A PROPOSAL FOR AN

ENERGY POLICY FOR MALTA

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and Rural Affairs

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FOREWARD

The first draft of the National Energy Policy was issued for consultation in 2006. Immediately after the consultation process ended, the European Commission launched its 3rd energy package which included the revision of the inland market directive and proposals for an overall RES target for the European Union. Negotiations on this continued till the end of December 2008 when the energy package was concluded. It was only then, when Malta became fully aware of its commitments, that the proposal for a National Energy Policy could be finalised.

Concurrent to this discussion dramatic international developments in the energy sector were being experienced. A year ago Malta was concerned that the price of a barrel of oil would touch the 200 dollar mark. Soon after the price of oil collapsed because of the global economic downturn. Such volatility erodes Malta's competitive edge because it is heavily dependent on fossil fuels.

Within these developments the draft policy had to be updated so that it proposes an advanced, holistic and balanced approach to help Malta achieve its objectives in the energy sector.

The provision of a secure, competitive and affordable as well as environmentally and financially sustainable energy supply has always been a big challenge for Malta. This stems from the fact that Malta is an isolated island state both geographically and infrastructurally. Malta's small size and high population density makes exploitation of RES very difficult. Nothwithstanding these constraints investment in energy has never been more timely! Malta must ride the current economic challenge and diversify its energy supply, tap renewables and adopt a price structure that incentivises energy efficiency. We also need an electricity sector which guarantees security of supply. Our economy, the competitiveness of our country and job security are very much dependent on investment in this sector.

This is a document that compliments a series of other initiatives presently being undertaken by Government. The National Energy Efficiency Action Plan adopted towards the end of 2008 and the draft publication of the Climate Change Strategy as well as the revised Solid Waste Management Strategy is tantamount of a government that is out on a number of fronts to make Malta greener and more competitive at a time when the world economic activity has slowed down. This Government wishes to have an economy that is properly primed when world markets recover. We want to be ready for this with an energy sector that is more competitive, reliable, secure and clean.

The Government will continue to develop all the necessary infrastructural and regulatory structures, despite a monopolistic distribution network, so that energy generation is open to competition. We shall continue to seek a tariff structure that reflects the polluter pays principle, incentivises energy efficiency and promotes social well-being.

We will also continue to work closely with the EU in relation to the continuous ongoing debate and activity in the energy sector. We will seek to reap the benefits of an energy policy that is based on solidarity and coordination and common action. All this will provide our country with a continuous spur to higher levels of energy governance coupled with support to achieve the required standards.

I augur an active and fruitful participation in this consultation process. Government will consider all suggestions and comments put forward such that the final product will be an energy policy that will find consensus among all stakeholders.

George Pullicino
Minister for Resources and Rural Affairs

DRAFT NATIONAL ENERGY POLICY

INTRODUCTION

This document outlines Government's energy policy, the priority areas and the overall goals and objectives for the development of the energy sector. These can be summarised as: security of supplies, environmental protection and competitiveness.

In addressing the country's energy challenge, Malta's energy policy is significantly influenced by a number of EU energy and environmental policies. Our international commitments are leading us not only towards ambitious targets for energy efficiency, renewable energy and greenhouse gas emission reduction, but are also offering us new opportunities for growth.

This policy document identifies six key policy areas to attain the stated policy objectives. These are: energy efficiency, reduction in reliance on imported fuels, stability in energy supply, improvement in our carbon footprint, efficient and effective delivery of energy and finally policy support to the energy sector.

1. Energy efficiency: Sustainable energy consumption is considered as a fundamental challenge to satisfy energy demands at appropriate levels using suitable technologies whilst balancing the environmental impact and cost of the energy supplies. Energy efficiency in electricity generation and distribution as well as energy end-use all contribute significantly to meeting this challenge. A National Energy Efficiency Action Plan was published in 2008 and is being pursued. It identifies cost-effective measures that will generate energy efficiency and charts a plan whereby these measures are implemented in a structured holistic manner.

2. Reducing reliance on imported fuels: Malta is also actively seeking to promote and increase the use of renewable energy sources. A target of 10% energy from renewable sources in final energy consumption by 2020 has been set. Government is implementing and proposing various measures to tap renewable energy and diversify the energy mix. Concurrently sustained efforts are being made to seek opportunities in oil exploration to further contribute to reducing Malta's reliance on imported fuels.

3. Stability in energy supplies: Malta, is a small isolated system and fully dependent on the import of fossil fuels. Implementation of strategies for exceptional contingencies outside its control is crucial to ensure stability of energy supplies. An interconnection with the European electricity system is seen as breaking the insularity of the islands, giving Malta the security of supply and enabling it to access the EU internal electricity market. The realisation of the necessary natural gas supply infrastructure is also being pursued in order to provide further diversification of the energy mix in Malta.

4. Reducing the emissions from the energy sector: In Malta, the energy sector is the main contributor to GHG (mainly CO2) and other pollutants. Climate change, of which the emission of GHG is the main instigator, is a major issue of global concern and is very much interrelated to the energy sector. A major catalyst for climate change action has been the European Union's proposal for an integrated energy and climate change package setting EU overall targets for reduction of GHG by at least 20% of 1990 levels, increasing use of renewable energy sources to 20% of the final energy consumption and reducing energy consumption by 20% of projected 2020 levels. Apart from the emission of GHG, the combustion of fuel results in the emission of other pollutants, which are of a concern for the quality of air. The reduction of emissions of GHG and other pollutants is therefore being given importance. Malta's energy policy is therefore intrinsically linked to the country's climate change strategy and the national emissions reduction program. International commitments and obligations, policy actions and measures proposed seek to address these challenges.

5. Efficient and effective delivery of energy supplies: Opening the energy market for competition and introducing a variety of options as energy sources for specific needs will enhance the delivery and quality of the services. Government is proposing various measures to ensure that appropriate regulation is maintained whilst opening the market to competition where this is possible.

6. Support to energy sector: Government considers that the energy sector should be supported through fiscal, education and research policies to enable it to attain general energy policy objectives. In addition Government will also seek synergies with other sector polices and strategies.

A clear understanding of the general and specific objectives identified is necessary to address the energy challenge. This document seeks to identify and outline such policy objectives and measures. Striking the right balance between the different objectives is now essential to ensure that Malta's national energy policy follows a truly sustainable path.

OBJECTIVES AND PRIORITIES OF THE ENERGY POLICY

A secure, competitively priced, and environmentally sound energy supply is a basic requirement for a competitive Maltese economy. Without an energy supply with these characteristics, sustained economic growth, employment and prosperity could be jeopardised.

These objectives are all essential, though their relative importance differs. Indeed, in certain instances, they are clearly complementary, while in others they appear to be mutually competitive.

Policy decisions sometimes involve tradeoffs between one objective and another. For example, improvement in energy efficiency will address all objectives of the energy policy. Similarly, investment in renewable energy sources addresses environmental protection and security of supply (though not necessarily competitive pricing).

The importance of security of supply can be realised by considering the cost of energy not being available when required by an end-user. Interruption of the energy supply, or threats of interruption, could lead to widespread disruption. Better security can be achieved by ensuring that energy sources are reliable, that markets are designed and regulated appropriately, and that energy systems are resilient to shocks through a combination of diversity and flexibility.

The availability of competitively priced high quality energy services has a significant effect on the Maltese economy. One can see this from the debates that ensue when end-use prices are adjusted. Prices have an impact on the competitiveness of industry and services and on the achievement of the Lisbon Strategy objectives. They also have a direct impact on the life of the individual citizen.

Where environmental responsibility is involved, there is a growing consensus on the need to ensure sustainable development, and that the measures proposed would not conflict with but rather complement this concept.

THE ENERGY POLICY

Policy area 1: ***Energy efficiency***

Policy statement:
Government will encourage and facilitate the achievement of increased energy efficiency in electricity generation and distribution and in energy end-use and will lead by example.

A target of 9% energy savings by 2016 in end use is established. Enemalta generation and distribution plans lead to a move towards a more modern efficient energy sector, with the order for the first expansion of the generating capacity being awarded in 2009.

Policy area 2: ***Reducing reliance on imported fuels***

Policy statement:
Government will support the sustainable development of sources of renewable energy, while continuing to provide opportunities in oil exploration.

A target of 10% energy coming from renewable sources of energy in final energy consumption, together with a set sub-target of 10% content of renewable fuels in transport fuels.

Policy area 3: ***Stability in energy supply***

Policy statement:
Government will seek to diversify the current reliance on oil products while ensuring that contingency plans are in place to cater for short-term disruption in oil supply. Malta will interconnect with the European electricity system and purse the realisation of the necessary natural gas supply infrastructure.

Policy area 4: ***Improving our carbon foot print***

Policy statement:
Government will seek that the improvement of the carbon footprint is reflected in the policies and legislation.

*Policy area 5:****Delivering energy efficiently and effectively***

Policy statement:
Government will ensure maximum competition possible within the limits imposed by the market, while ensuring that operators deliver the best quality of service at the cheapest possible prices through market forces complemented by robust regulation.

Policy area 6: ***Ensuring that the energy sector can deliver***

Policy statement:
Government will ensure that fiscal policy and policy in education and research support the general objectives of ensuring security of supply, environmental protection and competitiveness.

THE POLICIES

Policy Area 1: ***Energy Efficiency***

Policy statement:

Government will encourage and facilitate the achievement of increased energy efficiency in electricity generation and distribution and in energy end-use and will lead by example.

1.1 OBJECTIVES

Energy efficiency will help meet all three-policy objectives:

- Reduce dependence on a particular source of energy thus contributing towards security of supply
- Introduce alternative energy solutions to create a competitive market
- Reduce emissions and depletion of natural resources thus reducing the impact on environment.

1.2 BACKGROUND

Energy efficiency is a key objective in the Government's energy policy and can help the economy achieve its social and environmental objectives. It can have a significant impact on the energy sector and can arguably be the lowest cost option available to the Government to reach its objectives in that it

- reduces the individual and national fuel bill
- decreases the release of carbon into the environment and hence the carbon footprint
- reduces the emissions of other pollutants from the combustion of fuel
- contributes towards improving security of supply
- is more rewarding than the introduction of renewable energy
- prioritises areas which give most savings for a given investment

It is widely perceived that Malta has the potential to improve energy efficiency.

The NEEAP [1], submitted to the Commission in 2007, was updated in 2008. This plan shows how Malta can potentially reach the indicative target of 9% savings in energy end use by 2016. Government gave energy efficiency a high profile during the 2009 budget [8], introducing a number of incentives and measures intended to promote energy efficiency.

ACTION AT EU LEVEL

In 2007, the European Commission proposed a new energy policy for Europe. (http://europa.eu/scadplus/leg/en/lvb/l27067.htm) aiming to reduce energy consumption by 20% by 2020.

The EU is giving high priority to energy efficiency and is using Community technology research and demonstration programmes to support it.

In 2008 the European Commission also released the 'Second Strategic Energy Review - Securing our Energy Future' proposing a wide-ranging energy package aimed to make energy savings in key areas, such as reinforcing energy efficiency legislation on buildings and energy-using products.

(http://ec.europa.eu/energy/efficiency/index_en.htm)

Policy Area 1A: ***Efficiency in electricity generation and distribution***

1A.1 OBJECTIVES

Improving energy efficiency in generation and distribution will have an impact on the cost of delivered electricity, and hence on the country's competitiveness. It will also complement any improvements in energy efficiency measures taken by customers, lead to lowering emissions from the power station and to improving security of supply.

1A.2 BACKGROUND

Malta relies 100% on the importation of fuel for its energy needs. Currently over 63% of the imported fuel is used for power generation. At present, there are no electricity or gas interconnections with other countries.

Enemalta Corporation (EMC) is currently the sole generator, distributor and supplier of electricity in Malta. It operates two power stations, with a total installed capacity of 571MW to supply all the electricity needs of Malta [11].
The generation plant consists of:

- **Marsa Power Station**
- Age: most of the steam plant dates back to the early 1950's
- Efficiency: Operating at an efficiency of 27%
- Remaining life: 20,000 hrs as from January 1st 2008 and is due to be closed by 2015 whichever comes first in terms of the Large Combustion plant Directive

- **Delimara Power Station**
- Age: Plant commissioned between 1992 and 1998
- Operating efficiency

Conventional steam	32%
CCGT	40%

- The CCGT is the most efficient plant available however the cost of fuel (Gas oil) compared to Heavy Fuel Oil used by conventional plant makes it the most expensive plant to run.
- The open cycle gas turbines cover peak demand or emergencies.

The electricity generated is distributed through a network of underground cables/ overhead lines/transformers and other equipment at different voltage levels to supply the end consumers. The infrastructure of the distribution system has inherently a number of sources of inefficiency and these explain the loss of part of the electric energy handled by the network.

Consumption of electrical energy has been increasing at varying rates for many years, however as from 2005 the rate of increase has been 2% or less.

This could be due to
- growth in the economic activity,
- higher standard of living, and
- an improved distribution network and use of electrical energy.

The load demand curve in Malta varies seasonally and experiences a sharp day-night difference. Since 2003, the summer active power peak demand (MW) has exceeded the winter peak in terms of magnitude. This is explained by the penetration of air-conditioning systems (which are associated with high reactive power demand) while electric heaters have been replaced by gas heaters.

There is relative absence and lack of awareness of combined heat and power generation (CHP) in the non-residential sector.

Action at EU level

A driver to improve energy efficiency in power generation is the National Allocation Plan (NAP) 2008 - 2012 drawn up in accordance with Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading. Further consideration to this is given in Policy Area 4: Improving our carbon footprint.

The Integrated Pollution Prevention and Control Directive 96/61/EC and the use of Best Available Techniques (BAT) under the directive will improve energy generation efficiency.

Directive 2004/8/EC on the promotion of cogeneration, i.e. the combined heat and power based on useful heat demand, aims to increase energy efficiency and improve security of supply. It aims to create a framework for the promotion and development of high efficiency cogeneration of heat and power based on useful heat demand and primary energy savings in the internal energy market, taking into account the specific national circumstances, especially climatic and economic conditions.

1A.3 WORK UNDERTAKEN

Dependency on Marsa Power Station steam plant was reduced and a larger proportion of the load was transferred to the CCGT at Delimara, leading to an increased financial burden but better environmental performance (Compliance with LCPD as from January 1st 2008).

The Enemalta Generation Plan 2006-2015 [11] highlighted the urgency of the construction of a new plant in the interest of security of supply and environmental obligations. The tender, for the building of a plant at Delimara Power Station, is to be awarded during 2009.

The MRA has recently commissioned a study to investigate available options to provide electricity supply in Malta in a more feasible and globally efficient way during the period 2008 - 2020. [7]

The study considered the following options

- Expansion and modernisation of on-island generation
- Introduction of natural gas for the power stations
- Interconnection to the European grid

The conclusions of the study were, that under current and foreseeable circumstances,

- a Combined Cycle Diesel Engine running on Heavy Fuel Oil with possibility of conversion to natural gas is the best option for immediate increase in local generation capacity
- further expansion would be based on CCGT running on natural gas

A possible timeline for the expansion of local generation capacity is

- In 2011: Commissioning of an HFO based Combined Cycle Diesel Generation Units (7+1) Total 136 MW capacity;

- In 2014: Commissioning of a Gas based CCGT (2+1);126 MW capacity.

Enemalta is concluding its own activities on the tender for the purchase of a generation capacity ranging from 100MW to 150MW. The capacity will depend on the technology chosen following the completion of the tender procedure.
The contract for a national Supervisory Control And Data Acquisition (SCADA) in the process of being awarded. The SCADA system will enable EMC to manage more efficiently distribution system.

1A.4 MEASURES PROPOSED

Considering the level of efficiency in the existing Enemalta electricity generation plant and the conclusions of the feasibility study conducted, there is scope for investment in new generation plants to raise efficiency levels. Complementary to measures proposed in other sections in this policy, Government will:

- ensure that Enemalta and any other electricity producers seek and implement ways to increase the efficiency of the electrical power generation plants, including Enemalta investments in 2009,

- require that Enemalta, as the Distribution System Operator, improves the efficiency of the distribution network, in line with a long term Distribution Plan to be completed in 2009,

- ensure that decisions on the required new generation capacity are taken and implemented staring in 2009,

- require that Enemalta, as the sole supplier of electricity in Malta, implement demand management measures intended to decrease the discrepancy between peak and minimum loads, such as time differentiated tariffs in its tariff scheme,

- promote the generation of electricity produced from high-efficiency cogeneration plant, particularly in industry, that uses heat and power in its manufacturing process. An updated survey of the potential will be carried out in 2009, and a pilot project started soon after,

- promote efficiency in water use since this will contribute to reducing electricity demand, a new water saving campaign to start in 2009.

Policy Area 1B: ***Energy End-use effeciency***

1B.1 **OBJECTIVES**

Energy efficiency will contribute towards lowering energy bills for end users and possibly with same or better level of comfort for the residential sector, enhance the country's competitiveness and could lead to higher productivity. Furthermore, the energy savings will be beneficial for the environment and will contribute towards security of supply.

1B.2 **BACKGROUND**

Initiatives, designed to improve energy efficiency in the residential and non-residential sectors, will be taken to educate the public and facilitate the uptake of schemes.

In 2008, Government published a detailed NEEAP [1] designed to achieve Malta's target of 1% reduction per annum cumulative for nine years.

Barriers to the uptake of Energy Efficiency include:
- a lack of visibility of the savings potential and the hidden costs of inefficient energy use,
- a limited access to capital considering the long payback of energy efficiency measures,
- a lack of knowledge on the cost-effectiveness, returns and risks of investments in energy end-use efficiency,
- a dilemma where investors (such as hire companies) minimise investment in efficient energy-using technology in cases where the resulting higher energy requirements will not be paid by them but by their clients.

Action taken in this sector seeks to have a long-term effect and cultural change in making use of resources only to the required needs, without restricting the possibility of an increase in justifiable energy consumption due to strong economic growth or structural changes.

Action at EU level
Current EU strategy is the development of market-based instruments to encourage energy efficiency. The performance of these instruments is limited in a small market such as Malta.

Directive 2002/91/EC on the energy performance of buildings, transposed by LN 261 of 2008, promotes the improvement of the energy performance of buildings, taking into account outdoor climatic and local conditions, as well as indoor climate requirements and cost-effectiveness.

Directive 2006/32/EC sets targets for energy efficiency achievements in use of energy for each Member State with a cumulative target of a reduction of at least 1% of inland energy consumption for each year reaching a total 9% reduction within 9 years. The idea is to improve energy efficiency in all end-use sectors, with a view to solving environmental, self-sufficiency and cost problems while adequately providing for increasing needs for lighting, heating, cooling and motive power without major upheavals. This is especially true when seen in the light of the Kyoto Agreement to reduce CO2 emissions, where improved energy efficiency will play a key role in meeting the EU-Kyoto target to reduce the carbon footprint in an economic way. The directive also provides that energy suppliers contribute to the energy savings target of 1% per year.

A number of directives on energy labelling, including Directive 2005/32/EC, setting a framework for the setting of eco-design requirements for energy-using products, energy labelling for vehicles and the energy star program for office equipment, were enacted.

The Commission will be launching a new legislation intended to update the existing one on energy efficiency, introduce new laws as well as to update its energy efficiency action plan during 2009.

