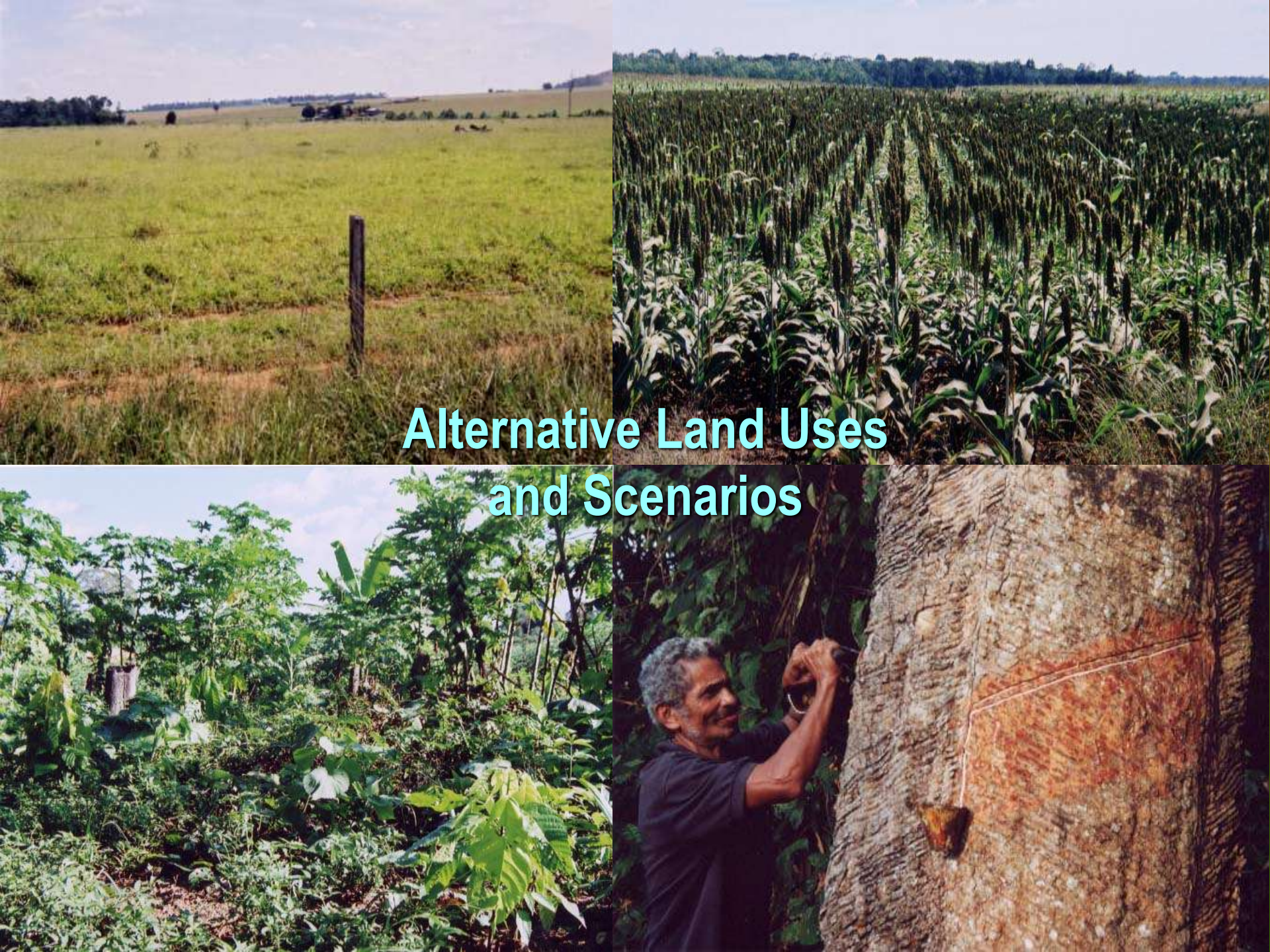


Alternative Land Uses and Scenarios

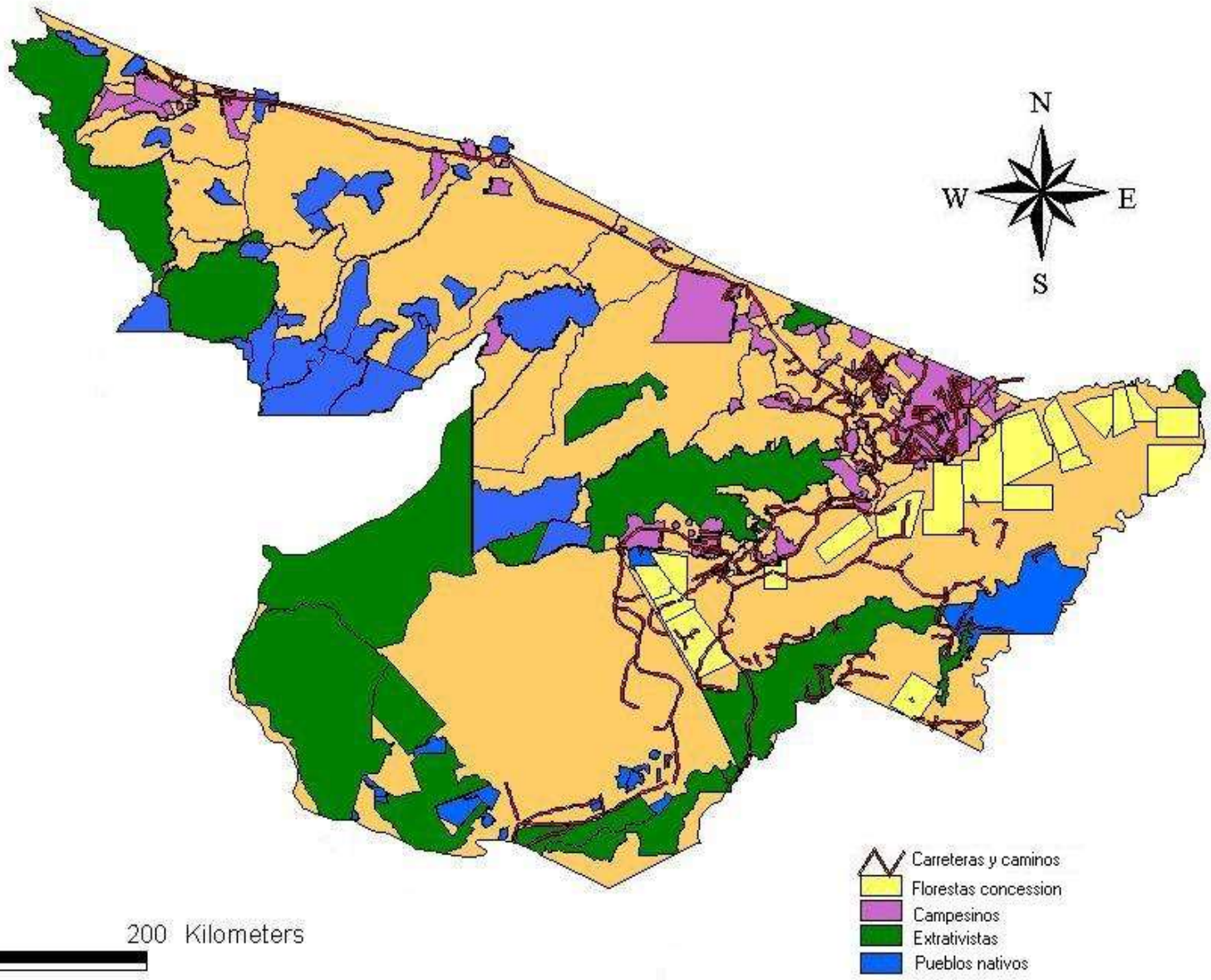
Alternative Land Uses and Scenarios

- Theoretical Debate and Alternative Land Uses
  - A major reason for theoretical debate over land use change are the many different land uses in the Amazon
  - Most are themselves the subject of debate for their merits and drawbacks
  - Ranching, logging, mechanized agriculture, etc.
  - Some land uses are held out as “better” alternatives

