



Spatial analysis for poverty targeted aquaculture development: what works and what doesn't?

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Outline

- Introduction
- Poverty analysis
- Poverty in Cambodia
- Poverty and aquaculture
- Market access
- Conclusions

Small-scale aquaculture

- Potential for poverty alleviation
- Need to address poverty within aquatic resource sector
- Sector often overlooked in national poverty reduction (Thorpe 2005)
- Requires targeting on maximized contribution to sustainable livelihoods
- Causes and characteristics of poverty?
- Vulnerability to stresses and shocks affecting natural resource base of rural households

Poverty analysis

- Overall indicator of household welfare
- Household consumption and income per capita
- Consumption-based welfare indicators superior to income-based but:
- Household income can yield insights into socio-economic status, particularly when disaggregated by source of income
- Judgement on level of income or expenditure necessary for a minimal standard of living
- Below this standard: **poor**

Aggregate measures of poverty

- Poverty line based on basket of goods providing enough calories to meet minimum energy requirements (Glewwe, Gragnolati, & Zaman, 2000)
- Headcount: proportion of population counted as poor
- Poverty gap: extent below the poverty line (poverty depth)
- Poverty severity: squared poverty gap
- Depth and severity of poverty provide complementary information on the incidence of poverty
- Can be disaggregated for population sub-groups

Poverty targeting

- Cost-effective allocation
- Two types of errors (Hoddinott 1999)
 - Exclusion: intended beneficiaries cannot benefit
 - Inclusion: benefits reach people not intended as beneficiaries
- Targeting increasingly costly below a certain administrative level
- If costs of targeting outweigh benefits: allocations without targeting (Fujii 2003)

