

Welcome! Bienvenue!

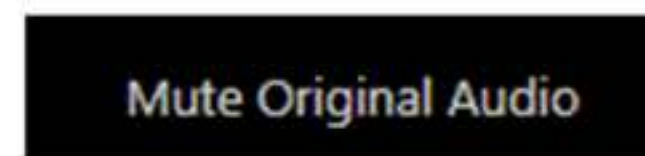
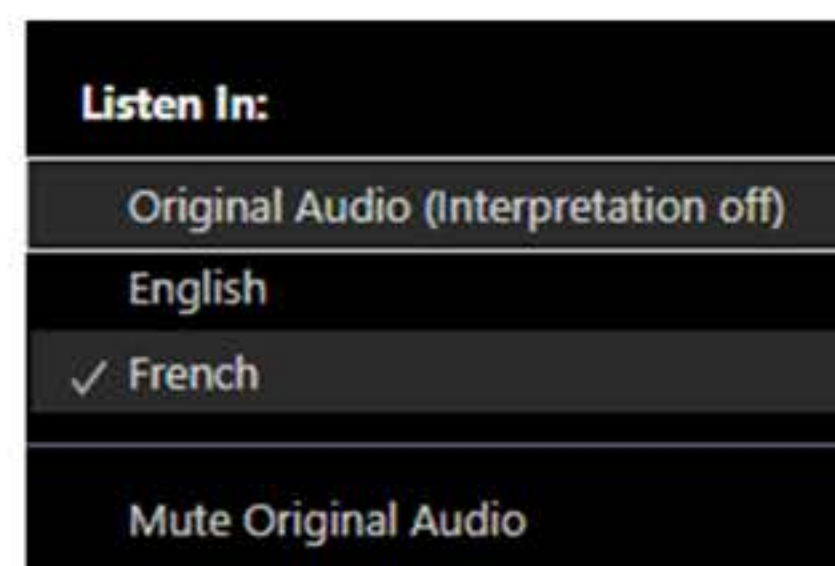
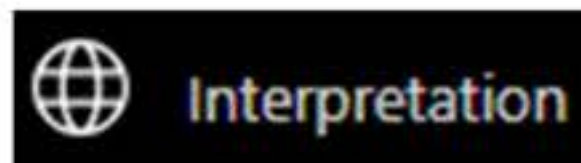


Bem-vindo! ¡Bienvenido!

Spoken Interpretation Instructions

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(Located in your Zoom toolbar)
2. Choose your language
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 - ✓ Hear only your selected language
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1. Under “Participants,” click the 3 dots (...) next to your name
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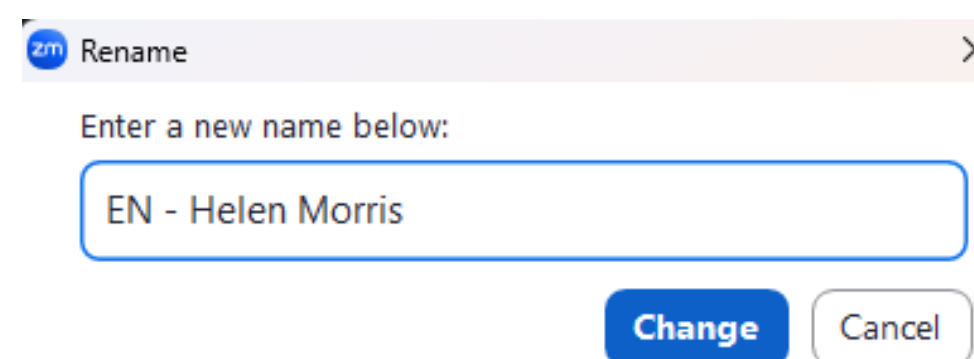
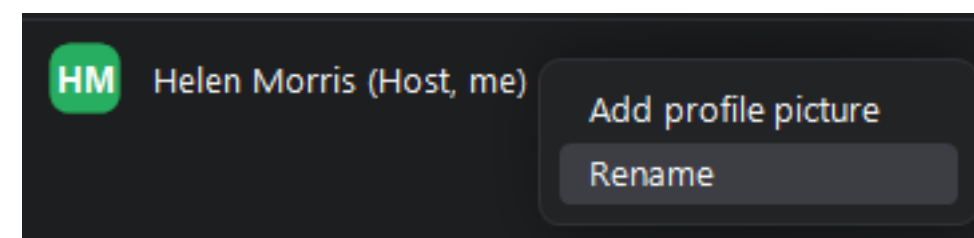
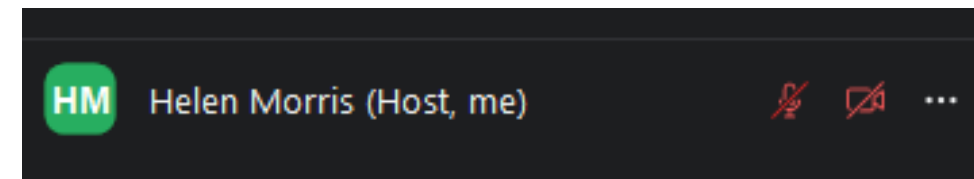
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A photograph of two women in a field, focused on planting small green seedlings into the soil. The woman on the right is wearing a white short-sleeved shirt, a grey beanie, and a patterned skirt. The woman on the left is wearing a dark long-sleeved shirt. The background shows a natural, wooded area with trees and dry vegetation.

RESTORATION FOR CLIMATE ADAPTATION TRAINING

Giacomo Fedele, PhD | Adaptation Strategy Director

Starry Sprenkle-Hyppolite, PhD | Restoration Science Director

GEF8 – Ecosystem Restoration Integrated Program 2026

CONSERVATION
INTERNATIONAL



TRAINING OBJECTIVES

Objectives: To provide information about:

- A. The importance of climate adaptation and the need to adapt to climate change,
- B. Nature-based Solutions for climate change adaptation of people,
- C. Ecosystem restoration as a type of NbS for climate adaptation of people,
- D. How to identify, implement and monitor restoration interventions for the climate adaptation of people
- E. The importance of implementing restoration where multiple benefits, beyond climate adaptation, can be achieved.



TRAINING MODULES

1. **Module 1:** The Importance of Climate Adaptation and Risk Analysis for Restoration (1.5h)
2. **Module 2:** Nature and Restoration for climate adaptation (1.5h)
3. **Module 3:** Identification and Implementation of Restoration for Climate Adaptation (1.5h)
4. **Module 4:** Monitoring NbS for climate adaptation (1.5h)



COURSE PAGE

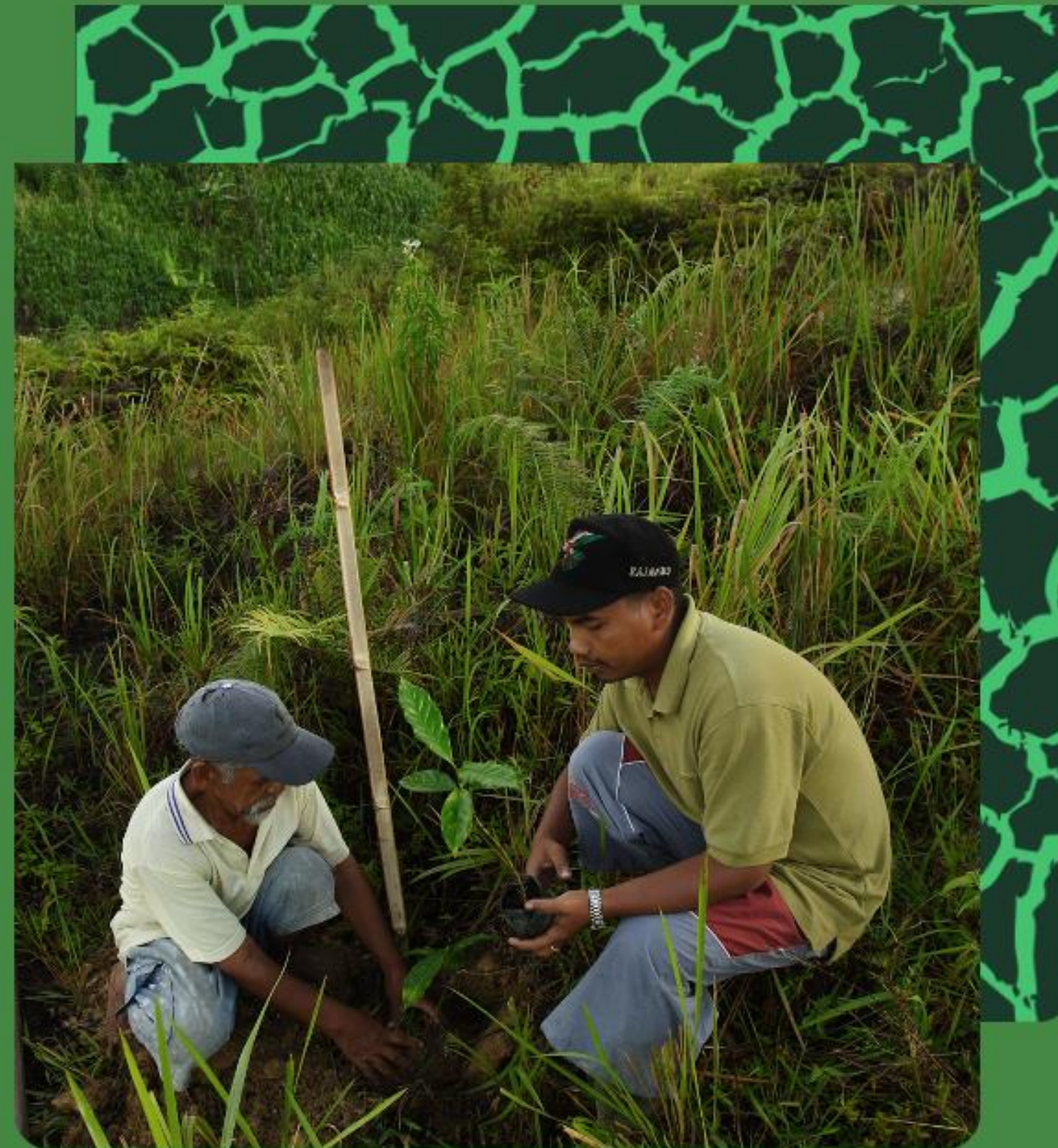
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Climate Change

Nature-Based Solution



[Restoration for Climate Adaptation course home page](#)

- Reading Materials
- Presentations
- Recordings

STARRY SPRENKLE-HYPPOLITE

Restoration Ecologist and Natural Climate Solutions Strategist with 20 years of international experience, 15 years in Caribbean, primarily Haiti

Ph.D. in Ecology, University of California at Davis



GIACOMO FEDELE

Climate adaptation specialist with 15 years of experience on nature-based solutions for climate adaptation of most vulnerable communities across the tropics (from South East Asia to Amazon)

Ph.D. in Environmental Science,
University AgroParisTech, France

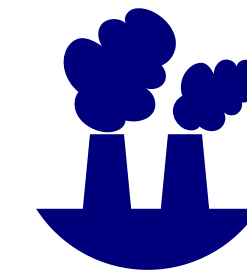


ERIP at a Glance

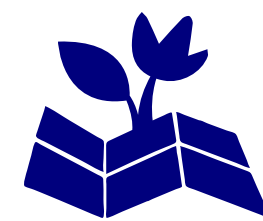
- \$200M GEF-8 Integrated Program
- Multi-agency collaboration with national governments and civil society organizations
- 21 countries across Africa, Asia, Latin America
- Aligned with UN Decade on Ecosystem Restoration



1.7 million ha
under restoration
(sub-indicators: agricultural
land; forests; grass and
woodlands; wetlands)



170 million t
of carbon benefits
(CI 6)



642,000 ha
Terrestrial PAs under
improved management
(CI 1.2)



3 million
beneficiaries (CI 11)



6 million ha
under improved
practices (sub-indicators:
improved management to
benefit biodiversity;
improved management in
production landscapes;
high conservation value
forests)

Module 1

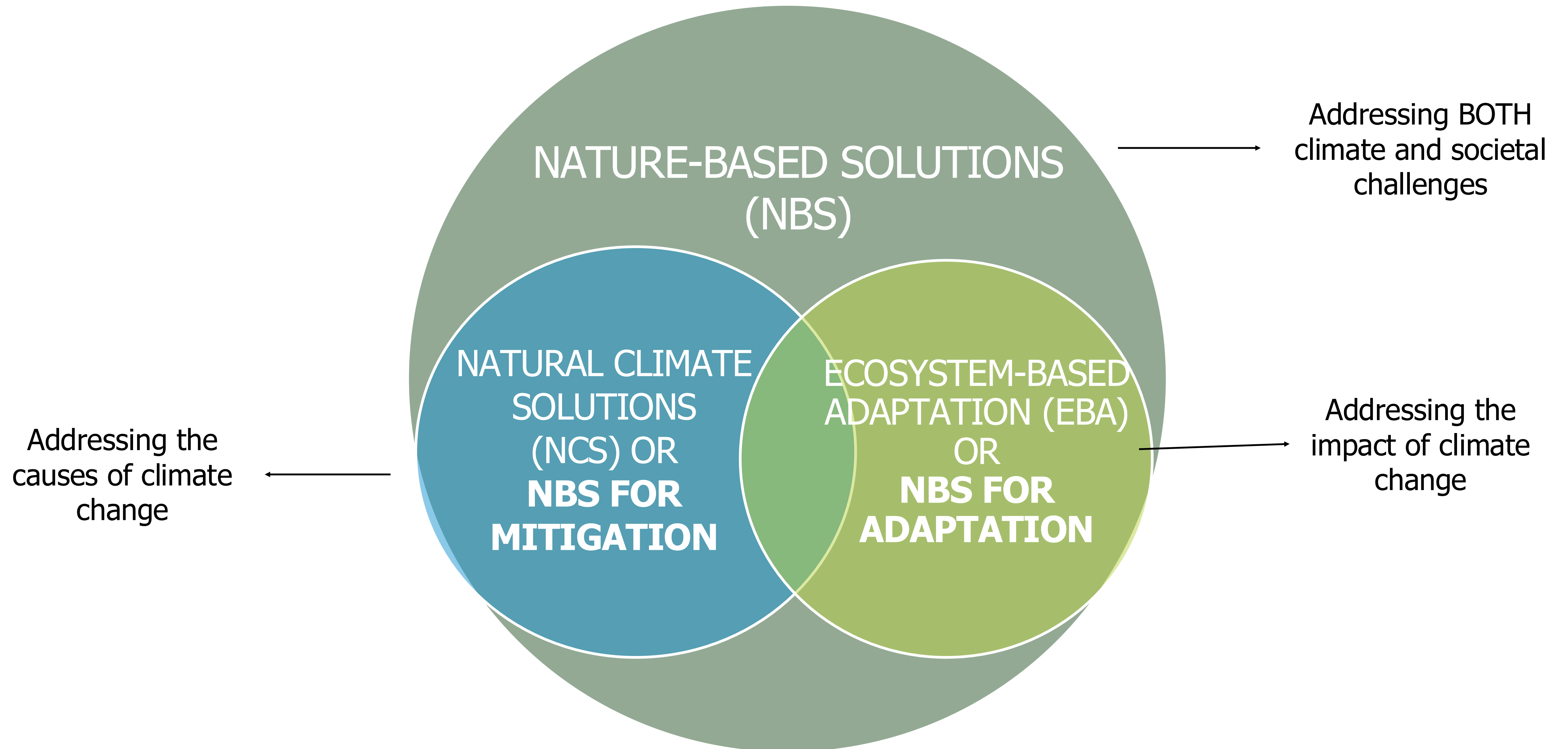
THE IMPORTANCE OF CLIMATE ADAPTATION AND RISK ANALYSIS FOR RESTORATION

~ 1 hour presentations, Q&A

~30 minute interactive activities in smaller groups (by language)



DEFINITION OF NBS



RESTORATION: DEFINITION FOR CI

Restoration is defined as **improving the ecological integrity** of a landscape, to the level that **human use and community needs allow**



RESTORATION: GEF'S DEFINITION

Restoration is defined as the process of **repairing and/or assisting the recovery of land and ecosystems** that have been degraded, damaged, destroyed, or modified to an extent that the land and/or ecosystem cannot fulfil its ecological functions and/or fully deliver environmental services.

Activities may include (i) **ecosystem restoration** that reduces the causes of decline and improves basic functions; and (ii) **ecological restoration** that enhances native habitats, sustains ecosystem resilience, and conserves biodiversity.



**STRATEGIES TO RESTORE NATURE
MUST BE FORWARD-LOOKING,
PREPARED FOR NEW CLIMATIC CONDITIONS AND
IMPACTS ON ECOSYSTEMS AND PEOPLE AND BUILD
THEIR RESILIENCE.**

PURPOSE OF UNDERSTANDING CLIMATE RISKS



Reduce risk of project failure due to current and future climate change impacts



Avoid unintentionally exacerbating climate vulnerability of some groups or in the long-term



Support adaptation responses to manage climate change risks

RISKS OF OVERLOOKING ADAPTATION IN NATURE-BASED SOLUTIONS



Location is NOT appropriate under future climate conditions.



Management plans do NOT support resilience and adaptation benefits.

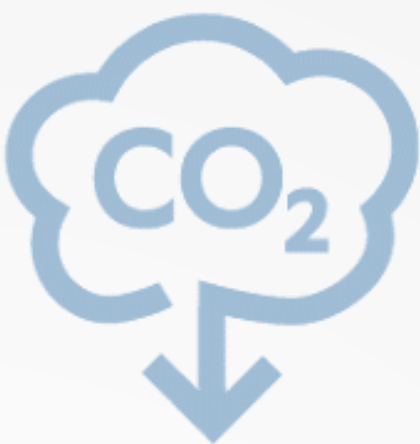


Land-use plans do NOT include needs of most climate-vulnerable people.



Species are NOT suitable under future climate.

WHAT ARE THE STRATEGIES TO ADDRESS CLIMATE CHANGE?

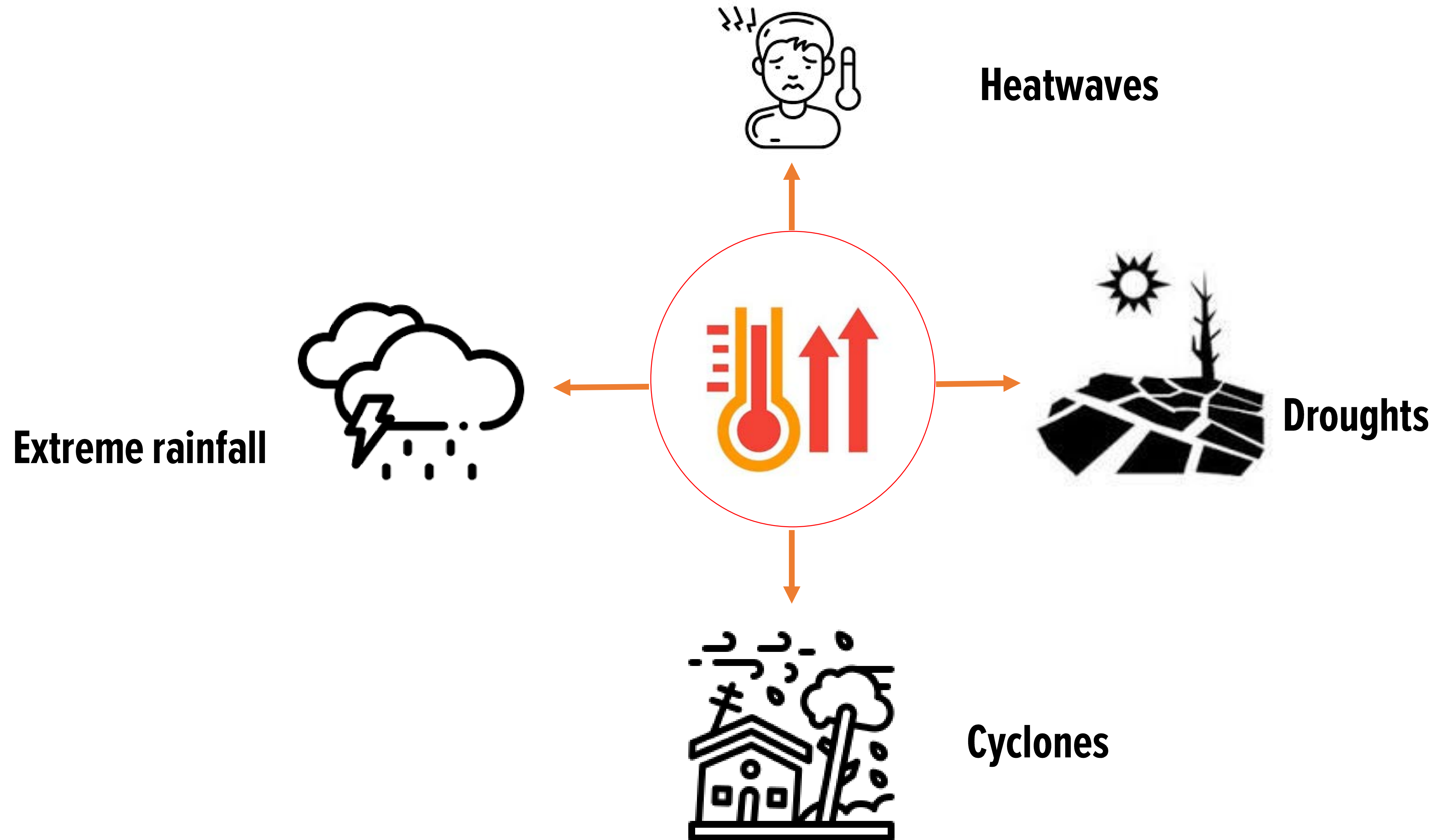


- Scope
- Metric
- Benefits
- Temporal scale
- Priority sectors
- Nature-based solution

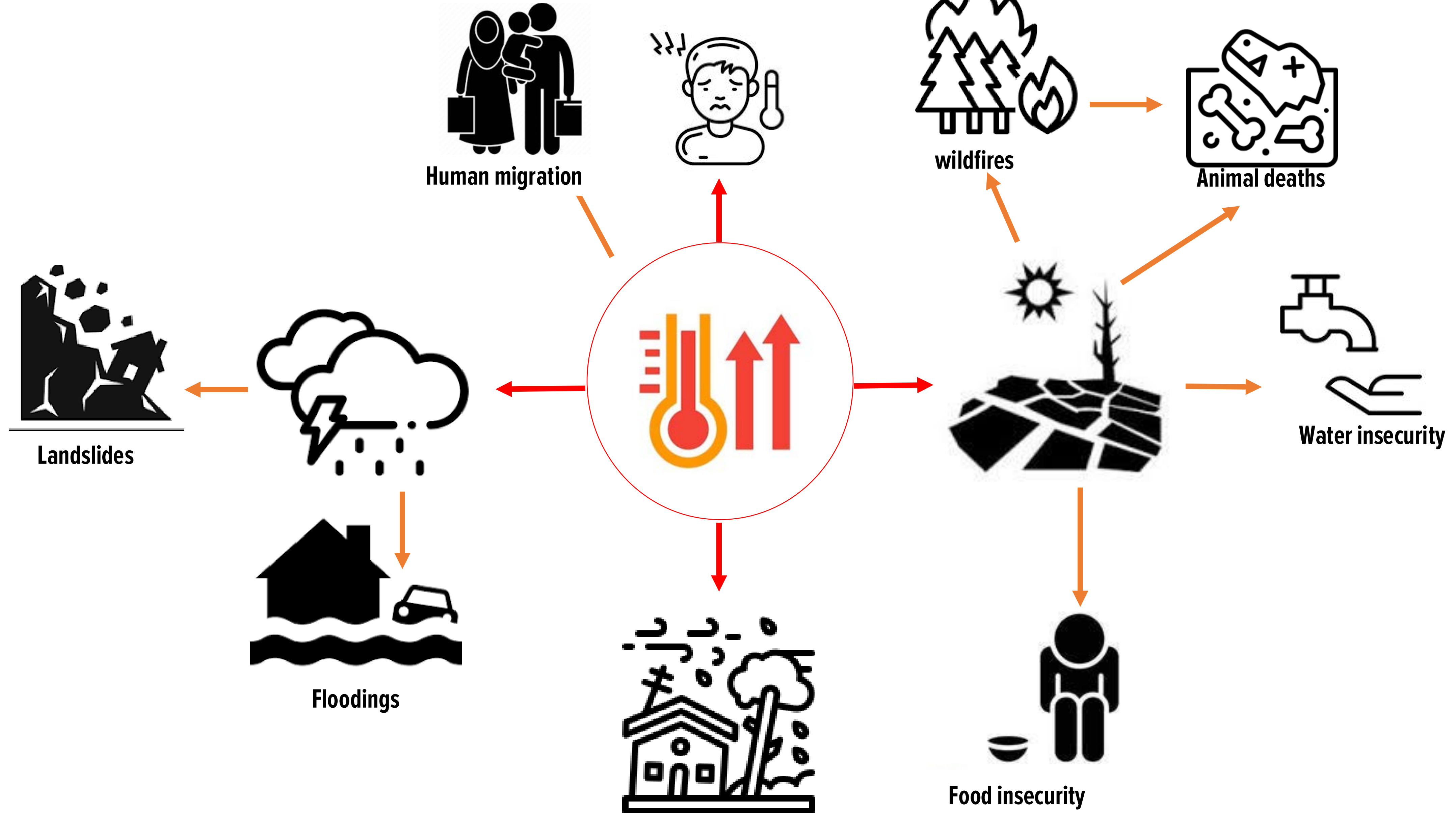
Mitigation	Adaptation
Reduce causes	Reduce effects
Carbon	Multiple
Global	Local
Long-term	Short-term
Energy, Transportation, Industry, Forests & Agriculture	Water, Health, Infrastructure, Forests & Agriculture
NCS/REDD+	EbA/NbS for Adaptation



IMPACTS OF CLIMATE CHANGE



IMPACTS OF CLIMATE CHANGE



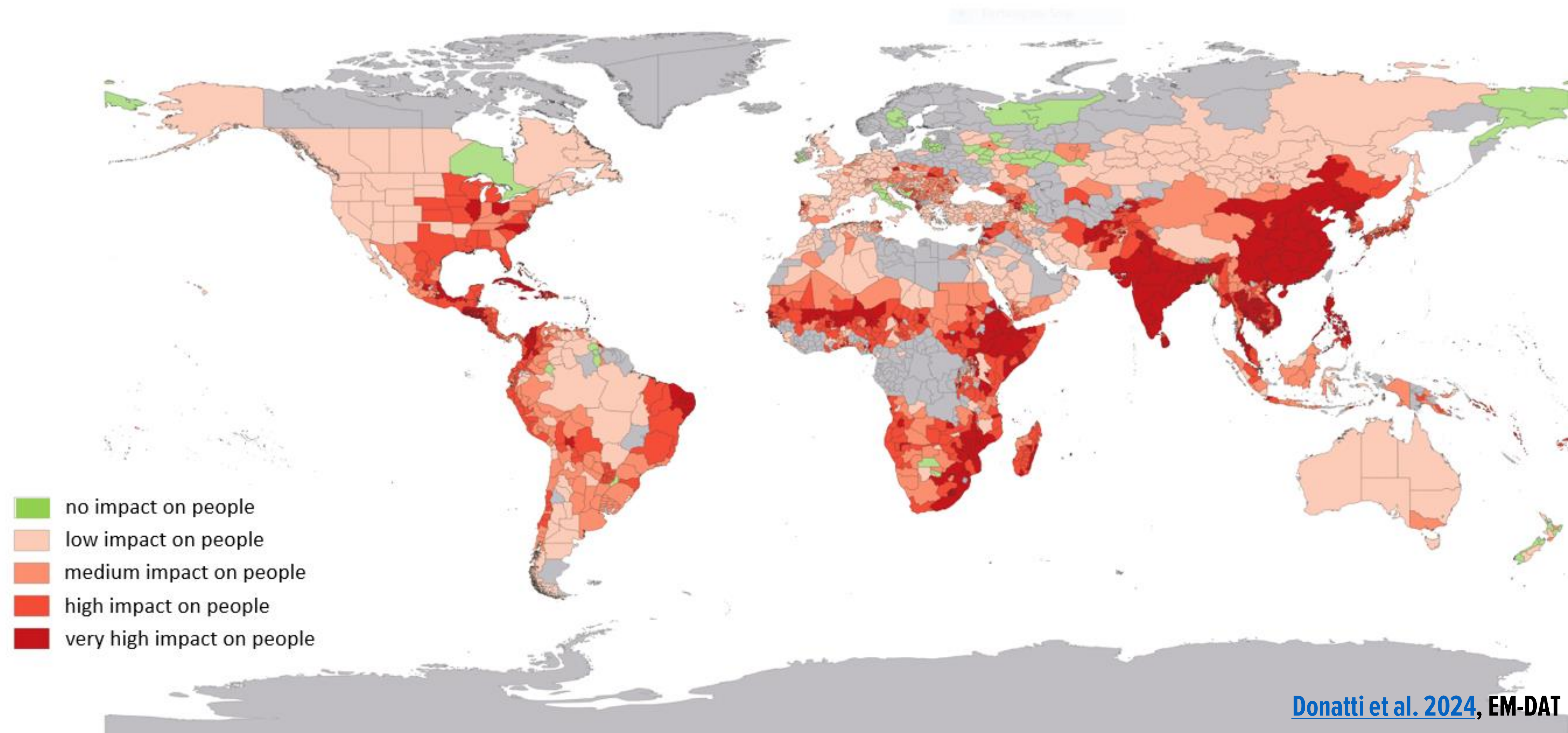
A photograph of a coastal village at dusk. In the foreground, a man in a red tank top and blue pants is wading through shallow, rippling water. Two other people are visible further back in the water. In the background, there are several small houses with thatched roofs, palm trees, and a small pier extending into the sea. The sky is dark with some clouds, and the sun is low on the horizon.

