Performance Audit

Renewable Energy in Malta
Follow-up

Table of Contents

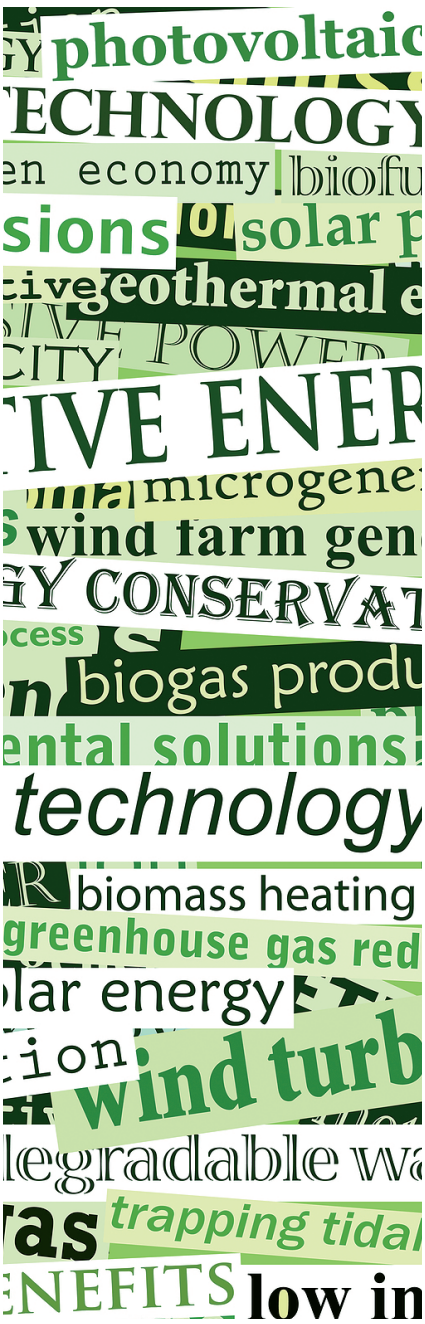
Appendices

Tables

Figures

List of Abbreviations

AA	Appropriate Assessment
CHP	Combined Heat and Power
DoC	Department of Contracts
DREPM	Draft Renewable Energy Policy for Malta
EIA	Environment Impact Assessment
ERDF	European Regional Development Fund
EU	European Union
FMMU	Financial Management and Monitoring Unit
GWh	Gigawatt Hour
ISE	Institute for Sustainable Energy
kWh	Kilowatt Hour
MBT	Mechanical Biological Treatment
MEPA	Malta Environment and Planning Authority
MFEI	Ministry of Finance, the Economy and Investment
MRA	Malta Resources Authority
MRRA	Ministry for Resources and Rural Affairs
MWh	Megawatt Hours
NAO	National Audit Office
NEEAP	National Energy Efficiency Action Plan
NREAP	National Renewable Energy Action Plan
OPM	Office of the Prime Minister
PAC	Public Accounts Committee
PDS	Project Description Statement
PEPM	Proposal for an Energy Policy for Malta
PV	Photovoltaics
RDF	Refuse Derived Fuel
RES	Renewable Energy Sources
SEA	Strategic Environmental Assessment
TM	Transport Malta
WSC	Water Services Corporation
WSM	WasteServ Malta Ltd.



Executive Summary

Executive Summary

Introduction

1. This follow-up performance audit aims to report on the progress registered in the exploitation of renewable energy sources in Malta. This study was undertaken by the National Audit Office (NAO) as was requested by the Parliamentary Public Accounts Committee (PAC) during its deliberations of the performance audit report: *Renewable Energy and Energy Efficiency in Malta,* which was published in September 2009.

2. For the purpose of this review, the NAO focused on the following audit objectives from its 2009 study, namely to:

   i. evaluate the process adopted in the development of Malta's energy policies.

   ii. determine Malta's progress with regards to the renewable energy programme.

3. Issues related to encouraging more energy efficiency practices were considered to be beyond the scope of this review. However, it is to be pointed out that the Malta Resources Authority (MRA) is obliged to report to the EU Commission, by end June 2011, on progress registered by Malta in this regard.

4. This follow-up audit was carried out during the period September – December 2010, and entailed determining the extent to which recommendations proposed in the NAO's 2009 publication have been implemented. For ease of reference, this Executive Summary reproduces the key recommendations made in the report referred to in this paragraph as marginal notes in green text. The degree of progress registered in connection with these recommendations is presented adjacent to the proposals.

The Policy Formulation Process

5. The Ministry for Resources and Rural Affairs (MRRA) has ownership of the energy policy and the responsibility to make policy in this field. However, in order to optimise the utilisation of available expertise in Malta, Government assigned the energy policy-drafting role to the MRA.

Efforts are to be sustained to ensure that Malta's energy efficiency and renewable energy polices are updated to reflect current circumstances and envisage future developments.

6. During the period under review, plans were drafted to restructure and augment human resources at the MRA. Such plans have been referred to the Ministry of Finance, the Economy and Investment (MFEI) for clearance. It is envisaged that the MRA's organisation structure will include specific units for policy drafting and regulation. This should enable the Authority to better carry out its diverse functions.

7. The process to finalise Malta's energy policy, which embraces energy from renewable sources, has continued.

During the follow-up audit period two major milestones were achieved in the energy policy.

8. The first milestone in the policy development was the completion of the revised Proposal for an Energy Policy for Malta (PEPM) launched in April 2009. The revision of the energy policy proposal reflected changes in related EU legislation, particularly Directive 2009/28/EC.

9. The second milestone related to the commencement of the Strategic Environmental Assessment (SEA) of the revised Energy Policy Proposal. This is required under Legal Notice 418/2005 and the SEA Directive 2001/42/EC.

10. Following scheduling revisions and the recent appointment of the SEA audit team, this process is now expected to be concluded in August 2011. Upon conclusion of the SEA process, Government will be in a position to consider formally endorsing Malta's energy policy.

11. Biofuel regulations were also developed during the period under review. Two legal notices became effective in 2010. Legal Notice 553/2010 stipulates that biofuel produced and imported for the local market must adhere to sustainability criteria defined therein.

12. Legal Notice 556/2010 lays out greenhouse gases emissions standards by conventional fuel. The latter Legal Notice stipulates that a proportion of biofuel, up to the permissible standards laid out by the European Union (EU) and the Malta Standards Authority, can be premixed with petroleum products. However, currently, suppliers may opt for the higher levels of bio-element permissible in premixed petroleum fuel. The potential consequence of such action relate to the extent of suitability of the existent fleet of Maltese vehicles to run on the higher mixes permissible of biofuel in conventional petroleum products.

13. An additional legal notice – "Petroleum for the Inland (Wholesale) Fuel Market (Amendment) Regulation, 2011", which is still in draft form, is expected to become effective shortly. This Legal Notice will mandate the gradual premixing parameters of biofuel in all petroleum products consumed in Malta by the transport sector. The main objective of these provisions is to stimulate the uptake of biofuel in Malta. Moreover, this Legal Notice will cancel out the potential side-effects, brought about by LN 556/2010 discussed in the preceding paragraph.

14. Policy developments relating to the attainment of Malta's EU obligations with regards the use of renewable energy within the transport sector also encompassed the use of electric cars. It is expected that a strategy in this respect will be published in the coming weeks.

15. The MRA considers that, at a national level, the strategic plans supporting the implementation of Malta's renewable

energy policy are deemed to be the National Renewable Energy Action Plan (NREAP) and National Energy Efficiency Action Plan (NEEAP).

The appropriate strategic and operational plans are to be drafted and communicated to all stakeholders.

16. During the period under review, the NREAP was formulated and referred to the EU Commission in July 2010. This is in accordance with Malta's EU obligations as stipulated in Directive 2009/28/EC.

17. On the other hand, the NEEAP is being updated to reflect ongoing changes in the energy sector. The updated NEEAP should be submitted to the EU Commission in June 2011, as required.

18. Operational plans regarding wind farms and biomass related projects have been developed by the implementing entities. Plans related to the development of the proposed onshore and offshore wind farms sites indicate that these facilities will be able to generate 255 GWh or 39.7 per cent of Malta's RES target by 2020. Additionally, operational plans related to waste to energy generation, the other major RES contributing to Malta's RES targets, indicate that by 2020 approximately 156 GWh will be generated, or 25 per cent of Malta's renewable energy targets.

Exploiting Renewable Energy in Malta

19. Malta's Energy Policy Proposal sets out that Malta will seek to achieve its renewable energy biannual trajectory and EU 2020 targets namely by generating energy from wind, solar and biomass (waste) sources, and by increasing the use of biofuel.

In view of the continuous technological advancements, sustainability assessments of the effectiveness and environmental impacts of large-scale wind energy farms are to be made.

20. The initiatives undertaken regarding the exploitation of wind energy during the period under review complied with the milestones noted in the NREAP. Generally, the activities undertaken by the Ministry for Resources and Rural Affairs (MRRA) during this period related to studies for planning permission purposes.

21. In addition to the planning permission related assessments, Site Specific Wind Measurement studies are being carried out at the three major wind farm sites. The Sikka l-Bajda study was published in February 2011. The other studies relating to the other wind farm sites are expected to be completed shortly.

22. In order to enable the exploitation of renewable energy through micro wind turbines, the Malta Environment and Planning Authority (MEPA) Board has approved new planning guidance for the installation of such equipment. Despite the fact that consumers of micro wind turbines benefit from rebate schemes, the uptake of this equipment remains marginal.

Efforts to implement waste to energy related projects should be intensified.

23. During the period under review various initiatives, aimed at converting biomass to energy, were undertaken by WasteServ Malta Ltd. (WSM) and the Water Services Corporation (WSC).

24. The NREAP envisaged that by 2010, about 1.1 GWh of biomass energy would be generated through landfill gases. By the date indicated, this target was exceeded since 1.8 GWh of energy through landfill gases was generated from Ta' Zwejra and Maghtab landfill. The latter landfill sites are expected to be fully operational by the first and fourth quarter of 2011, respectively.

25. It is envisaged that three Mechanical Biological Treatment (MBT) plants will be operational by 2014. The MBT plant at St. Antnin is in its commissioning phase following minor delays. This plant is expected to generate 27.5 GWh of electrical and thermal energy annually. It is expected to be operating at full capacity by mid 2011. Planning and design initiatives regarding the Malta North and Gozo plants were subject to minor delays due to tendering related issues. Nevertheless, WSM envisages that this delay will only marginally impact the projected implementation date of these projects. These MBT plants are expected to generate 33 GWh of electrical energy annually.

26. The project at Ta' Barkat, which converts sewage sludge to energy, is proceeding in accordance to the timeframe indicated in the NREAP. This project is expected to generate 16 GWh of energy annually.

Financial incentives and other forms of encouraging consumer investment in renewable energy technologies (such as photovoltaic) are to be revised and inclined towards technologies necessitating a relatively high initial capital outlay.

27. Grant schemes aimed at stimulating the exploitation of solar energy through Photovoltaic (PV) systems offered both the Domestic and Industrial sectors improved 'rebate' conditions. Together with improvements in the feed-in tariffs, these schemes were positively viewed by consumers in both the targeted sectors. In fact, the uptake of PV systems through the applicable grant schemes during the period under review was almost double the projections indicated in the NREAP. These schemes were funded through national funds and European Regional Development Fund programmes. The total funds allocated for the PV grant schemes amounted to €17 million.

28. Up to end 2010, the PV systems installed through these grant schemes generated an estimated 11 GWh of electricity. This implies that the estimated average cost of 1 kWh of energy produced through these PV grant schemes was €0.05 and €0.09 for the Domestic and Industrial sectors respectively. This is considerably less than the current minimum retail price of electricity for these sectors.

29. Even when the applicable feed-in tariffs are taken into consideration, together with the PV Grant Schemes, the Government measures to promote the use of PV systems still render value for money. The cost to Government for promoting the use of a unit of energy generated through PV systems ranges between €0.14 and €0.15, for the Domestic and Industrial sectors respectively. This is less than the assumed current cost of producing electricity through conventional means. Such costs are based on the assumptions that the current cost of conventional electricity

production and current feed-in tariffs will remain constant throughout the lifetime of the PV system.

30. Similarly to the strategies adopted for PVs, the uptake of solar water heaters within the Domestic and Industrial sectors was based on improved rebate rates over previous grant schemes. The 2009 grant scheme was wholly funded through national funds. Another two grant schemes were co-financed through the ERDF programme and national funds. The total funds allocated to the solar water heaters grant schemes amounted to €1.6 million.

