

Urban-Rural Teleconnections within borders and across borders: the case of Vietnam and Laos within the East-West Economic Corridor

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Outline

- Introduction: setting the context
 - Aim of this presentation
 - The East-West Economic Corridor
 - Teleconnections
 - The Study Area
- Methods
 - Interviewing and fieldwork
 - Remote sensing image analysis
- Results
 - Urban changes
 - Rural changes
- Discussion
 - Drivers of urban changes
 - Drives of rural changes
 - Cross border teleconnections
- Conclusions

Aim of this presentation

- Focusing on the land-use/cover changes taking place in the border districts of Quang Tri Province, Vietnam, and Savannakhet, Laos, address the following questions:
 - (1) what are the land-cover/land use changes taking place in the urban and rural districts of the East-West Economic Corridor (EWEC) along the Laos/Vietnam border?
 - (2) What are the drivers of these changes?
 - (3) Is there evidence of urban-rural teleconnections on both sides of the border?

Background: The EWEK

GREATER MEKONG SUBREGION EAST-WEST ECONOMIC CORRIDOR



Figure 1: Credit: Strategy and Action Plan for the GMS EWEK (2010)

Background: Teleconnections

What are teleconnections?

Atmospheric:
Spatially and temporally large-scale anomalies that influence the variability of the atmospheric circulation

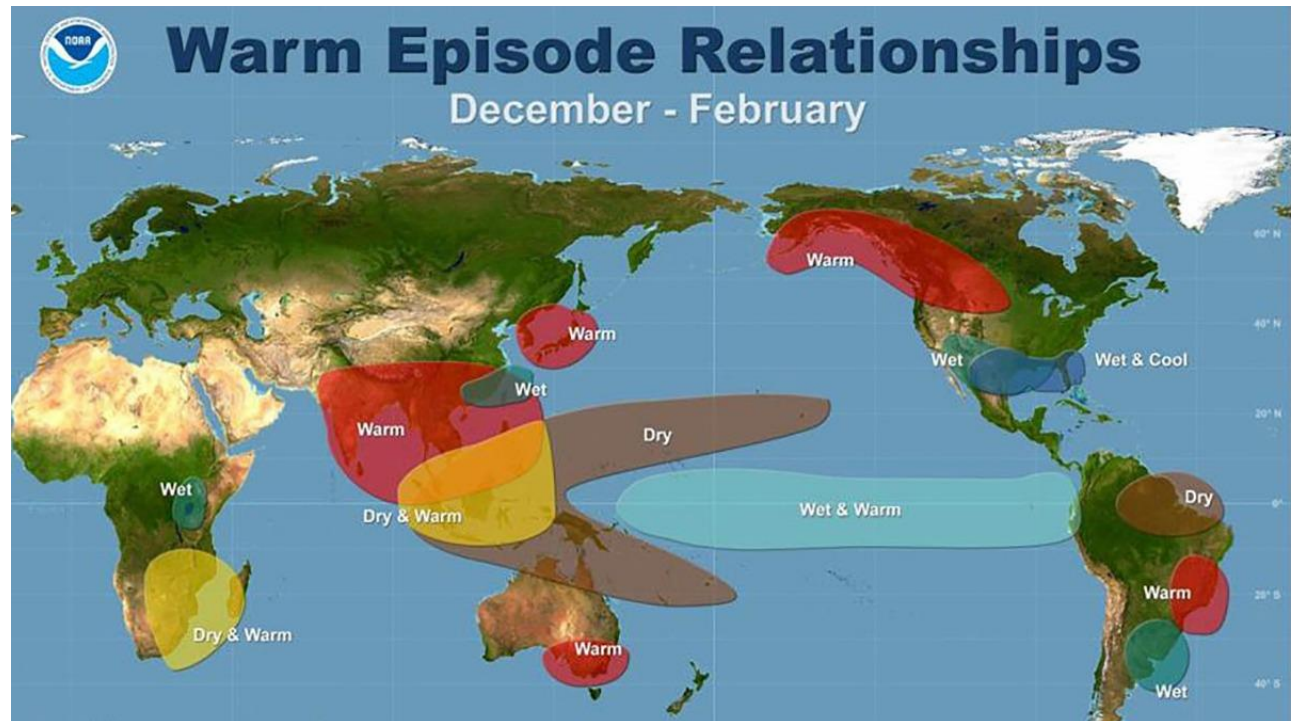
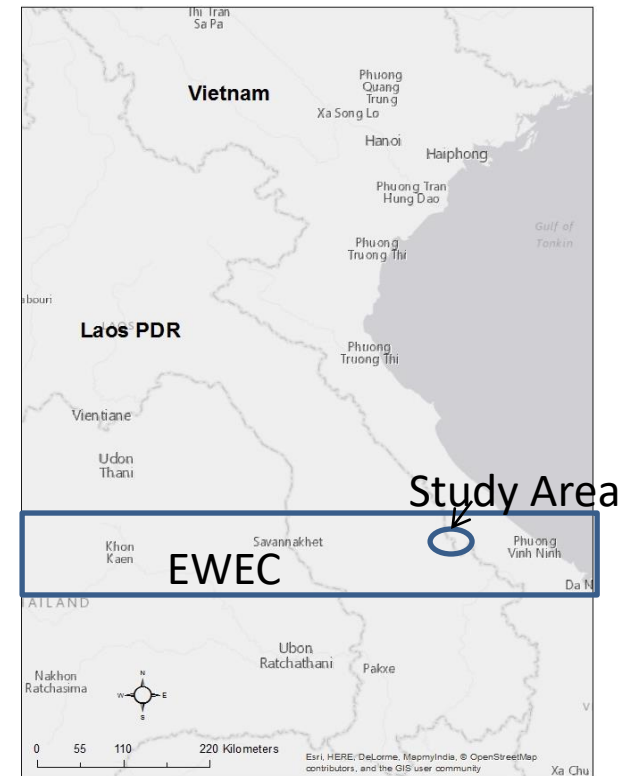
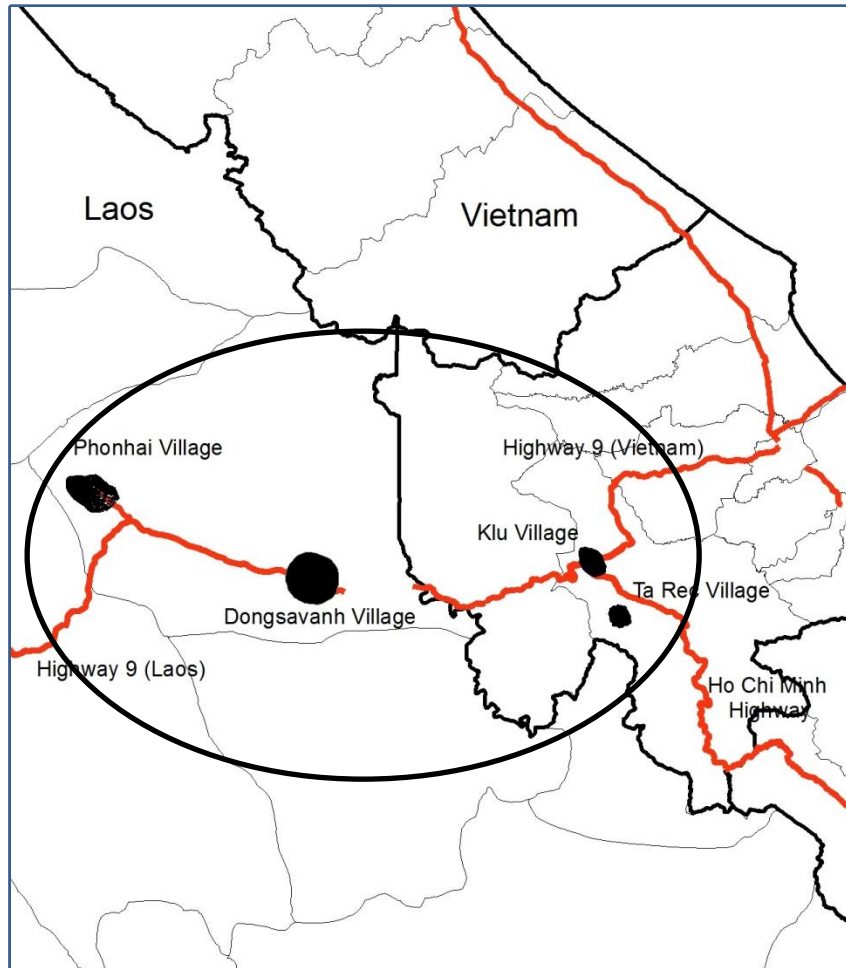


