

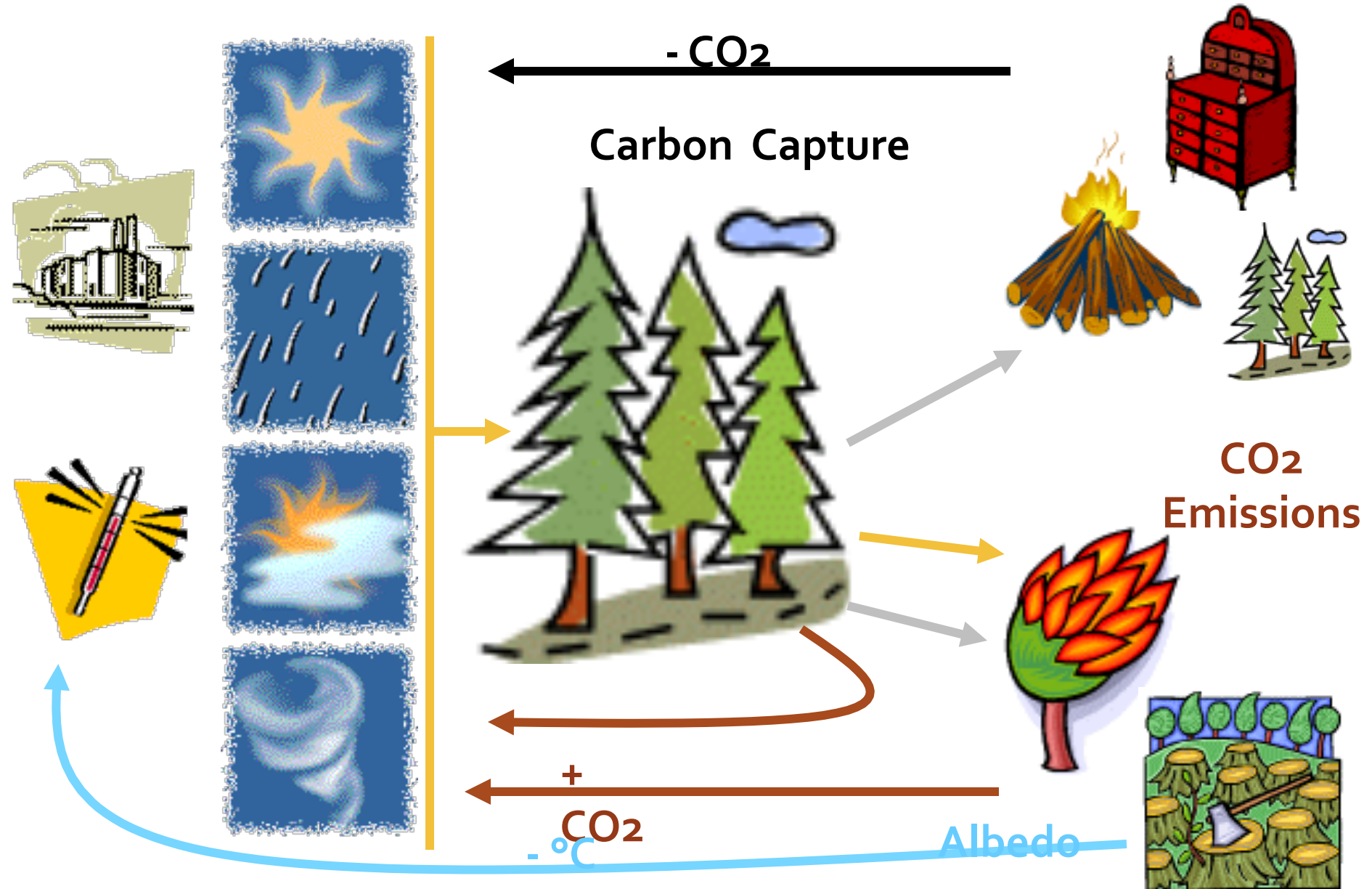


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# Climate Change and Forests



# Environmental Services

The background of the slide is a photograph of a dense, green forest. In the center, a waterfall cascades down a rocky ledge. The overall scene is vibrant and natural, representing the environmental services provided by such ecosystems.

Clean Water

Species Conservation

Carbon Sequestration

Less Energy Use

Pesticide Free

Oaxacan Farmer View:

