



DEPARTMENT OF
THE ENVIRONMENT

HM Government of Gibraltar

National Energy Efficiency Action Plan

Gibraltar

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1 Introduction

This National Energy Efficiency Action Plan has been prepared to fulfil the requirements of the EED. It sets targets for energy efficiency in 2020, as well outlining the ways in which these targets will be met.

Gibraltar has a challenge in common with every other nation of the world. Energy is vital to our economic growth and, although the link between growth and energy use is not absolute, the world's demand for energy is increasing rapidly, leading to fiercer competition for finite natural resources. At present Gibraltar is very dependent upon imported fossil fuels. Gibraltar is looking to develop an energy strategy based upon three principal objectives:

1. Providing a secure and affordable supply of energy;
2. Producing energy in an environmentally sound & sustainable manner;
3. Promoting policies that improve energy efficiency.

In order to understand the context in which H.M. GoG has developed this Plan, it is useful to give an overview of Gibraltar's very particular political and geographical circumstances.

Gibraltar is situated at latitude 36°07' North and longitude 5°21' West at the southern tip of the Iberian Peninsula and the eastern end of the Strait which bears its name. It is clearly marked by its famous Rock, a mass of Lower Jurassic limestone running roughly north to south along the greater part of the peninsula which is approximately 6 kilometres long and 1.2 kilometres at its widest point. It rises to a height of 426 metres and lies just 16 kilometres across the Straits from the north coast of Africa. The total area of the peninsula is approximately 6.5 square kilometres.

Gibraltar is a British territory and has a population of 30,001 (2012 population statistics), one of the highest population densities in the world. The territory has its own elected Government, which is responsible for all internal matters such as provision of municipal services, trade, health, education and housing.

Much of Gibraltar consists of rocky and dense matorral areas, called the Upper Rock Nature Reserve, which is a Special Protected Area (SPA) and a Special Area of Conservation (SAC), where any further development is prohibited. The remaining land has therefore been densely developed, and most of the population, commercial and leisure activities, are concentrated on the lower western slopes of the Rock. Much of the city area is built on land reclaimed from the sea within the harbour.

Gibraltar also receives an annual influx of some 10 million visitors, the vast majority being day-trippers from Spain. Due to economic factors, mainly the lower cost of fuel, many visitors cross over the border to fill their vehicles with fuel before returning to the Spanish mainland. For this reason, figures from fuel energy use are higher than would be expected for a population of this size.

Gibraltar's land mass, as highlighted above is small, some 6.5 square kilometres, of which 30.8% is the Upper Rock Nature Reserve. It is therefore particularly important for Gibraltar to strike a balance between the requirement for development and the preservation of the environment. The protection of the environment is a matter of prime concern.

Gibraltar is a popular port of call for cruise liners; with 187 cruise liners calling in 2011, as well as for other vessels. It also has three marinas offering over four hundred berths for yachts. Gibraltar's airport currently offers scheduled air services to the United Kingdom and Morocco. There are approximately 40 kilometres of roads in Gibraltar. The network currently connects to that of Spain by a single access road, which runs across the airport runway.

The economy of Gibraltar has many unusual features most of which stem from its small size in terms of area and population. Gibraltar is not capable of sustaining any kind of agriculture due to its topographical features and size constraints. There are no commercial fishing fleets based in Gibraltar and there is no domestic industrial manufacturing activity.

All of Gibraltar's energy needs are met by electricity; which is currently produced by burning diesel fuel. H.M. Government of Gibraltar has plans to build a new, state of

the art power station which will run on liquid natural gas, thus improving energy efficiency considerably. There is also a commitment to achieve carbon neutrality and a Task Force has been set up with the specific purpose of delivering this objective. Energy efficiency will form a key part of this strategy.

Despite its small size and correspondingly small contribution to global and EU figures for energy usage and carbon emissions, H.M. GoG is committed to placing environmental considerations at the top of its agenda and this Plan sets out the ways in which it will assist the EU in meeting its energy efficiency obligation by 2020.

2 Overview of national energy efficiency targets & savings

2.1 National 2020 energy efficiency targets

As part of its Energy and Climate Change Package, the European Union has committed to saving 20% of its primary energy consumption by 2020, compared to a business-as-usual scenario based on the 2007 PRIMES model scenarios. These scenarios are published regularly as part of updates to the study series “EU Energy Trends to 2030”¹ and include a Baseline scenario which determines the development of the EU energy system under current trends and policies.

The EED allows for a number of options for determining the energy efficiency target. It should be noted that Gibraltar holds a unique role within the EU; due to its small size and specific status, only a limited amount of data is available to make robust calculations. As a result certain assumptions have had to be made and for many measures it is not actually possible to accurately quantify the resulting energy savings, at this stage. Government is currently working to collect and survey the information and data that will be necessary in order to perform these calculations accurately.

H.M. GoG has decided that the 2020 target is to be expressed in **primary energy** based on a bottom-up methodology for creating a baseline projection up to 2020 which follows business-as-usual developments in GDP growth as well as forecasts on generated electricity up to 2020. Furthermore, it was decided that the target shall be presented as an **energy intensity target**.

2.2 Gibraltar indicative energy efficiency target for 2020

Gibraltar’s indicative energy efficiency target for 2020 is an **energy intensity of 40.8 kgoe/1000EUR_{2005/06}**, which lies **16 %** below the business-as-usual energy intensity projection.

This energy intensity target corresponds to an absolute **1144 GWh (0.0983 Mtoe)** of primary energy consumption in 2020.