Figure 2. NOAA via UCAR

Teleconnections in land change studies:

- Seto et al., the GLP/UGEC Project, Guneralp et al., and others:
 - Urban areas create demand, originate resources, and impact other places
 - flows of people, economic goods and services, between urban and rural areas that drive land use change in rural areas, peri-urban, and distal urban areas
 - over short distances or long distances, and can be comprised of single linkages or multiple linkages between urban and rural areas

Introduction: The Study Area

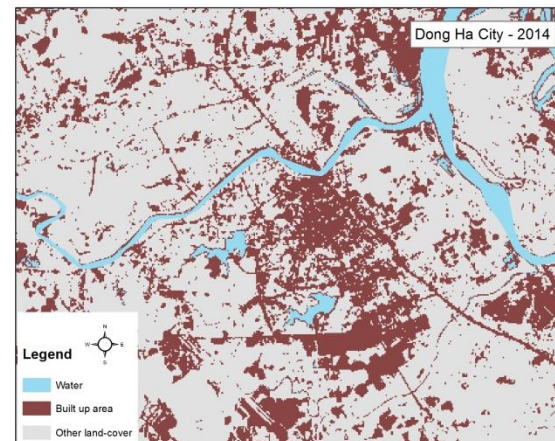
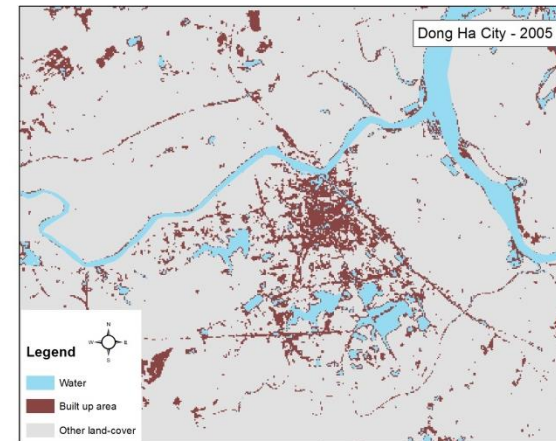


Methods

- Interviews (semi-structured)
 - Province, district, commune, village levels
- Interviews (structured)
 - Village level
- Transects
- Satellite (Landsat TM) image analysis

Results: Urban Changes Dong Ha City

- Infilling of core city area
 - Private residences, private shops, government buildings
- Extension of city
 - South and southeast: government buildings, residences, industrial zone (cassava starch factory; wood processing)
 - North: residences, hotels, services

