

# Biodiversity in a nutshell

## Investment rationale

March 2023

### What is biodiversity and why is it so essential?

Biosphere integrity is considered as one of the **9 planetary boundaries, i.e.**, natural processes that regulates the stability and resilience of earth's ecosystem and provide conducive conditions for humanity to survive, develop, and thrive for generations to come.

As of now, **biodiversity is declining at an alarming rate** with now 25% of plant and animal species being threatened with extinction and abundance having been reduced by 20% since pre-industrial levels (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services - IPBES -, 2019).

Often referred to as the **sixth mass extinction**, the current acceleration of global biodiversity loss is one of the most significant threats to economies (World Economic Forum - WEF -, 2019).

- Biodiversity is fundamental to food security as it facilitates essential ecosystem cohesion through water filtration, soil fertility, and pollination
- Biodiversity loss also represents significant risks to human health as a source of zoonoses (diseases which can be transmitted to humans from animals)
- Moreover, biodiversity protects us against climate-related events and provides resilience in our surrounding environment

### What are the main drivers of biodiversity loss?

Biodiversity is primarily affected by **five direct drivers\*** (anthropogenic and natural):

- climate change
- direct exploitation of organisms
- land and sea use change
- pollution
- invasive species

### What are our responsibilities as an investor?

We believe investors should participate in the drivers of pressures on biodiversity. They have a key role to play in accelerating the momentum of biodiversity action by allocating capital to support companies that provide solutions.

- Investors should better understand the dependency of their investments to ecosystem services provided by biodiversity.
- Financial institutions can better understand how firms impact biodiversity directly and through their value chain by translating the impact into a single metric (e.g. Mean Species Abundance, MSA).
- Acting quickly is paramount and financial institutions cannot wait for companies disclosure in order to distinguish virtuous and detrimental players. In this regard, we need tools that can simulate corporations impact on biodiversity.

### What are the main biodiversity indicators / metrics?

The complexity of measuring biodiversity is a significant hurdle for investors who want to integrate nature-related metrics in their analysis. The need for clear global standards and guidelines has resulted into new indicators:

Adopting a parallel approach as for climate, where the main indicator is GHG (greenhouse gases) emissions, researchers have established the **Mean Species Abundance (MSA) as a standard to measure biodiversity**.

The MSA is endorsed by the international scientific community, used by the IPBES and the IPPC (International Plant Protection Convention) in their reports and one of the most widely used indicators in biodiversity accounting.

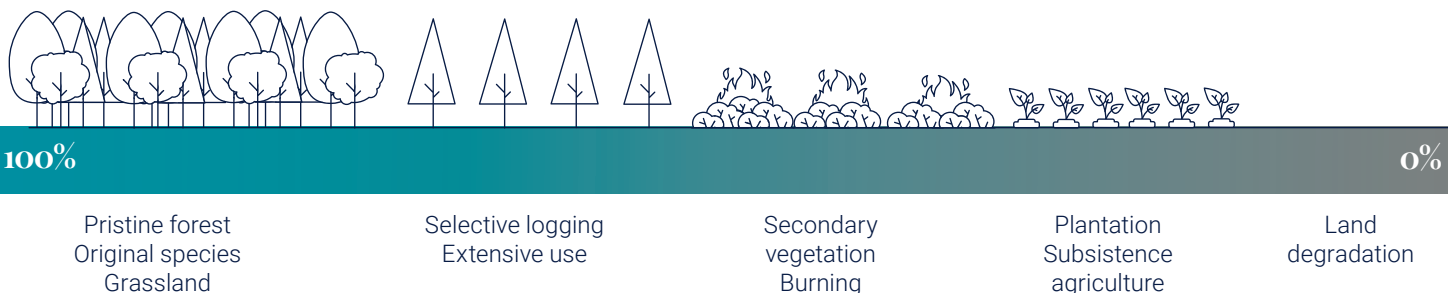
## THE MSA : A COMMON INDICATOR TO QUANTIFY THE IMPACT ON BIODIVERSITY

The « Mean Species Abundance » (MSA) is a biodiversity indicator expressing the average abundance of native species in an ecosystem compared to their abundance in undisturbed ecosystems. It is an indicator that measures the conservation status of an ecosystem in relation to its original state, undisturbed by human activities and pressures. For instance, an area with an MSA of 0% will have completely lost its original biodiversity (or will be exclusively colonized by invasive species) whereas an MSA of 100% reflects a level of biodiversity, equal to an original, undisturbed ecosystem.

Mean Species Abundance (MSA) is relevant for listed stocks and is becoming a standard.

The MSA approach is offered by many data providers in Europe and in the US, such as CDC Biodiversité et Iceberg Datalab.

### Mean abundance of original species



\* According to the 2019 IPBES report

## How to estimate the biodiversity footprint of companies?

Among the indicators using abundance as a biodiversity metrics, there are different tools to help investors identify their portfolio companies potential impact on biodiversity. The main 2 being:

- The Global Biodiversity Score (GBS) developed by Carbon4 Finance and CDC Biodiversité
- The Corporate Biodiversity Footprint (CBF) developed by Iceberg Datalab, and I Care & Consult. Both tools are using the "MSA.km<sup>2</sup>" unit.

## What is the methodology Mirova uses to estimate portfolio companies biodiversity impact?

Mirova partnered with Iceberg Datalab and I Care & Consult to develop the Corporate Biodiversity Footprint.

The Corporate Biodiversity Footprint (CBF) is a measurement approach that translates company level activity data into environmental pressures (land-use change, air / water pollution, and greenhouse gas emissions). These impacts are calculated using a life-cycle approach, which takes into account the impact of companies' products and services as well as upstream inputs.

