UBS Optimus Foundation Environment and Climate strategy

Deep Dive

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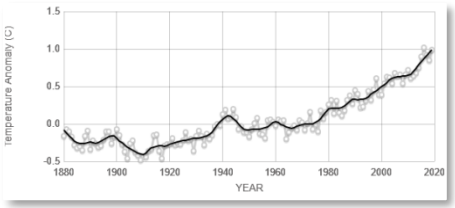
Introduction

Climate and environmental

Context (1/2)

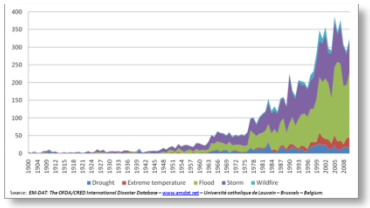
Increasing temperatures and changing rainfall patterns

Higher temperatures affect plants and animals. Decreasing or increasing rainfall will make current agricultural and forestry areas unfeasible but also develop new ones



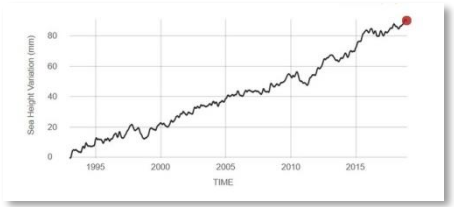
Climate extremes

Storms, floods, wildfires and droughts endanger yields and destroy soils.



Sea level rise

Rising water levels reduce the area of usable land and salinate soils



EM-DAT International Disaster Database, CRED – www.emdat.be – Universite Catholique de Louvain (2020)

Context (2/2)

Key takeaways

Climate change is **affecting land and sea, communities and livelihoods already** and projections show that there will be more severe impacts

Food systems including agriculture and fisheries/aquaculture are **very vulnerable to climate change** putting global food supplies at risk

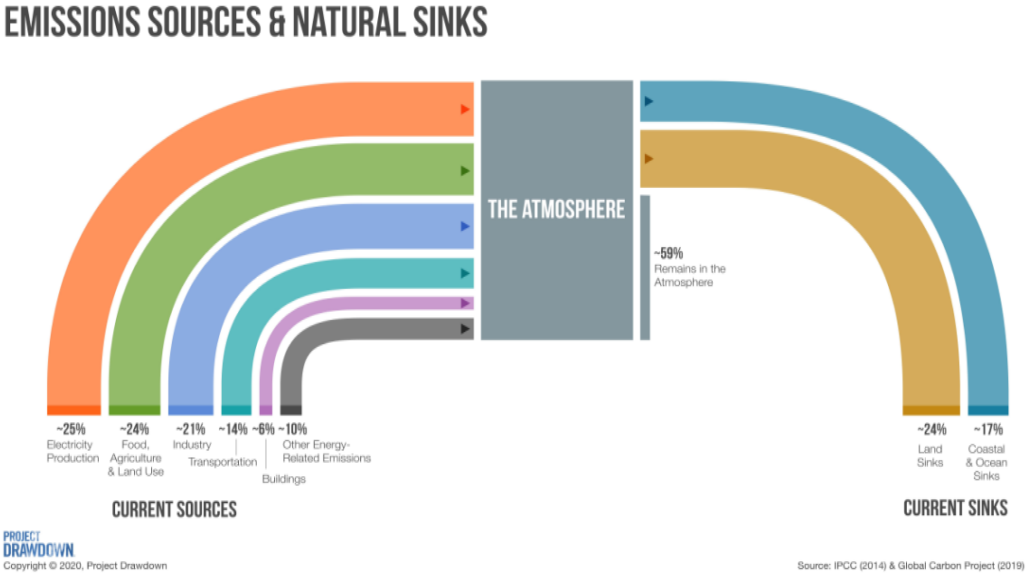
Fisheries, agriculture and agroforestry are **closely interlinked with other issues** such as the fight against hunger, health and global justice

There are significant opportunities to **mitigate climate change** by shifting agricultural practices and improving land management systems

Land and coastal ecosystems can be either a source or sink of emissions; they can increase or reduce the impact of climate change

Greenhouse gas sources and solutions (1/2)

Where do these gases come from? Where do they go?



Which sectors create greenhouse gases?

- The sectors producing most are *Electricity Production* and *Food, Agriculture and Land Use*

What happens to the greenhouse gases?

- 17% absorbed into the oceans; 24% into land; 59% remain in atmosphere

How do we help?