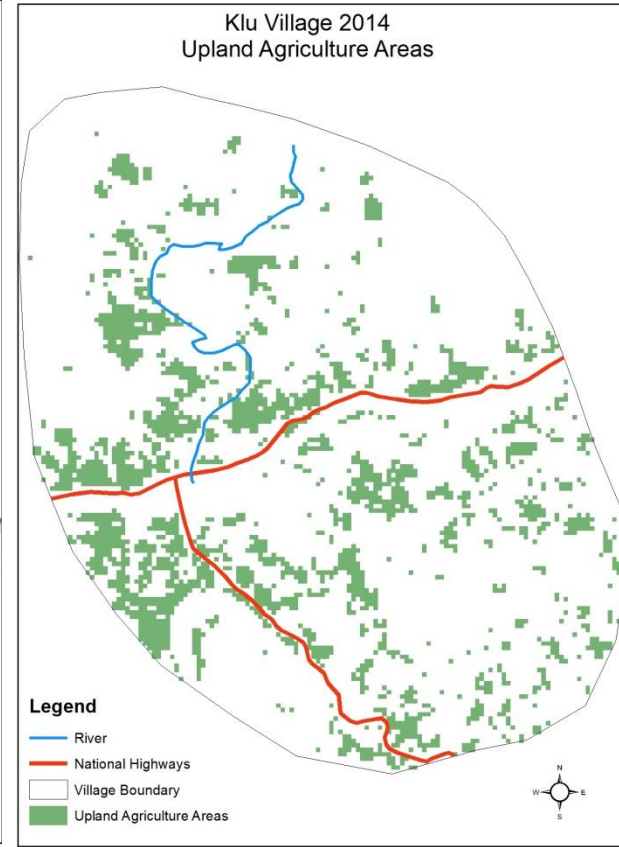
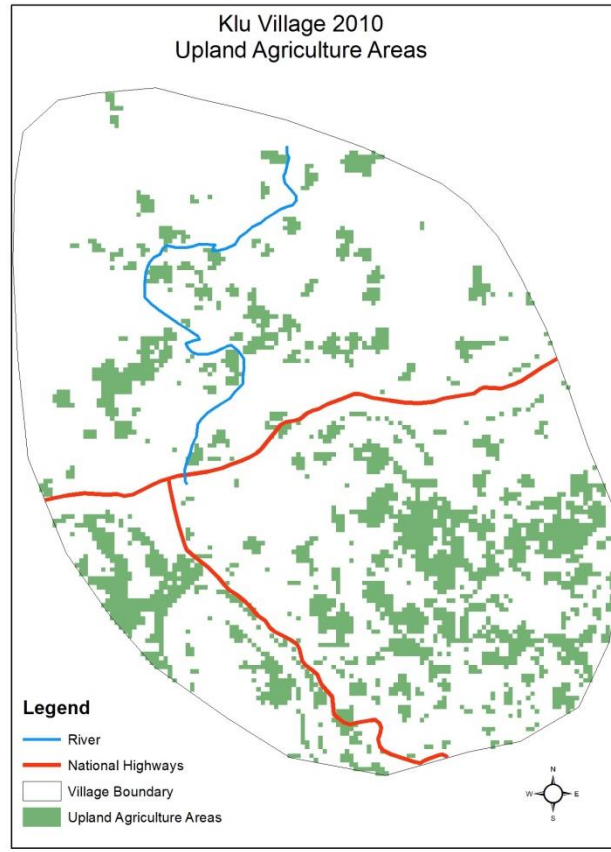
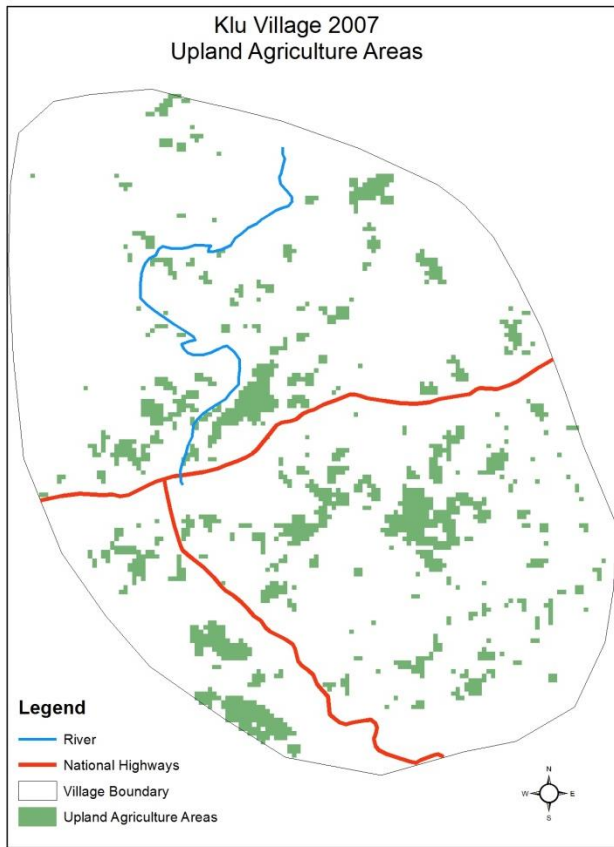


Results: Rural Changes in Vietnam

Klu Village

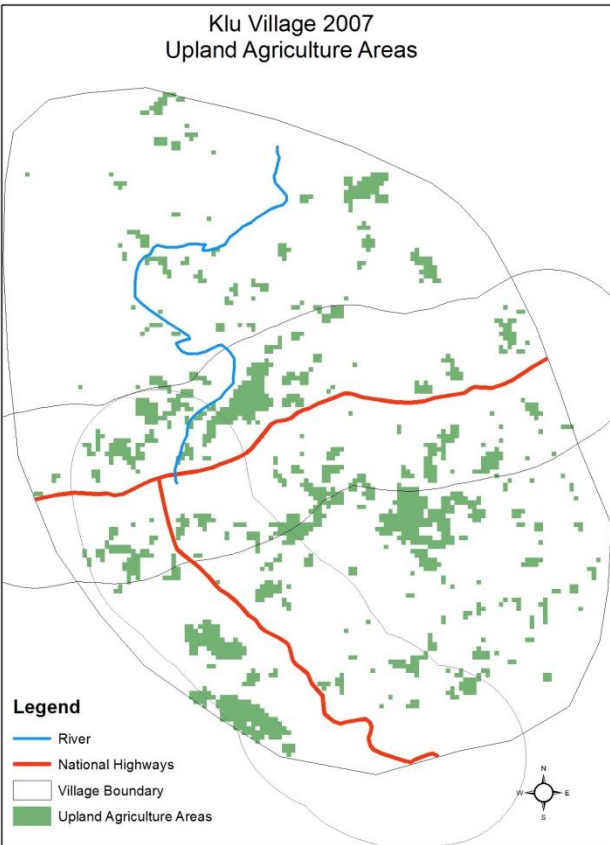
- Upgrade of Highway 9 and Ho Chi Minh Highway
- Continuation of swidden rice
- Expansion of hybrid cassava (near road)
- Acacia tree production in fallow for selling
- Service shops opening

Upland fields in Klu (pre/post Highway 9 upgrade)