**3.3 – 3.6 BILLION
PEOPLE LIVE IN
HOTSPOTS OF
HIGH VULNERABILITY TO
CLIMATE CHANGE.**

IPCC 2022



40% OF THE POPULATION WAS IMPACTED OVER THE LAST 20 Y





70%

**PEOPLE IN THE TROPICS
DEPEND ON NATURE FOR AT
LEAST ONE BASIC NEED**



ASSESSING RISKS

- Heatwaves
- Storms
- Floods
- (Social, political, economical)



Hazard



Exposure

- People
- Productive activities environment
- Infrastructure

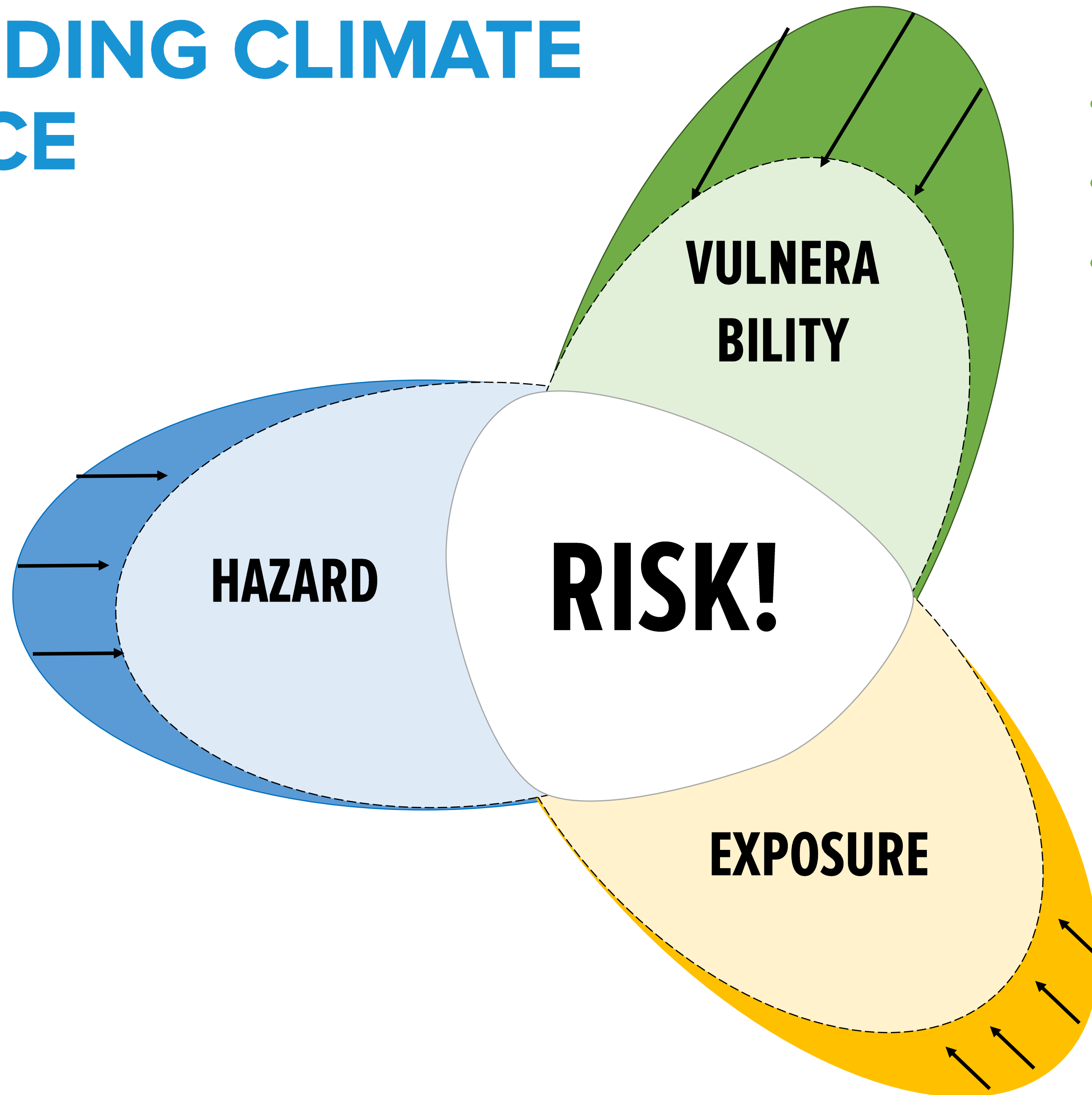


Vulnerability
(adaptive capacity, sensitivity)

- Natural capital (land, water)
- Human skills (education, health)
- Social + governance (leadership, rules)
- Physical (roads, energy)
- Financial (savings, wages)

RESPONDING: ADAPTING AND BUILDING CLIMATE RESILIENCE

- **Water reservoir**
- **Seawalls**
- **Watershed restoration to improve water infiltration**

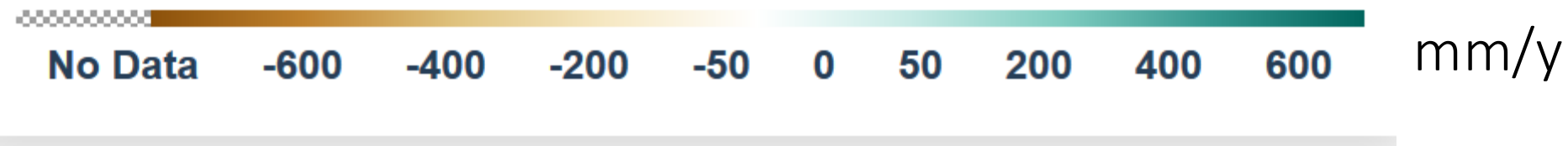
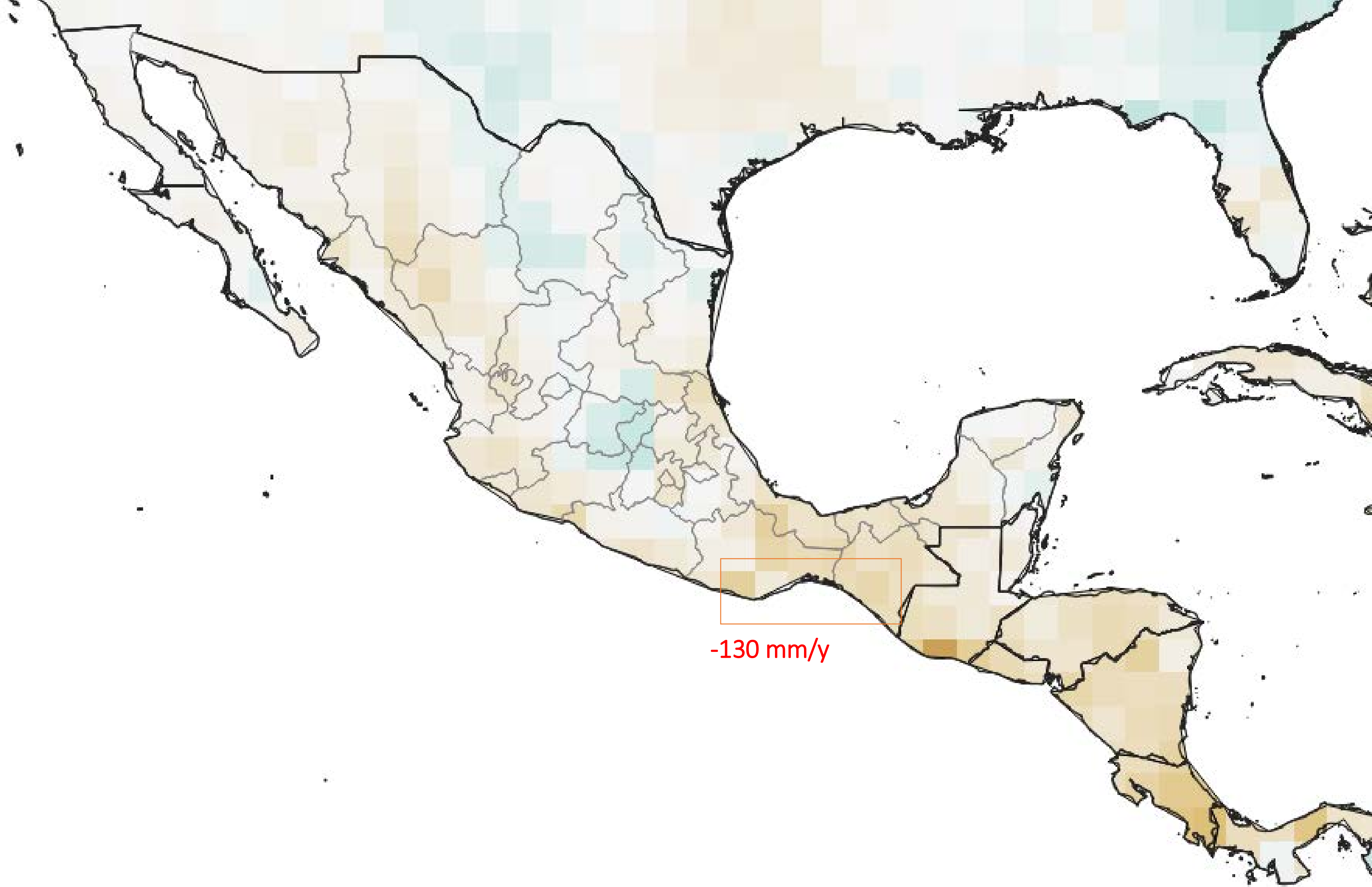


- **Livelihood diversification**
- **Improving building codes**
- **Insurance**

- **Coastal resettlements**
- **Risk sensitive land use plans**
- **Early warning & evacuation**

EXAMPLE OF CLIMATE HAZARD
MAPPING

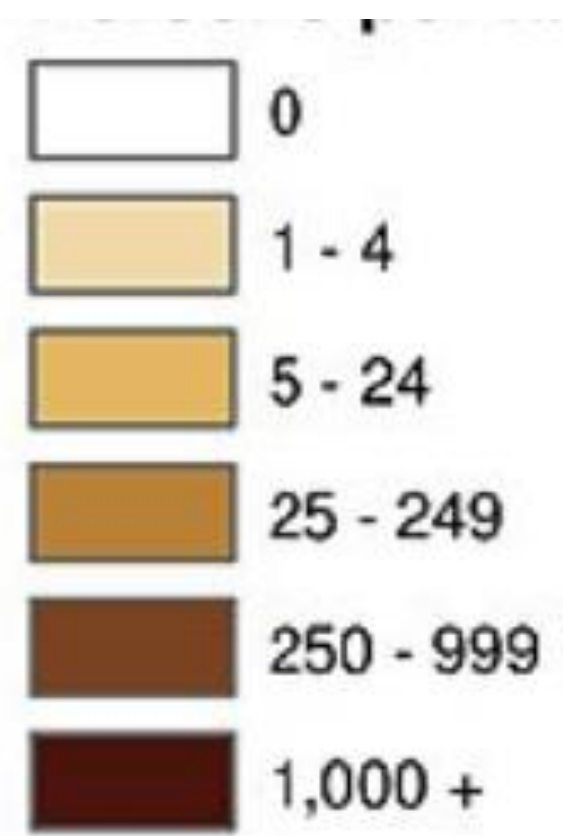
PROJECTED
PRECIPITATIONS
CHANGES (MM/Y)
IN 2100



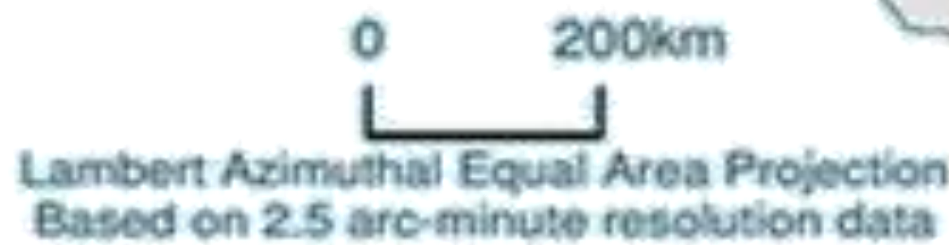
Average differences (1971-2000 v. 2051-2080)
Emission Scenario RCP 4.5
NASA Earth Exchange Global Daily Downscaled Projection (NEX-GDDP)

EXAMPLE OF CLIMATE EXPOSURE

POPULATION DENSITY
(PEOPLE/KM2)

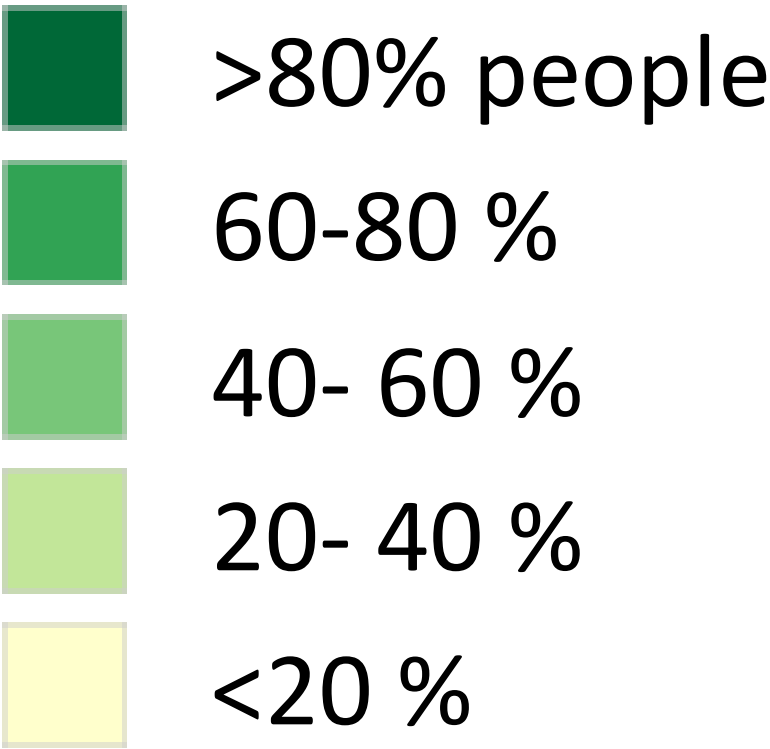


Several places with
medium population
density



EXAMPLE OF CLIMATE VULNERABILITY
(SENSITIVITY)

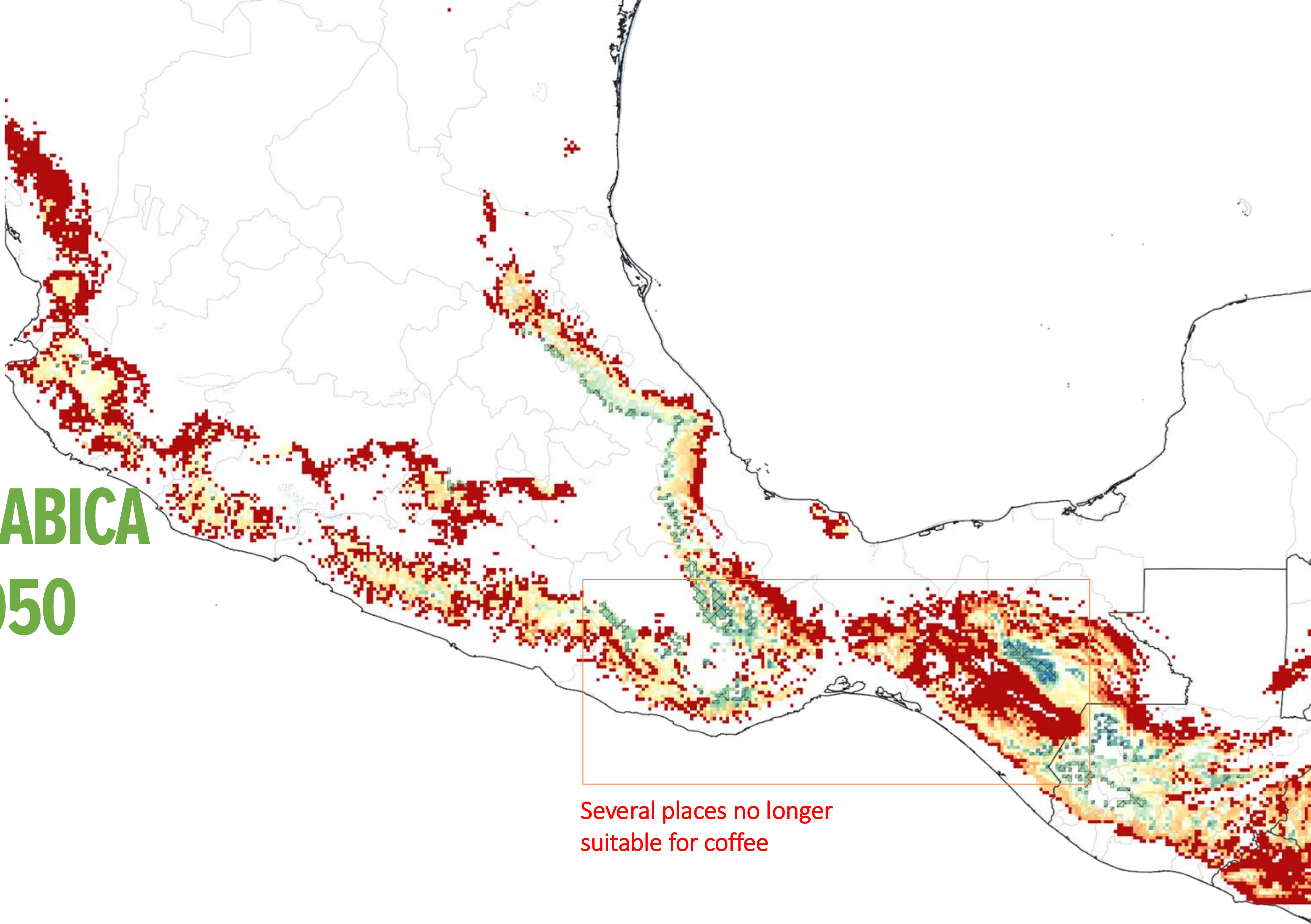
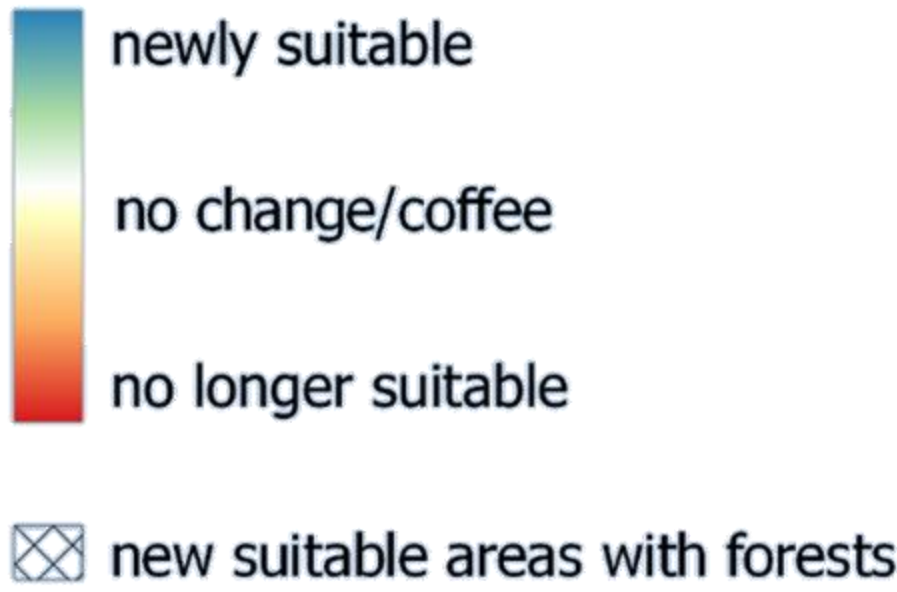
PEOPLE DEPENDENCY ON
NATURE FOR BASIC NEEDS



Relative high proportion of
nature dependency

EXAMPLE OF CLIMATE VULNERABILITY
(SENSITIVITY)

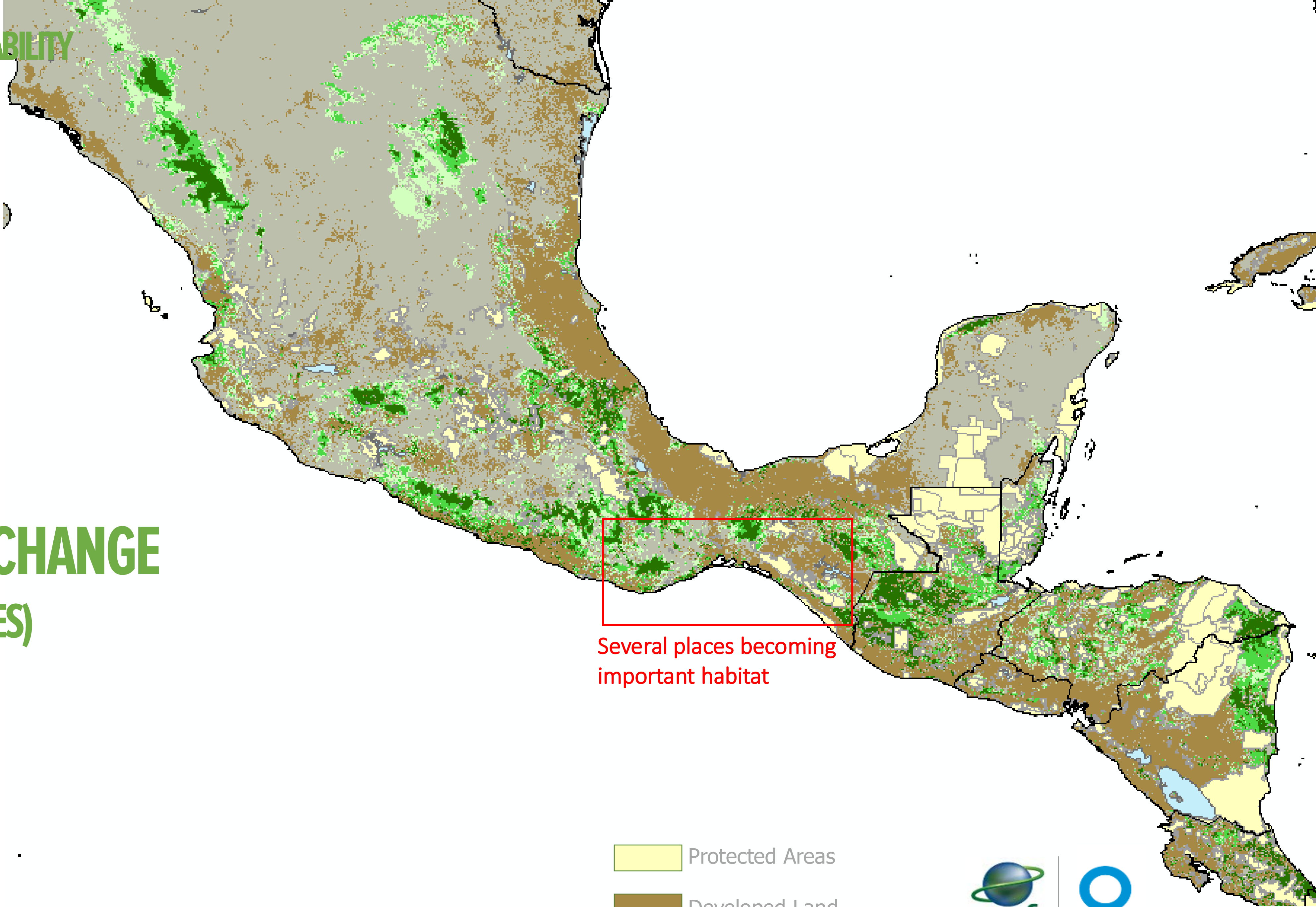
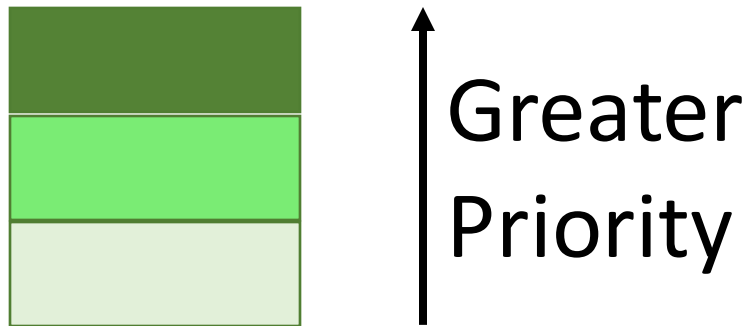
FUTURE COFFEE ARABICA PRODUCTION IN 2050



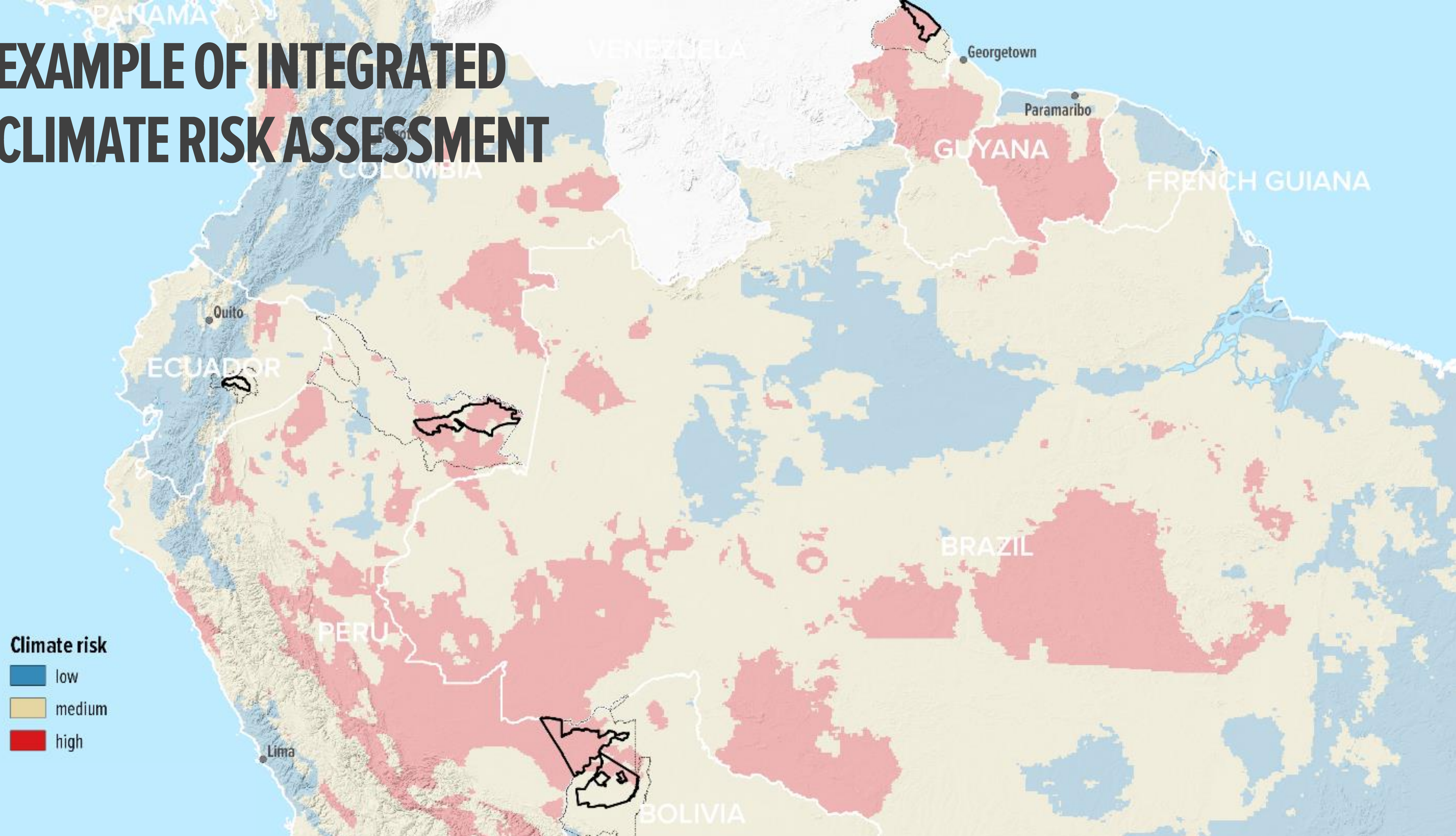
Based on data from: Bunn C, Läderach P, Ovalle-Rivera O, Kirschke D, 2015: A bitter cup: climate change profile of global production of Arabica and Robusta coffee. ClimaticChange (2015) 129:89–10

EXAMPLE OF CLIMATE VULNERABILITY
(SENSITIVITY)

SPECIES SHIFTS
UNDER CLIMATE CHANGE
(PLANTS AND VERTEBRATES)



EXAMPLE OF INTEGRATED CLIMATE RISK ASSESSMENT



TOOLS FOR IDENTIFYING CLIMATE RISKS

- [CI's climate change risk tool](#)
- [trends.earth](#)
- [Resilience Atlas](#)
- [Copernicus interactive climate atlas](#)
- [World Bank Climate Knowledge Portal](#)
- participatory methods capturing local knowledge and experience (considering gender, age, and social groups)



Site-Based Climate Risk and Related Disasters

As a part of CI Safeguards, projects must ensure that they are not at risk of failure due to current and future climate change impacts, they do not exacerbate climate vulnerability in the long-term, and they support adaptation responses to mitigate climate change risks. This tool will help you describe the current and expected climate change risks based on trends and projections for your project location.

