

# My Sustainable Living

## Category-1 Guidebook

For students from preschool to grade 3



Green Homeland  
Pakistan

[www.greenhomelandpakidstan.pk](http://www.greenhomelandpakidstan.pk)

## About the Guidebooks

Environmental sustainability has become a crucial concern in the 21st century. Since the industrial revolution began, troubling trends of environmental decline have emerged. The primary challenge facing today's world is to establish societal, systemic, and commercial frameworks that reverse these trends by acknowledging and nurturing the intricate connections between the natural and human environments. Educators, entrepreneurs, chemists, journalists, psychologists, and analysts must all grasp how our economic, natural, and social systems interrelate to sustain human civilization collectively.

Our inclusive (value-based) educational programme offers students opportunities to delve deep into the concept of "sustainability." The 'My Sustainable Living' guidebooks aim to familiarize Green Ambassadors and their families with a wide array of issues, ranging from conserving natural landscapes to fostering sustainable communities. Your practical efforts will complement the exploration of these topics. Studying the guidebooks and putting their lessons into practice will empower students and faculty alike to tackle real-world challenges within our campus and community.

These foundational experiences will equip participants with a solid foundation for thriving in the future green economy. Learning to calculate carbon footprints, understanding triple bottom line accounting, and connecting social, environmental, and economic systems will be invaluable skills in the coming decades.

The 'My Sustainable Living' guidebooks are designed to bring an awareness of a variety of environmental concerns to create a pro-environmental attitude and a behavioural pattern in society that is based on creating sustainable lifestyles. It is recommended that school administrations keep these guides available to students even after the 'My Sustainable Living' activity to incorporate the subjects into their curricular studies to make it an inclusive education.

Establishing a comprehensive project 'My Sustainable Living' for the Green Ambassadors and their families had been a real challenge with its capacity to facilitate all Green Ambassadors in their different educational grades, having diverse subjects and studying in varied educational institutes. There were many aspects to make this happen however, GHP's technical team, our global partners and volunteer associates have nicely contributed in successfully accomplishing the task.

And implementation of this project was never possible without active participation by the dedicated managements of our Green Partner Schools, their Campuses, Green Ambassadors and the Parents. We thank you and believe in your valuable association in making a new sustainable and dynamic society protected from the environmental dangers.

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This guidebook has been established under the 'Green Studies' approach, without using the booklet or any of its part as printed material.



**Green Homeland Pakistan**

# Air

(Artwork)



# A

## For Supporters

Air is the invisible mixture of gases that surrounds Earth. Air contains important substances, such as oxygen and nitrogen, that most species need to survive.

Air Pollution is the release of pollutants such as gases, particles, biological molecules, etc. into the air that is harmful to human health and the environment.

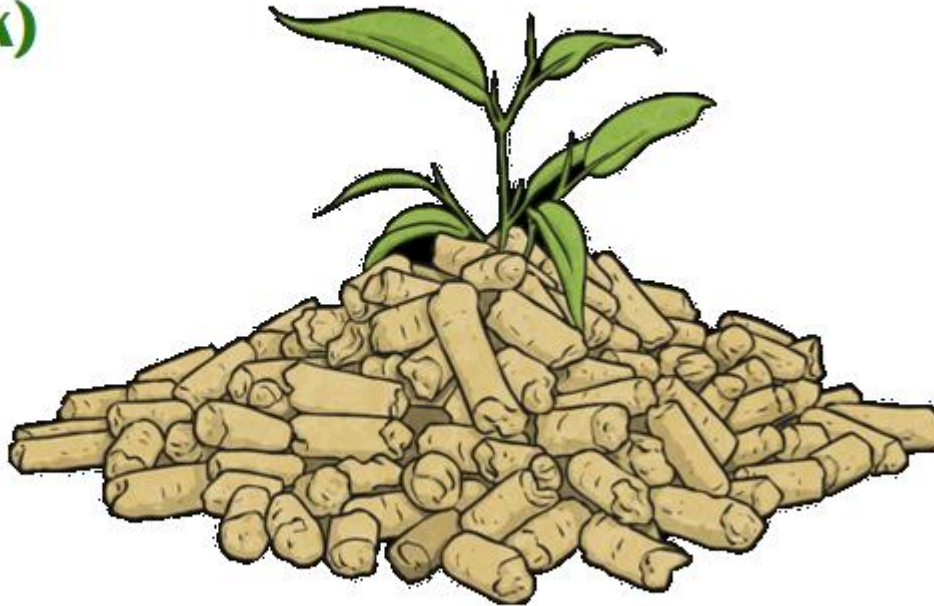
Air pollution refers to any physical, chemical or biological change in the air. It is the contamination of air by harmful gases, dust and smoke which affects plants, animals and humans drastically.