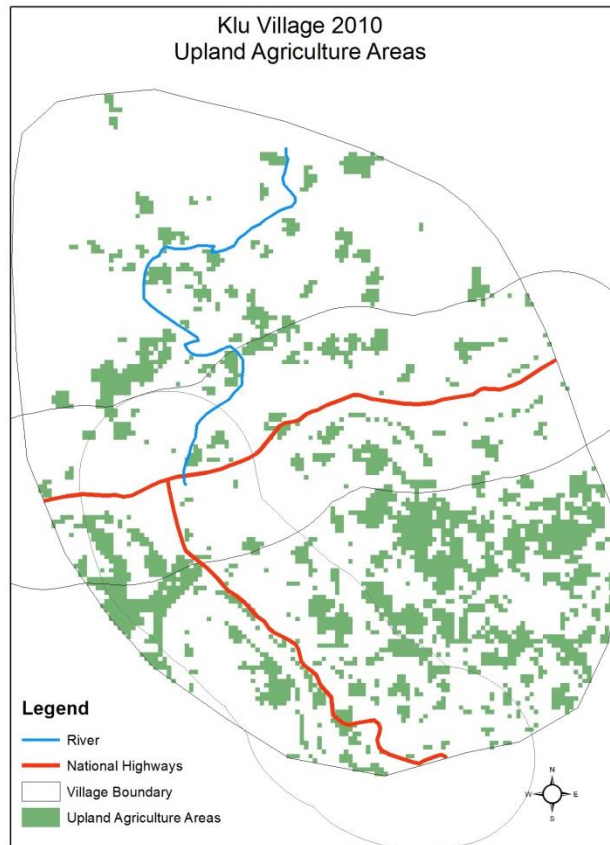


Upland fields in Klu (pre/post Highway 9 upgrade)

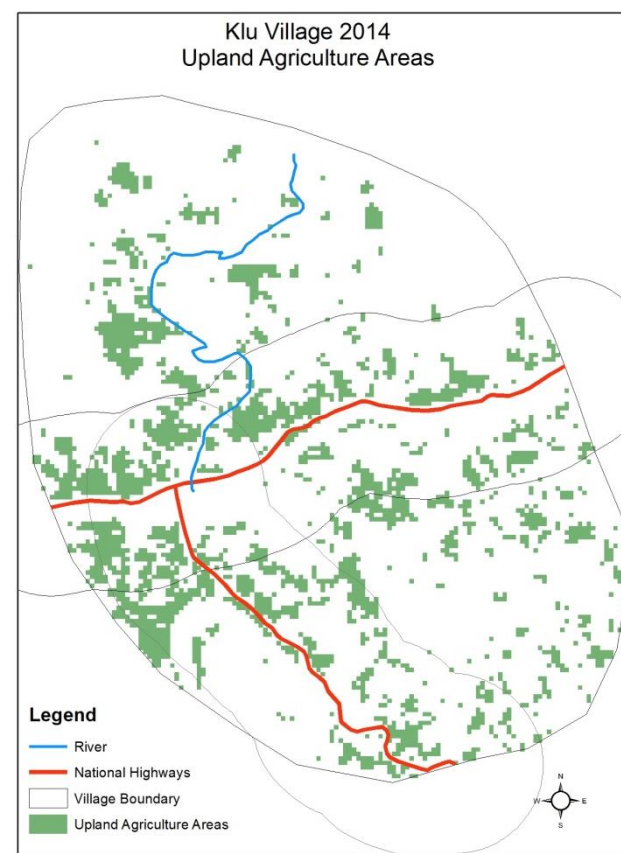
Klu Village 2007
Upland Agriculture Areas



Klu Village 2010
Upland Agriculture Areas



Klu Village 2014
Upland Agriculture Areas



Klu: Changes in upland fields

Year	Cleared land for upland agriculture (in square meters)	Cleared land for upland agriculture within 600m of Highway 9 (before 2006) and within 600m of both Highway 9 and the Ho Chi Minh Highway after 2006 (in square meters)	Percent of agriculture land near roads
1996	857700	240300	28%
2002	1225800	195300	16%
2004	1695600	221400	13%
2006	1398600	522900	47%
2007	1398600	512100	47%
2010	2635200	504000	34%
2014	2290500	920700	51%

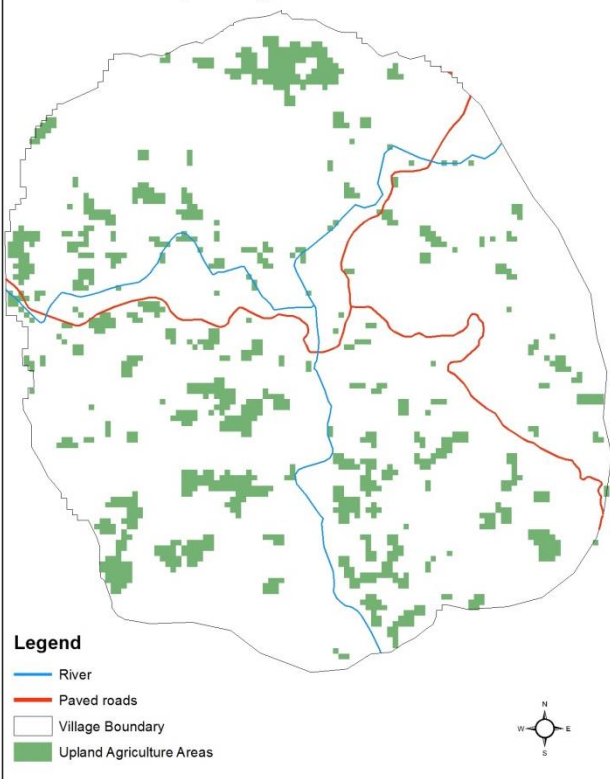
Results: Rural Changes in Vietnam

Ta Rec Village

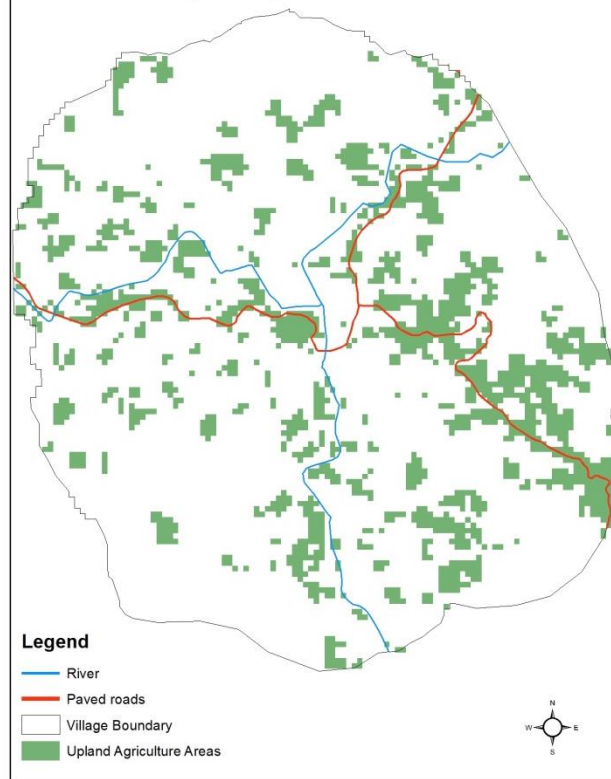
- Road access to village and new road to near border
- Introduction of maize, hybrid cassava, acacia tree production for market
- Continuation of swidden rice
- Shops in village

