

# Deforestation in the Amazon

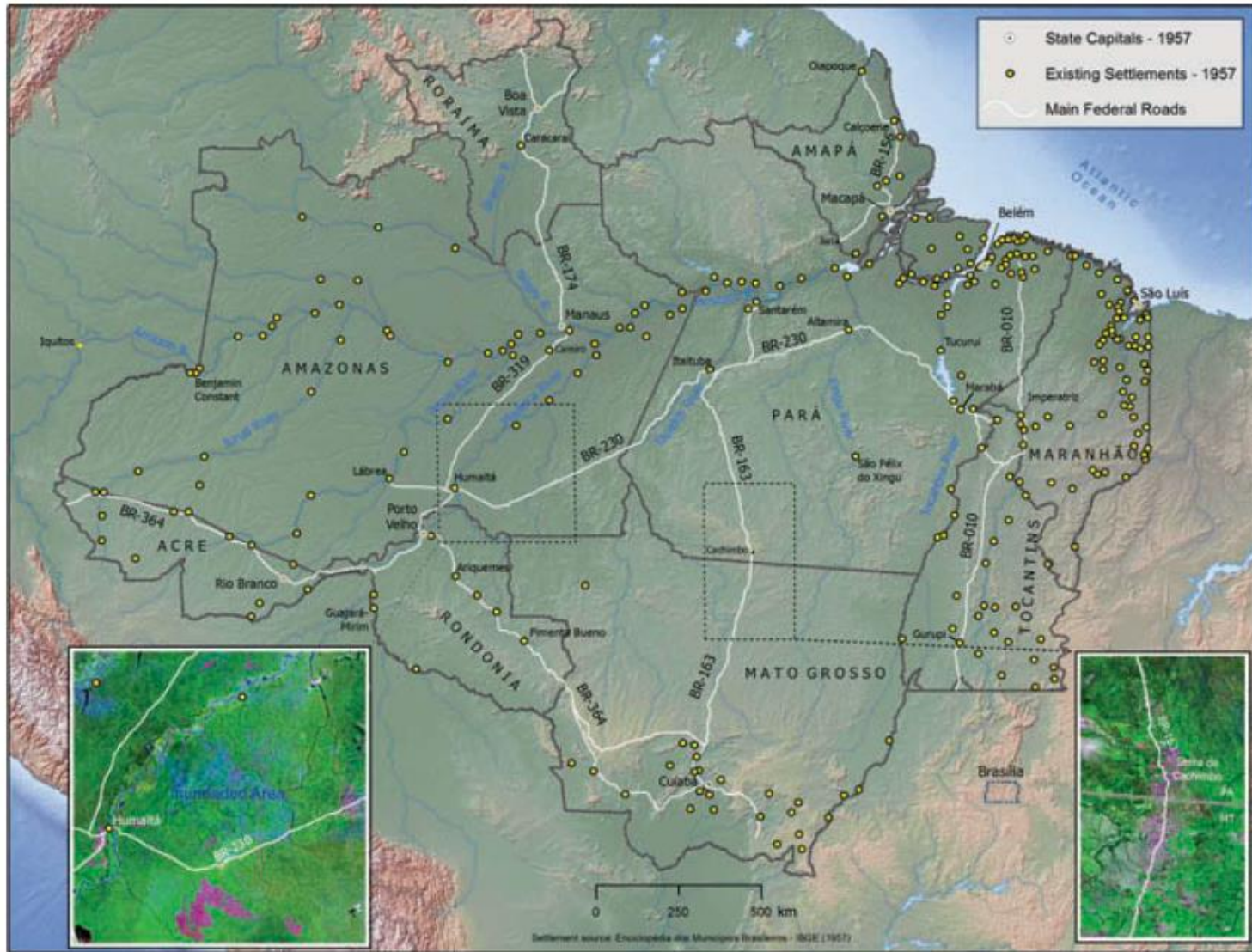
*forest loss, fragmentation and fire feedbacks*

