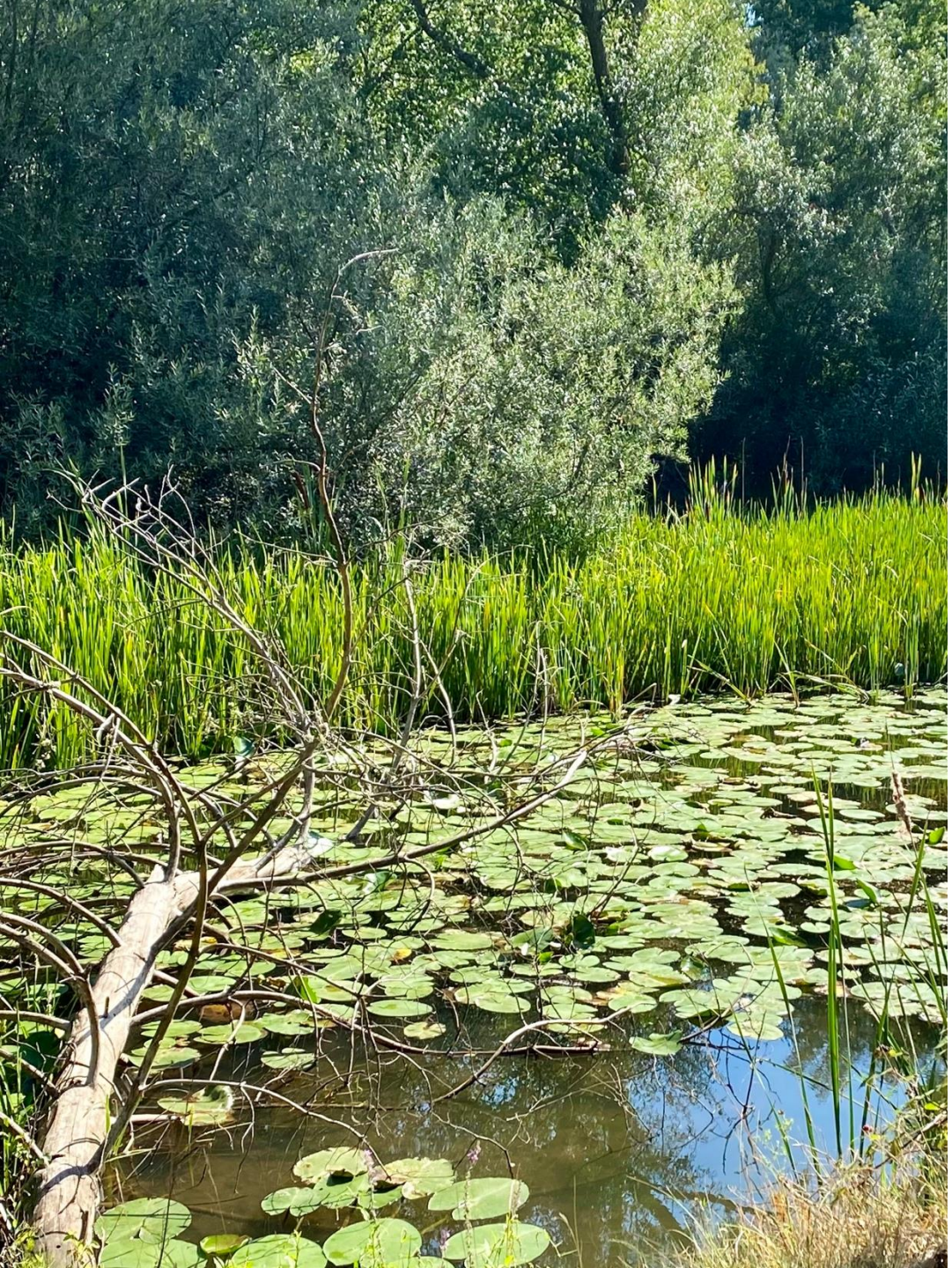
Nature Restoration Law and Wetlands Conservation - REWET Training


# Climate-Smart Conservation Strategies. ACCIÓN_RAMSAR case

Fundación para la Investigación del Clima

Climate Research Foundation
eulogio@ficlima.org



This is not climate change information
This is not the result of the research
These will be methods for conservation under climate change

# What about this training session

1. The case: **ACCION-RAMSAR Project**

2. The approach: **Conservation Standards**

3. The implementation: **Climate-smart strategies**

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1 The case

# Adaptation to Climate Change and Nature Conservation in Ramsar sites. ACCION–RAMSAR

## Adaptación al Cambio climático y Conservación de la Naturaleza en sitios Ramsar

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GOBIERNO DE ESPAÑA

MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO

# Key challenges!

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Operatives:

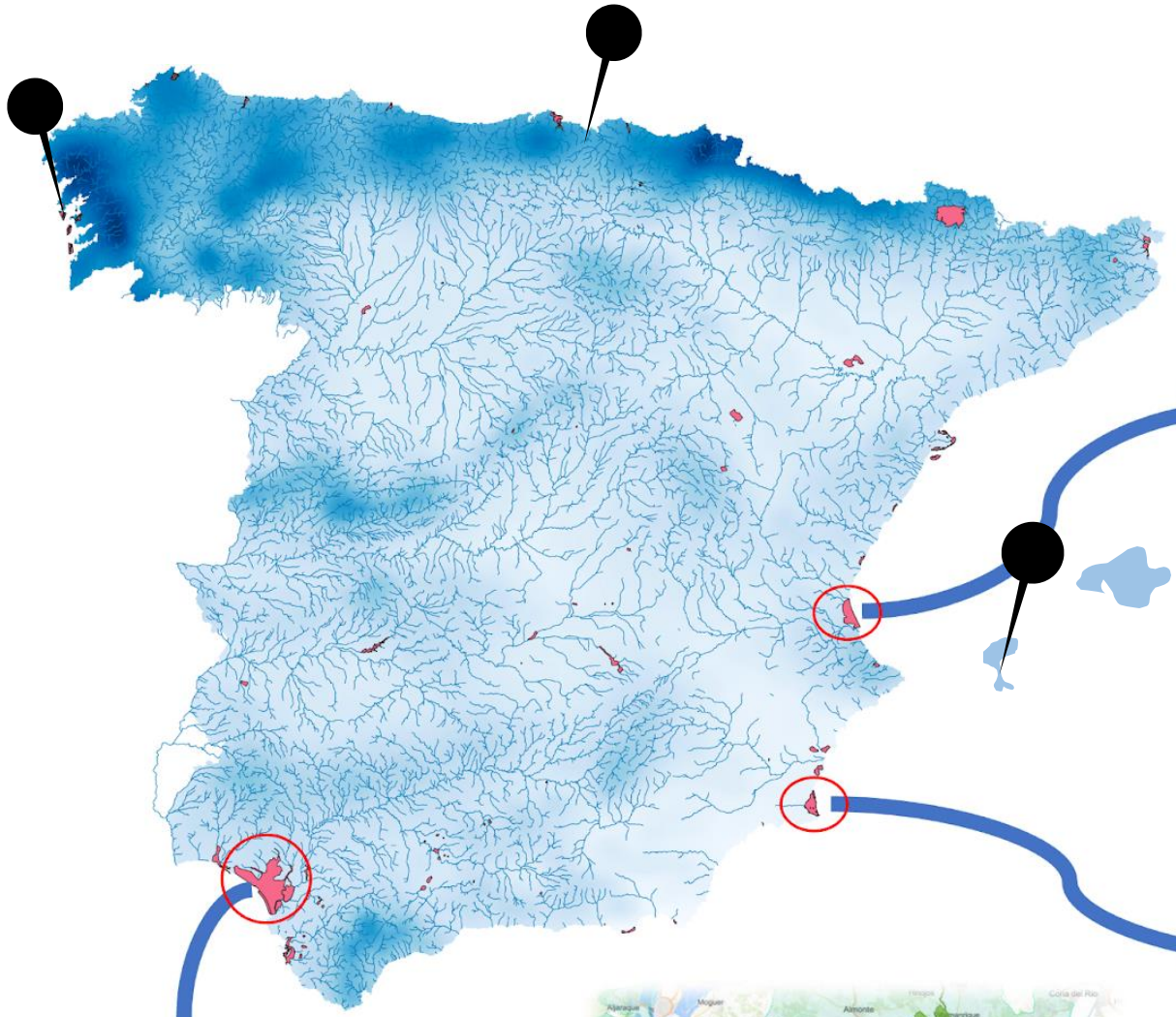
- State-level, national – international agreements → Ramsar sites
- Hydrology → Water dynamics
- Biodiversity, Climate Change, Ecological transition → Our expertise
- Marine environments (marine-coastal) → Marine–coastal Ramsar sites

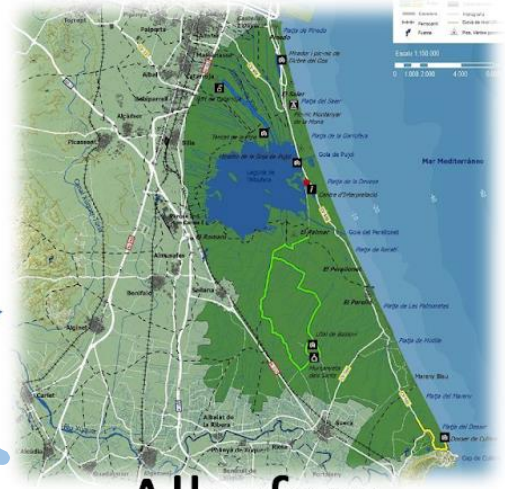
Science – Management connection

# Objective and development phases

# Objective

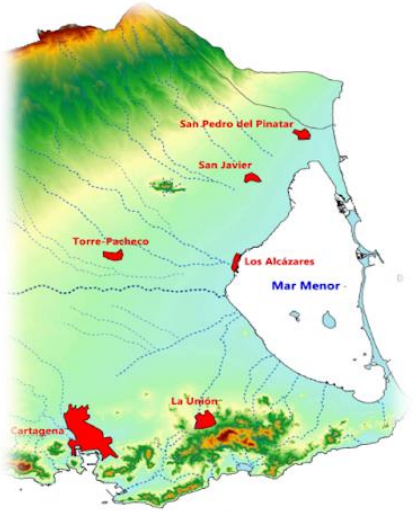
Generate proposals for sustainable adaptation, management, conservation, and restoration based on robust modeling and analysis of future climate impacts on hydrology, biodiversity, and ecosystem services at marine and coastal Ramsar pilot sites through an integrated and participatory process involving managers and local stakeholders.





Albufera

Doñana




Mar Menor

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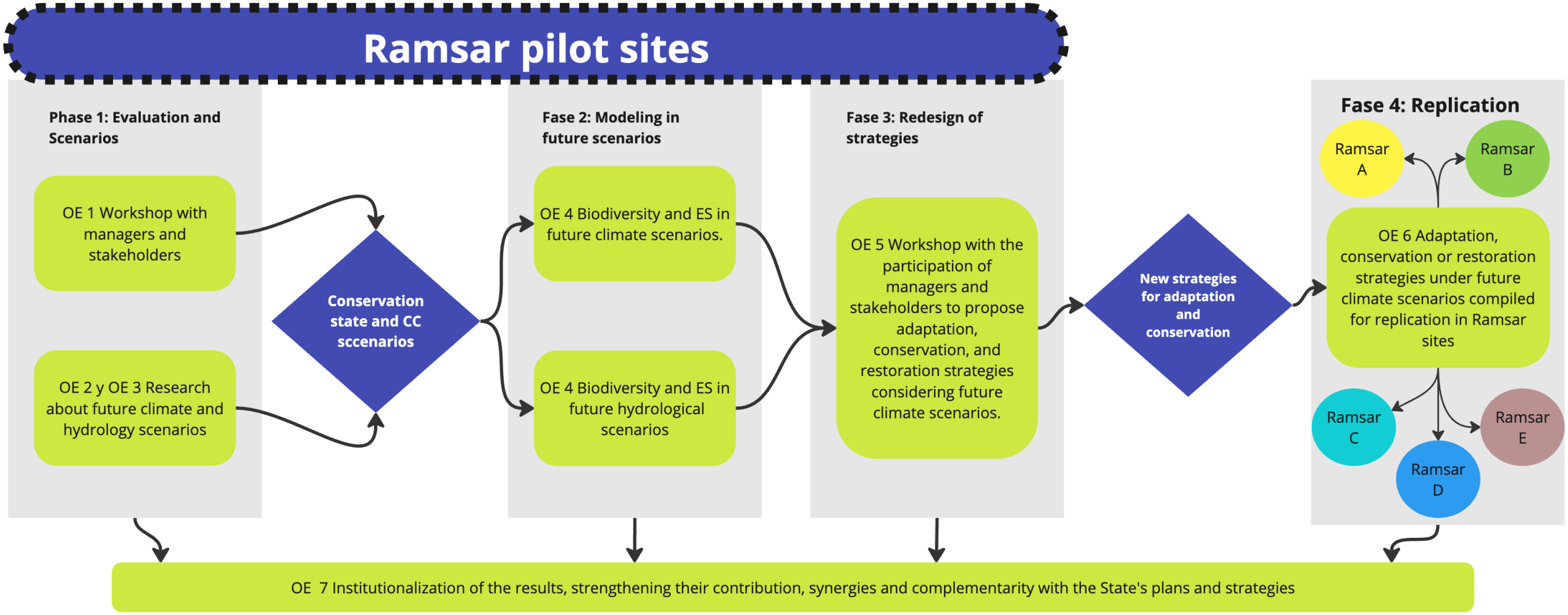
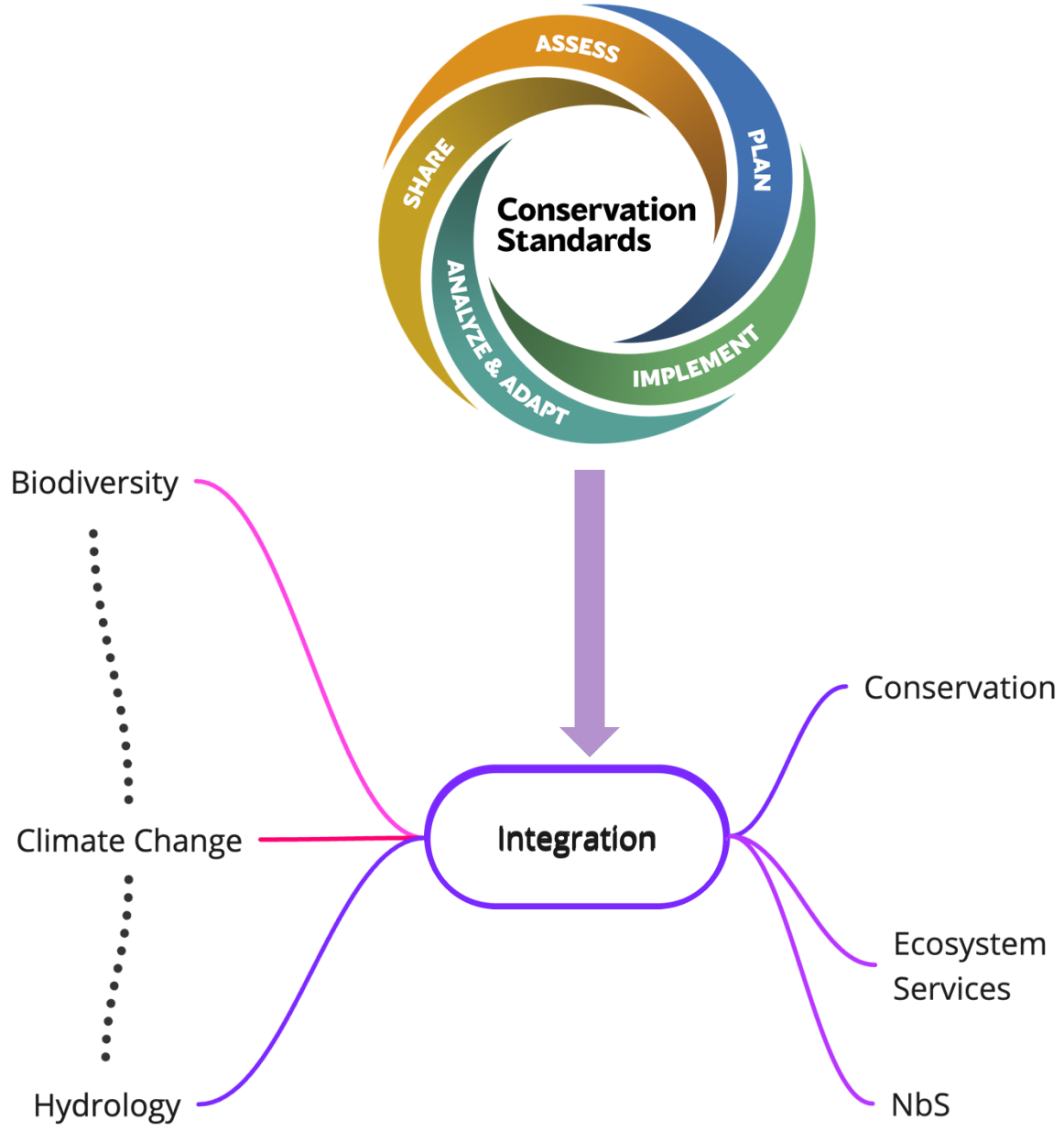
# Phases and specific objectives



**Integration**




Science

Management

# Main project results

***Evaluation and adaptation workshops:***

Workshops have facilitated the collection of **primary data** on current management practices and identified opportunities for climate-change-adaptive improvements. By working collaboratively with local stakeholders and protected area managers, **we have gained a better understanding of local climate change impacts and have been able to target management** efforts towards the most vulnerable biodiversity components.

Working closely **has fostered a deeper understanding of site-specific climate impacts and guided management** towards safeguarding vulnerable biodiversity "

***Climate and hydrological projections under future climate scenarios :***

**Local, detailed, scientifically rigorous** climate and hydrology models help local managers and stakeholders better understand climate change impacts.

These projections serve as a **detailed and local basis for analyzing the impacts of future climate and hydrology on the biodiversity** of Ramsar sites, expressed through their species, communities, and ecosystems.

The changes projected by the different models (climate, hydrology, biodiversity, ecosystem services, etc.) are **severe and should be systematically used in management to adapt to climate change**.

## **Impact analysis and biodiversity modelling**:

Methodologies were implemented to analyze the impact of future climate and hydrology on the **main conservation objectives selected by managers** and key stakeholders of the Ramsar sites.

These methodologies included **analyzing** climate and hydrological variables derived for **ecosystem functioning processes**; **species distribution modeling (SDM) under future climate scenarios** to estimate their climatic suitability; and **assessing future increases in the risk** of processes such as **wildfires.**

Results from ongoing projects such as **FORESTECCO** (Fundación Biodiversidad) were highly useful for the development of SDMs.

# NATURE RESTORATION LAW AND WETLANDS CONSERVATION

## REWET TRAINING

3
OCTOBER
2024

HYBRID EVENT
SEVILLE, SPAIN & ONLINE

EUROSTARS TORRE SEVILLA

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2 The approach

# THE OPEN STANDARDS FOR THE PRACTICE OF CONSERVATION

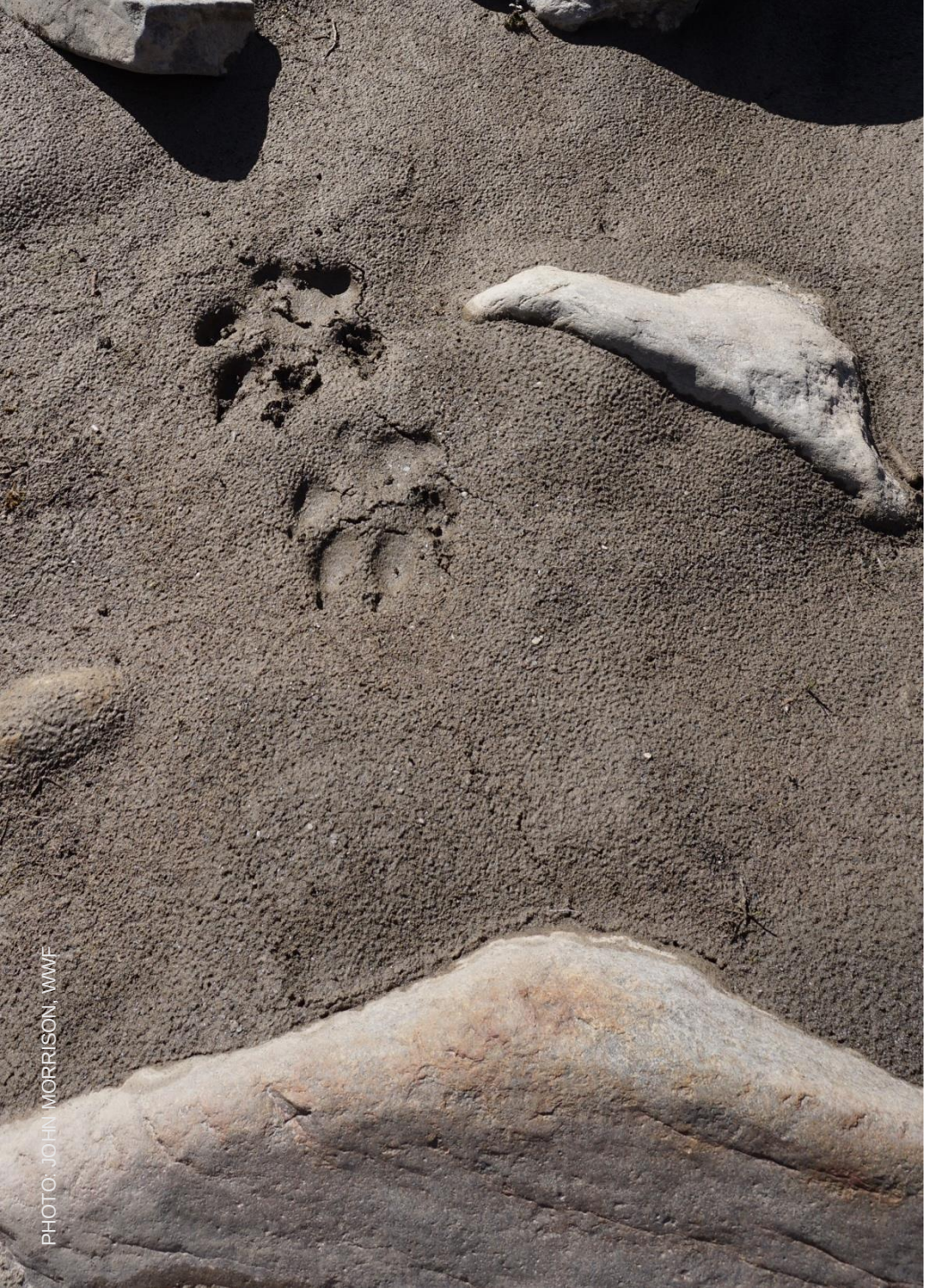
Planning, implementing, monitoring, and learning from projects and programs at all scales

PHOTO: DIANE DETOEUF, WILDLIFE CONSERVATION SOCIETY

Conservation Standards

# EVIDENCE-BASED & ADAPTIVE MANAGEMENT

PHOTO: QUANG NGUYEN | PEXELS



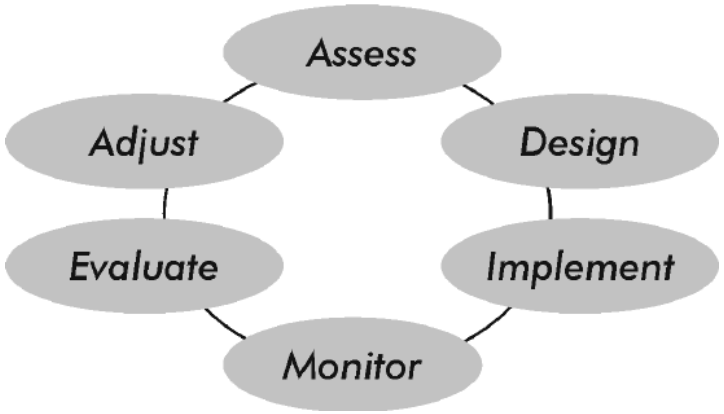

# EVIDENCE-BASED APPROACH

- Use evidence to inform decisions about:
  - Project scope and targets
  - Target viability
  - Factors & contributing factors
  - Causal relationships
  - Outcomes: goals, threat reduction
  - Which actions to invest in
- Seek best available evidence
- Expect varying levels of confidence

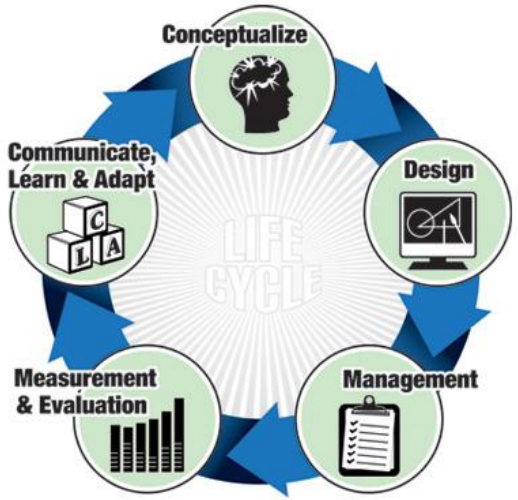
# ADAPTIVE MANAGEMENT

- Complexity & uncertainty
- Are we doing the right things?
- Are we doing them well?
- Are we achieving an impact?