There is a certain percentage of gases present in the atmosphere. An increase or decrease in the composition of these gases is harmful to survival. This imbalance in the gaseous composition has resulted in an increase in earth's temperature, which is known as global warming.

# Biomass

(Artwork)

B



## For Supporters

Biomass, in ecological terms, is the sum total mass of living organisms such as plants, animals, in a specific unit of area or volume of habitat. In ecological terms, biomass refers to the various types of living organisms in a particular environment or ecosystem.

Biomass is renewable organic material that comes from plants and animals. Biomass can be burned directly for heat or converted to liquid and gaseous fuels through various processes.

Biomass can be studied at different levels including the species biomass (the mass of one or more species), the community biomass (the mass of all species in a community), or the ecosystem biomass (the mass of all communities in an ecosystem). Biomass can also refer to a particular group of species like plant biomass, heterotrophic biomass (mass of organisms that obtain nutrition by feeding on other organisms), or a specific type of habitat such as terrestrial biomass or ocean biomass.



# Composting

## (Artwork)

C



### For Supporters

Composting is a controlled, aerobic (oxygen-required) process that converts organic materials into a nutrient-rich, biologically-stable soil amendment or mulch through natural decomposition. The end product is compost. Microorganisms feed on the materials added to the compost pile during the composting process.

Composting has multiple benefits. Composting is a great way to recycle the organic waste we generate at home. Food scraps and garden waste combined make up more than 28 percent of what we throw away

Compost is an essential tool for improving large-scale agricultural systems. Compost contains three primary nutrients needed by garden crops: nitrogen, phosphorus, and potassium. It also includes traces of other essential elements like calcium, magnesium, iron, and zinc.

# Dam

(Artwork)

D



## For Supporters

Dam is a barrier that is impervious in nature and is built across a river to create a reservoir on its upstream. This is a hydraulic structure made for various purposes. They are used to increase the amount of water available for generating hydroelectric power, to reduce peak discharge of floodwater created by large storms or heavy snowmelt, or to increase the depth of water in a river in order to improve navigation and allow barges and ships to travel more easily. Their construction involves geospatial data for planning and other engineering work.

Dams are massive structures that retain water for domestic use, irrigation, hydroelectricity generation, and for use in industrial processes. However, when dams block the flow of water across a river, they trap enormous amounts of lake sediments in their reservoirs.

# Earth

(Artwork)

# E



## For Supporters

Earth, third planet from the Sun and the fifth largest planet in the solar system in terms of size and mass. Its single most outstanding feature is that its near-surface environments are the only places in the universe known to harbour life. It is designated by the symbol  $\oplus$ .

Earth has a very hospitable temperature and mix of chemicals that have made life abundant here. Most notably, Earth is unique in that most of our planet is covered in liquid water, since the temperature allows liquid water to exist for extended periods of time. Earth's vast oceans provided a convenient place for life to begin about 3.8 billion years ago.

We rely upon Earth for our existence in many different ways. Its resources feed us and provide the materials of our way of life. Even modest changes to Earth's systems have had profound influences on human societies and the course of civilization.



