# GREECO
# Territorial Potentials for a Greener Economy

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Case Study

Vol. 4.8. Malta

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This basic report exists only in an electronic version.

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# List of abbreviations

BRO – Building Registration Office
DMC – Domestic Material Consumption
EE – Energy Efficiency
EHS – Environmental Harmful Subsidies
EMAS – Environmental Management and Audit Scheme
ERDF – European Regional Development Fund
ESF – European Social Fund
ETAP – Environmental Technologies Action PLan
FAO – Food and Agriculture Organisation
FEC – Final Energy Consumption
FTO - Federation of Tour Operators
GDP – Gross Domestic Product
GHG – Greenhouse Gas
GIC – Gross Inland Consumption
GPP – Green Public Procurement
GVA – Gross Value Added
LCP – Large Combustion Plant
MBI – Market-based Instruments
MEDE - Ministry for Education and Employment
MEPA – Malta Environment and Planning Authority
MIEMA - Malta Intelligent Energy Management Agency
MSA - Malta Standards Authority
MSDEC - Ministry for Sustainable Development, the Environment and Climate Change
MTA – Malta Tourism Agency
MTCE - Minister for Tourism, Culture and the Environment

NACE - Nomenclature generale des Activites economiques
NED
NEEAP - National Energy Efficiency Action Plans
NSO – National Statistical Office
OECD – Organisation for Economic Cooperation and Development
PPS – Purchasing Power Standard
PV - Photovoltaic
RE(S) – Renewable Energy (Source)
R&D(&I) – Research, Development (and Innovations)
SME – Small and Medium Enterprise
SPED - Strategic Plan for Environment and Development
TSE - Treated Sewage Effluent
UNESCO – United Nations Educational, Scientific and Cultural Organisation
VAT – Value Added Tax
WEI – Water Efficiency Index
WFD – Water Framework Directive
WSC – Water Service Corporation

# I. Introduction

## *1. Objectives of the case study*

This case study aims at studying a number of economic sectors in Malta in order to identify good practices for switching to a greener economy as defined within GREECO. The study will cover key policy areas with an impact on environmental, economic and social behaviours which triggered greening of the economy and which hold a significant potential to do so. Additionally, I highlight, where possible, financial instruments and investments with an impact on the green economy.

The report will also strive to analyse key factors - called drivers and enabling conditions (policies, financial instruments and investments, etc.) - providing a regional dimension to the green economy and having an impact on the environment, economy, society and territories.

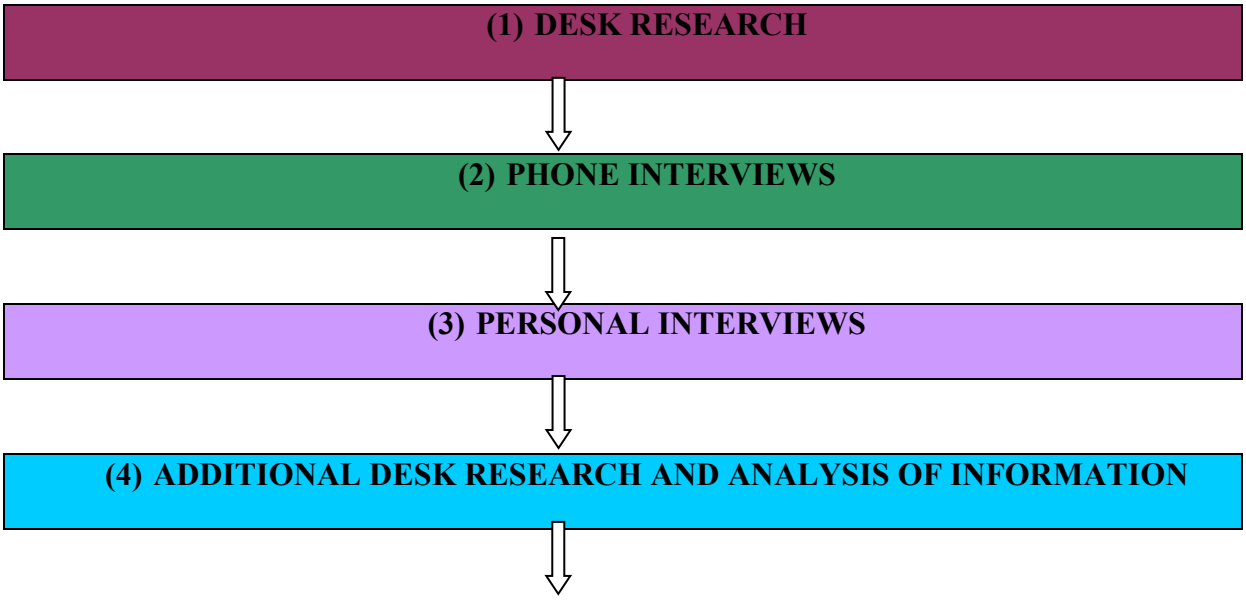
The case studies on Malta and the Green economy will attempt to create an integrated narrative of how green economy works in the country. The case study will attempt to test hypothesis and validate GREECO regional typologies.

The emphasis will be on the positive practices in Malta but at the same time the authors tried to paint a comprehensive picture of the green economy describing obstacles, disincentives and hindering factors. These can bring useful insights on what needs to be improved and on the "lost potentials". The narrative will also try tocapture complex sectoral interrelations which are not necessarily obvious from the figures.

## *2. Methodology*

The drafting of the Maltese case study started in the autumn of 2012. It followed the principles for case study preparation developed within the GREECO team.

**Figure 1** Research Methodology




(1) **Desk research.** Through **desk research** the authors familiarized themselves with the territory - economy, economic history, geography, climate, figures and policies - and reviewed existing literature on green economy features of the region.

(2) **Phone interviews.** The desktop research was followed by several **phone interviews** with key stakeholders (bottom-up) describing the overall and sectoral context. The purpose of the phone interviews was to capture the story behind the figures as well as to construct a picture of the **stakeholder's perception** of the development of green economy.

(3) **Personal interviews.** These were instrumental for capturing the stories of the individual sectors, discussing drivers and enabling conditions as well as barriers.

(4) **Additional desktop research and analysis of information.** The interviews were followed by an **additional desktop research** of information and insights provided by the interviewees, studying the provided literature and policies.

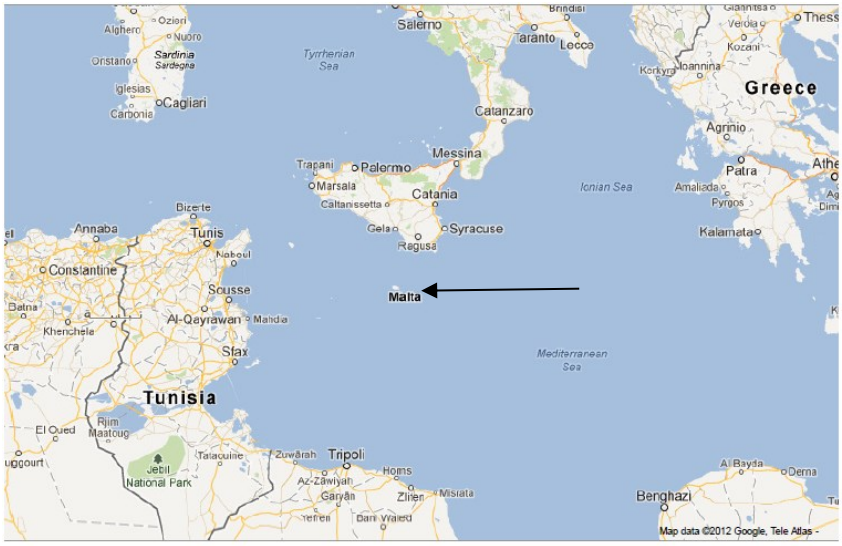
# II. General description. Setting the stage

## *1. Geography*

Malta is located in the Mediterranean Sea, 80 km. south of Sicily and East of Tunisia and 290 km. north of Lybia. Malta has been on the crossroad of trade and migration routes – a fact which defined its history. Malta's territory is 316 km2. Three of the islands of the Maltese archipelago – Malta, Gozo and Comino – are inhabited. The Maltese landscape is flat or gently hilly, the highest point being 253 m. There are no permanent rivers on Malta but some small rivers form at times of abundant rainfall. According to the WWF, the territory of Malta belongs to the ecoregion of "Mediterranean Forests, Woodlands and Scrub".

The climate is a Mediterranean one characterised by hot, dry summers and cool winters with an annual average rainfall of nearly 476 mm. For 2012 the rainfall was 519.2 mm. Temperatures are stable, the annual mean being 19°C and monthly averages ranging from 15°C to about 31°C in the summer months.[i]

**Figure 2 Map (Mediterranean scale)**




Malta is located in a geographical proximity to Tunisia and Lybia. This location is beneficial in certain cases allowing the country to serve as a bridge between North and South but it could also be a threat in periods of political turmoil in these two countries.

## 2. Natural assets and resources

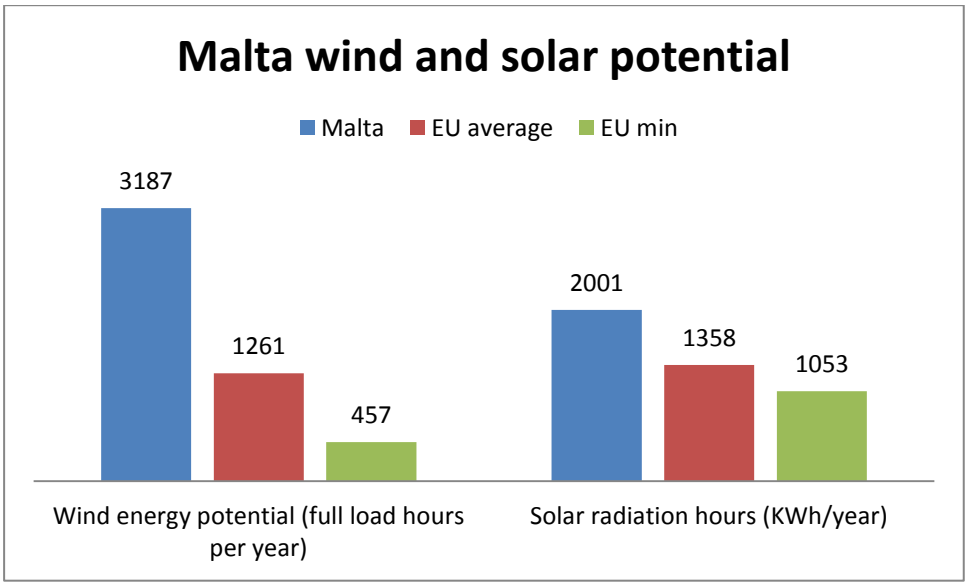
Malta is not rich in natural resources. Crucial resources like fresh water, limestone and land are insufficient. Limestone is a natural resource that has made Maltese architecture what it is now. It needs to be actively protected because of its shortage. This is done through setting the right price of stone, research into reconstituted stone and also being particularly meticulous about the environmental impacts of quarrying. The rest of the raw materials are imported – a fact which puts Malta in a situation of dependency.

Fresh water is another key resource whose importance has been even higher having in mind the arid climate of Malta. Malta is particularly adamant about implementing its water policies and managing water in the right way. This delicate situation with water is one of the reasons to choose greening the water sector as one of the areas for research in this case study.

Coastal and marine areas are by far the biggest assets of Malta making a significant contribution to wealth generation through tourism and through marine economy as a

whole. The total length of the shoreline is 200 km plus an additional 71.2 km for Gozo and Comino.[ii] The length of artificial coastline in 2004 was 21%. Pressures on coastal zones come from overdevelopment, public land take and damage to coastal habitats.[iii] A conflict comes from the fact that space sought after for tourism development is also needed for recreational activities. Greening the tourism sector is one of the focus of the study.

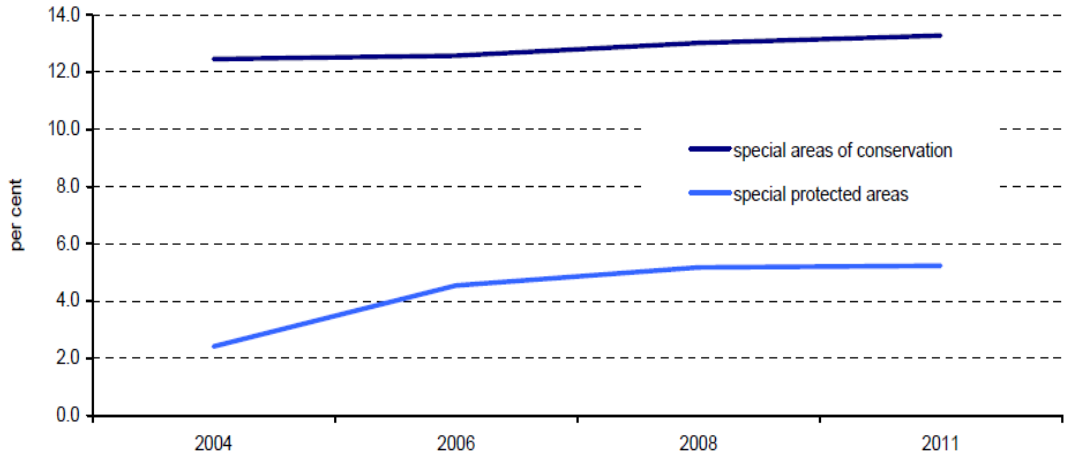
**Figure 3 Natural assets necessary for the development of Renewable Energy Sources (solar and wind)**




**Source:** EU, 2012, Country Factsheet, Malta

From the figure above it becomes obvious that Malta has the most abundant solar and wind resources in Europe. In the chapter on energy there is an attempt to elucidate the dynamics behind development of renewable energy in Malta. The National Energy Policy for the Maltese Islands is more moderate in its assessment.[iv]

**Figure 4 Designated land as a proportion of the total land area**



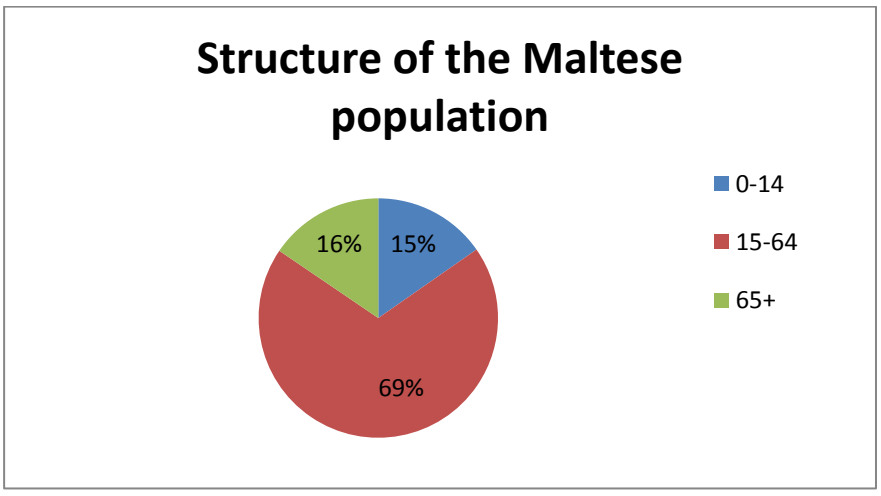

**Source:** National Statistics Office, Malta

The figure above demonstrates a slight increase and then stabilization of designated land as a proportion of the total land area. Malta has 34 Natura 2000 sites. Natura 2000 sites account for almost 14 percent of the country's territory, compared to a EU average of about 20 percent.

## 3. Demographics

The total population of in 2012 was 421,363 inhabitants with a population growth of 6.5 pro mille from 2000 to 2010. Additionally, the net migration flows were 4.1 pro mille on average from 2000-2010. Malta is the most densely populated country in Europe and demography is a potential threat. The population of Gozo in 2011 was 31,296 inhabitants or slightly above 7% of the Maltese population.

**Figure 5 Structure of the Maltese population in 2011**




Source: Eurostat

This is very close to the EU average where +65 years old population is 17.4%.

Malta is an urban society and 100% of the population lives in a predominantly urban areas compared to only 41.1% as an EU average. Out of these some 92.5% live in the capital area, on the main island. Some 7.5% live on the small islands Gozo and Comino.

### *4. Administrative structure and governance*

The Maltese archipelago consists of the islands of Malta, Gozo and Comino. Malta, with the capital Valletta, is the largest island of the archipelago. Malta is considered as a city-state with one urban agglomeration, housing over 80% of the country's population. Because of its size Malta is a highly centralized country and the whole territory is NUTS 2 region. The Island of Gozo has a distinct identity and there is a separate ministry – the Ministry of Gozo – dealing with drafting specific policies.

