



# **Biodiversity Compensation in Road Projects: Challenges in Latin America**

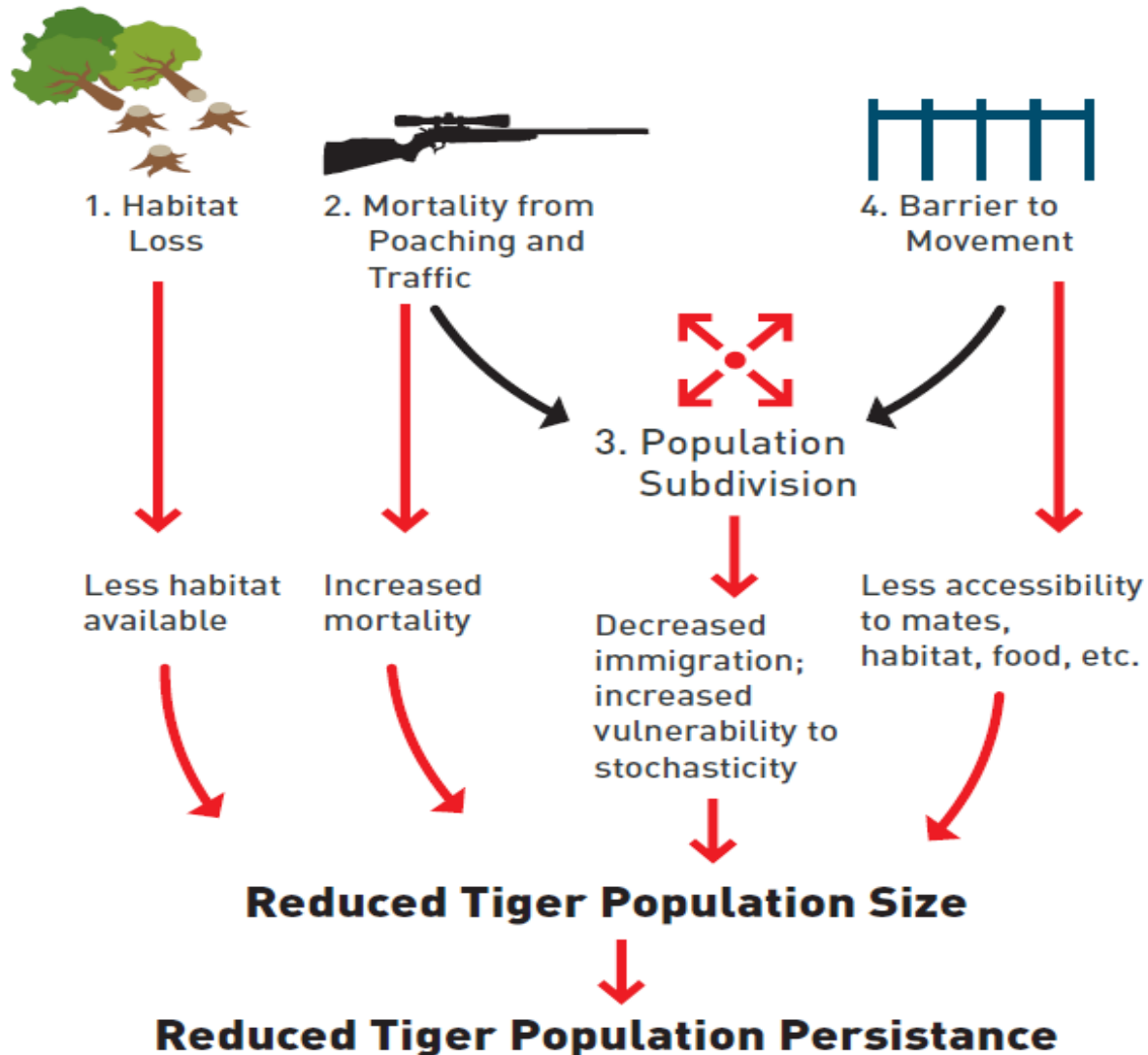
**Biodiversity & Ecosystem Services  
In Impact Assessment**

*Special Symposium organized by the IAIA  
Biodiversity & Ecology Section*

**Inter-American Development Bank | Washington,  
DC, USA  
7-8 February 2013**

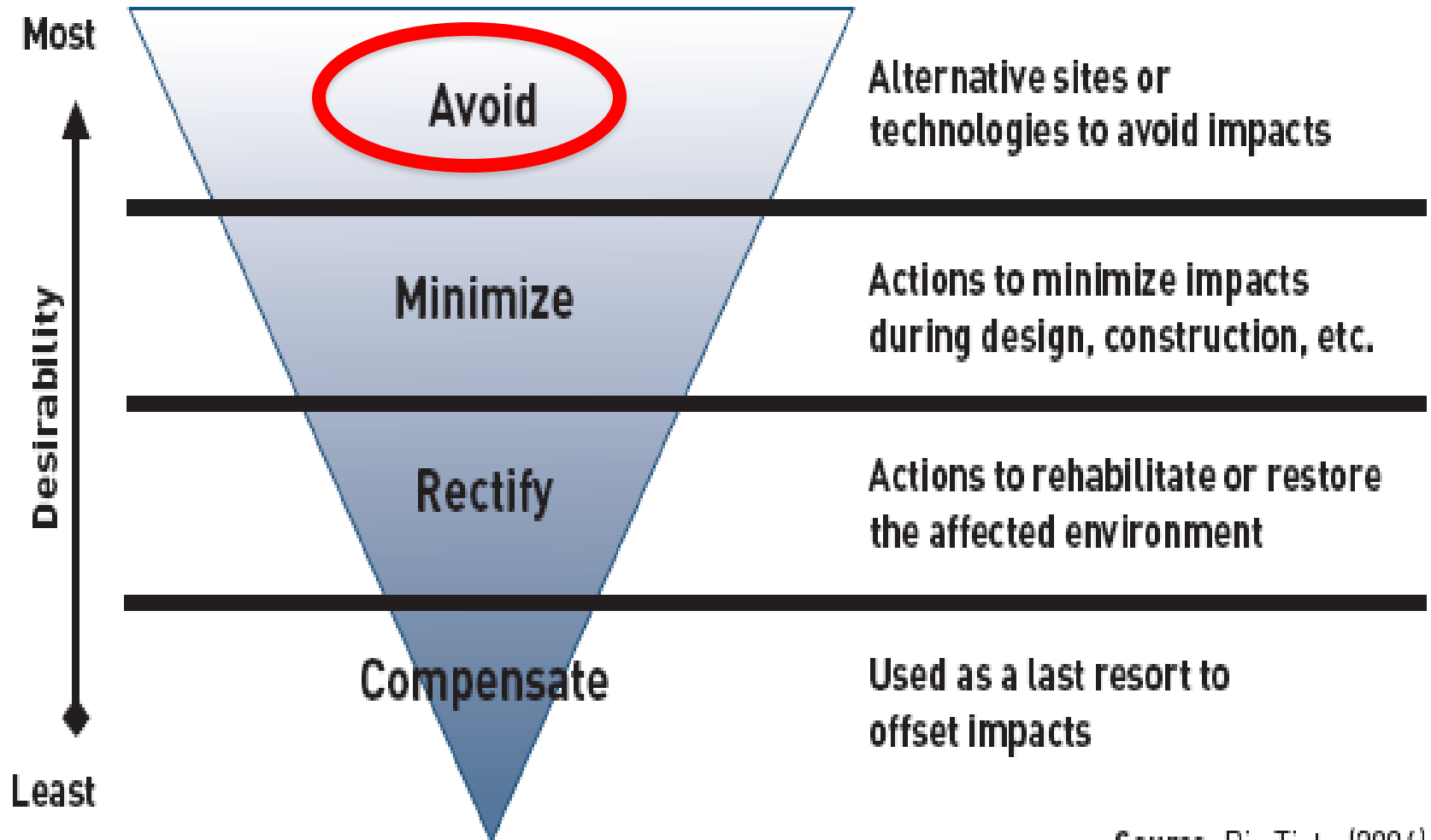
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# Road Impacts on Wildlife



