



# *Meeting Stakeholder knowledge needs for managing land to deliver multiple benefits from tropical forest landscapes*

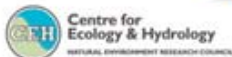
Consuelo Varela-Ortega, Irene Blanco, UPM Spain

Simron J. Singh, Nelson Grima, Barbara Smetschka, SEC Austria

Acknowledgements to LA partners from IBIF (Bolivia), UNAM (Mexico) and EMBRAPA (Brazil) and from UPM (Spain), WU (Netherlands), ALTEERRA (Netherlands), NERC (UK)

**2014 GLOBAL LAND PROJECT OPEN SCIENCE MEETING 19-21 Mar 2014, Berlin**

[www.robinproject.info](http://www.robinproject.info)

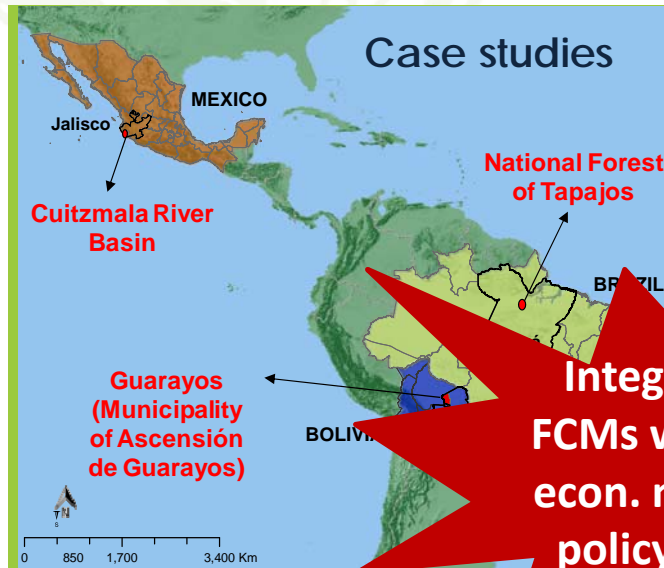


- **Aim** → Analyzing **socio-economic and human dimension** as part of the **whole system approach** in **ROBIN**
- Based on the development of a **SH participatory process and modeling initiative**
- Linking local, provincial and national scales
  - Making use of the results and models produced in ROBIN (LUC, scenarios, ecosystem services...) in an iterative process

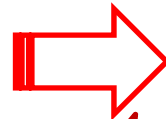
# Cross-scale socio-economic/ecological interactions

## LOCAL LEVEL (Part. Process) → FCMs

- Engaging SH in discussion over BD & CC
- Understanding SH perceptions
- Building scenarios (CC and LU changes)



*Up-scaling*



**Integration of FCMs with socio-econ. models for policy analysis**

## PROVINCIAL LEVEL → Field work + Economic Optimization Model ( MPM)

- Analyzing agro-forestry prod. systems
- Studying trade-offs between human wellbeing & forest conservation
- Impact REDD+ policies

→ Studies in **Bolivia, Brazil**

→ Farm types and municipalities

## NATIONAL LEVEL → Econometric model (databases, multivariate anl.)

- Analyzing the drivers of deforestation
- Scenario simulations (CC, social..)

→ **20 countries in Latin America**

→ **Panel data , 84 variables**

→ **1960-2011 time series**

**Relevant SHs:** farmers, cattle ranchers, timber & mining companies...

# Local level → FCMs: Key findings

Key issues		Bolivia	Brazil	Mexico
Central factors		<b>Deforestation</b> Pollution	<b>Deforestation</b> Forest fires Loss of biodiversity	<b>Deforestation</b> Expansion of agriculture
	<b>Social</b>	<b>Lack of environmental awareness</b>	<b>Lack of environmental awareness</b> Population increase	Lack of education and information
Drivers	<b>Economic</b>	<b>Illegal land use (expansion of agriculture)</b> Illegal mining	<b>Agricultural production pressures</b> Infrastructure projects	<b>Farmers' revenues</b> Market demands Tourism
	<b>Political</b>	<b>Lack of coordination &amp; application policies</b> Poor administration by community leaders	<b>Lack of governmental coordination</b> Ineffective supervision	Design and <b>implementation of policies</b> Agrarian colonization
	<b>Environmental</b>	<b>Climate change/</b> extreme events	<b>Climate change</b>	<b>Climatic extremes</b>

# Provincial level → Fieldwork: Key findings

- Area: **Guarayos province, 31 interviews of farmers and experts (Next: Brazil)**
- Database: crops, farm types, agricultural practices, socio-economic patterns



Cluster	Cropped Area (ha)	Nº Farms (%)	Main crops
1- <b>VERY SMALL</b>	3.4	29	Rice, maize, banana, cassava
2- <b>SMALL</b>	14.4	29	Maize and rice
3- <b>MEDIUM</b>	52.6	18	Maize, rice and soya
4- <b>LARGE</b>	96.7	24	Rice and Soya

## Key findings:

- Small-subsistence farms have the largest (>50%) forest area, **large farms are highly deforested** (<5% of forests)
- Trend to **single crop cultivation** in large farms
- Cropping decisions: **market prices** in middle-large farms, **family consumption** in subsistence farms
- Access to **credit**: limiting factor for larger commercial farms

- Fieldwork used in **economic optimization (Math. Prog. Model)** of farmers behavior → policy analysis in DM:





# National level → Econometric analysis: Key findings

- 20 countries in LA
- Variables: physical, social, economic, institutional, technical → **First selection based on FCMs results**
- **Cluster analysis: country classification according to forest cover and annual deforestation**
- **Principal Component Anal. + Literature review: Key factors that explain deforestation in Bo, Br , Mex**