¹ http://ec.europa.eu/energy/observatory/trends_2030/doc/trends_to_2030_update_2009.pdf

2.3 Impact of the target on overall primary and final energy consumption

Gibraltar's energy efficiency target will result in a reduction in **primary energy consumption** of **222 GWh** (0.0191 Mtoe) which is 16% below business-as-usual. It will reduce **final energy consumption** by **113 GWh** (0.0097 Mtoe).

2.4 Calculation methodology and data basis

As Gibraltar holds a very unique position within the European Union, official and/or default statistical data provided by the EU or EUROSTAT is not readily available as for other Member States. Therefore business-as-usual projections were calculated based on observed trends in data on electricity output, fuel consumption² as well as development of GDP (see Table 1 - Table 3).

Table 1 Electricity output from Gibraltar power stations (in GWh)

Year	Total [in GWh]
2003/2004	176
2004/2005	185
2005/2006	192
2006/2007	192
2007/2008	194
2008/2009	208
2009/2010	211
2010/2011	207
2011/2012	205
2012/2013	218
Total	1,990

² The fuel figures are based on import duty paid on the commodities and not on imports. Whilst they reflect a fairer view about local consumption, prior to June 2013 (when marine fuels were exempted from duty), diesel for vessels (same as that used for cars) of under 250 tonnes paid duty and are included in the figures. The information is not available to correct for this. The figures are also affected by cross border traffic, with Spanish drivers buying fuel in Gibraltar because of the price difference. In 2013, this cross border traffic was much less.

Table 2 Fuel consumption 2010-2012 (in GWh)

Category [in GWh]	2010	2011	2012
Motor spirits (petrol)	172	156	154
Gas Oil (diesel)	342	318	285
Total	515	475	439

Table 3 Gross Domestic Product for Gibraltar (inflation corrected)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
GDP [£M _{2005/06}]	474	508	562	600	720	760	824	888	901	947	1,001

Source: Gibraltar Statistics Office

Based on the data received, the primary energy consumption as well as the energy intensity for Gibraltar for the past 3 years has been determined.

Table 4 Primary energy and energy intensity for Gibraltar

	2010	2011	2012
Primary energy [in GWh]	1085	1034	1027
Energy intensity [in GWh/£M _{2005/06}]	1.204	1.091	1.026
Energy intensity [in kgoe/1000 EUR _{2005/06}]	70.8	64.2	60.3

2.5 Projected primary energy and energy intensity up to 2020

The GDP figures in Table 3 show varying annual growth rates. HM GOG has stated an intention of continuing on a high growth pathway; therefore we assume annual increases in GDP of 6% up to 2020. Under this assumption, GDP would be £_{2005/06} 1.6bn in 2020.

Based on the development forecast by the GEA, primary energy is assumed to grow at the same rate as generated electricity which shows an average annual increase rate of 4% in the data provided up till 2020.

Table 5 Projected primary energy and energy intensity (business-as-usual)

Projections	2013	2014	2015	2016	2017	2018	2019	2020
Primary energy [GWh]	1065	1103	1143	1185	1228	1272	1318	1366
Energy intensity [kgoe/1000EUR _{2005/06}]	57.4	56.2	55.1	53.7	52.4	51.2	49.9	48.7

By assessing the likely savings from measures currently planned and implemented, as well as taking into account the overall target set for the EU, it is estimated that a target of 16% below business-as-usual can realistically be achieved. This results in an indicative **energy intensity target of 40.8 kgoe/1000EUR_{2005/06}** by 2020, as stated above.

2.6 Estimate of primary energy consumption in 2020

Overall, following business-as-usual estimations the primary energy consumption will be 1366 GWh (0.1175 Mtoe) without the realisation of energy savings. Gibraltar has no additional efficiency targets addressing the whole economy or specific sectors.

2.7 Primary and final energy savings

Table 6 gives an overview of measures that are currently implemented (I), in the process of implementation (PR) or planned (PL) in Gibraltar. These measures mainly target final energy consumption, but will of course also have an effect on primary energy consumption. A short description of the individual measures has been provided. Following Annex XIV 2.2(b) sector level primary (PE) and final (FE) energy reductions are shown due to (the combination) of measures, to ensure that the set target of 222 GWh in primary energy and 113 GWh in final energy will be saved.

Table 6 Overview of measures that are implemented (I), the process of implementation (PR) or planned (PL)

Sector	Measure	Status	Short Description	Targeted primary/ final energy savings
Public	New gas fuelled power station	(PL)	Gibraltar's ageing power stations will be replaced with a single, state of the art, LNG power station. Based on 2012 data, if 218 GWh of electricity is generated the new power plant would save around 61 GWh of primary energy.	37.5 GWh (PE) 15 GWh (FE)
	Street lighting (LED)	(I)	Phased replacement of all street lighting with LED	
	Street lighting (solar)	(I)	Installation of solar street lighting in certain areas	
	Electric charging points	(PR)	Inclusion of electric charging points in new public car parks	
	Green Business Programme	(I)	Government initiative to adopt sustainable and greener practices within Government Departments. Targeted principles include: <ul style="list-style-type: none"> • Green procurement will also be considered where economically feasible. • Complying with legislative and regulatory requirements and applying the best available techniques. • Striving for continuous improvement on sustainability and promoting environmental management systems. 	
	Solar thermal systems	(I)	Installation of solar thermal systems at Tercentenary Sports Hall and St. Bernard's Hospital	
	Public building refurbishment	(I)	All government buildings to be refurbished using LED lighting	
Building	Tax allowance scheme	(PL)	Tax allowance scheme for buildings: <ul style="list-style-type: none"> • Replacement of windows (improved double glazing) • Roof insulation • Replacement of cooling systems • Replacement of lighting with LED 	60 GWh (PE) 24 GWh (FE)