Robert Walker

Amazon  
Biome  
vs.  
Legal  
Amazon



# Federal System of Highways



# Agricultural development

Cattle

Rice, corn, beans

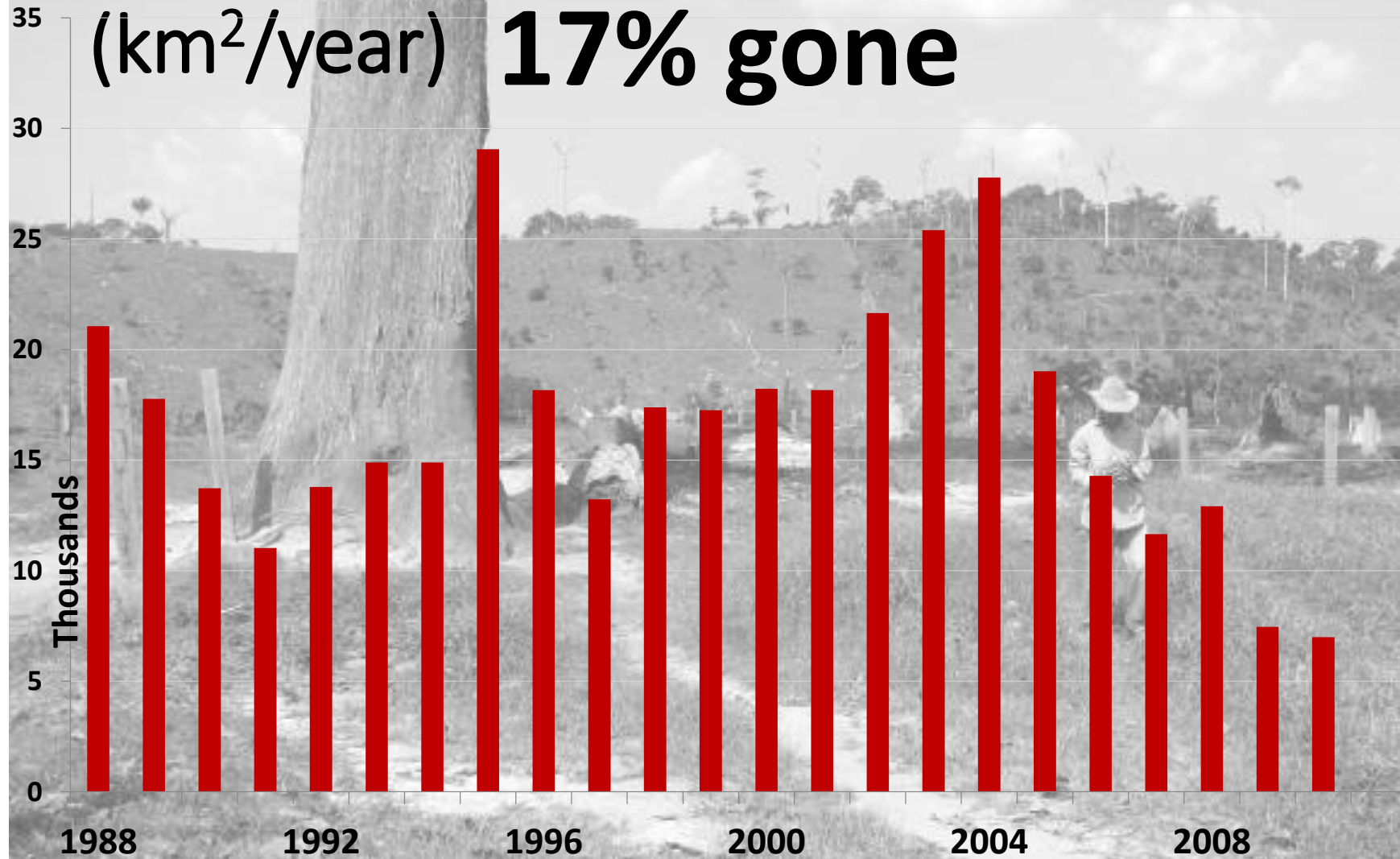
Perennials (cocoa, pepper, oil palm)

Soybeans

Amazon, once thought agriculturally constrained  
not anymore!



# Deforestation in the Brazilian Amazon (km<sup>2</sup>/year) **17% gone**



## Geographical Analysis

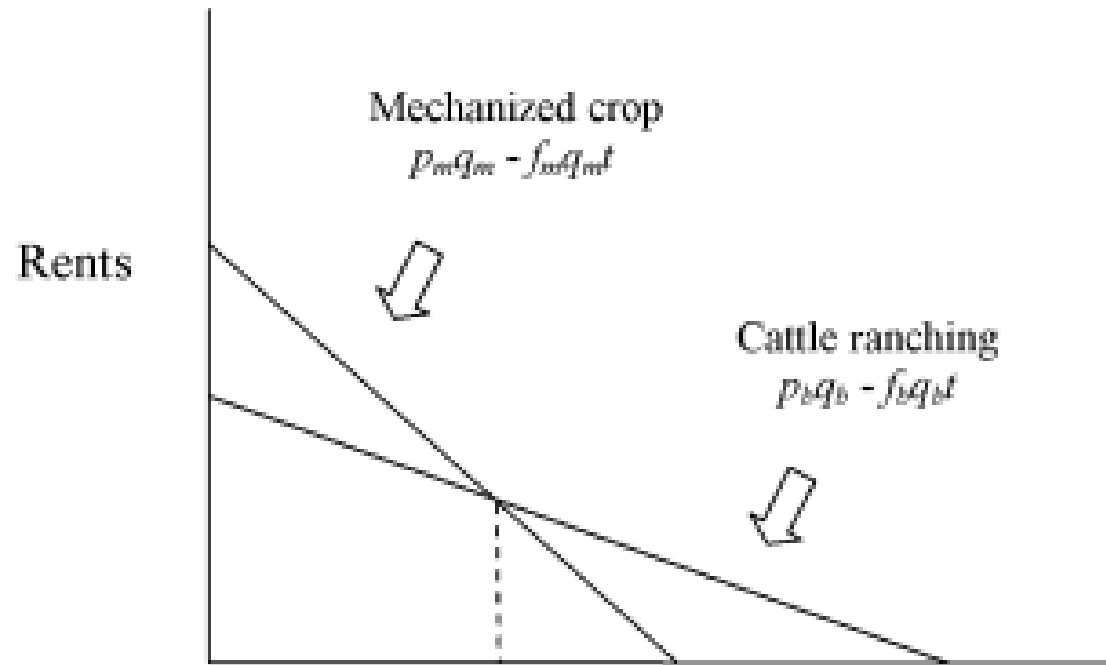


Figure 2. Land uses and rent.