Teaching Children  
about the environment

Less pollution

Global Climate Change

Biodiversity

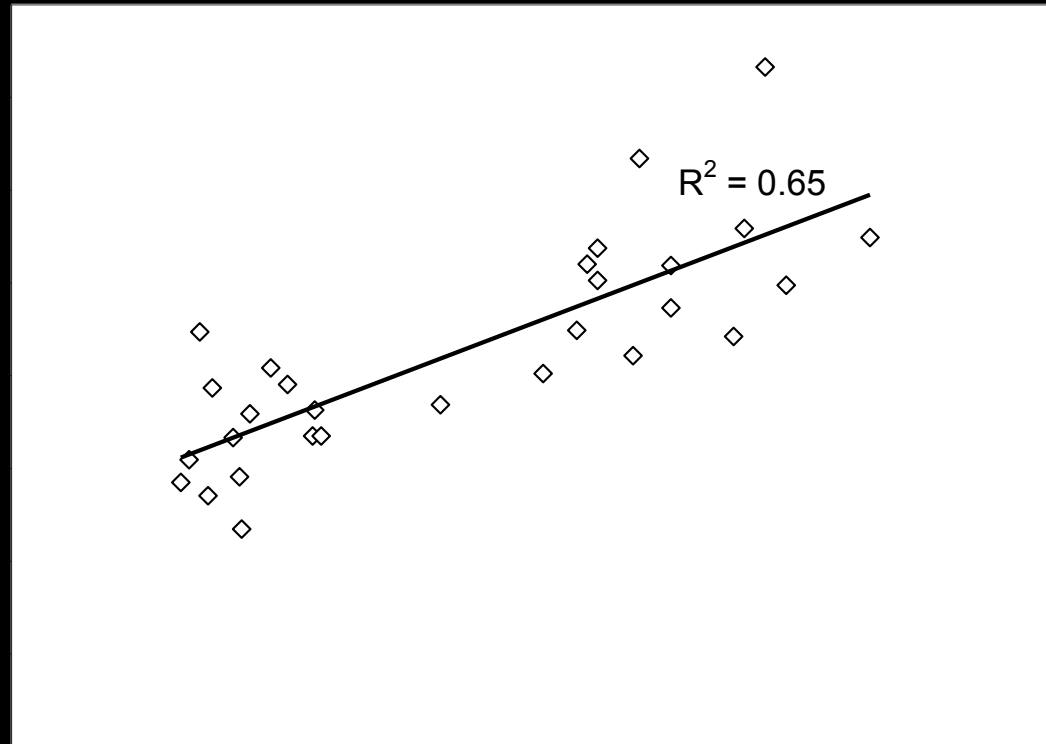
Land-use Planning &  
'estatutos'

# What is the best way to increase carbon storage in forest ecosystems?

- Intensified forest harvests, favoring fast rates of uptake and storage in wood products?
- Reduced harvesting intensity/frequency and/or passive management (reserves) favoring carbon storage in extant forests?

