



GIBRALTAR CLIMATE CHANGE STRATEGY

The National Mitigation & Adaptation Plan





COVID 19 & THE CLIMATE CRISIS

2020 had long been touted as a milestone year for the climate. As more and more countries and cities alike declared a climate emergency, the world appeared to be reaching a turning point. Despite Brexit dominating the news cycles, the Chief Minister, in his New Year message, stated that tackling the climate emergency would be his greatest challenge that year. At the time, there was no indication that the world would simultaneously be tackling a health crisis of this magnitude.

Moments of crisis are also always moments of opportunity. The coronavirus pandemic represents an unprecedented global moment of change, in which the normal patterns of hundreds of millions of people's lives have been forcefully interrupted. Many crucial decisions will be made over the coming months that will shape the world for generations. As options are being weighed up it is critical that those in positions of power ask themselves what is the most effective way to not only overcome the immediate threat, but also to ensure that the economy and the society we rebuild is one that is equitable and sustainable, in which we are all able to thrive together with nature.

With so many people staying at home it is unsurprising that global carbon emissions fell and that air quality improved across towns and cities. Empty streets and skies allowed us to hear the birds sing and the papers report regular incidents of wildlife "taking over" urban areas – from herds of goats in Wales and deer in east London to a puma in the streets of Santiago.

In Gibraltar, the resident macaque population quickly adapted to life in the Upper Rock without a constant stream of tourists and appeared more relaxed and less aggressive.

Coronavirus has had an unquestionable impact on the environment in the short term but it is not a model of how to deal with the long-term systemic issues of climate change. What it has shown us is what can be done – the Covid 19 pandemic has elicited a global response unlike anything seen before and Gibraltar's response has been no different. Government and the private sector alike took on new roles to respond to the crisis, retailers adapted their ways of interacting with the public and delivering their goods, online meetings have taken off and e-government has come closer to reality in record time. On an individual level we have all had to re-organise how we work, travel and socialise – we have witnessed transformational changes that would have appeared impossible a few months ago.

That same decisive spirit is needed in response to the climate crisis. As the Government looks to restart the economy and move us into the “new normal”, the protection of the environment and the climate remain at the heart of its thinking. Directing economic and societal support efforts by government in sustainable directions is not only an opportunity but a necessity.

This plan was written pre-Covid-19. It was due to be tabled at the first meeting of the Parliamentary Select Committee on the Environment in March 2020, which was cancelled when lockdown commenced, days before it was due. As such, some of the emissions predictions are likely to change, particularly in respect to emissions from transport, which will likely be lower in the short term than forecast. The mitigation options set out in the plan, however, will not change drastically, except in so far as certain measures such as the development of renewable energy and a shift to more sustainable modes of transport will be accelerated.

Air pollution dropped as a result of the enforced lockdown, people have been reconsidering the way they move and indeed their need to move. We will focus on improving options to walk and cycle as well as on electrification of the vehicle fleet in order to maximise on both health and environmental benefits. Energy efficient refurbishment of buildings will become more important as will the development of renewable energy plants. Both will require the development of a new skills sector and create green employment opportunities to ensure that no-one is left behind.

The tourism sector has already been identified as likely to suffer the most as a result of this crisis so we will use this opportunity to redesign Gibraltar's tourist offering and position ourselves as a truly sustainable tourist destination.

The transition to a low carbon economy will inevitably bring about changes in sectors and occupations and therefore in workforce skills and competences. In this moment of global disruption, we will take the opportunity offered to re-evaluate and reconsider, and to choose how we rebuild, in a manner that is consistent with our environmental and climate goals.

MINISTER'S FOREWORD

Gibraltar's relative contribution to overall global carbon is small. But this is no excuse for complacency. Quite the contrary, it should be seen as making carbon neutrality for Gibraltar all the more achievable. Small countries must not feel compromised by their size nor limited by their means. They must serve as examples of commitment and effective action. This is the spirit in which this National Mitigation & Adaptation Plan is written.

Significantly, action on emissions has a direct effect on air quality, which is possibly the area in which there is the greatest public concern in relation to Gibraltar's environment. While the major aim of this Plan is to comply with the Parliamentary declaration of the Climate Emergency, and to meet our commitments under the Climate Change Act, air quality will clearly benefit.

The Plan analyses the position clearly and critically, sets out the targets, and indicates how these can be achieved. Some of the steps will be easy. Others will present more of a challenge to some. They are all vitally important.

The Gibraltar National Mitigation & Adaptation Plan should be read in conjunction with the 25 Year Environment Plan and other publications, which will focus in greater detail on citizen and corporate action. And action by citizens, Business and Government are all necessary if we are to achieve these ambitious aims.

The thing is that we have no choice.



Prof John Cortes MBE, C.Env

Minister for Education & Culture, Environment, Sustainability, Climate Change, Heritage
and Public Health

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EXECUTIVE SUMMARY

2019 saw unprecedented recognition of climate change and the threat it poses. In November 2019, the Intergovernmental Panel on Climate Change (IPCC) warned that the planet “clearly and unequivocally faces a climate emergency”.

“Climate Emergency’ is an internationally recognised declaration being used by Parliaments, Councils and Local Authorities, predominantly in the UK, Canada, Australia and the USA, to publicly declare concern over the Intergovernmental Panel on Climate Change (IPCC) findings which recognise the adverse global impact of the changing climate. The declaration also serves as a commitment to take urgent action and aspire towards carbon neutrality.”

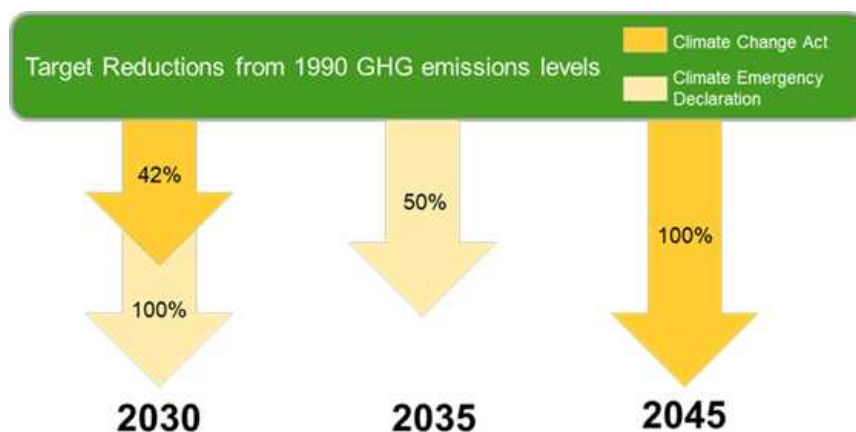
The Gibraltar Parliament – Climate Emergency Motion

In March 2019, the Gibraltar Parliament unanimously declared a climate emergency.

Gibraltar’s climate emergency declares ambitious targets that include the following:

- A pledge to make Gibraltar carbon neutral by 2030;
- A pledge to reduce emissions by 50% by 2035;
- Working with other governments in the UK family, including the devolved administrations, the UK Overseas Territories and the Crown Dependencies to determine and implement best practice methods to limit Global Warming to less than 1.5°C;
- Working with partners across Gibraltar and in the region to deliver this new goal through all relevant strategies and plans.

In 2019, H.M. Government of Gibraltar also published Gibraltar's first Climate Change Act. The overriding objective of the Act is to assist preventative and remedial measures against climate change to protect the climate for present and future generations. The Act sets out legally binding targets to reduce greenhouse gas (GHG) emissions by 100% compared to the baseline by 2045, with an interim target to reduce emissions by 42% below the baseline by 2030.



References to emissions reductions or achieving net-zero emissions refer to the manageable subset of city emissions as set out in the city inventories.

The Government's emissions reductions targets are ambitious, and a clear plan is essential to direct and communicate the actions across all aspects of society that will be required to achieve them. This Plan outlines a roadmap of existing and planned measures to reduce emissions across numerous sectors in Gibraltar. These sectors include the energy sector, building sector, transport sector and waste sector. Cross-sectoral measures are also discussed.

The overriding objective of measures developed for each sector is as follows:

Energy Sector

- To increase the share of Gibraltar's renewable energy to 20% by 2025, 50% by 2030 and 70% by 2045;

Building Sector

- Support the upgrade and renovation of existing buildings to improve energy efficiency; ensure all new buildings meet criteria as defined by 'Nearly Zero Energy Buildings';

Transport Sector

- Improve sustainable travel options such as walking, cycling and public transport; and encourage local fuel switch to fully electric vehicles;

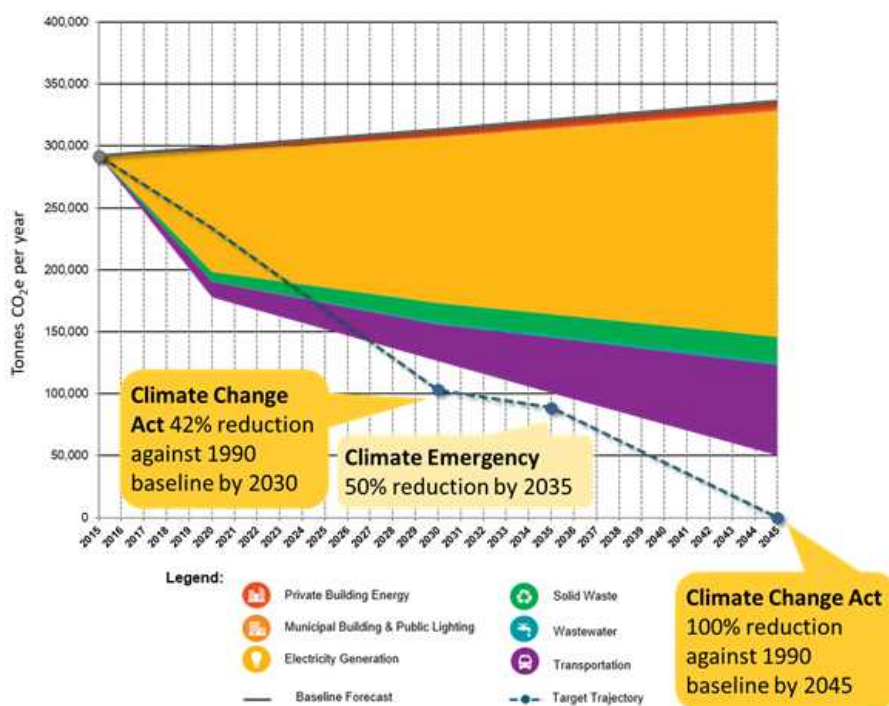
Waste Sector

- Continue the promotion of a dedicated waste reduction and recycling campaign and expansion of recycling bin facilities, with a view to achieve a 55% recycling rate by 2025 and zero avoidable waste by 2050;

Cross-sector

- Develop Gibraltar into a 'Smart City'.

It is estimated that fully implementing the existing and planned measures detailed in this Plan will achieve an emission reduction of over 70% below 1990 levels.



This leaves an achievement gap of under 50,000 tonnes CO₂e, or 30% of 1990 emissions. To close this gap, H.M. Government of Gibraltar will continuously review the measures enclosed within this document to identify whether there are any opportunities to increase ambition. Where this is not possible, Government will consider offsetting remaining emissions by investing in high quality projects that will help Gibraltar achieve its goal of becoming carbon neutral.

H.M. Government of Gibraltar recognises that, regardless of efforts made at a global scale to reduce GHG emissions, the world will continue to experience some degree of climate change. Gibraltar will not be immune to the impacts of this and Government recognises that it has a duty to safeguard Gibraltar's living and built environment for future generations. In-keeping with the commitments of this Plan, Government will continue to assess evolving climate change risks to the local environment, upkeep current measures in place, and use monitoring and evaluation data to develop future policies and practice.



1. THE CLIMATE EMERGENCY

2019 saw unprecedented recognition of climate change and the dangers it poses with mass climate protests around the world, school strikes and warnings from the Bank of England. In November 2019 over 11,000 scientists in 153 countries from a broad range of disciplines warned that the planet “clearly and unequivocally faces a climate emergency”.

“Climate Emergency’ is an internationally recognised declaration being used by Parliaments, Councils and Local Authorities, predominantly in the UK, Canada, Australia and the USA, to publicly declare concern over the Intergovernmental Panel on Climate Change (IPCC) findings which recognise the adverse global impact of the changing climate. The declaration also serves as a commitment to take urgent action and aspire towards carbon neutrality.”

The Gibraltar Parliament – Climate Emergency Motion

In March 2019, the Gibraltar Parliament unanimously declared a climate emergency. Echoing the Paris Agreement's priority to limit global warming to 1.5°C, Gibraltar's climate emergency declares ambitious targets that include the following:

- A pledge to make Gibraltar carbon neutral by 2030;
- A pledge to reduce emissions by 50% by 2035;
- Working with other governments in the UK family, including the devolved administrations, the UK Overseas Territories and the Crown Dependencies to determine and implement best practice methods to limit Global Warming to less than 1.5°C;
- Working with partners across Gibraltar and in the region to deliver this new goal through all relevant strategies and plans;
- Reporting to Parliament by the end of 2019* with a climate emergency action plan which will include a carbon reduction plan

This plan has been prepared in response to that motion, which sought to engage the entire community, not just HM Government of Gibraltar (Government). It acknowledges the indisputable effect that humans have had on the climate system and recognises that initiatives to address this need to be stepped up urgently. The Plan also fulfills the statutory requirements under the Climate Change Act for a National Mitigation and Adaptation Plan, an Energy Efficiency Plan and a Renewable Heat Plan.

The package of measures contained in this plan is designed to:

- Slash greenhouse gas emissions across the economy, helping Gibraltar to achieve its target of climate neutrality by 2030.
- Be transformational, accelerating emissions cuts that are commensurate with the emergency.
- Be achievable now: these steps can all be implemented starting right now, with existing technology and supporting innovation.
- Help the people of Gibraltar by providing the infrastructure, support and incentives required to help people make climate- friendly decisions.
- Make Gibraltar wealthier, healthier and greener, supporting prosperity and social well-being and working with nature to deliver wider environmental benefits.

Climate change is a far reaching and complex problem. Every sector will need to play its part in responding to the climate emergency – government, businesses and individuals. This document sets out the ways in which Government will provide leadership and facilitate actions by others.



Tackling the emergency will also require investment. Government commits to setting aside a climate emergency budget of no less than £1 million GDP each year to help to drive the initiatives set out in this plan, administered via the Climate Action Fund.



Government also commits to ensuring that all decisions about projects and investments are taken in consideration of the climate emergency.

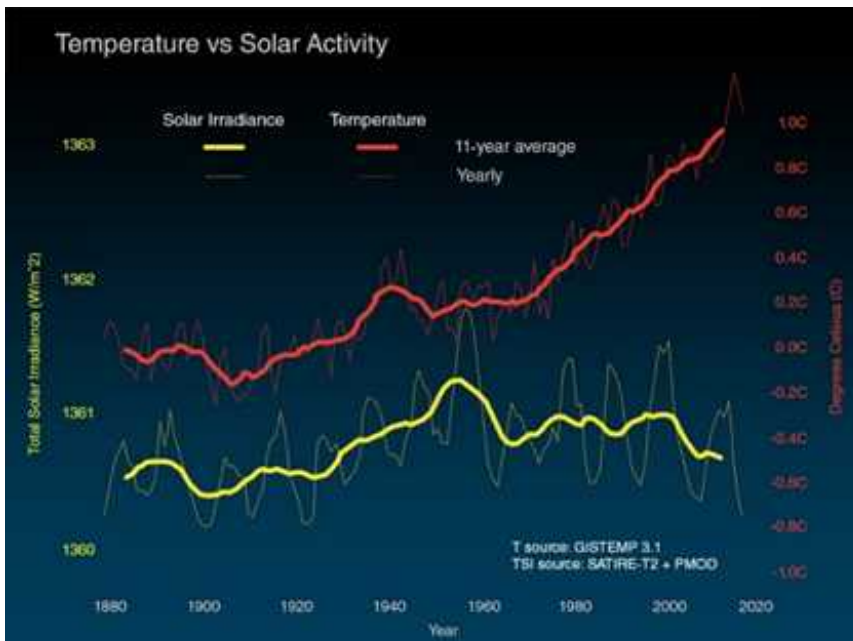
It is important to note at this point that this Plan deals with the emissions that are deemed “manageable”, that is to say it excludes bunkering and aviation. Critics will be swift to suggest that this is hypocritical and fails to recognise Gibraltar’s contribution to the climate crisis. And to a certain extent, they will be right. It is important to understand, however, that Gibraltar’s ability to influence how the shipping and aviation industries operate is limited. But we will continue to enforce the strictest requirements in respect of bunkering and to promote the shift towards LNG as a bunker fuel, although these changes will be driven by international agreements and at a global scale.

We believe it is important for Gibraltar to tackle the other sectors – energy, traffic, buildings – because these actions will not only reduce carbon emissions but will also result in quality of life improvements for Gibraltar’s residents and visitors. Moreover, they signal our willingness to engage with the climate crisis.

Shipping, bunkering and aviation will not be ignored and we will place particular emphasis on determining how the local impacts of these activities can be further reduced. COP26 has again identified the need to reduce emissions from shipping worldwide and it is clear that there will be considerable progress on this in the next few years. The Clydebank Declaration is an ambitious global initiative encouraging Governments to form partnerships which pledge to working towards decarbonising a shared maritime route and forming a Green Corridor. Gibraltar support this proposal and will take all possible steps to achieve the aims of the Declaration. We will work to diversify Gibraltar’s economy to reduce our relative dependence on bunkering and we will seek to always implement the highest standards at our port and our airport. As global pressures force these industries to change – to cleaner fuels and better practices – we will ensure that we are ready to meet those changes.

1.1 Climate Change

Since the Earth developed an atmosphere, our planet has experienced natural variations in global temperatures including glacial and interglacial periods of heating and cooling occurring over tens of thousands of years. A natural process catalysed by variations in solar output and atmospheric gas concentrations, the phenomenon known as the greenhouse gas effect has affected life on earth.



Over the past century, human activities have released large amounts of carbon dioxide (CO₂) and other greenhouse gases into the atmosphere. The majority of greenhouse gases come from the burning of fossil fuels to produce energy; although deforestation, industrial processes and some agricultural and horticultural

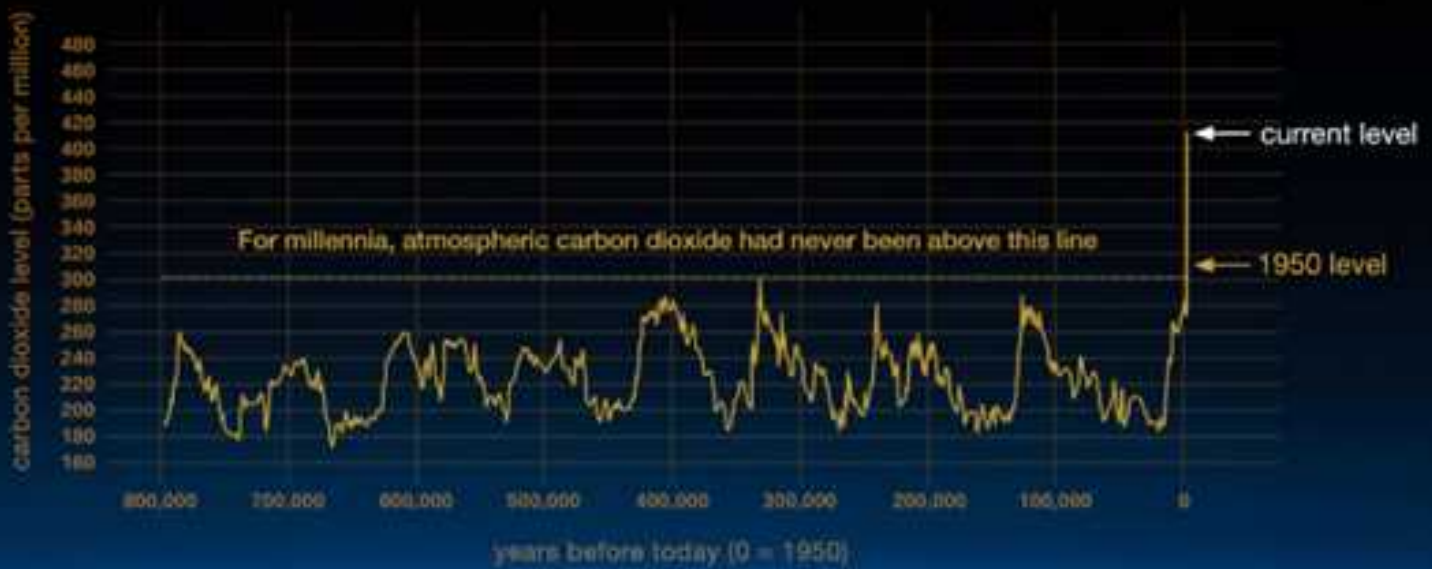
practices also emit gases into the atmosphere. This graph from the NASA illustrates the correlation between the Sun's energy and the Earth's temperatures. Following the industrial revolution circa 1950, this pattern is lost with temperatures continuing to increase, despite falling solar irradiance.

Increasing greenhouse gas emissions from anthropogenic activities has resulted in atmospheric concentrations of carbon dioxide, methane and nitrous oxide reaching levels not seen in the last 800,000 years.

The rise in global temperature over the last several decades is a matter of public record. There is an overwhelming scientific consensus that it can only be explained by one thing - the rise in greenhouse gas emissions caused by human activities.

**HUMAN INFLUENCE ON THE CLIMATE SYSTEM IS CLEAR,
AND RECENT ANTHROPOGENIC EMISSIONS OF
GREENHOUSE GASES ARE THE HIGHEST IN HISTORY.**

The Intergovernmental Panel on Climate Change (IPCC)



This graph, based on the comparison of atmospheric samples contained in ice cores and more recent direct measurements, provides evidence that atmospheric CO₂ has increased since the Industrial Revolution. (Credit: Luthi, D., et al., 2008; Etheridge, D.M., et al. 2010; Vostok ice core data/J.R. Petit et al.; NOAA Mauna Loa CO₂ record.)