Adapted from: Jaeger, J.A., Fahrig, L., and Ewald, K.C. Does the configuration of road networks influence the degree to which roads affect wildlife populations? On the road to Stewardship, Chapter 5, ICOET 2005 Proceedings.

# Mitigation Hierarchy



Source: Rio Tinto (2004)

# The Break-Even Point

Impacts on  
Natural  
Habitats

+

Break-Even  
Point

-

No net loss

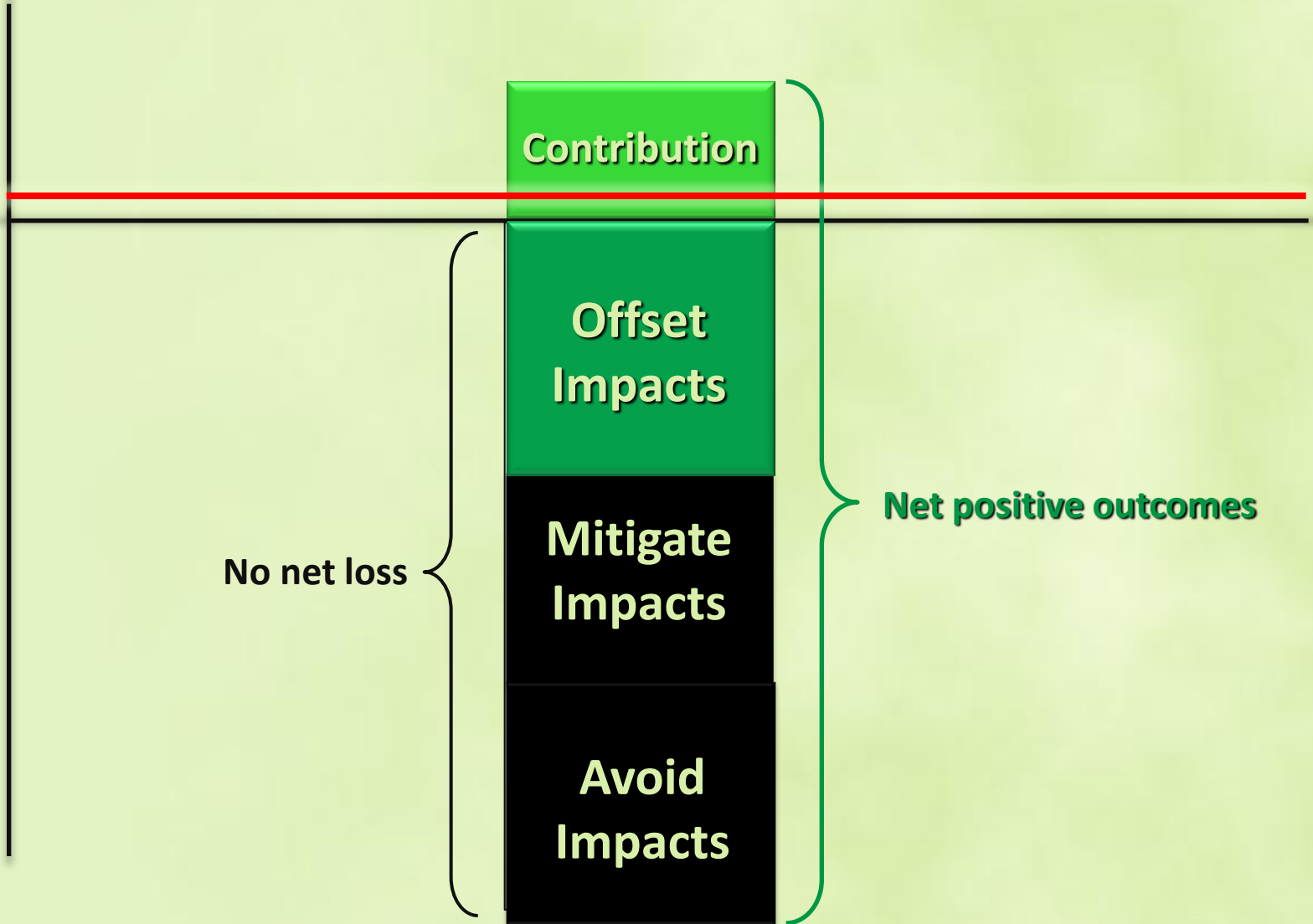
Contribution

Offset  
Impacts

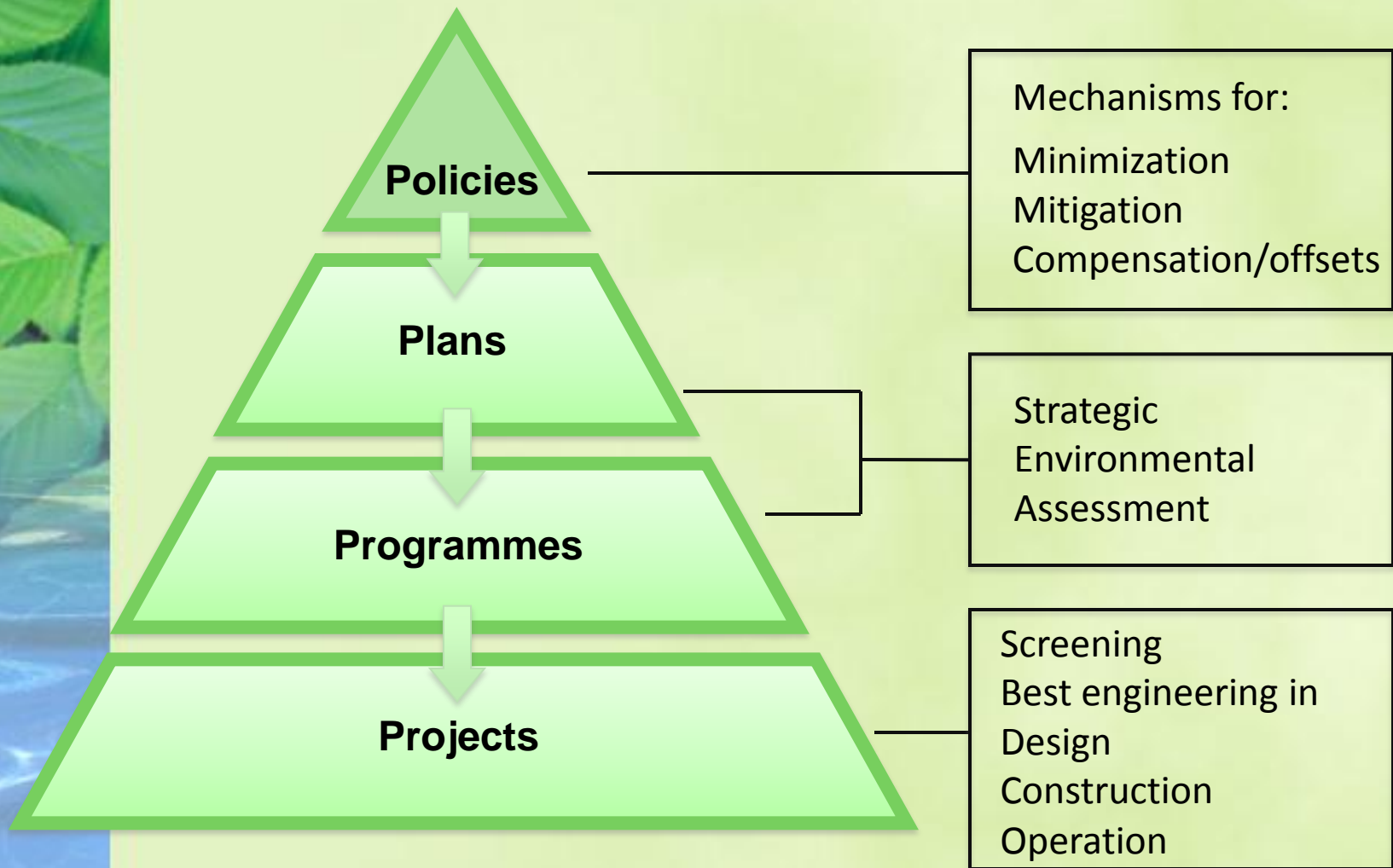
Mitigate  