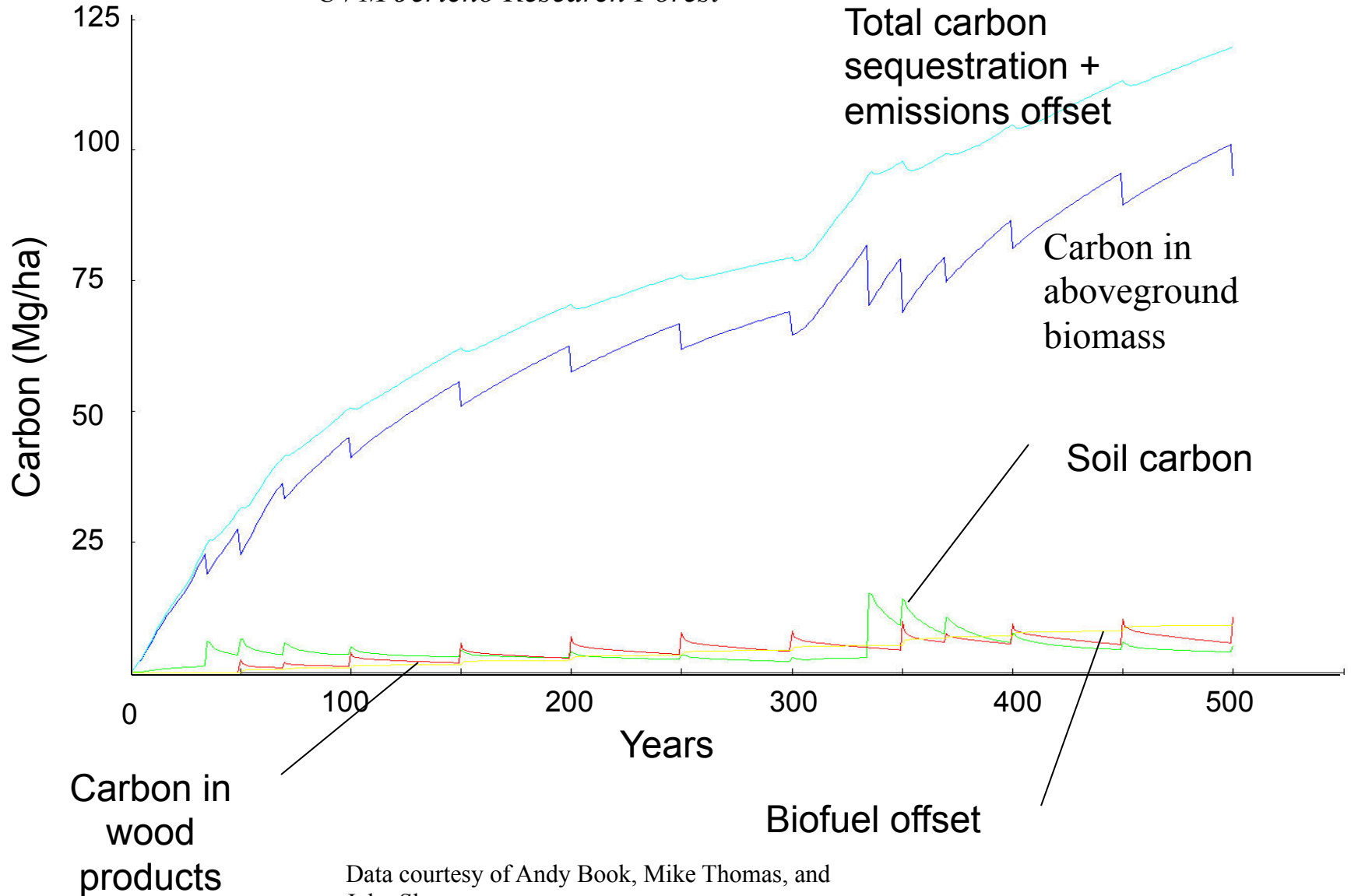


# Carbon storage in old and structurally complex forests

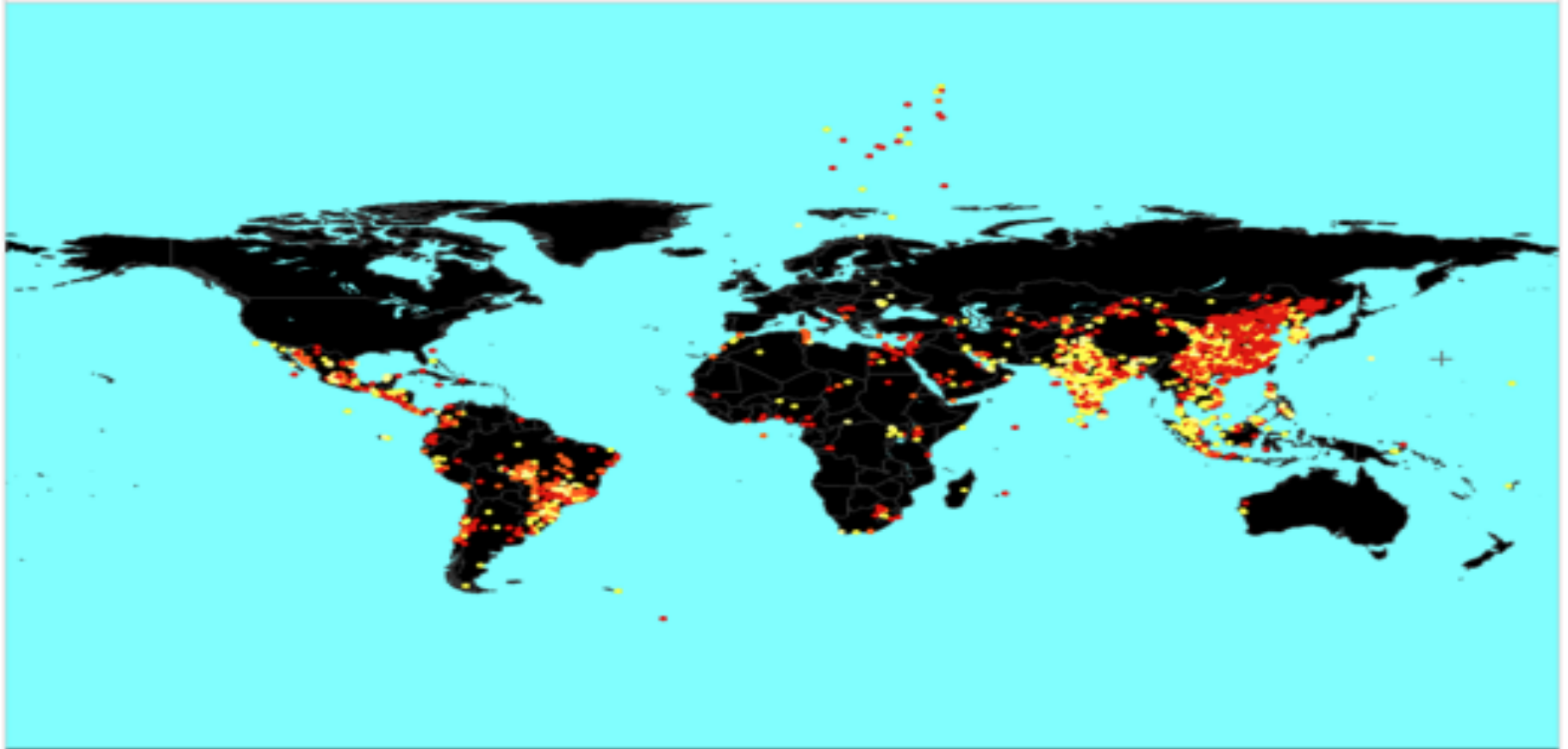


# CO2fix Model Simulation

*Scenario = low intensity selection harvest for durable wood products and biomass, northern hardwood stand, UVM Jericho Research Forest*



