



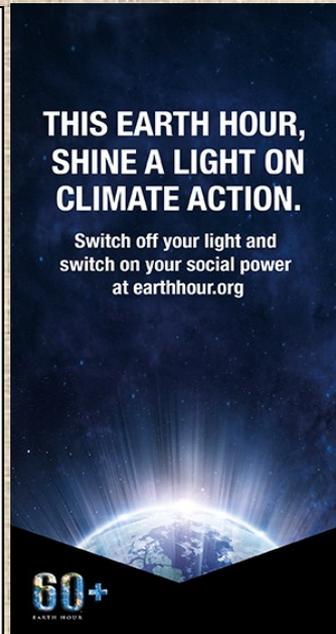
L&P Group Ltd

Climate Change & Earth Hour

Earth Hour has been celebrated for the past 10 years as a reminder to turn off unnecessary lights and reduce our energy use as much as possible. This symbolic one hour is aimed at encouraging more sustainable behaviours and reducing our environmental impact on the planet.

Currently, the rate at which humanity is using up resources would require 1.5 planets to meet our needs. In other words, we are demanding natural resources at a rate 44% faster than nature can regenerate itself. This is also the reason behind global warming. The rate at which we are producing Greenhouse Gas emissions (GHG), particularly those produced by burning of fossil fuels (e.g. cars and electricity), is faster than the rate the forests can process this and convert it into Oxygen. As a result, Carbon Dioxide (the main GHG) has accumulated in the atmosphere and is the main reason for climate change.

The scientific consensus on climate change is that human activities are responsible for global warming. In order to avert the worst effects of climate change, it is necessary to reduce our dependency on fossil fuels in favour of renewable energy sources, such as solar, wind power and so on. However, a very important part of the transition to a low-carbon future depends on us and our ability to respond to these challenges. One way to do this is by reducing our energy consumption. Whether it is through choosing energy efficient products, or adopting more sustainable behaviour, Earth Hour is a reminder of the power that is in our hands to help prevent the worst effects of climate change. In this edition, we look at climate change as a driver for innovation and collaboration, while also exploring the role that ecosystem services play in our lives and their interaction with climate change. **This year, Earth Hour is celebrated on Saturday, March 25th from 8:30pm to 9:30pm (Irish Time).**



- In this Issue**
- In the second issue of our Earth Hour report we discuss the interaction between climate change and ecosystem services.
 - These are the benefits we derive from nature which contribute to making life possible on earth, and are alas, taken for granted.
 - We also look at what the corporate sector is doing to address climate change.
 - Happy Earth Hour!



Science-Based Goals, Innovation & Collaboration

During the 2015 Paris Climate Conference, leaders from all nations agreed to limit the warming of the planet to a rise in temperature of no more than 2 degrees Celsius. To address this, companies have begun to set carbon reduction targets which are aligned with the levels of reductions scientists believe are necessary to prevent the worst effects of climate change. These are called Science-Based Goals.

A Sectoral Approach

Given the nature of certain industry sectors, the range of companies setting science-based goals



can vary from food and drink companies (e.g. Coca Cola, Kellogg) to the usual suspects of manufactures and distributors of electricity and gas (e.g. Enel, EDP).

Setting science-based goals also prepares the corporate world to adjust to a carbon-restrained future, leading to innovation and economic competitiveness.

Collaboration has become the winning formula in the development of new technologies. Take the automotive industry for example. Carmakers are actively collaborating with their peers in the development of key design strategies. Toyota, a long-time player in the Electric Vehicle (EV) industry, is collaborating with BMW, a well-known maker of diesel cars, developing battery technology for EVs.

Others, such as French carmaker Renault, have opted for a more radical approach, as it plans to stop the production of diesel cars entirely in the near-term. Renault has invested heavily in EV technology, as the

company prepares to meet tighter emission standards, which are expected to start in 2019. These standards aim to reduce pollution (diesel cars contribute to acid rain and respiratory illnesses) as well as CO2 emissions which contribute to climate change.

