

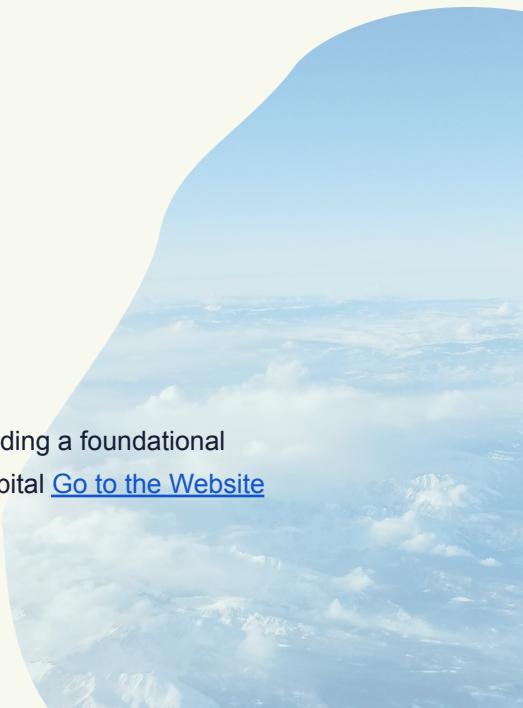
Natural Capital Primer

The Essentials

A science-based resource that explains how our entire lives, businesses and economies depend on nature, and how we can understand the value of it using a concept called natural capital.



This guide is a condensed version of the Natural Capital Primer website, providing a foundational understanding of natural capital. For a more in-depth exploration of natural capital [Go to the Website](#)



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What is Natural Capital?

Natural capital refers to all biotic (living) and abiotic (non-living) natural resources present in a defined area that produce flows of services that yield value to society. Natural capital is also sometimes referred to as natural capital assets or stocks.

Biotic natural resources

Biotic natural resources are those derived from living organisms, such as plants, animals, fungi, bacteria and viruses.

Abiotic natural resources

Abiotic natural resources are those derived from non-living sources and include geological resources (minerals, soil, fossil fuels), water and physical processes such as solar radiation, wind and tides.

Chapter 01

Assets and Resources



What are natural capital assets and resources?

Natural capital assets are the tangible natural resources (both biotic and abiotic) that provide products and generate ecosystem services that are of value to society. Natural capital assets can be defined by their extent (e.g., area, volume, length) and condition (e.g., quality, density, diversity).

There are two types of natural capital assets: environmental assets and ecosystem assets.

1. Environmental Assets

Environmental assets are the individual components in nature. This includes both biotic and abiotic natural resources which contribute to an ecosystem's biological diversity and vitality. They provide the foundational physical and chemical components necessary for ecosystem functioning.

Examples: individual plant or animal species (biotic) and water, minerals, and soil (abiotic)

2. Ecosystem Assets

Ecosystem assets are formed through the combination of many individual environmental assets. Abiotic factors like climate and geology interact with biotic factors

Assets and Resources

such as plants and animals to shape ecosystems and influence their extent and condition. The properties of ecosystem assets, such as species composition, function and form, result from these interactions, and give ecosystems their unique characteristics that determine the services and products that flow from them. They are called “assets” because they are the source for ecosystem services that support well-being, health, and security.

Examples: grasslands, forests, woodlands, wetlands, mangroves, and peatlands

The three categories of natural resources

Natural capital assets and natural resources are related but distinct. Natural capital assets encompass the broader elements of nature that provide value through ecosystem services.

1. Renewable

- **Inexhaustible**

Physical resources that are restored by natural processes at a rate equal to or faster than they are used.

Examples: solar radiation, wind, tidal energy, water flow, geothermal energy

- **Exhaustible**

Biological resources that, if harvested slower than or equal to the rate at which they are replenished by natural processes, can be harvested sustainably in perpetuity. If biotic

resources are harvested faster than they are replaced by natural processes, they become exhaustible (unsustainable).

Examples: timber, kelp, fisheries, game species

- **Recoverable**

Renewable resources that are replenished by natural processes on longer time scales (decades to centuries).

Examples: guano, groundwater, soil fertility

2. Cultivated

Ecosystems that are maintained by human intervention but depend on the underlying environmental assets.

Examples: agricultural systems, plantations, urban green spaces

3. Non-renewable

Non-renewable resources are finite and irreplaceable or those that can only be replaced over geological timescales.

Examples: coal, iron ore, natural gas, lithium

Chapter 02

Flows of Services



What are the benefits that flow from natural capital assets?

Natural capital assets produce flows of services that have value to businesses and society.

There can be of two types:

1. Abiotic services

Abiotic services are benefits that arise from abiotic natural resources and physical processes, including fundamental geological processes, solar radiation and the Earth's rotation and gravitational pull.

Examples: the supply of minerals (including metals) and fossil fuels, as well as geothermal heat, wind, tides, sunlight and hydro-power

2. Ecosystem services

Ecosystem services are a key concept in natural capital. Ecosystem services are products or processes generated by ecosystems that have value to society. They can be raw materials or products extracted directly from ecosystem assets or the outcome of ecological processes that generate a resource or service.