Alternative Land Uses and Scenarios

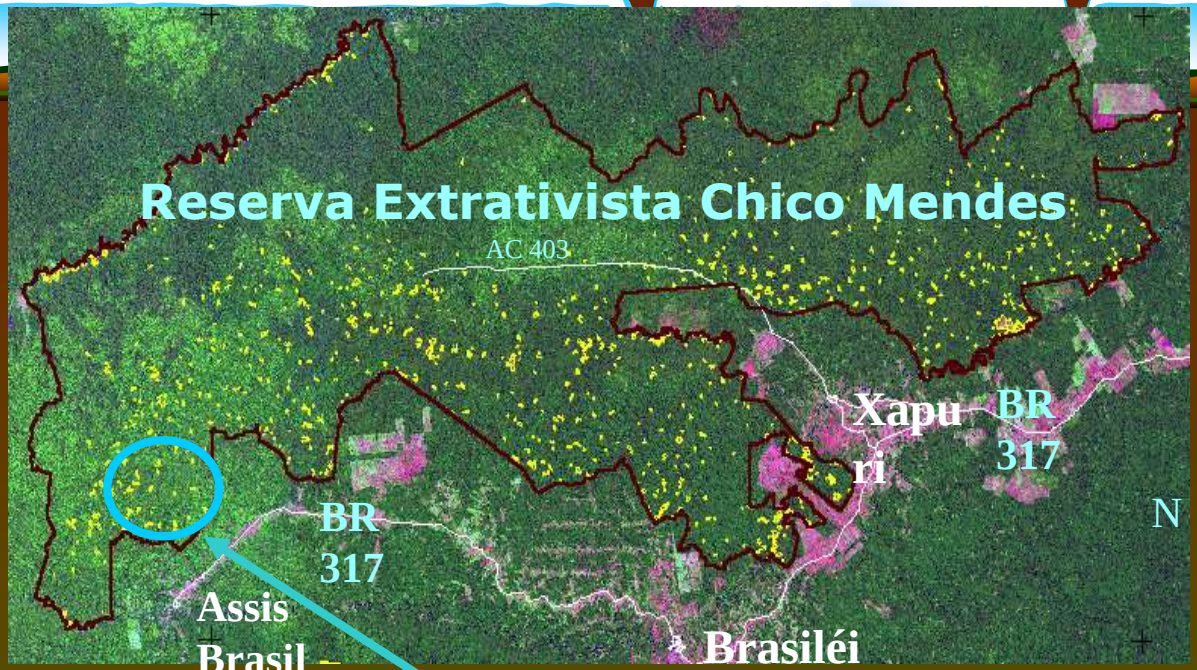
- Alternative Land Uses: Proposals
  - 1. Extractive reserves
    - Forest product extractivism, limited forest clearing
    - Goal of sustainable forest management
    - Rubber, Brazil nuts, oils, fibers, etc.
    - Generates employment, requires large forest areas

Zoneamento na Regiao MAP
Madre de Dios/PE, Acre/BR, Pando/BO



Alternative Land Uses and Scenarios

- Alternative Land Uses: Proposals
  - 1. Extractive reserves
    - Forest product extractivism, limited forest clearing
    - Goal of sustainable forest management
    - Rubber, Brazil nuts, oils, fibers, etc.
    - Generates employment, requires large forest areas
    - Debate over income generated, limited market access
    - Need for processing to add value to raw forest products