31. Despite the fact that during the period under review there were various schemes aimed at the sectors indicated in the preceding paragraph, the overall response resulted in the generation of around 30 per cent of the 29.3 GWh of energy indicated in the NREAP. This situation could have potentially materialised since a number of applicants were excluded through the relative financial means test criteria applicable to the ERDF financed grant schemes. Moreover, potential applicants could have perceived a better rate of return on their capital on if they invested in PV technology rather than solar water heaters.

Evaluate the feasibility of increasing the market penetration of biodiesel within the transport and industry sectors through pre-mixes of biodiesel as already undertaken in various other EU Member States.

32. During the period 2009 – 2010, various initiatives aimed at reversing the declining trend of biofuel penetration in the Maltese market were undertaken.

33. Most of these initiatives focused on the further development and strengthening of the biofuel legal framework, as discussed above in this Executive Summary. In turn, these developments are seen to enable the further penetration of biofuel within the local market.

34. By 2020, it is envisaged that the renewable energy targets relating to the transport sector will mainly be achieved through the increased uptake of biofuel. However, issues relating to the pricing mechanism for consumers in cases where biofuel is premixed with conventional fuel are yet to be fully resolved. Similarly, the extent of suitability for the local market of bioethanol and bio-ETBE as part substitutes of unleaded petrol is still being studied by the MRA.

The monitoring and enforcement of biofuel producers by the Regulator is to be strengthened.

35. Through the recent changes to the regulatory framework, the MRA is in a better position to obtain information from operators about biofuel related activities. Such information will strengthen the MRA's monitoring and enforcement functions demanded through its regulatory role.

Research studies should also focus on emerging technologies related to the exploitation of renewable energy sources. Such research may, in the long run, serve to provide other renewable energy opportunities in addition to those currently being considered.

36. Government policy dictates that Malta should consider alternative renewable energy technologies, as long as in the long term these will be of benefit to the energy sector and further extend Malta's potential on alternative energy sources.

37. Government is currently evaluating the proposals of projects intended to develop innovative technologies relating to renewable energy as well as carbon capture and storage projects. This call is funded under the NER 300 initiative. The NER300 project preferences are also in conformity with Malta's Energy policy.

38. Government is also conducting preliminary work, related to potential studies, on emerging technologies. Currently, such work has focused on the potential applicability and benefits of wave and geothermal energy. Moreover, further studies are being undertaken to enable the eventual investigations of possibilities on new technologies addressing wind farms in deep seas.

Overall Conclusions

39. This follow-up audit has shown that current initiatives and plans devised by various Governmental entities, intended to further stimulate the use of renewable energy in Malta, appropriately address the recommendations proposed by the NAO in 2010. These RES initiatives, which are ultimately intended to mitigate climate change, are also directed towards ensuring that Malta fulfils its national and EU obligatory renewable energy targets.

40. Despite delays, significant progress was registered in matters relating to renewable energy policy, including the broadening and strengthening of the biofuel operational and legal framework. Additionally, initiatives relating to renewable energy projects are now gathering momentum.

41. Delays registered have resulted in Malta progressing only to one third of its 2010 projected RES targets, as indicated in the NREAP. This is not considered to be detrimental to Malta attaining the EU 2020 targets. The progress registered to date and revised plans indicate that Malta will be in a position to fulfil its EU trajectory targets – the first of which falls in 2012 – and ultimately exceed its obligatory 2020 EU renewable energy targets. This is, however, dependant on the current drive being maintained in order to minimise project implementation delays. Moreover, the attainment of Malta 2020 targets remains critically dependent on the feasibility of major projects and that they exploit renewable energy in accordance with the relative projections.

Chapter 1

Introduction

Chapter 1 – Introduction

1.1 Public Accounts Committee Request

1.1.1 This follow-up performance audit aims to report on the progress registered in the exploitation of renewable energy sources in Malta. This study was undertaken by the National Audit Office (NAO) as requested by the Parliamentary Public Accounts Committee (PAC) during its deliberations of the performance audit report: *Renewable Energy and Energy Efficiency in Malta* which was published in September 2009, hereafter referred to as 'RES Audit Report (2009)'.

1.1.2 In order to be able to consider developments, at least over a 12 month period, the NAO embarked on this follow-up audit in September 2010. Issues and conclusions presented in this follow-up audit reflect information available as at end December 2010, unless otherwise stated.

1.2 Situation as reported upon by the NAO in September 2009

1.2.1 The RES Audit Report (2009) discussed the extent to which Malta was exploiting Renewable Energy Sources (RES) and adopting energy efficient practices. This report also evaluated Malta's progress towards fulfilling its obligations, as a Member State of the European Union (EU), with regards to mandatory renewable energy targets. The report was discussed by the PAC on 28 October and 25 November 2009.

1.2.2 The 2009 report concluded that initiatives undertaken, which were mainly of a start-up nature, led to some encouraging results. However, the report remarked that, at the time, exploitation of renewable energy resources was still minimal. The report concluded that unless policy development and project implementation were stepped up, it would be very difficult for Malta to reach all of its EU renewable energy and energy efficient targets.

1.2.3 The NAO's 2009 report outlined the policy development related initiatives. Various studies were commissioned / undertaken by Government to evaluate the viability of the RES options available to Malta. In 2008, Government published the National Energy Efficiency Action Plan (NEEAP). In April 2009, the National Energy Policy for Malta was revised and presented for public consultation. However, the NAO's 2009 report commented that the national policy drafting process was considered to be overdue since it was initiated following Malta's EU membership, when EU obligations were already applicable. The NAO also reported that at the time Malta still lacked formally approved energy and renewable energy policies.

1.2.4 Moreover, strategic and operational planning related to the various renewable energy and energy efficient initiatives were not always appropriate. The NAO also stated that the monitoring of the implementation of the various projects and measures was not always robust.

1.2.5 As at September 2009, a number of Government entities had already embarked on preliminary work related to the development of the infrastructures required to support the exploitation of renewable energy sources. At the time, the most advanced work in this regard related to the generation of energy from waste and the identification of potential sites for wind energy farms. Through private sector involvement, biofuel was also introduced on the Maltese market. However, in 2008, biofuel sales declined back to 2005 levels.

1.2.6 Government also introduced a number of measures aimed at encouraging 'domestic' and 'industrial' users to exploit renewable energy sources, namely, through solar and wind energy. These schemes sought to increase the utilisation of RES by providing rebates aimed at improving the financial rate of return on the capital outlay made by participants. In its 2009 report, the NAO remarked that the opportunity existed to increase further the market penetration of various RES systems, particularly photovoltaic systems.

1.2.7 Additionally, Government also introduced measures and initiatives aimed at stimulating further energy efficient practices. These measures are aimed at improving the market penetration of energy efficient domestic appliances, the use of Compact Fluorescent Lamps, improvements in the insulation of buildings and to promote energy efficiency. Government also established the Green Leader initiative with the aim of increasing environmental awareness and to act as catalysts for promoting energy efficiency in Government ministries. However, as at end September 2009, the evaluation of the impact of the various energy efficient initiatives being undertaken had not yet commenced.

1.2.8 In its 2009 report, the NAO proposed recommendations aimed at expediting the policy making process as well as the implementation of projects. Moreover, it was recommended that additional measures are aimed at encouraging further the exploitation of renewable energy and encouraging energy efficient practices.

1.3 Focus of the follow-up audit

Audit Objectives

1.3.1 Against this background, the NAO undertook this follow-up audit to examine the progress registered since the 2009 publication. For the purpose of this review, the NAO focused on the following audit objectives from the previous study, namely to:

- evaluate the process adopted in the development of Malta's energy policies.
- determine Malta's progress with regards to the renewable energy programme.

1.3.2 Issues related to encouraging more energy efficiency practices were considered to be beyond the scope of this review. It is to be pointed out that the Malta Resources Authority (MRA) is obliged to report to the EU Commission, by end June 2011, on progress registered by Malta in this regard. In due course, and when more data on the subject matter becomes readily available, the NAO may consider undertaking a performance audit focusing on the feasibility of programmes aimed at improving energy efficiency.

Methodology

1.3.3 This report examined the extent to which the recommendations proposed in the RES Audit Report (2009) have been implemented. This entailed the review of key documentation, such as the draft energy policy and Government's action plans regarding the utilisation of renewable energy. The documentation review enabled the NAO to evaluate progress made against the predetermined targets indicated therein and with Malta's EU obligations. Operational and business plans relating to the implementation of renewable energy projects, where available, were reviewed. This enabled the NAO to gauge the extent of progress registered with regards to the implementation of renewable energy and to assess whether Malta was on track to fulfil its EU obligations.

1.3.4 Data related to Government 'rebate' measures aimed at encouraging the Domestic and Industrial sectors to exploit renewable energy sources was analysed. The data analysis enabled the audit team to evaluate whether the uptake of these measures was in accordance with predetermined targets, to determine the overall contribution of these measures towards Malta's EU renewable energy obligations and to assess whether these measures constituted cost effectiveness.

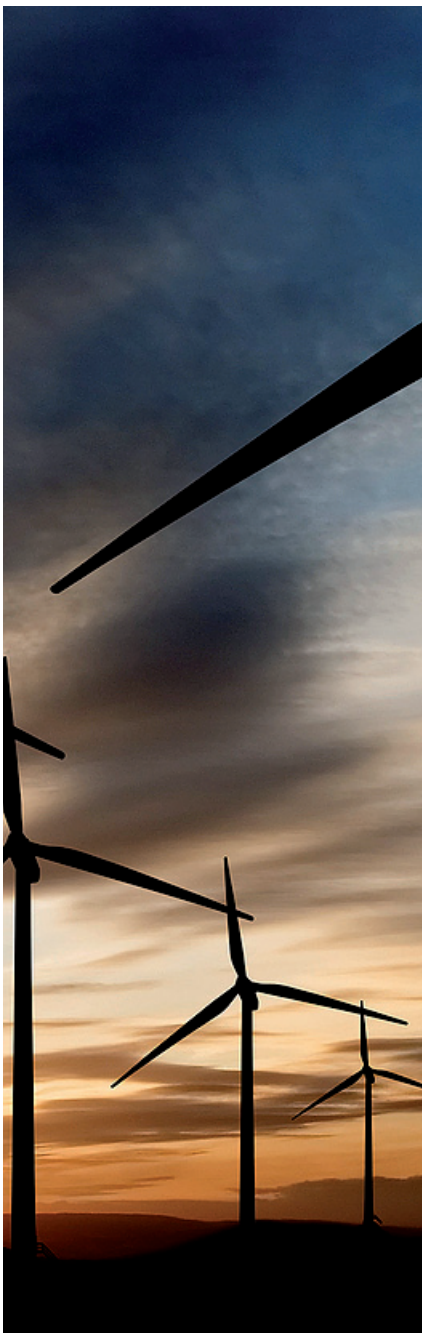
1.3.5 The NAO carried out semi structured interviews with officials at the Ministry for Resources and Rural Affairs (MRRA) and the MRA, as well as with other stakeholders, such as WasteServ Malta Ltd. (WSM). These interviews enabled the audit team to understand better the implications and the complexities of implementing Government's policy objectives. Such interviews also enabled the NAO to assess the relevant management processes involved and the relationships between the key stakeholders. Additionally, the issues arising through the semi-structured interviews were used in conjunction with the review of key documentation and data analysis.

1.4 Structure of the report

1.4.1 Following this introductory Chapter, the report is structured around these key areas:

- Chapter 2 discusses the developments regarding Malta's energy policy framework. The discussion focuses on the status of Malta's energy as well as biofuel policies and the extent to which such policies are supported with the relative strategic and operational plans.
- Chapter 3 evaluates the progress achieved in implementing Malta's renewable energy policies and the relative action plans. This Chapter discusses the progress made with regards to infrastructural developments to enable the generation of energy from wind, waste and solar sources. Developments regarding the market penetration of biofuel are also discussed. Moreover this Chapter assesses the extent to which Malta's efforts to implement its renewable energy policies enable the attainment of the relevant EU targets.

1.4.2 The overall conclusions emanating from this study are included in the Report's Executive Summary.



Chapter 2

The Policy Formulation Process

Chapter 2 – The Policy Formulation Process

2.1 Introduction

2.1.1 The follow-up audit evaluated the developments in energy policy formulation which took place during the follow-up audit period, that is, between April 2009 and December 2010. This follow-up audit evaluated any developments which took place to finalise:

- Improvements to Government's policy-making capability with regard to the energy sector.
- A comprehensive energy policy for Malta, including renewable energy sources.
- A policy on biofuel.
- Strategic and operational plans.

2.1.2 The costs of updating Malta's energy and renewable energy policies have mainly been absorbed by the relevant Governmental entities involved in such initiatives, namely the MRRA and the MRA. Additional expenses incurred in this regard generally relate to supporting studies, such as the Strategic Environmental Assessment (SEA). Information in this regard is indicated in the appropriate sections within this Chapter.

