

# Nested Vulnerability: cross-scale linkages & tele-connections in Mexican and Vietnamese coffee systems

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Mexico

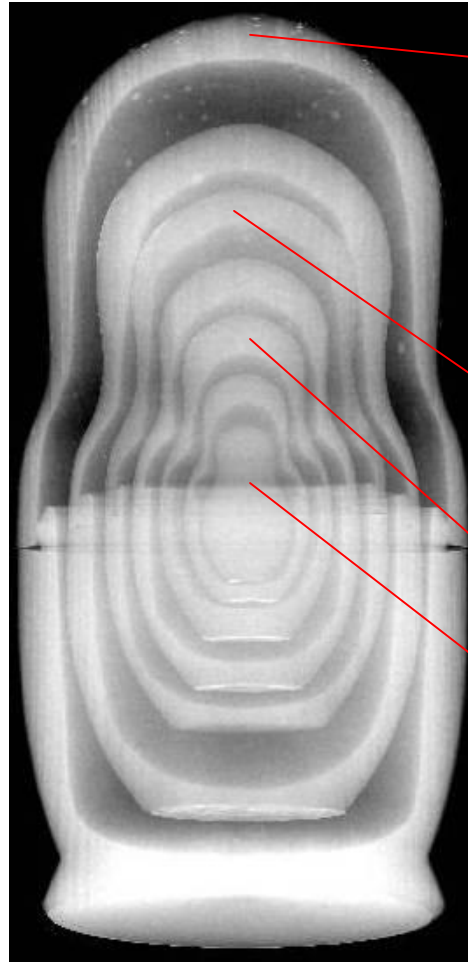
Vietnam

# Vulnerability & Global Change in Food Systems

- Need to move vulnerability analysis from *sector & place* to *networks & nestedness*
  - Linkages across space (teleconnections)
    - Impacts & responses in one location reverberate in another
  - Linkages across levels (nestedness)
    - Local-global interactions