# Forest (Artwork)



F

## For Supporters

A forest is a complex ecological system in which trees are the dominant life-form. A forest is nature's most efficient ecosystem, with a high rate of photosynthesis affecting both plant and animal systems in a series of complex organic relationships.

Sustainable forestry is important in the fight against climate change and how we manage forest ecosystems for future generations. Overall, the number of forests on the planet is constantly decreasing.

Rather than leave forest ecosystems completely untouched, it's about maintaining or enhancing their productivity, diversity, and resilience. At the same time, sustainable forestry methods also lead to the production of natural resources and services that directly benefit local communities and the wider world.

# Gas

(Artwork)



# G

## For Supporters

Natural gas is the most environmentally friendly fossil fuel because it burns cleaner. In power plants, natural gas emits 50 to 60 percent less carbon dioxide (CO<sub>2</sub>) than regular oil or coal-fired power plants. It also emits greenhouse gases with a lower life cycle into the atmosphere.

Greenhouse gases (also known as GHGs) are gases in the earth's atmosphere that trap heat. During the day, the sun shines through the atmosphere, warming the earth's surface. At night the earth's surface cools, releasing heat back into the air. But some of the heat is trapped by the greenhouse gases in the atmosphere.

By trapping heat from the sun, greenhouse gases have kept Earth's climate habitable for humans and millions of other species. But those gases are now out of balance and threaten to change drastically which living things can survive on our planet Earth.

# Heat

(Artwork)



H

## For Supporters

Heat is the transfer of thermal energy from one physical system to another system or from one region in a physical system to another region. A system, in such an instance, might be a mug of coffee, room full of air, cast-iron frying pan, mountain lake, piece of scrap metal, or any number of other physical objects or substances, including an energy source such as a campfire or the sun.

A heat wave occurs when the daily maximum temperature of more than five consecutive days exceeds the average maximum temperature by 5 °C (9 °F), the normal period being 1961–1990.

Heat waves are extreme climate events that have become a major societal concern since they are expected to increase in frequency, intensity, and duration throughout the 21st century. A recent study in *Reviews of Geophysics* explores the current understanding of heat waves and the main scientific challenges.

# Ice

(Artwork)



## For Supporters

Ice is water that is frozen into a solid state, typically forming at or below temperatures of 0 °C, 32 °F, or 273.15 K. It occurs naturally on Earth, on other planets, in Oort cloud objects, and as interstellar ice.

The **polar ice caps** are dome-shaped regions of ice that exist in the northern and southernmost regions of a planet. On Earth, the polar ice caps cover about 10% of the planet and are an estimated 70% of our freshwater supply. Unfortunately, increasing average global temperatures have resulted in a gradual and worrisome change in our polar regions. The melting of the polar ice caps has a direct impact on the planet's climate. This includes global temperature, greenhouse gases, sea level, international trade, coastal communities, and wildlife.

Rapid **glacial** melt in Antarctica and Greenland also influences ocean currents, as massive amounts of very cold glacial-melt water entering warmer ocean waters is slowing ocean currents. And as ice on land melts, sea levels will continue to rise.



# Jute

(Artwork)

J



## For Supporters

Jute is a biodegradable and renewable resource. This means it can break down naturally over time, reducing its environmental impact. Additionally, the jute plant requires minimal pesticides and fertilisers. This makes it a sustainable choice.

Jute fibre's primary use is in fabrics for packaging a wide range of agricultural and industrial commodities that require bags, sacks, packs, and wrappings. Wherever bulky, strong fabrics and twines resistant to stretching are required, jute is widely used because of its low cost.

In the campaign of saving the planet, everyone prefers to use jute bags over plastic. Plastic adversely affects the environment. On the contrary, jute not only comes from a natural source but also has many benefits of usage. Other than bags, it's used in manufacturing carpets, rugs, baskets, mats and many more useful items.