**Figure 6 Map of Malta, local scale**


**Source:** Malta in Figures, 2012

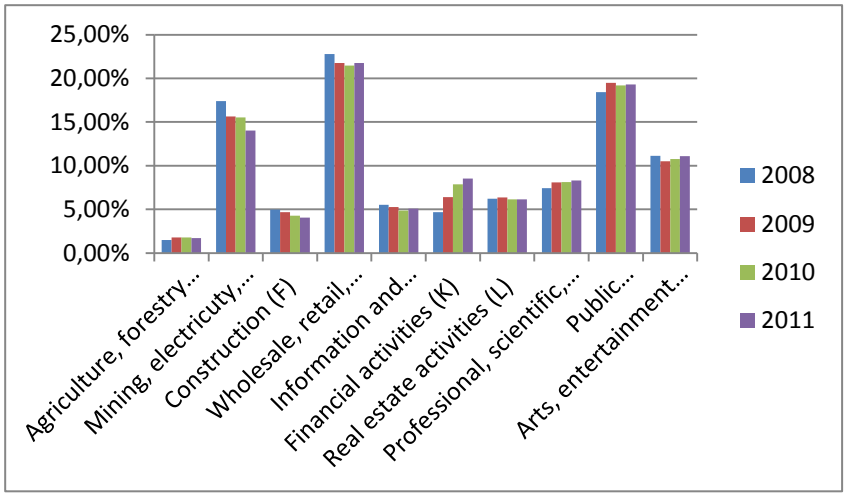
# III. Economy as a whole

### *1. Structure*

Over the last decades the Maltese economy has gradually shifted from agriculture and industry-based to service-oriented. The share of manufacturing fell from 22.4% in 2000

to 13.4% in 2010 and the share of agriculture, fisheries and construction fell from 6.4% of GVA to 5.5%. At the same time, the share of industries increased from 52.5% in 2000 to 58.8% in 2010. The share of government, education, health and social work increased from 16.4% to 19%. The economy has been undergoing a process of diversification as the share of chemicals, aircraft maintenance, IT and financial services grew.

**Figure 7 Value added by sectors of the economy (NACE) between 2008 and 2011**




**Source:** Malta in Figures, 2012

The GDP of Malta at current prices is 6,499.2 million EUR which represents 15,600 EUR/capita or 21,000 EUR/capita in PPP.[v] In 2011, there were 29,877 SMEs in Malta, making up 99.9% of the total number of enterprises, employing 76.3% (88,423) of private sector employees and contributing 64.5% of the national value-added.[vi] The social and economic gap between Malta and Gozo is still significant: the island of Malta has a GDP per head of 80.5% of the EU-27 average (2007-2009) and the island of Gozo stands at 57.4%.[vii]

Maltese export companies feel the burden of the strong Euro and the impact of the global economic crisis. At the same time labour productivity has been increasing more slowly in Malta than in Malta's main competitors.[viii]

Major challenges to growth:

- Ensuring the long-term sustainability of public finances in view of ageing of population;
- Ensuring that productivity growth underlines wage developments to safeguard competitiveness;
- A further move to higher value-added activities by raising investment in new areas of growth. The main infrastructural bottlenecks which need to be addressed include the education, energy and water resources, transport, communication, and the environment.

- Ensuring better utilisation of the economy's labour potential, in particular that of women and older workers, and improving the skills base of labour force;
- Addressing the weaknesses in the business environment and enhancing competition;
- Macroeconomic imbalances and current account imbalances.[ix]

**Box 1 Public infrastructural projects**

The increased investment expenditure includes big infrastructural projects such as the building of the extension of the power station, the interconnector project between Malta and Sicily and the continued introduction of smart meters. Other increases relate to the environmental and resources sector including investment in renewable energy sources, waste, the management of water resources and water treatment and also in the maritime and ports sector.

**Source:** Malta's National Reform Programme 2012 under the Europe 2020 Strategy

## 2. Governance

The new Labour government (which came in power in April 2013) introduced the following structure of the public administration relevant to this study:

- Ministry for Tourism;
- Ministry for Education and Employment;
- Minister for Sustainable Development, the Environment and Climate Change;
- Minister for Transport and Infrastructure;
- Ministry for Gozo (remains);
- Minister for the Economy, Investment and Small Business;
- Minister for Energy and the Conservation of Water;
- Parliamentary Secretary for Research, Innovation, Youth and Sport in the Ministry for Education and Employment;
- Parliamentary Secretary for Competitiveness and Economic Growth in the Ministry for the Economy, Investment and Small Business.[x]

**Table 1** Quality of governance indicators

| | Malta | EU average | EU min | EU max |
|---|---|---|---|---|
| Quality of Government index | 0.1 | | -1.9 | 1.5 |
| Rule of Law | 0.5 | | -2.1 | 1.3 |
| Voice and accountability | 0 | | -2.2 | 1.4 |
| Government effectiveness | 0 | | -2.2 | 1.7 |
| Control of corruption | -0.1 | | -1.5 | 1.7 |
| Online access to 20 basic e-government services | 100 | 84.3 | 47.5 | 100 |

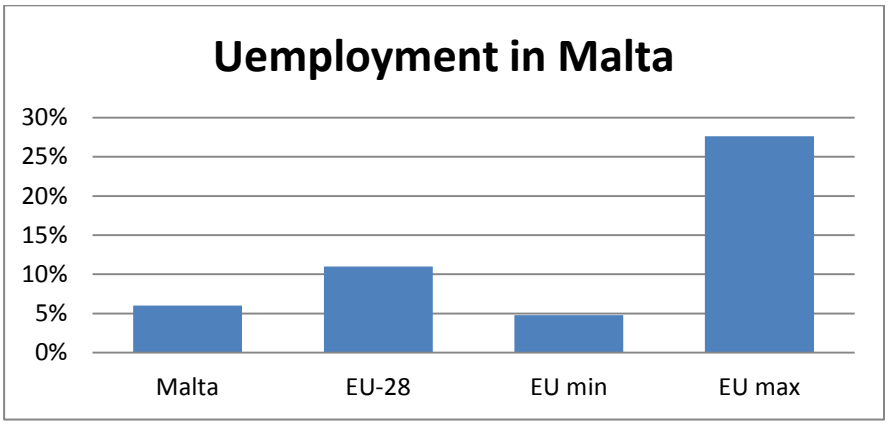
**Source:** EU, 2012, Country Factsheet, Malta

Judging by a number of governance indicators Malta is an average performer in the EU except online access to government services where the country is a leader.

## 3. Employment

In 2012, the total employed population in Malta was 168,730 people and the unemployment rate was 6.5%. Employment in Malta has grown by an average of 1% between 2001-2011, more than twice the EU average but less than the best performers where employment has grown by around 2.5% per year on average.

**Figure 8 Unemployment rate in Malta as of July 2013**

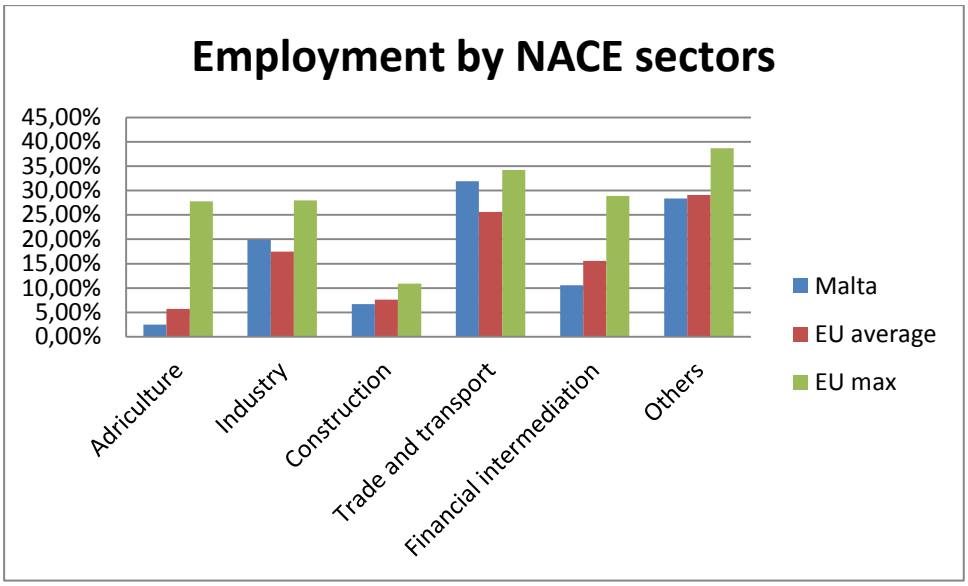



Source: Eurostat

As of July 2013, the 6% unemployment rate in Malta is among the lowest in the EU. Figures are better only in Austria, Germany and Luxembourg. On the other hand, the Maltese employment rate remains among the lowest in Europe, in particular for women (44.2% in 2012) and elder workers (7.4% in 2012 for the age group 55-64). The total number of employed people in Gozo in 2011 is about 7% of the total number of employed people in Malta.

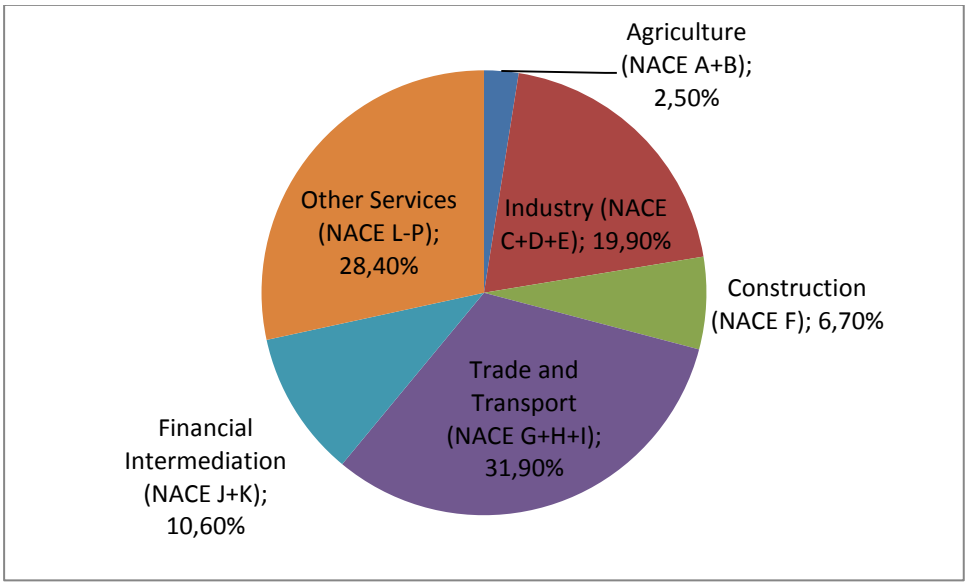
From the two figures below we can see that the trade and transport sector is a major employer with around 30%, industry employs around 20% of the working population, financial intermediation – around 10% and construction – around 5%.

**Figure 9 Employment by NACE sectors (% of total employment) (2009)**




Source: Eurostat

**Figure 10 Split of employment in Malta by sectors in 2011**

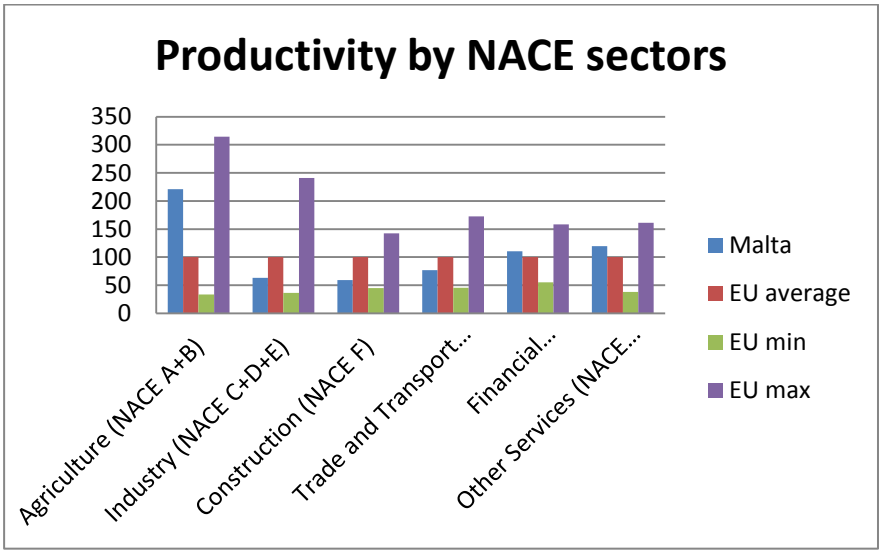



**Source:** National Statistics Office, Malta

## *4. Productivity*

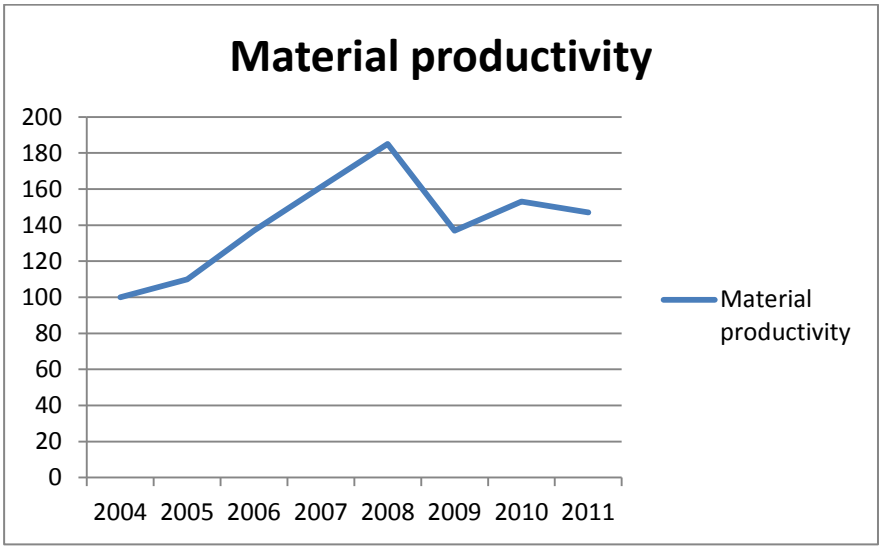
In the figure below we make a comparison between the productivity of economic sectors in Malta and the EU-average. We observe that the Maltese agriculture is more than two times more productive than the average EU-27. The financial intermediation services and other services category are also more productive than the EU average. In these three categories the difference with the best in the EU is not overwhelming. Conversely, the Maltese industry is almost 50% less productive than the EU-27 average and almost five times less productive than the best in the EU. The same, to a smaller degree, is valid for construction and trade and transport.

**Figure 11 Productivity by NACE sectors, Index, EU27 = 100 (2009)**




**Source:** Eurostat

**Figure 12 Material productivity (GDP/DMC) (2004=100)**

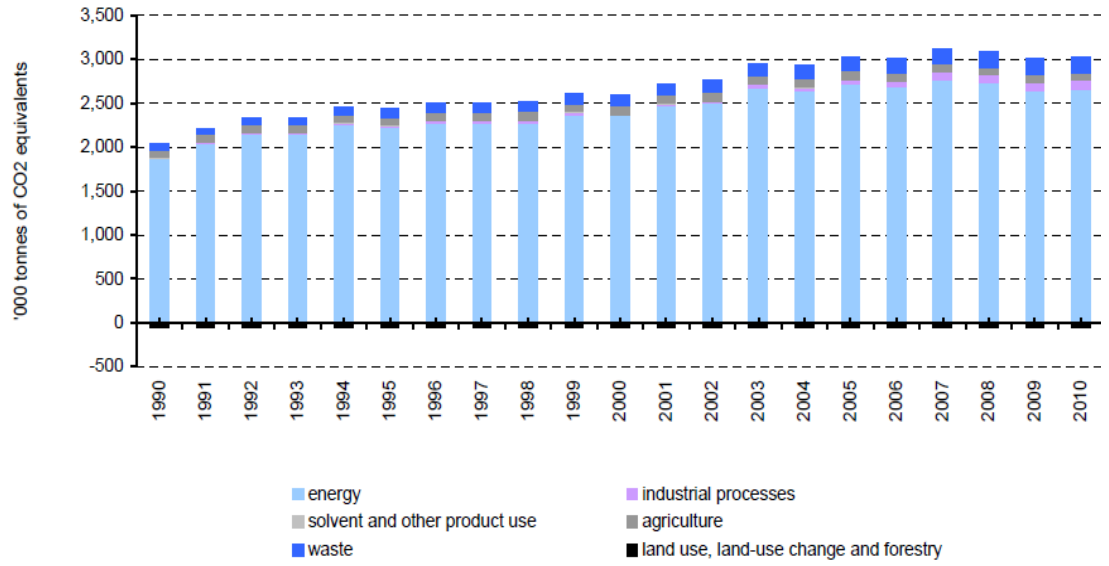



**Source:** National Statistics Office, Malta

# IV. Impact of the economy of the environment

When discussing greening of the economy there is a need to try and see what the actual impact of the economy is on the environment. From the table below it could be seen that energy generation is responsible for the majority of GHG emissions in Malta. Therefore, changes in the electricity mix or the source of fuel could contribute significantly to the overall decrease of GHG emissions in Malta and hence to greening of the energy sector. Waste is the second biggest emitter of GHG in the country. Both the energy and waste sectors are discussed further.