Data courtesy of Andy Book, Mike Thomas, and John Shane



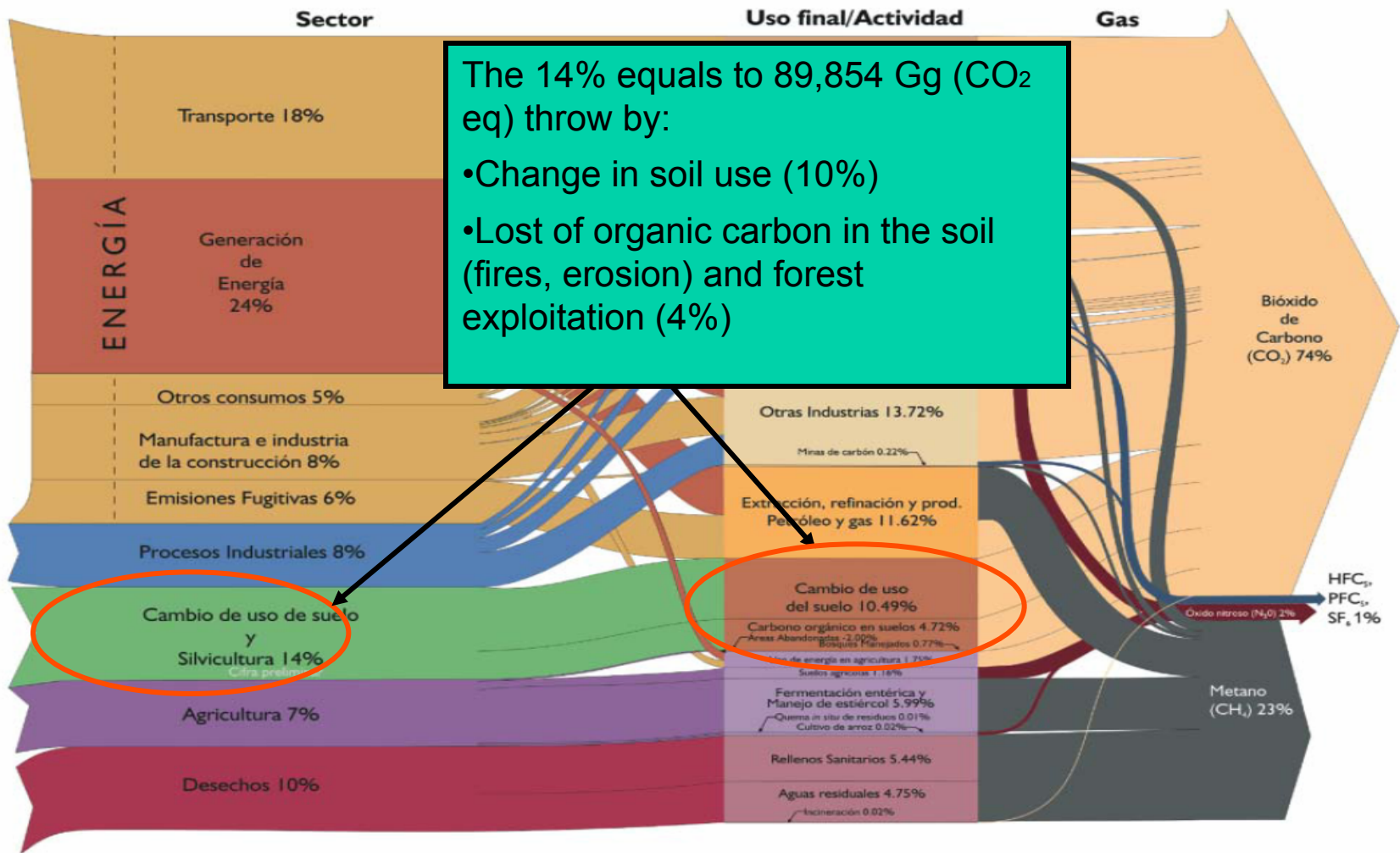
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

**Legend**

- = CDM project, Large scale, one location
- = CDM project, Large scale, several locations
- = CDM project, Small scale, one location
- = CDM project, Small scale, several locations

**Map Indicating Location of CDM Projects (2014)**





The 14% equals to 89,854 Gg (CO<sub>2</sub> eq) throw by:

- Change in soil use (10%)
- Lost of organic carbon in the soil (fires, erosion) and forest exploitation (4%)