# Kerosene

(Artwork)



# K



## For Supporters

Kerosene, or paraffin, is a **combustible hydrocarbon liquid** which is derived from petroleum. It is widely used as a fuel in aviation as well as households.

Kerosene is typically pale yellow or colourless and has a not-unpleasant characteristic odour. It is obtained from petroleum and is used for burning in kerosene lamps and domestic heaters or furnaces, as a fuel or fuel component for jet engines, and as a solvent for greases and insecticides.

All fossil fuels, including kerosene, release 'greenhouse gases' like carbon monoxide. This is directly attributed to global warming. However, if you still rely on fossil fuels for home heating, kerosene is one of the most environmentally-friendly options.

Therefore, kerosene has certain advantages as well. It can be used as a synthetic kerosene flue gas, which is energy-saving and environmentally friendly, reducing accidents and black smoke during combustion.

# Landfill

(Artwork)



L



## For Supporters

Landfill" is a collective term for facilities subject to authorisation for the landfill of waste. Landfills are sites where various types of waste can be gathered and an effective waste control carried out to ensure that the landfilling is environmentally optimal.

Along with methane, landfills also produce carbon dioxide and water vapour, and trace amounts of oxygen, nitrogen, hydrogen, and non-methane organic compounds. These gases can also contribute to climate change and create smog if left uncontrolled.

Environmental pollution has inherently been associated with health issues including the spread of diseases, i.e., typhoid and cholera, some of which are largely seen as waterborne diseases. There are also non-communicable diseases (NCDs) that are brought about due to environmental pollution, such as cancer and asthma, or several defects evident at birth among infants. The significant adverse effects of environmental pollution on health-related outcomes have largely been evidenced in low-income countries, where an estimated 90% of the deaths are, in fact, caused by that type of pollution.

# Moon

(Artwork)



# M

## For Supporters

The Moon is Earth's only natural satellite. It orbits at an average distance of 384,400 km (238,900 mi), about 30 times the diameter of Earth. Tidal forces between Earth and the Moon have over time synchronized the Moon's orbital period (lunar month) with its rotation period (lunar day) at 29.5 Earth days, causing the same side of the Moon to always face Earth. The Moon's gravitational pull – and to a lesser extent, the Sun's – are the main drivers of Earth's tides.

The brightest and largest object in our night sky, the Moon makes Earth a more liveable planet by moderating our home planet's wobble on its axis, leading to a relatively stable climate. It also causes tides, creating a rhythm that has guided humans for thousands of years.

The Moon was likely formed after a Mars-sized body collided with Earth several billion years ago.