Begin by selecting a location on the right to populate the table below. Next, review more information on the individual metrics in their respective tabs above. Each tab will populate with information and maps specific to your site.

		Historic Climate Risk		Projected Climate Risk	
	Metric	Value	Site Risk	Value	Site Risk
Q1	Is extreme temperature a current or likely future risk?			0	
Q2	Is extreme rainfall, flooding, or sea level a current or likely future risk?			0	
Q3	Are extreme drought, water stress, and wildfires a current or likely future risk?			0	
Q4	Are extreme storms, cyclones, and strong winds a current or likely future risk?			0	
Q5	Are resident species exposed to climate change?			0	
Q6	To what extent are people dependent on nature?			0	
Q7	How adaptable is the population?			0	
	Overall Risk			0	

Select Location

Q1

Q2

Q3

Q4

Q5

Q6

Q7

Adaptation Options

Contact

Determine an area of interest:

- ☒ Select a CI SLS site
- ☐ Select a country
- ☐ Draw a polygon
- ☐ Upload a file

Select a site:

Choose

Go!



For best experience, you may need to adjust browser zoom

Country boundaries are from Natural Earth (www.naturalearthdata.com). The country boundaries shown here do not imply any opinion or position of Conservation International concerning the legal status of any country or delimitation of its borders.

Q&A



DISCUSSION + ACTIVITY (~20 MIN)

Discussion Topics

1. Please give a short intro (name, organization, country) and mention what is your expectation about this training?
2. Can you give an example of a climate-related hazards or impact in your project area?
3. Use the climate risk tool to check the climate risk in your location



INTERACTIVE ACTIVITY

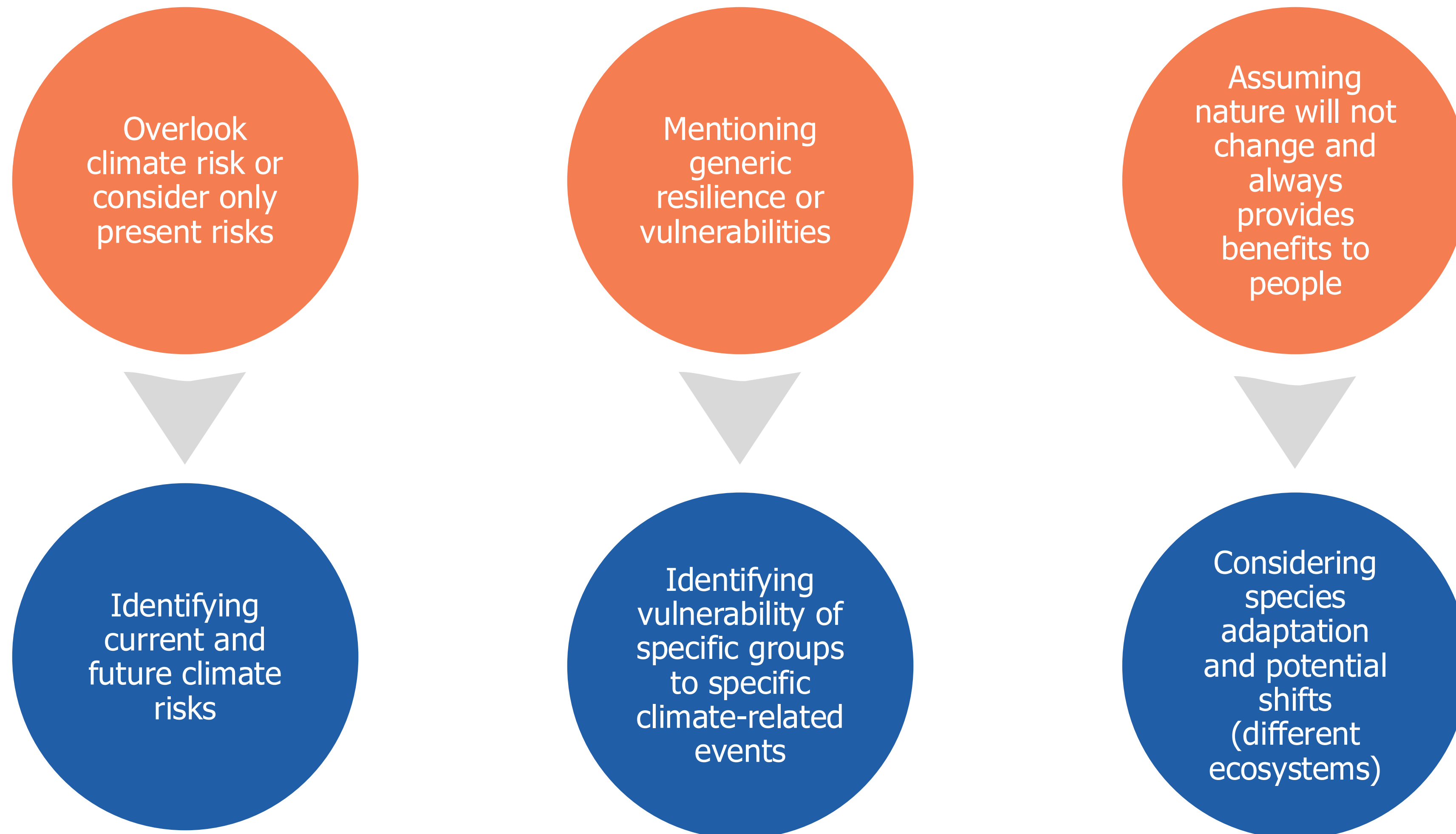
RESTORATION & ADAPTATION TRAINING - MODULE 1 ACTIVITY.PPTX

Climate change hazards

impact on people and
ecosystems



KEY TAKE AWAYS



HOMework

- For the next session, please prepare to share a 2-3 minute summary of:
 1. the major climate risks your area face (based on your knowledge + climate risk tool),
 2. the restoration activities of your project and
 3. the benefits they provide to people, if those activities are expected to reduce the impacts of climate change.
- Can be completely verbal, or have a maximum of 2 slides.



OFFICE HOURS FOR THIS MODULE

Thursday Sept 3 10-11 CET (Giacomo)

Thursday Sept 3 10-11 EST (Starry)

Zoom links in chat and on course page



Contact Information:

Giacomo Fedele, PhD | Adaptation Strategy Director: gfedele@conservation.org

Starry Sprenkle-Hyppolite, PhD | Restoration Science Director
ssprenkle-hyppolite@conservation.org

THANK YOU



Module 2

NATURE & RESTORATION FOR CLIMATE ADAPTATION



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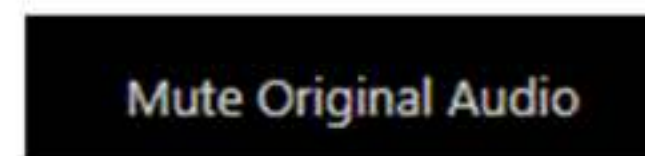
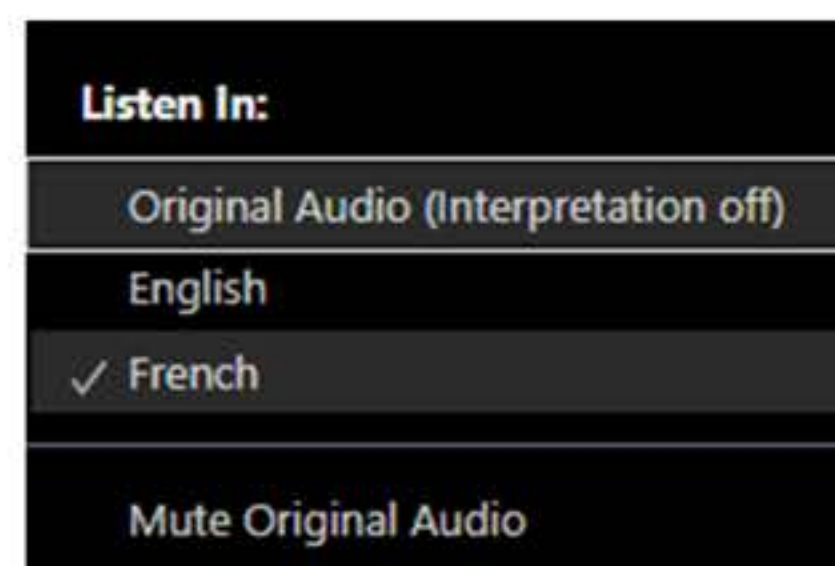
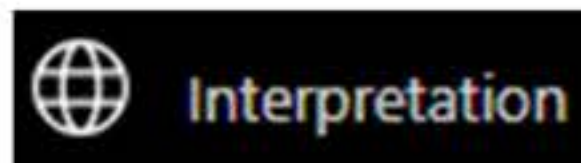


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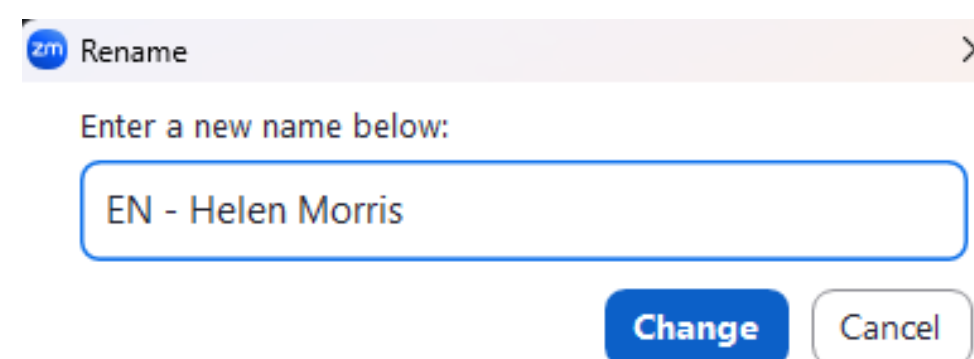
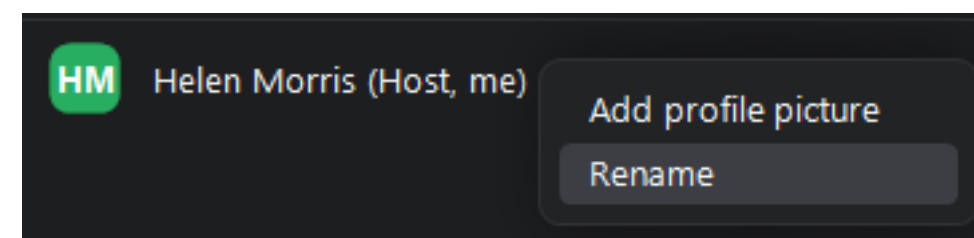
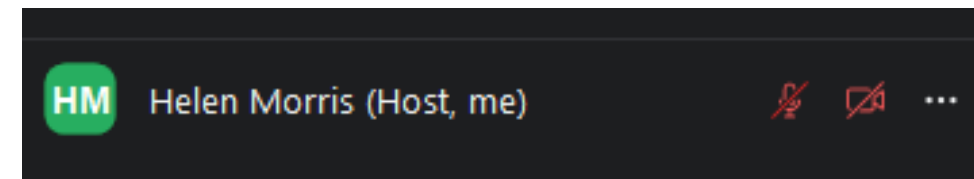
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Module 2

NATURE & RESTORATION FOR CLIMATE ADAPTATION



AGENDA

30 minutes Lecture, Discussion, Q&A

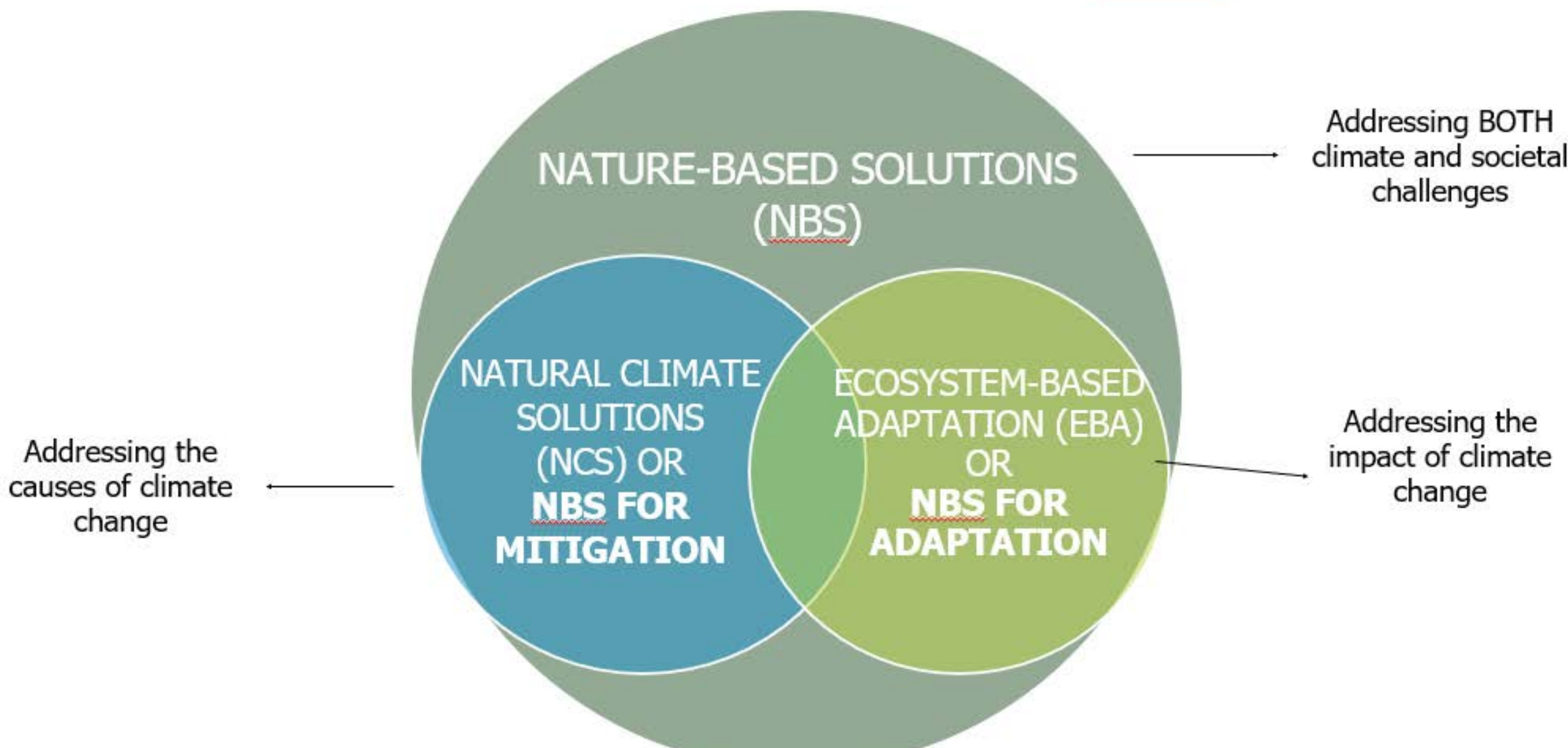
15 minutes presentations (verbal only)

40 minutes breakout groups: Theory of Change

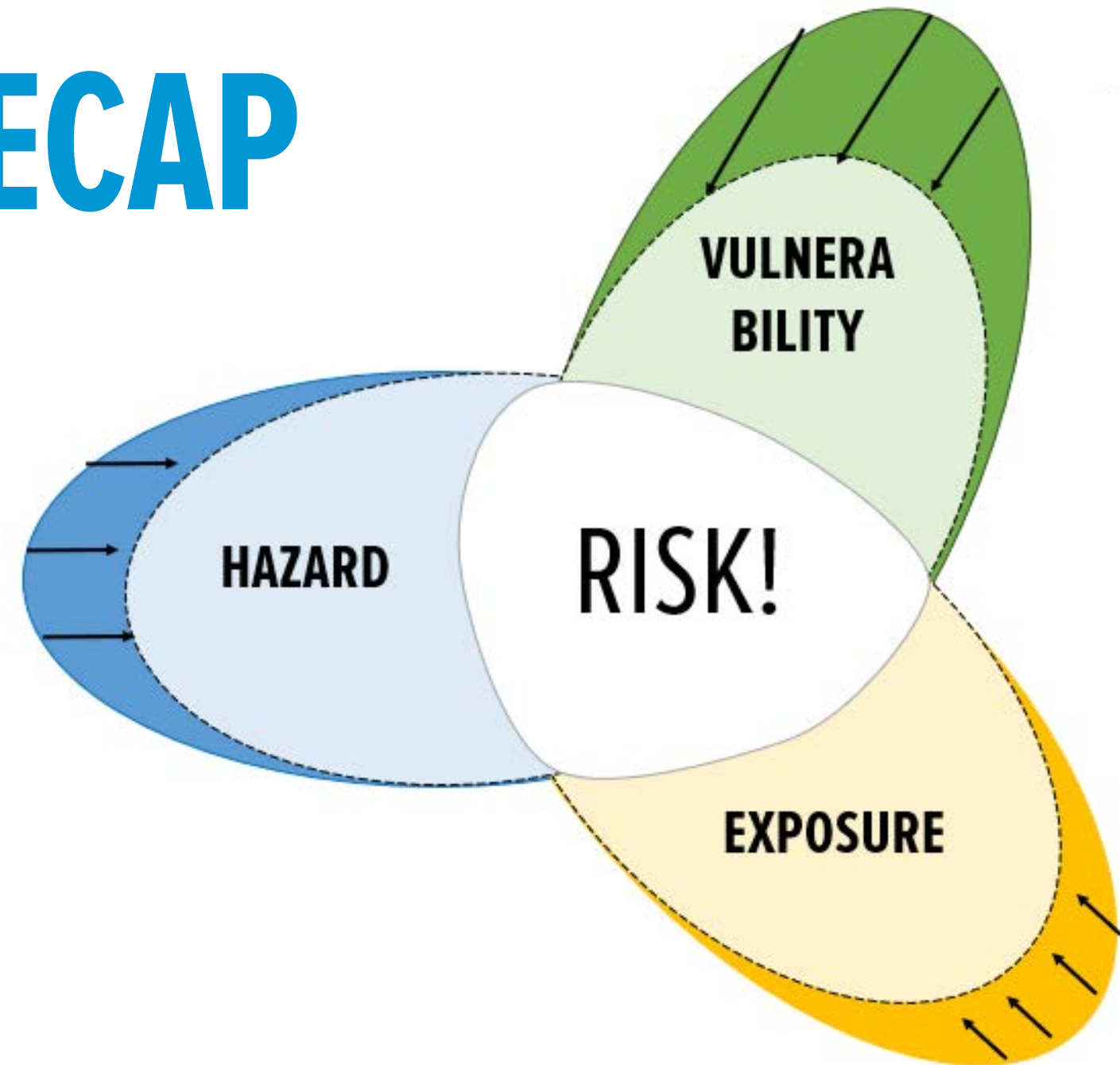
5 minutes Takeaways, Homework, and Closing