1.2 The IPCC

The IPCC, set up in 1988 by the World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP), is the international body for assessing ongoing research on climate change. A global leader in climate change science, its role is to provide policymakers with regular assessments of the scientific basis of climate change, its associated risks, and options for adaptation and mitigation. In their assessments, the IPCC provides a comprehensive analysis of the direct and indirect impacts climate change is expected to have on human and natural systems across the world. In the global context, the effects of climate change are expected to vary considerably according to location, resilience, and time. The specific risks for Gibraltar are discussed in more detail in the Vulnerability assessment later on in the document but are broadly likely to be similar to those of other Mediterranean countries with hotter and dryer summers and more frequent intense storm events.

2. THE GLOBAL RESPONSE

2.1 The United Nations

The United Nations is an international organization comprised of 193 member states with a common vision to maintain international cooperation, peace, and security. Their Sustainable Development Goals have served to tackle a variety of global concerns, including climate change.

The United Nations Framework Convention on Climate Change (UNFCCC) entered into force on 21st March 1994. Today it has near-universal membership. The ultimate objective of the Convention is to stabilize greenhouse gas concentrations **"at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system."** It states, **"such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner."**

As well as providing support and technical expertise to participating nations, the UNFCCC is also responsible for coordinating the Conference of the Parties (COP) on an annual basis. Negotiations made here have established ground breaking agreements that are now charting the course for climate change action.



PURSUE EFFORTS TO LIMIT
THE TEMPERATURE
INCREASE TO



2.1.1 The Paris Agreement

THE PARIS AGREEMENT BUILDS UPON THE CONVENTION AND - FOR THE FIRST TIME - BRINGS ALL NATIONS INTO A COMMON CAUSE TO UNDERTAKE AMBITIOUS EFFORTS TO COMBAT CLIMATE CHANGE AND ADAPT TO ITS EFFECTS, WITH ENHANCED SUPPORT TO ASSIST DEVELOPING COUNTRIES TO DO SO.

United Nations Framework Convention on Climate Change (UNFCCC)

The Paris Agreement was presented at the 21st Conference of the Parties to the UNFCCC (COP21) in December 2015, and is internationally recognized as a landmark agreement. Its central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

The agreement strives to increase the ability of countries to deal with the impacts of climate change, and to make finance flows consistent with a low GHG emissions and climate-resilient pathway. To reach these ambitious goals, appropriate mobilization and provision of financial resources, a new technology framework and enhanced capacity building must be put in place. In conjunction, a system of enhanced transparency whilst supporting action by developing countries must also form part of the initiative. It is intended, and is vital, that the outstanding concerns are addressed at the COP26 summit due to be held in Glasgow in November 2021.

2.2 The European Union

In the EU, efforts to combat climate change are continually evolving with the most recent aspiration being a long-term strategic vision for a climate-neutral Europe by 2050.

The EU Commission has developed seven main strategic building blocks to structure the delivery of this vision. These include the following:

- maximise the benefits of energy efficiency, including zero emission buildings;
- maximise the deployment of renewables and the use of electricity to fully decarbonise Europe's energy supply;
- embrace clean, safe and connected mobility;
- mobilise a competitive EU industry and the circular economy as a key enabler to reduce GHG emissions;
- develop an adequate smart network infrastructure and interconnections;
- reap the full benefits of bioeconomy and create essential carbon sinks;
- tackle remaining CO2 emissions with Carbon Capture and Storage (CCS).

In response to the Paris Agreement, the Commission is using the above to pursue efforts in keeping global warming to the target of 1.5°C compared to pre-industrial levels. So far, the EU has already succeeded in lowering GHG emissions by 22%, and is broadly on track to meet 2030 targets for emissions reductions by 40%.

3. GIBRALTAR'S RESPONSE

3.1 Global Covenant of Mayors for Climate & Energy



Figure 1: GCoM commitment requirements

In October 2015, Gibraltar became a signatory of the Compact of Mayors (CoM), a global coalition of mayors and city officials pledging to reduce local GHGs, enhance resilience to climate change and track their progress transparently. The Compact collects the significant climate action data that cities are already reporting in a single, transparent platform. It therefore represents the greatest opportunity to bring attention to, and quantify, city action.

As of January 2017, the Compact of Mayors merged with the EU's Covenant of Mayors to create the Global Covenant of Mayors for Climate and Energy (GCoM). GCoM brings together the world's two primary initiatives of cities and local governments – to advance city-level transition to a low emission and climate resilient economy, and to demonstrate the global impact of local action. Gibraltar is now one of over 9,200 cities and local governments who have committed to GCoM.

Under GCoM, Gibraltar has committed to regularly reporting a GHG Inventory, assessing climate risks and vulnerabilities, defining ambitious climate mitigation, resilience and energy targets, and creating a full climate action plan outlining how targets will be delivered.

As a commitment to GCoM, Gibraltar annually reports a GHG inventory to the GCoM reporting platform, the Carbon Disclosure Project (CDP). Gibraltar has reported a GHG inventory for the years 2013, 2015, 2016, 2017 and 2018. Further detail on Gibraltar's GHG inventory are given in Section 3.3.

3.2 The Climate Change Act

In 2019, Government published Gibraltar's first Climate Change Act. It was passed unanimously by the Gibraltar Parliament in July and the Climate Change Act commenced on the 10th October 2019. The overriding objective of the Act is to protect the climate for present and future generations, and to assist in the taking of preventative and remedial measures against climate change. Comprised of eight parts, the Act is broken down as follows:

Part 1

This describes the overriding objective of the Act, establishes the creation of a Climate Change Committee with designated advisory functions, and outlines the effect of the Act.

Part 2

Requires the provision of a national low carbon transition and mitigation plan.

Part 3

Sets emissions reduction targets. This includes the 2045 target which states that the net emissions account for the year 2045 must be 100% lower than the baseline. It also defines the interim target which requires that the net emissions account for the year 2030 must be at least 42% lower than the baseline. During these periods, Government must also set progress targets to ensure successful action.

Part 4

Defines the functions of the Climate Change Committee.

Part 5

Outlines the composition of greenhouse gas emissions. It also established a baseline with guidelines for measuring and reporting purposes.

Part 6

Establishes reporting duties on all progress targets.

Part 7

Describes the duties of public bodies relating to climate change.

Part 8

Details other climate change provisions including energy efficiency, waste reduction and transport.

Box 1: Climate Emergency Declaration and the Climate Change Act

There are a number of different targets outlined in the Climate Emergency Motion and the Climate Change Act. All targets refer to reductions in emissions below 1990 levels; Figure 6 explains this. The targets outlined in the Climate Change Act are legal targets, which H.M. Government of Gibraltar have pledged to achieve. The Climate Emergency Declaration carbon neutrality target goes beyond the Climate Change Act targets and exemplifies HM Government of Gibraltar's ambition in tackling climate change.

3.3 Gibraltar's GHG Inventory

To enable the tracking of emission reduction targets, such as those outlined in the Climate Change Act and Climate Emergency Declaration, Gibraltar annually reports an inventory of GHGs. The first step in managing GHG emissions effectively at the community scale and making informed decisions to contribute to global mitigation efforts, is to have a good understanding of these emissions; the major sources, activities and relative contributions of different activities through regularly compiling and reporting a GHG inventory.

To date, Gibraltar has reported GHG inventories for the years 2013, 2015, 2016, 2017 & 2018. Before this, Gibraltar understood emissions through emissions data captured and reported through the UK GHG Inventory, as part of the UK's National Atmospheric Emissions Inventory. Whilst this high-level information is critical for compliance with international reporting obligations under the UNFCCC, it is not the most useful approach for estimating and reporting emissions at a city level. In 2015, the Gibraltar Emissions Inventory Programme was established to compile a detailed bottom-up inventory of community GHG emissions on an annual basis.

Since 2015, Gibraltar's GHG inventories have followed the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC); this is a robust, transparent and globally accepted framework to consistently identify, calculate and report on sub-national GHGs. It is methodologically consistent with national territory-based approaches to emissions accounting, but also provides the flexibility to account for emissions in ways that more accurately reflect local circumstances.

Emissions are calculated for seven GHGs, reported as carbon dioxide equivalent (CO₂e) and are categorised by 'scope', to distinguish where emissions physically occur:

- Scope 1 emissions are directly emitted within the city boundary (direct emissions)
- Scope 2 emissions are indirect from in-boundary consumption of electricity (Indirect emissions)
- Scope 3 emissions are indirect and out of boundary emissions (Other direct emissions)

The sources, and scopes, that are included within Gibraltar's GHG inventories are shown in **Figure 2**.

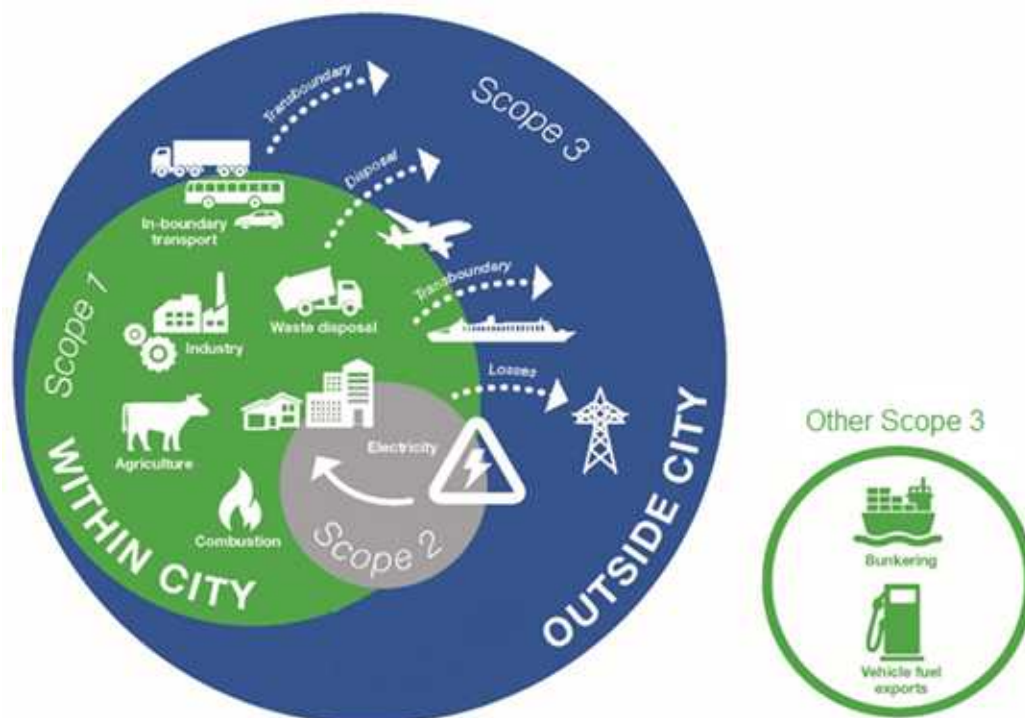


Figure 2: GHG Inventory sources and scopes.

Certain sources, such as international shipping (non-bunkering), are excluded from results due to the very large impact on overall totals, and the lack of potential local influence (see Section 4.3 for further information); this sub-set of emissions is considered Gibraltar's 'manageable' emissions. For the purposes of tracking progress against Gibraltar's emission reduction targets, an additional sub-set of 'manageable' emissions has been calculated.

As such, when this document refers to zero emissions or net-zero it is in reference to this sub-set of city emissions.

3.3.1 Gibraltar's Emissions

Table 1. Gibraltar's 2018 manageable emissions by sector

Sector	Tonnes CO2e	% contribution
Stationary Energy	162,597	53.4%
Transportation	110,357	36.2%
Waste	20,891	6.9%
Industrial Processes and Product Use (IPPU)	10,671	3.5%
TOTAL	304,516	100%

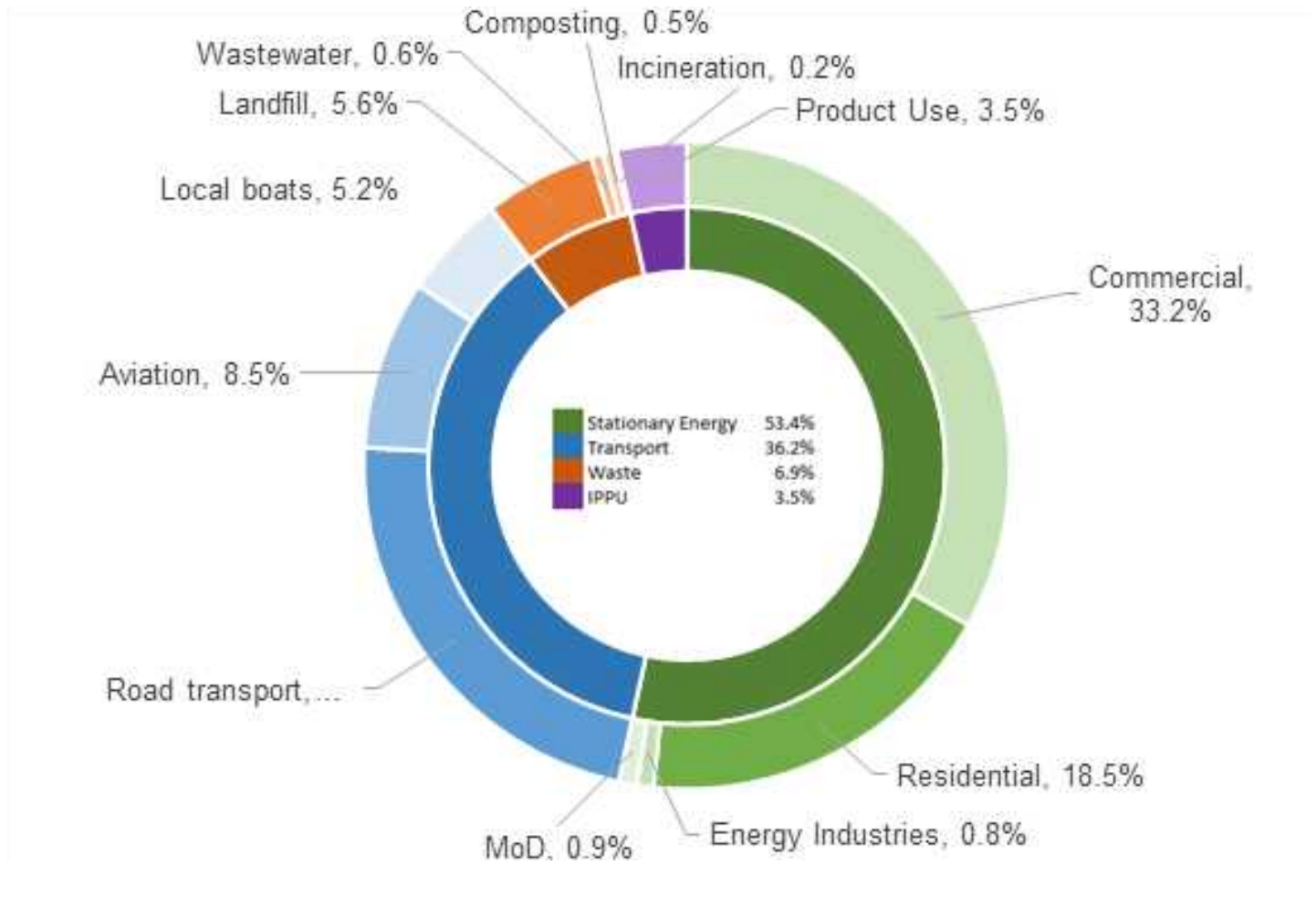


Figure 3: Gibraltar's 2018 'manageable' emissions

3.3.2 Determining manageable emissions

Sources that are deemed to be ‘outside of scopes’ (i.e. they are reported for information in the full GHG inventory reports, but are not deemed to be within the influence or immediate responsibility of Gibraltar – such as bunker fuel) would dominate emissions overall if included in emission totals. This is exemplified in Figure 4 where emissions deemed ‘outside of scope’ account for 91.5% of Gibraltar’s total emissions profile when including all emission sources. The role of bunkering and how to tackle these emissions is discussed further in Box 2 (section 4.4).

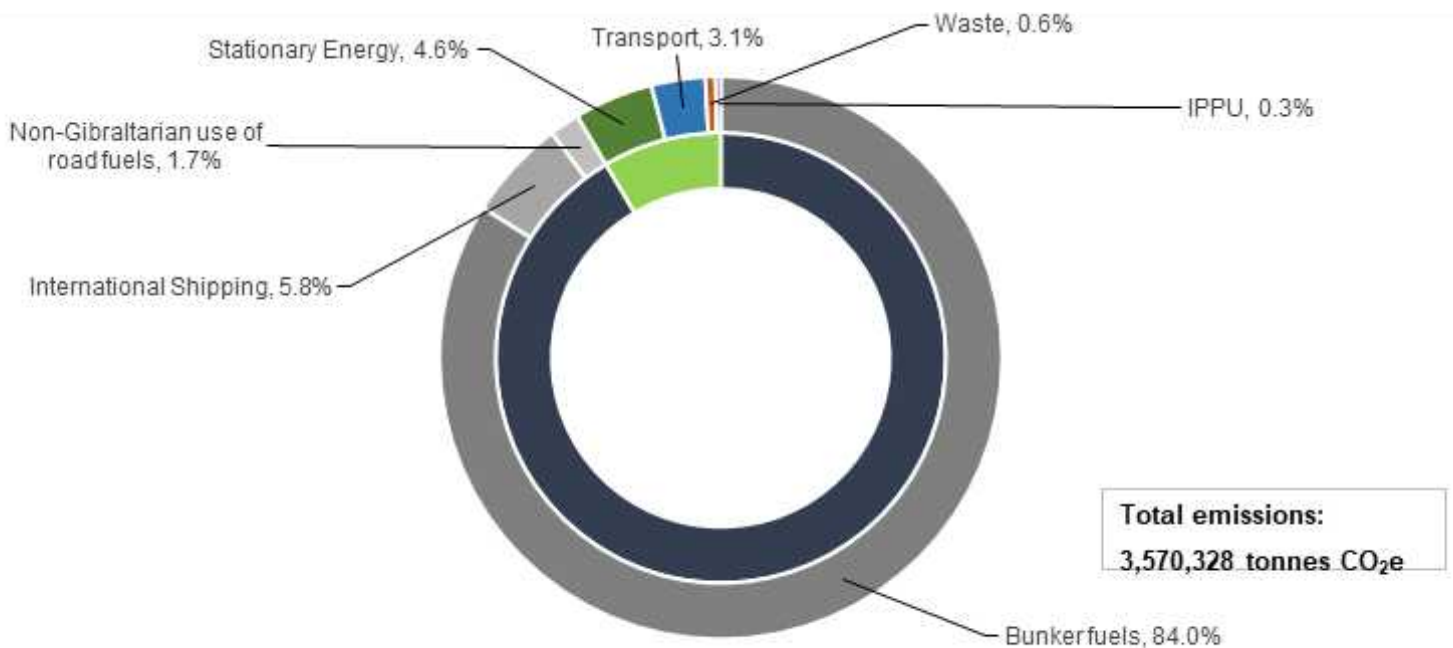


Figure 4: Gibraltar’s total emissions (including excluded sources) by source category for 2018

3.3.3 Emissions progress to date

When compiling the inventory for the latest year for Gibraltar, any improvements in data, methods or understanding are assessed and, where appropriate, are also applied to previous year’s inventories to enhance accuracy and consistency across the time series. The 2015, 2016 and 2017 inventories have therefore been revised, referred to as ‘2015r’, ‘2016r’ and ‘2017r’. This ensures consistency and accuracy for the exercise, and follows international best practice. Important recalculations are explained in Appendix 3 of the full report accompanying the 2018 inventory.

Table 2: Comparison between the 2015r, 2016r, 2017r and 2018 inventories.

Reporting sector	Emissions (tCO ₂ e)			
	2015r	2016r	2017r	2018
Stationary Energy	193,567	183,811	155,868	162,597
Transportation (all ⁵)	283,694	376,519	369,492	317,186
Transportation (excluding scope 3 shipping)	93,795	103,234	106,709	110,357
Waste	22,249	21,561	19,460	20,891
IPPU	11,536	11,532	11,233	10,671
Other Scope 3 ²³	3,077,657	3,207,139	3,324,843	3,058,982
Total Manageable emissions	321,147	320,137	293,270	304,516

*not included in Gibraltar's 'manageable' emissions.

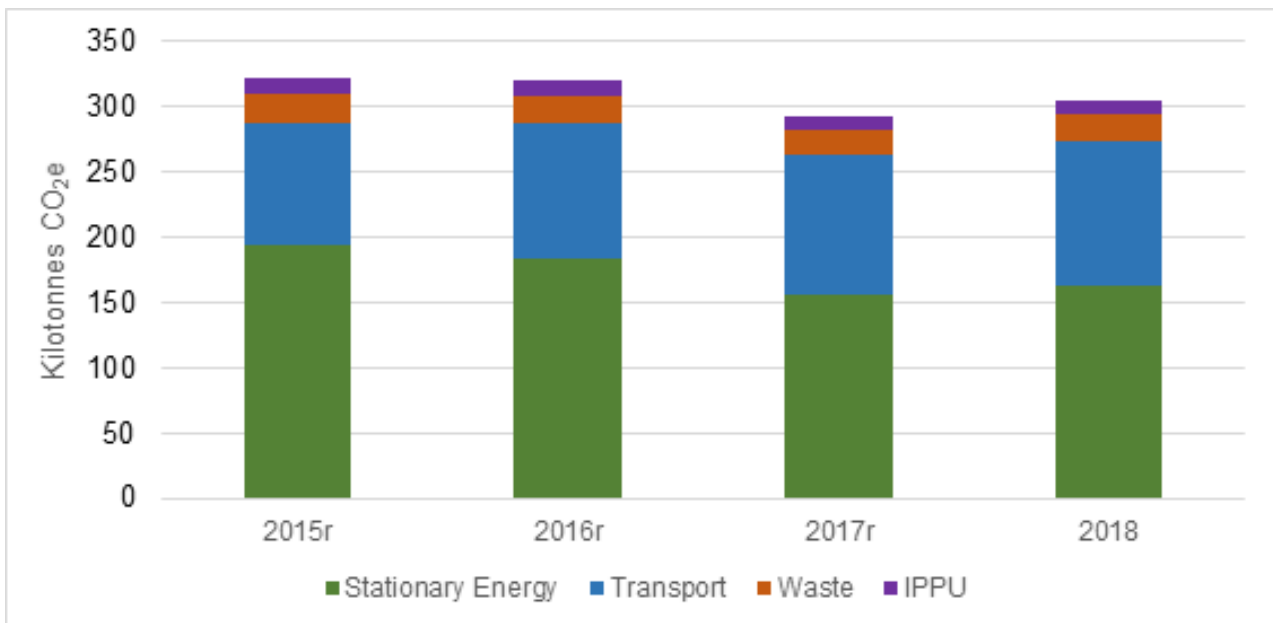


Figure 5: Comparison between the 2015r, 2016r, 2017r and 2018 inventories.