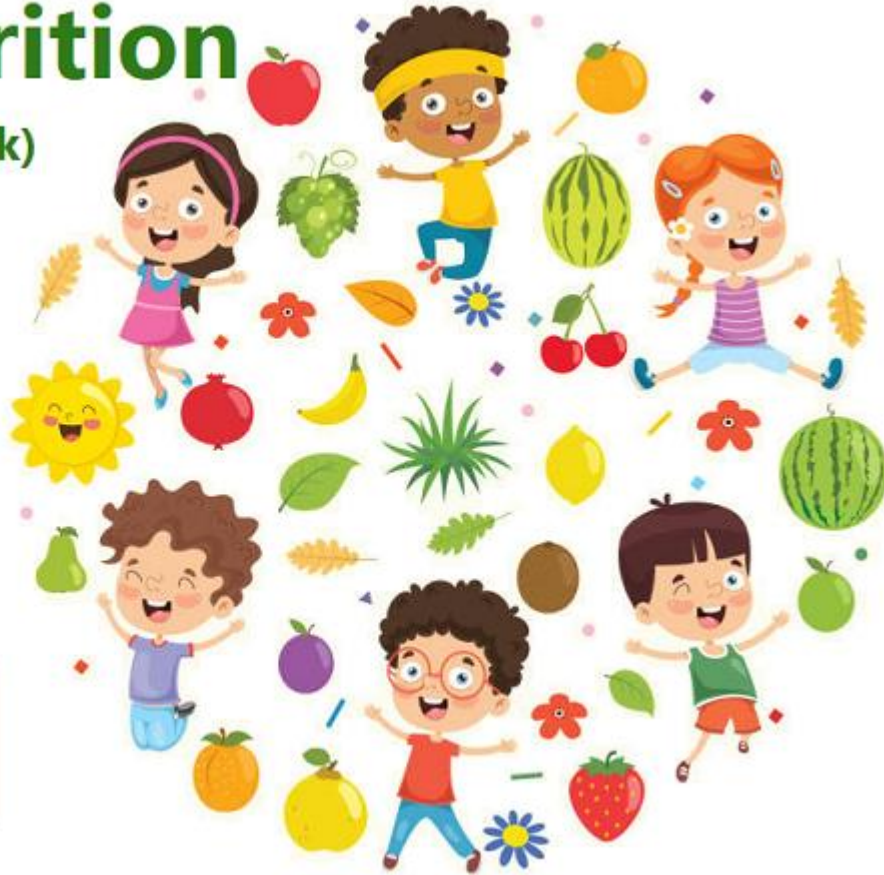
Earth's only natural satellite is simply called "the Moon" because people didn't know other moons existed until Galileo Galilei discovered four moons orbiting Jupiter in 1610. In Latin, the Moon was called Luna, which is the main adjective for all things Moon-related: lunar.



# Nutrition

(Artwork)

# N



## For Supporters

Nutrition is the intake of food, considered in relation to the body's dietary needs. Adequate food is vital in keeping people alive. Good nutrition is essential to good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity. Nutrition impacts the development process at every stage of the life-cycle from conception to death. Freedom from hunger and malnutrition is a basic human right and their alleviation is a fundamental prerequisite for human and national development.

Nutrition is a critical part of health and development. Better nutrition is related to improved infant, child and maternal health, stronger immune systems, safer pregnancy and childbirth, lower risk of non-communicable diseases (such as diabetes and cardiovascular disease), and longevity.

# Organic

(Artwork)

O



## For Supporters

Organic describes things that are natural or related to nature. In common usage, organic is used to mean “healthful” or “close to nature.” It can also describe foods grown without artificial pesticides or fertilizers. In other uses, organic refers to living things or material that comes from living things.

Organic farming can be defined as a system of management and agricultural production that combines a high level of biodiversity with environmental practices that preserve natural resources and has rigorous standards for animal welfare.

Organic foods are crops that were produced without using synthetic pesticides, fertilizers or other genetically modified components. They also include animals’ products such as cheese, milk, meat or honey that were also produced free of growth hormones, antibiotics.

Organic fashion is about brands creating clothes in a way that recognizes and protects the environment, trying to have the smallest footprint possible. Generally, organic clothing is made from materials produced according to organic agricultural standards.

# Pakistan

(Artwork)

P



## For Supporters

Pakistan is one of the few countries in the world to have **all types of geological structures**. Pakistan's geography is a mixture of landscapes where you can find plains, deserts, forests, hills and plateaus. There are coastal areas along the Arabian Sea and mountains of the Karakoram Range in the northern areas. There are green and dry mountains and variety of rich land for cultivation and waterfalls. Geologically, Pakistan overlaps the tectonic plates of Eurasia, Iran and India.

**The Indus River basin is a large, fertile floodplain and high-quality silted land where extensive irrigation projects have made the area an agricultural destination for thousands of years.** Pakistan is one of the richest countries in the world in terms of natural resources, but we couldn't adequately capitalize on them in the past. Now, it's time for us all Pakistanis to leave no stone unturned to **make our beloved homeland one of the most successful countries in the world.**







# Rain

(Artwork)

# R



## For Supporters

Rain is liquid precipitation: water falling from the sky. Raindrops fall to Earth when clouds become saturated, or filled, with water droplets. Millions of water droplets bump into each other as they gather in a cloud. When a small water droplet bumps into a bigger one, it condenses, or combines, with the larger one.