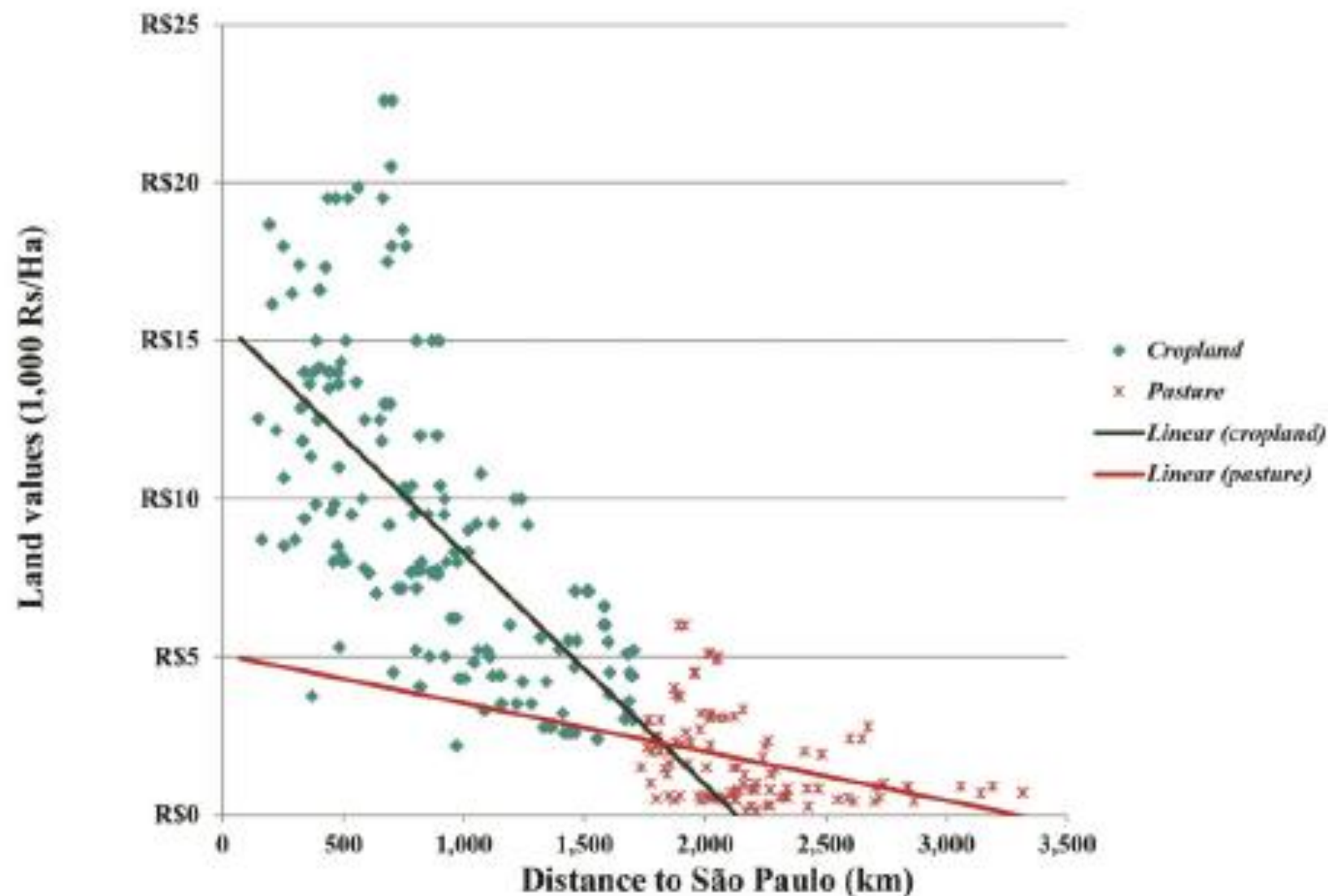
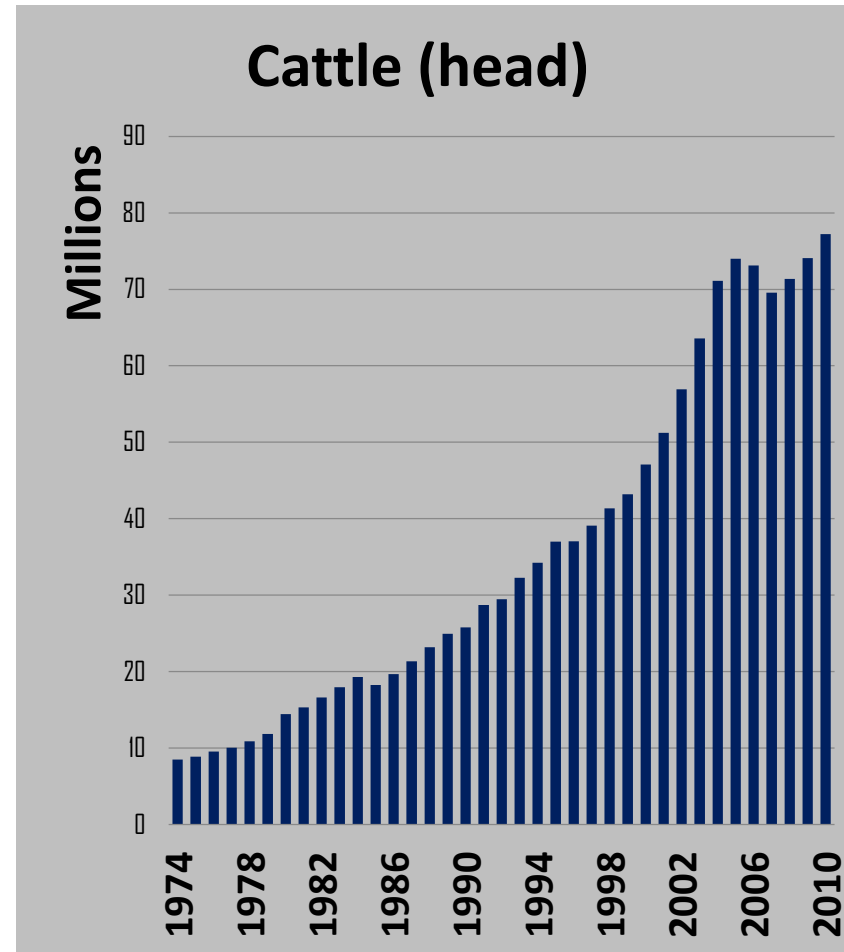
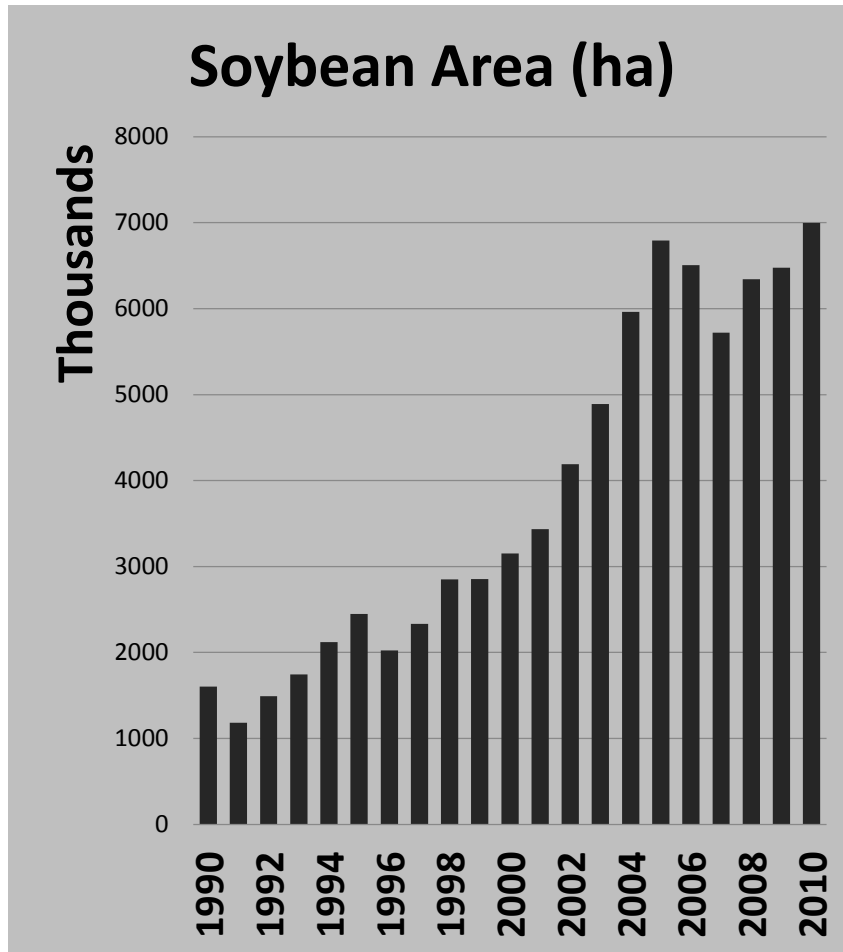