	Loan scheme to promote energy efficient technologies and processes	(PL)	Cross-sectional technologies (ICT, cooling devices, pumps)	
Commercial	Grant scheme to promote energy efficient technologies and processes	(PL)	Energy audits	70 GWh (PE) 28 GWh (FE)
Transport	Public bus services	(I)	Free public bus services for local residents	47 GWh (PE) 43 GWh (FE)
	Tax scheme e-mobility	(PR)	Electric and hybrid vehicles are exempt from import duty	
	Tax allowance scheme vehicle fleet improvement	(PL)	Loan scheme to improve vehicle fleet efficiency	
Cross-sector	Tax scheme on import duty	(PR)	To increase the share of high standard energy efficiency technology, import duty will be increased for appliances with a 'C' or 'D' rating. Appliances with an 'F' or 'G' rating will be either banned or required to pay even higher import duties.	7.5 (PE) 3 (FE)
	Tax scheme Renewables	(PL)	Renewable energy products are exempt from import duty.	
	Energy advice and consultation (centrally and on-site)	(PL)	<ul style="list-style-type: none"> • Training programme for energy service providers • Energy advice for private households • Energy advice for commercial sector 	

2.8 Achieved final energy savings and forecast savings till 2016

The majority of measures cannot be quantified at this stage. Therefore example calculations have been done for the replacement of lighting as well as for the roll out of smart meters. The main findings are presented below. Details to the calculation can be found in Annex II of this document.

Energy savings from the measure of lighting replacement have amounted to around 152 MWh of final energy savings and 380 MWh³ of primary energy savings in the beginning of 2014. These savings will persist from 2014 on until 2020 and by then will have contributed roughly 3.3 GWh in primary energy savings (1.3 GWh in final energy) to the target. Further savings can be expected from the continuous replacement of lighting in other buildings and open spaces.

Although the advantages of smart meters are widely recognized, the actual potential of savings is difficult to quantify, as savings are dependent not only on individual behaviour, but can also vary depending on the smart meter system installed. For this calculation we estimated savings of around 0.1 -0.2 MWh per year and smart meter, which corresponds to roughly a 2-4 % reduction in average household consumption in Gibraltar⁴.

Depending on the targeted share of households that will have a smart meter in 2020 (e.g. 20%, 50%, 80% etc.) a total of 2.3 – 11.8 GWh of primary energy (equals 0.9 – 4.7 GWh of final energy) can be saved. If it is assumed that around 0.2 MWh/smart meter⁵ is saved a range of 4.5 – 23.3 GWh of primary energy (equals 1.8 – 9.3 of final energy) can be saved through the introduction of smart meters. The savings can be further increased if a larger number of smart meters are installed for the first intermediate period of the national scheme (between 2014 and 2017).

With regard to the final energy savings achieved, as well as forecast savings in energy end-use by 2016, it is planned that 50% of the energy savings target will be reached by 2017 meaning that in 2016 3/8 of the energy savings target will be reached. This amounts to **42 GWh in final energy savings by 2016**.

In order to calculate the energy savings from the measures proposed in Table 6 an ex-post methodology will be used; based on a combination of bottom-up calculation and expert estimations. Gibraltar is currently gathering the relevant data needed to

³ Using the default coefficient of 2.5 for energy conversion as stated in Annex IV of Directive (2012/27/EU) for all calculations

⁴ This is in line with other MS methodology, e. g. Malta estimates an annual savings potential of 25 - 50 GWh for 250 000 installed smart meters.

⁵ This corresponds to roughly 4% of the energy bill being saved after smart meter installation.

perform these calculations so that future NEEAPs will contain more information on energy saved through implemented measures.

3 Policy measures implementing EED

3.1. Horizontal measures

3.1.1 Energy Efficiency Obligation Scheme

The implementation of Article 7 of the EED (Directive 2012/27/EU) is to put the EU back on track for achieving its energy saving target of 20% by 2020. It is estimated that about half of the energy savings will come from the 1.5% annual savings under the efficiency obligation schemes defined under Article 7 of the Directive. Gibraltar holds a very unique position within the European Union and statistical data is not that readily available as for other Member States.

3.1.2 Target setting

To determine the target of Article 7 EED the transport sector is excluded from the energy savings calculation. From Gibraltar's remaining final energy consumption nearly 95% comes from electricity. The remaining 5 % is from bottled gas and diesel. Paragraph 2 of the Article lists four options that can be applied in order to reduce the savings, as long as the reduction does not exceed 25% of the normal target. For its target setting Gibraltar applies option 2(a) using values of 1 % in 2014 and 2015; 1,25 % in 2016 and 2017; and 1,5 % in 2018, 2019 and 2020. This results in a total energy saving of 69.8 GWh of final energy, or **175 GWh⁶ of primary energy**, over the seven year period. Gibraltar opts for two intermediate periods which last for four years (2014-2017) and three years (2018-2020) and in which energy savings are equally distributed.

