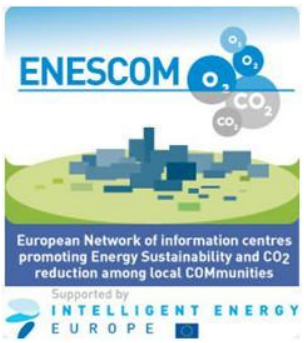
Sustainable Energy Action Plan

Qala, Gozo (Malta)

May 2012



Acknowledgements

This Sustainable Energy Action Plan has been completed as part of the Enescom Project (*European Network of Information Centres Promoting Energy Sustainability and CO_2 Reduction among Local Communities Project*) with the support of a number of entities, from the Covenant of Mayors Supporting Structure in Malta and Enescom Project Partner, namely the Local Councils Association, utility providers and the Joint Research Centre of the European Commission. We would like to acknowledge the supportive role of the following persons whose help has been found to be invaluable in the compilation of this document.

Mr. Damian Bornas Cayuela, Joint Research Centre, European Commission

Mr. Ronald Piers, Joint Research Centre, European Commission

Mr. Jimmy Magro, Executive Secretary, Local Councils Association

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1. Introduction and General Information

The European Union, in its bid to lead the global fight against climate change has committed itself to reduce the overall emissions to at least 20% below 1990 levels by the year 2020. It has also acknowledged the key role that local authorities have to play in the achievement of the EU's energy and climate objectives.

As a result, it has taken the initiative to establish the **Covenant of Mayors**. This is a process in which local authorities commit themselves voluntarily to reduce their CO_2 emissions beyond this 20% target.

To realize this commitment, each participating locality is producing and eventually implementing a Sustainable Energy Action Plan (SEAP). This plan is to be presented within one year from the date of adhesion.

Figure 1 – Covenant of Mayors Logo

In this case, since the date of the adhesion for the locality of Qala was the 2nd day of July 2009, the Sustainable Energy Action Plan (SEAP) had to be completed within one year from this date.

As a basis for the SEAP, a Baseline Emissions Inventory (BEI) is prepared to provide knowledge of the entities contributing to CO_2 emissions in the locality's geographical area. The BEI shall also be used to identify and select appropriate actions and opportunities for reaching the locality's targets.

In future, in order to monitor progress of implementation of the actions within the SEAP, a Monitoring Emissions Inventory (MEI) shall be prepared to establish whether actions have been successful in reducing the overall emissions.

This SEAP must be envisaged as a key document illustrating how the Local Council shall reach its commitment by 2020. It defines concrete reduction measures which translate the

long-term strategy into action and which shall have an effect on everyone including the private sector.

As described by the European Commission itself, actions in the following sectors shall be included in this action plan:

- *Built environment, including new buildings and major refurbishment;*
- *Municipal infrastructure (district heating, public lighting, smart grids, etc);*
- *Land use and urban planning;*
- *Decentralised renewable energy sources;*
- *Public and private transport policies and urban mobility;*
- *Citizen and, in general, civil society participation;*
- *Intelligent energy behaviour by citizens, consumers and businesses.*

This Sustainable Energy Action Plan shall not be regarded as a rigid document. As circumstances change and as experience is gained through the ongoing implementation of actions, it may be useful to revise the plan. Furthermore, the plan establishes a strategy which is at least 10 years long. As a consequence, technological developments within the coming decade are foreseen to be significant.

For this reason, it may make technical sense to revise the SEAP at least during it mid-term to include any actions or opportunities that may arise. The impacts of missing such opportunities may be significant and long lasting.

2. The National Situation

The Ministry for Resources and Rural Affairs has presented the National Strategy for Policy and Abatement Measures relating to the reduction of Greenhouse Gas emissions in September 2009.

The same national strategy underlines that a number of proposed actions require further study as it was not deemed possible or realistic that the published strategy document would be comprehensive in terms of the details and impacts of each policy or abatement measure considered.

Furthermore, it was emphasized that the proposed strategy is not absolute and immutable. As new challenges emerge and unforeseen opportunities arise, the strategy should be reviewed and reconsidered. This strategy for policy and abatement measures relating to the reduction of Greenhouse Gas emissions was based on the following building blocks:

Figure 2 – National Strategy building blocks

In the same way, this Action Plan shall be seen as a dynamic document. It attempts to include those measures presented in the National Strategy that can be implemented at

local level. Given the limited jurisdiction and budgets of Local Councils, many of such actions shall require financial and administrative support of the Central Government.

This should not be a strenuous feat as such actions performed by the Local Council shall be in line with the national strategy and shall be deemed to be contributing to the achievement of the national targets.

As a part of the mentioned National Strategy, the country shall undergo a substantial investment in energy supply by considering the possibility of substituting present sources of energy by cleaner solutions. Since electricity production is the major source of CO_2 emissions, it is envisaged that any improvement in this regard shall contribute to an improvement in the National Emission Factor and as result reduce the locality's portion of CO_2 emissions.

In addition, as a part of the Energy Demand Management measures, it is expected that national measures such as the installation of smart utility meters, promotion of energy efficient appliances and the implementation of the EU Directive on the ban on incandescent lights shall also be a contributor to the overall reduction of the locality's energy requirements.

The implementation of the Energy Performance of Buildings Directive shall have a long term effect to reduce energy requirements of buildings in the locality. However, since the positive effects of this Directive are considered to be achievable over a number of years, it is unlikely that this shall have a measureable effect over the term of the Covenant of Mayors.

The national measures aimed to stimulate the penetration and use of renewable energy systems shall be looked upon closely by the Local Council. It shall attempt, as a part of this action plan, to help its citizens in tapping on the financial and technical resources made available by central government in the implementation of the National Strategy.

3. About the Locality of Qala

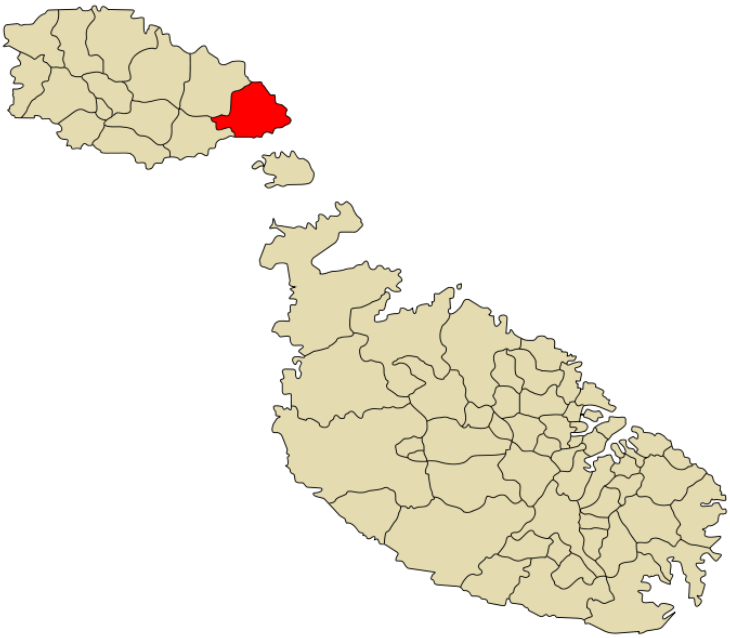

Figure 3 – Geographical position of Qala

In 2005, Qala had a population of 1,609 inhabitants over an area of 5.9 km^2. Therefore population density of Qala is 270 inhabitants/km^2, which is one fifth that of the national average which stands at 1,308 inhabitants/km^2.

The local administrative body is the Qala Local Council which is democratically elected and consists of five members including the Mayor. The office of the Mayor is occupied by the elected Councillor who obtains the highest number of first count votes among the candidates of the political party which obtains the absolute majority at the elections.

The office of the Mayor is currently occupied by Mr. Clint Camilleri.

4. Political Commitment

The Qala Local Council wants to create a healthy, thriving development with increasing concern for its environment and surrounding natural resources. As a result, it wants that all developments, in future, will be conducted with sustainability in mind.

The Local Council has already committed itself by adhering to the Covenant of Mayors since the 2nd day of July 2009. In addition, it has taken an active role by starting the process required in the Covenant of Mayors. This Sustainable Energy Action Plan is a step in the right direction encouraging citizens to take the responsibility for their own part, however small, in conserving the environment.

The Local Council is aware that to realize its ambitions to reduce the locality's impact on climate change it needs to encourage the reduction of use of fossil fuels and a challenging plan of actions is required to define its commitment to reducing CO_2 emissions.

The Local Council is also conscious that to achieve its overall target, it needs to involve all stakeholders in the process. Each citizen of the locality needs to be involved to participate in at least some of the actions of this plan. There may be several methods to secure public participation and this plan attempts to identify a number of possibilities.

It is evident that due to the limited administrative power of Local Councils in general, the Council has to rely on a number of actions that need to be implemented by the Central Government. Nevertheless, it shall do its utmost to lobby for the implementation of the necessary actions.

