



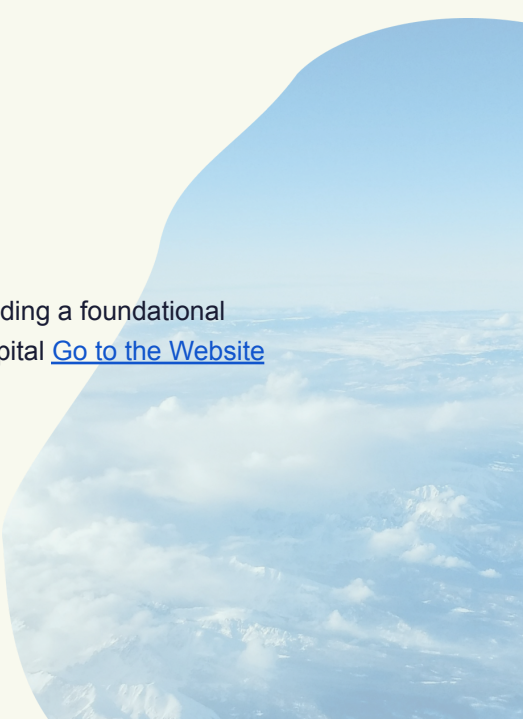
# Natural Capital Primer

## The Essentials

A science-based resource that explains the concept of natural capital and how business and society depend on it.



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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# Introduction | 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 are those derived from living organisms, such as plants, animals, fungi, bacteria and viruses.

*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 | Natural Capital Assets

## **What are natural capital assets and resources?**

Abiotic factors like climate and geology interact with biotic factors such as vegetation and animals to shape ecosystems, define their physical context, and influence the quantity and quality of natural capital assets. There are two types of natural capital assets: environmental assets and ecosystem assets.

### **Environmental Assets**

Environmental assets are the components that make up the environment. This includes both biotic and abiotic natural resources, which contribute to an ecosystem's biological diversity and vitality and provide the foundational physical and chemical components necessary for ecosystem functioning.

### **Ecosystem Assets**

Ecosystem assets are formed from the interaction of individual environmental assets. They have properties (such as composition, functions, and form) that result from the interaction of environmental assets. This gives ecosystems unique characteristics and determines the flow of ecosystem services.

### 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 resources

- **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:** Water resources, guano, ozone layer

## 2. Cultivated resources

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

**Examples:** Agricultural systems, plantations, urban green spaces

## 3. Non-renewable resources

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

**Examples:** Fossil fuels, minerals

# 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. These 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 fiber, medicinal resources, climate regulation, water purification, pollination, flood control, nutrient cycling, photosynthesis, habitat provision, recreational and tourism opportunities, and spiritual and aesthetic values.

# The four categories of ecosystem services.

## 1. Supporting services

Supporting services support all other ecosystem services. In practical terms, supporting services are difficult to measure directly, so they are assessed by using proxy measures such as the extent of ecosystems and the maintenance of genetic diversity among populations and communities.

**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 facilitate many of the provisioning services that do produce products or moderate natural phenomena that support life.

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

## 3. Provisioning services

These are ecosystem processes that produce any type of product that benefits people and can be extracted from nature.

**Examples:** all food, raw materials (timber, minerals, gas, oil), fibres, 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 derived from connecting with nature, creative inspiration, aesthetic amenity, spiritual renewal

# Chapter 03 | Business 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), 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 amount
- **Negative:** a deterioration in condition and/or decrease in amount

# 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.

## 2. Indirect

Indirect impacts from business on natural capital are unintended or secondary consequences arising through pathways such as financial support, supply chains, policy influences, and market dynamics rather than direct actions.

**Examples:** A company that provides financial credit to another company that is clearing forests for grazing land. Residential development that leads to changes in the condition of adjacent native vegetation.

## 3. Cumulative

Cumulative impacts are the gradual, collective effects of multiple activities, operations, or decisions over time that alter natural capital assets and ecosystem services.

**Examples:** Corporations are contributing to carbon emissions that are cumulatively driving climate change.

# Key insights

## Natural Capital Assets

1. Assets form the basis of natural capital and can be categorized 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**. They 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 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).

## Business Dependencies and Impacts

1. Businesses **depend** on natural capital assets and ecosystem services to operate effectively, such as extracting non-renewable resources or utilizing 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 pollution from production), indirect (e.g., deforestation linked to scope 3 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, practicing 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](#)