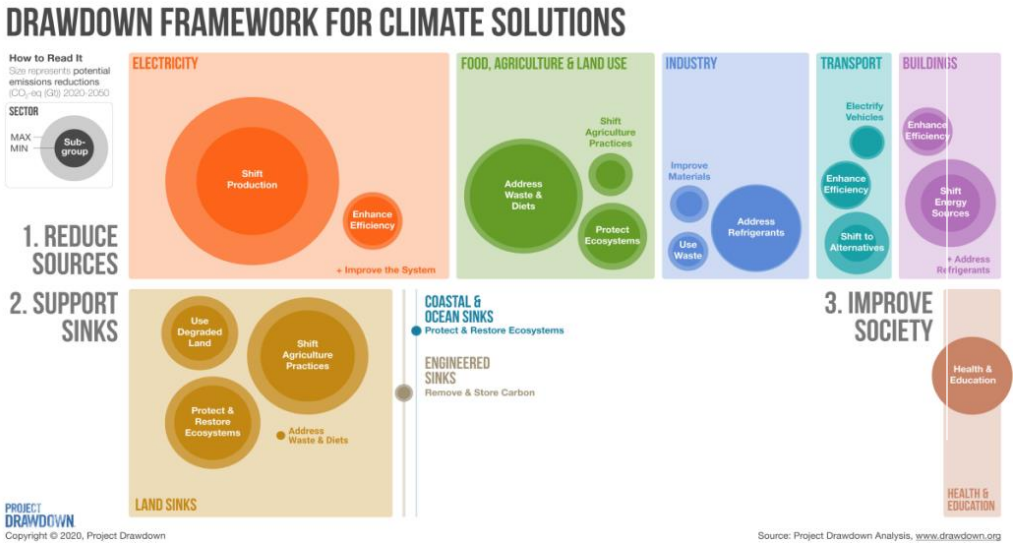
- We need to **reduce** the amount of greenhouse gases emitted and **increase** the percentage absorbed

What are the best solutions to keep to a 1.5 degree rise?

Source: Project Drawdown (2020)

Greenhouse gas sources and solutions (2/2)

Where do these gases come from? Where do they go?



Which sectors have most potential to reduce production of greenhouse gases?

- *Electricity Production* and *Food, Agriculture and Land Use*

Which activities have most potential to increase gas absorption by oceans and land (sinks)?

- Shift agricultural practices, protect ecosystems and use degraded land

Note:

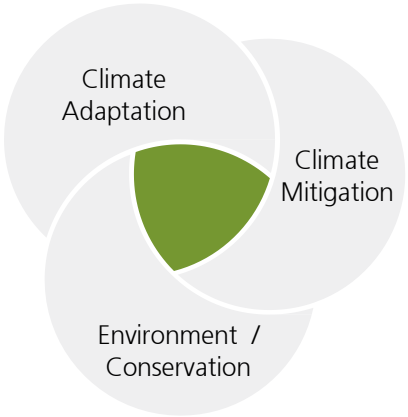
Electricity Production methodologies are changing and have a lot of public and private sector attention and investment

What are the best solutions to keep to a 1.5 degree rise?

Source: Project Drawdown (2020)

A holistic approach

Two themes at the intersection of climate mitigation, climate adaptation, and the environment / conservation



Sustainable land use

Coastal and marine ecosystems

Subthemes	1. Sustainable land use	2. Coastal and marine ecosystems
Sustainable ecosystem management	1.1 Landscape restoration and conservation	2.1 Wetland restoration and conservation (blue carbon)
Food systems	1.2 Climate smart agriculture	2.2 Sustainable fisheries
Pollution		2.3 Pollution and waste

Primary outcome

Climate mitigation (carbon sequestration, reduction of emissions)

Secondary outcomes

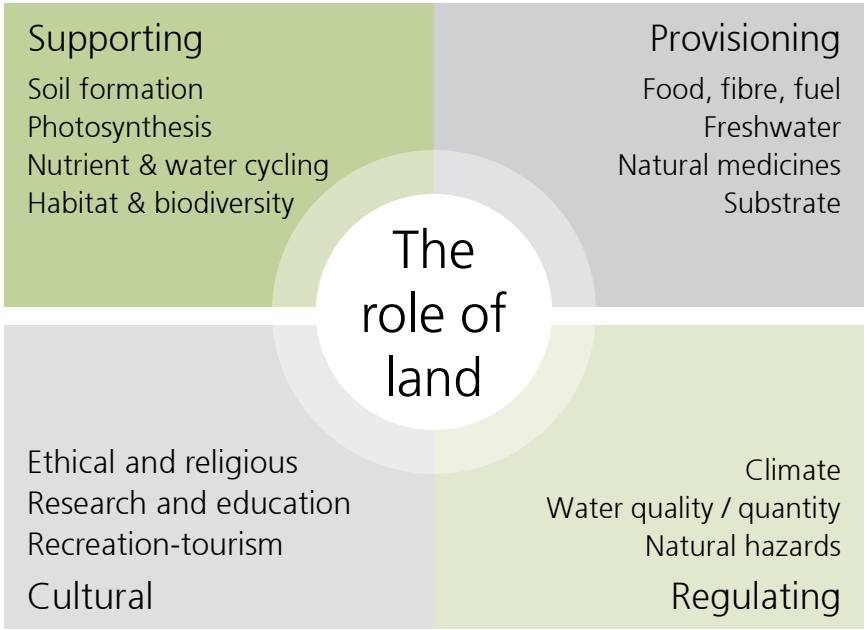
Climate adaptation, resilient livelihoods, enhanced food security, improved health and wellbeing, improved biodiversity