Article 7 of the EED offers a variety of options for fulfilling its requirements. Next to the setup of an **energy efficiency obligation scheme** as described in paragraph 1 of the Article it allows Member States to set up other **alternative policy measures** to achieve energy savings among final customers. Gibraltar opts for a **combination of both**. Within Gibraltar's scheme the energy efficiency obligation scheme should reach 10% of the target while the rest of the target is achieved through various alternative policy measures.

⁶ Using the default coefficient of 2.5 for energy conversion as stated in Annex IV of Directive (2012/27/EU)

Gibraltar intends to create an energy efficiency obligation scheme for their one energy supplier, the Gibraltar Electricity Authority (GEA), which will only cover some leading measures which are best carried out by the supplier due to the subjects they target. Consequently, the roll-out of a smart meter programme for the residential as well as commercial sector is planned. An example calculation for possible savings from a smart meter programme demonstrates that depending on the number of smart meters installed, savings of around 2-13 % of the total energy saving target can be achieved, making this measure suitable for implementation by the GEA. The example calculation can be found in Appendix II.

Gibraltar's scheme also includes **alternative policy measures** to achieve the Article 7 target. These policy measures contain ongoing measures as well as those in preparation, like the retrofitting of street lighting and lighting in public buildings, the Green Business Programme for the public sector and the free public bus services for local residents. However, these existing measures alone are unlikely to provide the scale of energy savings needed to meet the target. Therefore the implementation of additional measures is intended to bridge the gap for reaching the target.

3.1.3 Taxes

Sector	Measure	Short Description
All	Taxation scheme on import duty	To increase the share of high standard energy efficiency technology, import duty will be increased for appliances with a 'C' or 'D' rating.

3.1.4 Financing schemes and instruments, fiscal incentives

Sector	Measure	Short Description
Buildings	Tax allowance scheme for residential and commercial buildings	Tax allowance scheme for buildings: <ul style="list-style-type: none"> • Replacement of windows (improved double glazing) • Roof insulation • Replacement of cooling systems • Replacement of lighting with LED
Transport	Tax allowance scheme vehicle fleet	Tax allowance scheme to improve vehicle fleet efficiency

	improvement	
Commercial	Loan scheme to promote energy efficient technologies and processes	Cross-sectional technologies (ICT, cooling devices, pumps)
	Grant scheme to promote energy efficient technologies and processes	Energy audits

3.1.5 Training and education, including energy advisory programmes

Sector	Measure	Short Description
Public Services	Energy advice and consultation	<ul style="list-style-type: none"> • Training programme for energy service providers • Energy advice for private households • Energy advice for the commercial sector

Due to Gibraltar's size and the small amount of relevant sectors, consumer behaviour and buying decisions, are even more crucial to successful energy savings results here than for other EU Member States, making energy advice services as well as financing schemes for replacement of old HVAC systems and appliances, promising options for saving energy.

3.1.6 Monitoring and verification

With regard to the **energy efficiency obligation**, paragraph 6 determines that Member States shall put in place measurement, control and verification systems under which at least a statistically significant proportion and representative sample of the energy efficiency improvement measures put in place by the obligated parties is verified. That measurement, control and verification shall be conducted independently of the obligated parties.

In addition, Member States shall ensure that obligated parties provide on request: (not more than once a year) (paragraph 8)

- aggregated statistical information on their final consumers;
- current information on final customers' consumption including load profiles, customers segmentation while preserving the integrity of data.

For **alternative policy measures** paragraph 10 (g-j) defines that:

- (g) an annual report of the energy savings achieved is provided by participating parties unless not feasible and made publicly available;
- (h) monitoring of the results is ensured and appropriate measures are envisaged if the progress is not satisfactory;
- (i) a control system is put in place that also includes independent verification of a statistically significant proportion of the energy efficiency improvement measures; and
- (j) data on the annual trend of energy savings are published annually.

To meet these requirements it is important to build up a monitoring system at an early stage by defining indicators and data needed, preparing appropriate calculation methods and templates for obligated/participating parties (e.g. GEA) to be regularly filled in with the necessary information.

The Ministry for Health and the Environment will be responsible for MRV. The Department of the Environment will be appointed as Monitoring and Verification Office to monitor and control the compliance with Article 7 EED. It will report to H.M. GoG which can intervene as necessary if the expected energy savings are not achieved.

The Monitoring and Verification Office needs to fulfil certain criteria and qualification, e.g. technical knowledge, quality standards and has the following tasks:

- composing an obligation agreement with GEA;
- making available methodologies applied by GEA and participating parties to calculate energy savings;
- adapting calculation methods due to new regulations, technological developments etc.;
- providing templates for statistical information and audit protocol for GEA and participating parties;

- verifying the energy savings achieved;
- if necessary, on-site inspections, technical monitoring (e.g. to check that all the conditions for obtaining a loan are met);
- reporting annually to cabinet and in the case that progress is not satisfactory, proposing additional measures to achieve the target;
- contributing to the energy efficiency action plans;
- publishing an annual report, printed or on the website, following the progress of compliance with Art. 7 EED.

In the first instance, GEA will be required to develop and implement a quality control process that will ensure that any energy savings claimed against its target are reliable, verifiable and undertaken to an appropriate standard. Once energy savings are submitted to the Monitoring and Verification Office by the GEA and other participating parties, the Department of the Environment will audit these claimed energy savings. This will be done on the basis of an annual report on the progress of the measures implemented in the previous year e.g. by 31 January at the latest, including the energy savings achieved.