Impacts

Avoid  
Impacts

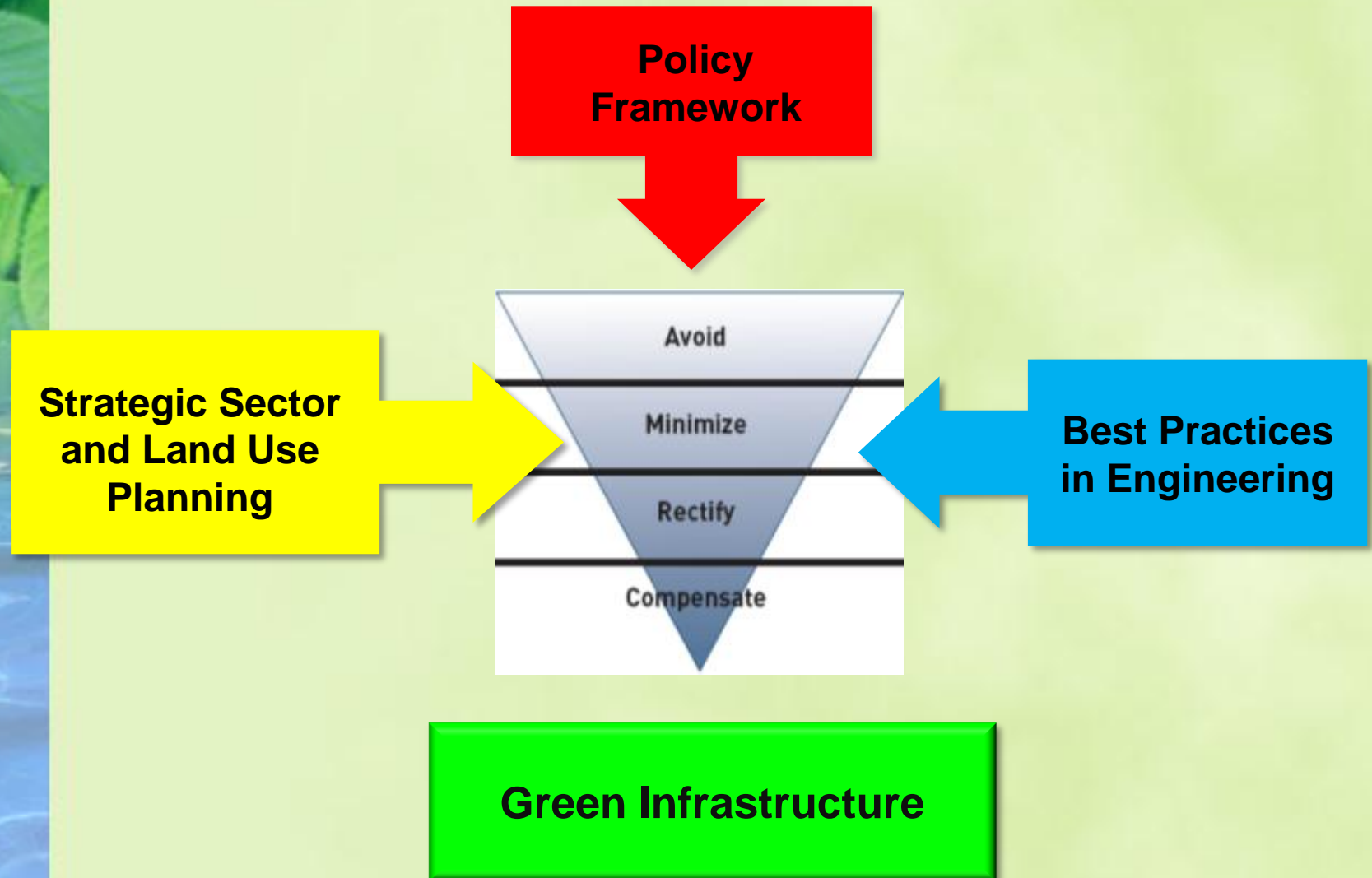
Net positive outcomes



# The Multi-level Approach



# Three Pillars for Promoting Green Infrastructure





# The Olanchito - San Lorenzo Road in Honduras

# Background



- 45 Km
- Unpaved section
- 150 Km<sup>2</sup> area of influence
- Primary land-use is cattle ranching
- Mostly private lands



# Natural Habitat Issues



- ❖ Endangered endemic Honduran emerald hummingbird
- ❖ Patchy dry thorn forest
- ❖ Road increases land value
