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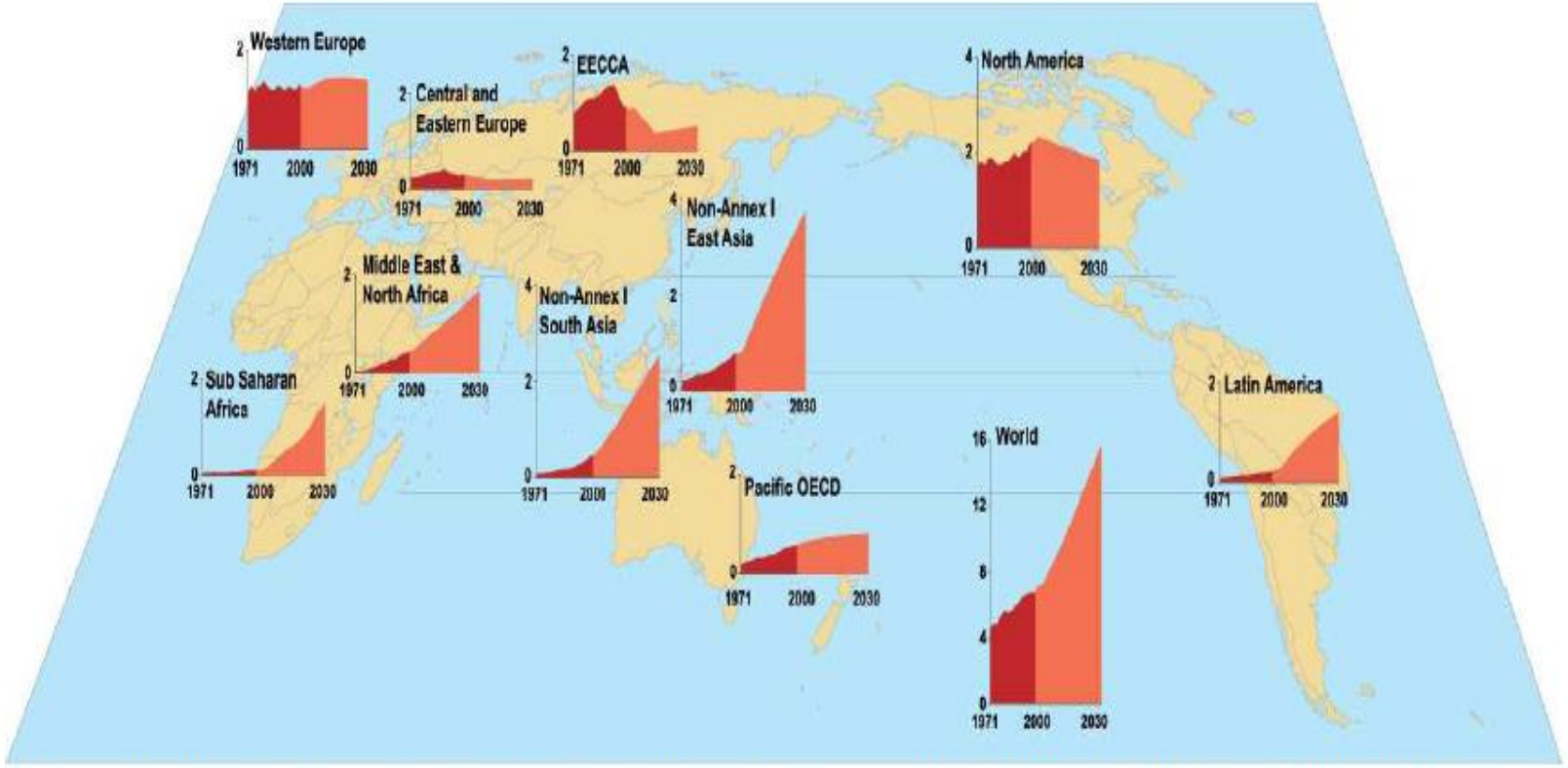
MRV for Buildings in Asia