Reserva Extrativista Chico Mendes
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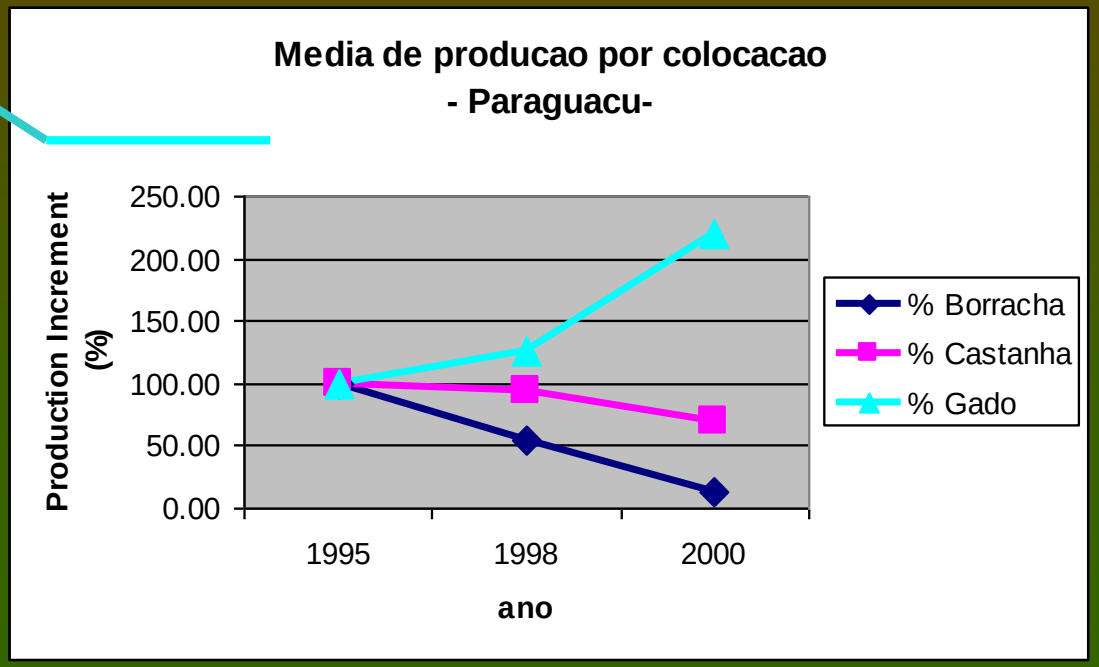
Media de producao por colocacao
- Paraguacu-
Production Increment (%)
250.00
200.00
150.00
100.00
50.00
0.00
1995
1998
2000
ano
% Borracha
% Castanha
% Gado


USINA DE
DE CASTANHA
BENEFICIAMENTO
CO BRASIL

Alternative Land Uses and Scenarios

- Alternative Land Uses: Proposals
  - 2. Agroforestry
    - Diversified cropping systems
    - Intercropping or sequenced planting of annuals, perennials, timber, medicinal sp.
    - Mimics forest succession, generates numerous income sources
    - Criticized for low productivity, incomes; now debated
    - Also agropastoral, silvipastoral, other systems

Alternative Land Uses and Scenarios

- Alternative Land Uses: Proposals
  - 3. Community ("traditional") management
    - Argument for control over resources by long-standing residents; riberinhos, indigenas, etc.
    - Knowledge of local species, best practices built up over long periods of time
    - Management by community decisions, with monitoring and mutual aid
    - Debate over "ecological nobility" of traditional groups, especially when facing market penetration


PRAINHA
A 3 KM
REC.: VICINAIS 165:
160 E 155 SUL
RECURSOS: PMU.
CAIXA

Alternative Land Uses and Scenarios

- Alternative Land Uses: Proposals
  - 4. Improved systems
    - Based on experimental agricultural testing
    - Identify best varieties, crop combinations, sequences of land use activities, zoning for “best uses”
    - Pasture rotation with legumes, non-traditional crops in agroforestry systems
    - Often capital-intensive, involves market risk