The Council aims to reduce climate change by taking actions described in the SEAP to reduce CO_2 emissions by 23.03%.

This percentage value currently excludes the tertiary sector which, due to the present jurisdiction limitations of Local Councils in Malta, shall be included in two years' time, based on the experienced achieved through the Covenant of Mayors. The final overall reduction of CO_2 emissions shall meet or exceed 20% of overall emissions in the baseline year, as detailed in the Baseline Emissions Inventory, in accordance with the Council's commitment to the Covenant of Mayors. Additional actions for the reduction of emissions by the tertiary sector shall be included at that stage as required.

5. Baseline Emissions Inventory (BEI)

5.1 Selection of Baseline Year

It is to be noted that Local Councils in Malta are a fairly recent political development. They have been established by Act of Parliament in 1993 (Act XV of 1993 – Local Councils Act). Prior to this development, since Malta was considered as one political entity, statistical data was separated mainly according to the divisions of the two main islands, namely Malta and Gozo, of the Maltese archipelago.

For this reason, statistical data by locality is not readily available in all fields and, where available, it does not date back extensively. National statistical data has been published at locality level with some degree of detail in the National Census of 2005.

Consequently, it has been resolved that the furthest year for which the most comprehensive and reliable data can be collected is the year 2005. It is predicted, that future data at locality level will be accessible to a higher level of detail. Hence, Monitoring Emissions Inventories, to be presented in future, as committed in the Covenant of Mayors, may include adjustments and improvements in the accuracy of the emissions data at locality level.

5.2 Sources of Data

Data relating to municipal buildings, equipment and facilities, municipal fleet and municipal public lighting has been provided directly by the local council. Besides this direct data, the following primary sources of data have been consulted in the preparation of the Baseline Emissions Inventory:

- National Statistics Office: Energy Consumption in Malta, 2000 – 2007.
- National Statistics Office: Census of Population and Housing 2005, Volume 2: Dwellings.
- National Statistics Office: Transport Statistics, 2005.
- Malta Environment and Planning Authority: GHG Inventory for Malta, Common Reporting Format (CRF) Tables, Submission 2009, v1.3
- National Greenhouse Gas Emissions Inventory Report for Malta, 1990-2007, March 2009.
- Enemalta Corporation, Annual Report, 2005.
- Water Services Corporation, Annual Report, 2005.
- Street Lighting Survey Maps, Qala Local Council.

5.3 Availability of Data and Fields of Action

The Joint Research Committee (JRC) document named "Existing Methodologies and Tools for the Development and Implementation of SEAPs" dated September 11, 2009, states that small municipalities usually have less data about energy consumption making the baseline estimation more difficult.

Consequently, it has been inevitable to perform a degree of proportioning of national data to locality level. However, extreme care has been taken such that the proportioning models are truly representative of the situation in the locality.

As a result, the scope of the Baseline Emissions Inventory and eventually the Sustainable Energy Action Plan abide by the requirements of the Guidebook published by European Commission on "How to Develop a Sustainable Energy Action Plan (SEAP)".

The fields of action are stated below, identifying whether the local council has authority, competence and jurisdiction on the particular field.

SEAP FIELDS OF ACTION: NON STRICTLY ON ENERGY, IDENTIFIED BY LOCAL COUNCIL COMPETENCE				
Field of Action	**Under Direct Local Council Jurisdiction**	**Emissions Inventory**	**Action Proposals**	**Reduction Commitment**
Road Transport (Private and Commercial)	NO	YES	YES	YES
Public Transport	NO	YES	YES	YES
Municipal Fleet	YES	YES	YES	YES
Water Consumption	NO	YES	YES	NO
Others	NO	NO	YES	NO

Table 1 – SEAP Fields of Action (non-strictly on energy)

SEAP FIELDS OF ACTION: STRICTLY ON ENERGY, IDENTIFIED BY LOCAL COUNCIL COMPETENCE				
Field of Action	**Under Direct Local Council Jurisdiction**	**Emissions Inventory**	**Action Proposals**	**Reduction Commitment**
Municipal Buildings, Directly Managed or by Concession	YES	YES	YES	YES
Residential Buildings	NO	YES	YES	YES
Tertiary Buildings (Small Businesses, Shops, Repair Shops, etc.)	NO	YES	YES	NO*
Municipal Public Lighting	NO	YES	YES	YES
Traffic Lights	NO	YES	YES	YES
Municipal Fleet	YES	YES	YES	YES
Others	NO	NO	YES	NO

Table 2 – SEAP Fields of Action (strictly on energy)

For fields of action for which the local authority does not have any jurisdiction, the action plan includes an estimation of emissions, which is as accurate as far as reasonably practicable, together with feasible proposals for action by the Local Council to support the reduction of CO_2 emissions.

It is very likely that by the year 2020, that is, during the course of the Covenant of Mayors, the competence on municipal public lighting excluding lighting of national arterial roads shall be de-centralised to be controlled by local councils. Should this not materialize, the local council shall, nevertheless, endeavour to implement the proposed actions to achieve the anticipated targets.

Where applicable, details on the methodology employed for proportioning of national data are available under the relevant subheadings in the next chapter.

Regarding the Tertiary sector (marked by * in Table 2), no commitment to emission reduction is be considered at this stage, since this sector is completely out of the Council's jurisdiction. However, in accordance with the Covenant of Mayors, this shall be considered at a later stage. Nevertheless, for completeness, the baseline emissions inventory includes emissions from the Tertiary sector.

6. Buildings, Equipment, Facilities and Industries

6.1 Municipal Buildings, Equipment and Facilities

The local council operates one office building in Triq l-Isqof Mikiel Buttigieg. The electrical energy consumption for this building in the baseline year was estimated at 13.80 MWh. Emissions due to this consumption are equal to 11.96 tCO_2.

In addition, the council is responsible for the energy consumption of two public recreational areas, these being a playing field in Triq it-Tletin ta' Ottubru 1948 and a leisure park known as Ġnien il-Familja. These areas have an overall combined annual consumption of 14.27 MWh, equivalent to 12.37 tCO_2.

The electrical energy consumption of a public library, although under the jurisdiction of the local council, is not metered separately.

In total, the energy consumption for municipal buildings equipment and facilities, in the baseline year, is equal to 28.07 MWh. The associated CO_2 emissions add up to 24.33 tCO_2.

ENERGY CONSUMPTION FOR MUNICIPAL BUILDINGS, EQUIPMENT AND FACILITIES		
Building / Equipment / Facility	**Energy Consumption (MWh)**	**CO_2 Emissions (tCO_2)**
Office Building	13.80	11.96
Recreational Areas	14.27	12.37
Others	N/A	N/A
Total Energy Consumption & Total CO_2 Emissions	**28.07**	**24.33**

Table 3 –Energy Consumption for Municipal buildings, equipment and facilities

6.2 Residential Buildings

Data for energy consumption in residential buildings only, at a locality level, was not available from the utility supplier. For this reason, a national proportioning method has been employed. A two dimensional matrix, representing the types of dwellings by number of persons living in the dwelling and number of rooms has been created. A weighting factor for the number of persons and another weighting factor for the number of rooms, both relating to electricity consumption, have been assigned. Similarly, a set of weighting factors has been assigned relating to fuel combustion in residential buildings.

6.2.1 Electricity

In the baseline year, 2005, a total of 2,260,762 MWh of electricity were generated in Malta. Fossil fuel used to generate this amount of electricity produced 1961.27 Gg of CO_2. This value is based on the quantity reported in the National Greenhouse Gas Emission Inventory for Malta and the values therein have been calculated using standard emission factors in line with IPCC principles. As a result, the overall emission factor for electricity has been calculated to be equal to 0.867 tCO_2/MWh.

Of the total electricity generated, 658,224 MWh have been used at a national level for domestic (residential) purposes. Using the two dimensional matrix model, as described above, 1,757.41 MWh can be attributed to electricity usage in residential buildings in the locality.

Applying the above calculated emission factor results in a CO_2 contribution of 1,523.67tCO_2 for the baseline year.

6.2.2 Liquefied Petroleum Gas (LPG)

A similar approach has been employed for the purpose of establishing the locality's contribution of fuel combustion in residential buildings. The National Emissions Inventory for Malta, states that 99% of fuel combustion in residential buildings originates from the combustion of liquefied petroleum gas (LPG).

Enemalta Corporation imported 19,513 tons of LPG in 2005. Of these, 80% was sold in cylinders for residential use equating to 15,610.4 tons of LPG. Using an average calorific value of 12.45 kWh/kg of LPG results in a final energy consumption of 194,349 MWh.

Using the IPCC emission factor for LPG of 0.227 tCO_2/MWh, results in 43.86 Gg of CO_2 emissions. The National Inventory report 44.44 Gg of CO_2 emissions from fuel combustion in residential buildings for 2005. The difference is attributed to minor use of kerosene in residential buildings, equivalent to 2285.16 MWh and 580 tCO_2.