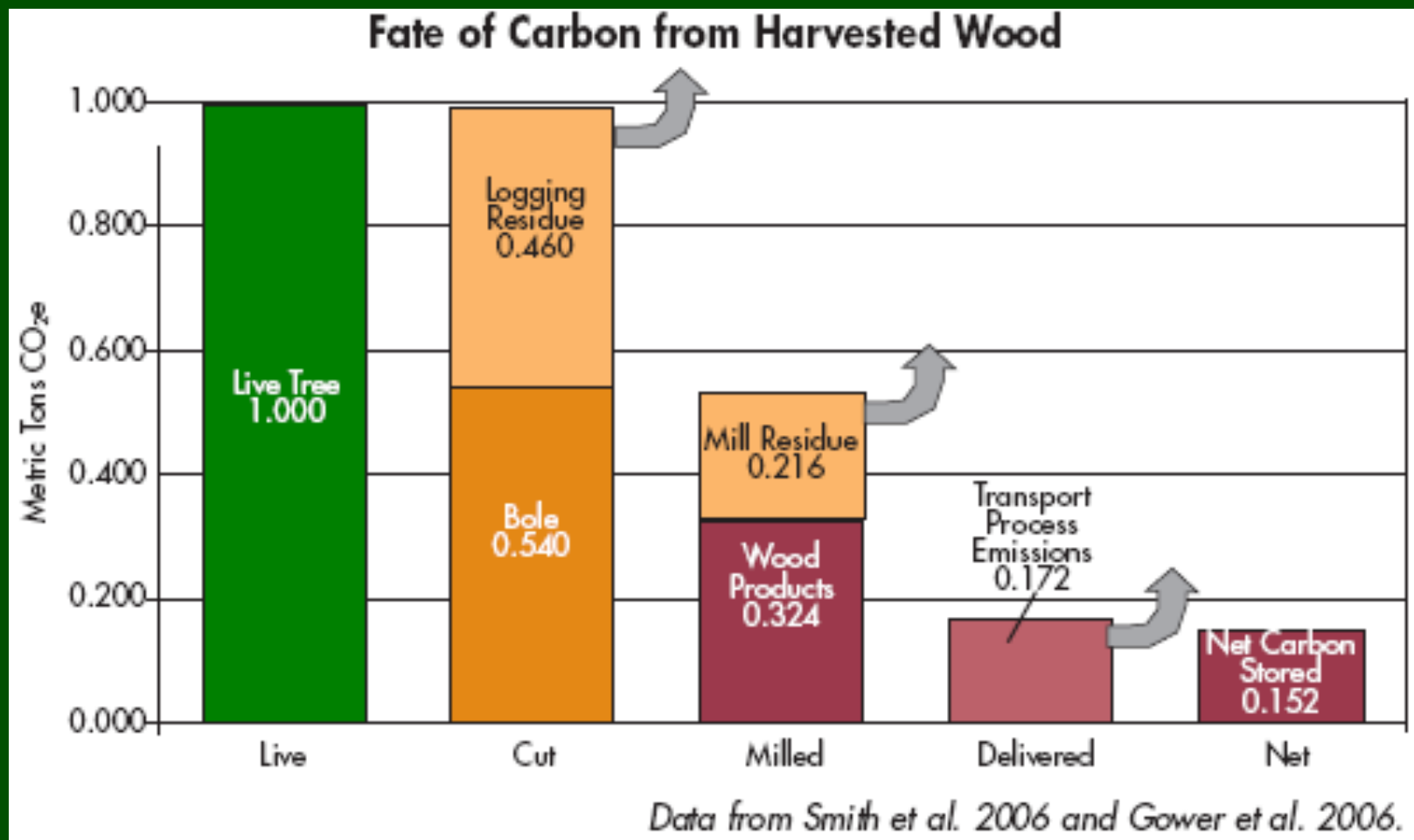


Figure from Ingerson. 2007.



## Mexican Example

There are direct actions to reduce CO<sub>2</sub> emissions in the forestry sector through ProArbol program.

### 1. Carbon conservation

- Sustainable Forestry Development
- Forestry Communitarian Diligence
- **Environmental Services** (water, biodiversity and agro forestry)
- Conservation and restoration of forestry ecosystems.

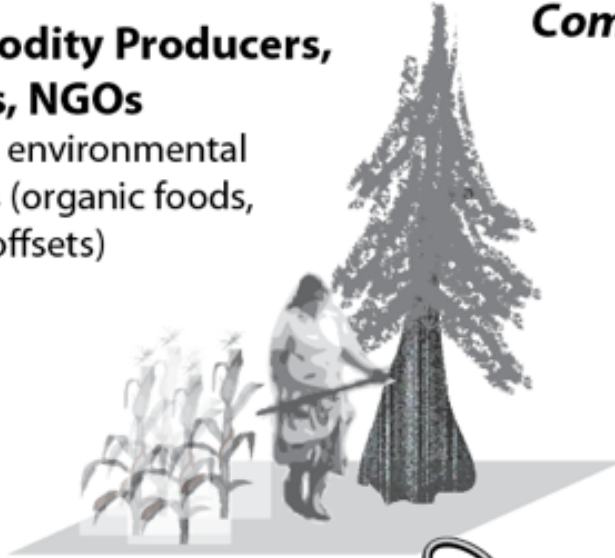
### 2. Carbon capture

- Reforestation
- Commercial plantations
- **Benefits for Environmental services**

# Environmental Product Certification: Commodifying Environmental Qualities

## Commodity Producers, Unions, NGOs

Produce environmental  
qualities (organic foods,  
carbon offsets)



## Certifying Agencies: Accreditation, Inspections

*assess quality  
compliance  
and verify  
'chain of custody' from  
producer to buyer*



*Standards Boards  
communicate  
standards to  
producer  
groups*



## Standards Boards:

NGOs, Governmental Agencies (NOP),  
Multilateral Agencies (ISO)



## Buyers:



Wholesale/retail consumers (e.g., organic foods)  
Corporate Buyers (Carbon Credits)  
Governmental Agencies (Environmental subsidies)

# Monitoring Tree Plantings in the Sierra Madre





**Coffee Sales:**

Fairtrade-Organic Premiums  
 PROCAMPO (SAGARPA)  
 FOMENTO PRODUCTIVO (SAGARPA)  
 Financial Services (Banamex)

