

# Mapping Non-Timber Forest Products (NTFPs) and ecosystem services (ES) under climate change: A PARTICIPATORY METHODOLOGICAL APPROACH

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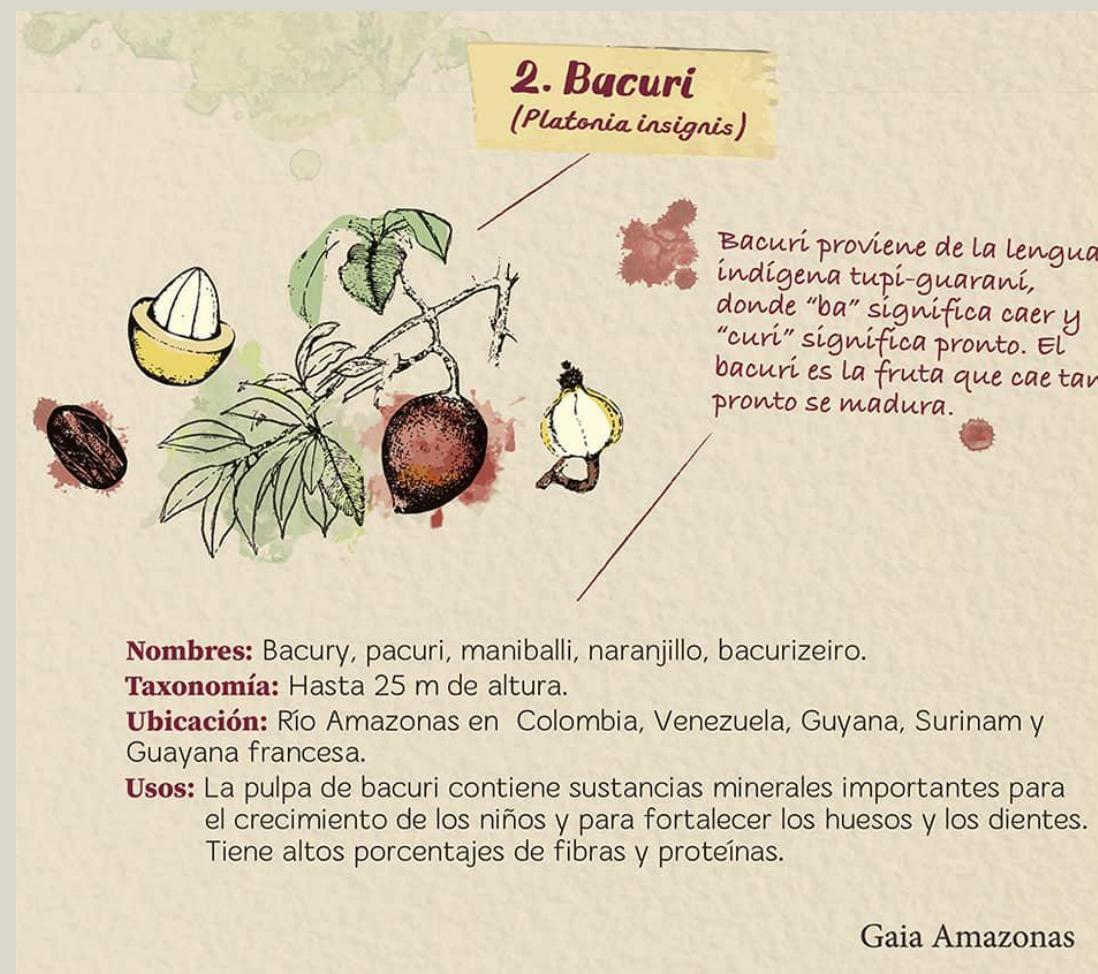


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Non-wood forest products (NWFPs) have been defined by FAO as “*goods of biological origin other than wood derived from forests and other wooded land and trees outside forests*”.





Products used as food and food additives (edible nuts, vegetables, mushrooms, fruits, herbs, spices and condiments, aromatic plants, game, insects), fibres (used in construction, furniture, clothing or utensils), resins, gums, and plant and animal products used for medicinal, cosmetic or cultural purposes.