Gibraltar's total manageable emissions have decreased by 5% since 2015r but increased by 4% since 2017r; this is a result of the following:

↓ By 2018, emissions from electricity generation have decreased by 16% compared to 2015r. This is despite an increase in emissions from electricity generation (a 4% increase) since 2017r. The decrease since 2015 is due to less fuel being used to generate a unit of electricity, implying improvements in efficiency at Gibraltar's electricity power stations. Electricity consumption by residents and activity in Gibraltar remained fairly consistent between 2015 and 2018. Emissions from IPPU have decreased by 8% between 2015r and 2018; this follows trends in UK data that is used as a proxy for Gibraltar's emissions from product use (e.g. air conditioning and refrigeration).

↓ Emissions from aviation are around 9% lower in 2018 than 2015r, and 33% lower than in 2017r, likely due to a decreased number of flights to London Gatwick, London Heathrow and Manchester.

↓ Emissions from Waste are around 6% lower in 2018 than 2015r due to a reduction in total waste arisings sent to landfill (and composting). However, an increase in total waste produced between 2017r and 2018 saw emissions rise by 7%.

↑ Emissions from road transport in Gibraltar have increased by 18% due to more fuel being consumed by vehicles in Gibraltar.

It is expected that emissions will experience a significant drop in the 2020/2021 inventories due to the move to natural gas for electricity production and the effects of the covid-19 lockdowns.

3.3 Gibraltar's Targets in Context

Figure 6 presents Gibraltar's historic GHG emissions since 1990 and emission reduction targets that Government have committed to meeting in future years. In this graph, actual GHG emissions data from the UK's national inventory (NAEI, 2019) have been used to derive trends from 1990 to 2015. Note that the UK's national inventory emissions calculations are subject to constant refinement in light of new data availability, changes to international reporting standards, and to reflect improved scientific understanding. Therefore, only relative trends are presented as actual emissions calculations are likely to be recalculated in future.

For 2015-2018, the bars on the chart represent the output of Gibraltar's city carbon inventory as submitted to the Carbon Disclosure Project (CDP), more specifically, the relative trends between each year. Emission Reduction Targets as stated in Gibraltar's Climate Change Act and Climate Emergency Declaration are then illustrated to demonstrate the ambition required to meet future targets. Note that projections beyond 2018 are based only on linear interpolation and are not meant to be representative of a likely pathway for emissions reduction; this is presented later in Section 5.

The pledge to make Gibraltar carbon neutral by 2030 will necessarily include some degree of carbon offsetting; this is discussed in Section 5.2. The pledge to reduce emissions by 50% by 2030 (below 1990 baseline) does not include carbon offsetting.

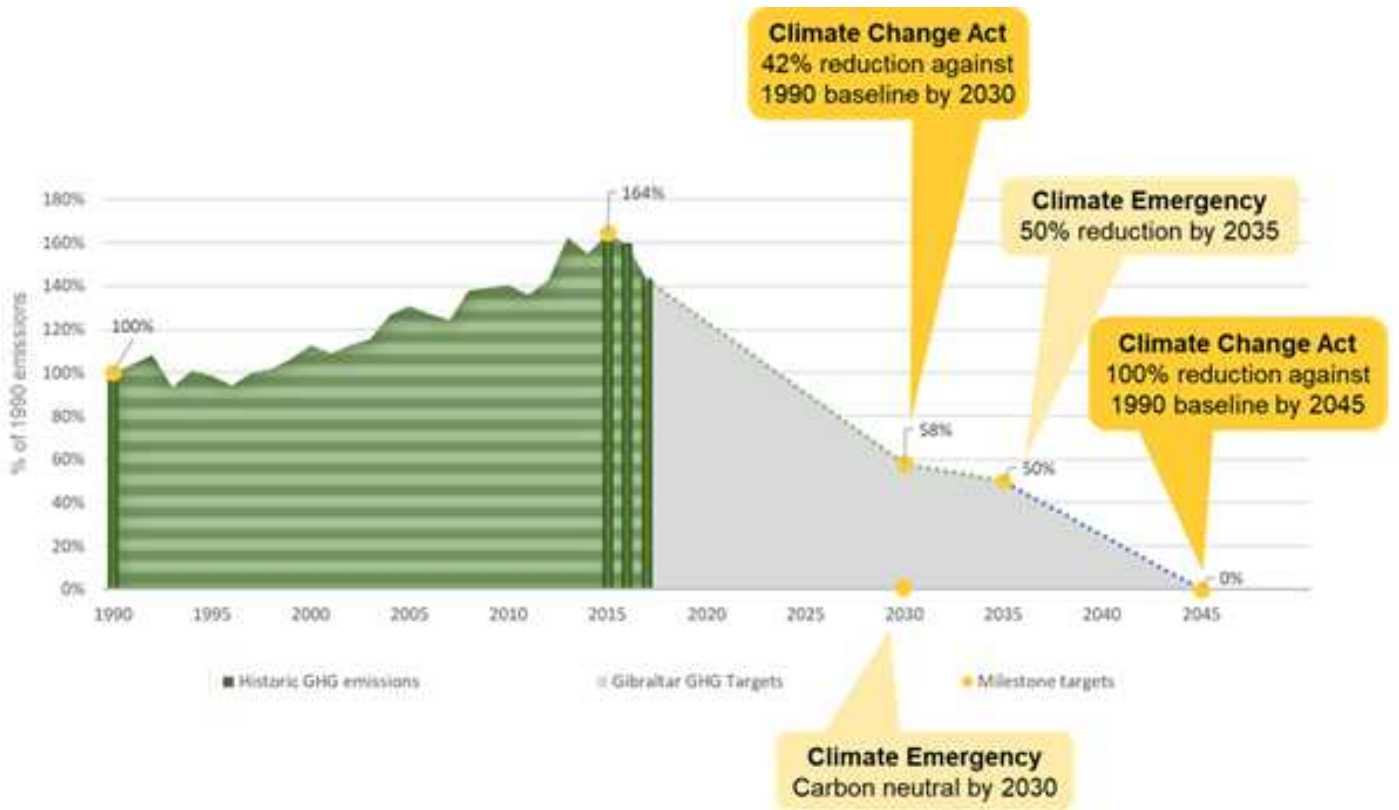


Figure 6: Gibraltar's historic emissions and future emission reduction targets.

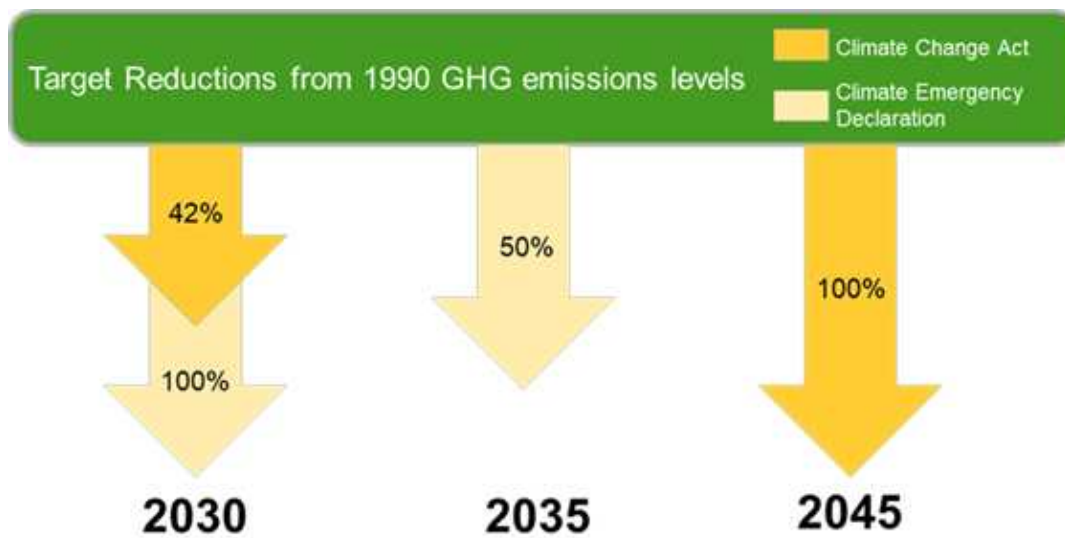


Figure 7: Gibraltar's GHG emission reduction targets.



4. ROADMAP TO NET ZERO

4.1 Method for action

To understand the scale of the task needed to meet Government's emission reduction targets, it is useful to understand what emissions would look like in the future if no action were taken. To do this, and to assess the potential impact of measures to reduce emissions, the 'CURB: Climate Action for Urban Sustainability' tool [1] (hereinafter referred to as CURB) has been used. CURB was developed by the World Bank in partnership with AECOM Consulting, Bloomberg Philanthropies and the C40 Cities Climate Leadership Group. CURB enables cities to:

- Project emissions into the future using simple growth factors;
- Identify and prioritise low-carbon infrastructure and other GHG reduction actions;
- Understand the impact on emissions of potential actions;
- Develop, compare and explore multiple scenarios;
- Ensure targets and actions are aligned.

[1] <https://www.worldbank.org/en/topic/urbandevelopment/brief/the-curb-tool-climate-action-for-urban-sustainability>

CURB requires a GPC-compliant inventory as a basic input. As such, 'manageable' emissions from Gibraltar's revised 2015 inventory have been used as the starting point. Emissions from aviation have been excluded; this will be discussed in Section 4.7. Emission reduction targets have been scaled to reflect what they would mean against a 2015 baseline, as opposed to a 1990 baseline.

Emissions have been projected to 2045, based on Government data. Assuming emissions increase in line with population growth, it is estimated that emissions will grow by 15% between 2015 and 2045 if no action to reduce emissions is taken, as shown in Figure 8. It should be noted that the emissions presented in Figure 8 are on an end user basis (i.e. emissions from electricity consumption are spread between end users, rather than reported based on emissions from electricity generation).

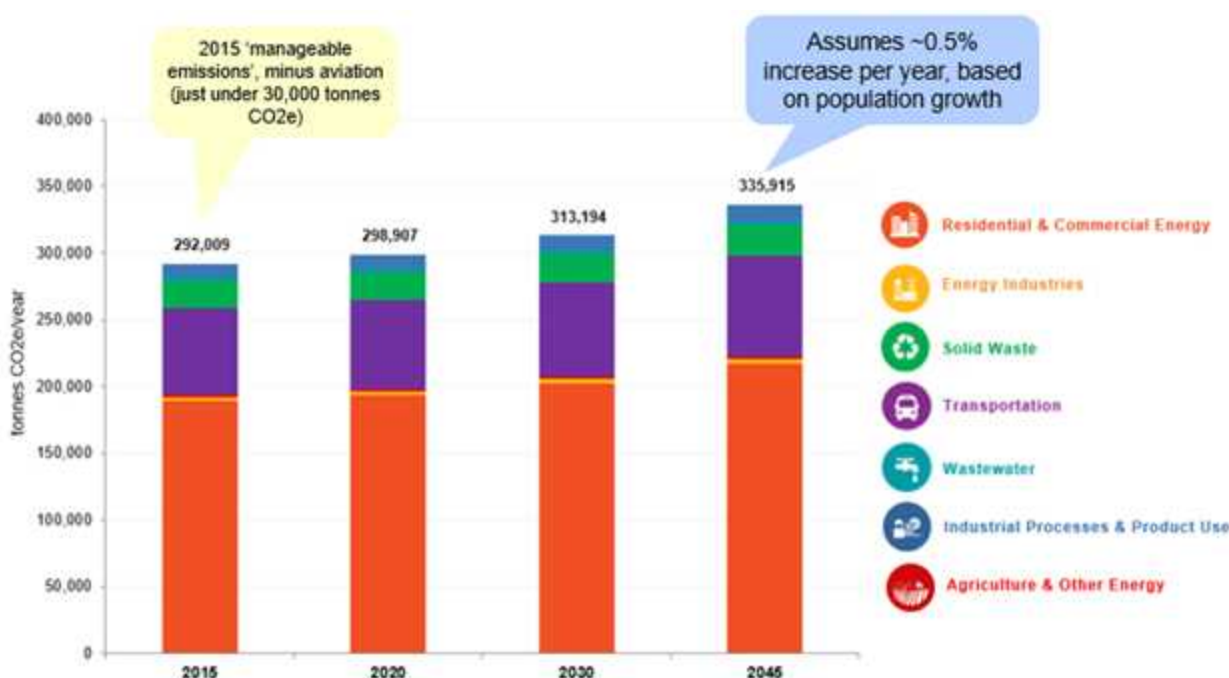


Figure 8: GHG emissions projected to 2045.

To prevent a further increase in emissions output, and in line with Government commitments to achieve net zero emissions, the following sections will detail existing and planned measures to reduce emissions across numerous sectors in Gibraltar.



4.1 Decarbonising the energy sector

In 2018, Gibraltar's energy sector accounted for 162,597 tCO₂e, and 53.4% of total 'manageable' emissions emitted that year. As such, it represented the highest proportion of emissions that can be directly controlled by Government. The direction of energy generation and supply over the next 5-10 years is critical to Gibraltar's ability to meet its carbon reduction targets and a considerable amount of work has already been done in this respect.

Ongoing Measures

PUBLIC SECTOR INITIATIVES	Improvements to public lighting network & public buildings.
	Research into potential for offshore wind, tidal & wave.
	Awareness campaigns on energy.
	Feed In Agreement Scheme.
POLICY	20% total energy consumption from renewable sources by 2025.
	Removal of import duty on renewable technology.
	Continuation of Power Purchase Agreements and Solar Tender for the deployment of PV.
UPGRADING TECHNOLOGY	Ongoing improvements to electricity network to accommodate renewables.

Public Sector Initiatives

Public lighting network

Improvements to the public lighting network and public buildings continue by replacing existing streetlights with LED and other low energy lanterns.

Offshore wind, tidal and wave energy research

In 2019, Government engaged with Scotland's University of Highlands and Islands (UHI) to launch an investigation into the potential for marine and offshore wind renewables in Gibraltar. Leading the way in global marine energy research and innovation, UHI will assist Government in gathering vital resource data of local tidal currents, wave activity and offshore winds to determine their feasibility in contributing to Gibraltar's energy network. Once sufficient data have been gathered and the study completed, it will be possible to determine which of these natural resources can best help Gibraltar meet its renewable energy targets.

Awareness

Awareness is a critical part of any strategy to generate change. One of Government's objectives is to 'promote and cooperate in education, training and public awareness'. It recognizes the importance of public participation and access to information as a means of empowering the community to make positive changes

Network Feed-in-Agreements

The Gibraltar Electricity Authority (Amendment) Act 2019 came into effect in August 2019. Under the terms of this Act, the GEA may enter into agreements with consumers to enable them to supply any excess energy generated from renewable sources into the distribution network. These agreements will not generate income for the consumer as such but will generate credits which can offset their electricity bills.

Policy

20% renewables by 2025

In January 2008, the European Commission published a 20 20 by 2020 package targeted at reducing the EU's greenhouse gas emissions by 20% and increasing its proportion of final energy consumption from renewable sources to 20%. In 2015, Government published its own National Renewable Energy Action Plan committing to this target. Since publishing the plan, Government has successfully installed solar photovoltaic power at several sites across Gibraltar, including St Bernard's Hospital, the Europa Sports Stadium and the Special Olympics Facility. Several projects planned for 2020 have experienced considerable delays due to the Covid-19 pandemic but these should be coming online in 2021/2022. At the time of publication Gibraltar has an installed capacity of 2.4MW.

Import duty on renewable energy technologies

As part of Government's financial measures to encourage the uptake of renewable energy there is currently no import duty charged on renewable energy technologies. This incentive has been in place for several years now and seeks to make the pricing of these technologies more favourable, to promote their uptake.

Power purchase agreements

Government entered into a PPA with Green Resources International Ltd in 2014 for the provision of 0.8MW of photovoltaic panels at the New Harbours industrial estate. This project was completed in 2019. This project delivered over 1 million kWh in 2020. A further 0.5MW has been installed at the Europa Business Centre, with further projects planned at Midharbours Estate and other sites. A total of 3 MW will be delivered from this agreement.

Solar tender

In 2018, Government in collaboration with the GEA, launched the Sale of Power Tender, for electricity generated via solar Photo Voltaic (PV) technology. Three companies were successful in their bids and now form part of the Government Solar Framework Agreement. Government will continue with its phased roll out of rooftop PV systems through this framework. With the first 'mini-competition' held in May 2019, and the allocation of further sites to continue, the initiative is proving to be a successful one with scope for expansion. Although projects have been delayed due to Covid, 2021 should see the installation of panels at St. Joseph's School, the University of Gibraltar and the cruise liner terminal.

Upgrading technology

Upgrading the existing electricity network

In order to improve efficiencies and reduce their carbon footprint, the Gibraltar Electricity Authority (GEA) is upgrading and expanding its network. Replacing old equipment and introducing a SCADA system (Supervisory Control and Data Acquisition), the GEA is able to monitor generation and distribution and manage the system more effectively.

2020-2025 Targets

PUBLIC SECTOR INITIATIVES

Availability of onshore power for berthing ships at Extension Jetty and GibDock.

POLICY

Removal of existing commercial tariff.

UPGRADING TECHNOLOGY

Fully transfer energy production to LNG.

Improvements to potable water production process.

Public Sector Initiatives

Onshore power for berthing ships

Government will facilitate the provision of onshore power for certain visiting ships. This will enable vessels to turn off their engines while at anchor to provide on board services necessary for ongoing maintenance. At present the engines remain on to provide the necessary power which results in significant emissions released close to the urban area and at a height likely to detrimentally impact it. Priority will be allocated by the head of the Port Authority to those vessels likely to be the most polluting where logistically possible. The first of these facilities will shortly be made available at the Extension Jetty with other areas under consideration.

Policy

Removal of existing “commercial” tariff

The current commercial tariff allows large consumers to pay less per unit of electricity consumed, thus rewarding the higher consumer. This is the exact opposite of what we seek to achieve. In keeping with the principles of energy efficiency and the polluter pays, this tariff will be withdrawn.

Upgrading Technology

Full transfer of energy production to the LNG plant

In September 2019, Gibraltar saw the official opening of the North Mole power station. Running on natural gas, the plant is now providing reliable cleaner energy to the community's homes and businesses. The new plant secures Gibraltar's energy supply economically and environmentally. In December 2020, Waterport Power Station was fully decommissioned.

2025-2030 Targets

POLICY

50% of total energy consumption sources from renewables by 2030.

Establish a Climate Action Fund to aid in the reduction of emissions from electricity

Policy

50% of total energy consumption from renewable energy technologies by 2030

Building on the 20% by 2025 target, Government will continue to roll out rooftop solar PV across existing buildings. In addition, all new builds will be required to install rooftop PV. Studies undertaken suggest that Gibraltar has sufficient roof space to allow this target to be reached. Following the study being undertaken by UHI, further viable renewable projects will be explored.

Climate Action Fund

In accordance with Paris Agreement's requirement to develop financial mechanisms, Government shall establish a Climate Action Fund. It will support climate change action and funds may be generated from the following sources:

- Revenues accruing to the Government from its participation in and implementation of market-based measures relating to climate action adopted pursuant to international legislation, including, inter alia, from the auctioning of allowances pursuant to the Greenhouse Gas Emissions Trading Scheme Regulations 2012 as may be amended or replaced from time to time;
- Revenues generated by the Government through the implementation of national measures relating to the reduction or limitation of Gibraltar emissions;
- Any donations or grants made to the Fund by individuals or institutions;
- Any sums appropriated by Parliament for such purpose;
- Any sums or monies as may from time to time be provided by or under the Climate Change Act or any other law.

The Climate Action Fund will be administered by a board of appointed members and not be subject to tax. As from 2022, £1 million will be allocated as a minimum per annum with the amount being reviewed upwards annually.

2030 + Targets

POLICY	70% of total energy consumption must be sourced from renewable energy. Encourage shift towards LNG bunkering.
UPGRADING TECHNOLOGY	Deployment of marine renewables.

Policy

70% of total energy consumption from renewable energy technologies

Building on the 50% by 2030 target, achieving 70% of total energy consumption by 2045 envisages a Gibraltar which has maximised its solar PV potential. In addition to this, Government maintains a watching brief on marine technologies which may be sufficiently developed by this time to allow a more diverse renewables portfolio which would increase our resilience.

Encourage shift towards LNG bunkering

A report by Deloitte in June 2018 shows that LNG is slowly but surely becoming the preferred solution among ship owners and operators. Although Europe has a number of LNG bunkering ports, these are largely located in the north of the continent (Rotterdam, Hammerfest and Barcelona). Gibraltar will continue to develop LNG bunkering facilities in order to improve local air quality issues and contribute to the global effort to reduce emissions from shipping. Gibraltar's first successful LNG bunkering operation took place in March 2021.

Upgrading Technology

Deployment of marine renewable technologies

Following ongoing research into the potential for marine renewables locally, including that undertaken by UHI, Government is committed to deploying this technology if viable.



4.2 Decarbonising the building sector

Buildings account for nearly 70% of carbon emissions in Gibraltar. These are the result of the end use of electricity to heat, cool and provide power to buildings. UNEP reports suggest that if no action is taken, it can be expected that emissions from buildings will more than double in the next 20 years. Luckily, buildings represent the largest untapped source of cost-effective energy saving and CO₂ reduction potential within Europe so the possibilities for positive intervention are considerable.

Emissions from this sector can be tackled in two ways: by reducing emissions associated with electricity (see Section 4.1) and through improved building design and increased energy efficiency and conservation. Overall building design can help to determine the amount of lighting, heating and cooling a building will require. Energy consumption in buildings is dominated by space heating, cooling, and lighting. Improving the thermal efficiencies of building envelopes and using efficient technologies are both key elements in reducing this consumption.