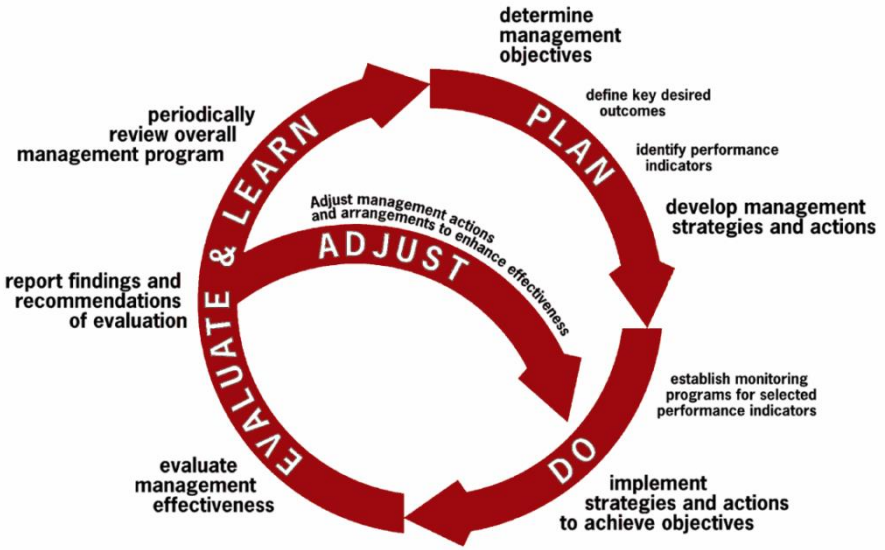
# ADAPTIVE MANAGEMENT CYCLES



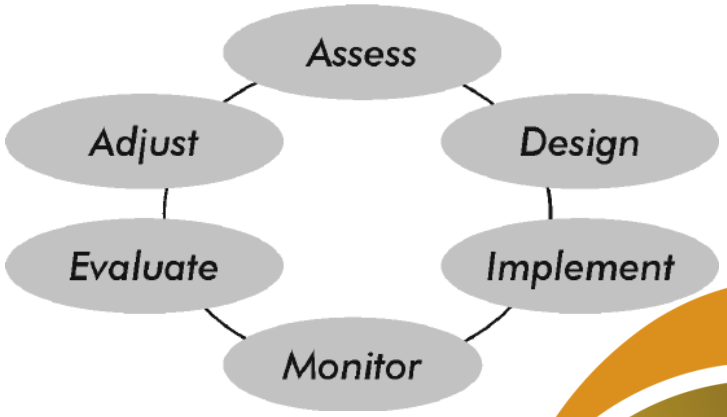




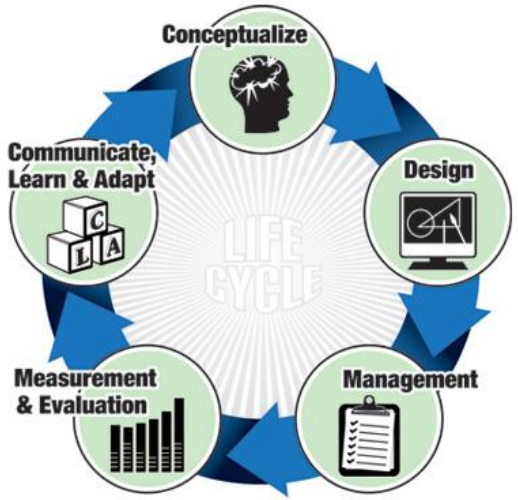




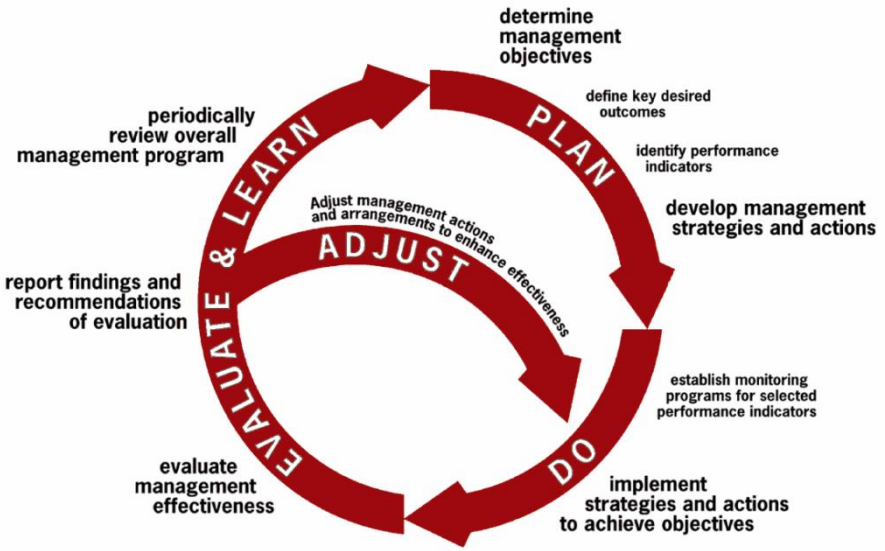
# ADAPTIVE MANAGEMENT CYCLES



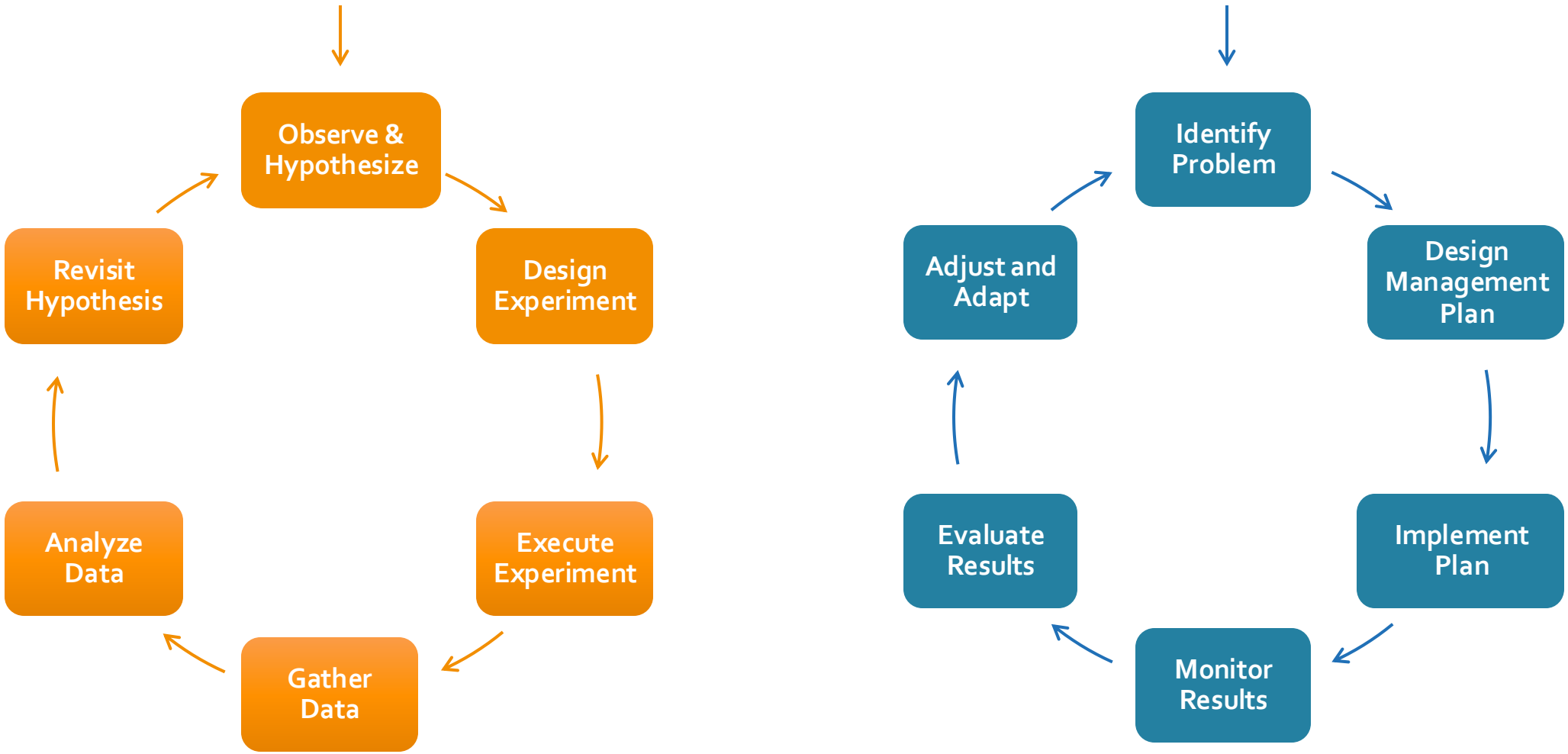


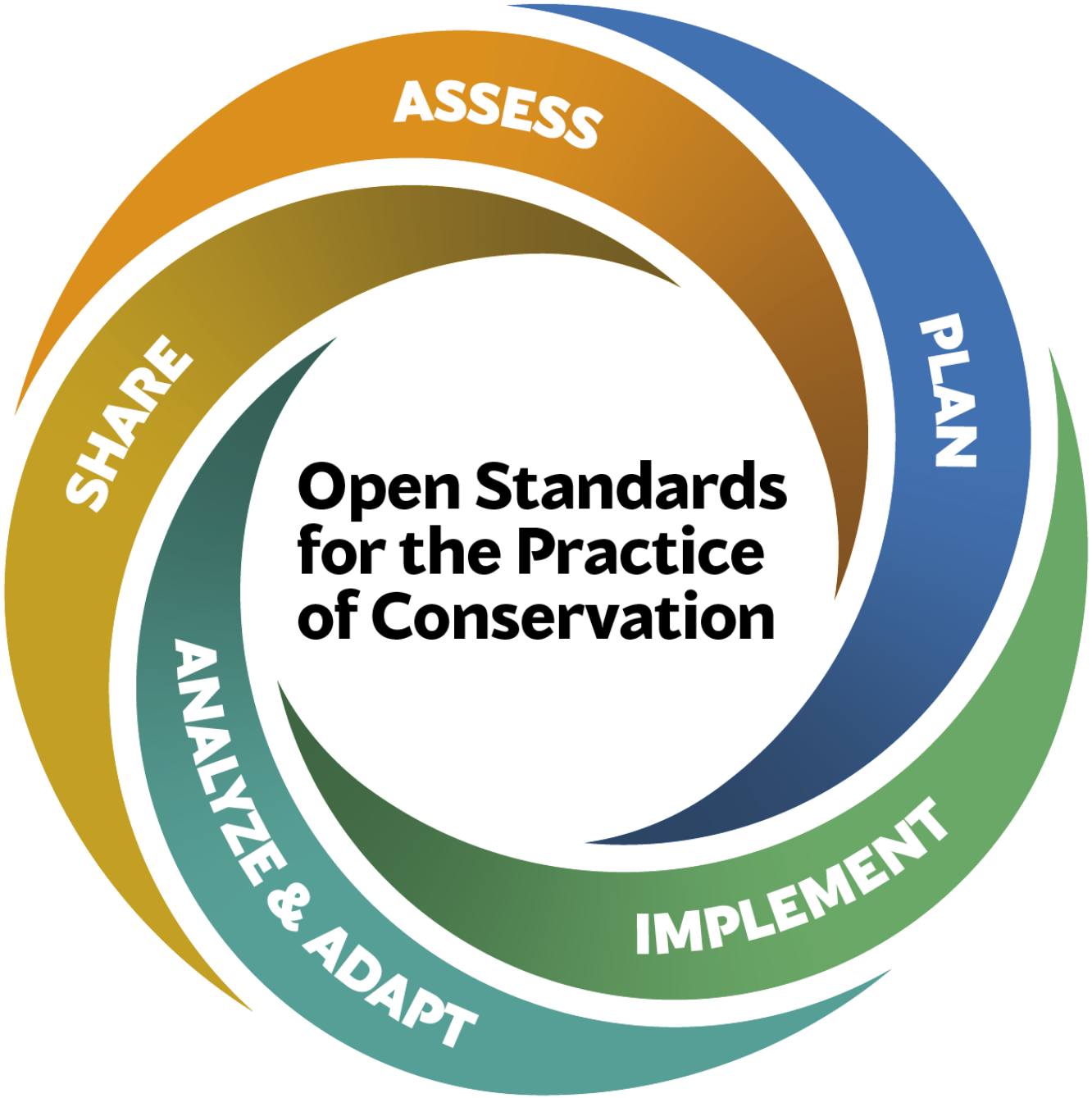




# SCIENTIFIC METHOD ≈ ADAPTIVE MANAGEMENT

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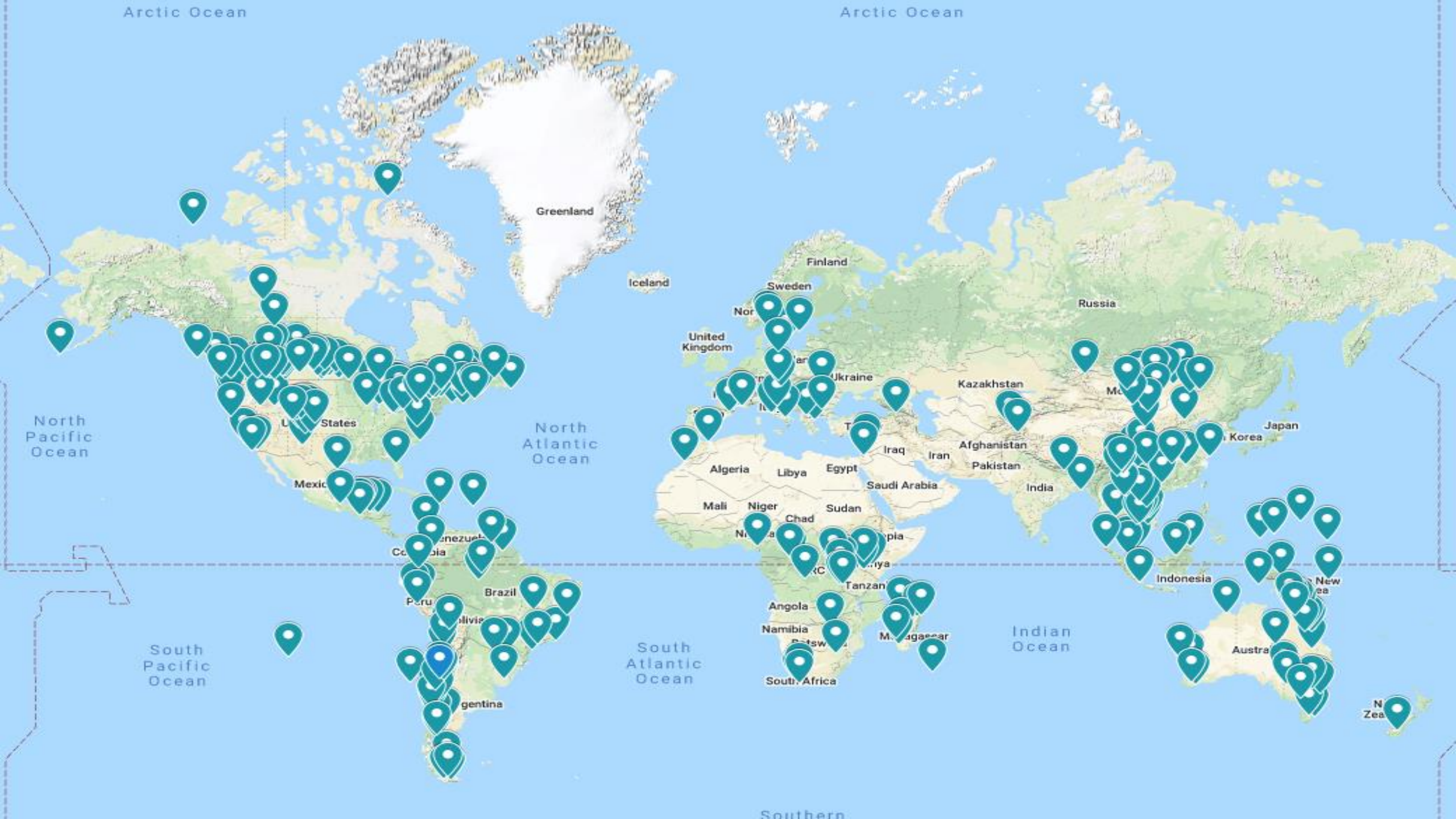
# USE OF THE CONSERVATION STANDARDS


Arctic Ocean
Arctic Ocean
Greenland
Iceland
Finland
Sweden
Russia
United Kingdom
Ukraine
Kazakhstan
North Pacific Ocean
North Atlantic Ocean
States
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Iraq
Iran
Afghanistan
Pakistan
India
Japan
Korea
Algeria
Libya
Egypt
Saudi Arabia
Mali
Niger
Sudan
Chad
Tanzan
Angola
Namibia
South Africa
Indonesia
Brazil
gentina
South Pacific Ocean
South Atlantic Ocean
Indian Ocean
Austra
Southern

# ECOSYSTEMS: REEFS

PHOTO: FRANCESCO UNGARO, PEXELS

# SPECIES: CHIMPANZEES

PHOTO: BRECORD, JANE GOODALL INSTITUTE

PHOTO: BRECORD, JANE GOODALL INSTITUTE

# THEMATIC: WILDLIFE TRAFFICKING

PHOTO: TANATHIP RATTANATUM, PEXELS

# THEMATIC: COMMODITY PRODUCTION:

PHOTO: JOHN MORRISON

# THEMATIC: CLIMATE AND ENERGY POLICY

PHOTO: NARCISA ACIKO, PEXELS

# THEMATIC: HIGH-LEVEL POLICY INFLUENCE

# ORGANIZATIONAL: TRUST FOR NATURE

PHOTO: TRUST FOR NATURE

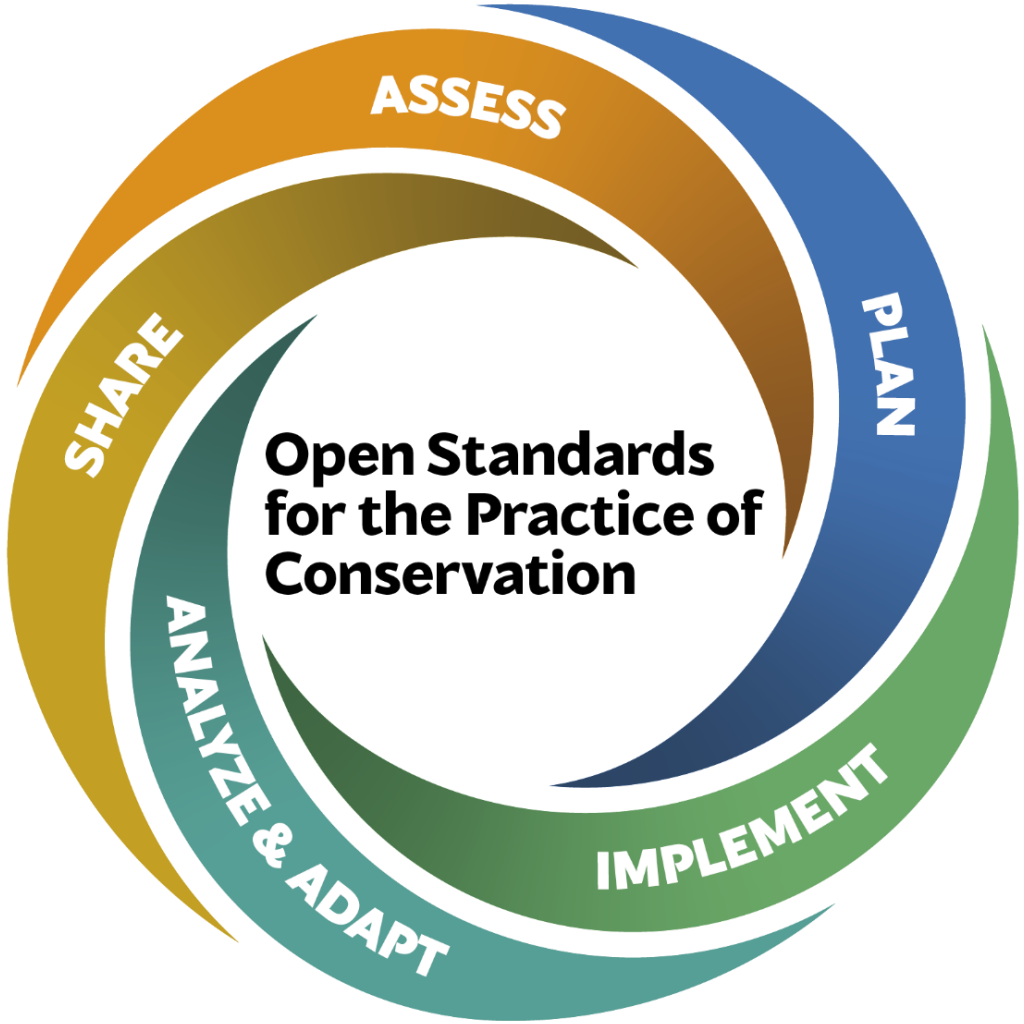
# CONSERVATION MEASURES PARTNERSHIP (CMP)

# 1 ASSESS

PHOTO: LEGADO INITIATIVE



Conservation Standards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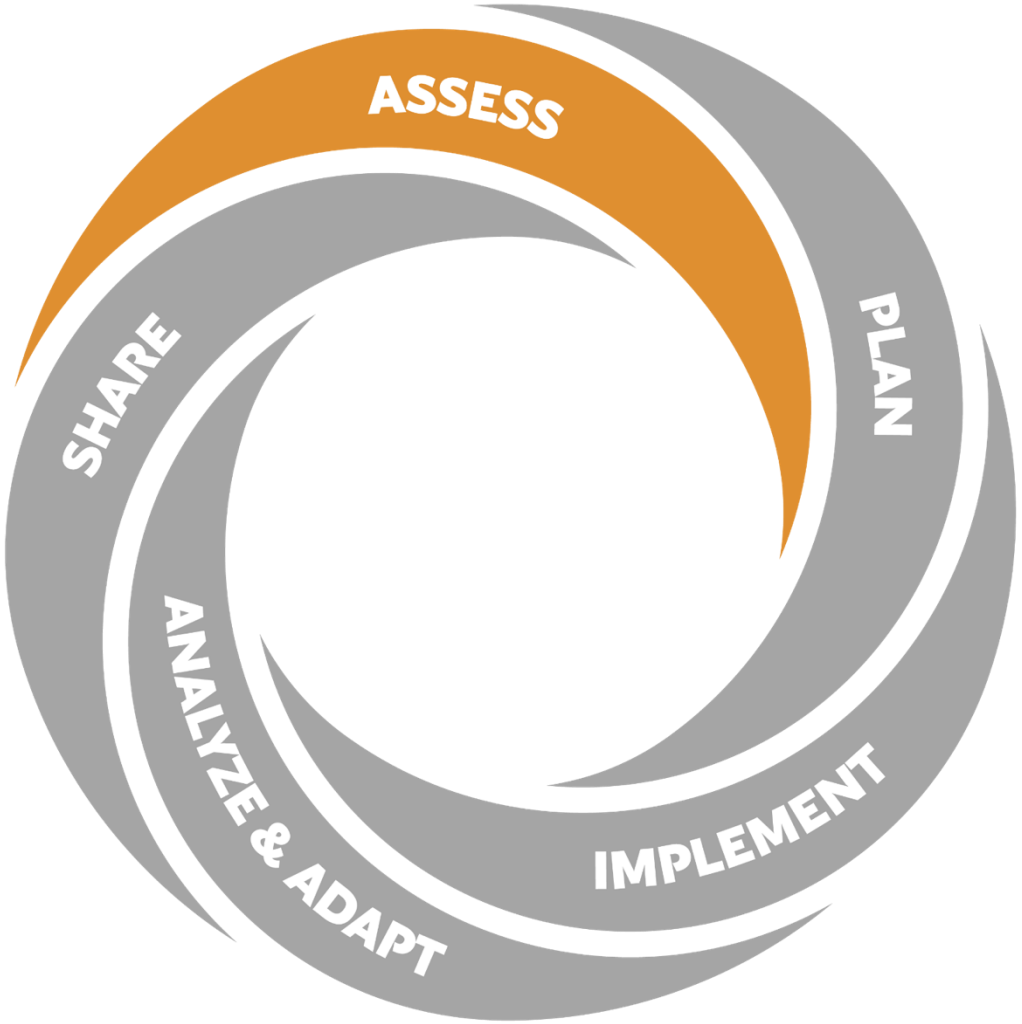



# 1. ASSESS

- Purpose & team
- Scope & vision
- Targets & Viability
- Threats
- Conservation situation

# SCOPE

PHOTO: MAX, UNSPLASH

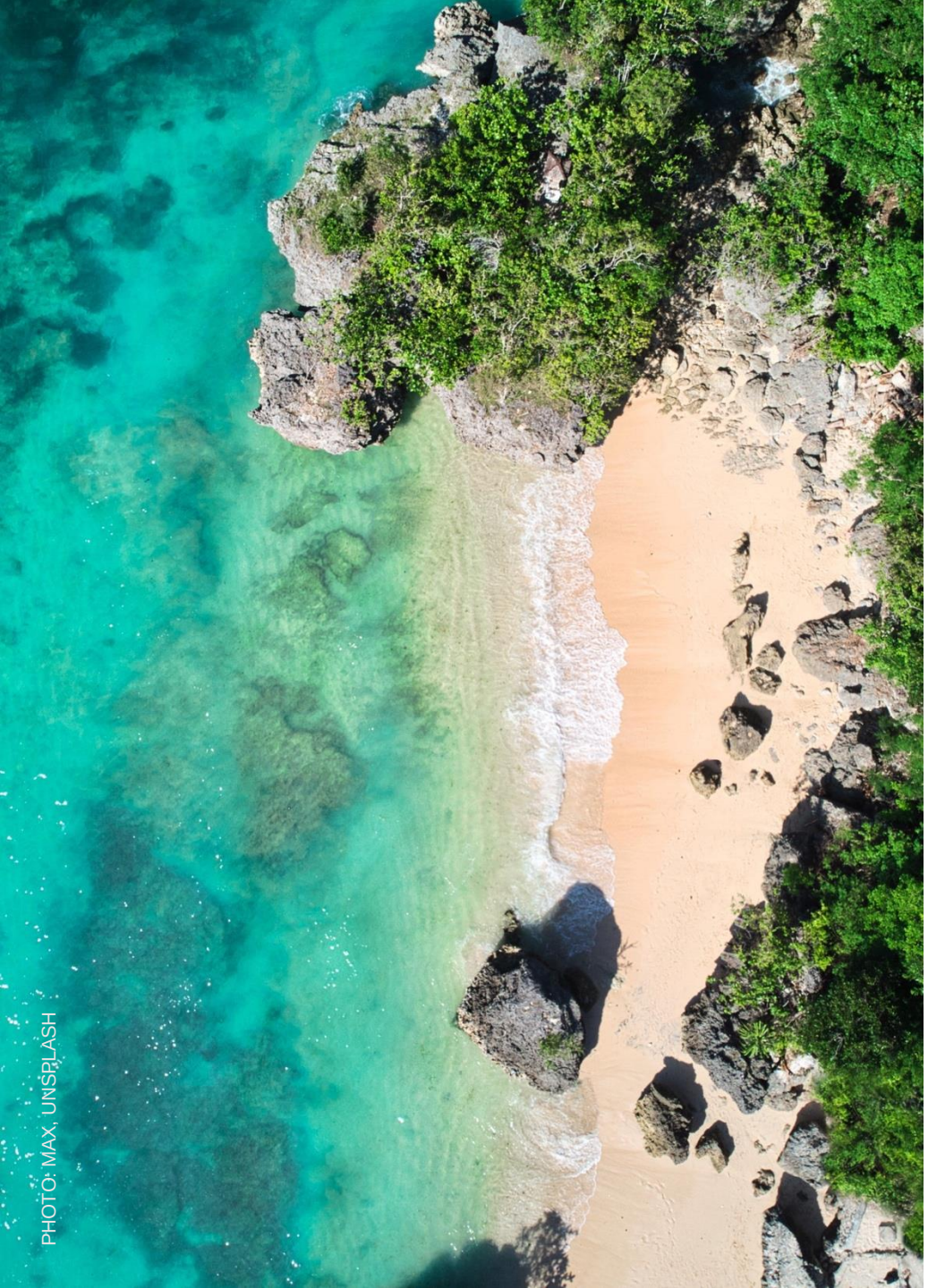


PHOTO: MAX, UNSPLASH

# SCOPE

- Place-based
- Target-based
- Thematic


# SPATIAL INFORMATION

- Applicable throughout
- GIS… sketch maps
- MiradiShare

# VISION

PHOTO: ANDREW BRIDGES


# VISION

- Relatively general
- Visionary
- Brief

# CONSERVATION TARGETS

PHOTO: ANDREW BRIDGES

# CONSERVATION TARGETS

- Ecosystems
- Habitats
- Species

# HUMAN WELL-BEING TARGETS

PHOTO: QUANG NGUYEN VINH, PEXELS

# HUMAN WELL-BEING TARGETS

- Livelihoods
- Health
- Social cohesion
- Security
- Governance

# ECOSYSTEM SERVICES

PHOTO: JOHN MORRISON


PHOTO: JOHN MORRISON, WWF

# ECOSYSTEM SERVICES

- Provisioning: clean water, wild foods
- Regulating: pollination, decomposition
- Cultural: nature-inspired creativity, recreation
- Supporting: photosynthesis, nutrient cycling

Conservation scope

Conservation target

Ecosystem Service

Human wellbeing scope

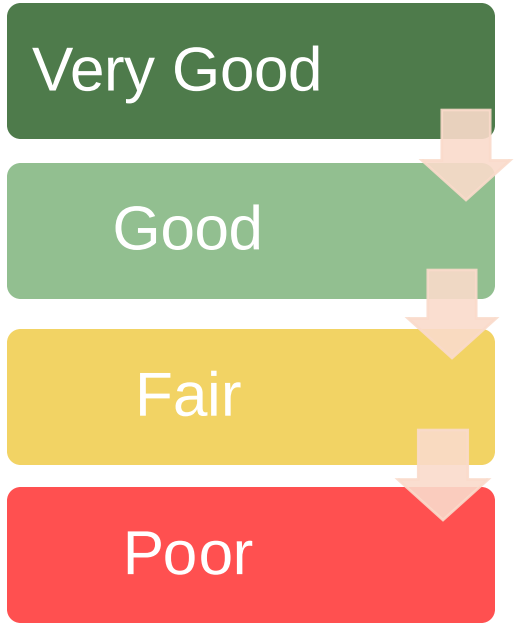
Human wellbeing target

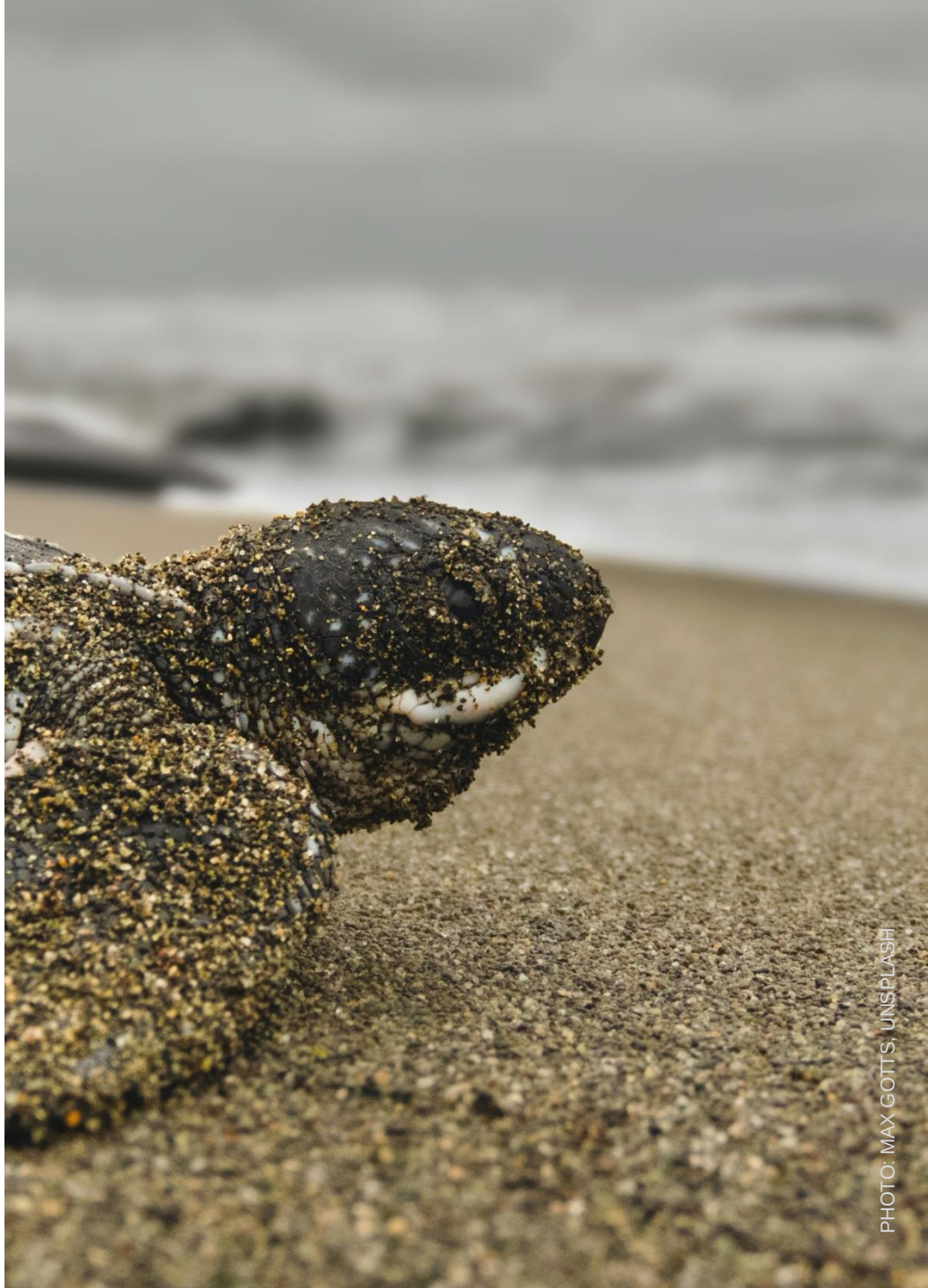
# VIABILITY

PHOTO: MAX GOTTS, UNSPLASH

# VIABILITY

- Characteristics
- Measures
- Current status
- Future goals



# THREATS

PHOTO: ANASTASIA SHURAEVA, PEXELS

# THREATS

- Primarily human activities
- Degrade target viability
- Altered natural phenomena
- Specify key actors → lump or split
- Synonym: pressure
- Clarify nature of the threat
- Focus on present and future threats

# CLIMATE CHANGE

- Threat by convention
- Basic understanding
- Deconstruct
- Scenarios
- Integrate

# CONSERVATION SITUATION

PHOTO: PETR GANAJ, PEXELS


PHOTO: PETR GANAJ, PEXELS

# CONSERVATION SITUATION

- Indirect threats & opportunities
- Stakeholders
- Situation model
- Ground-truth & revise

# CONSTRUCT A SITUATION MODEL

**Eastern Pacific sea turtles**

+ OPPORTUNITY

**+** Fishers don't want to harm turtles

**+** Sea turtle bycatch reduces fishing efficiency

**Traditional fishing methods** → **Reluctance to change gear** → **Fishers using J hooks** → **Bycatch of sea turtles in longline fisheries**