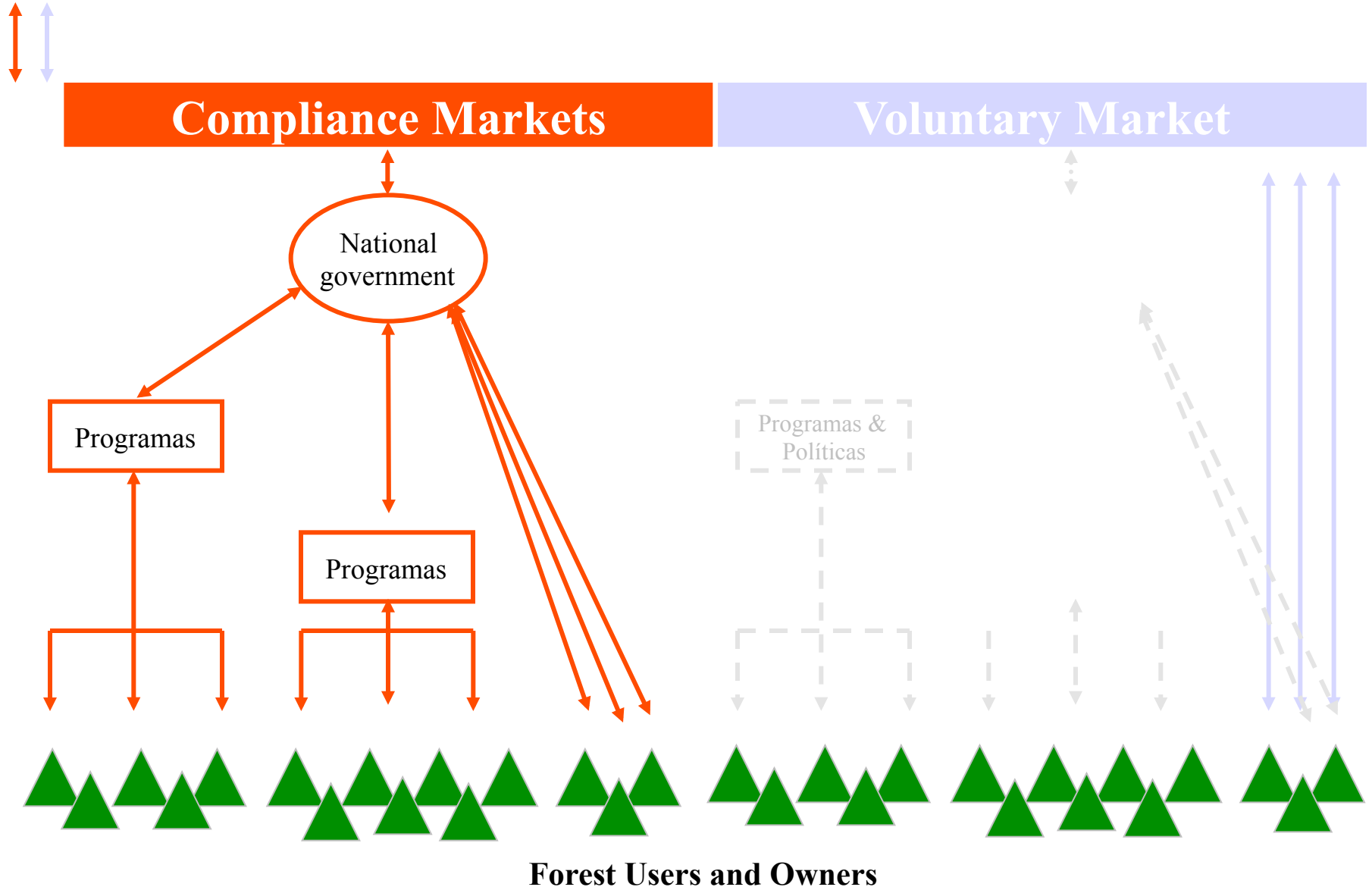
**Household:**

Oportunidades  
 Remittance  
 Commerce  
 Abasto  
 Health Care  
 Development  
 Projects  
 Salaries

**Environmental Services:**

Carbon Sequestration  
 'Hydrologic' services  
 Jaguar Habitat  
 Ecotourism  
 Sustainable Forestry

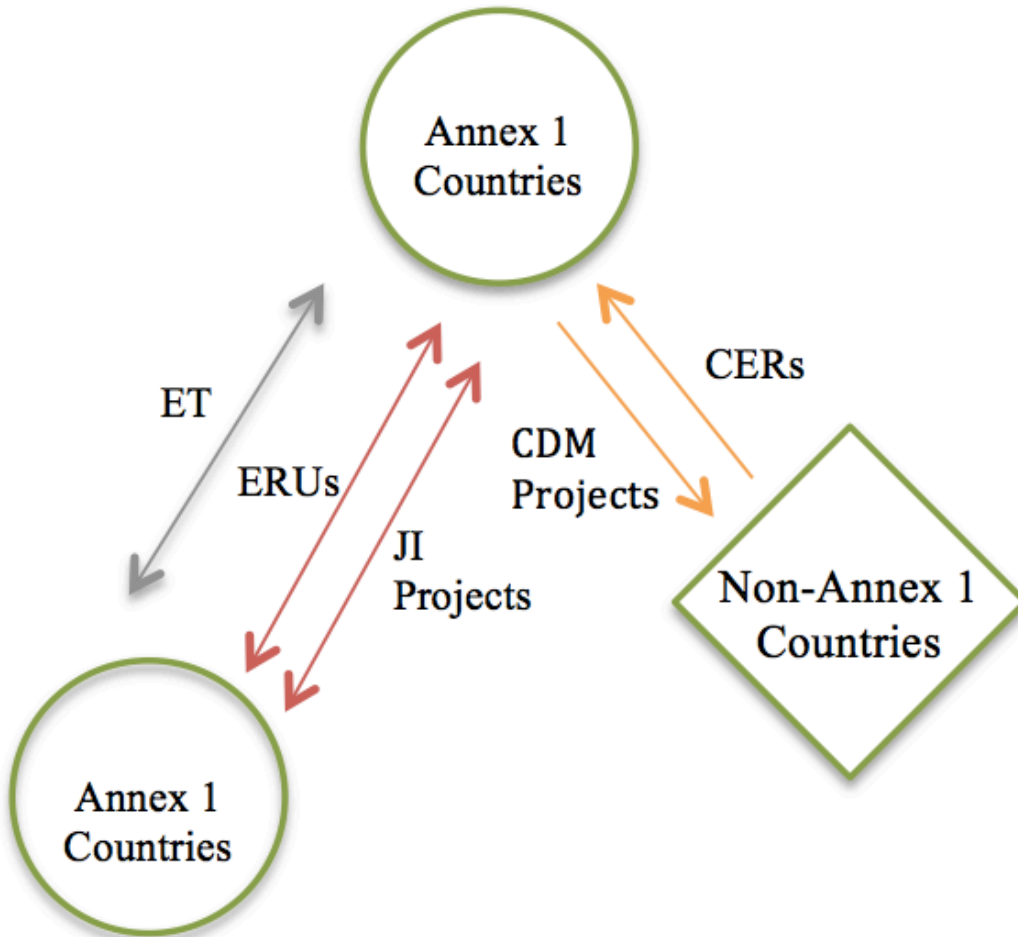
# Mechanisms for distributing REDD+ funds