Ongoing Measures

PUBLIC SECTOR INITIATIVES	<p>Availability of tax allowance to households for the installation of solar thermal or solar PV systems.</p> <p>Availability of soft loans to residential estates to help fund projects that improve energy use and efficiency.</p>
POLICY	<p>All new buildings must meet the minimum energy performance requirements.</p> <p>Energy Savings Opportunity Scheme (ESOS).</p>
UPGRADING TECHNOLOGY	<p>Smart meters to be fitted in all new builds as part of conditions set by the Development & Planning Commission.</p> <p>Requirement for electrical vehicle charging points in new residential and commercial buildings.</p>

Public Sector Initiatives

Tax allowances and soft loans

A tax allowance of up to £6000 over two years is available to households and businesses for the installation of solar thermal or PV systems.

Soft loans are available to residential estates to fund projects that use solar energy to provide electricity for communal lighting, water heating and the powering of lifts and for the replacement of traditional lighting with LED.

Approved projects are eligible for loans of up to 10-years at an effective rate of interest of 1 per cent per annum.

Policy

All new buildings must meet minimum energy performance requirements

The Energy Performance of Buildings Regulations came into force in 2012. Under these, new buildings, and existing buildings undergoing major renovations are required to meet minimum energy performance standards. These standards are embedded into the national calculation software, the Simplified Building Energy Model (Gibraltar) which is used to produce Energy Performance Certificates (EPCs). The EPC for a building will provide a rating from A to G. The rating will reflect how well the building has incorporated high performance thermal elements such as walls and windows as well as accounting for any renewable energy systems installed. New buildings must achieve a minimum of a B rating, with large developments often being asked by the DPC to achieve an A rating.

Enforcement of the Energy Savings Opportunity Scheme (ESOS) in Gibraltar

ESOS is a mandatory energy assessment scheme for large organisations, administered by the Department of the Environment, Sustainability, Heritage and Climate Change.

Organisations that qualify for ESOS (based on employee numbers, annual turnover and balance sheet) are required to carry out ESOS assessments every 4 years. These assessments are audits of the energy used by their buildings, industrial processes and transport, to identify cost-effective energy saving measures.

Upgrading Technology

Request for smart meters to be fitted in all new builds, as part of conditions set at the Development and Planning Commission

Developers must liaise with the GEA to ensure that new buildings, both residential and commercial, are fitted with appropriate smart meters.

Requirements for electric vehicle charging points in both residential and commercial buildings

In 2019, the Town Planning (Development Control) Regulations were set into force, with legal requirements for developers to now provide Active Electric Vehicle Charging Points (“Active EVCP”) and Passive Electric Vehicle Charging Points (“Passive EVCP”), in all new residential and commercial premises.

According to the regulations, these charging points are defined as follows;

- “active electric vehicle charging points” means fully wired and connected ready to use charging points within parking spaces;
- “passive electric vehicle charging points” means the provision of necessary underlying infrastructure to enable simple installation and activation of charging points within parking spaces for future use.

Under the Regulations, all new residential and commercial premises must ensure that 20% of all parking spaces have active EVCPs and the remaining 80% must have passive EVCPs.

2020-2025 Targets

PUBLIC SECTOR INITIATIVES

New Gibraltar Development Plan.

Updated Building Renovation Strategy.

Design teams for major developments to include professional experienced in sustainable design.

Biodiversity net gain principle for development including housing and infrastructure.

POLICY

All new buildings to be Nearly Zero Energy from 2021.

Legal requirement for all new builds to include solar panels or other form of renewable energy and/or green/brown roofs or green walls.

Establish regular inspections of the accessible parts of heating systems or of systems for combined space heating and ventilation, with an effective rated output of over 70 kW.

Public Sector Initiatives

New Gibraltar Development Plan

The Town Planning Department is in the process of producing a new Development Plan for Gibraltar. This Plan will set out a vision for co-ordination of development. It will reflect Government's decision to create and preserve open areas for the community to enjoy and will be consistent with the aims and objectives of the 25 Year Environment Plan and the Government's 2019 Manifesto.

Updated Building Renovation Strategy for Gibraltar

A large amount of untapped energy saving potential sits within existing buildings. Government will develop a long term Building Renovation Strategy for Gibraltar, which sets indicative milestones for 2030, 2040 and 2050. The plan will aim to tackle the historical problems associated with regeneration in the Old Town and will look to identify funding opportunities for this sector.

Design teams for major developments to include professional experienced in sustainable design

Government will introduce BREEAM (Building Research Establishment Environmental Assessment Method) to the planning and development process. BREEAM is a sustainability assessment used to masterplan projects, infrastructure and buildings. It focuses on sustainable value across a range of categories including energy, ecology, water, pollution, transport, materials and waste. Developments are rated and certified on a scale of Unclassified (<30%), Pass (>30%), Good (>45%), Very Good (>55%), Excellent (>70%) and Outstanding (>85%).

Biodiversity Net Gain principle for development including housing and infrastructure

Biodiversity Net Gain (BNG) is an approach to development that leaves biodiversity in a better state than before. Where a development has an impact on biodiversity, it encourages developers to provide an increase in appropriate natural habitat and ecological features over and above that being affected in such a way it is hoped that the current loss of biodiversity through development will be halted and ecological networks can be restored. Government will develop a matrix for the calculation of BNG and a requirement for developments to provide at least 10% BNG will be conditioned to new projects at DPC. This is to be applied to both land and marine development projects.

Policy

All new buildings must be Nearly Zero Energy from 2021

Nearly Zero Energy Buildings are defined as buildings with a very high energy performance in which the low amount of energy required comes mostly from renewable sources. This will require high performance specifications for all thermal elements of the building such as walls, windows etc. as well as for all energy using equipment (lighting, HVAC, hot water). It will also require a minimum amount of renewable energy for the building to be produced onsite. Government has developed a detailed definition, including numerical values for different types of buildings (residential, commercial etc.) and associated guidelines to assist developers in the delivery of these.

Legal requirement for all new builds to include solar panels or other form of renewable energy and/or green/brown roofs or green walls by 2022

Under the NZEB definition, all new builds will be required to include a minimum percentage of renewable energy onsite. Government will develop legislation to ensure that green roofs and walls are also required.

Establish regular inspections of the accessible parts of heating systems or of systems for combined space heating and ventilation, with an effective rated output of over 70 kW

This is a requirement under the Energy Performance of Buildings Directive, and will help to promote energy efficiency.

2025-2030 Targets

PUBLIC SECTOR INITIATIVES	Improve water consumption efficiency with the replacement of customer water meters, meter cupboards and meter manifolds.
POLICY	Enforce requirements to ensure that, non-residential buildings meeting certain requirements are equipped with building automation and control systems by 2025.
	Introduce a commutation whereby if a developer can demonstrate that it is not technically or economically feasible to introduce renewable energy onsite, an equivalent fee can be paid into the Climate Action Fund.
	Legal requirement for minimum EPC rating of 'D' for properties rented as from 2025.
UPGRADING TECHNOLOGY	All new households and commercial premises to be fitted with smart meters by 2025.
	All new builds to have hot water air source heat pumps by 2025.

Public Sector Initiatives

Improve water consumption efficiency with the replacement of customer water meters, meter cupboards and meter manifolds

There will be continued investment in capital projects as part of asset replacement plans aimed at maintaining and improving the water infrastructure assets in Gibraltar. As the level of efficiency is improved and water losses reduced, energy associated with water consumption can be expected to decrease significantly.

Policy

Enforce requirements to ensure that, where technically and economically feasible, non-residential buildings with certain HVAC requirements (290kW or more) are equipped with building automation and control systems by 2025

Building automation systems control various components within a building such as heating, ventilation and cooling (HVAC) which are a key part of the overall energy performance of a building. The primary function of these systems is to provide control over critical building systems. They also monitor individual components to alert building managers about detected problems. The user interface is a critical part of an effective building automation system. Suitable operation & training manuals must be provided as part of these systems.

Introduce a commutation whereby if a developer can demonstrate that it is not technically or economically feasible to introduce renewable energy onsite, an equivalent fee can be paid into the Government Climate Action Fund

Gibraltar's current development model is such that most new builds are high-rise with a low ratio of rooftop area/total building floor area. The development of NZEB standards may force this to change but in order to also assist, Government will allow developers to produce the requisite amount of RE on other sites. Where developers do not themselves have access to other sites, Government will allow the requirement to be met by paying an appropriate amount into the Climate Action Fund which will then be used by Government to deploy RE itself.

Legal requirement for a minimum EPC rating of 'D' for properties rented as from 2025

Properties will need to be retrofitted and upgraded as necessary before they are rented to ensure that a minimum EPC rating of a 'D' is achieved.

Upgrading Technology

All new households and commercial premises to be fitted with smart meters by 2025

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. The potential for reducing energy consumption and changing consumer behaviour with smart meters is significant. As such, all new households and commercial premises in Gibraltar will be equipped with smart meters by 2025.

All new builds to have hot water air source heat pumps by 2025.

Air Source Heat Pumps absorb heat from the outside air, which can then be used to heat hot water in your home. These systems can extract heat from the air even in temperatures as low as -15 °C so Gibraltar's mild climate is ideal for this technology.

2030 + Targets

PUBLIC SECTOR INITIATIVES	<p>Achieve a highly energy efficient and decarbonised building stock by 2050.</p> <p>All public service buildings to be Nearly Zero Energy.</p>
UPGRADING TECHNOLOGY	<p>All existing households and commercial premises to be fitted with smart meters.</p> <p>All existing households and commercial premises to have hot water air source heat pumps where relevant.</p>

Public sector initiatives

Achieve a highly energy efficient and decarbonised building stock by 2050

Through the introduction of Nearly Zero Energy Building Standards and the roll out of a long-term Building Renovation Strategy, we will achieve a highly efficient and decarbonised building stock by 2050.

All public service buildings to be Nearly Zero Energy Buildings

All Government owned and operated buildings will be renovated and upgraded to meet the Nearly Zero Energy Building Standards for existing buildings

Upgrading Technology

All existing households and commercial premises to be fitted with smart meters

Building further on measures for the roll out of smart meters, Government is committed to expanding this “smart” technology to all existing premises.

All existing households and commercial premises to have hot water air source heat pumps where relevant

Where the building is suitable (i.e. appropriate space requirements etc.) hot water air source heat pumps will be retrofitted whenever any renovation takes place.



4.2 Decarbonising the transport sector

Transport emissions account for around a third of emissions in Gibraltar, or just over 20% if excluding emissions from aviation. The majority of transport emissions come from road transport. Emissions from fuel used by Spanish vehicles which enter Gibraltar specifically to refuel are excluded. Emissions from ship bunkering are also excluded (see Box 2 for further information).

Moving towards a more sustainable travel model in Gibraltar will not only affect our total carbon emissions but will also have knock-on improvements to air quality and overall public health.

Box 2: Bunkering emissions

The Port of Gibraltar is one of the most successful and modern ports in Europe, connecting the Atlantic Ocean to the Mediterranean Sea. Operating at competitive prices to a high volume of traffic, the port and associated activities of bunkering brings major economic benefits and opportunities to Gibraltar. Emissions from bunkering are calculated on the basis of the onward journey of vessels visiting the port. In 2017, bunkering emissions were nearly 3Mt CO₂e.

Although decarbonisation in this area is critical to global climate change mitigation efforts, the conventional methods used in other sectors are not available to bunkering. Due to the high cost of fuel for international shipping vessels, measures to increase costs or limit access in Gibraltar would not reduce emissions on the global scale, but rather export them elsewhere. The Clydebank declaration is an important international step, seeking to deliver a transformation of energy use in this sector.

Irrespective of this, Government is committed to more efficient and greener operations. In line with this, Gibraltar will look to, in the near future, provide LNG bunkering facilities as an alternative to reduce GHG emissions and improve air quality. Although Europe has a number of LNG bunkering ports, these are largely located in the north of the continent (Rotterdam, Hammerfest and Barcelona). As result, the Gibraltar Port Authority will possess a unique selling point that will provide Gibraltar with greater opportunities in a wider market.

Box 3: The Clydebank Declaration

An ambitious global initiative encouraging Governments to form Clydebank Partnerships, in which two or more signatory members pledge to working toward decarbonising a shared maritime route forming a Green Corridor, considering the need to stimulate investment in fuels



Ongoing Measures

PUBLIC SECTOR INITIATIVES	<p>Increase number of pedestrianised areas in accordance with the Sustainable Traffic, Transport and Parking Plan.</p> <p>Reduce carbon dioxide emissions through a programme of Mobility Management measures, improvements to sustainable travel options and the management of car use.</p>
POLICY	<p>Electric and hybrid vehicles are exempt from import duty and there are cash-back incentives.</p> <p>Introduction of policy measures to regulate the emission of black smoke from shipping vessels.</p>
UPGRADING TECHNOLOGY	<p>Search for electric buses that suit Gibraltar's heritage and topography, or alternative modes of zero-emission transport.</p>

Public Sector Initiatives

Increase number of pedestrianised areas in accordance with the STTPP

Walking is the most environmentally and socially sustainable form of transport. It is an integral part of living in urban areas as it is ideal for undertaking most short journeys, particularly in Gibraltar where key services are located within relatively short distances from residential areas. Providing numerous benefits to health and local air quality, Government will look to increase the number of pedestrianised areas, and improve the quality of existing ones.

Reduce carbon dioxide emissions through a programme of Mobility Management measures, improvements to sustainable travel options and the management of car use

Mobility Management aims to increase sustainable travel by influencing individual travel behaviour and making alternatives to car use more attractive. Measures can also help to improve people's health by encouraging more active travel and enhance social inclusion such as through car sharing networks. Government is committed to launching a variety of different 'Mobility Management' measures including sustainable travel information, promotional campaigns, development of car clubs and car sharing initiatives, as well as travel planning.

Policy

Electric & Hybrid vehicles exempt from import duty and there are cash backs available

To encourage an environmentally friendly city, import duty for electric vehicles is currently zero. Cash-back incentives to encourage a more affordable transition to electric and hybrid vehicles are also available, and will be built upon further in future.

Introduction of policy measures to regulate the emission of black smoke from ships

Government is currently in the process of developing policy measures to regulate the emission of black smoke from ships. This initiative seeks to minimize emissions from vessels in close proximity to residential areas.

Upgrading Technology

Search for electric buses that suit Gibraltar's heritage and topography or alternative modes of zero-emission transport

Since 2011, Government has been exploring the options for deploying electric buses in Gibraltar but the topography has so far proved to be challenging. Notwithstanding, Government continues to be committed to securing the best environmental and practicable option for Gibraltar. This may include the possibility of limiting electric bus use to areas of service where topography is not an issue, namely in most areas bar the South District via Europa Road and the Upper Town. Smaller buses serving the Upper Town would also look to be replaced, and market research here continues to progress into the advanced stages.



2020-2025 Targets

PUBLIC SECTOR INITIATIVES

Increase grant provision for purchases of electric plug in cars, vans, motorbikes and bicycles.

Park & Ride Scheme.

Provide preferential parking for electric vehicles in the city centre.

Introduce a grant(s) for the installation of electric chargers at both residential properties and businesses.

Commit to cycling as part of a Green Gibraltar.

Support cycling promotion organisations.

Establish a Ride to Work Scheme.

Encourage cycling deliveries.

Provide information on bicycle parking online.

Introduce cycling incentives.

Pedal-Ready Gibraltar.

Improve the bicycle sharing scheme.

POLICY

Introduce legislative framework for no idling in Gibraltar.

Introduce electric scooter schemes, and the corresponding legislation to ensure correct and safe use.

No more diesel or petrol mopeds to be imported as from 2023.

Ban the importation of used passenger cars & LCVs over 5 years old from 2023.

Vehicle import duty tariffs to be revised to consider vehicle emission standards.

Introduction of a carbon tax for households with three or more registered vehicles.

UPGRADING TECHNOLOGY

Government to purchase only electric (minimum hybrid) vehicles commencing year 2023.

Electric vehicle charging points to be made available at all Government premises.

Implementation of a network of fast charging points across Gibraltar.

Taxis to commence transition to fully electric commencing no later than 2024.

Public service vehicles to transition to fully electric commencing no later than 2024.

All newly registered HGVs to be compliant with Euro 6 Standards commencing 2022.

Work with industry to encourage alternative low – or no-emissions fuels such as hydrogen or Compressed Natural Gas (CNG)..

Expanding bicycle infrastructure.

Advanced bicycle stop signs.

Introduce segregated cycle lanes.

Public Sector Initiatives

Increase grant provision for purchases of electric plug in cars, vans, motorbikes and electric bicycles.

Government will increase the grant provision for purchasers to make these vehicles more accessible.

Provide preferential parking for electric vehicles in the city centre

Electric vehicles will have preferential access to the city centre, both through the LEZ and via the provision of preferential parking for these vehicles in the city centre (i.e. parking spaces with easiest access to various entries into town).

Implement a Park & Ride scheme to discourage foreign vehicles from entering city centre

Park & Ride schemes are widely used in the UK to discourage excess traffic in city centres. The car park at Devil's Tower Road was initially earmarked for this purpose but the scheme was never completed. Combined with an increase in pay parking and the creation of low emission zones in the city centre, the creation of a Park & Ride scheme will discourage day-trippers from taking their cars into Gibraltar and adding to the congestion and pollution. Free parking will be offered and users of the service will only have to pay for a bus ticket into town. This bus service will be additional to those currently in existence. Redibikes will also be available for those who wish to transfer from their cars to a bicycle.

Introduce a tax credit for the installation of electric chargers at both residential properties and businesses

Government will introduce an Electric Vehicle Charge Scheme to provide tax credits of up to 50% of the upfront costs of the purchase and installation of EV charging points. Application forms and guidance on eligibility will be prepared and published on the Government of Gibraltar website.

Commit to cycling as part of a Green Gibraltar

In recent years, Gibraltar has seen an increase in the use of bicycles as a form of transport. As concluded in the Sustainable Traffic, Transport and Parking Plan (STTPP), Government believes this is a real option for travel locally, and is committed to encouraging its uptake further in future. To support this, Government will invest in cycling, with the aim of achieving £10 per capita as soon as possible, and expand existing awareness and safety programmes of this modern, healthy and sustainable form of transport.

Encouraging cycling promotion organisations

Government will encourage cycling promotion organisations with the aim of coordinating marketing, strategic and educational incentives and bringing together the many cycling clubs already constituted in Gibraltar.



Ride to work scheme

Government will explore options for the establishment of a Ride to Work scheme to enable employers to join the community in encouraging the use of cycling as a mode of transport for their employees. This will incorporate a combination of tax advantages and leasing arrangements that can have a real impact on the choices local and cross-border workers make.

Encourage cycling deliveries

As part of Government's commitment to promoting cycling, it will make it possible for businesses to make and receive deliveries up and down the pedestrianised areas of Gibraltar during the whole of the working day, if those deliveries are made by bicycle. As the variety of cargo bicycles on the market continues to expand, conducting at least part of daily deliveries in this way has become a realistic option. Government will incentivise their uptake both fiscally and by making access to Main Street available to cargo bicycles 24/7.

Provide information on bicycle parking online

Government will develop an interactive website to assist cyclists in locating bicycle-parking racks available throughout Gibraltar.

Introduce cycling incentives

In the 2018 Budget, a cash back incentive was given to purchasers of e-bikes, something which will be built upon in the future to help encourage the further purchase of e-bikes. In a place with the topography of Gibraltar, e-bikes are able to "flatten" our hills making cycling a real and viable alternative for Gibraltar. Further incentives will be considered for the purchase and use of E-Cargo Bikes in Gibraltar to assist businesses in adopting these modes of delivery and transport.

Pedal Ready – Gibraltar

As from the next school year, all cycling proficiency courses will follow the UK National Standards for Cycling Training. In 2019, six individuals followed a Cycling Trainers Course. Traditionally cycling training locally has been carried out in school playground and only offered to school children. The course taught young children the skills of balance and basic highway code in a safe but unreal environment.

Improve the bicycle sharing scheme

The Redibikes bicycle sharing scheme started in May 2017 but uptake of the bikes has been slow. This could be linked to a number of factors including, but not limited to, the lack of segregated cycle lanes, user reservation regarding personal safety and Gibraltar's hilly topography. As usage is assessed and following the introduction of segregated cycle lanes in the near future, consideration will be given to shared e-bikes as an alternative or addition to the present Redibikes Scheme.

Policy

Enhance the legislative framework for no idling in Gibraltar

As a measure to eliminate the negative effects of idling on air quality and human health, Government will designate selected areas outside schools as no-idling zones. Additionally, enforcement to reduce idling by private and commercial entities will also be considered with a view to formally legislating such measures.

Introduce electric scooter schemes, and the corresponding legislation

Having concluded a public consultation on the above, Government will now embark on a review of all submissions received to develop an effective e-scooters scheme that is efficient, practical, and most importantly, safe. With the potential to contribute a positive change to Gibraltar's current transport system, careful consideration will be given to the design of this scheme.

No more diesel or petrol mopeds to be imported as from 2023

A ban on the importation of petrol and diesel mopeds will be introduced as from 2022. These vehicles are highly polluting as well as causing a noise nuisance and contributing to overall levels of traffic. This measure will serve to limit the number of these vehicles on our roads and encourage a move to electric motorcycles and buses.

Ban the importation of used passenger cars & LCVs over 5 years old, from 2023

Nearly 50% of currently actively registered vehicles in Gibraltar are more than 10 years old. The market sees approximately 500-600 imports of used vehicles every year that do not meet the latest emissions standards. In order to prevent the market from continuing to be filled with older, more polluting vehicles Government will ban the importation of used passenger cars and light commercial vehicles commencing in 2023.

Vehicle import duty tariffs to be revised to consider vehicle emission standards

Zero emission vehicles already pay no import duty. Import duty on other vehicles will be revised to ensure that more polluting vehicles are required to pay a higher import duty, thus discouraging their purchase.

Introduction of a carbon tax for households with three or more registered vehicles

Households with three or more vehicles registered at the address (regardless of whether they are registered under different names) will be obliged to pay a yearly carbon tax on each additional vehicle.

Upgrading Technology

Government to purchase only electric (minimum hybrid) vehicles from 2023

Government will show leadership and provide market certainty by purchasing only electric vehicles (or second-generation hybrids for vehicle types where a fully electric model is not available or not suitable) commencing in 2023.

Electric vehicle charging points to be made available at all Government premises

Government will also ensure that EV charging points are available at all Government owned and operated premises where vehicles are parked, to allow the EV fleet to operate smoothly.

