

SynecO

# Introduction of Synecoculture™ and its potential in cocoa farm in Ghana

AI-37

SynecO, Inc.

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# Agenda

- About us
- Environmental issue at various scale
- Introduction of Synecoculture
- Application of Synecoculture to the cocoa farm

Synec0

About us

## About SynecoO, Inc.

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Establishment	April 1, 2021
Start of Business	June 1, 2021
Share Capital	41 million yen
Shareholders	Sony Group Corporation (100%)
President and Representative Director	Masatoshi Funabashi

### Purpose of Establishment ;

- Commercialize the research on ecosystem-enhancing technologies such as “Augmented Ecosystems” and “Synecoculture™” at Sony Computer Science Laboratories, Inc.
- Aim to create multifaceted value for biodiversity through social implementation
- The first project of the Sony Innovation Fund: Environment, a corporate venture capital fund of Sony Group Corporation



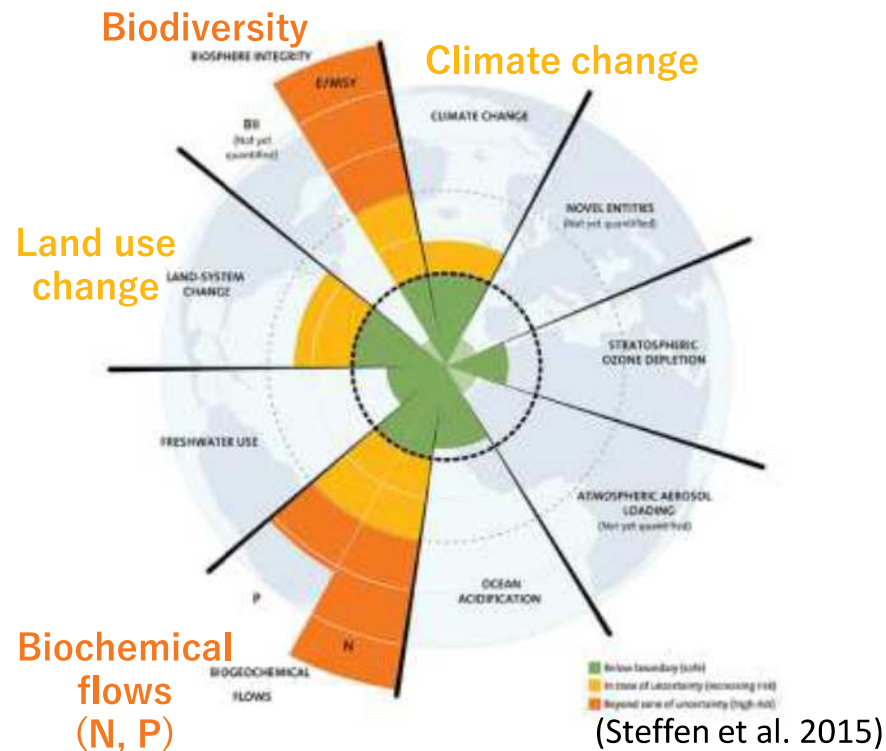
Improvement of biodiversity and ecosystem function  
Values of ecosystem  
Economic activity and food production

Synec0

# 1. Environmental issue at various scale

# What happens on our planet?

**Planetary boundaries:** showing the limit to the impact of human activity in the Earth system.



Biodiversity, biochemical flows, climate change, and land use change have already exceeded the limitation.

Attention is paid to how we can improve those situation.