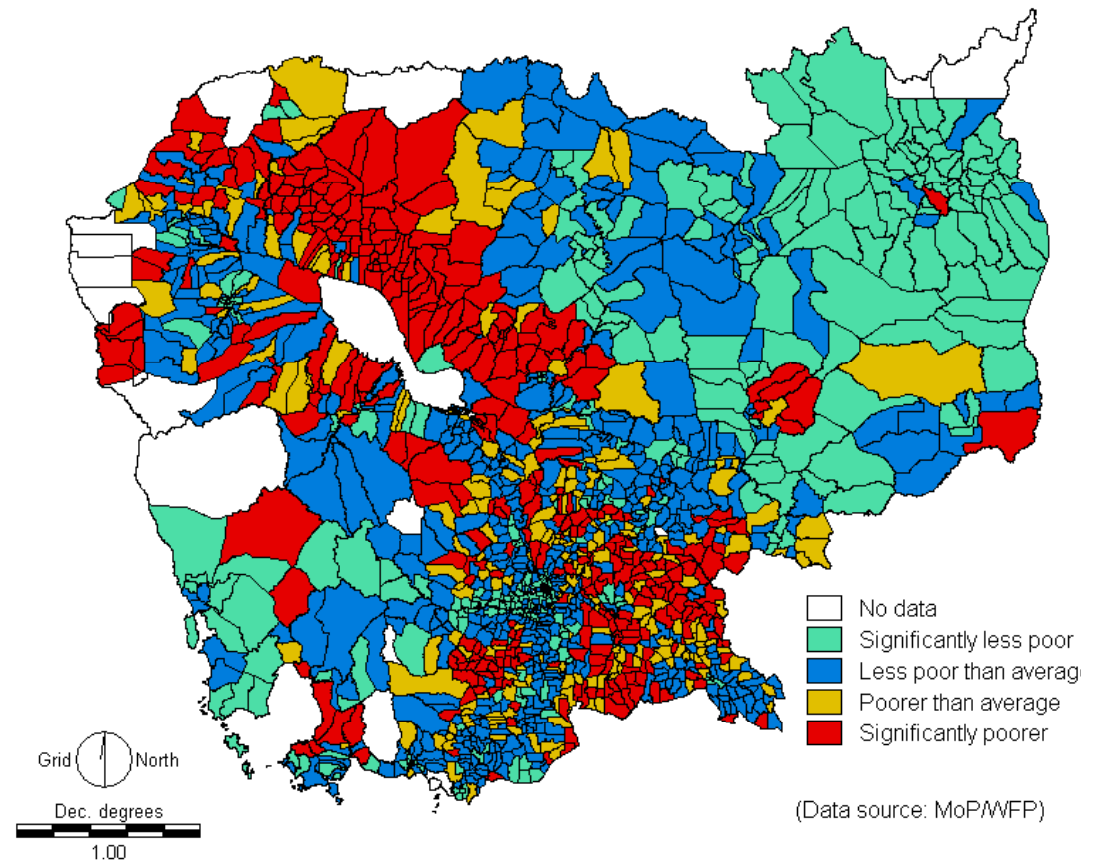
Poverty maps

- Framework for geographically targeting areas of high poverty and food insecurity
- Spatially disaggregated poverty measure
- Potentially maximises the number of poor people to benefit from a planned intervention
- Choice whether to reach a high number of poor people or base upon proportion of poor

Poverty in Cambodia

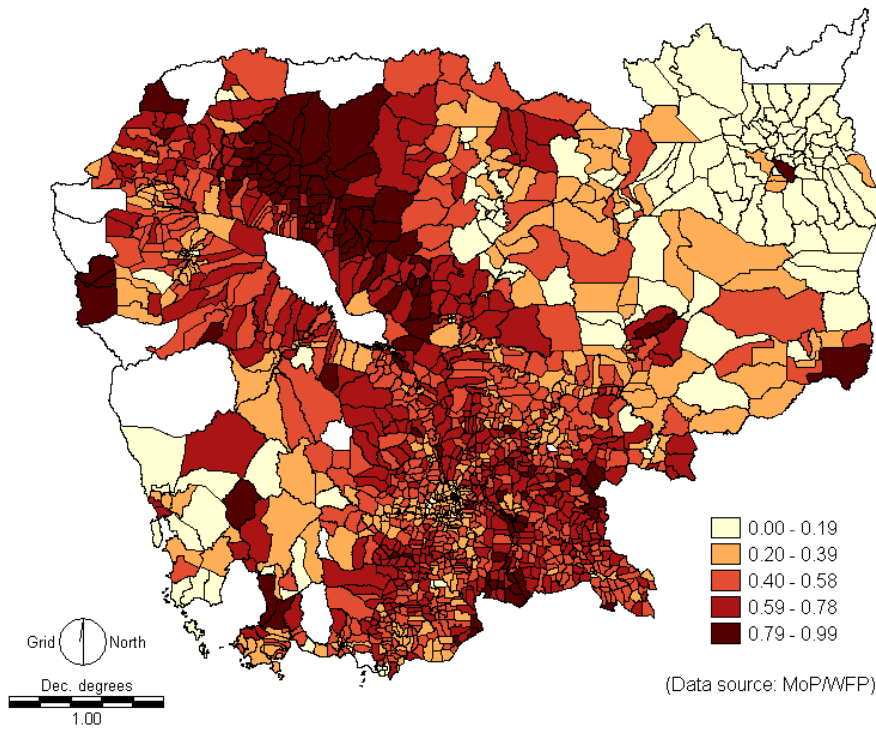
- National poverty rate 36.1 percent (1998)
- Closely related to food insecurity
- Rural
- Heterogeneous between regions
- Natural disasters: floods and drought