Rain is a major component of the water cycle and is responsible for depositing most of the fresh water on the Earth. It provides water for hydroelectric power plants, crop irrigation, and suitable conditions for many types of ecosystems.

The major cause of rain production is moisture moving along three-dimensional zones of temperature and moisture contrasts known as weather fronts. If enough moisture and upward motion is present, precipitation falls from convective clouds (those with strong upward vertical motion) such as cumulonimbus (thunder clouds) which can organize into narrow rainbands.

# Solar (Artwork)



## For Supporters

Solar energy is heat and radiant light from the Sun that can be harnessed with technologies such as solar power (which is used to generate electricity) and solar thermal energy (which is used for applications such as water heating).

As a renewable source of power, solar energy has an important role in reducing greenhouse gas emissions and mitigating climate change, which is critical to protecting humans, wildlife, and ecosystems. Solar energy can also improve air quality, reduce water use from energy production, and provide ecosystem services for host communities through carbon sequestration, pollination, and ground and stormwater management. Because ground-mounted photovoltaics (PV) and concentrating solar-thermal power (CSP) installations require the use of land, sites need to be selected, designed, and managed to minimize impacts to local wildlife, wildlife habitat, and soil and water resources.

During the siting and permitting of solar projects, solar developers typically evaluate multiple sites, site designs, and operation strategies. They assess the environmental impacts of their projects by complying with the relevant federal, state, and local laws; soliciting input from regulators; and performing impact assessments and mitigation.

# Tides

(Artwork)



# T

## For Supporters

Tides are the rise and fall of sea levels caused by the combined effects of the gravitational forces exerted by the Moon (and to a much lesser extent, the Sun) and are also caused by the Earth and Moon orbiting one another.

Tide tables can be used for any given locale to find the predicted times and amplitude (or "tidal range"). The predictions are influenced by many factors including the alignment of the Sun and Moon, the phase and amplitude of the tide (pattern of tides in the deep ocean), the amphidromic systems of the oceans, and the shape of the coastline and near-shore bathymetry.

Tidal waves help in preventing the accumulation of silts and sediments in the waterbed. It also contributes to the removal of polluted water from river estuaries. Tidal waves carry nutrients to the water that help in the survival and growth of marine plants and animals.

Tides are paramount when talking about fishing concentration, safe navigation, recreation, and coastal development. Although, tide stations are built to analyse data and measure tides. It helps scientists predict tidal flows and then report the tide table to support various aspects of daily lives.



# Upcycling

(Artwork)



## For Supporters

Upcycling, also known as creative reuse, is the process of transforming by-products, waste materials, useless, or unwanted products into new materials or products perceived to be of greater quality, such as artistic value or environmental value. Food cans upcycled into a stool.

The purpose of upcycling is to reduce waste and improve the lifespan of the resources used. Let's take a look at some statistics on upcycling. Benefits and Facts of Upcycling: Upcycling reduces the strain on valuable resources such as fuel, forests and water supplies – and helps safeguard wildlife habitats.