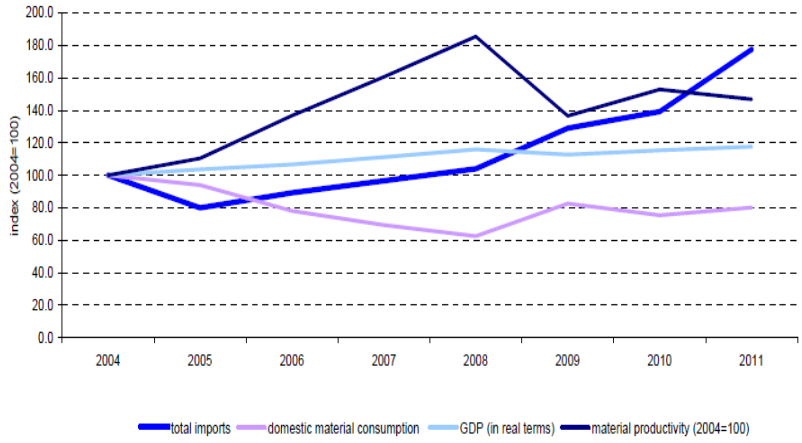
**Figure 13 GHG by sector and withdrawals from land use, land-use change and forestry**




**Source:** Climate change statistics

From 1990 to 2010 GHG emissions in Malta have increased by an average of 2.1% per year.

**Figure 14 Domestic material consumption 2004-2011**




Source: National Statistical Office, Malta

The figure above demonstrates that there is a certain degree of decoupling between Malta's real GDP and the domestic material consumption. While the real GDP grew by 20% between 2004 and 2011, the DMC fell by 20% for the same period. This is probably due to the changing structure of the economy and the increasing share of services.

# V. Sectors of the Green economy

# 1. Energy

## 1.1. Description and key milestones

***General context***

Electricity generation and supply are not liberalized in Malta. Enemalta is the main energy operator and manages the generation, distribution and supply of electricity. The nominal generation capacity for the country is 571 MW and Marsa Power Plant capacity is 267 MW while Delimara Power Plant capacity is 304 MW.[xi] The real electricity generation in 2012 was 336 MW, an increase from 328 MW in 2011.[xii] In 2011 the fuel mix is HFO/Gasoil (84%/16%). The industrial/commercial sector is the biggest consumer responsible for 50.3% of the total consumption in 2010 followed by the domestic sector with 29.5%, water production – 5.4% and government – 2.7%. The unbilled units are 11.8%. In 2009, the consumption per capita is 0.015 GJ/capita while for EU-27 it was 0.019 GJ/capita, i.e. Malta consumes less electricity than the EU-27 average.[xiii] In 2009, Enemalta contracted an automated meter-reading system to contribute to additional energy savings. In spite of the positive developments, the rate of transmission and distribution losses increased from 10% in 1990 to around 15% in 2009, which is more than twice the EU-27 average.[xiv]

**Electricity consumption**

Gross inland consumption (GIC) increased by 63% between 1990 and 2009 (900 toe). Final energy consumption (FEC) in Malta has grown by 30% between 1990 and 2009 (440 toe) (*Eurostat 2010*). In final energy consumption, transport is the most demanding sector (55%), followed by household (18%) and commerce (13%). The share of industry (11%) is far below the EU-27 average (27%) and still shows a decreasing tendency (*Eurostat 2010*). Energy consumption per capita is almost 34% below the European average (2.3 toe per capita compared to 3.6 toe per capita in 2008), placing Malta third out of EU-27 countries *(Eurostat 2010).*

***Energy intensity***

Energy intensity was 195 toe/EUR million in 2008, slightly higher than the EU-27 average (167 toe/EUR million), placing Malta 14th among EU member states (*EC 2010).* Between 1995 and 2000, total energy intensity decreased by 20% thanks to an increase in the efficiency of thermal power plants and the changing structure of the economy. However, this trend was reversed between 2000 and 2009 due to increasing losses in power generation driven by the rapid increase in electricity use.[xv]

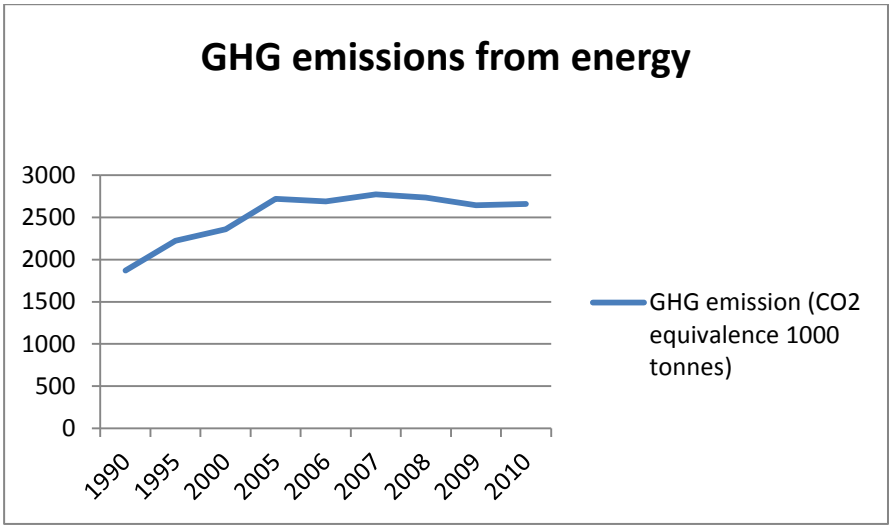
***Developments in the sector***

So far the development of the energy sector has faced several important constraints such as high dependency on oil, lack of interconnections, one ageing and inefficient power plant (Marsa) as well as large demand differences between peak and low varying from 160 MW to 425 MW.

The Maltese energy sector is undergoing a radical change. The power stations which are 100% oil-based will be converted to natural gas and this is one of the ways to green the energy sector in Malta. The new Labour government has come to power on a drive for gasification. This represents a very significant investment of MEUR 400.[xvi] Switching to gas fired generation will be made possible through a Natural Gas project which will be developed in partnership with the Private Sector.[xvii]

Additionally the energy production context will further change as the Marsa power plant will be shut down in 2013 because of the Large Combustion Plant (LCP) Directive requirements. [xviii] The electricity gap will be bridged through the interconnection to Sicily which will be completed in 2013 and Malta will be able to buy cheaper electricity from Italy. The 144 MW Delimara extension will also make the closing of Marsa PP possible.

**Figure 15 Emissions from energy**




**Source:** Climate change statistics (from National GHG Emissions Inventory)

Emissions from energy include all emissions that take place in energy production, transport, households and industry. It is to be observed that after peaking in 2006-2007 emissions have started to go down.

**Picture 1 Marsa power plant to be shut down by end 2013**

**Author:** Ruslan Zhechkov

**Renewable energy from sun**

Despite the favourable sun and wind resources Malta still has a very small share of Renewable Energy Sources (RES) in its Final Energy Consumption (FEC) because of a late start. According to Luciano Mule'Stagna from the Institute for Sustainable Energy, before 2007 there had been no political will for developing RES and therefore no push from the government. It is mainly the accession to the EU in 2004 and the Europe 2020 targets that nudged government into action.[xix] The new government which came into power in April 2013 has pledged to continue efforts for RES development.

**Renewable energy from wind**

Some assessments rank Malta as the country in Europe with the best conditions for the production of wind-generated electricity (Country Factsheet Malta, 2012, DG Regional Policy). Other assessments are much more conservative. According to the National Energy Policy for the Maltese Islands, "the One-Year average wind speed at Aħrax Point (Nov. 2009-Oct. 2010) was calculated to be 7.18 m/s at 80 m above ground level. The long term average wind speed at this site at 80 m was estimated to be equal to 6.84 m/s which is at the lower limit of commercial viability for large windfarms".[xx] However, wind energy development faces strong resistance from local population because of the visual impact. Malta is a small country and onshore wind turbines would be visible from everywhere. There are ongoing studies currently but overall there are strong reservations for wind energy development. Offshore development concerns are over bird migration paths as well.

## 1.2. Natural assets suitable for RES generation

By its Southern geographical position Malta is blessed with abundant solar and relatively good wind resources. The wind energy potential is about 2.5 times higher than the EU average and the number of solar radiation hours is 50% higher than the EU average. The figures are not confirmed by the National Energy Policy for the Maltese Islands which

proves the difficulties in gathering data for wind potential and the strong variability of potential according to precise locations.

**Table 2 Potential for wind and solar renewable energy development**

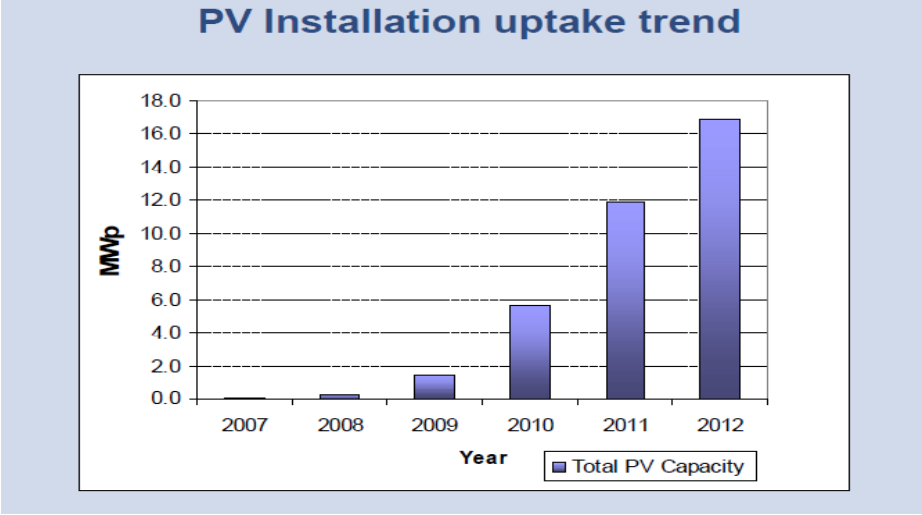
| | Malta | EU average | EU min | EU max |
|---|---|---|---|---|
| **Wind energy potential** (full load hours per year) (2000-2005) | 3186.7 | 1261.0 | 457.1 | 3186.7 |
| **Solar radiation hours** (Average solar energy resources in KWh/year) | 2001 | 1358.3 | 1053 | 2001 |

**Source:** EU, 2012, Country Factsheet, Malta

## 1.3. Trend over the years

Renewables in Malta took off only after 2007. The figure below demonstrates the development of PV-solar from practically 0 in 2007 to more than 16 MWp in 2012.

**Figure 16 PV Installation uptake trend**




**Source:** Presentation by Godwin Sant, Energy Policy of Malta and Strategies for fulfillment, 6 October 2012

In December 2012, the total installed PV capacity was 18 MW.[xxi]

## 1.4. Current state. Target and distance to EU targets

The table below shows that despite the abundant natural resources Malta is far from its 10% 2020 target for RES in Final Energy Consumption (FEC).

**Table 3 Current share of RES in FEC (%). Targets for 2020**

| | Malta | EU average | EU min | EU max |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| **Share of renewable energy in gross FEC (2010)** | 0.4 | 12.4 | 0.4 | 47.9 |
| **National EU 2020 target** | 10 | 20 | 10 | 49 |

**Source:** DG Regional and Urban Policy, 2012, Country Factsheet, Malta

**Table 4 National 2020 target and estimated trajectory of energy from RES in heating and cooling, electricity and transport**

| | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** |
|---|---|---|---|---|---|---|---|---|
| **RES Heating and cooling** | 8.5 | 8.2 | 7.9 | 7.6 | 7.4 | 6.8 | 6.6 | 6.2 |
| **RES-electricity** | 3.7 | 6.9 | 7 | 9.5 | 14.8 | 14.4 | 14.1 | 13.8 |
| **RES-transport** | 3.6 | 3.9 | 4.2 | 4.6 | 5.8 | 7.1 | 8.2 | 10.7 |
| **Overall RES** | 3.8 | 5.4 | 5.5 | 6.8 | 9.7 | 9.6 | 9.7 | 10.2 |

**Source:** Resubmitted National Renewable Energy Action Plan, 2011

According to the NREAP, 28MWp are to be installed in Malta by 2020.

We observe that there in an expectation for a gradual decrease of the share of RES in heating and cooling at the expense of significant increase in RES share in electricity and transport.

Despite the general resistance to wind electricity development in Malta there is a number of current and future projects.

**Box 2** Current and upcoming wind electricity projects

| **Onshore** | **Offshore** |
|---|---|
| • Micro wind (2010: 8kW and 2020: 127 kWp)<br>• Large scale (Bahrija, Hal-Far: 14.4 MWp)<br>• Large scale (Wied Rini: 10.2 MW) | • Sikka il-Bajda: 2016-2020: 72-100 MWp)<br>• NER 300 – floating 52 MWp wind farm (proposal)[xxii] |

The 2020 target for solar was 0.7% but there are discussions now of increasing it to 3% as the 0.7% target is expected to be met in 2015.

**Table 5 RES Percentage share in gross energy contribution**

| **Type if RES** | **2011** | **2015** | **2020 (targets)** |
|---|---|---|---|
| PV | 0.13 | 0.27 | 0.69* |
| Offshore wind | 0 | 0 | 3.48 |
| Onshore wind | 0 | 0.30 | 0.61 |
| Waste to energy electricity | 0.38 | 2.45 | 2.18 |
| Waste to energy heat | 0.44 | 0.45 | 0.32 |
| Solar Water Heaters | 0.58 | 0.56 | 0.52 |
| Biofuels | 0.75 | 1.03 | 2.40 |
| **Total** | **2.28** | **5.06** | **10.20** |

**Source:** Presentation by Godwin Sant
*There are discussions about increasing the 2020 target to 3% as it is expected to be met in 2015.

From the projections above it could be seen that the Maltese authorities predict a gradual growth in electricity from RES approximately adding 1% per year until 2020, a growth which will allow the country to reach its Europe 2020 targets.

## 1.5. Energy efficiency

The policy framework is in place and the target is 22% saving by 2020. Requirements for energy efficiency for new buildings are in place in line with the Energy Performance of Building Directive, 2010. The Maltese regulation is applicable for new construction and for extensions more than 25% of the existing surface. The high relative price of electricity (23.3 cents (PPS) in Malta versus an EU-27 average of 19.7 cents in the 2nd half of 2012[xxiii]) is a major driver for energy efficiency measures. After these prices were introduced there was a drop in consumption but then it bounced back. Despite the positive influence of the electricity prices on energy efficiency they remain high for the Maltese revenues and the new Labour government has pledged to reduce them with 25%.[xxiv]

Energy efficiency in electricity generation will be improved with the introduction of the new power plant in Delimara.[xxv]

**Box 3 Energy efficiency goals for 2020**

- 22% (-237 ktoe of primary energy savings) = 835 ktoe in 2020
- Savings in production, distribution and final consumption
- Public authorities to lead by example
- Industry to become more energy efficient to increase competitiveness.[xxvi]

## 1.6. GVA generation

NACE codes B-E (Mining and quarrying; electricity, gas, steam and air conditioning supply; sewerage, waste management and remediation activities) is responsible for 14.01% of the GVA at current prices.

## 1.7. Job generation

Regarding jobs and GVA there is awareness of the potential but it has not been quantified.[xxvii] According to the National Statistics Office data, some 1,540 people were employed in electricity, gas, steam and air conditioning supply (NACE 35) as of December 2012.[xxviii] In terms of energy efficiency assessment in buildings there are 165 assessors for residential buildings and 30 – for commercial. There are no figures on specialised teams for insulation and similar works but there are such.[xxix]

## 1.8. Barriers and trade-offs

***Public acceptance***

Public acceptance is lacking in relation to the wind farms. Developments meet strong resistance because of the visual impact. Malta is a very small country (roughly 30 km. by

10 km.) and onshore wind farms would be visible from everywhere. Offshore development concerns are over bird migration paths.