The Commission issued a communication (COM(2009) 111 final on the 12th March 2009) titled 'on mobilizing Information and Communication Technologies to facilitate the transition to an energy-efficient, low-carbon economy'. In this communication the EC is advocating the use of ICT to facilitate the transition to an energy efficienct and low carbon economy. ICT applications include mention in the communcation are

- the use of smart metering to provide consumers with appropriate information in regard to inefficiencies in their consumption and hecne enabling them to take action to mitigate them. to quantify energy consumption and provide appropriate information to consumers
- monitoring and management of energy consumption in buildings
- energy efficient work practices such as teleworking, e-goverment etc
- delivering of inovative technologies that reduce wasteful consumption of energy in devices

A public consultation will be launched on the explotation of ICT in energy efficiency improvements and carbon emission reduction.

1B.3 WORK UNDERTAKEN

The NEEAP [1], which proposes new measures intended to stimulate energy efficiency at end-use level, was used as a basis for the development measures to incentivise energy efficiency published with the 2009 budget.

Government has appointed green leaders for the public sector entrusted, amongst other things, to encourage energy efficiency in the sector. MITI drafted a corporate energy policy for the green leaders to ensure a coordinated effort in reducing the negative environmental impact of Government investments and to ensure that entities operate in the most efficient manner and with the least possible cost. Energy saving measures were implemented in state colleges.

The Water Services Corporation (WSC) was particularly successful in reducing electricity demand from a peak of around 15% of all electricity dispatched from the power stations in 1995 to around 6% in 2004. Other large energy customers took similar action.

Government has launched various schemes to promote and introduce energy efficiency, These included grants on the purchase of electrical vehicles, roof insulation and double glazing as well as the scheme to promote energy efficient appliances, by subsidising the purchase of A-rated washing machines, dishwashers, air conditioners and tumble dryers and A+ and A++ rated refrigerators.

Another scheme will promote the use of compact florescent lamps as a measure in energy saving in the lighting needs.

Enemalta and WSC signed a contract for the supply and installation of an Automatic Meter Management system complete with Smart Electricity Meters. Following the completion of the installation program, the utilities will be able to implement demand management and provide consumers with up-to-date consumption trends and comparisons. This will enable consumers understand better how their energy needs are being utilised and could react accordingly.

At least one local bank is providing subsidised loans for investment in energy efficiency.

Following the pilot energy saving project at Tal-Ftieħ in Birkirkara, as from January 2005 the Housing Authority decided to incorporate various energy saving features in its housing projects. These include double-glazing in apertures, window and door louvers, roof insulation, storm water cisterns and solar water heaters. The specific results and lessons learnt will be taken into consideration when taking the necessary steps to enhance the design of newly proposed housing projects to achieve better energy performance. Through the Energy Performance in Building regulations, specific minimum requirements for energy efficiency will be implemented on new building projects, opening the requirements to investigate alternative energy sources or methods, as co-generation, solar cooling possibilities, heat pumps, geo-thermal possibilities or alternative heat recovery methods.

A feasibility study analysing the potential of co-generation on the Maltese islands, carried out by the MRA, with the present prices of energy, has shown that in most sectors, this technology is quite feasible.

The Government has also started an energy efficiency campaign, called ‘Switch’, to educate and disseminate good practices to the public on methods how to save energy and water.

In the non-residential sector, Government has allocated a budget funded through ERDF for an Energy Grant Scheme, managed by Malta Enterprise. This will provide a grant to this sector as regards to expenditures related to energy from renewable sources and energy efficiency measures. This scheme is providing subsidised energy auditing by professionals, intended to indicate feasible measures required for efficiency in end-use.

1B.4 **MEASURES PROPOSED**

The developments undertaken in this sector will follow the proposed EU directive that establishes best practice for energy efficiency in the EU. Government therefore will continue to:

- coordinate all current initiatives and propose new initiatives within a regularly updated, holistic NEEAP [1] intended to achieve 9% energy savings by 2016, in line with directive 2006/32/EC,
- adopt exemplary energy efficiency practices in the public sector,
- implement legal notice 261 of 2008 which cameinto force in January 2009, and develop and adopt legislative and administrative instruments to achieve further energy efficient and environmentally friendly buildings and services,
- evaluate efficient street lighting measures, controlling both the consumption and light pollution, in 2009,
- give incentives for a modal shift of electricity consumption requirements, shifting some day operation to night off-peak time, by providing an attractive option for a cheaper night tariff for most consumers, complimented by the smart metering project,
- give incentives for the use of highly efficient co-generation in particular sectors in 2010 based on the findings of the survey.

Policy Area 1C: ***Energy Efficiency in Transport***

1C.1 OBJECTIVES

Energy efficiency in the transport sector could have a significant impact on climate change and air pollution, particularly in town and village centres, since transport accounts for around half of the energy end use in Malta.

1C.2 BACKGROUND

Improving efficiency in transport in general could lead to reduction of fuel consumption in the transport sector. Improvements in vehicle performance and technology in the near future are unlikely to have any significant effect. However, if the reform in mass transportation leads to the point where current private vehicle users are attracted to use public transportation then there is likely to be considerable room for improving the country's transportation fuel bill. This will concurrently generate other improvements, including reduction in air and noise pollution and other direct and indirect benefits associated with reduced pressure on the transport infrastructure.

The age of the national vehicle stock has improved in recent years though 33% of vehicles are over 10 years old, and another 41% are between 6 and 10 years old.

Action at EU level

The transport section accounts for almost 20% of total primary fuel consumption and has the fastest growth in consumption. It is heavily dependent on fossil fuels and increases the environmental risk through GHG emissions.

To solve these problems, it is vital to take action on the use of cars and to promote cleaner alternative transport. The Commission plans to set a binding target so that polluting car emissions will achieve the threshold of 120g of CO2/km by 2012. It also intends to address the issue of car components, such as air conditioning and tyres, in particular, by issuing a European standard for rolling resistance and by promoting tyre pressure monitoring. Moreover, strengthening the rules on vehicle labelling will help promote the most energy-efficient vehicles, as will proper awareness-raising campaigns and public authorities purchasing clean vehicles.

1C.3 WORK UNDERTAKEN

The government policy on transport envisages a number of measures that will lead to improved energy efficiency in transport.

In an effort to increase the usage of the public transport service and to encourage a modal shift from private transport to public transport, the government has embarked on a major restructuring programme of the public transport system. The following measures aimed at promoting the use of public transport will have a positive impact on energy efficiency:

- Redesign of the regular bus service networks in Malta and Gozo to cater better for travel needs of residents and visitors
- Introduce quality control with the operators of regular public transport services, through a public service contract
- Require the use of new, accessible and low emission environmentally friendly buses;
- New simplified fare structure with integrated ticketing and concessions for elderly and students;
- Better travel information (including real time information at bus stops and termini);
- Upgrade public transport infrastructure at termini and bus stops;
- Better branding and marketing of services
- Introduce more competition between all modes of public transport
- Upgrade training and certification procedures for professional competence for all drivers of public transport vehicles.
- Promote new modes of public transport such as, water taxis and local ferry services
- Give buses priority on the road through the introduction of an Intelligent Traffic Management System and take more bus priority measures such as bus lanes, bus gates and selective bus detection at traffic lights
- Study new solutions for the future such as Light Rapid Transit

The government's strategy to improve energy efficiency in transport also includes a number of measures aimed at encouraging the use of smaller, more efficient private cars and restraining their non-essential use. These measures include:

- tax on registration based on CO2 emissions
- financial incentives to encourage eco-driving,
- improve the national single vehicle approval system to reduce the importation of older vehicles from outside the EU,

- introduce further traffic regulatory measures to manage parking and control access to congested centres,
- promote employee schemes to encourage commuters to use public or shared transport,
- integrate land use and transport planning,
- increase accessibility for pedestrians and cyclists through the use of safer infrastructure,
- develop guidelines for good practices in urban transport planning,
- commission full feasibility studies on alternative mass transit systems, following the preliminary feasibility studies carried out in November 2008.

The government is also giving a grant on the purchase of electrical vehicles.

As part of the measures already taken, Information Communications Technology (ICT) has been employed in Valletta, as a means for better traffic management system, by the inclusion of the CVA system, thus controlling access and parking use for non-Valletta residents. An alternative measure implemented is the Park-and-Ride facility for commuters wishing to visit the capital city using their own transport, and a taxi service using electric vehicles to roam around the City's roads.

Malta, being at the southern part of the EU, is directly affected by long distance air travel in order to reach other parts in Europe. The signing of the Blue Med Declaration last November 2008 on the creation of a Mediterranean regional form of integrated management known as a Functional Airspace Block (FAB) – an airspace block based on operational requirements such as safety, capacity and cost, reflecting the need to ensure more integrated management of airspace regardless of existing national boundaries. The integration of FABs is one of the key concept towards the EU 's objective of creating a Single European Sky which will facilitate the efficiency of air traffic management systems and thus reduce emissions from this industry. Malta's active participation in the Blue Med Project was a significantly positive step forward.

1C.4 **MEASURES PROPOSED**

Government will:

- support initiatives at EU level to promote the manufacture and marketing of more efficient vehicles and components,
- ensure that transport policy and its implementation aim to improve efficiency in the transport sector with particular emphasis on public transport systems,
- promote the use of more efficient or environmentally friendly alternative fuels, for transport and/or modes of transportation,
- Apply improvements to the road networks, especially in congested areas during peak hours,
- Promote e-working and tele-work to reduce workforce mobility.
- evaluate the possibility to utilise electricity from renewable energy sources, for vehicle traction.
- consider the introduction of Intelligent Traffic Management Systems aimed in improving traffic circulation on the network, giving priority to public transport in congested areas and providing real time travel information to assist travellers in their transport decisions.
- work actively at all levels for quick implementation of Single European Sky (SES) aimed to reduce the distances and provide flight routes at optimal altitudes and
- Encourage car sharing and car pooling

Policy Area 2: ***REDUCING RELIANCE ON IMPORTED FUELS***

Policy statement:

Government will support the sustainable development of sources of renewable energy, while continuing to provide opportunities in oil exploration.

2.1 OBJECTIVES

A diversification of the sources of energy for the country's energy needs offers considerable advantages over the full dependence on imported fuels.

2.2 BACKGROUND

While it is evident that the benefits of undertaking all necessary action to ensure that the demand for energy is the minimum required to meet social and economic needs, a parallel and equally beneficial step is to try to reduce Malta's total dependency on imported fuels for its energy requirements. Malta currently imports its energy in the form of petroleum-based fossil fuels. The use of Renewable Energy Sources (RES) can lessen this dependency. Oil exploration, if successful, would reduce dependence on foreign crude oil. The country would still need to rely on foreign refineries, however, for its processing to fuels in useable forms.

RES hold a long-term promise. The current target of 10% by 2020 may evolve in response to international obligations, and as technology moves forward, prices move downwards.

Technically Malta can exploit renewable energy through [3,4] :

- large scale wind farms (onshore, offshore),
- medium and small scale wind farms (medium scale 20kW- 500 kW and small- scale < 20 kW),
- solar - photovoltaic and thermal,
- energy crops & waste,
- landfill gas,
- sewage treatment plant gas,
- biogases and
- heat pumps for heating and cooling.

The RES roadmap by the EU sets the objective to increase the proportion of RES in the overall EU energy mix to 20% by 2020. Malta's share, recognising the country's Gross Domestic Product (GDP), its potential and its starting point, is set at 10%.

Policy Area 2A: ***RENEWABLE SOURCES OF ENERGY***

2A.1 OBJECTIVES

Use of renewable sources of energy will contribute towards mitigating climate change as less carbon is released into the atmosphere leading to lower air pollution. This policy will also have a positive, though marginal, impact on security of supply.

2A.2 BACKGROUND

Studies were carried out on the availability and potential of RES [3,4], taking into consideration proven technologies. These studies indicate that wind, solar photovoltaic (PV), solar thermal, biomass wastes, landfill gases and sewage treatment plant gas offer some potential for exploitation. There also exists potential for low-grade geothermal energy for the purposes of heating and cooling. On the other hand tidal flow, high-grade geothermal, hydropower, biomass energy crops and wave energy do not appear to offer significant opportunities for exploitation on a commercial scale.Electricity generated from RES available in Malta, primarily wind and solar, may need support mechanisms to compete with conventional generation at current electricity prices. Presently there are also problems due to the characteristics (intermittence, low intensity) of renewable sources of energy, in particular wind. Given the specific opportunities offered by wind and solar energies as well as biomass (waste), this policy treats these issues separately.

Action at EU level

The new directive for the promotion of use of energy from renewable sources, being finalised during this period, requires that all EU member states reach an overall 20% target of energy derived from renewable sources. Malta's final target is 10% of renewable energy in the final consumption of 2020 including a 10% of renewable fuel in transport. However, the proposed directive also introduced a target trajectory approach, through which compliance with the final target will be monitored across two-year periods. For Malta, the trajectory is shown in the table below:

Period	Target renewable energy share
Starting case (2010)	0%
2011-2012	2.0%
2013-2014	3.0%
2015-2016	4.5%
2017-2018	6.5%
2019-2020	10.0%

The new directive on the promotion of renewable energy aims at facilitating cross-border support of renewable energies without affecting national support schemes. It will permit statistical transfers and joint support schemes between Member States and joint projects between Member States and third countries.

2A.3 WORK UNDERTAKEN

In 2005 Government funded a study on the development of a strategy for the exploitation of RES in Malta [3,4]. Besides defining the most applicable and feasible technologies of RES in our islands, the strategy incorporates the legal and regulatory aspects based on the EU legal obligations, financial aspects as well as administrative issues and tariff mechanisms for the introduction of renewable energy. Following the completion of this strategy report, the MRA, in conjunction with EMC, has drawn up transitory arrangements for a simplified licensing arrangement of small-scale electricity generation from RES.

Separate sections of this policy give further details related to wind, solar and low-grade geothermal energy and biomass. A separate strategy document will delve more about the subject. The MRA has commissioned a study to investigate the best and most likely options Malta [14] should be considering to meet its targets, based on the possibilities available in the proposed directive for the promotion of the use of energy from renewable sources. This study compares the technical and commercial aspects of various scenarios; from local energy generation from renewable sources (RES), by wind and solar, joint projects in RES with other EU countries or through interconnection with non-EU member states and the possibility of buying green certificates through statistical transfers.

In line with the new RES directive, as long as the renewable energy is produced in an EU member state, Malta does not need to physically import renewable energy in order for this to contribute to meeting its renewable sources of energy target but just purchasing certificates through statistical transfers would be enough. Another option for Malta would be to participate in a green energy joint project in another EU member state and assign the certificates to its RES energy portfolio. Actual consumption of green energy is necessary if energy is produced through a joint project with a non-EU member state. In the latter case, the RES project would have to be commissioned after the coming into force of the proposed directive in order to be accounted for meeting the RES target. The interconnection through Sicily, besides offering other advantages, would only contribute in the latter case as regards to the acquisition of green energy for the RES portfolio originating from a non-EU member state RES generation plant.

2A.4 MEASURES PROPOSED

In order to promote all forms of RES, Government will:

- continue to implement a strategy for the promotion of RES to meet 2020 targets and to identify which cost efficient efforts are necessary to establish and achieve longer term targets and
- keep under review and modify support mechanisms for RES electricity, if necessary.

As a further measure, the Government has declared Gozo an eco-island and has addressed this island as a pilot location for RES and energy efficiency measures at a district level.

Wind, Solar and Low-Grade Geothermal Energy

2Ai.1 **OBJECTIVES**

Wind and solar applications contribute to climate change mitigation, though they may have significant adverse environmental effects, mainly visual. They may contribute towards competitiveness when the cost of electricity produced from PV's and wind farms becomes cheaper than the cost of conventionally produced electricity.

Low-grade geothermal energy is a significant source for heating and cooling. It reduces reliance on less efficient conventional systems for heating and cooling.

2Ai.2 **BACKGROUND**

Currently, the most cost-effective feasible technology for generating electricity locally is large onshore wind farms [3]. Unfortunately, the onshore wind potential in Malta and Gozo is restricted due to various environmental and planning constraints. These include the cumulative visual and landscape impacts, impacts on the natural environment, lack of road access and interference with airport operations.

Offshore wind energy is more costly to install and maintain but offers key advantages over onshore wind farms. Wind speeds are usually higher and turbulence levels are lower for offshore sites further away from the coast. There are no logistical difficulties demanding the development of an upgraded road network to deliver the large wind turbines to the site of installation. Thus, wind turbines at sea can be bigger than those on land. Offshore wind farms have less potential to cause concern to neighbouring residents. In addition, they can protect the marine ecosystems by having the turbine foundation structures acting as artificial reefs.

Offshore wind farms are currently the second best technology option in terms of costs. Proven offshore technology currently available on the market is only suitable for shallow waters (less than 30m depth). The Maltese waters are generally too deep for such technology, with the exception of a few shallow water reefs and coastal features close to the shore. The potential offered by the shallow water sites available is still worth considering. Therefore, any developments would require mitigation on issues related to impacts on land and those relating to conflicts of use.

The Government is in favour of onshore and offshore wind farm developments, as long as any planning and environmental impacts are acceptable.

Deep offshore wind farm technology, for depths in the range of 50 to 200 m, would offer an enormous potential for Malta and Gozo. However since this technology is still in its research and development stage and is not expected to be available on a commercial scale within the next eight to 10 years Government is interested in research programs involving the testing of prototype deep offshore installations in the Maltese territorial waters.

Medium-scale wind turbines, with capacities ranging between 20 – 500 kW, and micro wind turbines, with capacities of less than 20 kW, do offer potential for wind exploitation on land. Medium-scale wind turbines would be more suitable than large-scale turbines for sites that are difficult to access and for which any significant road upgrading is not justified, either environmentally or economically.

There are barriers for the uptake of small-scale wind farms in urban areas because of the planning constraints that are likely to originate due to visual impacts on the Maltese townscape as well as to noise issues. However, technological advances have led to the development of innovative wind turbines designed specifically for the urban environment. These turbines have improved aesthetic qualities and low noise emissions.

One disadvantage of smaller turbines is that they have to be installed in larger numbers to be able to contribute a significant share of clean energy. The cumulative visual impact could be high.

Due to the intermittent behaviour of wind power, the conventional generation plant must provide a spinning reserve capacity to guarantee continuity of the electricity supply. Since Malta has an isolated grid, the spinning reserve capacity is limited. This in turn puts a limit on how much wind generation capacity can be introduced into the Maltese system. A cable interconnection with the European electricity grid would allow a larger wind capacity to feed into the local grid and provide the opportunity for Malta to export electricity generated in excess during periods of low local demand.

The PV resource potential in Malta is very large though it requires higher financial support. The electricity generation from PV systems occurs during daylight and in summer, this coincides with the occurrence of peak load demand. Therefore, PV systems can contribute to reduce the requirement of extra conventional generation during the peak loads. An additional benefit of PV systems is that they provide shade on rooftops, thereby reducing the demand for air-conditioning.

On a wider scale, solar energy for thermal applications (solar water heaters and potentially solar cooling) is another potential RES application.

Various configurations exist including large scale Concentrated Solar Power. However, this technology requires a large footprint area that is an issue on our islands.

It is proposed that a study be carried out about the potential of the use of low-grade geothermal energy for heating and cooling. These systems are able to transfer heat, to and from the ground and ground water, with minimal use of electricity. They would also reduce the demand for electricity used by conventional heating and air-conditioning units. The new directive for the promotion and use of energy from renewable sources also refers to aero thermal heat pumps, but the conditions under which such equipment would qualify are still to be defined. The Commission shall establish guidelines by 2011.

ACTION AT EU LEVEL

EU Directive 2001/77/EC on the promotion of electricity produced from RES in the internal electricity market has been transposed into local legislation through LN 186 of 2004.

