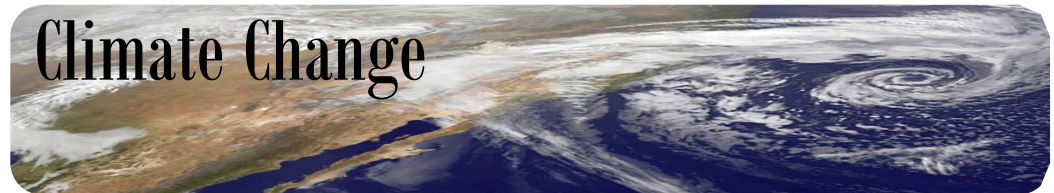




SPECIAL POINTS OF INTEREST:

- *Improving energy & water efficiency helps reduce climate change impacts.*
- *Recycling helps reduce greenhouse gas emissions.*
- *Climate change threatens many habitats and the species which depend on them.*
- *Renewable energy is a major step towards reducing greenhouse gas emissions.*
- *Our blue spaces are just as important as our green spaces and are also being impacted by climate change.*
- *More than a third of CO₂ produced since the industrial revolution has been absorbed by the oceans.*
- *Approximately 90% of all trash floating on the ocean's surface is plastic.*
- *Inevitably each of us contributes to the greenhouse gas emissions that are causing climate change. The choices we make in our homes, our travel, the food we eat and what we buy and throw away, all influence our carbon footprint.*



Climate Change

Climate change has ceased to be a scientific debate, and is no longer just one of many environmental and regulatory concerns. It is the overriding environmental issue of our time, and the single greatest challenge facing environmental regulators. It is a growing crisis which will impact the environment, the economy, food production and health.

There is worrying evidence that important tipping points, leading to irreversible changes in major ecosystems and the planet's climate system, may already have been reached or surpassed. Ecosystems as diverse as the Amazon rainforest and the Arctic tundra, for example, may be approaching thresholds of dramatic change through warming and drying. Mountain glaciers are in alarming retreat and the downstream effects of reduced water supply will affect those dependent on it for generations. Climate feedback systems and environmental effects are building across Earth systems, with repercussions we cannot anticipate.

Yet, the most dangerous climate change impacts may still be avoided if we transform our hydrocarbon based energy systems; the tools are available, we just need to apply them.



The polar bear could disappear in the wild unless the pace of global warming slows. Dependent on sea ice, the animal uses it as a floating platform to catch prey. Experts believe that the Arctic sea ice is melting at a rate of 9% per decade, endangering the polar bear's habitat and existence.

Reducing Climate Change through Energy Saving

Much of the increase in greenhouse gas emissions is as a result of burning fossil fuels for energy; therefore energy efficiency has a key role in tackling climate change. If we use our energy more wisely, we will need less energy to fulfill our needs, thereby reducing emissions.

Energy efficiency can lower energy costs, reduce local air pollutants such as small particulate matter, and make our homes and buildings more comfortable by, for example, increasing insulation and eliminating drafts. There are many simple ways in which we can reduce our energy use,

including changing to energy saving light bulbs, making it a habit to turn off lights as you leave a room, unplugging electronics when they are not in use, washing clothes at 30°C or at cold, hanging clothing out to dry instead of using the tumble dryer, drawing curtains instead of switching on the lights, etc.

Another great way of saving energy is by saving water! We obtain our fresh-water through the desalination of sea-water; which is a very energy intensive process - therefore if we consume less we not only save water but energy too!

Climate Change & Recycling



Gibraltar's recycling bins.

“Recycled paper produces 73% less air pollution than if it was made from virgin raw materials.”

By recycling you can help to reduce the need for the extraction of virgin raw materials from the earth, through activities such as mining and deforestation. This is important because mining and deforestation activities contribute substantially to pollution and the emission of greenhouse gases into the atmosphere. In addition, deforestation also reduces the amount of trees available on earth to help reduce the accumulation of greenhouse gases like carbon dioxide (CO₂).

When you recycle, less fossil fuel needs to be burnt for the manufacturing process, this is because production processes using recycled materials require less energy.

When you recycle, you also divert materials away from waste disposal systems like landfills and incinerators, therefore also helping to reduce pollution arising from these waste disposal methods.