Implementation of a network of fast charging points across Gibraltar

To support the transition to an electric vehicle fleet, Government will invest in the development of a network of fast charging points across Gibraltar.

Taxis to commence transition to fully electric commencing no later than 2024

All new taxis purchased as from 2024 must be fully electric. Any new vehicle not meeting this requirement will not be registered and licensed to operate as a taxi.

Public service vehicles to transition to fully electric commencing no later than 2024

Commencing 2024, only electric vehicles (or second-generation hybrids for vehicle types where a fully electric model is not available or not suitable) will be purchased for the addition or replacement of public service vehicles.

All newly registered HGVs to be compliant with Euro 6 Standards commencing 2022

In Europe, Heavy Goods Vehicles (HGV) such as lorries, buses and coaches account for approximately a quarter of road transport emissions. Despite some improvements to fuel consumption efficiency in recent years, these emissions are still rising, mainly due to increasing road freight traffic, and a slow transition from older to newer model vehicles. To tackle this problem and improve Gibraltar's HGV fleet, all newly registered vehicles commencing 2022 will be required to comply with Euro 6 Standard vehicle emissions. Government will work with fuel suppliers to encourage the introduction of alternative fuels such as hydrogen or CNG.

Expanding bicycle infrastructure

Cycling is growing in Gibraltar and as more cycling parking is installed, more bicycles appear. Gibraltar's latest bicycle rack delivers a strong environmental message that where you can park just one car, 10 bicycles can park instead. At Europort alone, considered today as the cycling hub of Gibraltar, there are over 170 spaces for bicycles to park. To encourage cycling as a truly viable alternative mode of transport, cycling needs to be made convenient. By providing parking close to popular amenities cyclists benefit from rapid and effective access to their destinations without needing to spend time looking for a place to lock up their bicycles.

Advanced bicycle stop lines

Also known as advanced stop boxes, these provide an important safety feature for cyclists within a busy urban environment. They allow cyclists to stop beyond the stop line for general traffic at traffic lights and therefore provide cyclists with a head start once traffic lights turn green. Government are committed to implementing these at key locations throughout Gibraltar.

Introduce segregated bicycle lanes

Government continues to be committed to creating segregated cycling lanes where possible to help encourage people who may be unsure, afraid or simply cautious, to be able to feel safer. For segregated bicycle lanes to be truly meaningful and safe, they must be planned very carefully joining up areas of importance to cyclists creating cycling corridors. Creating short lengths of segregated lanes is of little use and may often be more dangerous than not having these lanes at all. The new airport tunnel will have a segregated cycle lane throughout the whole length of the tunnel so that cyclists will be able to cycle safely away from vehicular traffic and separate to pedestrians. The planning of segregated cycling lanes has already begun and will soon become a reality.



2025-2030 Targets

POLICY	No vehicles fully fuelled by petrol to be registered by 2030.
	End the sale of new conventional petrol and diesel cars by 2026.
	Introduce tax weighted to vehicle's carbon emissions.
UPGRADING TECHNOLOGY	Taxis to switch to fully electric vehicles by 2030.

Policy

No vehicles fully fuelled by petrol to be registered by 2030

Government will drive forward policy that requires as a minimum, not registering private vehicles that are not at least hybrids by 2030 and only registering those that are fully electric by 2035.

End the sale of new conventional petrol and diesel cars, vans and motorbikes by 2026

Government will immediately introduce an outright ban on the sale and importation of new conventional petrol and diesel cars, vans and motorbikes as from 2026. This will give car importers and dealers time to adjust.

Introduce tax weighted to vehicle's carbon emissions

Government will by 2026 introduce a tax whereby drivers will pay a rate based on the vehicle's CO2 emissions. Electric vehicles and other zero-emission vehicles will pay no tax. This tax will apply to all types of vehicles (motorcycles, LGVs, HGVs etc.)

Upgrading Technology

Taxis to switch to electric vehicles by 2030

Government will continue to work with the Gibraltar Taxi Association to transform the local taxi fleet to a suitable electric alternative by 2030.

2030 + Targets

POLICY

Only electric vehicles registered by 2035.

UPGRADING TECHNOLOGY

75% of all cars and LCVs in Gibraltar to be fully electric by 2045.

Public sector initiatives

Only electric vehicles registered by 2035

Building on Government's target for no vehicles fully fuelled by petrol to be registered by 2030, only electric vehicles will be allowed to newly register by 2035.

Upgrading Technology

75% of all cars and LCVs in Gibraltar to be fully electric by 2045

With the successful implementation of all measures outlined in this section, Government hopes to have aided the transition of 75% of Gibraltar's cars and LCVs to be fully electric by 2045.



4.2 Decarbonising the waste sector

Waste sector emissions account for less than 10% of total emissions in Gibraltar. Despite the majority of waste being treated in Spain, these emissions are still the responsibility of Gibraltar so are therefore included in Gibraltar's total emissions. Gibraltar will seek to implement the principles of a circular economy into its waste management strategy in order to cut emissions and pollution and create sustainable growth and jobs.

Ongoing Measures

PUBLIC SECTOR INITIATIVES	<p>Continued promotion of a dedicated waste reduction and recycling campaign.</p> <p>Expand recycling bin facilities across Gibraltar to prevent sending waste to landfill.</p> <p>Carry out maintenance and upgrade works to the existing sewers infrastructure.</p>
POLICY	<p>Extension to the single-use plastic ban</p> <p>Introduction of a ban on the sale of single use plastic bottles in the Gibraltar Nature Reserve.</p>

Public Sector Initiatives

Continued promotion of a dedicated waste reduction and recycling campaign

In recent years, the Department of the Environment, Sustainability, Climate Change & Heritage has driven a recycling campaign dedicated to educating the wider community on how to reduce their waste to landfill, and recycle. This has taken the form of awareness days, printed material, and social media content. The Department will continue to champion this initiative.

Expand recycling bin facilities across Gibraltar to prevent waste to landfill

In order to reduce Gibraltar's waste to landfill, improved and easily accessible alternatives must be provided. To this effect, Government will review the existing recycling scheme with a view to identifying new key locations and expanding the scheme. Waste streams serviced may also be expanded to other items such as clothes.

Carry out maintenance and upgrade works to the existing sewers infrastructure

In 2019, AquaGib Ltd invested nearly £12.5 million on maintaining and improving its levels of service and performance indicators in respect of the provision of potable and seawater supply, and sewerage services. Investment will continue on capital projects to maintain and improve the water infrastructure assets and reduce overall energy consumption.

Policy

Extension to the single-use plastic ban

In 2019, Government introduced an amendment to Gibraltar's Imports and Exports Act 1987, prohibiting the importation of defined single use plastic products. Looking to expand on this further, Government hopes to ban additional single use plastics products, and promote a lifestyle change to greener product use by 2022.

Introduction of a ban on the sale of single use plastic bottles in the Gibraltar Nature Reserve

In July 2019, Government enforced regulations under the Nature Protection Act, prohibiting the sale or distribution of drinks in plastic bottles within the Nature Reserve. This was an important step in reducing plastic waste in Gibraltar and support shown by the private sector and wider community highlight a growing movement towards sustainability.

2020-2025 Targets

PUBLIC SECTOR INITIATIVES

Achieve a 55% recycling rate by 2025.

Publish an updated Waste Characterisation Study by 2022.

Ban use of single use bottled water in Government buildings and by Government Agencies, Authorities and Government owned companies.

Establish a deposit and return scheme.

POLICY

Regulate the requirement for the suppliers of goods to charge for carrier bags supplied by them.

Single-use cutlery, cotton buds, straws and stirrers to be banned from 2021.

Legislate the requirement for commercial entities to recycle.

UPGRADING TECHNOLOGY

Ensure the treatment of Gibraltar's wastewater

Construct a Materials Sorting Facility (MRF).

Public Sector Initiatives

Achieve a 55% recycling rate by 2025

Parallel to European Commission targets, Government is committed to achieving a minimum 55% recycling rate by 2025. Currently, Gibraltar's recycling scheme encompasses a kerbside system providing services for glass, cans, paper, plastic, cooking oil, batteries and small waste electrical and electronic items (WEEE) recycling. Government hopes to achieve this target by incrementally increasing the number of recycling stations, and educating the wider community on how to appropriately use these facilities.

Publish an updated Waste Characterisation Study by 2022

In 2014, Government commissioned Golder Associates (UK) Ltd to undertake a characterisation study of municipal waste. The purpose of this study was to gather information on the typical composition and other parameters, such as calorific value, of the municipal waste stream generated. These data can determine the Best Practicable Environmental Option (BPEO) for disposing and treating Gibraltar's waste helping to reduce emissions and inefficiencies where possible. Government will publish an updated Waste Characterisation Study by 2022. This will help to identify key areas where improvements have been made, and where further efficiencies can be achieved.

Ban use of single use bottled water in Government buildings

Consistent with the principles of the waste hierarchy, Government will look to reduce its plastic waste by banning the use of bottled water in Government Departments and Buildings. In many offices, this has already been done, including at official Parliament meetings where reusable glasses have replaced what was once single use plastic bottles.

Establish a deposit and return scheme under which articles with a returnable element can be returned and paid an equal sum to that deposit

Introducing a deposit return scheme will reward members of the community for recycling, and should encourage the wider community to practise recycling.

Policy

Legislate the requirement for commercial entities to recycle

In order to increase the proportion of Gibraltar's waste being recycled, Government will introduce a legal requirement for all commercial entities to recycle.

Upgrading Technology

Wastewater treatment

Gibraltar will comply with the Public Health (Urban Wastewater Collection & Treatment) Regulations 1999 and will ensure that its sewage undergoes appropriate treatment, putting an end to direct raw sewage discharges into the Strait.

Construct a Materials Sorting Facility (MRF) to maximize separation of waste and increase the amount of recycle recovered

Government will encourage waste reduction and separation locally with the development of a purpose built waste transfer site. This will allow for improved waste segregation prior to export, increasing the value of the waste material and allowing Gibraltar to implement circular economy principles.

2030 + Targets

PUBLIC SECTOR INITIATIVES

Achieve zero avoidable waste by 2050.

Public sector initiatives

Achieve zero avoidable waste by 2050

In line with the UK's vision, Government has pledged to achieve zero avoidable waste by 2050. The objective of this target is to eliminate all waste where it is technologically, environmentally and economically practicable to do so. In this way, Gibraltar will work towards minimising the negative environmental and carbon impacts associated with resource extraction, use and disposal.

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4.2 Cross-sectoral measures

Ongoing Measures

PUBLIC SECTOR INITIATIVES

Continuation of Greenhouse Gas Inventory programme

Work with other governments in the UK family and partners across the region to deliver goals set through relevant strategies and plans.

Publication of the 25 Year Environment Plan

Public sector initiatives

Continuation of the Greenhouse Gas Inventory Programme under the Global Covenant of Mayors

As a signatory of the Compact of Mayors (CoM), Gibraltar will continue its work to reduce GHG emissions, enhance local resilience, and report data collected transparently.

Work with other governments in the UK family, and partners across the region to deliver goals set through all relevant strategies and plans

Under the obligations of the Paris Agreement, Parties are encouraged to communicate regularly and exchange resources to fortify the global response to climate change. Government is committed to work with other governments in the UK family and extend discussions across the region to ensure the success of all initiatives detailed within this document and the 25 Year Plan.

Publication of Government's 25 Year Environment Plan

The 25 Year Plan, in conjunction with this document, will set the course for environmental policy and action for Gibraltar for the next quarter of a century. It will encompass strict targets and associated measures for every area of environmental policy. It will also reinforce existing policies such as green procurement, and act as a green filter on Government activity and development.

2020-2025 Targets

PUBLIC SECTOR INITIATIVES

Ensure implementation of the Climate Change Strategy

Establish an Air Quality Commission.

Establish a Parliamentary Select Committee on the Environment.

Establish an Environmental Governance Act and Committee

Gibraltar to become a Smart City.

Encourage a move towards more plant based diets.

POLICY

Establish a Climate Change Committee.

Corporate disclosure on Climate & Nature.

UPGRADING TECHNOLOGY

Create a regulatory environment for the trading of environmental assets using Distributed Ledger Technology (DLT)

Host a conference with international stakeholders to develop and facilitate environmental trading using DLT.

Public sector initiatives

Ensure the implementation of the Climate Change Strategy

This strategy touches upon many aspects of life in Gibraltar and the co-ordinated delivery of the policies and targets within it will only be achieved by full commitment from all Government Departments, Agencies and Authorities, as well as the Private Sector. If necessary, Government will set up a body to ensure that the Strategy is implemented.

Establish an Air Quality Commission

Government has committed to creating an Air Quality Commission. Bringing together key stakeholders across different sectors, the forum will work to understand the status of Gibraltar's air quality, discuss key areas of concern, and propose solutions for improvement. This Commission will operate transparently, and with the public, to help build public trust and a collaborative approach to yield greater results.

Introduce an Environmental Governance Act and Committee

Government will introduce an Environmental Governance Act which will set legally binding targets to deliver environmental improvements across the areas of air quality, water quality, biodiversity and resource efficiency & waste reduction. The Act will also legislate for environmental principles to protect the environment from damage and will make environmental considerations central to policy development across government.

Ministers will be required to prepare policy statements confirming that they are satisfied that any new policy will contribute to the improvement of environmental protection and sustainable development.

The Act will also establish an Environmental Governance Committee to provide independent scrutiny and advice on the government's progress against the legally binding targets. The Committee would be required to report publicly – and to Parliament – on the government's environmental compliance.

Establish a Parliamentary Select Committee on the Environment

In recognition of the global, cross party nature of this problem, this Select Committee will be co-chaired by the Chief Minister and the Leader of the Opposition.

Gibraltar to become a smart city

As Government works to realise the vision of a 'Smart City' and a 'Child Friendly City', a number of initiatives will be rolled out to achieve this. A cross-sectoral effort, environmental measures will work towards building a city with the highest possible level of energy efficiency.

Encourage a move towards more plant based diets

Global livestock produces about 15% of all direct GHG emissions. When land use is taken into account, this increases to up to 30% of total global emissions. There is a growing public understanding of how our diet affects the environment and the planet with the Conscious Eating Campaign having resulted in a noticeable increase in plant based food offerings across the restaurant sector.

A plant-based diet is probably the single most effective action an individual can take to reduce their impact on the planet. Government, through Public Health Gibraltar, will develop guidance on how to make more sustainable food choices, including information on the health and environmental benefits as well as how to understand various food labelling initiatives.

The Sustainable Catering Policy will be adopted by the public sector in respect of its procurement of food for events, and in institutions such as schools, hospitals and care homes. Government will also explore options for directly encouraging a move towards plant-based diets.

Policy

Establish a Climate Change Committee to provide independent advice and scrutiny of the Government's efforts in respect of emissions reductions

In line with the legal requirements of the 2019 Climate Change Act, Government is required to establish a Climate Change Committee. The function of the Committee will be to deliver advice on climate change, and matters not limited to carbon budgets, emissions from international aviation and shipping, trading schemes, waste and transport.

Corporate Disclosure on Climate & Nature

In keeping with global initiatives such as the Taskforce on Climate-Related Financial Disclosures and the Taskforce on Nature-related Financial Disclosures, Government will require companies it works with to provide full climate & nature disclosures and encourage the private sector to do the same.

Upgrading Technology

Create a regulatory environment for the trading of environmental assets using Distributed Ledger Technology (DLT)

Government is working to create a regulatory environment for persons to establish exchanges where environmental assets can be traded using DLT. This will consist of the co-existence of the DLT Regulations and draft Token Regulations, together with Regulations to

be enacted under the Climate Change Act 2019, which will govern the standards that must be met by the projects whose environmental assets are listed on the exchanges. In the longer term and in particular once the Paris Rulebook has been completed in respect of Article 6, we will adapt the regulatory framework as necessary to accommodate the trading of internationally traded mitigation outcomes.

Host a conference with international stakeholders to develop and facilitate environmental trading using block chain and DLT

In order to progress this initiative a series of online workshops were convened on the 17th and 18th November 2020. These brought together interested parties from international organisations to discuss the Draft Regulations and the shape that these should take as well as the wider aspects of the ecosystem that Gibraltar is seeking to create.

2025-2030+ Targets

POLICY

Climate Emergency Motion: Gibraltar to achieve net zero carbon by 2030 and 50% emissions reduction by 2035.

Climate Change Act: Reduce Greenhouse Gas emissions by 42% below 1990 levels by 2030 and 100% below 1990 levels by 2045.

Policy

Climate Emergency Motion

Government has pledged to make Gibraltar Net Zero by 2030. This goal will require an element of carbon offsetting which is discussed later on in this document.

Climate Change Act

The Act sets binding targets for Government to achieve emissions reductions of 42% and 100% by 2030 and 2045 respectively.



4.7 Nature based solutions

Nature based approaches to tackling climate change can offer sustainable solutions to cope with both climate change mitigation and adaptation challenges. Nature based solutions are defined by the IUCN (International Union for the Conservation of Nature) as “actions to protect, sustainably manage and restore natural or modified ecosystems, that address societal challenges (e.g. climate change, food and water security or natural disasters) effectively and adaptively, simultaneously providing human well-being and biodiversity benefits”.

Terrestrial and marine ecosystems play an important role in the global carbon cycle, acting as carbon sinks and stores. Worldwide, natural ecosystems absorb about half of the CO₂ emissions generated by human activities each year. Adequately preserved ecosystems have a buffer effect on climate and reduce the risks and impacts of extreme events such as storms, landslides and floods, whose frequency and intensity will be exacerbated by climate change. Nature based solutions are therefore an essential part of the strategy to address climate change. Compared to technology-based solutions, they are often lower cost, longer lasting and have multiple synergistic benefits.



4.7.1 Gibraltar Planned Projects

#GreenGibraltar – urban planting and creation of new green areas

Government is committed to continuing to provide green areas within the urban environment for the community to enjoy. To this end, it will develop a green corridor along Queensway and the City Walls to connect with Commonwealth Park and Midtown Park. Furthermore, a green park will be created at Grand Parade, on the site of what is now a car park. This ‘green lung’ will serve as a carbon sink for Gibraltar, removing both carbon dioxide and other air pollutants from our environment.

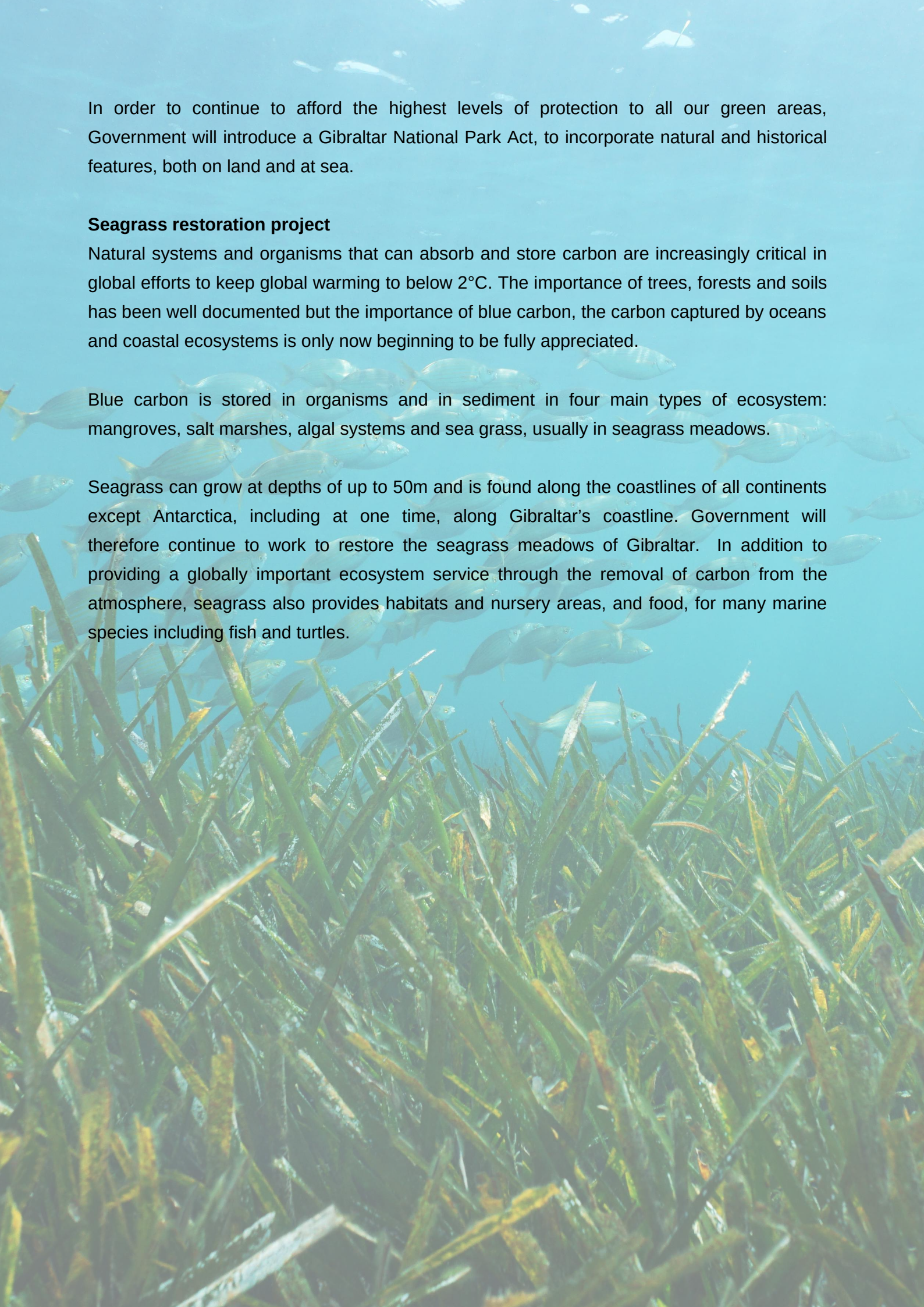
Urban Greening

Government will prioritise the planting of trees in urban areas and the creation of green walls. This will include the identifying of locations where trees can be planted, and walls suitable for climbing plants or other green wall structures. The laying of new services will take into account the need to increase the number of urban trees.

Infrastructure in the marine environment will also be enhanced where appropriate through, for example, the installation of vertipools.