Each environmental pressure is then translated into a quantified impact on biodiversity (MSA).

## What are the outputs of biodiversity measurement tools?

Biodiversity measurement tools can focus on negative and potential positive impacts on biodiversity but also on dependencies on ecosystem services.

- Negative impacts: direct negative impact from human activities on species and habitats. As of now, we use only the negative impact calculation.
- Potential positive impacts: avoided negative impact or direct positive impact from human activities on species and habitats. This could be achieved through products or services or management actions (e.g restoration, enhancement). These datapoints are not available yet.

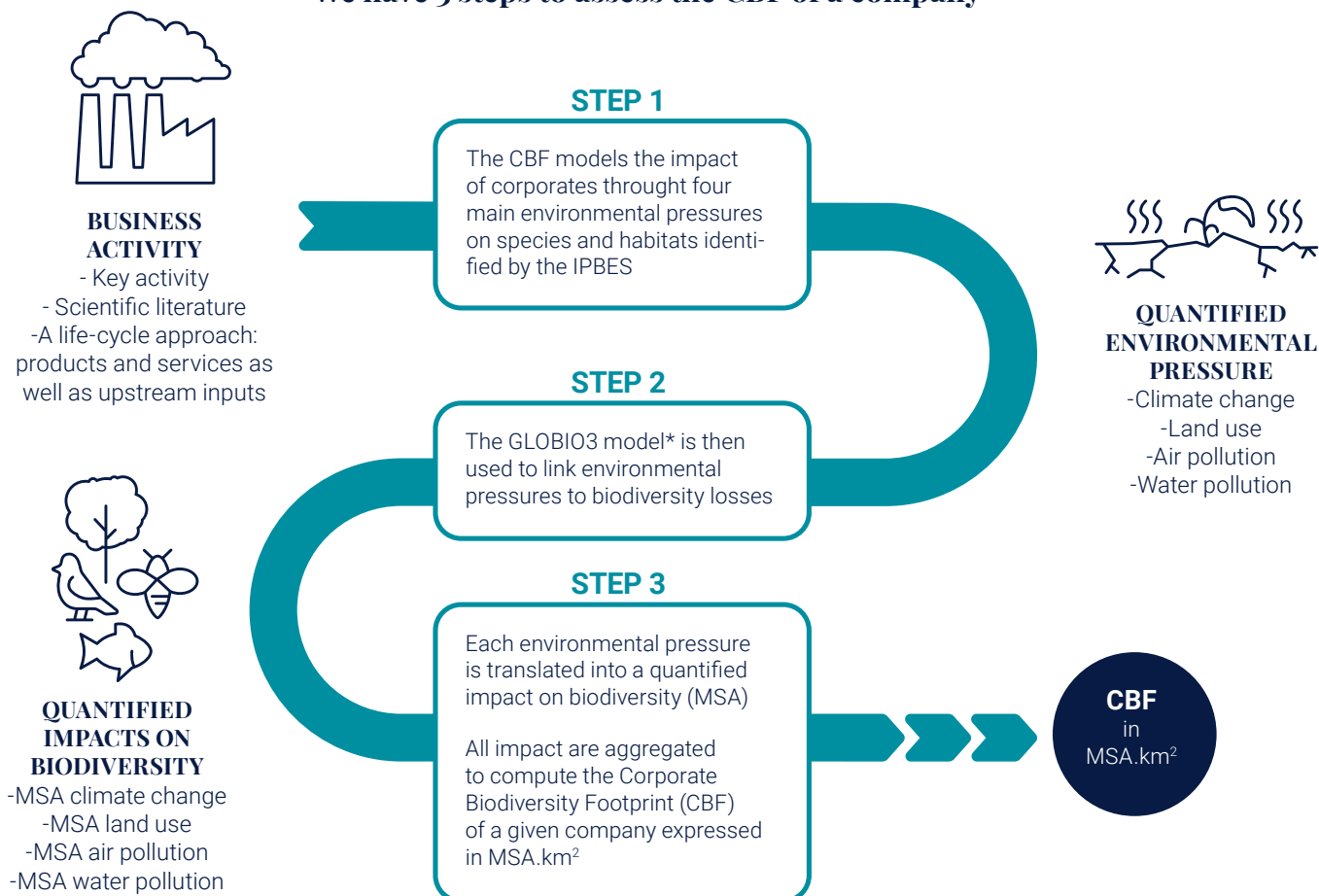
Soon we will also be able to estimate the eco-systemic dependency score provided by Iceberg Data Lab enabling us to determine how much biodiversity loss could impact a company.

## Our solutions to address biodiversity loss

To address biodiversity loss, as an impact investor we believe that investing in companies with solutions that help reduce the pressures and help regenerating biodiversity is key. Hence we need to build portfolio focusing on key solutions such as :

- **Sustainable land use** : Sustainable agricultural and forestry practices are known to enhance biodiversity, increase carbon storage in soils and vegetation, and reduce greenhouse gas emissions.
- **Sustainable Resource Management** through the elimination of waste and pollution, and circular economy, help limit the man-made pressure on the environment, thus regenerating nature.
- **Renewable Energies and Clean Transportation** are vital to reduce global GHG emissions, limiting global warming to ensure a habitable climate and to protect biodiversity.

## We have 3 steps to assess the CBF of a company



Source: Mirova, based on Iceberg Datalab methodology

The GLOBIO model was developed by PBL Netherlands Environmental Assessment Agency and is designed to inform and support decision-makers by quantifying global human impacts on biodiversity. GLOBIO calculates the local terrestrial biodiversity intactness, expressed by the MSA indicator.



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