***Roofspace***
Regarding RES roofspace is often limited because of penthouses and in these cases the roof is owned by the owner of the penthouse. The solution is that the building, instead of installing the PVs on the roof of the building it can install it in a park or on roofs of public buildings.[xxx]

***Lack of economies of scale***
As Malta is a small country there are no economies of scale for any investment into solar or wind.

***Technological limitations***
The technological bottlenecks for the offshore wind farms and the floating solar islands is the depth of the sea.

***Land and space limitations***
In addition to the lack of political will and the absence of binding targets one of the main barriers for PV development has been the limited space in Malta and the high population density.
As Malta is very densely populated there is always an inherent conflict when a certain development requires space. Here is an example of space requirements for different capacities.

**Table 6 Example of space requirements for different capacities of solar RES**

| Comparison of area requirements in m2 (approximately) | | Relation |
|---|---|---|
| 2 kW | Max 25-29 | Roof of wash room |
| 15 kW | Max 230-250 | ½ tennis court |
| 65 kW | Max 1,120-1,150 | 1 tomna |
| 200 kW | Max 3,500-3,700 | 3 tumuli |
| 400 kW | Max 7,100-7,300 | 1 football pitch |
| 1000 kW | Max 17,800-21,000 | 2.5 football pitches |

**Source:** Presentation by Godwin Sant

**Table 7 Area required for PV uptake scenarios: low, high, medium**

| Area (km2) | 2010 | 2015 | 2020 |
|---|---|---|---|
| Low | 0.00216 | 0.0214 | 0.0693 |
| High | 0.072 | 0.81 | 1.8 |
| Medium | 5.67 | 8.5 | 9.2 |

Source: Presentation by Godwin Sant (based on Mott Macdonald 2009 high level estimate of roof space available in Malta)

**Table 8 Overview of relevant environmentally harmful subsidies in energy**

| Subsidy area | Subsidy | Amount involved |
|---|---|---|
| **Fossil fuels** | Excise tax exemptions for petroleum products for: electric power generation; maritime commercial, | No estimates of the revenue foregone due |

| Subsidy area | Subsidy | Amount involved |
|---|---|---|
| | industrial or fishing vessels; inshore fishing; fuel used by aircraft operating for reward in international traffic. The biomass content in biodiesel is also exempt.[xxxi] | to the excise tax exemptions are available.[xxxii] |
| **Electricity** | A reduced rate of VAT (5%) is applied on the supply of electricity (the standard VAT rate is 18%).[xxxiii] | No estimates of the revenue foregone due to the reduced rate of VAT are available.[xxxiv] |

**Source:** IVM Institute for Environmental Studies (2013). Budgetary support and tax expenditures for fossil fuels: An inventory for six non-OECD EU countries.

## 1.9. Governance

Enemalta corporation was set up in 1977 and is the main provider of energy generation and distribution on the Maltese Islands. Environmental Management System will be implemented throughout Enemalta's operations to ISO 14001. This will ensure continuous improvement in its environmental performance.[xxxv]

The Ministry for Energy and the Conservation of Water is the government body in charge of energy policy.

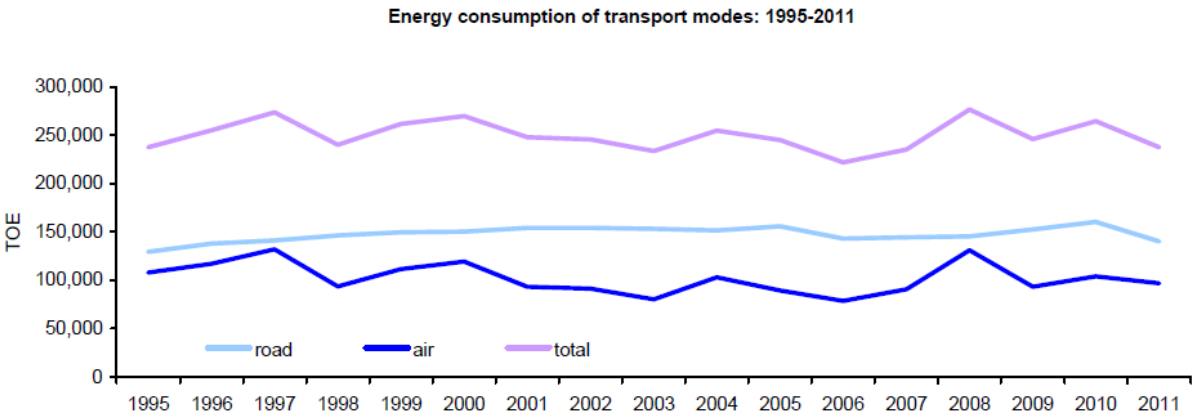
Other organisations active in the energy sector include: Malta Energy Efficiency and Renewable Energies Association[1], Malta Intelligent Energy Management Agency[2], the Malta Chamber of Commerce, Enterprise and Industry[3], the Institute for Sustainable Energy at the University of Malta[4], etc.

## 1.10. Energy and transport

Energy consumption of transport has been relatively stable between 1995 and 2011. Energy for road transport is slightly higher than energy for air transport. There are no railways in Malta.

**Figure 17 Energy consumption of transport modes**

[1] meerea.org, acccessed 13 February 2014
[2] www.miema.org, accessed 13 February 2014
[3] http://www.maltachamber.org, accessed 13 February 2014
[4] www.um.edu.mt/ise, accessed 13 February 2014




Source: Eurostat

**Fuel economy**

According to Stephen Camilleri from Transport Malta, annual taxes and registration tax of a car depends on the $CO_2$ emissions. Electric cars pay only 10 EUR/year. The impact of this has not been measured. There are also a number of hybrid buses.

During the 2011 reform of Maltese transport, 586 traditional Euro 0 buses have been removed from circulation. Some 284 Euro 5 buses were introduced. The capacity increased from 50 to 70 passengers per bus and is 3.7% higher.[xxxvi]

The obligatory share of biofuels in transport for 2012 was 2.5% and for 2013 - 3.5%. The National Reform Programme (2013) acknowledged biofuels are an important tool for reaching the target of energy from renewable sources in the transport sector. In 2012, the RES share in road transport was 3.3%.[xxxvii]

Additionally, the government is providing individuals with a grant of up to €4,000 to purchase electric vehicles. A target of 5,000 electric cars has been established for 2020 and a network of up to 100 charging points will also be installed in the near future.[xxxviii]

## 1.11. Drivers and enabling conditions

***Policy drivers***

Main policy documents setting the framework for current fast RES development are: the National Renewable Energy Action Plan, the National Energy Efficiency Action Plan, the Feed-in tariff Act. According to Luciano Mule'Stagna, they are sufficient and appropriate.[xxxix]

Other relevant energy policy documents include: Electricity Supply Regulations (423.01), Enemalta (Gas Board) Rules (423.06), Promotion of Energy from Renewable Sources Regulations (423.19), Electricity Market Regulations (423.22), Biofuels and Bioliquids Regulations (423.24), Energy End-use Efficiency and Energy Services Regulations (423.34), Guarantees of Origin of Electricity from High Efficiency Cogeneration and Renewable Energy Sources Regulations (423.38), Feed-in Tariffs (Electricity Generated from Solar Photovoltaic Installations) Regulations (423.46).[xl]

***Feed-in tariffs***

The feed-in-tariff for small scale domestic photo-voltaics (PV) of 0.25 EUR/KWh (Malta) and 0.28 EUR/KWh (Gozo) was introduced in 2010. It is guaranteed for eight years up to

a maximum of 4.8 MWh per year. The feed-in-tariff for business is 0.20 EUR/kWh and is guaranteed for seven years up to a maximum of 160 MWh per year.[xli] In 2013 feed-in-tariffs were introduced for installations of PV panels that are not supported through other funding, as follows:

- for installations < 1MW, 0.18 EUR/kWh for 20 years for rooftops;
- 0.17 EUR/KWh for 20 years for ground-based;
- for installations of > 1MW, 0.17 EUR/kWh for 20 years for rooftops;
- 0.16 EUR/KWh for 20 years for ground-based.[xlii]

***Investment subsidies/grant programmes***

The Maltese Ministry of Finance grants once-only investment subsidies for small wind and solar PV systems to domestic investors: for PV, 50% of eligible costs are funded up to a maximum of 3,000 EUR per family/installation; micro wind turbines (with a maximum generation capacity of 3.7 kW) installed on domestic premises may qualify for a grant of 25% on the purchase price up to a maximum of 232.94 EUR. There is also a grant scheme for domestic solar water heaters: 40% of eligible costs are funded up to a maximum of 560 EUR per family/installation, with no cap on the budget.

Some 2-3000 residential PV systems have been installed in Malta and the government plan is currently oversubscribed.[xliii] The PV installations registered with the Malta Resource Authority (MRA) by 31 May 2012 amounted to 17 MWp which would produce appr. 26 GWh/year (in December, 2012 the figure was 18 MW). An upcoming project is the installation of 67,000 m2 of public roof tops with the capacity of 4.5-5 MW generating 7.5 GWh/year.[xliv]

A similar grant programme was announced in March 2013 for an additional 20 MEUR for the next two years. This means a total investment of 40 MEUR (own investment included). This is expected to lead to the installment of almost 50 MWh of solar energy (residential and industrial) compared with a target of 27 MWh. The grants come partly from the Structural Funds.[xlv]

As a part of the current programming period 2007-2013, since 2010 the government has allocated a further EUR 4.2 million for solar water heater grants, co-financed through the European Regional Development Fund (ERDF), to be used by the end of 2013. The grant covers 40% of the eligible costs up to a maximum of EUR 560. According to estimations, around 15 000 installations of solar water heaters have been installed in Malta.[xlvi]

***Promotion of new technology***

The Maltese Environment and Planning Authority (MEPA) is actively promoting solar water heaters and photovoltaic systems. Some EUR 800,000 are available to MEPA to incentivize the application of these technologies in existing and new buildings. Since 2010 EUR 150,000 has been made available to farmers who opt for energy efficiency investments.[xlvii]

***Decrease in price of installations***

At the current feed-in tariff level and the current prices of PVs the payback time is 4-5 years. However, the new feed-in tariffs for the new two-year grant will be lower as the

prices of installations have dropped substantially (i.e. Mr. Stagne's own installation cost 7,500 EUR two years ago while exactly the same one costs around 4,000 EUR now)

The grant programme, the high feed-in tariffs, the good policy framework, the political commitment and the decreasing cost of installation have been singled out as the main driving forces for solar development.

**Picture 2 Solar water heaters and PV installations on roofs in Sliema, Malta**

**Author:** Ruslan Zhechkov

***Funding for research***

The government has identified several important areas for research and RES is one of them. Through the MCST there is funding for collaboration between industries and university.

***Smart meters***

According to the Enemalta website, the 'smart metering project will make Malta the first country in the world with a smart electricity grid on the whole territory'. The implementation of this technologically advanced system will enable the better management of the distribution of electricity and better monitoring of consumption by the consumer'.[xlviii] This project was started in 2009 and it is expected that the complete replacement of all 275,000 electricity meters (originally 245,000 but increased due to new consumers and PV systems) should be completed within three years.[xlix]

***Soft loans for energy efficiency measures***

Malta Enterprise has also offered soft loans to hotels, guesthouses, hostels, farmhouses, snack bars and restaurants to support energy efficiency measures, including energy saving measures, use of cleaner fuels and alternative energy sources. Loans of up to 400,000 EUR and covering up to 80% of the total eligible project costs have been provided for up to five years, and must then be repaid at an interest rate of 1.5% higher

than the discount rate charged by local commercial banks. Applications were invited until the end of 2012, with the incentive remaining effective until the end of 2013.[l]

***Energy efficiency in buildings***

There are new suggested targets for the revision of the minimum requirements of energy performance of buildings in the National Energy Efficiency Action Plan (NEEAP). These targets will affect new and refurbished buildings. The Building Regulation Office (BRO) has commissioned cost-optimal studies on the existing national minimum requirements. They will recommend the most appropriate upgrades of the same requirements as required by the Recast EPBD 2010/31/EU. Two studies will establish cost-optimal energy performance levels in new and existing residential buildings as well as in new and existing Office buildings. The national plan for increasing the number of nearly zero-energy buildings will be properly defined when the results of the cost-optimal studies are issued in the official report.[li]

## 1.12. Gozo

Gozo is a separate island and the Maltese government has a special policy towards it in general and there is a Ministry for Gozo. In the energy sector Gozo is also being treated in a special way. Feed-in tariffs in Gozo were 0.28 EUR/KWh versus 0.25 EU/KWh for the main island. This differentiated policy is in line with the EcoGozo vision.

In the recent past the Institute for Sustainable Energy made a massive awareness raising campaign on solar power and energy savings. More than 70% of all individual homes have been visited (9,000 homes). This is also a driving factor and a similar project is being prepared for the main island.

## 1.13. Further opportunities for greening the energy sector. Key policy recommendations

***Decoupling economic growth from energy demand***

Malta has a big potential to decouple growing total energy demand from economic growth by investing in RES and alternative technologies.[lii] The principal renewable sources of energy considered for electricity generation are wind and solar radiation. The potential of waste, wave energy and solar water heating for buildings is also being considered.[liii] Improvement of energy technologies through energy saving and energy efficiency measures is a priority as well.

***Conversion of the power stations from oil to gas***

Conversion of 100% of the power stations in Malta from oil-based to gas-based is one way of greening the energy sector. Closing down of non-compliant Marsa Power Plant will reduce emissions. These measures would help continue the trend for levelling off and decreasing GHG emissions from energy production.

***Renewable energy sources***

Malta should capitalise on its favourable climate and abundant sun and wind resources. The country was a late starter in developing electricity from RES but it has been introducing the right incentives during the past several years and growth has been consistent.

**Table 9 PV uptake potential: low, high, medium**

| Capacity | 2010 | 2015 | 2020 |
|---|---|---|---|
| Low | 0.12 MW (0.183 GWh) | 1.19 MW (1.82 GWh) | 3.85 MW (5.9 GWh) |
| High | 4 MW (5 GWh) | 45 MW (69 GWh) | 100 MW (153 GWh) |
| Medium | 315 MW (482 GWh) | 472 MW (722 GWh) | 513 MW (785 GWh) |

**Source:** Presentation by Godwin Sant

***Demand-side measures***

Implementation of demand-side management is recognised as one of the best ways ahead. At the same time, there is a need for coordinated measures in the framework of an updated National Energy Efficiency Action Plan. These include: schemes to promote penetration of SWH, P.V. installations, and purchases of white goods; water use efficiency; improvement in road networks, promote e-working and tele-working; smart traffic management, encourage car sharing and car-pooling; green procurement; education campaigns; energy efficiency in government buildings; Covenant of Mayors; and Sustainable Action Plans.[liv]

***Energy efficiency and building conservation***

According to Joe Magri Conti from MEPA, during the conservation of old, historical buildings the preservation of thickness of walls is promoted. They also found a way to introduce double-glazing in the old window frames which was an innovation. Roofs used to be made from crashed pottery and lime, a technique called dellum (women used to thread upon it). Lately, some people have been redoing it. When this is not possible retrofitting of roofs is done with an insulation layer.[lv]

***Energy efficiency and transport***

Energy efficiency in transport can be further improved by attracting additional people to use the revamped public transportation system in Malta. However, there are barriers such as considering cars as status object but also the dispersed character of the Maltese settlements.

# 2. Tourism

## 2.1. Description and key milestones

Tourism has a significant, growing share in the Maltese economy. It has environmental, cultural and social dimensions. The marine environment and the beaches are the main points of attraction. While the coast brings prosperity through the tourist industry it also becomes more vulnerable due to tourism-related pressures. Besides the natural assets, the rich cultural and architectural heritage of Malta is also a major factor for success of the local tourist industry.