Commune level poverty relative to national poverty line of 36.1 percent, 1998

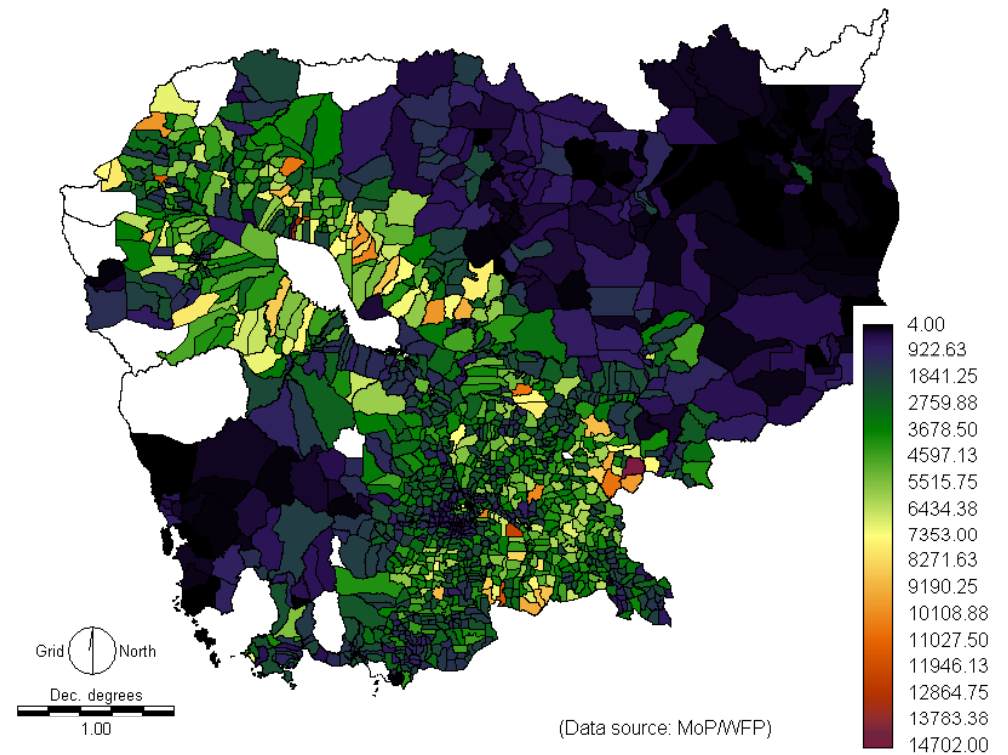


Poverty in Cambodia

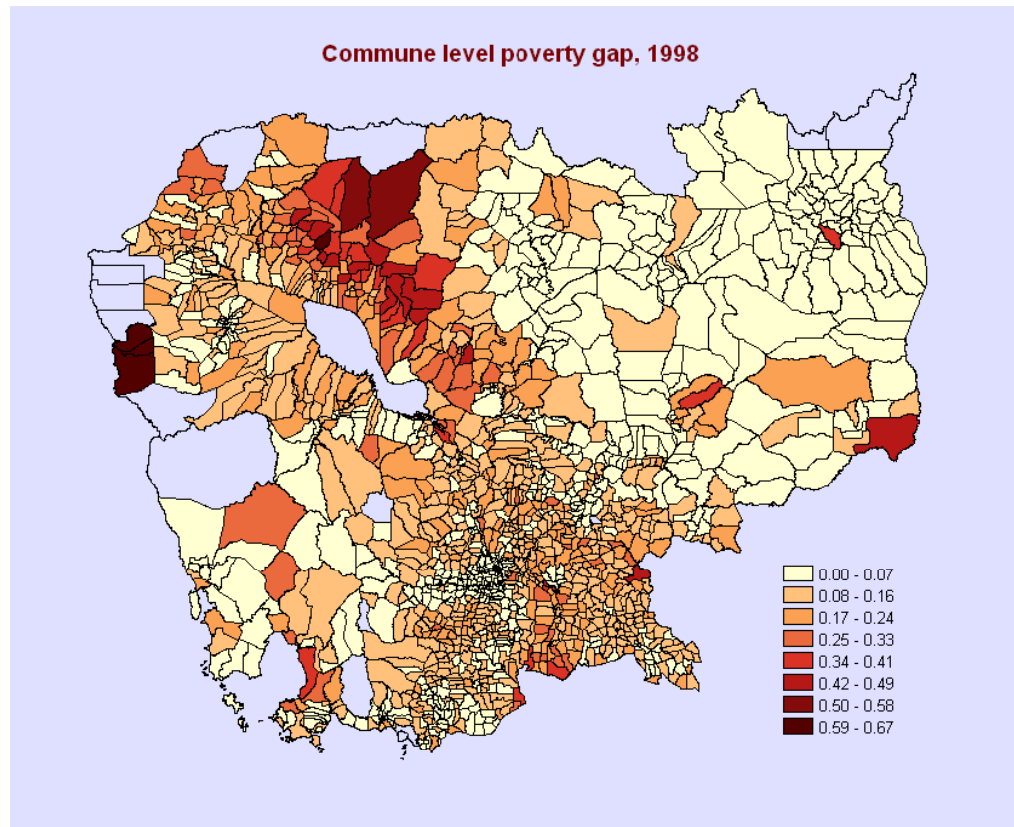
Commune level poverty rate (Head Count Index), 1998