The energy savings achieved through the energy efficiency obligation scheme referred to in Article 7 (1) or the alternative measures adopted in application of Article 7 (9) are part of the annual reports referred to in Art. 24 (1) (National Energy Efficiency Plan).

Next to these energy savings per measure a set of indicators will be defined to assess the progress in addition to those already listed in Annex XIV of the EED.

3.1.7 Additional indicators to monitor the progress

Monitoring involves verifying compliance with the targets defined for energy efficiency savings for each measure, as well as continuous and comparative assessment of the cost benefit ratio of the different measures. To this end, it is important to ensure that suitable statistical variables as well as quantitative and performance indicators are developed.

The bottom-up method uses specific methodologies for each measure (whenever possible), based on criteria and assumptions which make it possible to estimate the impact on final and primary energy, derived from the implementation of the measure. However, the inherent nature of the bottom-up method does not allow it to monitor all measures and the validity of the assumptions for the methodologies developed is liable to undermine the veracity of the impact being monitored. The top-down method responds to this monitoring shortcoming, by means of a set of energy efficiency indicators which make it possible to monitor savings achieved as compared to a reference year.

Examples:

Indicator for the residential and commercial sector:

- Energy consumption to heat space per m^2 adjusted to climate conditions (kWh/ m^2).
- Energy consumption to cool space per m^2 adjusted to climate conditions (kWh/ m^2).
- Electric energy consumption (kWh) per dwelling/ per person household (kWh/dwelling/ per person household).

Indicator for the public sector:

- Electric energy consumption in public buildings per type of use (e.g. schools, sport halls, administration buildings) per m^2 adjusted to climate conditions (kWh/ m^2).
- Share of buildings with improved energy classification (in %).

3.1.8 Energy audits and management systems

Under Article 8 of the EED, Member States are obliged to promote high quality, effective and independent energy audits and it requires large enterprises to carry out energy audits at least every 4 years.

A large enterprise is defined as one which has over 250 employees and whose annual turnover exceeds EUR 50 million and/or whose balance sheet exceeds EUR 43 million.

Due to Gibraltar's small size there are a very limited number of enterprises that meet these criteria. Initial consultations with the Gibraltar Chamber of Commerce suggest that the figure is likely to be low. Work is ongoing in conjunction with the Chamber and with the Income Tax Office and Employment Board, to identify any enterprises that meet the criteria in order to engage with them prior to the December 2015 deadline.

Other companies which are not headquartered in Gibraltar but have offices here will also be contacted in order to determine whether they should be considered large enterprises, in light of the Commission guidance on the related enterprises in other countries.

Gibraltar is already able to offer auditing and certification in ISO14001, in conjunction with the UK. H.M. GoG will work towards developing a register of accredited assessors for the purposes of energy audits between now and December 2014 to ensure that affected parties are able to access independent and affordable assessments by 2015.

3.1.9 Metering and billing

The billing for both water and electricity is carried out by AquaGib (Gibraltar's sole water provider). AquaGib, in consultation with the GEA, has developed a new billing format for final consumers. This new format contains historical information on the user's electricity and water usage, to allow useful comparison and encourage energy savings. The bill also includes basic information on how to save energy and links to the Department of the Environment webpage which contains more detailed information and advice.

This draft bill has been submitted to Cabinet for approval and is due to be rolled out to end users by summer 2014.

3.1.10 Consumer information programmes and training

H.M. GoG recognises that a lack of good quality, trusted information is one of the key barriers to energy efficiency take up. As such it is developing a dedicated energy efficiency website which will include:

- all policy and guidance documents,
- information on simple measures that can be implemented in the home and the workplace to reduce energy consumption,
- links to accredited energy assessors and energy auditors,
- information on financing and loan schemes for energy efficiency measures.

H.M. GoG is also working on the introduction of a Green Business Award which will reward businesses that can demonstrate significant savings in energy over a period of 12 months.

H.M. GoG will continue to engage with the public and the business sector to better understand their needs in this respect, in order to continue improving the level of information and advice that is available.

3.1.11 Availability of qualification, accreditation and certification schemes

A number of companies have achieved ISO 14001 certification. H.M. GoG recognises the lack of expertise and services in this field and will be working with UK counterparts to provide other types of energy audits. This will offer businesses and companies the opportunity to engage in energy audits / services to assist them in drawing up an energy action plan.

3.1.12 Energy Services

The Energy Performance Building Directive was transposed into local legislation via the Building (Energy Performance) Rules which came into force on the 4th January 2009. In addition to this legislation, the Building Rules have been amended. These Rules now contain a section on conservation of fuel and power to reflect minimum energy performance standards.

The Directive requires the creation of a methodology for the calculation of the energy performance of buildings. The Simplified Building Energy Model (SBEM) was developed by the Building Research Establishment (BRE) for the UK Department for Communities and Local Government as the default calculation for non-domestic buildings in the UK. BRE have modified and further developed this software to create a Gibraltar-specific version, (SBEM-GI). This methodology has been approved by the H.M. GoG and is the official methodology used to calculate the energy performance of dwellings and non-domestic buildings, as well as to carry out building regulations compliance checks. Energy performance assessments are carried out solely by government trained and accredited assessors (<https://www.gibraltar.gov.gi/energy-performance-in-buildings>). Over 700 EPCs have been issued to date.

Gibraltar has one main energy provider the GEA and the government intends to create an energy efficiency obligation scheme for this authority which will be monitored by the Department of the Environment.

The government is committed to expanding Gibraltar's energy service providers in order to offer accessible and affordable service to all energy end-users.