*NTFP use fulfills multiple livelihood functions, including directly providing consumptive goods, generating income from sales, and maintaining cultural traditions and knowledge (Shackleton 2015).*



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# NTFPs in social-ecological

#### 4. Azaí (*Euterpe oleracea*)



**Nombres:** Palma murrepo, naidí, asaí, azaí, huasaí, uassi, morroke.

**Taxonomía:** Hasta 25 m de altura.

**Ubicación:** Brasil, Guyana, Guayana francesa, Venezuela Y Colombia.

**Usos:**

**Hojas:** las hojas se usan para techos de casas, cestos, alfombras, abanicos y cuerdas para subir a los árboles.

**Semilla:** las semillas producen un buen fertilizante y se usan secas para confeccionar joyas.

**Fruta:** para la preparación de alimentos.

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#### 5. Burití, palma de moriche (*Mauritia flexuosa*)

• Una de las palmeras más grandes y robustas de la Amazonía



**Nombres:** El burití –palma de moriche, morete, palma real, aguachi, aguaje, biñón.

**Taxonomía:** Hasta 35 m de altura.

**Ubicación:** En toda la Amazonía, desde el norte de América del Sur, hasta Brasil nororiental, central y meridional.

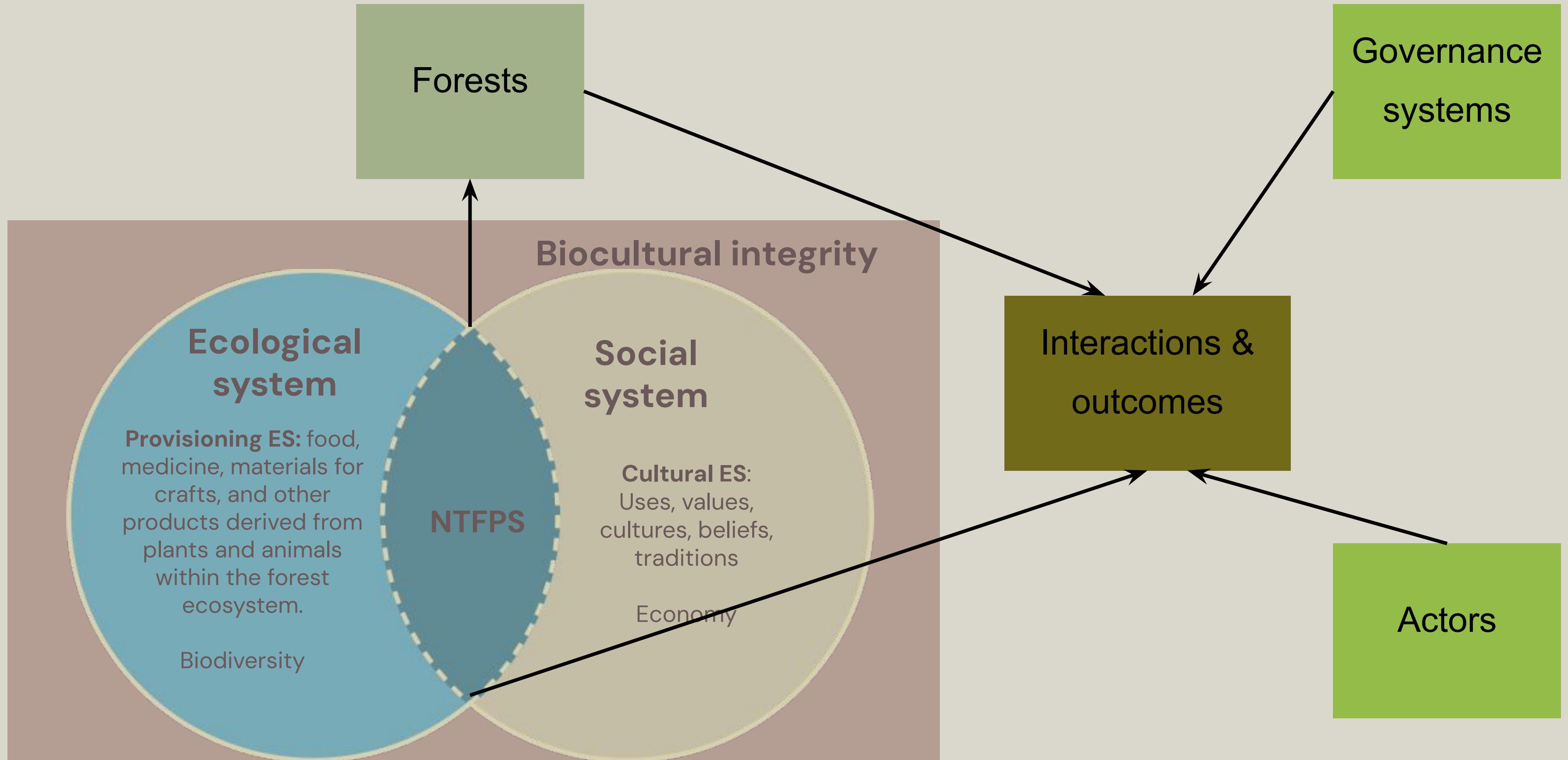
**Usos:**

**Aceite:** El aceite se usa para freír pescado y para hacer jabones y cosméticos.

**Hojas adultas:** Anteriormente, los indígenas Tupinambá hervían las hojas de burití para obtener un polvo seco y oscuro usado como sustituto de la sal.

**Fauna silvestre:** La fruta de burití es una fuente importante de nutrición para muchos animales, entre otros, tigres, tepezcuintles y venados.

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Nontimber forest products (NTFPs) in social-ecological systems. Figure adapted from McGinnis and Ostrom (2014) by replacing “resources units” with NTFPs.



# biocultur al

- Supports biodiversity and cultural diversity
- Strengthens community resilience to environmental change
- Essential for sustainable development