Extension of the reserve area & creation of Gibraltar National Park

Government has already designated significant areas of our terrestrial and marine environment as protected areas. The area of the Gibraltar Nature Reserve was recently extended, meaning that 2.42km² of land is a protected area, approximately 37% of our total land area.

An underwater photograph showing a school of fish swimming above a dense field of seagrass. The water is clear and blue, and the seagrass is green and yellowish. The fish are silvery and appear to be of various species.

In order to continue to afford the highest levels of protection to all our green areas, Government will introduce a Gibraltar National Park Act, to incorporate natural and historical features, both on land and at sea.

Seagrass restoration project

Natural systems and organisms that can absorb and store carbon are increasingly critical in global efforts to keep global warming to below 2°C. The importance of trees, forests and soils has been well documented but the importance of blue carbon, the carbon captured by oceans and coastal ecosystems is only now beginning to be fully appreciated.

Blue carbon is stored in organisms and in sediment in four main types of ecosystem: mangroves, salt marshes, algal systems and sea grass, usually in seagrass meadows.

Seagrass can grow at depths of up to 50m and is found along the coastlines of all continents except Antarctica, including at one time, along Gibraltar's coastline. Government will therefore continue to work to restore the seagrass meadows of Gibraltar. In addition to providing a globally important ecosystem service through the removal of carbon from the atmosphere, seagrass also provides habitats and nursery areas, and food, for many marine species including fish and turtles.



5. ESTIMATED IMPACT OF MEASURES

To understand the impact of existing and planned measures outlined in the previous section, and to understand what more needs to be done to reach the ambitious emissions reduction targets set by Government, the CURB tool has been used. The following section aims to illustrate how existing and planned measures to reduce emissions will impact upon future GHG emissions.

5.1 Impact of planned & existing measures

Figure 9 presents the estimated impact of the planned and existing measures on future emissions. It should be noted that this analysis involves a degree of uncertainty due to assumptions made in order to quantify the impact of measures. It should also be noted that it was not possible to quantify the impact of all measures, and therefore assumptions have been made to best reflect the likely output of measures.

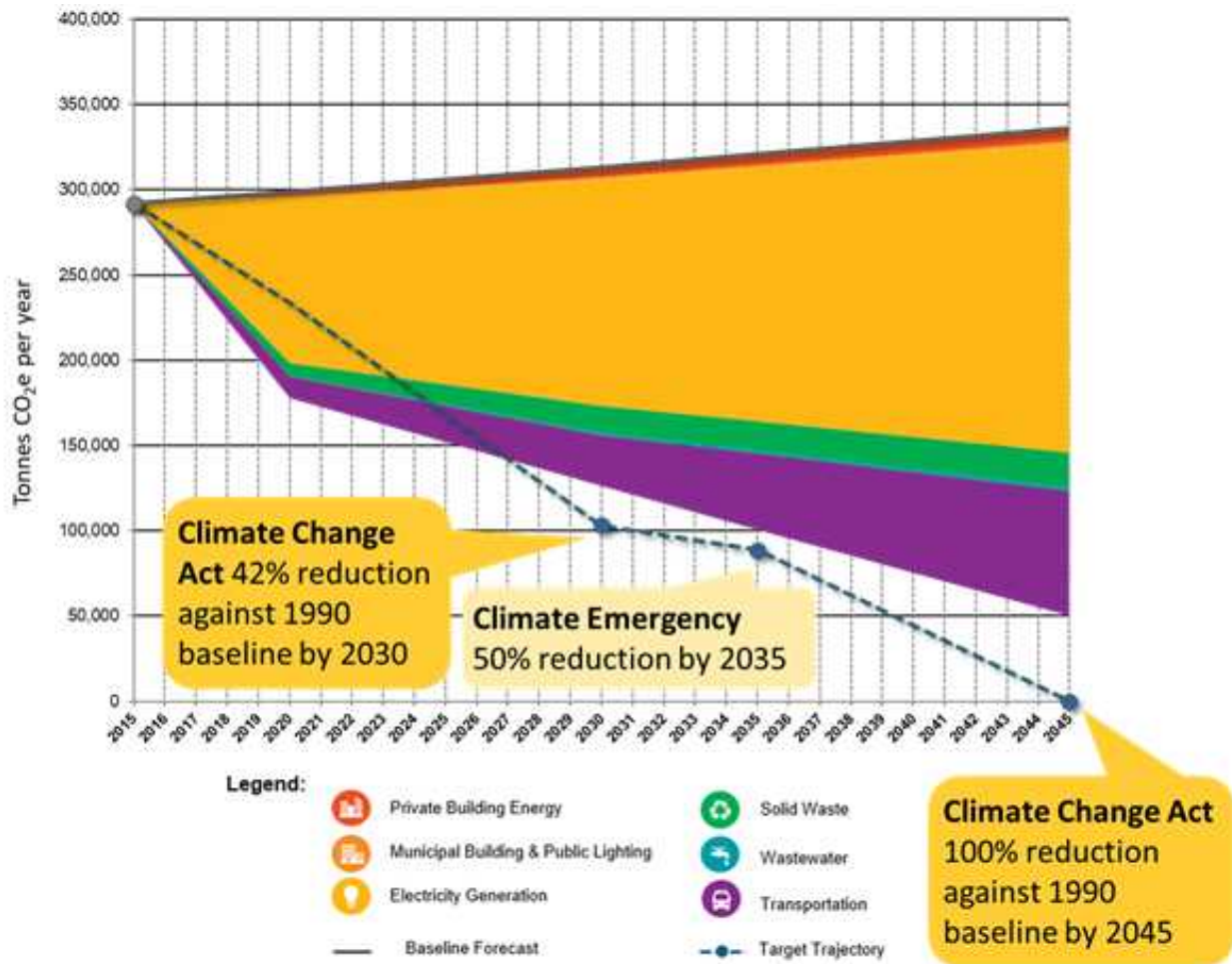


Figure 9: Planned and existing measures scenario

The top solid line in Figure 9 represents Gibraltar's projected GHG emissions, or 'baseline forecast', to 2045 (See section 3.4.5). The dotted line at the bottom represents Gibraltar's various emission reduction targets; these have been scaled to the 1990 inventory to the 2015 CURB baseline inventory. The coloured wedges below the 'baseline forecast' line represent emission reductions by sector. The white gap between the coloured wedges and dotted target line shows the difference between how much Gibraltar wants to reduce emissions and by how much the planned and existing measures will reduce emissions.

Fully implementing the current planned and existing measures, as outlined above, would be estimated to achieve an emission reduction of over 70% below 1990 levels and over 80% below 2015 levels. This leaves an achievement gap of under 50,000 tonnes CO₂e, or 30% of 1990 emissions, 17% of 2015 emissions, or 15% of 2045 emissions.

There are also slight achievement gaps in reaching the targets in 2030 and 2035. In 2030, around 23,000 tonnes CO₂e will need to be reduced. In 2035, around 12,000 tonnes CO₂e will need to be reduced. To meet the 2030 carbon neutrality, over 100,000 tonnes CO₂e would need to be mitigated, sequestered or offset.

Emission reductions and remaining emissions by sector

Table 3 presents potential emission reductions by sector, given the planned and existing emission reduction measures outlined in the Roadmap. Remaining emissions are presented in Figure 10.

Sector	% change compared to 2015 emissions			
	2020	2030	2035	2045
Stationary energy	-50%	-65%	-71%	-83%
Transport	-17%	-38%	-58%	-97%
Waste	-35%	-69%	-75%	-85%
Wastewater	2%	-87%	-87%	-86%
Product Use	2%	7%	10%	15%
Total	-39%	-57%	-65%	-83%

Table 3: Emission reductions by sector compared to 2015 emissions.

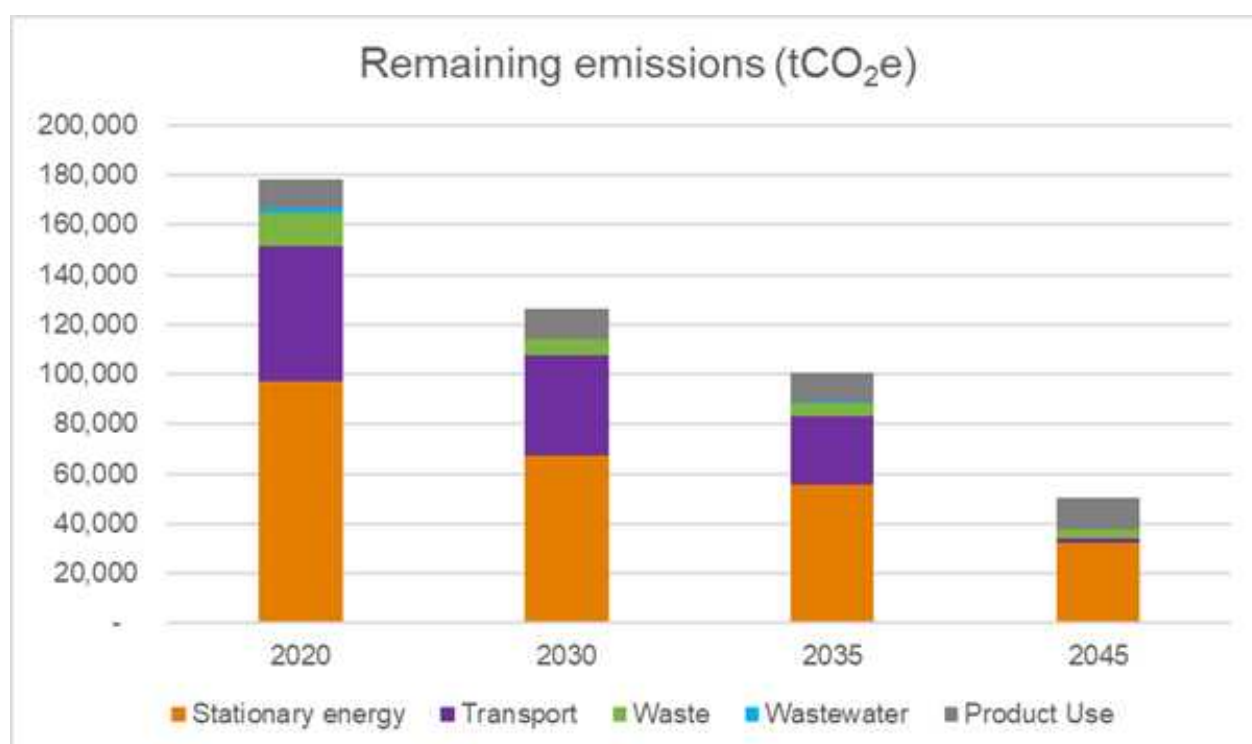


Figure 10: Emissions remaining after planned and existing measures

Emission reductions in the stationary energy sector will largely be driven by switching electricity generation to LNG and increasing the share of renewable energy. In 2045, with 70% electricity generation coming from renewable energy, some emissions will remain from the LNG power station.

Emission reductions in the transport sector will be driven by promoting the uptake of electric vehicles and encouraging the uptake of emission-free modes of transport such as walking and cycling. In 2045, a small amount of emissions will remain due to some petrol vehicles remaining on the road.

Emission reductions from waste will be driven by the ambitious targets to increase recycling rates and achieve zero avoidable waste by 2050. Emissions from waste incineration and CH₄ emissions from landfill will remain in 2045. Likewise, some CH₄ emissions from the treatment of wastewater will also remain in 2045. There are limited actions to tackle emissions from product use therefore no actions have been included; these emissions will be offset (see below for further information on offsetting emissions).

5.2 Increasing ambition to reach Net Zero

As mentioned, if planned and existing measures are fully implemented to the ambitious levels intended, estimates show that there will be around 50,000 tonnes CO₂e remaining in 2045. Further measures will be needed to complement the current planned and existing measures in order to reach the net zero target by 2045.

Offsetting

In order to achieve net zero, all remaining emissions that Gibraltar is unable to mitigate, could be offset. For this carbon neutrality to be verifiable, Government is undertaking a review of offsetting options to ensure that only credits from high quality projects distributed through credible retailers are selected.

The Government will seek to ensure that the projects selected:

- Are additional: Project wouldn't have happened without offset programme;
- Avoid double counting: Credits from the project are only sold once;
- Avoid leakage: Emissive activity is not transferred elsewhere because of the project.

As well as ensuring certification to the highest level of methodological robustness and delivering development co-benefits such as clean air, clean water access and female empowerment.

Government will begin offsetting in 2030. To reach the goal of carbon neutrality, as mentioned, around 100,000 tonnes CO₂e will be required to be offset. To meet the Climate Change Act target to reduce emissions by 42% below 1990 levels, a total of around 23,000 tonnes CO₂e will need to be offset. For the 2035 Climate Emergency Motion target to reduce emissions by 50%, a further 12,000 tonnes CO₂e will need to be offset in 2035. Finally, if considering the current planned and existing measures, remaining emissions of around 50,000 tonnes CO₂e will need to be offset in 2045. Figure 11 presents the emission reduction from planned and existing measures, including emissions to be offset in order to reach the various emission reduction targets in future years.

The possibility of an undersea cable accessing renewable energy from north Africa has not been included in this analysis, but could at the very least be an alternative to offsetting. The option is being studied by the Government.

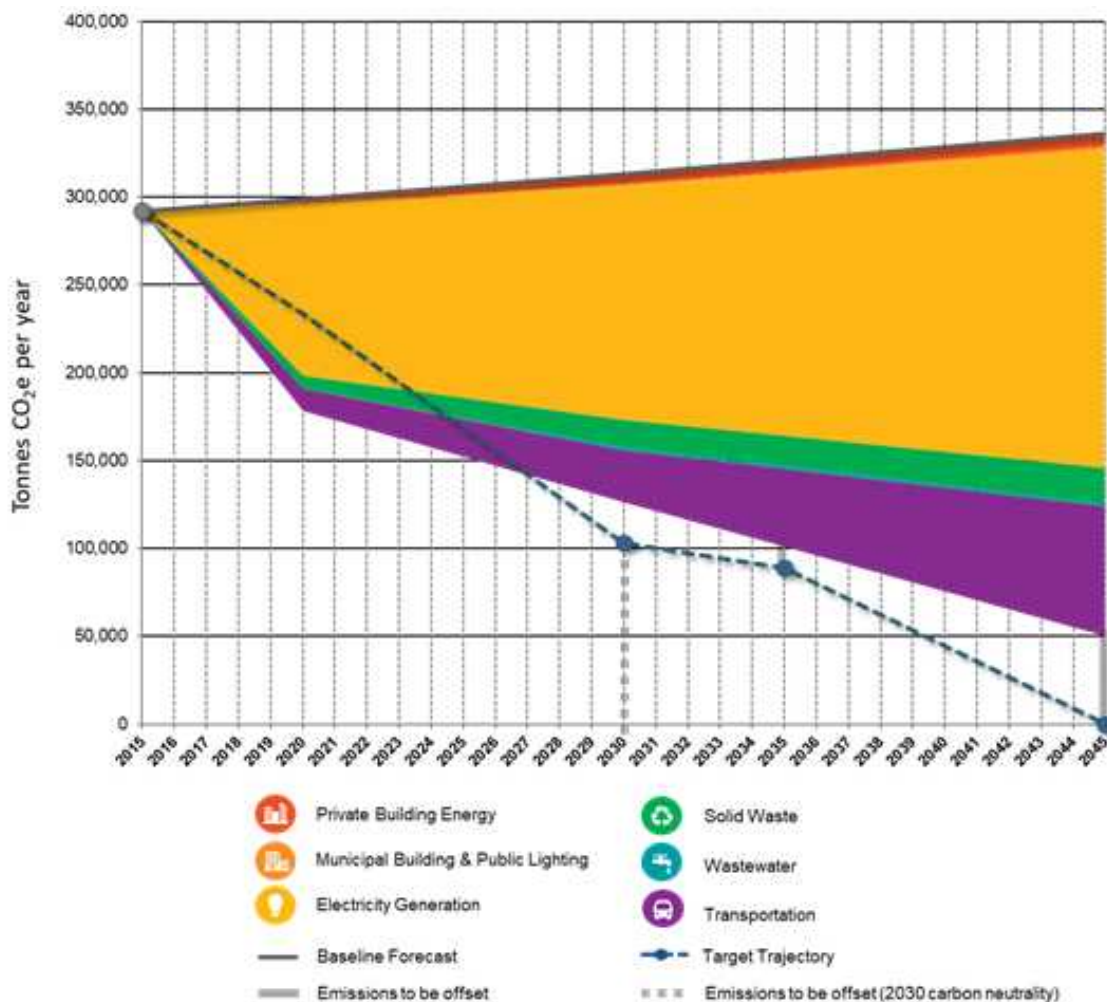


Figure 11: Emissions remaining after planned and existing measures

Increasing the ambition of measures

The other option is to increase the ambition of current measures or include additional measures. To tackle remaining emissions, the following additional measures could include, but not be limited to:

- 100% renewable energy by 2045;
- 100% electric vehicles by 2045;
- All waste recycled/composted by 2045, with technology in place to capture or utilise any biogas;
- All wastewater to be treated with sludge waste treated through anaerobic digestion with gas capture;

Figure 12 illustrates the desired emission reduction impact of these measures as well as others yet to be defined.

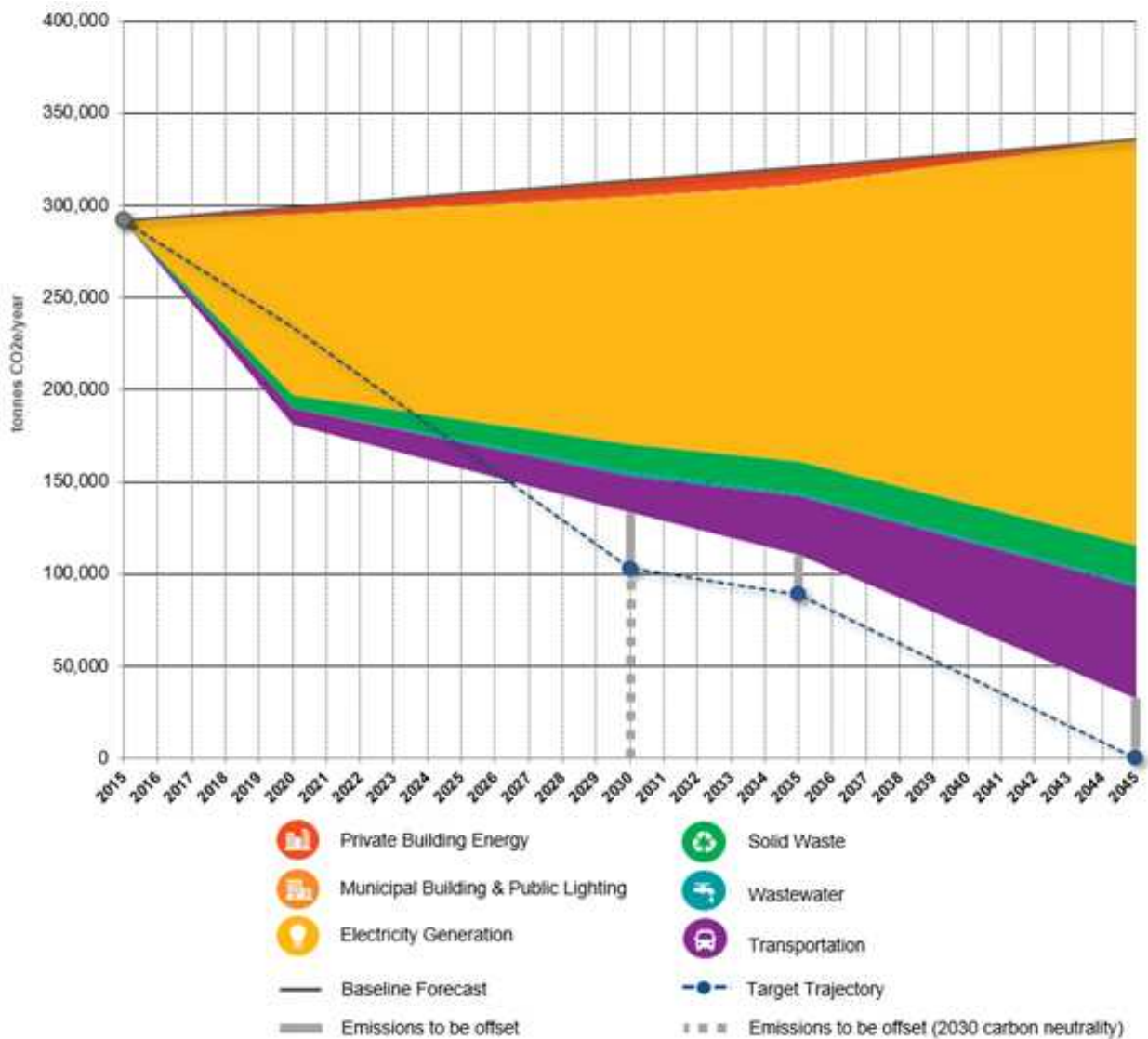


Figure 12: Ambitious actions scenario, including offsetting, to achieve Net Zero by 2045

Even when increasing the ambition of various measures, some emissions will remain. For the emissions which cannot be mitigated, offsetting would remain an option to ensure carbon neutrality. These emissions would include, for example, a small amount of fossil fuel use for back-up electricity generation and emissions from product use (e.g. use of air conditioning and refrigerators).

In 2045, emissions from private buildings, including lighting, heating, and cooling are non-existent in an enhanced ambition, zero-carbon scenario as electricity generation is 100% renewable. In Figure 12, the emissions savings are implied within the savings from Electricity Generation, rather than within the Private Buildings Energy sector. In other scenarios, this sector depicts emissions savings due to efficiency improvements, but in the zero-carbon case, the emissions savings are made upstream of the final user at the source of generation.



6. ADAPTATION & RESILIENCE

“ADAPTATION INVOLVES REDUCING RISK AND VULNERABILITY; SEEKING OPPORTUNITIES; AND BUILDING THE CAPACITY OF NATIONS, REGIONS, CITIES, THE PRIVATE SECTOR, COMMUNITIES, INDIVIDUALS, AND NATURAL SYSTEMS TO COPE WITH CLIMATE IMPACTS, AS WELL AS MOBILIZING THAT CAPACITY BY IMPLEMENTING DECISIONS AND ACTIONS.”