3.1.13 Other energy efficiency measures of a horizontal nature

Government recognises that barriers to energy efficiency exist and result in significant delays in adoption of energy efficient practices (especially in the case of split incentives). Lack of information on owner structure, as well as complex and unclear procedures, in respect to carrying out energy performance improvements in renovation are the main reasons that appropriate measures to remove these barriers have not been pursued at this stage. Further data collection and assessment is needed before the true barriers to energy efficiency can be identified and addressed. To this end H.M. GoG will be conducting a stakeholder consultation exercise, inviting the public, the business community, NGO's and any concerned citizens to comment on what they believe the barriers to energy efficiency uptake are. On the basis of these findings, the existing Energy efficiency Forum, made up of Ministers and senior Government officials will work on developing ways to remove these barriers through measures that will most likely include creating financial incentives or

regulatory provisions, as well as providing guidelines, training and information campaigns on energy efficiency to raise awareness among Gibraltar's population, from policy makers, home owners to contractors.

3.1.14 Energy Efficiency National Fund

Next to the setup of an energy efficiency obligation scheme or the implementation of alternative policy measures, the EED allows for a third option for obligated parties under Art. 7 to fulfil their obligations. Following Article 20(6) obligated parties can contribute an amount of financial support to the Energy Efficiency National Fund. This amount should be equal to the investments they would have to make to achieve the required savings under Art. 7.

Art. 20 requires Member States to “*facilitate the establishment of a financing facilities or use of existing ones for energy efficiency improvement measure*”. The purpose of the Energy Efficiency National Fund is to support national energy efficiency initiatives.

Gibraltar will be adopting this option. A facility already exists for residential estates to obtain low interest loans via the Credit Finance Company to implement environmentally friendly improvements to housing estates. A total of £1.1 million has already been given out in loans under this scheme.

The intention of the Energy Efficiency Fund will be to complement this loan facility and to offer loans and/or grants to a broader section of the community than is currently eligible to apply. The Fund will be administered by the Office of the Financial Secretary, in consultation with the Department of the Environment in the first instance.

3.2 Energy efficiency in buildings

3.2.1. Building Renovation Strategy

As part of this National Action Plan, H.M. GoG will also develop a first version of a long-term renovation strategy as required under Article 4 of the EED. This strategy is

aimed at stimulating renovations in the building sector and providing an opportunity to target the potential of energy savings lying within the whole building stock. Article 4 specifically goes beyond merely stimulating renovation activities of public buildings as under Article 5. The overall goal of creating the first designs of renovation roadmaps is to increase the low renovation rates that are currently observed in the majority of Member States and to ultimately reduce significantly the energy consumption of the building stock by 2050 paving the way for further, more ambitious energy savings within the EU beyond the 2020 target.

While Gibraltar has long understood the opportunities lying within building renovation activities and general adoption of energy efficiency, it has only recently recognised that in order to mitigate the barriers faced by energy efficiency in buildings, an official strategy is needed to unlock this potential and stimulate energy efficient renovation activities. This strategy will form a basis for assisting Gibraltar in creating a long-term policy for restoration that will lay out short, medium and long-term goals that will help guide all stakeholders in making investment and renovation decisions.

3.3 Energy efficiency in public bodies

3.3.1 Central Government Buildings

Gibraltar has identified the central Government buildings which correspond to the criteria i.e. are above 500m² in size and are either heated or cooled. H.M. GoG is in the processing of assessing the energy performance of these buildings. Once the information is complete the inventory will be published online. It is envisaged that the inventory will be complete by October 2014.

Once the inventory has been compiled, Gibraltar has decided to adopt the main approach to ensuring that at least 3% of the total floor area of these buildings is renovated each year to meet the minimum energy performance requirements. Government will therefore develop a plan to deliver these refurbishments in accordance with the Directive requirements.

3.3.2 Buildings of Other Public Bodies

Due to Gibraltar's small size, most public bodies come under the definition of central Government. In 2013, H.M. GoG published its Environmental Action & Management Plan (EAMP) which sets out Government policy in respect of numerous environmental matters.

In response to this document and the seminars that accompanied, all Government Departments, Bodies and Agencies, submitted an environmental action plan which detailed the steps they would be taking to reduce energy and water consumption and encourage greater recycling. Information on the energy use of each entity will be submitted to the Department of the Environment on a yearly basis to allow monitoring of progress in this respect.

3.3.3 Purchasing of public bodies

Environmental purchasing has a valuable role to play by reducing government exposure to environmental risk and driving environmental improvements along the supply chain. Public sector purchasers have a particular role to play in delivering environmental improvements because of the scale on which they operate.

To this end, H.M. GoG has developed a Green Public Procurement Policy which is based upon the EU guidance on the same. This document is published on the central government website: www.gibraltar.gov.gi/environment/environment.

Green procurement is a win-win tool which enables the public sector to obtain the best value for money and procure low-carbon, environmentally friendly goods and services while presenting a business opportunity to suppliers and helping to expand the market for green products and services.

The policy is designed to help ensure that the procurement process is open, transparent and equitable. It will apply to all Government Departments, Authorities and Agencies and wholly owned Government companies and will also have implications for private contractors working for Government.

New Government contracts, where relevant, will include appropriate requirements for suppliers and sub-contractors to provide products and services that comply with agreed mandatory standards. Existing contracts will be updated to also meet these standards as soon as is practically possible.