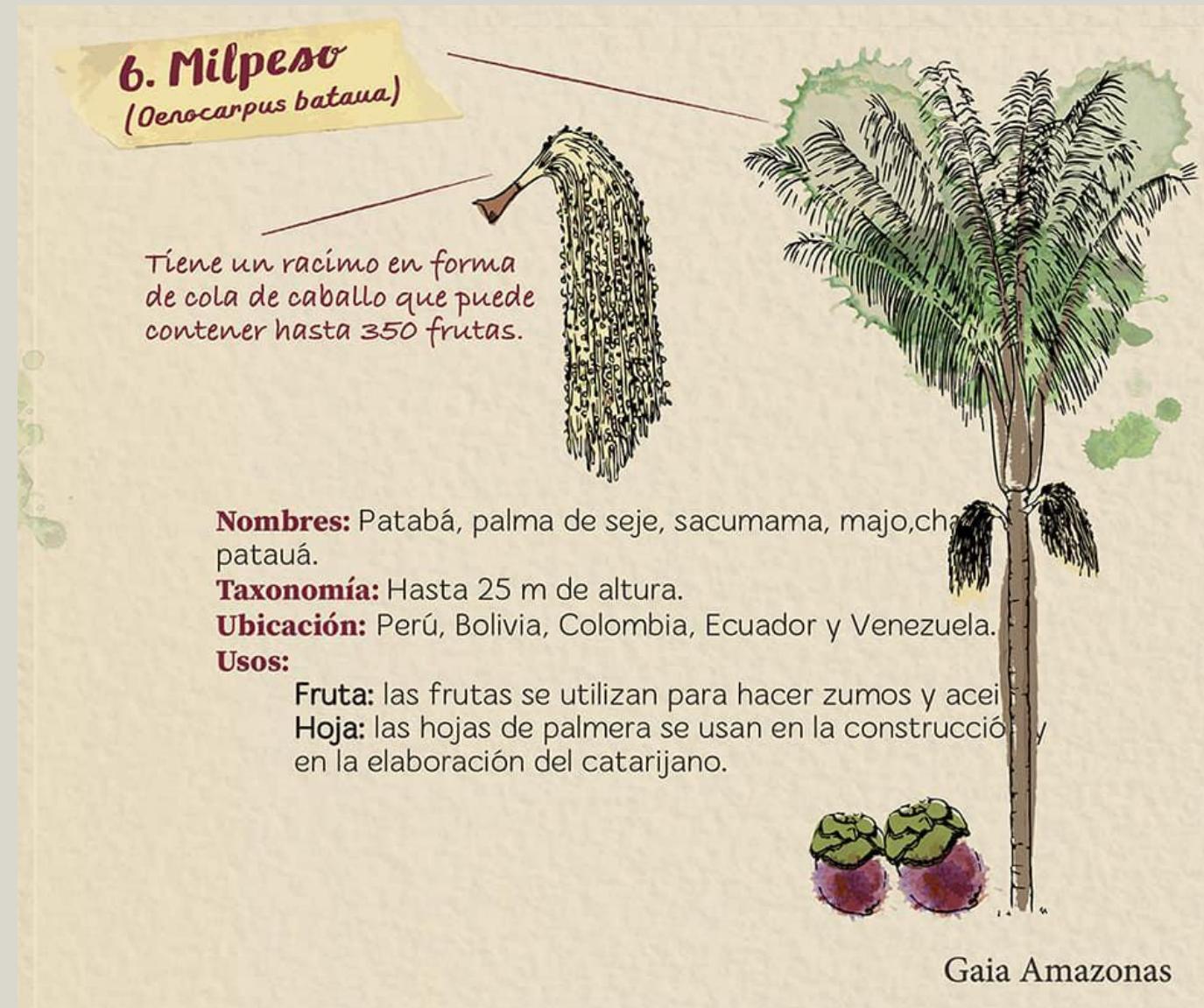
# Methodology objective

**Facilitate a participatory process that enables communities to identify, map, and plan the sustainable use of Non-Timber Forest Products (NTFPs) for developing sustainable value chains.**

Specific objectives:

- Identify climate risks
- Strengthen local knowledge
- Support decision-making







Solutions for Inclusive Green Development  
Soluciones para el Desarrollo Verde Inclusivo



# Uniendo saberes, fortaleciendo territorios

Mapeo participativo para analizar la vulnerabilidad ante  
el cambio climático en medios de vida agropecuarios

How can this methodology be applied in the context of bioeconomy with NTFPs?

# Guiding Questions of the

## Methodology

What does the territory mean to the community, and how is their relationship with it constructed and maintained?

## logy

Which non-timber forest products hold potential to be developed into sustainable value chains?

What climate and non-climate risks affect the community and its forest-based livelihoods?

What is the community's vision for a desirable and resilient future?

### STEP 1 AND 2

This question explores the cultural, ecological, and historical dimensions of territoriality, including how communities interact with, manage, and assign meaning to their territory.

### STEP 3 AND 4

This inquiry seeks to identify NTFPs that are ecologically viable, culturally significant, and economically promising for value chain development.