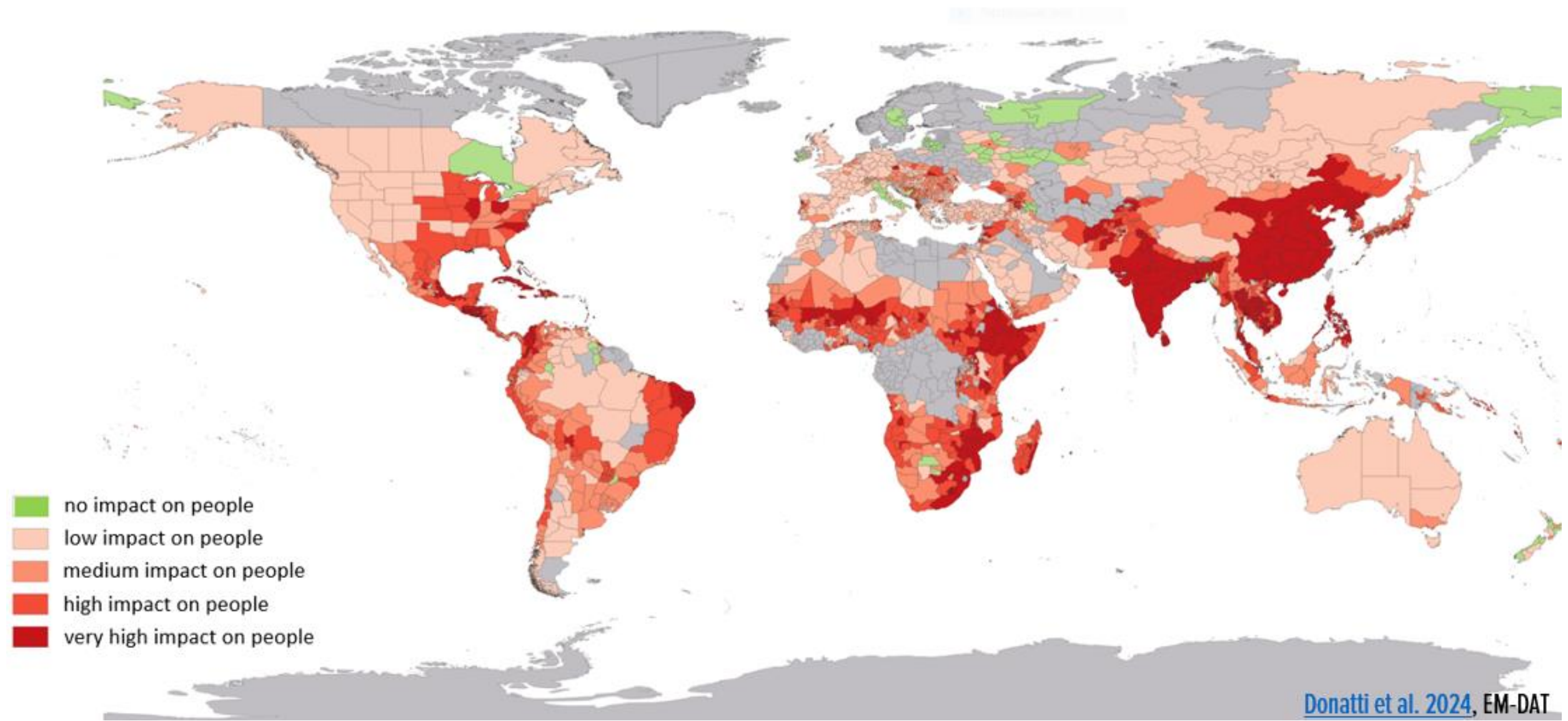
DEFINITION OF NBS



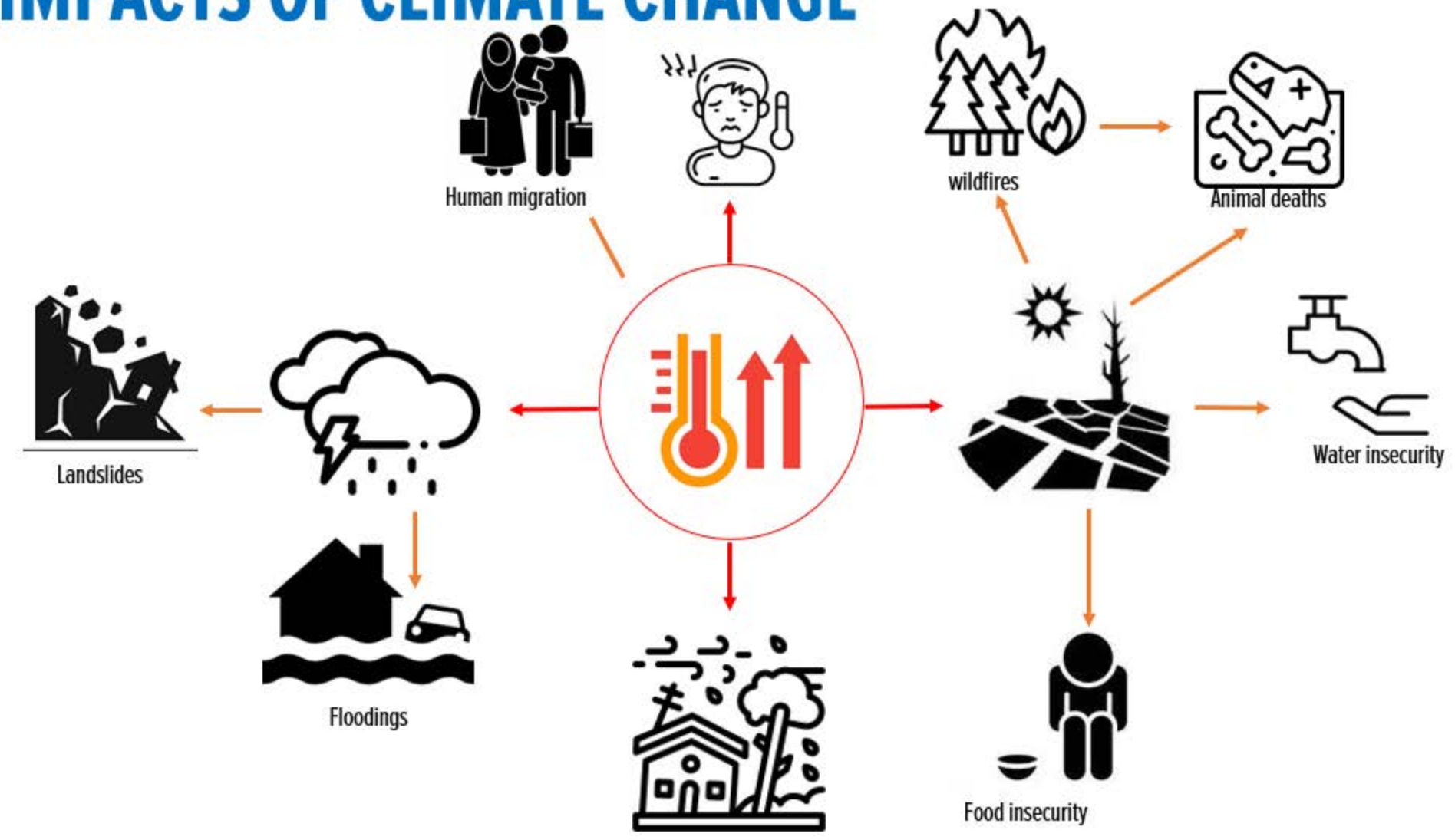
MODULE 1 RECAP



40% OF THE POPULATION WAS IMPACTED OVER THE LAST 20 Y



IMPACTS OF CLIMATE CHANGE



COURSE PAGE

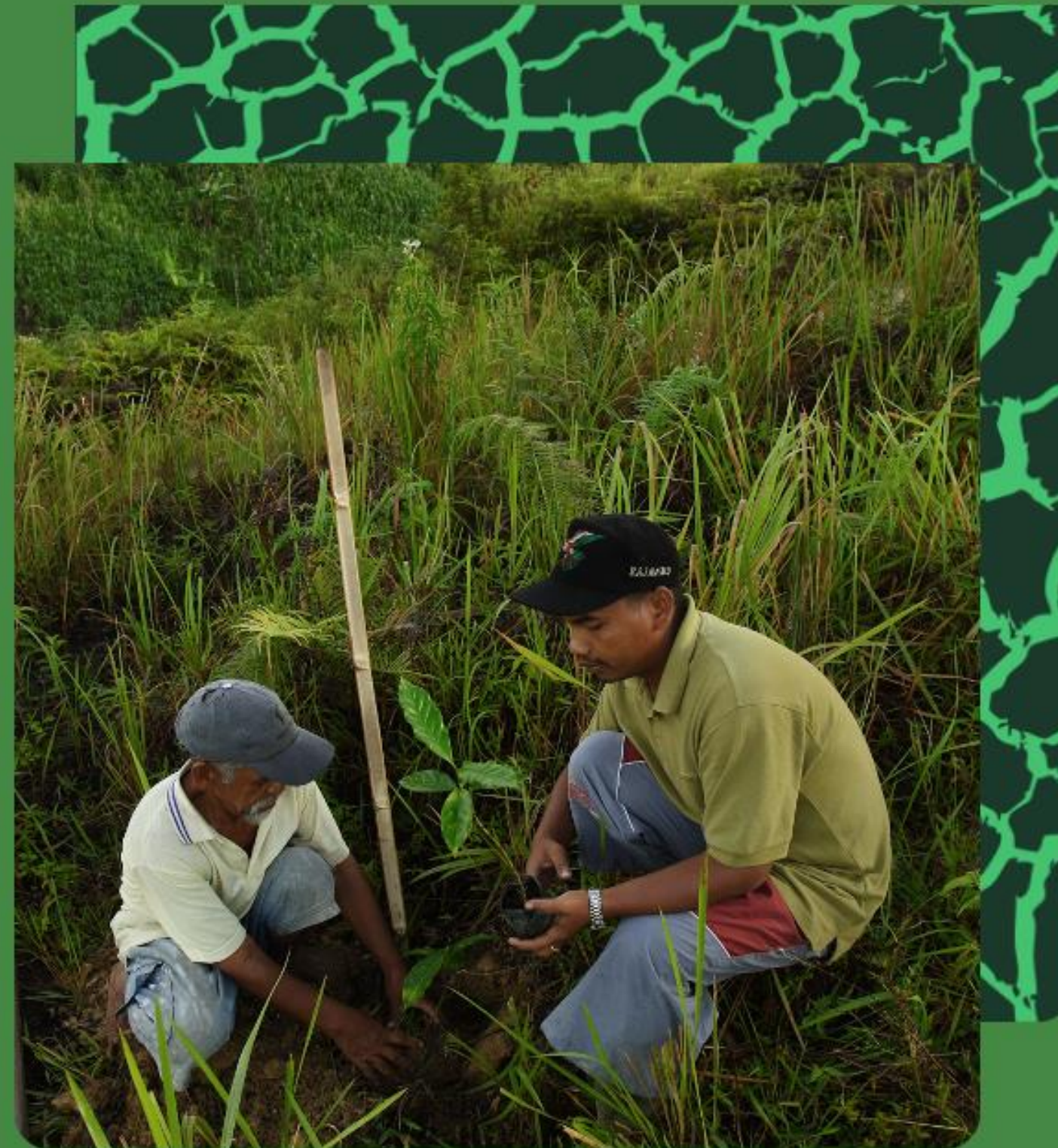
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Climate Change

Nature-Based Solution



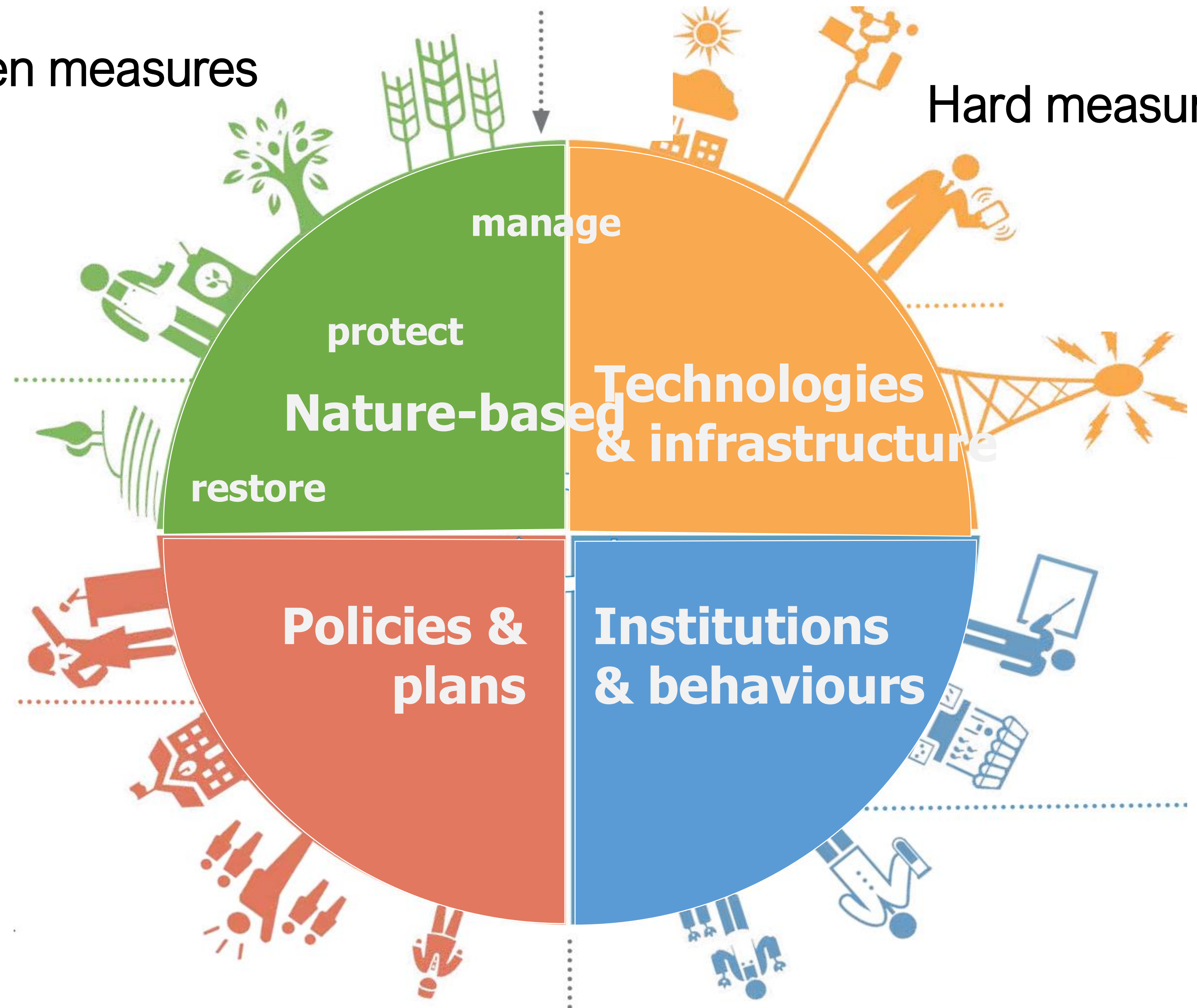
[Restoration for Climate Adaptation course home page](#)

- Reading Materials
- Presentations
- Recordings

TYPES OF CLIMATE ADAPTATION

Green measures

Hard measures



Soft measures



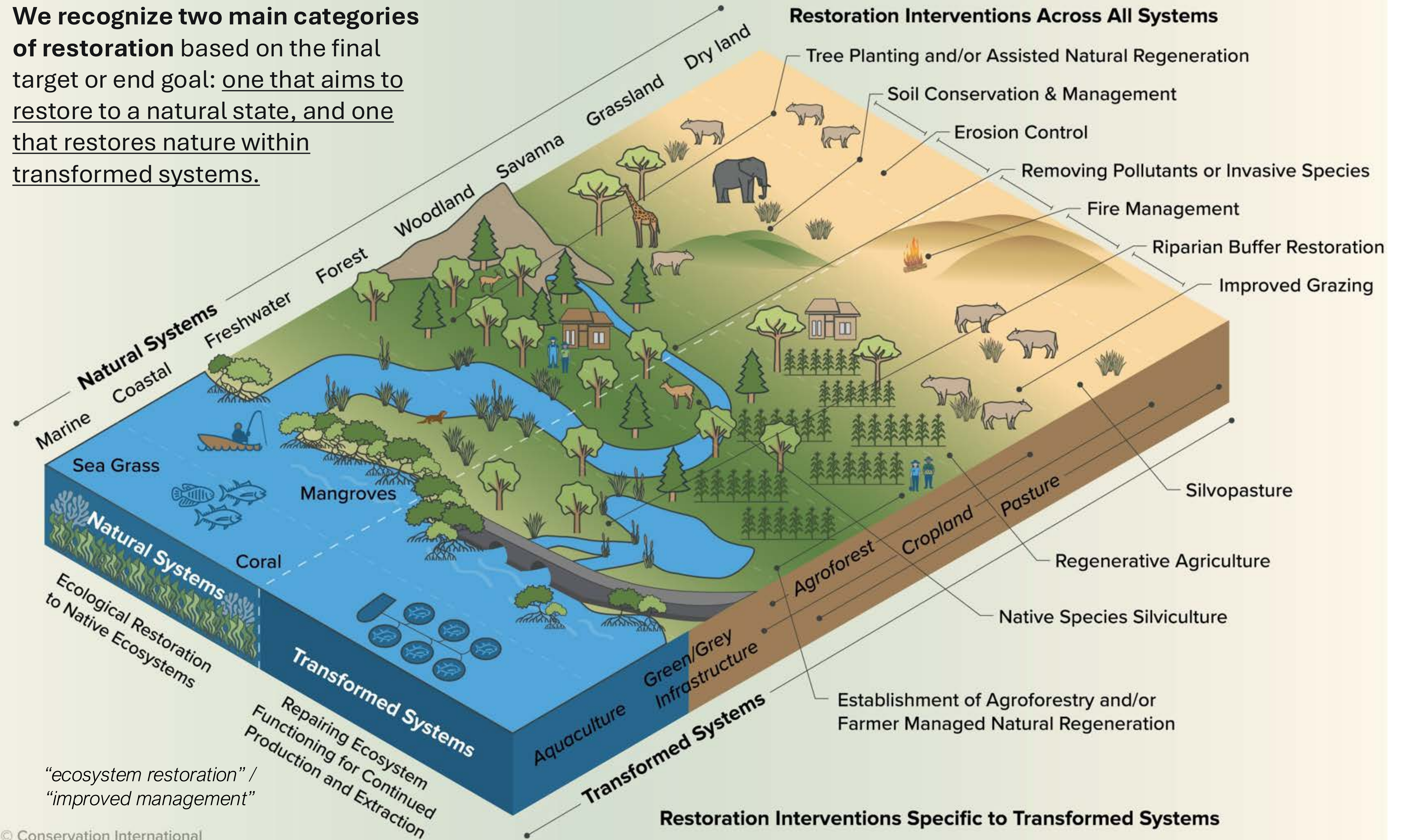
RESTORATION: DEFINITIONS

CI: Restoration is defined as **improving the ecological integrity** of a landscape, to the level that **human use** and **community needs allow**

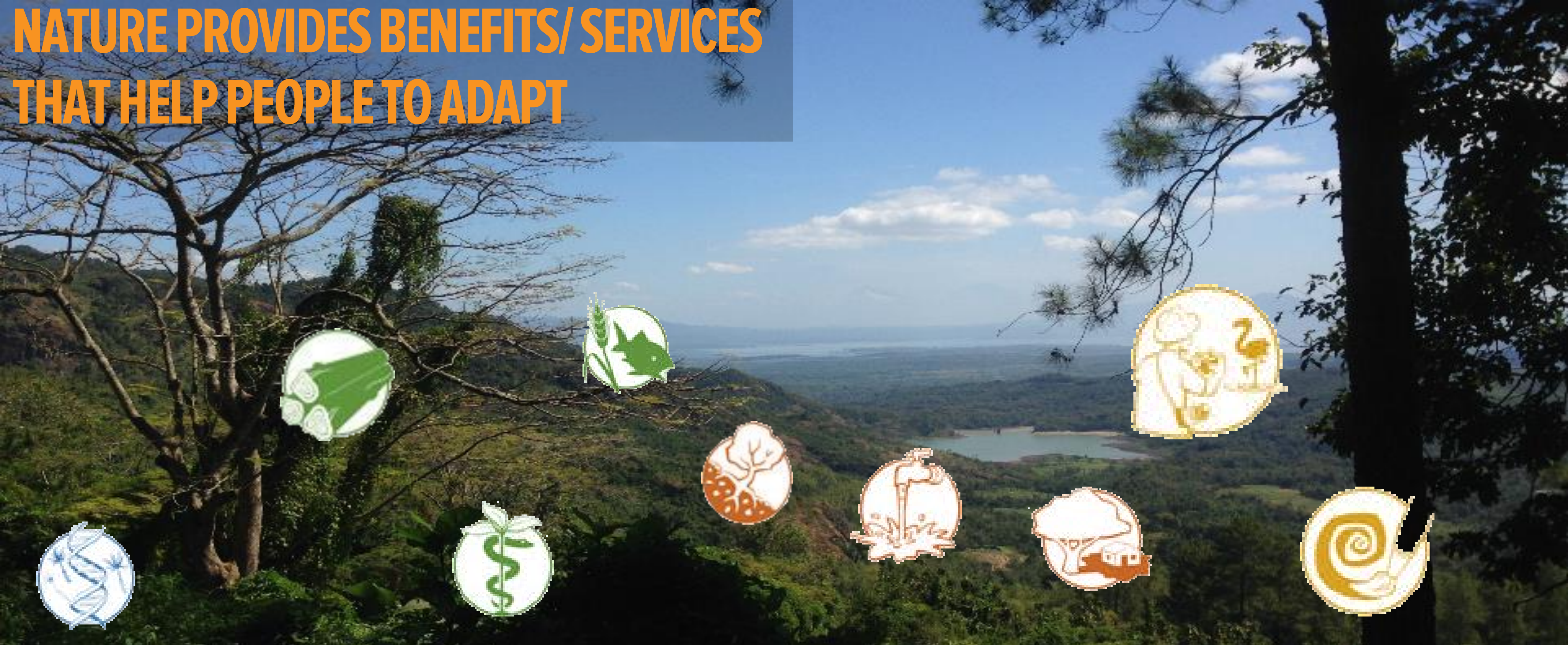
GEF: Restoration is defined as the process of **repairing and/or assisting the recovery of land and ecosystems** that have been degraded, damaged, destroyed, or modified to an extent that the land and/or ecosystem cannot fulfil its ecological functions and/or fully deliver environmental services.

Activities may include (i) **ecosystem restoration** that reduces the causes of decline and improves basic functions; and (ii) **ecological restoration** that enhances native habitats, sustains ecosystem resilience, and conserves biodiversity.

We recognize two main categories of restoration based on the final target or end goal: one that aims to restore to a natural state, and one that restores nature within transformed systems.



NATURE PROVIDES BENEFITS/ SERVICES THAT HELP PEOPLE TO ADAPT



Supporting services

Biodiversity

Habitat

Provisioning services

Wood

Berries, mushrooms,
animals, natural medicines

Agricultural products

Regulating services

Water flows regulation

Pests & diseases regulation

Soil fertility and stability

Cultural services

Outdoor activities and
recreation

Spiritual values, eco-tourism



**RESTORING HIGH-ALTITUDE FORESTS TO PROTECT
PEOPLE AND ASSETS AGAINST LANDSLIDES**



**RESTORING AREAS AROUND RIVERS
TO REDUCE FLOOD IMPACTS**



**RESTORING WETLANDS TO REGULATE
WATER FLOWS UNDER
EXTREME RAINFALLS CONDITIONS**



**USING TREES TO PROTECT FIELDS
AGAINST STRONG WINDS**

**USING SHADE TREES TO BUFFER AGAINST EXTREME
TEMPERATURES AND RETAIN SOIL MOISTURE**

**DIVERSIFYING CROPS TO SECURE
FOOD DURING DROUGHTS**



**RESTORING RANGELANDS TO MINIMIZE
HUMAN-WILDLIFE CONFLICTS**



**RESTORING HIGH-ALTITUDE ECOSYSTEMS
TO MAINTAIN WATER PROVISION**



**RESTORING MANGROVE TO REDUCE COASTAL EROSION
FROM STORMS**

<https://www.oneearth.org/eco-regions/northern-andean-paramo/>



**IMPLEMENTING GREEN SPACES IN CITIES TO MINIMIZE
HEAT STRESS DUE TO INCREASED TEMPERATURES**

**MANAGING FOREST TO REDUCE RISK OF SUPER FIRES
ASSOCIATED TO DROUGHT EVENTS**

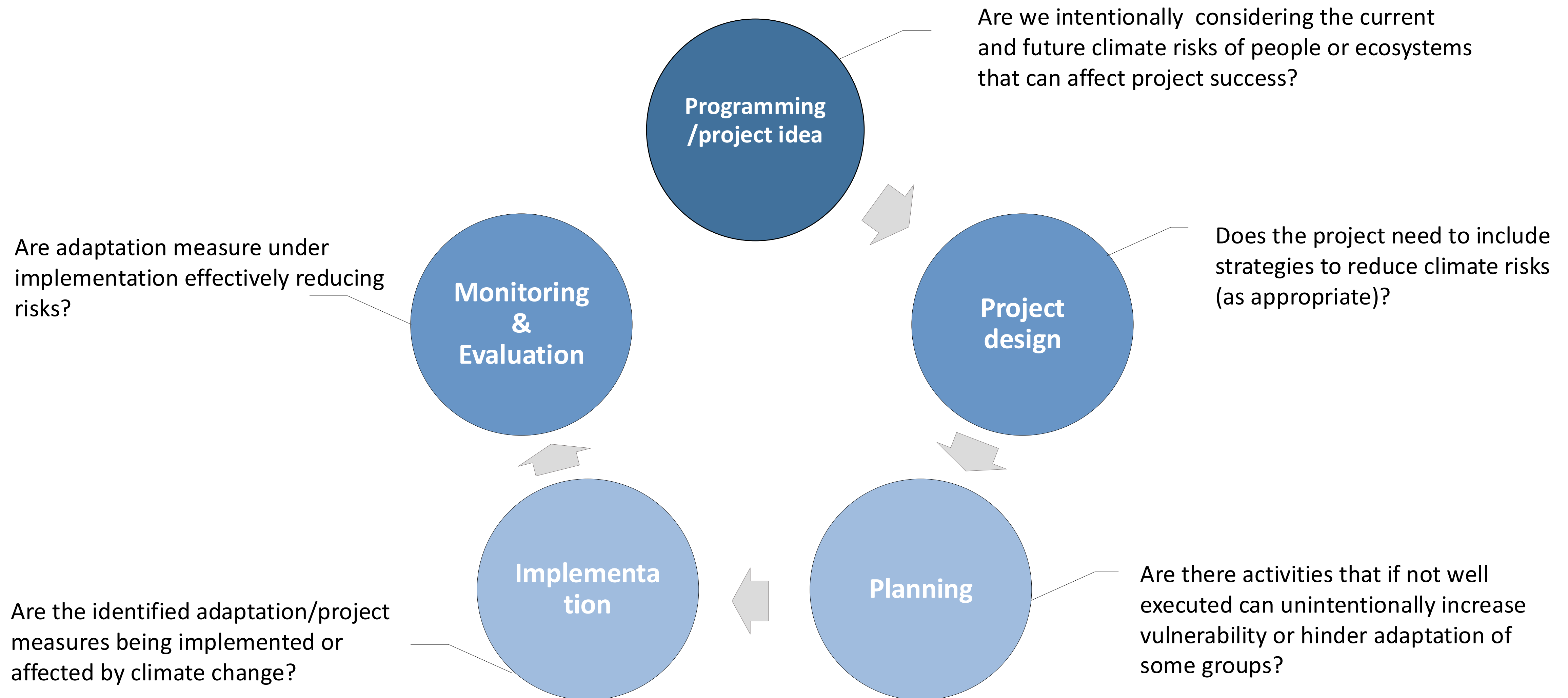


**RESTORING AREAS TO REDUCE FLOODING
AND INCREASING WATER PROVISION**



© picture-allian

THINKING ABOUT CLIMATE ADAPTATION IN EVERY STEP OF PROJECT CYCLE



Welcome! Bienvenue!

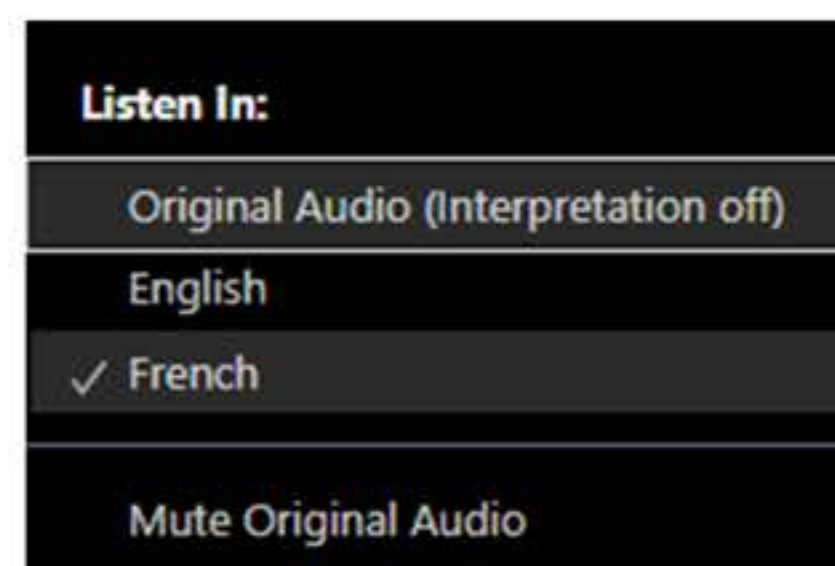
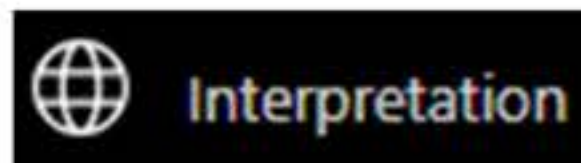


Bem-vindo! ¡Bienvenido!

Spoken Interpretation Instructions

1. Click the  Interpretation button
(Located in your Zoom toolbar)
2. Choose your language
3. Turn OFF "Original Audio"
 - ✓ Hear only your selected language
 - ✗ Avoid hearing overlapping English

If you need help, please message the host in the chat.



Mute Original Audio

Consignes de l'interprétation orale

1. Cliquez sur le bouton  Interprétation
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 - ✗ Vous n'entendrez pas l'anglais en fond sonore

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Supporting services	Provisioning services	Regulating services	Cultural services
Biodiversity	Wood	Water flows regulation	Outdoor activities and recreation
Habitat	Berries, mushrooms, animals	Pests & diseases regulation	Spiritual values, eco-tourism
	Agricultural products	Soil fertility and stability	

DISCUSSION (CHAT/PLENARY)

Do the categories adequately capture all of the benefits we have discussed?

Does your project take advantage of all of the categories of benefits?

What benefits are desirable but not a part of the current planning for your project?



Q&A



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PROJECT PRESENTATIONS (PLENARY)

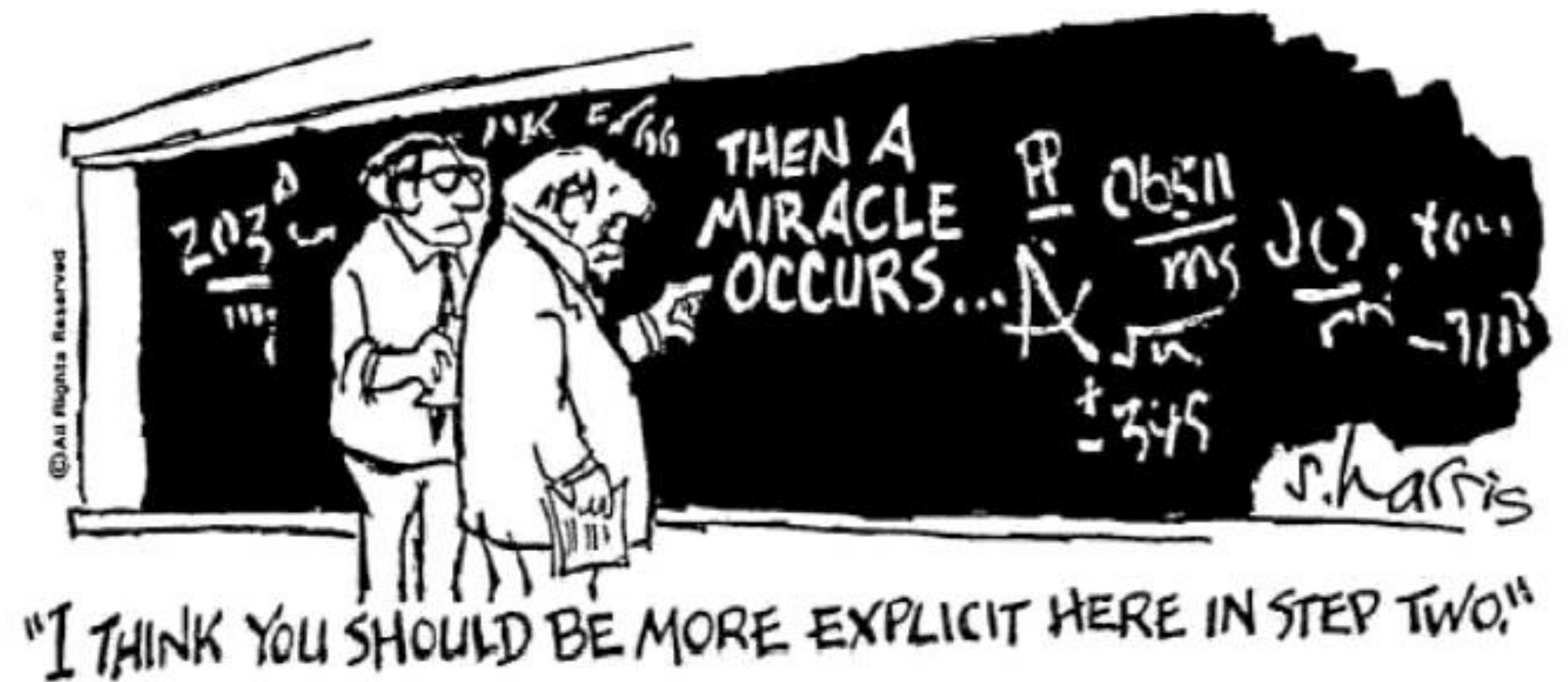
Volunteers Share a 2-3 minute summary of:

1. the major climate risks your area face
2. the restoration activities of your project and
3. the benefits they provide to people, if those activities are expected to reduce the impacts of climate change.