Upland fields in Ta Rec (pre/post Highway 9 upgrade)

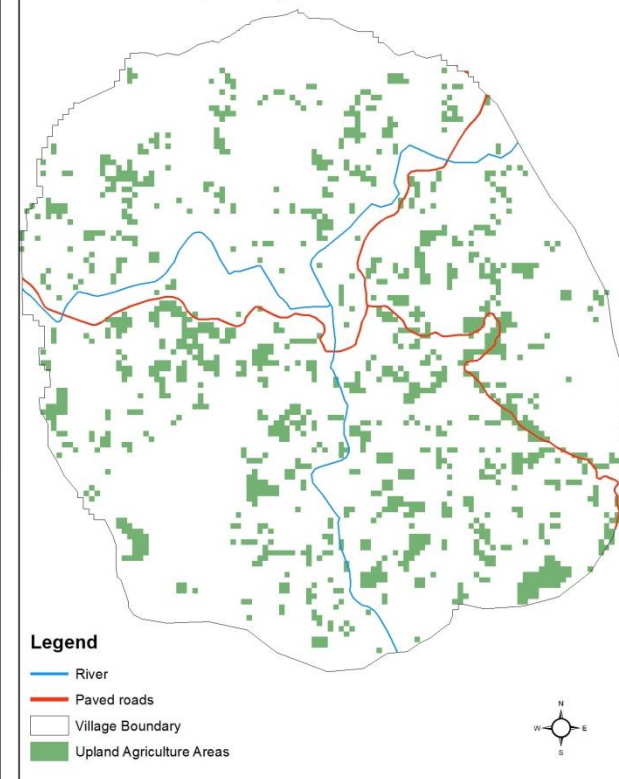
Ta Rec Village 2007
Upland Agriculture Areas



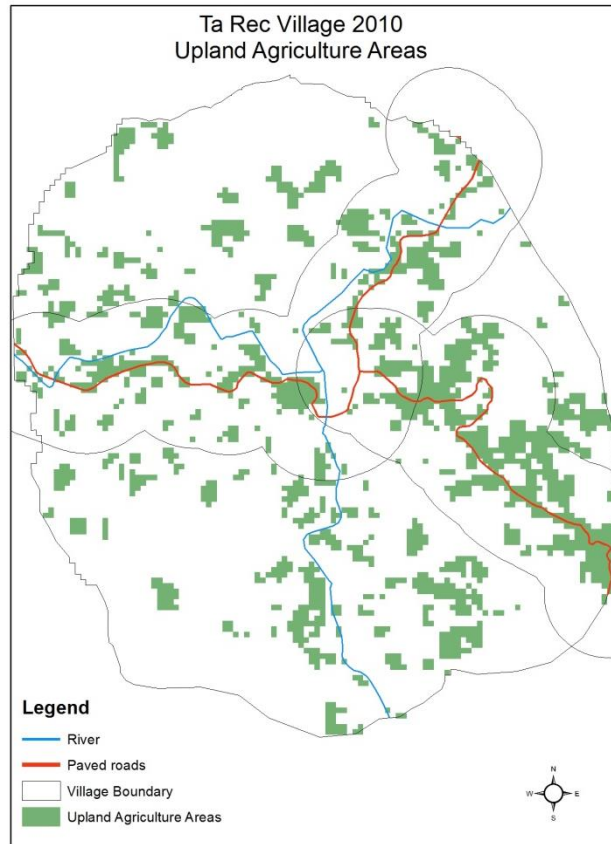
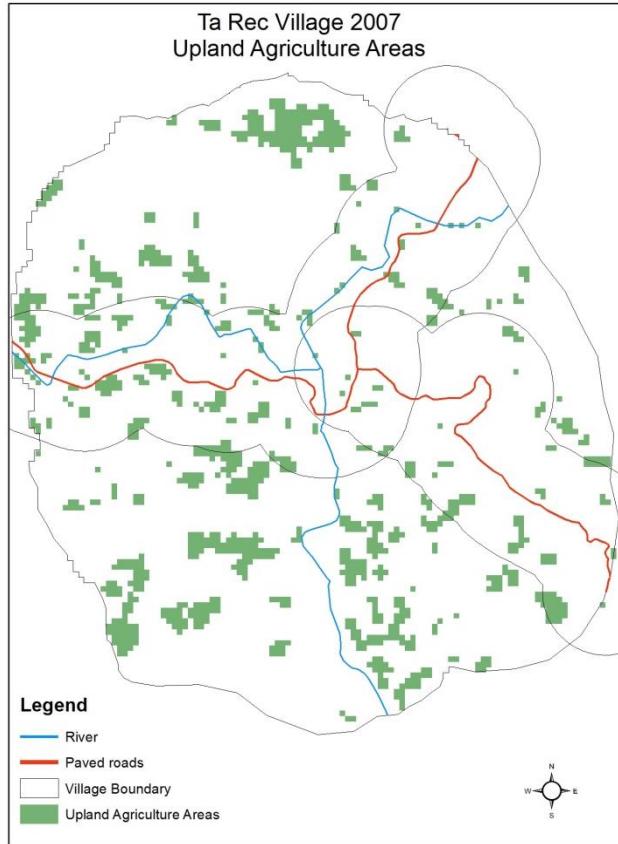
Ta Rec Village 2010
Upland Agriculture Areas



Ta Rec Village 2014
Upland Agriculture Areas



Upland fields in Ta Rec (pre/post Highway 9 upgrade)