- ❖ Remaining thorn forest would be converted





# Hummingbird Habitat Study

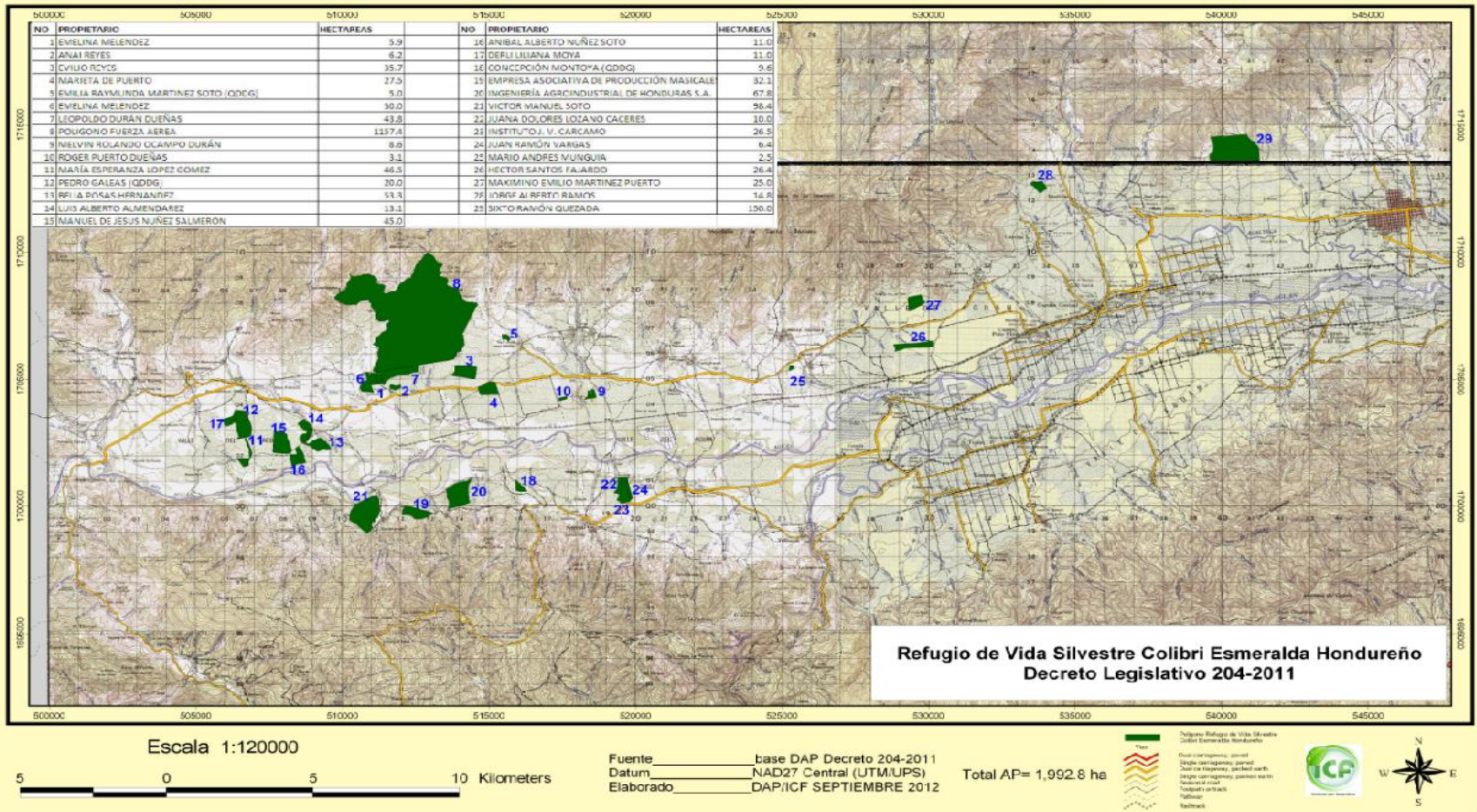
- ✿ Thorn forest main habitat, non legally protected
- ✿ 96% habitat between San Lorenzo – Olanchito
- ✿ Population 75 -250 birds
- ✿ 11 endemic plants, all threatened
- ✿ Endangered endemic iguana *Ctenosaura melasnostrena*
- ✿ 30,000 Ha in 1938, only 3,000 Ha left
- ✿ Cattle forest replaces understory with pasture
- ✿ Cattle ranching expansion: refrained by lack of money