Estimated number of poor people, commune level, 1998

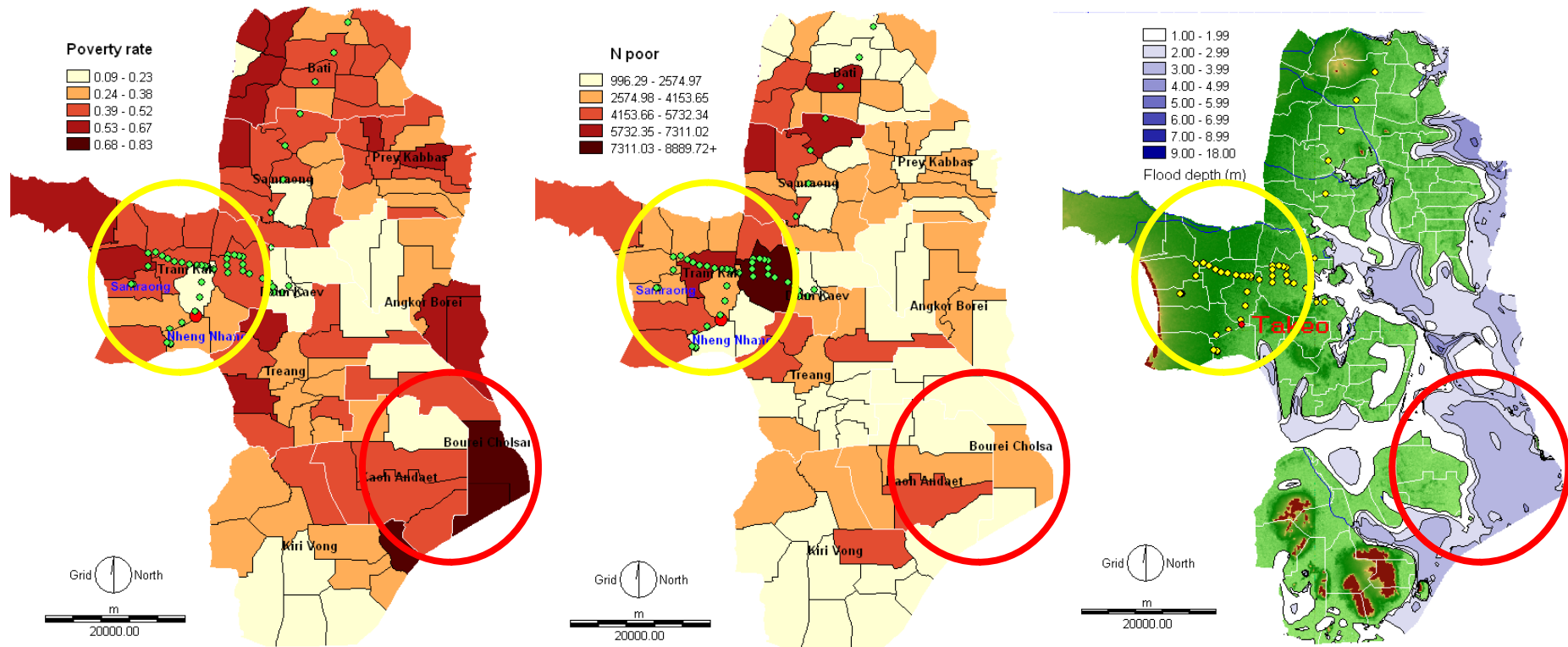


Poverty in Cambodia



- Geographically disaggregated, but:
- What are the explanatory variables?
- Need to compare variables across population subgroups
- Need for variables sensitive to poverty in the aquatic resources sector

Proportion, numbers or factors?