# Nested

How different levels fit within a Hierarchy

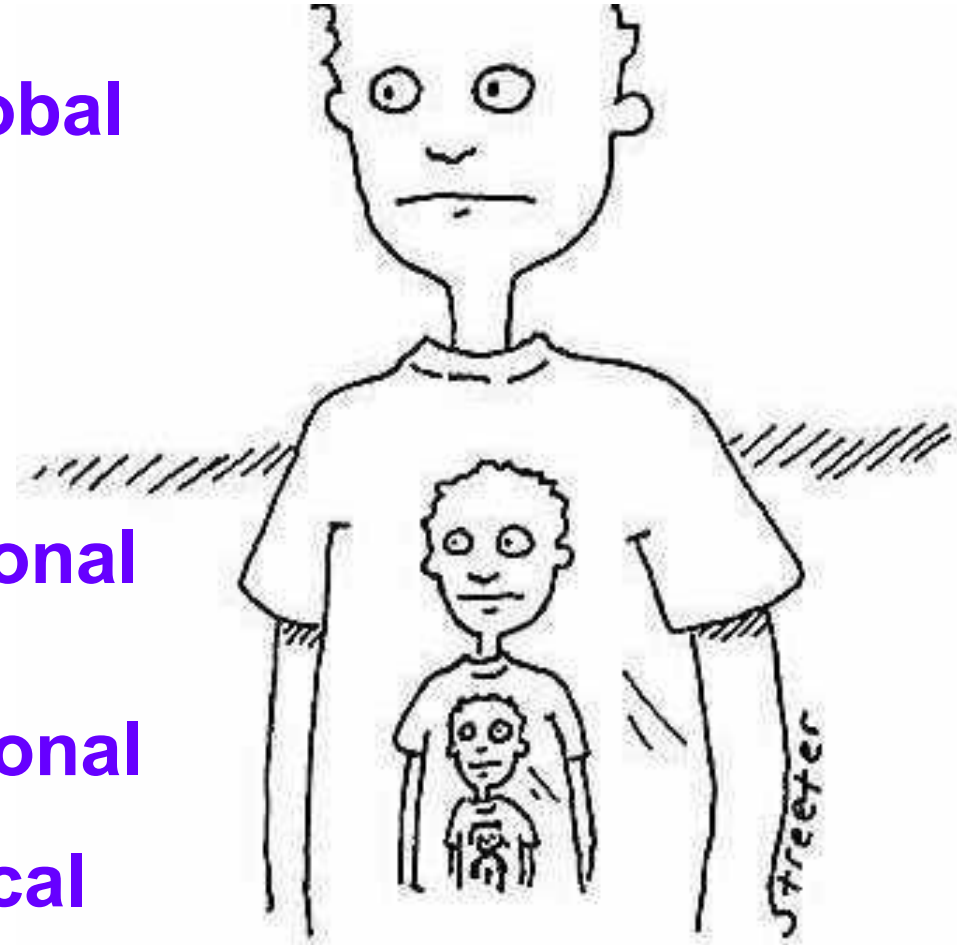


**Global**

**National**

**Regional**

**Local**



# Implications of New Terms for Vulnerability Analysis

Opening a window on multiple scales

- **Nestedness:**
  - changes in key variables operating at one level have non-linear outcomes for processes operating at broader levels of analysis
- **Tele-connected:**
  - geographically specific signals of change stimulate outcomes in distant places.

# Tele-connected & Nested Vulnerabilities in the Coffee Sector

- How do global changes affect smallholders in (dis)similar ways across different coffee producing nations?
- How are local *responses* and livelihood vulnerabilities linked across space and time?

Two case studies: Veracruz, Mexico & Central Highlands of Vietnam

# The Case of Coffee



Source: The National Geographic: <http://www.nationalgeographic.com/coffee/map.html>

- Suited to tropical mountain ecosystems
- Cash crop of smallholders in developing nations
- *Livelihood* activity vs. commercial enterprise
- Livelihood connected via global markets

# What conveys signals of change in the coffee food system?

- **Economic globalization:**
  - Volatility of coffee prices: std dev. of monthly price returns ~ 24%
  - Place-based environmental shocks = price shocks (e.g, frost in Brazil)
- **Globalization of ideas:**
  - Liberalization
  - End of the Cold War
  - Sustainability & “Fair Trade”

# What conveys signals of change in the coffee food system?

- **Movement of actors & technology:**
  - People: coffee producers and laborers
  - Traders, investors, NGOs
  - Dissemination of technological packages
- **Institutions** (norms, rules, legislation)
  - Collapse of International Coffee Agreement
  - Dissolution of parastatals
  - Requirements for market participation