The promotion of electricity produced from RES is of high priority for reasons of security and diversification of energy supply, because of environmental protection and social and economic cohesion. RES is also a major priority area within the EU through the support of various programmes seeking its development and uptake (e.g. FP6, Intelligent Energy for Europe etc.).

The EU Commission considers wind energy to play an essential role in meeting the objectives for a new Energy Policy for Europe. The modelling scenario used for the Second Strategic Energy Review (COM (2008) 738) suggests that wind will represent more than one third of all electricity production from renewable energy sources by 2020. The Commission recognises the vast wind resources over Europe's seas. It addressed a number of difficulties faced by the offshore wind sector today and proposed measures that need to be taken to enable large deployment of offshore wind (COM (2008) 768).

The EU Commission has identified key infrastructure projects within and outside the EU as set out in its second Strategic Energy Review, 'An EU energy security and solidarity action plan'. The projects intend to develop a European super grid that would interconnect EU countries and link Europe with other countries outside the EU. Apart from guaranteeing EU security of energy supply, the development of a super grid will permit the achievement of the EU renewable energy objectives. One project is the Mediterranean Energy Ring, which would link Europe with Africa. The project is considered by the Commission to be essential in the development of the vast solar and wind energy potential in the Mediterranean region (COM (2008) 782).

2Ai.3 **WORK UNDERTAKEN**

Small-scale auto-generators, including PV panels, wind turbines and combined heat and power (CHP) with maximum generation capacity of not more than 16 Amps per phase, benefit from a fast-track notification system which facilitates the process for connection to the electricity grid subject to established conditions. Auto-producers with capacity larger than 16 Amps per phase require an authorisation to construct the generation system and a license to produce for own use and to produce and supply Enemalta. EMC and MEPA may also require separate permits and authorisations.

As part of the transitory arrangements, EMC will buy the electricity generated and supplied to the grid in such cases by using a net metering scheme with a spill over rate of 6.98 cents/kWh.

In the 2006 budget, Government introduced a number of measures in favour of small scale RES. To increase the penetration of electricity generation from PV systems, small-scale wind systems and uptake of solar water heaters in domestic households had access to a capital grant. Solar water heaters installed in new buildings, entitle the owner to a rebate on connection fees by Enemalta.

The Institute for Energy Technology is offering a service to check the technical aspects of these installations. There is a fee allocated to cover travel expenses. One of the studies of IET based on these visits showed that only 20% of the installed solar heaters were working optimally while over 50% of them had no insulation on the hot water pipes.

Between September 2004 and March 2009, the MRA received 56 notifications for installation of PV installations and seven applications for authorisation. The Authority issued four licences to produce electricity for own use and to produce electricity and supply to Enemalta. Total installed capacity of these installations is estimated at approximately 254 kW peak whilst the annual electricity generation is estimated to be 381 MWh.

While the current transitory measures have facilitated the administrative aspects for licensing of small-scale solar energy installations and has reduced bureaucracy in dealing with the administrative aspects, the uptake has been low. This is due to long payback periods for PV installations at the current prices. However, the 2009 support scheme [8] regarding PV installations, where the grant given on the initial capital investment was increased, saw a good response with the number of applicants exceeding the expected target.

The 2009 Support Scheme is also giving better incentives for the purchase of solar water heaters, roof insulation and double-glazing apertures. The MRA is managing the scheme addressing the residential sector.

As regards to the non-residential sector [8], a grant is being given as part of the ERDF funding scheme managed by Malta Enterprise for generation of electricity from renewable resources. Specifically to PV installation, the government is also giving a tax credit on the investment costs.

However, in order to achieve the 10% energy from renewable target for 2020, large-scale renewable installations are required. From a report commissioned by the MRA to Mott MacDonald in 2005 [3,4], wind generation is the most viable solution for Malta. Following this report and another report from R.Farrugia et al issued in 2005 [12], the MRA has started various studies in respect to wind energy generation and has been considering various sites, both onshore and offshore, for wind farm development.

Mott MacDonald reported a potential of 230MW of an on-shore wind farm, but considering constraints to various sites, the more realistic figure would be between 15 to 25MW. Sites considered were:

- Ġebel Ċiantar,
- Għemieri,
- Qasam Ben Ġorġ (Gozo),
- Wardija Ridge,
- Bajda Ridge,
- Marfa Ridge,
- Ta' Ħammud and
- Hal Far.

R. Farrugia et al reported a potential of 45MW of on-shore and suggested sites as:

- Baħrija,
- Marfa Ridge,
- Mellieħa Ridge,
- South of Dingli,
- Ħal Far and
- Delimara.

Most constraints on onshore wind farms are related to airport operation interference, flight paths, telecoms and radar interferences, site access for development and maintenance, electrical connection to grid and its stability, visual, noise and ecological impact.

Keeping these factors in mind and liaising with respective authorities, the MRA together with the Ministry for Resources and Rural Affairs (MRRA), are evaluating several onshore sites.

Moreover, the MRA and the MRRA have commissioned a study with Mott MacDonald as regards to an offshore wind farm at Sikka l-Bajda. The study includes the determination of the maximum capacity of wind energy that could be connected to the current electricity grid, without affecting the security and stability of the electricity distribution. The same study considers alternative onshore wind farms and will produce a wind map at the site and alternative sites.

The MRA is also involved in a project to gather wind measurement data in the area in order to estimate the electricity generation yield at this site as evidence for interested developers.

2Ai.4 Measures proposed
Government will:

- promote onshore and offshore wind farms and put forward concrete projects in 2009,

- continue to promote small-scale and medium-scale wind turbine installations,

ensure the development of the electricity interconnection with the European grid to allow a higher capacity of wind power generated locally and enable Malta to import renewable energy generated in non-EU member states.

- continue to promote PV systems for the domestic, commercial and industrial sectors,

- continue to promote solar thermal systems,

- promote geothermal systems for heating and cooling,

- evaluate alternative schemes and mechanisms, including but not limited to feed-in-tariffs, also to attract foreign investment and overcome the barriers limiting the capacity of the present installations based on relative consumptions. This will be an ongoing exercise designed to make appropriate RES projects in Malta attractive for investment,

- consider providing a share in PV solar parks investment, in assigned public areas, to investors who have no access to their own solar potential. This proposal being studied for possible implementation in 2010.

Biomass and Other Waste

2Aii.1 **OBJECTIVES**

The use of fuels derived from organic waste, such as bio diesel, will be beneficial from the environmental point of view of reducing used oil from entering the waste stream. It will also help reduce Malta's dependence on imported fossil fuel to a limited extent, thus improving the country's security of supply. Finally, producing bio diesel locally contributes towards a sustainable economy.

Similarly, the production and use of biogas will be beneficial from the environmental point of view to reduce the amount of unprocessed nitrates and other elements ending up in the soil and water tables, causing only harm.

2Aii.2 **BACKGROUND**

This policy area covers biomass, landfill gas, biogas from the treatment of sewage sludge and biogases. Biomass is the biodegradable fraction of products, waste and residue from agriculture (including vegetal and animal substances), forestry and related industries as well as the biodegradable fraction of industrial and municipal waste.

Malta has negligible potential in producing biofuels from its own agricultural products. The limited freshwater resources, the high population density and poor soil fertility contribute to these factors. The cultivation of marine algae to produce oil rich biomass for biodiesel production may be possible but needs investigation.

Industrial, commercial and domestic waste are currently currently the only substantial sources of indigenous biomass. In this respect, Government policy [10] so far has been:

- to reduce the quantity of waste and to encourage higher levels of reuse,
- to increase recycling and composting,
- reduce the quantity of waste directed to land filling,
- further develop energy recovery technologies;
- safe disposal of residues that cannot be otherwise managed.

Biofuels are liquid or gaseous fuels produced from biomass. There is potential for waste oil to be collected and converted to bio diesel. Mixed with fossil diesel, in ratios up to 5%, it can be used directly in recently marketed diesel vehicles.

A further option currently being considered is the extraction of Biogas from Agricultural Waste through anaerobic digestion. Besides helping to solve Malta's current waste storage and related environmental problems, it will produce a considerable amount of Biogas. If in addition, if organic waste is added/mixed to agricultural waste, it is envisaged that the amounts of Biogas will increase extensively. Unfortunately, no values are available to date. The other by-product of this system is a 100% environmental friendly inert fertiliser that can be efficiently used back by the agricultural sector.

Currently bio diesel, produced from either locally sourced recycled waste cooking oil or imported vegetable oil, is the only type of biofuel available on the Maltese market. In this regard, local privately owned companies have been very active in producing and promoting bio diesel for local consumption.

One of these companies supplies bio diesel for the transport sector. Around 30 petroleum filling stations, equivalent to about 40% of the total number of stations, are now retailing bio diesel. Presently petroleum filling stations can store and dispense 100% bio diesel only.

ACTION AT EU LEVEL

The leading document is EU Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport was incorporated into local legislation through LN 528 of 2004.

The Directive promotes the use of biofuels or other renewable fuels to replace diesel or petrol for transport purposes in each Member State, with a view to contribute to such objectives as meeting climate change commitments, environmentally friendly security of supply and promoting RES.

The EU Directive 2003/30/EC requires the establishment of national indicative targets by Member States for biofuels and other renewable fuels to be placed on the market based on the energy content of all petrol and diesel for transport purposes.

The target for 2005 was set to 0.3%. The actual figure however reached 0.52%. Similarly, the target for 2010 has been set to 1.25% and preliminary indications are that Malta will reach this target and possibly exceed it.

Biomass is expected to contribute towards meeting the national 10% renewable energy in the final energy consumption in 2020. The total energy from solid waste, taking into consideration landfill gas, mechanical biological treatment plants (MBT's) and residue derived fuel(RDF), is projected to be around 60GWh in 2020.

2Aii.3 **WORK UNDERTAKEN**

During 2003, Government decided to proceed with testing the use of bio diesel on its heavy plant. During 2004 and 2005, various Government entities, including the Environment Department, St Vincent De Paul Hospital, the Agriculture Department, MEPA and the Ministry for Resources and Infrastructure, made use of bio diesel produced locally, and MEPA, together with the local producers of bio diesel, launched an information campaign on the benefits of bio diesel.

The biomass content in the blended bio diesel was exempted from excise duty. In 2007, approximately 1.5 million litres of biofuel were sold. It is estimated that Government's support in excise duty for this bio diesel amounted to around €672,000. It is interesting to note that a relatively small Government expenditure has resulted in a relatively significant impact on the bio diesel market. This is proof that fiscal measures promoting alternative energy sources can work, if properly implemented and supported.

As regards to waste as a resource, WasteServ is considering the development of another two Mechanical Biological Treatment Plants (MBT) apart from that installed at Sant Antnin. One MBT is being proposed for installation in the north of Malta, to treat organic waste not treated at Sant Antnin and waste from animal husbandry from the area. Another smaller MBT will be installed in Gozo to treat organic fraction as well as animal husbandry waste.

WasteServ is also considering the development of an incinerator with energy recovery for the treatment of residual fraction of waste, including RDF derived from the mechanical separation of MSW and rejects from sorting of dry recyclables at the MRF . All plants will incorporate energy recovery facilities from the waste throughput and should seek to maximise the generation potential of RES from their respective site

Two biogas engines will be instaled at Sant Antnin site and will run on Biogas produced during the anaerobic digestion process in this site. The electricity generated in excess from San Antnin Biogas engines will be exported to the national grid. The recovered heat produced from these engines will be used for water heating to be utilised in the various processes of the plant, whilst providing heat energy to Razzet tal-Ħbiberija for pool water heating.

WasteServ also intends to generate electricity using the gas produced by the Ta' Zwejra and Ghallis non-hazardous waste landfills.

It is planned that in the future a steam turbine will be installed in the Marsa waste incineration plant, which is already producing steam for the abattoir.

As regards to waste water treatment by WSC at Tal-Barkat, the corporation will be installing gas engine driven generators fired by biogas. The heat rejection of the engines will be utilised to optimise the anaerobic sludge digestion and maintain the optimal generation of biogas from the plant.

2Aii.4 **MEASURES PROPOSED**

Government will:
- recover energy from waste,
- continue to promote the manufacture of biofuels produced from indigenous sources, primarily waste biomass,
- monitor the use of biodiesel and amend strategy and targets accordingly,
- implement a Biogas plant and make good use of the by-products,
- perform studies on the full potential of MSW as a means of conversion to energy and
- explore the possibility of marine algae cultivation to produce biomass for the production of biodiesel.

Policy Area 2B: ***OIL EXPLORATION***

2B.1 OBJECTIVES

Domestic extraction of natural gas would enhance diversification of primary sources of energy. Exploitation of crude oil would reduce our dependence on foreign sources for this commodity but would still entail reliance on foreign refinery capacity.

2B.2 BACKGROUND

Malta has no indigenous fossil fuels. Although exploration for petroleum has been going on since 1958, no commercial discovery has yet been made. This activity has led to the identification of numerous prospects and the drilling of 12 exploratory wells. Several drillable prospects remain to be tested and the possibility of making a commercial discovery in the future is realistically good.

Most activity is carried out offshore in an area of about 70,000km2 parcelled into blocks made available to the oil industry for exploration. Geologically, this area consists of different sedimentary domains, some of which produce petroleum in nearby Sicily and Libya. In particular, the Ragusa Basin of SE Sicily extends in the northern parts of Malta's offshore while in the south, the oil prolific Lower Eocene nummulitic trend of offshore Libya and Tunisia extends well inside Maltese acreage.

In Malta, subsoil natural petroleum resources belong to the State. According to the Petroleum Production Act, the Government may delegate companies the right to explore and produce petroleum. An exploration and production licence is granted under a Production Sharing Contract and is valid for 30 years but can be terminated earlier. To facilitate applications a model text of the agreement is published and distributed to the oil industry.

ACTION AT EU LEVEL

EU legislation on oil exploration was transposed into national legislation as Legal Notice 320 of 2001.

2B.3 WORK UNDERTAKEN

Exploration and production of petroleum in Malta enjoys a favourable legal and fiscal regime. Under the current legislation, the process of granting exploration and production permits is short and of a duration compatible with the decision-making process of oil and gas companies. Moreover, specific incentives exist for exploration and exploitation in water depths greater than 250m. The sharing of revenue derived from petroleum also encourages the exploitation of marginal discoveries.

At present there are 2 exploration and production licences in force, one issued in December 2007 to Heritage Oil International Malta Ltd and another issued to Malta Oil Pty Ltd in July 2008, both under Production Sharing Contracts. Two firm wells are due to be drilled under these contracts, the first one by the end of 2010 and the second by July 2011. Any petroleum discovered and produced will be shared between the companies and the Government in proportions that depend on the daily rate of production and the profitability of the venture. Companies are also taxed at the rate of 35% on profits made.

2B.4 MEASURES PROPOSED

Government will continue to:

- seek to intensify exploration by oil companies and
- negotiate with neighbouring countries, where disputed boundaries exist, to enable oil exploration to take place in currently disputed areas.

POLICY AREA 3:
STABILITY IN ENERGY SUPPLY

Policy statement: Government will seek to diversify the current reliance on oil products while ensuring that contingency plans are in place to cater for short-term disruption in oil supply. Malta will interconnect with the European electricity system purse the realisation of the necessary natural gas supply infrastructure.

3.1 **OBJECTIVES**
Malta, being an isolated system and fully dependent on the import of fossil fuels, has to seek the implementation of strategies for exceptional contingencies outside its control.

3.2 **BACKGROUND**
A secure energy supply is essential for any economy to flourish. Malta is no exception. It currently depends on fossil fuels for practically all its energy needs and, as presently it has no extractible indigenous fossil fuel reserves, it is dependent on importation of fuels. The desalination of seawater, a process that requires the use of electricity, provides 50% of the islands' potable water requirements.

Malta's physical isolation makes it heavily dependent on imported goods and materials for its domestic and industrial needs. The bulk of imported goods arrive by sea so that the availability of fuels for sea going vessels, operating to and from, Malta is also vital.

Measures to ensure a stable energy supply essentially revolve around seeking alternative energy sources to supplement or replace dependency on oil and planning for disruption in oil supply.

POLICY AREA 3A:
DIVERSIFICATION: INTERCONNECTION AND ALTERNATIVE SOURCES

3A.1 **OBJECTIVES ADDRESSED**
Diversification of sources will provide insurance against disruption of any one particular source of energy, and hence improve security of supply. In addition, the use of natural gas is more environmentally friendly than fossil oil.

3A.2 **BACKGROUND**
The only source of energy used at present in Malta is fossil oil. The other major forms of energy used or traded in Europe are electricity, natural gas, coal, nuclear power and hydropower.

Malta no longer makes use of coal. Besides its effect on the environment,, the main problem regarding the use of coal is the lack of space for the disposal of resulting waste products. Hydropower is not available in Malta whilst nuclear power generation is not considered a feasible option.

Natural gas could be transferred by pipeline at high pressures in a gaseous state or by ship in a liquefied state. The nearest connection points for a pipeline are Sicily and Libya and possibly Tunisia. Natural gas is liquefied (LNG) at around -170°C and is transported in specially insulated ships. Before it is pumped through a pipeline system to customers, a re-gasification plant would be needed in Malta.

Electricity interconnection is relatively simple, using either a high voltage AC or DC cable with Sicily. This would allow Malta to purchase electricity from the European grid. The interconnection would also potentially allow Malta to consume renewable electricity produced in non-EU countries if such a supply becomes available in Sicily.

The interconnection will involve revisiting Malta's position relative to EU legislation. However, Government believes that having an inter-connection with the European electricity grid finally breaks the insularity of the islands, giving Malta security of supply and enabling it to access the EU internal electricity market.

3A.3 **WORK UNDERTAKEN**
The feasibility study undertaken by the MRA [7], as mentioned in Policy Area 1A.3, apart from local generation expansion options also investigated the available alternatives for the provision of natural gas supply for electricity generation and for a cable interconnection with Sicily.

The options considered for the supply of natural gas were:
- Italian natural gas via pipeline interconnection Malta (Delimara)-Sicily (Gela),
- an LNG terminal at Delimara Power Station with transportation via sea vessel
- Compressed Natural Gas (CNG), involving the storage and transportation of compressed gas in pipes inside a sea vessel

The study concluded that

- an LNG terminal with a storage capacity of 60000m3 would be the most feasible option.
- The introduction of natural gas in Malta apart from enabling diversification in the generation fuel would also contribute towards decreasing the emissions of CO_2 and other pollutants.

In the case of an electricity interconnection Malta-Sicily the study investigated

- an option of 2 x 100MW (HVDC) and
- 2 x 100(HVAC) cables.

The study concluded that in the scenarios studied
- an HVDC interconnection of 2 cables each rated 100MW (but could be more precisely determined at the time of ordering depending on the mode of operation and commodity prices) would be the best option for Malta as it may possibly provide cheaper reserve capacity than local generation,

- there is potential for reduction of local green house gas emissions and other pollutants.
- the electricity purchased from mainland Europe will most probably include the cost of CO2 emissions and
- the electricity interconnection will improve the potential for the integration of a large intermittent source of renewable energy.

Enemalta, as the designated Distribution System Operator, is also undertaking a complementary detailed feasibility study which will analyse the optimum sizing and technology for the interconnector and the practical implications of the electricity interconnection to take into account the system stability issues. The study is expected to be concluded shortly.

Concerning the natural gas introduction in Malta, Enemalta is evaluating the proposals received after the issue of the request for proposals together with the consideration of other options for the supply of natural gas to Malta.