2.1.3 The RES Audit Report (2009) had made certain recommendations regarding the policy formulation process, namely the need for Government to:

- conclude the formulation and adoption of the energy-related policies in a timely manner (Recommendation i).
- update Malta's energy efficiency and renewable energy policies to reflect current circumstances and envisaged future developments (Recommendation i).
- draft the appropriate strategic and operational plans, and to communicate them to all stakeholders (Recommendation ii).

2.1.4 Table 1 provides an overview of the extent to which the above recommendations have been implemented.

2.1.5 A detailed discussion of initiatives undertaken in relation to the NAO's recommendations to strengthen and update the Government's renewable energy policy drafting mechanisms is provided in the ensuing sections of this Chapter.

2.2 Plans to improve policy drafting capability within the Malta Resources Authority are at approval stage

2.2.1 The MRRA has ownership of the energy policy and the responsibility to make policy in this field. However, in order to optimise the utilisation of available expertise in Malta, Government assigned the energy policy-drafting role to the MRA. Moreover, such an arrangement facilitates the process for the MRA officials involved in energy policy to keep abreast of development in this field.

2.2.2 However, requiring MRA to draft policy on behalf of the MRRA, in addition to its regulatory role, currently poses a logistical difficulty due to the Authority's limited administrative capacity. Throughout the drafting of the energy policy seven MRA officials have given their contribution at various stages (MRA's organisational chart as at November 2010 is shown at Appendix 1). The MRA contends that its staff complement is deemed to be insufficient to adequately cope with policy drafting, regulation, and to act as the contact entity on energy matters at EU level.

2.2.3 The MRA's limited workforce is additionally stretched as it has to deal with an extensive portfolio. In 2010 the MRA was also assigned the regulatory role in

Table 1: Renewable energy policy developments between 2009 and 2010

NAO recommendations (2009)	Extent of implementation	Supporting observations
Efforts are to be sustained to ensure that Malta's energy efficiency and renewable energy polices are updated to reflect current circumstances and envisage future developments.	Plans to improve policy drafting capability within the Malta Resources Authority are at approval stage.	Plans to restructure the MRA and augment its human resources have been referred to MFEI for clearance.
	Renewable energy has been integrated in the on-going development to Malta's energy policy.	The Proposal for an Energy Policy for Malta – 2009 (PEPM) was updated to reflect changes in EU legislation.
		Energy policy to be formally adopted on conclusion of its strategic environmental assessment.
	Renewable energy policy developments in the transport sector include the increased use of biofuel and electric cars.	Further initiatives to strengthen the regulatory framework and increase the use of biofuel are expected to become fully effective in the coming weeks.
		A draft strategy to increase the uptake of electric cars is expected to be finalised shortly.
The appropriate strategic and operational plans to enable the implementation of the relevant policies are to be drafted and communicated to all stakeholders.	The formulation of energy related strategic plans was concluded on time.	The National Renewable Energy Action Plan was finalised on schedule.
		An updated National Energy Efficiency Action Plan, required by the EU Commission in 2011 is currently being drafted.
		Operational plans regarding wind farms and biomass related projects have been developed.

climate change, an area related to energy policy. MRA is also spearheading the implementation process on climate change.

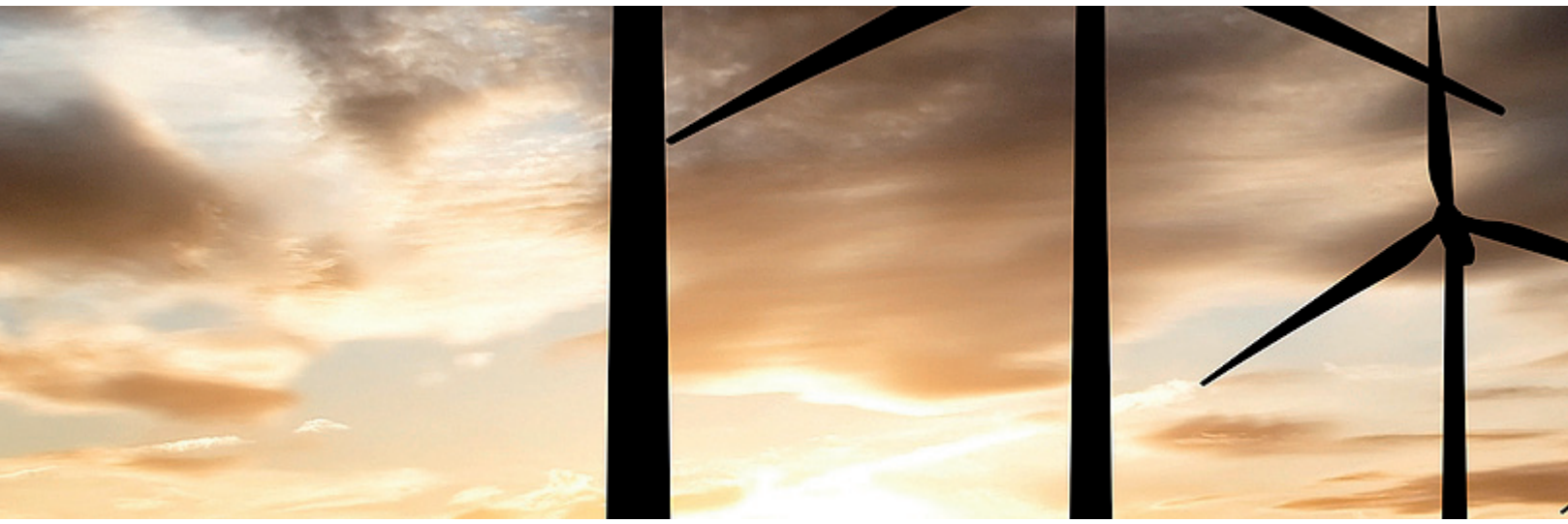
2.2.4 The MRA's policy drafting role may potentially encroach on its regulatory function. The MRA seeks to minimise the effects of such a situation by assigning different officials to each role, though this is not always possible. However, the MRRA[1] contends that:

- governmental policies are issued for consultation so that potential conflicts of interest that may arise are in the public domain prior to the adoption of the document.
- governmental policy is referred to Cabinet for approval before being formally adopted, with such policy process mitigating further the conflict of interest.
- a unit responsible for policy formulation within the MRRA, spearheaded by the Ministry's Permanent Secretary, was established.
- the Ministry has teamed up with the Institute of Sustainable Energy at the University of Malta to assist with the necessary policy/technological assessments, where necessary, independently from the MRA.
- the MRA may opt to source out its input policy advice in case it is overwhelmed with work.
- the MRA is an essential stakeholder in the whole process, so it is imperative that it dedicates time on policy formulation over and above its regulatory function.

Plans to restructure the MRA and augment its human resources have been referred to MFEI for clearance

2.2.5 The MRA has embarked on a restructuring exercise. The proposed structure for these units has been approved by the MRRA. The Financial Management and Monitoring Unit (FMMU), within the Ministry of Finance, the Economy and Investment (MFEI), has agreed with the structural changes and the proposal is currently at MFEI for clearance. After obtaining this approval, the proposal will be presented to the MRA Board.

[1] MRRA's organisational chart is shown at Appendix 2.



2.2.6 The restructuring is anticipated to initiate in early 2011. The envisaged increase in the MRA's administrative capacity should enable the Authority to better carry out its diverse functions, namely, policy drafting and regulation.

2.3 Renewable energy has been integrated in the on-going development to Malta's energy policy

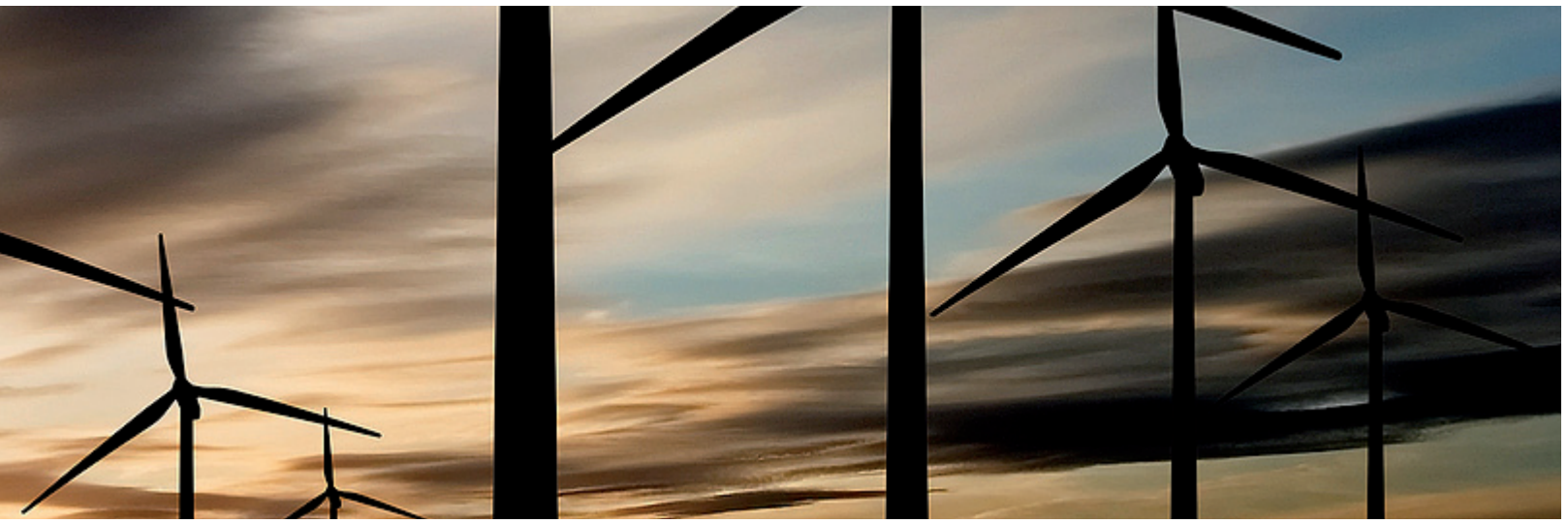
2.3.1 At the time that the RES Audit Report (2009) was published, Malta had two energy policy related documents, namely, the draft Renewable Energy Policy for Malta (2006) and Proposal for an Energy Policy for Malta (2006). During the follow-up audit period, the draft Renewable Energy Policy for Malta (DREPM) became superseded when it was absorbed into the revised Proposal for an Energy Policy for Malta (PEPM) launched in April 2009 (discussed in the next paragraphs).

2.3.2 When the RES Audit Report (2009) was published, the Proposal for an Energy Policy for Malta (2006) was

Table 2: Projected timeline and actual milestones achieved to finalise the energy policy for Malta from April 2009 onwards

Energy policy formulation milestones	Revised target completion date	Status of milestone
The updated energy policy proposal for Malta is published for public consultation	n/a	Completed in April 2009 (At this date the Directive 2009/28/EC came into force)
Strategic Environmental Assessment process for the Energy Policy Proposal initiated	September 2009	Started on September 2009
MRA awarded tender to a private consultancy to carry out the SEA	November 2009	Awarded on November 2009
SEA Scoping Report finalised	n/a	Finalised in June 2010
Draft SEA Environmental Report to be submitted to SEA Audit Team	November 2010	Submitted in November 2010
SEA Competent Authority and identified stakeholders submit comments to MRA on the draft Environment Report	April 2011	Expected to be completed by April 2011
Preparation of the revised Environmental Report following comments from Competent Authority	May 2011	Envisaged to be submitted in May 2011
Conclude the SEA of the Energy Policy Proposal by publishing the finalised Environmental Report and finalised Energy Policy	August 2011	Expected conclusion in August 2011
Obtain legislative approval of finalised Energy Policy for Malta	September 2011	Envisaged to be finalised in September 2011

Source: MRA.



being revised by Government. During the follow-up audit period two major milestones were undertaken with regard to this policy, namely, the revision of the energy policy proposal and the commencement of the SEA process (Table 2 refers).