By applying the two dimensional matrix, described above, 562.42 MWh equivalent of liquid gas can be attributed to the locality of Qala. The equivalent quantity of CO_2 emissions is equal to 127.67 tCO_2 for the baseline year.

6.2.3 Kerosene

The use of kerosene (reported as "heating oil" in the baseline inventory) is equivalent to 6.61 MWh of energy and 1.68 tCO_2 for the baseline year.

ENERGY CONSUMPTION FOR RESIDENTIAL BUILDINGS		
Type of Fuel	**Energy Consumption (MWh)**	**CO_2 Emissions (tCO_2)**
Electricity	1757.41	1523.67
Liquefied Petroleum Gas (LPG)	562.42	127.67
Heating Oil (Kerosene)	6.61	1.68
Total Energy Consumption & Total CO_2 Emissions	**2326.44**	**1653.02**

Table 4 –Energy Consumption for residential buildings

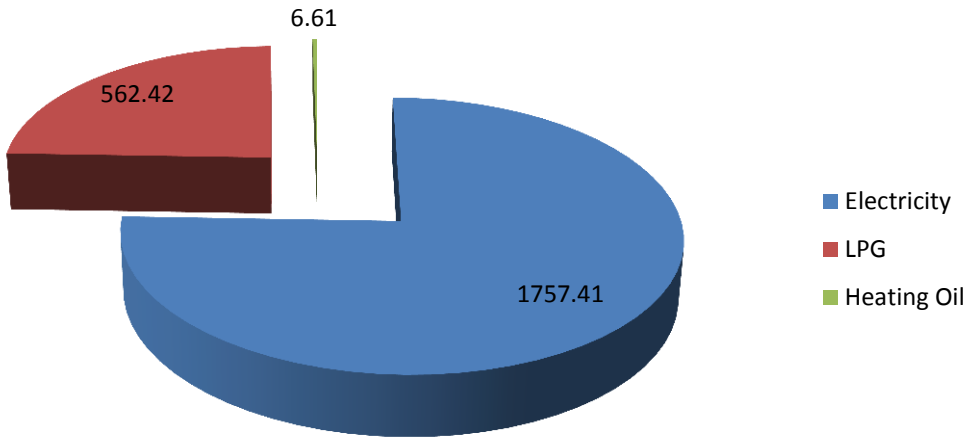

Figure 4 – Pie chart for energy consumption for residential buildings

6.3 Tertiary (Non Municipal) Buildings, Equipment and Facilities

The Tertiary sector is being included in the Baseline Emissions Inventory for completeness. Refer to notes in Chapter 5 regarding the Council's commitment to emission reductions from this sector.

As explained above, electricity consumption data for the locality is not split by sector. However, since a reasonable good degree of confidence exists for the estimation of residential electrical energy consumption, and since the locality does not have any particularly sizeable industries, the amount of electrical energy used in tertiary buildings, equipment and facilities is deemed to be equal to the difference between the locality's total electrical energy metered and the sum of the municipal and residential energy consumption. This may prove to be a slight overestimation of the tertiary energy consumption.

6.3.1 Electricity

The locality's total electricity consumption, excluding street lighting, for the baseline year, was 3,549.08 MWh. Using the above assumption, the electrical energy consumption in the tertiary (non municipal) buildings, equipment and facilities is equal to 1,763.60 MWh.

Using the emission factor for electricity calculated above, the CO_2 contribution of tertiary (non municipal) buildings, equipment and facilities for the baseline year is equal to 1529.04 tCO_2 for the baseline year.

6.3.2 Liquefied Petroleum Gas (LPG)

Since bulk fuel is distributed by a number of private contractors, consumption of fuels by locality is not available from Enemalta Corporation. On a national level, using the data from the GHG CRF Tables for Malta for the baseline year, the total amount of liquefied

petroleum gas (LPG) used in commercial and institutional buildings amounts to 47,059.84 MWh equivalent to 10,600 tCO_2.

Using data from the National Statistics Office, a total of 154 businesses operate in the locality of Qala. This is equivalent to 0.28% of the national business community.

Although due to their different nature of operations, different businesses consume different amounts of energy per unit, since data is not available at a locality level, it is considered appropriate to allocate the same percentage for the fuel combustion in tertiary (non municipal) buildings to the locality.

With this rationale, the energy from liquid gas consumed in the locality equates to 131.77 MWh equivalent to 29.91 tCO_2.

6.3.3 Other Fossil Fuels

On a national level, the total amount of other liquid fuels used, amounts to 152,385.7 MWh equivalent to 40,400 tCO_2.

Using the same reasoning as for LPG, an amount of 426.68 MWh of energy from other liquid fuels was consumed in the baseline year in the locality, equivalent to 113.12 tCO_2. This latter amount includes both heating oil and diesel but the proportions of the two types of fuel are not available. For this reason, it is reported under "Other Fossil Fuels" in the Baseline Emissions Inventory tables.

When one considers the proximity of localities in Malta together with the fact that citizens frequently make use of businesses from localities other than their own, the above calculation of proportioning fuel consumption in tertiary (non municipal) buildings by the

proportion of businesses registered in the locality is the best possible approximation using the data available.

ENERGY CONSUMPTION FOR TERTIARY (NON MUNICIPAL) BUILDINGS, EQUIPMENT AND FACILITIES		
Type of Fuel	**Energy Consumption (MWh)**	**CO_2 Emissions (tCO_2)**
Electricity	1763.60	1529.04
Liquefied Petroleum Gas (LPG)	131.77	29.91
Other Fossil Fuels (*includes Heating Oil and Diesel)*	426.68	113.12
Total Energy Consumption & Total CO_2 Emissions	**2322.05**	**1672.07**

Table 5 –Energy Consumption for tertiary buildings, equipment and facilities

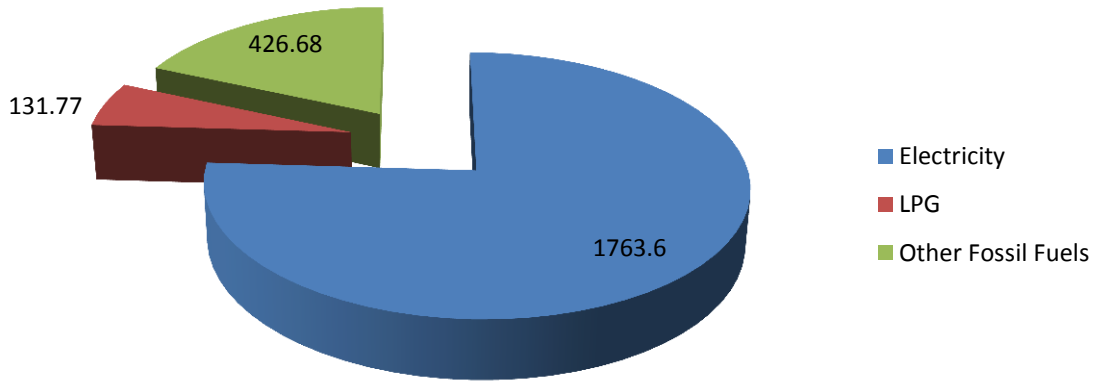

Figure 5 – Pie chart for energy consumption for tertiary buildings

6.4 Accuracy of Electrical Energy Allocation by Sector

It is to be pointed out that although there may be some errors in the allocation of electrical energy by sector, since all electrical energy has been provided from one source, namely Enemalta Corporation, the overall total electrical energy consumed in the locality is correct as it is recorded from billing data.

Any over or underestimation in the residential electrical energy consumption is inversely reflected in the tertiary (non municipal) electrical energy consumption and the overall estimation of the CO_2 emissions by the locality is reasonably accurate.

6.5 Municipal Public Lighting

An inventory of street lighting luminaires has been collected from street lighting survey maps provided by the local council. Together with this, the annual operating time was also estimated in order to achieve a figure for the annual energy consumption for each type of light fitting installed.

ESTIMATE OF ENERGY CONSUMPTION FOR STREET LIGHTING IN THE LOCALITY				
Type	**Number of Fittings**	**Nominal Power Consumption (W)**	**Power Consumption Including Control Gear (W)**	**Estimated Annual Energy Consumption (kWh)**
L	126	70	77	41913
W	144	70	77	47900
S	23	250	275	27324
D		500	550	11880
R	3	70	77	998
C	4	250	275	4752
F	7	400	440	13306
Others	55	11	11	2614
Others	7	35	35	1058
TOTAL	**392**			**151,745**

Table 6 –Energy Consumption for street lighting

The findings of this street lighting energy consumption inventory are reproduced above for completeness and for straightforward reference.

For traceability purposes, the nomenclature pertaining to the type of fittings is identical to the nomenclature available on the inventory provided by the local council.