Did you know that:

- Recycling aluminium cans saves 95% of the energy used to make cans from new material!
- Recycled paper produces 73% less air pollution than if it was made from raw materials.
- Plastic can take up to 500 years to decompose - recycle it instead!
- One recycled plastic bottle would save enough energy to power a 60-watt light bulb for 3 hours.
- Each ton of recycled paper can save 17 trees!
- Glass and aluminium can be recycled again and again!
- Oil which is a non-renewable resource is in all plastic items.
- 25 two-litre bottles can be recycled into an adult-size fleece jacket .

Reducing Climate Change through Renewable Energy

Renewable energy sources play a role in providing energy services in a sustainable manner and, in particular, in mitigating climate change. They are effective in lowering CO₂ emissions because they have a low carbon intensity, with emissions per unit of energy output typically 1-10% compared to fossil fuels.

H.M. Government of Gibraltar is committed to producing energy in an environmentally sound and sustainable manner by investing in renewable energy sources and to producing at least 15% of its energy from renewables by 2020, as required under the Directive on Promotion of the Use of Energy from Renewable Sources, with a view to increasing this in the long term.

Steps towards renewable energy have already been taken, with solar thermal technologies having been installed at the Tercentenary Hall as part of a pilot project. Four flat plate collectors and four evacuated tube collectors have been installed; half of these have been installed facing south and the other half facing south-west. These systems will be monitored over a period of

twelve months to gather data and ascertain which orientation and system are the most efficient.

A renewable energy system is also underway at the hospital. This will comprise of roof mounted photovoltaic panels providing the primary energy to electrically power an array of modular heat pumps. The net effect will be to considerably reduce the hospital's dependence on the present fossil fuelled diesel boilers.

At the GASA swimming pool solar thermal energy is being harvested to heat the pool and provide hot water and solar photovoltaic energy is being used to dehumidify the pool and power the heat pump. In addition, a heat recovery system has also been installed to provide adequate ventilation and cooling when needed.

Solar powered street lighting has also been introduced and the new power station will also include a heat recovery system to provide an additional output of over 4 MWe.



Solar panels at the Tercentenary Hall.

Our Oceans & Reefs

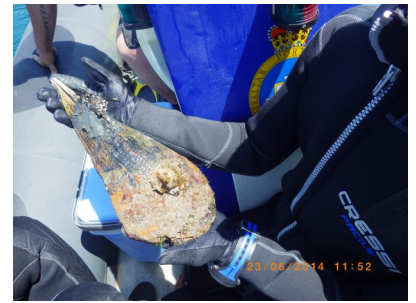
Our blue spaces are just as important as our green spaces and are also being impacted by climate change. More than a third of emissions produced since the industrial revolution has been absorbed by the oceans, where it reacts with seawater to form carbonic acid. So far, we've added enough carbon to shift the pH of the world's waters from 8.2 to 8.1. This figure may not appear to be large, but the acidity of the water is measured on a logarithmic scale, meaning a shift by 0.1 to 0.15 pH units represents an increase of about 30%.

The first to feel the impact are sea creatures, which use calcium carbonate to form their shells and exoskeletons. The less alkaline water wears away at crabs, mollusks and sea snails and bleaches coral reefs. This in-turn impacts fish populations, which affects seabird populations. If you combine this with over-fishing and the discharging of pollutants,

it paints a grim picture for our beautiful oceans.

In 2013, the Department created the North West Artificial Reef System as part of the wider artificial reef programme to help improve fish stocks and benthic habitats in our waters. The second phase of this project is a Marine Ecosystem Restoration, which will involve the re-introduction of species that were known to exist in the area, such as fan mussels, oysters and sea-grasses, the latter being a tremendously important source of food, oxygen and habitat, as well as an excellent carbon sink.

The Department has also been involved in the translocation of protected marine species in response to developmental pressures. Species that have been relocated and protected thus far, include the Ribbed Mediterranean limpet, spider crabs and fan mussels.



Fan mussels and spider crabs relocated by the Department of the Environment.

Over 100,000 marine mammals and one million seabirds die each year from ingesting or becoming entangled in plastic.

Plastic Pollution & Our Oceans

Plastic pollution affects every waterway, sea and ocean in the world and constitutes approximately 90% of all trash floating on the ocean's surface, with 46,000 pieces of plastic per square mile!

So why is there so much plastic in the ocean? Unlike other types of trash, plastic does not biodegrade; instead, it photo-degrades with sunlight, breaking down into smaller and smaller pieces, but they never really disappear. These plastic pieces are eaten by marine life, wash up on beaches, or break down into microscopic plastic dust.