Deforestation

Image: Earth.org

Agrochemicals

Image: [Arjun MJ](#) on Unsplash

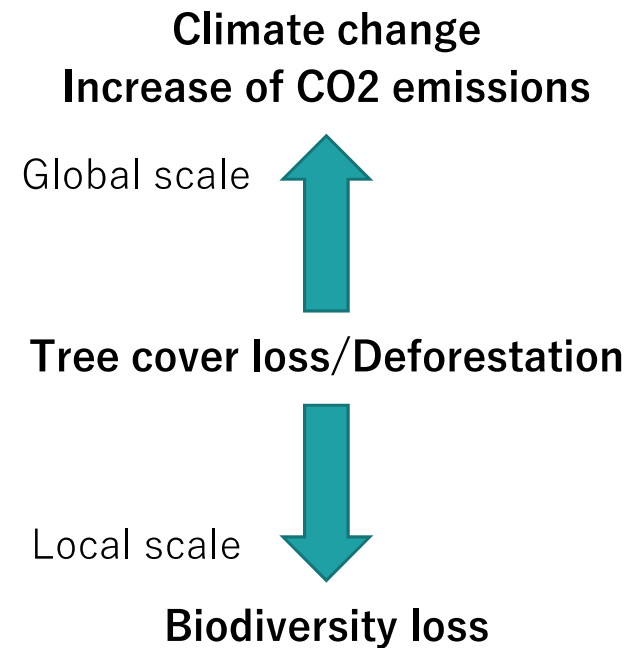
Extreme weather

Image: [Mike Erskine](#) on Unsplash



# Nature-related risks in Ghana

Tree cover loss is one of the biggest problems in Ghana



Data: Global Forest Watch

# Global perspective against deforestation

## EU adopts new rules for deforestation-free products

Alert

19 May 2023

7 min read

Genevra Forwood | Clare Connelan | Sara Nordin

The European Union has adopted a new regulation to curb the EU market's impact on global deforestation and forest degradation around the world, as well as protecting the rights of indigenous peoples.<sup>1</sup> The EU Deforestation Regulation ("EUDR") mandates extensive due diligence on the value chain for all operators and traders dealing with certain products derived from cattle, cocoa, coffee, oil palm, rubber, soya and wood.

**Targeted products must be deforestation-free**



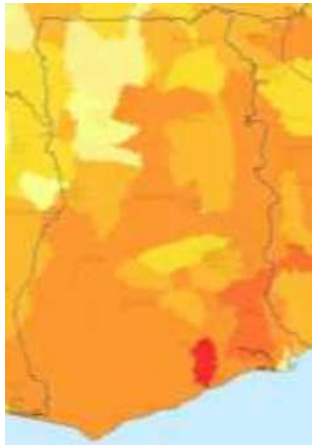
# Nature-related risks in Ghana

## Biodiversity loss in Southern Ghana

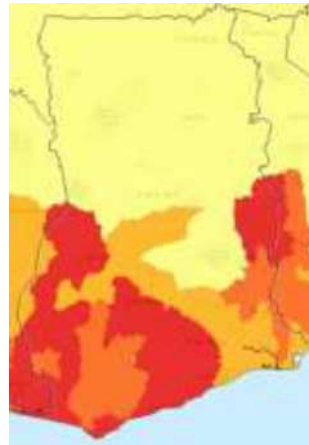
**1442** species on IUCN Red List

Nearly 100 endangered species

## Forest as a biodiversity hotspot



Pressure on biodiversity



Range rarity  
(uniqueness of biodiversity)



# Biodiversity and Ecosystem services

Well-established ecosystem provides many services to us

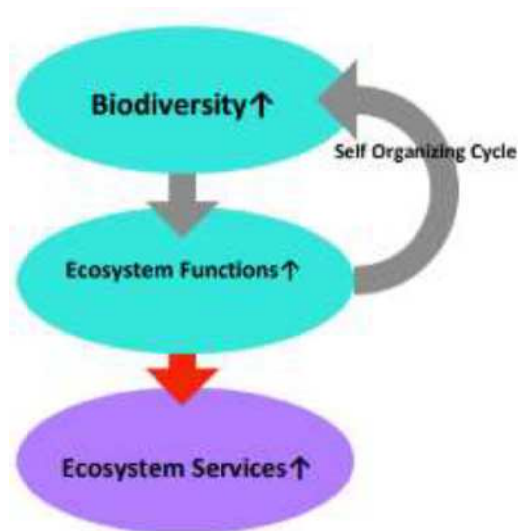


Image:Synecoculture manual



Image: TEEB Europe

Conversely, it is possible that **you cannot continue some activities in the future because of biodiversity loss and ecosystem collapse.**