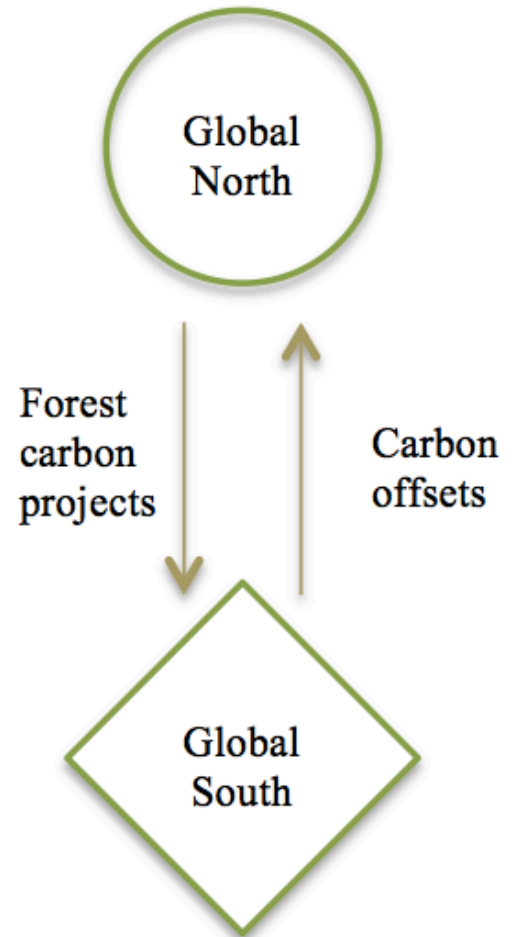


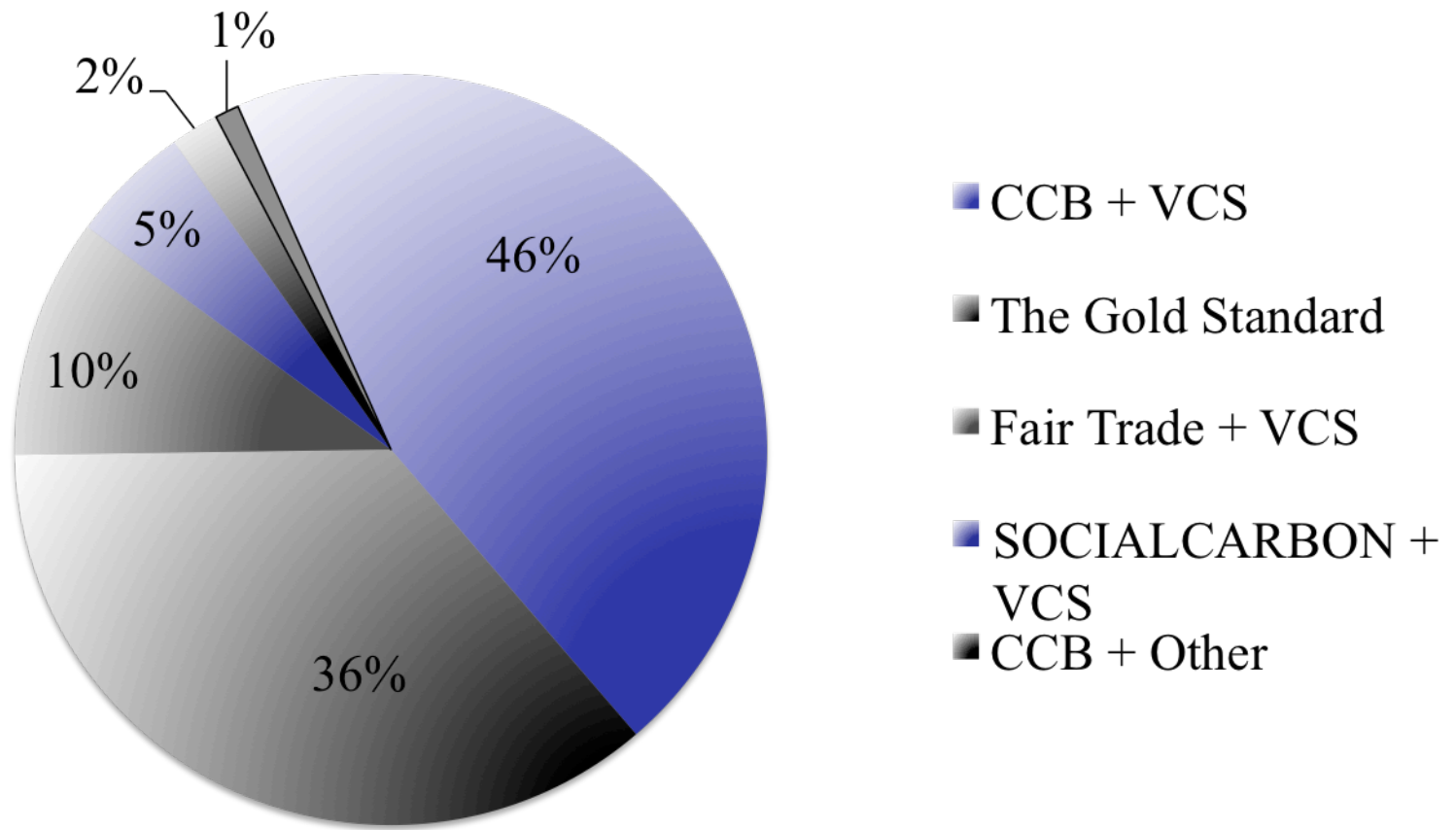
# Carbon Sequestration Markets: Compliance vs. Voluntary