Plastic rubbish washed onto the 'seven sisters' beach and removed during Clean Up the World Day 2014 by the Department of the Environment.



Plastic pollution does not just harm marine species. It's also harmful to people. As plastic debris floats in the seawater, it absorbs dangerous pollutants like PCBs, DDT and PAH. These chemicals are highly toxic and have a wide range of chronic effects, including endocrine disruption and cancer-causing mutations. The concentration of PCBs in plastics floating in the ocean has been documented as 100,000 to 1 million times that of surrounding waters. When animals eat these plastic pieces, the toxins are absorbed into their body and passed up the food chain.

Furthermore, as plastics break apart in the ocean, they also release potentially toxic chemicals such as bisphenol A (BPA), which can then enter the food web. When fish and other marine species mistake the plastic items for food, they

ingest the particles and pass toxic chemicals through the food chain and ultimately to our dinner plates.

Plastic pollution in the world's oceans now ranks alongside climate change as one of the biggest issues facing our planet. Cleaning up our oceans may seem an almost impossible challenge but we can all do our bit to help by:

- Cutting disposable plastics out of your routine, bringing your own bag to the store, choosing reusable items where possible, purchasing plastic with recycled content.
- Managing your rubbish properly!
- Recycling! - Each piece of plastic recycled is one less piece of waste that could end up in our oceans.
- Never littering!
- Getting involved! Participate in local cleanups in your area and look after your beach.
- Remembering that our lands and seas are connected.
- Picking up plastic bags and bottles when out at sea and disposing of them properly.

How large is your carbon footprint?

A carbon footprint is defined as:

The total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of CO₂.

Your carbon footprint is measured by the amount of CO₂ you produce.

Inevitably, in going about our daily lives - driving, heating or cooling our homes, eating, washing - each of us contributes to the greenhouse gas emissions that are causing climate change and our increasing carbon footprint is having profound effects on the environment. Yet, there are many things each of us, as individuals, can do to reduce our carbon emissions. The choices we make in our homes, our travel, the food we eat and what we buy and throw away, all influence our carbon footprint. We can all help our environment by working towards reducing our carbon footprint.



Reduce the Carbon Footprint of Your Home

- Lighting: use energy efficient lighting.
- Heating and Cooling: keep your heating and cooling systems tuned, 21°C is the optimal temperature.
- Appliances: when replacing appliances check the energy label - get A or A+ rated appliances.
- TV's, chargers: switch them off or unplug them to prevent "vampire" energy loss from electricity usage by leaving appliances on standby.
- Use re-chargeable batteries in remote controls, toys, etc.
- Insulate the water heater.

Reduce the Carbon Footprint of Your Office

- Utilise power saving modes on your computers, tablets and phones.
- Only print documents when you really need to, print doubled sided and use 100% recycled paper.
- Turn off lights and air-conditioning or heating units when leaving your office.
- Make use of natural light and switch off lights when not needed.
- At the end of the day switch off computers, printers, photocopiers and lights.
- Consider a laptop when it's time to purchase a new computer. Laptops use less energy than desktops.

Reduce the Carbon Footprint of Your Daily Travels and Holidays too!



- How do you travel to work or to school? Could you walk, cycle or get the bus, instead of using private cars or motorcycles? Could you car-pool?
- Combine trips if using the car.
- Think! Would it be quicker to walk?
- Do you need to take this trip - could you conference call instead?
- Fly nonstop - nonstop flights are better than connecting flights.
- Purchase electronic-tickets for airline travel whenever possible.
- Use the train or buses when abroad instead of private vehicles.
- Participate in hotel linen environmental programs by not having your sheets and towels changed every day.
- While you're away - turn your stuff off, what's the point of things being on when no ones home?

Reduce the Carbon Footprint of Your Life!

- Reduce! Reuse! & Recycle!
- Eat less meat - meat production involves huge amounts of water, land, energy and pollution compared to plant foods.
- Don't waste food - if food waste were a country it would rank no. 3 for greenhouse gas emissions!
- Think before buying and buy only what you need - did you know its takes almost 7,000 litres of water to grow enough cotton to produce just one pair of regular blue jeans?

We can all make a difference to help limit Climate Change.



Our planet is beautiful, lets ensure it stays that way!