# 1989-1993: Weak Linkages via Ideological Shifts & Market Integration

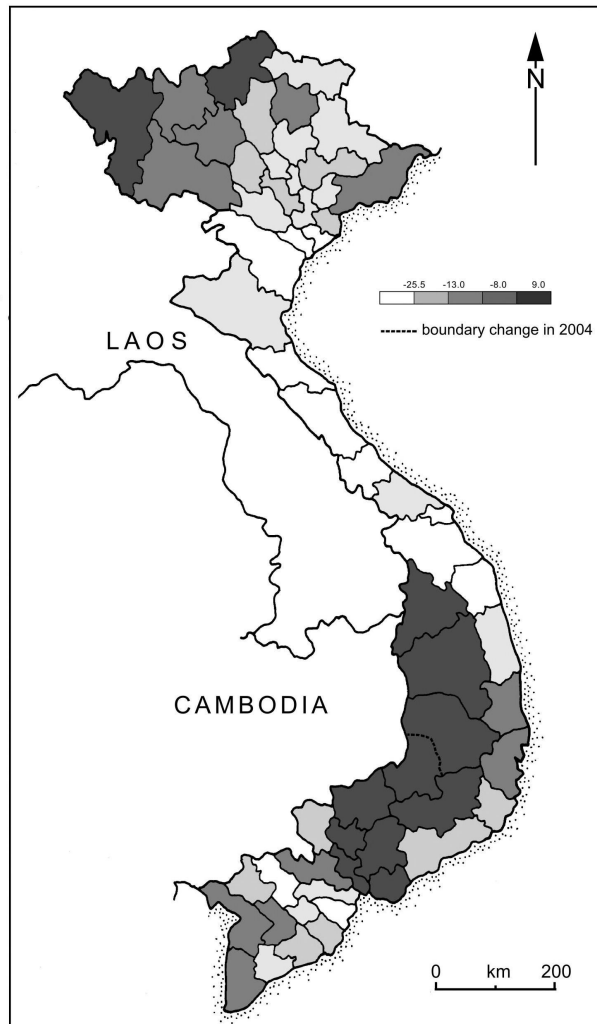
## MEXICO

- 1989: Closure of INMECAFE; ICA
- Frost losses & emigration of labor
- Liberalization of input markets
- **Result: Decline in productivity**

## VIETAM

- 1989 USSR collapse