Outline

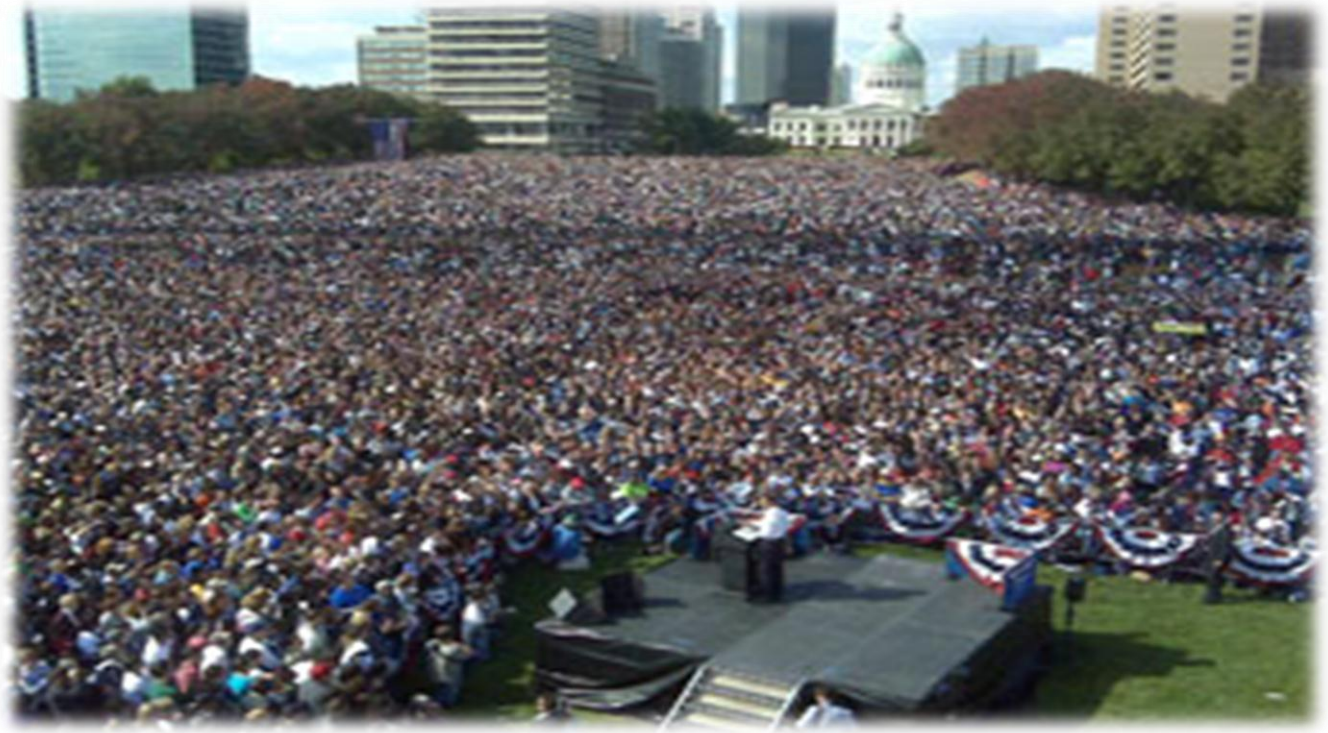
- Tension: project scope and transaction costs
- How do MRV approaches manage this tension
- Recommendations emphasis on simplification