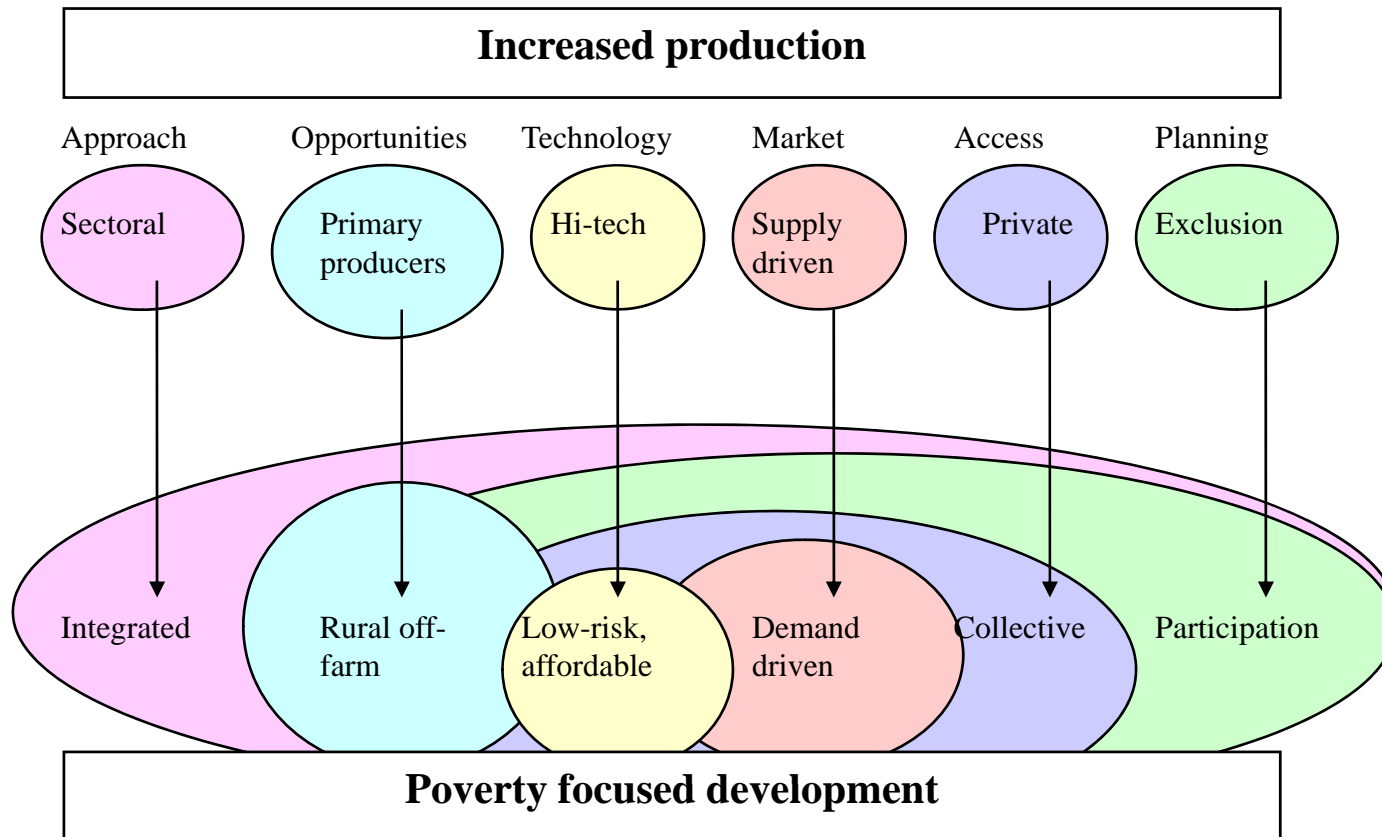


Takeo province, southern Cambodia

Poverty and natural resources

- Natural resource stocks and environmental quality by definition spatially distributed (Davis, 2003)
- In many cases common to both poor and less poor
- Currently, water depletion and water quality the single main environmental problem for the poor
- Agriculture is predominantly rain-fed and depends heavily on natural conditions
- Rice, fish and fish products are staple foods in rural Cambodia
- Capture fisheries contribute significantly to food security, nutrition and income generation