# Conservation Action Plan

- ✿ Impending land conversion requires CAP in place before bidding
- ✿ Does not forbid road upgrade
- ✿ Secures habitat for endangered & threatened species
- ✿ Environmental education component
- ✿ Provides guidelines for development
- ✿ Regulates future land-use
- ✿ Promotes ecotourism
- ✿ Monitoring program for all threatened species



# Fragmentation of Dry Forest



# Remaining Challenges

- ✿ Habitat fragmentation and long term conservation
- ✿ How much is enough on the face of limited resources?
- ✿ Big dry forest fragments vs small dry forest fragments
- ✿ Cumulative effects and other infrastructure projects in the area
- ✿ Rural poverty and unemployment
- ✿ Long-term financial sustainability



# SAN FRANCISCO – MOCOA BY-PASS (COLOMBIA)



IIRSA

Financed by IDB

- Adecuación del puerto de Tumaco
- Vía perimetral de Túquerres
- Proyecto Ancla: Carretera Pasto-Mocoa y variantes de pavimentación
- Tramo vial Santa Ana-Asís
- Adecuación del puerto de Puerto Asís



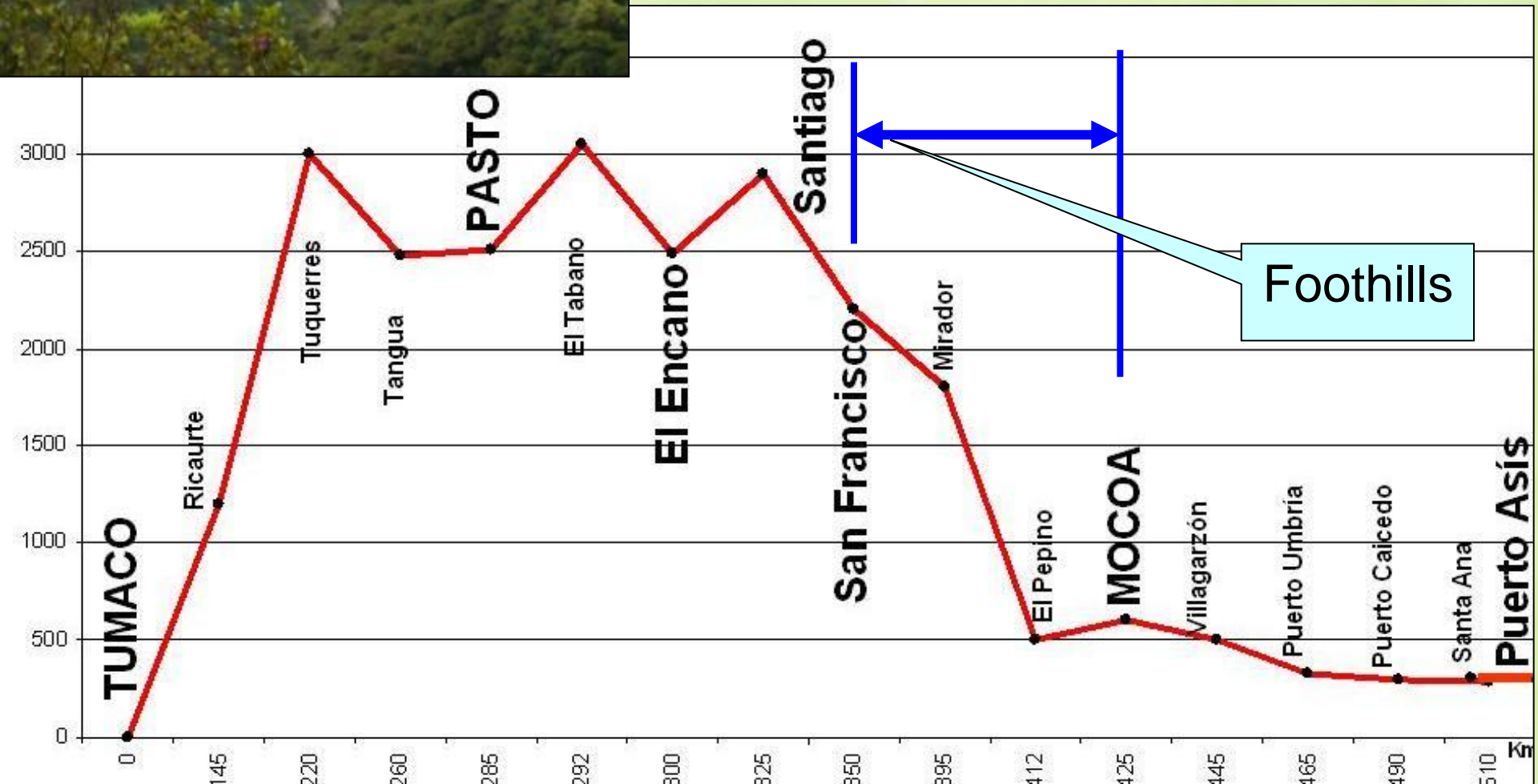
- Adecuación del puerto de San Lorenzo
- Tramo San Lorenzo-El Carmen: rehabilitación y pavimentación
- Adecuación del puerto de Puerto El Carmen



