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A Few Centimeters Wider: Lessons on Stove Adoption in China

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In cooperation with:

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Background

- Growing interest in larger-scale efforts to reduce household use of biomass through more efficient, cleaner burning stoves.
- Improved stoves (>150 million households) occurred in China between the mid 1980s and the late1990s.
- China remains the world's largest user of solid biomass fuels and indoor air quality in rural kitchens is still below national standards.
- Deployment of a new generation of more efficient, cleaner burning stoves presents an opportunity to reduce the burden of solid biomass use.

Objective

- To explore the potential for a new generation of improved stoves in rural China.

The Experiment

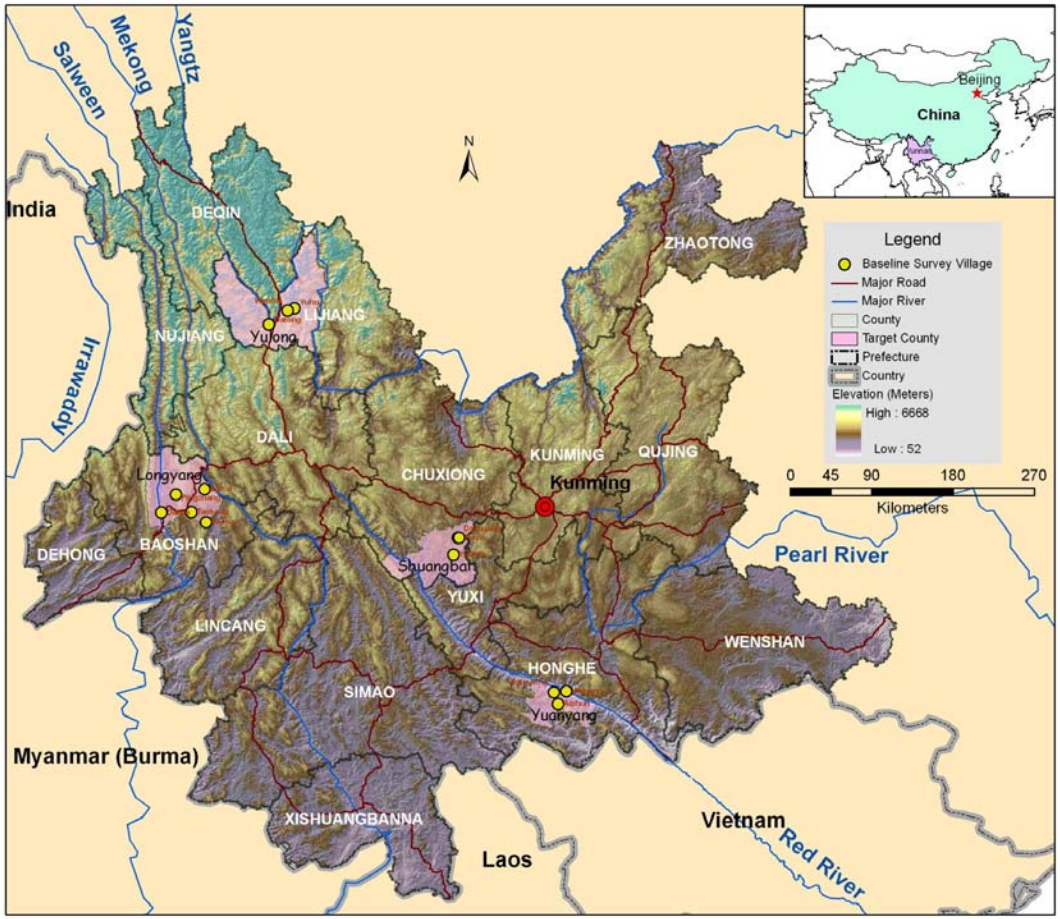
six stoves — three models and two of each model disseminated

Stove types and costs:

Stove Type	Stove Cost
Small gasifier w/ chimney	350 RMB (US$50)
Partial gasifier w/ chimney	380 RMB (US$54)
Larger gasifier	450 RMB (US$64)

The Experiment

Where? two natural villages in western Yunnan's Baoshan Municipality



The Experiment

Where? The two natural villages are located at 2,300 and 2,200m, and heavily dependent on wood as an energy source.

The Experiment

How? Initially co-financing of these stoves from the villagers was requested, but proved to be not feasible.

The stoves were given away with the conditions:

- Use their existing stove(s) for one week and measure and record wood use;
- Use their new stove for one week and measure and record wood use; and
- Provide the record of two weeks of wood use with each stove, as well as feedback on the new stove.

Villagers were at least outwardly impressed by the stoves, and we were initially optimistic about their potential.

Results: reduced wood consumption by about 40%, and cooking time by about 30%

- BUT only one household was still using the new stove after one month.

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Not large enough

not fit well with either existing tasks or kitchens

- Complains: did not provide versatility (cooking food, steaming rice, cooking pig feed, and heating water), need to watch over the stove to add wood and avoid overcooking, unhealthy without a chimney…


国际小母牛项目
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Results

Conclusions

- Mismatch between stove design and local cooking needs.
- A high bar for the next generation of efficient stoves.
- Little incentive to purchase more efficient, cleaner burning stoves.
- Changes in forest management and carbon finance may provide incentives, but
- Still need to balance design and costs per unit.
- With a number of potential non-biomass substitutes for current uses of biomass energy, improved stoves may ultimately not be the answer.

Looking Ahead

- A next generation of stoves will need to be at least as versatile, at least as kitchen-integrated, & at least as cheap as current stoves.
- Carbon finance (4 tCO2e per household per year) and upcoming black carbon discussion could trigger new stove adoption.
- In the medium term, the end goal of efforts to reduce the impacts of solid fuel use should be to offer rural households more choice in energy technologies.
- More choice in rural energy technologies would require a reconsideration of the role of government agencies and donor institutions in financing and disseminating.
- Finding the right mix of government and market in the next generation of rural energy technologies is the next step toward more socially, economically and environmentally sustainable energy sources in rural China.

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Thank you for your attention

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