Poverty and aquaculture

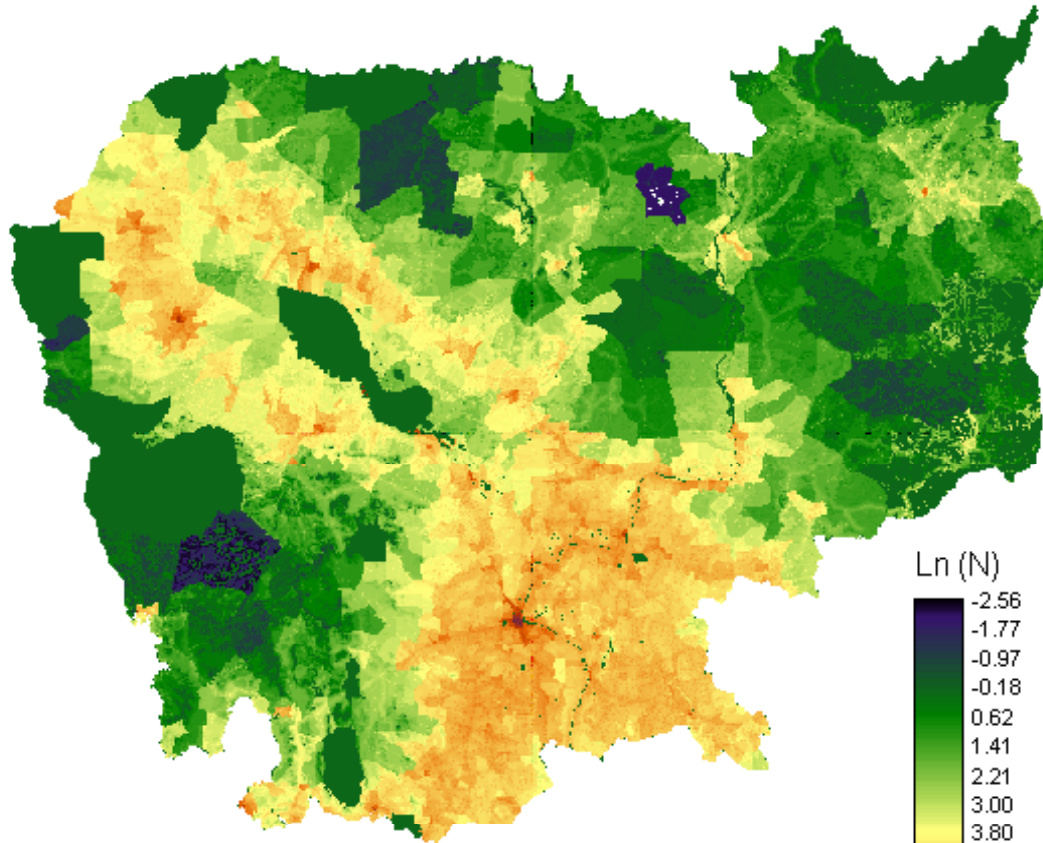


Trends towards poverty focused aquaculture development

Poverty and aquaculture

- Geographically disaggregated poverty indices used in conjunction with indicators and secondary data of relevance to pro-poor aquaculture development
- Proxy indicator for aquaculture market potential as a function of population distribution and distance to markets
- Assumption: opportunity costs for poor to access markets increase more rapidly with distance

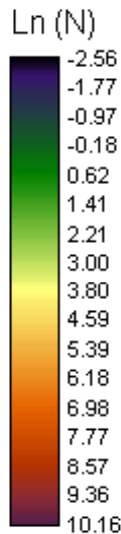
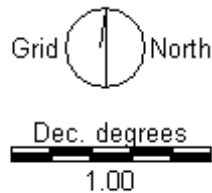
Market access as proxy



Ln (N): Population distribution probability 2002 (log scale)