Section 1

Sustainable land use

Sustainable land use overview (1/2)

Land and food systems play an important role in the climate system

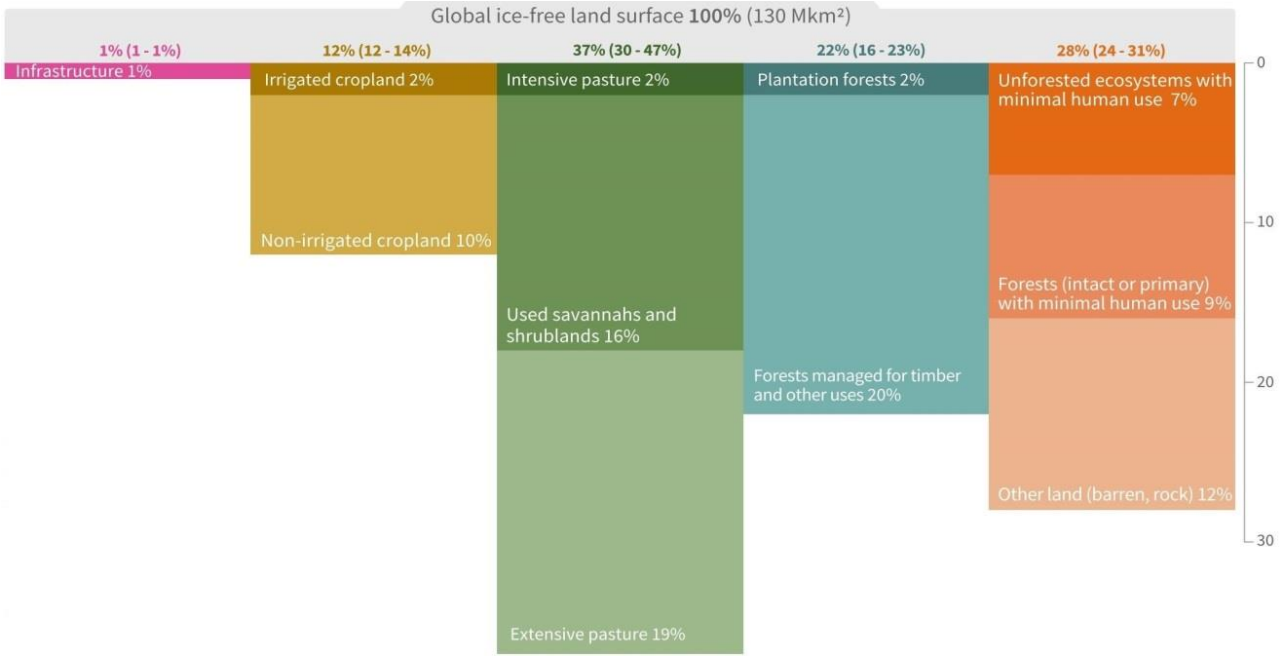


> Land and food systems provide the principal basis for human livelihoods and well-being including the supply of food, freshwater and multiple other ecosystem services
>
> IPCC, 2019

> Conversion of land has supported consumption and food availability for a growing population but also increased emissions
>
> IPCC, 2019

Sustainable land use overview (1/2)

Land and food systems play an important role in the climate system



Land in the climate system

- 72% of global ice-free land surface is affected or managed by humans
- Land management therefore has a HUGE impact on the planet
- Depending on how it is used and managed, land can be either a source or sink of emissions

Source: (IPCC, 2019)

Landscape restoration and conservation

Degradation

Drivers of degradation

Poverty and food insecurity

Increasing demand for land
Consumption, population, fossil fuels, agriculture

Unsustainable land use
Overgrazing, mining etc.

Climate change
Rising temps, extreme weather, precipitation patterns

Consequences

Resulting problems

- Soils – erosion and loss of fertility
- Pollution – nutrient runoff, mineral processing
- Conservation – loss of habitat and biodiversity

Currently ….