Buildings' emissions will grow rapidly

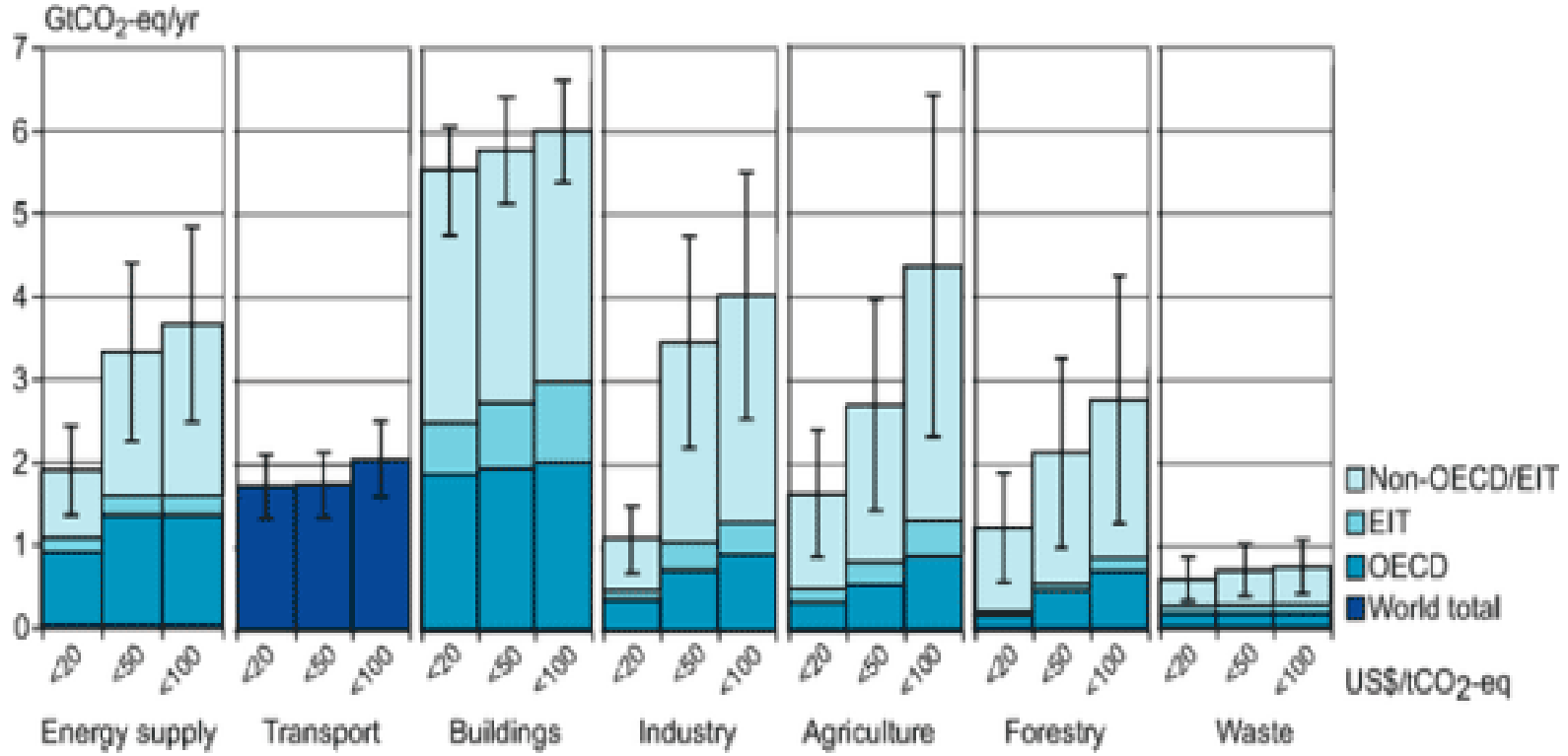


Note: Dark red – historic emissions; light red – projections 2001–2030 data; 2000–2010 data adjusted to actual 2000 carbon dioxide emissions. EECCA = Countries of Eastern Europe, the Caucasus and Central Asia. Source: Levine et al., 2007.