**Picture 3 A glimpse of Malta - Marsaclockx bay and port**

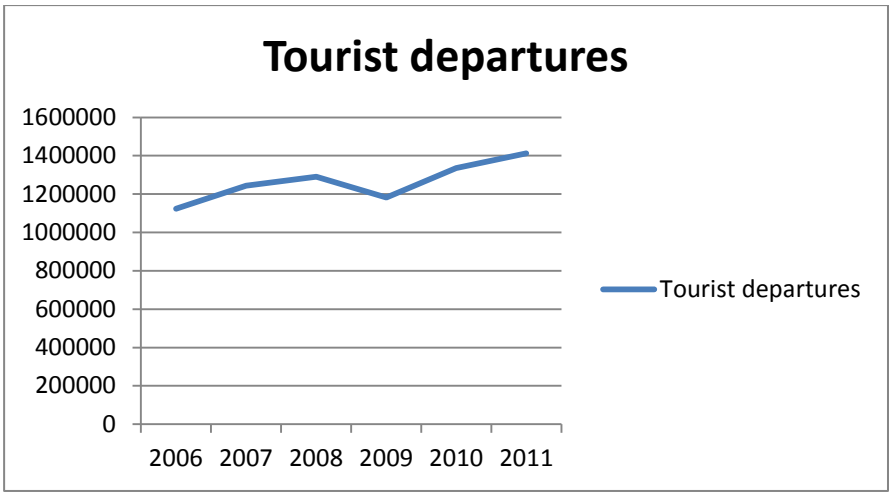
**Author:** Ruslan Zhechkov

Although there is no evidence of the waste, water and energy implications of tourism, the focus has shifted from orientation towards growth in the 1980s towards a more sustainable tourism. One of the reasons for this is that, according to estimations, the carrying capacity of the Maltese Islands is 1.5 million tourists per year. In 2012 the tourists reached almost 1.4 million. However, there is no precise analysis as to the activities of these tourists and the overall impact of tourism would depend on this.[lvi]

## 2.2. Trend over the years

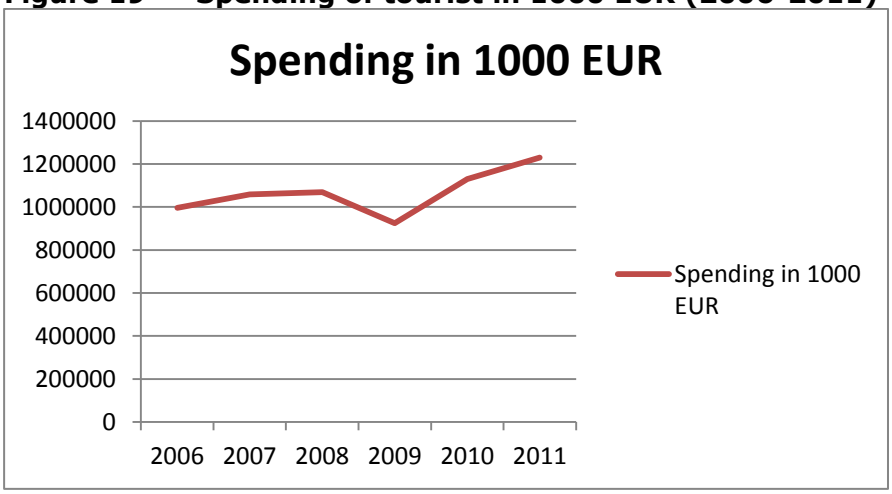
Tourist departures have been growing over the years and from 1.12 million visitors in 2006 they grew to around 1.41 million visitors in 2011. This represents a growth of more than 25%. Spending grew with around 23% from slightly less than EUR 1 billion in 2006 to EUR 1.23 billion in 2011. Total nights grew from 10.6 million to 11.7 million or 9.5%. The average length of stay decreased from 9.5 days in 2006 to 8.3 days in 2011. There has also been a trend of decreasing of the tourists' average age and also an increase in the number of tourists visiting Malta during the shoulder months from November to April.

**Figure 18 Tourist departures (2006-2011)**



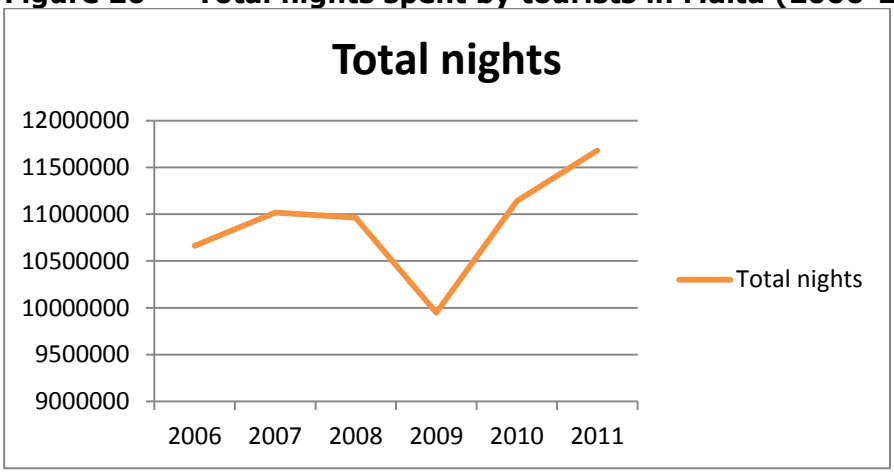

**Source:** National Statistics Office

**Figure 19 Spending of tourist in 1000 EUR (2006-2011)**




**Source:** National Statistics Office

**Figure 20 Total nights spent by tourists in Malta (2006-2011)**




**Source:** National Statistics Office

## 2.3. Impact of climate change on tourism

Climate change is (and will be) determining seasonality of tourism and choice of location. It has a significant impact on costs such as cooling. Increase of frequency of heat waves droughts, floods, tropical cyclones will have an immediate effect on the tourism industry of Malta through increased infrastructure damage, additional emergency preparedness requirements, and higher operating expenses.

Since environmental conditions are such a critical resource for tourism, climate induced environmental changes will have profound effects on tourism. Changes in water availability, biodiversity loss, reduced landscape aesthetic, altered agricultural production (for example; food and wine tourism), increased natural hazards, coastal erosion, inundation, damage to infrastructure will all impact tourism.[lvii]

## 2.4. Vision for Maltese tourism

The Maltese government has a strong vision on the quality of the environment as a main factor for success in the tourism sector and a main competitive advantage for Malta. There is a recognition of the risk and pressures that tourism puts on the environment. A number of environmental and social goals have been identified.

**Box 4 Vision for tourism in Malta. Aspects relevant to the green economy**

***Environment***

- Giving added value to built and natural heritage thus ensuring their protection;
- Achieve better quality of life in cities as this has a major impact on tourist experience;
- Minimise resource use and contribute to a low-carbon, eco-efficient and resource efficient economy;
- Carry out constant monitoring to mitigate pollution and reduce the negative impacts on the environment especially on protected areas;
- Align tourist activities with area management plans, permits and regulations established by MEPA.

***Social***

- Have a trained workforce that enjoys a fair return from a sustainable economic activity;
- Provide a forum for exchange of ideas which is an essential factor for future economic growth and social development;
- Conserve local craft and traditions;
- Develop tourism within the socially accepted limits.

Source: Tourism Policy for the Maltese Islands 2012-2016

## 2.5. Vision for Gozo

The environment remains Gozo's main asset and the future vision is based on eco-principles and on the island as a model for sustainable living. This vision is to be reflected in the Local Plan for Gozo 'facilitating the development of the island as an eco-destination'. Gozo also needs to attract a wider share of independent travelers or the so called relational tourism because of the higher quality interaction with the local

communities. Additionally, the development of rural and agro-tourism is one of the main potentials for Gozo which will also strengthen the linkages between the tourist and agricultural sectors. The Tourism Policy for the Maltese Islands (2012-2016) also promotes policies such as integration of sustainability concerns by businesses; responsible management and spatial land-use tourism planning; pursuing tourism development on a scale and in a manner that ensures its long-term viability and does not alter the human, physical and natural assets of the environment. In terms of accommodation there is the intention to revise the standards for farmhouses relying on self-catering. Additionally, the vision for Gozo features tourists who:

- are willing to engage in responsible practices;
- reduce, re-use and recycle waste;
- make use of public transport;
- consume locally produced food;
- show respect towards the lifestyle and culture of the Gozitans;
- do not disturb the ecosystems in Gozo.

## 2.6. GVA generation

NACE codes B-E (Mining and quarrying; electricity, gas, steam and air conditioning supply; sewerage, waste management and remediation activities) is responsible for 14.01% of the GVA at current prices.
Tourism constitutes an important pillar for Malta's economy and its direct impact generates an economic output accounting for about 10% of the GDP.[lviii]

## 2.7. Job generation

According to the National Statistics Office, some 9,636 people were employed in 'Accommodation and food service activities' (NACE 55-56).

## 2.8. Governance

Maltese tourist sector development is taking place with cross-government support and interaction between government and the private sector. There is also a need for cooperation between the private sector and its components. This has been recognized in the past years when government and the private sector have monitored the tourist market together on different levels and discussed possible actions.

In January 2012, a Minister for Tourism, Culture and the Environment (MTCE) was appointed. MTCE was responsible for managing tourist initiatives, drafting policy and monitoring activities. The MTCE was responsible of environment and culture as well which points at the synergies between the three areas. With the coming of the new government in April 2013, a new Ministry of Tourism was established[5]. There is also the Malta Tourism Authority (MTA)[6].

There is a Business Support Unit which provides recommendations to tourist operators.

[5] http://www.tourism.gov.mt, accessed 13 February 2014
[6] http://www.mta.com.mt, accessed 13 February 2014

Federated Association of Travel & Tourism Agents is a national nonprofit organisation representing travel agents and tourism operators.[7] Gozo's interest in tourism are represented by the Gozo Tourism Association.[8]

## 2.9. Barriers

According to Dr. Mangion, the main barriers to the development of tourism include the conservative level of progress on green public procurement that has characterised public administration throughout the years and the challenges faced by green firms in gaining access to finance.[lix]

## 2.10. Drivers and enabling conditions

***Policy framework***
The National Tourism Policy (2007-2011) has been the main policy framework so far. The new Tourism Policy for the Maltese Islands (2012-2016) focuses much more on the environmental dimension of tourism. The environmental drivers identified in it include: climate change, air quality, natural resources depletion, loss of biodiversity, degradation of ecosystems, environmental pollution, responsible consumerism, resource efficiency, waste management, integrated management of coastal zones, water and energy conservation, storm water collection, environment as a tourist attraction and increased environmental awareness and action.

Malta is also striving to effectively identify innovative tourism processes and operations which reflect a zero-waste model, building on renewable energies, green procurement, green jobs and the need to target responsible and relational tourism.[lx]

***Grant scheme***
A grant of 10 million EUR has been allocated towards the Grant Scheme for **Sustainable Tourism** Projects by Enterprises financed through the ERDF for 2007-2013. The scheme, managed by the Tourism and Sustainable Development Unit within the Office of the Prime Minister, directs funds towards the economic development of the tourism sector. Projects should strengthen Malta's competitive advantage in tourism; increase the use of ICT for tourism; increase good environmental practices by tourism enterprises; and/or increase innovation in tourism.[lxi]

There are recycling efforts in hotels and maybe they are integrated in the licenses but the main problem is that they are not a part of the local culture and the main efforts should be in this direction.

***Award scheme***
In 2009 the Federation of Tourism Operators launched a Travelife Sustainability Award Scheme. The award is given on a yearly basis. It does not only cover good environmental practices but also social and cultural.

***Eco-certifications***

[7] www.fatta.org, accessed 13 February 2014
[8] http://www.islandofgozo.org/, accessed 13 February 2014

Eco-certification initiatives aim to improve the tourism operators' environmental performance and to increase environmental awareness amongst staff. Criteria for hotel eco-certification include increasing environmental management, waste management, green procurement, energy, air quality, noise management and corporate social responsible investment opportunities.[lxii] The Malta Tourism Authority issues eco-certifications. There are 22 eco-certified hotels (out of 110 without counting the farm houses on Gozo)

***International Blue Flag for beaches***

Blue Flag Awards is an eco-label available whereby through the integration of proper management, local beaches are committed to have proper waste management systems, safety, bathing water quality, cleanliness and information of material, environmental education and environmental management.[lxiii]

The Malta Tourism Authority is responsible for beach management in Malta. It strives to meet international criteria for beaches such as safety, services and environmental awareness.

***Hotel Energy Audits***

The Malta Intelligent Energy Management Agency (MIEMA) in collaboration with the Malta Tourism Authority (MTA), the Tourism and Sustainable Development Unit and the Ministry for Tourism, Culture and the Environment are managing hotel energy audits. The audits primarily help local hotel establishments to reduce costs and help them become more competitive by adopting energy efficient systems and practices. The deliverables of the hotel audits and the recommendations emerging from these audits for the 3* and 4* were linked to other initiatives such as the scheme administered by the Malta Enterprise (Innovation Actions Grant Scheme focusing on eco innovations and pro-environmental interventions).[lxiv]

***Travelife Sustainability Awarding System***

The Federation of Tour Operators (FTO) in collaboration with the Tourism and Sustainable Development Unit (MTCE) and the Malta Tourism Authority are running the scheme. By engaging in this activity the accommodation industry is being provided with an opportunity to invest in all the renewable energy options, waste management techniques, sustainable HR practices and proactive community involvement principles that contribute towards a greener economy and to one based on the principles of forward planning/corporate social responsibility that benefit the profitability of the industry itself and most outstandingly the sustainable quality of life for present and future generations.[lxv]

***Natura 2000 sites***

Malta has 34 Natura 2000 sites forming unique eco-systems. The share of Natura 2000 sites of the country's territory is 14% and it is lower than the 20% EU average. This is because of lack of land and the land take by the construction industry. These sites constitute a vital element in the safeguarding of Malta's remaining natural heritage landscape and are closely linked to a more successful tourist industry.[lxvi]

***'Investing in Water' project***

This is an initiative, funded by EU LIFE+, to improve the efficient operability of the tourism industry. The project aims to implement water consumption audits for the hotel industry and for general businesses. This project is currently being implemented by the

Malta Business Bureau in connection with MHRA and with the Malta Chamber. The project aims to improve the water utility patterns adopted by the hotel industry and seeks to identify practices which lead to less water wastage, maximized efficiency and mitigated economic losses. The project supports a more responsible attitude in water consumption and it is directed at hoteliers, employees and customers. The project contributes to address a cultural change connected to the negative perception that water is an infinite resource. The water consumption audits shall be fully implemented by March 2014.

***Valetta Cruise Port***

Valetta Cruise Port is one of the most successful Mediterranean ports of call, strategically located between Europe, North Africa and the Middle East. The port is within Valetta which is an UNESCO World Heritage City

***Rural tourism***

A Policy for Sustainable Rural Tourism in Malta and Gozo was being finalized as of April, 2013. The policy aims to ensure the complementarity of tourism with existing rural activities and to enrich the diversification strategy for rural areas by proposing sources of income and employment of rural communities. According to the office of Dr. Mangion, the concept of sustainability is firmly embedded in the drafted document. The two main policy driving factors rely on the distinctiveness of the rural tourism offer and the effectiveness of the management practices adopted by rural tourism operators and also upon the ability to adopt a marketing strategy aimed at attracting tourists whose behaviour contributes to sustainable practices.[lxvii]

***Transport on the island and accessibility***

Good local transport is an important factor for tourists' perception of their experience on the island. The recent reform (2011) is a major step in this direction. The reform included replacement of 585 Euro 0 buses with 284 Euro 5 buses and 10 hybrid ones. This increased capacity by 3.7%. The reform led to an 4.7% rise in passenger numbers. The reform also included improvement of the ferry links to Sliema. Vittorioso and Sangliar as well as a better synchronisation between the timetables of the buses and the ferries for Gozo. This reform was especially successful in terms of Gozo's accessibility. The good management of Air Malta is also an extremely important factor for the success of the Maltese tourism as air is the major mode of transportation to and from the island and a major way of overcoming the remote geographical location of the island.[lxviii]

## 2.11. Further opportunities for greening the tourism sector. Key policy recommendations

***Shifting tourists away from peak season***

The number of tourists in Malta in the summer months has reached the estimated carrying capacity. Therefore, in order to alleviate the impact there is a need to shift tourists away from the peak season to the shoulder months and also develop more sustainable forms of tourism.[lxix]

***Climate change and tourism***

Malta needs to monitor closely the scientific development around climate change in Malta and keep adapting the industry to the changing climate. Adaptation measures include

more active development of new forms of tourism and similarly to above shifting the tourists to shoulder months.

***Pressures of tourism on the environment***
Malta needs to monitor the pressures that tourism is exerting on the environment as any deterioration in the natural environment (including marine) will hit back the industry and decrease the attractiveness of the destination.

***Keep by the stated vision***
The vision of Maltese tourism is very appealing and focuses on quality and sustainability. All stakeholders should do their best to realize this vision in practice through good governance, different incentives and other policy and financial instruments. From a governance point of view realizing of the vision would mean.

***Gozo***
Tourism in Gozo is taking up a special niche of a more environmentally-geared, closer-to-the nature experience including rural tourism. This is a laudable development and needs to be continuing by not allowing big new developments. This would also necessitate compliance with the government vision for Gozo and the Local Plan for Gozo which stimulate responsible practices, better waste management, consumption of locally produced food and respect for the local ecosystems.