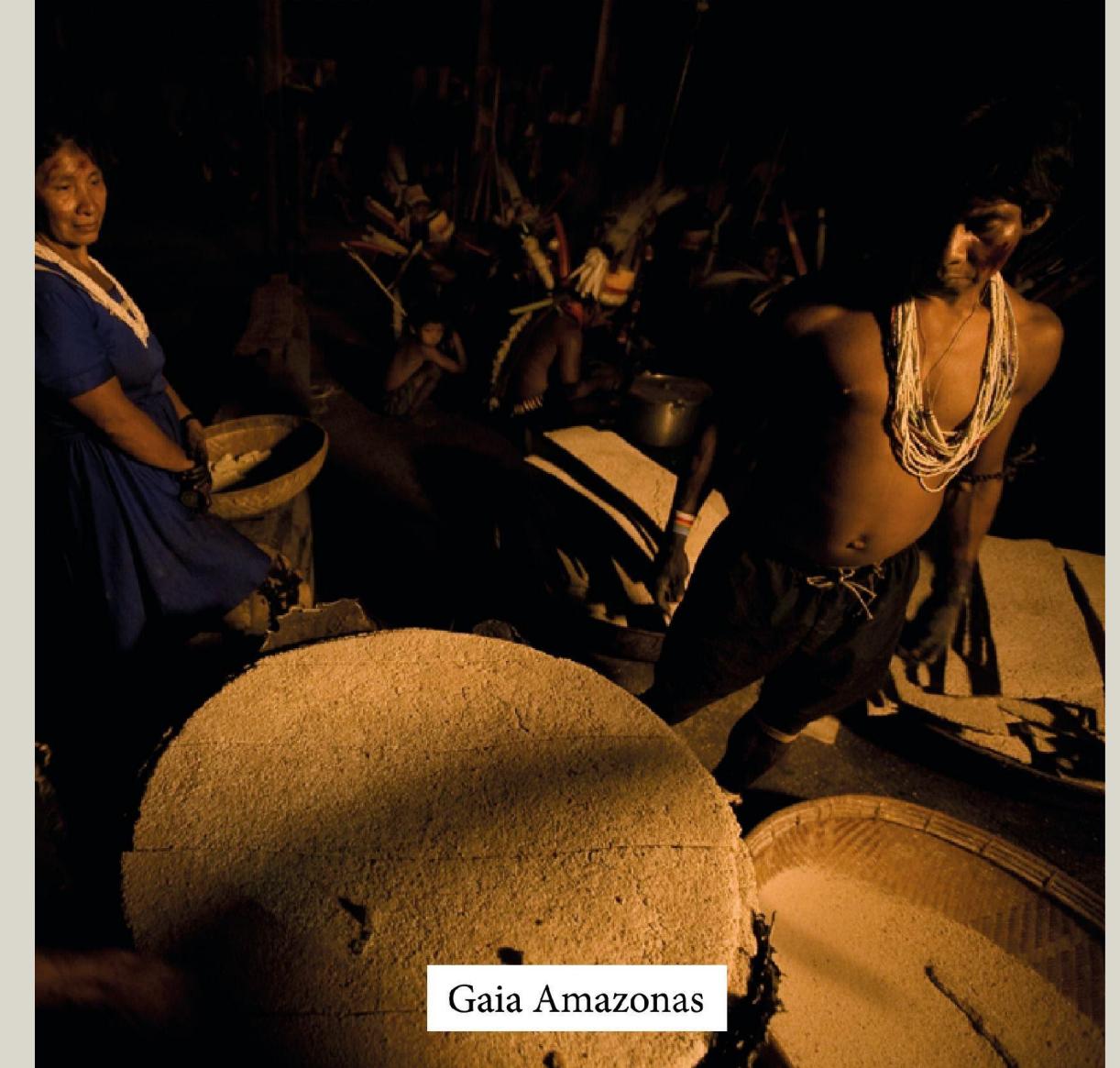