Examples: the provision of food, raw materials like timber and fibre, medicinal resources, climate regulation, water purification, pollination, flood control, nutrient cycling, photosynthesis, habitat provision, recreational and tourism opportunities, and spiritual and aesthetic value

The four categories of ecosystem services.

1. Supporting services

Supporting services support all other ecosystem services. They are the underlying natural processes that enable ecosystems to function, and to produce all other ecosystem services.

Examples: photosynthesis, nutrient cycling, soil formation, and water cycling

2. Regulating services

These are the services produced as a by-product of ecosystem processes. They do not produce a tangible product directly but they moderate natural phenomena that support life or facilitate provisioning services that produce products.

Examples: climate regulation, flood mitigation, erosion control, water purification and pollination

3. Provisioning services

These are any type of tangible material or product extracted from natural capital that benefits people.

Examples: all food, raw materials (timber, minerals, gas, oil), fibres (wool, cotton, hemp), medicines, drinking water

4. Cultural services

These are non-material benefits that contribute to the cultural and spiritual advancement of people.

Examples: recreational services and tourism, mental and physical health and well-being that comes from connecting with nature, creative inspiration, enjoying beautiful scenery, spiritual renewal

Chapter 03

Dependencies and Impacts



Dependencies and Impacts

How do businesses impact and depend on natural capital?

All businesses have natural capital dependencies and impacts.

Dependencies

A dependency is a reliance on or use of a natural capital asset or ecosystem service to conduct business operations.

Examples: a company may be dependent on extracting a non-renewable resource (e.g., mining of coal), harnessing a renewable resource (e.g., water flow to generate electricity), or harvesting a biotic resource (e.g., fisheries) to generate income

Impacts

Impacts are changes in the extent or condition of a natural capital asset or ecosystem service resulting from a business's activities.

Impacts may be:

- **Positive:** an improvement in condition and/or increase in the extent of a natural capital asset
- **Negative:** a deterioration in condition and/or decrease in the extent of a natural capital asset

Dependencies and Impacts

There are three categories of impacts.

1. Direct

This refers to the direct result of a company's actions and operations without intermediaries or secondary pathways, such as direct pollution, habitat destruction, resource extraction, and land use change.

Examples: the release of waste into waterways negatively impacts water quality, reforestation of land to generate carbon credits

2. Indirect

Indirect impacts are the unintended or secondary consequences of business activities, such as: financially supporting others that directly impact natural capital; downstream and upstream supply chain impacts; perverse consequences of policy that influence natural capital; and investment and infrastructure decisions with natural capital implications.

Examples: A bank that provides a financial loan to a company that is clearing native forests for grazing land. Residential development that leads to changes in the condition of adjacent native vegetation. Lower insurance premiums or higher land valuations for cleared farmlands.

3. Cumulative

Cumulative impacts are the gradual, incremental effects of multiple organisations, activities, operations, or decisions over time that alter natural capital assets and ecosystem services. These often relate to climate change, habitat fragmentation, unsustainable water use, and land degradation, and result from ongoing contributions rather than isolated events.

Examples: While the carbon emissions of an individual company may be small, the cumulative emissions of many companies are fueling climate change. The habitat loss from one residential development may be small, but the combined impacts of many such developments leads to significant land use change and habitat fragmentation.

A company can measure and track their dependency and impact on natural capital by using natural capital assessment or natural capital accounting.

Key Insights

Assets and Resources

1. Assets form the basis of natural capital and can be categorised as either **environmental** (individual) or **ecosystem** (interaction of environmental) assets.
2. There are three different resource classes: **renewable** (inexhaustible, exhaustible and recoverable), **cultivated** and **non-renewable**.
3. These classes are determined by the amount of time taken to replenish them and the process in which they are created.

Flows of Services

1. Natural capital assets produce two types of services: **abiotic services** (geological and physical processes) and **ecosystem services** (ecological processes).
2. There are four categories of ecosystem services: **supporting** the production of all other services and life on Earth, **regulating** the balance of natural processes, provisioning products from nature, and **cultural** non-material benefits we get from nature.
3. Humans directly benefit from and exist thanks to all ecosystem services, be it nutrient cycling (supporting) and pollination (regulation), which enable food to grow, freshwater for drinking (provisioning), and beautiful landscapes that offer a place to exercise, relax, and be inspired by nature (cultural).

Dependencies and Impacts

1. Businesses **depend** on natural capital assets and ecosystem services to operate effectively, such as extracting non-renewable resources or utilising renewable resources like water for electricity generation.
2. Businesses influence natural capital assets and ecosystem services through their activities, having **positive** and **negative impacts**. Impacts can be direct (e.g., waste and pollution from production), indirect (e.g., deforestation linked to scope supply chains), and cumulative (e.g., numerous industries and activities contributing to global climate change over time).
3. Many businesses aim to reduce their negative impacts by achieving net-zero emissions, avoiding deforestation, and eliminating plastic use. Others go further by restoring habitats, practising sustainable agriculture, and adopting circular economy principles.

Curious to Know More?

So, there you have it – a quick look at natural capital. We invite you to visit the Natural Capital Primer website to delve deeper into these concepts and embark on an interactive learning experience to further improve your understanding of this essential topic.

Take the next step in your natural capital journey.

[Go to the Website](#)