43% global population live in regions affected by land degradation

By 2050 ….

Up to 700 million people displaced

Reduction up to 10% average global crop yield

(IUCN, 2015)

Landscape restoration and conservation

Mitigation potential

Terrestrial ecosystems are powerful carbon sinks

Forests, peatlands, and grasslands store large amounts of carbon in vegetation and soil

2007-2016: global land areas stored 11.2 gigatons of CO^2 per year.

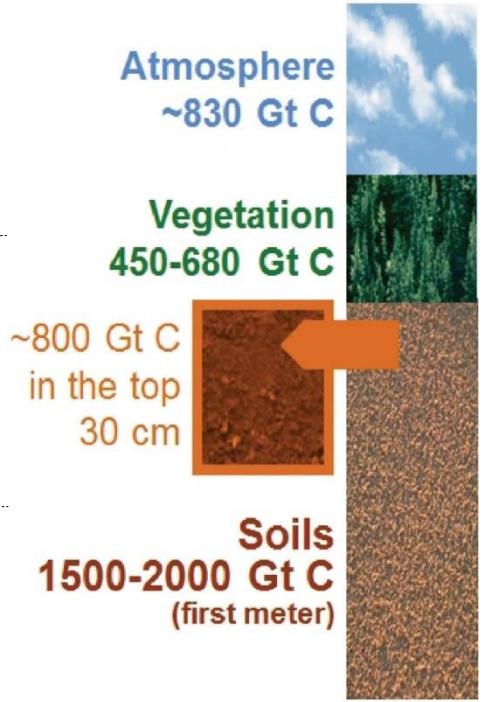
That's **29%** of total CO_2 emissions for the decade

Different landscapes mitigation potential in GtCO2e (gigatons greenhouse gases)

• **Protecting peatlands:**	**26 – 42**	**This could have the greatest impact!**
• Restoring temperate forests:	19 – 28	Forests are hugely important
• Restoring abandoned farmland:	12 – 20	Farmlands need careful management
• Protecting grasslands:	3 – 4	Grasslands should not be overlooked

Soil is the biggest terrestrial carbon sink

- Soils store more carbon globally than the planet's biomass and atmosphere combined
- Soil protection and restoration can provide 1/3 of the most cost-effective mitigation activities needed by 2030 to keep global warming under the 1.5°C threshold



(IPCC, 2019), (IUCN, 2015), (Project Draw Down, 2020)., (IPBES, 2018)