- *Doi Moi*
  - Land privatization
  - Increased labor mobility
- Trade openness & economic liberalization
- **Result: Expansion of export agriculture production**

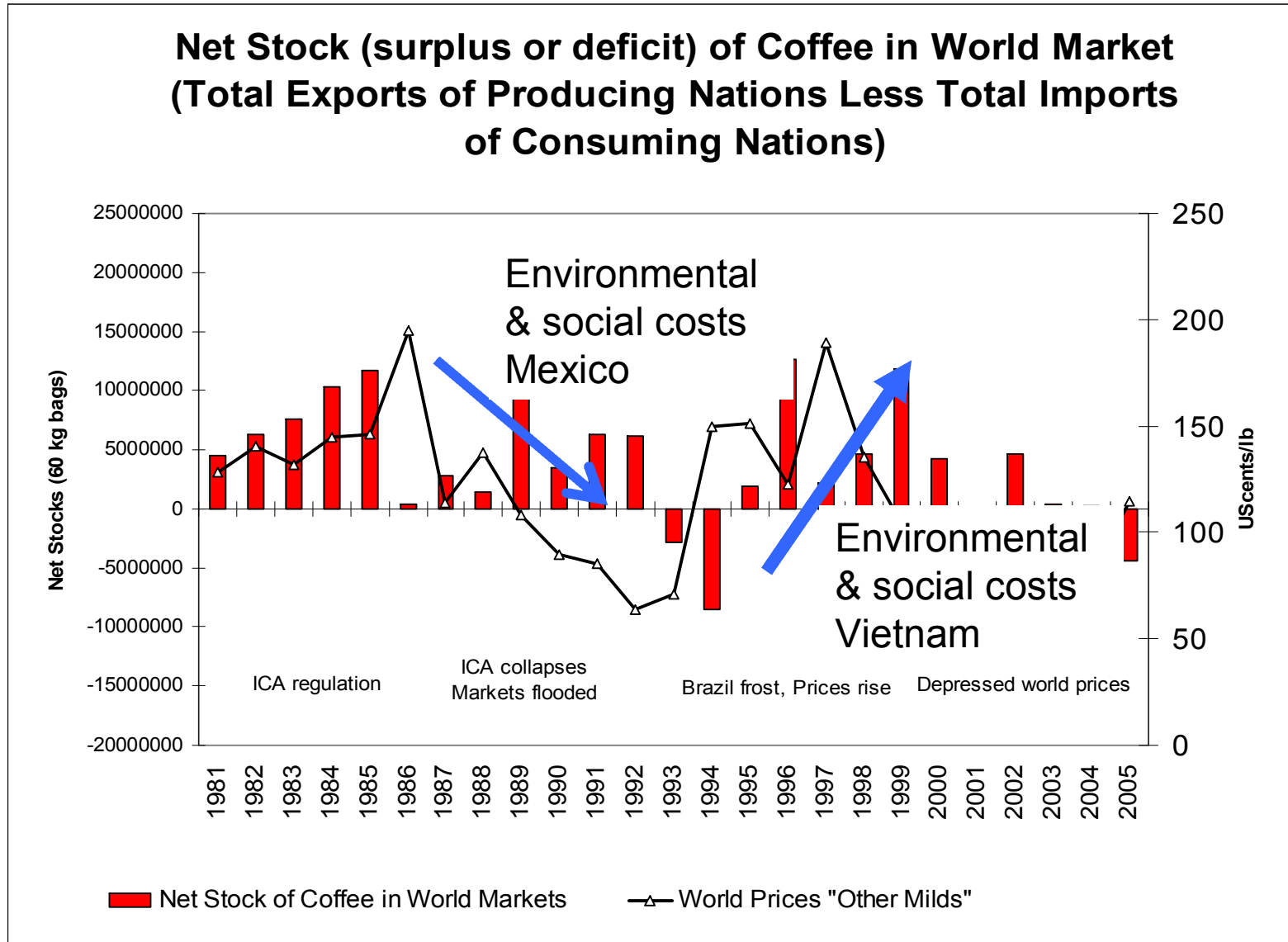
# 1994-1998: Nested vulnerabilities via climate & price shocks