3A.4 MEASURES PROPOSED

It is clear that in order to enhance security of supply, Malta needs to diversify its energy sources as soon as feasibly possible. In accordance with the conclusions of the studies carried out, the Government will

- pursue the realisation of the required infrastructure for the provision of a natural gas supply and
- ensure the implementation of an electricity interconnection with Sicily as soon as feasible.

Policy Area 3B:
PLANNING FOR DISRUPTION

3B.1 OBJECTIVES

Planning for disruption will aid security of supply. There are environmental costs, since the storage of fuel can have environmental risks that would need to be minimised, and obvious financial costs. A major limit to on-island storage is the spatial limitation on further growth of storage facilities, though storage in some European locations is cheaper than in Malta.

3B.2 BACKGROUND

For the near future, the larger portion of energy requirements has to be met through imported fuel. The most feasible solution so far is to continue to depend substantially on fossil oil products. Planning for oil disruption is an essential element of ensuring security of supply.

In this sense, Malta follows the EU Directive 2006/67/EC that, requires a 90-Day of selected petroleum stocks be kept for crisis situations. The fuels, which are covered by this directive regulated in Malta by LN 237 of 2002, are Petrol, Diesel, Gasoil, Kerosine, Jet A1 and Fuel Oil.

The LPG Market Regulations LN 249 of 2008 covers security measures for Liquefied Petroleum Gas. These Regulations establish:

- A minimum 50 ton storage capacity for each importer;
- A minimum stock level of 20 % of the total storage capacity or 8 days average sales of the previous year, which ever is the largest;
- One day amount of filled cylinders as operational stock.

ACTION AT EU LEVEL

Currently, EU deals with oil disruption using a two-pronged approach.

First, it provides for measures to be taken by the competent authorities of the Member States to mitigate the effect of difficulties in the supply of crude oil and petroleum products. Article 2 (2) of the Directive establishes that Member States are to draw up intervention plans for use in the event of difficulties arising with regard to the supply of crude oil and petroleum products.

Second, it imposes a requirement for Member States to maintain a 90-day security stock of oil and any withdrawal below the minimum level is to be notified to the EU Commission with full details.

The types of oil products imported in Malta and covered by this directive are:

- **Category 1** - gasoline (petrol: unleaded and lead replacement) for automotive use;
- **Category 2A** - aviation fuel and jet fuel used by the aviation industry;
- **Category 2B** - kerosene used for heating and cooking purposes and gas oil (diesel) used for power generation, by industry and for automotive use;
- **Category 3** - fuel oil used for heating purposes and by industry and heavy fuel oil for power generation;

Currently the EU is also in the process of revising this directive, firstly in order to align these with current IEA (International Energy Agency) procedures, and secondly to ensure tighter checks on security stocks, better monitoring and accountability. In this regard, the EU has issued a proposal that is currently at discussion stage.

3B.3 WORK UNDERTAKEN

Government has prepared a plan to deal rapidly with a disruption in the supply of oil and to mitigate the impact and offset the negative effects arising from such a disruption.
The aim of the plan is to regulate the distribution of oil fuels during an oil emergency, in such a manner as to promote and safeguard in order of preference:

1. maintenance of the health, safety, welfare and security of the community,
2. provision and prioritisation of such essential services to specified groups of users and
3. minimise the disruption to economic activity.

The plan seeks to identify the risks and incidents leading to oil supply disruption in Malta, the responsibilities, procedures and measures to respond to supply shortages and to plan the best options for stockholding.

The MRA is currently participating in a twinning light project with Germany “Strengthening the capacity of the MRA in the implementation of the liberalisation of the Petroleum market and petroleum market monitoring”. In this project, the MRA will be supported in the development and establishment of a system of statistical reporting mechanisms concerning oil stocks based on quota partitioning [13].

3B.4 MEASURES PROPOSED

In the context of the emergency response plan, Government will
- Ensure that as far as possible, the institutions, information, hardware and infrastructure are available, ready and coordinated to perform efficiently and expeditiously in any emergency, while leaving the freedom and flexibility to respond to any circumstance as it arises and as best thought fit.

Policy Area 3C: **INTERNATIONAL ACTION**

3C.1 **OBJECTIVES**
All these actions will contribute towards improving security of supply. In March 2007, the EU adopted an energy action plan highlighting the need for speeding up the process to develop a common approach to an external energy policy aiming at guaranteeing the supply of energy through energy partnerships with producer and consumer countries.

3C.2 **BACKGROUND**
A concerted effort at international level could promote security of supply.

Much of what is necessary to achieve major results at a global level needs to be carried through the EU, and through other international fora. The EU is already handling the wider issues of oil security.

In the Mediterranean context, a cooperation framework, the Euro-Mediterranean Energy Forum,, was set up, and an Action Plan implemented for the period 1998-2002. The Granada Forum 2000 is a significant step in the cooperation process. Priorities established in the following main areas were:

- reform of the legislative and regulatory framework and restructuring of the energy industry,
- integration of Mediterranean markets and development of interconnections and
- sustainable development and use of renewable energy

ACTION AT EU LEVEL
Malta is a signatory of the Energy Charter Treaty and of the Protocol on Energy Efficiency and Related Environmental Aspects.

3C.4 **WORK UNDERTAKEN**

The completion of the Mediterranean energy ring in gas and electricity is being given importance by the EC because it will increase the interconnections between Europe and the southern Mediterranean. The Mediterranean ring is important for the exploitation of the region's natural gas resources, solar and wind energy potential.

3C.5 **MEASURES PROPOSED**
Government will:
- Actively support international initiatives that will:
a. promote political and economic stability in the main pro ducer countries,
b. improve the climate for energy sector investment, en courage more openness and transparency in inter national energy markets, and
c. ensure the efficient and sustainable use of energy re sources.

- continue to strengthen its diplomatic ties with supplier and producer countries of crude oil and derived products and

- will continue to follow actively this project and seek opportunities to benefit directly by tapping energy sources for its own use and also take economic and business advantage from the development of the energy infrastructure in the region.

Policy Area 4:
REDUCING THE EMISSIONS FROM THE ENERGY SECTOR

Policy statement: Government will seek that the commitment to reduce the emissions from the energy sector including the reduction of the national carbon footprint as well as the decrease in the emissions of other pollutants is reflected in the policies and legislation.

4.1 **OBJECTIVES**

The energy sector must be environmentally sustainable and therefore it is necessary to

- Address climate change through the reduction of GHG emissions and in particular the reduction of the national carbon foot print, and
- Decrease the emission of pollutants produced from the combustion of fossil fuel to improve air quality is essential

for our health and the environment.

4.2 **BACKGROUND**

The energy sector (under UNFCCC guidelines including the energy generation industry, energy use in industrial, commercial/institutional, residential and transport sectors) is the main contributor to greenhouse gas emissions in Malta. The emissions of GHG (of which carbon is the main contributor) are deemed the main instigators of climate change. Apart from the emissions of GHG fuel combustion is also a main contributor to the emissions of other pollutants which are major concern for the quality of air. The technology used to burn fossil fuels, the efficiency of the process and the quality of the fuel have an impact on the amount of GHG and other pollutants emitted in the environment.

Adopting environmentally sound practices in the energy sector is therefore synergetic with the obligations to ensure efficiency in electricity generation, transport and other energy consuming processes and in ensuring security of supplies. However, especially in the generation sector, this has strong implications both logistically and financially.

The strategy for meeting Malta's energy needs has to be in line with the requirement to fulfil compliance with EU legislation (including environmental). This requires long term planning to ensure most cost-effectiveness and security of supply.

ACTION AT EU LEVEL

The EC aim has been to develop an overall strategy through the setting up of long-term air quality objectives. In order to control levels of certain pollutants and to monitor their concentrations in the air a series of Directives were implemented. Malta has followed suit and as such follows all Directives in this regard.

At a sectorial level, the electricity generation is subject to a number of environmental restrictions including the limitations of emissions to the air resulting from various directives, namely the Large Combustion Plants Directive, the National Emission Ceilings Directive, the Integrated Pollution Prevention and Control Directive, Ambient Air Quality Assessment and Management Regulations, and the Greenhouse Gas Emissions Trading Scheme. All these obligations has to be taken into account in the electricity generation strategy of Malta and will unavoidably have strong economic and financial implications

The EC has established a number of directives that aim to control the pollutants content of fuel both intended for use in the internal market of the individual EU member state as well as bunker fuel.

Policy Area 4A:
REDUCING THE NATIONAL CARBON FOOT PRINT

4A.1 **OBJECTIVES**

The impact of the increasing demand for energy on the release of GHG emissions will be addressed aggressively.

4A.2 **BACKGROUND**

The increase in GHG emissions is threatening the world's climate stability, economy and population. The causes and effects of climate change are global. Malta can and needs to take action in line with other countries in a joint global effort. CO2 emissions are major contributors to GHG.

Malta ratified the United Nations Framework Convention on Climate Change (UNFCCC) as non-Annex I party on March 17th 1994, and subsequently ratified the Kyoto Protocol (KP) on November 11th 2001. In view of this non-Annex I status, Malta does not have any direct commitments under the KP to limit or reduce GHG emissions. However, Malta has been reporting obligations in line with Decision No 280/2004/EC of the European Parliament and of the Council of February 11th 2004 concerning a mechanism for monitoring Community GHG emissions and for implementing the KP.

In terms of climate change, although Malta does not have any quantified mandatory targets for the limitation or reduction of national GHG emissions, any commitments in the area – for example through participation in the emissions trading scheme – would have a high impact on the flexibility of options in energy policy.
Malta's Biennial Report on policies and measures (PAM's) [6] and the National GHG Emission inventory [5] indicate that from 1990 to 2007 the GHG emissions in Malta increased by 49% of which the main component is CO_2.

An energy policy can be instrumental towards improving our carbon footprint given that the energy sector in Malta is

- the main contributor to the gross national GHG emissions with an 83% of CO_2 equivalent.
- The Delimara and Marsa power stations together account for about 75%,of CO_2 emissions of the energy sector
- the transport sector emits around 19% of CO_2 of the energy sector
- Fuel consumption used in the manufacturing industry, commercial, institutional, navigation and residential sectors account for the remaining 6% sectorial GHG emissions[2]

Enemalta's power generation installations [11] within the scope of NAP (2008-2012)

- were allotted a quantified amount of free CO_2 allowances to cover projected emissions(2008-2012).
- exceeding allocated allowances means that extra allowances would need to be acquired from participating installations in the trading market.
- the cost of purchasing allowances could lead to an increase in electricity rates that the consumers would have to pay.
- Improvement in efficiency of power generation could result in lower emissions than the amount of allowances allocated.
- financial gains are possible for the installations through the sale of excess, unused allowances on the trading market.

ACTION AT EU LEVEL

A driver towards improving our carbon footprint is the Climate change package launched on the January 23rd 2008 by the EC. The objective is the reduction of CO2 emissions by 2020 over 1990 levels. In December 2008, the European Parliament adopted the text for a number of legislative instruments within an integrated energy and climate change policy as follows:-

- The new proposal for a directive on the promotion of renewable sources of energy amending Directive 2001/77/ EC
- aims at an EU overall target of 20% of the energy needs in 2020 from renewable sources.
- assigns a target of renewable energy in the final consumption of 2020 to each member state. (Malta's share is 10% as explained in Policy Area 2A including 10% of fuel used in transport to come from renewable sources in 2020).
- contributes to lowering of CO_2 emissions through reduction of fossil fuels consumption.
- Green house gas emission trading system(ETS) new proposal amending Directive 2003/87/EC
- applicable for the period 2013-2020 for generation sector in Malta;
- introduces allocation of CO2 allowances by auction instead of free as in previous directive;
- as a transitional measure Malta may apply to be allowed to allocate for free up to 70% of CO2 allowances from 2013 onwards reduce to 0% in 2020. However, decision on whether Malta should apply to benefit this derogation has to take into account the planned evolvement of the generation sector.

- The proposal for a Commission decision for the non-ETS sector
- applicable to emission from fuel combustion in manufacturing industry, road transport, commercial, institutional, national navigation, domestic aviation and residential sectors;
- emissions from agriculture and waste sectors are also within the scope of the non-ETS Commission Decision;
- is based on an effort sharing principle;
- Malta like other EU members states has a legally binding target for the emissions from the non-ETS sector, it cannot exceed the +5% over the 2005 levels in 2020.

- Monitoring of specification of petrol, diesel and gas-oil, introducing a mechanism to monitor and reduce greenhouse gas emissions from the use of road transport fuels, and amending Council Directive 1999/32/EC; as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC.

- proposed regulation of the EP and of the Council setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO2 emissions from light-duty vehicles.

[2] MEPA 2009-National Greenhouse Gas Emissions Inventory Report for Malta 1990 – 2007

4A.3 **WORK UNDERTAKEN**

Government has established energy efficiency as an important consideration for the authorisation of any new generation plant by the MRA [7,11].

Energy efficiency is also one of the environmental criteria stipulated in the IPPC Directive. Use of 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.
NEEAP [1] – plan how Malta will reach the 9% target in end-use efficiency by 2020 (Policy Area 1B).

MRA study on options for generation expansion (Policy Area 1A) [7] and Policy area 3A: Diversification: interconnection and alternative sources.

The government has set up the climate change committee that presented a consultation report in December 2008 [9] on the measures that may be taken to fight climate change.

The study commissioned by the MRA to investigate the various options available to Malta to increase its renewable energy contribution [14]. The options include investing locally in renewable energy projects, buying Guarantees of origin and investing in joint projects abroad. All the options take into consideration the impact on CO2 emissions.(details in Policy area 2A)

MEPA has recently submitted the Biennial Report [6] on policies and measures and projected GHG emissions 2009.

A National Greenhouse Gas Emissions Inventory Report for Malta 1990 – 2007, was prepared by MEPA in March 2009 [5].

4A.4 **MEASURES PROPOSED**

There are a number of measures, proposed in the other policy areas that, together will have the net effect of improving our carbon footprint. The measures are summarised as follows:-

- ensure that operators in the energy sector operate more efficiently
- support the implementation of the NEEAP to reach the target of 9% savings in 2016
- seek that Malta reaches its renewable energy targets in a sustainable manner
- support the introduction and use of lower carbon fuels in the supply of energy especially in power generation
- implement demand side management to reduce consumption of energy
- Implement effectively the minimum performance in buildings regulations

Policy Area 4B: ***BETTER FUEL QUALITY***

4B.1 **OBJECTIVES**

The combustion of fossil fuel results in the emission of pollutants which are dependent on the technology being used as well as the quality of the fuel products themselves. It is important to pursue more efficient and cleaner fuel burning technologies together with the use of better quality fuels in the electricity generation, transport and other fossil fuel fired processes.

4B.2 **BACKGROUND**

Electricity generation, small industry and transport (in particular from diesel vehicles) are the responsible sectors for emissions of sulphur dioxide (SO2) in Malta.

Since 2002 the sulphur content of diesel imported for consumption in the local market (mainly transport) has been reduced to 0.035%.

The heavy fuel oil used in the two power stations for electricity generation contains 1% or less sulphur while the gas oil used for electricity generation has a sulphur content of less than 0.1%. The introduction of low sulphur fuel since April 2004 brought a drastic reduction in SO2 emissions.

ACTION AT EU LEVEL

The issue of air quality is one of the areas in which the EU has been most active. The action at EU includes legislation aiming at the improvement of air quality by controlling emissions of harmful substances into the atmosphere, improvement of fuel quality and by integrating environmental protection requirements into the transport and energy sectors. The EU legislation has resulted in considerable progress in dealing with air pollutants such as sulphur dioxide, lead, nitrogen oxides, carbon monoxide and benzene.

A series of Directives were implemented in order to control levels of certain pollutants and to monitor their concentrations in the air such as the:

- European Parliament and Council Directive 94/63/EC of December 20th 1994 on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations;

- Directive 2001/80/EC of the European Parliament and of the Council of October 23rd 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants;

- Directive 2001/81/EC of the European Parliament and of the Council of October 23rd 2001 on national emission ceilings for certain atmospheric pollutants. The National Emission Ceilings Directive (NECD) gives each Member State maximum emission ceilings for pollutants responsible for acidification, eutrophication and ground-level ozone in the community area which must not be exceeded from 2010 onwards;

- The Integrated Pollution Prevention and Control (IPPC) Directive (1996/61/EC), transposed by LN 234/2002, amended by LN 230/2004, requires Member States to reduce emissions to the air, land and water from industrial activities as categorised in the Directive.

The IPPC Directive is currently being reviewed and the new proposal will incorporate a Directive on industrial emissions recasts seven existing Directives related to industrial emissions. The recast includes among others the IPPC Directive, the Large Combustion Plants Directive which are relevant to the energy sector. The new IPPC Directive, applicable from 2016 onwards, is expected to come with more stringent specific emission levels for SO_2, NOx, CO and dust in particular for electricity generation plants.

As with the rest of Europe, Malta has adopted international standards in line with established EU Directives to ensure that the quality of the fuel products placed on the market, and eventually its combusted products are within an allowable figure.

In this regard, the EU has adopted the following directives to ensure that good fuel quality products are placed on the European market:

- Directive 98/70/EC of the European Parliament and of the Council of October 13th 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC.
- Directive 2003/17/EC of the European Parliament and of the Council of 3 March 2003 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels.
- Directive 1999/32 of the European Parliament and of the Council of 26 April 1999 relating to a reduction of sulphur content in certain liquid fuels.
- Directive 2005/33/EC of the European Parliament and of the Council of 6 July 2005 amending Directive 1999/32/EC as regards the sulphur content of marine fuels.

4B.3 WORK UNDERTAKEN

As already mentioned in Policy Area A, in Malta, the LCP Directive is applicable to the electricity generation sector. The Marsa Power station steam plant is subject to a limitation of 20,000 operation hours and has to be close down by 2015. A number of measures have been taken in the Delimara power stations for compliance with this directive. Among the measures are the use of heavy fuel oil with sulphur content of less than 1%. Enemalta also intends to implement a De NOx plant on the steam boilers.

The tender issued by Enemalta for the new generation capacity gives specific emission limit values in g/kWh for sulphur dioxide, nitrogen oxides, carbon dioxide and ammonia. Additionally, the new plant is required to comply with all the legislation which limits emissions into the air.

With reference to the National Emission Ceilings Directive, MEPA being the regulator; has guided Enemalta in allocating their respective “share” of NEC pollutants attributed to power generation.

In line with what is required by the EU, Malta has adopted the directives related to the fuel quality as its own legislation. These are now effective through Legal Notice 44 of 2008. Enforcement of the regulations, which include a monitoring plan for the sampling and testing of fuel placed on both the inland market and the bunkering sector, will be done through the MRA, in conjunction with the MMA in relation to the sampling of marine fuel.

Policy area 5: ***DELIVERING ENERGY EFFICIENTLY AND EFFECTIVELY***

Policy statement: Government will ensure maximum competition possible within the limits imposed by the market, while ensuring that operators deliver the best quality of service at the cheapest possible prices through market forces complemented by robust regulation.

5.1 **OBJECTIVES**

Opening the energy market for competition and introducing a variety of options as energy sources for specific needs will enhance the delivery and quality of the services.

5.2 **BACKGROUND**

EMC, a state owned organisation, is presently the principal entity responsible for the provision of energy products in Malta. Prior to the liberalisation of the fuel market in October 2007, the Corporation was also the only entity responsible for the importation and wholesale of petroleum products for the inland market.

EMC has responsibilities ranging from generation to the delivery of electrical energy to all consumers. A number of small-scale auto-producers are also present in the market although their total generation capacity is still relatively small.