15 minutes- 4-5 volunteers



THEORY OF CHANGE FOR ECOSYSTEM RESTORATION AND CLIMATE ADAPTATION BENEFITS

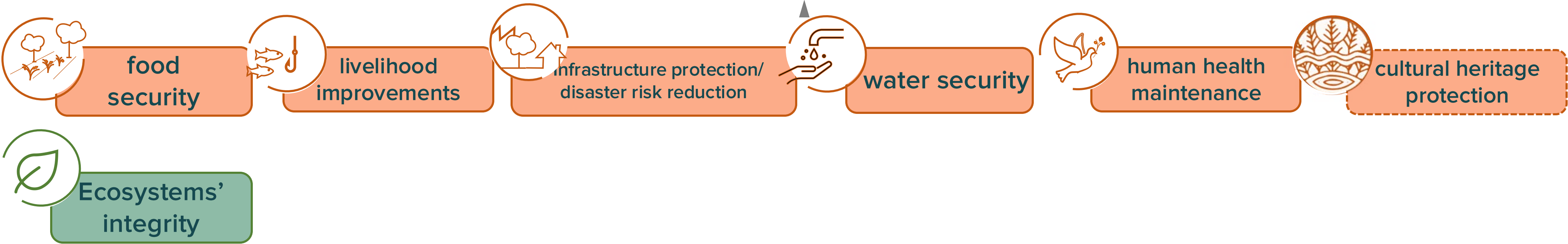


GENERIC THEORY OF CHANGE FOR ADAPTATION

Adaptation goal

XX people [specific groups] with improved [adaptation outcome] in response to [climate change impact]

Adaptation benefits/ outcomes



Activities outputs



Project activities

climate-resilient practices that provide adaptation benefits under current & expected climate change

Climate awareness, climate information services

climate-resilient techniques & livelihoods

Inclusive of climate affected people & natural resources

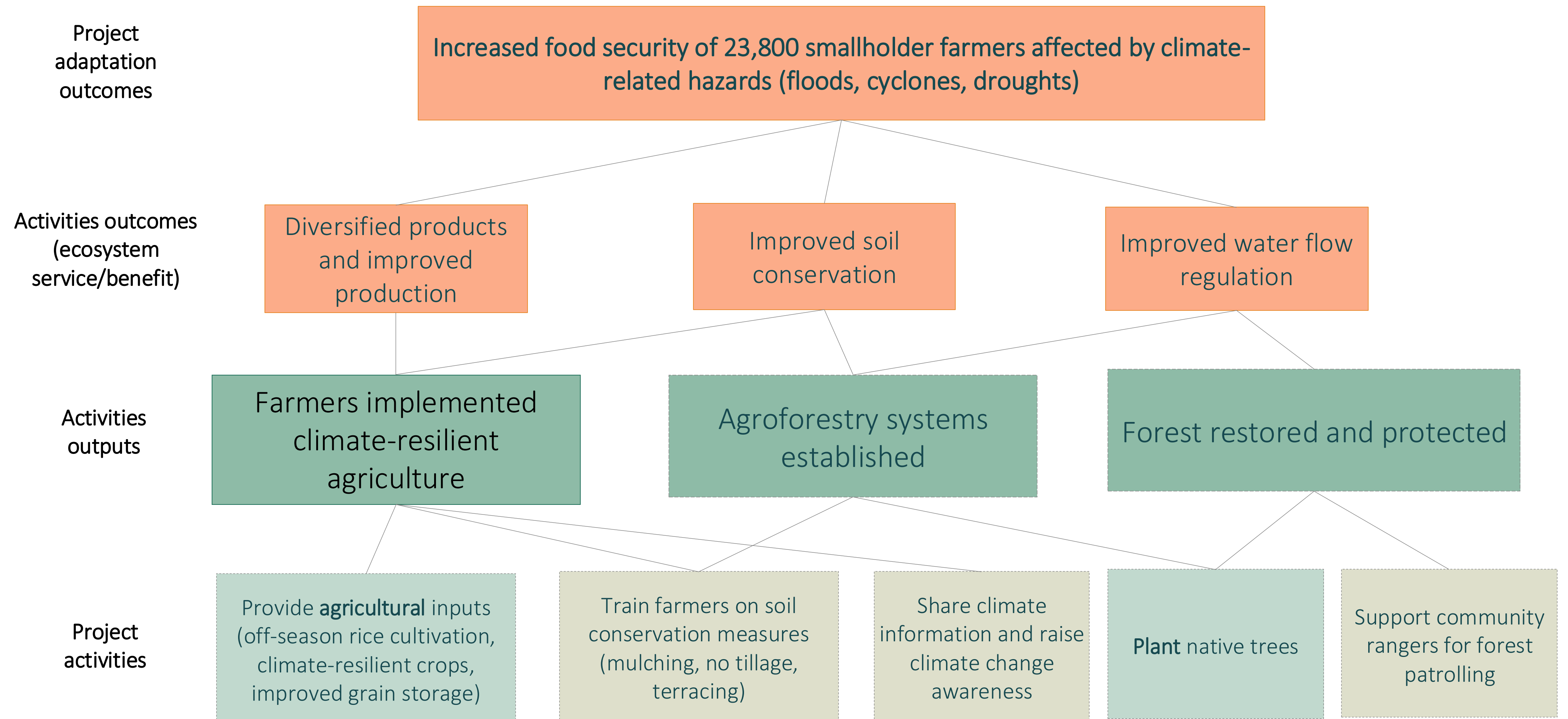
diversified financial mechanisms reducing climate risks

NbS

Enabling activities

EXAMPLE OF THEORY OF CHANGE:

RESTORING EASTERN MADAGASCAR LANDSCAPES



ACTIVITY INSTRUCTIONS

1. Go to your group's section

For example: *Group 3 – Portuguese*.

2. Choose a slide to edit

Select one of the participant slides (e.g. *Slide – Participant 1*) and add:

The title of one of your (restoration) projects

3. Create a Theory of Change (ToC) that incorporates climate adaptation into your restoration project

- Review the Madagascar and Fiji ToC slides as examples (at the beginning of the slide deck).
- Review the slide listing the different elements that can be included, such as:
 - Adaptation outcomes and benefits
 - Ecosystem services and benefits
 - Enabling activities
- Complete the ToC by filling in the boxes **from top to bottom**. Replace the text in **[brackets]** and/or add new text where needed.

4. Move, modify, or create new connecting lines between the boxes to reflect the logic and pathways of contribution in your ToC.

If you have any questions, ask your group facilitator in the chat or breakout room.



SUPPORTING LISTS FOR BUILDING THE ELEMENTS OF A THEORY OF CHANGE

Adaptation outcomes/benefits

-  Livelihood improvements
-  Human health maintenance
-  Water security
-  Infrastructure protection / disaster risk reduction
-  Food security
-  Cultural heritage protection
-  Ecosystem integrity

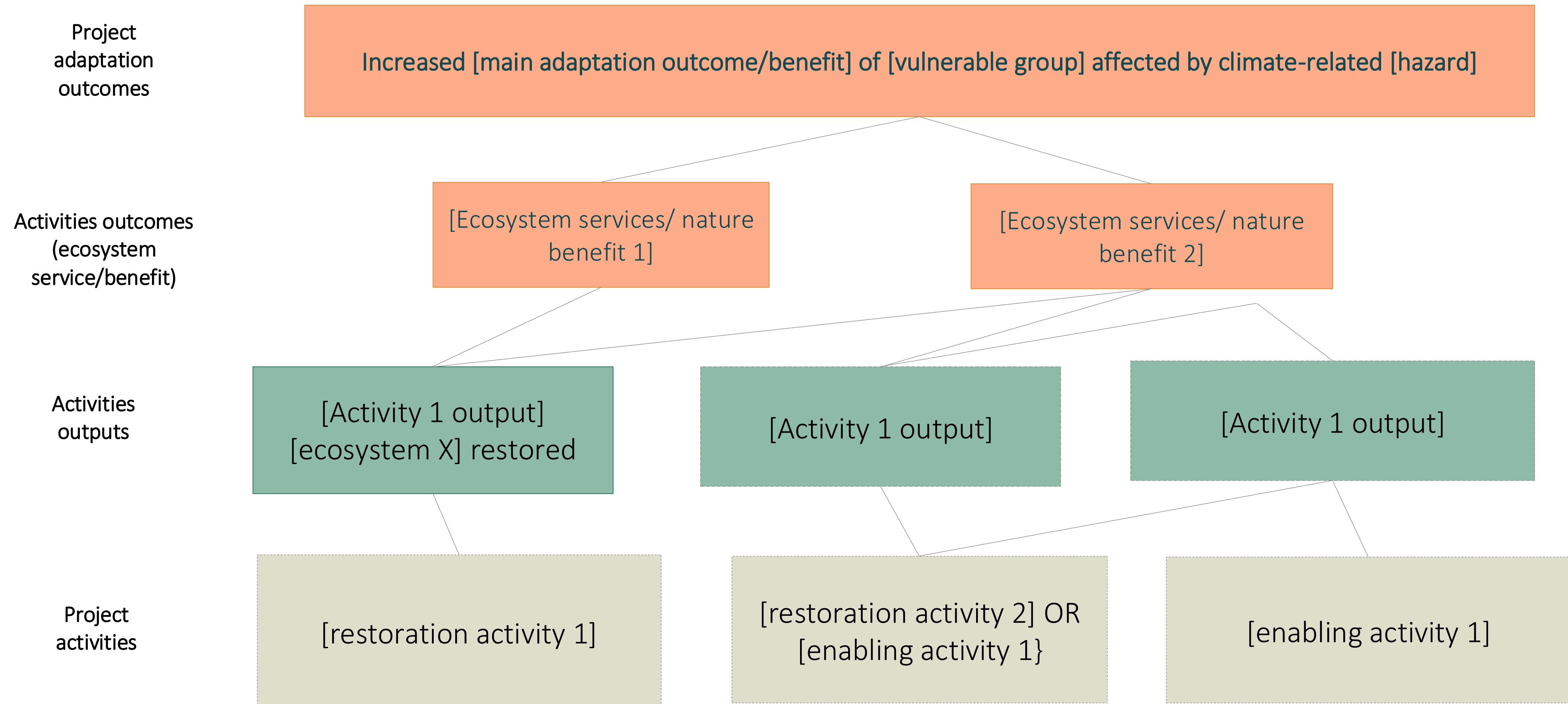
Ecosystem services/benefits

-  **Provisioning services**
 - Food and wild resource provision (including, crops, animals, ...)
 - Freshwater provision
 - Timber, fuel and other natural materials
-  **Regulating services**
 - Water regulation (e.g. flood / drought)
 - Temperature and microclimate regulation
 - Erosion and coastal protection
-  **Cultural services**
 - Cultural heritage and identity
 - Traditional ecological knowledge
 - Recreation and mental well-being
-  **Supporting / maintenance services**
 - Biodiversity and habitat maintenance
 - Soil formation and fertility, nutrient cycling

Enabling activities

-  **Governance & planning for adaptation** (e.g. Inclusive of climate affected people & natural resources)
-  **Adaptive capacities** (e.g. climate-resilient techniques & livelihoods)
-  **Climate knowledge & technologies** (e.g. climate awareness, climate information services)
-  **Diversified and resilient finance** (e.g. diversified financial mechanisms reducing climate risks)

PARTICIPANT 1: ADD A TITLE OF THE PROJECT AND LOCATION



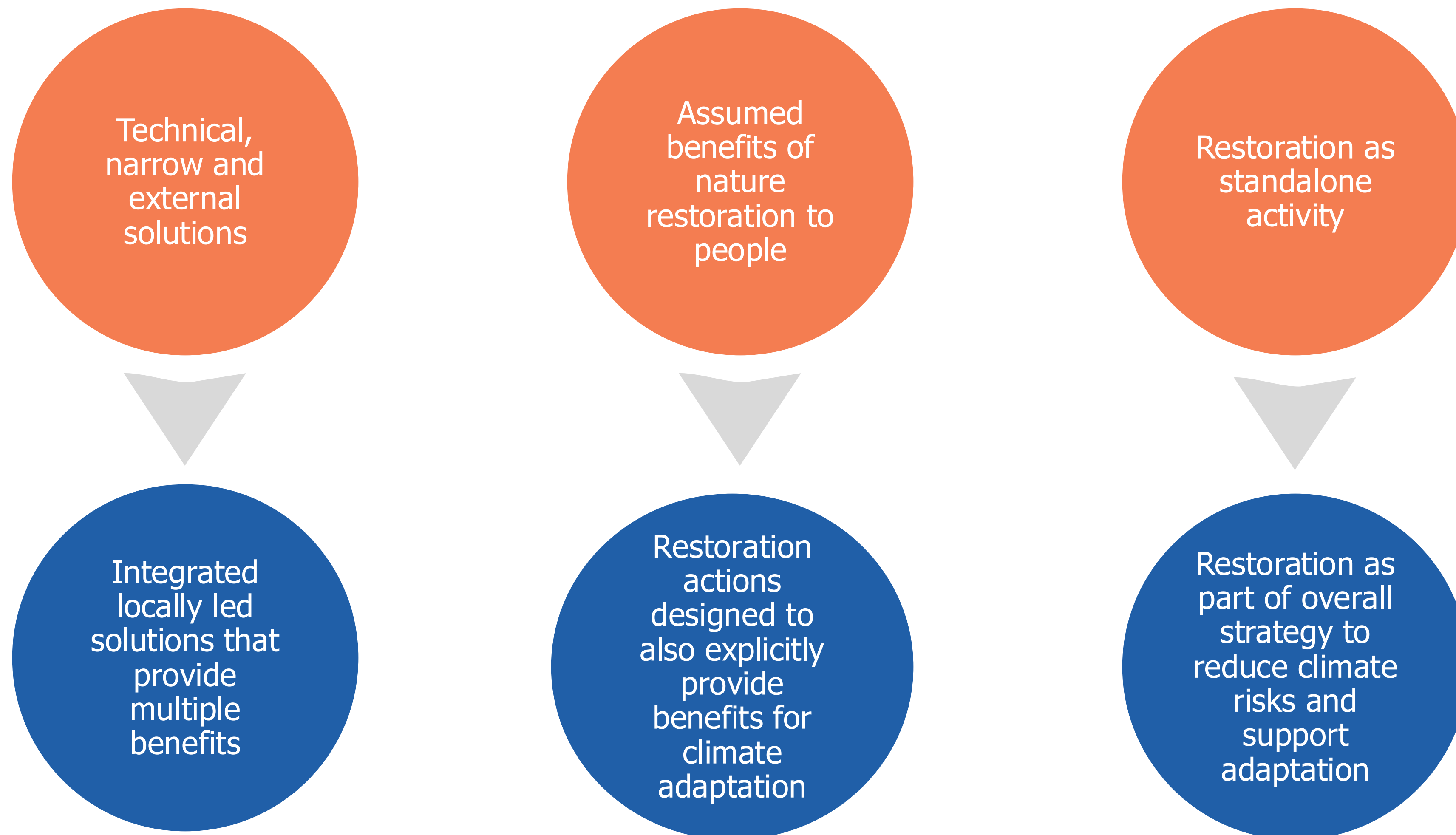
INTERACTIVE ACTIVITY

BREAKOUT GROUPS

Please develop a simple theory of change for potential adaptation benefits by rearranging the blocks and filling the missing text.



KEY TAKE AWAYS



Q&A



HOMework

- For the next session, please come prepared to give a short (2-3 min) presentation on the theory of change prepared based on climate risk information previously identified.
- Presentation can be verbal, or have a maximum of 2 slides (use/add onto the slide in the shared slide deck we worked on today: [restoration & Adaptation training - module 2 activity.pptx](#)).



OFFICE HOURS FOR THIS MODULE [OPTIONAL!!]

Thursday Sept 10 10-11 CET (Giacomo)

Thursday Sept 10 10-11 EST (Starry)



Contact Information:

Giacomo Fedele, PhD | Adaptation Strategy Director: gfedele@conservation.org
Starry Sprenkle-Hyppolite, PhD | Restoration Science Director ssprenkle-hyppolite@conservation.org

THANK YOU



Welcome! Bienvenue!



Bem-vindo! ¡Bienvenido!

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Module 3

IDENTIFICATION AND IMPLEMENTATION OF RESTORATION FOR CLIMATE ADAPTATION



Welcome! Bienvenue!

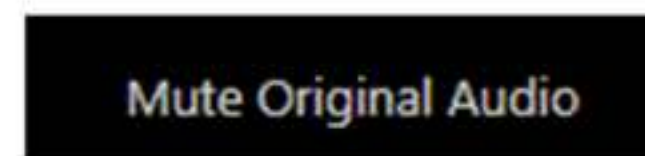
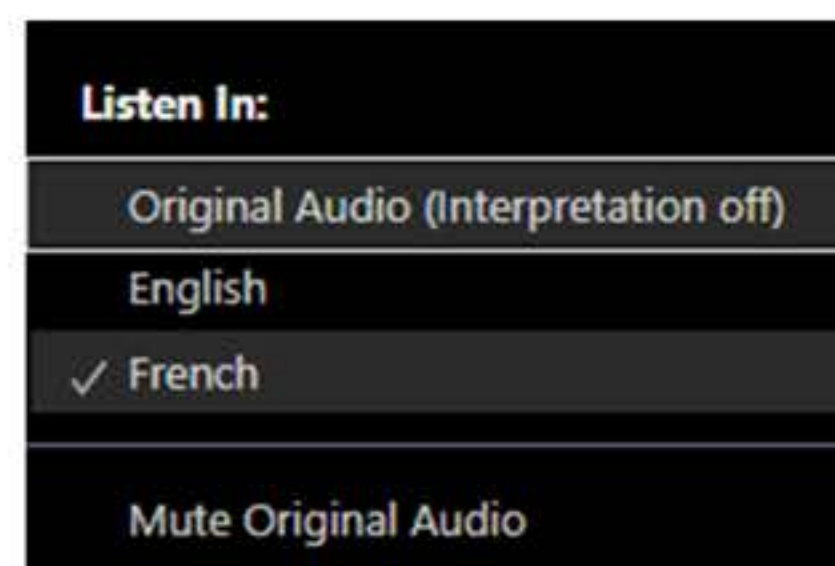
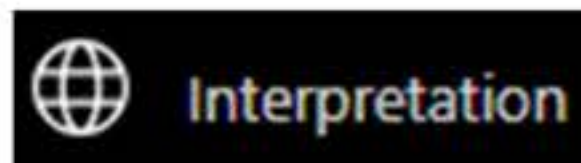


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Welcome! Bienvenue !



Bem-vindo!

¡Bienvenido!

Please rename yourself with your preferred speaking language

1. Under “Participants,” click the 3 dots (...) next to your name
2. Click “Rename”
3. Add the language or languages you can speak in front of your name
4. Click “Change”

Por favor, altere seu nome para o idioma em que prefere se expressar

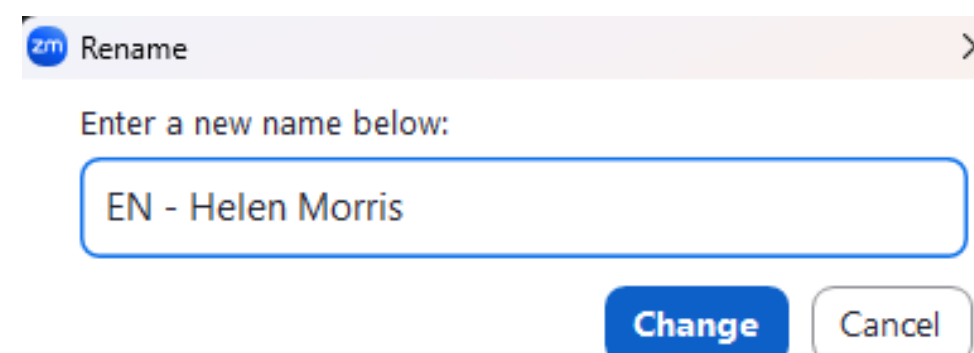
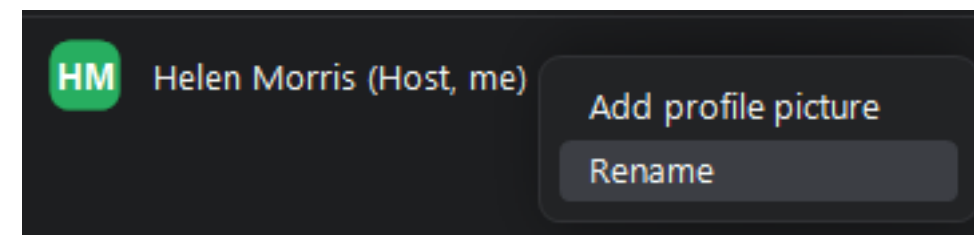
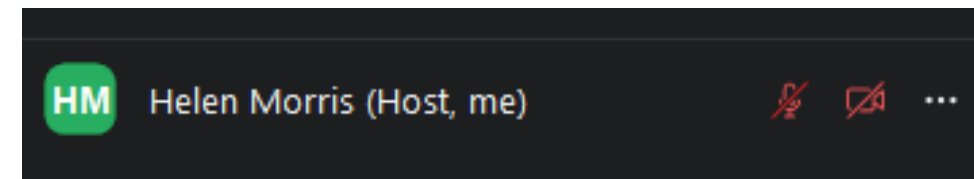
1. Na seção “Participantes”, clique nos três pontos (...) ao lado do seu nome
2. Clique em “Renomear”
3. Adicione o idioma ou idiomas que você fala antes do seu nome
4. Clique em “Alterar”

Merci de renommer votre profil en indiquant la langue dans laquelle vous préférez communiquer.

1. Dans la rubrique « Participants », cliquez sur les trois points (...) à côté de votre nom
2. Cliquez sur « Renommer »
3. Indiquez la ou les langues que vous parlez devant votre nom
4. Cliquez sur « Modifier »

Por favor, cambia su nombre por el idioma en el que prefiera hablar

1. En la sección «Participantes», haga clic en los tres puntos (...) que aparecen junto a su nombre
2. Haga clic en «Cambiar nombre»
3. Agregue el idioma o los idiomas que habla delante de su nombre
4. Haga clic en «Cambiar»



AGENDA

Recap of previous module

20 minutes Project/ToC Presentations by Participants

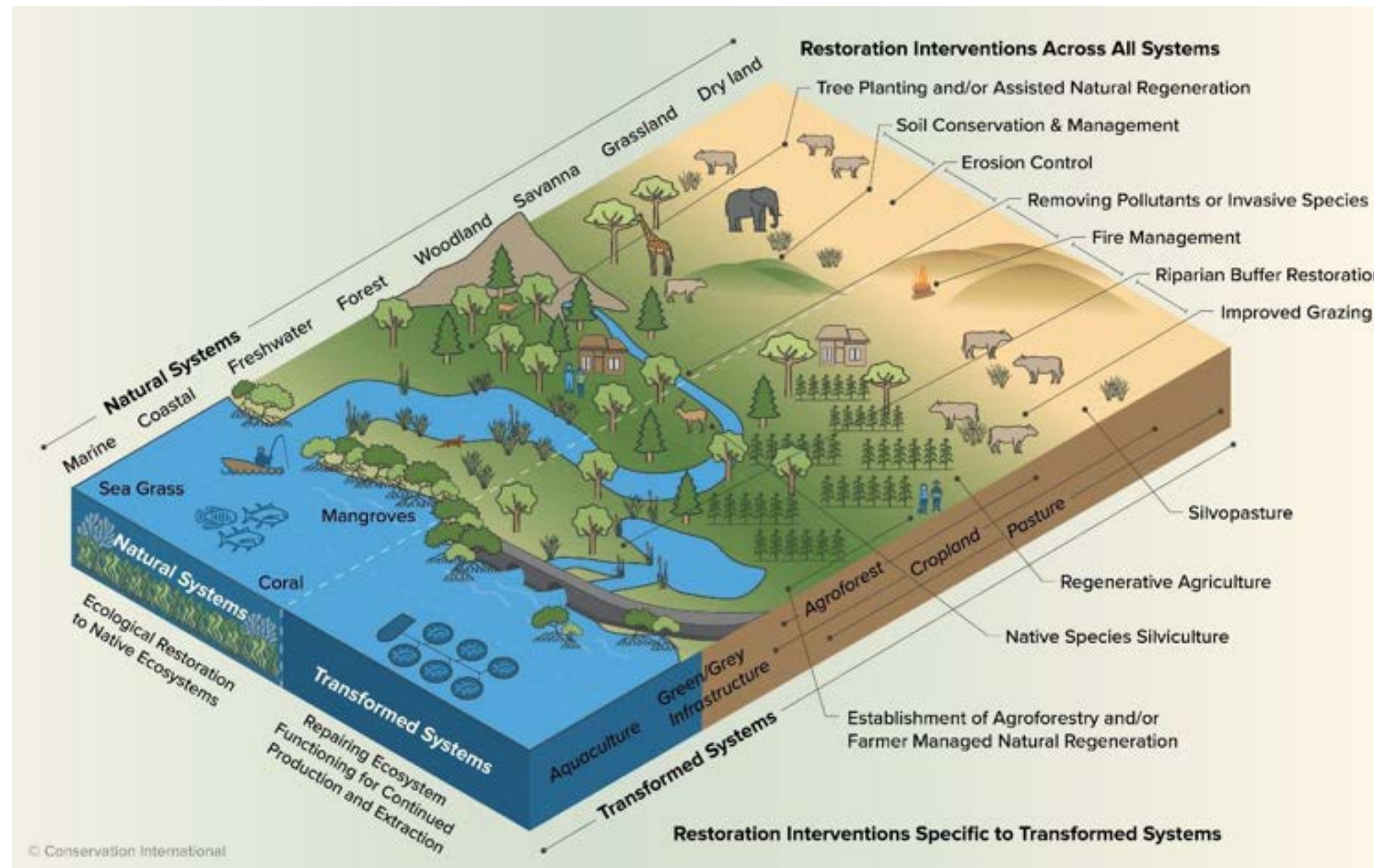
35 minutes Lecture, Q&A

15 minutes breakout group discussion

5 minutes Takeaways, Homework, and Closing

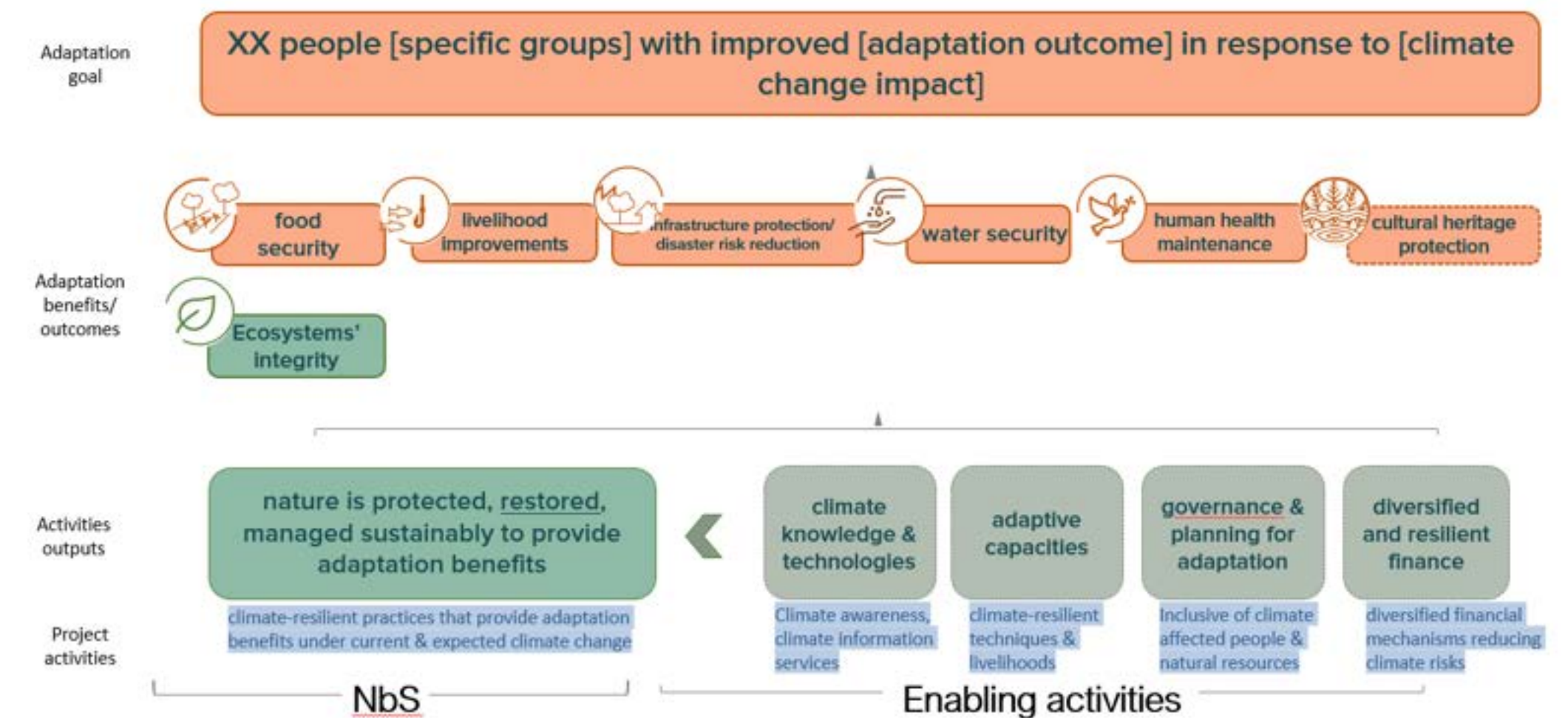


MODULE 2 RECAP



Supporting services	Provisioning services	Regulating services	Cultural services
Biodiversity	Wood	Water flows regulation	Outdoor activities and recreation
Habitat	Berries, mushrooms, animals	Pests & diseases regulation	Spiritual values, eco-tourism
	Agricultural products	Soil fertility and stability	