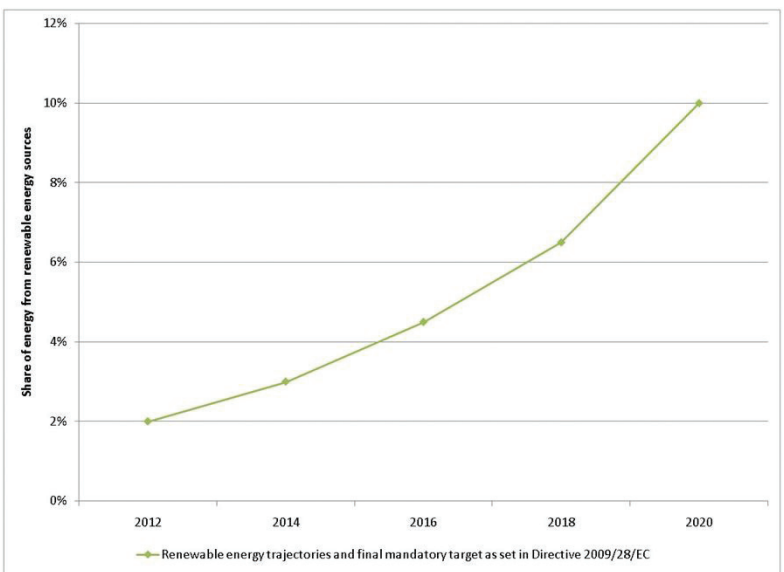
The Proposal for an Energy Policy for Malta - 2009 (PEPM) was updated to reflect changes in EU legislation

2.3.3 The first milestone in the policy development was the completion of the revised PEPM launched in April 2009. The revision of the energy policy proposal reflected changes in related EU legislation, particularly Directive 2009/28/EC.

2.3.4 The energy policy updates take into account the EU mandatory targets for Malta. These targets demand that Malta attains a 10 per cent of energy share of its total energy consumption from renewable sources and at least 10 per cent of the final consumption of energy in transport (such as through the use of biofuel). It also includes the renewable energy performance trajectories that Malta is to achieve (Figure 1 refers).

2.3.5 The updated PEPM also adds various measures relating to different policy areas, particularly with regard to energy efficiency and measures aimed at increasing the use of various renewable energy sources.[2] The update also contains a new policy area titled 'Reducing Emissions from the Energy Sector' which proposes various measures

Figure 1: Malta's renewable energy biannual trajectories and mandatory 2020 target as a share of final energy consumption, included in the revised Energy Policy Proposal



[2] The revised energy proposal does not address biofuel as, since April 2009, these are being addressed in a separate policy (discussed in Paragraphs 2.4.2 to 2.4.14).

aimed at reducing greenhouse gas emissions and other air pollutants arising from fossil fuel combustion. Another new sub-policy titled 'Electricity Tariff Policy' sets out the tenets upon which electricity tariffs will be based.

Energy policy to be formally adopted on conclusion of its strategic environmental assessment

2.3.6 The second milestone regarding the development of Malta's energy policy undertaken in this follow-up audit period was the commencement of the Strategic Environmental Assessment (SEA) of the revised Energy Policy Proposal. This is required under Legal Notice 418/2005 and the SEA Directive 2001/42/EC.

2.3.7 The SEA process aims to evaluate the effects of the proposed policy to ensure that environmental and health considerations are integrated in the policy with a view to promote sustainable development. A public tender was issued by the MRA in September 2009 for the engagement of a consultant to carry out the SEA. The tender was awarded at a price of €32,048.

2.3.8 The first part of this assessment is the formulation of a Scoping Report which sets out the terms of reference of the SEA. The second part comprises the formulation of an Environmental Report which describes the alternatives, data and documentation considered in drafting the energy policy proposal. It identifies and evaluates the likely significant environmental effects of implementing the proposed policy. The Environmental Report also describes any possible mitigation measures and envisaged monitoring measures.

2.3.9 In September 2009, a consultant was engaged to carry out the SEA on the energy proposal for Malta. At the time of writing, consultations with the MRA on the Environment Report for the SEA was underway. Originally, the SEA was scheduled to be concluded in November 2010. However, according to MRA, this process was delayed due to the need to integrate additional measures related to the NREAP. Following the recent appointment of the SEA audit team, the SEA process concerning the energy policy is now expected to be concluded by August 2011. Upon conclusion of the SEA process, Government will be in a position to consider formally endorsing Malta's energy policy, which also relates to renewable energy.

2.4 Renewable energy policy developments in the transport sector include the increased use of biofuel and electric cars

2.4.1 During the period under review the main renewable energy policy developments in the transport sector relate to increase the use and regulation of biofuel and the use of electric cars. These two initiatives are seen to be the major contributory elements which will enable Malta to attain its obligations under Directive 2009/28/EC to derive at least 10 per cent of energy used in transport from renewable energy sources by 2020.

Further initiatives to strengthen the regulatory framework and increase the use of biofuel are expected to become fully effective shortly

2.4.2 Currently, Malta's policy regarding the use of biofuel in the transport sector is being finalised. However, despite the various initiatives currently being undertaken, a milestone plan to support this process was not documented. This draft policy has been subjected through the public consultation process in June 2010.

2.4.3 This document, in conjunction with Malta's energy policy aims to reduce emissions resulting from the use of conventional fuels within the transport sector. Additionally, the biofuel policy seeks to be coherent with other national strategies, such as those related to Climate Change, Waste Management, Energy Efficiency and the relative EU obligations.

2.4.4 One of the mechanisms adopted in this regard is the increased use of alternative fuels, such as biofuel. In this respect, the biofuel legal framework has been further developed and strengthened. Two legal notices became effective in 2010, whilst another, which is currently in draft form, is expected to be tabled in Parliament shortly.

All biofuel used in Malta must emanate from sustainable sources

2.4.5 The production of biofuel is associated with various environmental externalities. In line with EU Directive 2009/28/EC, the provisions of LN 553/2010 uphold the principle of sustainability since it defines the criteria which must be observed when producing or importing biofuel in Malta.

2.4.6 The biofuel sustainability criteria demanded by LN 553/2010 is seen to further strengthen the local legal framework concerning biofuel. Moreover, the sustainability concept demanded by this Legal Notice is of fundamental importance for the introduction of measures intended to stimulate further the use of biofuel in Malta.

Minimum target of lifecycle greenhouse gas emissions from petroleum fuels has been set

2.4.7 The use of biofuel is considered as a means to mitigate climate change since it contributes towards the reduction of greenhouse gas emissions. Legal Notice 556/2010 establishes standards regarding the lifecycle greenhouse gas emissions from petroleum-based fuels. This Legal Notice stipulates that suppliers of conventional fuel must, by 2020, reduce gradually lifecycle greenhouse

gas emissions per unit of energy from fuel and energy supplied on the Maltese market. These legal provisions became effective in December 2010.

2.4.8 The objectives of LN 556/2010 can be attained through the substitution of a proportion of petroleum fuel with biofuel. This implies that suppliers, also in accordance with European and Malta Standards Authority regulations, can limit the amount of biodiesel which can be placed in petroleum diesel to seven per cent by volume. Similarly, suppliers can substitute petrol by up to 10 per cent and 22 per cent by volume with bioethanol and bio-ETBE, respectively.

2.4.9 However, a legal notice regulating and imposing the amount of biofuel used to substitute conventional fuels over a predefined period is still in draft form (see paragraph 2.4.10 to 2.4.14). Consequently, the amount of biofuel content in conventional fuel may be considered not to be fully regulated yet. The ensuing potential consequences of this situation relate to the extent of suitability of the current fleet of Maltese vehicles to operate within the higher mixes of bio-element in the fuel used.

Petroleum placed on the Maltese market will contain a prescribed amount of biofuel

2.4.10 A significant increase in the use of RES within the transport sector will be attained by obliging importers and wholesalers to include an amount of biofuel content in any petroleum product retailed locally.

2.4.11 For this purpose, a legal notice is being drafted to amend the provisions stipulated by the Petroleum for the Inland (Wholesale) Fuel market regulations, 2007 (LN 278/2007). These amendments aim to ascertain that the proportion of the biofuel substituting conventional petroleum products will increase over a 10 year period to enable Malta to attain the relative national trajectory and the EU's 2020 targets.

2.4.12 The NREAP envisaged that the legal notice enabling the 'substitution' of petroleum fuel with biofuel was to be published in 2010. However, this date has now been revised to 2011. The MRA attributed this delay to issues relating to provisions concerning the biofuel and petroleum standards, sustainability criteria and the imposition of penalties for defaulters.

2.4.13 The ensuing environmental benefits derived when this draft legal notice becomes effective are acknowledged. Moreover, this measure is expected to make a significant contribution towards the fulfillment of Malta's RES target in the transport sector. On becoming effective, the draft 'biofuel substitution' regulations will also clarify the extent to which biofuel can be premixed with petroleum fuel to satisfy the provisions of LN 556/2010. Such clarification will result since the draft 'biofuel substitution' regulations will define a predetermined timeframe over which such premixing will be permissible.

2.4.14 However, a pricing mechanism for consumers in cases where biofuel is premixed with conventional fuels has not yet been devised. The MRA has studied possible scenarios related to full, partial or no excise exemption of biofuel. To date, a decision in this regard and the extent of its applicability has not been made.

A draft strategy to increase the uptake of electric cars is expected to be finalised shortly

2.4.15 The increased use of electric cars will also contribute towards the fulfilment of Malta's EU renewable energy targets. For this purpose, in July 2010, Government appointed a Committee to draft the relative strategy. The Committee comprises representatives from various Governmental entities, namely Office of the Prime Minister (OPM), MFEI, MRA, MRRA, Transport Malta (TM) and the University of Malta.

2.4.16 Malta's draft strategy regarding the use of electric cars will outline Government's intentions relating to the provision of the necessary recharging infrastructure and the appropriate licensing and fiscal mechanisms. In accordance with Budget Speech 2011, Government aims to introduce 5,000 electric cars until 2020 as part of the national plan to reduce emissions and to complement in the potential to achieve the transport renewable energy target.

2.4.17 The Budget for 2011 has allocated funds specifically aimed at supporting the introduction of electric cars. Issues regarding the implementation of these measures are still in the initial stage.

2.5 The formulation of energy related strategic plans was concluded on time

2.5.1 The MRA stated that, at a national level, the strategic plans supporting the implementation of Malta's renewable energy policy are deemed to be the NREAP and NEEAP.

2.5.2 The NREAP, as required by Article 4(1) of Directive 2009/28/EC, sets out Malta's national targets for the share of energy from renewable energy sources consumed in transport, electricity and heating and cooling in 2020. Additionally, this action plan also devises a number of renewable energy measures through which these targets are expected to be attained.

2.5.3 The NEEAP fulfils the provisions of Article 14(2) of Directive 2006/32/EC by identifying cost-

Table 3: Projected timeline and actual milestones achieved to finalise the NREAP for Malta from April 2009 onwards

Milestones regarding the National Renewable Energy Action Plan	Completion target date set by Government	Status of milestone
Finalisation of Forecast Document and its submission to the EU Commission	End 2009 as set in EU Directive 2009/28/EC	Submitted to the EU Commission in January 2010
Public consultation of Draft NREAP	n/a	Undertaken in 2010
Finalisation of NREAP and its submission to the EU Commission	July 2010	July 2010

effective measures that are to be implemented within the various economic sectors. This enables Malta to attain an indicative target of nine per cent of the average annual energy consumption between 2001 and 2006 by 2016.

The National Renewable Energy Action Plan was finalised on schedule

2.5.4 At the time of the RES Audit Report (2009) publication, the National Renewable Energy Action Plan (NREAP) was still being drafted. The NAO evaluation found that the outstanding actions to finalise this Action Plan had been taken on schedule during the follow-up audit period.

2.5.5 As a first step towards concluding this Action Plan, Government finalised the Forecast Document by end 2009 and subsequently submitted to the EU Commission. The Forecast Document set out how Malta plans to reach its forecasted annual renewable energy generation until 2020. These plans formed the basis for the draft NREAP, which was subjected to a consultation period in June 2010.

2.5.6 In addition to the measures addressed in the Forecast Document, the NREAP included further measures formulated to ensure that the renewable energy target for the transport sector will be achieved by 2020. Government finalised the NREAP in July 2010. In this way, the policy formulation process with regard to the NREAP was concluded. Table 3 refers.

An updated National Energy Efficiency Action Plan, required by the EU Commission in 2011 is currently being drafted

2.5.7 The formulation of the National Energy Efficiency Action Plan (NEEAP) had been finalised in November 2008. Thus during this follow-up audit period the NEEAP was in its implementation phase (which is discussed in Chapter 3). However, in view of ongoing changes in the energy sector, at the time of writing the MRA was also in the process of updating the NEEAP to reflect such changes. The updated NEEAP should be submitted to the EU Commission in June 2011. Table 4 refers.

Operational plans regarding wind farms and biomass related projects have been developed

2.5.8 The responsibility for formulating and implementing RES projects vests with various Governmental entities, namely, MRRA, WasteServ Malta Ltd. (WSM), Water Services Corporation (WSC) and TM. The MRRA, however, is the ministry which owns the energy policy and is spearheading the implementation of energy policy.