Ta Rec: Changes in upland fields

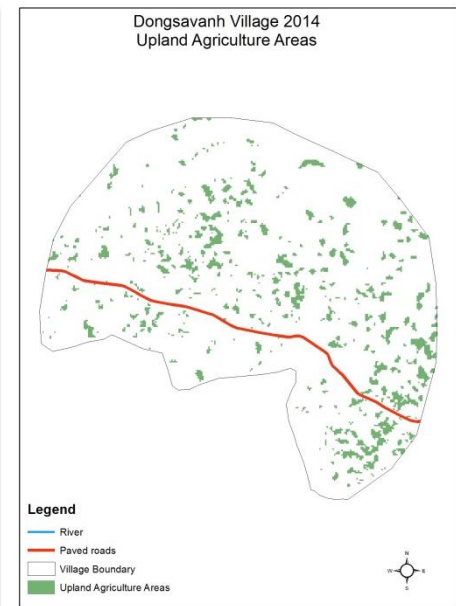
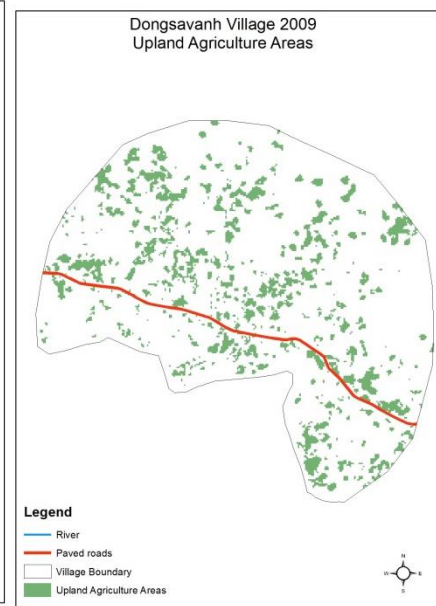
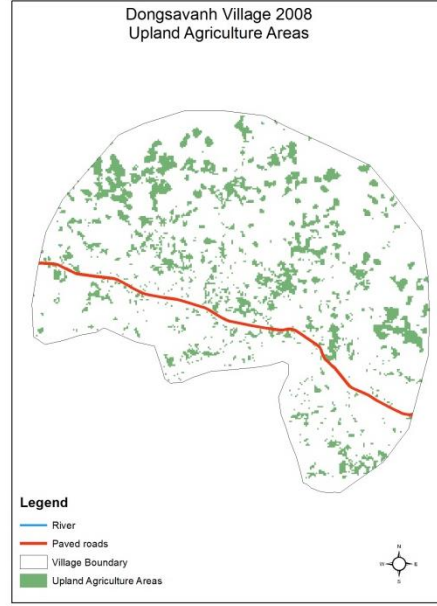
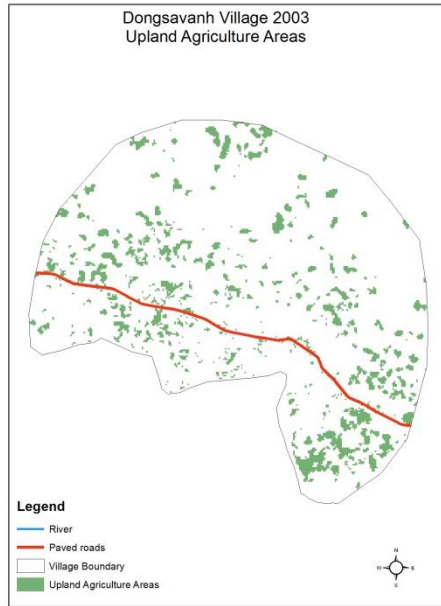
Year	Cleared land for upland agriculture (in square meters)	Cleared land for upland agriculture within 350m of secondary roads in the village after 2006* (in square meters)	Percent of agriculture land near roads
1996	279000	77400	28%
2002	442800	220500	50%
2004	609300	235800	39%
2006	624600	264600	42%
2007	521100	102600	20%
2010	1054800	576900	55%
2014	892800	427500	48%

Results: Rural Changes in Laos

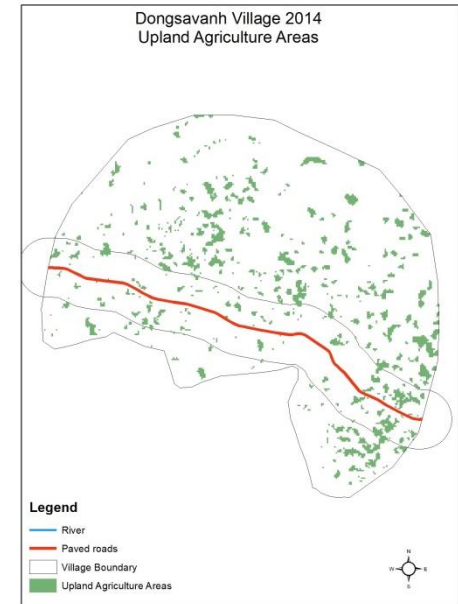
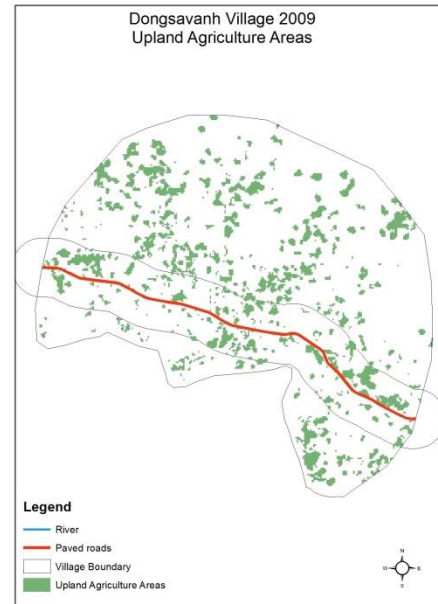
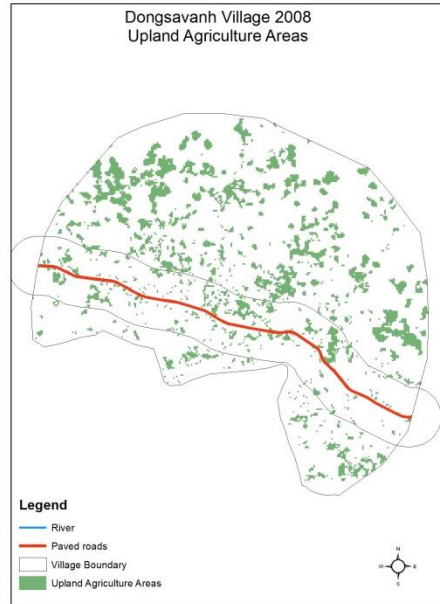
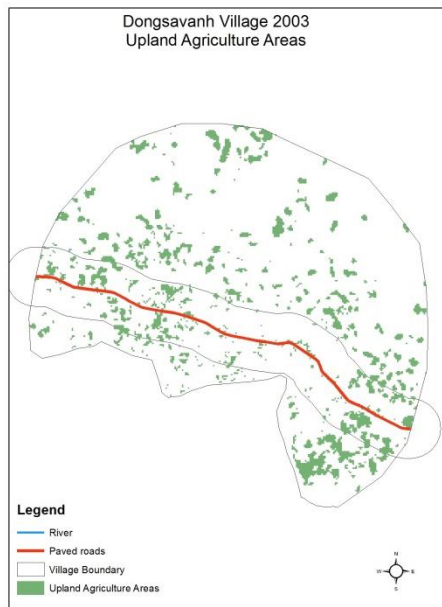
Dongsavanh