**Scope**

**Sea turtles**

PHOTO: JEREMY BISHOP, PEXELS

# EXAMPLE: CIRCLE HOOK PROJECT

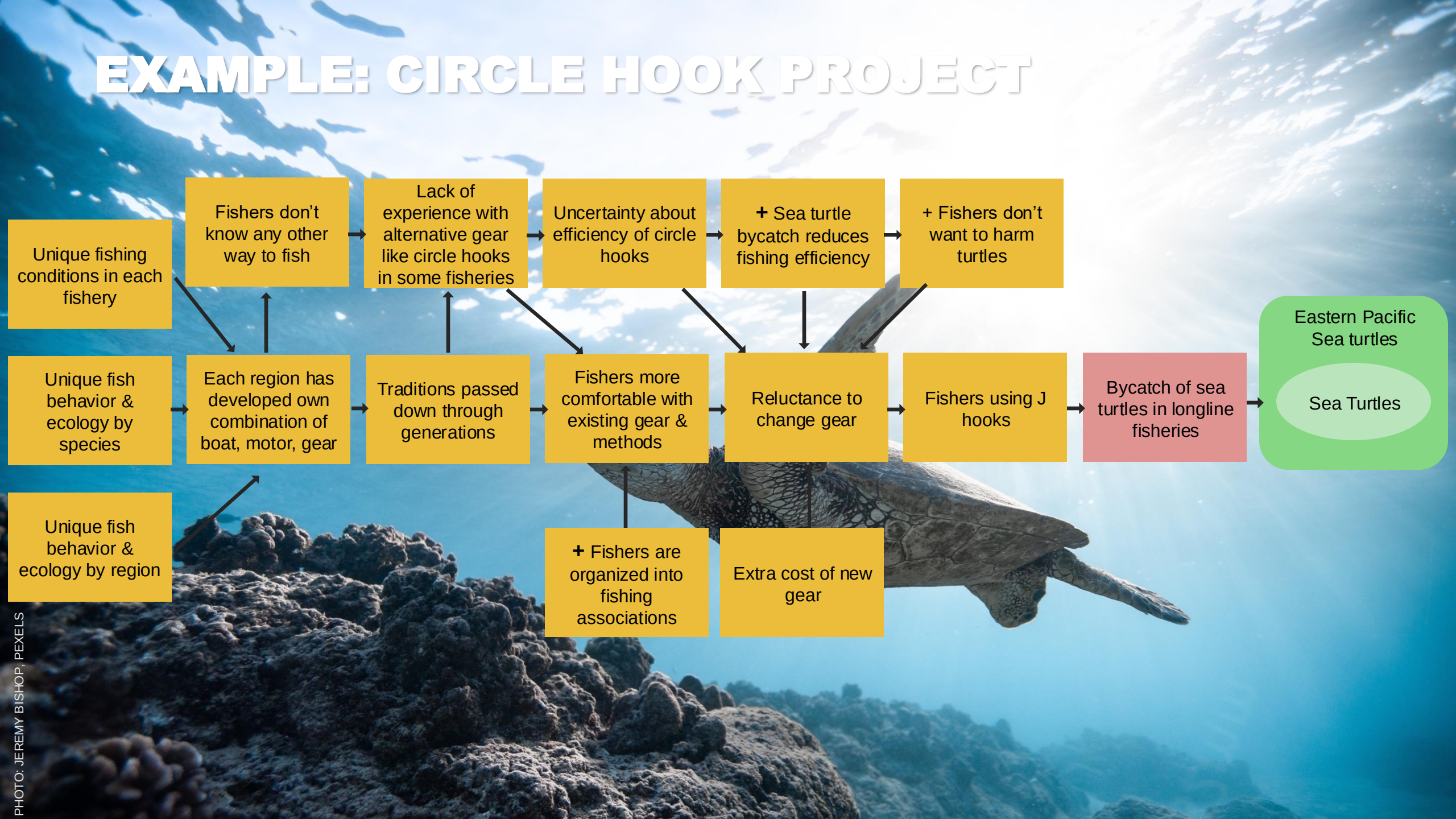
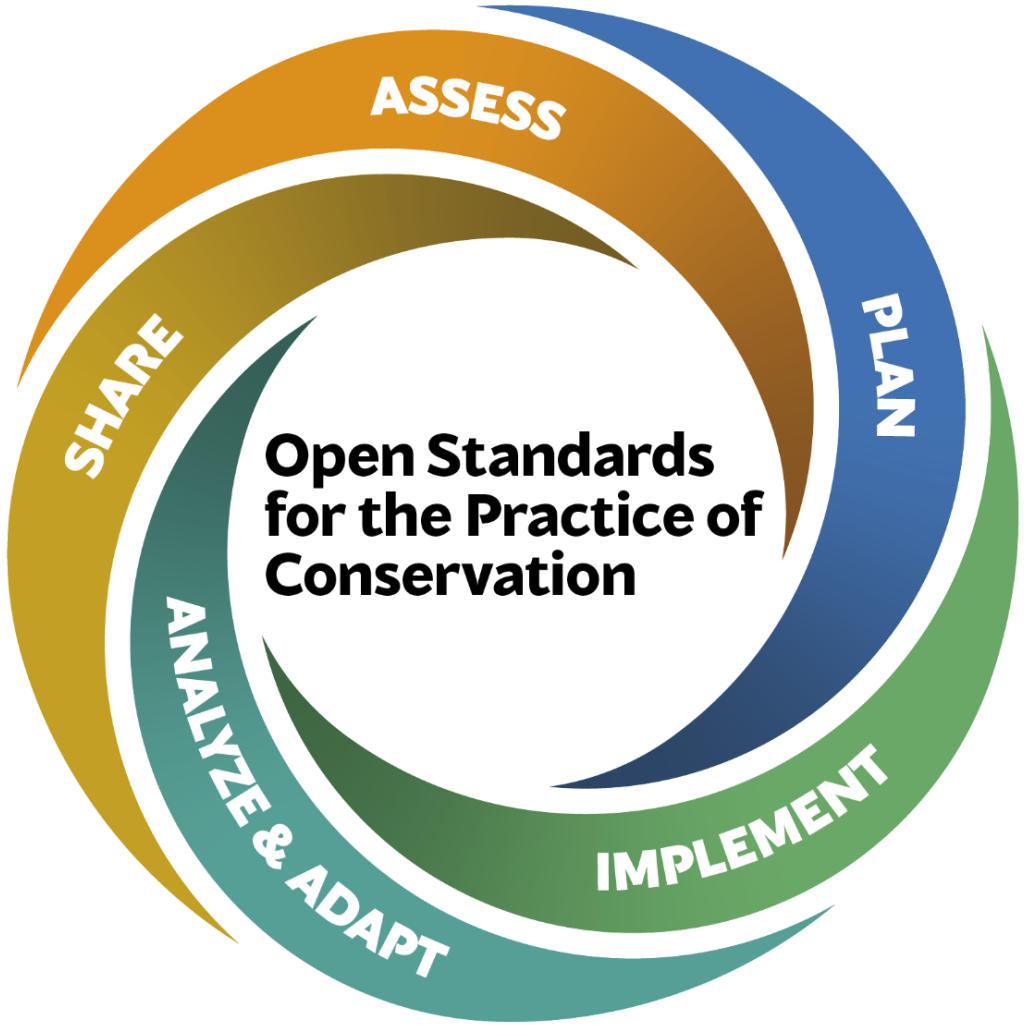



PHOTO: JEREMY BISHOP, PEXELS

# 2 PLAN

PHOTO: ASHLEIGH BAKER, FOS

Conservation Standards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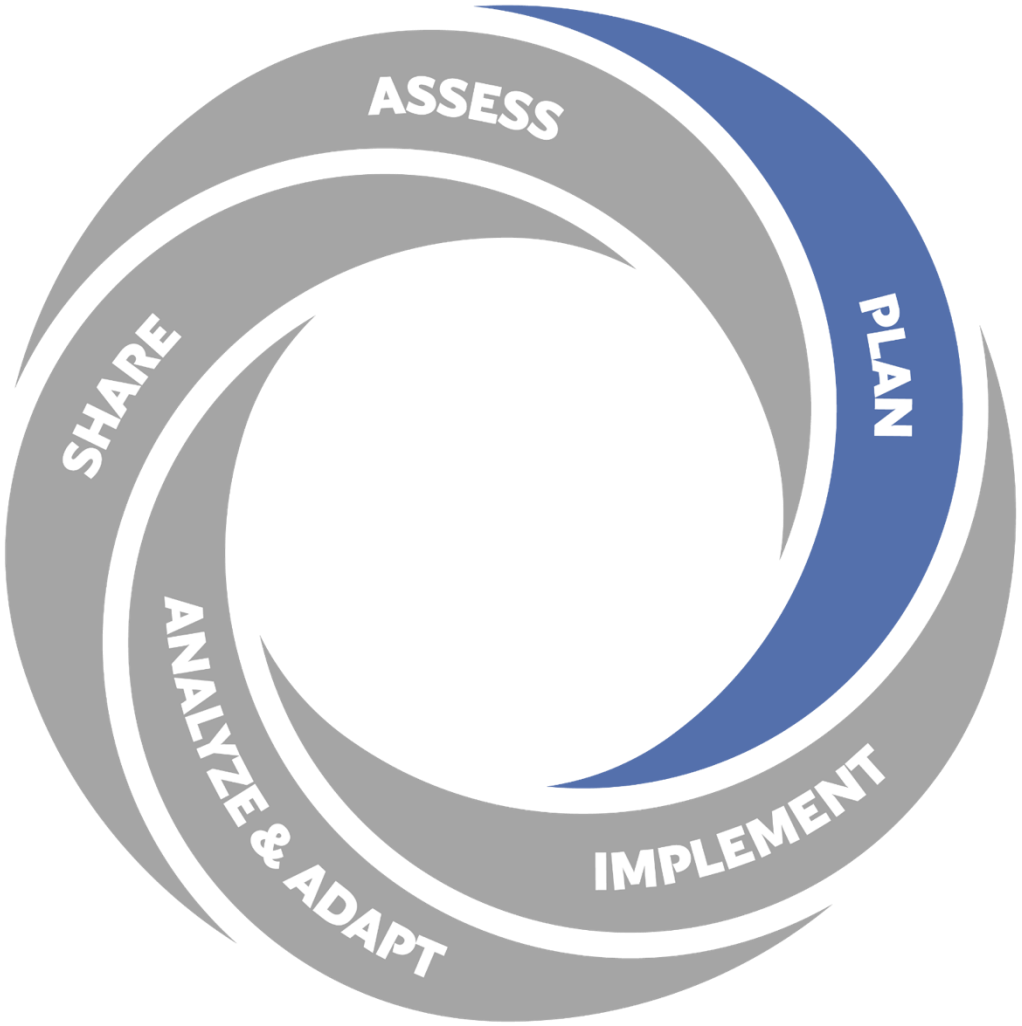



# 2. PLAN

- Goals
- Strategies
- Theory of Change
- Monitoring
- Operational Plan

# GOALS

PHOTO: RICHARD VERBEEK, PEXELS/FLICKR

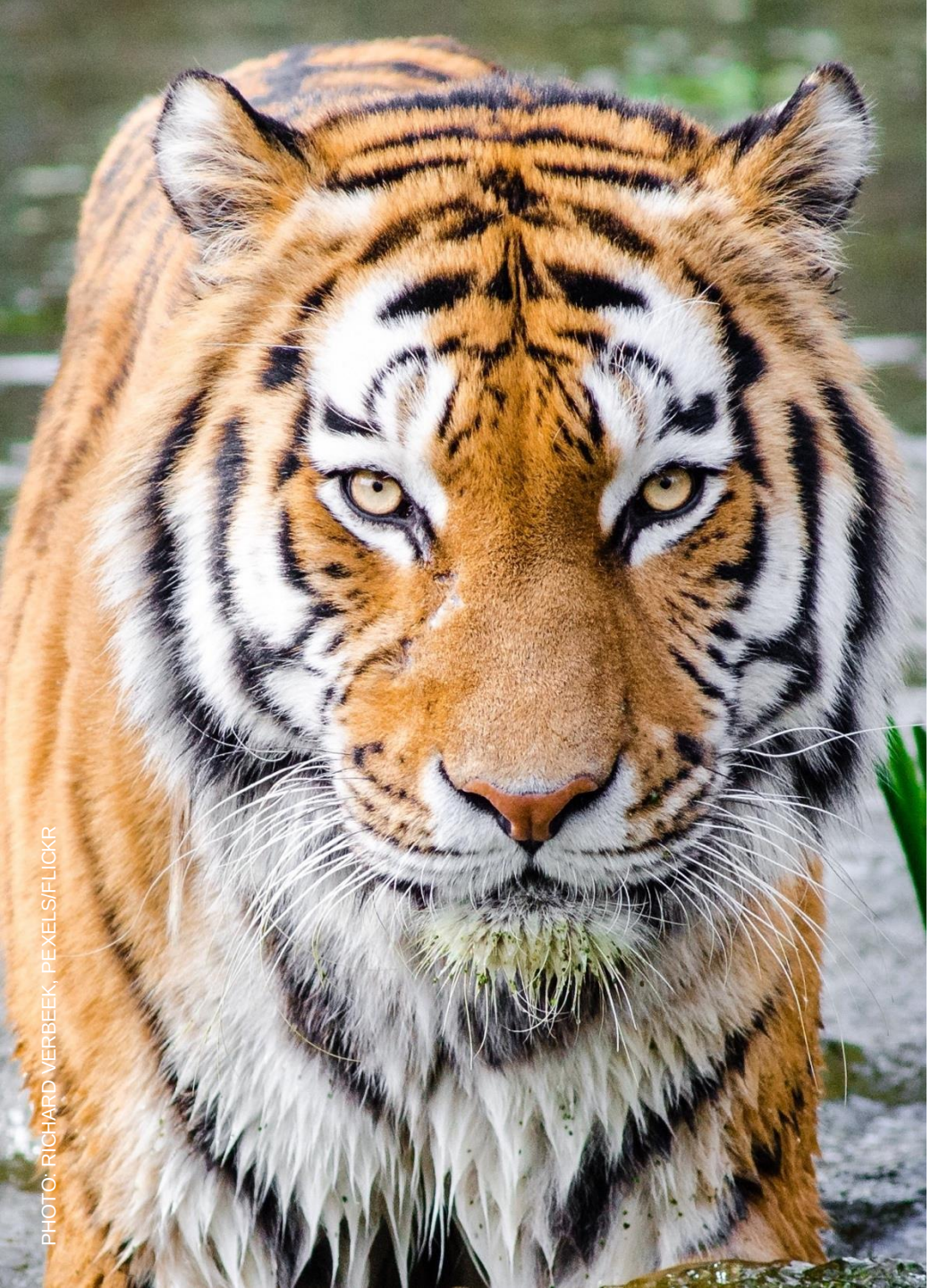


PHOTO: RICHARD VERBEEK, PEXELS/FLICKR

# GOALS

- Linked to conservation targets
- Desired future status
- S.M.A.R.T

# STRATEGIES

Who do we need to influence?

Where and how to intervene?

Where not to?

PHOTO: LUCA AMBROSI, UNSPLASH

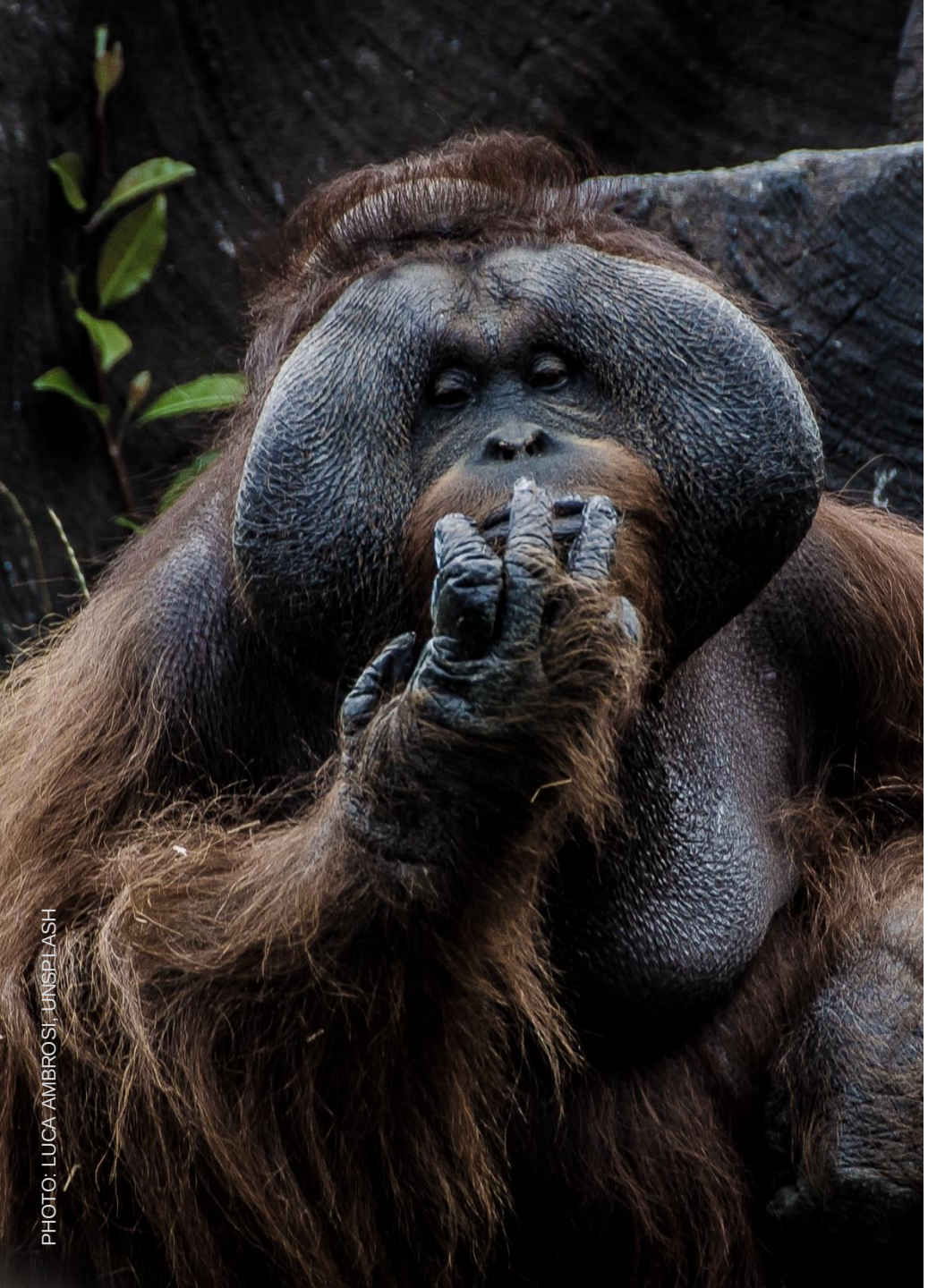


PHOTO: LUCA AMBROSI, UNSPLASH

# STRATEGIES

- Find key intervention points
- Process:
  - Research existing strategies
  - Generate new strategies
  - Select optimal strategies
- Work iteratively!

# CURRENT SITUATION

# FUTURE GOAL

Strategy

PHOTO: JEFF ROTMAN, WWF

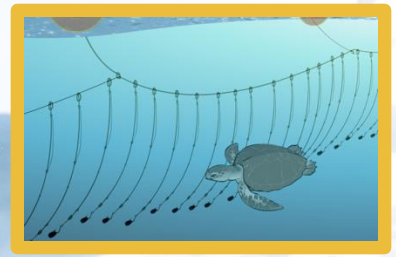
PHOTO: WEXOR TMG, UNSPLASH

# HOW TO BUILD A RESULTS CHAIN (OVERVIEW)

- Select a strategy
- Build it
  - Convert from situation model, OR
  - Build from scratch
- Complete the logic
- Apply criteria for good results chain
- Share & refine

PHOTO: MARIKA SUVAL

# SITUATION MODEL → THEORY OF CHANGE



INTERVENTION POINT

Test and promote circle hooks to reduce bycatch → Reluctance to change gear → Fishers using J hooks → Bycatch of sea turtles in longline fisheries → Marine turtles

Goal

PHOTO: JEREMY BISHOP, PEXELS

# CONVERT FACTORS TO RESULTS

Fishers willing to change gear

Fishers using circle hooks

Sea turtle bycatch reduced

Strategy

Result

Result

Threat Reduction Result

Target

**Test and promote circle hooks to reduce bycatch**

**Reluctance to change gear**

**Fishers using J hooks**

**Bycatch of sea turtles in longline fisheries**

**Marine turtles**

PHOTO: JEREMY BISHOP, PEXELS

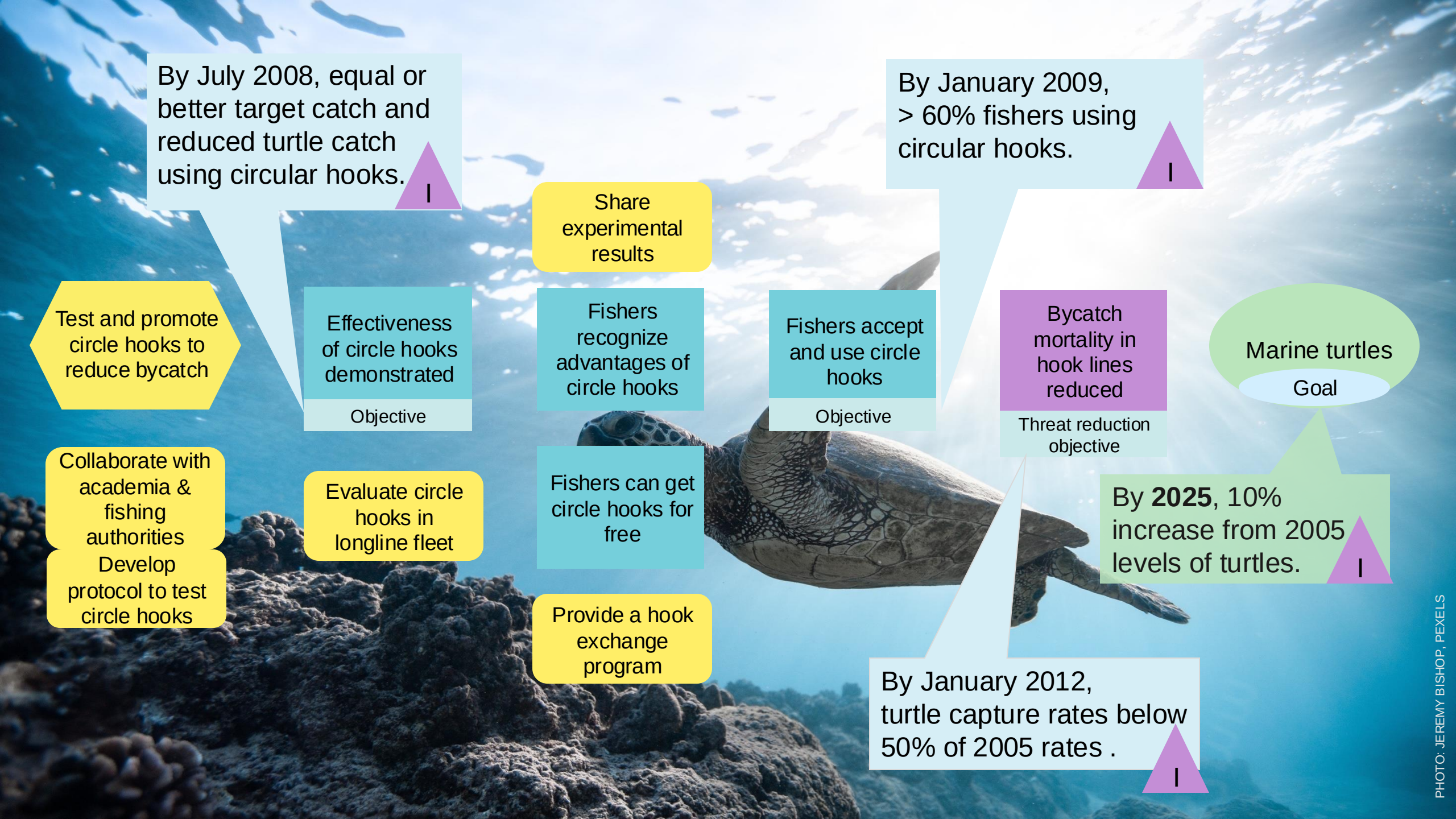

By July 2008, equal or better target catch and reduced turtle catch using circular hooks.
I
Test and promote circle hooks to reduce bycatch
Effectiveness of circle hooks demonstrated
Objective
Share experimental results
Fishers recognize advantages of circle hooks
Fishers accept and use circle hooks
Objective
By January 2009, > 60% fishers using circular hooks.
I
Bycatch mortality in hook lines reduced
Threat reduction objective
Marine turtles
Goal
Collaborate with academia & fishing authorities
Develop protocol to test circle hooks
Evaluate circle hooks in longline fleet
Fishers can get circle hooks for free
Provide a hook exchange program
By **2025**, 10% increase from 2005 levels of turtles.
I
By January 2012, turtle capture rates below 50% of 2005 rates .
I
PHOTO: JEREMY BISHOP, PEXELS


PHOTO: ROGER BRADSHAW, UNSPLASH

# OPERATIONAL PLAN

- Define & cost monitoring activities
- Define & cost implementation activities
- Assess human, financial resources
- Determine risk & mitigation
- Develop exit strategy

# UNDERSTANDING RISK

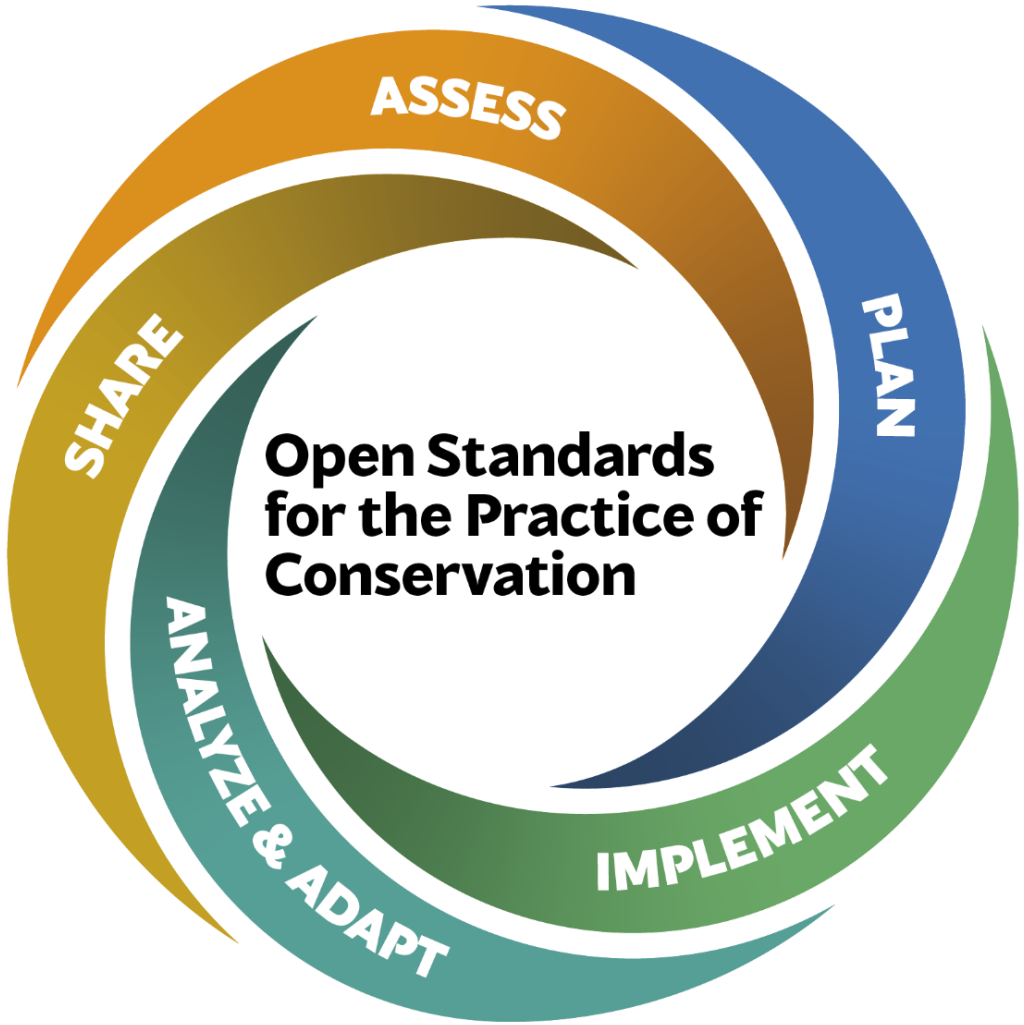
- Clarify risk
- Other tools
- Results chains
- Environmental & Social Safeguards

PHOTO: JONATHAN BOWERS, UNSPLASH

# 3 IMPLEMENT

Conservation Standards

PHOTO: CHARLES SCARFFE, DURELL WILDLIFE CONSERVATION TRUST, MADAGASCAR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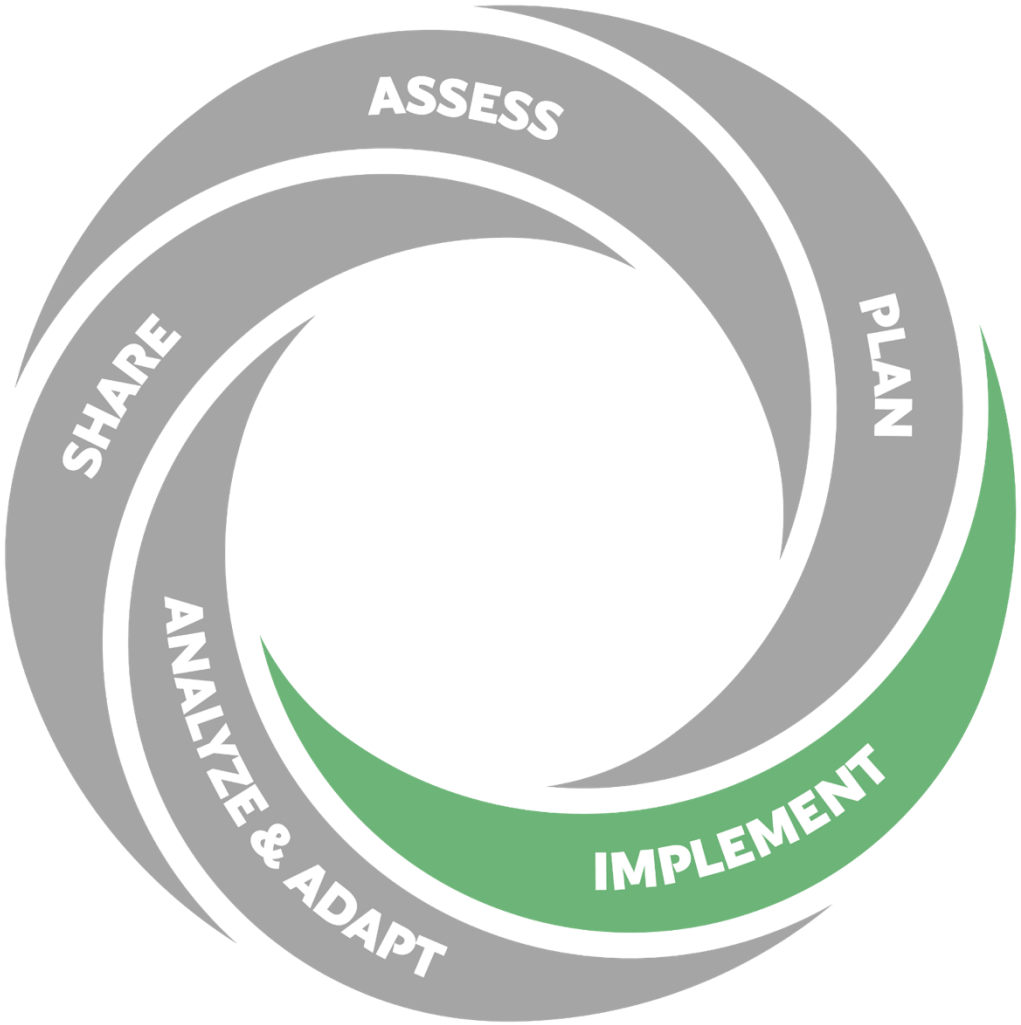



# 3. IMPLEMENT

- Work plan, budget
- Implement
- Monitor
- Report

# THEORY OF CHANGE to WORK PLAN

By July 2008, equal or better target catch and reduced turtle catch using circular hooks.