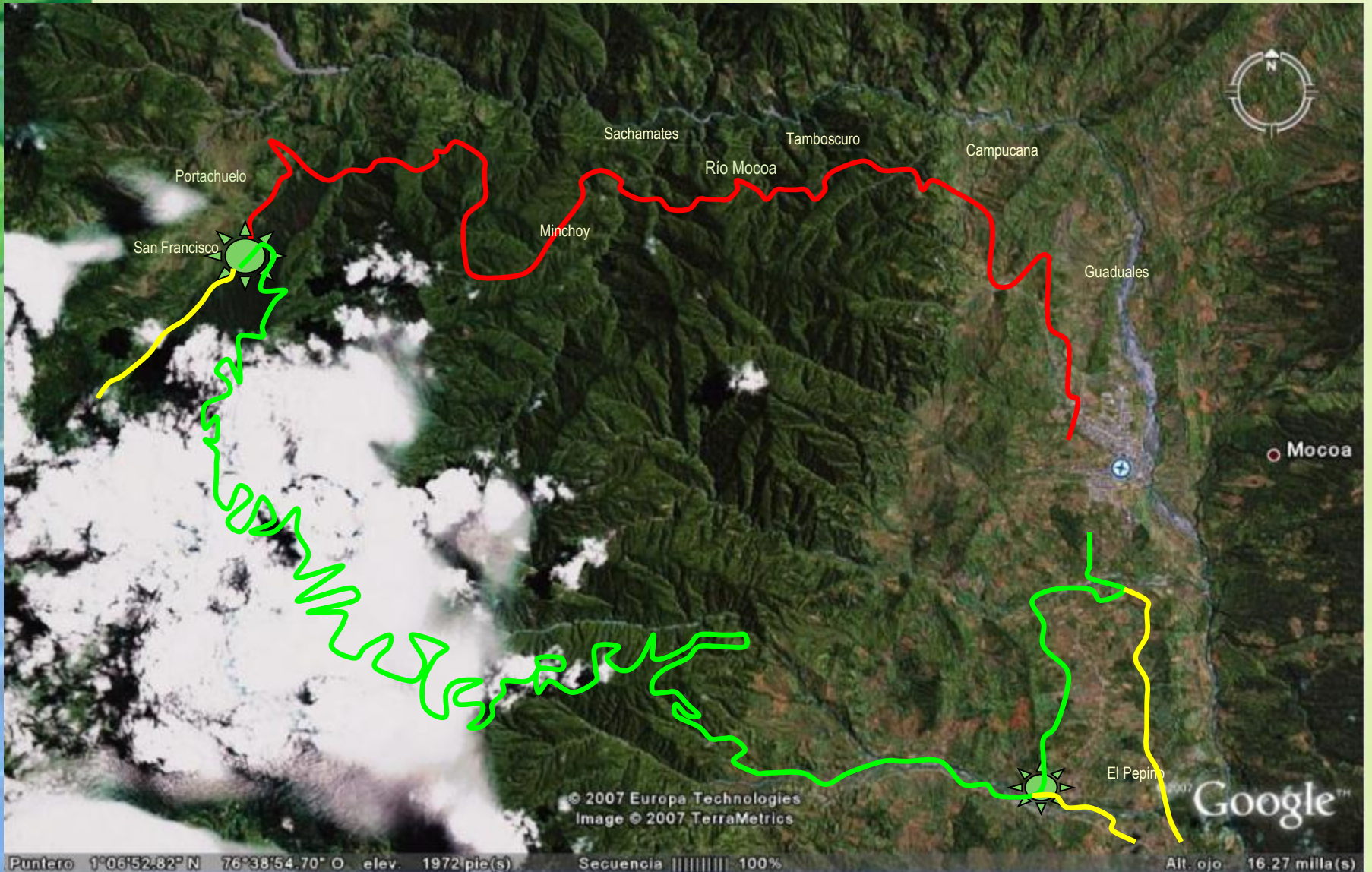




# Vertical Alignment

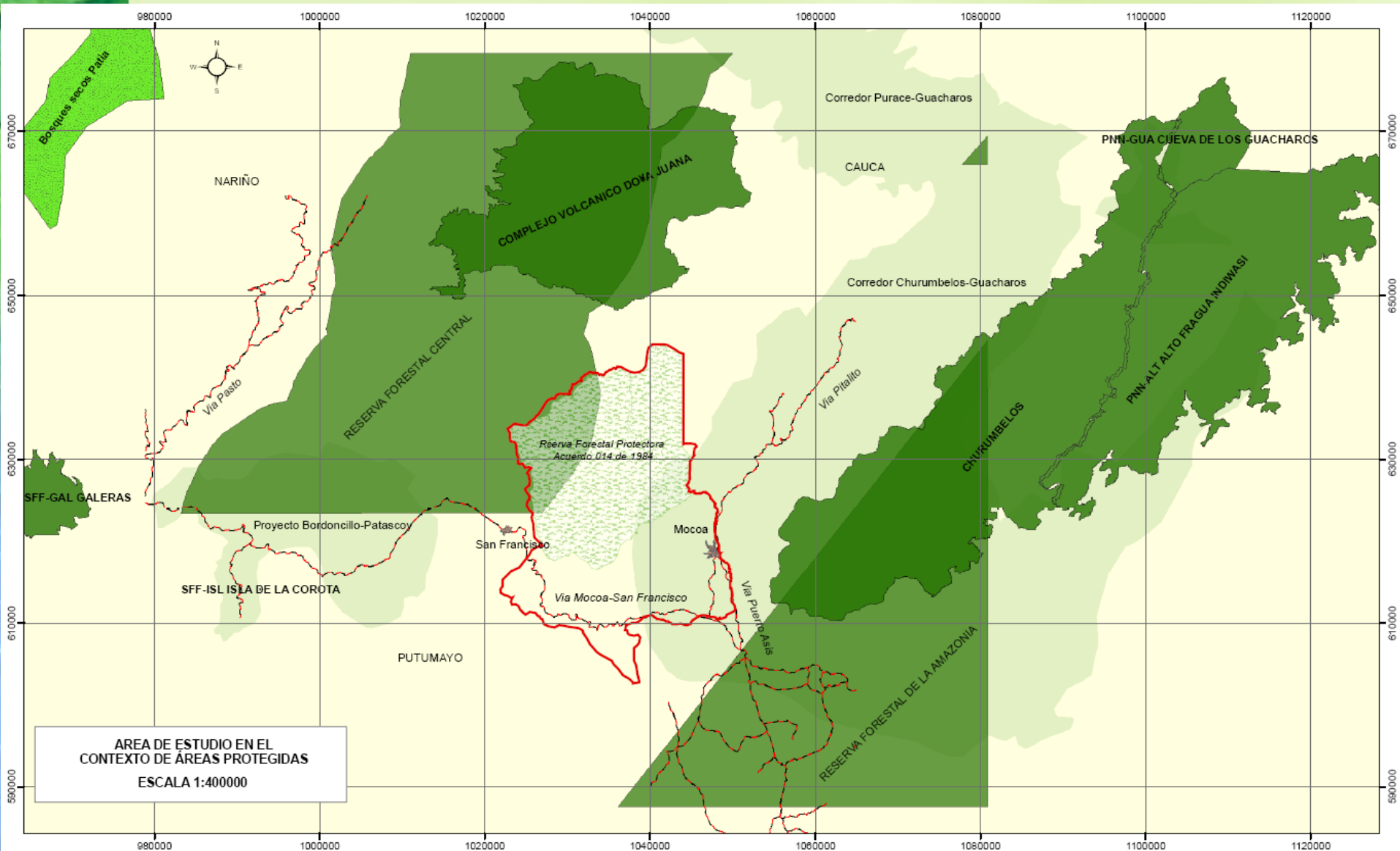


# Right of Way





# Ecological Importance



# Alignment



# Alignment



# Alignment



# VISUALIZACION DEL PROYECTO





# Alignment



# Alignment

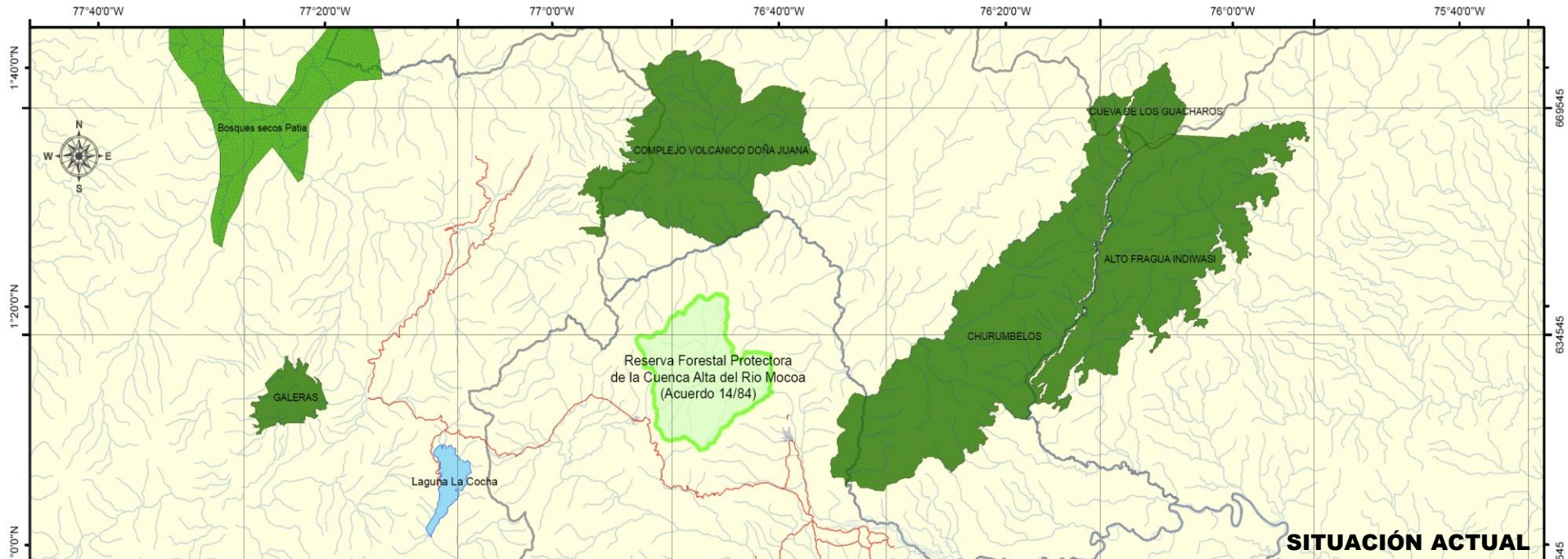


# Alignment

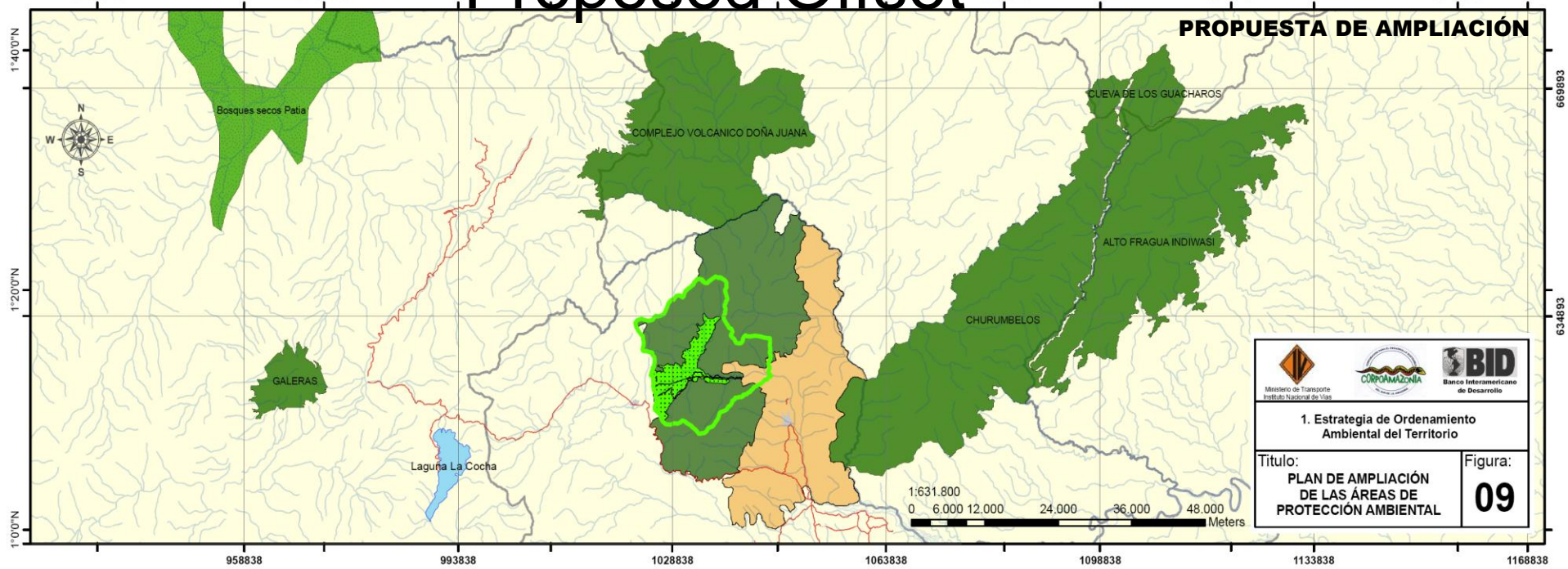


# Alignment



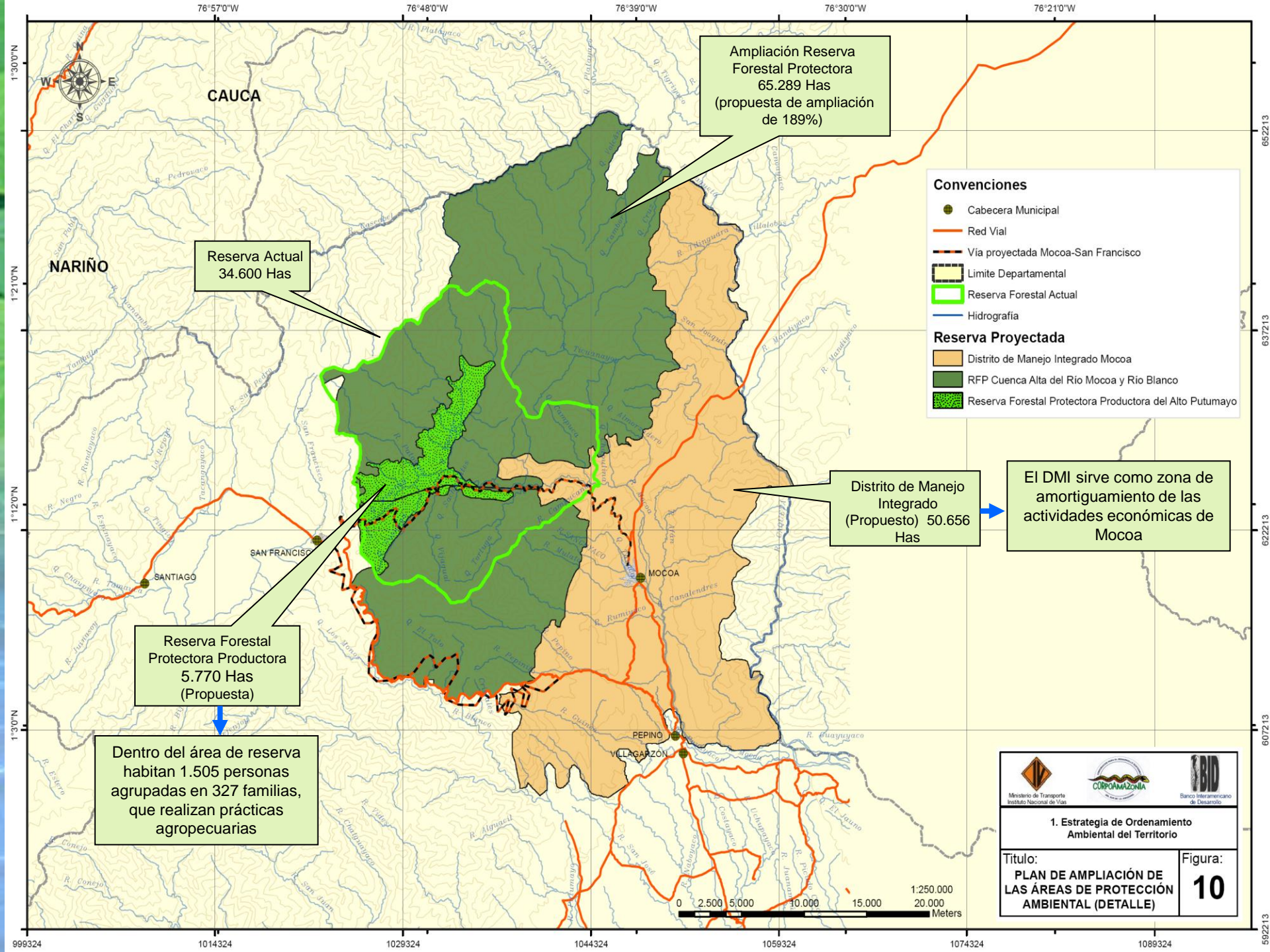


# Proposed Offset



  	
<b>1. Estrategia de Ordenamiento Ambiental del Territorio</b>	
Titulo: <b>PLAN DE AMPLIACIÓN DE LAS ÁREAS DE PROTECCIÓN AMBIENTAL</b>	Figura: <b>09</b>