Enemalta was set-up in 1977 by virtue of the EMC Act (Cap 272). It operated as a monopoly in the inland energy sector while, at the same time, it carried certain activities of a regulatory nature. Following the initial phase of the restructuring of the energy sector through the enactment of the Malta Resources Authority Act (Cap. 423), its' regulatory responsibilities for the inland energy sector were transferred to MRA.

A substantial change in the fuel market arrangements occurred because of the full liberalisation of the fuel market. The organisation of the electricity market is taking place in line with the electricity directive 2003/54/EC and the derogations obtained. The derogations include exemption from the obligation to open the electricity supply market for competition. However, the electricity generation sector is open to competition. In this market structure, Enemalta is the designated sole distributor and supplier of electricity to end consumers. Any generator, except for auto-producers, have to sell their electricity to Enemalta.

In the opening of the sector to competition, changes and reform must be undertaken in a spirit of prudent innovation. While permitting initiatives, the Government's policy is to emphasise caution to allow stakeholders to learn as the reform proceeds, give adequate time for the consolidation of regulatory and administrative procedures and to ensure progress at a sustained rate.

The size of Malta's energy market is not conducive to economies of scale or of scope. EU policy for the energy sector is based on the use of market-based tools. In their transposition and implementation, these tools must be assessed carefully since they were not designed for a small economy such as Malta.

While reform in Malta has a precedent by similar efforts in other countries, the future is unknown. Benchmarking will be useful as a revelation to the likely response of stakeholders and consumers to the reform process. Indeed, Government believes that market forces in Malta will not be sufficient to bring about these reforms in the sector.

Policy Area 5A: ***COMPETITION AND REGULATION***

5A.1 **OBJECTIVES**

Competition in the electricity generation sector can be beneficial for Malta and has to be promoted. The effective regulation of the distribution and supply of electricity is necessary to ensure sustainability. The opening up for competition of the inland fuel market has already taken place and now it is necessary to monitor the transition to ensure that the liberalised market will deliver as expected.

5A.2 **BACKGROUND**

EU law requires the liberalisation of the importation, stocking and wholesale marketing of petroleum products and electricity.

Fuels

EU legislation allows other enterprises to have the right to import and wholesale petroleum products in order to give consumers a choice. However, in order for Enemalta to have sufficient time to adapt to liberalisation, Malta requested a transitional period before applying full liberalisation. EU accepted the request.

The approval of Legal Notice 278 of 2007 on the Petroleum for the Inland (Wholesale) Fuel Market Regulations and Legal Notice 249 of 2008 on the Liquefied Petroleum Gas Market Regulations provide the legal framework to the liberalisation process.

Electricity

Directive 2003/54/EC on common rules for the internal market in electricity was legislated to ensure the creation of a fully operational internal electricity market, in which fair competition prevails, to achieve benefits of efficiency gains, price reductions, higher standards of service and increased competitiveness.

Inbuilt in the directive is a possibility (under Article 26) to request a derogation from Chapters IV to VII for 'small isolated systems'. These chapters relate to transmission, distribution, unbundling and transparency of accounts, and as well as the organisation of access to the system. Derogation may be granted by the Commission if there are "substantial problems for the operation of the system".

Malta obtained derogations from Article 20(1) and Article 21(1) of Directive 2003/54/EC by means of Decision 2006/859/EC of the European Commission, granted on the November 28th 2006 (OJ L 332, 30.11.2006, p. 32). Part of the derogations concerns the exemption from the requirement to ensure that consumers have the right to an electricity supplier of their choice. The arguments put forward by Malta in the application submitted to the EU Commission were that given the size and structure of the electricity market, it is impossible or impractical, for the time being, to achieve the objective of a competitive market in electricity as explained below.

In the electricity generation sector, the number of suppliers will be limited because:

- the Maltese electricity system is not interconnected to any other system, and hence there can be no cross-border trade in electricity.

- the electricity demand in Malta is small, with a total installed capacity of 550MW. Technical literature indicates that the most economical sizes of generation plants are large compared to the Malta's total demand. In practice, the size of generation plants installed in Malta has been constrained by the need to ensure flexibility in operation.

- The only energy source feasible for conventional plants presently in Malta is fuel oil. Investment in such a market is therefore not very attractive since the risks are higher than in interconnected and larger markets (due to the volatility in prices of oil and technical obsolescence).

Effective competition in the electricity supply sector in Malta therefore cannot exist because there are not a sufficient number of sellers in the country. Such a market structure has the potential for collusion and high profits.

In order to support free competition in electricity markets, highly sophisticated systems were developed. They are unnecessarily administratively complex and costly for a market the size of Malta, and are not sufficient to prevent market failures such as collusion.

In such circumstances, opening up of the market would create substantial problems relating, in particular, to the security of supply of electricity which would result in higher costs for consumers.

Malta is obliged to monitor the evolution of the electricity sector and has to report to the Commission any substantial changes in the market, in particular information on new generating licenses, new entrants in the market and new infrastructure plans that may necessitate a review of the derogation. A report setting out the tariff and pricing policy together with measures taken to protect customers' interests in the light of the derogation has to be presented to the Commission bi-annually.

Other transitory mechanisms have to be developed to ensure that customers have access to a competitively priced and secure source of electricity. These mechanisms will be reviewed when the country's electricity system connects to the European system.

ACTION AT EU LEVEL

The Treaty establishing the European Community (Articles 81 and 82), and more specifically Directive 2003/54/EC on common rules for the internal market in electricity, are the main EU legislation for this policy area. This Directive is currently being revised as part of the third legislative package adopted by the EC in 2007. The revised internal market in electricity directive contains a provision whereby Malta will continue to enjoy the same derogations as per Commission decision 2006/869/EC.

Regulation
The two main regulatory pieces of legislation in the energy sector in Malta are the Malta Resources Authority Act and the Competition Act.

The Malta Resources Authority Act established a sectoral regulator with the functions:

a) to regulate, monitor and keep under review all practices, operations and activities relating to energy, water and mineral resources;
b) to grant any licence, permit or other authorisation, for the carrying out of any operation or activity relating to energy, water and mineral resources;
c) to regulate and secure interconnectivity for the production, transmission and distribution of the services or products regulated by or under the act;
d) to ensure fair competition in all such practices, operations and activities;
e) to establish minimum quality and security standards for any of the said practices, operations and activities and to regulate such measures as may be necessary to ensure public and private safety;
f) to secure and regulate the development and maintenance of efficient systems in order to satisfy, as economically as possible, all reasonable demands for the provision of the resources regulated by or under the act;
g) to carry out studies, research or investigation on any matter relating to the resources regulated by or under the act;
h) to provide information and issue guidelines to the public and to commercial and other entities on matters relating to the said resources;
i) to regulate the price structure for any activity regulated by the act and where appropriate to establish the mechanisms whereby the price to be charged for the acquisition, production, manufacture, sale, storage and distribution thereof is determined;
j) to establish the minimum qualifications to be possessed by any person who is engaged or employed in any activity regulated by or under the act;
k) to establish measures for the protection of the environment in the practices, operations and activities regulated by or under the act;
l) to ensure that international obligations entered into by the Government relative to the matters regulated by or under the act are complied with;
m) to advise the Minister on the formulation of policy in relation to matters regulated by the act, and in particular in relation to such international obligations;
n) otherwise to advise the Minister on any matter connected with its functions under the act;
o) to formulate and implement the policies and strategies with short-term and long-term objectives, in relation to the activities regulated by the act;
p) to perform such other functions as may from time to time be assigned to it by the Minister.

In relation specifically to energy:
(i) to promote, encourage and regulate the harnessing, generation and use of all forms of energy and
(ii) to encourage the use of alternative sources of energy and for such purpose in accordance with such regulations as may be prescribed, to impose levies on energy produced by non renewable sources and grant subsidies in connection with the production of energy from renewable sources;

The Competition Act (Chapter 379 of the laws of Malta) is a general law regulating competition in all sectors of the economy in Malta. The principles enshrined therein have been inspired from the corresponding competition provisions in the EC Treaty. The pertinent substantive provisions are the following:

- prohibition of agreements between undertakings, decisions by an association of undertakings and any concerted practice between undertakings having the object or effect of preventing, restricting or distorting competition within Malta;

- prohibition of the abuse of a dominant position by one or more undertakings within Malta.

The Competition Act establishes the Office for Fair Competition (OFC) and the Commission for Fair Trading (CFT) as the overall guardians of competition in Malta. The OFC currently forms part of the Consumer and Competition Division. The CFT is independent from the OFC.

The European Court of Justice has ruled that the energy sector falls within the scope of the competition rules. The Commission too has applied the competition rules to the energy sector. Indeed, the effective application of Articles 81 and 82 of the EC treaty are considered as essential tools to ensure that liberalization is not undermined by anti-competitive conduct on the market. In recent years, there was a considerable increase in activity to enforce these rules, both from the regulators and by third parties eager to gain access to the market. The Commission also dealt with electricity mergers and aims to ensure an effective merger policy to enhance competition in energy markets. In the context of several mergers, the Commission has imposed appropriate remedies.

The OFC and the CFT are responsible for the implementation and enforcement of the competition rules in all sectors of the market. These are contained in the Competition Act, in the Regulations enacted under it and in Articles 81 and 82 of the EC Treaty, where there is an effect on inter-state trade (as, for instance, in the case of interdependent networks). The OFC and CFT can therefore also act and exercise their powers in the energy sector. In the interpretation of the law and in analysing cases the OFC and the CFT will have due regard to the EU corresponding legislation and will be guided by EU case law.

In terms of Article 4(1) of the Malta Resources Authority Act (Cap 423), the MRA has, as one of its functions, to ensure fair competition in all practices, operations and activities relating to energy, water and mineral resources. The MRA Act moreover empowers the Minister responsible to make regulations in this respect, where the function of the MRA is further amplified. At law, the MRA also has a role to play in promoting and protecting competition in the energy sector. In performing this function the MRA enforces the sector-specific regulation and in doing so plays an ex ante role. The OFC, on the other hand, plays an ex post role under the general competition law framework.

At the same time, the Enemalta Act (Cap 272) provides for the House of Representatives to approve the financial estimates and the accounts of Enemalta (Articles 21 and 22), and provides for Enemalta, with the approval of the Minister responsible for Enemalta, to establish tariffs, fees and charges within the price structures that are established by the MRA.

5A.3 WORK UNDERTAKEN

The electricity generation market was liberalised and the legislative structure put in place. Fuel supply at the airport has also been liberalised.

The regulator has intervened in a number of disputes in the sector otherwise there is little experience in Malta relating to competition issues in the energy sector.

5A.4 MEASURES PROPOSED

In order to achieve the objectives of this policy area it is necessary to continue to:

- ensure that the appropriate regulatory oversight is maintained,
- regulate the energy sector using practices and policies that are coherent,
- impose minimum and the least intrusive bureaucratic obligations,
- ensure the minimum duplication and conflict with existing structures, while aiming towards affordability of energy and customer protection, and
- open up the market to competition where possible.

Policy Area 5B:
OPENING UP THE FUEL SECTOR TO COMPETITION

5B.1 OBJECTIVES ADDRESSED

The competition that may result from the liberalisation of the inland fuel market would potentially lead to an upgrading of standards, not least, where quality, the price of service rendered and safety in operations are concerned.

5B.2 BACKGROUND

Since the liberalisation of the inland fuel wholesale fuel market, the fuel sector has been open for competition. To-date, five operators, including EMC, are in possession of an authorisation to conduct the business of an importer and or wholesaler of petroleum. Retail of fuels is conducted by a number of operators authorised by the MRA for the specific activity.

The retail of fuel for automotive use, that is, diesel and petrol (unleaded and lead replacement petrol) is carried out by fuel-filling stations. Other fuels, namely kerosene, LPG, light heating oil and thin fuel oil are used by industry, commercial outlets, and households. These are distributed by a system of 'jobbers' and 'hawkers'.

Enemalta's monopoly in the importation, storage and wholesale marketing of fuels ceased with the introduction of Legal Notice 278 of 2007 on the Petroleum for the Inland (Wholesale) Fuel Market Regulations and Legal Notice 249 of 2008 on the Liquefied Petroleum Gas Market Regulations.

The MRA issues a number of licences in the fuel sector including licences for petrol stations, jobbers, kerosene hawkers and LPG cylinder distributors while Customs issues certificates of approval for authorised traders.

The bunkering sector was liberalised with the introduction of the Bunkering (Fuel) Tax Act in 1995 when the then existing restrictions were removed and new licences were issued by the MRA in conjunction with Operating permits issued by the MMA.

In line with what is required by the EU, Malta has adopted these directives as its own legislation. These are now effective through Legal Notice 44 of 2008. Enforcement of the regulations, which include a monitoring plan for the sampling and testing of fuel placed on both the inland market and the bunkering sector will be done through the MRA, in conjunction with the MMA in relation to the sampling of marine fuel.

5B.3 WORK UNDERTAKEN

The Government had commissioned a study to assist it in the development of a strategy for the reform of the inland fuel market [13]. The scope of the study was to evaluate and to select the most suitable strategy for the liberalisation of the fuel supply market, based on the pre-established criteria, Government's sectoral policy and Malta's international obligations.

The work incorporated an analysis of the existing fuel market situation and structure including the legal and regulatory regime, licensing and administrative framework, Governmental obligations, economic and social assessment and environmental considerations and their various interactions. A regulatory framework and intervention including legal, technical, fiscal, economic and administrative procedures was developed.

Following this study, Legal Notice 278 of 2007 on the Petroleum for the Inland (Wholesale) Fuel Market Regulations and Legal Notice 249 of 2008 on the Liquefied Petroleum Gas Market Regulations were drawn up and are currently in force.

Throughout 2008, interests in the fuel sector resulted in the Authority issuing five authorisations for importation of fuel including that issued to Enemalta. Two of these authorisations arose after Enemalta and the Government Privatisation Unit concluded the privatisation exercise of its Gas Division.

As part of the government policy to divest Enemalta from operations in the fuel sector, the Government Privatisation Unit had also issued a request for an expression of interest for the commercialisation of Enemalta Petroleum Division. Currently discussions are ongoing with a preferred bidder.

In terms of improving the general standard and safety of fuel installations, Government is committed to improve wherever possible the standard of existing fuel installations.

In terms of smaller installations such as petroleum filling stations or fuel storages used for own use, the Government through the expertise of the MRA is committed to guide in the overall improvement of existing installations.

5B.4 MEASURES PROPOSED

- continue to reform the fuel market by adopting the necessary legal, administrative, fiscal, economic measures consistent with its obligations, economic, environmental and social considerations and strategic concerns,
- establish satisfactory design and operating standards for operators in the fuel market,
- monitor and enforce compliance to standards and fair competition, and
- continue the commercialisation of Enemalta's Petroleum assets and monitor the transition in the gas sector.

Policy Area 5C:
AN EFFECTIVE ELECTRICITY SECTOR

5C.1 **OBJECTIVES**

A reformed electricity sector with an unbundling of activities between generation and distribution and retail supply will introduce competition in generation, leading to greater efficiency and reduced costs in the sector.

5C.2 **BACKGROUND**

The electricity sector can be divided into three distinct activities.

- Generation is the activity dealing with conversion of fuel or alternative energy derived from renewable sources of energy into electricity. This sector is open to competition.
- Distribution deals with the transport of electricity on a distribution network. This is a natural monopoly and will continue to be carried out by Enemalta.
- Supply deals with retail to customers. Government requested and obtained derogation from the Electricity Directive to ensure that Enemalta only carries out this activity.

In this context, EMC is a key player in the electricity sector in Malta, even though the generation sector is now open to competition. Its experience and stature have been a valuable contribution to security of electricity supply.

The policy will ensure that the Corporation is restructured, to become efficient, to compete successfully in a liberalised generation market and to make the electricity supply in Malta the cheapest possible within the parameters of quality, environmental and fair competition standards.

5C.3 **WORK UNDERTAKEN**

Legislation ensuring competition in generation was enacted and criteria for the authorisation of a new generation plant published. Private investors have already shown interest.

Enemalta published the network code in 2007 after the granting of approval by the MRA as required by the internal market directive 2003/54/EC. The Network Code is the “set of rules establishing the basic technical design and operational requirements for the connection to the distribution system of generating installations, consumers’ installations and direct lines.

The network code aims to be objective and non-discriminatory and is designed to:

- permit the development, maintenance and operation of an efficient, coordinated and economical distribution system, and
- facilitate competition where this is allowed by law.

5C.4 **MEASURES PROPOSED**

These will:

- ensure, through effective regulation, that the electricity sector operates in a sustainable manner and deliver at affordable prices with due regard to the environment,

- promote competition in the generation market,

- take measures to ensure security of supply, quality of service, customer and environmental protection, and ensure the financial sustainability of electricity through an adequate tariff structure,

- ensure that electricity generation coming from renewable energy is given priority provided this does not compromise the stability of the electricity distribution.

Policy Area 6: ***ENSURING THAT THE ENERGY SECTOR CAN DELIVER***

Policy statement: Government will ensure that fiscal policy and policy in education and research support the general objectives of ensuring security of supply, environmental protection and competitiveness.

Policy Area 6A: ***FISCAL POLICY***

6A.1 **BACKGROUND**

Used judiciously, taxation can achieve certain objectives by placing a value to a cost or benefit that is not valued by the market, such as environmental externalities. An example is the removal of excise tax on biofuels that served to stimulate the market.

The fiscal area is constrained by the Directive 2003/96/EC restructuring the Community framework for the taxation of energy products and electricity. Malta has obtained transitory arrangements on this directive as follows:

- Electricity: 50% of EU minimum rate as from Jan 1st 2007 till 2010
- Gas oil and kerosene used as propellants: 245€/1000l till 2010
- Unleaded petrol used as propellant: 287€/1000l till 2010
- Leaded petrol used as propellant: 337€/1000l till 2010
- Natural gas used for heating: 50% of EU minimum rate as from Jan 1st 2007 till 2010
- Solid fuel: 50% of EU minimum rate as from Jan 1st 2007 till 2010

Structural and national funding will also be utilised judiciously to support key Government initiatives.

6A.2 **WORK UNDERTAKEN**

Government created a fund, to promote energy efficiency and RES, financed through an additional excise duty of 5c5 on each litre of petrol, as well as 2c on each litre of diesel [8].

Government also allocated funding from the Cohesion Policy 2007-13 to the energy sector, including funding for energy efficiency measures and alternative sources of energy.

Road tax has been set to place higher burdens on high powered vehicles, as well as older vehicles, as to motivate replacement of the present vehicle fleet with the adequately sized vehicles for the individual's needs.

6A.3 **MEASURES PROPOSED**

Government will:

- continue to implement the transitory arrangements for energy taxation as agreed with the EU,
- use fiscal policy to promote environmental and other Government priorities in the energy sector and

Policy Area 6B: ***ELECTRICITY TARIFF POLICY***

6B.1 **OBJECTIVES**

A transparent electricity tariff policy, based on the recovery of the costs for the generation, transmission, distribution and retail for the generation of electricity is essential to ensure a fare burden sharing by the consumers.

6B.2 **BACKGROUND**

Recently, a revision of the electricity tariffs mechanism was published based on the following main principles:

- tariffs will be transparent and non discriminatory,
- tariffs to incentivize energy efficiency and energy conservation,
- tariffs to be cost reflective, guaranteeing an adequate rate of return and do not to cover avoidable inefficiencies,
- tariffs will ensure that there is no cross-subsidisation between tariff groups as well as between consumers of the same group,
- Deserving vulnerable consumers are to be assisted directly by Government; tariff structure will not incorporate any subsidies.