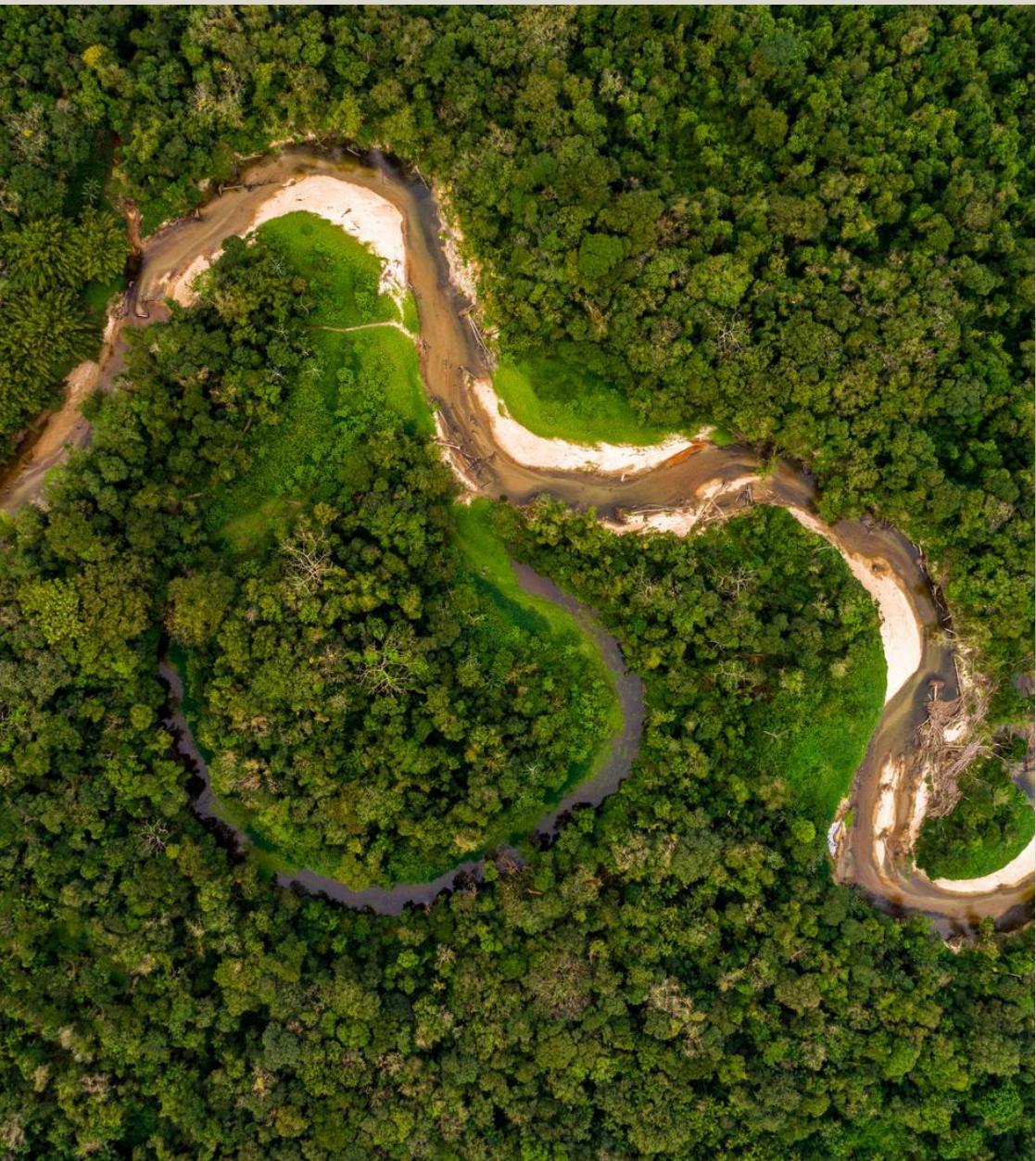
### STEP 5