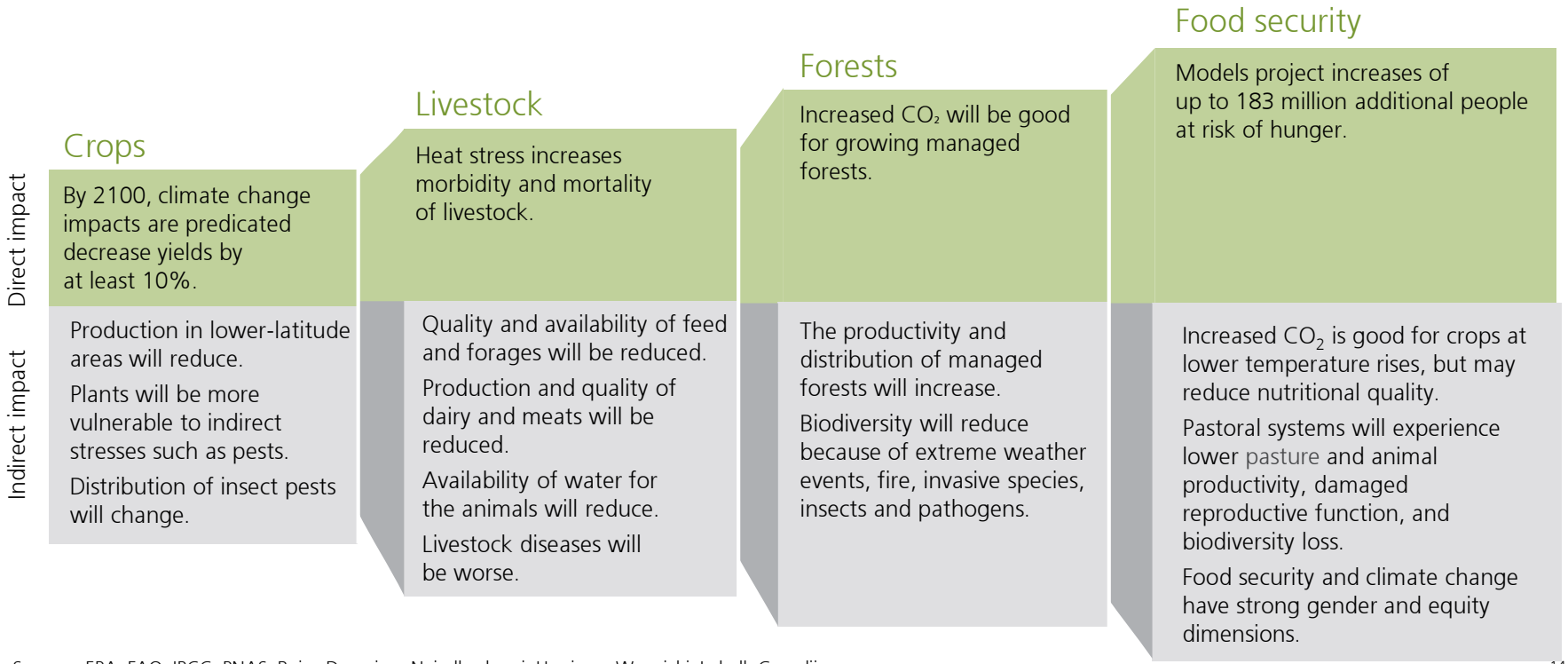
Landscape restoration and conservation

Strategic focus areas and goals

	Protecting terrestrial ecosystems at risk of conversion	Restoring the productivity of degraded land	Reduce demand for land conversion
Methods	• Conserve high carbon ecosystems • Prevent desertification • Enhance rights of indigenous communities that conserve land • Encourage sustainable sourcing of land-based non-agriculture products	• Re-introduce native vegetation • Increase biomass to enrich soils • Promote natural soil carbon sequestration	• Facilitate transition to alternative livelihoods • Strengthen international platform for land use governance • Promoting policy coherence on sustainable production and consumption of land-based commodities • Eliminating incentives that promote land degradation
Target outputs	# ha of land protected / restored # km green walls with climate-resilient plants # Gt CO2 sequestered % market for eco-certified forest-based commodities	# ha of native species replanted # wetlands rewetted # farms using perennial pastures # Gt CO2 sequestered % soil organic matter improved	# training & capacity building activities # regional & international meetings # campaigns to remove subsidies

Climate-resilient agriculture and agroforestry

Climate change affects crops, livestock, forests and food security

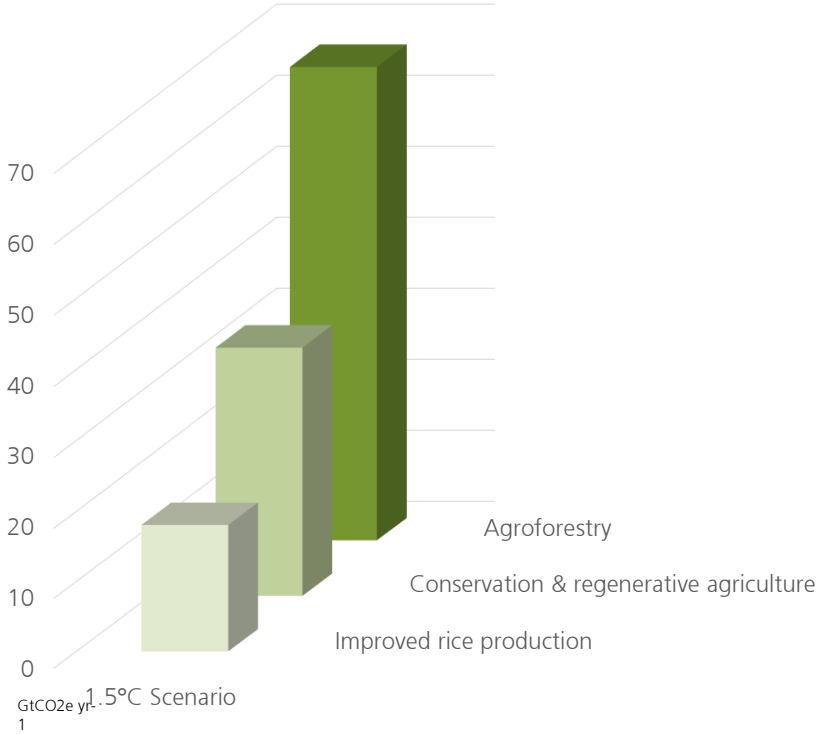


Sources: EPA; FAO; IPCC; PNAS; Rojas-Downing, Nejadhashemi, Harrigan, Woznicki; Lobell, Gourdji

Climate-resilient agriculture and agroforestry

Mitigation potential

Agroforestry and changes in current agricultural practices can contribute significantly to mitigate climate change



Agroforestry includes tree intercropping and silvopasture. Tree intercropping (growing trees and annual crops together) increases biomass, soil organic matter, and carbon sequestration.