Test and promote circle hooks to reduce bycatch

Effectiveness of circle hooks demonstrated

Objective

Fishers recognize advantages of circle hooks

Fishers accept and use circle hooks

Objective

Bycatch mortality in hook lines reduced

Threat reduction objective

Marine turtles

Goal

Collaborate with academia & fishing authorities

Develop protocol to test circle hooks

Evaluate circle hooks in longline fleet

Fishers can get circle hooks for free

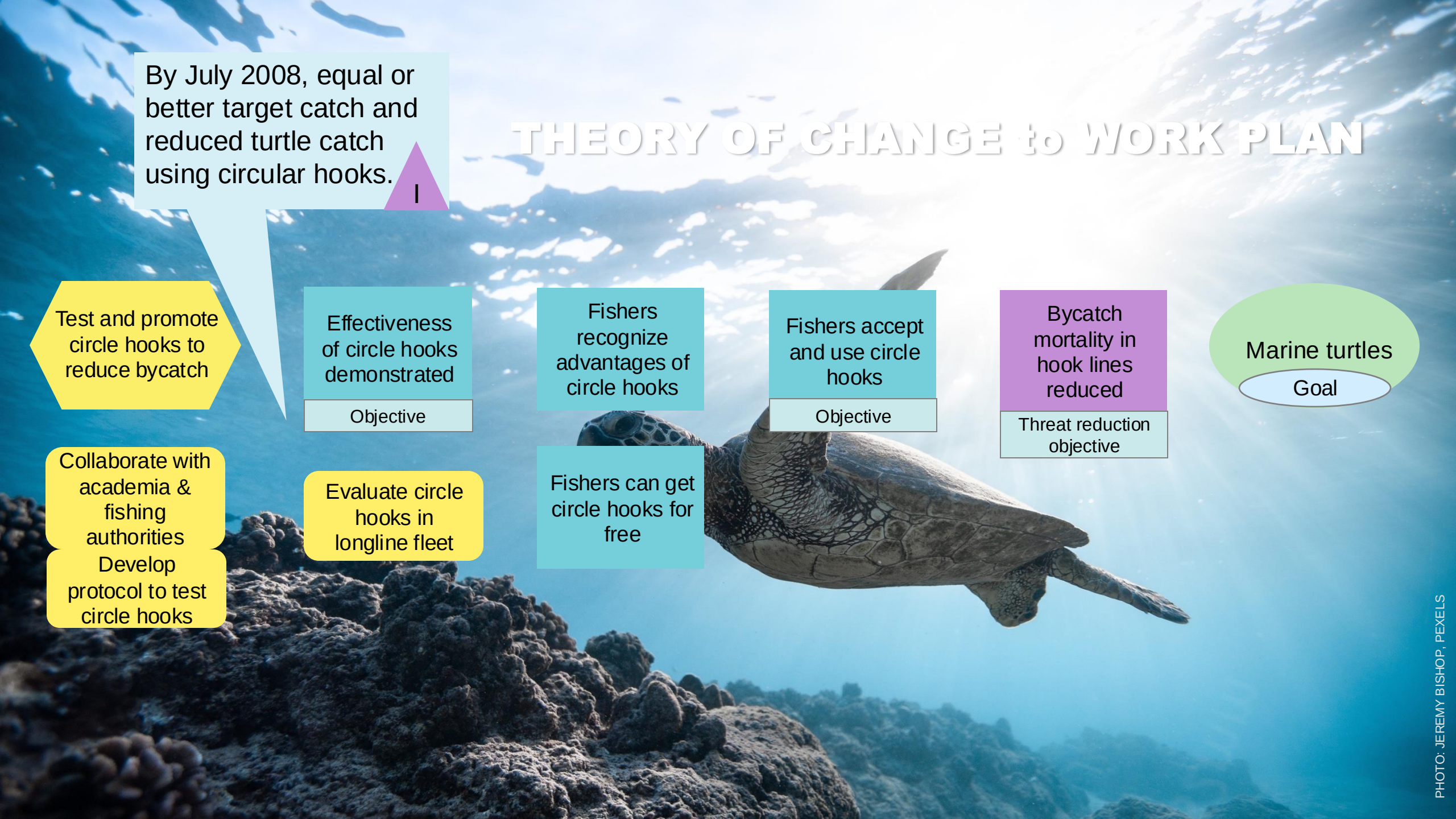


PHOTO: JEREMY BISHOP, PEXELS

MS

Test and promote circle hooks to reduce bycatch

Collaborate with academia & fishing authorities

| Action | Who | Cost / Source | When | Output |
|---|---|---|---|---|
| **Identify academics** | project manager | 10 days | 04/06 | Broad agreement |
| **Develop agreement** | project manager | 5 days | 06/06 | Signed agreement |
| **Secure funding** | project manager | $15,000 WWF | 12/06 | Grant secured |

PHOTO: JEREMY BISHOP, PEXELS

# IMPLEMENT, MONITOR AND REPORT

PHOTO: ABSALOM ROBINSON, PEXELS

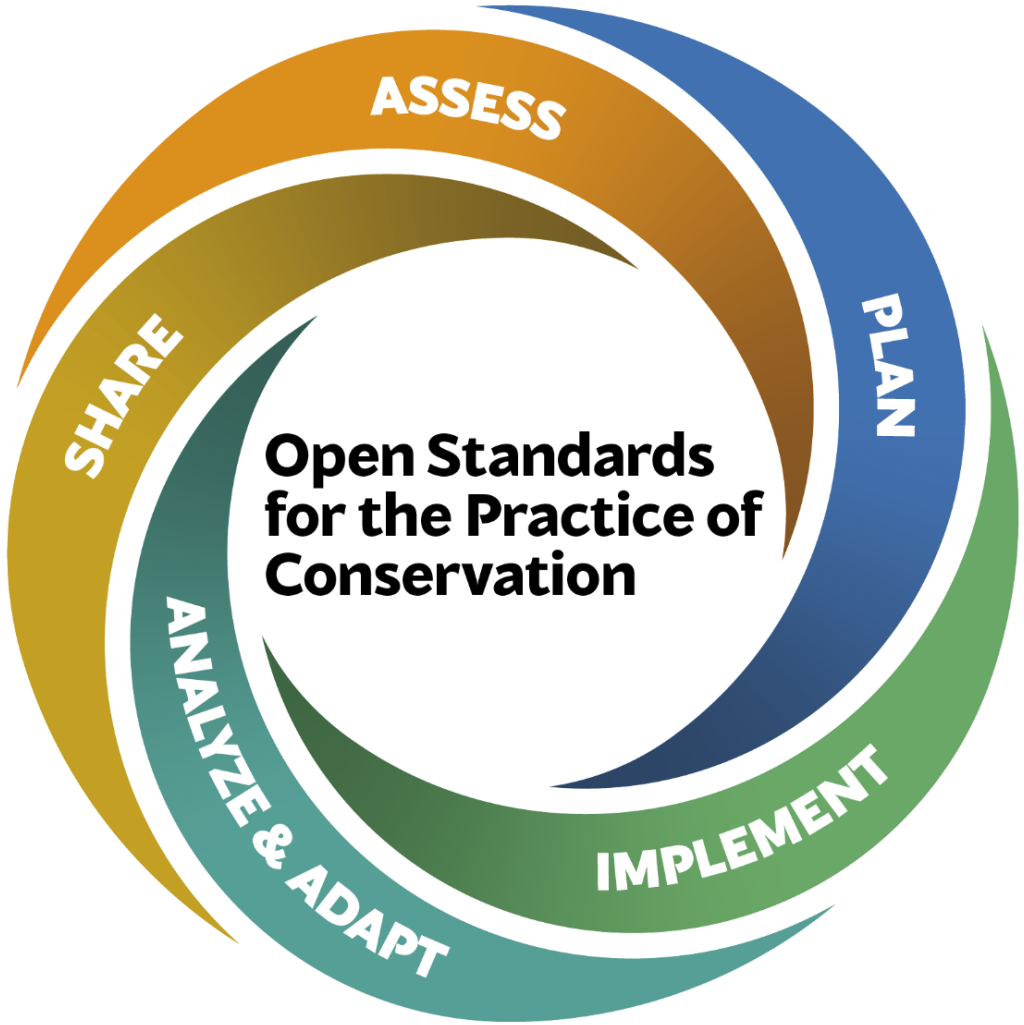
# IMPLEMENT

- Use the plan
- Monitor
- Report

# 4 ANALYZE & ADAPT

Conservation Standards

PHOTO: NATURE CONSERVANCY CANADA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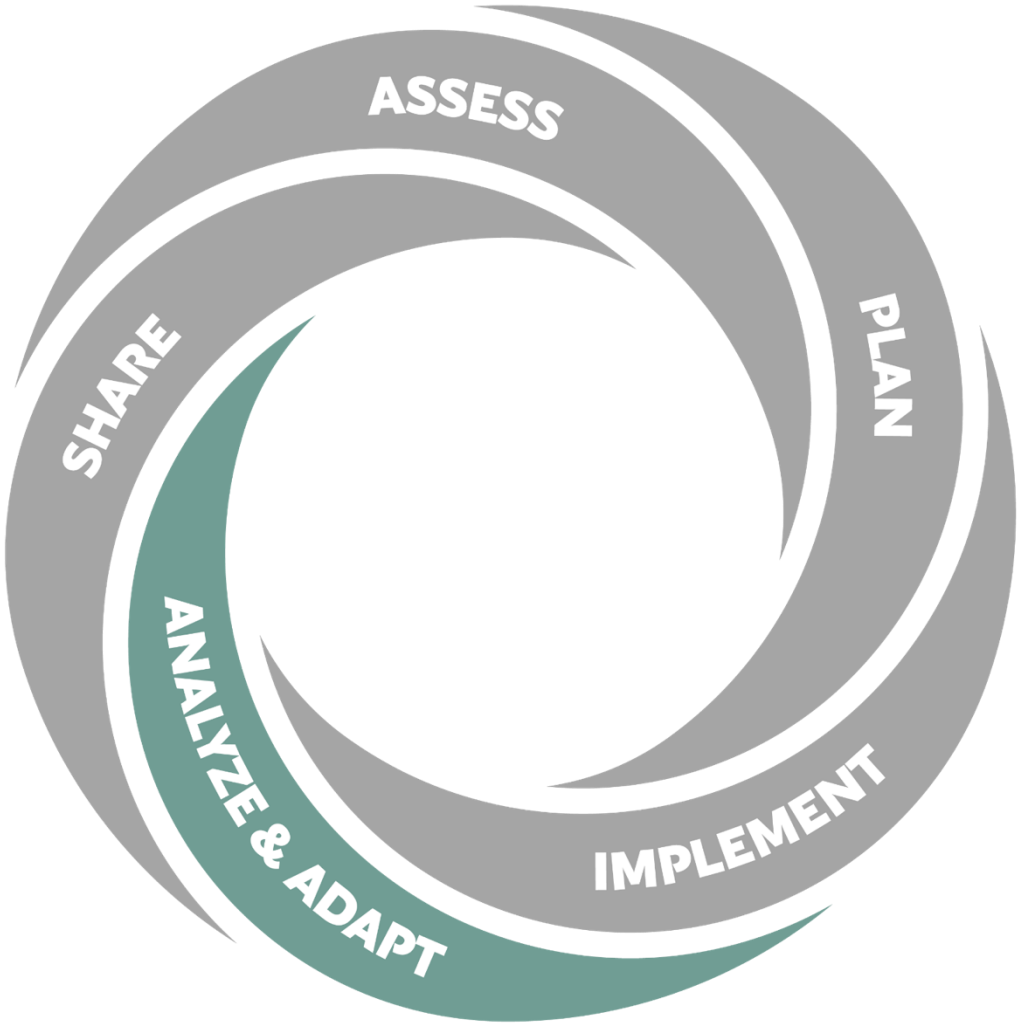
for the Practice of
Conservation



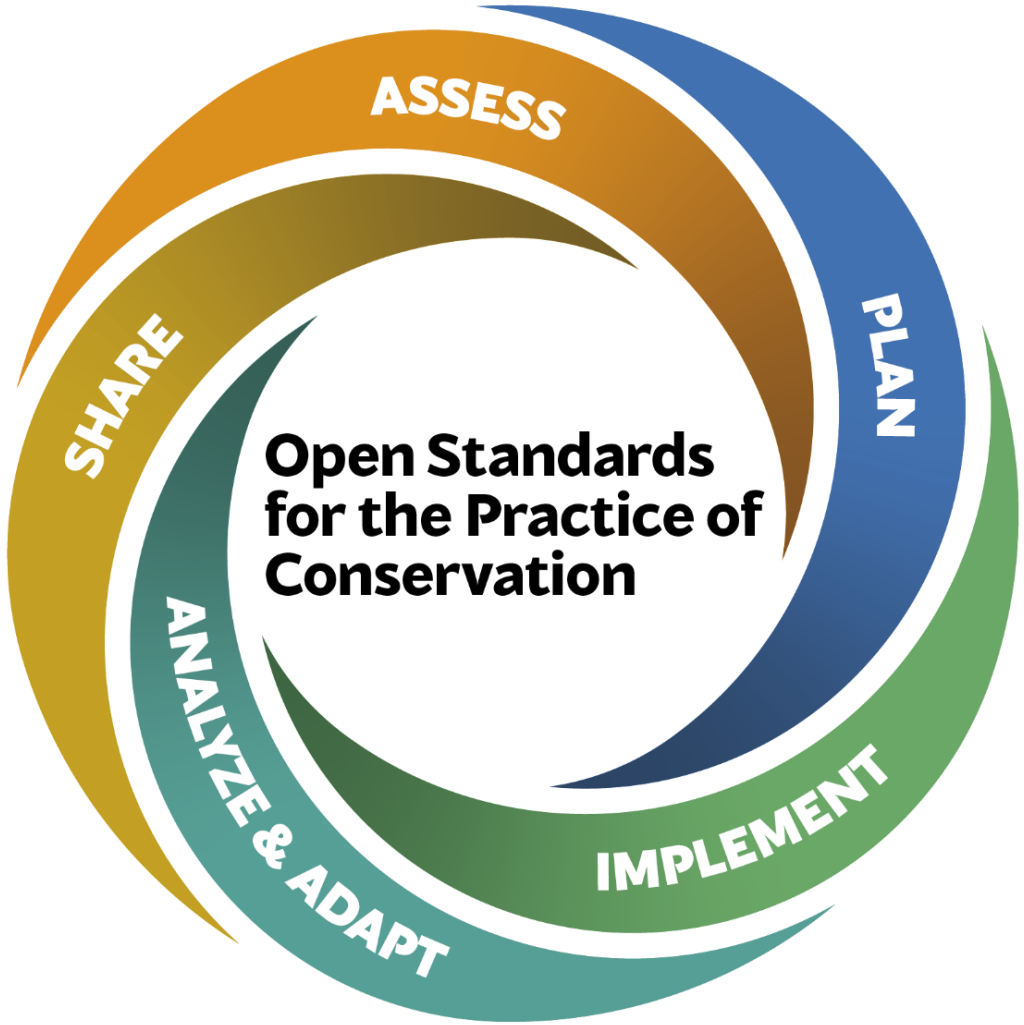

# 4. ANALYZE & ADAPT

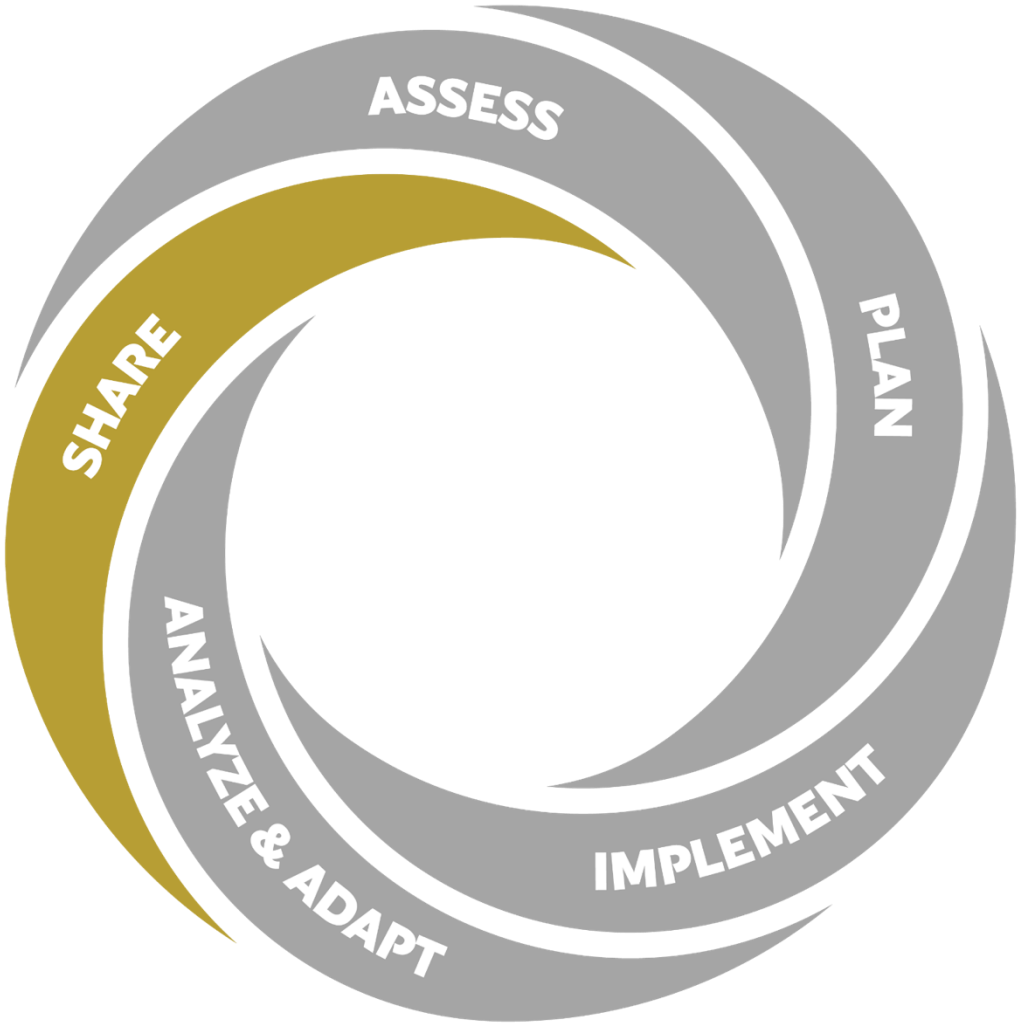
- Prepare
- Analyze
- Adapt

# 5 SHARE

Conservation Standards

PHOTO: CURTISS CONRAD, LEGADO INTIATIVE


ASSESS
PLAN
IMPLEMENT
ANALYZE & ADAPT
SHARE
Open Standards
for the Practice of
Conservation




# 5. SHARE

- Document
- Share
- Foster learning

# LEARN & SHARE

PHOTO: DANIEL SPROD

# LEARN & SHARE

- Document
- Share
- Foster learning

# TOOLS AND SUPPORT

PHOTO: PEXELS

# RESOURCES

- Coaches network
- Training & guidance
- Miradi software
- Teaching network
- Standard classifications

PHOTO: FELIX CYBULLA (CYBULLA.ORG)

# COACHES NETWORK

## Conservation Coaches Network

Strengthening conservation strategies and practice through coaching

- Climate-smart conservation

# NATURE RESTORATION LAW AND WETLANDS CONSERVATION

## REWET TRAINING

3
OCTOBER
2024

HYBRID EVENT
SEVILLE, SPAIN & ONLINE

EUROSTARS TORRE SEVILLA

rewet

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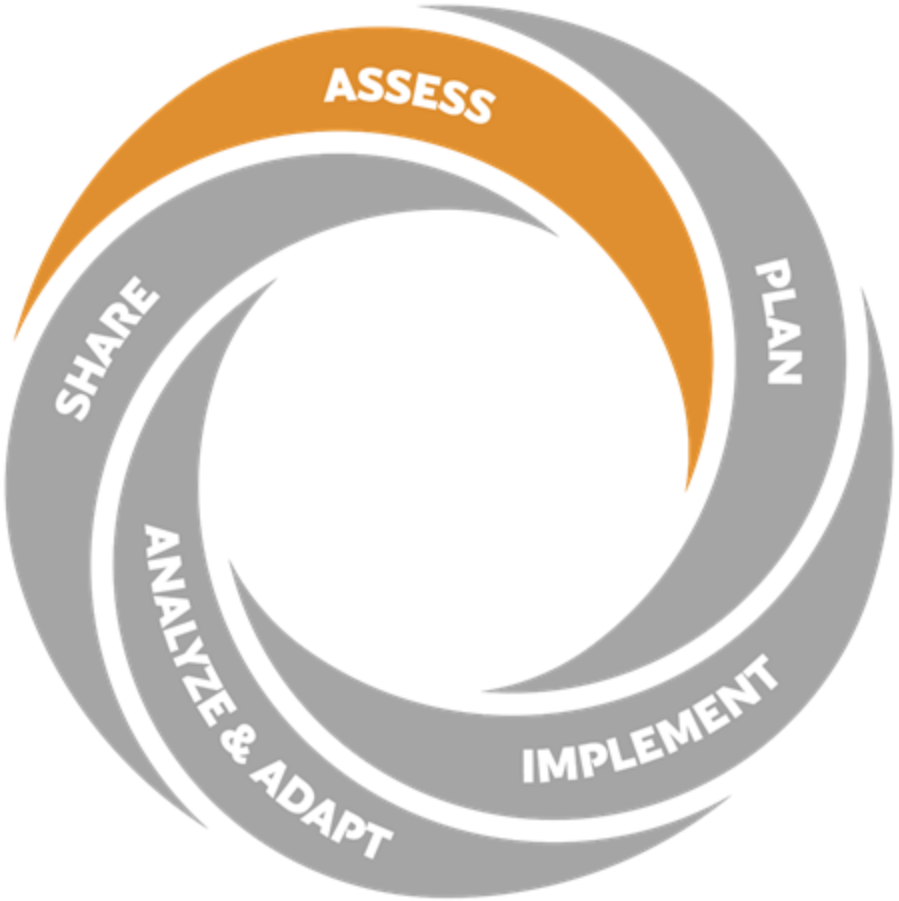
rewet
3
Implementation
CLIMATE–SMART CONSERVATION
Using the CS to Address Climate Adaptation
RAMSAR example
fic
fundación para la investigación del clima
Climate Research Foundation

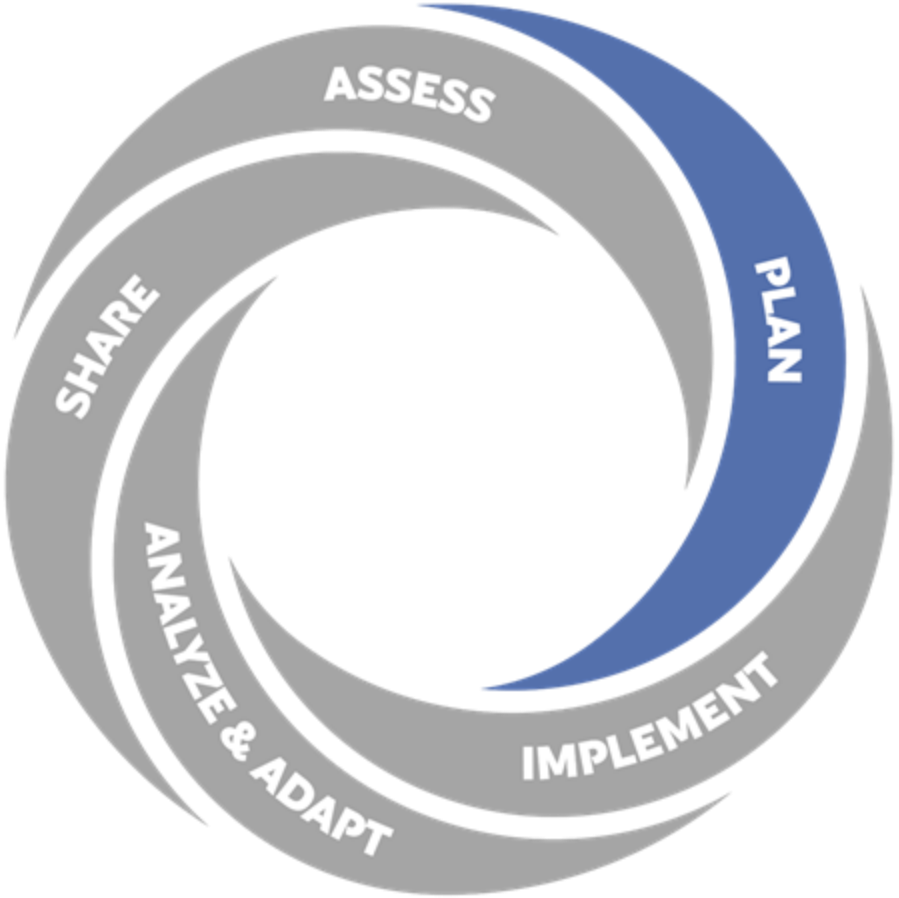
# WHERE DOES CLIMATE FIT IN?




## ASSESS

- Scenario planning within **threat assessment**
- Add climate threats to **situation model**
- **Rate** conventional & climate threats
- **Revisit targets & goals**, based on projected CC impacts

# WHERE DOES CLIMATE FIT IN?




## PLAN

- Identify climate-smart strategies
- Include climate impacts in theories of change

# What about climate change?

PHOTO: JOHN MORRISON


# CLIMATE CHANGE CONTEXT

- Challenging to fit with other threats
- Teams need a basic understanding
- Fully integrate from beginning*
- Deconstruct impacts
- Use scenarios to explore uncertainty
- Detailed guidance available

# LEVEL OF ANALYSIS OPTIONS

A. Don’t address climate change

B. Work with existing climate change

C. One future scenario

D. Two or more scenarios


PHOTO: JOHN MORRISON


PHOTO: : JOHN MORRISON

# HUMAN RESPONSES

- Understand potential effects on humans
- Try to predict human reactions
- Avoid mal-adaptation

# CLIMATE PROJECTIONS

- Many climate models
- Recognize uncertainty
- Look for agreement or lack of it
- Scenario planning helps address uncertainty

# SCENARIO PLANNING

PHOTO: JOHN MORRISON

# SOURCES OF UNCERTAINTY

- GHG emissions
- Model accuracy
- Trend direction & magnitude of change
- Randomness
- Natural responses
- Human responses

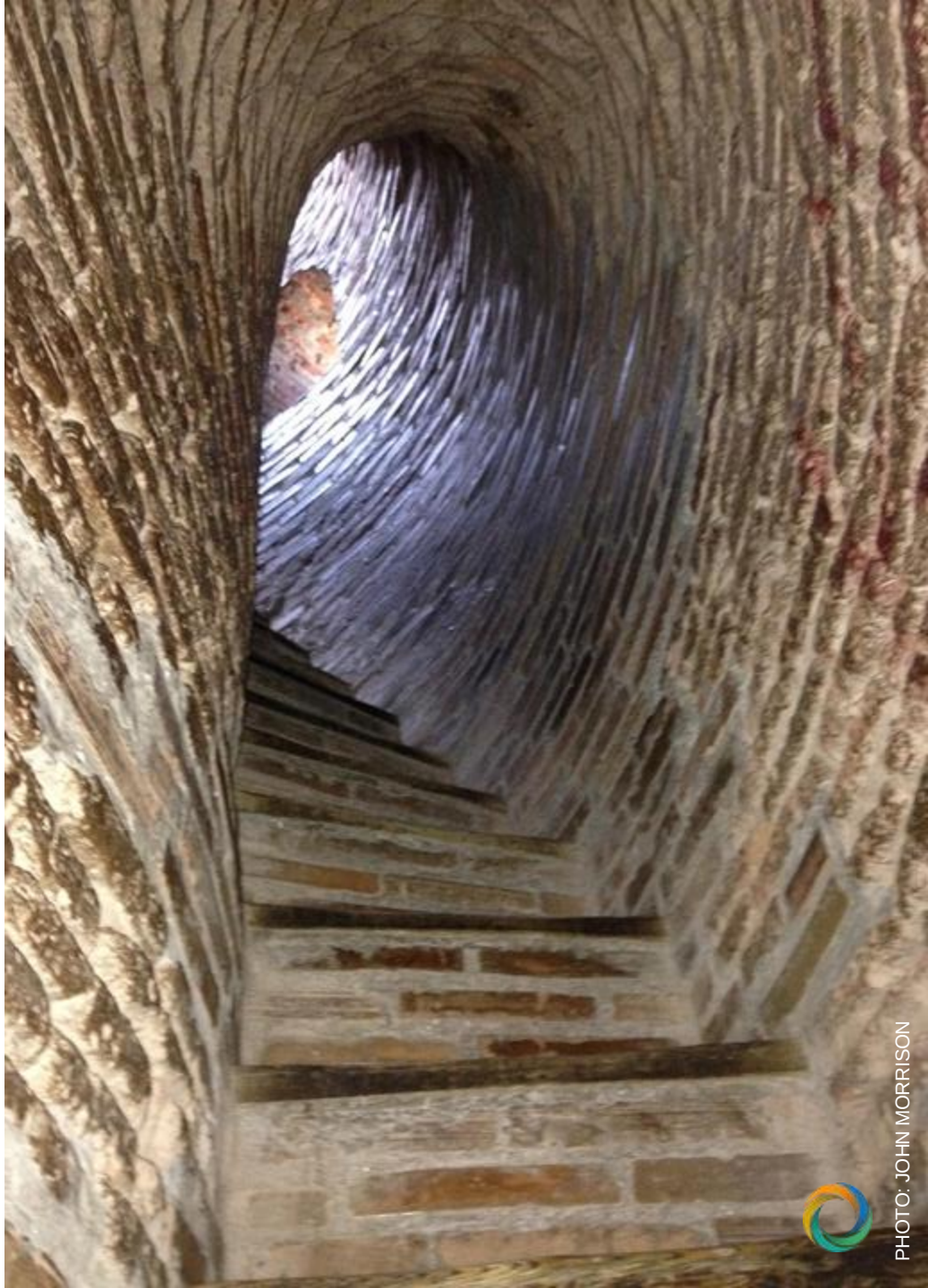



PHOTO: JOHN MORRISON

# RESPONSES TO UNCERTAINTY

- Focus on better understood problems
- Wait for more certainty
- Proceed as if no uncertainty
- Work with uncertainty ✓

# SCENARIO PLANNING

- Decision support tool
- Used extensively in military & business
- For high uncertainty, low control
- Helps imagine a very different future
- Consists of stories/hypotheses
- Both science and art

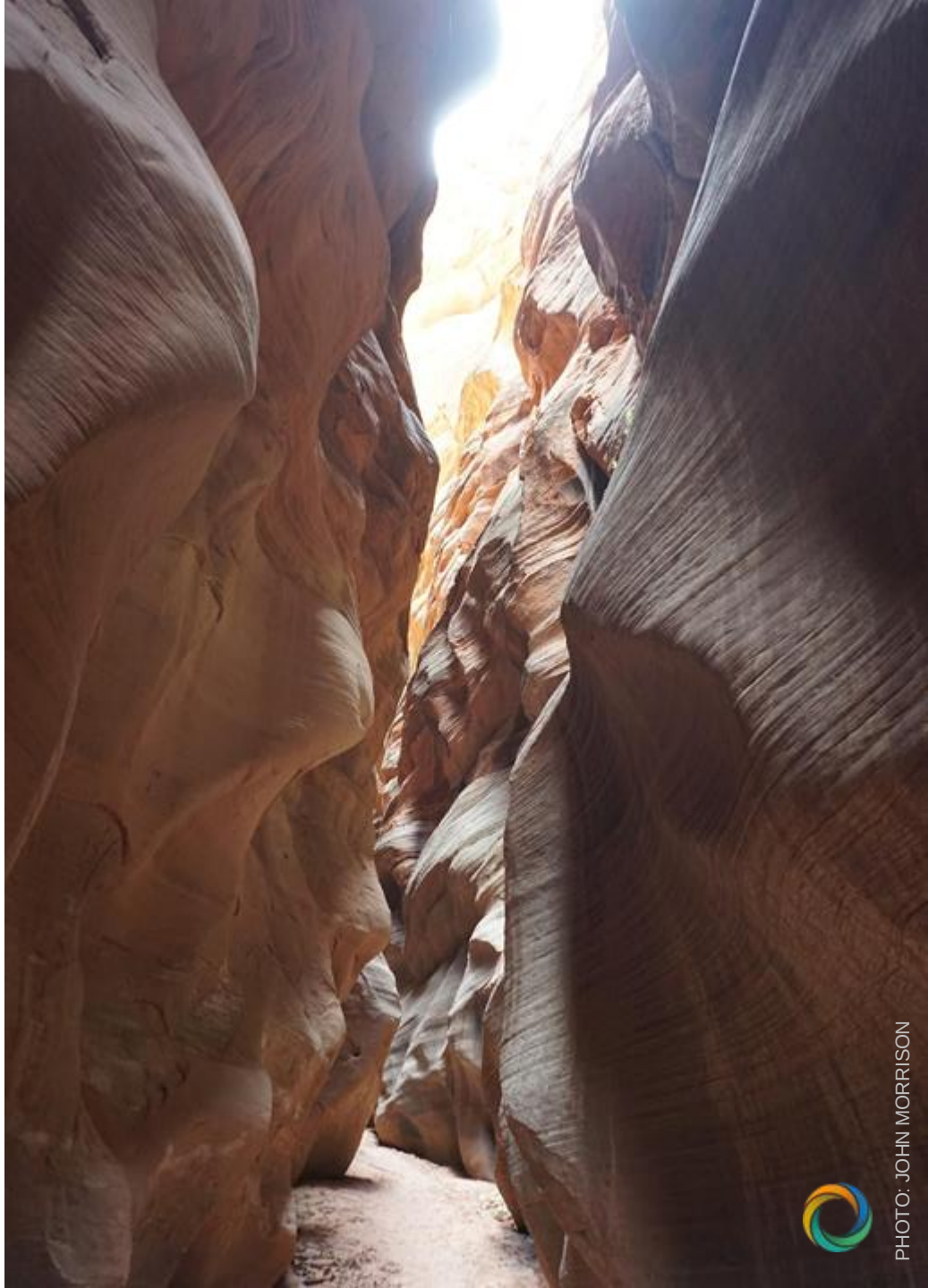



PHOTO: JOHN MORRISON

# WHY SCENARIO PLANNING?

- Explore a range of futures
  - Understand potential impacts
  - Eventually develop solutions