The IPCC

In recent years, worldwide action against climate change has focused on the race against time to limit warming to well below 2°C above pre-industrial levels. Despite these mitigation efforts, it is important to understand that the world is already experiencing climate change. Locked into the system by historic emissions, efforts of the short to long-term future must also focus on adjusting to actual or expected climate change and its effects.

6.1 Adaptation across Europe

Since 2013, the EU has worked to develop a climate adaptation strategy that supports member states in their preparation and capacity to respond to climate change impacts. Clear that a “one-size-fits-all” approach is unsuitable for the cause, the European Commission has developed a series of objectives, and supporting tools to help facilitate information exchange, implementation of measures, and cross border coordination. The objectives and measures promoted by the EU’s adaptation strategy are as follows:

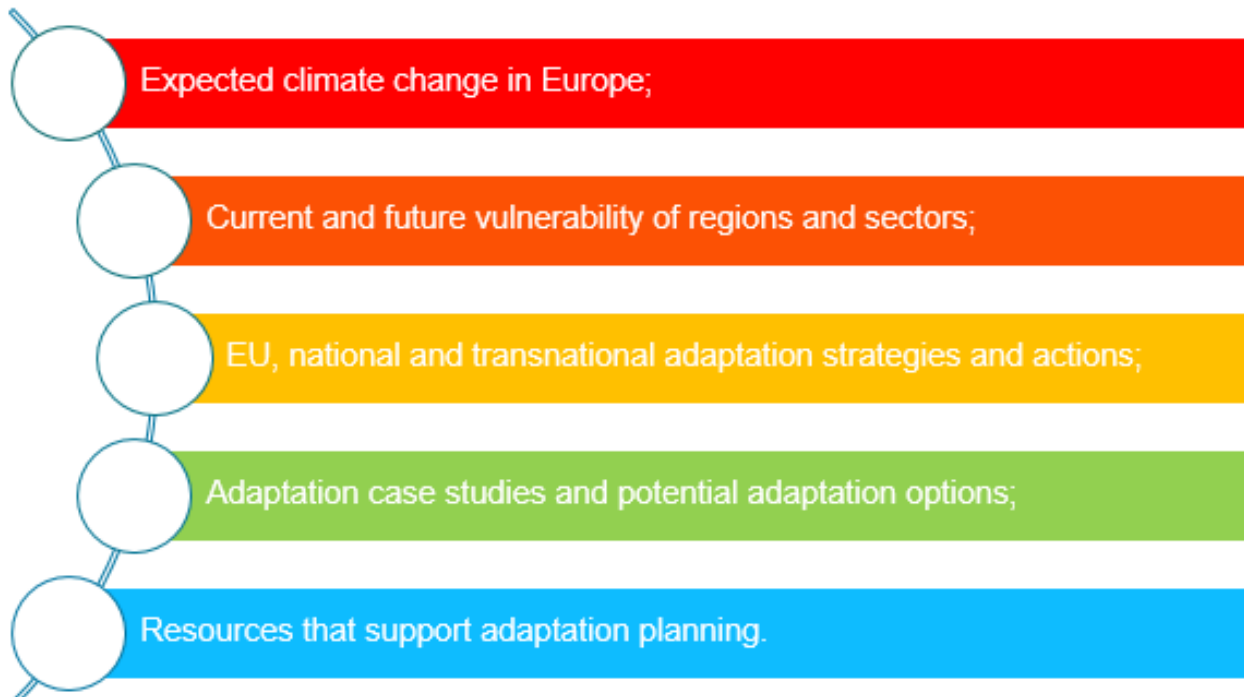
<i>Objective 1: To encourage action by member states.</i>	
<i>Action 1</i>	Encourage all member states to adopt comprehensive adaptation strategies.
<i>Action 2</i>	LIFE funding to support capacity building and step up adaptation action in Europe.
<i>Action 3</i>	Promoting adaptation actions by cities along the Covenant of Mayors Initiative.
<i>Objective 2: To support better-informed decision-making.</i>	
<i>Action 4</i>	Knowledge gap strategy.
<i>Action 5</i>	Further develop Climate-ADAPT as the ‘one stop shop’ for adaptation information in Europe.
<i>Objective 3: Promote adaptation in key EU vulnerable sectors.</i>	
<i>Action 6</i>	Climate-proofing of the Common Agricultural Policy, the Cohesion Policy and the Common Fisheries Policy.
<i>Action 7</i>	Making infrastructure more resilient.
<i>Action 8</i>	Promote insurance and other financial products for resilient investment and business decisions.

Table 4: Objectives and measures promoted by the EU’s adaptation strategy.

Particularly valuable to the development of Gibraltar’s own climate change strategy is the Climate-ADAPT online platform.

6.1.1 Climate-ADAPT

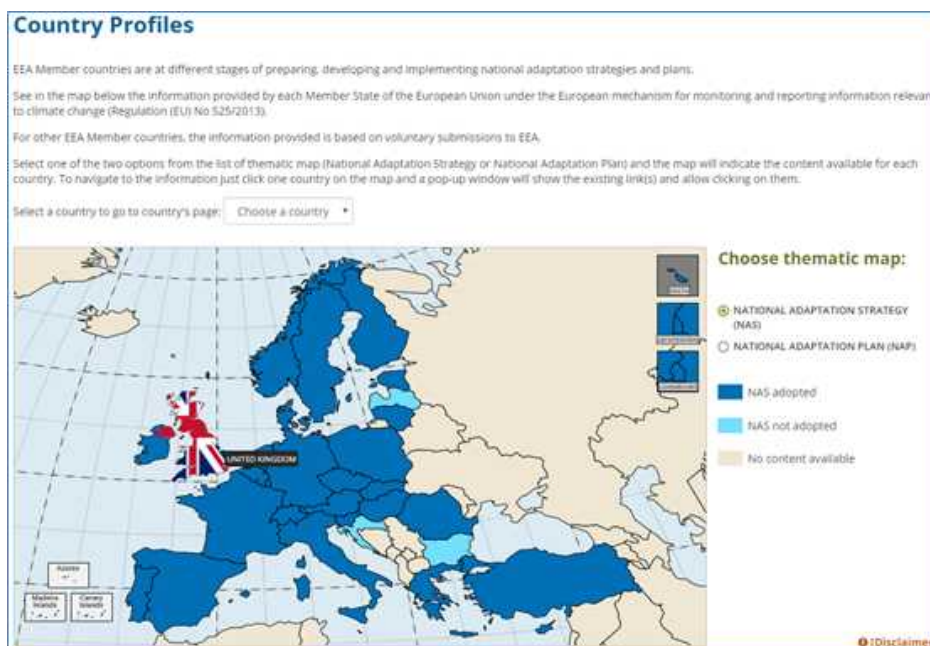
Launched in 2012 by the European Commission in partnership with the European Environment Agency (EEA), Climate-ADAPT is a digital tool that helps users to access and share data and information on:



Equipped with functions such as the Urban Adaptation Map Viewer, users are able to upload research and resilience data for their city.

Highlighting the latest information on observed climate and projected vulnerabilities, the portal provides the opportunity for cities across Europe to share resources and gain inspiration from the adaptation measures implemented by their neighbours.

Country profiles also provided give an overview of which countries have developed national adaptation plans or strategies, with direct links to these documents.



6.1.1.2 The Adaptation Support Tool

Within the Climate-ADAPT platform, the Adaptation Support Tool supports users with a structured approach to adaptation planning. The tool lays out six steps for cities which include:

1. Preparing the ground for adaptation.
2. Assessing risks and vulnerabilities to climate change.
3. Identifying adaptation options.
4. Assessing adaptation options.
5. Implementation.
6. Monitoring and evaluation.

In line with Government's commitment to maintain local environmental governance in parallel with EU initiatives, Gibraltar has adopted this structure for its own climate adaptation strategy.

6.2 Gibraltar's Climate Adaptation Plan

VISION OF A CLIMATE RESILIENT GIBRALTAR

H.M. Government of Gibraltar recognises that, regardless of efforts made at a global scale to reduce carbon emissions, the world will continue to experience some degree of climate change. Gibraltar will not be immune to the impacts of this and Government recognises that it has a duty to safeguard Gibraltar's living and built environment for future generations. As such, this evolving strategy will enable Gibraltar to adapt to the impacts it is likely to experience.

Government recognises the importance of using sound evidence as its baseline, and is therefore committed to obtaining the necessary information to allow it to realise its vision of a climate resilient Gibraltar.

Government is committed to placing the environment at the heart of its policy and will work to ensure that climate change considerations are embedded into all decision-making processes. It will facilitate the necessary close co-operation and involvement across all of Government to achieve this. In this way, it hopes to ensure a rich, healthy and diverse environment for all to enjoy, both now and in the future.

PREPARING THE GROUND FOR ADAPTATION

Step 1 requires:

- Engaging a high-level of support from all sectors of society varying from policy commitments to raising awareness on climate change issues;
- Setting up adequate coordination mechanisms with clear roles and responsibilities established;
- Identifying funding opportunities for climate adaptation initiatives;
- Conducting research on actual and potential climate change effects, with adaptation activities taking place.

EU Cities Adapt

In 2013, Government began to lay the ground for successful adaptation planning through its participation in a DG CLIMA project called EU Cities Adapt. The aim of the project was to provide capacity building and assistance for cities across Europe in developing and implementing a climate adaptation plan by raising awareness on the importance of preparing for climate change in cities, exchanging knowledge and good practice, and developing tools and guidance on adaptation.

The exercise served to highlight the fact that Gibraltar is in many ways resilient to climate change due to its existing high degree of self-sufficiency. Gibraltar works on “island” mode with its own power generation and water desalination plants. These reinforce Gibraltar’s resilience against climate change and act as adaptation measures. In addition to this, other measures identified included the routine reinforcement of local coastal revetments to withstand a 1 in 200-year storm, and the development of separate sewer and storm water networks for all new developments.

Where gaps, such as lack of data or vulnerability assessments were found, the project assisted in providing tools and a blueprint way forward, which is discussed further in the sections to follow.

Climate Change Task Force

In 2014, Government established a Climate Change Task Force (CCTF). The committee engaged key stakeholders such as water, electricity, telecommunications bodies, local professionals, and members of the Chamber of Commerce and Federation of Small Businesses. Acting as a technical advisory group for Government on climate change matters, this is now to be superseded by an independent Climate Change Committee, as defined by Gibraltar’s Climate Change Act.

United Nations COP attendance

Since 2015 Gibraltar, through the UK Overseas Territories Environment Minister's Council has been represented at the United Nations annual Conference of the Parties. Celebrated as the leading forum for climate change discussion, participation in this event is critical to understanding the development of potential climate change impacts, mechanisms for adaptation, and funding opportunities.

Climate Change Awareness

The EU Cities Adapt project identified that Gibraltar's awareness of climate change risks and the associated actions required to prepare for these is low. Resilience has been developed for other reasons but further explicit awareness of the risks that climate change poses is required to ensure that Gibraltar is adequately prepared for future climate scenarios.

In order to tackle this it is important to raise awareness both internally (within Government) and externally. Government will reconvene the Climate Change Adaptation Working Group (CCAWG) in order to develop better communication flows between different government entities in respect of projects being undertaken and how these can be adapted to increase their resilience.

Adapting to our changing environment must be a cross-sector collaboration involving civil society, the public and private sector. Communication of the risks, impacts and actions to take will be a critical element of the adaptation plan. Government will engage with external bodies such as the GFSB and the Chamber of Commerce, NGOs such as the ESG, GONHS and the Nautilus Project so that together we can develop a strong understanding of all the potential challenges as well as solutions. Government will establish a regular forum for consultation with these organisations.

Government will engage with meteorological service providers so that they can increase their communication on climate change.

The aim is for all citizens to feel empowered with knowledge of the risks that Gibraltar might face as well as information on what different actors are doing to mitigate those risks.

ASSESSING RISKS & VULNERABILITY

Step 2 requires:

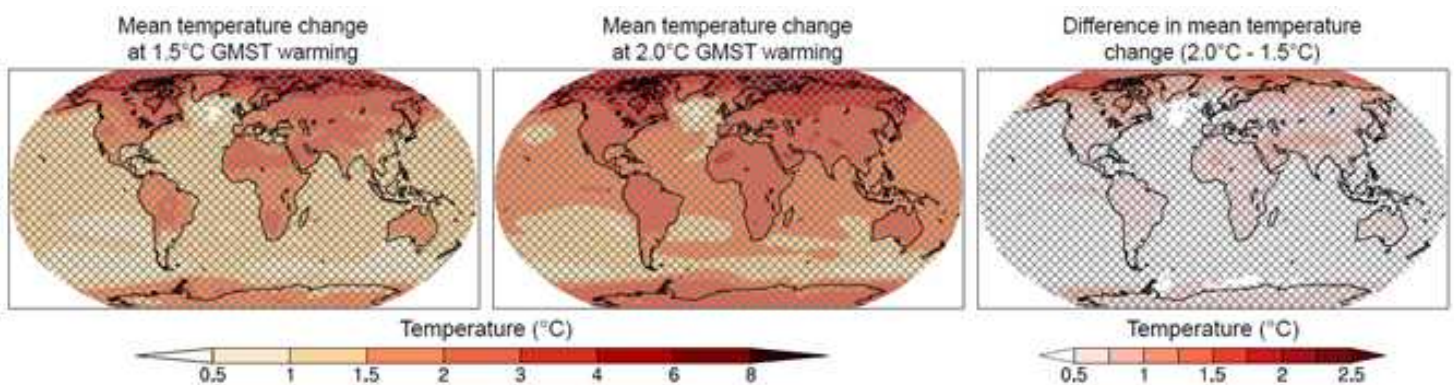
- An analysis of weather pattern changes and events;
- Undertaking a vulnerability assessment to identify potential impacts and assess the country's ability to adapt;
- Developing an approach for addressing knowledge gaps and dealing with uncertainties;
- Establishing a strategic approach to address identified risks.

Vulnerability assessment

Government has already conducted a preliminary desktop risk and vulnerability assessment. Gibraltar, located in Europe and the Mediterranean climate, is likely to be exposed to the following risks:

Surface Temperature Rise

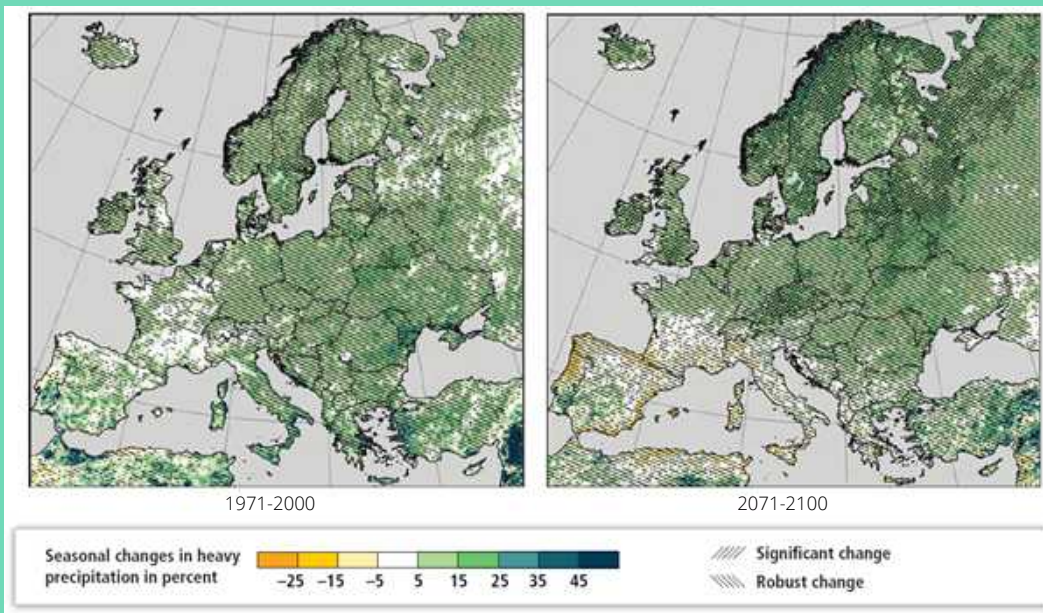
Under all assessed emission scenarios, southern Europe is projected to experience strongest warming increases during the summer months. Continued research suggests that under average global temperature increases, Europe's climate will alter significantly in the coming decades from today's climate.



Projected changes in mean temperature at 1.5°C (left) and 2°C (middle) of global warming compared to the pre-industrial period (1861–1880), and the difference between 1.5°C and 2°C of global warming (right). Cross-hatching highlights areas where at least two-thirds of the models agree on the sign of change as a measure of robustness (IPCC, 2018).

Precipitation decrease

In southern Europe, precipitation is projected to decrease as a result of climate change. As northern Europe sees increased extreme precipitation, the Iberian Peninsula will suffer a decrease in frequency exposing it to higher risks of drought.

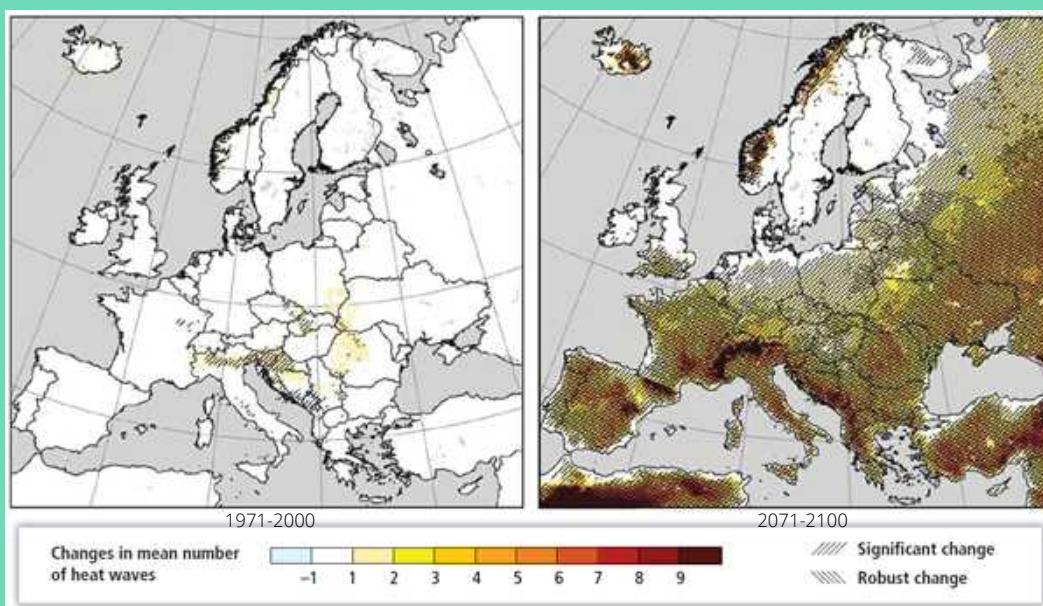


Projected seasonal changes in heavy precipitation defined as the 95th percentile of daily precipitation (only days with precipitation >1 mm day⁻¹ are considered) for the period 2071–2100 compared to 1971–2000 (in %) in the months June to August (JJA). (IPCC).

Extreme Weather Events

There is high confidence that there will be a marked increase in extreme weather events in Europe. Climate change will very likely increase the frequency and intensity of heat waves, particularly in Southern Europe with mostly adverse implications for health, agriculture, energy production and use, transport, tourism, labour productivity and the built environment.

As heat waves increase, southern Europe will experience trends towards more intense and longer periods of drought. Hotter and dryer summers increase the risk of fires in the Upper Rock and an increase in extreme weather events could also bring on an increase in rock falls on the eastern side and other cliff areas.

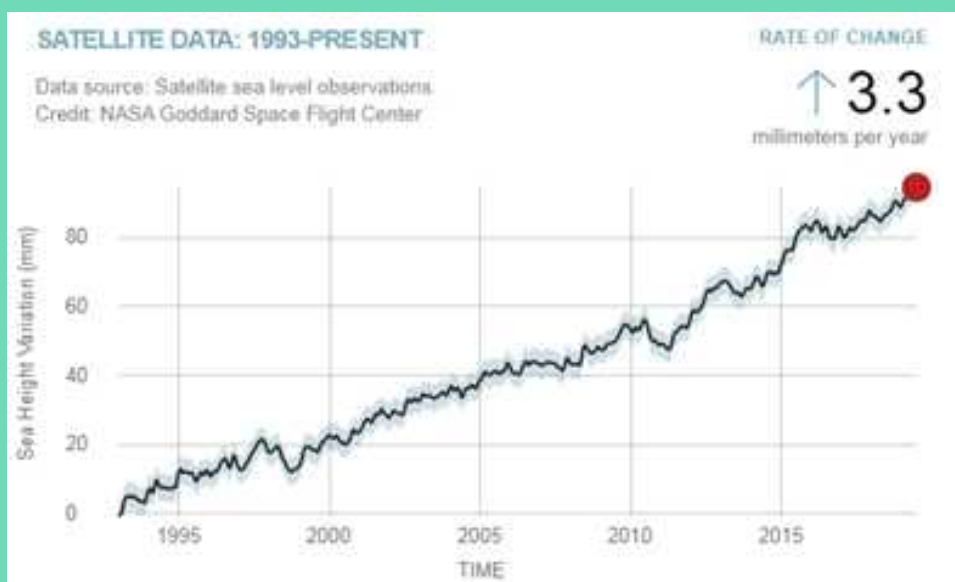


Projected changes in the mean number of heat waves occurring in the months May to September for the period 2071–2100 compared to 1971–2000 (number per 30 years). Heat waves are defined as periods of more than 5 consecutive days with daily maximum temperature exceeding the mean maximum temperature of the May to September season of the control period (1971–2000) by at least 5°C. (IPCC).

Rising Sea Levels

By the end of the 21st century, it is very likely that sea level will rise in more than about 95% of the ocean area. Populations and infrastructure located in coastal regions are likely to be most adversely affected by sea level rise, which poses a threat to Gibraltar given its location.

Gibraltar is almost completely surrounded by water, with a great area of this being land reclaimed from the sea and is relatively low-lying apart from the Rock itself; meaning that any sea level rise or coastal erosion could have significant impacts. Major infrastructure potentially at risk from sea level rise and storm surges includes the hospital, the airport, runway, and the North Mole Power Station as well as major residential areas & the beaches.