Silvopasture integrates trees, pasture, and forage into a single system. Incorporating trees improves land health and significantly increases carbon sequestration.

Conservation agriculture uses cover crops, crop rotation, and minimal tilling in the production of annual crops. It protects soil, avoids emissions, and sequesters carbon.

Building on conservation agriculture, regenerative annual cropping can include compost application, green manure, and organic production.

Improved rice production involves improved soil, nutrient management, water use, and tillage practices .

A holistic approach to sustainable rice cultivation includes reducing water use and alternating wet and dry conditions.

This minimizes methane production and greenhouse gas emissions.

Source: Project Drawdown (2020)

Climate-resilient agriculture and agroforestry

Strategic focus areas and goals

	Promote Climate Resilient Agriculture for sustainable livelihoods	**Engage consumers and support climate-smart products along the value chain**	**Advance the political debate around the global production of food and resources**
Methods	• Teach and train farmers on climate-smart production technologies • Provide financing for adapting new production technologies • Create awareness and develop competencies of regulatory bodies at local and national level	• Support farmers in obtaining certifications • Promote awareness and usage of certified (e.g. FLOCERT, Rainforest Alliance) products • Advocate for legally binding climate sensitive regulations for agricultural products • Support and raise awareness around plant-based foods and meat alternatives	• Advocate for legally binding instruments and regulations benefitting small-hold farmers (e.g. import and export tariffs, subsidies, transparent supply chains) • Raise awareness of consumers for seasonal and low-emission local goods
Target outputs	# ha land under new management techniques # trainings conducted # transitional measures financed # awareness raising campaigns # GtCO2 sequestered	# campaigns launched % of labelled products bought # grants issued to achieve certification # suppliers engaged / farmers certified	# laws influenced # campaigns funded # events held (regional/national/international)

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Section 2

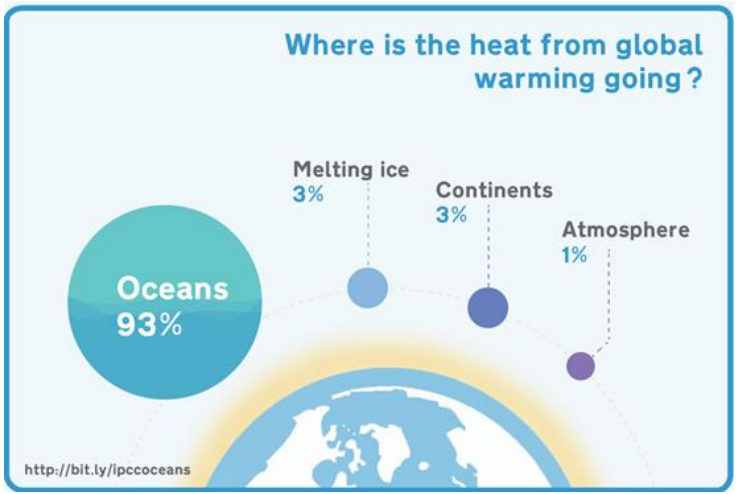
Coastal and marine ecosystems

Coastal and marine ecosystems

Overview

The ocean provides

- Home to an estimated **over 2 million species**, making it the most biodiverse ecosystem on earth
- Over **50% of the Earth's oxygen** from photosynthesis
- Temperature, weather and climate regulation – distributing heat by ocean currents and **storing about 30% of CO_2 emissions**
- Food (accounting for **about 20% of worldwide animal protein consumption**), water, building materials and pharmaceuticals
- **Livelihoods for over 3 billion people**, most of them living in developing countries
- Routes for transportation of goods, as well as for passengers and tourism
- Recreational opportunities, from watersports to whale watching and other activities



The ocean covers 70% of the earth's surface and is crucial for all human life

Sources: NOAA, undated; OECD, undated; Marine Conservation Institute, undated, IPCC (2013) Chapter 3: Oceans

Wetland restoration and conservation (blue carbon)

Degradation

Drivers of degradation

Lack of regulation and enforcement

Lack of alternative livelihoods

Pollution
Agricultural and industrial run off, plastic pollution, shipping accidents

Climate change impacts
Rising sea temperatures, extreme weather events, changing currents

Land use changes
Coastal and inland / urban development, increased agriculture

Consequences

Carbon sequestration

- Storing less CO_2 (fewer plants to trap the gases)
- Releasing more CO_2 – (Current loss rates may be up to 1 billion tons per year – more than combined annual emissions of UK, Italy and France)