This question addresses the vulnerability of communities by assessing environmental, social, and economic threats, including those exacerbated by climate change.

### STEP 6

This question aims to co-create future scenarios grounded in local values, aspirations, guiding strategic planning and action.

# Preliminary context



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Legal framework and  
stakeholder mapping

Objective: Gather key information to guide the intervention in the territory  
from a legal, institutional, and social perspective.

# S1 & S2

# Defining the territory and the



- What does the territory mean to the community?
- How does the community relate to the territory and its beings, both human and non-human?
- How far does the community live from the forest or main resource areas?
- How long has the community and their family been using or gathering from the forest?
- What does the community collect, harvest, or use from the forest?  
• (Provisioning ecosystem services)
- How does the community use the trees in their daily life or for special occasions?
- Does the community perform any rituals, ceremonies, or traditional practices related to the forest?
- What is the community relationship with the legal or customary owners of the territory?
- Is the land communal, private, or state-owned?

## S3. NTFPs

- How does the community use the different parts of trees or plants from the forest?
- Are there any forest products that provide income for the community
- Who within the community is responsible for harvesting these products? (e.g., men, women, children, elders? Is it an individual or collective responsibility?)
- When and how does the community carry out the harvest?
- What does the community usually do with these products after harvesting?
- Are these products connected to any animals or to the flowering or fruiting of other species? Do they depend on pollinators, seed dispersers, or specific ecological relationships?



## S3. NTFPs

1. Seasonal calendar for NTFPs
2. Prioritized NTFPs
3. Market analysis
  - Does a market exist for this product?
    - Local markets, urban consumers, industries?
  - Is the product already being used or transformed by small businesses or industry?
    - Is it used for food, cosmetics, crafts, medicine?
  - How much of the product is currently available in the territory?
    - Enough for family use only? Surplus for trade?
  - How long does it take to regenerate or fruit again?
  - **Are there any current limits or pressures on availability?**
    - Overharvesting, fires, climate shifts, land use change?)