## Compliance Markets



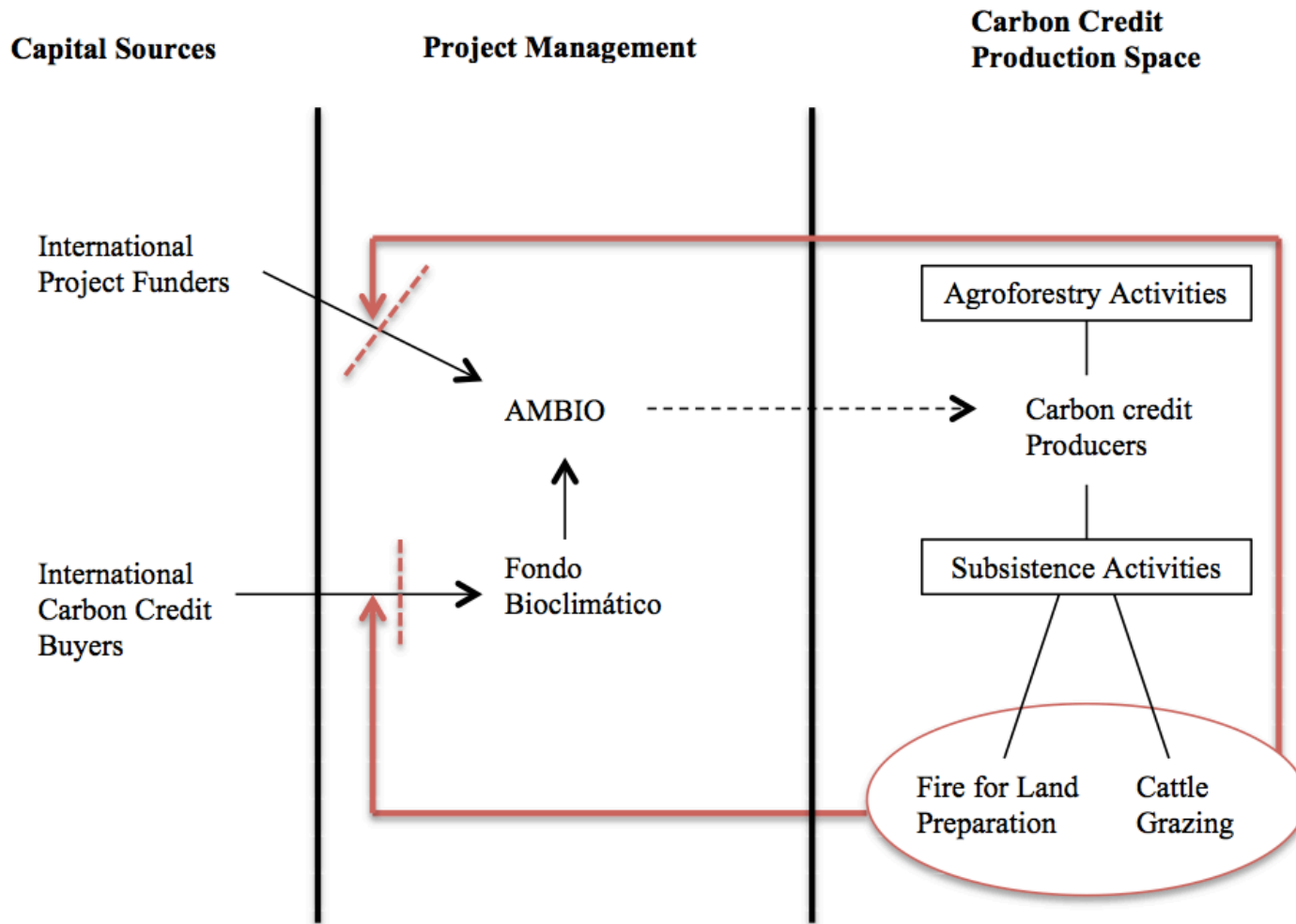
## Voluntary Markets



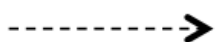


**Market Share by Co-benefits Standard in 2012**

# Risk in Voluntary Carbon Markets



Indicates capital flows



Indicates capital flows in partial quantities



Indicates potential interruption in capital flows due to unmitigated risks

# USAID Recommendations

- Land Tenure should be based to the maximum possible on systems of titling and the application of existing recognition.
- ?? Rather than examine market mechanisms that push risk onto the most vulnerable people, the US government recommendation is to provide private tenure? Really??

