Changing agricultural land-use patterns and the drivers of these changes in Vietnam’s Red River Delta

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Overview

• Background on Agricultural Transitions in SE Asia
• Introduction
• Study Area
• Changes in the Red River Delta of Vietnam
  • Findings to date
• Case Study – Agricultural and land-cover changes in Xuan Quan Commune
• Discussion
  • Drivers of Changes
  • Next steps
Background: Agrarian Transition

• As economies grow, farm sizes grow, but rural populations decrease
• Originally documented in the “developed” countries (U.S., Europe, Australia, some countries in South America)

• Southeast Asian countries:
  • moved from low income to middle and upper-middle income
  • Share of GDP from agriculture has dropped
  • Share of labor force in agriculture has dropped
  • Transition in farm size has not occurred
  • Truncated agrarian transition(?)
Introduction: The context of this presentation

• Research is part of the larger project: “The agrarian transition in Mainland Southeast Asia: Changes in rice farming – 1995 to 2018” (PI: Jefferson Fox; Co-I’s Jamon Van Den Hock, Kaspar Hurni, Caitlin Kontgis, Ian Baird, Stephen Leisz)

• Focus of larger project:
  • Northeast and Central Regions, Thailand
  • Savannakhet Province, Laos
  • Battambang Province, Cambodia
  • Mekong Delta, Vietnam
  • Red River Delta, Vietnam
The Red River Delta

• One of two major rice growing regions in Vietnam
  • Historically important to Vietnam for rice production
• Yields per hectare of rice can be greater than 13 ton/ha
• Hanoi is located near the center of the Red River Delta
• Industrial zones expanding
Policies related to farming in the Red River Delta

• 1954: Land to the tiller
  • Redistribution of land from landlords to local households
• 1960 – 1980: Collectivization
• 1986: Doi Moi
  • Land to households (“Red books”: right to exchange, bequeath, transfer, lease, mortgage)
  • Long term leases (20 yrs/annual crops, 50 yrs/perennial crops)
• 1993: Land Law
  • Equal distribution of land
• 2013: Lease period for all land 50 years

Note: Within land laws prohibition on converting large areas of rice land to other uses have been in place.
Study sites

- Provinces randomly chosen
  - Stratified Red River Delta into upper, middle, lower regions
  - Randomly chose one province from each region
- Districts randomly chosen from each province that was selected
- Communes – selected by district
- 7 communes:
  - Yen Lac, Dai Tu (Vinh Phuc [upper])
  - Xuan Quan, Pham Ngu Lao, Vinh Xa (Hung Yen [middle])
  - Nam Duong, Nam Thang (Nam Dinh [lower])
Methods

- Interviews
  - Semi-structured interviews (2018)
    - Officials at the Province, District, Commune
    - Key informants in each District and Commune
  - Structured Questionnaire (2019)
    - 270 households

- Remote Sensing
  - High Resolution Imagery analysis for commune level case studies
  - Ground truth collected in the field
  - Object based image analysis and visual interpretation
    - Results checked against high resolution imagery after classification and ground truth

(Note: on-going not completed for all sites)
Results:
Farming Systems in the RRD

Upper RRD: Vinh Phuc Province
• Land allocation 1993
• Two rounds of land consolidation (2002, 2013)
• Agriculturally dependent
  • Rice growing (2 crops or 1 crop)
  • Winter vegetable crops for market
  • Aquaculture
• Consolidation of rice land at household level
  • Fewer plots per HH
  • Some HH leaving farming; rent land to others (5 year rental agreements)
• HH labor starting to go to industrial parks
Results:
Farming Systems in the RRD

Middle RRD: Hung Yen Province
• Land allocation 1993
• Two rounds of land consolidation (2002, 2013/2014)
  • Plots of rice land per HH decreased from 8 to 1 to 2
  • Two crops of rice per year
  • Rice growing less emphasized
  • Winter crops grown on 1/3 of land
• Goal of Province: decrease rice growing and increase tree crops
  • History of fruit and flower production (originally in northern part of province; moving to southern and eastern areas)
  • Provide trees/flowers for landscaping of new housing developments
Results:
Farming Systems in the RRD