The annual energy consumption for municipal street lighting in the baseline year is equal to 151.75 MWh.

Since the source of energy for municipal public lighting is electricity, originating from the same source, the equivalent emission factor is identical as for residential buildings, specifically 0.867 tCO_2/MWh. This corresponds to an annual CO_2 emission for municipal public lighting of 131.57 tCO_2.

6.6 Industries

Industries are currently under the responsibility of Malta Enterprise, a central government agency responsible for the promotion of foreign investment and industrial development in Malta. This agency is already advocating energy saving initiatives under the European Regional Development Fund (ERDF) and several grants have been given to aid industries in reducing their energy consumption and carbon footprint.

Since industries are therefore not under the jurisdiction of the local council, and since the authority of local councils over industrial estates is specifically excluded under the Local Councils Act, emissions due to industries have been explicitly excluded from the Baseline Emissions Inventory and the Sustainable Energy Action Plan.

This option is in line with the guidelines for Baseline Emissions Inventories under the Covenant of Mayors.

7. Transport

7.1 Municipal Fleet

The local council does not own or operate any vehicles. Thus no emissions can be attributed in this regard. Any transport services made use of by the local council would be accounted for under the commercial transport section of this report.

7.2 Public Transport

During the baseline year, the locality was being served by two routes on the national public transport schedule.

Route 42/43: 14,976 trips/year Route length: 7.0km Total distance = 104,832km
This route is a direct link from Victoria (Rabat) to Qala and serves the localities of Nadur, Xewkija and Ghajnsielem along the way. In order to obtain a reasonable proportion of contribution for the usage by this locality, the fraction of the served population has been considered for the locality's contribution. Qala accounts for approximately 14.02% of the population served by this route. This fraction of the route's energy consumption has therefore been attributed to the locality and so, the total travel distance attributed to the locality is 14,697km.

The public transport service is operated by a mixture of new and old vehicles, some of which dating back as far as the 1970's. All vehicles are operated by Diesel powered internal combustion engines. When considering the number of stops, the means speed and the type of buses in operation, a fuel consumption value of 55l/100km has been considered reasonable to estimate the fuel consumption on this route. Therefore, the calculated annual Diesel consumption is that of 8083 litres.

Using a calorific value of 10.0 kWh/l of Diesel, then the energy consumption for public transport for the locality is equal to 80.83 MWh. Applying the IPCC emission factor of 0.267 tCO_2/MWh for Diesel gives an annual emission of 21.58 tCO_2.

7.3 Private and Commercial Transport

The case of private and commercial transport is similar to that for residential and commercial buildings, that is, there is no locality specific data. Due to the close proximity of localities in Malta, it is very common that vehicles are refuelled in a locality other than the registered locality. For this reason, it has been considered inappropriate to obtain fuel consumption data per locality.

Once again, a level of proportioning of national data has been inevitable.

An analysis of the vehicle stock for the baseline was carried out. It was found out that the locality had 2 agricultural vehicles, 220 commercial vehicles, 19 garage hire vehicles, 4 minibuses, 139 motorcycles, 792 private vehicles, 2 buses, 46 self drive cars and 2 taxis in the baseline year.

A fuel consumption weighting factor has been assigned to each type of vehicle based on the engine capacity and estimated activity. From this, the annual energy consumption and CO_2 emissions allocated to the locality have been calculated.

The amount attributable to public transport has been deducted to avoid double accounting. This is accounted for under a separate computation (see above).

The energy consumption for private and commercial transport for the baseline year is equal to 9,104.50 MWh divided as 4,629.87 MWh from Gasoline (Petrol), 4,440.32 MWh from Diesel and 34.31 MWh originating from the use of Bio-Diesel.

Since proportioning of National data has been carried out in this part of this exercise, the emission conversion factors used in the National Emissions Inventory Report were used for consistency. The equivalent CO_2 emissions add up to 2,324.34 tCO_2 in total, divided as

1,143.49 tCO_2 due to combustion of Gasoline (Petrol), 1,172.10 tCO_2 due to combustion of Diesel and 8.75 tCO_2 due to combustion of Bio-Diesel for private and commercial transport.

ENERGY CONSUMPTION FOR PRIVATE AND COMMERCIAL TRANSPORT		
Type of Fuel	**Energy Consumption (MWh)**	**CO_2 Emissions (tCO_2)**
Diesel	4440.32	1172.10
Gasoline	4629.87	1143.49
Biofuel	34.31	8.75
Total Energy Consumption & Total CO_2 Emissions	**9104.50**	**2324.34**

Table 7 –Energy Consumption for private and commercial transport

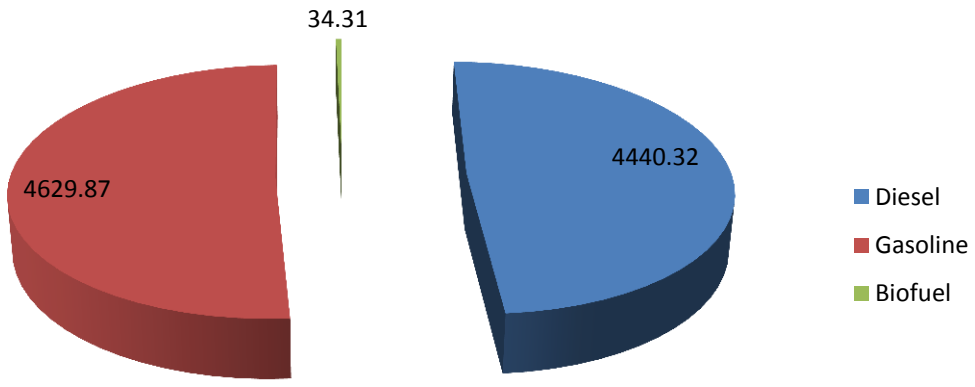

Figure 6 – Pie chart for energy consumption for private and commercial transport

8. Others

8.1 Water Consumption

Production of potable water in Malta is mainly by means of sea water desalination. Hence, the provision of water is an energy intensive process. For this reason, it has been deemed sensible to include the CO_2 related to the production and distribution of water in the baseline emissions inventory.

From utility billing data, the water consumption for the locality, in the baseline year, was equal to 55,674 m^3. According to the Water Services Corporation, the specific energy for the production and distribution of water for 2005 was 5.89 kWh/m^3. This means that the energy consumption relating to the production and distribution of water in the locality for the baseline year was equal to 327.92 MWh.

Since the source of this energy is electricity, using the emission factor of 0.867 tCO_2/MWh results in a CO_2 emission for water production and distribution of 284.31 tCO_2.

9. Baseline Emissions Inventory (BEI) Summary

9.1 Overview

The total energy consumption for the locality, in the baseline year, 2005, was equal to 14,341.56 MWh. The associated CO_2 emissions totalled 6,111.22 tCO_2.

Emissions due to the Tertiary sector have been included to ensure a comprehensive inventory. Refer to Chapter 5 of this report for the Council's commitments on reduction of emissions from this sector.

The corresponding annual values per capita are 8.91 MWh/capita and 3.8 tCO_2/capita.

	Annual Energy Consumption (MWh)	Annual CO_2 Emissions (t CO_2)
Locality Total	14,341.56	6,111.22
Per Capita	8.91	3.8

Table 8 –Overview of annual energy consumption

9.2 Energy Consumption by Sector

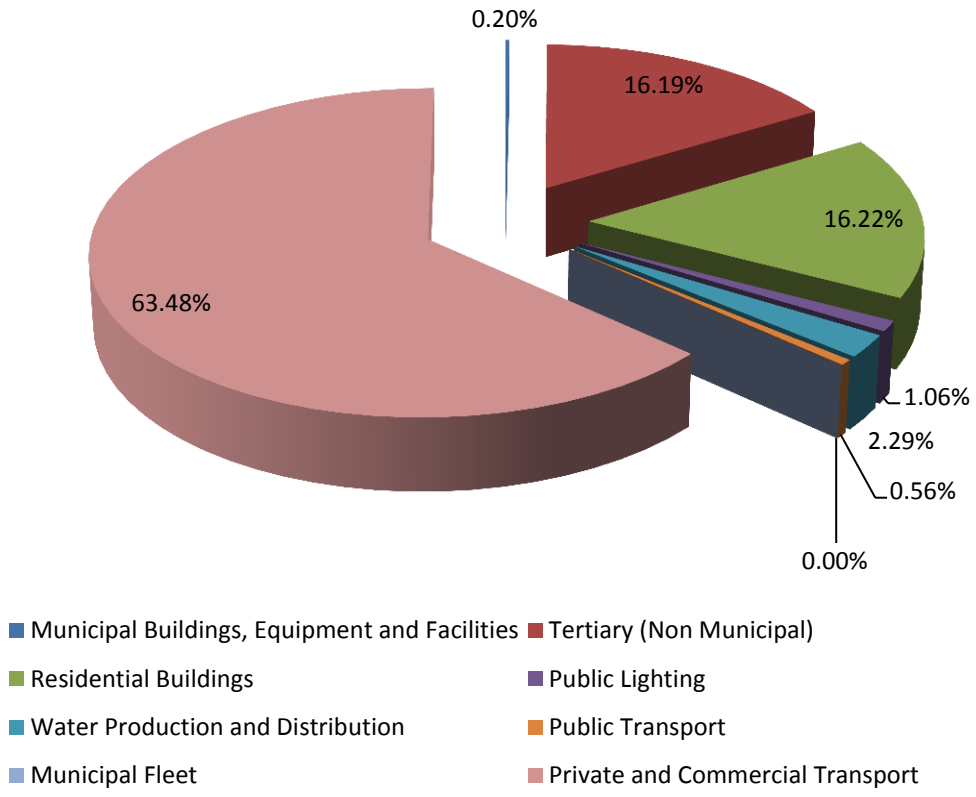

Figure 7 – Pie chart for energy consumption by sector

The above pie chart shows the distribution of energy consumption by sector, in the locality. The largest consumer of energy is the sector of Private and Commercial Transport (63.48%) followed by Residential Buildings (16.22%). This is followed by Tertiary (Non Municipal) Buildings, Equipment and Facilities (16.19%) and Water Production (2.29%).