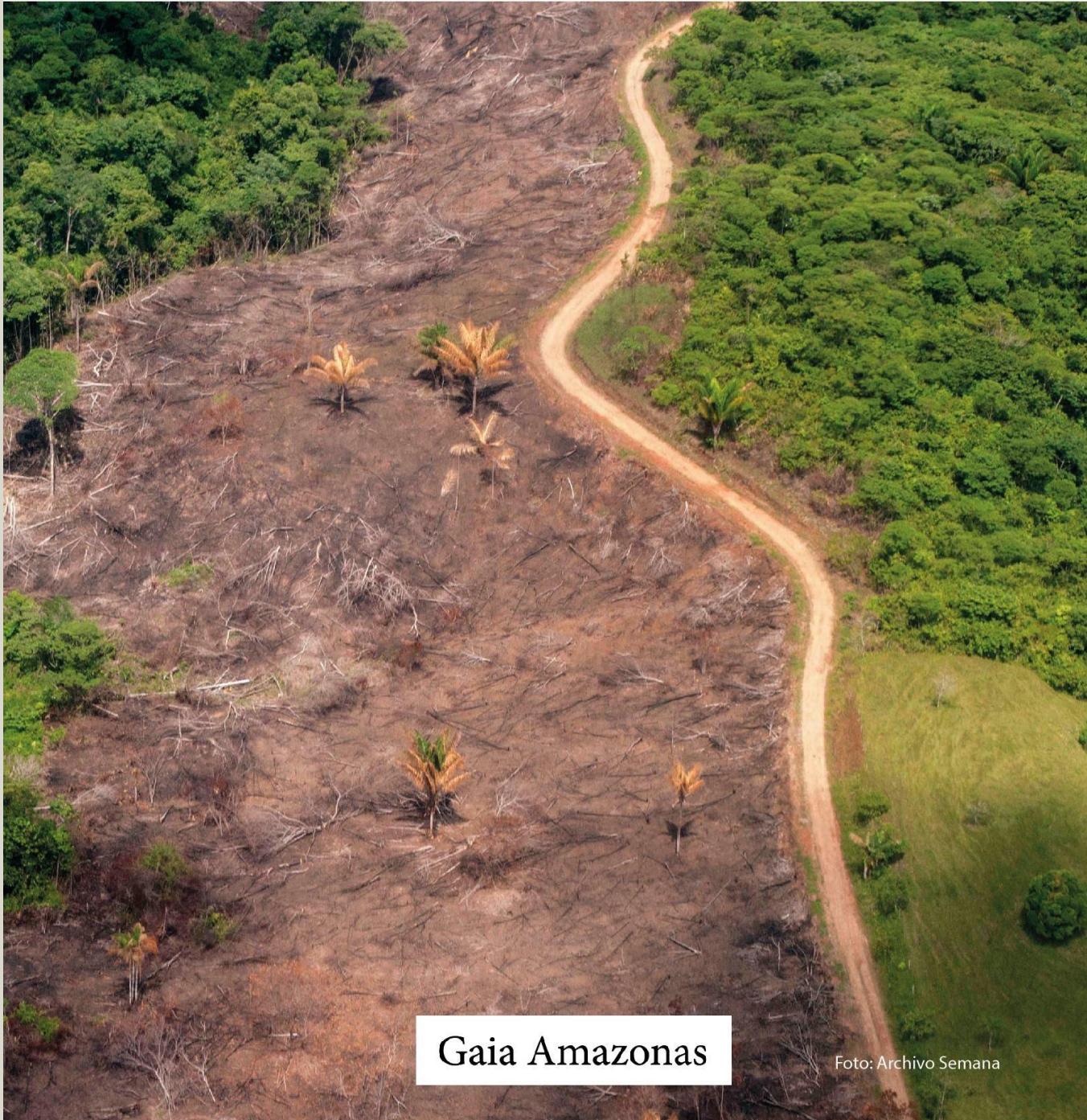
# S4.

## mapping the territory and the

- Where is the community currently living?
- Where does the community hunt?
- Where does the community harvest NTFPs?
- Where does the community gather water?
- Where do people from outside the community stay or live when visiting the territory?
- Which important places are located within the territory?(e.g., rivers, mountains, forests, etc.)
- Where are non-timber forest products (NTFPs) being harvested by the community?
- Are there any places within the territory that hold special cultural or sacred meaning for the community?
- Where are they located?



# S5. Risks



- Is the community currently facing any risks or challenges that affect the territory or daily life?
- What types of risks have been identified?
  - Are they related to droughts, floods, pests, land conflicts, loss of traditional knowledge...?
- If the risks are climate-related, do you perceive any changes or variability in the climate?
  - Changes in rainfall, temperature, seasons, wind, storms...
- How are these climate changes affecting the forest and the non-timber forest products (NTFPs) you use or harvest?
  - Changes in fruiting time, availability, quality, or habitat of certain species)
- How have these changes affected your practices related to NTFPs prioritized earlier?
  - Harvest timing, productivity, accessibility, marketability

**Matrix with information of  
climate and non-climate risks**

# S6. Future scenarios



- How does the community project the territory in the future?
  - In 5, 10, or 20 years, what would you like it to look like?
- What does "living well" (Buen Vivir) mean for your community?
  - What elements are essential for harmony with people, nature, and spirits?
- How can the community return to balance with the territory?
  - What needs to be cared for, restored, or transformed?
- What roles do the forest and the NTFPs play in that vision of the future?
- What actions or paths can help the community move toward that harmonious future?
  - From your knowledge, practices, alliances, or dreams?

# Thank You



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