Lower RRD: Nam Dinh Province
- Land allocation 1993
- Agriculture focuses on rice growing
  - 3 crops per year or 2 crops per year
  - Winter crop (potatoes, cauliflower, groundnuts, melons)
  - Consolidation of plots; fewer plots per HH (2 or 3)
- Other agricultural activities
  - Mulberry trees
  - (New) Sod farming (sell to hotels, resorts, golf courses in Vietnam, Laos, Cambodia)
Case Study: Farming System and Land Cover Changes in Xuan Quan Commune

• Located in north of Hung Yen Province; close to Hanoi
  • In addition to rice growing, historically supplied fruit and flowers to Hanoi market
• 2012: lost rice growing land east of dike to housing development (EcoPark)
• 2012: Households started replacing rice and fruit trees with ornamental trees and flowers
Xuan Quan 2002 – Farming System and Land Cover

Land-Cover

• Residential: 109 ha
• Agriculture
  • Rice: 298 ha
  • Tree crops / trees: 41 ha
  • Mixed agriculture: 44 ha
• Water: 47 ha
• Mixed land covers: 13 ha
Xuan Quan 2010 – Farming System and Land Cover

Land-Cover
• Residential: 156 ha
• Agriculture
  • Rice: 173 ha
  • Tree crops / trees: 107 ha
  • Mixed agriculture: 62 ha
• Water: 35 ha
• Mixed land covers: 20 ha
Xuan Quan 2017 – Farming System and Land Cover

Land-Cover
• Residential: 174 ha
• Agriculture
  • Rice: 36 ha
  • Tree crops / trees: 186 ha
  • Mixed agriculture: 54 ha
  • Tree nurseries: 35 ha
• Water: 29 ha
• Mixed land covers: 38 ha
## Discussion

### Trajectory of the changes in Xuan Quan Commune

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<th>2002</th>
<th>2010</th>
<th>2017MM</th>
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<tbody>
<tr>
<td><strong>Built up</strong></td>
<td>Residential (100 ha)</td>
<td>Residential (95 ha)</td>
<td>Residential (155 ha)</td>
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<tr>
<td></td>
<td>Roads, Construction areas (9 ha)</td>
<td>Roads, Construction areas (61 ha)</td>
<td>Roads, Construction areas (18 ha)</td>
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<tr>
<td><strong>Agriculture</strong></td>
<td>Rice fields (298 ha)</td>
<td>Rice fields (173 ha)</td>
<td>Rice fields (36 ha)</td>
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<td>Tree crops / tree areas (41 ha)</td>
<td>Tree crops / tree areas (107)</td>
<td>Tree crops / tree areas (186)</td>
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<td></td>
<td>(Mixed agriculture 44 ha)</td>
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<td>Mixed land cover (20 ha)</td>
<td>Mixed land cover (38 ha)</td>
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### Social changes/livelihood changes:
- ½ HH (or more) own nurseries and employ others in commune or external workers
- Household income increased; residential improvements
- Decrease rice agriculture; increase tree crops
Discussion: Drivers of changes in Xuan Quan Commune

Hanoi: Industrial park expansion; Expanding middle class (Demand services / better housing / other)

Xuan Quan Commune
- Lost land
- Diversified agriculture
- Increased income

Trees / flowers for housing developments; Industrial parks

Fruit tree orchards displace to other communes within the province

Rice price

Government Policy (national, local)

Industrial Expansion; Tourism; NGOs

Infrastructure Employment

Export market demand; International Investment

Ecopark

Construction Companies
Conclusions and next steps

• Implications for other communes in the Red River Delta
  • Decrease in land devoted to rice growing (decrease in rice production?)
  • Diversification of agricultural crops
  • Farmers continue in agriculture, but not growing rice
    • Agrarian transitions in some cases may take different forms than the classical one that most literature addresses
    • Is this a form of what Rigg (2018) describes as a truncated agrarian transition? Or another type of agrarian transition?

• Next steps
  • Object based image analysis for other commune cases
  • Expand analysis to cover each district and province
  • Household Questionnaires in all communes (August 2019)
Thank you