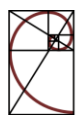


Ecological migration as an adaptation strategy – scoping of Ningxia China

Li Lailai, Fei Xiaojing , Xu Jiayi & H. Slater

Adaptation Forum 2012

Bangkok Thailand



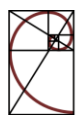
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Presentation

- Key impact of climate change leading to migration
- Planned migration as a development – poverty reduction & ecological recovery – strategy
- Preliminary assessment of impacts of planned migration
- Policy recommendations

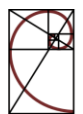
Based on a country scoping of China for the program of Regional Climate Change Adaptation Knowledge Platform for Asia, financed by SIDA



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Key climate impacts leading to ecological migration





Ningxia Hui Autonomous Region of China

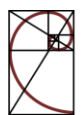
- A population: 6.25 million, 55% living in rural and 35% as Hui minority ethnic group
- Area: 66,400 km²
- Bordering with 3 deserts in east, west and north, totaling \simeq 100,000 km²
- Higher poverty rate and higher CO₂ emission than the national average.



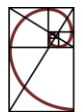
CC symptoms recognized	Climate risks CC impacts felt				
		1) Ecosystem	2) Built systems	3) Economic system: agriculture/ food production	4) Public health
					5) Livelihoods of people & community
a) Change in precipitation pattern	Land (grassland) degradation & desertification			Yields of winter crops dropped or disappeared	Cropping systems shifted
b) Increased incidence & magnitude of drought and floods	Water & soil erosion, land degradation; underground water table dropped	Infrastructure e.g. irrigation systems damaged		Agriculture fed by rain damaged	Income from agriculture reduced or lost Housing damaged
c) Change in hydrology and reduced water availability	Underground water table dropped badly	Current irrigation systems lost sufficiency		Irrigated agriculture & industry affected	Livelihoods lost People displaced
d) Higher temperature	Shift or change in distribution of habitats and species			Survival of more crop disease & pests damaging agriculture and natural vegetation	Resettlement-related difficulties

Water resource, a threatening factor

- Less water allocated from Yellow River (4 bm^3 to 3 bm^3) together with dropped the total runoff (58 bm^3 to 53 bm^3)
- Changed pattern of precipitation (rainfall $\simeq 350\text{mm}$)
 - Further uneven distribution in time & space
 - Incidence and magnitude of floods and drought growing
- Lower underground water table
- Water resource: $\simeq 200 \text{ m}^3/\text{per capita}$, 14% of the national average



Planned ecological migration



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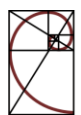
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Migration as a strategy to adapt to climate change

- Organized resettlement as one of adaptation strategies adopted by the Ningxia regional government,
- To build livelihoods – close to water and roads
- To reduce poverty
- For ecological recovery

Planned “ecological” migration in Ningxia

- The 11th five-year plan period (2006-2010): 180,000 people migrated
- The 12th five-year plan period: 350,000 people to migrate; ~30000 RMB is budgeted per household
- Closing originating villages for ecological recovery
- Participation of key stakeholders is a social learning process



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Role of government

Planning & financing:

- Mobilizing and negotiation
- Subsidized housing
- Infrastructure: running water, electricity and schools
- Assistance for production: a greenhouse & a biogas digester
- Training for new production skill and jobs in town
- Compensating receiving communities



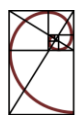
Role of communities/villagers migrated in/out

Farmers migrating out

- Negotiate
- Buy new subsidized houses
- Learn new farming skills
- Adapt to new social/
cultural environment
- Managing old homes

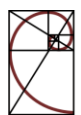
Receiving locations

- Negotiation
- Sharing limited resources
 - Land
 - Water
- Community support
- Resolving conflicts



Role of private or business sector

- Negotiate for land and water use rights
- Invest in water-saving agriculture / plantation
- Pay expensive irrigation cost
- Develop high value-added agricultural business
- Create jobs



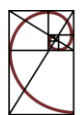
Preliminary analysis of impacts

Some economic impacts

Cost for infrastructure development not included

- For new migrants:
 - Expected household income for the year resettled :

Source of income	Estimated Income	
	Low ¥	High ¥
Farming	6000	8000
Produce from greenhouse	4000	5000
Livestock	4000	4000
Wage from jobs in cities	4000	5000
Total (in USD\$)	18000 (\$2812)	22000 (\$3437)

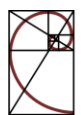


Economic impacts (2)

- Resettlement cost (-)
- Improved income opportunity from agriculture or jobs in cities
- Lower living cost, e.g. drinking water: ¥ 180/barrel
- Slow acquiring new production skills required (-)
- Uncertainty of losing land use rights (-)
- Receiving communities: sharing limited resources
- Private sector investment: land use right, efficient agriculture

Environmental impacts

- The environment in the originating locations gets recovered naturally when human activities stopped (+)
- Human activities of conservation also stopped by the “enclosure for recovery” policy (+ -)
- Environment pressure is increasing on the new locations due to increased demands for resource (-)



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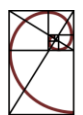
Social impacts – mixed and complex

- Being displaced
- Sense of community
- Ethnic identity and relations with different ethnic groups
- Capacity of community organizations
- New human resources required
- Government resettlement programs as resources

Policy recommendations to Government of Ningxia Hui Autonomous Region

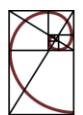
Policy recommendations

- Migration is an effective CC adaptation strategy particularly for area of high ecological vulnerability
- Science-based assessment of social, economic and environmental impacts of migration under different climate change scenarios to support
 - Long-term development planning, and planning/decision making of migration
 - Long-term strategy of ecological recovery in migrated out areas and sustainable resource use in migrated in areas
 - Planning for effective and efficient finance



Policy recommendations

- Resettlement is a complicated social learning process for all the stakeholders to participate
- Strong capacity building programs for migrating receiving communities, e.g. training for planning, agriculture, jobs.
- Development of human resource – expertise in supporting and managing ecological migration



Thanks

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