- Paving of Highway 9; access to border
- Introduction of hybrid cassava (sale to market)
- Introduction of bananas (sale to market)
- Continuation of swidden rice as subsistence crop

Upland fields in Dongsavanh(pre/post Highway 9 upgrade and border opening)



Upland fields in Dongsavanh(pre/post Highway 9 upgrade and border opening)



Dongsavanh: Changes in upland fields

Year	Cleared land for upland agriculture (in square meters)	Cleared land for upland agriculture within 600m of National Highway 9 (in square meters)	Percent of agriculture land near roads
1994	2,145,600	588600	27%
1998	4,759,200	1050300	22%
2003	4,112,100	1106100	27%
2008	5,572,800	942300	17%
2009	5,380,200	1508400	28%
2014	3,242,700	668700	21%

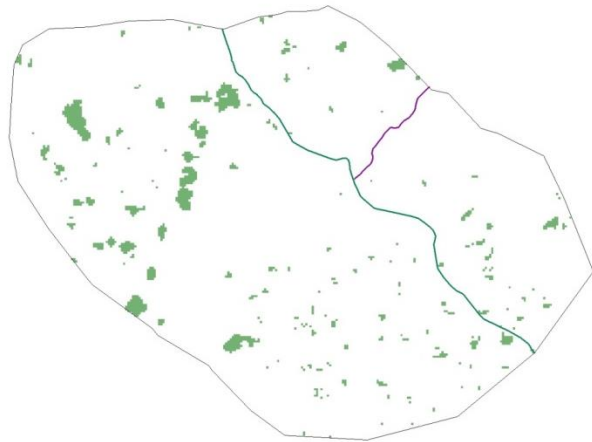
Results: Rural Changes in Laos

Phonhai

- Upgrade of road through village
- Bridge across river, connection to informal border crossing
- Expansion of cattle raising / sale to Vietnam
- Expansion of agriculture fields to east; introduction of hybrid cassava

Upland fields in Phonhai(pre/post Highway 9 upgrade and border opening)

Phonhai Village 2003
Upland Agriculture Areas

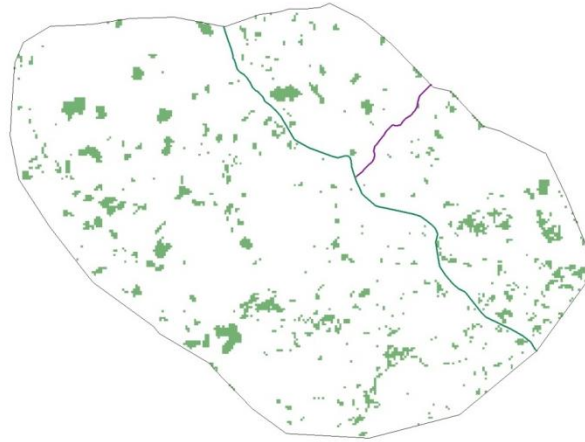


Legend

- River
- Paved roads
- Village Boundary
- Upland Agriculture Areas



Phonhai Village 2014
Upland Agriculture Areas

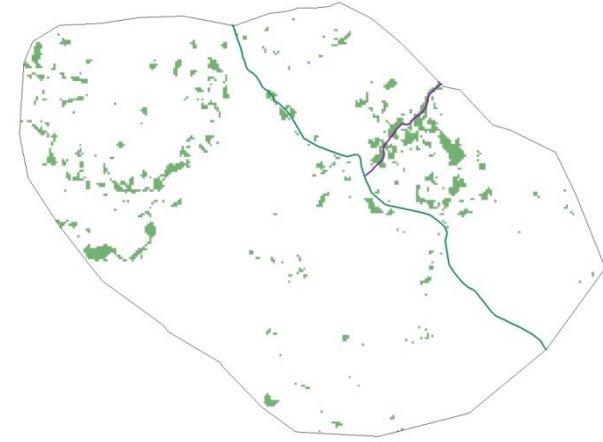


Legend

- River
- Paved roads
- Village Boundary
- Upland Agriculture Areas



Phonhai Village 2008
Upland Agriculture Areas



Legend

- River
- Paved roads
- Village Boundary
- Upland Agriculture Areas

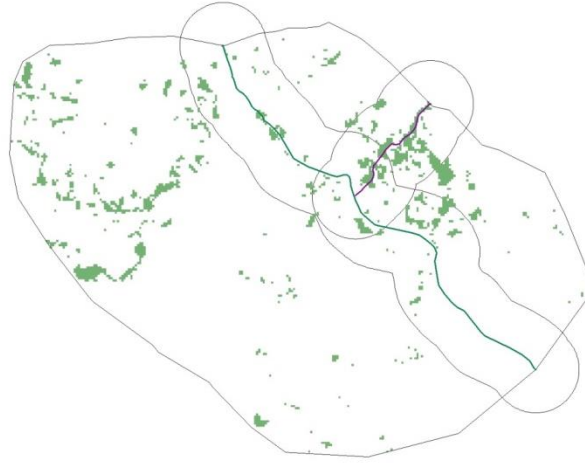


Upland fields in Phonhai(pre/post Highway 9 upgrade and border opening)

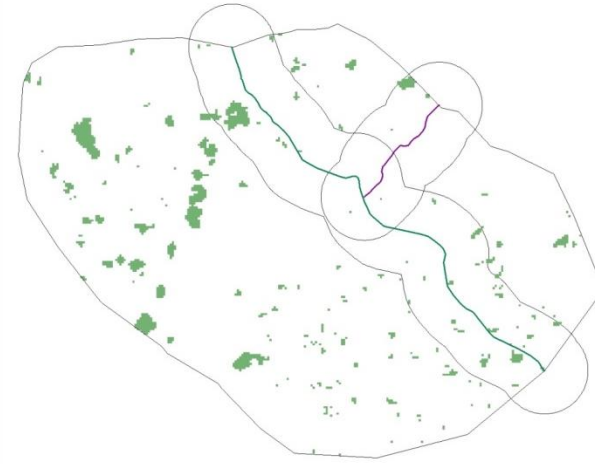
Phonhai Village 2014
Upland Agriculture Areas