Coastlines

- Greater vulnerability to hazards (tsunamis and typhoons)
- Less land available due to flooding and coastal erosion
- Reduced biodiversity and habitats

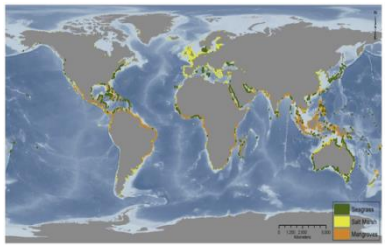
Food and water

- Decreased productivity of fish stock and aquaculture
- Diminished water quality
- Reduced freshwater and irrigation

Source: Blue Carbon Initiative (undated); UNEP (2020)

Wetland restoration and conservation (blue carbon)

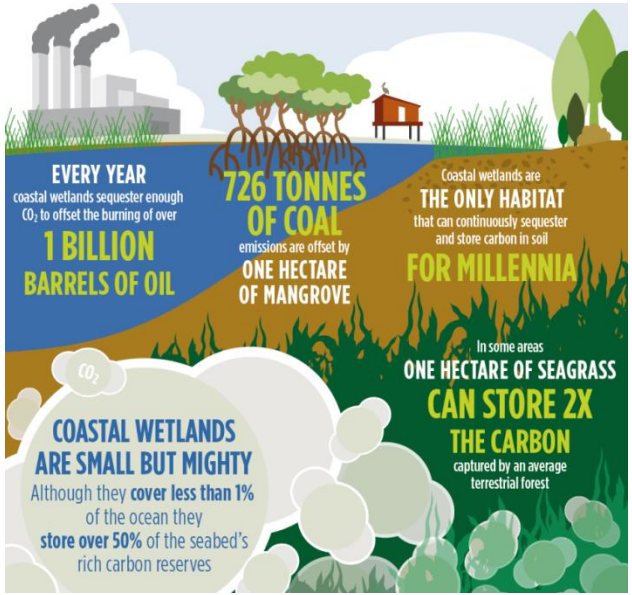
Migration potential



Coastal wetlands such as mangroves, seagrasses and tidal marshes **remove carbon** from the atmosphere and ocean and store it in soils and plants.

Coastal soils store most carbon. Water prevents release of carbon, and over time soil continually builds up and holds carbon for centuries.

Globally, we have already lost 67% of mangroves, 35% of tidal marshes and 29% of seagrass meadows



Sources: UNEP 2020; Blue Carbon Initiative (undated); Howard et al UNESCO (2014); oceanwealth.org The Nature Conservancy 2020

Wetland restoration and conservation (blue carbon)

Strategic focus areas and goals

	Protect healthy wetland ecosystems and their sequestation capacity in coastal areas	**Restore wetland ecosystems and secure their seqestration capacity for a lasting period**	**Better understand the risks and potentials related to blue carbon**
Methods	• Educate stakeholders on importance of coastal wetlands and protection measures • Develop integrated coastal management systems • Directly conserve wetland ecosystems • Improve land management practices • Develop sustainable incomes	• Support the incorporation of coastal blue carbon into national mitigation strategies • Provide financial mechanisms and incentives for wetland restoration. • Develop and fund new protected areas	• Increase and improve research conducted on coastal blue carbon and wetland protection • Monitor changes and develop models for blue carbon ecosystems
Target outputs	# awareness raising campaigns & ppl reached # ha placed under protection # policy initiatives # exchange visits, online meetings, publications # tonnes CO2 sequestered (potential)	# countries including blue carbon in NDCs % wetlands included within REDD+ # of local initiatives supported # ha placed under protection/restored # tonnes CO2 sequestered (potential)	# Research projects funded # Conferences organised # datasets shared

Sustainable fisheries

Cause and effects

Drivers

Poverty

Food insecurity

Population growth

Global trade

Rising incomes

Urbanisation

Global fossil fuel economy

Resource competition between subsistence and commercial fishing

Insufficient enforcement and regulation

Consequences

Fishing practices

- Illegal, unreported and unregulated fishing
- Aquaculture practices (fish feed, social/human rights)
- Loss of sea food in supply chains
- Regulation of fisheries (fishing quotas, subsidies)

Marine ecosystem changes

- Marine pollution
- Degradation of coastal wetlands
- Climate change (ocean acidification and deoxygenation, coral bleaching)

Demand in fish

- Inefficient distribution channels

Sustainable fisheries

Mitigation and adaptation potential

Mitigation potential of a seafood diet

1 to 5 kg

Carbon produced per kilo of wild fish

50 to 750 kg

Carbon produced per kilo of red meat

Sustainable fisheries

Mitigation and adaptation potential

Sustainable fishing

- Protects marine fauna
- Reduces waste
- Improves food security
- Generates jobs and is more responsible
- Reduces pollution
- Certifies the sustainability of the catches