***Green public procurement***
The lack of GPP has been identified as the main barrier to improving the sustainability level of tourism in Malta. Therefore, the efforts of the government to develop GPP have to be sustained.

***Recycling in hotels***
Through different schemes the government and other stakeholders should work towards a situation where responsible waste management permeates the culture of the hotels and becomes standard. Such behaviour could be stimulated through awards and certifications.

***Energy and water audits***
Both energy and water audits of hotels are already a practice which needs to be maintained. Besides waste management, these are the two key efforts that need to be pursued having in mind on one hand the need for intensive cooling in the summer and on the other hand the shortage of water.

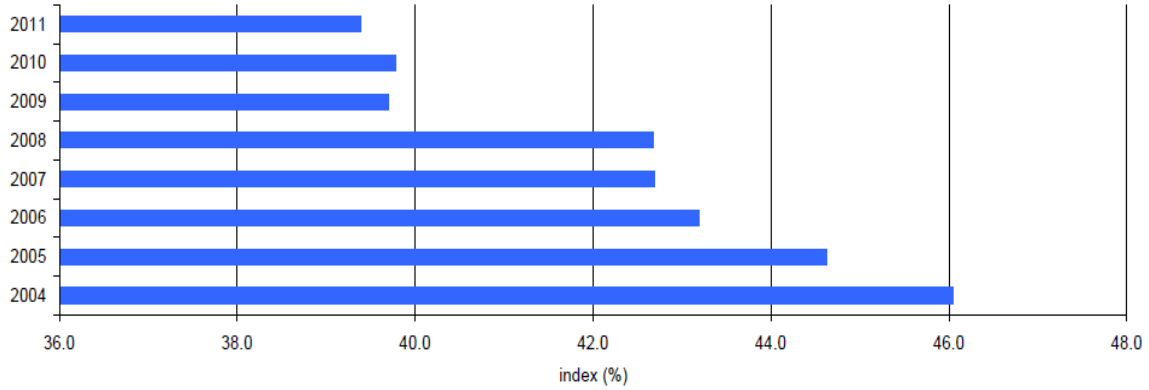
# *3. Water*

## 3.1. Description and key milestones

Groundwater is the single natural freshwater source in Malta and it is extracted by the government-owned Water Service Corporation. Individual agricultural users also extract water. Despite the fact that the Water Exploitation Index (WEI) was decreasing between 2004 and 2011 (see figure below) Maltese water resources are classified as stressed (20-40%) to severely stressed (>40%). As Malta relies exclusively on rainfalls for

replenishment it is fully dependent on them. The water stress is alleviated through demand management. So far groundwater consumption by private users (irrigation) has not been measured but this is about to change.[lxx] Malta is a pioneering country in the use of desalination in the Mediterranean. This has improved the reliability of water supply under normal conditions but has increased the vulnerability of the economy in terms of energy.

**Figure 21 Water exploitation index: 2004-2011**




**Source:** Water Service Corporation, Malta Airport Metereological Office, NSO

The entire population has access to public utility water supply. Water consumption stabilised in 2005 after decreasing since the 1990s. Per capita daily water consumption is about 75 $m^3$ at national level *(Eurostat)*

Leakage levels have been brought down from around 3,900 m3/h in the mid-1990s to around 500 m3/h.[lxxi]

## 3.2. Problem statement

Water management in Malta is facing a number of problems of a different character.

- When water extraction in Malta is high the sea water enters the aquifer and salinity of water increases. Groundwater depletion, partly because of illegal abstraction, also risks damages because of intrusion of seawater into the water table. It was reported that 30% groundwater bodies are at risk as a result of groundwater abstractions. Climate change is a major future challenge since a sea level rise of 1m will reduce groundwater production potential by about 40%. Even a moderate sea level rise will lead to the deterioration of the groundwater quality.

- The Maltese Islands are densely populated but poorly endowed with freshwater resources with only 190 $m^3$ per inhabitant (*FAO, 2006 and Eurostat, 2012*). As groundwater production is insufficient to meet demand, seawater is desalinated with three plants by Reverse Osmosis (RO) which is an energy intensive process. As a result of the introduction of RO technology, the rationing of water in the 1980s was replaced by a more wasteful use of the resource in the present day.

- There is a perception that RO plants imply a problem-free renewable water resource. Although RO has become the operationally most cost-effective way of delivering water to the population it remains expensive and relies entirely on electricity as an energy source. Therefore, increased dependency on RO water instead of the diminishing yields of natural ground water is not an optimistic scenario and presents a challenge to Malta. There is a need for realistic solutions for the nation's water security.[lxxii]

## 3.3. Impact of climate change on water

There is increasing evidence of a changing water cycle which would potentially lead to changes in precipitation patterns and intensity; increase in atmospheric water vapour because of an increase in water evaporation; and changes in soil moisture and runoff. In Malta, changes in precipitation will impact agriculture, tourism, health and ecosystem services making up a significant share of the economy. Floods are likely to become more common. There will be increased episodes and duration of droughts and surface water quality and groundwater quantity will be affected. Climate change will strain additionally the local water supply and related infrastructure.

Other impacts include:

- increased water consumption associated with increased temperatures;
- increase in cooling water withdrawals by power plants needed among other things to sustain water desalination;
- increased water demand for irrigation;
- increased sediment runoff due to increased downpours.[lxxiii]

Climate change and water is not new for Malta as the aridity of the island is innate. Historically, people used to have very frugal habits but what spoiled them is the water at the tap. However, the awareness of the water shortage will always be there and the problem is water supply.[lxxiv]

## 3.4. Water as an economic factor. Demand for water

Tourism (35% of GDP) is directly dependent not only on a reliable drinking water supply but also on the quality of bathing waters. There were no beach closures during the 2010 bathing season as no sewerage overflow was allowed during that period by the WSC (WSC, 2011). Water consumed by tourists peaks in July-August and some 46% of it comes from groundwater. Tourism also puts pressure on the wastewater treatment infrastructure.[lxxv]

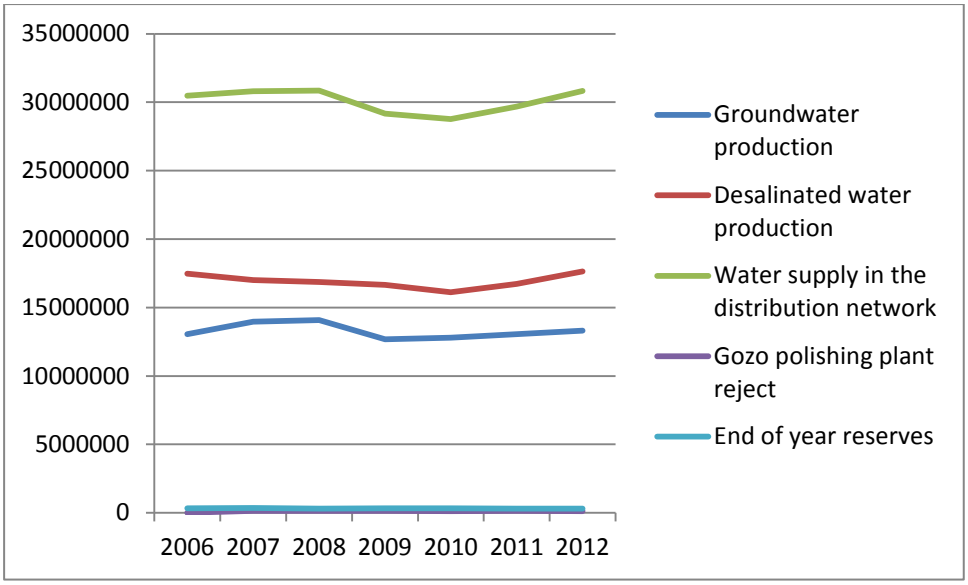
Agriculture relies heavily on ground water and contributes 1.9% of the total GDP. Irrigated land amounts to 30% of all agricultural land.[lxxvi] Some producers have invested in desalination plants to offset the increasing levels of salt in the lowering water table. This activity employs about 18,539 persons or 4,862 annual work units (*NSO, 2012*). 28 million $m^3$ would have been used annually by the sector, roughly the same amount that is provided by the water industry for domestic consumption and industry. Also, 1.5 billion cubic metres (estimated worth EUR 1.5 billion) of drinking water would have been lost to

contamination by nitrate from unregulated agricultural activities and sewage leaks (*MWA, 2012*)
In 2007 industry consumed 1.34 million $m^3$ of water supplied by the WSC.[lxxvii]

## 3.5. Trend over the years

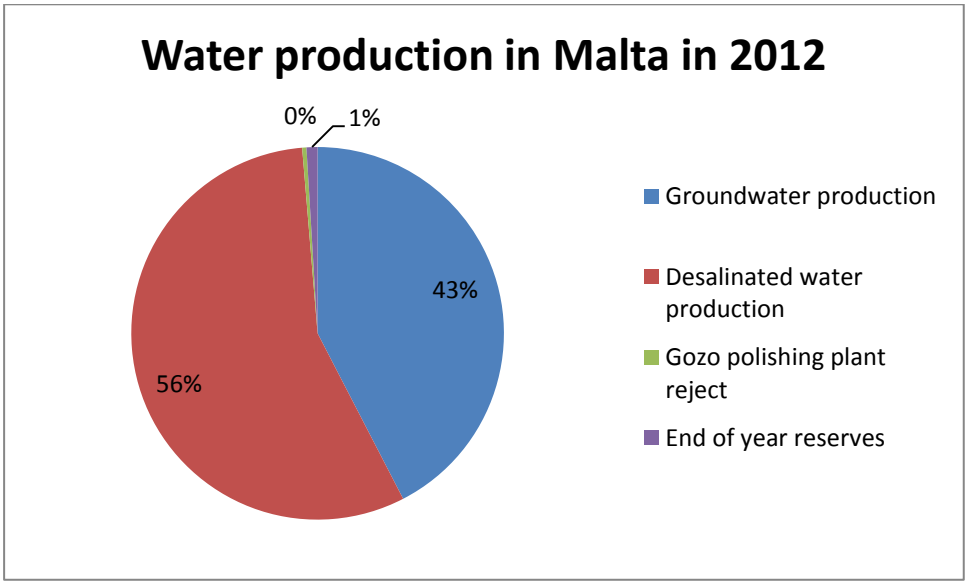
The public water production in Malta has been relatively stable between 2006 and 2012 with slight oscillations. In 2012, some 56% of the water has been produced through desalination while 43% is through groundwater abstraction.

**Figure 22 Public water production (m3)**




Source: National Statistics Office

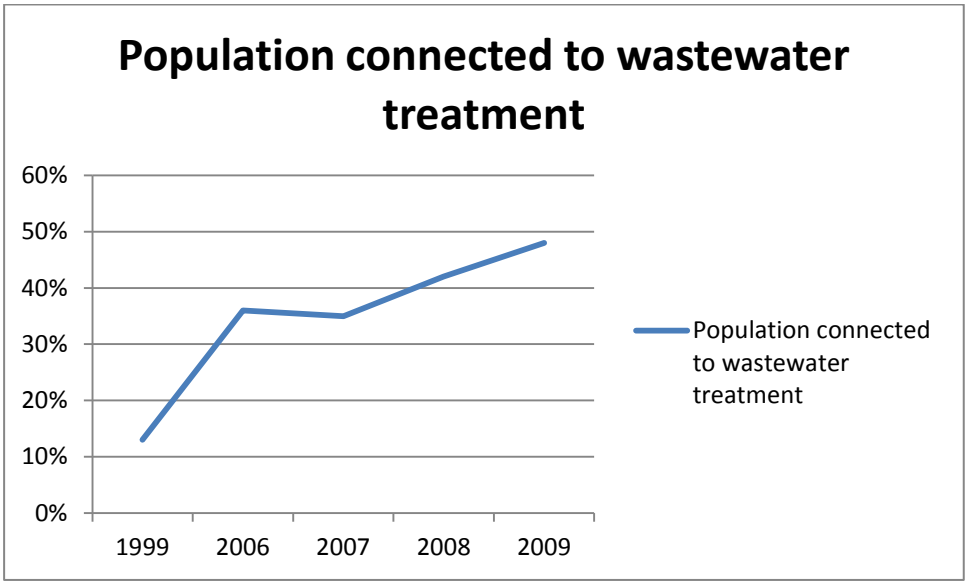
**Figure 23 Water production in Malta in 2012**




**Source:** National Statistics Office

The figure below demonstrates that the share of population connected to wastewater treatment has increased 4.5 times between 1999 (13%) and 2009 (around 48%). (*Eurostat*)

**Figure 24 Population connected to wastewater treatment**




**Source:** Eurostat

*The rate changed significantly to almost 100% after the introduction of the third WWTP.[lxxviii] This has not been reflected in Eurostat yet.

The main objectives of the Urban Waste Water Directive were met by Malta with the opening of three WWTPs - one in Gozo in January 2008 another new plant at Ic-Cumnija l/o Mellieha in January 2009, and the third and largest new treatment plant - in Ta' Barkat in the south of Malta in June 2011. There is a large network of sewers on the islands and some 400 km. of them are cleaned every year to improve performance and avoid overflow.[lxxix]

## 3.6. GVA and Job generation

Although the water sector is of utmost importance for Malta the number of the employed people and the GVA generation are not significant.

The water sector has an annual turnover of MEUR 54.4 (*WSC, 2011*). According to the National Statistics Office, some 985 people were employed in water collection, treatment and supply (NACE 36) as of December 2012. An additional 11 employees were employed in sewerage (NACE 37).

## 3.7. Governance

The groundwater is Malta is abstracted by Malta Service Corporation (MSC). It was set up in 1992 to produce and distribute potable water in the Maltese Islands. MSC also owns and produces desalinated water at one of the three reverse osmosis plants – Pembroke (capacity 54,000 m3/day), Cirkewwa (capacity 18,600 m3/day) and Ghar Lapsi (capacity 24,000 m3/day). Since October 2003 MSC has a Wastewater Section and is responsible

for the whole water cycle. The MSC employs around 900 peopls and its headquarters are in Hal Luqa. There are three WSC sections in Malta – North, Central and South plus the Gozo one.[lxxx]

The Ministry for Energy and the Conservation of Water is the government body in charge of water policy. Other relevant organisations in the sector include: Malta Water Association[9]

## 3.8. Barriers

In Malta, agricultural water use is specifically exempted from abstraction taxes. There are no estimates as to how much this cost to the state but at the national level effort is needed to ensure better cost recovery for water usage. This is considered as an Environmentally Harmful Subsidy (EHS). [lxxxi]

## 3.9. Drivers and enabling conditions

**Water policy**
There are two main policy documents in the water sector – Water Policy (2012) and the Water Catchment Plan for Malta (which is the river basin management plan for Malta). Other relevant policy documents include: The Climate Change Adaptation Strategy, The Nitrates Action Plan, Management Plans of the Water Services Corporation; and the National Flood Relief Programme. These documents give a good policy basis but there is a possibility for improvement.[lxxxii]

Other relevant water management policy documents include: Control of Water Pumps and Wells Order (423.02), Water Supply Regulations (423.03), Water Economy Regulations (423.04), Water Services Regulations (423.11), Notification of Groundwater Sources Regulations (423.12), Sewer Discharge Control Regulations (423.15), Protection of Groundwater against Pollution caused by Certain Dangerous Substances Regulations (423.16), Water Policy Framework Regulations (423.20), Water Supply and Sewerage Services Regulations (423.23), Borehole Drilling and Excavation Works within the Saturated Zone Regulations (423.32), Protection of Groundwater against Pollution and Deterioration Regulations (423.36), Groundwater Abstraction (Metering) Regulations (423.40), Users of Groundwater Sources (Application) Regulations (423.45).[lxxxiii]

**Box 5 New water policy for Malta**

In July 2010 Government launched a consultation document on a proposed water policy for Malta, outlining the key objectives and policy statements for the water sector for the period 2010-2015. Government's overall objective for this water policy proposal is to chart the way towards a holistic, integrated approach to water management, recognizing that a balance needs to be struck between supply and demand in the light of environmental constraints and socio-economic needs. The policy aims to reduce demand and water waste, improve quality by reducing ground water extraction, reduce pollution and ensure good quality water, encourage people to harvest their own rain water, adapt

[9] www.maltawater.org, accessed 13 February 2014

to climate change, and manage floods. The vision for water resources is their utilisation in a manner that is environmentally and economically sustainable, providing the right amount of water for people, agriculture, commerce and industry, and an improved water-related environment whilst recognizing the effects of climate change.[lxxxiv]

***Research on treatment technologies***

The Water Services Corporation is now having a programme of applied research and development of small stand-alone treatment plants. These are designed to treat wastewater up to irrigation level to provide water for the various urban regeneration and greenery projects being carried out on the island.[lxxxv]

***Installing meters on boreholes to curb over-extraction***

Malta Resources Authority has embarked on a programme to install meters on boreholes followed by a one year monitoring process. Extracted water is used for agriculture but also for recreational purposes, such as swimming pools, lawns and private gardens. The goal is to curb the uncontrolled extraction of water through individual boreholes. Appropriate quotas and sanctions will be applied for specific crop plans.[lxxxvi] There will be also free allocations of a certain level depending on the crop and the quantities above will be charged at market rates.[lxxxvii] In January 2010, the Groundwater Abstraction Metering Regulations entered into force. All groundwater sources in use since before 1955, all validly registered or notified groundwater sources, or sources which were in use or constructed prior to the entry into force of the Malta Resources Authority Act, and which are used by the Water Services Corporation, shall be metered by the Corporation. Exemptions from metering may be permitted: if no pump or other mechanical device is used to abstract groundwater; if it is proved by the user to be a cultural property; or if the source is used solely for domestic purposes, the abstraction yield does not exceed $1m^3$ per day, and the source abstracts groundwater from the perched aquifer.