GENERIC THEORY OF CHANGE FOR ADAPTATION



COURSE PAGE

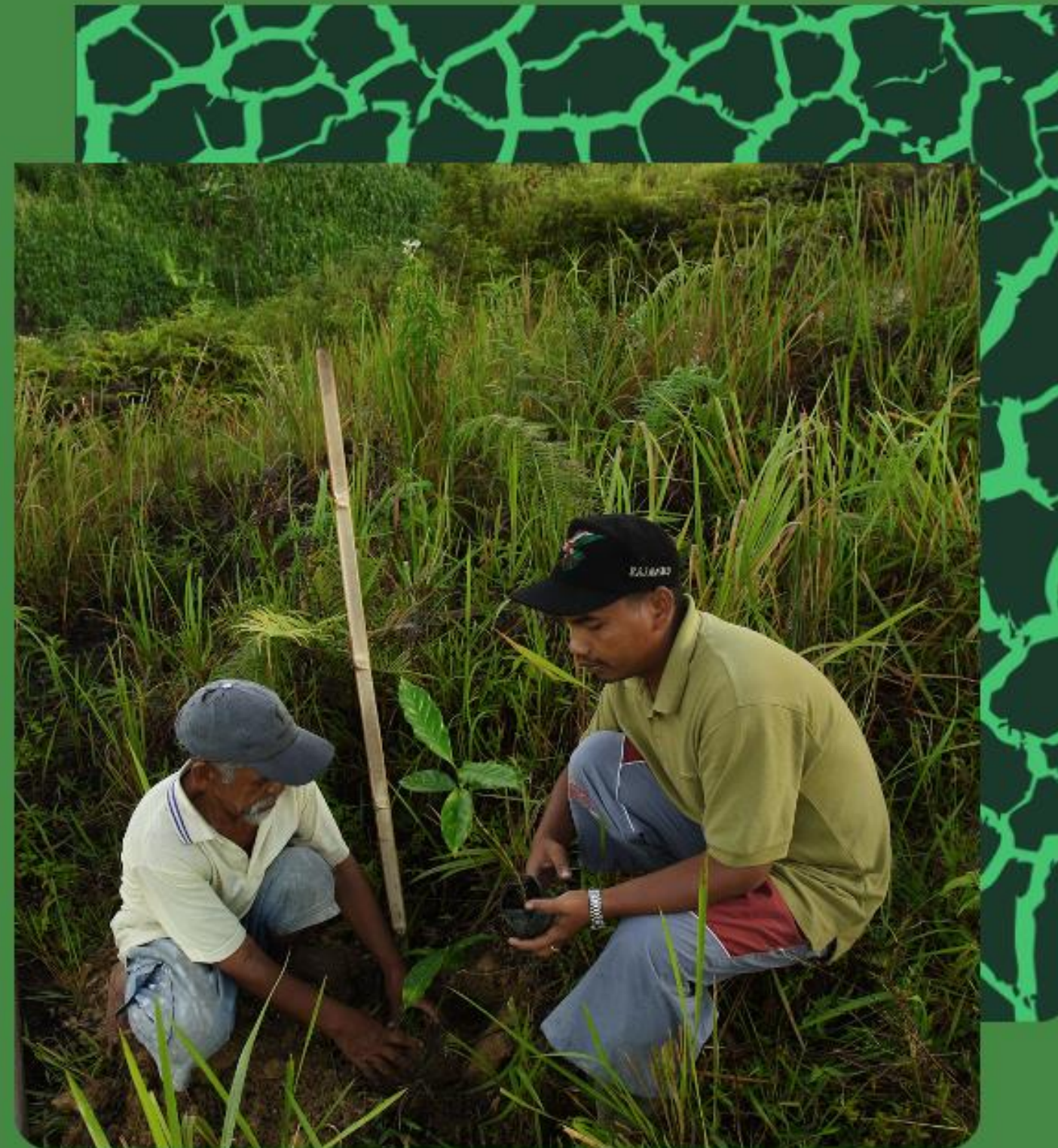
Restoration for Climate Adaptation Training

The Restoration for Climate Adaptation Training is an online learning opportunity for ecosystem restoration practitioners interested in strengthening the climate adaptation dimension of their work. It provides a shared space to build understanding, exchange experiences, and explore how ecosystem restoration can support people in adapting to climate change.

Delivered under the Ecosystem Restoration Program, the training brings together practitioners working across regions and contexts to reflect on practice, learn from peers, and apply adaptation concepts to real restoration initiatives.

Climate Change

Nature-Based Solution



[Restoration for Climate Adaptation course home page](#)

- Reading Materials
- Presentations
- Recordings

PROJECT PRESENTATIONS (PLENARY)

4-5 volunteers share a 2-3 minute summary of:

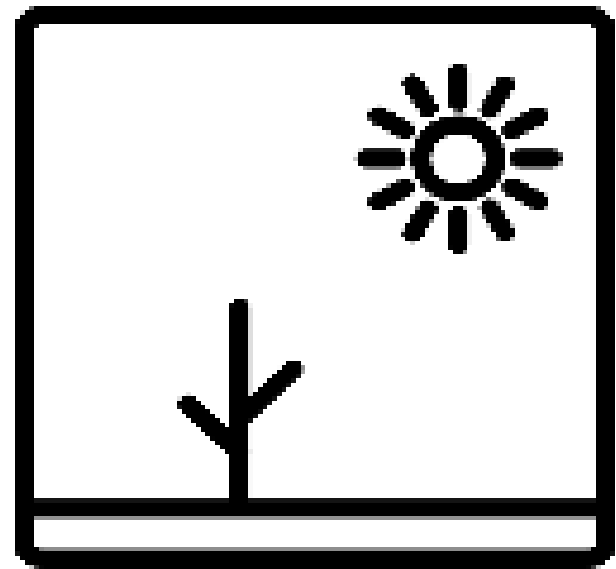
Your project's theory of change (tell us which slide to show!)

OR

The major climate risks your area face, the restoration activities of your project and the benefits they provide to people, if those activities are expected to reduce the impacts of climate change.



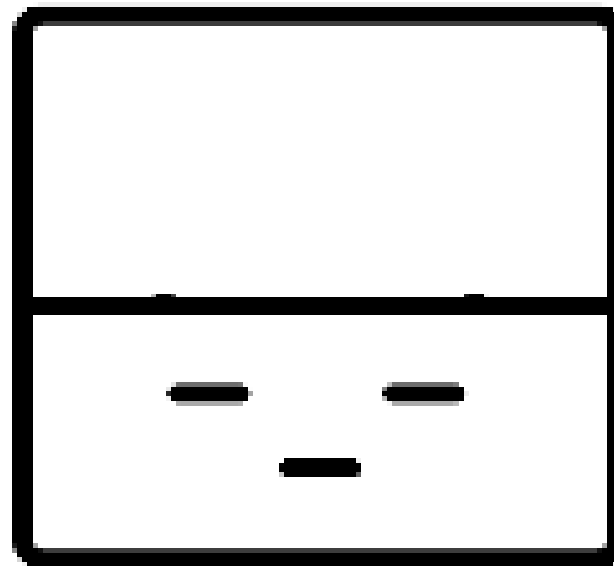
EXAMPLES OF INTEGRATION OF CLIMATE-RESILIENCE ACTIONS IN PROJECTS AT HIGH CLIMATE RISK



Heat and drought



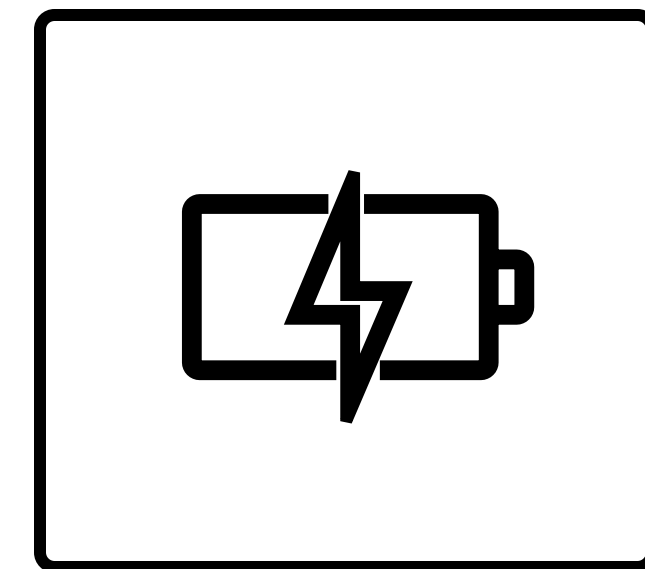
Use Climate appropriate trees and crop varieties and diversification



Land degradation



Promote agroforestry, re-vegetation, crop rotation, water retention



limited adaptive capacity



Strengthen land use planning, increase access to climate finance, improve climate data access

EXAMPLES OF RESTORATION INTERVENTIONS FOR CLIMATE ADAPTATION

- Forest (Madagascar, Peru)
- Agricultural land (Mexico)
- Wetlands (Colombia, Indonesia)
- Grassland (Kenya, South Africa)
- Mangrove (Guyana)



**Introducing climate-resilient
agricultural practices and forest
restoration to maintain food
security of farmers facing cyclones
in Eastern Madagascar**



Using shade trees in coffee farms against heat in Chiapas, Mexico



Protecting and restoring high mountain wetlands for water in Bogota, Colombia



**Creating a municipal nursery
with climate-resilient tree
species to regreen schools and
riverbanks in Loreto, Peru**



Rewetting and revegetating peatlands and mangroves to protect against fires, droughts and floods.



Protecting mangroves to reduce coastal damages in Guyana



Untreated
(no boma)

Treated
(20 months
boma)

Restoring communal rangelands & rotational grazing for pastoralists' livelihoods affected by long dry periods in South Africa and Botswana

Boma repair

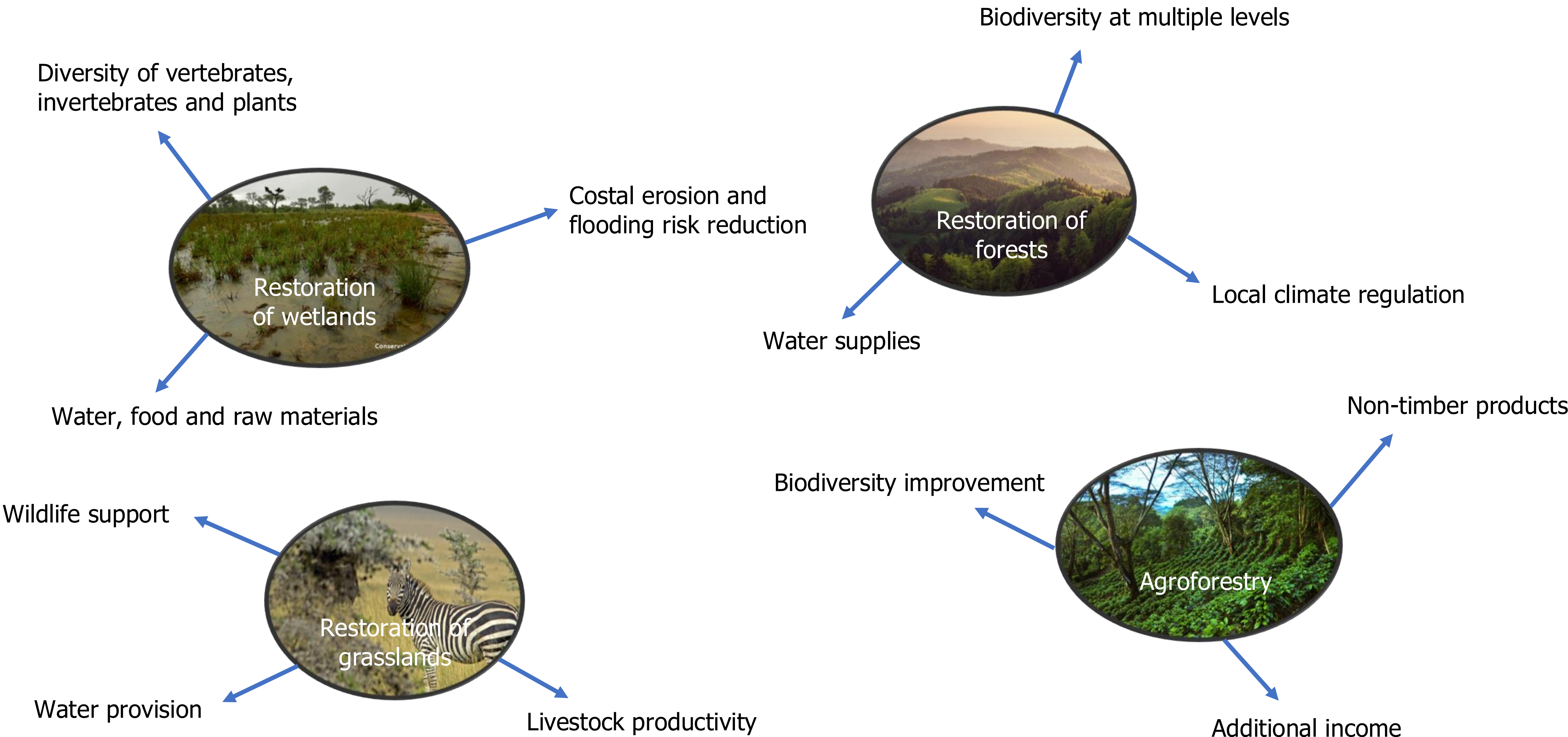
OTHER BENEFITS OF NBS

Implementing restoration where multiple needs exist and where multiple benefits can be realized:

- Climate mitigation benefits
- Biodiversity conservation benefits
- Human wellbeing



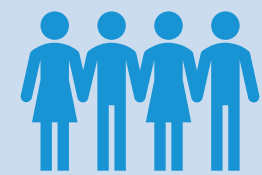
WELL-DESIGNED RESTORATION PROJECTS CAN LEAD TO MANY CO-BENEFITS



IDENTIFYING NEGATIVE OUTCOMES



Unintended conflicts (humans and wildlife)



Unintended negative impacts on people's livelihoods



Unintended negative impacts on biodiversity

CHALLENGES FACING NATURE-BASED SOLUTIONS



Big financial gap

Limited awareness of policy makers on those solutions

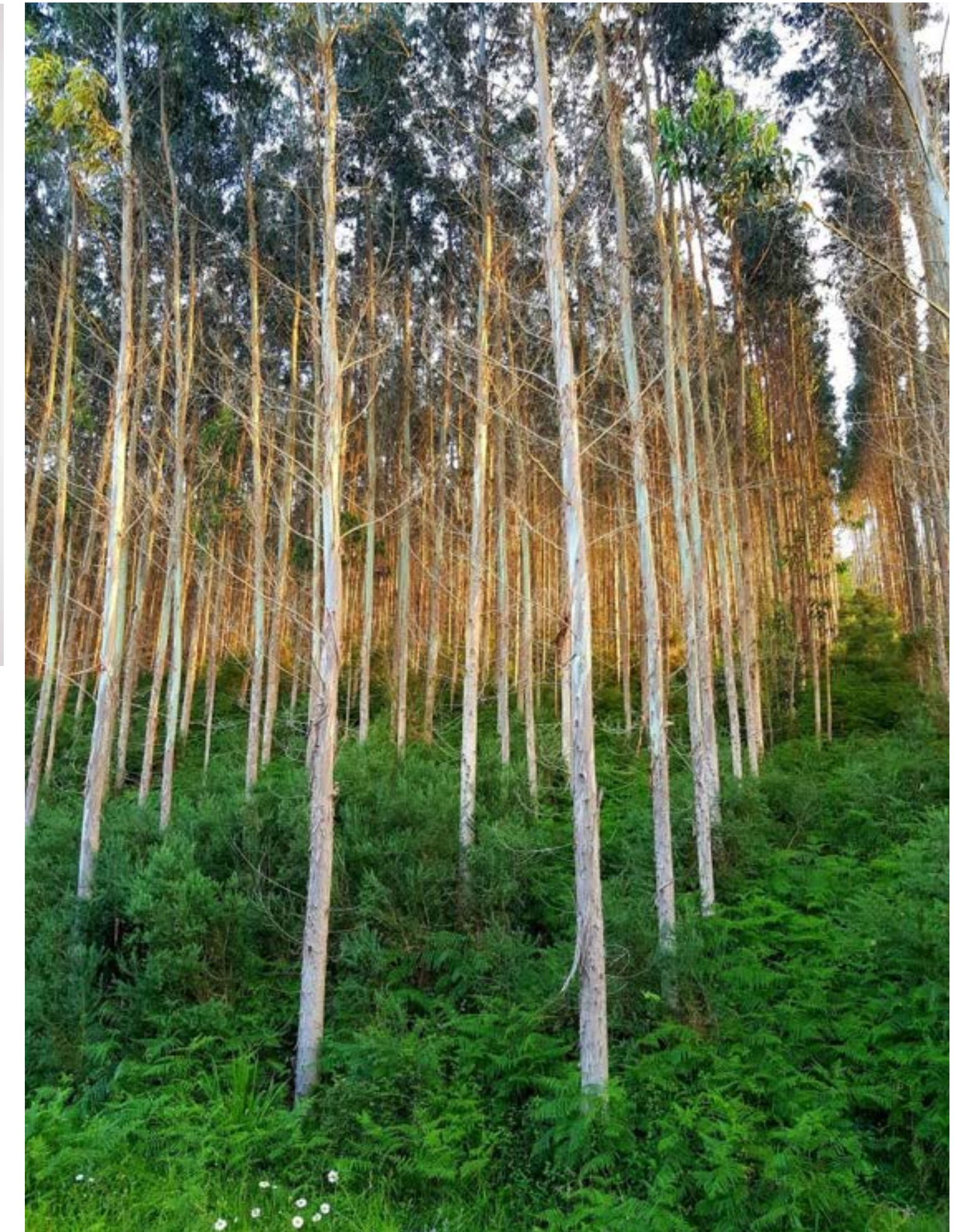
Limited information on costs



IMPORTANCE OF CO-DESIGNING NATURE RESTORATION WITH IP&LC



NOT WELL-DESIGNED NATURE RESTORATION CAN LEAD TO TRADE-OFFS



CHALLENGES TO SCALING UP NATURE RESTORATION FOR CLIMATE ADAPTATION



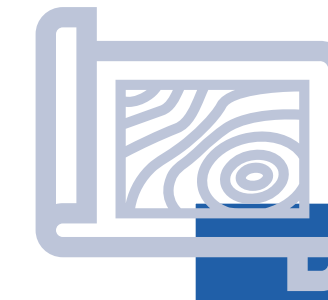
People & Communities

- Community engagement and equitable benefit sharing
- Capacity and technical support
- Alignment with local livelihoods



Governance & Policy

- Cross-sector coordination challenges
- Limited long-term financing
- Policy and regulatory barriers



Land & Economics

- Competing land uses
- Land tenure uncertainty
- Weak economic incentives for restoration

OPPORTUNITIES TO SCALING UP NATURE RESTORATION FOR CLIMATE ADAPTATION



Financial Mechanisms

- Mobilizing private and public capital
- Carbon and ecosystem markets
- Innovative funding models



Policy Frameworks

- Supportive regulations and incentives
- National restoration commitments
- Integration into adaptation planning



Coalitions

- Cross-sector partnerships
- Community-led implementation
- Landscape-scale collaboration

Q&A



Welcome! Bienvenue!

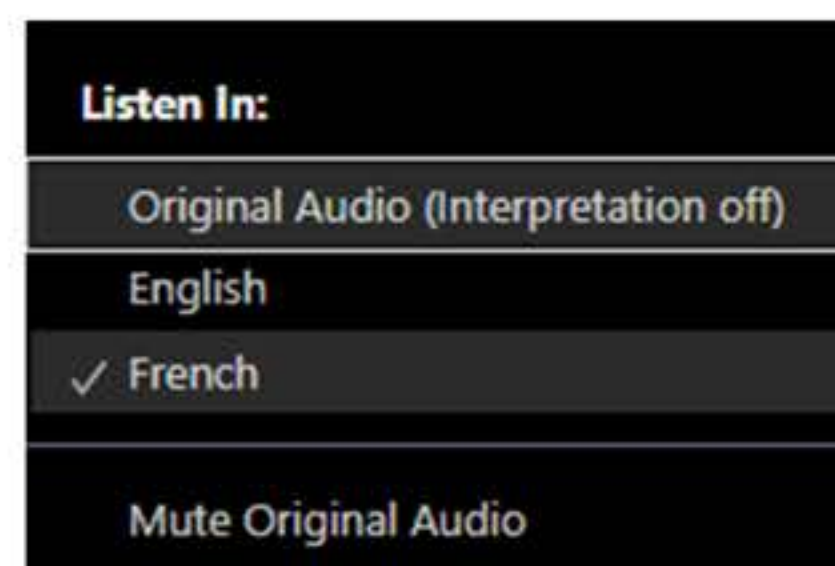
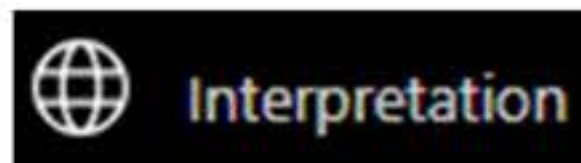


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Consignes de l'interprétation orale

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(situé dans la barre d'outils de Zoom)
2. Choisissez votre langue
3. Désactivez l'option « Audio d'origine »
 - ✓ Vous n'entendrez que la langue que vous avez sélectionnée
 - ✗ Vous n'entendrez pas l'anglais en fond sonore

Si vous avez besoin d'aide, veuillez envoyer un message à l'organisateur via le chat.

Instruções de interpretação oral

1. Clique no botão  Interpretação
(localizado na barra de ferramentas do Zoom)
2. Escolha o seu idioma
3. Desative a opção "Áudio original"
 - ✓ Ouça apenas o idioma selecionado
 - ✗ Evite ouvir o inglês em simultâneo

Se precisar de ajuda, envie uma mensagem ao anfitrião no chat.

Instrucciones de interpretación

1. Haz clic en el botón  Interpretación
(situado en la barra de herramientas de Zoom)
2. Elige su idioma
3. Desactiva la opción «Audio original»
 - ✓ Escucha solo el idioma seleccionado
 - ✗ Evita escuchar el inglés superpuesto

Si necesita ayuda, envía un mensaje al anfitrión en el chat.

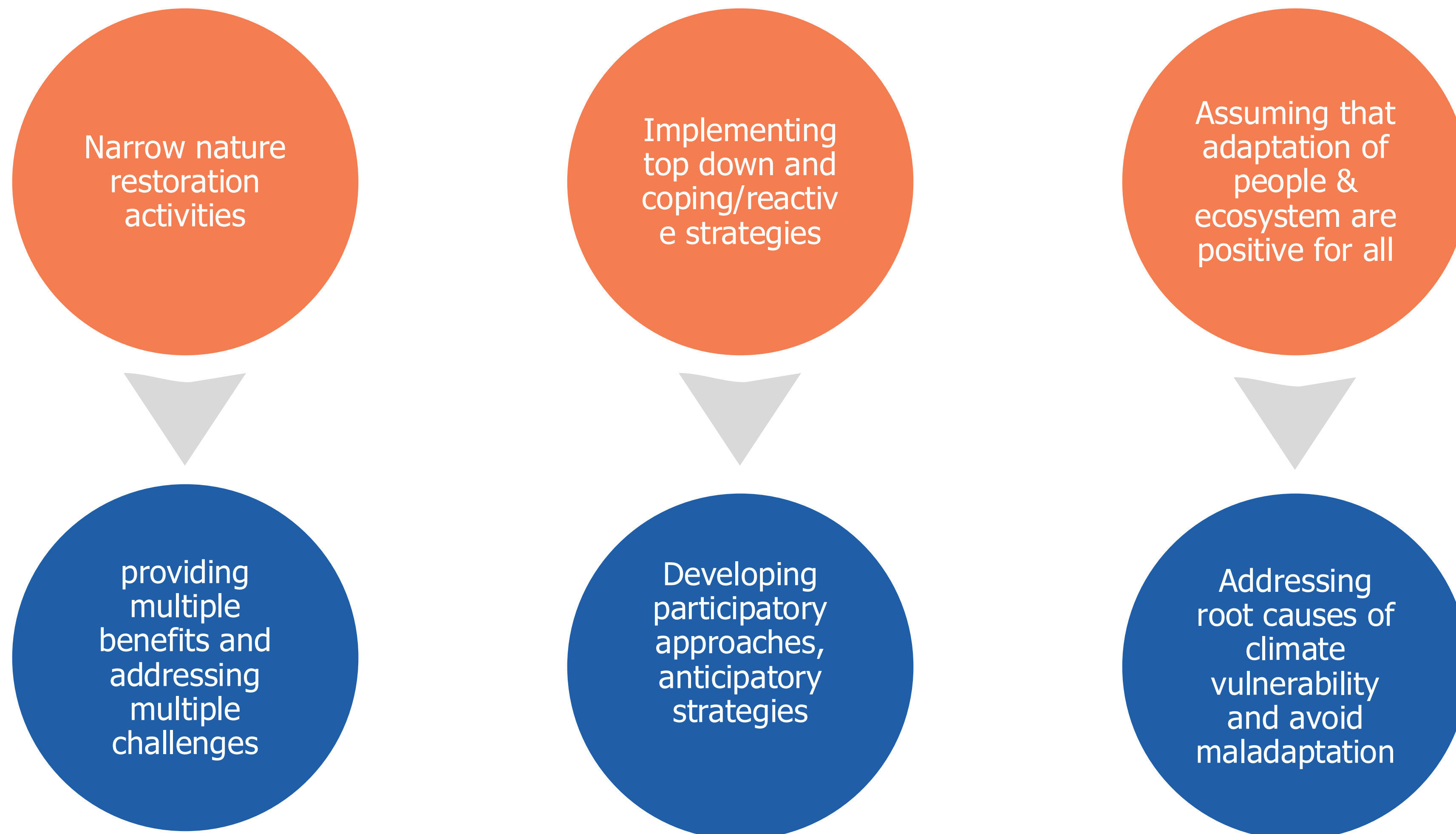
DISCUSSION

BREAKOUT GROUPS

Participants share what they still need to think about in their restoration **projects to improve the provision of climate adaptation and resilience benefits**, based on what they have learned today.



KEY TAKE AWAYS



HOMework

- Finalize your theory of change and identify points in the theory of change where monitoring could occur.

Suggested reading materials for Module 4:

- Strategies for adaptation to and mitigation of climate change: Key performance indicators to assess nature-based solutions performances: <https://www.sciencedirect.com/science/article/pii/S2212095523001748>
- Guidebook for Monitoring and Evaluating Ecosystem-based Adaptation Interventions https://www.adaptationcommunity.net/download/ME-Guidebook_EbA.pdf



OFFICE HOURS FOR THIS MODULE

Thursday Sept 24 10-11 CET (Giacomo)

Thursday Sept 24 10-11 EST (Starry)



Contact Information:

Giacomo Fedele, PhD | Adaptation Strategy Director: gfedele@conservation.org

Starry Sprenkle-Hyppolite, PhD | Restoration Science Director
ssprenkle-hyppolite@conservation.org

THANK YOU



Welcome! Bienvenue!