This means, for example, that H.M. GoG will increasingly only choose: computers, office equipment and white goods that are energy efficient; stationary and tissue paper with recycled content; low volatile organic compound (VOC) wall paints; biodegradable detergents; water saving taps and fittings etc.

The Department of the Environment will report on public sector progress on green procurement commitments in the annual report, 'The Environment Matters'. All Departments, Agencies, Authorities and wholly owned Government companies will be expected to co-operate by supplying evidence of compliance (including justification for non-compliance) with the mandatory procurement policies and standards set out in this plan.

All actions will be undertaken within the legal and policy framework governing public procurement. This involves securing value for money, and consistency with EU Procurement Directives and Treaty-based principles of non-discrimination, equal treatment, transparency, mutual recognition and proportionality.

Achievement of the green procurement objectives will require efforts across all Government departments, agencies and authorities to embed the mandatory product standards into relevant contracts and decisions in key areas including:

- Capital expenditure plans,
- Construction projects for new builds and refurbishments,
- Facilities management, buildings and grounds maintenance,
- IT hardware and services and office solutions,
- Travel services,
- Hire, lease and pool cars.

In essence the public sector will be required to:

- Design and build low carbon and water efficient new buildings and major refurbishments, consider the use of renewable energy sources that contribute

towards carbon neutrality and only use sources of timber that are legal and sustainable;

- Operate buildings with energy efficient equipment such as 'A' rated water heaters, low flush toilets, etc.;
- Use the most resource efficient product types such as computing equipment that is 'energy star' compliant, the most energy efficient white and brown goods, compact fluorescent and LED lamps etc.;
- Only use contractors able to supply equipment and/or services (including design) which comply with this procurement policy.

3.4 Other end use energy efficiency measures including in industry and transport

As described in the introductory section, Gibraltar does not have industrial manufacturing activity therefore there is very limited scope to introduce energy efficiency measures in industry.

In terms of transport, Gibraltar has been working on a Sustainable Traffic, Transport and Parking Plan for the last year and this is due to be published shortly. The plan aims to create a future transport system for Gibraltar in which users are able to move around in a safe, reliable and sustainable manner. Sustainable, low energy modes of travel will be developed that minimise adverse impacts on the environment and promote healthier lifestyles. Significant planned measures include:

- Simplifying the public transport network to provide fast, regular services,
- Supporting public services through significant quality improvements including new, low emission buses, real time passenger information and smartcard ticketing,
- Gradual introduction of on-street parking controls and charges,
- New parking management function to deliver reliable and focused parking control and monitoring,
- Adoption of best practice design of highways, cycle-ways and pedestrian facilities,
- Options to improve frontier traffic movement into Gibraltar,

- Junction improvements to improve traffic flow and provide better facilities for pedestrians, cyclists and bus users,
- Development of pedestrian and cycle priority routes, including safer crossing points and better signage,
- Establishing greater priority for pedestrians and cyclists on town centre routes,
- Development of sustainable travel plans for schools and businesses.

The STTPP is a long term vision for Gibraltar and the measures within the plan will be rolled out in stages over a 20 year period; initial 'quick wins' will be delivered within the first 6-12 months of the plan being published.

3.5 Energy transformation, transmission, distribution, and demand response

3.5.1 Energy efficiency criteria in network tariffs and regulation

Gibraltar currently produces all of its electricity from aging diesel power stations. The electricity tariffs are subsidised by Government to account for fluctuating fuel prices. Government will shortly be awarding a tender for the construction of a brand new, state of the art power station powered by Liquid Natural Gas (LNG). In addition to this, Government is also actively pursuing the development of renewable energy solutions to Gibraltar's needs. As these changes are implemented, H.M. GoG will maintain an ongoing review of the tariff system to ensure that it promotes energy efficiency.

The GEA is a Government authority, and is Gibraltar's sole electricity provider. Improvements in energy efficiency are therefore promoted via Government policy and adherence to EU requirements.

3.5.2 Facilitate and promote demand response

The European Commission, as well as most European governments, support the concept of Demand Response. However, according to the EC⁷ fewer than 5 out of the EU 28 Member States have created regulatory and contractual structures that support aggregated demand side response, despite the flexibility these programmes offer, as they can be either:

- **price-based**, where consumers respond to a retail price structure that differentiates between time periods (e.g. time of use tariffs, real-time pricing or critical peak pricing),
- **incentive-based**, giving customers load-reduction incentives that are separate from, or additional to, their retail electricity rate (usually implemented by large (energy-intensive) industrial and commercial customers).

This demonstrates that demand side response can offer relief to the electricity system, the transmission and distribution grid through different types of services, therefore helping to prevent black-outs and corresponding costs, as well as avoiding investment in transport capacity. It can also help with the reduction of energy consumption, through behaviour change in electricity and technology use.

Gibraltar has not yet introduced any measures to facilitate or promote demand side response, however, H.M. GoG believes that considering Gibraltar's sectoral set-up, a price-based demand response programme will be explored further. In combination with the roll out of smart meters as already planned, the groundwork for demand side participation will be laid. Adding to this measure a price-based demand response programme like **time-of-use tariffs** will give Gibraltar the opportunity to develop a consumer-oriented programme, that could support Gibraltar in reducing its energy consumption as well as lowering its citizens energy bills.