Municipal Buildings, Equipment and Facilities, as expected, contribute to a very small fraction of the locality's energy consumption.

9.3 Energy Consumption by Source

The sources of energy in the locality are Electricity, Liquid Gas, Diesel and Heating Oil (combined as indicated in Tertiary buildings estimates), Gasoline and Biofuels.

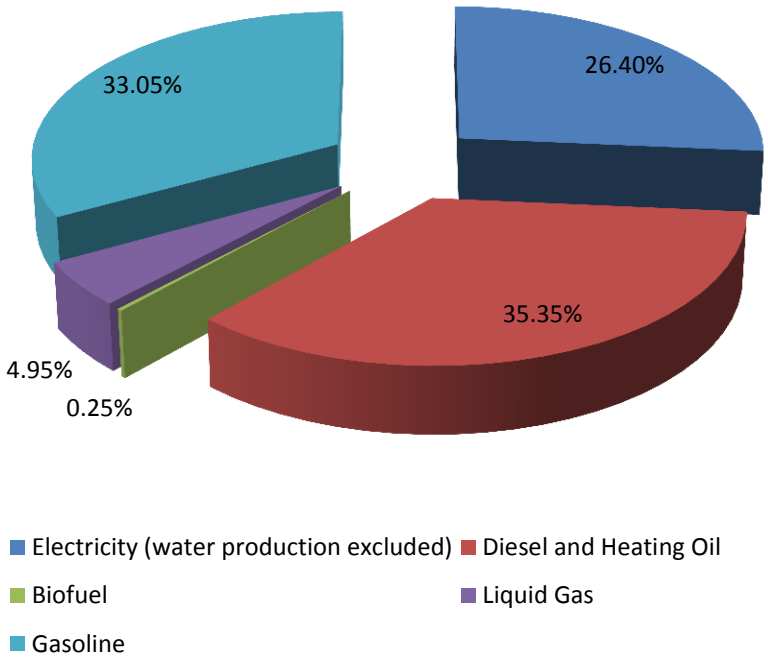

Figure 8 – Pie chart for energy consumption by source

Diesel and heating oil are the major contributors of energy supplying the Transport sector and to a lesser extent as a source of heat in Tertiary (Non Municipal) Buildings. Gasoline is the next largest source of energy and is also used in the Transport sector. The next major contributor is Electricity, mainly consumed in Residential Buildings and Tertiary (Non Municipal) Buildings, Equipment and Facilities.

9.4 Carbon Dioxide (CO_2) Emissions by Sector

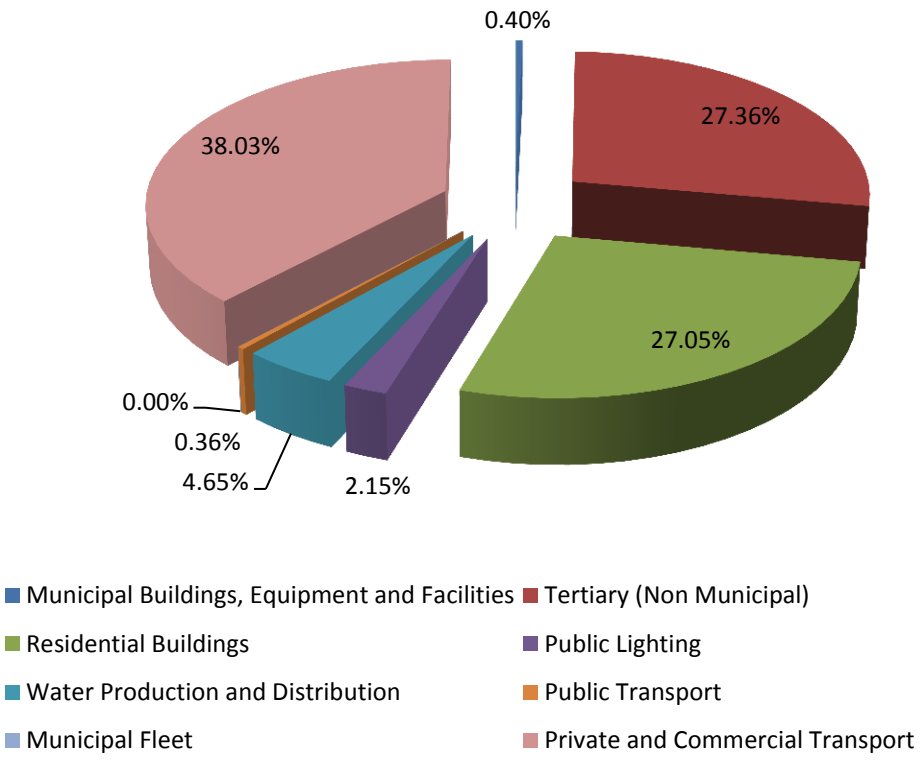

Figure 9 – Pie chart for Carbon Dioxide (CO2) Emissions by Sector

In comparison, the above chart shows the distribution of CO_2 emissions by sector. Evidently, the share of CO_2 emissions due to residential buildings (27.05%) is significantly larger than the share of energy consumption for the same sector. This is mainly due to the fact that the source of energy for a large proportion of energy used in residential buildings is electricity. Although this percentage is lower than the benchmark European average contribution from residential buildings of 40%, there remains a huge potential for reduction in this sector.

The largest sector remains that of Private and Commercial Transport, to be followed by Tertiary (Non Municipal) Buildings.

9.5 Carbon Dioxide (CO_2) Emissions by Source of Energy

The graph below shows the sources of CO_2 emissions by source of energy. Due to the relatively high emission factor for electricity, the CO_2 emissions due to this source of energy are significantly highest even though it is not the largest energy provider for the locality. This means that any initiative to reduce the consumption of electricity has the highest effect in reducing the CO_2 emissions.

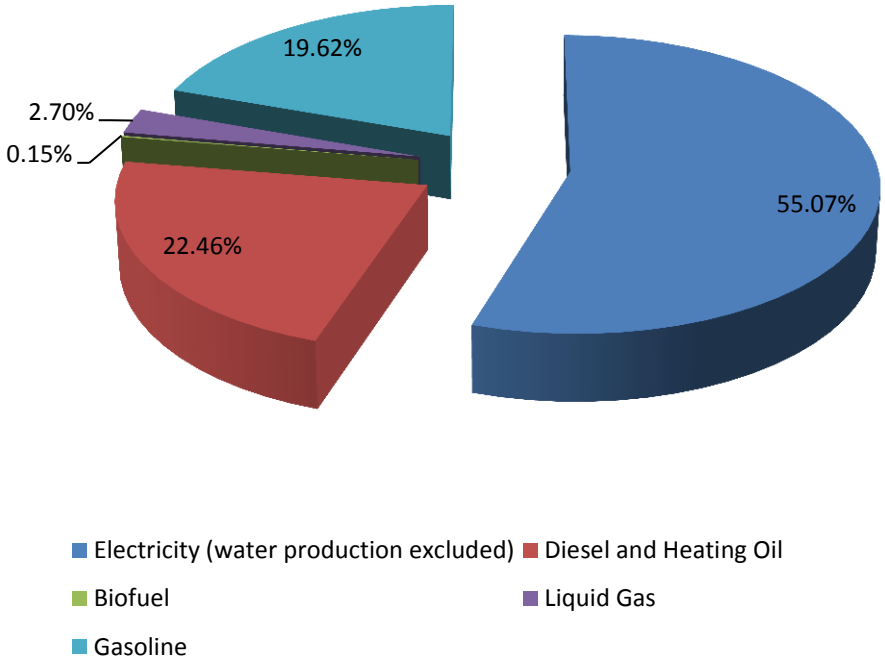

Figure 10 – Pie chart for Carbon Dioxide (CO2) Emissions by Source of Energy

Baseline Emissions Inventory (BEI) Tables

General Data

Baseline Year	2005
Number of Inhabitants in Baseline Year	1,609
Emission Factors	Standard Emission Factors in line with IPCC Principles
Emission Reporting Unit	CO_2 Emissions