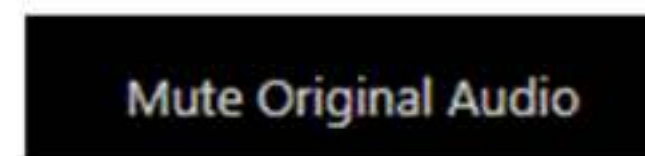
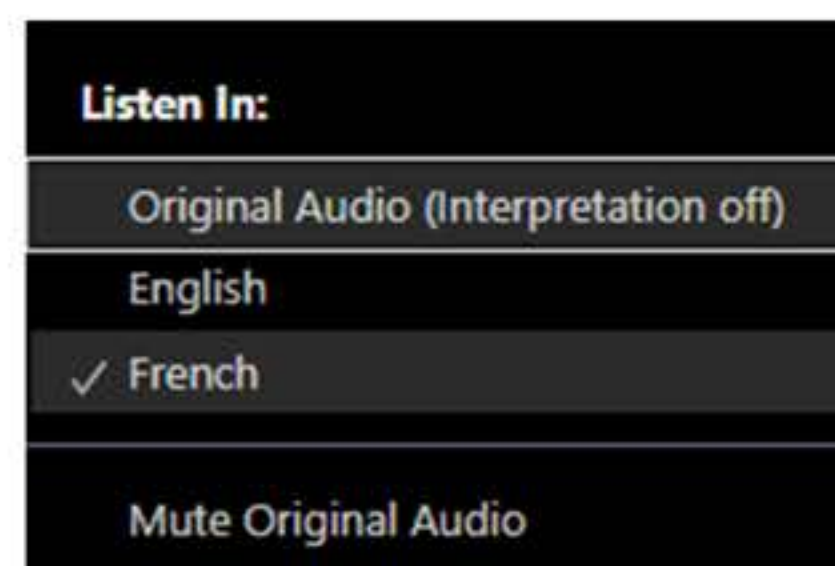
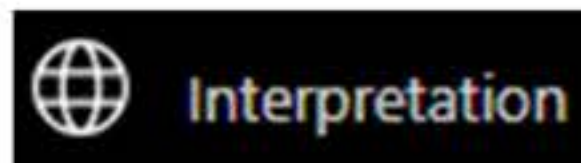


Bem-vindo! ¡Bienvenido!

Spoken Interpretation Instructions

1. Click the  Interpretation button
(Located in your Zoom toolbar)
2. Choose your language
3. Turn OFF "Original Audio"
 - ✓ Hear only your selected language
 - ✗ Avoid hearing overlapping English

If you need help, please message the host in the chat.



Consignes de l'interprétation orale

1. Cliquez sur le bouton  Interprétation
(situé dans la barre d'outils de Zoom)
2. Choisissez votre langue
3. Désactivez l'option « Audio d'origine »
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 - ✗ Vous n'entendrez pas l'anglais en fond sonore

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Instruções de interpretação oral

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 - ✗ Evita escuchar el inglés superpuesto

Si necesita ayuda, envía un mensaje al anfitrión en el chat.

Welcome! Bienvenue !



Bem-vindo!

¡Bienvenido!

Please rename yourself with your preferred speaking language

1. Under “Participants,” click the 3 dots (...) next to your name
2. Click “Rename”
3. Add the language or languages you can speak in front of your name
4. Click “Change”

Por favor, altere seu nome para o idioma em que prefere se expressar

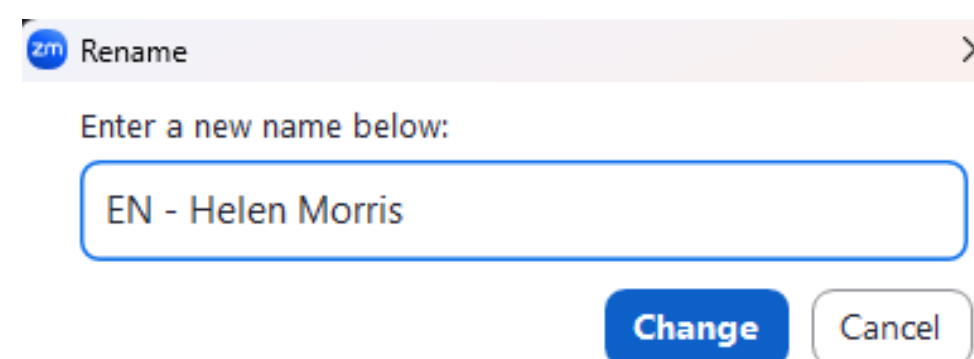
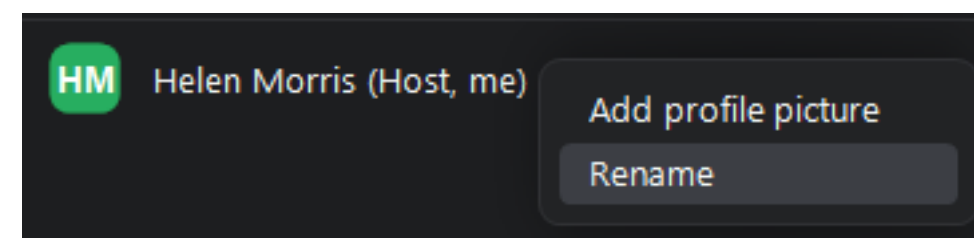
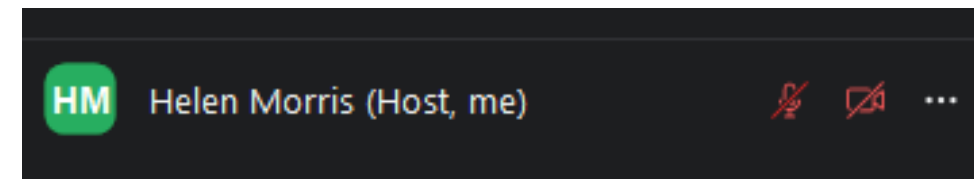
1. Na seção “Participantes”, clique nos três pontos (...) ao lado do seu nome
2. Clique em “Renomear”
3. Adicione o idioma ou idiomas que você fala antes do seu nome
4. Clique em “Alterar”

Merci de renommer votre profil en indiquant la langue dans laquelle vous préférez communiquer.

1. Dans la rubrique « Participants », cliquez sur les trois points (...) à côté de votre nom
2. Cliquez sur « Renommer »
3. Indiquez la ou les langues que vous parlez devant votre nom
4. Cliquez sur « Modifier »

Por favor, cambia su nombre por el idioma en el que prefiera hablar

1. En la sección «Participantes», haga clic en los tres puntos (...) que aparecen junto a su nombre
2. Haga clic en «Cambiar nombre»
3. Agregue el idioma o los idiomas que habla delante de su nombre
4. Haga clic en «Cambiar»



Module 4

MONITORING NATURE-BASED SOLUTIONS FOR CLIMATE ADAPTATION



AGENDA

Recap of previous module

45 minutes Lecture

15 minutes Q&A

20 minutes breakout group discussion

10 minutes Takeaways, final survey, and closing



MODULE 3 RECAP



NOT WELL-DESIGNED NATURE RESTORATION CAN LEAD TO TRADE-OFFS



OPPORTUNITIES TO SCALING UP NATURE RESTORATION FOR CLIMATE ADAPTATION



Financial Mechanisms

- Mobilizing private and public capital
- Carbon and ecosystem markets
- Innovative funding models



Policy Frameworks

- Supportive regulations and incentives
- National restoration commitments
- Integration into adaptation planning



Coalitions

- Cross-sector partnerships
- Community-led implementation
- Landscape-scale collaboration



IMPORTANCE OF MONITORING CLIMATE ADAPTATION BENEFITS

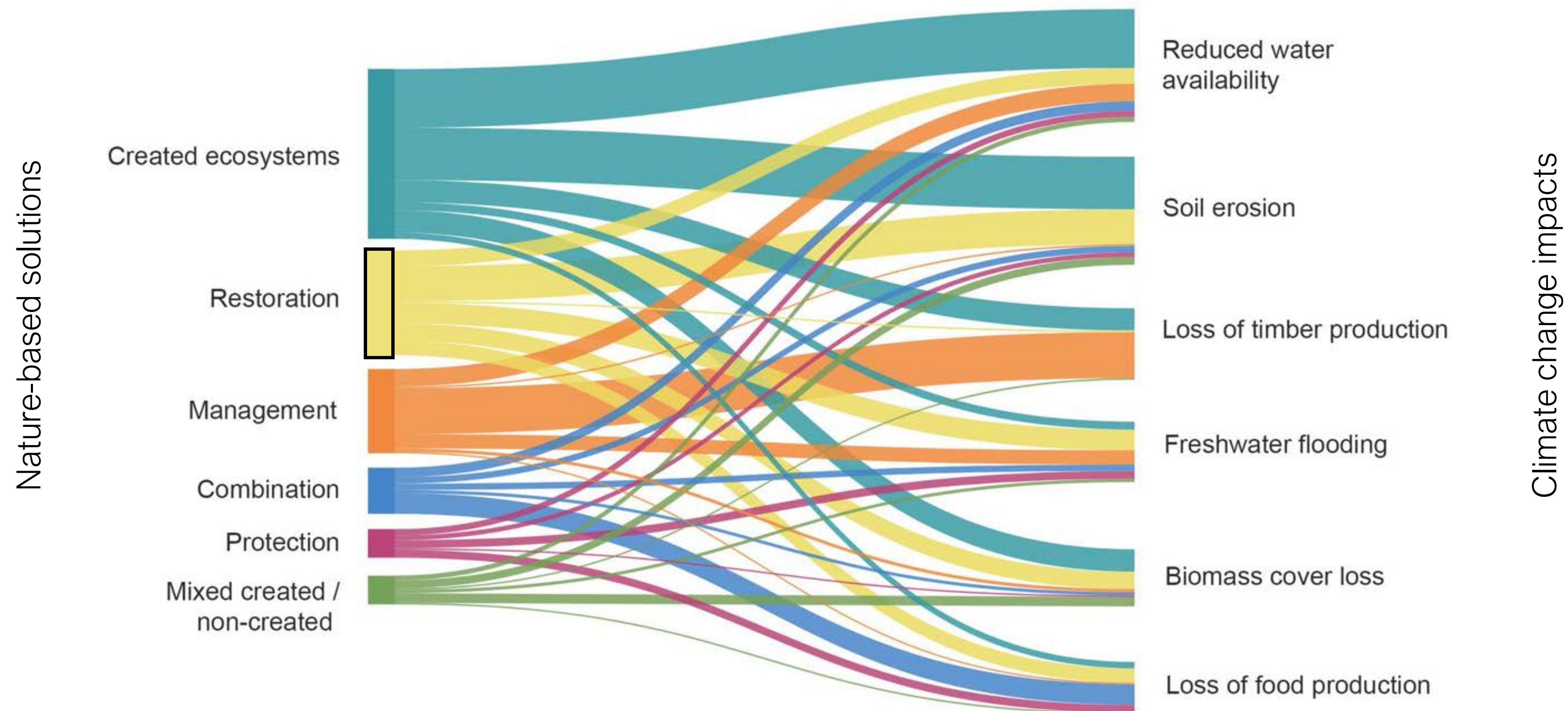


EFFECTIVENESS OF NBS FOR CLIMATE ADAPTATION

- What we know about effectiveness (impact assessment and monitoring and evaluation studies)
- What we know about cost-effectiveness (studies that have looked at costs and effectiveness)
- What we know about Return on investment



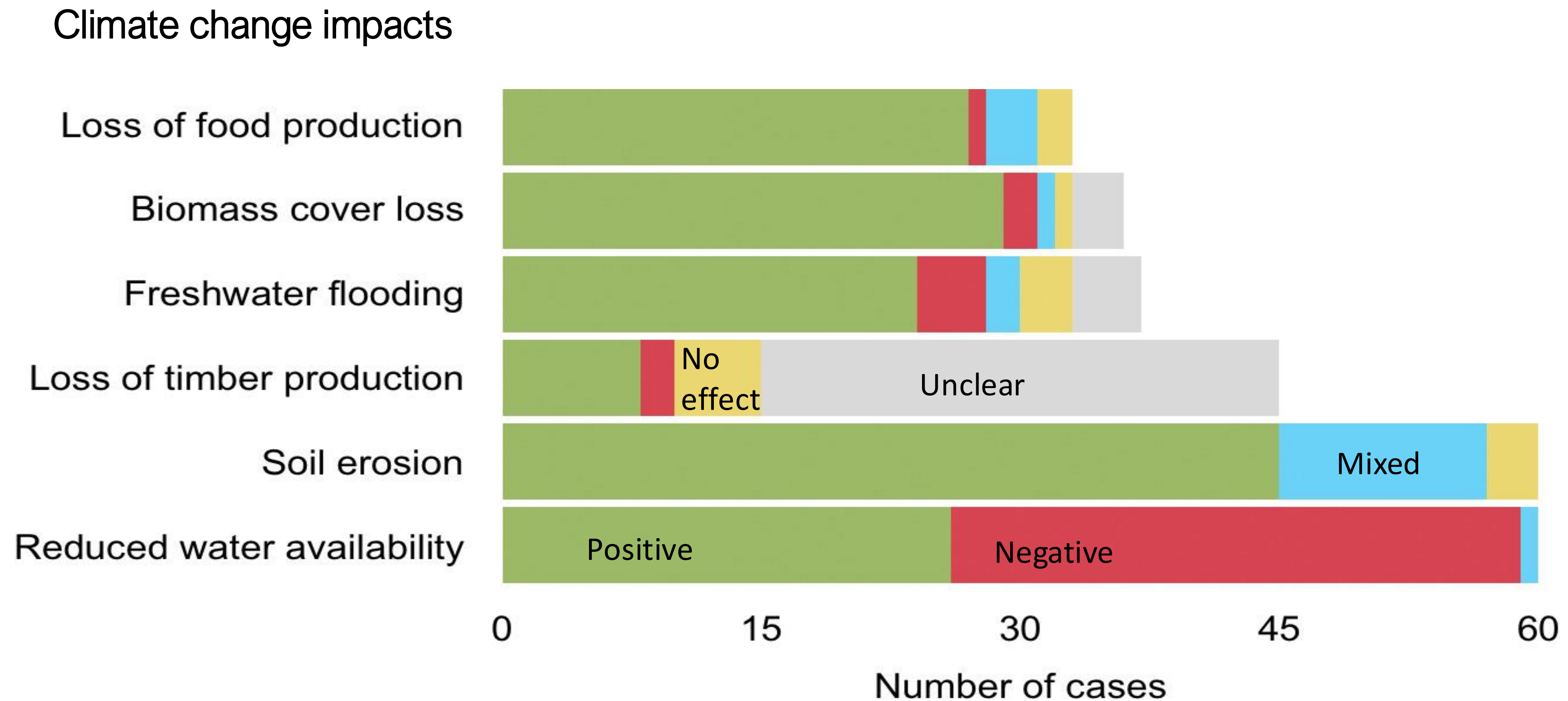
WHAT IS THE EVIDENCE OF THE EFFECTIVENESS OF NATURE-BASED ADAPTATION?



[Chausson et al. 2020](#)

based on 386 scientific studies
(85 countries from 2012-2020)

WHAT IS THE EVIDENCE OF THE EFFECTIVENESS OF NATURE-BASED ADAPTATION?



[Chausson et al. 2020](#)

based on 386 scientific studies
(85 countries from 2012-2020)

GENERAL RECOMMENDATIONS FOR MONITORING

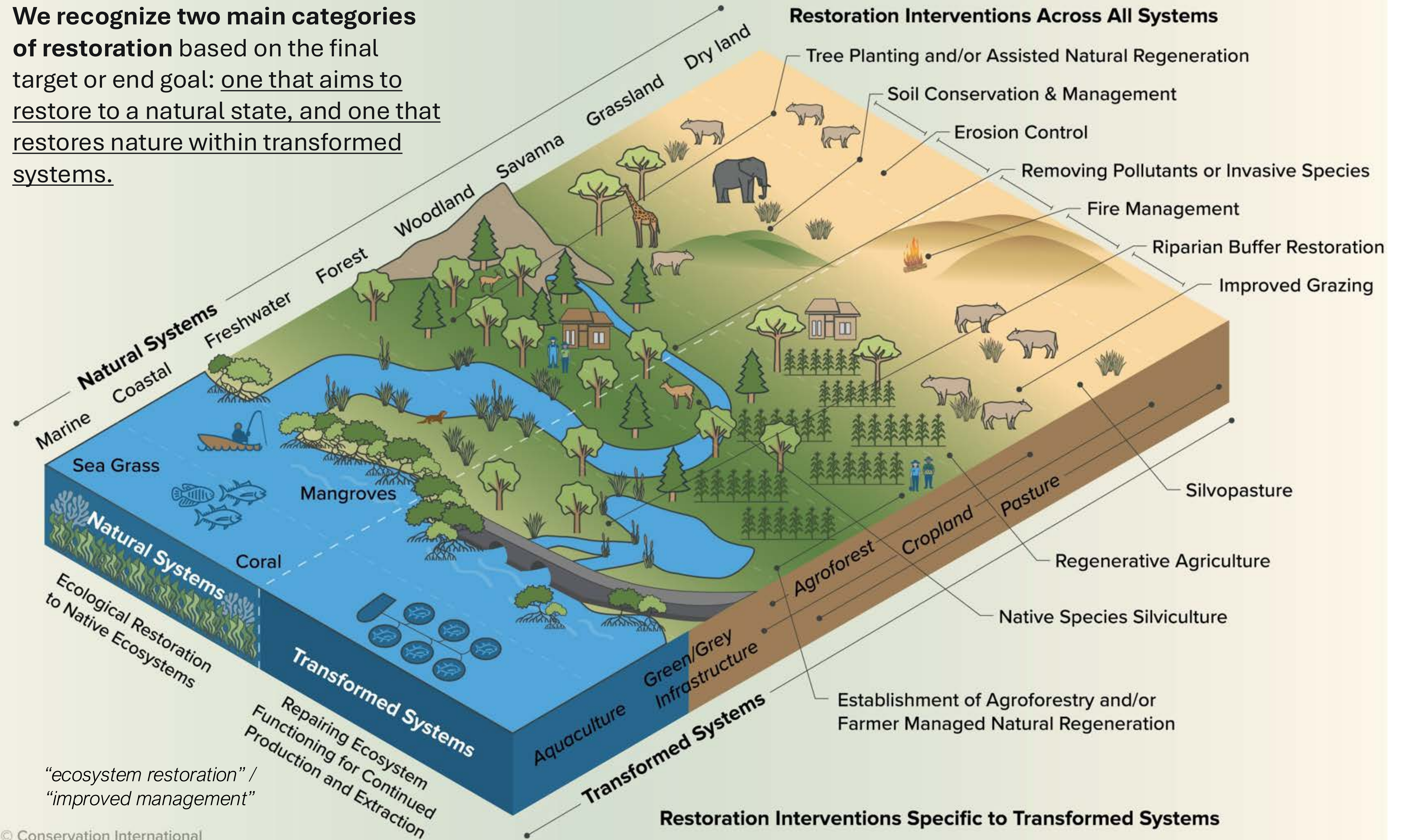
- **Indicator complexity** (basic, intermediate and advanced) depends on data, resources, project scope (adaptation or not, climate risk), donor requirements and budget
- Metrics should be taken before (**baseline**) and after (**endline**) the implementation of the nature-based solution for adaptation.
- Balance **field** and **desktop** data collection by utilizing remote sensing or geospatial datasets when possible and concentrating field data collection on remaining indicators

CHALLENGES OF MONITORING RESTORATION INTERVENTIONS

- Time lag between the implementation of interventions (and collection of baseline data) and the realization of the adaptation benefits (collection of endline data)
- Challenges of gathering accurate and comprehensive data over large and remote areas
- Complexity of monitoring dynamic ecosystems (many interconnected variables influenced by various external factors).
- Social and political barriers, including land ownership, regulatory changes, and community engagement
- Data collection systems and management



We recognize two main categories of restoration based on the final target or end goal: one that aims to restore to a natural state, and one that restores nature within transformed systems.



LEADING INDICATORS FOR RESTORATION MONITORING

Category	Level	Indicator
Area under Restoration	Impact	HA or Km ² under restoration (disaggregation by area of importance (corridors, key habitats, MPA's, etc.,))
	Outcome	Length of rivers or streams within restoration sites
	Outcome	HA under climate resilient management
	Outcome	# of HA of cultural importance under restoration
Climate	Outcome	% change in natural vegetative cover (proxy for carbon)
	Outcome	Amount of CO ₂ sequestered (aboveground)
	Outcome	Amount of CO ₂ sequestered (belowground)
	Outcome	% survival of planted or naturally regenerating vegetation
Biodiversity	Outcome	% change in species richness within designated class (i.e. trees, corals or primates)
	Outcome	Mean species abundance
	Outcome	# of species planted and regenerating
	Outcome	# of plants (trees, grasses, etc.) planted and regenerating (disaggregated by species)
	Outcome	# of target species of importance identified in restoration areas
	Outcome	% of restoration area covered by invasive species
People	Output	# of people directly receiving support to their livelihoods (disaggregated by gender, geography and results area)
	Outcome	% of community members who have improved skills/knowledge/finances resulting from support provided as part of project activities
	Outcome	% of community with favorable perceptions of the project/their well-being/equity
	Outcome	Evidence that laws and regulations in project area are being implemented, monitored and enforced
	Outcome	% increase in yield of target commodity
	Output	# of people under (or subscribing to) conservation agreements
	Output	# of people participating in decision-making community meetings
	Output	# workdays created
Adaptation	Impact	% increase in landscape connectivity
	Impact	Volumetric water benefits
	Impact	Change in shoreline elevation/morphology
	Outcome	# people who experienced improved climate adaptation capacity as a result of project activities
	Impact	Changes in food security index
	Outcome	Changes in number of sustainable income sources
	Outcome	Reduction in soil erosion

GEF-8 INDICATORS

Core Indicators
1.1 Area of terrestrial protected areas created or under improved management (ha)
3. Area of land and ecosystems under restoration (ha)
4. Area of landscapes under improved practices (ha)
6. Greenhouse gas emissions mitigated (tCO ₂ eq)
11. People benefitting from GEF finance investments disaggregated by gender

GEF-8 INDICATORS

Component	Program-level Indicators
Governance and Policies	1.1.1: At least one policy targeted for shifts to overcome restoration barriers and/or harmful incentives to further policy coherence and support ecosystem restoration.
	1.2.1: Number of established cross-sectoral support mechanisms at national and/or subnational levels for restoration of targeted ecosystems.
	1.2.2: Number of plans developed or improved at national, subnational and/or local levels for ecosystem restoration and/or sustainable ecosystem management.

Component	Program-level Indicators
Restoration (Innovation and Learning)	2.1.1: Number of knowledge products developed and disseminated disaggregated by type of knowledge product and targeted stakeholder.
	2.1.2: The percentage of stakeholders with increased awareness and knowledge of ecosystem restoration above baseline, disaggregated by type of stakeholder.

GEF-8 INDICATORS

Component	Program-level Indicators
Financial Leverage	3.1.1. Number of financial mechanisms/models developed and/or piloted for restoration geographies and ecosystems to provide increase in financing capacity, multi-stakeholder organization and alignment to decrease the financing gap.
	3.2.1. Amount of new financing leveraged from national and international sources through coalitions, partnerships and/or direct investments for restoration.
	3.2.2. Number of stakeholders experiencing livelihood benefits from program-induced investments, disaggregated by GESI.

Component	Program-level Indicators
Global Coordination	4.1.1. Percentage of effective responses (uptake) by country projects to Program Steering Committee recommendations.
	4.1.2. Number of women, Indigenous people, youth or other vulnerable group members in decision-making positions related to ecosystem restoration supported by the project.
	4.2.1. Amount of co-financing materialized by the project in favor of ecosystem restoration.
	4.3.1. The number of stakeholders surveyed expressing satisfaction regarding their participation in project activities disaggregated by type GESI

ADAPTATION INDICATORS CAN BE ADDED!



APOMBO
(Albino, Eubolus)

BOZAKA
(Albino, Eubolus)

HOW TO MONITOR CLIMATE ADAPTATION BENEFITS

- participatory methods and community engagements
- data collection in the field
- modeling and projections
- Remote sensing (ha, damages)
- existing population and agriculture surveys



PARTICIPATORY METHODS TO ASSESS CLIMATE RISKS AND COMPLEMENT DESK ASSESSMENTS

CLIMATE PROBLEM TREE + RESPONSES



CLIMATE SENSITIVITY MATRIX



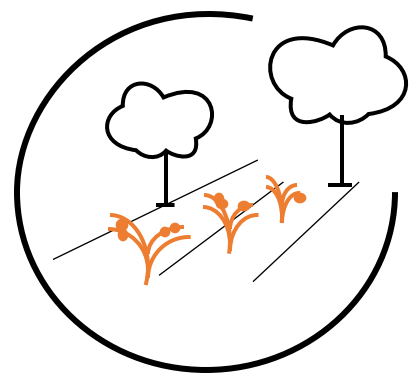
PARTICIPATORY RISK MAPPING



EXAMPLES ON HOW TO MONITOR CLIMATE ADAPTATION BENEFITS

- Indicators related to each type of adaptation benefit
- Indictors choice considering project complexity (time, budget, capacities)
- Indicators using either existing data or primary data



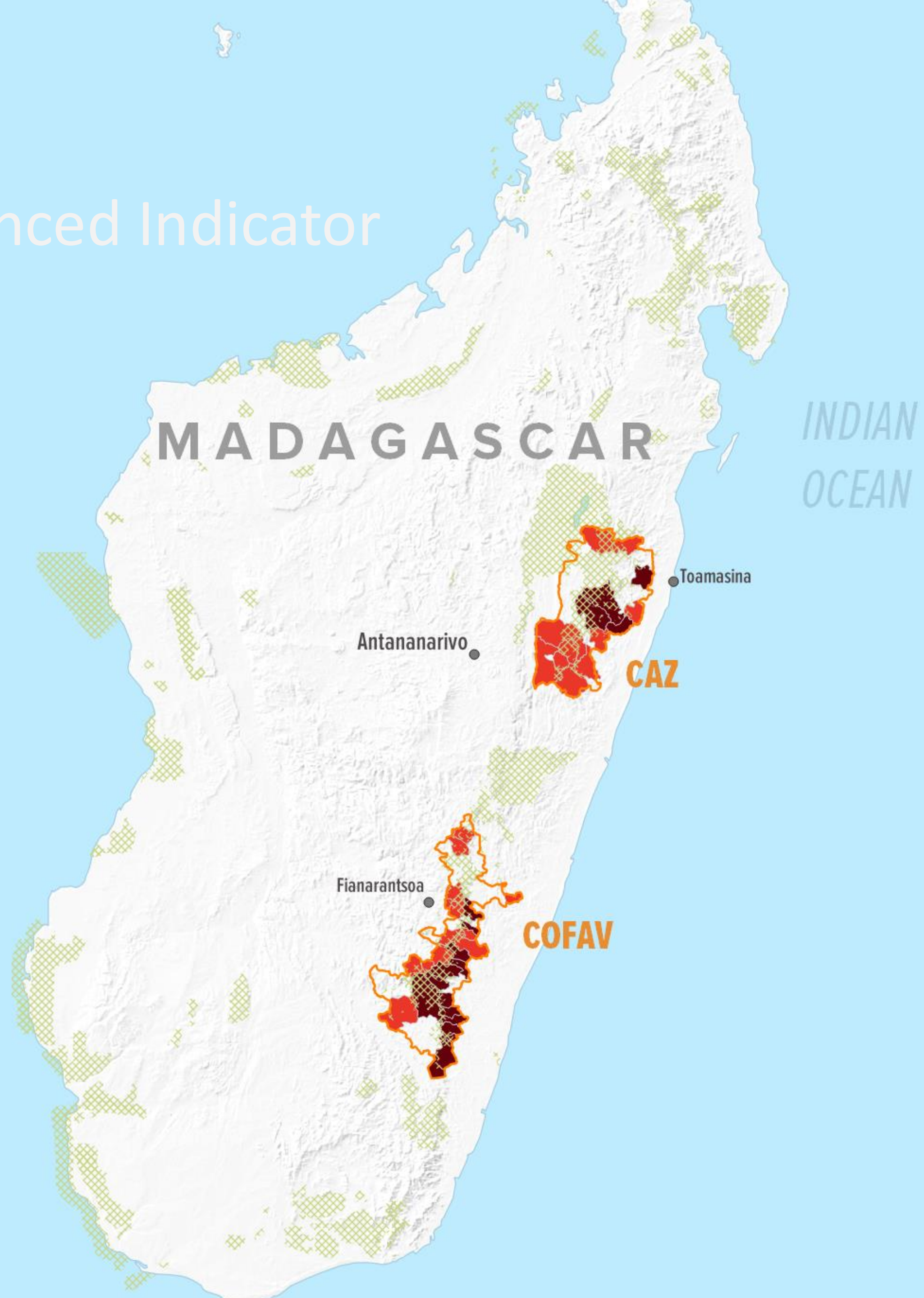


FOOD SECURITY

MONITORING ADAPTATION OUTCOMES

Basic indicators	Intermediate indicators	Advanced indicators
Changes in number of meals	Changes in the consumption of specific items or expenditure (index)	Changes in food security index
Meals (#/day), reduced coping strategies index	days eating specific items (# days), food expenditure index	Food security index (e.g. WFP CARI)