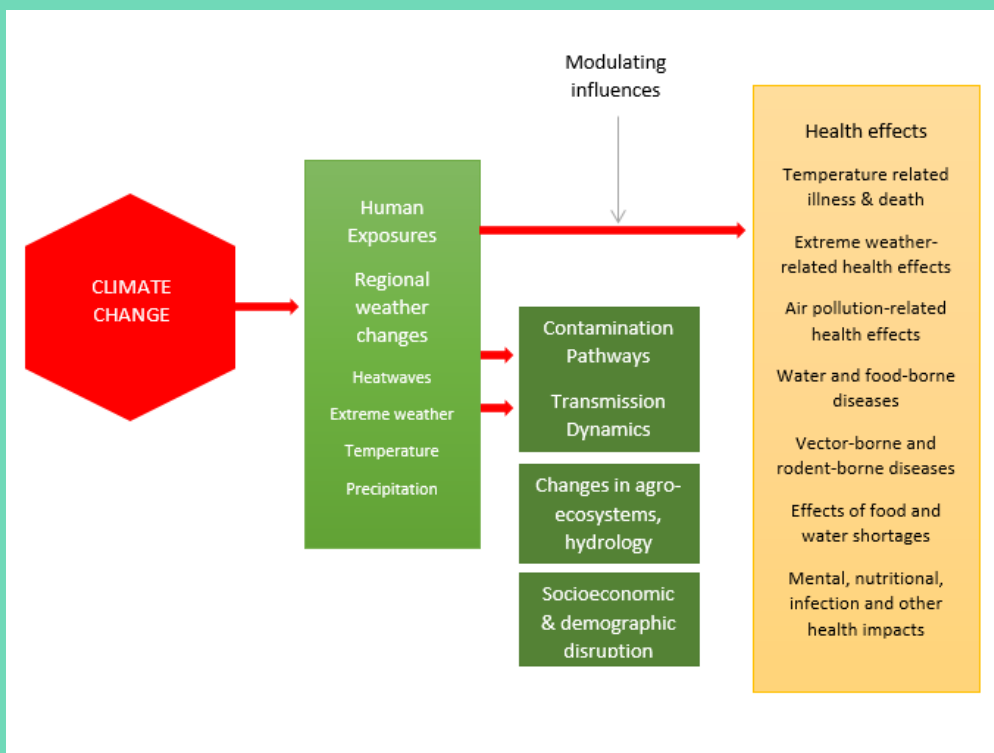
Observations in sea level rise from 1993 to present. This is caused primarily by added water from melting ice sheets & glaciers, as well as the expansion of seawater as it warms (NASA Goddard Space Flight Center, 2019).

Human Population Health Risks

Climate change is highly likely to have an impact on human health. Induced by the effects of heat waves on mortality and morbidity, changes to the distribution of infectious diseases, and the potential risks to food sources, Gibraltar will be vulnerable to all of these.

Gibraltar has an aging population which could be particularly vulnerable to heat waves.

Climate change is also allowing disease-carrying Asian tiger mosquitoes to spread across Western Europe. The insects are known to spread more than 20 diseases including yellow fever, chikungunya, dengue and Zika. The tiger mosquito has arrived in Gibraltar although the viral diseases it can spread have not. These viruses could, however, be imported by travellers returning from overseas which would result in a small risk of spread.



Pathways by which climate change affects human health (World Health Organization).

Risks to Tourism

Climatic suitability for general tourism activities is currently best in southern Europe. The regions most favourable for general tourism are projected to shift northwards as a result of climate change. The touristic attractiveness in northern and central Europe would increase in most seasons. Suitability of southern Europe for tourism would decline markedly during the key summer months but improve in other seasons.

The projected climatic changes are expected to shift the major flows of tourism in Europe and can have substantial consequences for regions where tourism is an important economic sector. The magnitude of the economic impacts is strongly determined by non-climatic factors, such as the ability of tourists to adjust the timing of their holidays.

Tourism is one of the greatest contributors to Gibraltar's economy, and any long-term changes to the local climate could redefine services and demand in this sector including less tourism during the summer months but an increase in winter.

Marine Biodiversity Risks

Any change in climate affects the physical, biological, and biogeochemical characteristics of the oceans on different spatial and temporal scales. Such changes have crucial consequences for the conservation of marine ecosystems, and thus for their role as suppliers of goods and services, including for fisheries. Gibraltar's Southern Waters were designated as a dual Special Protected Area (SPA) and Special Area of Conservation (SAC).

This reflects their importance as a site for marine diversity, and generates concern over how our Marine Protected Area and British Gibraltar Territorial Waters more generally, may be affected by global warming. Increased sea surface temperatures, changes in productivity and food webs and frequency and extent of jellyfish blooms are all areas of concern.

Terrestrial Biodiversity Risks

Geophysical changes occurring from climate change will have a wide range of impacts on terrestrial biodiversity. This includes rising atmospheric temperatures, increasing atmospheric CO2 concentrations, changes in precipitation patterns and hydrological cycles and increased frequency of extreme weather events. This could present a significant impact to terrestrial species by altering breeding seasons, timing of spring migration, latitudinal distribution, and migratory behaviour of birds.

Climate change will also define the distribution of invasive species within Europe. This can cause a catastrophic displacement of species within the food chain and affect ecosystem dynamics as a whole.

Climate change could negatively impact the Upper Rock and other natural areas, and the flora and fauna dependent on these.

Urban Flooding Risks

Instances of urban flooding are likely to increase as a result of climate change. The vulnerability of urban areas to flooding varies according to regional climate patterns and site specific factors such as topography, drainage system configuration and the capacity of soils and other natural or engineered storage elements to store excess run-off.

Gibraltar already experiences urban flooding during heavy rains, with major road arteries becoming flooded and storm drains overflowing. The fact that much of Gibraltar's sewage network still consists of combined sewage and storm drains means that in these instances, sewage can be discharged directly into the marine environment. The limited road network means that the closure of a major thoroughfare like Queensway results in considerable disruption to residents and visitors and limits the ability of emergency services to respond to other areas.



Following on from this, vulnerable areas in Gibraltar have been identified and mapped. Sea level rise and storm surges will impact buildings and infrastructure on the coastline and increased rock falls as a result of more extreme weather events will especially affect the eastern side of the Rock. The airport runway and the hospital are both on areas of low-lying land therefore these are particularly at risk of sea level rise and would affect Gibraltar's ability to connect with the rest of the world.

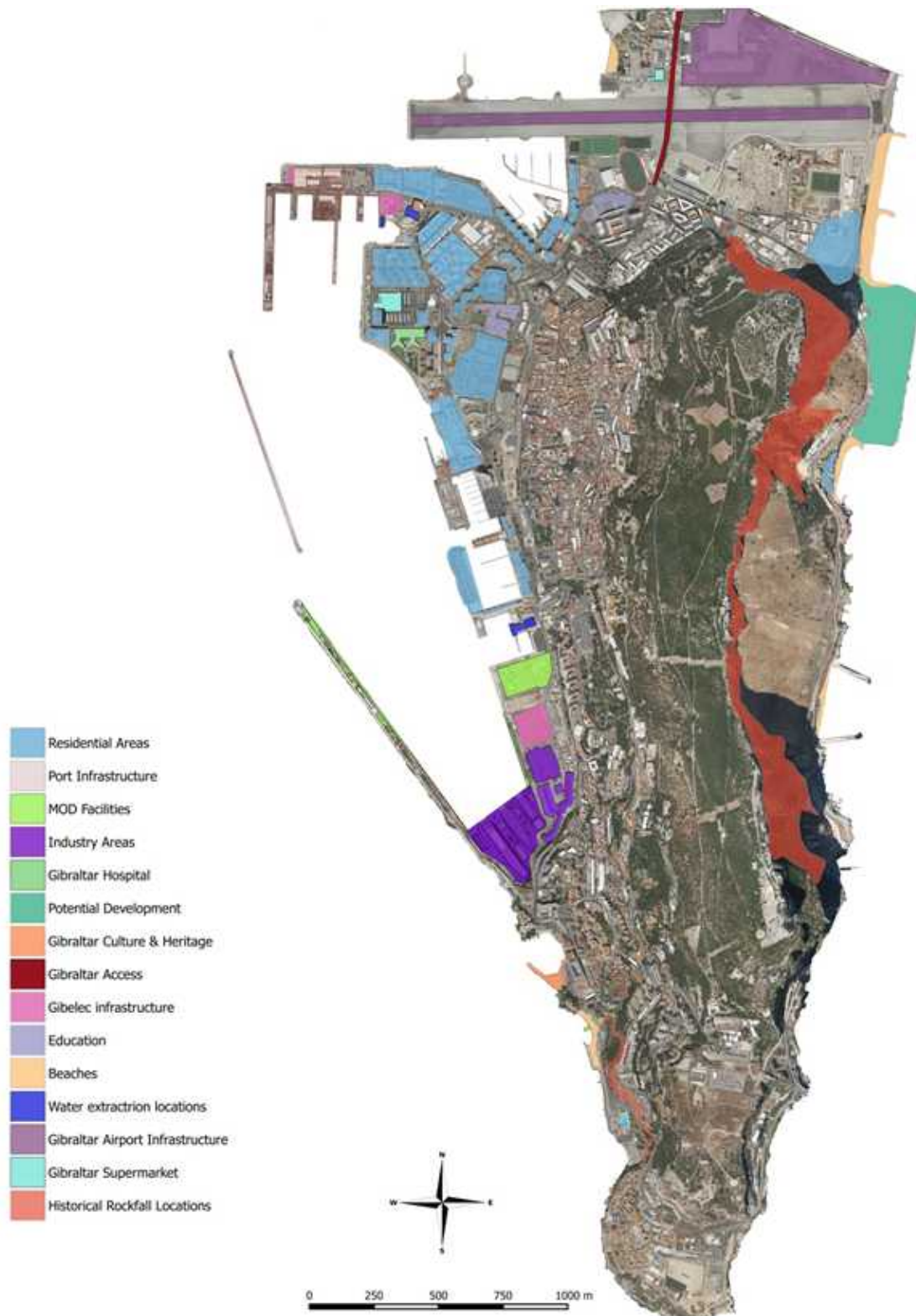


Figure 13: Infrastructure and areas of development identified as vulnerable

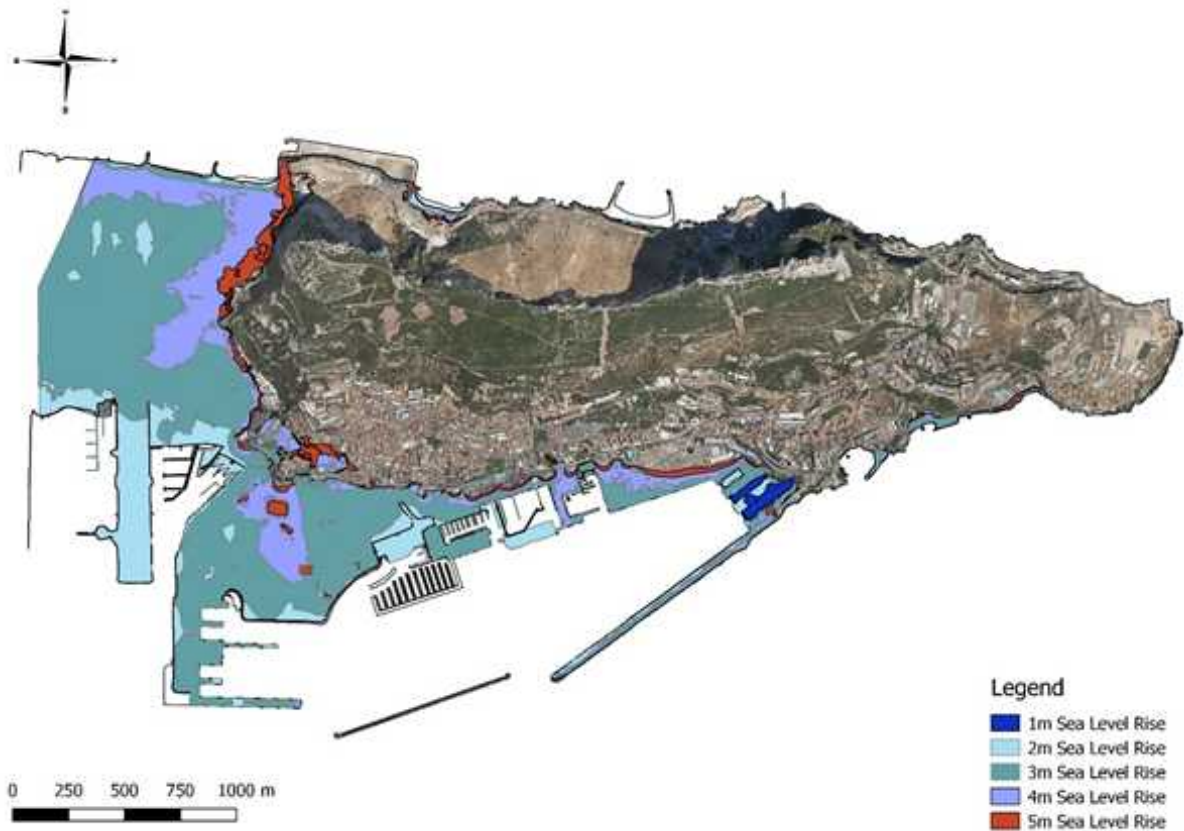
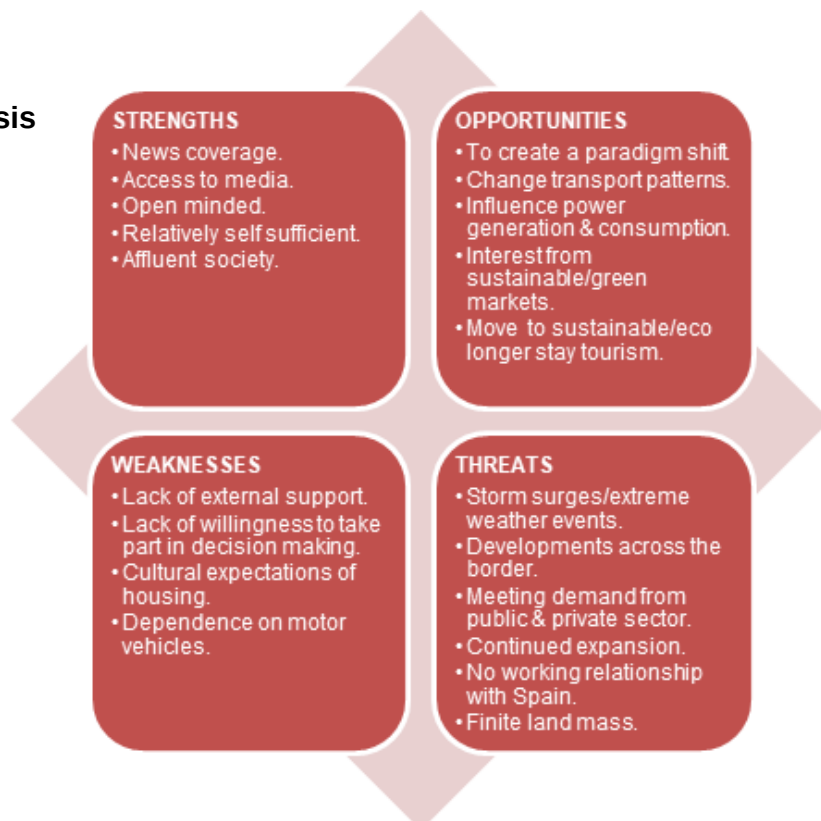


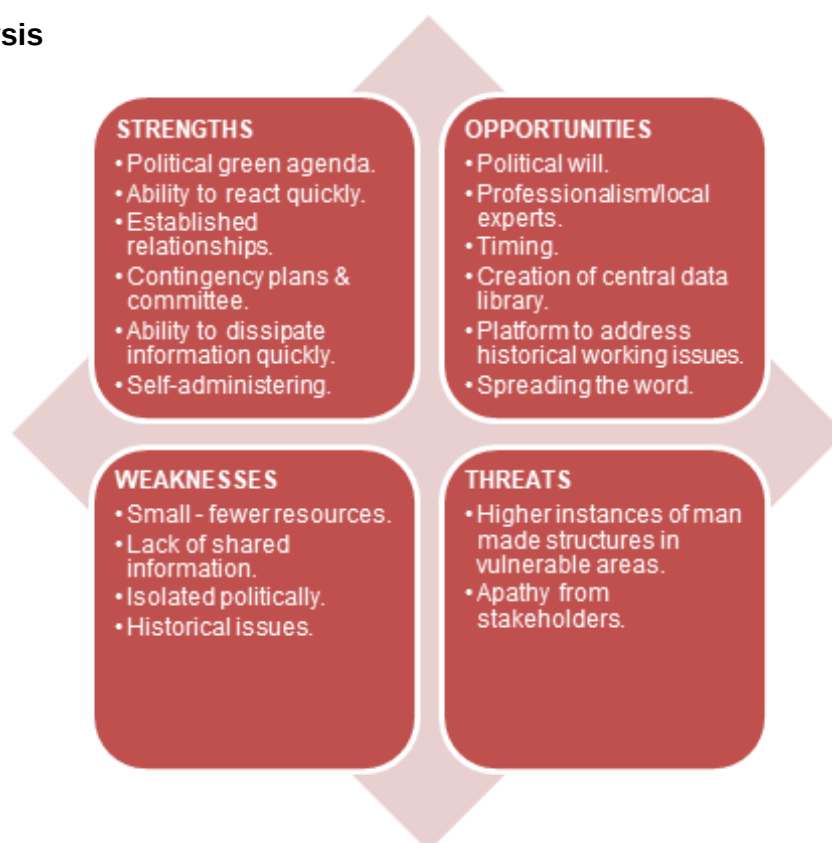
Figure 14: Vulnerable areas affected by sea level rise

To investigate all strengths, weaknesses, opportunities and threats arising from identified climate change risks, a SWOT (Strengths, Opportunities, Weaknesses, Threats) analysis has been conducted to reflect internal and external perspectives. The results of these are detailed below:

Internal analysis



External analysis



Addressing major evidence gaps

As highlighted above, risks will differ according to location highlighting the crucial importance of targeted local assessments. Depending on where specific risks are placed, different responses to managing and reducing risks will be necessary. Government has already begun to gather data on local meteorology through the creation of a met network around Gibraltar measuring ambient temperature, rainfall, solar intensity, wind speed and direction. This will provide a better picture of Gibraltar's microclimate and help to identify trends and patterns in climate.

In addition to this, Government will continue to research appropriate climate data and projections for Gibraltar, including the use of Climate-ADAPT, the World Bank Climate Knowledge Portal, and working with relevant academic institutions to fill any remaining gaps.

The CCAW group will collect information from across government, the private sector and civil society on systems and processes that could be impacted by climate change and work with relevant stakeholders to develop appropriate adaptation techniques.

IDENTIFYING ADAPTATION OPTIONS

Step 3 requires:

- Identifying suitable adaptation options to tackle local concerns.

Gibraltar has already implemented various adaptation options. These include:

- The requirement for revetments to withstand 1 in 200 year storms;
- The need to consider a 0.5 m sea level rise for all new development;
- The upkeep and maintenance of fire breaks in the Upper Rock;
- The development of independent energy and water supplies;
- The creation of city parks with several more planned to reduce the heat island effect;
- Ongoing monitoring of the tiger mosquito in Gibraltar.

Following the results of a local vulnerability assessment, Government is well equipped to rollout further initiatives specifically targeted at localised risks. To this effect, the CCAW group will be responsible for exploring eligible adaptation options to minimize climate change risks. For example, new buildings must use renewable energy to reduce dependence on the network and include green roofs to cool the building and reduce the heat island effect, when designing new roads and thoroughfares, preference must be given to non-polluting transport modes and adequate provision should be made for water run off to limit the incidence of flash floods during heavy precipitation. The CCAW Group will also consider ways in which existing infrastructure can be adapted.

ASSESSING ADAPTATION OPTIONS

Step 4 requires:

- An assessment of the feasibility of selected measures against requirements such as time-frame, costs, benefits & implementation demands;
- Prioritisation of adaptation options according to highest risks & identified gaps.

The CCAW must select adaptation options in the context of highest risks and identified gaps. To ensure good practice principles, a climate change risk assessment framework will be formalised, helping to define the magnitude of risks identified for different locations or sectors.

Probability of climate change hazard occurring	High (3)	3	6	9
	Medium (2)	2	4	6
	Low (1)	1	2	3
		Low (1)	Medium (2)	High (3)

Table 5: Climate Change risk assessment framework

IMPLEMENTATION

Step 5 requires:

- Mainstreaming climate adaptation through policies and other instruments;
- Seeking collaboration with other stakeholders to ensure a swift and efficient implementation of measures;
- Establishing a comprehensive action plan that details timelines and provisions for maintenance etc.

Once the adaptation options have been selected, an implementation plan for adaptation measures will be developed. The plan will specify roles and responsibilities, and identify resource requirements, maintenance approaches and timelines.

MONITORING & EVALUATION

Step 6 requires:

- Understanding the scope and purpose of measures put in place to evaluate effectiveness;
- Establishing roles and a programme for monitoring;
- Selecting qualitative and quantitative indicators for measuring success;
- Feeding in monitoring and evaluation data into future policies and practice.

Once adaptation measures have been put in place, it is essential to carry out continuous monitoring and evaluation of these to establish a record of their effectiveness, efficiency and resilience. Learning about what works and what does not is fundamental to the development of the adaptation plan, and improved performance of future measures.

Subject to the location and type of measures put in place, Government will determine the relevant bodies to carry out this monitoring and evaluation.



CLIMATE
CHANGE
IS REAL

7. CONCLUSION

Climate change presents a pressing and complex challenge which requires proper investment in the co-ordination of planning, policy development, delivery, as well as honest and transparent engagement with the community. HM Government of Gibraltar is committed to putting the climate emergency at the heart of its programme for government.

Under the terms of the Climate Change Act, Government will report to Parliament on the progress being made towards our emissions reductions targets. This will serve to create accountability and transparency and ensure that we deliver the promises made.

As we proceed with the implementation of this plan, change must be seen as an opportunity to do things better, rather than a burden to bear. This agenda will be driven forward by the Government together with the people of Gibraltar, to ensure that the actions we take are commensurate with the scale of the emergency we face.