Total Annual Energy Consumption per Capita	8.91 MWh
Total Annual CO_2 Emissions per Capita	3.8 tCO_2

Table 9 – General data from Baseline Emissions Inventory

Key Results of the Baseline Emissions Inventory

FINAL ENERGY CONSUMPTION (MWh)								
Category	Electricity	Fossil Fuels					Biofuel	**TOTAL**
		Liquid Gas	Heating Oil	Diesel	Gasoline	Other Fossil Fuels*		
BUILDINGS, EQUIPMENT AND FACILITIES								
Municipal Buildings, Equipment and Facilities	28.07	0	0	0	0	0	0	**28.07**
Tertiary (Non Municipal) Buildings, Equipment and Facilities	1763.60	131.77	0	0	0	426.68	0	**2322.05**
Residential Buildings	1757.41	562.42	6.61	0	0	0	0	**2326.44**
Municipal Public Lighting	151.75	0	0	0	0	0	0	**151.75**
Subtotal Buildings, Equipment, Facilities	**3700.83**	**694.19**	**6.61**	**0**	**0**	**426.68**	**0**	**4828.31**
TRANSPORT								
Municipal Fleet	0	0	0	0	0	0	0	**0**
Public Transport	0	0	0	80.83	0	0	0	**80.83**
Private and Commercial Transport	0	0	0	4440.32	4629.87	0	34.31	**9104.50**
Subtotal Transport	**0**	**0**	**0**	**4521.15**	**4629.87**	**0**	**34.31**	**9185.33**
OTHERS								
Water Production and Distribution	**327.92**	**0**	**0**	**0**	**0**	**0**	**0**	**327.92**
TOTAL (MWh)	**4028.75**	**694.19**	**6.61**	**4521.15**	**4629.87**	**426.68**	**34.31**	**14341.56**

**Includes and Combination of Heating Oil and Diesel used in Tertiary (Non Municipal) Buildings*

Table 10 – Final Energy Consumption

CO_2 EMISSIONS (t)								
Category	Electricity	Fossil Fuels					Biofuel	**TOTAL**
		Liquid Gas	Heating Oil	Diesel	Gasoline	Other Fossil Fuels*		
BUILDINGS, EQUIPMENT AND FACILITIES								
Municipal Buildings, Equipment and Facilities	24.33	0	0	0	0	0	0	**24.33**
Tertiary (Non Municipal) Buildings, Equipment and Facilities	1529.04	29.91	0	0	0	113.12	0	**1672.07**
Residential Buildings	1523.67	127.67	1.68	0	0	0	0	**1653.02**
Municipal Public Lighting	131.57	0	0	0	0	0	0	**131.57**
Subtotal Buildings, Equipment, Facilities	**3208.61**	**157.58**	**1.68**	**0**	**0**	**113.12**	**0**	**3480.99**
TRANSPORT								
Municipal Fleet	0	0	0	0	0	0	0	**0**
Public Transport	0	0	0	21.58	0	0	0	**21.58**
Private and Commercial Transport	0	0	0	1172.10	1143.49	0	8.75	**2324.34**
Subtotal Transport	**0**	**0**	**0**	**1193.68**	**1143.49**	**0**	**8.75**	**2345.92**
OTHERS								
Water Production and Distribution	**284.31**	**0**	**0**	**0**	**0**	**0**	**0**	**284.31**
TOTAL (tCO_2)	**3492.92**	**157.58**	**1.68**	**1193.68**	**1143.49**	**113.12**	**8.75**	**6111.22**
Corresponding CO_2 Emission Factors (tCO_2/MWh)	0.867	0.226	0.254	0.265	0.247	0.265	0.255	**0.462**

**Includes and Combination of Heating Oil and Diesel used in Tertiary (Non Municipal) Buildings*

Table 11 – CO_2 emissions

10. Sustainable Energy Action Plan (SEAP)

10.1 Qala's Vision towards a Sustainable Energy Future

The locality of Qala is setting the vision statement below as its guiding principle in its effort in favour of a Sustainable Energy Future for the locality, in line with the objectives of the Covenant of Mayors.

> *"The locality of Qala, aware of the challenge of a building a Sustainable Energy future, shall aim to lead by its actions towards sustainable development where its energy consumption shall be reduced and the related CO_2 emissions minimised. It shall contribute to the reduction of CO_2 emissions at a National and European level, in proportion to its population and resources.*
>
> *Qala aims to become a village in which its residents can identify themselves with the locality's goal to sustainable living with minimal environmental impact."*

10.2 Actions to Implement the Locality's Vision towards Energy Sustainability

As mentioned previously in this document, the local council is committing itself to reduce CO_2 emissions in the areas under its direct jurisdiction. These include emissions due to energy consumption in municipal buildings, municipal public lighting and the municipal fleet. It is to be noted that municipal public lighting is not presently under the jurisdiction of the local council but it is expected that in the term of the Covenant of Mayors, that is, by the year 2020, the responsibility of municipal public lighting excluding arterial roads would be handed over to the local authorities.

The following table lists the annual energy consumption and CO_2 emissions that the local council is committed to reduce.

ANNUAL ENERGY CONSUMPTION UNDER LOCAL COUNCIL'S JURISDICTION		
Field of Action	**Energy Consumption (MWh)**	**CO_2 Emissions (tCO_2)**
Municipal Buildings, Facilities and Equipment	6.21	5.38
Municipal Public Lighting	292.53	253.62
Municipal Fleet	N/A	N/A
Total Energy Consumption & Total CO_2 Emissions	**298.74**	**259**

Table 12 – Annual Energy Consumption under Council's Jurisdiction

However, the local council is aware that this is a small fraction of the locality's total emissions. For this reason, it shall include also in this action plan, those actions that it can possibly take to enable the reduction of CO_2 emissions in the locality either by increasing consumer awareness and providing education and general information to the citizens in its locality.

The major and most significant reduction in CO_2 emissions shall result from an improvement in electricity generation in Malta. This shall reduce the emission factor for electricity and hence the overall emissions. As a member state, Malta is also committed to ensure that 10% of its energy needs shall be provided by renewable sources by the year 2020. This shall also have an effect on the reduction of the locality's emissions. Such measures are nevertheless under the control of central government and are not accounted for in this action plan. Any reduction in CO_2 emissions resulting from improved electricity generation processes shall be over and above the reductions within this action plan.

10.2.1 Buildings, Equipment and Facilities

10.2.1.1 Municipal Buildings, Equipment and Facilities

Action 1.1: Conduct an energy audit for local council buildings.

An energy audit for the local council office building shall be performed in order to identify possibilities of reducing energy consumption. Although, this action does not reduce emissions per se, it will serve as a basis for the identification of tangible actions which will reduce the annual energy consumption.

Action 1.2: Conduct an energy audit for public gardens and recreational areas in the locality.

Similar to Action 1.1, this energy audit shall identify means of reducing energy consumption in public areas in the locality. Such actions will also not reduce energy consumption directly. However, if the work is publicised well, it shall have an effect to increase the awareness of the citizens of the locality and involve them in the process of decreasing energy consumption in the locality, possibly encouraging them to take other actions under their direct control.

Action 1.3: Perform actions identified in energy audit for local council buildings, municipal lighting facilities and public gardens and recreational areas.

Following actions 1.1 and 1.2, any actions identified shall be implemented over the course of the Covenant of Mayors. Neither the cost, nor the expected emission reduction can be quantified at this stage.

Action 1.4: Install a 1.8kWp (minimum) photovoltaic system to serve the Local Council building.

The local council shall commission the installation of a photovoltaic system of a 1.8kWp to provide part of the electrical energy used in the Local Council office building. It is expected that such a system shall cost in the order of € 7,000 and shall reduce annual energy consumption and CO_2 emissions by 2.90 MWh equivalent to 2.51 tCO_2.

Action 1.5: Identify possibilities and proceed with installation of further renewable energy systems on other public buildings to be managed by the local council.

The Local Council shall embark on a project to identify a number of sites that are potentially suitable for installation of further renewable energy systems, possibly employing different technologies. Such buildings may include buildings owned by the central government. The Local council shall enter in an agreement with the owner of the proposed sites to install the renewable energy systems and eventually take over the installation, maintenance and management of such systems.

Since the possibilities are not identified at this stage, the expected cost and energy savings cannot be quantified at this stage. It is however expected that carefully chosen sites, systems and technologies shall make such initiative revenue neutral in the payback period of the system.