Against this background, carmakers are being forced to invest heavily in emission treatment systems, which will only become more expensive as emission targets become stricter. On the other hand, EV technology will continue to become cheaper, as more efficient batteries are developed and economies of scale reduce the costs associated with the industry (the cost of solar power is also declining).

While companies work to adapt and transform the automotive industry, it is also the responsibility of our governments to bolster infrastructure to support EV, not just by providing sufficient charging points, but also increasing electricity generation from renewable sources.

Climate Change & Ecosystem Services

Ecosystem services are benefits we receive from nature, most of which are essential to life (see a list of ecosystem services in chart opposite this section). As these services are always in the background, we tend to take them for granted.

However, the effects of climate change are a reminder of the vulnerability of ecosystem services. Let's take pollination as an example. Without pollination, food plants that rely on pollinators (e.g. bees, insects) can't produce the fruits that we eat.

Research has shown climate change is affecting the interaction between plants and pollinators. Many plants are blooming earlier (due to the warming climate), therefore creating a mismatch between the time the flowers open and their pollinators emerge from hibernation. The declining population of bees and other pollinators is a further cause for concern, which has been largely attributed by scientists to climate change, habitat loss, pesticide use and disease.

According to the UN Food and Agriculture Organisation, the ecosystem service provided by pollinators is worth an estimated €153 billion annually worldwide. It contributes to the yield and quality of at least 70% of the world's major food crops, especially nutritionally important fruit and vegetable crops.



Source: metrovancover.org

Ecosystem Services: Seagrass Meadows

Seagrass meadows, which sustain marine life and help to protect shorelines from erosion, are also known to help to combat climate change due to their ability to capture and sequester large amounts of CO₂. In fact, seagrass meadows are far more important "carbon sinks" that scientists had previously realised. Just like forests, seagrass has roots and stems, absorbs carbon from the environment and converts it into oxygen for growth. They grow flowers, pollen and seeds underwater and are considered the lungs of the sea.

However, the capacity of seagrass to store carbon differs markedly from that of forests. To put this in numbers, forest can store approximately 30,000 metric tons of carbon per square kilometre. In contrast, seagrass can store up to 83,000 metric tons of carbon per square kilometre, and unlike forests, seagrass locks up 90% of CO₂ absorbed beneath the seafloor and can build on this indefinitely. This ability to retain and store long term CO₂ underground is called carbon sequestration, and is one of the most promising methods to mitigate global warming.

Cleaning the Oceans

Seagrasses also draw fertiliser runoff from agriculture and other pollutants out of the water and store them away in meadow soil. These water-filtering properties have been reinforced by a recent study which found seagrass plays an important role in removing pathogens, which are linked to a myriad of human-related illnesses, from the water.

A study by Cornell University found that levels of harmful E-coli bacteria are significantly lower in areas covered with seagrass meadows. In seagrass-free areas, the levels of E-coli are 10 times higher than the limit set by regulators for recreational water. The exact mechanisms behind this process to eliminate or inhibit pathogens is still not clear. Most likely, it is an interaction of natural biocides and nutrient removal which alters the soil and water chemistry.

Endangered Species

Despite the important ecosystem services they provide, seagrass meadows have become one of the most endangered ecosystems on the planet. Globally, we are losing seagrass coverage at a rate of



1.5% per year. This amounts to two football fields of seagrass lost each hour. Direct and indirect human activities are the main reasons behind the loss of these ecosystems. Dredging, water pollution and the runoff of fertilisers are threatening seagrass beds. As fertiliser runs into oceans, it encourages algae growth due the excess nutrients, such as nitrogen, found in fertilisers. As excess algae grows on the surface, less sunlight can get through the water. Without sunlight photosynthesis stops, and seagrass gradually dies. This has been found to be the case in shorelines in Ireland and the UK, where nitrogen levels have been found to be 75% higher than global values. Historically, at least 50% of these habitats have been lost in Ireland and the UK and are now protected under EU legislation.

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