Figure 1. Land prices per unit hectare (Ha) averages for distance radii from São Paulo (\$US1 = -R2, R is the “real,” a unit of Brazilian currency); courtesy of Peter Richards.

# Beef and Soybeans

*Legal Amazon*



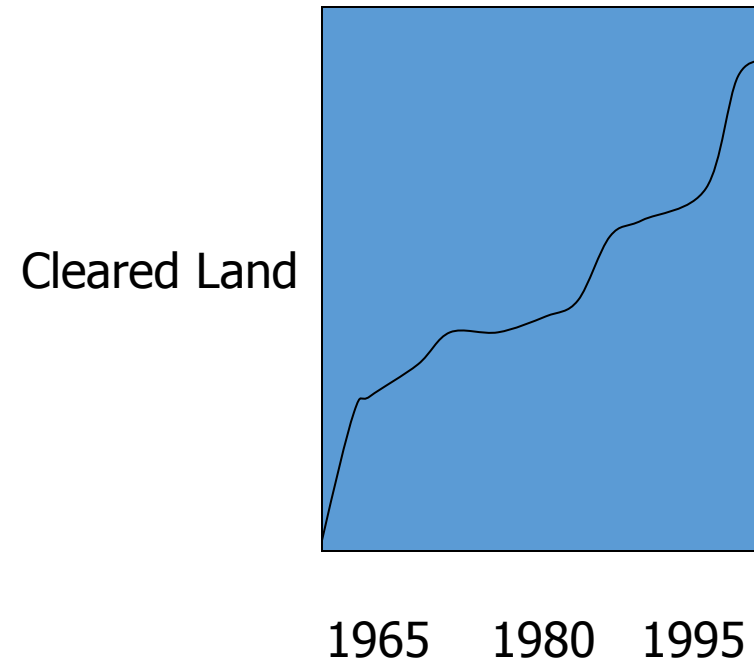
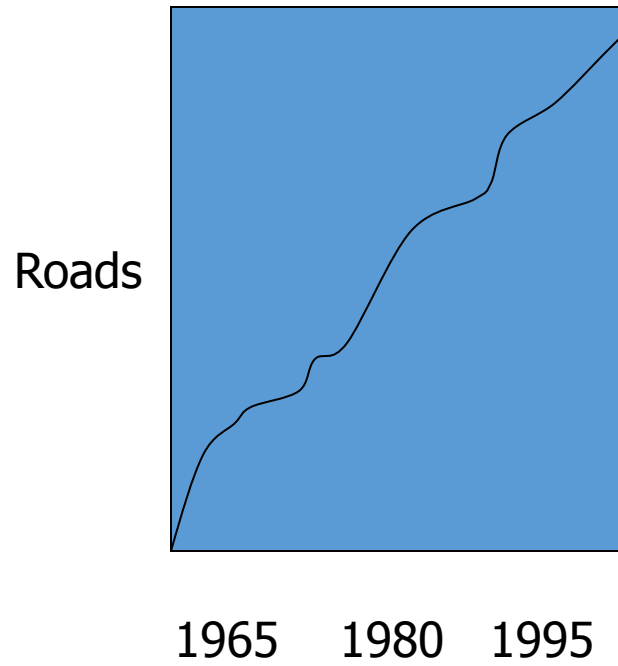