H.M. GoG will also consider applying other demand response measures to the commercial sector which would again lead to further reductions in Gibraltar's energy consumption. Such measures could include actions like, turning off lights, pumps, air-conditioning and refrigeration (e.g. these can also be turned up to higher

⁷ http://ec.europa.eu/energy/gas_electricity/doc/com_2013_public_intervention_swd07_en.pdf

temperatures) as well as other equipment. Combined with awareness raising campaigns, energy management/ energy audits and electric charging points, demand response is a powerful tool to reach lower energy consumption levels through end-user behaviour change.

3.5.3 Energy efficiency in network design and regulation

Gibraltar will be investing approximately £80 million in the construction of a new 80MWe power station, operating on natural gas. It has also issued a PIN notice for the supply and storage of LNG for said power station. This may create an opportunity to create a natural gas infrastructure in Gibraltar, which presently does not exist.

In terms of electrical infrastructure, it should be noted that from an electrical perspective, Gibraltar is an island and is investing in the replacement of ageing switchgear, transformers and cables in order to provide a more efficient, reliable and resilient distribution network for Gibraltar. It is estimated that £15 million will be invested in electrical infrastructure over the next 3 years.

Annex I Reporting Template for alternative policy measures

[Policy Name]			
[Type of policy, e.g. norms, financing scheme]	Start date:	End date:	
Estimated impact on energy savings	[yearly]	[Cumulated after 1. Intermediate period]	[All together 2014-2020]
Targets of the measure			
Short Description			
Sector		Target group	
Implementing Body			
Lifetime		Savings achievable till	[time frame]
Calculation Methodology			
Calculation Methodology			
Method for monitoring/measuring savings			
Monitoring and Verification			

Annex II Energy savings from smart metering – example calculation

The advantages of smart meters are widely recognized. Smart meters allow consumers to monitor their energy use and resulting costs, enabling them to make smart choices about when to use energy and how much. Therefore the savings potential of smart meters is mainly seen in fostering behaviour change of the consumer.

The actual potential is difficult to quantify, as savings are dependent not only on individual behaviour but can also vary depending on the smart meter system installed. Based on the savings reported by Gibraltar, savings of around 0.1 -0.2 MWh per year are estimated, which corresponds to roughly 2-4 % reduction in average household consumption in Gibraltar⁸. Savings of up to 10% of the cost of energy bills have been reported by the EC, although this probably cannot be converted directly to 10% of energy.

Share of meters in households

The number of households in Gibraltar has been steadily increasing and is expected to increase further as a result of the new housing developments to be constructed in the coming years.

Table 7 shows different options of target shares of smart meters among households, e.g. aiming towards a share of 50% of households having smart meters will result in an overall installation of ca 5,900 smart meters. The installation of these meters is then evenly spread over the seven years so that in 2020 5,900 households in Gibraltar will have a smart meter.

The EU has proposed that at least 80% of consumers shall be equipped with intelligent metering systems by 2020, if the cost-benefit analysis is positive.⁹

⁸ This is in line with other MS methodology, e. g. Malta estimates an annual savings potential of 25 - 50 GWh for 250 000 installed smart meters.

⁹ <http://www.euractiv.com/special-report-building-way-cris/eu-smart-meter-roll-lags-ambitio-news-528914>

Table 7 Number of installed meters in Gibraltar households

Number of smart meters		2014	2015	2016	2017	2018	2019	2020
20%	2360	337	674	1011	1349	1686	2023	2360
50%	5900	843	1686	2529	3371	4214	5057	5900
80%	9440	1349	2697	4046	5394	6743	8091	9440
99%	11682	1669	3338	5007	6675	8344	10013	11682

Estimation of savings resulting from smart meter installation

The corresponding savings from the installed meters, assuming that each meter saves 0.1 MWh/year or 0.2 MWh/year are shown in Table 8 and Table 9 respectively.

Table 8 Final energy savings if a meter saves 0.1 MWh/year

Share of meters in households	2014	2015	2016	2017	2018	2019	2020	Total savings [in MWh]
20%	34	67	101	135	169	202	236	944
50%	84	169	253	337	421	506	590	2360
80%	135	270	405	539	674	809	944	3776
99%	167	334	501	668	834	1001	1168	4673

Table 9 Final energy savings if a meter saves 0.2 MWh/year

Share of meters in households								Total savings [in MWh]
	2014	2015	2016	2017	2018	2019	2020	
20%	67	135	202	270	337	405	472	1888
50%	169	337	506	674	843	1011	1180	4720
80%	270	539	809	1079	1349	1618	1888	7552
99%	334	668	1001	1335	1669	2003	2336	9346

Each year a new set of meters is installed depending on the target share for 2020 adding to the energy savings, each meter keeps saving energy each year so that at the end of the 7 year period a total of 0.9 – 4.7 GWh of final energy (equals 2.3 – 11.8 GWh¹⁰ of primary energy) can be saved, depending on which share was chosen. If it is assumed that around 0.2 MWh/meter¹¹ is saved a range of 1.8 – 9.3 GWh (equals 4.5 – 23.3 GWh¹² of primary energy) of final energy can be saved through the introduction of smart meters. The savings can be further increased if a larger number of smart meters are installed for the first intermediate period of the national scheme, as these will then contribute longer, resulting in more savings.

These savings can contribute directly to the Article 7 energy savings target under the energy efficiency obligation scheme.

¹⁰ Using the default coefficient of 2.5 for energy conversion as stated in Annex IV of Directive (2012/27/EU)

¹¹ This corresponds to roughly 4% of the energy bill being saved after smart meter installation.

¹² Using the default coefficient of 2.5 for energy conversion as stated in Annex IV of Directive (2012/27/EU)