2.5.9 Plans related to the development of the proposed onshore and offshore wind farms sites have been developed. These plans indicate that wind farm facilities are expected to generate 255 GWh or 39.7 per cent of Malta's renewable energy target by 2020. Additionally, operational plans

Table 4: Projected timeline and actual milestones achieved to finalise the NEEAP for Malta from April 2009 onwards

Milestones regarding the National Energy Efficiency Action Plan	Timeline set by Government	Status of milestone
Carry out updates and revisions so as to submit second NEEAP to EU Commission	30 June 2011	Underway

related to waste to energy generation, the other major RES contributing to Malta's RES targets, indicate that by 2020 approximately 156 GWh will be generated. This amount of energy is 25 per cent of Malta's renewable energy targets.

2.6 Conclusion

2.6.1 This follow-up audit sought to assess the extent to which the NAO's recommendations, made in 2009, relating to the development of Malta's renewable energy policy have been implemented. This Chapter has shown that substantial progress in this area has been registered.

2.6.2 The energy policy development process, which also embraces renewable energy sources, has gathered significant momentum. Work related to policies on the exploitation of renewable energy sources within the transport sector has also commenced. Generally, operational plans have also been developed to support the implementation of policy provisions related to the generation of energy from renewable sources.

2.6.3 Plans were drafted to restructure and augment human resources at the MRA. Such plans have been referred to Ministry of Finance, the Economy and Investment (MFEI) for clearance. It is envisaged that the MRA's organisation structure will include specific units for policy drafting and regulation. This should enable the Authority to better carry out its diverse functions.

2.6.4 Following scheduling revisions and the recent appointment of the SEA audit team, this process is now expected to be concluded in August 2011. Upon conclusion of this assessment, envisaged to be finalised by August 2011, Government may consider to formally endorse Malta's energy policy.

Chapter 3

Exploitation of Renewable Energy in Malta

Chapter 3 – Exploitation of Renewable Energy in Malta

3.1 Introduction

3.1.1 The Proposal for Energy Policy for Malta (2009) sets out how Malta will seek to achieve its renewable energy biannual trajectories and 2020 mandatory targets. These targets will be mainly attained by generating energy from wind, solar and waste sources, as well as by increasing the use of biofuel.

3.1.2 The specific measures to be implemented and targets to be achieved are set out in the National Renewable Energy Action Plan (NREAP) that Malta submitted to the EU Commission in July 2010. Malta's EU mandatory renewable energy target for 2020 amounts to 10 per cent of final energy consumption. In addition, 10 per cent of the energy within the transport sector must emanate from renewable sources. This implies that 642 GWh of energy consumed in Malta must be derived from renewable sources, namely wind, biomass, solar and biofuel. The main entities involved in these projects are the MRRA, WasteServ Malta Ltd. (WSM) and the Water Services Corporation (WSC), and the Malta Resources Authority (MRA), respectively.

3.1.3 This follow-up audit evaluated the implementation progress registered particularly with regard to the targets and measures set out in Malta's NREAP. It also gauged the extent that the NAO recommendations on the exploitation of renewable energy sources were adopted. The progress registered in implementation was undertaken by reviewing the relevant measures implemented by the various Government entities and ministries involved.

3.1.4 The RES Audit Report (2009) has made the following implementation-related recommendations:

i. In view of the continuous technological advancements, sustained assessments of the effectiveness and environmental impacts of large-scale wind energy farms are to be made (Recommendation iii).

ii. Efforts to implement waste to energy related projects should be intensified (Recommendation v).

iii. Financial incentives and other forms of encouraging consumer investment in renewable energy technologies (such as photovoltaic systems) are to be revised and inclined towards technologies necessitating a relatively high initial capital outlay (Recommendation x).

iv. Feasibility of increasing the market penetration of biofuel within the transport sector, namely through premixes of biodiesel as already undertaken in various other EU Member States should be evaluated (Recommendation viii).

v. The monitoring and enforcement of biofuel producers by the Regulator is to be strengthened (Recommendations vi and vii).

vi. Research studies should also focus on emerging technologies related to the exploitation of renewable energy sources. Such research may, in the long run, serve to provide other renewable energy opportunities in addition to those currently being considered (Recommendation iv).

3.1.5 Table 5 provides an overview of the extent to which the above recommendations have been implemented.

Table 5: Progress achieved in the implementation of renewable energy projects and measures between April 2009 and December 2010

NAO recommendations (2009)	Extent of implementation	Supporting observations
In view of the continuous technological advancements, sustained assessments of the effectiveness and environmental impacts of large-scale wind energy farms are to be made (Recommendation iii).	Measures undertaken to generate energy from wind are generally progressing according to the NREAP.	Appropriate Assessments and Environmental Impact Assessments regarding onshore and offshore wind farms are proceeding according to schedule.
		Site Specific Wind Measurement studies are expected to be completed as scheduled.
		Guidelines for the installation of micro wind turbines have been issued by MEPA.
Efforts to implement waste to energy related projects should be intensified (Recommendation v).	Despite delays, projections show that current initiatives are directed towards the realisation of future biomass targets.	Landfill gas to energy projects expected to start contributing to RES targets in 2012.
		Minor delays experienced in MBT projects are not expected to hinder the attainment of Malta's RES targets if current momentum is maintained.
		Plans to generate energy through RDF are at the initial phase.
		Electricity generation from sewage sludge project at Ta' Barkat is proceeding according to the NREAP.
Financial incentives and other forms of encouraging consumer investment in renewable energy technologies (such as photovoltaic) are to be revised and inclined towards technologies necessitating a relatively high initial capital outlay (Recommendation x).	Current initiatives to exploit solar energy resulted in attaining 56 per cent of the national solar energy target for 2010.	Higher feed-in tariff for the domestic and industrial sector encouraged further the uptake of photovoltaic systems.
		The installation of PV technology increased substantially through improved financial incentives.
		The NREAP target for 2010 regarding the uptake of solar water heaters was not attained.
Evaluate the feasibility of increasing the market penetration of biodiesel within the transport and industry sectors through pre-mixes of biodiesel as already undertaken in various other EU Member States (Recommendation viii).	Initiatives aimed at reversing the declining trend of biofuel penetration in the Maltese market, through premixing with other petroleum products, will be implemented shortly.	Up to 2009, biofuel sales continued to decline.
		The further development of the biofuel legal framework is also intended to increase the market penetration of biofuel.
The monitoring and enforcement of biofuel producers by the Regulator is to be strengthened (Recommendations vi and vii).	The recent and envisaged amendments to the biofuel legal framework further strengthen the regulatory function.	The regulator is in a better position to obtain information from operators about biofuel related activities.
Research studies should also focus on emerging technologies related to the exploitation of renewable energy sources. Such research may, in the long run, serve to provide other renewable energy opportunities in addition to those currently being considered (Recommendation iv).	Studies on emerging renewable energy technologies are being undertaken.	Various studies on emerging technologies are in their preliminary stages.

3.1.6 A detailed discussion of initiatives undertaken in relation to the NAO's recommendations to strengthen and update the Government's renewable energy policy drafting mechanisms is provided in the ensuing sections of this Chapter.

3.1.7 Through the initiatives outlined in Table 5, the exploitation of renewable energy in Malta through wind, solar, biomass and biofuel amounted to 28.5 GWh. This implies that these initiatives contributed to about 32 per cent of Malta's 2010 trajectory target indicated in the NREAP. The utilisation of biofuel contributed to the equivalent of 6.8 GWh of renewable energy within the transport sector, which amounts to about 20 per cent of Malta's 2010 trajectory target indicated in the NREAP.

3.1.8 The foregoing suggests that Malta's 2010 trajectory targets indicated in the NREAP were not attained. Table 6 refers.

3.1.9 Despite the delays, which hindered further progress from being registered in the exploitation of renewable energy, the MRA projects that Malta will be in a position to attain the trajectory and final obligatory EU energy targets.

3.2 Measures undertaken to generate energy from wind are generally progressing according to the NREAP

3.2.1 The NREAP envisages that, by 2017, wind energy generation in Malta would amount to 255 GWh. This amount of energy generation represents approximately 40 per cent of Malta's mandatory EU renewable energy target. It is planned that wind energy will mainly be generated through two onshore and one offshore wind farms. Additionally, the amount of wind energy expected to be generated may marginally increase through the use of micro and medium wind systems. The contribution of the latter wind energy systems is allocated marginal consideration by the NREAP.

3.2.2 However, it is to be noted that the exploitation of wind energy in Malta is still subject to the following major risks:

- The relative permits not being granted due to environmental externalities caused by the wind farm projects.

Table 6: Exploitation of renewable energy as at end December 2010

Renewable energy sources	NREAP targets (GWh)		Actual energy generated as at end 2010 (GWh)
	2010	2020	
Wind	0.01	254.69	Marginal
Solar	35.50	74.76	19.87
Biomass	20.43	155.48	1.80
Biofuel	34.66	157.24	6.83
Total	**90.60**	**642.17**	**28.50**

Note: The actual energy generated within the transport sector is as at end December 2009.

- The projects not being financially viable.
- The lack of interest in the projects by potential investors.

3.2.3 Currently, Government is undertaking environmental and planning studies as well as Site Specific Wind Measurment studies for the three sites identified to house the wind farm projects. These studies are not only intended to satisfy legal requirements but they also contribute towards identifying and mitigating the above mentioned risks. The NREAP highlights the importance of these studies, by indicating them as major milestones to be achieved during the period 2009 – 2012. This follow-up audit has indicated that generally, during 2010, progress relating to achieving these targets has been as scheduled in the NREAP. The discussion below illustrates further the progress in this regard.

Appropriate Assessments and Environmental Impact Assessments regarding onshore and offshore wind farms are proceeding according to schedule

3.2.4 The NREAP states that Appropriate Assessments (AA) and Environmental Impact Assessments (EIA) regarding the potential two onshore (Ħal-Far and Wied Rini) and the offshore (Sikka l-Bajda) wind farms be undertaken between 2009 and 2012. The costs of these studies amounted to €541,510 (exc. VAT). Table 7 refers.

3.2.5 The main phases relating to these mandatory assessments entailed the issue of the relevant tenders, the award of the relative contracts and the undertaking of the assessments.

3.2.6 The AAs and EIAs relating to the Sikka l-Bajda and Wied Rini are progressing as per schedule. However, the AA concerning the Ħal-Far site is envisaged to be completed with a four month delay, which ensued following the need to undertake further studies on the site's suitability. The MRRA contends that this delay is accommodated through the contingencies accounted for in the planning of the project and consequently will be of immaterial significance to the overall project implementation schedule.

Site Specific Wind Measurement studies are expected to be completed as scheduled

3.2.7 Site Specific Wind Measurement studies at the three major wind farm sites are also currently being undertaken to ascertain the feasibility of the proposed wind

Table 7: Costs of environmental and planning studies for the proposed wind farms

	Total cost of environmental and planning studies (exc. VAT)
Sikka l-Bajda	€295,000
Ħal-Far	€86,510
Wied Rini	€160,000
Total	**€541,510**

Source: MRRA.

farms. The NREAP envisaged that the Site Specific Wind Measurement studies were to be undertaken during the period 2009 – 2011.

3.2.8 The most critical of these studies, in terms of project materiality and output, relates to the Sikka l-Bajda site since the project is expected to generate 216 GWh of electrical energy. This study, which is being carried out at l-Aħrax tal-Mellieħa, entailed that the wind potential be determined to enable estimates of the annual energy generation. The costs of the two-year wind measuring campaign at l-Aħrax tal-Mellieħa are estimated to be around €158,000, €29,800 of which are attributed to the wind reporting requirements.

3.2.9 The Sikka l-Bajda wind measurement study commenced in November 2009. Following the collation of data over a period of one year, a report was published in February 2011. This study confirmed that wind speeds at Sikka l-Bajda are sufficient for the development of a wind farm in this area.

3.2.10 Similar studies are being undertaken with regards the Ħal-Far and Wied Rini sites by the Institute for Sustainable Energy (ISE) pertaining to the University of Malta. An agreement between the MRRA and the University of Malta on the Cooperation in the Field of Sustainable Energy through the ISE entered into effect on 1 May 2010. Wind studies form part of this cooperation. The data collation process at Wied Rini started on January 2010, while that at Ħal-Far started in May 2010. So far the costs of data collection at these sites amounted to €36,711 (excluding VAT).

3.2.11 The Ħal-Far study encountered minor delays since the wind mast used to collate data had to be relocated. Reports regarding Ħal-Far and Wied Rini sites are expected to be submitted by August and April 2011, respectively.