# Mechanism of forest penetration

Original opening of basin

Road building by private citizens

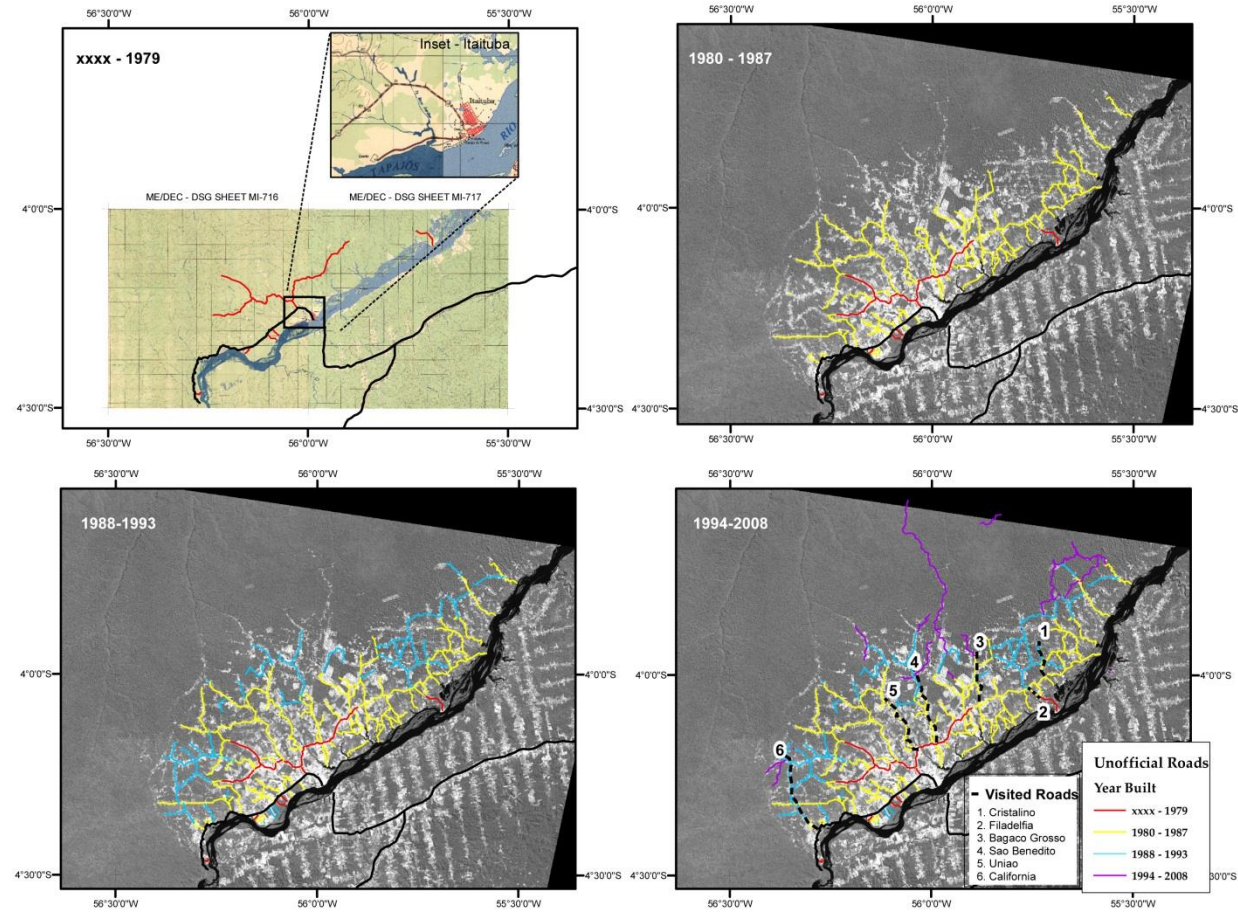
# ROADS CAUSE DEFORESTATION (?)