# Nature-related risks in Ghana

## Extreme heat

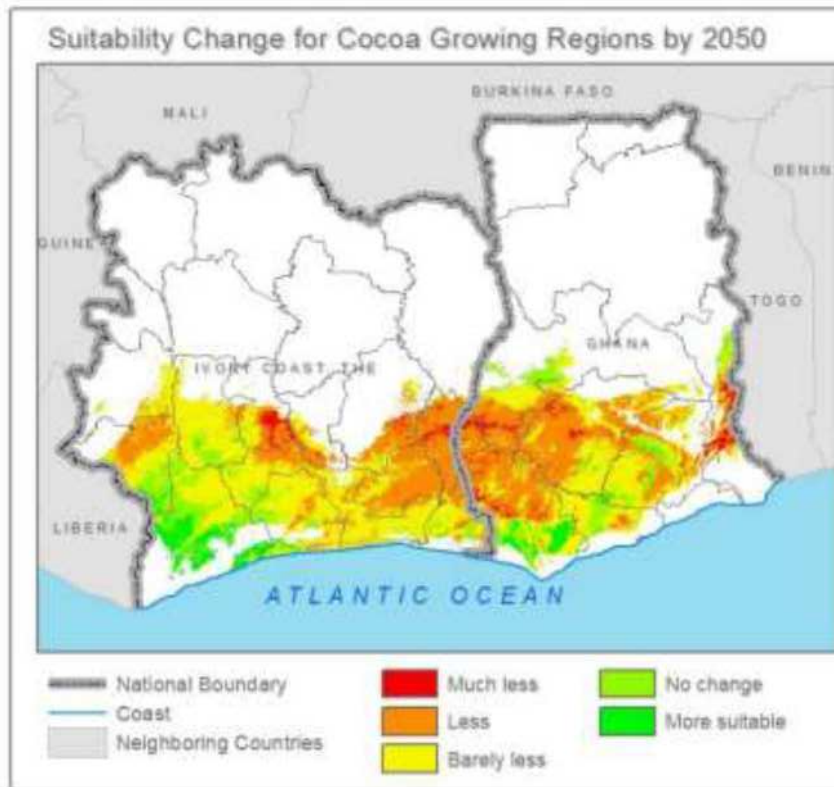


Extreme heat will affect negatively on the root growth of cocoa tree. The risk of extreme heat expected to be more severe in the future.