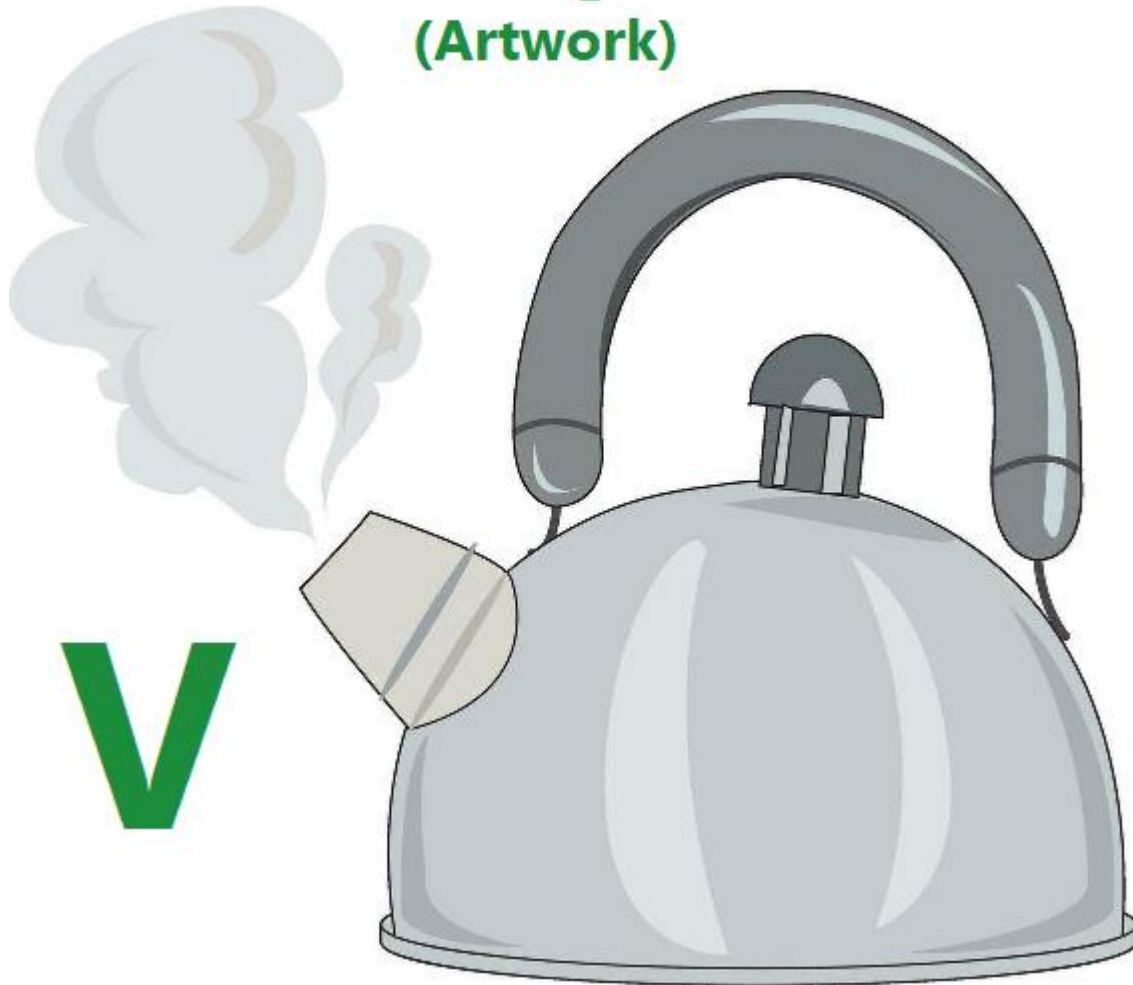
The environmental benefits of upcycling are mammoth, aside from minimising the volume of discarded materials and waste being sent to landfill each year, it also reduces the need for production using new or raw materials which means a reduction in air pollution, water pollution, greenhouse gas emissions and often a conservation of global resources.

These days, many brands and designers are making very cool stuff from old stuff. Plenty of items that were once end route to landfill have been reclaimed by some very creative people.



# Vapour

(Artwork)



## For Supporters

In physics, a vapour is a substance in the gas phase at a temperature lower than its critical temperature, which means that the vapour can be condensed to a liquid by increasing the pressure on it without reducing the temperature of the vapour. A vapour is different from an aerosol. An aerosol is a suspension of tiny particles of liquid, solid, or both within a gas.