Sustainable acquaculture

- Fair remuneration for aquaculturists
- Equitable distribution of costs and benefits
- Creation of wealth and employment
- Enhanced food security
- Environmental management that benefits future generations
- Sustainable growth of authorities and industry

Adaptation and resilient livelihoods for coastal communities depend on a sustainable approach to fisheries

Sustainable Fisheries

Strategic focus areas and goals

	Support adoption of sustainable practices in small-scale fishing and aquaculture	**Regulate commercial capture fisheries**	**Protect marine ecosystems and fishing grounds**
Methods	• Diversify coastal livelihoods to reduce pressure on resources & introduce marketing innovations • Establish tenure right for small fisher(wo)man • Reduce post-harvest loss • Strengthen control mechanisms for aquatic environments of aquaculture • Reduce use of fish feed & foster traditional aquacultures of non-fed species	• Improve sanctioning of illegal, unregulated and unreported fishing • Increase traceability of fishing production chains • End harmful forms of fishery subsidies • Introduce monitoring and management strategies that allow for reduced fishing when stock levels decline	• Design temporary or permanent no take or multi-use zones • Include marine protection in climate adaptation and mitigation plans • Manage inland waters and their negative impacts on fisheries • Jointly develop multi-use MPAs and aquaculture areas
Target outputs	% of # household income from other sources $ of catch sold without intermediaries # fishers adopting alternative process % aquaculture products eco certified % alternatives to fish oil and meal used # farmers educated in traditional practices	# regions agreeing on standards to stop trade of illegal catch # vessels and operators with transparent history of fishing activities % of catch eco-certified # areas with compensated exit or licensing schemes	# km² protected area # National Adaptation Plans and Programs of Action including MPAs # water management authorities trained on downstream impact

Ocean pollution and waste

Cause and effects

Drivers

Population and urbanisation

Linear, extractive economy

Poor waste management

Lack of regulation and insufficient enforcement

Consequences

Ocean's ecosystem services

- Microplastics slow CO_2 sequestration
- Loss of biodiversity
- Jeopardised food provision

Human health and well-being

- Untreated wastewater and sewage
- Plastic entering the food web
- Loss of recreational value

Livelihoods

- Loss of fishing income
- Loss of tourism income

Ocean pollution and waste

Potential

Over 90% of plastics are not recycled and 80% of all marine debris is plastic waste

Plastic is largely produced from virgin fossil fuel and accounts for 6% of the global oil consumption. If plastic production and use continue to grow as expected this figure is projected to increase to 20%

In 2015 total carbon emissions from plastics, from production to processing, use and discharge, were estimated to be equivalent to almost 1.8 billion metric tons of CO_2.

Sources: IUCN (2018); (ScienceDaily (15.04.2019)

Ocean pollution & waste

Strategic focus areas and goals

	Improve solid waste management systems in order to reduce plastic waste leakage into water bodies	**Reduce growth in plastic consumption and global waste trade**	**Improve wastewater management in lower-income coastal countries**
Methods	• Educate stakeholders and population on impacts of inadequate waste management • Expand waste collection service to increase collection rates • Integrate informal waste pickers into formal waste management • Increase recycling capacity and rates globally, e.g. by encouraging separation of waste streams	• Raise awareness among and educate population on impacts of plastic waste • Advocate for introduction and enforcement of measures reducing single-use plastic consumption, e.g. bans or charges on single use plastic items • Advocate for less plastic items in consumer goods and retail industry • Advocate for export taxes on plastic waste	• Support development and implementation of better sanitation facilities • Support initiatives for development and implementation of stormwater and wastewater treatment technologies and management practices • Educate stakeholders on links between wastewater and health and ecosystem functioning and potential benefits of wastewater reuse
Target outputs	# education campaigns, # PAX reached % of plastic waste collection increased # informal waste pickers integrated into formal system % of recycling rates increased	# awareness raising campaigns & # PAX reached # commitments by industry to reduce plastic items and % of reduction # countries having introduced/enforced bans/charges on single-use plastic items % of plastic consumption reduced	# sanitation projects piloted # wastewater treatment initiatives supported # education activities, # PAX reached

Climate and environment

What programs?

Yes

- Holistic – hits a number of outcome boxes
- Scalable – potential to expand if further funds are raised
- Sustainable – longevity in terms of financial, logistical resilience

No

- Beyond strategy (e.g. renewable energy, urban development)
- Single point of interest (e.g. conservation of a single species)
- Not scalable
- Not sustainable i.e. no exit strategy, no long term planning – what happens when UBS Optimus Foundation exits?

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