# Expanding road system -- Itaituba



# Fragmentation

Impacts of deforestation not just in forest loss magnitude

Also, the spatial pattern of fragmentation that results

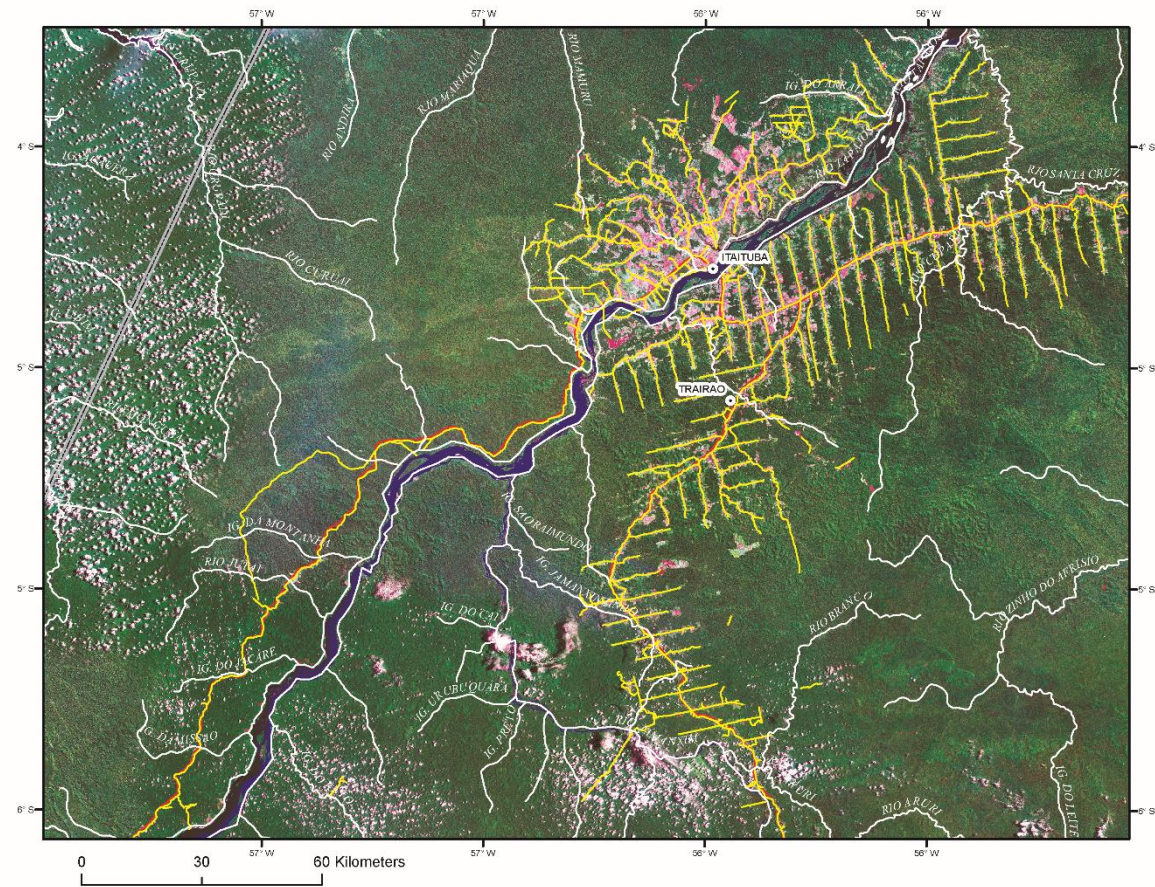
Here's where fire enters the picture

*edge effects out from roads*

*biological impoverishment and desiccation*



# Fishbone and radial

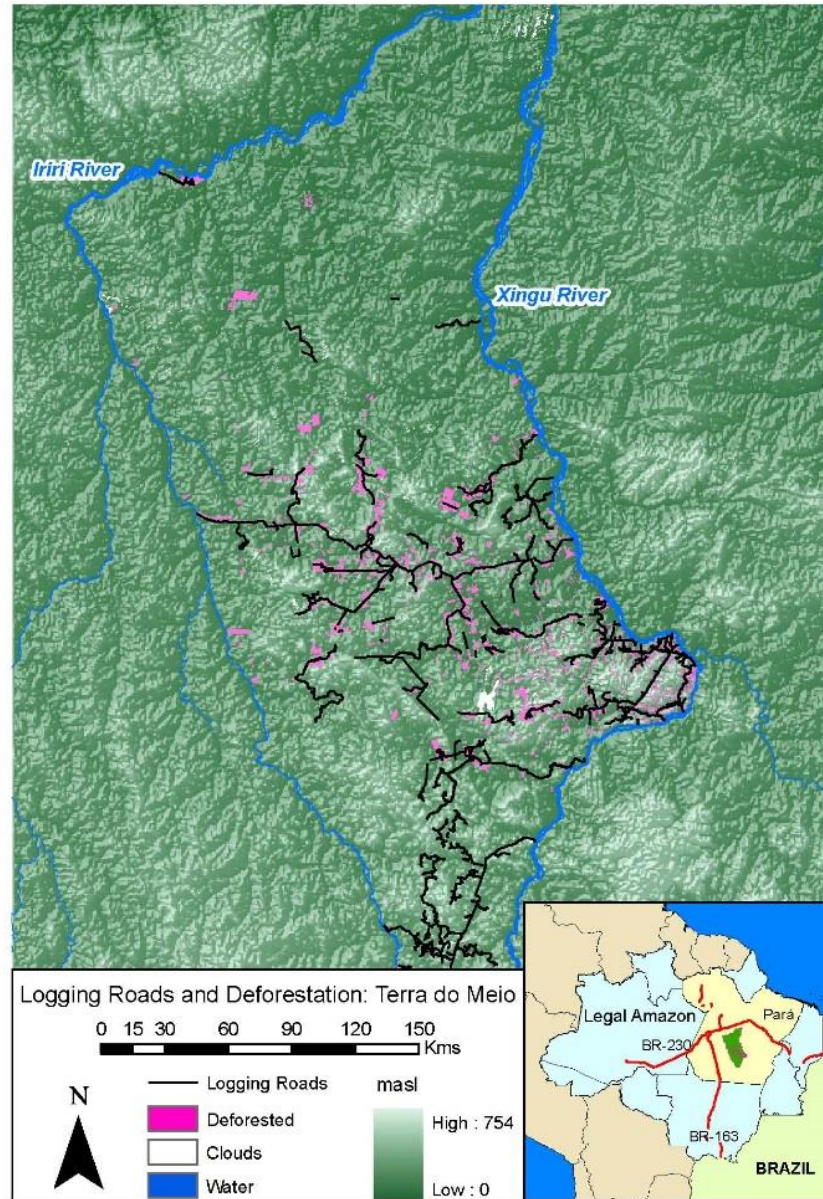


# Rectilinear fragmentation

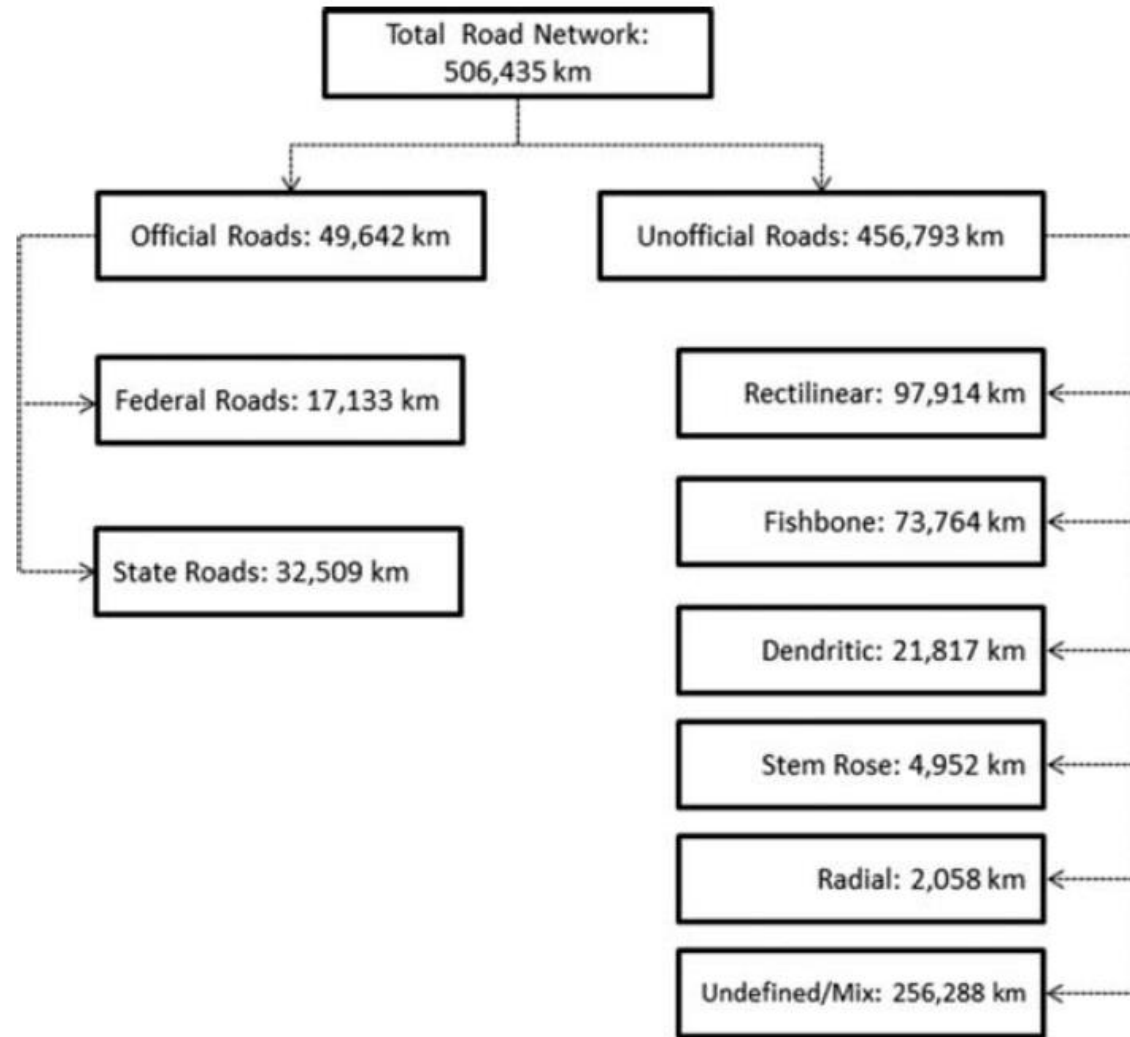