6B.3 **WORK UNDERTAKEN**

The above-mentioned electricity tariffs mechanism has replaced a previous tariff system, which incorporated a fuel surcharge to reflect fluctuations in the cost of the fuel primary source.

An agreement on the principles on which the electricity tariffs mechanism should be based was reached following various meetings held with stakeholders, and after further constructive suggestions were put forward, accepted and implemented. The MRA will continue to examine and approve or otherwise proposed tariffs according to the Electricity Regulations, 2004(Legal Notice 511 of 2004).

6B.3 **MEASURES PROPOSED**

The Government will:

- continue to ensure that the electricity tariff structures are transparent and non-discriminatory, by requiring timely audited reports and cost justification with every tariff revision request,
- continue to ensure that there is no cross-subsidization

between consumer groups,
- use other fiscal measures to ensure affordability of electricity prices and incentivise investment,
- ensure adequate assistance to deserving vulnerable consumers,
- continue to promote tariff structures that encourage energy efficiency and conservation such as more focused dual tariffs, eco reduction mechanisms or other measures.

Policy Area 6C: ***EDUCATION AND RESEARCH***

6C.1 **OBJECTIVES**

The involvement of the public in the energy sector, will flourish ownership and the sense of belonging in this sector.

6C.2 **BACKGROUND**

Research is essential to ensure that the sector develops in line with the highest international standards. Demonstration projects and innovative introduction of the latest technology were successfully applied in other sectors and there is an advantage in applying such skills to the energy sector. The EU has a number of initiatives that could support financially, and through access to other institutions, such research. However, in Malta there is a need for a structured approach for research in energy.

The achievement of the policy objectives also requires the availability of a skilled workforce. Education is essential to maintain and develop energy systems that provide high quality supply.

6C.3 **WORK UNDERTAKEN**

Demonstrative projects have been ongoing in various parts of the island by the public sector as well as some commercial enterprises, especially in the field of renewable sources. The intention is to sensitise the public on these relatively new technologies.

EMC, has installed two PV systems, and is having the generation reporting available on-line for the public to investigate the yield of these technologies. Complimented with the pv systems, EMC has also installed a micro wind turbine.

Similarly, Government establishments, like Ministries and schools have installed such systems for demonstration purposes. WasteServ has installed PV's as well as micro wind turbines at the civic amenity sites.

At schools, Government has launched the Eco-Skola project to promote environmental awareness in schools.

'Proġett Dawl' gave assistance to families needing social assistance to utilise energy in the best possible way.

Recently, the campaign 'Switch' was launched in order to bring awareness to the public on various everyday tips related to energy saving measures.

Research on harvesting energy from renewable sources has been ongoing by the Institute of Energy Technology. A foreign owned company having a base in Malta, specialising in research and development in the field of electrical storage in batteries, is also investigating various PV technologies available on the market in our environment.

The Malta Intelligent Energy Management Agency (MIEMA) is Malta's first energy agency, set up in June 2007, with the support of the Intelligent Energy Europe (IEE) Programme and that of a large number of public institutions among them the MRRA, MRA and university of Malta. The MIEMA activities are in line with other IEE supported Energy Agencies, which aims towards a more intelligent use of energy resources.

The Agency's activities are initially targeting local requirements such as energy practices in the tourism industry and the use of biofuels. There is also the intention to co-ordinate and provide training to installers of photo-voltaic and similar intelligent energy systems and together with activities for the dissemination of information and raising awareness of the importance of managing energy.

The agency has a three-year program of activities that include

- Energy planning
- Green certificates
- Energy certification of buildings
- Energy saving on public lighting
- Studies to address the energy needs of industrial parks and micro-enterprises
- Studies to address the energy needs of tourism establishments
- Promotion of the use of biofuels and related projects (e.g., marine algae project)
- Dissemination of information about renewables at local and national levels

Malta joining the International Renewable Energy Agency (IRENA). IRENA was founded on the 26 January 2009 with the 75 signatory countries. It's aim is to work throughout the world to close the gap that exists between the enormous potential of renewables and their current relatively low market share in energy consumption. The agency is considered to be the first international worldwide organization to focus solely on the issues related to renewable energy, targeting both the industrialized and the developing world. The main function of IRENA will be to give advice to its members on creating the right frameworks, building capacity, and improving financing and the transfer of technology and know-how for renewable energy.

6C.4 **MEASURES PROPOSED**
In order to pursue this policy area it is necessary to continue to:

- promote research projects of direct benefit to Malta, and best exploit the specific conditions, particularly climatic ones in Malta,

- develop analytical (energy modelling scenarios, indicators) and sector monitoring tools to develop perspectives on long-term demand and supply,

- support the build-up of technical expertise in the field of energy technologies through the University of Malta and MCAST and

- continue to follow the activities of IRENA and other similar agencies and seek opportunities for joint ventures in research and development.

Policy Area 6D:
INVESTMENT AND INDUSTRY PROMOTION

6D.1 **BACKGROUND**
Malta is located at the centre of the Mediterranean, in the midst of all offshore oil and gas activity in the region. This makes the country at a short sailing distance to the major offshore platforms in the area, and to the main ports in Algeria, Tunisia, Libya and Egypt. Malta serves as a base for the major oil operators, drilling contractors and pipe laying contractors in and offshore North Africa, particularly Libya. It has extensive berthing, key and storage facilities.

Other benefits Malta has to offer include:

- long standing experience in servicing of the oil and gas industry,
- state-of-the-art transhipment terminal and distribution facilities within a free zone environment,
- storage and warehousing facilities, including an oil terminal,
- expertise in the manufacture, repair and conversion of ships and rigs and
- excellent telecommunication facilities

In the local context, the strength of Malta lies in its strategic location and its use as a logistics and maritime base. In particular, Malta Enterprise is considering targeting the following organisations:

- companies involved in the maintenance and repair of oil rigs and installations, tapping into the skills of people deployed in the process as well as the close proximity of the market, and
- logistics centres for the distribution of oil in the Mediterranean and back office support thereby creating synergies with the logistics sector and the shared services sector.

It also encourages the development of specialist areas to build internationally recognised centres of excellence in the sector with highly focused training institutions and research and development organisations.

6D.2 **MEASURES PROPOSED**
Government will:
- promote investment in the oil and gas sector, and in renewable sources of energy and energy efficiency, and pursue job creation in the energy industry, serving both Malta and other counties, and
- through attractive incentives, draw investors in setting up both the manufacturing and the operation of equipment harvesting energy from RES, and energy conservation.

SUMMARY
OBJECTIVES AND POLICY MEASURES

This section links up the measures proposed with the objectives set for the energy policy. Each measure will have a positive impact on at least one objective.

SECURITY OF SUPPLY
The objective of security of supply will be achieved through the following measures.

- All measures intended to improve efficiency in use of energy (Policy area 1)
- All measures intended to reduce reliance on imported oil (Policy area 2)
- Measures to ensure stability in oil supply (Policy area 3)
- Measures intended to deliver energy more efficiently (parts of Policy area 5)
- Measures in fiscal, education and research, and investment promotion areas (Policy area 6)

COMPETITIVE PRICING
The objective of a competitively priced energy supply will be achieved through the following measures.

- All measures intended to improve efficiency in use of energy (Policy area 1)
- Measures intended to reduce reliance on imported oil (Policy area 2)
- All measures to ensure stability in oil supply (Policy area 3)
- Measures intended to be cleaner in respect to the carbon footprint (Policy area 4)
- All measures intended to deliver energy more efficiently (Policy area 5)
- Measures in fiscal, education and research, and investment promotion areas (Policy area 6)

PROTECTION OF THE ENVIRONMENT
The objective of protecting the environment will be achieved through the following measures. These will mainly affect carbon emissions and improvement in air quality.

- All measures intended to improve efficiency in use of energy (Policy area 1)
- All measures intended to promote the use of RES (Policy area 2)
- Measures resulting in the reduction of the use of fossil oil (Policy area 2)
- Measures intended in the reduction of GHG and use of better quality fuels (Policy area 4)
- Measures intended to deliver energy more efficiently (Policy area 5)
- Measures in fiscal, education and research, and investment promotion areas (Policy area 6)

SUMMARY

The impact of each measure against the objectives is summarised below:

POLICY AREA	MEASURE	SECURITY OF SUPPLY	COMPETITIVE PRICING	ENVIRONMENT
	1 Energy efficiency			
1A	**1A Supply side efficiency**			
	ensure that Enemalta and any other electricity producers seek and implement ways to increase the efficiency of the electrical power generation plants, including Enemalta investments in 2009,	>	>	>
	ensure that decisions on the required new generation capacity are taken and implemented staring in 2009	>	>	>
	require that Enemalta, as the sole supplier of electricity in Malta, implement demand management measures intended to decrease the discrepancy between peak and minimum loads, such as time differentiated tariffs in its tariff scheme compatible with the metering and control technology available at any time	>	>	>
	promote the generation of electricity produced from high-efficiency cogeneration plant, particularly in industry, that uses heat and power in its manufacturing process. An updated survey of the potential will be carried out in 2009, and a pilot project started soon after.	>	>	>
	promote efficiency in water use since this will contribute to reducing electricity demand, a new water saving campaign to start in 2009	>	>	>
1B	**1B Energy end use efficiency**			
	coordinate all current initiatives and propose new initiatives within a regularly updated, holistic, the NEEAP intended to achieve 9% energy savings by 2016, in line with directive 2006/32/EC,	>	>	>
	adopt exemplary energy efficiency practices in the public sector,	>	>	>
	implement legal notice 261 of 2008 which came into force in January 2009, and develop and adopt legislative and administrative instruments to achieve further energy efficient and environmentally friendly buildings and services,			
	evaluate efficient street lighting measures, controlling both the consumption and light pollution, in 2009,	>	>	>
	incentivize a modal shift of electricity consumption requirements, shifting some day operation to night off-peak time, by providing an attractive option for a cheaper night tariff for most consumers, complimented by the smart metering project, smart metering project scheduled for 2009	>	>	>
	incentivize the use of highly efficient co-generation in particular sectors in 2010 based on the findings of the survey	>	>	>

POLICY AREA	MEASURE	SECURITY OF SUPPLY	COMPETITIVE PRICING	ENVIRONMENT
1C	**1C Efficiency in the transport sector**			
	Support initiatives at EU level to promote the manufacture and marketing of more efficient vehicles and components;	>	>	>
	Undertake advisory services intended to change attitudes and influence behaviour in transport use;	>	>	>
	Ensure that transport policy and its implementation aim to improve efficiency in energy use in the transport sector with particular emphasis on public transport systems;	>	>	>
	Promote the use of more efficient or environmentally friendly alternative fuels for transport and/or modes of transportation;	>	>	>
	Apply improvements to the road networks, especially in congested areas during peak hours,			>
	Promote e-working and tele-work to reduce workforce mobility.	>	>	>
	Evaluate the possibility to utilise electricity from renewable energy sources, for vehicle traction. The proposed new directive for the promotion of energy from renewable sources, is multiplying this renewable energy figure by 2.5 times in the calculation of the targets	>	>	>
	Consider variable traffic flow lanes in narrow artery roads.	>	>	>
	Consider intelligent traffic lights, changing priority according to congestion needs, and prioritising roads going uphill, to reduce occurrences of accelerations from stationary conditions,		>	>
	Work actively at all levels for quick implementation of Single European Sky (SES) aimed to reduce the distances and provide flight routes at optimal altitudes.	>	>	>
	Encourage car sharing and car pooling		>	>

POLICY AREA	MEASURE	SECURITY OF SUPPLY	COMPETITIVE PRICING	ENVIRONMENT
2	**2 Reducing reliance on imported fuels**			
2A	**2A Renewable sources of energy**			
	continue to implement a strategy for the promotion of RES to meet 2020 targets and to identify which cost efficient efforts are necessary to establish and achieve longer term targets	>		>
2A	**2Ai Wind and solar energy**			
	Promote on-shore and off-shore wind farms and put forward concrete projects in 2009	>		>
	Promote small-scale and medium-scale wind turbine installations	>		>
	Ensure the development of the electricity interconnection with the European grid to allow a higher capacity of wind power to be generated locally. The interconnection will also enable Malta to import renewable energy generated in non-EU member states	>		>
	Promote PV systems for the domestic, commercial and industrial sectors;	>		>
	Promote solar thermal systems	>		>
	Promote geothermal systems for heating and cooling	>		>
	Evaluate alternative attractive schemes and mechanisms, including but not limited to feed-in-tariffs, also to attract foreign investment and overcome the barriers limiting the capacity of the present installations based on relative consumptions. This will be an ongoing exercise designed to make appropriate RES projects in Malta attractive for investment	>	>	>
	Consider providing a share in PV solar parks investment, in assigned public areas, to investors who have no access to their own solar potential. Proposal being studied for possible implementation in 2010	>	>	>
	2Aii Biomass			
	recover energy from waste in accordance with the Solid Waste Strategy as finally approved	>		>
	continue to promote the manufacture of biofuels produced from indigenous sources, primarily waste biomass,	>		>
	Monitor the use of biodiesel and amend strategy and targets accordingly	>		>
	Implement a Biogas plant in the next years & make good use of the by-products	>		>
	evaluate the full potential of MSW as a means of conversion to energy	>		>
	explore the possibility of marine algae cultivation to produce biomass for the production of biodiesel	>		>

POLICY AREA	MEASURE	SECURITY OF SUPPLY	COMPETITIVE PRICING	ENVIRONMENT
	biodiesel			
2B	**2B Oil exploration**			
	Seek to intensify exploration by oil companies	>	>	
	Negotiate with neighbouring countries where disputed boundaries exist, with a view to enabling oil exploration to take place in currently disputed areas	>	>	
3	**3 Stability in energy supply**			
3A	**3A Interconnection and alternative sources**			
	Pursue the realisation of the required infrastructure or other suitable option for the provision of a natural gas supply for electricity generation	>	>	>
	Ensure the implementation of an electricity interconnection with Sicily, tender for the infrastructure to be issued in 2009	>	>	>
3B	**3B Disruption planning**			
	Ensure that as far as possible, the institutions, information, hardware and infrastructure are available, ready and coordinated so as to perform efficiently and expeditiously in any emergency, while leaving the freedom and flexibility to respond to any circumstance as it arises and as best thought fit;	>		
3C	**3C International action**			
	Actively support international initiatives that will: a. promote political and economic stability in the main producer countries, b. improve the climate for energy sector investment, encourage more openness and transparency in international energy markets; c. ensure the efficient and sustainable use of energy resources;	>	>	>
	Malta will continue to follow actively this project and seek opportunities to benefit directly by tapping energy sources for its own use and also take economic and business advantage from the development of the energy infrastructure in the region.	>	>	>
	Continue to strengthen its diplomatic ties with supplier and producer countries of crude oil and derived products	>		-

POLICY AREA	MEASURE	SECURITY OF SUPPLY	COMPETITIVE PRICING	ENVIRONMENT
	biodiesel			
4	**Improving our carbon footprint**			
	Ensure that operators in the energy sector operate more efficiently.	>	>	>
	Support the implementation of the NEEAP to reach the target of 9% savings in 2016	>		>
	Seek that Malta reach its renewable targets in a sustainable manner.			>
	Support the introduction and use of lower carbon fuels in the supply of energy especially in power generation			>
	Implement demand side management to reduce consumption of energy	>	>	>
	Effective implementation of the minimum performance in buildings regulations		>	>
5	**5 Delivering energy efficiently and effectively**			
5A	**5A Competition and regulation**			
	Ensure that the appropriate regulatory oversight is maintained	>	>	>
	Regulate the energy sector using practices and policies that are coherent	>	>	>
	Impose minimum and the least intrusive bureaucratic obligations	>	>	
	Ensure the minimum duplication and conflict with existing structures, while aiming towards affordability of energy and customer protection		>	
	Open up the market to competition where possible	>	>	
5B	**5B Open the fuel sector to competition**			
	Continue to reform the fuel market by adopting the necessary legal, administrative, fiscal, economic measures consistent with its obligations, economic, environmental and social considerations and strategic concerns	>	>	>
	Establish satisfactory design and operating standards for operators in the fuel market	>		>
	Monitor and enforce compliance to standards and fair competition	>	>	
	Continue the commercialisation of Enemalta's Petroleum assets and monitor the transition in the gas sector	>	>	

POLICY AREA	MEASURE	SECURITY OF SUPPLY	COMPETITIVE PRICING	ENVIRONMENT
	biodiesel			
5C	**5C An effective electricity sector**			
	Ensure, through effective regulation, that the electricity sector operates in a sustainable manner and deliver at affordable prices with due regard to the environment		>	
	Promote competition in the generation market.	>	>	
	Take measures to ensure security of supply, quality of service, customer and environmental protection, and ensure the financial sustainability of electricity through an adequate tariff structure	>		>
	Ensure that technical safety criteria are defined and that technical rules are developed establishing the minimum technical design and operational requirements for the connection to the electricity system.	>		>
6	**6 Support measures**			
6A	**6A Fiscal policy**			
	Continue to implement the transitory arrangements for energy taxation as agreed with the EU;	>		>
	Use fiscal policy to promote environmental and other Government priorities in the energy sector;	>	>	>
6B	**6B Electricity tariff policy**			
	Continue to ensure that the electricity tariff structures are transparent and non-discriminatory, by requiring timely audited reports and cost justification with every tariff revision request,	>	>	>
	Continue to ensure that there is no cross-subsidization between consumer groups	>	>	>
	Use other fiscal measures to ensure affordability of electricity prices and incentivise investment	>	>	>
	Ensure adequate assistance to deserving vulnerable consumers	>	>	>
	Continue to promote tariff structures that encourage energy efficiency and conservation such as more focused dual tariffs, eco reduction mechanisms or other measures	>	>	>
6C	**6C Research and education**			
	Promote research projects of direct benefit to Malta, and exploit best the specific conditions, particularly climatic, in Malta	>	>	>
	Develop analytical (energy modelling scenarios, indicators) and sector monitoring tools to develop perspectives on long-term demand and supply.	>	>	>
	Support build up of technical expertise in the field of energy technologies through the University of Malta and MCAST.	>	>	>
	Continue to follow the activities of IRENA and other similar agencies and seek opportunities for joint ventures in research and development.	>	>	>

POLICY AREA	MEASURE	SECURITY OF SUPPLY	COMPETITIVE PRICING	ENVIRONMENT
6D	**6D Investments and industry promotion**			
	Through attractive incentives, draw investors in setting up both the manufacturing and the operation of equipment harvesting energy from renewable energy sources, and energy conservation.	>	>	>
	Promote investment in the oil and gas sector, and in renewable sources of energy and energy efficiency and pursue job creation in the energy industry, both serving Malta and other counties	>	>	>

ANNEX I
SOME TECHNICAL DATA

Data supplied by EMC, but still not published officially.

Salient points about the energy sector in Malta:
The yearly total gross inland consumption of fuel in Malta in 2008 was about 0.975 million tons of oil equivalent (toe), or 2.37 toe/person (EU: 3.702 toe/person in 2005).