06 a 15 de junho
EXPONOP
2003
19ª Edição
Um encontro de emoções
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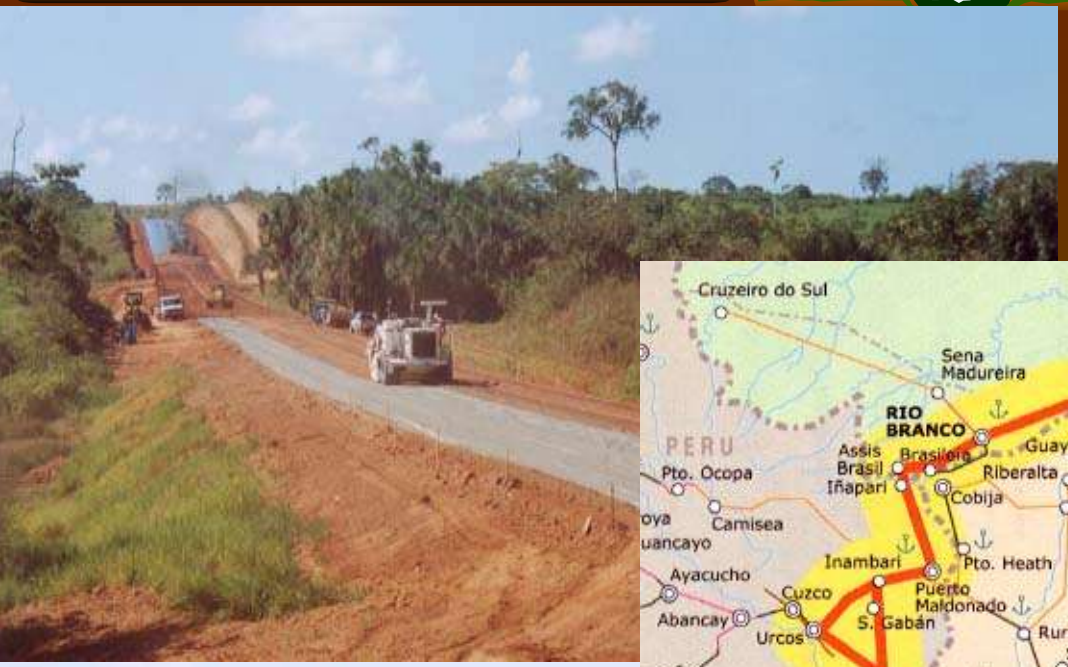
Alternative Land Uses and Scenarios

- Scenarios of Land Use
  - Theories of land use change, and diverse land use practices make it hard to anticipate future scenarios of land use
  - New infrastructure, new policies, new institutions, etc.




Estrada do Pacífico
Assis Brasil 60 Km
Cuzco / Peru 800 Km
Lima / Peru 1.931 Km
Oceano Pacífico 1.530 Km
Estrada do Pacífico / BR-317


Cruzeiro do Sul
Humaitá
Sena Madureira
PORTO VELHO
RIO BRANCO
PERU
Assis Brasil
Iñapari
Brasiléia
Guayamerin
Riberalta
Guajará-Mirim
Pto. Ocopa
Cobija
El Choro
Camisea
Inambari
Pto. Heath
Pto. Siles
Ayacucho
Puerto Maldonado
Cuzco
Abancay
S. Gabán
Urcos
Rurrenabaque
S. Borja
Trinidad
Yúcumo
Nazca
Juliaca
Puno
BOLIVIA
Arequipa
LA PAZ
Villa Tunari
San Ramón
Desaguadero
Cochabamba
Matarani
Moquegua
Oruro
Ilo
Tacna
Aiquile
Santa Cruz
Arica


PAVIMENTAÇÃO DO AERODROMO DE ASSIS BRASIL
GOVERNO FEDERAL
Trabalhando em Todo o Brasil
7ºBECnst
Exército Brasileiro
Força Aérea Brasileira
Ministério da Defesa
Avança Brasil

Alternative Land Uses and Scenarios

- Scenarios of Land Use
  - Theories of land use change, and diverse land use practices make it hard to anticipate future scenarios of land use
  - New infrastructure, new policies, new institutions, etc.
  - Land users face uncertainty and a lack of controllability in many aspects of the context of their landholdings
  - In any scenario for future land use, we must account for uncertainty and a lack of controllability

Alternative Land Uses and Scenarios

- Scenarios of Land Use
  - 1. Scenarios based on projection models
    - Run multiple models with different assumptions
    - Vary assumptions in terms of external “shocks”, whether economic or environmental
    - In model outputs, include estimates of statistical error or variation, as in climate models