# Dendritic



# Magnitude of Fragmentation Types



# Social issues and land conflict

Productive use and land competition

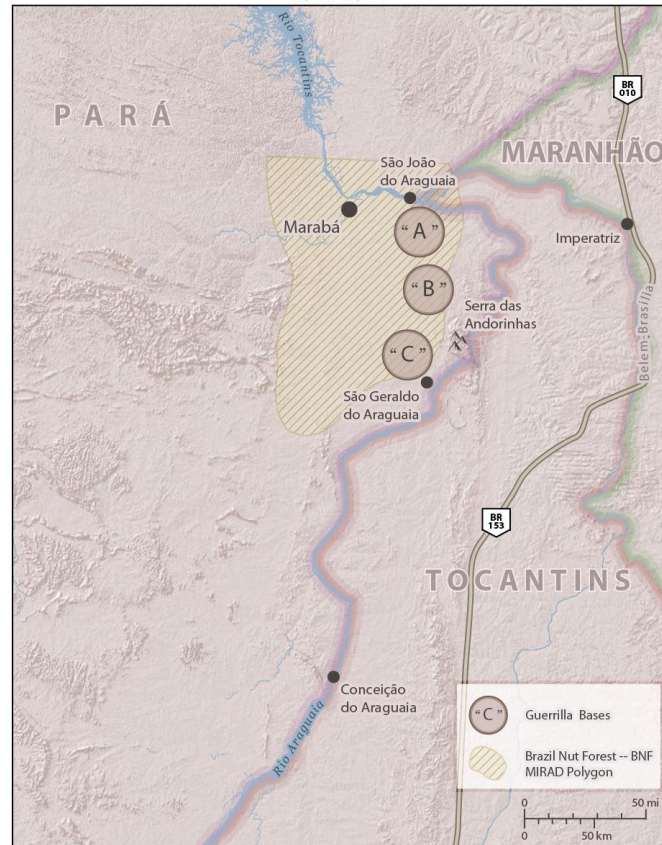
Land hunger

Political circumstances

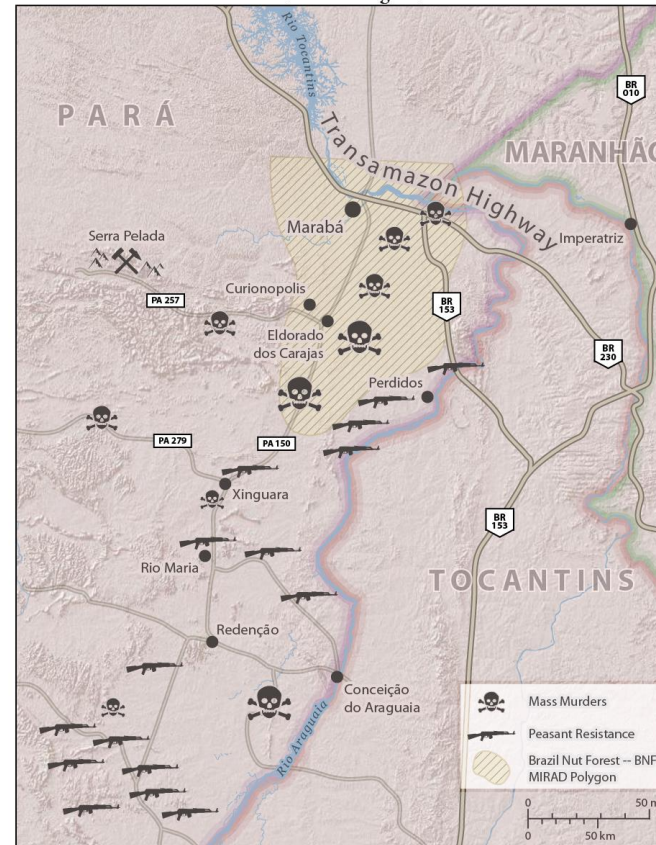


# Contentious Land Change

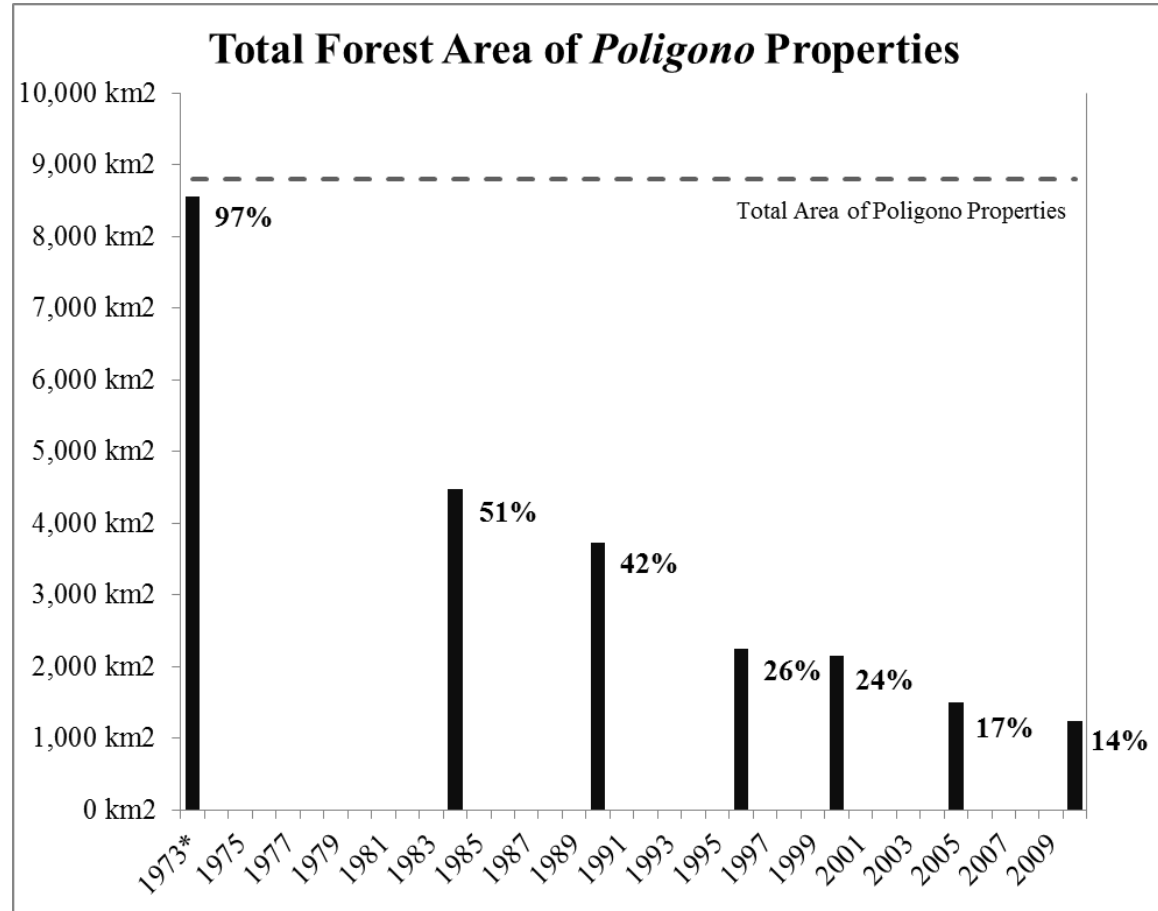
*The Little War of Araguaia*  
1972-1974



*The Peasant Struggle and War of the Brazil Nut Groves*  
Late 1970s through 1980s



# Contentious Land Change



# Hope for the future?

Forest transition, land sparing

Cause for hope

*Soybean moratorium*

*Enforcement of environmental law*

# Cause for concern

*Tipping point (?)*

*Indirect land use change*

*IIRSA project*

*Amazonia, a multi-modal hub*

*600+ dams*

*100,000 km roads (vs 77,000 km US Interstate System)*

*20,000 km waterways (vs 40,000 km in US)*

# IIRSA Dams