# HOW MANY SCENARIOS?

- How much time & effort to devote?
- Start with basic investigation
- Understand climate trends and level of uncertainty
  - 1 scenario: low uncertainty
  - 2+ scenarios: recommended

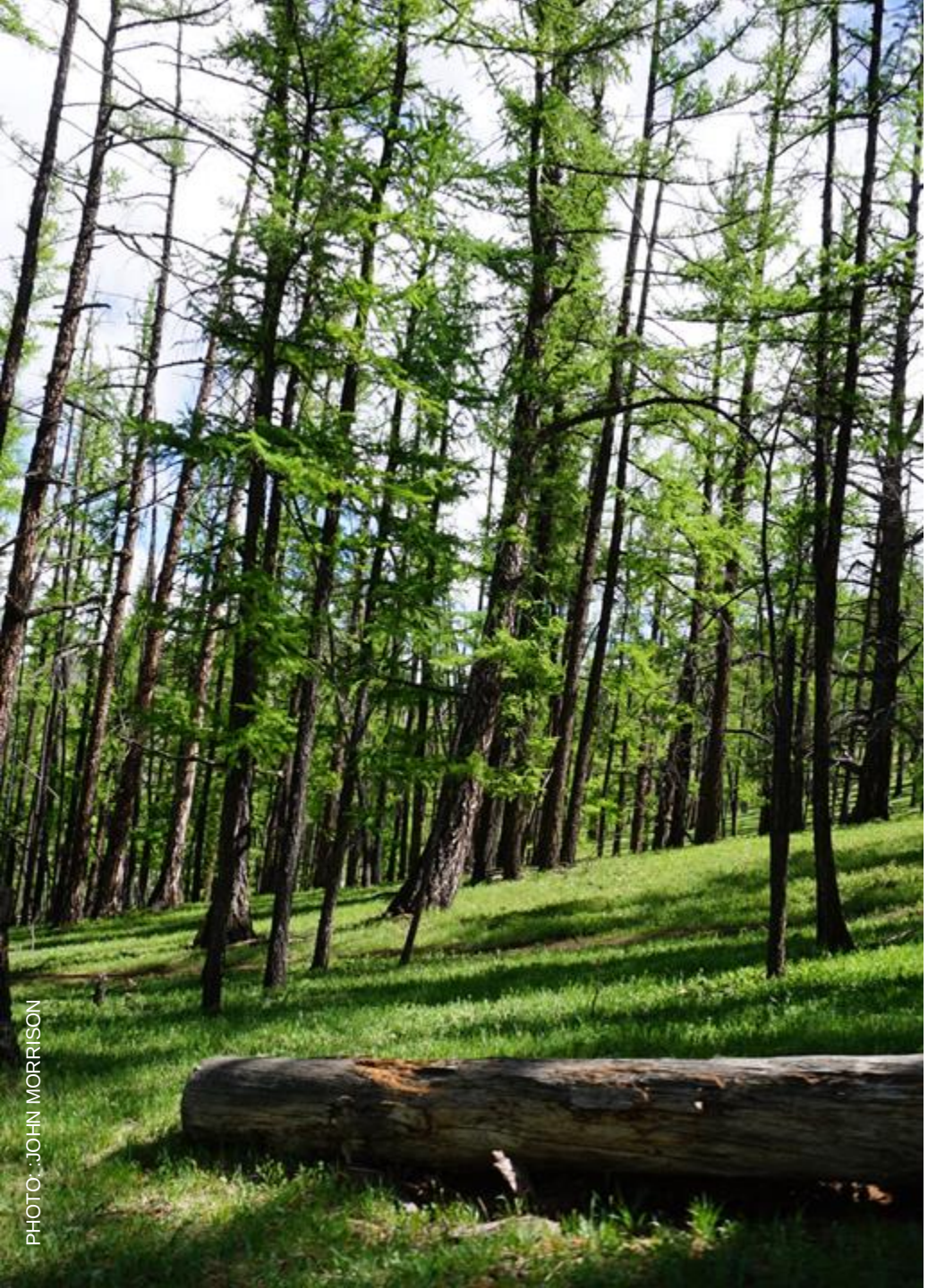
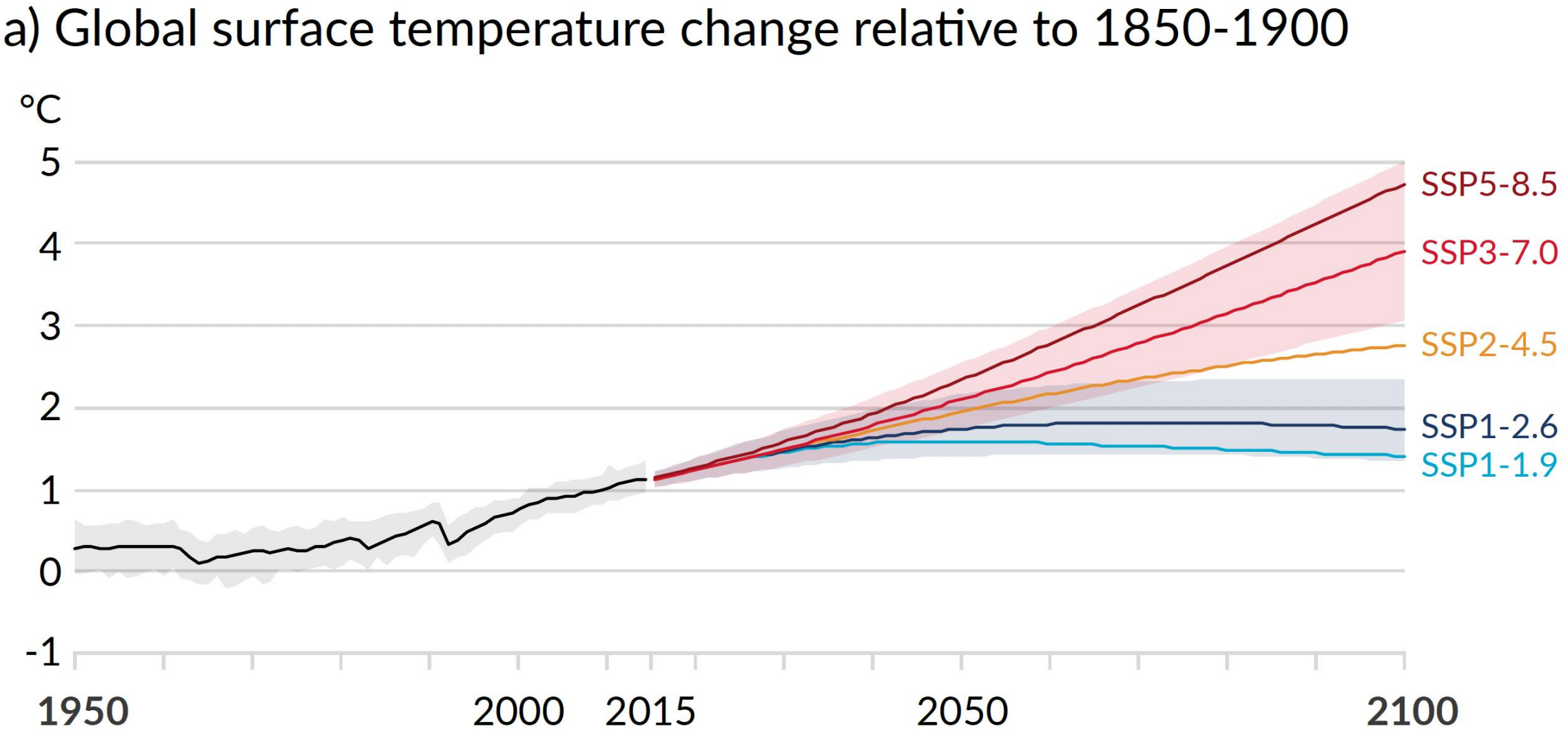


PHOTO: JOHN MORRISON

# HOW TO DEFINE SCENARIOS

- Purpose: explore consequences when uncertainty is high
- Generate scenarios by using:
  - Multiple GHG emission scenarios
  - Multiple models
  - Different time horizons
- Can combine the above
- Can add other dimensions: political, economic, etc.
- Seek out uncertainty

# EMISSIONS SCENARIOS



# CLIMATE MODEL SCENARIOS

*Scenario SSP1 2.6. Period 2021-2050. 10 Climate models for bioclimate variables BIO17 y BIO06*

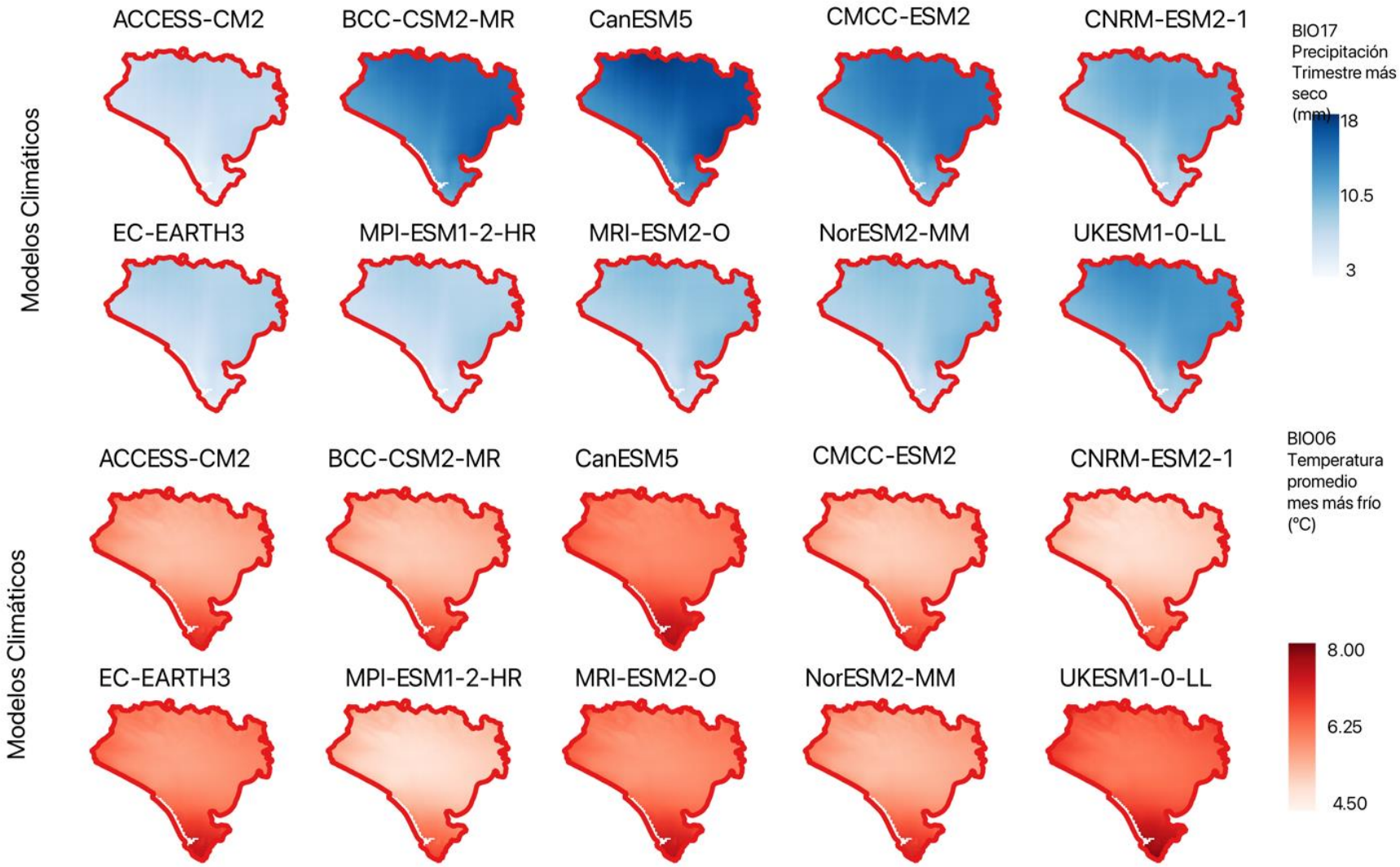



PHOTO: JOHN MORRISON

# CLIMATE MODEL SCENARIOS

- Examine multiple model outputs
- Seek assistance (academia, government)
- Tools:
  - SICMA Andalucía

# EXAMPLE: 4 SCENARIOS FROM 2 VARIABLES

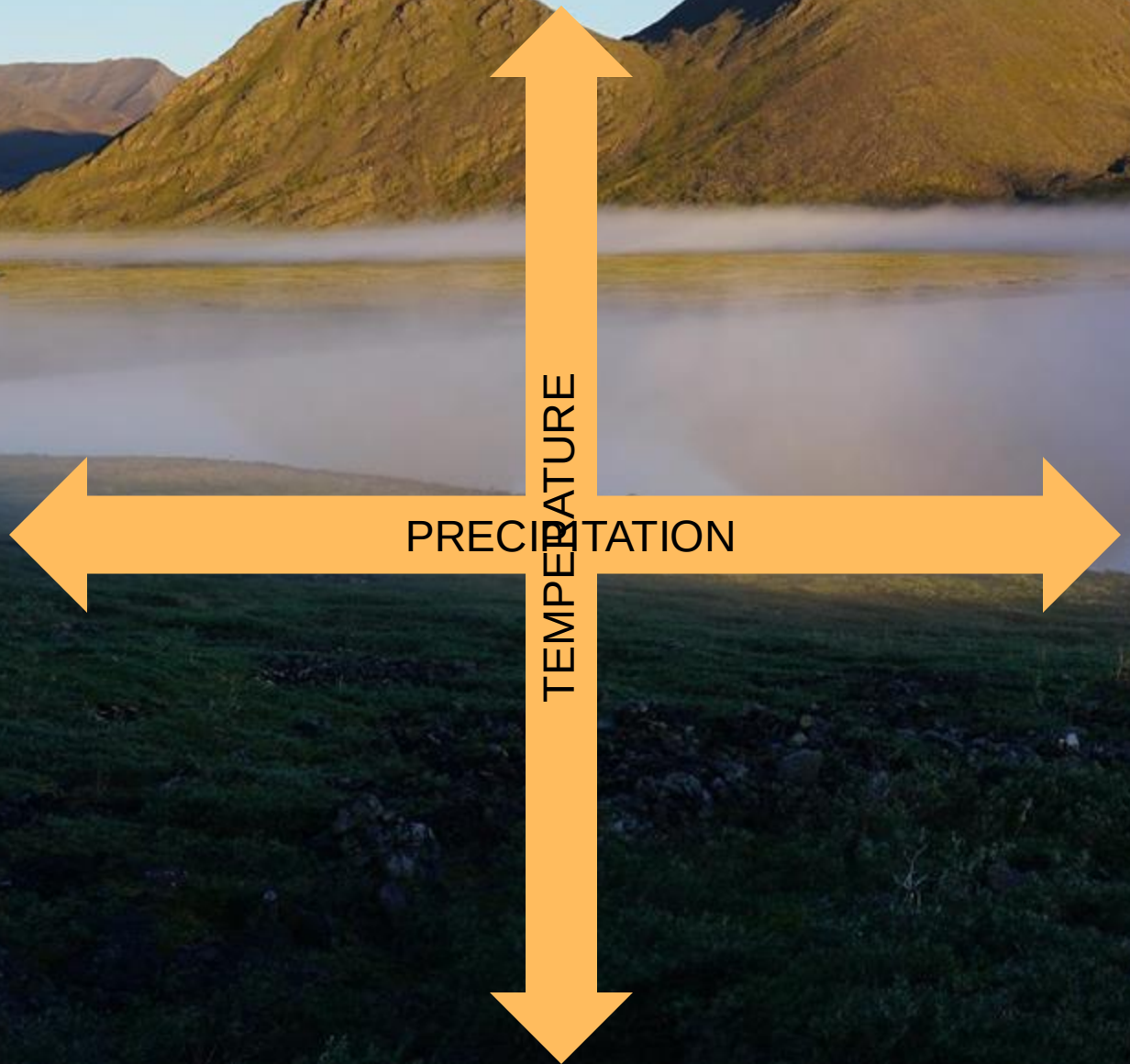



PHOTO: JOHN MORRISON

# EXAMPLE: 4 SCENARIOS FROM 2 VARIABLES

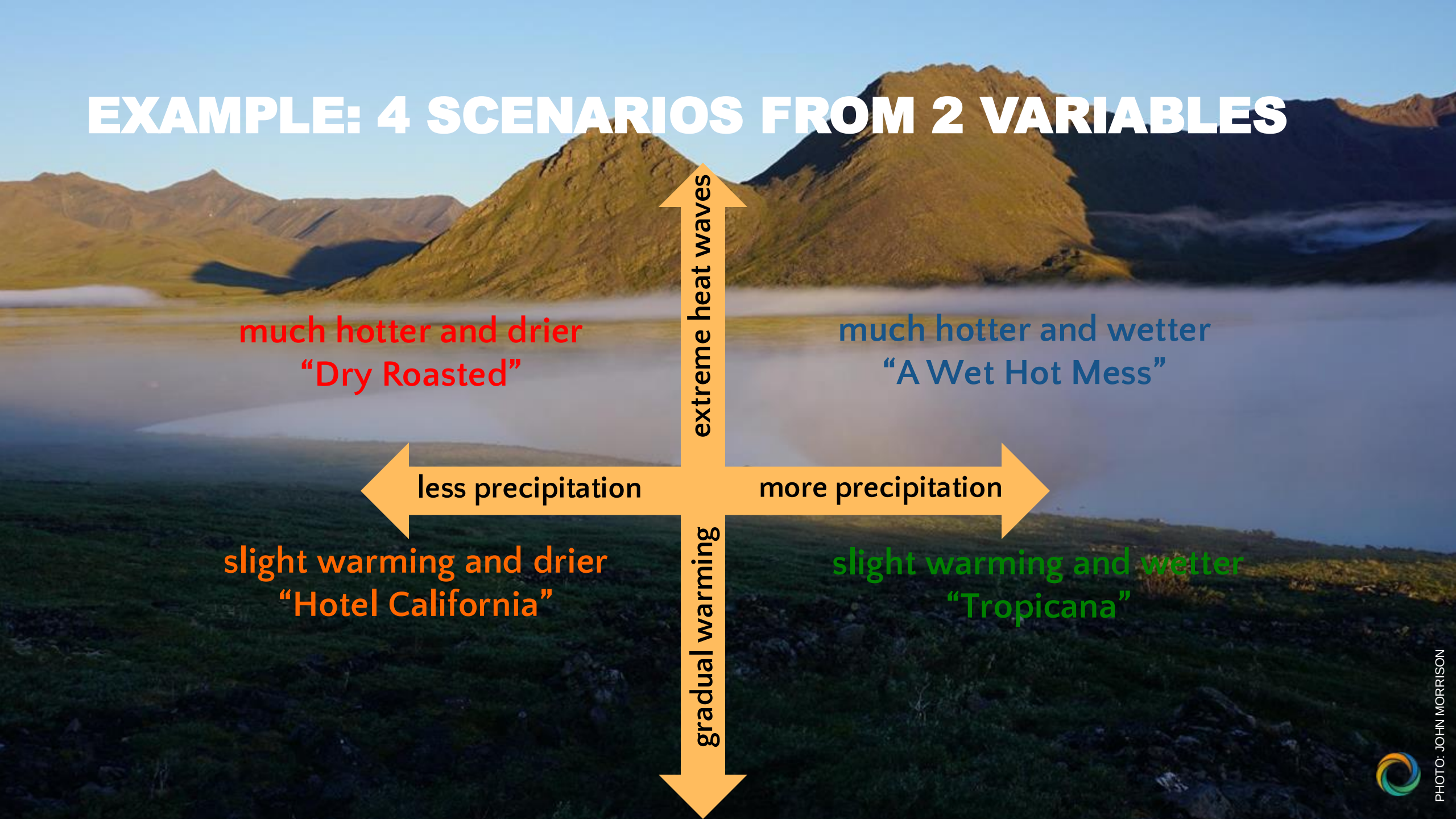
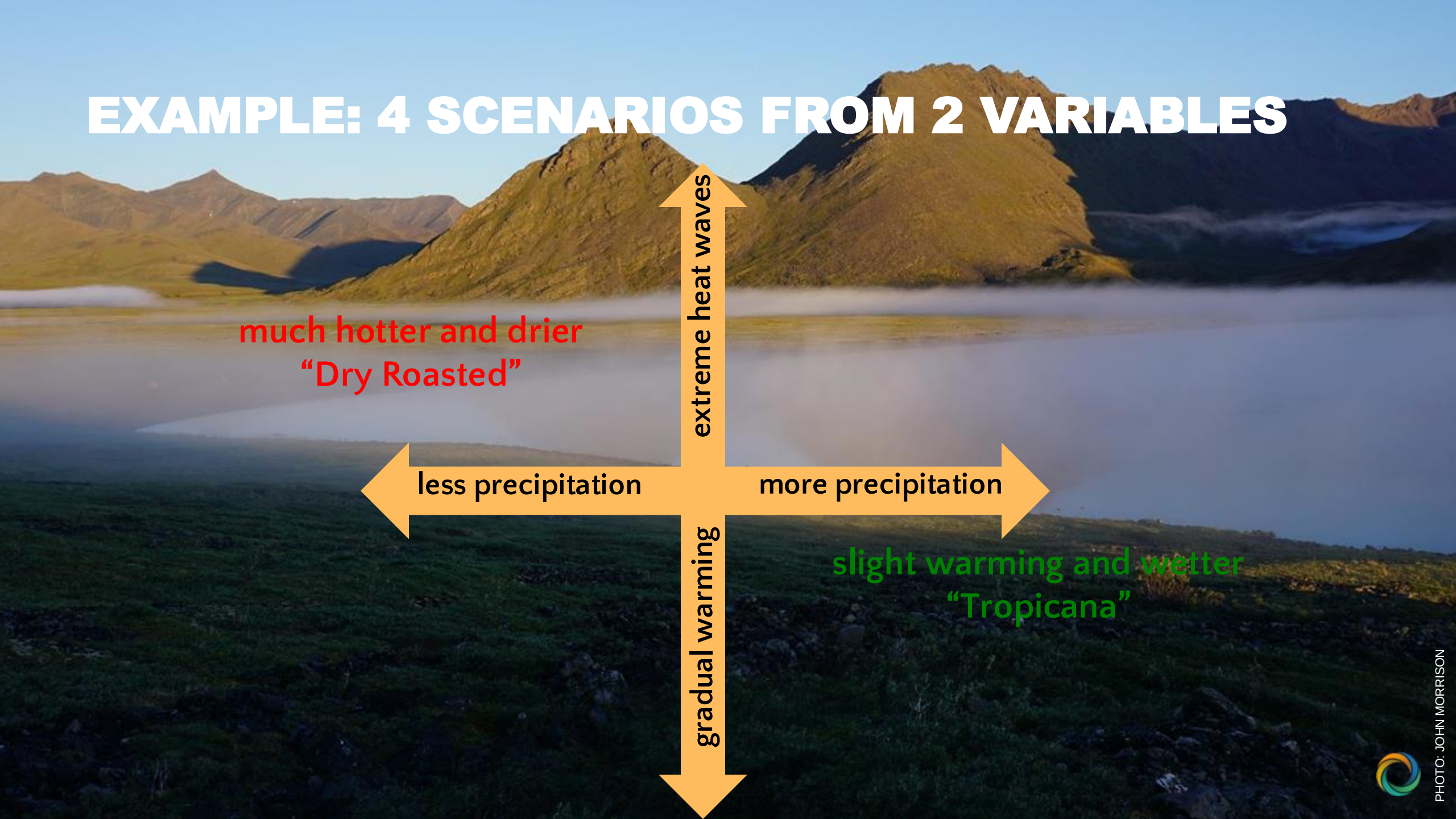



PHOTO: JOHN MORRISON

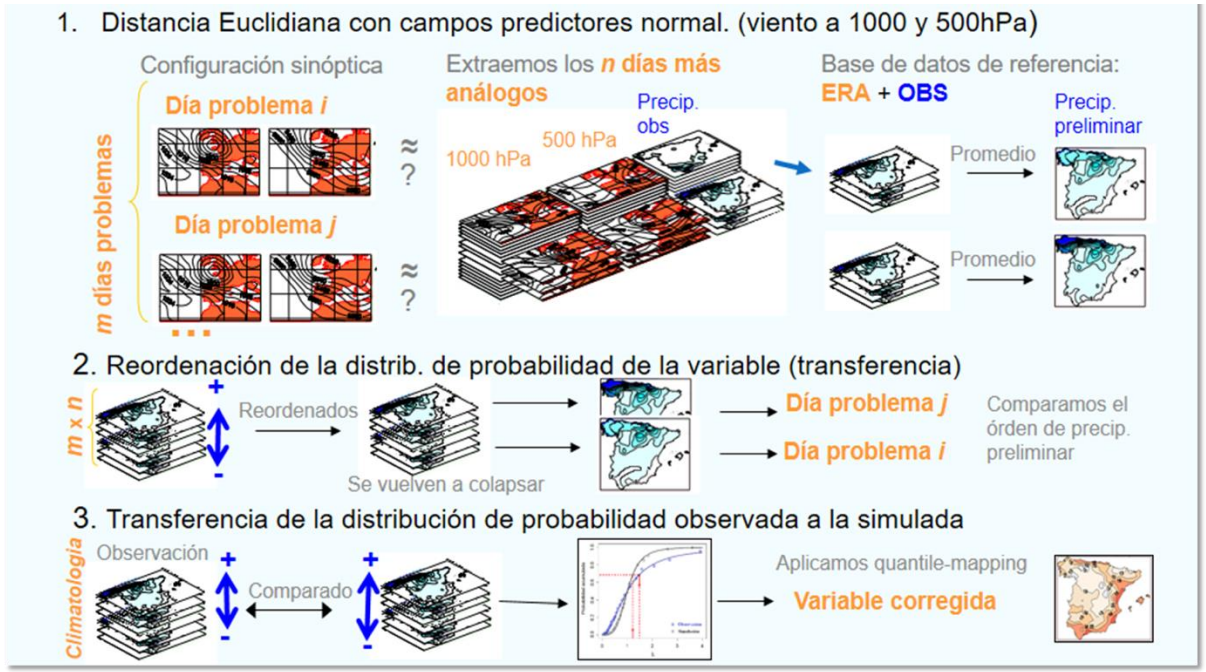
# EXAMPLE: 4 SCENARIOS FROM 2 VARIABLES



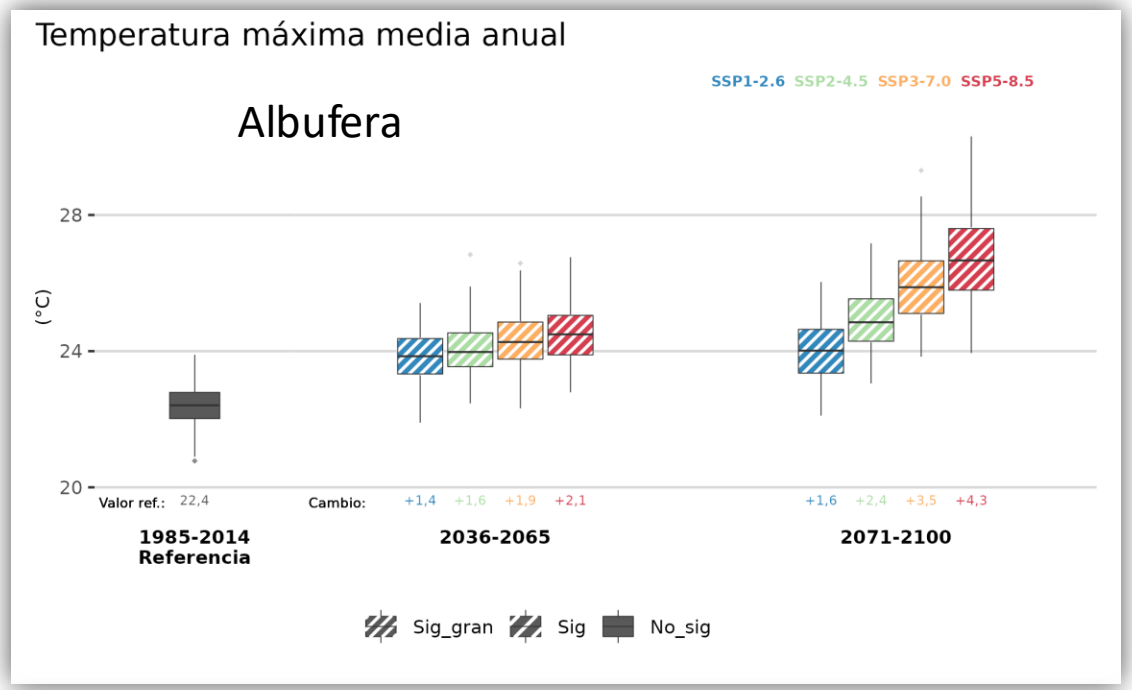
# ACCION–RAMSAR
# 1st stage

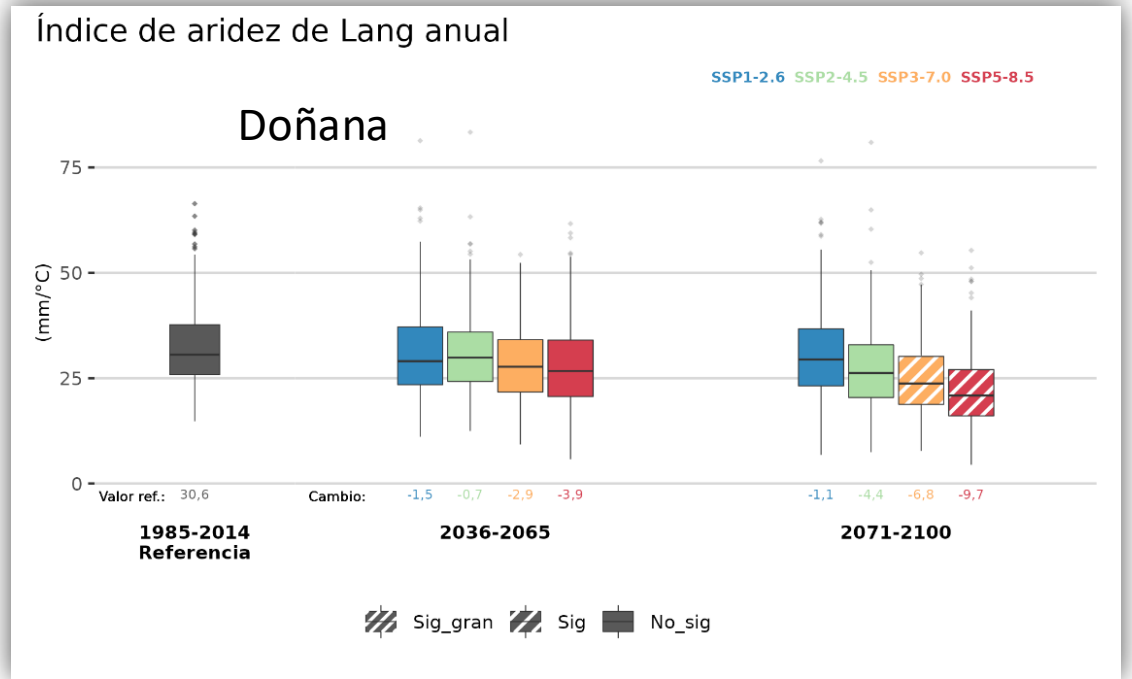
PHOTO: JOHN MORRISON

# Climate modeling.



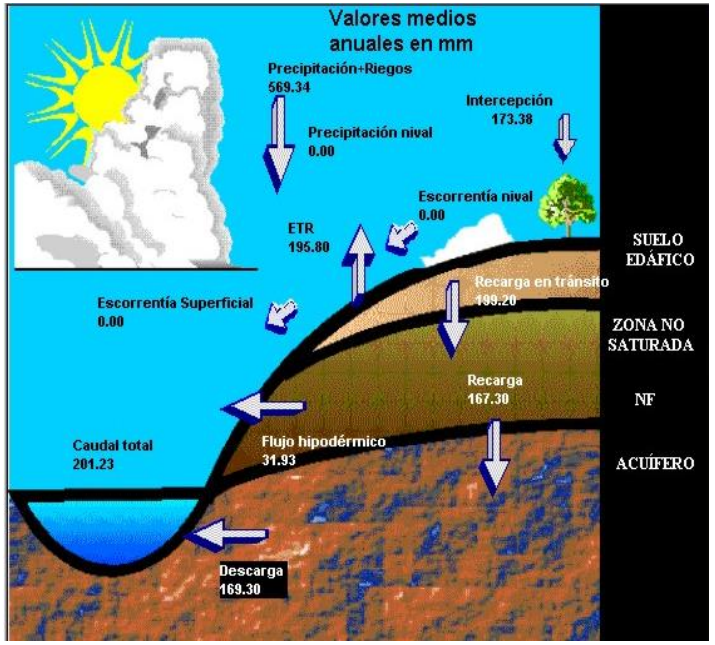

Climate simulation: day scale for 40 projections (10 models x 4 SSPs)