(Map by P. Judge, adapted from Dang Nguyen Anh et al, 2003)

- Brazilian Frost causes price spike 1994-95
- Vietnamese farmers respond:
  - Immigration & land use change in highlands
  - Coffee area expands by 15%/yr
  - Production doubles
- Mexico's production stagnates
  - Labor scarcity
  - Market failures
  - Lack of credit & technology

# 1999-2003: Nested & Tele-connected Vulnerabilities



# Tele-connected Vulnerabilities

## MEXICO

- Increase in poverty
- Emigration increase of 100% between 1997-2003
- Decline in coffee investment
- Pest infestations & drought

### *Outcome*

- Land to sugar cane, urban residences
- Abandonment (forest regeneration)

## VIETNAM

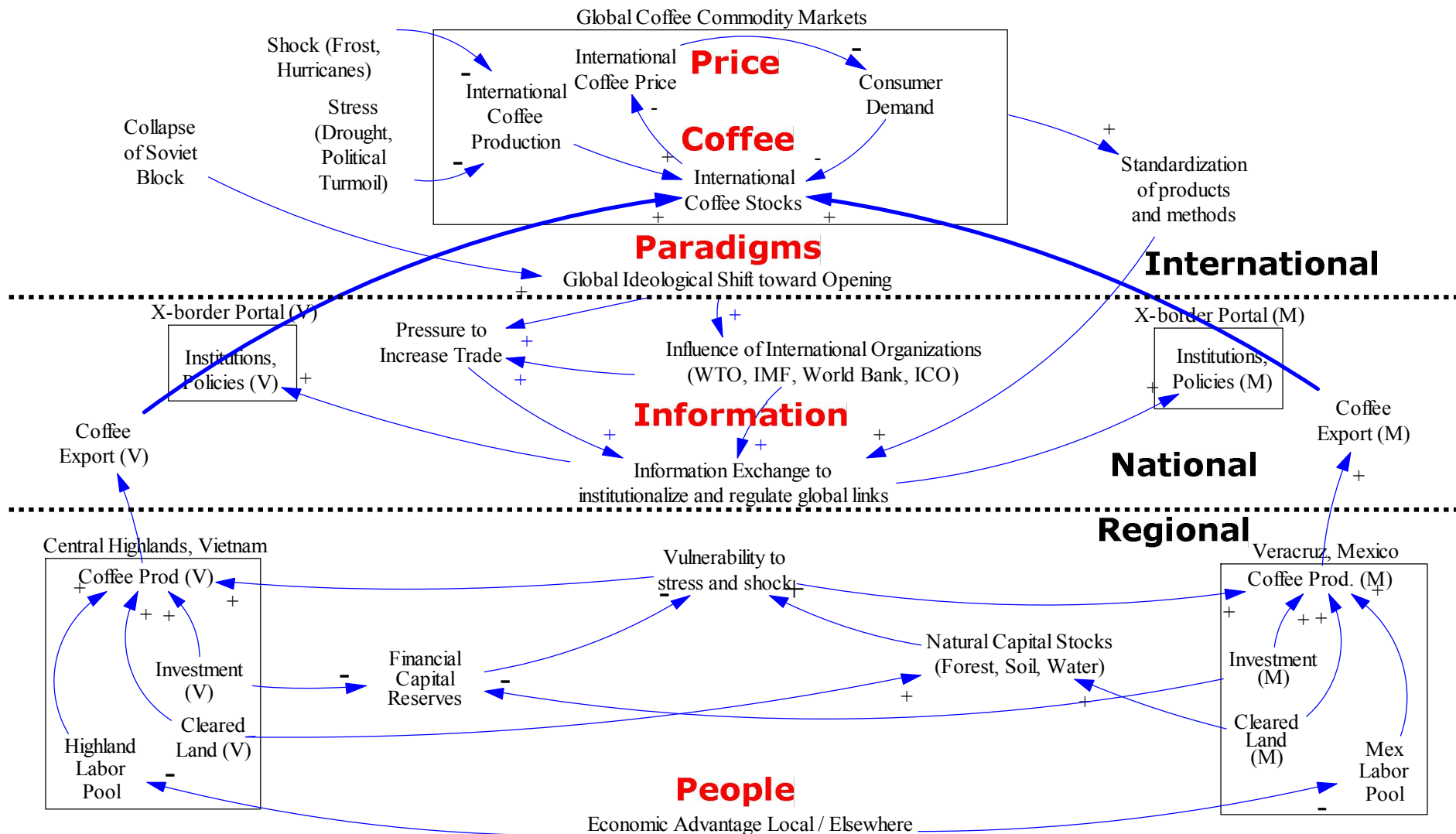
- Farmers' debt burden
- Reduction in investment
- Increase in social conflict
- Environmental degradation:
  - Decline in groundwater
  - Decline in forest cover
  - Erosion

### *Outcome*

- Return migration to lowland
- Farm abandonment
- Shift in coffee varieties (Robusta to Arabica)

What is the vehicle?	What facilitates?	What signals are conveyed?
Price	Commodity exchanges & futures markets	Place-based supply shocks, change in consumer/producer behavior
Coffee	Multinational exporters, roasters, distributors; NGOS	Consumer preferences; production quality standards
Paradigms	Governments, buyers, consumers, investors, international agencies & NGOs	Ideas about role markets, government, quality, fairness, sustainability
Institutions & Information	Aid organizations; International Coffee Organization; national coffee boards & research groups; sector agencies	Non-monetary values (e.g., ecoservices; fair trade); production standards & incentives; social safety nets
People	Migration, social capital in commodity chains, farmer-farmer associations & cooperatives	Technology, market knowledge, environmental experience, empowerment

# Mechanisms of Tele-connections



# Summary

- People & places are tele-connected
  - Linkages via markets, prices, people, institutions and ideological shifts
  - Local geographies filter global influences & amplify/diminish global significance of local responses
- Nestedness:
  - Top-down influence of prices, commodity regulation, neoliberalism & cold war ideology
  - Upward influence of environmental degradation (via global environmental change); environmental shocks and production volumes (via global price)

# Conclusions

- Local vulnerabilities & adaptive responses can matter for distant places & people
- Identifying relevant tele-connections may help address local vulnerability
- Tele-connections may also be vehicles of *resilience*
  - Social mobilization; alternative commodity chains; farmer-to-farmer networks