***Water pricing***

One of the ways to solving the water problems in Malta is getting the water prices right and introducing a sewerage tax which is missing.

The following water tariffs applied in Malta from 1 January 2010:

- **Residential water tariffs**: An annual service charge of 59 EUR, then 1.47 EUR per $m^3$ for 1st tier consumption ($33m^3$ per person or less) and 5.41 EUR for 2nd tier consumption (more than $33m^3$ per person);
- **Domestic water tariffs**: An annual service charge of 59 EUR, then 2.30 EUR per $m^3$ for 1st tier consumption ($33m^3$ per person or less) and 5.41 EUR per $m^3$ for 2nd tier consumption (more than $33m^3$ per person);
- **Non-residential water tariffs**: An annual service charge of 59 EUR, then 2.10 EUR per $m^3$ for 1st tier consumption ($168m^3$ or less), 2.50 EUR per $m^3$ for 2nd tier consumption (over $168m^3$ but less than $40,000m^3$) and 1.75 EUR per $m^3$ for 3rd tier consumption ($40,000m^3$ or more).[lxxxviii] It is unclear why the price for top-level consumption drops substantially.[lxxxix]

According to Marco Cremona (independent water expert), the current water pricing does not reflect reality. It is heavily subsided, as substantial part of the supply is coming from groundwater for free, and because WSC obtains 60% of its water from RO, costing unofficially EUR 0.60/m3. This amounts to six times as much as the cost of extracted

ground water. The Water Framework Directive (WFD) will force Malta to design such a price of water which reflects the real costs behind it.[xc]

These tariffs are charged by the Water Services Corporation through its subsidiary ARMS Ltd.[xci] In 2009, 20,465 households were exempt from paying rent on the water meter, as well as paying a reduced consumption charge for water.[xcii]

**Treated sewage effluent as a cheaper source of water**

The provision of treated sewage effluent as a cheaper source of water for use by the agriculture community can act as an economic substitute to the use of ground water. Since 1992, the public Water Service Corporation is responsible for water supply and since 2003 it has also the responsibility to manage waste water treatment as a unique organization for the island. Water Services Corporation has identified the processes, plant locations and infrastructure necessary to treat waste water beyond the basic tertiary level. The plants will cater for all the wastewater treated at the North and Gozo Sewage Treatment Plants and for 12,000m3/day at the South Sewage Treatment Plant.[xciii]

## 3.10. Further opportunities for greening the water sector. Key policy recommendations

***Energy efficiency of desalination plants***

A key opportunity is the energy-water saving potential of desalination plants. RO plants use 3.8% of the electricity available in Malta. They now consume 32.6% less than what they used to back in 2000 thanks to a combination of an increase in energy supply but also more efficient plants. (NSO, 2011 and WSC, 2011) There is also a possibility to explore renewable based power sources for running the desalination plants to reduce the currently increasing vulnerability of the islands to external shocks. In this connection there is also a need to promote and foster the development of water desalination technologies that rely less on fossil fuels.

***Treated waste water for irrigation***

There is a possibility and a need to expand the programme of infrastructure that redirects basically treated waste water for irrigation purposes (in support to the Strategic Plan of the WSC).

This involves an upgrade of the three WWTPs and building a network for Treated Sewage Effluent (TSE) for the farmers. TSE will be costlier if no resource price is attached to groundwater and slightly cheaper if no externalities are calculated like carbon cost. However, it will have to be factored in. Structural Funds could be used for this developing further this technology. One concept for the future is recharging the Maltese water table by TSE.[xciv]

**Box 6 Waste water recycling Moriso project**

A EUR 22 million water polishing project was launched on 17 June 2013 in Bulebel. It is expected to produce some seven million m3 of recycled drainage water for industry and agriculture by 2015. The project consists of a micro waste water treatment plant that can process 45 m3 of sewage a day and a Mobile Polishing Plant which is taken to fields to improve water quality which is then used for specific crops. Some 40 farmers in the Bulebel area are currently benefiting from Project Moriso using recycled water. The

project would be extended to the water recycling plants in Gozo, and in the south of Malta.
The Water Services Corporation intends to install a distribution infrastructure from the sewage treatment plants to a number of strategic locations in Malta and Gozo with a concentration of agricultural activity. The project is implemented by the Water Services Corporation and funded in the most part by the European Structural Fund.

**Source:** Water Service Corporation and Times of Malta[xcv]

**Picture 4 Waste water recycling Moriso project**

Author: Times of Malta

***No-overflow policy***

Institutionalise the no-overflow policy during the bathing season in the long run, given the strategic nature of tourism.

***Re-define role of non-conventional water resources***

Non-conventional water resources (desalination, reuse, basically treated waste water for irrigation, etc.) have an increasing share of the water portfolio. They could be regarded either as a buffer source or a permanent water source. Redefinition of their role will impact the financial sustainability of existing facilities and the long-term consequences over water scarcity.

***Registry of groundwater abstractions***

Develop a strategy to complete the registry and enhance the control of groundwater abstractions. This gradual strategy might be based on voluntary declarations and compliance in the early stages with the aim of defining water use rights in a more precise way and to ensure its enforcement in the medium term.

***Address diffuse pollution***

Diffuse pollution needs to be addressed, notably from agriculture. This would decrease the currently increasing costs to society in addition to support reaching and maintaining compliance with the WFD, the nitrates directive and the MSFD, and hence avoid important punishment costs in the medium run.[xcvi]

***Harvesting rainwater***

The aridity of the Maltese Islands was a major challenge for the knights of St. John when they settled on the islands. According to building regulations from the period, each house in Malta had to have a cistern for harvesting rainwater. These cisterns had been used through the centuries but with the arrival of tap water their used declined significantly. Recently, the construction of cisterns has become expensive and the labour skills necessary for that have been dwindling.

***Technology and R&D***

There is also a market for technology development for tap water savings but also for agriculture, industry and tourism. Regarding tourism hotels could invest in in RO plants and recycling of water.[xcvii]

***Skills***

In terms of skills there are earmarked funds from the ESF fund for brushing up or renewing already lost skills including building of water reservoirs, wells, etc. Even the knights of St John had a legislation according to which every house had to have a well. This has not been enforced so well the past several years and this is a problem. There is alsa a need for additional research and additional academic training. For example, the Centre of Excellence in Adaptation is nurturing a water expertise.[xcviii]

***Water and heritage conservation***

According to Joe Magro Conti from MEPA, the Knights of St. John had a law obliging every house to dig wells and build reservoirs. They appointed a planning authority – Officio delle Case. Unfortunately, these reservoirs are not used anymore and people converted them into basements.

As a part of the restoration projects MEPA is looking at identifying the reservoirs, restoring them and using them for water conservation. Additionally, the British authorities provided additional measures for water supply by building aquaducts, sewers, piped water and public fountains.

As a rule, MEPA is trying to retain these features of old buildings – reservoirs but also aeration systems. Buildings had their own climatic control through aeration openings, thick walls and tall but narrow windows.

Unfortunately, it seems that there is no serious interest in these efforts on behalf of the water management authorities, something that could be improved.[xcix]

# VI. Transversal drivers and enabling conditions

There are a number of drivers and enabling conditions which have a transversal, horizontal character and which impact positively all or most sectors. With regards to greening the economy, the draft Environment Policy mentions the use of market-based instruments (MBIs), environmental taxation, eco-innovation, green jobs, a stronger private sector role in environmental management, green public procurement and mobilising finance.

Green Economy Working Group (GEWG) mainly composed of individuals from the private sector was set up. Based on its work, a document titled 'Greening Our National Economy' was formulated which would be launched as 'an initial step for 'green' measures to be taken on board'. A Green Economy Action Plan is also to be launched.[c]

## 1. (Eco-)innovations

According to the Innovation Union 2013 Scoreboard, Malta is at the lower end of the moderate innovators with particular problems with human resources and finance and support. Malta is faring better in indicators such as firm investments, intellectual assets, innovators and economic effects.[ci]
Eco-innovation is still relatively new in Malta, and the overall eco-innovation performance of Malta is below the EU 27 average. However, eco-innovation is now considered to be an issue of national priority. The government has developed the National Environmental Action Plan (ETAP) and the National Strategic Research and Innovation Plan.

The areas with the biggest potential for eco-innovation are tourism, water management, renewable energy and energy efficiency. Current eco-innovation tools are mainly associated with incentives and voluntary schemes such as the provision of grants for the installation of RES and with eco-labelling or audits. The funding programme of the National R&I Programme 2011 also defined the promotion of eco-innovation activities as a priority. [cii]

In March 2012, only 18% of the almost 30,000 Maltese SMEs claimed to sell green products or services, with a further 3% intending to do so in the following two years. Of the businesses selling green products or services, 23% provide products or services with environmental features, 43% are in the recycled material sector, 1% work on renewable energy, 1% on solid waste management, 8% on heat or energy saving audits/consulting/management, 10% offer environment-related professional services, and 15% work on air pollution control.[ciii]

In 2008, total investment in R&D reached 0.60 % of GDP, where the business sector accounted for GDP 0.21% of GDP and the public sector 0.39% of GDP. Putting these figures in perspective, Malta's total investment in R&D is well below the estimated 1.83% of the EU-27.
The main innovation challenges for Malta are those in relation to boosting financial and human resources in research and innovation, stimulating research and innovation in enterprises and promoting an innovation culture.[civ]

**Table 10 Indicators on R&D, innovation and competitiveness**

| | Malta | EU average | EU min | EU max |
|---|---|---|---|---|
| **R&D and Innovation** | | | | |
| R&D expenditure (2010) | 0.6(1) | 2 | 0.5 | 3.9 |
| National EU 2020 target % - of GDP 2020 | 0.7 | 3 | 0.5 | 4 |
| Patent applications to the EPO (per inhabitant) Index, EU27 = 100 (2007-2008) | 12.2 | 100 | 1.3 | 236.9 |
| Human Resources in Science and Technology (core) (% of total employment) (2010) | 14 | 18.8 | 12.6 | 33.1 |
| Employment in high-technology sectors (% of total employment) (2010) | 5.1 | 3.7 | 1.8 | 7 |
| Employment in knowledge-intensive services (% of total employment) (2010) | 40.5 | 38.5 | 20 | 55 |

| Competitiveness and business environment | | | | |
|---|---|---|---|---|
| Competitiveness Index – (Values range between 0 and 100) (2010) | 32.5 | 54.7 | 19.7 | 83.5 |
| GDP per head (PPS) (EU27=100) (2011) | 83 | 100 | 45 | 274 |

**Source:** EU, 2012, Country Factsheet, Malta (1) Business sector accounts for 0.21%.

Malta is significantly lagging behind EU-27 average in several indicators such as the R&D expenditure, number of patent applications, human resource in science and technology and the competitiveness index. Surprisingly, the employment in high-technology sectors and knowledge-intensive services is higher than the EU-27 average.

The general government empoyees in R&D in 2012 are 1,151 – an increase from 1,035 in 2011.[cv]

***An Ecosystem Approach to R&I Funding***

The main objective of the National Research and Innovation Strategy 2011 – 2020 is to ensure an idea-to-innovation approach in line with the Innovation Union Flagship Initiative, by addressing gaps in support which create bottlenecks for commercialisation.[cvi]

## 2. Support to enterprises

***Provision of environmental expertise to SMEs at no or low cost***

The Business advisor scheme provides businesses with advisory services to encourage the adoption of innovative processes and techniques, for example related to waste and energy management. This assistance covers the first ten hours of advisory services and co-finances subsequent hours of advice.[cvii]

***Project-based support***

The Malta Council for Science and Technology (MSCT) and Malta Enterprise coordinate a number of environment-related research programmes bridging the gap between research and industry, and with a focus on applied research.[cviii]

***Assistance for set up and maintenance of environmental management schemes***

The Malta Standards Authority (MSA) runs the EU eco-label scheme and EMAS Certification designed to provide organisations, regulators and the public with an instrument to evaluate, manage and improve their environmental performance.[cix]
The Malta Competition and Consumer Affairs Authority also supports the institutional capability for the promotion of environmental certification through EMAS and ISO 14001.[cx]

In 2009/2010 there are 11 students who graduated from the University of Malta in the specialty Environmental Protection.[cxi]

## 3. Governance and Green Public Procurement

***Corporate Social Responsibility***

An Environmental Corporate Responsibility Office has been set up by the Office of the Prime Minister in accordance with the National Strategic Plan to promote awareness and environmental best practices. A 'Green Leader' is to be appointed in each ministry to encourage environmentally-friendly and resource efficiency measures.[cxii]

***Green Public Procurement***

An updated National Action Plan for Green Public Procurement covers eighteen product groups ranging from textiles to office IT equipment, and from air-conditioning to food and catering. The target is ensuring is that by 2015 50% of public procurement is compliant with EU GPP criteria. The involvement of multiple institutions in a GPP Task Force would be an additional guarantee for success. There will be a quantitative and qualitative monitoring of GPP. Additionally, over 400 representatives of procurers & suppliers have been trained. There is a national GPP helpdesk & portal[10].

**Box 7 Green Primary School in Pembroke**

Construction of the government-run primary school in Pembroke (situated on Malta's north coast) began in March 2008 and was completed in September 2009, after which 266 school children began to use its facilities. The school was constructed on the site of a former army barracks occupying 9,000 $m^2$ and built with a budget of EUR4.6 million.

Source: Introduction to GPP, presentation by Sergei Golovkin, February 2013

Other examples of GPP in Malta include the bus reform which replaced the Euro 0 buses with Euro 5 buses.

**Box 8 Other examples of GPP in Malta**

- Cleaning, maintenance, upkeep and embellishment of parks, public gardens and soft areas, using environmentally friendly products and practices – EUR 90,000 tender by Gzira Local Council;
- Period contract for the provision and delivery of environmentally friendly working clothes – EUR 54,604 tender by WasteServ
- Supply and delivery of tower personal computers and LED screens – EUR 92,000 tender by MCAST
- Two year framework agreement for the supply of xerographic paper - EUR 38,000 tender by Enemalta
- Provision of environmentally friendly cleaning services at Maria Regina College Boys' Secondary School, Mosta – EUR 66,268 tender by MEDE

Source: Introduction to GPP, presentation by Sergei Golovkin, February 2013

## 4. Green Jobs

The green sector requires two types of workers: scientists and environmental experts, and lowly qualified workers, with some basic training. In order to fill the low-skilled jobs in the green industry, short job-oriented courses are needed.[cxiii]

[10] www.gpp.gov.mt

The "environmental goods and services industry" is a growing sector. The draft National Environment Policy of Malta calls for the creation of green jobs and for the increase of such jobs by 50% by 2015; the preparation of a Green Jobs strategy by 2012; and setting up of an incubator for green industries by 2014. It is estimated that wind and solar energy will create around 8 mil jobs in a 20-year period.

**Table 11 IT infrastructure indicators**

| | Malta | EU average | EU min | EU max |
|---|---|---|---|---|
| Households with broadband connection (2011) | 75 | 67 | 31 | 86 |
| Firms with boradband connection (2011) | 94 | 87 | 54 | 96 |
| DSL coverage (2010) | 99 | 95.1 | 77 | 100 |

**Source:** EU, 2012, Country Factsheet, Malta

The Ministry for Sustainable Development, the Environment and Climate Change (MSDEC) together with the Ministry for Education and Employment (MEDE) have been tasked to prepare a strategy on green jobs that will help Malta create new opportunities based on EU best practices in such areas as Clean Technology, Energy Efficiency, Resource Efficiency and Waste Management.[cxiv]

## 5. National Environmental Policy

In March 2010, Government launched a process to develop Malta's National Environment Policy (NEP), a comprehensive, horizontal environmental policy covering all environmental sectors and natural resources, including air, waste, water, land, soil, climate, biodiversity, coastal and marine areas, noise, chemicals, and mineral resources.