Guidelines for the installation of micro wind turbines have been issued by MEPA

3.2.12 In a move to promote renewable energy and find alternative ways for cleaner resources of energy production, the Malta Environment and Planning Authority (MEPA) Board has approved new planning guidance for micro wind turbines, with an energy generating capacity of up to 20kW.

3.2.13 The new guidelines seek to address the potential impact that the turbines may have on the surrounding environment as well as other possible causes of nuisance to surrounding receptors. The guidelines look favourably upon the installation of micro wind turbines in industrial areas, on the roofs of large buildings or within the curtilage of large buildings surrounded by large grounds situated in Outside Development Zone areas. However, the policy adopts a more conservative approach to the installation of micro wind turbines in urban areas, particularly due to the lack of information on potential visual and auditory impacts.

3.2.14 Larger wind turbines shall be assessed within government's proposal for An Energy Policy for Malta (2009), other supporting documents published by the MRA, and all relevant studies necessary to inform decisions on any future applications for such development.

3.2.15 It is to be noted that micro wind turbines installed on domestic premises may qualify for a grant of 25 per cent on the purchase price of micro wind systems (with a maximum generation capacity of 3.7kW) and subject to a maximum capping of €232.94. However, the uptake of this rebate scheme has to date been marginal.

3.3 Despite delays, projections show that current initiatives are directed towards the realisation of future biomass targets

3.3.1 The NREAP envisages that the waste to energy component for Malta's mandatory 2020 renewable energy targets will amount to 156 GWh. Consequently, the projected conversion of biomass to electricity will amount to around 25 per cent of Malta's EU final renewable energy target. It is to be noted that recently revised figures by WSM suggest that Malta may potentially achieve a higher energy generation through the treatment of waste.

3.3.2 Malta's waste strategy (A Solid Waste Management Strategy for the Maltese Islands) also considers waste to energy projects as a critical element of a sustainable waste management strategy. WSM and the WSC are the Government entities responsible for the implementation of waste to energy projects. Table 8 refers.

Table 8: The contribution of waste to energy projects towards Malta's RES targets in 2020

Government entity implementing the project	Biomass projects	Total contribution in 2020 (GWh)	Project's share of biomass energy to be generated by 2020 (%)
WasteServ Malta Ltd.	Landfill gases	1.1	0.7
	St. Antnin MBT plant	27.5	17.0
	North MBT plant	29.0	17.9
	Gozo MBT plant	4.5	2.8
	Refuse Derived Fuel	84.0	51.7
Water Services Corporation	Sewage Sludge	16.0	9.9

Note: Figures quoted herein reflect the latest updates on waste to energy targets as indicated by WasteServ Malta Ltd. Energy generated by the St. Antnin MBT is envisaged to be 27.5 GWh per year. This amounts to 9.9 GWh more than previous 2020 projections indicated in the NREAP.

3.3.3 Two of the waste to energy projects, namely the Mechanical Biological Treatment (MBT) plants and landfill projects, have encountered implementation delays during the period 2009 – 2010. Nevertheless, WSM contends that the current status of these projects provide a sound indication that waste to energy targets noted in the NREAP will generally be met. The current status of these projects is presented in Table 9.

3.3.4 The salient points relating to the various projects referred to in Table 9 are discussed in Paragraphs 3.3.5 to 3.3.19.

Landfill gas to energy projects expected to start contributing to RES targets in 2012

3.3.5 The NREAP envisaged that by 2010, about 1.1 GWh of biomass energy would be generated through landfill gases. By the date indicated, this target was exceeded since 1.8 GWh of energy through landfill gases was generated from the Ta' Zwejra and Magħtab landfill.

3.3.6 The Ta' Zwejra and Għallis sites are expected to be fully operational by the first and fourth quarter of 2011, respectively. WSM estimates that the additional costs to recover further energy from the landfills that is, the cost

Table 9: Progress registered in waste to energy projects between 2009 and 2010

Implementation milestones regarding energy recovery from waste	Target completion date	Status of milestone	Cost incurred on milestone
Energy recovered through landfill gas (Magħtab, Ta' Żwejra and Għallis)	2011	Project delayed by six months. Currently in execution phase.	€0.97m[3]
Sant'Antnin MBT	1st quarter of 2010	Delays experienced. Currently in commissioning phase. Full operation by 2011.	€1.50m[4]
Malta North MBT	2013	Proceeding as per schedule. Currently in planning and design phase.	Estimated at €3.79m[5]
Gozo MBT	2013	Proceeding as per schedule. Currently in planning and design phase.	N/A
Refuse Derived Fuel	2014	Currently in the Project Description Statement phase.	€108m
Energy generation from sewage sludge (Ta' Barkat)	2011	Proceeding as per schedule.	€5.09m

Source: WSM and WSC.

[3] This figure does not include the cost for gas extraction.

[4] This figure does not include the cost for producing the gas through the treatment of organic waste by means of anaerobic design.

[5] This estimate does not include the cost for producing the gas through the treatment of organic waste and manure by means of anaerobic digestion.

relating to the installation of converting landfill gases to energy lies in the range of €0.97 million.

3.3.7 The Ta' Zwejra engineered landfill is currently undergoing additional gas extraction trials to monitor the potential quantity and quality of gas. WSM contends that these tests are proceeding as anticipated and the plant will be commissioned by as scheduled.

3.3.8 The preparation of the gas field at the Għallis site is expected to be complete by late 2011. Such a target adheres to WSM's project plans.

Minor delays experienced in MBT projects are not expected to hinder the attainment of Malta's RES targets if current momentum is maintained.

3.3.9 The Mechanical Biological Treatment (MBT) plants are envisaged to be operational by 2014. The St. Antnin plant in Marsascala is currently in its commissioning phase. Two other plants, Malta North and Gozo are still in their design and planning phases. Latest projections indicate that by 2020, the energy generated through the three MBT plants will amount to 61 GWh annually, which is slightly higher than the figure quoted in the NREAP. This value is expected to increase since the thermal heating projected to be generated through the Malta North and Gozo MBTs was not considered for NREAP purposes.

3.3.10 The St. Antnin MBT project is expected to be fully operational by mid-2011, which implies a delay of around six months from the date indicated in the NREAP (December 2010). Such delays materialised due to issues relating to plant development.

3.3.11 The St. Antnin plant is expected to generate 27.5 GWh of energy annually at full capacity. WSM estimates that the 'renewable energy element' costs of the project amounted to over €1.5 million. Currently, WSM is negotiating with Enemalta the feed-in tariff to be invoked when the electricity generated from this plant is transferred to the national grid.

3.3.12 The Malta North and Gozo MBT plants are envisaged to be operational by February and June 2014, respectively. This implies a minor delay from the scheduling quoted in the NREAP, whereby both projects were projected to be completed by end 2013. The Malta North and Gozo MBT plants are expected to generate 33 GWh of electrical energy annually. Considering the 'renewable energy element' costs of the project only, the Malta North MBT is projected to cost around €3.79 million. WasteServ is still in the process of estimating costs for the Gozo plant.

3.3.13 The delay in the Malta North MBT plant materialised since tenderers failed to submit bids in according with the required specifications. Consequently, this necessitated the re-publication of the afore mentioned document, which caused the project's completion date to be shifted forward by two months.

3.3.14 A similar tendering problem was encountered with regards to the Gozo MBT plant. Additionally, further delays were experienced due to the publication of new guidelines and tender conditions by the Department of Contracts (DoC) for service contracts. As a result of these issues, the Gozo MBT plant will now be completed six months later than the date noted in the NREAP.

Plans to generate energy through refuse derived fuel are at the initial phase

3.3.15 WSM projects to start generating 84 GWh of electrical energy from refuse derived fuel (RDF) by 2014. This project, which is envisaged to contribute about 52 per cent of Malta's biomass energy by 2020, is estimated to cost around €108 million.

3.3.16 This project is currently in the initial stages. WSM is currently preparing the respective tender documentation necessary to complete the initial phase of this project which includes the preparation of a Project Description Statement (PDS) and the site selection exercise. The PDS is to provide operational details that are to be carried out within the site of development. The PDS, which is mandatory, is required by MEPA to determine whether the development application necessitates an environmental assessment.

Electricity generation from sewage sludge project at Ta' Barkat is proceeding according to the NREAP

3.3.17 Another waste to energy project has been implemented at Ta' Barkat. This project is expected to convert sewage sludge – a by product following the treatment of waste water – into electricity and thermal energy. The NREAP notes that this project will generate 16 GWh of energy annually. This project is being co-financed through the EU Cohesion fund 2007 – 2013 Programme. The total cost of this project was estimated at around €5 million.

3.3.18 Plant start-up is scheduled for end January 2011. Biogas is anticipated to be available for harvesting during the second quarter of this year. The rate of generation and quality of biogas will be effectively determined during operation as this is heavily dependant on the quantity and quality of sewage arriving at the plant.

3.3.19 The electrical component of the energy generated, amounting to 7.8 GWh per annum accounts for around half the annual project consumption of the waste water treatment plant. The WSC estimates a savings of €1.18 million per annum (excluding VAT), based on Enemalta's going rate of €0.14 per kWh.

3.4 Current initiatives to exploit solar energy resulted in attaining 56 per cent of the national solar energy target for 2010

3.4.1 Solar energy is expected to contribute 11.6 per cent towards Malta's obligatory EU 2020 renewable energy targets. The NREAP projected Malta's national solar energy target for 2010 at 35.5 GWh.

3.4.2 The NREAP estimates that the generation of renewable energy through photovoltaic technology and solar water heaters to be 6.19 GWh and 29.31 GWh, respectively in 2010. However, the MRA estimated that the relative initiatives undertaken enabled only around 56 per cent of the projected solar energy to be generated.

3.4.3 The major initiatives intended to stimulate the further exploitation of solar energy were based on grant schemes relating to the installation of PV systems and solar water heaters. Such grants were applicable for both the Domestic and Industrial sectors. It is to be noted that other initiatives relating to the exploitation of solar energy were undertaken by various Government departments and entities. The MRA was responsible for the administration of these schemes.

3.4.4 Table 10 indicates that the overall progress registered in the generation of solar energy amounted to around 56 per cent of the 35.5 GWh anticipated by the NREAP for 2010. Most of the progress registered can be attributed to the significant uptake of PVs, which nearly doubled expectations. On the other hand, the uptake of solar water heaters reached less than one third of projections. The uptake of PVs and solar water heaters are discussed in the ensuing sections.

Higher feed-in tariff for the domestic and industrial sector encouraged further the uptake of photovoltaic systems

3.4.5 In July 2010, Government announced the feed-in tariffs to encourage more energy consumers to opt for renewable energy systems. Government projects that, in addition to the financial grants (discussed in the sections below), the payback period for a PV system is estimated to be around eight years.

3.4.6 For every unit of electricity produced by a PV system and fed into the electricity grid, Enemalta pays households in Malta €0.25 per kWh. Households in Gozo are paid a slightly higher tariff of €0.28 per kWh as part of Government's vision of Eco-Gozo. In contrast to these tariffs the minimum residential retail rate of one kWh is €0.161. Enemalta is bound to purchase electricity at these tariff rates for a period of eight years.

3.4.7 Commercial entities are paid €0.20 per unit of electricity produced through a PV system. This contrasts with the maximum commercial rate of €0.162 per 1 kWh of energy consumed. The feed-in tariff is guaranteed for a period of seven years.

The installation of PV technology increased substantially through improved financial incentives

3.4.8 The MRA estimated that during 2010, over 11 GWh of solar energy was generated through PVs. Apart from significantly exceeding the NREAP target of the past year, this level of solar energy generation is considerably higher than that produced in 2008. The significant uptake of PV systems by consumers and industry can be attributed to the various grants schemes launched during the period under review by this follow-up audit. Other factors influencing the uptake of PVs include increased awareness of the benefits of renewable energy and energy prices.

3.4.9 Grant schemes relating to PV systems were available to both the Domestic and Industrial sectors. During the period 2009 – 2010, around €17 million were expended to sustain these schemes.