Every day Asia adds this many urban residents

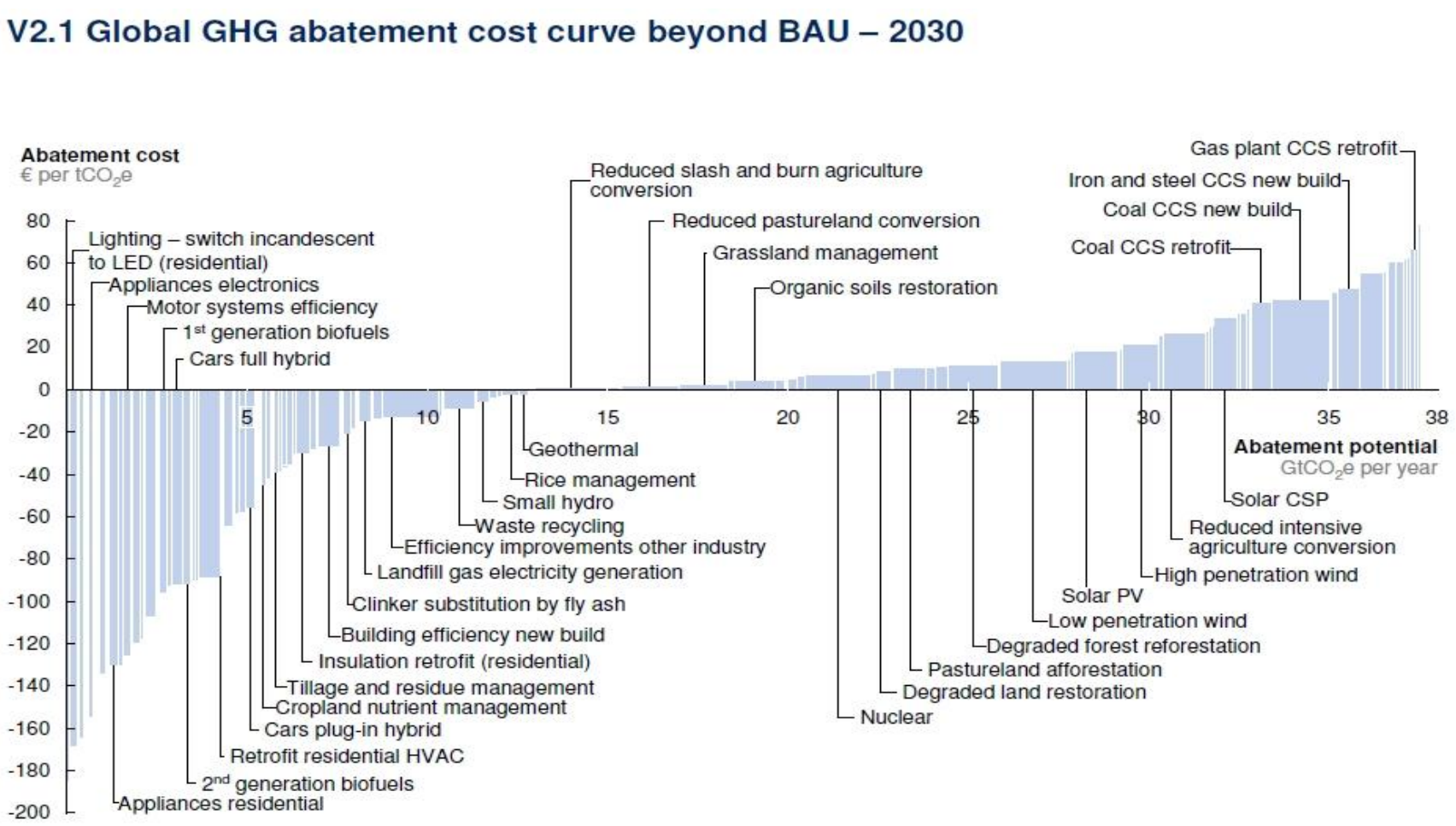


Significant mitigation potential



Source: IPCC 2007

MAC curve tell the same story



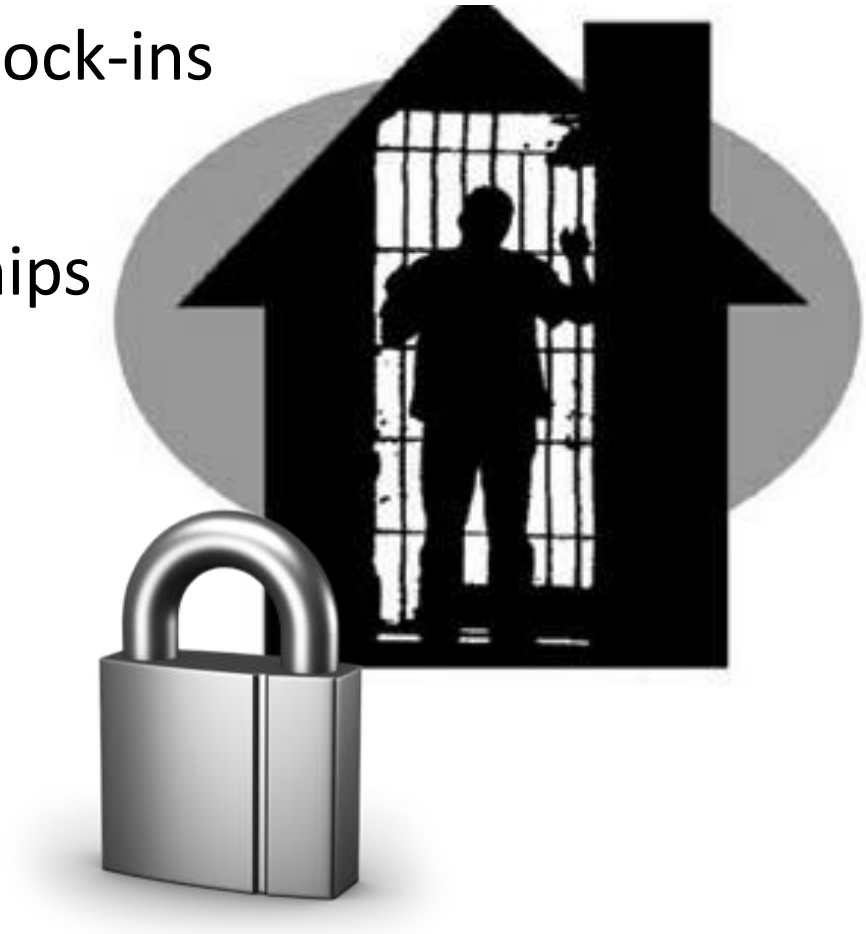
NAMAs reflect similar potential

Country	Subsector	Intervention
Algeria	Energy efficiency(residential)	Increase energy efficiency in new and existing residential buildings using mature technologies.
Ethiopia	Energy efficiency(residential) Alternative fuels	Scale up the usage of energy efficient fuelwood and alternative fuel stoves.
Libya	Energy efficiency(residential) Energy efficiency (public and commercial)	Reduce by half average specific emissions in the residential sector in 2023 by increasing energy efficiency of buildings and appliances and increasing the usage of solar water heaters.
Mexico	Energy efficiency(residential) Energy efficiency (public and commercial)	Supplement on-going initiatives for energy-efficient housing as laid out in the PECC and as currently operated by INFONAVIT by: 1. Extending penetration of basic efficiency standards to the entire new housing market in Mexico 2. Upgrading efficiency standards to more ambitious levels
Morocco	Energy efficiency (residential)	Incorporate several measures to incentivize the uptake of solar hot water systems, accelerate the adoption of compact fluorescent light bulbs (CFL), implement measures related to the thermal performance of buildings and incorporate energy efficiency labeling of appliances.
Mongolia	Energy efficient buildings	Building energy efficiency improvement
Peru	Energy efficiency Energy efficiency(residential) Energy efficiency (public and commercial)	Reduction of energy consumption through the implementation of more efficient lighting technologies in the residential, industrial and public services sectors
South Africa	Energy efficiency(residential) Alternative fuels	GHG emission reductions through solar water heaters and thermal efficiency in one million new low-income houses

Source: NAMAs Database, http://www.nama-database.org/; New Mechanisms Information Platform, http://www.mmechanisms.org/namainfo/index.html