Importantly, the policy addresses the environment-economy interaction (including the impacts on the environment of specific key sectors, such as tourism, construction, agriculture, transport, and vice-versa, the implications on competitiveness, innovation, employment, GDP) and environment–society interaction (including health and quality of life considerations). The time horizon for the NEP is from 2012 to 2020. [cxv] The intention is that by 2050 Malta will be well on its way to implementing its long-term vision of transforming itself into a low-carbon, zero-waste society. Greening the economy is one of the main goals of NEP through: integrating environmental considerations into economic development planning; Market-based instruments; environmental taxation; promoting eco-innovation; incentivizing the green jobs sectors; enabling the private sector; greening public procurement; mobilizing finance for the green economy. Other goals include using resources efficiently and sustainably: stone, fresh water, coastal and marine areas, soil, land, waste and greening Gozo: Eco-Gozo: sustainable agriculture; sustainable transport; sustainable tourism; improved resource management.[cxvi]

**Box 9 Weaknesses of Malta's environmental management landscape**

The National Environmental Policy has identified a number of weaknesses and challenges which need to be addressed on the way of achieving the above vision:

- dense population and the associated intensity of pressures on the environment;
- large number of competing activities;
- distance from major centres of innovation;

- lack of economies of scale;
- insufficiently strong environmental institutions;
- insufficient integration of environmental objectives into the policies and operations of the various economic sectors;
- lack of public awareness of the relationship between environment and health;

**Source:** National Environmental Policy

## 6. Spatial planning

The adoption of an Environment and Development Planning Act in 2010 calls for the preparation of a Strategic Plan for Environment and Development (SPED). SPED has to be based on an integrated planning system and set out the policy framework for the development, use and protection of the land and sea. It has to ensure a holistic approach and integrate other exisiting policy documents and considerations. Priorities for the plan reflect the three pillars of sustainable development, therefore would contribute to the transition to the green economy. Gozo's particularities would be taken into consideration.

## 7. Environmental taxes

In Malta in 2010, 9.22% of total revenues from taxes and social contributions came from environmental taxes (see table below). There was a decreasing annual trend from 2000 to 2004, with small annual increases from 2004 to 2007, and then annual decreases once again from 2007 to 2010.[cxvii]

**Table 12 % of total revenue from taxes and social contributions coming from environmental taxes**

| 2000 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 2000-2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13.01 | 12.17 | 11.09 | 10.73 | 9.33 | 9.75 | 10 | 10.86 | 10.19 | 9.77 | 9.22 | -3.79 |

Source: Eurostat

Environmental taxation has remained fairly stable over the last decade as a percentage of GDP - between 3.1% and 3.6%. In comparison to the rest of the EU, this is relatively high (the EU-27 average is 2.6%), and can be attributed to taxation on transport (1.4% of GDP in Malta, 0.5% in the EU-27). Revenue from energy taxation, on the other hand, is below the EU average (1.5% in Malta, 1.9% in the EU-27). Taxes on pollution in Malta yielded 0.2% of GDP in 2010, the fifth highest level in the EU.[cxviii]

From 2011, registration taxes of commercial vehicles of lower than EURO 3 emission standard were increased in order to encourage the purchase of less polluting vehicles; this was also applied to non-commercial vehicles as of January 2012. Companies can also benefit from a reduction in company tax up to 125% on the amounts spent on electric cars.[cxix]

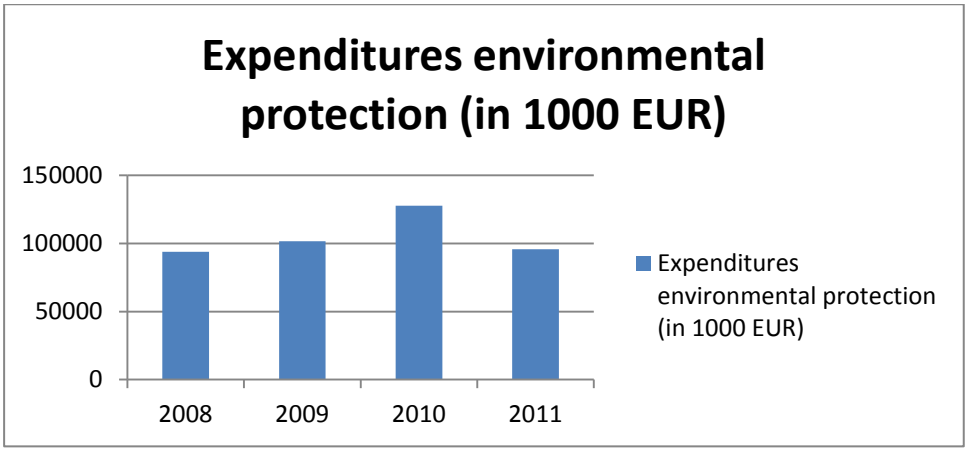
The Maltese government spent 87 million EUR on the environment in 2011. This was 31% less than in 2010 (EUR 125 million). Most (72%) of the government's environmental expenditure was related to wastewater and waste management. Biodiversity and landscape protection accounted for 20% of environmental expenditure, while 7.5% went to other environmental protection activities, which includes various environmental initiatives and campaigns, funds for green leaders and green wardens, national match-funding for EU projects.[cxx]

In September 2004 the 'eco-contribution' was introduced in Malta. It is paid on a quarterly basis by producers, based on the amount of products on the market, and applies to: white goods and electronic equipment (EUR 1.16-69.88 per item, depending on type of item), lamps (EUR 0.25-0.50 per bulb/tube, depending on type), beverage containers (EUR 0.02-0.12 depending on contents), toiletries (EUR 0.02-0.12), chewing gum (EUR 0.01 per 2g), mattresses and bedding (EUR 2.33-6.99), batteries (EUR 0.06-1.63 depending on weight), plastic bags (EUR 0.02-0.15 per bag), tyres (EUR 4.66 per tyre), petroleum oils (EUR 0.23 per litre) and other specified products that are deemed to result in waste. Producers who take back waste products on which they have paid an eco-contribution may have their future eco-contribution payments reduced by all or part of the value of the eco-contribution paid on the recovered items.[cxxi]

## 8. Expenditures environmental protection

Expenditures on environment have been fairly stable since 2008 with a sudden peak in 2010 after which they came back to the 2008 level.

**Figure 25 Expenditures environmental protection**




**Source:** Malta in Figures 2012 (National Statistics Office)

The dynamics of the expenditures by sectors could be seen in the table below.

**Table 13: Expenditures of central government on environment, resource efficiency and green growth, 2008-2011, million EUR**

| Environment, resource efficiency and green growth related policy areas | Development of state expenditure in these areas* | | | |
|---|---|---|---|---|
| | 2008 | 2009 | 2010 | 2011 |

| | | | | |
|---|---|---|---|---|
| Wastewater management | 20.55 | 42.83 (+108%) | 57.62 (+180%) | 18.59 (-10%) |
| Waste management | 56.38 | 38.4 (-32%) | 46.07 (-18%) | 44.26 (-21%) |
| Protection of biodiversity and landscape (including MEPA's Environment Directorate expenses) | 14.8 | 18.22 (+23%) | 18.54 (+25%) | 17.58 (+19%) |
| Pollution abatement | 0.2 | 0.23 (+15%) | 0.31 (+55%) | 0 (-100%) |
| R&D environmental protection | 0.01 | 0.013 (+30%) | 0.038 (+280%) | 0.052 (+420%) |
| Other environmental protection (including environmental initiatives/campaigns, funds for green leaders/wardens, national match-funding for EU projects) | 1.98 | 1.97 (-1%) | 3.87 (+95%) | 6.52 (+229%) |

**Source:** National Statistics Office Malta[cxxii]

## 9. Better regulation

In order to reduce administrative burden on businesses by 15% by 2012, Malta intends to give priority to the measures below:

- Identification, measurement and reduction of administrative burden in the priority areas as well as 100 simplification measures across line Ministries.
- Training of more than 350 public officials in better regulation principles, tools and techniques including the Standard Cost Model.
- Developing 'best-in-class' standards for regulators to address the high degree of variation in the capacity of regulators.
- The consolidation of the above three measures into Ministry Better Regulation Plans and its continuing recalibration, review and improvement through the central Better
- Regulation Unit.

The indicated budget for these reform measures is estimated at EUR 1.7 million and is financed through ESF Funds.[cxxiii]

## 10. Government vision of environmental development

Policy documents reflect the Government's intention to focus on environmental concerns and issues at the same time working with civil society and provoking the growth of a civic conscience. This priority has translated into spending decisions for EU Structural Funds with more than EUR 300 million allocated for environmental expenses.[cxxiv]

The Environment and Development Planning Act established a full-time Environment and Planning Commission and a full-time Environment and Planning Review Tribunal to deal with appeals against MEPA decisions. The Environment and Planning Commission will consist of several divisions. It has control and enforcement functions in the environment and development sectors similar to those of MEPA. The Environmental Planning Review Tribunal is responsible for assessing appeals made by an applicant of a rejected development project or appeals by a person charged with an offence according to rules

set out in this Act. The Act further introduced a screening process of not more than four weeks and time limits within which land development applications must be decided.[cxxv]

## *11. Role of Structural and Cohesion policy funds*

Malta was allocated EUR 855 million under the EU Cohesion policy. Around 32% or EUR 239 million is allocated to environment and risk from the European Regional Development Fund, most of which aims to address waste and pollution-related problems. [cxxvi]

Several Government measures exist to share the risks of investing in eco-innovation activities. Support for green start-ups and entrepreneurial schemes is available through the Malta Enterprise schemes ERDF Innovation Actions Grant Scheme (Environment) and Small Start Up ERDF Grant Scheme which aim to assist SMEs in improving their environmental performance, for example by co-financing energy efficiency solutions and renewable energy installation.

The **SME Development Grant Scheme** supports the diversification of SMEs' activities and includes environment as a target area, providing grants to enterprises investing in eco-innovation such as energy-saving and renewables.

The **Investment Aid Tax Credits Scheme** offers eligible enterprises tax credits, calculated as a percentage of the value of the investment project for qualifying expenditure. Among the businesses eligible to participate in the scheme are eco-innovation activities, waste treatment and environmental solutions.

Until 2011, under the Structural Funds 2007-2013 programming period industry had benefited from 3 million EUR for environmental innovation, 15 million EUR in energy grants, 17 million EUR for the promotion of renewable energy sources in domestic buildings and 10 million EUR in grants to promote sustainable tourism.

**Box 10 Different available grant schemes since 2008**

- Grants have facilitated the installation of 1,761 photovoltaic systems and 6,199 solar water heaters;
- 700,000 EUR were allocated for projects under the Energy & Environment area of Malta's R&I programme;
- 10 million EUR was allocated for sustainable tourism products;
- 20 million EUR was allocated to industry (although it is difficult to determine the amount which might be classified as supporting eco-innovation); and
- 1.5 million EUR was provided to projects under an ERDF grant scheme which qualified as being of eco-innovative orientation.[cxxvii]

Source: Eco-innovation Observatory, 2011

# VII. The Island of Gozo

Gozo's situation is similar to that of Malta, but at the same time distinct from it. The economic and social progress that has taken place in Gozo over the last few years is a direct result of policies which recognise the island's distinction.

***Eco-Gozo Strategy***

Over the next five years, priority in Gozo will be given to the environment and to agritourism, crafts museums and heritage sites will be developed, country lanes will be maintained, and there will be investment in fishing-ports and in facilities for cruise liners and for sport-based tourism. Gozo is intended to serve as a model for sustainable development.[cxxviii] Government considers that the best way that the island of Gozo can address the challenge of double insularity, whilst still advancing economically is to focus the island's economy on agro-cultural and tourism industries. These sectors have been identified as areas of strategic importance within the context of the Eco Gozo vision for the sustainable development of the island.
In this regard, as of 2010 priority is being given to the following measures:

- The transformation of the Gozo experimental farm into a centre for research, development and innovation in agriculture.
- The cleaning and upgrading of water catchment areas for the storage of rainwater.
- The promotion of niche tourism markets.
- The upgrading of tourism infrastructure.
- The development of a Human Resource Strategy for Gozo.

These actions have been estimated to cost EUR 2 million.[cxxix]

There is an Eco-Gozo website which provides excellent information on Gozo and environmental, social, economic and cultural projects.[cxxx]

# VIII. Assessment of the country's potential to develop green economy in the future

## *1. Natural assets*

Malta has a small territory, favourable climate and rich biodiversity. The natural assets are conducive to development of renewable energies and sustainable tourism. Malta is also sheltered from transboundary pollution. Malta is really in a huge disadvantage when water is concerned. However, Malta's lack of water resources could be turned into an advantage by gaining an upper hand in water sector innovation capacity. The geographical location of Malta is on one hand a disadvantage as the country is on the margins of the European continent but on the other hand – an advantage because of opportunities to serve as a bridge to a dynamic North African region.

## *2. Governance and political stability*

Malta has a political stability, relatively high quality of governance and political commitment to protection of the environment and greening the economy. This has been reflected in different strategic documents. The challenge with the political class is to secure continuity at the change of political cycle.
Relatively high level of environmental awareness has been translated into political expectations. Awareness could also act as a pull factor for environmentally-friendly goods and services.

## 3. Policy framework

Malta's membership in the EU has triggered a wave of environmental policy development and environmental institutions creation. Therefore, it can be said that the policy framework is in place. We can state with certainty that policies within the three studied sectors are ambitious enough and in line with a vision for a greener economy. Enforcement has been improving through the years but it is a challenge to the political elite to generate a sufficient will for enforcement of the declared objectives.[cxxxi] Additionally, the current government has the ambition to launch two overarching documents on green economy which will hopefully give an additional impetus to Malta for transition to a green economy. The new government has the ambition to remove Environmentally Harmful Subsidies (EHS) and to integrate externalities into decisions of market operators. There is an acknowledgement that substantial finance will need to be mobilized for the greening of the economy and in this connection Malta has the intention to formulate an Action Plan for the development of market-based instruments in the environment[cxxxii].

## 4. Financial support

The funds from the new Programming Period 2014-2020 could be increasingly channeled into greening different economic sectors and improving the integration of environment and climate change into all relevant sectors. The challenges are to mainstream the environment and climate change in the Partnership Agreement and the Operational Programme(s) but also to mainstream these investments in practice at the stage of implementation.

## 5. Major issues for improvement

The National Environmental Policy identified several major directions for improvement. One is strengthening the link between the environment and the economy. This is needed first at a conceptual level, in terms of raising awareness about the role of the environment as the key resource-base for economic development.

Better links between the environment and the economic sectors are also needed, to internalise environmental costs into economic transactions, to assess policies as to their environmental impact, to account for environmental degradation, and to direct economic development into sectors that involve less environmental damage.

Creativity and innovation is another potential avenue for improvement. There is a big need to strengthen research and innovation (R&I) infrastructure, to develop R&I excellence and promote centres of competence such as a Centre of Excellence on Adaptation to Climate Change or Energy Efficiency and Green Technologies. This includes enhancing the private sector research and development capacity[cxxxiii]

The European Commission has also identified a possibility in incentivizing investments in higher added value sectors such as energy and environmental technologies. There is a strong recommendation to use part of the Structural and Cohesion funds to this end.[cxxxiv] Fostering environmental responsibility through the promotion of core social values is also a strong factor for greening the Maltese economy.[cxxxv]

# IX. Transferability

Malta is a country which can be scrutinized closely in terms of getting inspiration for positive approaches. This is especially the case in tourism and water management. Transferable issues or at least issues include:

**Tourism**

The willingness and the attempt to change a situation of saturation in terms of tourist numbers and pressures on the environment to a situation of more uniform repartition of the tourist numbers through the year and much less impact of the tourist industry on the environment. The latter is done through a number of policies and mechanisms described previously in the text.

**Water**

Malta's water sector is an example how a disadvantageous situation can be potentially turned into an asset. It has to be underlined though that this is still not the case. This would be a fact if, besides a pioneer in desalination technologies, Malta becomes an innovation leader in other water-related technologies as well.

**Energy**

Malta has been a late-started as far as transformation of the energy sector is concerned. Therefore, the country can be an example of how to start the development of renewables practically from scratch. Malta can also provide ideas how to conduct RES development in very densely populated territories.

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