

Adaptation and Mitigation: Development Pathways in Peri-Urban Construction Practices



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Overview



- ❧ Earthquake risk in Kathmandu
- ❧ Building practices and risk
- ❧ Straw bale construction
- ❧ Cost-Benefit of Straw bale at household level
- ❧ Macro benefits of Straw bale
- ❧ Lessons learnt
- ❧ Way forward

Earthquake risk in Kathmandu



- ❧ High seismic activity
- ❧ R 8 earthquake every 75-100 yrs
- ❧ Last in 1934
- ❧ Population growth
- ❧ Lack of awareness
- ❧ Projections for next major earthquake
 - ❧ 40-95,000 deaths
 - ❧ 600-900,000 homeless

Building practices and risk

- ❧ Most building are not earthquake resistant
- ❧ Building rules not enforced
- ❧ Earthquake awareness low
- ❧ Brick and concrete structures preferred



Straw bale construction



- ❧ Two century old practice
- ❧ Earthquake resistant
- ❧ Renewable resources
- ❧ Energy Efficient
- ❧ Low cost
- ❧ Environmentally friendly
- ❧ Micro and macro level benefits



Cost-Benefit of Straw bale at Household (micro) level



- ❧ Benefit cost ratio of 2:1 compared to bricks
- ❧ 16% saving in construction
- ❧ Rest in heating-cooling
- ❧ Wall area increase
- ❧ Results valid at 20% social discount rate
- ❧ Price of straw is important
- ❧ Cost effective for 4-5 times straw price
- ❧ Substitutes for straw or straw uses

Macro level benefits of Straw bale

- ❧ Land and water use
- ❧ Rice production and food security
- ❧ Air pollution and sickness
- ❧ Bonded and child labor



Lessons learnt



- ❧ New technology difficult to introduce
- ❧ Technical knowledge on construction and design
- ❧ Aesthetic preferences and modernity
- ❧ Pathway for adaptation to risk and mitigation

Ways forward

- ❧ Training and tools for straw baling
- ❧ Design and construction techniques
- ❧ Pre-positioning for earth-quake
- ❧ Commercialization of technology
- ❧ Adaptation = Mitigation