For example, water has a critical temperature of 647 K (374 °C; 705 °F), which is the highest temperature at which liquid water can exist at any pressure. In the atmosphere at ordinary temperatures gaseous water (known as water vapour) will condense into a liquid if its partial pressure is increased sufficiently.

A vapour may co-exist with a liquid (or a solid). When this is true, the two phases will be in equilibrium, and the gas-partial pressure will be equal to the equilibrium vapour pressure of the liquid.

Water vapour is the most prevalent greenhouse gas. It causes roughly half of the warming of the planet. Like other greenhouse gases, it lets almost all of the sunlight reach the earth's surface but absorbs heat radiated upward from the earth.

# Waste

(Artwork)



## For Supporters

Waste (or wastes) are unwanted or unusable materials. Waste is any substance discarded after primary use, or is worthless, defective and of no use. A by-product, by contrast is a joint product of relatively minor economic value. A waste product may become a by-product, joint product or resource through an invention that raises a waste product's value above zero.

Examples include municipal solid waste (household trash/refuse), hazardous waste, wastewater (such as sewage, which contains bodily wastes (faeces and urine) and surface runoff), radioactive waste, and others.

Waste can be classified into different categories based on its composition, such as organic waste, recyclable waste, and hazardous waste. It can also be characterized by its source, such as municipal waste, industrial waste, or medical waste. The management of waste involves collection, transportation, treatment, and disposal, and it is important to adopt sustainable waste management practices to minimize environmental harm and promote resource conservation.

# Xeriscape

(Artwork)

# X



## For Supporters

Xeriscape means a landscaping method developed especially for arid and semiarid climates that utilizes water-conserving techniques (such as the use of drought-tolerant plants, mulch, and efficient irrigation).

Xeriscape is promoted in regions that do not have accessible, plentiful, or reliable supplies of fresh water and has gained acceptance in other regions as access to irrigation water has become limited, though it is not limited to such climates. Xeriscaping may be an alternative to various types of traditional gardening.

In some areas, terms such as water-conserving landscaping, drought-tolerant landscaping, and smart scaping are used instead. The use of plants whose natural requirements are appropriate to the local climate is emphasized, and care is taken to avoid losing water to evaporation and runoff. However, the specific plants used in xeriscaping vary based on climate as this strategy can be used in xeric, mesic, and hydric environments.



# Yield

(Artwork)

# Y



## For Supporters

In agriculture, the yield is a measurement of the amount of a crop grown, or product such as wool, meat or milk produced, per unit area of land. The seed ratio is another way of calculating yields.

Innovations, such as the use of fertilizer, the creation of better farming tools, new methods of farming and improved crop varieties, have improved yields. The higher the yield and more intensive use of the farmland, the higher the productivity and profitability of a farm; this increases the well-being of farming families. Surplus crops beyond the needs of subsistence agriculture can be sold or bartered. The more grain or fodder a farmer can produce, the more draft animals such as horses and oxen could be supported and harnessed for labour and production of manure. Increased crop yields also means fewer hands are needed on farm, freeing them for industry and commerce. This, in turn, led to the formation and growth of cities, which then translated into an increased demand for foodstuffs or other agricultural products.



# Zero-waste

(Artwork)



## For Supporters

Zero Waste means designing and managing products and processes to systematically avoid and eliminate the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.

Zero waste, or waste minimization, is a set of principles focused on waste prevention that encourages redesigning resource life cycles so that all products are repurposed (i.e. “up-cycled”) and/or reused. The goal of the movement is to avoid sending trash to landfills, incinerators, oceans, or any other part of the environment. Currently 9% of global plastic is recycled. In a zero-waste system, all materials are reused until the optimum level of consumption is reached.

Zero waste refers to waste prevention as opposed to end-of-pipe waste management. It is a “whole systems” approach that aims for a massive change in the way materials flow through society, resulting in no waste.

NOT FOR SALE

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