# Prediction of suitability change for cocoa

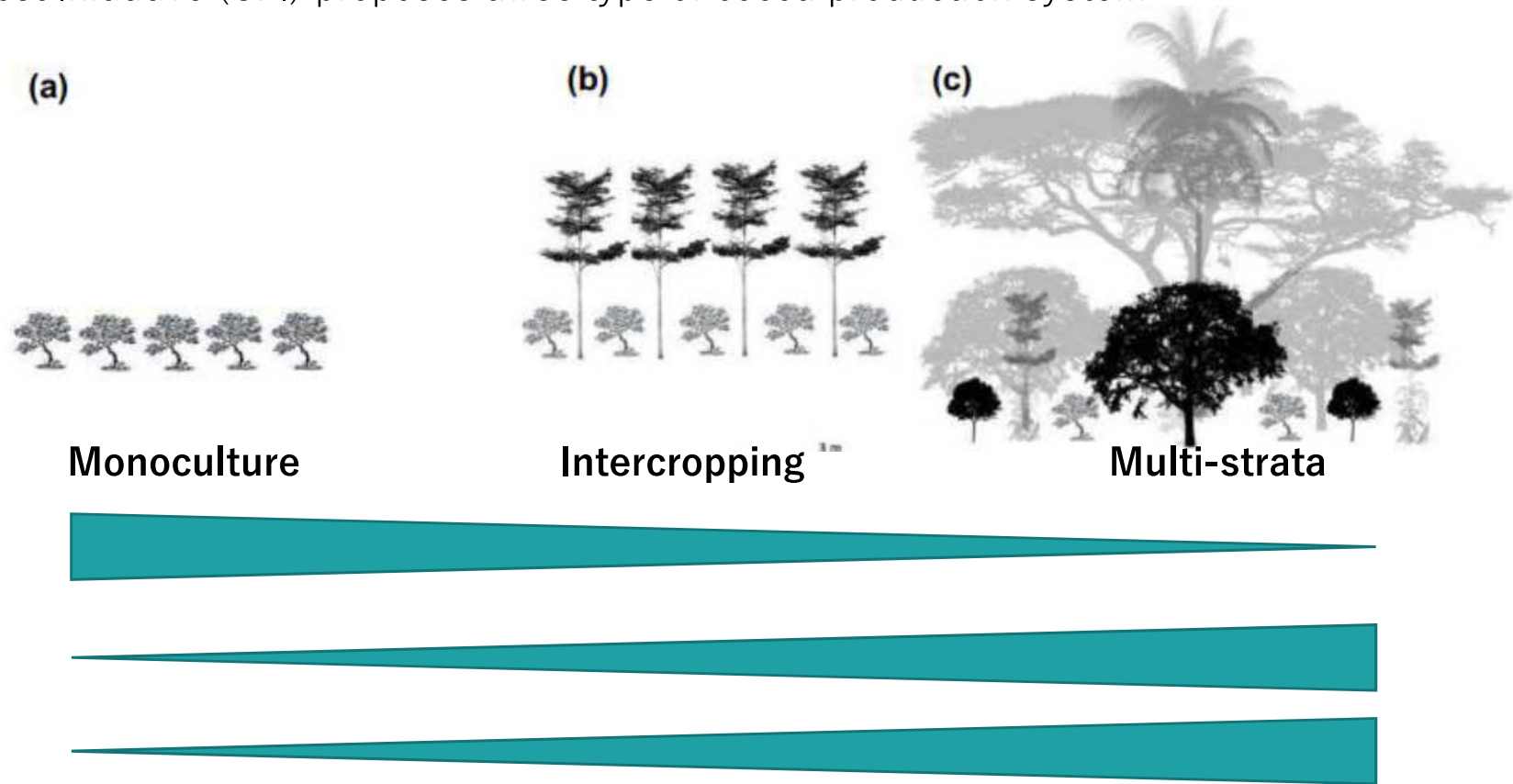


(Laderach, 2011)

## How to adapt and deal with this situation?

# Type of cocoa farm

Cocoa Forest Initiative (CFI) proposes three type of cocoa production system.



Despite the theoretical high productivity of monoculture, the average cocoa yield is around 500-700 kg/ha, which is lower than the theoretical value

# Monoculture and Agroforestry

## Monoculture

Cocoa monoculture is based on the hybrid variety and fertilizer

## Characteristics of monoculture

With right amount of fertilizer, sunlight, and water, it can produce high yield (but it's difficult)

Difficult to deal with the risks such as climate uncertainty

Soil gets degraded faster

# Monoculture and Agroforestry

## Agroforestry (Multi-strata system)

Cocoa is cultivated with shade tree and understory plants

## Characteristics of agroforestry

Soil is less likely to be degraded

Diverse plants result in higher

**resilience - toughness**

Lower cocoa yield compared to that in monoculture because of the competition



Cocoa production in Cameroon

# Cocoa monoculture and deforestation

## Cocoa monoculture over years



Global environmental issues made deforestation-free policy, which may restrict farmers to keep expanding new farm land in restriction areas.

**To overcome this restriction, what we can do?**



We come here not to say “just use same land and you should accept yield decrease for biodiversity and forests.”

## **Our message is:**

Biodiversity and forest will give you certain benefit,  
so it is not only global issue but also local issue  
We would like to suggest how to improve profit  
from the farm without land expansion

# Wrap-up; What is needed in cocoa farms?

## Sustainable land use

It is required to utilize the same land for the longer period

## Resilient farm

Suitability for cocoa production will change in the near future

Cocoa farm is surrounded by uncertain factors such as climate change, price volatility, extreme weather

## Consider environmental factors

Biodiversity, ecosystem, and preventing tree-cover loss

**Most importantly, improving farmers' economic situation is fundamental**