Domestic PV grant schemes

3.4.10 During this period, two PV grant schemes aimed at the Domestic sector were launched. These schemes operated on a first come first served basis until the exhaustion of the allocated budgets. Both grant

Table 10: Exploitation of solar energy as at end 2010

	Solar Energy Target in NREAP (GWh)	Solar energy generated (GWh)	Solar energy generated as a share of NREAP target (%)
Solar Water Heaters	29.31	8.72	29.75
PVs	6.19	11.15	180.13
Totals	**35.50**	**19.87**	**55.97**

Table 11: Solar energy generated through the Domestic sector PV grant schemes

Domestic PV grant schemes	Approved applications (number)	Rebates awarded (€)	Solar energy generated annually (GWh)	Grant cost of solar energy generated over equipment lifetime of 23 years (€/kWh)
Scheme 1 (up to Feb 2010)	160	471,493	0.37	0.0554
Scheme 2 (up to Dec 2010)	1,910[6]	6,034,484	5.50	0.0477
Totals	**2,070**	**6,505,977**	**5.87**	**0.0482**

Source: MRA.

schemes entitled consumers to a 50 per cent rebate, up to a maximum of €3,000 on the purchasing price of PV systems. It is to be noted that the rebate rates for these two schemes were improved over those applicable for a similar grant in 2008. The 2008 grant was based on a 20 per cent rebate which was capped at €1,165. Additionally, the latter schemes also benefited from the feed-in tariff rates that ranged from €0.25 to €0.28 for consumers in Malta and Gozo respectively. This represents an increase over the net metering practice previously adopted.

3.4.11 The first PV grant scheme, effective up to February 2009, was nationally funded, and operated on a budget allocation of €500,000. A subsequent scheme, effective up to February 2013, was co-financed by the EU (through an ERDF programme) and national funds. Out of a total of €15 million allocated to this programme, €6 million has been budgeted specifically for the latter PV systems grant scheme. Both schemes have now been terminated mainly due to the exhaustion of funds.

3.4.12 Table 11 shows that over their 23 year lifetime, these rebate scheme can, on their own merits, be considered to constitute value for money.[7] The average cost per unit (kWh) of solar energy generated by the two grant schemes, less than €0.05, is considerably less than the minimum retail rate of one kWh of electricity, which at current rates amounts to €0.16.[8]

3.4.13 Even when the applicable feed-in tariffs are taken into consideration, together with the PV Grant Schemes, the Government measures to promote the use of PV systems still render value for money. This results since the difference between the minimum feed-in tariff rate applicable (€0.25 kWh) and the cost of producing one unit of electricity would amount to around €0.09. Thus the cost to Government for promoting the use of one unit of energy generated through PV systems would be the costs of the Grant Schemes and feed-in tariffs. Such costs amount to €0.14/kWh which is less than the assumed current costs of producing one unit of electricity through conventional means. This estimate assumes that the current minimum retail rate of electricity (€0.16/kWh) represents the cost of producing one kWh of electricity. Additionally, it is assumed that the current cost of conventional electricity production and current feed-in tariffs will remain constant throughout the lifetime of the PV systems.

3.4.14 Benefits of such schemes also extend to consumers. Consumers will benefit through the rebate applicable to the grant schemes, savings in their consumption of energy and improved feed-in tariff rates. The foregoing suggests that the value for money considerations from the consumers' point of view can also be considered as positive. These consumers' benefits imply an improved rate of return on the cost of equipment over previous schemes.

Industry sector PV grant schemes

3.4.15 The Industrial sector also benefited from a PV grant scheme. Such a scheme was launched in March 2009 and is administered by the Malta Enterprise. Rebate schemes aimed at the Industrial sector are considered to have various advantages, namely the potential for energy savings due to the heavy consumption by this sector, which in turn would contribute towards Malta fulfilling its RES obligations.

3.4.16 The 2009 PV grant scheme aimed at the Industrial sector was based on three calls for applications from interested parties. These calls were based on a rebate rate of 50 per cent of the purchasing price and capped at €100,000.

[6] Following the revision of this scheme, due to minor inconsistencies in the applications submitted, 43 applications were funded through national funds.

[7] The phrase 'on their own merit' is being used to imply that the opportunity cost of investing the available funds in other renewable technologies is not considered.

[8] It is being assumed that the minimum retail rate of electricity equals the variable cost of production of electricity.

Such rebate rates were improved over those applicable to the previous scheme. The industry PV grant scheme which operated from 2007 offered applicants a rebate of 60 per cent of the purchase price up to a maximum of €60,000.

3.4.17 The 2009 grant scheme available to the Industrial sector has been allocated a budget of around €15 million. This scheme was co-funded through the ERDF programme and national funds.

3.4.18 Value for money considerations of this scheme are also considered as positive. The average cost per unit of electricity (kWh) generated through this grant scheme amounted to around €0.09. This is €0.05 less than the maximum retail rate of one kWh of electricity, applicable for the commercial sector.[9] Other positive value for money considerations also relate to financial savings reaped by operators within the Industry sector.

3.4.19 Moreover, value for money considerations are still positive when the applicable feed-in tariff for commercial operators is taken into account together with the PV Grant Schemes. This results since the difference between the minimum feed-in tariff rate applicable (€0.20 kWh) and the cost of producing one unit of electricity would amount to around €0.06. Thus, the cost to Government for promoting the use of one unit of energy generated through PV systems would be the costs of the Grant Schemes and Feed-in tariffs, Such costs amount to €0.15/kWh which is less than the assumed current costs of producing one unit of electricity through conventional means. This estimate assumes that the current minimum commercial operators' retail rate of electricity (€0.144/kWh) represents the cost of producing one kWh of electricity. Additionally, it is assumed that the current cost of conventional electricity production and current feed-in tariffs will remain constant throughout the lifetime of the PV systems.

Installation of PVs by Government entities

3.4.20 Government department and entities are also embarking on initiatives to exploit solar energy through PVs. As at end 2010, the MRA records indicated that 40 PV systems owned by Government departments and entities and has an annual electricity generation capacity of 272 MWh annually.

3.4.21 Moreover, Government is evaluating the response of a call for an expression of interest for the installation of PV systems on public buildings. The call for expression of interest identifies a number of 'host roofs' on public buildings such as public schools, hospitals, water reservoirs and other government buildings. The estimated total unshaded area available for this project was quoted as over 67,000 square metres.

The NREAP target for 2010 regarding the uptake of solar water heaters was not attained

3.4.22 Similarly to the strategy adopted for PVs, the uptake of solar water heaters is based on rebate grant schemes. However, despite the fact that during the period under review there were various schemes aimed at the Domestic and Industrial sectors, the overall response was low. In fact, the energy generated through solar water heaters up to end 2010 amounted to around 30 per cent of the projected 29.3 GWh indicated in the NREAP.

3.4.23 The grant scheme aimed for the Industrial sector, and which was administered by the Malta Enterprise, yielded marginal uptake of solar water heaters. This 2009 grant scheme formed part of the measure which was co-funded through the European Regional Development Fund (ERDF) programme and national funds to stimulate the exploitation of renewable energy and energy efficient

Table 12: Solar energy generated through the Industry sector PV grant scheme

Industry PV grant schemes		Approved applications (number)	Rebates awarded (€)	Solar energy generated annually (GWh)	Grant cost of solar energy generated over equipment lifetime of 23 years (€/kWh)
ERDF Energy grant scheme	Call 1	90	10,500,000	5	0.091
	Call 2	107			
	Call 3	Under evaluation			
Totals			**10,500,000**	**5**	**0.091**

Source: Malta Enterprise.

Note: The total rebates awarded are based on the assumption that 70 per cent of the total grants approved, as was the case in first call, went to the installation of PV systems. The remaining share of the grant budgetary allocation mainly went to finance energy savings projects.

[9] It is being assumed that the minimum retail rate of electricity equals the variable cost of production of electricity.

practices. A budget of €15 million was allocated for this measure. This scheme entitled applicants to a 50 per cent rebate up to a maximum of €100,000.

3.4.24 During the period under review, two solar water heaters grant schemes were aimed at the Domestic sector. The scheme which was effective up to February 2010 was nationally funded, with a budgetary allocation of €2 million. The rebate applicable was based on 66 per cent of the purchasing price up to a maximum of €460.

3.4.25 The subsequent scheme, with a budget allocation of €2 million was co-funded through ERDF and national funds. This scheme has a closing date of February 2013. This rebate scheme entitled applicants to 40 per cent of the purchasing price with a €560 capping. Entitlement for rebate associated with this scheme was subject to the applicants' fulfillment of the relative financial means testing criteria.

3.4.26 Table 13 shows that the applicable rebate rate for the two schemes offered positive value for money both for Government and consumers. The grant cost of solar energy generated over the lifetime of solar water heaters amounts to over €0.01. This amount is significantly less than the variable cost of production of electricity, if this is assumed to equal the minimum commercial applicable retail rate of electricity of €0.16 per kWh. On the other hand, the improved rebate rates offered consumers a better rate of return on the solar water heater purchasing price.

3.4.27 Despite the clear financial and environmental benefits, the uptake of solar water heaters through the latest grant scheme was significantly lower than projected. The main reasons for this situation are potentially considered to be the following:

- Financial means testing could have excluded potential applicants from applying.
- Consumers could have perceived that the PV grant schemes, together with the improved feed-in tariffs, more advantageous and offered a better rate of return for costs incurred.

3.4.28 It is to be noted that Government is currently considering other similar schemes to stimulate further the installation of solar water heaters. The Budget Speech for 2011 allocates €800,000 for this purpose.

3.5 Initiatives aimed at reversing the declining trend of biofuel penetration in the Maltese market, through premixing with other petroleum products, are under consideration

3.5.1 Malta's renewable energy target in the transport sector can be considered as challenging for various reasons. In order to fulfil its RES transport obligations, mainly through the use of biofuel, Malta must supplement local production with the importation of biofuel. Biofuel has been retailed on the local market, as biodiesel, since 2003. However, as at end 2009, the use of biofuel within the transport sector makes only a marginal contribution towards attaining this target. In view of the foregoing, the NREAP outlines initiatives intended to increase the use of biofuel by the transport sector within the inland fuel market.

In 2009, biofuel sales continued to decline

3.5.2 Up to 2007, the degree of penetration of biofuel on the Maltese market was progressing positively. Biofuel was being retailed both as B100 from petroleum filling stations and as mixed blends from a biofuel plant.

3.5.3 However, since 2008, the use of biofuel declined sharply. Statistics for 2009 indicate that the utilisation of biofuel amounted to less than 0.4 per cent of Malta's RES target for the transport sector. Figure 2 refers.

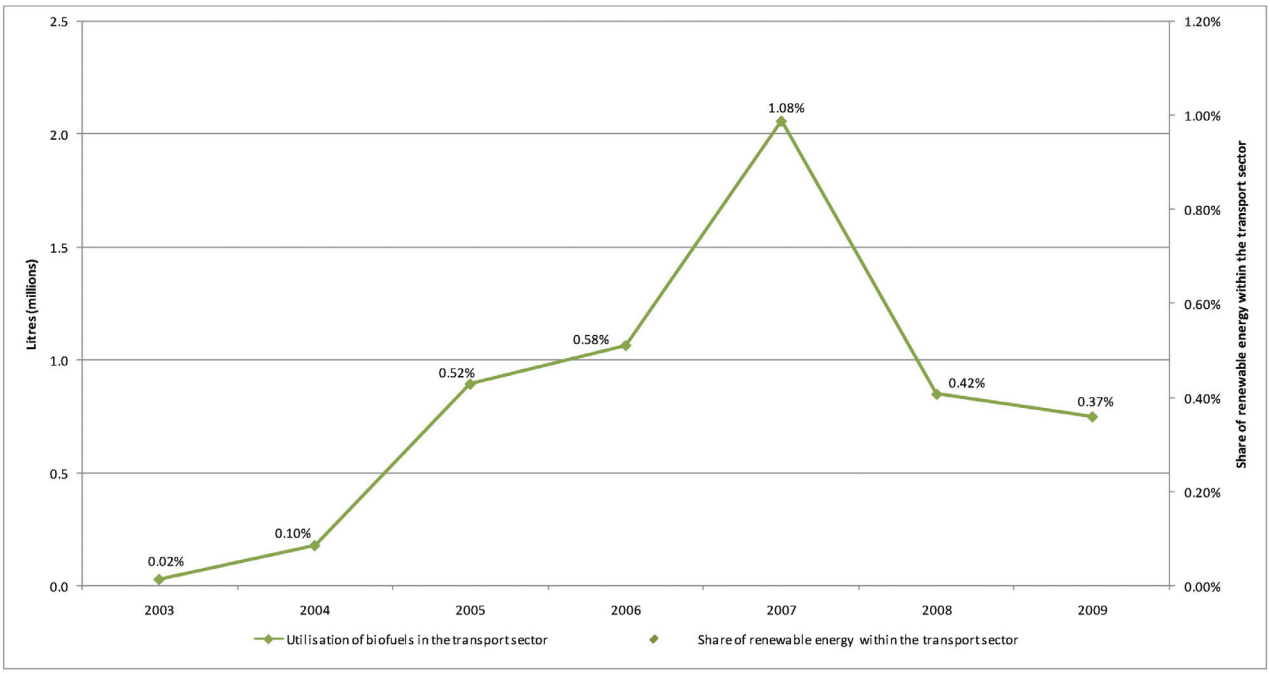
3.5.4 The MRA did not carry out specific studies to identify the cause of this decline. However, it is to be noted that out of the three companies which were active

Table 13: Uptake of solar water heaters through Domestic grant schemes (2009 – 2010)

Domestic PV grant schemes	Approved applications (number)	Rebates awarded (€)	Solar energy generated annually by approved applications (GWh)	Grant cost of solar energy generated over equipment lifetime of 23 years (€/kWh)
Scheme 1 (up to Feb 2010)	3,399	1,348,878	5,44	0.012
Scheme 2 (up to 2013)	597	287,257	0.96	0.015
Totals	**3,996**	**1,636,135**	**6.40**	**0.013**

Source: MRA.