Such an action shall have the added advantage of promoting renewable energy systems in the locality and enable the citizens and visitors to have firsthand experience with such systems in order to encourage them to invest in their own renewable energy technology.

10.2.1.2 Tertiary, Non-Municipal Buildings

Although no specific commitment is being made on the Tertiary sector at this stage (Refer to Chapter 5), the Council is aware that this shall be included at a later stage. For this reason, the Council shall proceed with any actions that can, at present or in future, lead to the overall reduction of emissions in the locality, in accordance with the Covenant of Mayors.

Action 1.6: Promote energy audits for non-municipal public buildings in the locality such as political clubs, band clubs and sports clubs.

Promotional material shall be provided to promote the implementation of energy audits for non municipal public buildings. The aim is that public buildings, where citizens gather for social and other activities, get on board with the locality on its commitment to reduce emissions. Such clubs and social groups are very likely to have an influential effect on their members and hence a large portion of the civil society can be made aware of the locality's initiatives regarding emission reduction measures.

10.2.1.3 Residential Buildings

Action 1.7: Perform energy audits in a limited number of dwellings (tentatively 5 residences) to serve as a pilot study.

The local council shall pilot a study on a limited number of selected residences in order to identify the potential to reduce energy consumption and emissions. Such residences are to be selected on the criteria that their tenants are willing to invest in energy reduction measures. The findings of this study shall be used in Action 1.8.

Action 1.8: Analyze Data from Pilot Study and present it to the public for information.

The information gathered from this pilot study shall be analysed and used in a public awareness campaign on the tangible and practical possibilities that do in fact exist for reducing energy consumption in residential buildings. The Council shall produce information leaflets with tangible actions that residents can take to reduce energy consumption within their households. The investments in the buildings will be undertaken by the residents themselves.

This action aims to reduce electricity consumption within residential buildings by 10% as a result of improvements in the building envelopes, particularly by improving building insulation properties and a reduction of heat absorpivity (which would consequently decrease air conditioning costs). Electricity consumption shall be reduced by 175.74 MWh annually and CO_2 emissions by 152.37 tCO_2.

It is expected also that such improvements shall reduce the consumption of heating oil in residential buildings by another 10%. This equates to a reduction of 0.66 MWh in energy consumption and 0.17 tCO_2 of emissions.

Furthermore, assuming that half the use of LPG in residences is for space heating purposes, then the consumption of LPG shall also reduce by 5% in residences. Energy savings amount to 28.12 MWh with a carbon dioxide reduction of 6.38 tCO_2.

Action 1.9: Conduct a public awareness campaign and organise Energy Days to involve the wider public in the use of renewable energy sources and energy efficiency.

In line with its commitment in the Covenant of Mayors, the local council shall periodically organise Energy Days to involve the general public in activities related to the production or use of renewable energy sources and

energy efficiency. These can take the form of guided visits and tours, education activities, open door days and exhibitions.

Conservatively, it is expected that the use of energy efficient appliances in residences shall reduce the electricity consumption by another 5%. This means an energy saving of a further 87.87 MWh and a carbon dioxide reduction of 76.19 tCO_2.

Action 1.10: Conclude agreement(s) with a number of suppliers of renewable energy systems to obtain preferential prices for use in buildings in the locality.

By entering into an agreement with a number of suppliers of renewable energy systems, the local council shall be in a position to offer residences in its locality the possibility to purchase renewable energy technology at reduced prices. This model has already been employed in Malta and has been very successful at a local level. It should be aimed to introduce a renewable energy system on at least 50% of rooftops in the locality.

Typical renewable energy systems may include but are not limited to solar (water and space) heating systems, photovoltaic systems and vertical axis (low noise) helical wind turbines which tend to be more aesthetic due to its design and quieter because the of the lower blade tip speed. Obviously, this is subject to the approval of the Malta Environment and Planning Authority and/or other authorities as applicable.

The Council aims to have 259 solar water heaters installed on residential buildings by 2020. These are expected to offset electricity consumption which is currently the absolute majority source of energy for water heating. Electrical energy savings are aimed to reach 283.61 MWh annually with a corresponding emission reduction of 245.89 tCO_2.

In addition, by promoting the installation of photovoltaic energy systems, the Council aims to have a good participation within the locality. The target installed capacity on residential rooftops by 2020 is 215 kWp. This should be able to generate 354.93 MWh offset a carbon dioxide emission of 307.72 tCO_2.

10.2.1.4 Municipal Public Lighting

Action 1.11: Conduct an energy audit for municipal lighting facilities in the locality to assess the adequacy of public lighting and identify methods to improve energy efficiency.

A detailed energy audit of municipal public lighting shall be undertaken to assess the adequacy of public lighting and identify methods to improve energy efficiency.

Action 1.12: Install intelligent street lighting control systems in all substations.

By installing intelligent (such as adaptive) street lighting control systems in the locality, it is predicted that around 25% of energy used for street lighting can be reduced. This would equate to a reduction of 32.89 tCO_2 emissions annually.

It is expected that such a system would cost around € 150,000 for the whole locality with a payback period in the order of 3 to 4 years. Funding from central government or other public authorities may be required for this action.

10.2.2 Transport

10.2.2.1 Private and Commercial Transport

Action 2.1: Provide preferential reserved parking spaces for electric, hybrid or low emission vehicles together with two charging points for electric vehicles in prominent areas of the locality.

In order to promote the introduction of electric or hybrid vehicles, the local council is to provide a number of preferential parking spaces in the central areas of the locality such that these spaces are reserved for these types of vehicles only.

In addition, the local council shall provide a number of small parking spaces specifically for small vehicles that are likely to produce lower emissions. This approach is already being applied successfully in other countries. The council shall install two charging points for electric vehicles in prominent areas of the locality.

The ultimate aim is that 5% of vehicles registered in the locality are hybrid or low emission means of transport. Assuming that the overall emissions of these vehicles are reduced by 25% (compared to conventional fuels), then the emission reduction on the overall fleet is 1.25%.

Furthermore, the council aims that by 2020, another 5% of the vehicles registered in the locality are electric vehicles. It is assumed that this shall reduce the annual consumption of conventional fuels by 25% (compared to conventional fuels) resulting in another 1.25% in overall emission reduction average over the locality's fleet.

A total of 2.5% reduction is therefore expected. This is equivalent to an annual reduction in energy consumption of 227.61 MWh resulting in an annual emission reduction of 58.11 tCO_2.

Action 2.2: Promote an increase in use of bio fuels in the locality by means of information campaigns.

The current use of bio fuels in the private and commercial transport sector is low (less than 0.4%). This is exclusively biodiesel.

It is the aim of the local council to provide adequate information about the environmental benefits of the use of bio fuels. Other bio fuels such as bioethanol shall also be promoted such that even vehicles operating on conventional petrol can use bio fuels.

Such information can be presented during Energy Days or by means of specific leaflets. Funding for this initiative can be sought from sponsorship by bio fuel importers and distributors.

This action should, in due course, increase the usage of bio fuels to at least 5%. This would not reduce the energy consumption but, provided that the source of bio fuels is renewable, it would reduce the carbon dioxide emissions by 4.5% that is 104.60 tCO_2.

10.2.2.2 Public Transport

Action 2.3: Upgrade of Public Transport System.

The Council is committed to have a good public transport system within the locality. As a result, it shall actively work to persuade the transport authority in this direction. In addition, the Council shall take the initiative to provide as much information as possible to its citizens in order to encourage the use of public transport.

It is expected that by 2020, the increase in use of public transport shall reduce the use of private vehicles by 10%. It is estimated that small private vehicles consume 12.53% of energy consumption of the Private and Commercial Transport sector in the locality.

As a result, the percentage energy consumption reduction in this sector should amount to 1.25% of the total. In absolute terms, this is equivalent to a reduction of 113.81 MWh and 29.05 tCO_2.

Public transport routes shall also be optimised to ensure better utilisation of the service and replacement of the old fleet of buses. The expected reduction due to such a gross improvement is 30%. In energy and emission terms, this result in a reduction of 24.25 MWh and 6.47 tCO_2 respectively.

The public transport system shall be operated by a private contractor with no direct cost on the Local Council.

10.2.3 Local Electricity Production

10.2.3.1 Combined Heat and Power

Action 3.1: Conduct a feasibility study for installation of a Combined Heat and Power with Absorption Cooling in Public Building (if deemed feasible)

The local council shall commission a feasibility study for the installation of a combined heat and power unit with absorption cooling for use in a prominent public building. If the project is deemed feasible, the local council shall attempt to proceed with funding and installation. This project is aimed to introduce this highly efficient technology in the locality.

10.2.4 Land Use Planning

10.2.4.1 Carbon Sequestration Measures

Action 4.1: Conduct a locality survey to identify locations where new trees can be planted. Survey is to identify possible locations by available areas or number of tree spaces.

Although not strictly an energy initiative, this action is intended to make maximum use of spaces available for the planting of new vegetation, especially trees that have the function to capture atmospheric CO_2 and offset part of the locality's emissions.