Ampliación Reserva Forestal Protectora  
65.289 Has  
(propuesta de ampliación de 189%)

Reserva Actual  
34.600 Has

Reserva Forestal Protectora Productora  
5.770 Has  
(Propuesta)

Dentro del área de reserva habitan 1.505 personas agrupadas en 327 familias, que realizan prácticas agropecuarias

Distrito de Manejo Integrado (Propuesto) 50.656 Has

El DMI sirve como zona de amortiguamiento de las actividades económicas de Mocoa

**Convenciones**

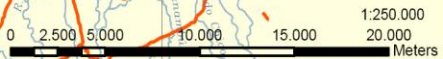
- Cabecera Municipal
- Red Vial
- Via proyectada Mocoa-San Francisco
- Limite Departamental
- Reserva Forestal Actual
- Hidrografía

**Reserva Projectada**

- Distrito de Manejo Integrado Mocoa
- RFP Cuenca Alta del Río Mocoa y Río Blanco
- Reserva Forestal Protectora Productora del Alto Putumayo

1. Estrategia de Ordenamiento Ambiental del Territorio

Título: <b>PLAN DE AMPLIACIÓN DE LAS ÁREAS DE PROTECCIÓN AMBIENTAL (DETALLE)</b>	Figura: <b>10</b>
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# Challenges

- ✿ Weak capacity at regional and local level
- ✿ Mining and oil concessions in protected areas
- ✿ Indigenous communities land claims
- ✿ Engineering challenges still need resolution