Figure 2: Sales of biofuel (2003 – 2009)



in the Maltese biofuel market in 2007, only one continued with its operations.

3.5.5 Moreover, the number of petroleum filling stations retailing biofuel declined from 30 to 23 from 2008 to 2009. It is to be noted that there are no petroleum filling stations retailing biofuel in Gozo.

3.5.6 The MRA also remarked that the reduction in excise duty as a fiscal incentive for the uptake of biofuel has not shown itself to be sufficient to enable Malta to fulfil the relative mandatory EU obligations.[10]

The further development of the biofuel legal framework is also intended to increase the market penetration of biofuel

3.5.7 Most of these initiatives focused on the further development and strengthening of the biofuel legal framework, as discussed in paragraphs 2.4.2 to 2.4.14. In turn, these developments are seen to enable the further penetration of biofuel within the local market. In particular, on becoming effective, the draft legal notice – "Petroleum for the Inland (Wholesale) Fuel Market (Amendment) Regulation, 2011" – will lead to a significant increase in the use of RES by obliging importers and wholesalers to include an amount of biofuel content in the diesel and unleaded petrol retailed locally. It is envisaged that, by 2020, Malta would have attained 85 per cent of the EU's RES target for the transport sector through the increase in the use of biofuel. The remaining 15 per cent of renewable energy in the transport sector is mainly expected to be attained through the introduction of electric cars.

3.5.8 However, in the short term the biofuel pre-mix provisions envisaged by the draft legal notice will, in practice, only be applicable to petroleum diesel. This is mainly due to the fact that the MRA is currently preparing an operational framework on how Malta could exploit advancements in the biofuel sector, the feasibility of second generation of biofuel and the gradual increased use of bioethanol and bio-ETBE. The latter initiatives will enable the premixing of biofuel with unleaded petrol. Studies in this regard are still in the preliminary phases.

3.5.9 When concluded such studies will, *inter alia*, conclude on the degree of suitability of using bioethanol and bio-ETBE locally. Until such confirmation, the risk exists that the contribution of biofuel towards attaining local trajectory and EU targets will diminish by over 50 per cent. This situation will arise since biofuel will be premixed only with petroleum diesel, which accounts for around half of the fuel consumption in the local transport sector.

3.6 The recent and envisaged amendments to the biofuel legal framework further strengthens the regulatory function

3.6.1 Recent changes to the biofuel legal framework reflect the importance of biofuel towards mitigating climate change and enabling Malta to reach its RES target.

[10] MRA, Draft 'Biofuel in Transport' Public Consultation, 2010.

Additionally, these changes have strengthened the MRA's regulatory function of the biofuel market.

The regulator is in a better position to obtain information from operators about biofuel related activities

3.6.2 The recently introduced and envisaged legal provisions enable the Regulator, the MRA, to monitor and enforce activities within the local biofuel market more effectively. The updating of the biofuel legal framework facilitates the collation of information from operators since operators are obliged to:

- register their activities with the MRA;
- submit information regarding the total amount of biofuel placed on the market to the Regulator;
- provide evidence to the Authority regarding the appointment of independent auditors to verify and confirm the sustainability characteristics used by the economic operators; and
- report annually to the MRA on the greenhouse gases intensity of fuel and energy.

3.7 Studies on emerging renewable energy technologies are currently being undertaken

3.7.1 Government policy dictates that Malta should consider alternative renewable energy technologies as long as in the long term these will be of benefit to the energy sector and further extend Malta's potential on alternative energy sources. Developments regarding various emerging technologies are currently being monitored to determine the extent of their applicability for Malta.

Various studies on emerging technologies are in their preliminary stages

3.7.2 Government is currently evaluating the proposals of projects intended to develop innovative technologies relating to renewable energy as well as carbon capture and storage projects. This call is funded under the NER300 initiative. The NER300 project preferences are also in conformity with Malta's Energy Policy.

3.7.3 Government is also conducting preliminary work, related to potential studies, on emerging technologies. Currently, such work has focused on the potential applicability and benefits of wave and geothermal energy.

3.8 Conclusion

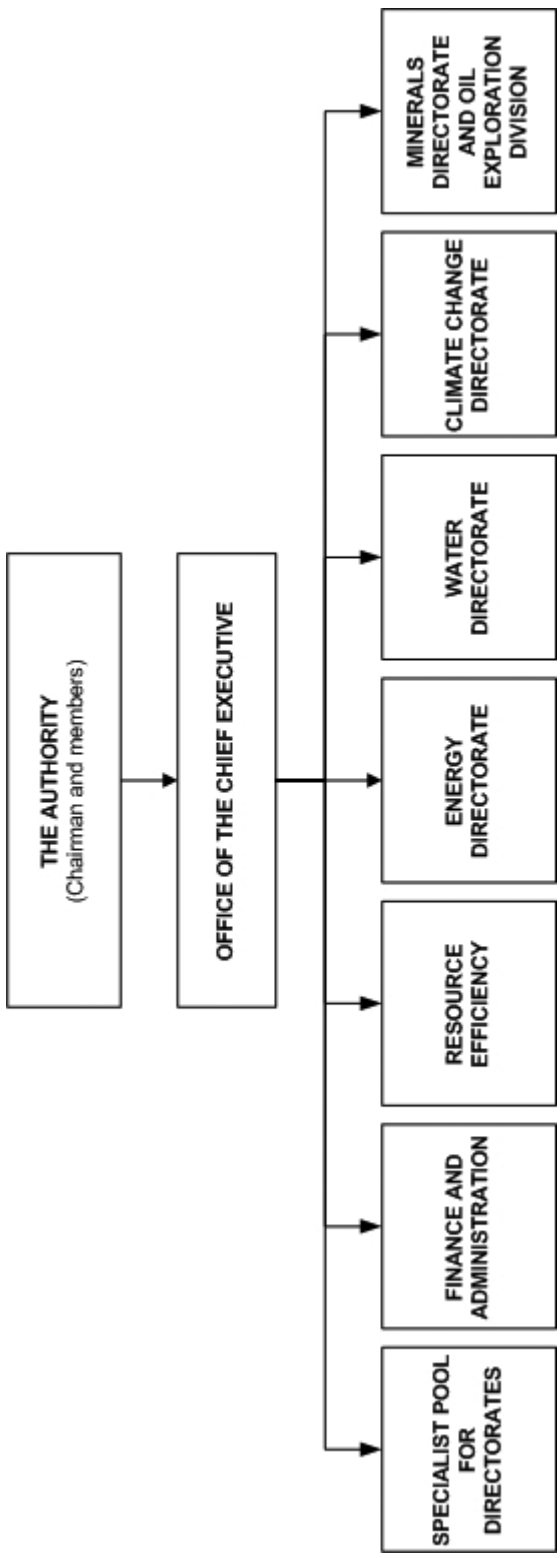
3.8.1 An array of initiatives is currently being undertaken to stimulate the further exploitation of renewable energy. These programmes range from studies and projects leading to major projects to rebate grant schemes to various sectors of the economy. The undertaking of these initiatives confirms that the proposals made by the NAO in 2010 are being appropriately addressed. Moreover, these initiatives can be seen as Malta's obligatory contribution towards mitigating climate change by fulfilling its EU renewable energy obligations.

3.8.2 However, the implementation of a number of these programmes was subject to delays. Some of these programmes relate to major projects, such as waste to energy projects, which are expected to make a significant contribution towards the attainment of national and EU targets. These delays, which were mainly of an administrative and technical nature, led to the non-attainment of the 2010 renewable energy targets indicated in the NREAP – progress in this regard was less than half that projected.

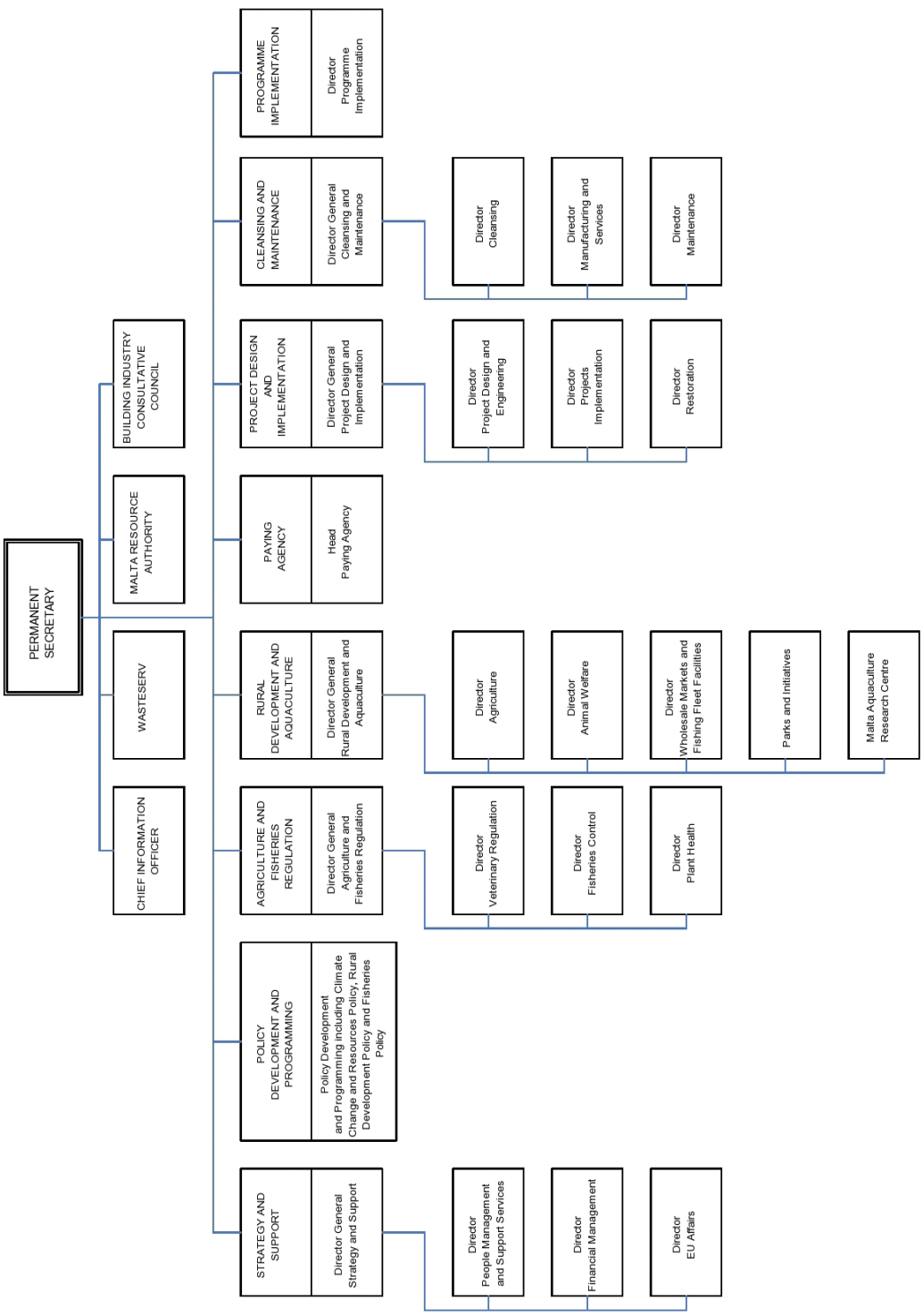
3.8.3 Notwithstanding this situation, the progress registered to date and revised plans indicate that Malta will be in a position to fulfil its EU trajectory targets – the first of which falls in 2012 – and ultimately exceed its obligatory 2020 EU renewable energy targets. This is, however, dependant on the current drive being maintained in order to minimise project implementation delays. Moreover, the attainment of Malta 2020 targets remains critically dependent on the feasibility of major projects and that they are able to exploit renewable energy in accordance with the relative projections.

Appendices

Appendix 1 - MRA's organisational chart as at November 2010



Appendix 2 - MRRA's organisational chart as at November 2010



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