Action 4.2: Undertake a tree planting exercise as identified in the locality survey (Action 4.1) to counteract emissions produced in the locality.

Conduct a tree planting exercise in the locality involving as much as possible the general public in participating in such exercise. This can be combined with the Energy Days activities.

10.2.5 Local District Heating / Cooling, CHPs

Not applicable for the locality.

10.2.6 Public Procurement of Products and Services

10.2.6.1 Energy Efficiency Requirements / Standards

Action 6.1: Establish a policy such that all equipment purchased by Local Council is rated as the least energy consuming.

All tenders for the purchase of equipment issued by the local council shall include a clause giving preference to the equipment which consumes least energy for the same functions.

Action 6.2: Establish a policy such that service providers that have recognised environmental policies and independent accreditation will be given preference in the selection process.

It shall be the council policy that in the selection process, preference is given to service providers with recognised environmental policies and independent accreditation. Such a policy shall be communicated in all tender documents.

10.2.7 Working with the Citizens and Stakeholders

10.2.7.1 Awareness raising and local networking

Action 7.1: Consult with Malta Resources Authority about the possibility of offering energy saving incentives applications from the Local Council Office.

The local council shall investigate the possibility of helping the citizens in the locality by processing applications for renewable energy incentives promoted by the Malta Resources Authority from its offices within the locality. It is likely that this shall make it easier for residents to participate and benefit from such incentives, thus attracting renewable energy technology towards the locality.

List of Actions of the SEAP

Sectors and Fields of Action	Key Actions and Measures	Implementation (Start and End Time)	Expected Costs per Action or Measure	Expected Energy and CO_2 Reduction per Measure [Tonnes CO_2 pa]
1. Buildings, Equipment and Facilities				
Municipal Buildings, Equipment and Facilities	1. 1 Conduct an energy audit for local council buildings.	Start: January 2013 End: June 2013	€ 750	Nil
	1.2 Conduct an energy audit for public gardens and recreational areas in the locality.	Start: June 2013 End: December 2013	€ 1,000	Nil
	1.3 Perform actions identified in energy audit for local council buildings, municipal lighting facilities and public gardens and recreational areas.	Start: January 2014 End: As indicated in respective Energy Audit recommendations.	Depending on Actions Identified in Actions 1.1 and 1.2 above.	Not Quantifiable at this stage.
	1.4 Install 1.8kWp of PV system(s) to serve the municipal facilities.	Start: January 2014 End: June 2014	€ 7,000	2.90 MWh 2.51 tCO_2

Sectors and Fields of Action	Key Actions and Measures	Implementation (Start and End Time)	Expected Costs per Action or Measure	Expected Energy and CO_2 Reduction per Measure [Tonnes CO_2 pa]
	1.5 Identify possibilities and proceed with installation of further renewable energy systems on other public buildings to be managed by the local council.	Start: 2015 End: 2019	Depending on technologies employed and capacity installed.	Not Quantifiable at this stage.
Tertiary, Non-Municipal Buildings	1.6 Promote energy audits for non-municipal public buildings in the locality such as political clubs, band clubs and sports clubs.	Start: January 2015 End: December 2016	€ 800 for promotional material	Nil
Residential Buildings	1.7 Perform energy audits in a limited number of dwellings (tentatively 5 residences) to serve as a pilot study.	Start: January 2014 End: December 2016	€ 1250 for performance of energy audits in 5 dwellings	Nil
	1.8 Analyze Data from Pilot Study and present it to the public for information to promote uptake of energy saving measures in residences	Start: January 2017 End: June 2017	€ 750 for an analysis report of pilot study	204.52 MWh 158.92 tCO_2
	1.9 Conduct a public awareness campaign and organise Energy Days to involve the wider public in the use of renewable energy sources and energy efficiency.	Start: October 2012 End: Ongoing till 2020	€ 1,500 for promotional material and organisation of events.	87.87 MWh 76.19 tCO_2

Sectors and Fields of Action	Key Actions and Measures	Implementation (Start and End Time)	Expected Costs per Action or Measure	Expected Energy and CO_2 Reduction per Measure [Tonnes CO_2 pa]
	1.10 Conclude agreement(s) with a number of suppliers of RE systems to obtain preferential prices for use in residential buildings in the locality.	Start: January 2013 End: December 2013	Nil	638.53 MWh 553.61 tCO_2
Municipal Public Lighting	1.11 Conduct an energy audit for municipal lighting facilities in the locality to assess the adequacy of public lighting and identify methods to improve energy efficiency.	Start: January 2016 End: December 2016	€ 1,000	Nil
	1.12 Install intelligent street lighting control system in all substations.	Start: January 2018 End: December 2020	€ 150,000	37.94 MWh 32.89 tCO_2
2. Transport				
Private and Commercial Transport	2.1 Provide preferential reserved parking spaces for electric, hybrid or low emission vehicles to promote uptake within the locality.	Start: January 2013 End: December 2013	€ 450 for additional signage and road marking.	227.61 MWh 58.11 tCO_2

Sectors and Fields of Action	Key Actions and Measures	Implementation (Start and End Time)	Expected Costs per Action or Measure	Expected Energy and CO_2 Reduction per Measure [Tonnes CO_2 pa]
	2.2 Promote the use of Bio-Fuels by means of an adequate information campaign.	Start: January 2015 End: December 2017	€ 1,000 for information campaign (sponsorship to be sought)	0 MWh 104.60 tCO_2
	2.3 Upgrade of Public Transport System to reduce private transport use and to reduce direct energy consumption by old fleet.	Start: July 2013 End: July 2020	€ 500 for public information campaign.	138.06 MWh 35.53 tCO_2
3. Local Electricity Production				
Combined Heat and Power	3.1 Conduct a feasibility study for the installation of a Combined Heat and Power with Absorption Cooling in Public Building. Install unit if deemed feasible.	Start: January 2018 End: December 2020	Prices are not yet known as the technology is still developing. It is envisaged that feasible commercial units will be available by 2018.	Not Quantifiable.

Sectors and Fields of Action	Key Actions and Measures	Implementation (Start and End Time)	Expected Costs per Action or Measure	Expected Energy and CO_2 Reduction per Measure [Tonnes CO_2 pa]
4. Land Use Planning				
Carbon Sequestration Measures	4.1 Conduct a locality survey to identify locations where new trees can be planted. Survey is to identify possible locations by available areas or number of tree spaces.	Start: January 2014 End: September 2014	€ 150 for administrative costs	Nil
	4.2 Undertake a tree planting exercise as identified in the locality survey (see Action 4.1) to counteract emissions produced in the locality.	Start: October 2014 End: As indicated in survey recommendations.	Depending on the type and number of trees to be planted.	Not Quantifiable.
5. Local District Heating and Cooling				
Local District Heating and Cooling	Not Applicable			Nil

Sectors and Fields of Action	Key Actions and Measures	Implementation (Start and End Time)	Expected Costs per Action or Measure	Expected Energy and CO_2 Reduction per Measure [Tonnes CO_2 pa]
6. Public Procurements of Products and Services				
Energy Efficiency Requirements and Standards	6.1 Establish a policy such that all equipment purchased by Local Council is rated as the least energy consuming.	Start: March 2013 End: Ongoing	Nil	Not Quantifiable.
	6.2 Establish a policy such that service providers that have recognized environmental policies and independent accreditation are preferred in the selection process.	Start: March 2013 End: Ongoing	Nil	Not Quantifiable.
7. Working with the Citizens and Stakeholders				
Awareness raising and local networking	7.1 Consult with the Malta Resources Authority about the possibility of offering energy saving incentives applications from the Local Council office.	Start: March 2013 End: June 2013	Nil	Nil
TOTAL ENERGY SAVINGS AND CARBON DIOXIDE REDUCTION				**1,337.43 MWh** **1,022.36 tCO_2**

Table 13 – List of Actions for SEAP

11. Endorsement

We, the Councillors of Qala Local Council, today the ____ day of _____, 2012, hereby approve this Sustainable Energy Action Plan as a part of the Council's commitment to the Covenant of Mayors.

_____

Perit Clint Camilleri,
Mayor

12. Conclusions

The Qala Local Council is aware that the jurisdiction and power of local councils in Malta with respect to energy management is rather limited. This, however, shall not be a restrictive factor in preventing the locality from actively participating in the Covenant of Mayors.

Remarkably, besides those fields of action on which the Local Council has direct control, it is also committing itself on a number of actions, included in this plan, covering fields outside its direct authority.

In this way, its contribution to the reduction of CO_2 emissions by 2020, together with the initiatives taken at a National level, shall be a significant factor in the abatement of global climate change in proportion to the population and resources of the locality.

The locality of Qala, by its participation and adherence to the Covenant of Mayors, aims to demonstrate that actions at a local level, however small, can have significant measureable effects in the fight against climate change.