Phonhai Village 2008
Upland Agriculture Areas



Phonhai Village 2003
Upland Agriculture Areas



Phonhai: Changes in upland fields

Year	Cleared land for upland agriculture (in square meters)	Cleared land for upland agriculture within 600m of National Highway 9 (in square meters)	Percent of agriculture land near roads
1994	2,135,700	244800	11%
1998	3,516,300	600300	17%
2003	1,143,000	216900	19%
2008	1,512,000	496800	33%
2009	2,427,300	642600	26%
2014	2,183,400	504000	23%

Analysis: Impact of and drivers of urban growth

Dong Ha City has changed from being a strictly government administrative center to incorporating new industrial zones and expanded residential areas with expanded infrastructure.

Drivers are:

- (1) domestic and foreign investment in new industries,
- (2) growth of government departments,
- (3) the real estate market and
- (4) city rank by central government

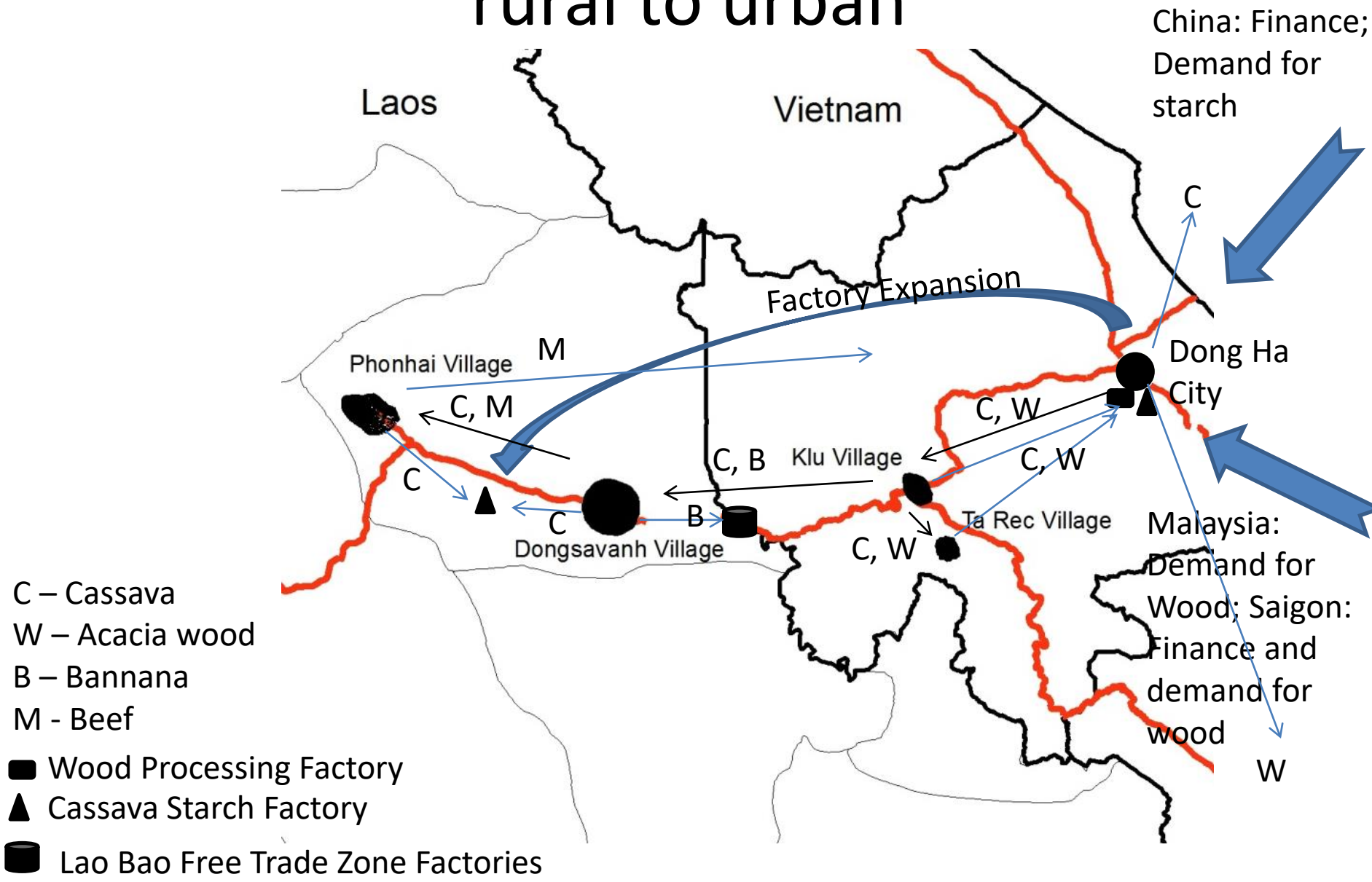
Analysis: Impacts of Rural Changes in Vietnam and drivers of change

- Klu – agriculture shifting to road; lengthening fallow away from road
 - Decrease in total area cleared for upland agriculture
 - Increase in agricultural land near roads
- Ta Rec – decrease in total agricultural land cleared; no clear signal that it is being reoriented to roadside
- Drivers: demand for cassava and acacia from cassava starch factory and lumber processing in Dong Ha City

Analysis: Impacts of Rural Changes and drivers of changes in Laos

- Dongsavanh
 - Initial increase in agricultural land clearing
 - Steep dropoff in land cleared for agriculture between 2009 and 2014 (lowest area since 1994)
- Phonhai
 - No clear signal of agricultural land use change
 - Increase in cattle raising
- Drivers: cross-border demand for cassava and banana and beef from Vietnam

Teleconnections: urban to urban to rural to urban



Conclusion

- Land cover changes:
 - Change in agricultural land use / cover patterns in Klu Village, Ta Rec Village and Dongsavanh Village
- Livelihood changes:
 - More market orientation in agricultural activities in each village studied
- Drivers are ultimately demand from urban areas of Vietnam and industrial needs in Vietnam, China, and Malaysia
- Cross-border teleconnections facilitated by EWEC road improvements and regularization of border protocols