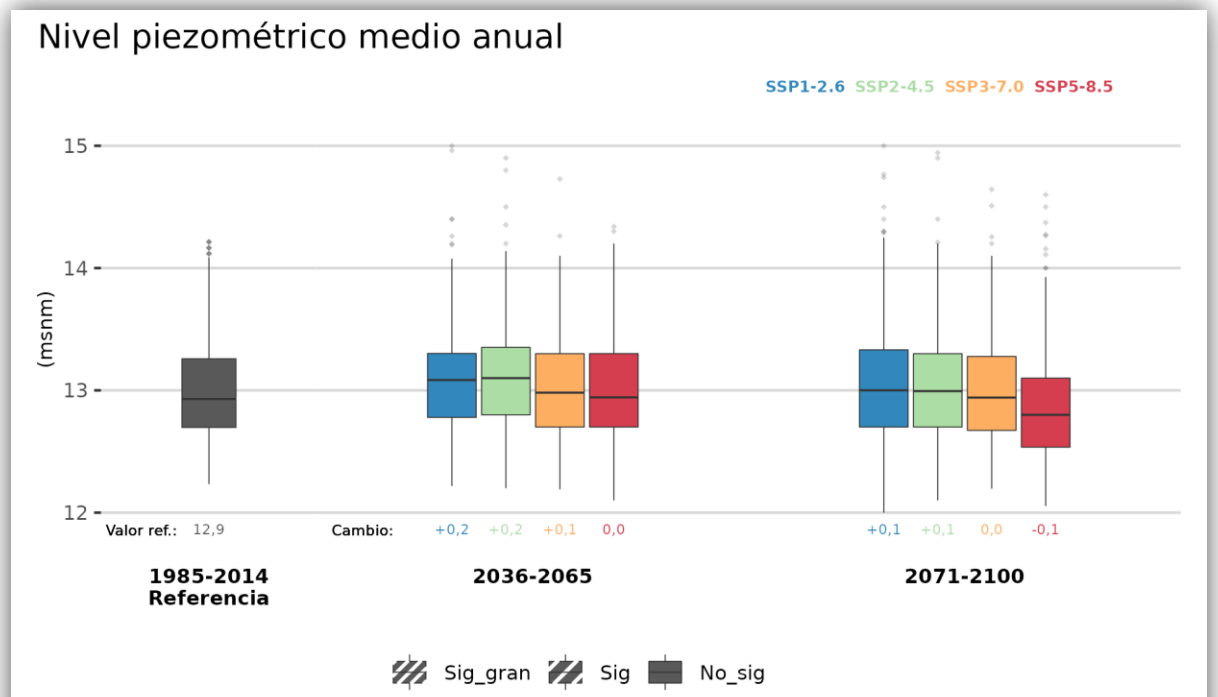


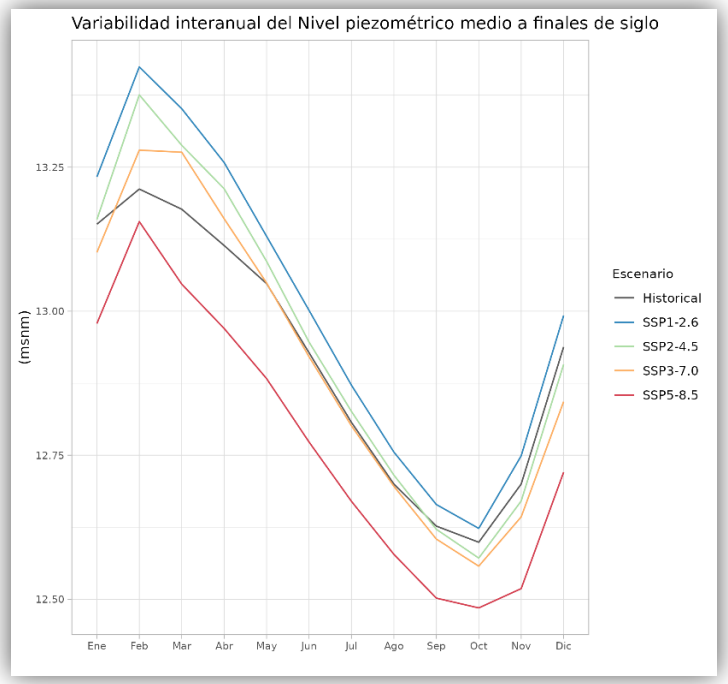



# Hydrological modeling.

Se ha realizado una simulación hidrológica a escala diaria para 40 proyecciones climáticas futuras (10 modelos x 4 SSPs) aplicando el modelo hidrológico VISUAL BALAN. Variables simuladas: precipitación, evapotranspiración potencial, evapotranspiración real, recarga, nivel piezométrico, descarga e infiltración.



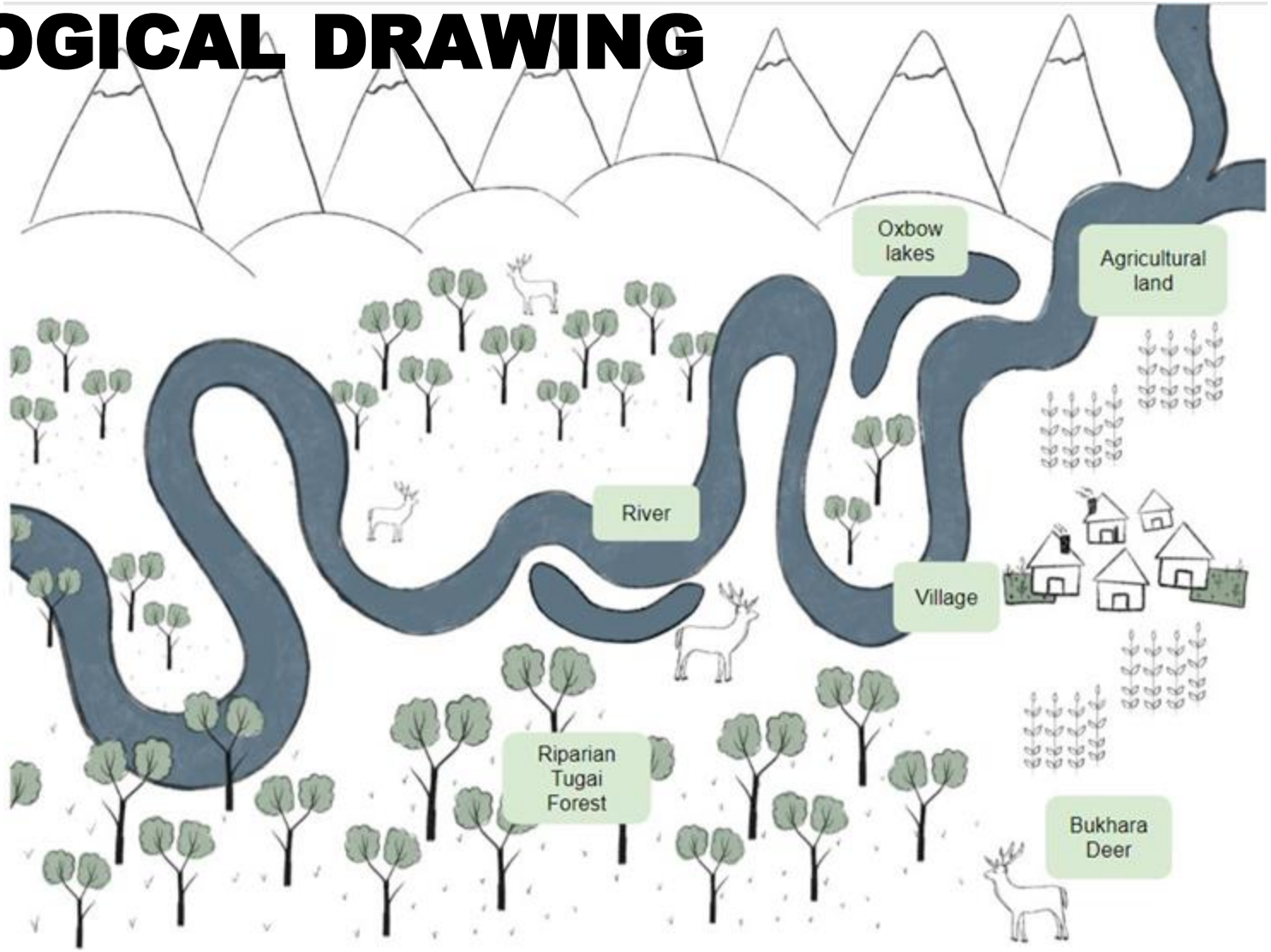

| | Tx 24,4ºC | Tn 11ºC | Prec 547 mm | ETP 858 mm | ETR 196mm | Desc 201,5 mm | Rec 196,1 mm | Inter 166,2 mm | Nivel 12,9 msnm |
|---|---|---|---|---|---|---|---|---|---|
| SSP1-2.6 | 1,9 | 1,8 | 8,1 | 111 | 11,5 | 13,3 | 11,5 | 2,1 | 0,1 |
| SSP2-4.5 | 2,9 | 2,7 | -9,7 | 192 | 7 | 8,9 | 7 | -3,5 | 0,1 |
| SSP3-7.0 | 4,1 | 3,7 | -47 | 286 | -9,5 | -8 | -9,5 | -14,2 | 0 |
| SSP5-8.5 | 5,2 | 4,6 | -97,5 | 424 | -33,6 | -29,6 | -33,6 | -29,4 | -0,1 |

# VULNERABILITY ASSESSMENT

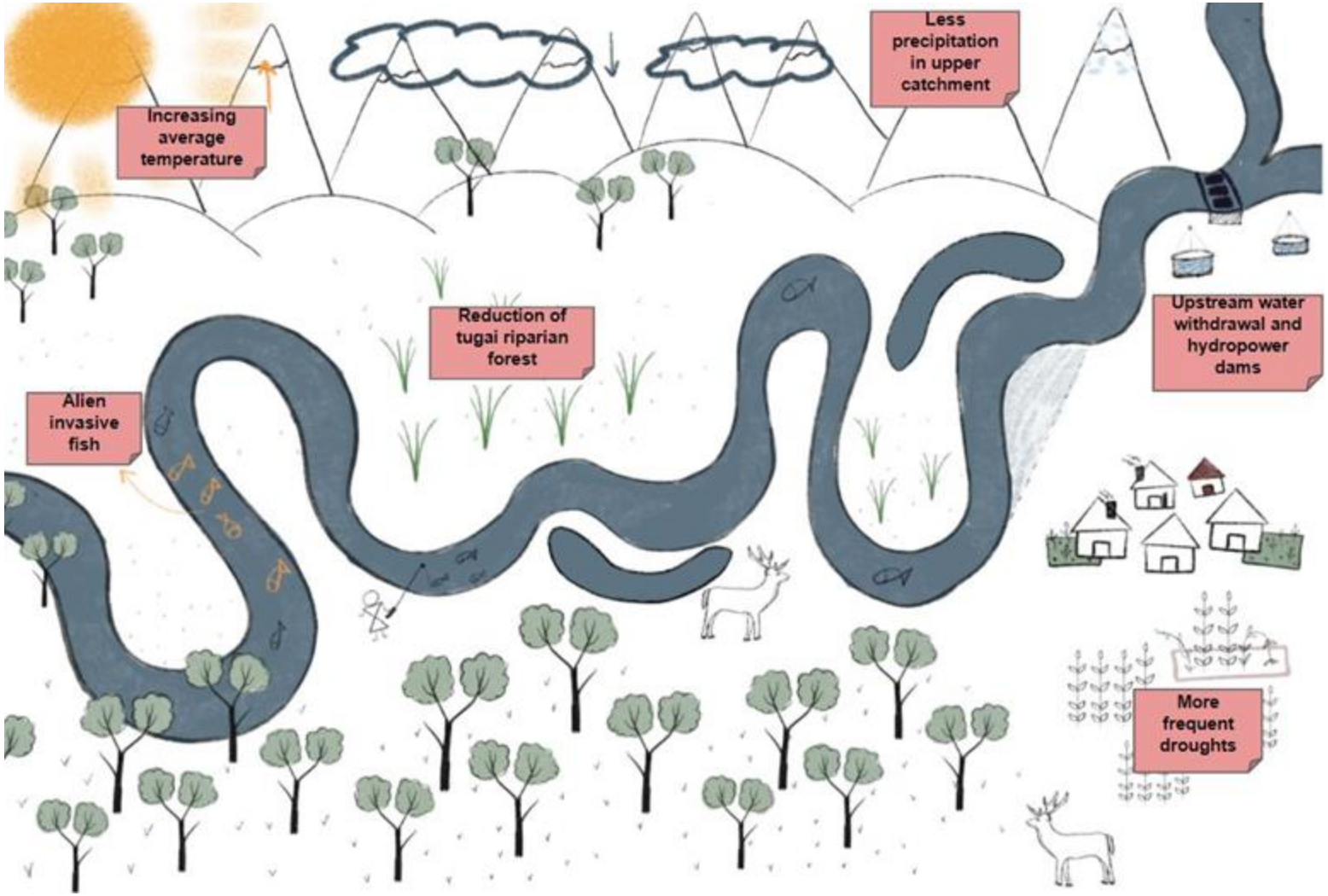
- Document scenario climate impacts on:
  - Conservation targets
  - Humans
  - Conservation targets due to human reactions


PHOTO: JOHN MORRISON

# VULNERABILITY ASSESSMENT - ECOLOGICAL DRAWING



# VULNERABILITY ASSESSMENT - ECOLOGICAL DRAWING



# VULNERABILITY ASSESSMENT

## Climate Threats

Less precipitation in upper catchment –

Increasing average temperature

More frequent & severe floods & droughts

# EXAMPLE SUMMARY OF IMPACTS

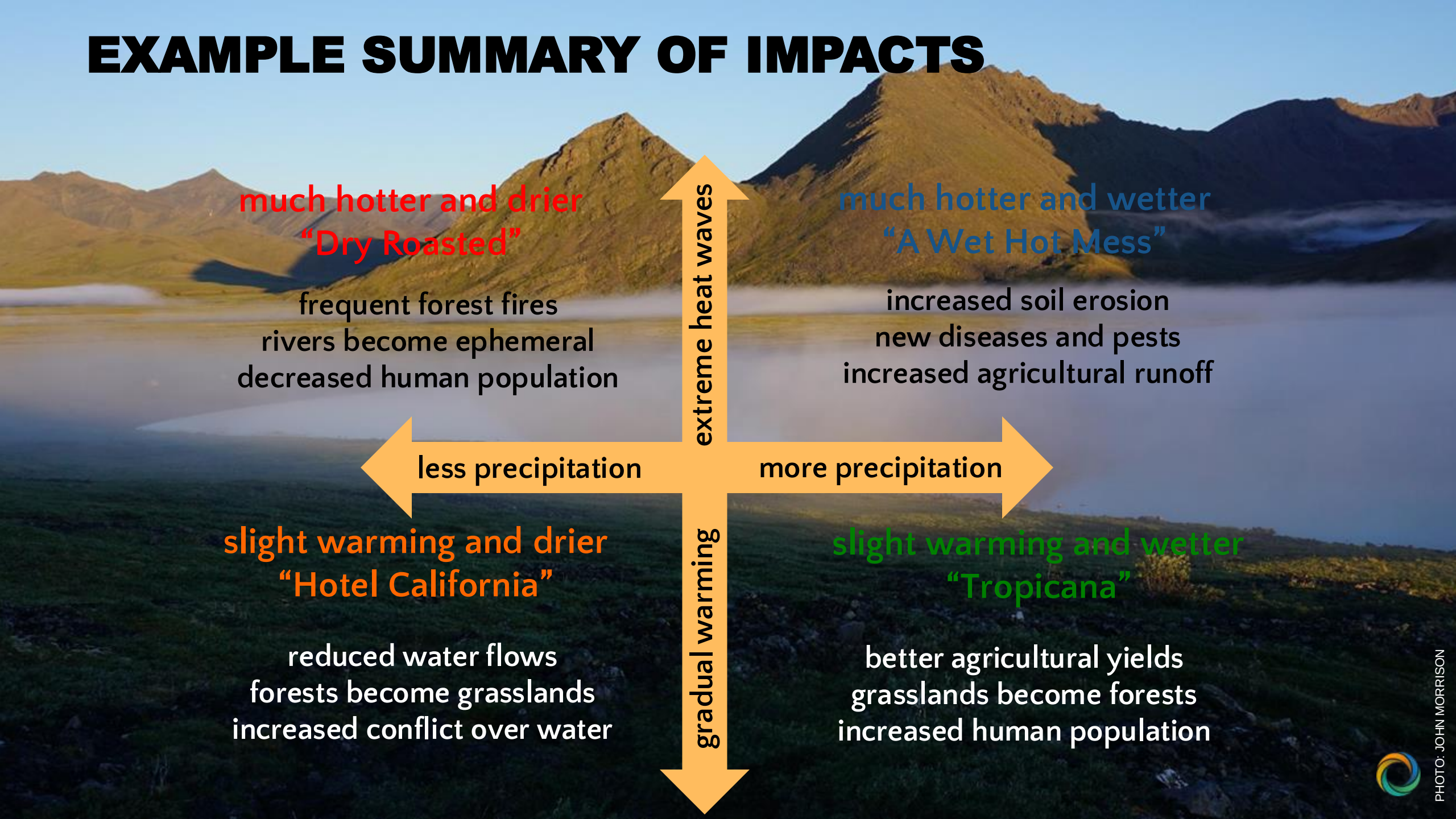
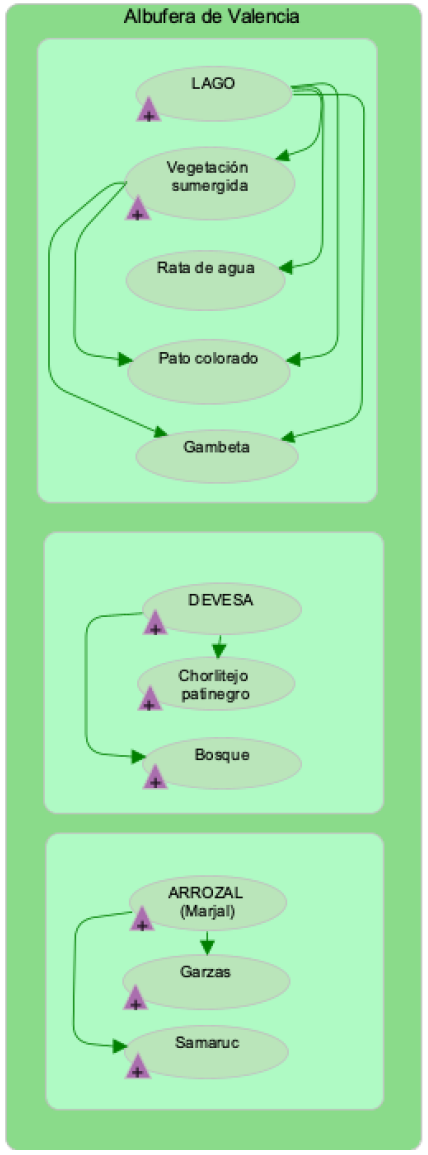
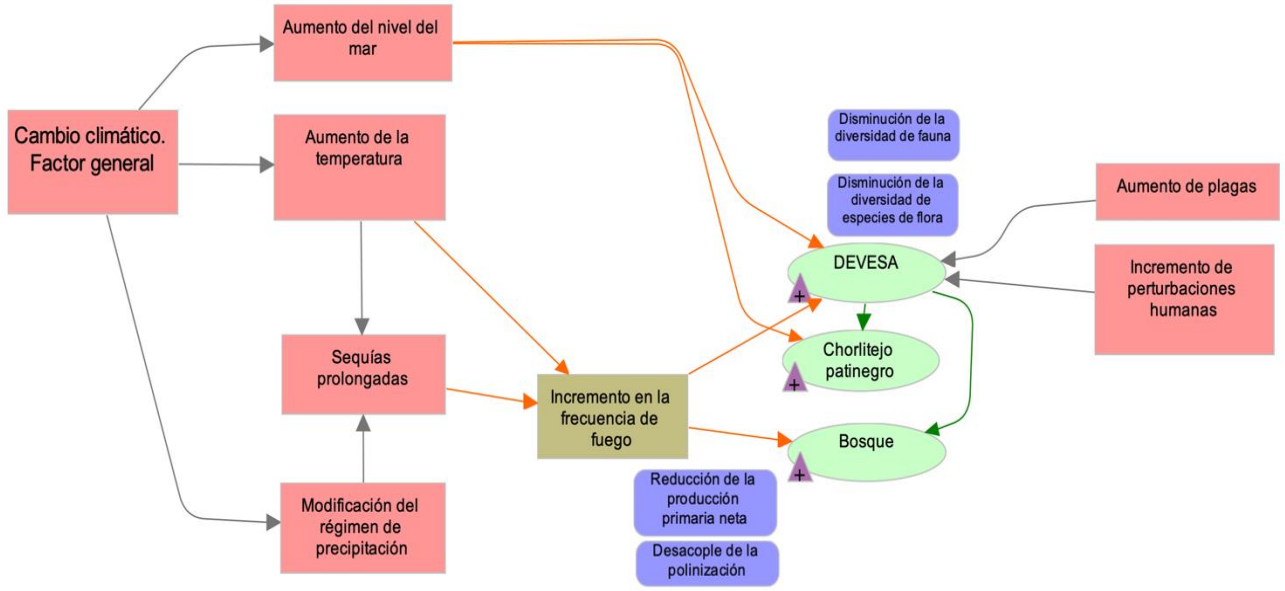



PHOTO: JOHN MORRISON

# Objective 1: Conservation state and biodiversity threats.




| OC | Enfoque metodológico | Requerimientos |
|---|---|---|
| Lago | Análisis de la situación hidrológica en escenario de cambio climático. | a) Fuentes de datos de hidrología actua<br>b) Proyecciones de escenarios de clima futuro<br>c) Análisis hidrológico en escenarios futuros de clima |
| Devesa | Modelización del riesgo de fuego en escenarios de clima futuro | a) Uso de Proyecciones de índices de riesgo de incendios por ejemplo FWI |
| Chorlitejo patinegro | Modelo de Idoneidad climática. MDE animales. | a) Variables bioclimáticas<br>b) Base de datos de distribución o presencia de la especie<br>c) Proyecciones de escenarios de clima futuro<br>d) Búsqueda bibliográfica de los límites ecofisiológicos de supervivencia |

# Objetivo 5: Biodiversity modeling.

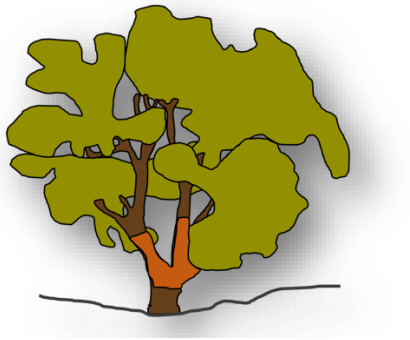
| **Objetos de Conservación** |
| --- |
| Lago |
| Devesa |
| Chorlitejo patinegro |
| Bosque |
| Arrozal |
| Samaruc |
| Complejo de acuíferos |
| Anfibios |
| Sistemas de marismas |
| Ecosistemas de Bosques y cotos |
| Ecosistemas de Bosques y cotos |
| Conejo |
| Alcornoque y otras leñosas |
| Sistema Lagunar |
| Caballito de mar |
| Arenales, dunas y playas |
| Desembocaduras de ramblas |
| Saladares y estepas salinas |
| Salinas |

Analysis of the impact of future climate and hydrology and derived variables on ecosystem processes

Suitability–climate modeling for Spp

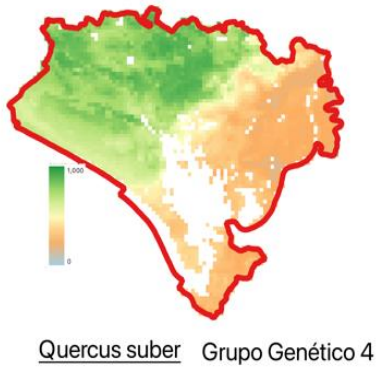
Modeling of diseases and pathogens for Spp

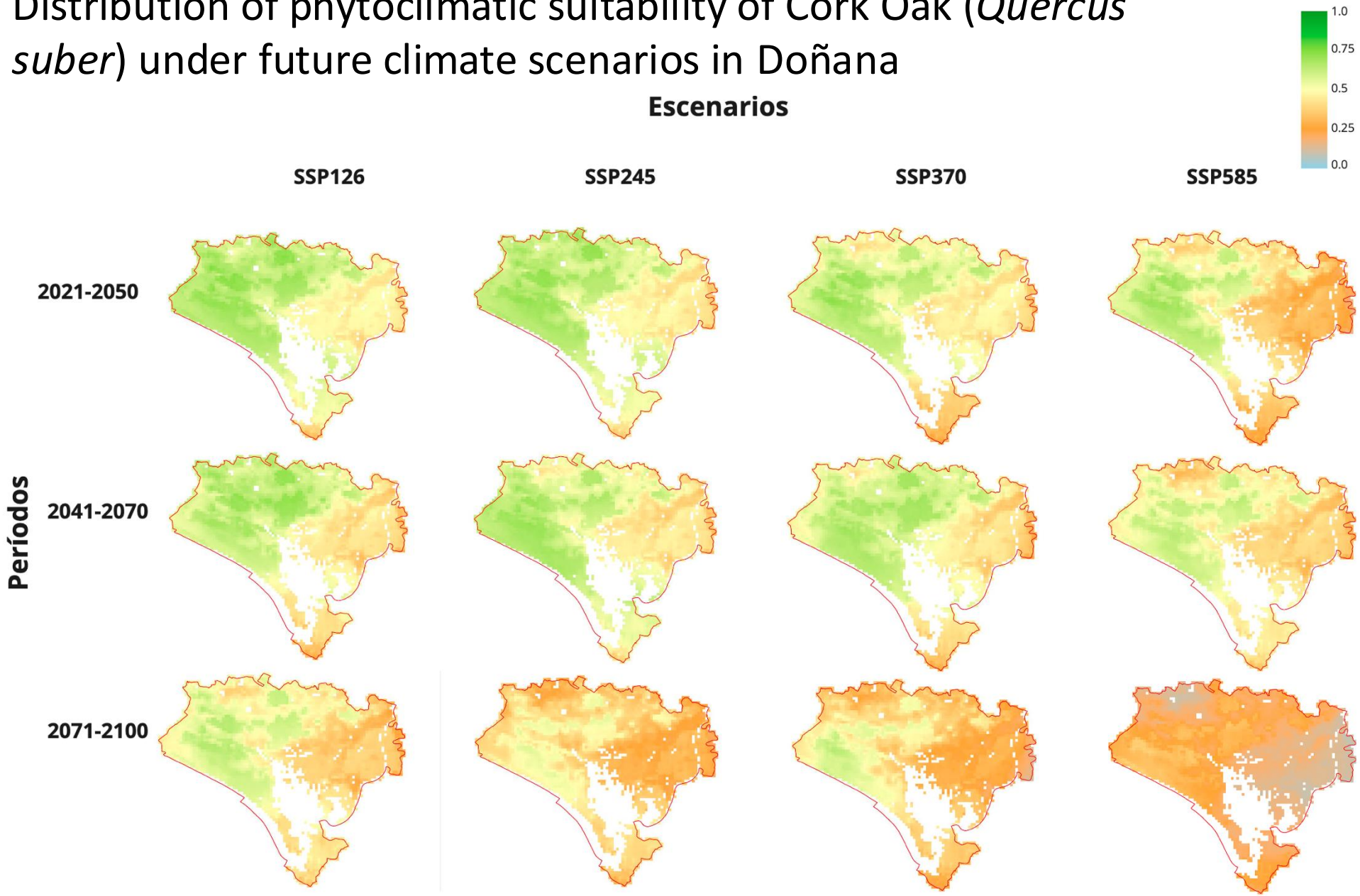
Risk of fire



# Distribution of phytoclimatic suitability of Cork Oak (*Quercus suber*) under future climate scenarios in Doñana


Quercus suber.