Malta is 100% dependent on oil imports. Although we are surrounded by oil producing nations, so far Malta has been unsuccessful in its exploration for oil. Oil imports are shipped since there is no fixed energy transport infrastructure connecting Malta with its suppliers. The average dependency on oil for the EU based on the year 2005 is of 53.8%. Other fuel percentages making up the EU gross inland consumption are:

- Solids: 17.7%
- Crude Oil and Petroleum Products: 36.7%
- Natural gas: 24.6%
- Nuclear: 14.2%
- Renewable Energy: 6.8%

Final energy demand by sector in Malta in 2008 was:

Industry:	0.021 Million tons of oil (EU – 324.3 in 2005)
Residential:	0.019 Million tons of oil (EU – 481.5 in 2005)
Transport:	0.189 Million tons of oil (EU – 370.3 in 2005)
Aviation:	0.100 Million tons of oil
Electricity Generation:	0.646 Million tons of oil

The electrical system grid is isolated

Total electricity generated annually in Malta is around 2.2TWh. This is equivalent to 4,573kWh per person (EU: 5,707kWh per person).

Total installed generating capacity is 571 MW, of which 350 MW are supplied by steam turbines, 111 MW are supplied by open cycle gas turbines whilst 110 MW are supplied by a combined cycle plant. The average conversion efficiency of the power stations in Malta is 27.8%.

Electricity generation fuel oil used up to 2001 was of high sulphur content (<3%). In July 2001, Enemalta started purchasing medium sulphur content (<2%) and is now using low sulphur content (<1%).

The amount of energy generated by RES is practically inexistent apart from very small systems.

The total energy consumed for road transport in Malta is about 0.41toe/capita (EU: 0.75 toe/capita).

During the last five years the average gasoline consumption was of 69,000 thousand tons of oil equivalent but showed a decreasing trend of 200 toe/year (-0.289%). During the same period the average consumption of gas oil was 72,000 thousand tons of oil showing an increase of 3,300 toe/year, equivalent to an annual increase of 4.5%.

Malta has one of the lowest emission rates per capita within the EU (7.9 tonnes of CO2 equivalents per capita, compared to an average of 10.4 tonnes for the EU-27)2. The specific GHG emissions per unit of gross domestic product (GDP) for Malta are 627.7 tonnes of CO2 equivalents per million Euro of GDP, as against the EU average of 442.5 tonnes. The relatively high value for GHG emissions per unit GDP probably reflects more Malta's (relatively low) GDP rather than high emissions per se, along with the fact that Malta is too small to benefit from 'economies of scale' (for example, in electricity production) and that it is (at present) an isolated energy system with a limited choice of energy sources.

ANNEX II
POLICYMAKERS AND IMPLEMENTERS

Ministries and government entities that have a statutory role in the energy sector include the following:

Ministries:
Office of the Prime Minister
Ministry for Resources and Rural Affairs
Ministry of Finance, the Economy and Investment
Ministry for Infrastructure, Transport and Communications
Ministry of Education, Culture, Youth and Sport
Ministry of Foreign Affairs

REGULATORY ENTITIES:

ENTITY	MAJOR STATUTORY ROLE / MANDATE	KEY RESPONSIBILITIES IN THE ENERGY SECTOR
Malta Resources Authority	The MRA is a public corporate body with regulatory responsibilities relating to water, energy and mineral resources in the Maltese Islands. It was set up through the Malta Resources Authority Act of 2000. The MRA has wide ranging responsibilities essentially involving regulation of water and energy utilities	- regulation of energy sector.
Malta Environment and Planning Authority	MEPA is the Authority assigned responsibilities under the Planning Development Act of 1992 and the Environment Protection Act of 2001. MEPA is responsible for the establishment of long and short-term objectives and strategies in the environmental field, for the setting of environmental standards, guidelines and regulations and for the control and management of activities having an impact on the environment through a licensing and permit system. It is also responsible for the promotion and control of proper land development, both public and private, in accordance with approved policies and plans.	- Environmental legislation, particularly relating to climate change and air quality. - planning development considerations and constraints, particularly those related to new energy infrastructure.
Malta Maritime Authority	The MMA was set up as a distinct and autonomous corporate body to supervise the organisation of the primary maritime services. It was established by law as a Government Agency in 1991 and vested with detailed regulatory powers. The set-up of the Authority was to enable ports, merchant shipping and yachting centres to operate within a centralised framework. The MMA develops and supports policies and initiatives consonant with the functions and duties stipulated in the Malta Maritime Authority Act (XVII) of 1991.	- bunkering

ENTITY	MAJOR STATUTORY ROLE / MANDATE	KEY RESPONSIBILITIES IN THE ENERGY SECTOR
Malta Transport Authority	The ADT comprises a Board appointed by Government. In accordance with the Malta Transport Authority Act [XXIII of 2000], the legal functions of Authority include a requirement for it to plan or provide or secure or promote the provision of, a properly integrated, safe, economical and efficient transport system by road by any means presently obtainable or that may be available in the future.	- energy demand for transport - transport policies that would have an impact on fuel demand / quality
Malta Standards Authority	The MSA was set up in terms of the MSA Act of 2000. Its mission is to effectively co-ordinate standardization and related activities to meet the needs of the Maltese community in accordance with European and internationally recognized standards and practices, which enhance economic efficiency and international competitiveness, and fulfil the community's demand for consumer protection and for a safe and sustainable environment.	- standards relating to energy - legislation dealing with energy efficiency of products
National Statistics Office	The NSO came into being in March 1947. It is responsible for the collection, compilation, analysis and publication of a wide range of statistical information and related matters. The NSO is governed by the Malta Statistics Authority Act, 2000.	- statistics related to energy

GOVERNMENT DEPARTMENTS:

DEPARTMENT	MAJOR STATUTORY ROLE	KEY RESPONSIBILITIES IN THE ENERGY SECTOR
Consumer and Competition Division	The Consumer and Competition Division is responsible to carry out the functions assigned to the OFC required under the Competition Act, including the responsibility to advise undertakings, associations of undertakings and the public in relation to matters concerned with fair trading practices and procedures and to carry out all the functions and duties assigned to it under the Competition Act related to the investigation, determination and suppression of restrictive practices.	- Competencies for fair-trading and prevention of abuse of dominant position, particularly those relating to fuel trade and utilities.
Oil Exploration Division	The Department is set up to implement and administer the provisions of the Petroleum Production Act (Cap.156), the Continental Shelf Act (Cap. 194) and the Petroleum (Production) Regulations, 2001. It also administers related terms on petroleum exploration and production as set out in contracts with oil companies operating in Malta.	- Current and new policies in oil exploration.

GOVERNMENT CONSULTATIVE BODIES:

DEPARTMENT	MAJOR STATUTORY ROLE	KEY RESPONSIBILITIES IN THE ENERGY SECTOR
Building Industry Consultative Committee	The BICC complements the activities of the Works Division, besides acting as the official link between the private sector and Government on matters related to the construction industry.	- design guidelines related to energy consumption in buildings
Consumer Affairs Council	The Council advises on Consumer Affairs and strives to promote consumer interests. It monitors and keeps under review trading and business practices related to the supply of goods and services to consumers	- identification of issues important to small consumers
Institute of Energy Technology	The aims of the Institute 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.	- analysis studies on the use of energy; - determination of feasible measures to conserve energy; - applications of RES; - originating and participating in teaching and research projects; - collaborating with other universities, industries and international bodies.
Malta Council for Science and Technology	The MCAST is the national advisory body to Goverment on science and technology policy. It is responsible for identifying and addressing major science and technology policy. It is responsible for identifying and addressing major science and technology challenges and issues of strategic importance for Malta, thereby contributing to the development of coherent and sustainable policy visions and intiatives.	- R&D in Malta, considering long experience in coordinating FP6 programmes.

IMPLEMENTING AGENCIES AND OTHERS:

ENTITY	MAJOR STATUTORY ROLE	SPECIFIC ROLES
EMC	EMC offers a broad range of services to the industrial, commercial and domestic sectors in the energy field. Set up in 1977 by virtue of the Enemalta Act of 1976, the Corporation today undertakes a broad range of operations, incorporating the importation and distribution of petroleum products and liquefied petroleum gas as well as the generation and distribution of electricity to all sectors of Maltese society.	- Has a major role as a supplier of energy products in a reformed energy market. - investment plans and programmes to improve technical and organisational efficiency
WasteServ Ltd	WasteServ Malta Ltd was established in November 2002. The company is responsible for organizing, managing and operating integrated systems for waste management including integrated systems for minimisation, collection, transport, sorting, reuse, utilisation, recycling, treatment and disposal of solid and hazardous waste.	- waste to energy plans
Malta Enterprise	Malta Enterprise is the focal point for enterprise in Malta. Its role is to act as a single point of contact for all enterprise considering trade, investment or commercial links with Malta. The organisation is committed to creating the right environment for successful enterprise in Malta. It provides a range of practical services and solutions to Maltese enterprises seeking to internationalise their operations and to international companies seeking to trade with or invest in Malta. Malta Enterprise provides a comprehensive package of assistance and advisory services to international companies and investors wishing to set up manufacturing, research and development, international trading, regional representation and other operations in Malta.	- relationship of energy issues with competitiveness - impact of energy issues in attracting industry and new investment to Malta. - R&D and investment in energy related business

ANNEX III
SELECTED EU LEGISLATION RELATED TO ENERGY

Directive 68/414/EEC of 20 December 1968 imposing an obligation on Member States of the EEC to maintain minimum stocks of crude oil and/or petroleum products amended by Directives 1972/425 and 1998/93 and related to Decisions 1968/414 and 1973/238

Decision 68/416/EEC of 20 December 1968 on the conclusion and implementation of individual agreements between Governments relating to the obligation of Member States to maintain minimum stocks of crude oil and/or petroleum products

Directive 73/238/EEC of 24 July 1973 on measures to mitigate the effects of difficulties in the supply of crude oil and petroleum products

Decision 77/706/EEC of 7 November 1977 on the setting of a Community target for a reduction in the consumption of primary sources of energy in the event of difficulties in the supply of crude oil and petroleum products related to Decision 1979/639 (proposed repeal)

Decision 79/639/EEC of 15 June 1979 laying down detailed rules for the implementation of Council Decision 77/706/EEC

Directive 84/360/EEC on the combating of air pollution from industrial plants

Directive 90/377/EEC of 29 June 1990 concerning a Community procedure to improve the transparency of gas and electricity prices charged to industrial end-users

Directive 92/42/EEC of 21 May 1992 on efficiency requirements for new hot-water boilers fired with liquid or gaseous fuels

Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances

Directive 93/12/EEC of 23 March 1993 relating to the sulphur content of certain liquid fuels

Regulation (EEC) No 926/93 of 1 April 1993 amending Regulation (EEC) No 1696/87 laying down certain detailed rules for the implementation of Council Regulation (EEC) No 3528/86 on the protection of the Community's forests against atmospheric pollution

Directive 94/2/EC of 21 January 1994 implementing Council Directive 92/75/EEC with regard to energy labelling of household electric refrigerators, freezers and their combinations

Directive 94/22/EC of the European Parliament and of the Council of 30 May 1994 on the conditions for granting and using authorizations for the prospection, exploration and production of hydrocarbons

Regulation (EC) No 1091/94 of 29 April 1994 laying down certain detailed rules for the implementation of Council Regulation (EEC) No 3528/86 on the protection of the Community's forests against atmospheric pollution

Directive 94/22/EC of 30 May 1994 on the conditions for granting and using authorizations for the prospection, exploration and production of hydrocarbons

Directive 94/63/EC of 20 December 1994 on the control of volatile organic compound (VOC) emissions resulting from the storage of petrol and its distribution from terminals to service stations

Directive 95/12/EC of 23 May 1995 implementing Council Directive 92/75/EEC with regard to energy labelling of household washing machines

Directive 95/13/EC of 23 May 1995 implementing Council Directive 92/75/EEC with regard to energy labelling of household electric tumble driers)

Directive 96/57/EC of 3 September 1996 on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof

Directive 96/61/EEC concerning integrated pollution prevention and control.

Directive 96/60/EC of 19 September 1996 implementing Council Directive 92/75/EEC with regard to energy labelling of household combined washer-driers

Regulation 736/96 of 22 April 1996 on notifying the Commission of investment projects of interest to the Community in the petroleum, natural gas and electricity sectors as applied by Regulation 2386/1996

Directive 97/17/EC of 16 April 1997 implementing Council Directive 92/75/EEC with regard to energy labelling of household dishwashers

Directive 98/11/EC of 27 January 1998 implementing Council Directive 92/75/EEC with regard to energy labelling of household lamps

Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC

Directive 98/93/EC of 14 December 1998 amending Directive 68/414/EEC imposing an obligation on Member States of the EEC to maintain minimum stocks of crude oil and/or petroleum products

Decision 98/537/EC of 13 July 1998 approving the text of the amendment to the trade-related provisions of the Energy Charter Treaty and its provisional application agreed by the Energy Charter Conference and the International Conference of the Signatories of the Energy Charter Treaty

Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air

Directive 1999/94/EC of 13 December 1999 relating to the availability of consumer information on fuel economy and CO emissions in respect of the marketing of new passenger cars

Decision 1999/280/EC of 22 April 1999 regarding a Community procedure for information and consultation on crude oil supply costs and the consumer prices of petroleum products as implemented by Decision 1999/566/EC

Decision 1999/566/EC of 26 July 1999 implementing Council Decision 1999/280/EC regarding a Community procedure for information and consultation on crude oil supply costs and the consumer prices of petroleum products

Directive 2000/55/EC of 18 September 2000 on energy efficiency requirements for ballasts for fluorescent lighting

Directive 2000/84/EC of 19 January 2001 on summer-time arrangements

Directive 2001/77/EC - The promotion of electricity produced from renewable energy sources in the internal electricity market.

Directive 2001/80/EC of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants.

Directive 2001/81/EC of 23 October 2001 on national emission ceilings for certain atmospheric pollutants.

Directive 2002/31/EC of 22 March 2002 implementing Council directive 92/75/EEC with regard to energy labelling of household air-conditioners.

Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings, also known as “EPBD”. Recasting in process 13-11-2008 COM(2008) 780 2008/0223(COD).

Directive 2002/40/EC of 8 May 2002 implementing Council Directive 92/75/EEC with regard to energy labelling of household electric ovens.

Directive 2003/30/EC of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport.

Directive 2003/54/EC of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC. This is being currently revised (5437/7/09)

Directive 2003/55/EC of 26 June 2003 concerning common rules for the internal market in natural gas and repealing

Directive 98/30/EC

Directive 2003/73/EC of 24 July 2003 amending Annex III to Directive 1999/94/EC

Directive 2003/87/EC of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC. A further proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading system of the Community (COM(2008)0016 – C6-0043/2008 – 2008/0013(COD))

Directive 2003/92/EC of 7 October 2003 amending Directive 77/388/EEC as regards the rules on the place of supply of gas and electricity.

Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity.

Decision No 1229/2003/EC of 26 June 2003 laying down a series of guidelines for trans-European energy networks and repealing Decision No 1254/96/EC

Directive 2004/8/EC 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.

Directive 2004/17/EC of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors.

Directive 2004/22/EC of 31 March 2004 on measuring instruments.

Directive 2004/67/EC of 26 April 2004 concerning measures to safeguard security of natural gas supply.

Directive 2004/74/EC of 29 April 2004 amending directive 2003/96/EC as regards the possibility for certain member states to apply, in respect of energy products and electricity, temporary exemptions or reductions in the levels of taxation.

Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol.

Regulation (EC) No 807/2004 of 21 April 2004 amending Council Regulation (EC) No 2236/95 laying down general rules for the granting of Community financial aid in the field of trans-European networks

Directive 2005/32/EC of 6 July 2005 establishing a framework for the setting of ecodesign requirements for energy-using products. Recast in process COM(2008)0399 – C6-0277/2008 – 2008/0151(COD)

Directive 2005/33/EC of 6 July 2005 amending Directive 1999/32/EC as regards the sulphur content of marine fuels.

Directive 2005/89/EC of 18 January 2006 concerning measures to safeguard security of electricity supply and infrastructure investment.

2005/166/EC: Commission Decision of 10 February 2005 laying down rules implementing Decision No 280/2004/EC of the European Parliament and of the Council concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol (notified under document number C(2005) 247)

Regulation (EC) No 1775/2005 of 28 September 2005 on conditions for access to the natural gas transmission networks

Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services

Proposal for a directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (COM(2008)0019 – C6-0046/2008 – 2008/0016(COD)

Proposal for a decision of the European Parliament and of the Council on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020 (COM(2008)0017 – C6-0041/2008 – 2008/0014(COD))

Adoption of Directive 2009/.../EC of the European Parliament and of the Council on the geological storage of carbon dioxide and amending Council Directives 85/337/EEC, 96/61/EC, Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC and Regulation (EC) No 1013/2006

Proposal for a directive of the European Parliament and of the Council amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions from the use of road transport fuels and amending Council Directive 1999/32/EC, as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC (COM(2007)0018 – C6-0061/2007 – 2007/0019(COD))

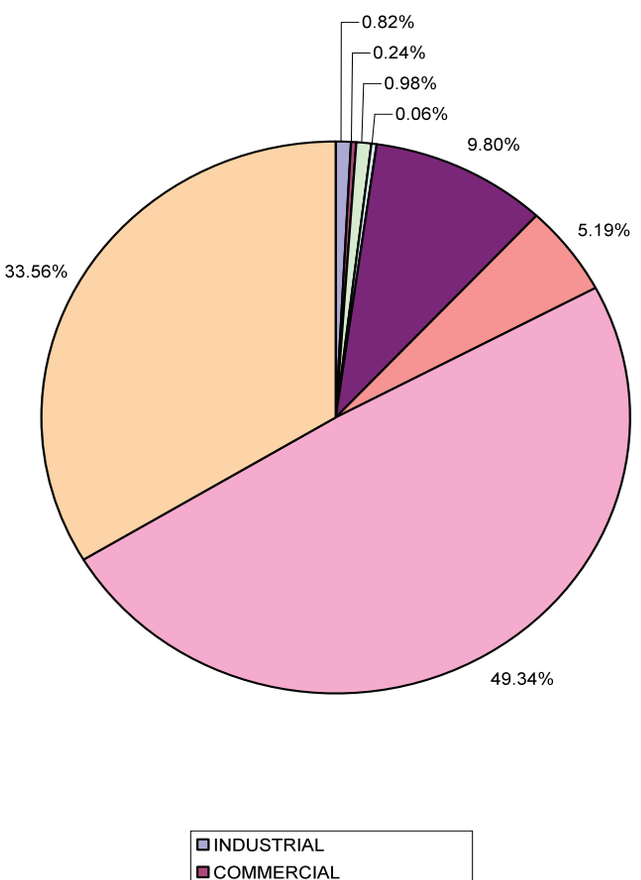
Proposal for a regulation of the European Parliament and of the Council setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO2 emissions from light-duty vehicles (COM(2007)0856 – C6-0022/2008 – 2007/0297(COD))

There are a number of directives in the pipeline that may be adopted be the time this policy formally becomes legislation.