Advanced Indicator



Food Security Index by municipality (2019)

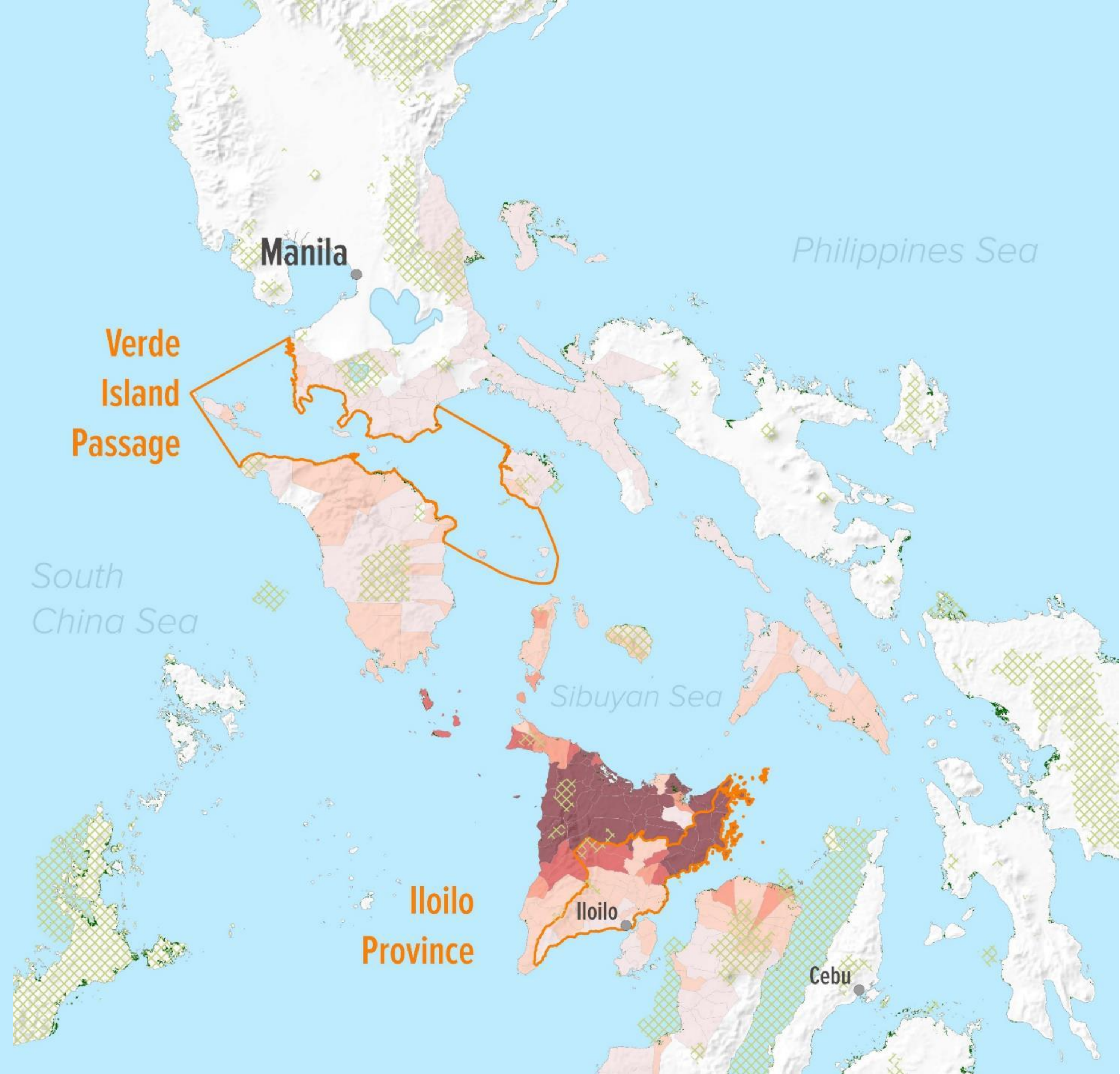
- 1 - Food secure
- 2- marginally food secure
- 3 -moderately food insecure
- 4 - severely food insecure
- protected areas

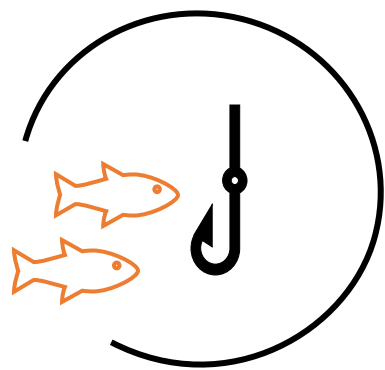


ASSETS PROTECTION: MONITORING ADAPTATION OUTCOMES

Basic indicators	Intermediate indicators	Advanced indicators
Changes in biophysical variables (e.g coastal erosion)	Changes in the perception of damages to assets and infrastructure due to an extreme weather event	Changes in loss of assets and infrastructure (and monetary value) due to an extreme weather
Coastal erosion, hillside erosion, flooding (m/year, ha)	Perception of damages (% people)	Assets and infrastructure damaged (#/total, \$/total)

Damaged houses by Typhoon Haiyan per municipality (%)

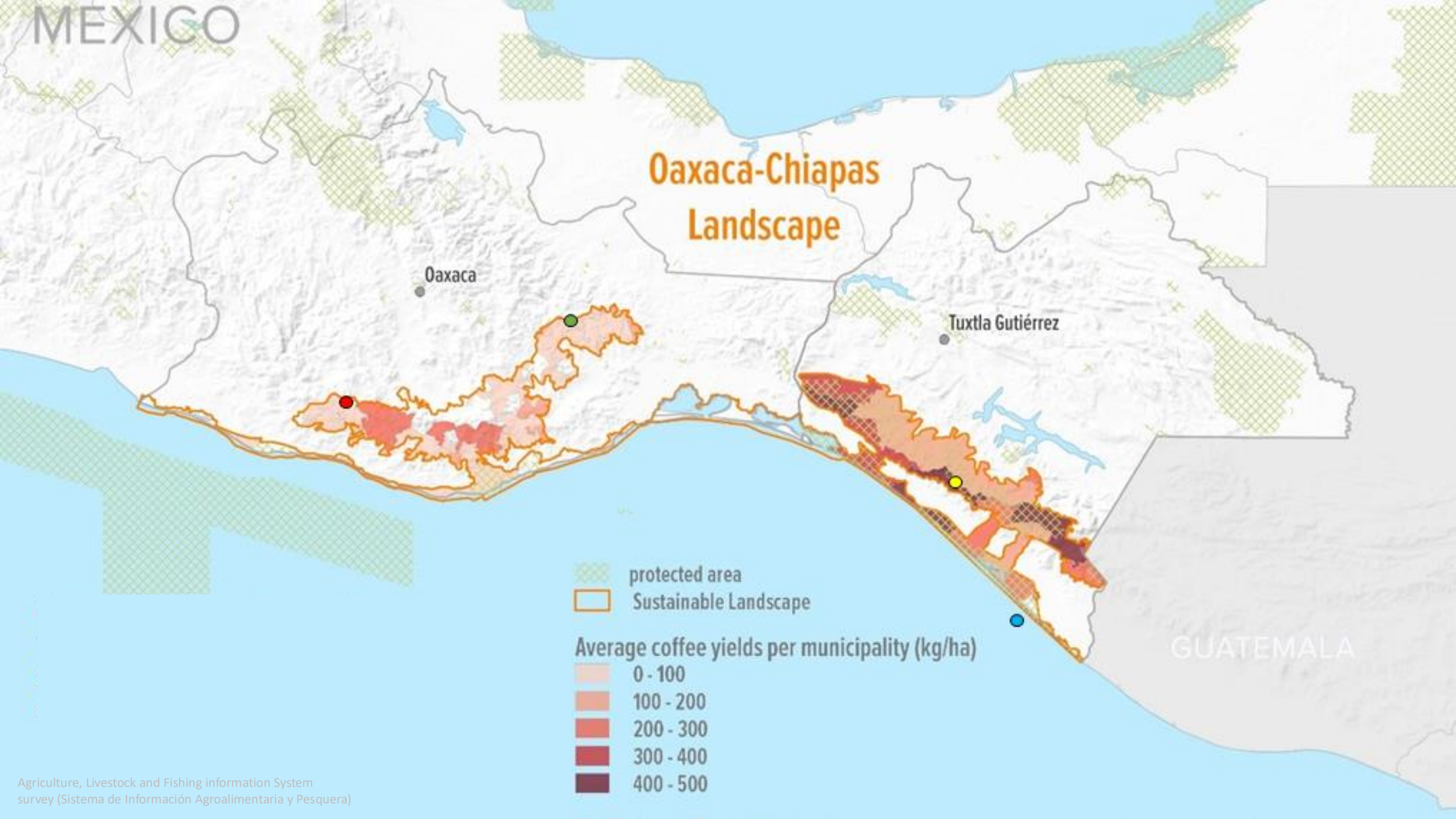




LIVELIHOOD MAINTENANCE:

MONITORING ADAPTATION OUTCOMES

Basic indicators	Intermediate indicators	Advanced indicators
Perception of changes in productivity or yields per area and season	Changes in income	Changes in income from diversified & sustainable sources
Crop productivity or yield (kg/month), percentage of change (%)	Overall monthly income (\$/month)	Monthly income from diversified & sustainable sources (\$/month)





WATER SECURITY: MONITORING ADAPTATION OUTCOMES

Basic indicators	Intermediate indicators	Advanced indicators
Changes in water flow	Changes in per capita access to water	Changes in water security index

River water flow stability (m³/s)

access to water (% people,
hours walking)

Water security index (e.g. HWISE)

Average water flow per watershed (m³/s)

14-100

100-200

200-300

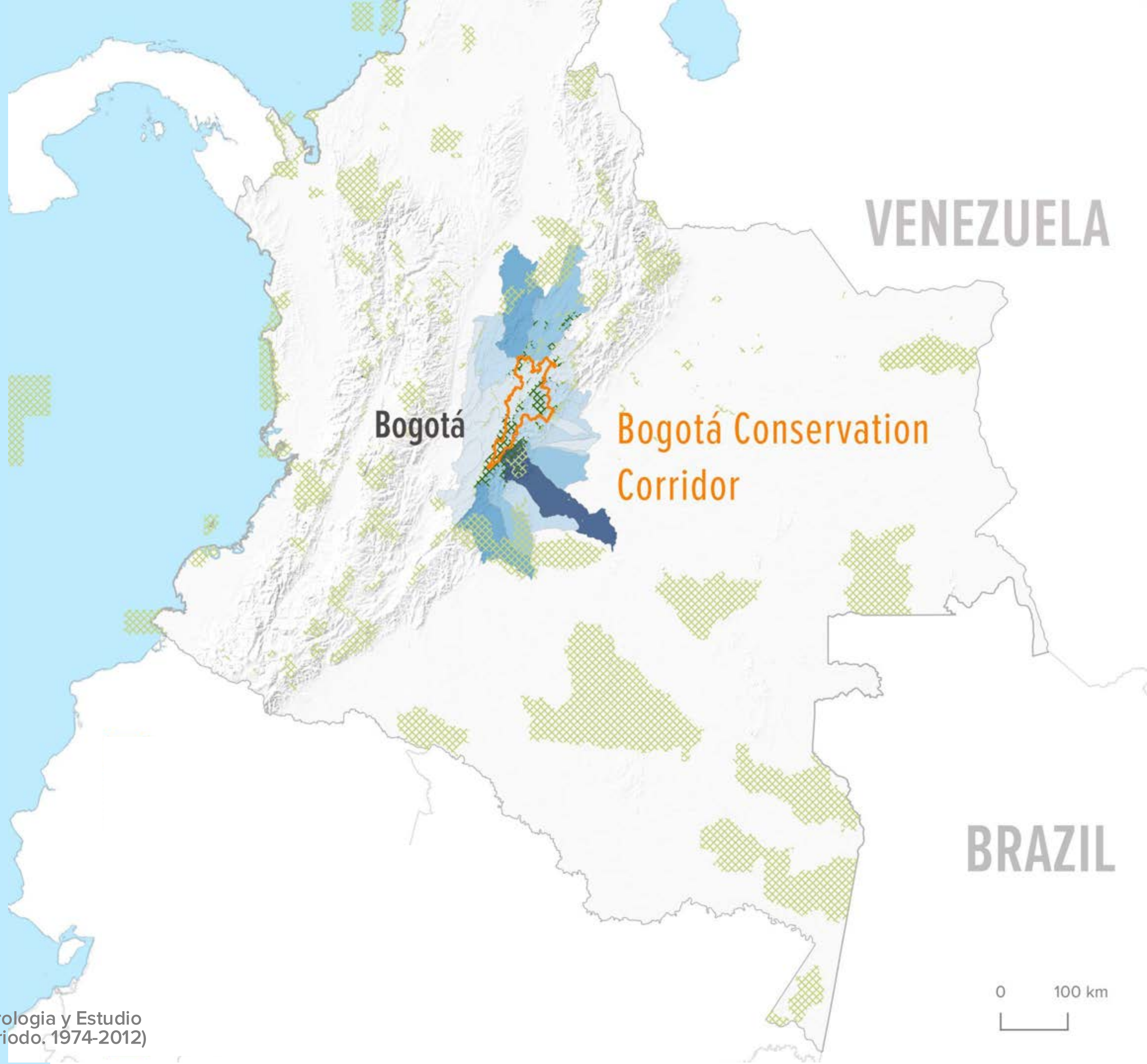
300-400

400-500

500-513

protected areas

Paramos





HUMAN HEALTH AND SECURITY:

MONITORING ADAPTATION OUTCOMES

Basic indicators	Intermediate indicators	Advanced indicators
Changes in local (human-human or human-wildlife) conflicts	Changes in the frequency of local conflicts (human-human or human-wildlife) over natural resources	Changes in the number of deaths and injuries resultant from conflicts over natural resources
Perceived frequency of conflicts (#)	Frequency of conflicts (#/year)	People dead or injured or animals dead/stolen (#)





ECOSYSTEM INTEGRITY AND RESILIENCE: MONITORING ADAPTATION OUTCOMES

Basic indicators	Intermediate indicators	Advanced indicators
Changes in ecosystem extent and management (natural and restored habitat)	Changes in ecosystem condition (productivity, soil, structure) relative to a reference state	Changes in ecosystem integrity and bioclimatic resilience
Area under climate-resilient management (ha, % cover), connectivity (ha, km)	Land productivity trend (NDVI), presence of target species (yes/no), soil organic carbon (t C/ha), or integrity index score	BERI score; integrity index (EII or FLII), climate connectivity

Q&A



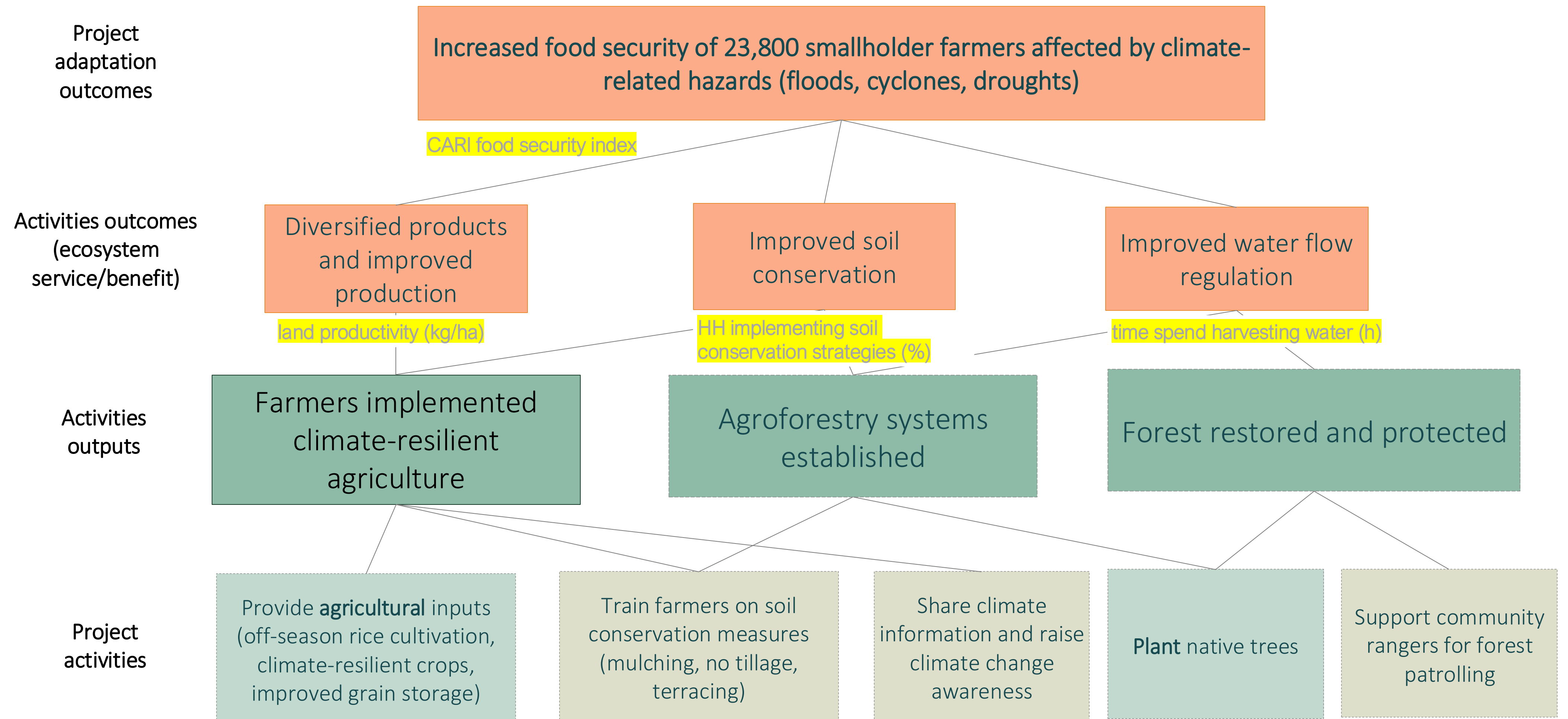
DISCUSSION IN BREAKOUT GROUPS

What indicators and metrics could be used to track the adaptation benefits of your project (red boxes or second level from top in your TOC)?

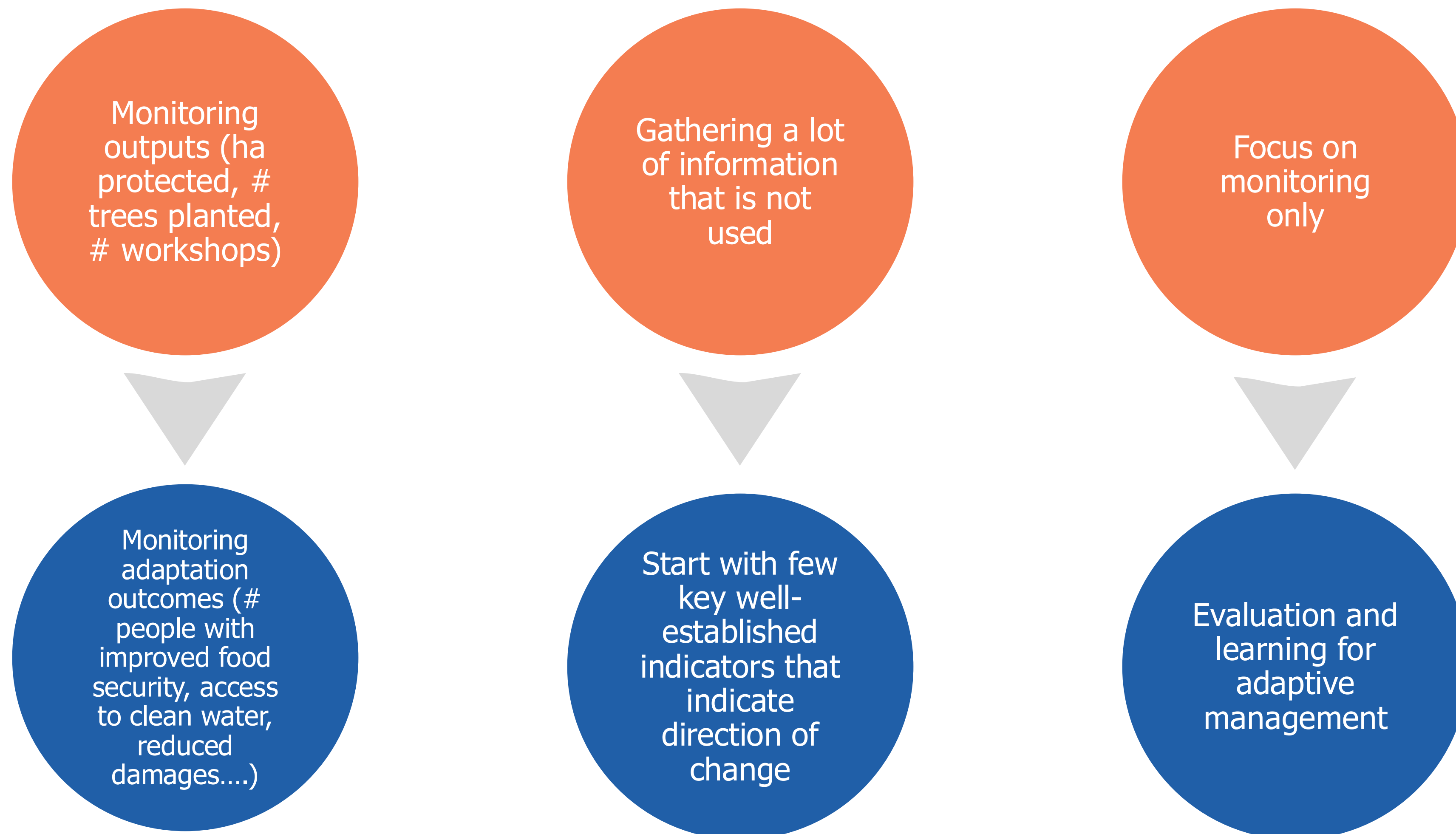


EXAMPLE OF THEORY OF CHANGE:

RESTORING EASTERN MADAGASCAR LANDSCAPES



KEY TAKE AWAYS



END OF TRAINING!

Exit survey

Certificates



A young boy with dark hair and a serious expression is sitting inside a large, shallow metal tub that he is using as a boat. He is holding a long, dark wooden pole with both hands, using it to navigate through the water. The tub is floating in a body of water that is filled with green, leafy aquatic plants. In the background, there is a wooden structure, possibly a house or a fence, with a red door or panel visible. The water is calm, reflecting the surrounding environment. The overall scene suggests a rural or coastal setting where flooding is common.

Thanks !

THANK YOU

CONSERVATION
INTERNATIONAL



CI COLORS

HOME
255/233/18

FLOWER
255/198/0

ORANGUTAN
255/173/38

TIGERLILY
247/148/33

CLOWNFISH
246/125/75

VOLCANO
230/103/62

TREE FROG
186/214/54

**MOTHER
NATURE**
76/169/80

RAINFOREST
53/125/87

SKY
126/203/239

MACAW
1/147/215

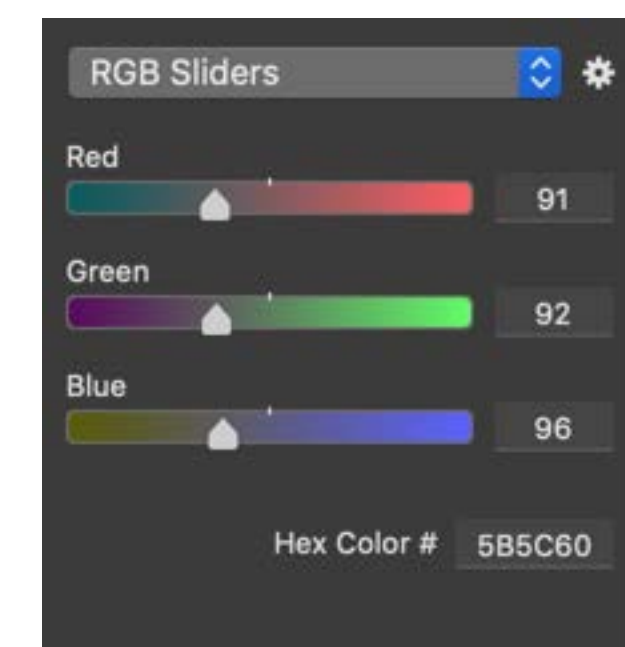
OCEAN
26/94/171

ARCTIC
255/255/255

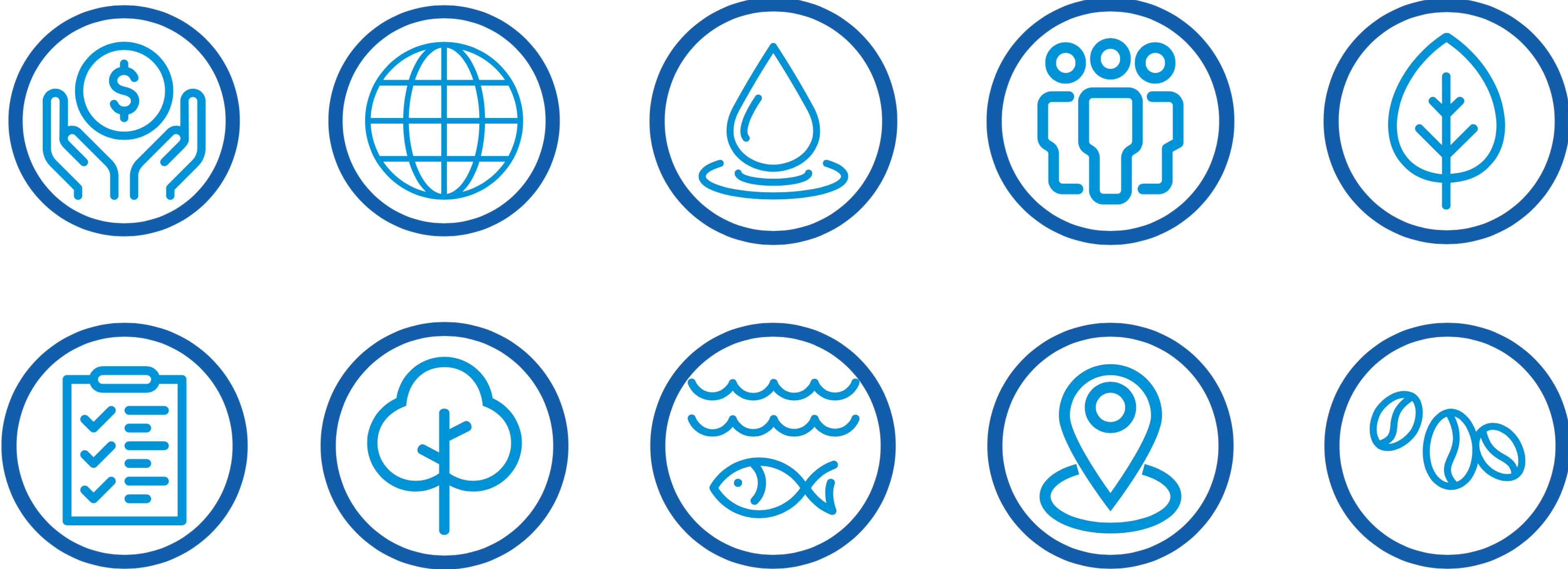
LEMUR
117/123/130

PANTHER
92/92/96

Color codes are for RGB (red, green, blue) you can add these to your color palette by typing in the numbers in the “more colors” menu.



Small library of icons that can be used as needed.



More icons available here: <https://ci.tandemvault.com/powerpoint-icons>