Mapa de distribución de la idoneidad de hábitat actual de *Pinus halepensis*

gg1

gg2

gg4

1.0
0.75
0.5
0.25
0.0

Área del PORN Albufera
Área definida en taller
Área de la Devesa
Laguna

Distribución España

Distribución La Albufera

# Grupos genéticos de *Pinus halepensis*

SSP370

SSP370

SSP370

2021-2050

2041-2070

2071-2100

GG1

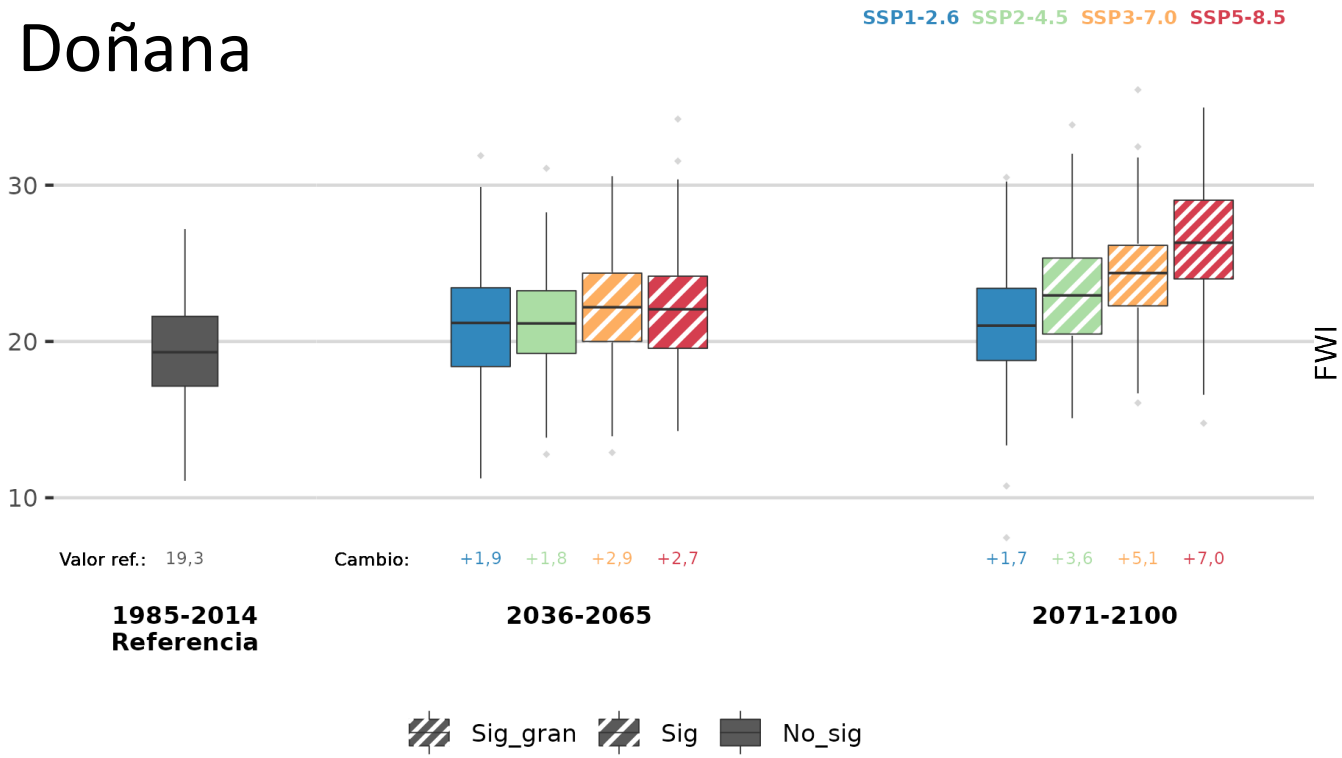
GG2

GG3

FIRE WEATHER INDEX (FWI)

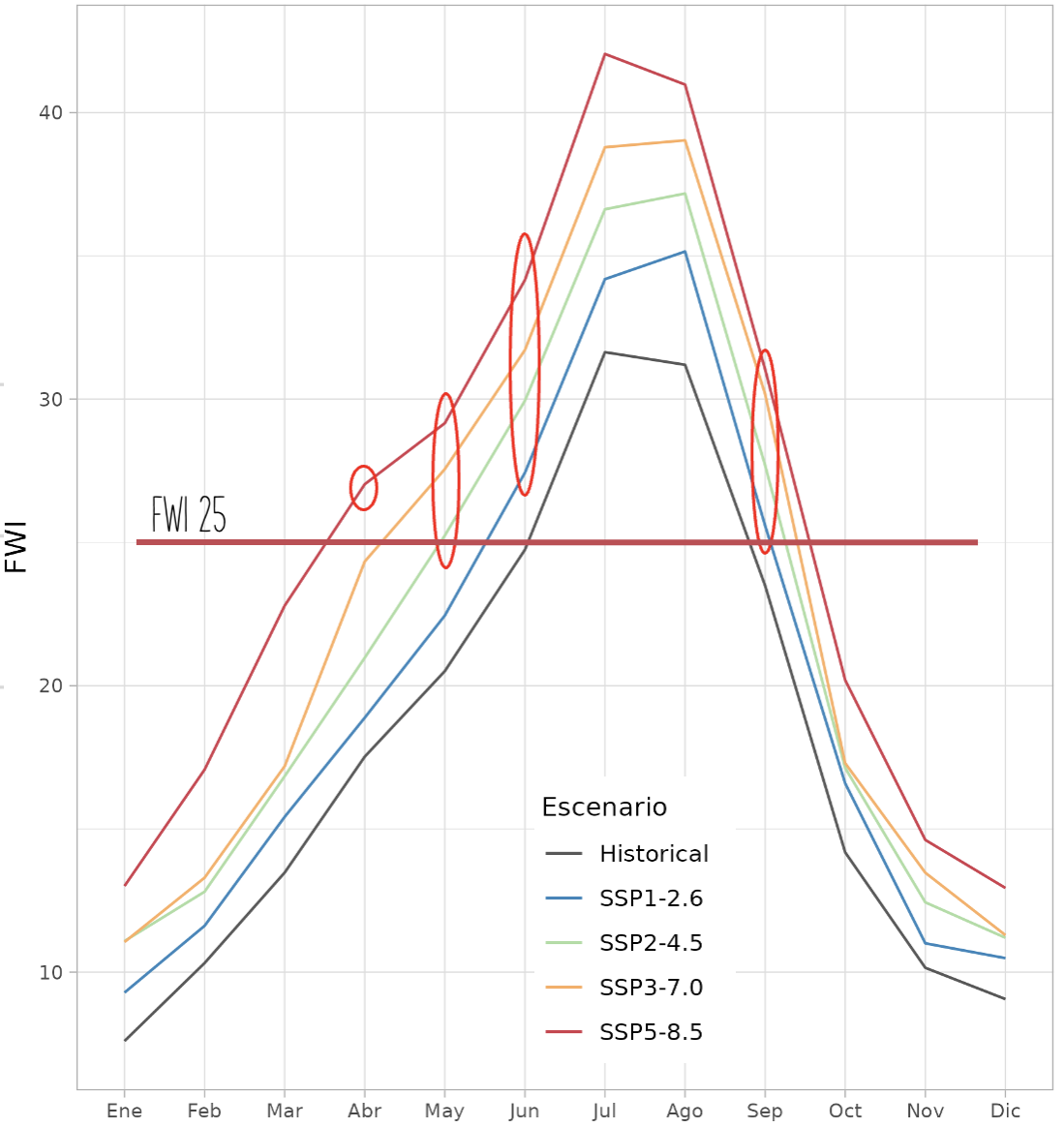
Calculado en el Proyecto Europeo FIREURISK (*Developing a holistic, risk-wise strategy for European wildfire management*, https://fireurisk.eu/)

Índice Meteorológico de Incendios Forestales máximo medio anua




# Extensión del periodo de riesgo alto

Variabilidad interanual del índice FWI medio a finales de



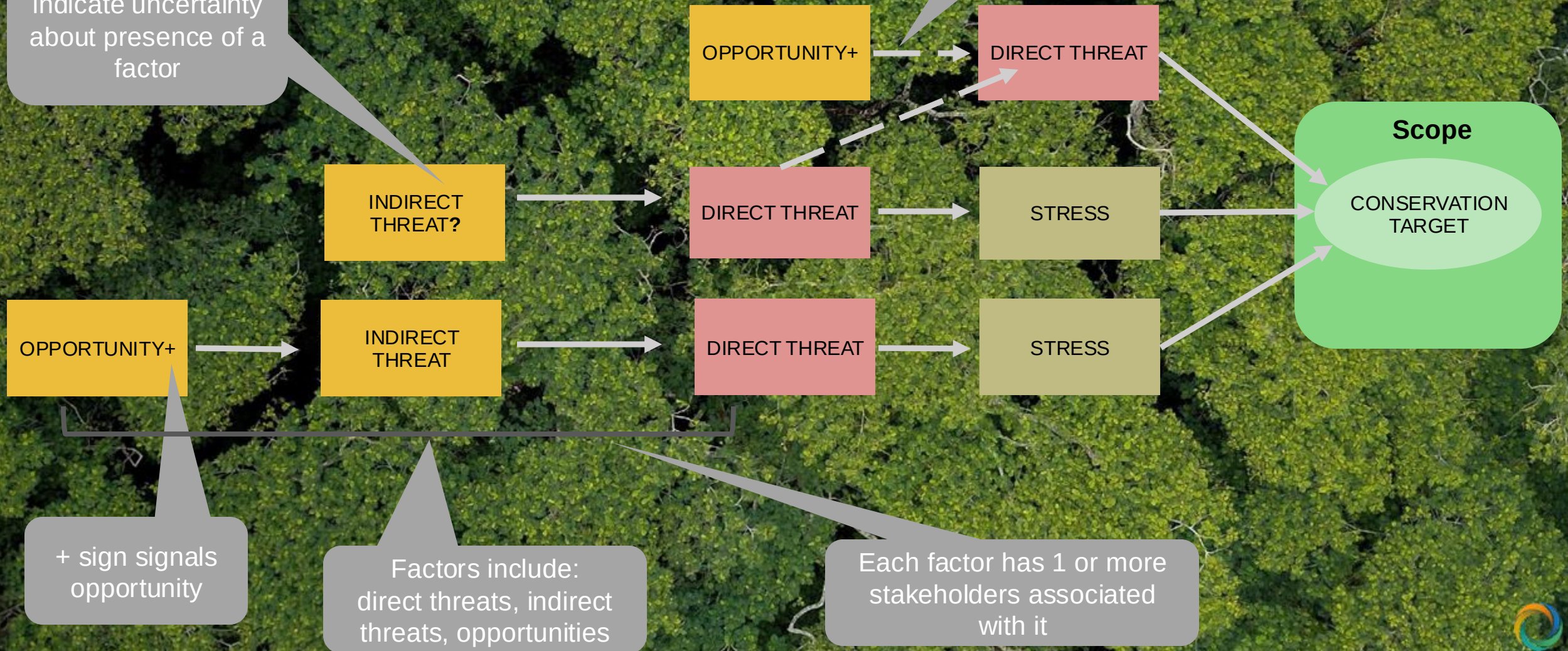
# SITUATION MODELS

PHOTO: JOHN MORRISON

# SITUATION MODEL

Question mark can indicate uncertainty about presence of a factor

Dotted lines could indicate uncertainty in relationships




+ sign signals opportunity

Factors include: direct threats, indirect threats, opportunities

Each factor has 1 or more stakeholders associated with it

PHOTO: MICHAEL OLSEN, UNSPLASH

# IDENTIFY TARGETS, CONVENTIONAL THREATS & ASSOCIATED STRESSES

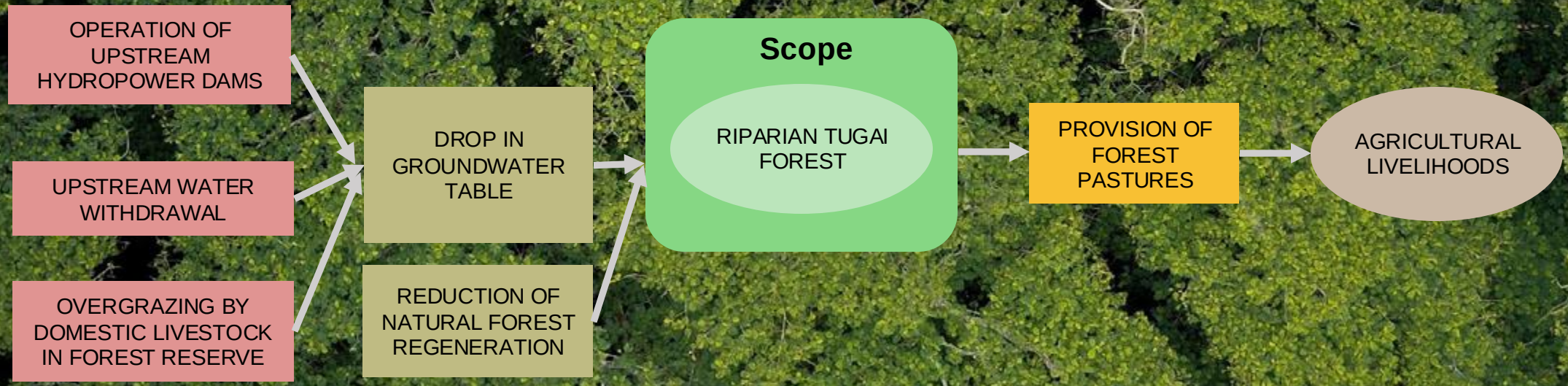



PHOTO: MICHAEL OLSEN, UNSPLASH

# ADD CLIMATE THREATS

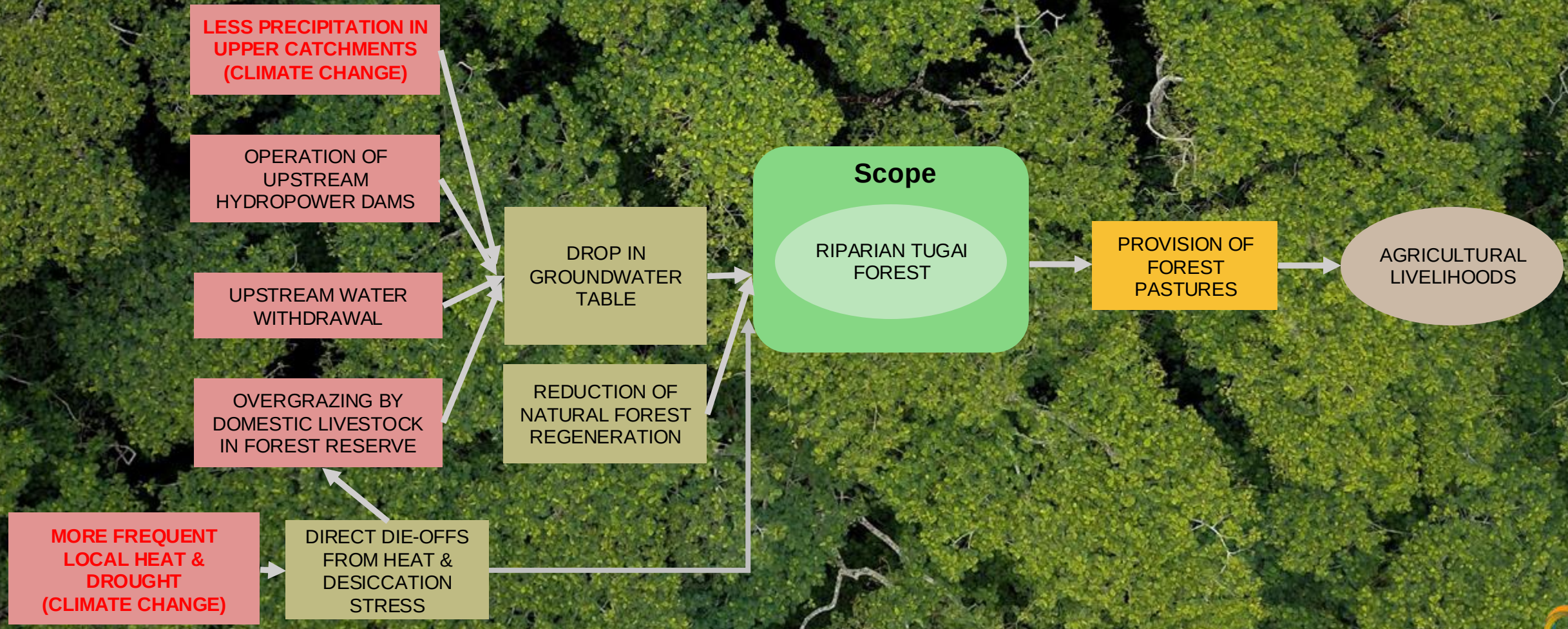



PHOTO: MICHAEL OLSEN, UNSPLASH

# TREAT CLIMATE STRESSES AS DIRECT THREATS

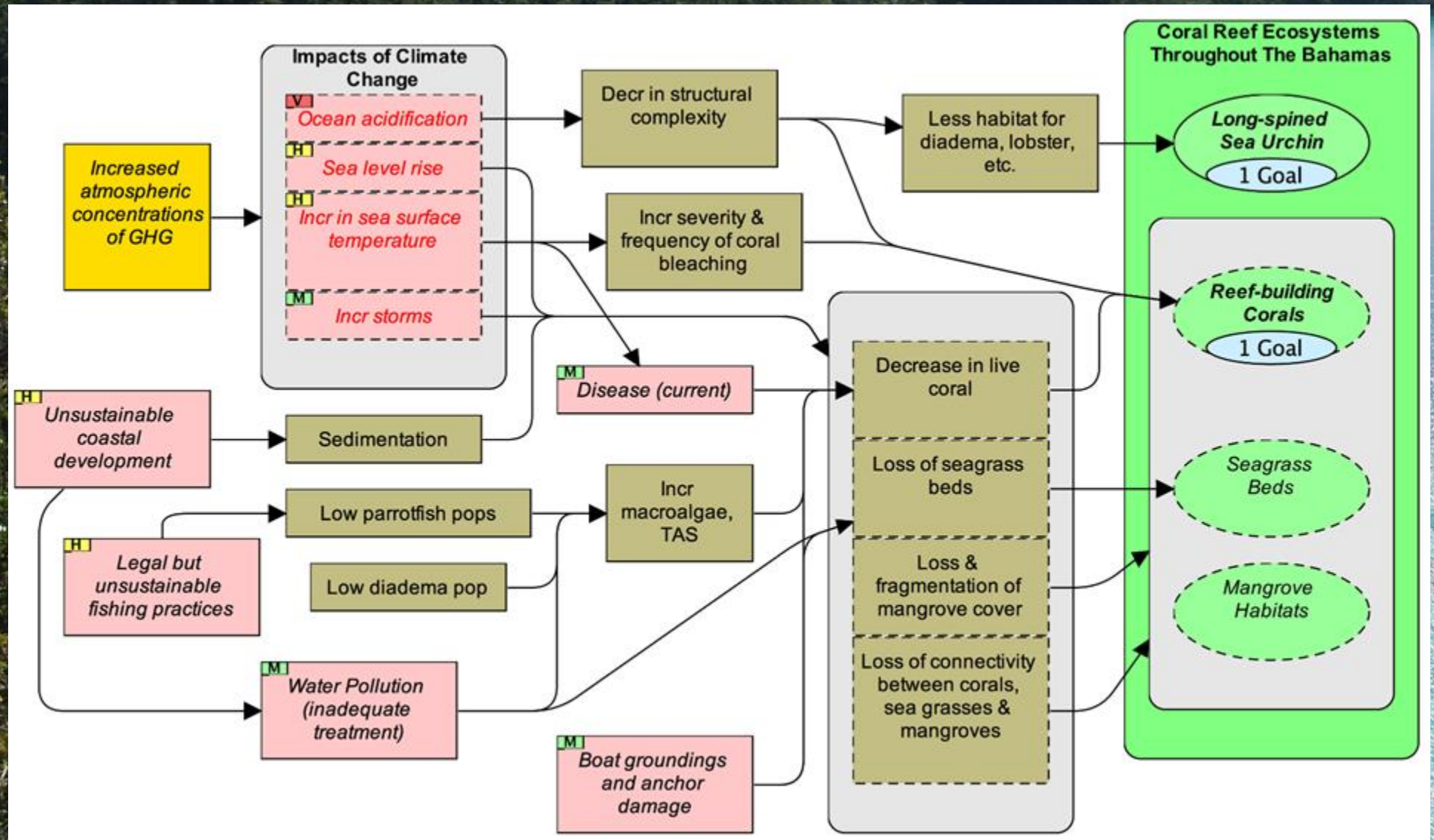



PHOTO: JOHN MORRISON


PHOTO: SERENA MORRISON

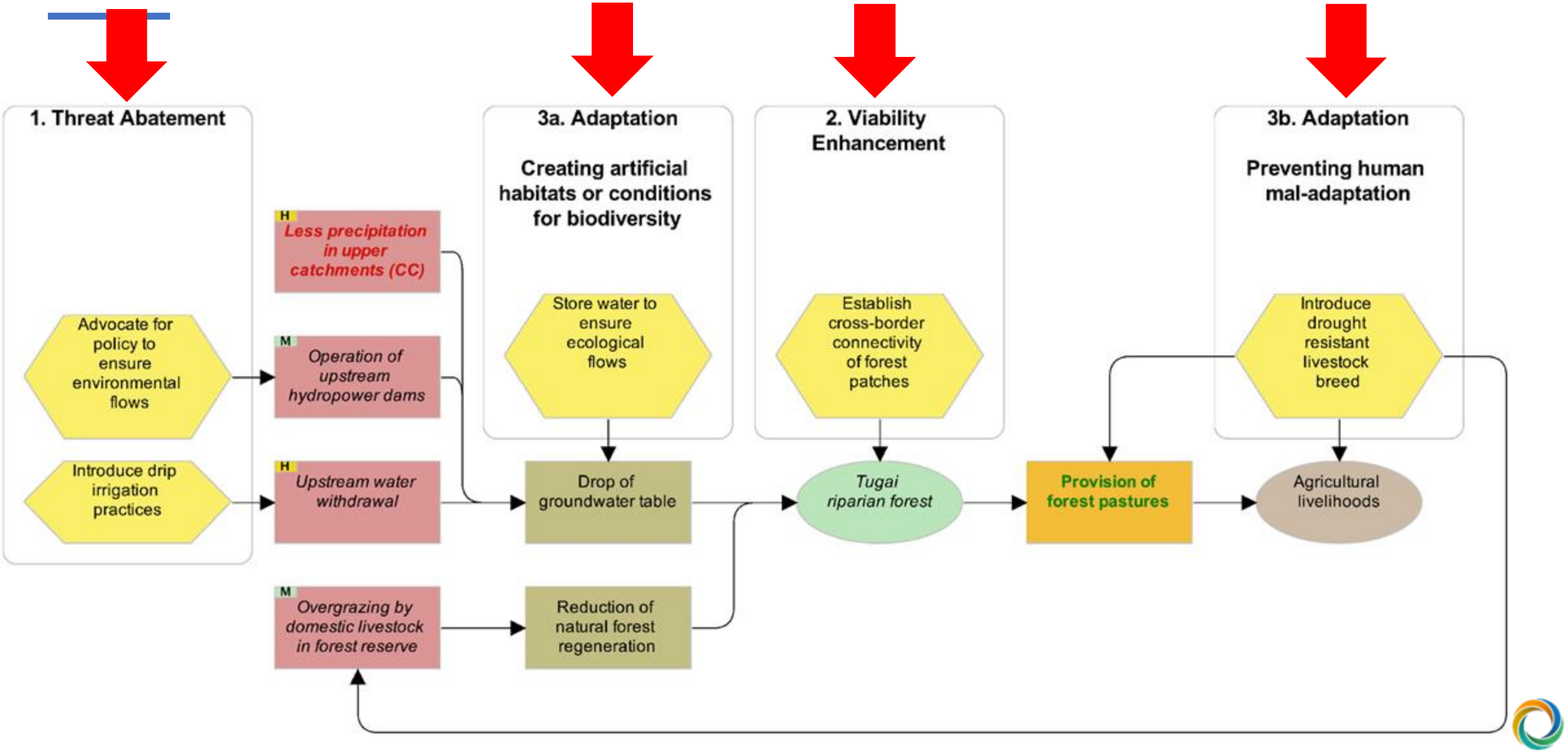
# REEVALUATE SCOPE & TARGETS

- Reconsider
  - Scope of project
  - Conservation targets
  - Key attributes of targets

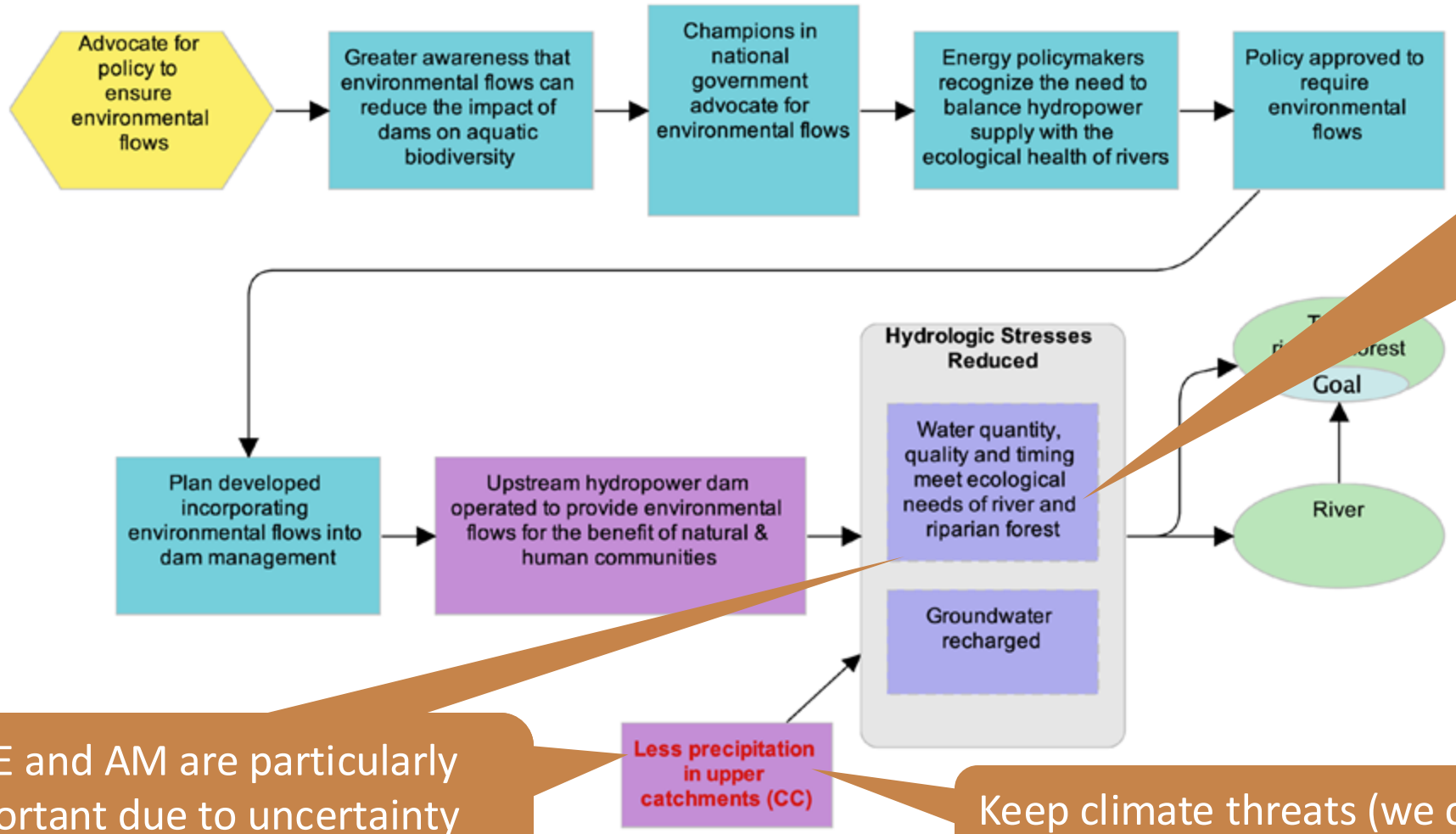
# STRATEGY SELECTION

PHOTO: JOHN MORRISON

# TYPES OF CLIMATE SMART STRATEGIES



# CLIMATE SMART RESULTS CHAINS



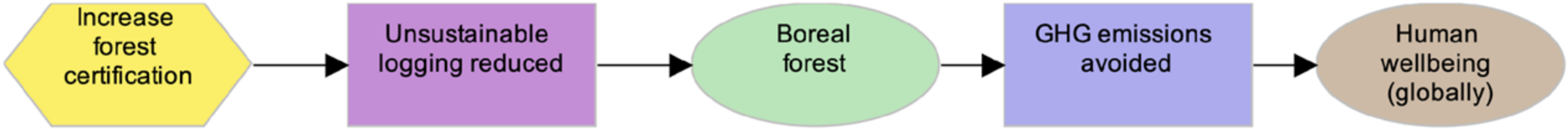

Include stress reduction / key attribute enhancement results (CC is all about the stresses)

M&E and AM are particularly important due to uncertainty related to CC

Keep climate threats (we cannot reduce them, but they're part of our TOC)

# CLIMATE MITIGATION STRATEGIES

Threat reduction strategy -- to avoid GHG emissions:

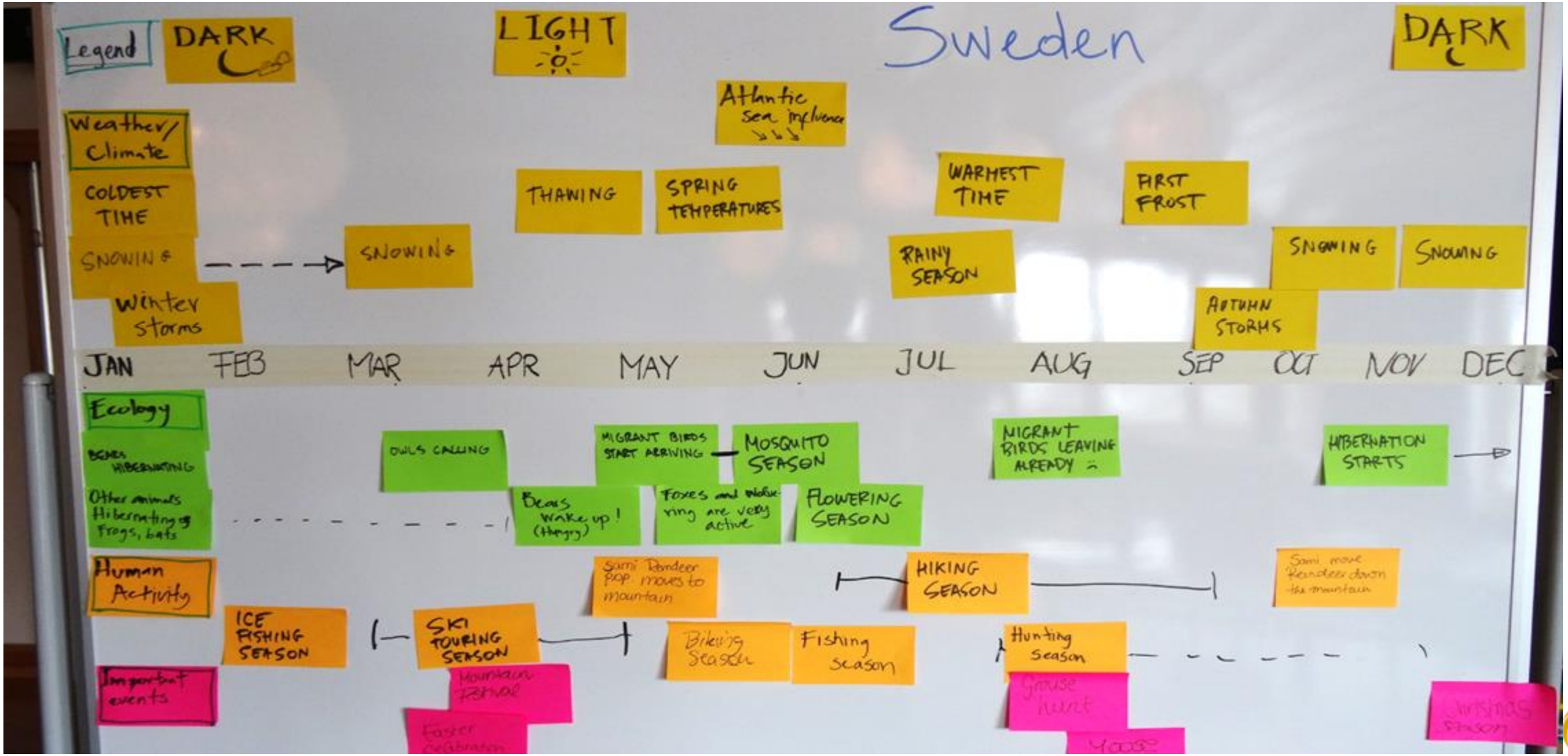



Restoration strategy -- to increase carbon sequestration:

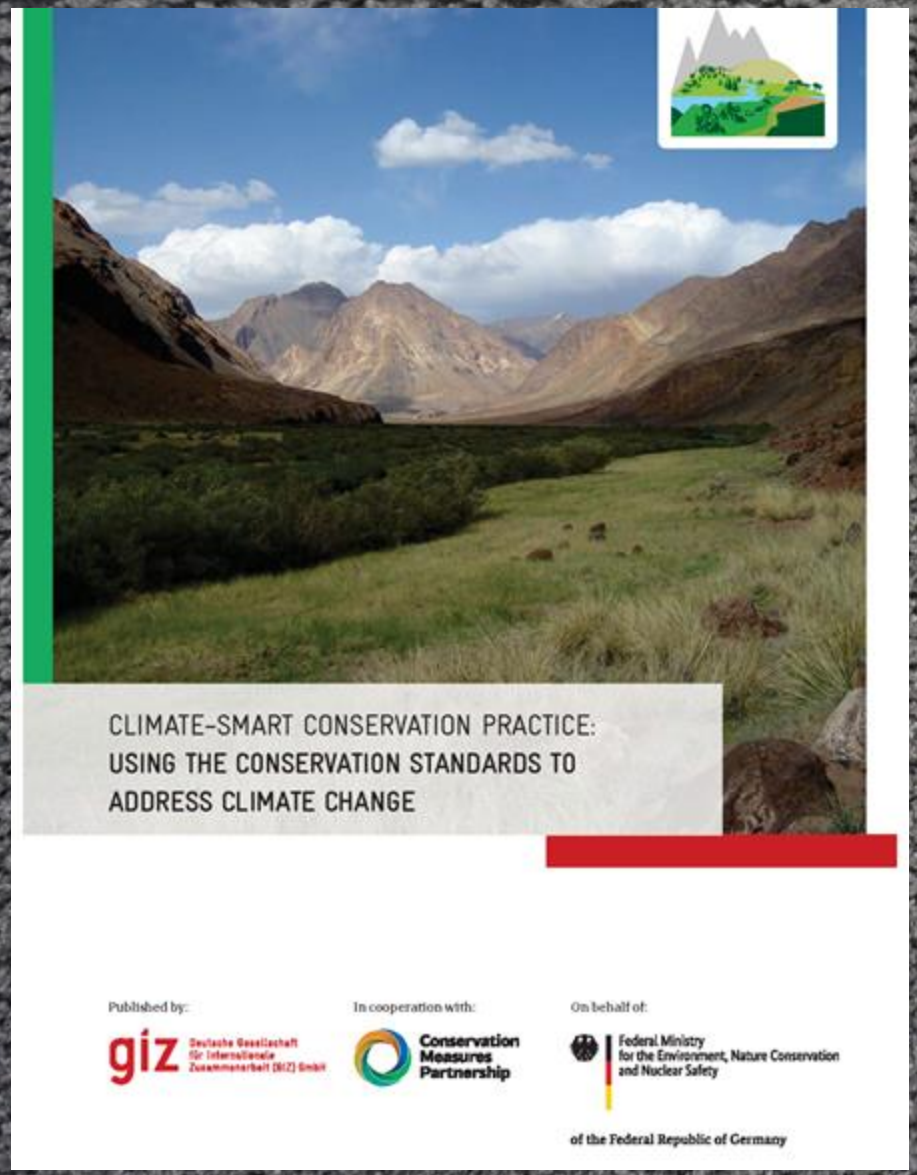
# TOOLS & SUPPORT

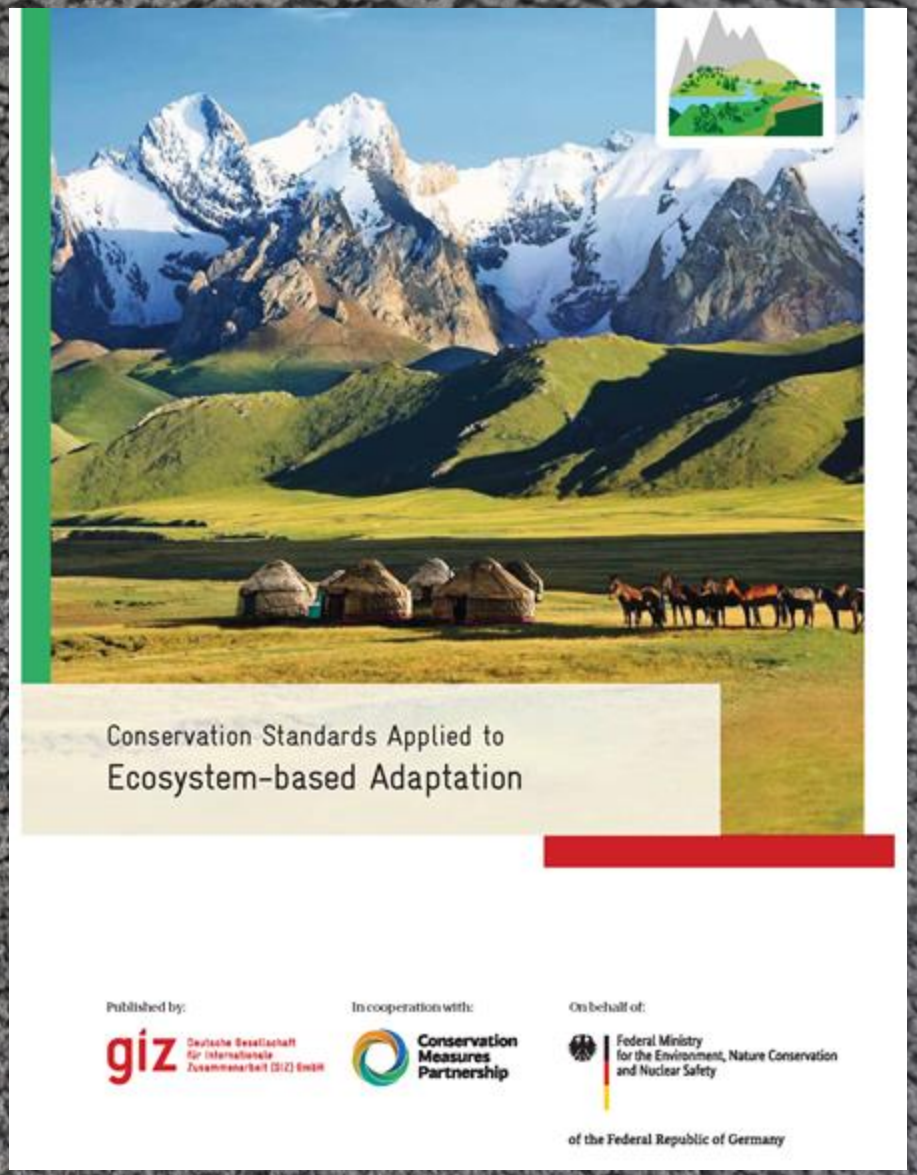
PHOTO: JOHN MORRISON

# SEASONAL CALENDAR

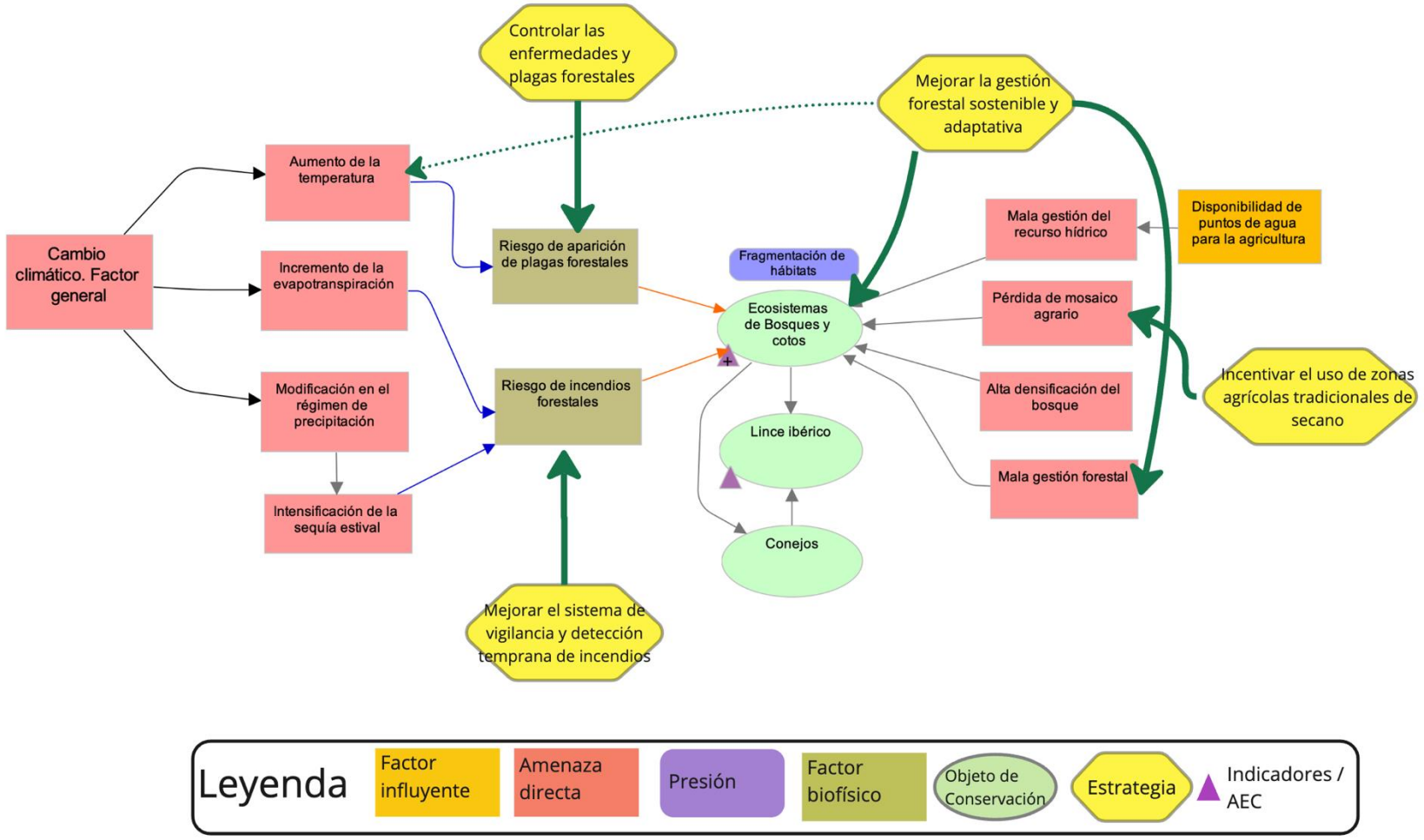


# PUBLISHED GUIDANCE

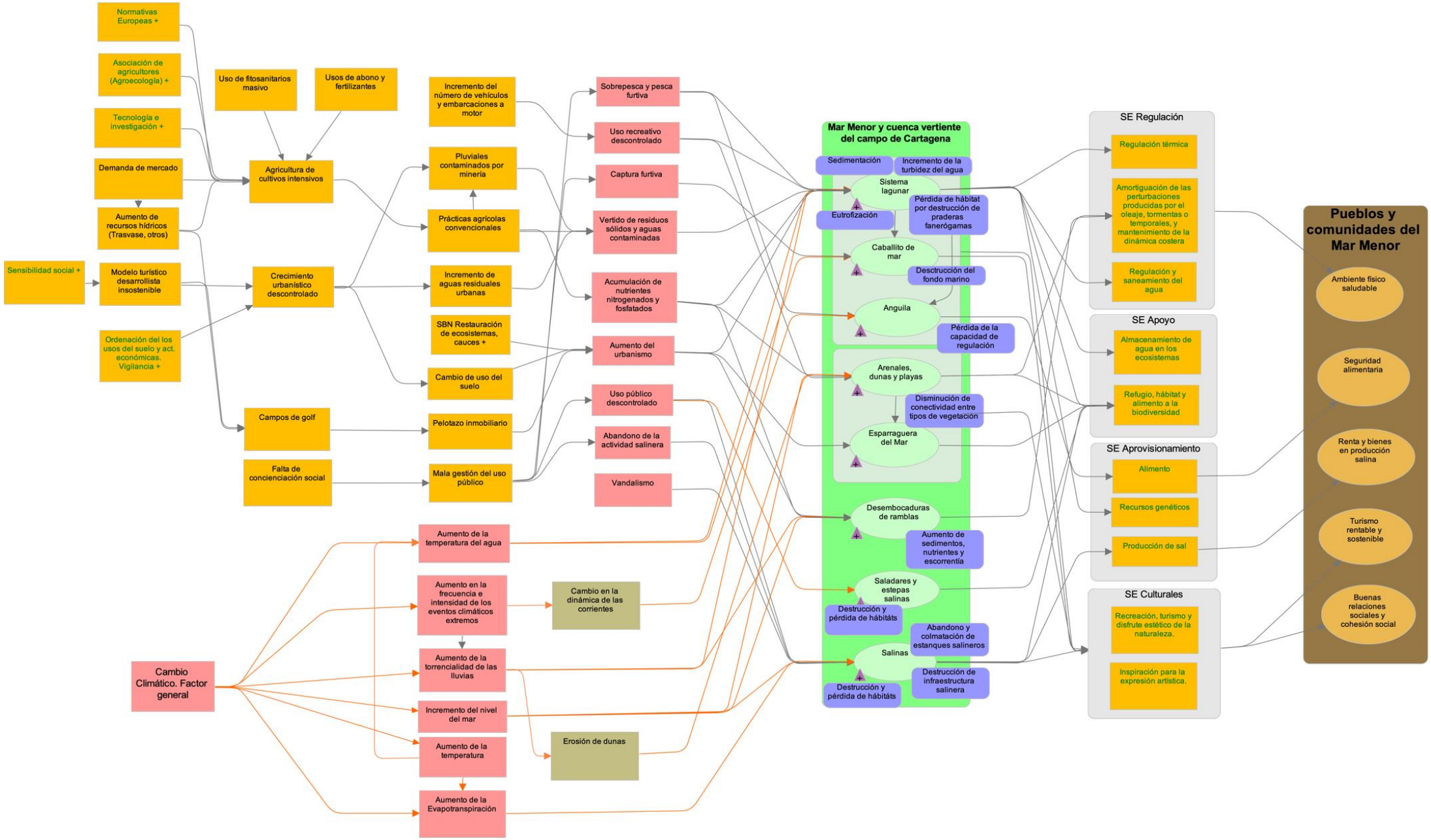


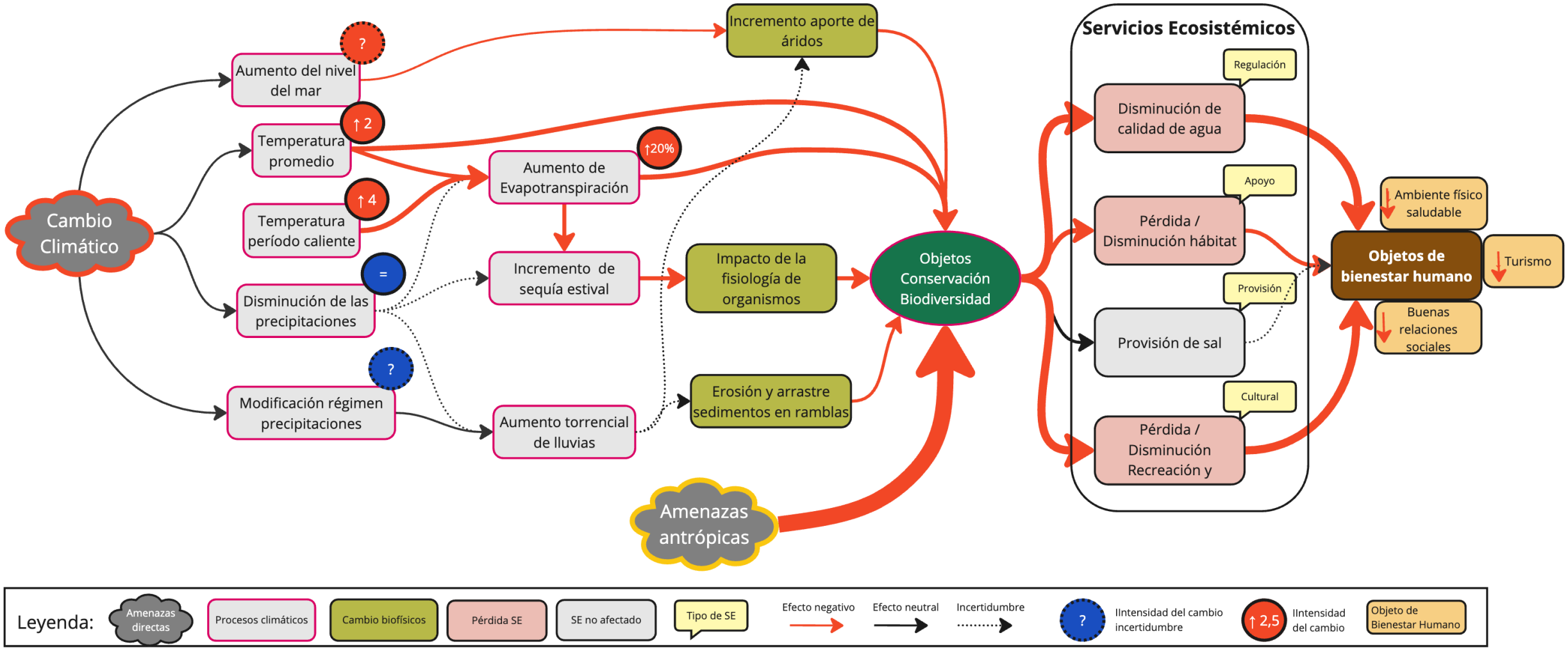



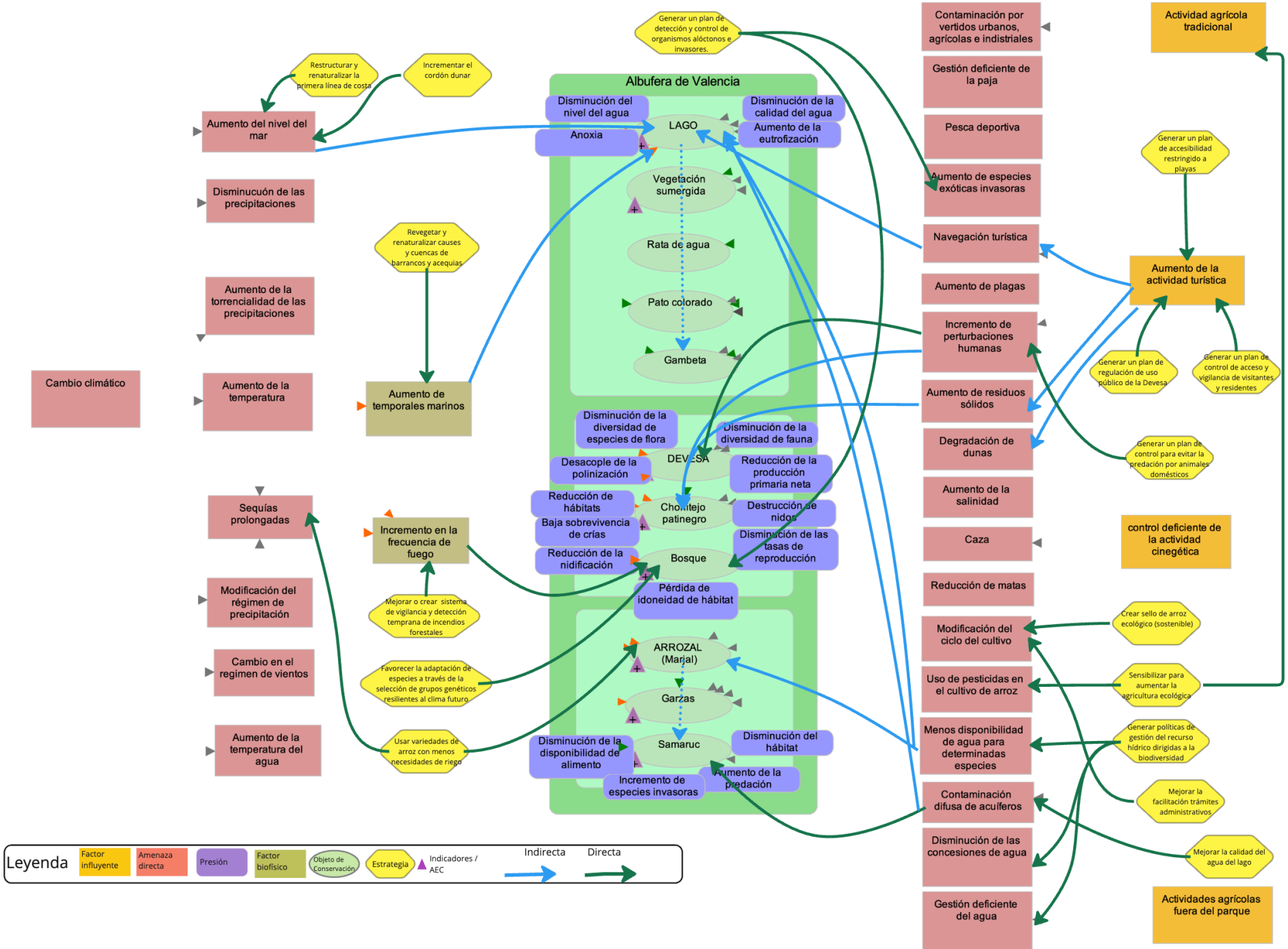
# Objective 5: Planning strategies for conservation, adaptation and restoration SP-R in future climate scenarios




# Servicios ecosistémicos y cambio climático




Cambio Climático
Aumento del nivel del mar
?
Temperatura promedio
↑ 2
Temperatura período caliente
↑ 4
Disminución de las precipitaciones
=
Modificación régimen precipitaciones
?
Incremento aporte de áridos
Aumento de Evapotranspiración
↑20%
Incremento de sequía estival
Aumento torrencial de lluvias
Impacto de la fisiología de organismos
Erosión y arrastre sedimentos en ramblas
Objetos Conservación Biodiversidad
Amenazas antrópicas
Servicios Ecosistémicos
Regulación
Disminución de calidad de agua
Apoyo
Pérdida / Disminución hábitat
Provisión
Provisión de sal
Cultural
Pérdida / Disminución Recreación y
Objetos de bienestar humano
Ambiente físico saludable
Turismo
Buenas relaciones sociales
Leyenda:
Amenazas directas
Procesos climáticos
Cambio biofísicos
Pérdida SE
SE no afectado
Tipo de SE
Efecto negativo
Efecto neutral
Incertidumbre
?
IIntensidad del cambio incertidumbre
↑ 2,5
IIntensidad del cambio
Objeto de Bienestar Humano


Albufera de Valencia
Cambio climático
Aumento del nivel del mar
Restructurar y renaturalizar la primera línea de costa
Incrementar el cordón dunar
Disminucuón de las precipitaciones
Aumento de la torrencialidad de las precipitaciones
Aumento de la temperatura
Sequías prolongadas
Modificación del régimen de precipitación
Cambio en el regimen de vientos
Aumento de la temperatura del agua
Revegetar y renaturalizar causes y cuencas de barrancos y acequias
Aumento de temporales marinos
Incremento en la frecuencia de fuego
Mejorar o crear sistema de vigilancia y detección temprana de incendios forestales
Favorecer la adaptación de especies a través de la selección de grupos genéticos resilientes al clima futuro
Usar variedades de arroz con menos necesidades de riego
Generar un plan de detección y control de organismos alóctonos e invasores.
Disminución del nivel del agua
Disminución de la calidad del agua
Anoxia
LAGO
Aumento de la eutrofización
Vegetación sumergida
Rata de agua
Pato colorado
Gambeta
Disminución de la diversidad de especies de flora
Disminución de la diversidad de fauna
Desacople de la polinización
DEVESA
Reducción de la producción primaria neta
Reducción de hábitats
Baja sobrevivencia de crías
Chorlitejo patinegro
Destrucción de nidos
Reducción de la nidificación
Bosque
Disminución de las tasas de reproducción
Pérdida de idoneidad de hábitat
ARROZAL (Marjal)
Garzas
Disminución de la disponibilidad de alimento
Samaruc
Disminución del hábitat
Incremento de especies invasoras
Aumento de la predación
Contaminación por vertidos urbanos, agrícolas e indistriales
Gestión deficiente de la paja
Pesca deportiva
Aumento de especies exóticas invasoras
Navegación turística
Aumento de plagas
Incremento de perturbaciones humanas
Aumento de residuos sólidos
Degradación de dunas
Aumento de la salinidad
Caza
Reducción de matas
Modificación del ciclo del cultivo
Uso de pesticidas en el cultivo de arroz
Menos disponibilidad de agua para determinadas especies
Contaminación difusa de acuíferos
Disminución de las concesiones de agua
Gestión deficiente del agua
Actividad agrícola tradicional
Generar un plan de accesibilidad restringido a playas
Aumento de la actividad turística
Generar un plan de regulación de uso público de la Devesa
Generar un plan de control de acceso y vigilancia de visitantes y residentes
Generar un plan de control para evitar la predación por animales domésticos
control deficiente de la actividad cinegética
Crear sello de arroz ecológico (sostenible)
Sensibilizar para aumentar la agricultura ecológica
Generar políticas de gestión del recurso hídrico dirigidas a la biodiversidad
Mejorar la facilitación trámites administrativos
Mejorar la calidad del agua del lago
Actividades agrícolas fuera del parque
Leyenda
Factor influyente
Amenaza directa
Presión
Factor biofísico
Objeto de Conservación
Estrategia
Indicadores / AEC
Indirecta
Directa

# Objective 6: Classification of strategies

## *Climate-Smart Strategies (CSS)*

- RED 1. Reducing climate vulnerability: Decreasing the susceptibility of a conservation target to the impacts of climate change by addressing conventional threats that exacerbate them.

- RED 2. Protecting climate refugia: Protecting areas that offer stable climate conditions for the presence of the conservation target, even in the face of climate change.

- RES 1. Improving the health of the target: Strengthening the overall condition of the conservation target, increasing its ability to withstand the impacts of climate change. This may include actions such as habitat restoration, population management, and invasive species control.

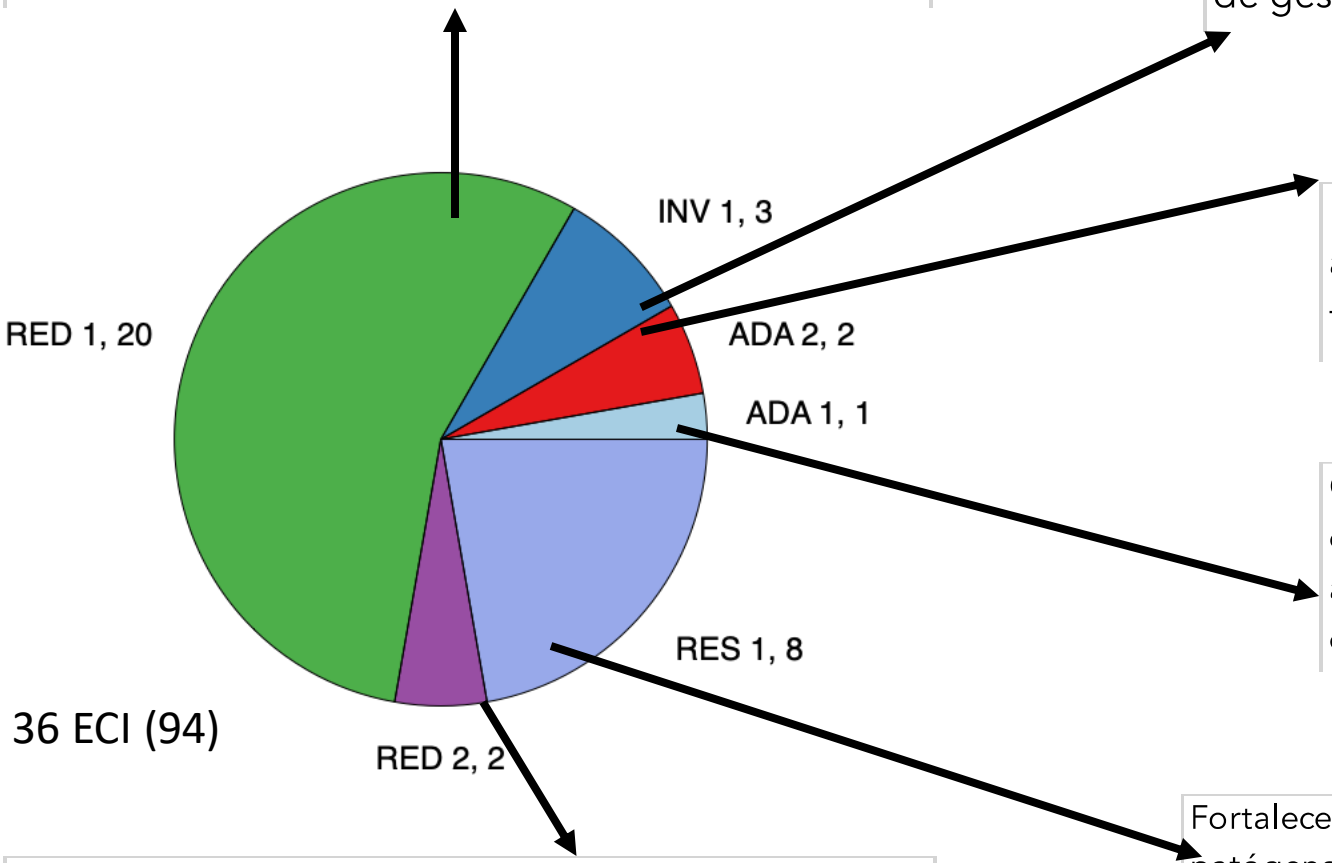
- ADA 1 Creating artificial conditions: Artificially creating or maintaining specific habitats or climate conditions that are necessary for the survival of the conservation target.

- ADA 2 Selecting ecologically equivalent species or genetic varieties that have better habitat suitability under future climate scenarios.

- ADA 3. Prevention of human maladaptation: Mitigate the negative impacts of inappropriate human adaptation actions to climate change on ecosystems and biodiversity.

Gestión forestal sostenible en concordancia con las líneas de actuación establecidas en los instrumentos de planificación que orientan la gestión, considerando escenarios de clima futuro

Proponer y desarrollar líneas de investigación orientadas a la adaptación al cambio climático, e incluir el monitoreo de sus acciones en los planes de gestión




Favorecer la adaptación de especies incorporando al ecosistema grupos genéticos resilientes al clima futuro

Contrarrestar el impacto del incremento del nivel del mar a partir de la recuperación y creación de arrecifes artificiales y la transformación de las áreas de fondeo

36 ECI (94)

Fortalecer la gestión preventiva de enfermedades y patógenos en conejos a través de su inmunización y control genético de poblaciones adaptadas a determinadas cepas

Fortalecer el desarrollo de refugios climáticos *in situ* y *ex situ* para contribuir con la conservación de especies endémicas

Interest of the Andalusian Government in implementing forest management strategies, considering species distribution models, in accordance with their behaviour in future climate scenarios. Specifically with cork oak repopulation activities.

Awareness raising among approximately 30 participants on the need to take into account future climate and hydrology scenarios in order to propose wetland management strategies.

# THANK YOU

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# What is a climate-smart strategy for biodiversity conservation?