Alternative Land Uses and Scenarios

- Scenarios of Land Use
  - 2. Scenarios based on adaptive management
    - Scientific data collection paired with stakeholder meetings
    - Assumes uncertainty but controllability
    - Land use exposed to external markets, but with strong local institutions, consensus
    - Decision-making based on scientific data
    - Outcome of a single strategy for local land management

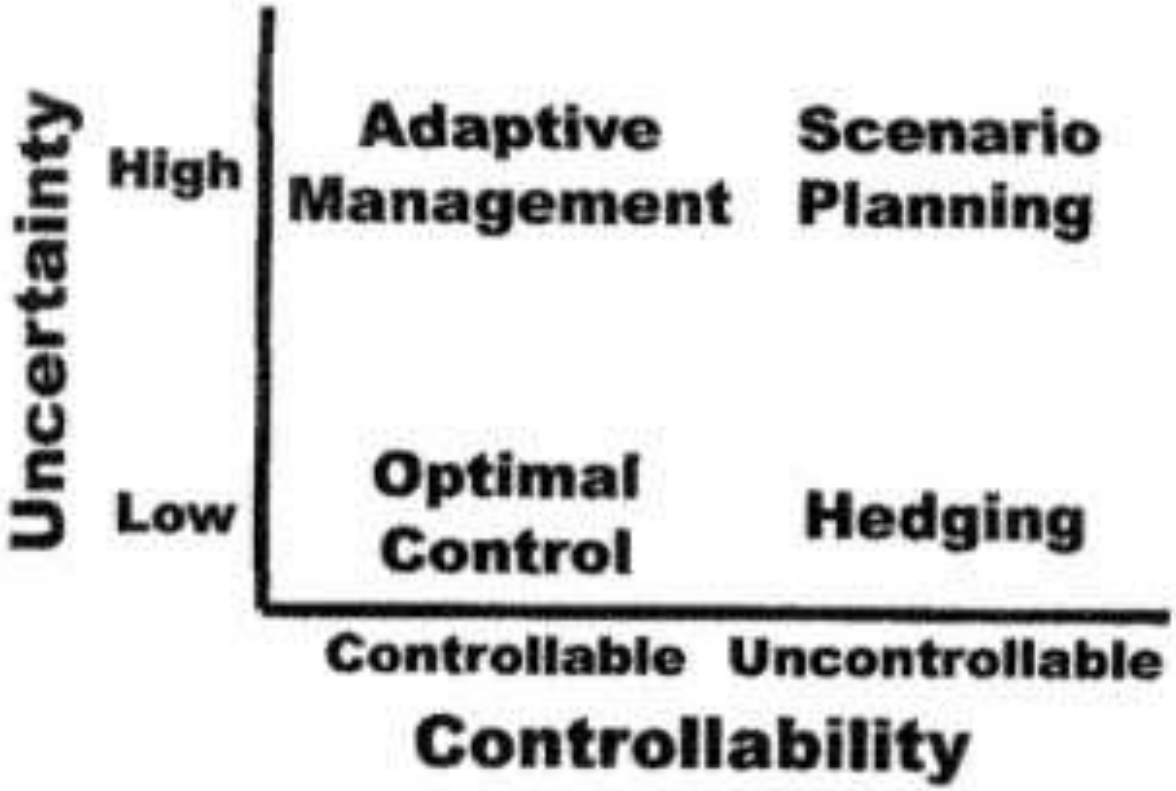


Figure 1. Scenario planning is appropriate for systems in which there is a lot of uncertainty that is not controllable. In other cases optimal control, hedging, or adaptive management may be appropriate responses.

Alternative Land Uses and Scenarios

- Scenarios of Land Use
  - 3. Scenarios based on scenario planning
    - Similar to adaptive management, but does not assume controllability
    - Stakeholder meeting with contributions of scientific data as well as stakeholder perspectives
    - Identification of alternative scenarios, followed by critical assessment and policy screening
    - Outcome of multiple scenarios to guide local action