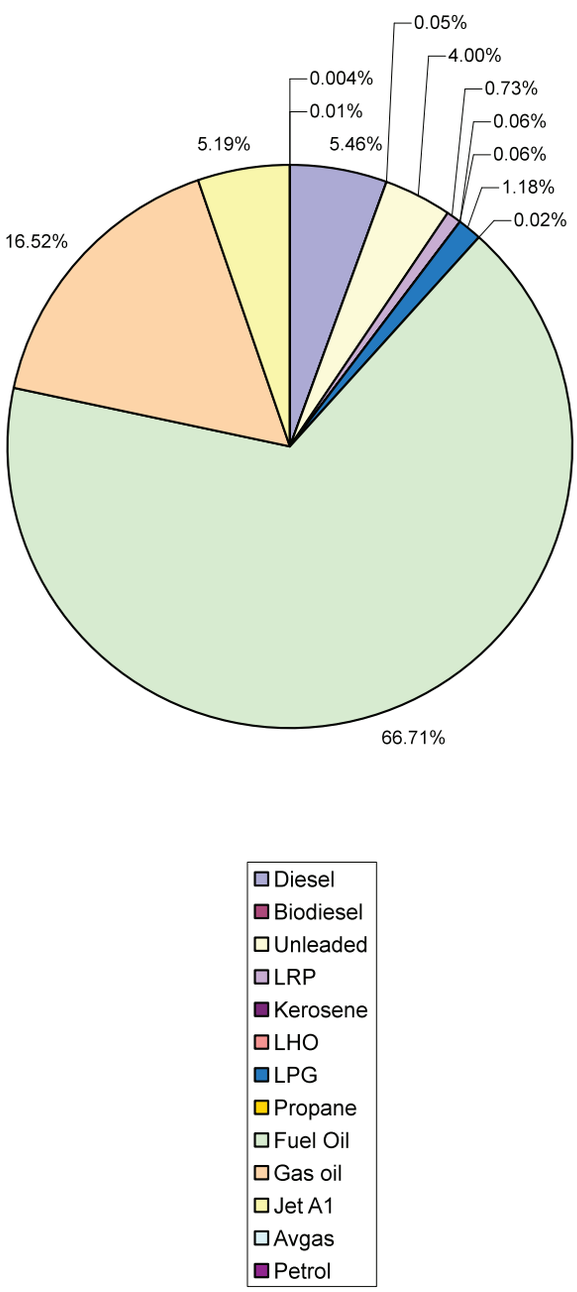
ANNEX IV
FUEL FIGURES

 # Data supplied by EMC, but still not published officially.

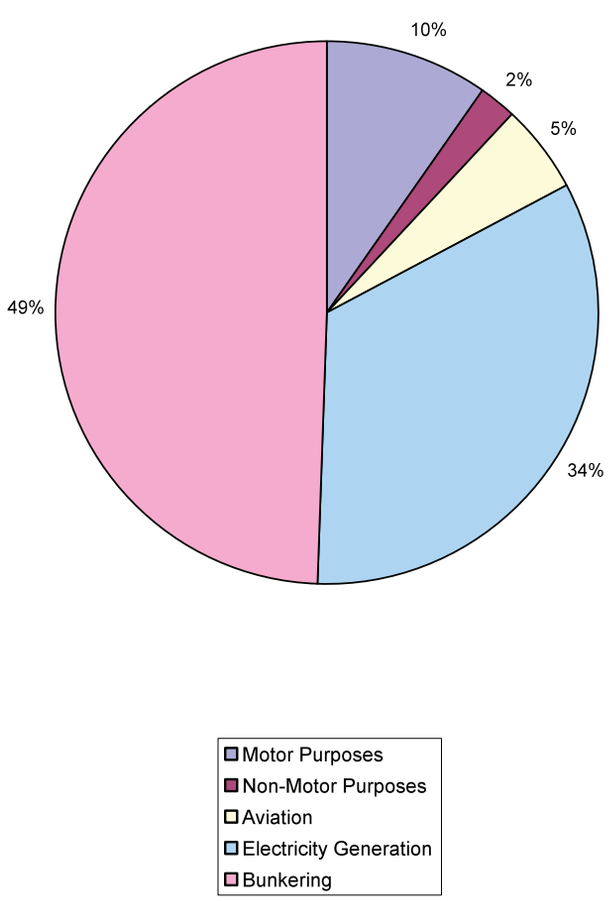
SECTORAL FUEL CONSUMPTION 2008



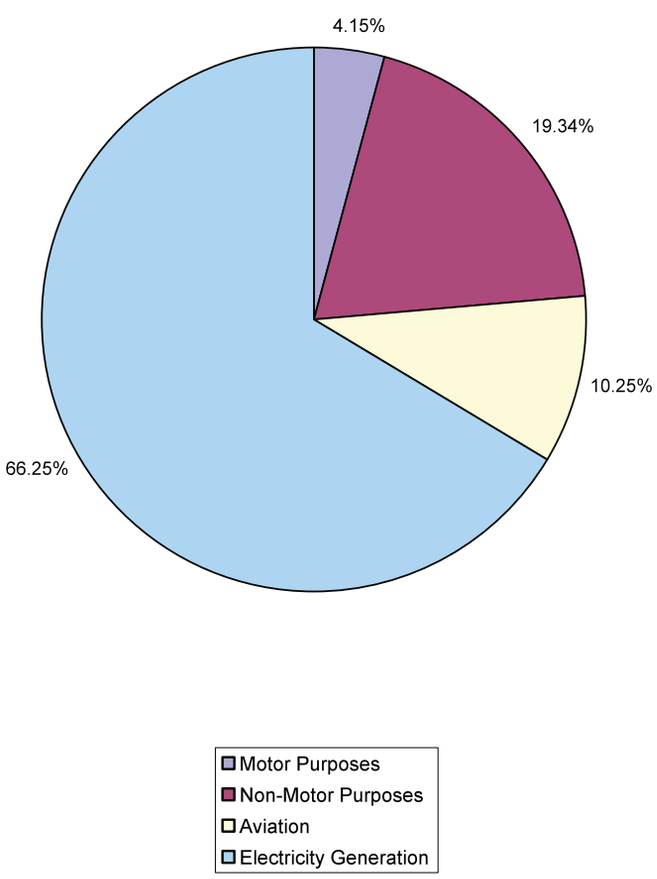
FUEL CONSUMPTION BY TYPE 2008

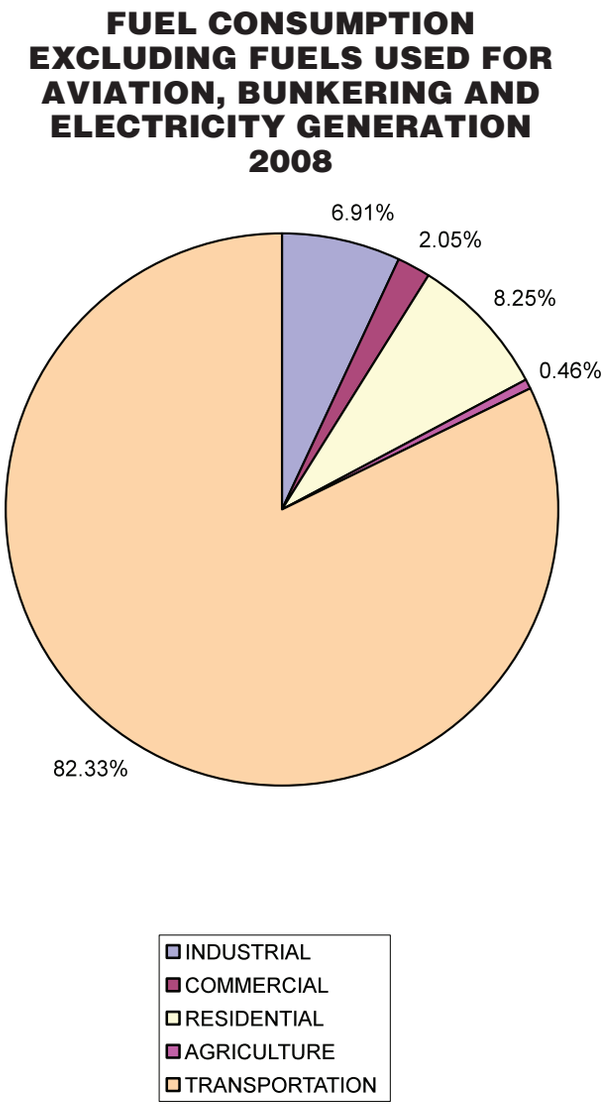


FUEL CONSUMPTION BY USE 2008



FUEL CONSUMPTION BY USE EXCLUDING BUNKER FUELS 2008

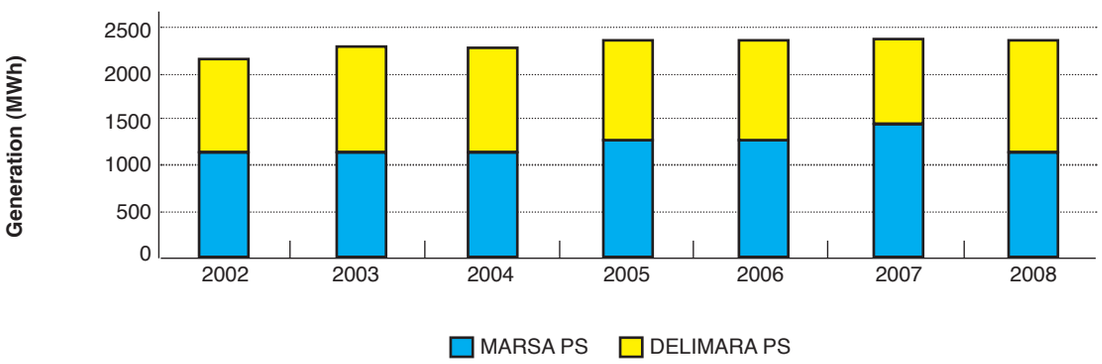



FUEL CONSUMPTION EXCLUDING FUELS USED FOR AVIATION, BUNKERING AND ELECTRICITY GENERATION 2008
6.91%
2.05%
8.25%
0.46%
82.33%
INDUSTRIAL
COMMERCIAL
RESIDENTIAL
AGRICULTURE
TRANSPORTATION

ANNEX V
ACTUAL AND PROJECTED ELECTRICITY FIGURES

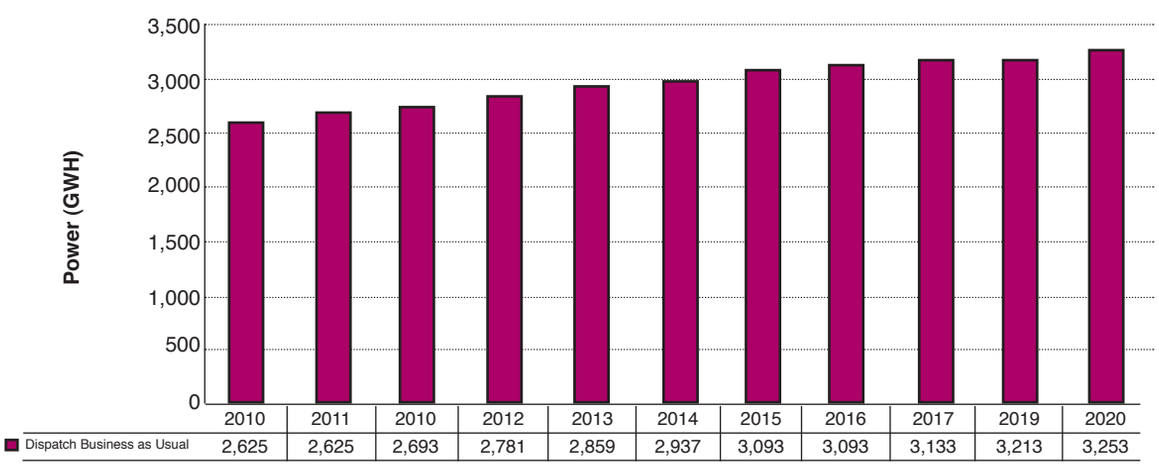
 # Actual supplied by EMC, but still not published officially.

ANNUAL ELECTRICITY GENERATION



Following the study commissioned to by the MRA mentioned in Policy Areas 1A the projected demand of the dispatched electricity can be viewed from the below chart.

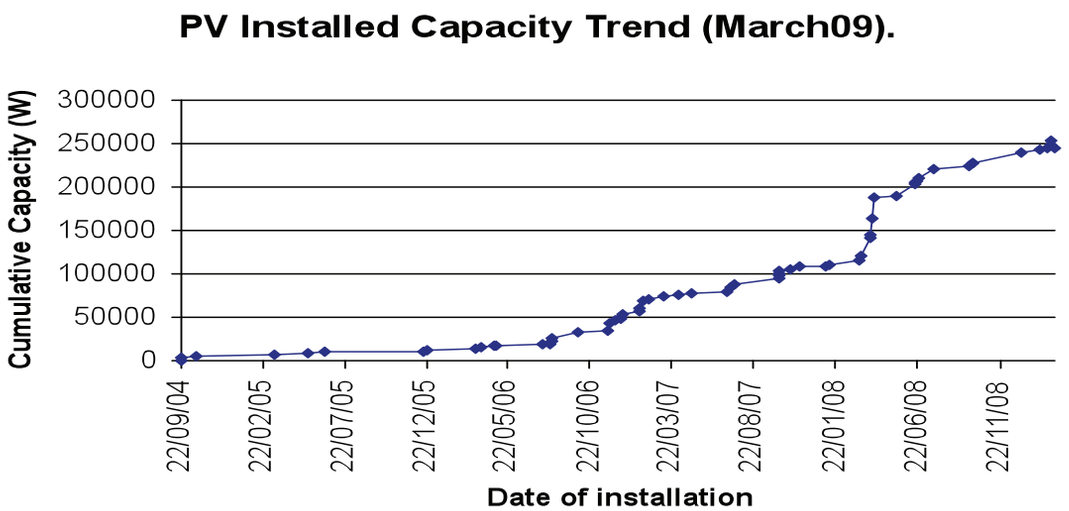
DISPATCHED ELECTRICITY PROJECTIONS



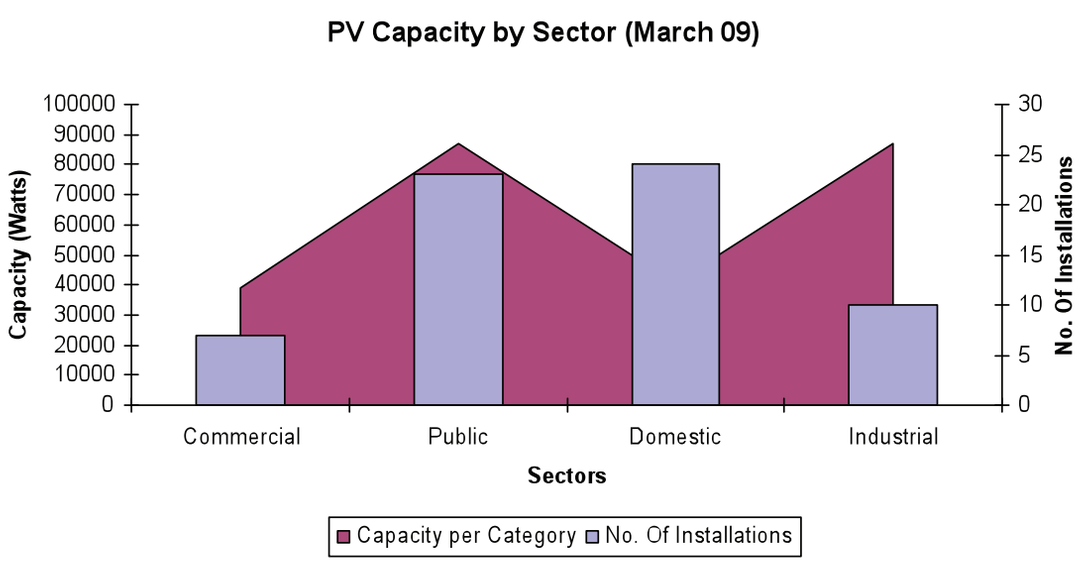
	2010	2011	2010	2012	2013	2014	2015	2016	2017	2019	2020
Dispatch Business as Usual	2,625	2,625	2,693	2,781	2,859	2,937	3,093	3,093	3,133	3,213	3,253

ANNEX VI
PHOTOVOLTAIC INSTALLATIONS UPTAKE

The Photovoltaic uptake progress in Malta can be viewed from this capacity trend chart.



A considerable sharp increase is noted in last summer, where four large installations, co-funded 60% by EU, were installed.



The analysis by sector, indicate that most installations are in the domestic sector, but these are relatively small, as compared to the fewer Industrial installations of higher capacity, as expected. The Public sector, including public buildings, such as Ministries, Colleges, Head Quarters, Civic amenity sites, also contribute considerably for the uptake of this technology.

ANNEX VII
LIST OF REFERENCES

1. National Energy Efficiency Action Plan : December 2008

2. A Draft Renewable Energy Policy for Malta : August 2006

3. Mott McDonald : Strategy for Renewable Electricity Exploitation in Malta Vol 1 : Renewable Electricity target : July 2005

4. Mott McDonald : Strategy for Renewable Electricity Exploitation in Malta Vol 2: Policy Options Review : August 2005

5. National Greenhouse Gas Emissions Inventory Report for Malta 1990 – 2007 : March 2009

6. Malta's Biennial Report on Policies and Measures and Projected Greenhouse Gas Emissions 2009 : March 2009

7. Lahmeyer International: Energy Interconnection Malta-Europe : July 2008

8. Budget 2009 Speech : November 2008

9. Climate Change Committee : National Strategy for Policy and Abatement Measures Relating to the Reduction of Greenhouse Gas Emissions : January 2009

10. A solid Waste Management Strategy for the Maltese Islands : January 2009

11. EMC: Electricity Generation Plan 2006 – 2015

12. R.N. Farrugia, & E. Scerri, Institute of Energy Technology: Offshore Wind Potential for a Central Mediterranean Archipelago

13. Liberalisation of the Inland Fuel Market : January 2007

14. Mott McDonald : Feasibility Study for Increasing Re newable Energy Credentials: January 2009

15. Reporting of National Programmes under the National Emission Ceilings Directive (2001/81/EC)

GLOSSARY OF TERMS

ADT	Malta Transport Authority
BAT	Best Available Techniques
BICC	Building Industry Consultative Committee
CCC	Climate Change Committee
CCGT	Closed Cycle Gas Turbine
CDM	Clean Development Mechanism
CFT	The Commission for Fair Trading
CHP	Combined Heat and Power
CNG	Compressed Natural Gas
CO2	Carbon Dioxide
COM	Communication Document
COP	Coefficient of Performance
CSP	Concentrated Solar Power
EC	European Commission
EE	Energy Efficiency
EMC	EMC
EPBR	Energy Performance in Buildings Regulations
ERDF	European Regional Development Fund
ETS	Emission Trading System
EU	European Union
FAB	Functional Airspace Block
GDP	Gross Domestic Product
GHG	Green House Gases
HFO	Heavy Fuel Oil
HVAC	High Voltage Alternate Current
HVDC	High Voltage Direct Current
ICT	Information Communications Technology
IEA	International Energy Agency
IET	Institute of Energy and Technology
IPPC	Integrated Pollution Prevention and Control
KP	Kyoto Protocol
LCP	Large Combustion Plant
LCPD	Large Combustion Plant Directive
LN	Legal Notice
LNG	Liquefied Natural Gas
LPG	Liquid Petroleum Gas

MCAST	Malta College of Arts, Science and Technology
MCST	Malta Council for Science and Technology
ME	Malta Enterprise
MEPA	Ministry of Information Technology, Industry and Investment
MMA	Malta Maritime Authority
MRA	Malta Resources Authority
MRRA	Ministry for Resources and Rural Affairs
MSA	Malta Resources Authority
MSW	Municipal Solid Waste
MW	Mega Watts
NAP	National Allocation Plan
NEEAP	National Energy Efficiency Action Plan
NGO	Non-Governmental Organisations
NSO	National Statistics Office
OFC	Office for Fair Competition
PV	Photo Voltaic
RES	Renewable Energy Source
SCADA	Supervisory Control And Data Acquisition
SES	Single European Sky
SWH	Solar Water Heater
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
VOC	Volatile Organic Compounds
WSC	Water Services Corporation

Ministry for Resources
and Rural Affairs

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