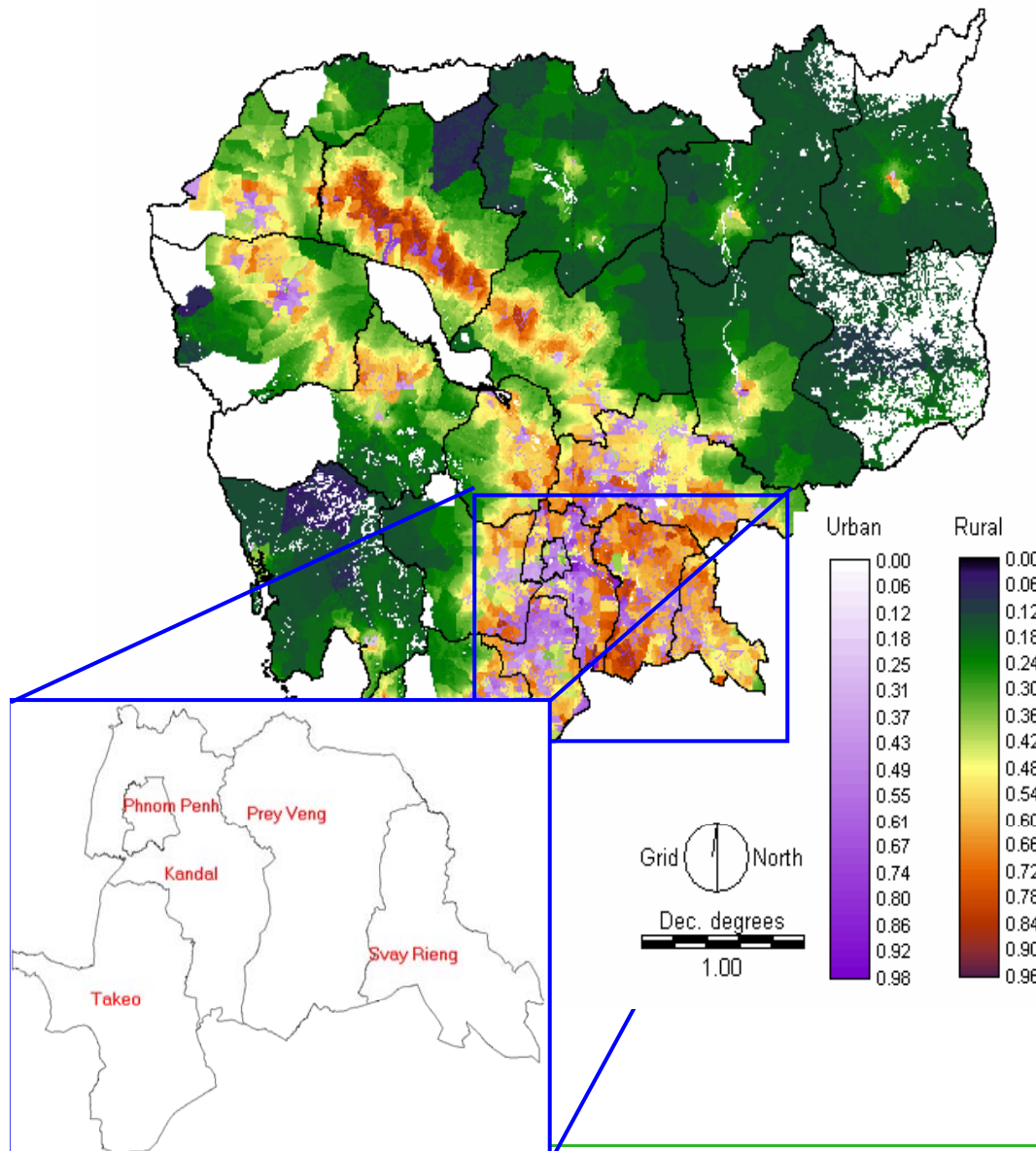
Peri-urban areas 500 - 5000 people/km2 [$\text{Ln}(6.21) - \text{Ln}(8.51)$]

Urban centres > 5000 people/km2 [$>\text{Ln}(8.51)$]



- Concentration of population near urban centres (social gravitation)
- Market access concentrated in the south
- Some provincial centres around Tonle Sap
- Isolated spots in rest of country

Relative accessibility of markets to the poor



Fish marketing in Cambodia

- Traditionally urban markets and export
- Commercial trade of high value species limits opportunities for access of poor
- Perhaps secondary employment opportunities
- Inland fish dominates supply

Proxy indicators for aquaculture potential

- Low urban market potential for fish typically promoted for rural aquaculture in ponds (Guttman & Kuntz 1997; Khay & Hortle 2005)
- Possible focus of poverty targeted aquaculture on markets where fish supply does not meet local demand
- Rural markets in Cambodia's southern and south-eastern provinces
- Scarce availability of fish in these markets does not reflect fish consumption patterns of rural households
- Supply infrastructure and availability of wild fish have an important influence on markets for aquaculture
- Fish demand potentially unfulfilled if wild fish stocks become scarce

Conclusions

- Generic poverty indicators not sufficient for pro-poor aquaculture development planning
- Proxy indicators partially substitute for lack of data
- Geographic targeting of pro-poor aquaculture is viable but depends on access to poverty indicators that are geographically disaggregated and decomposable in socio-economic terms

Muito obrigado

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