However many challenges

- Technology/institutional lock-ins
- Principal-agent relationships
- Coordination dilemmas



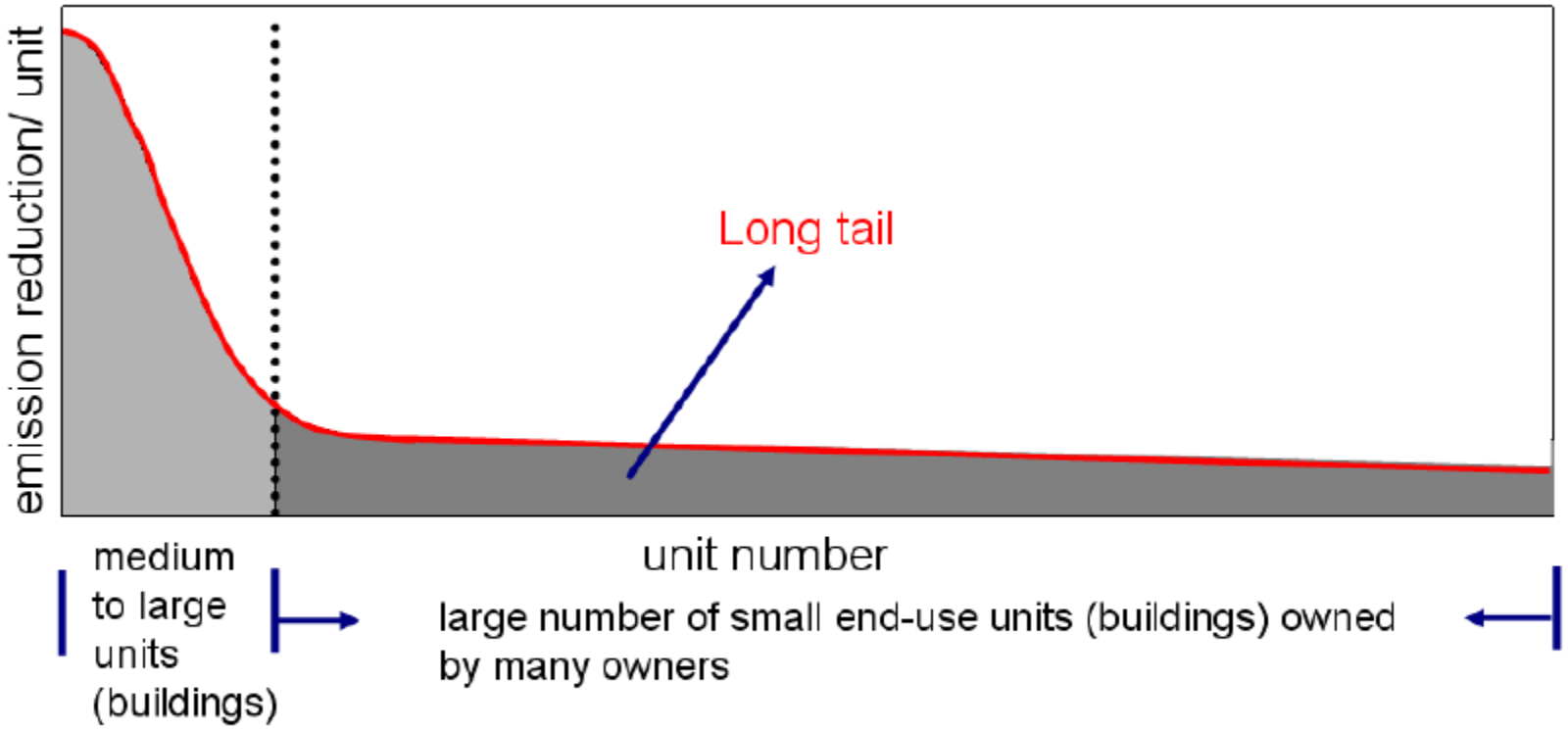
UB also confronts lock ins

CONSTRUCT MONGOLIA

Overcome challenges: need *whole* building approach

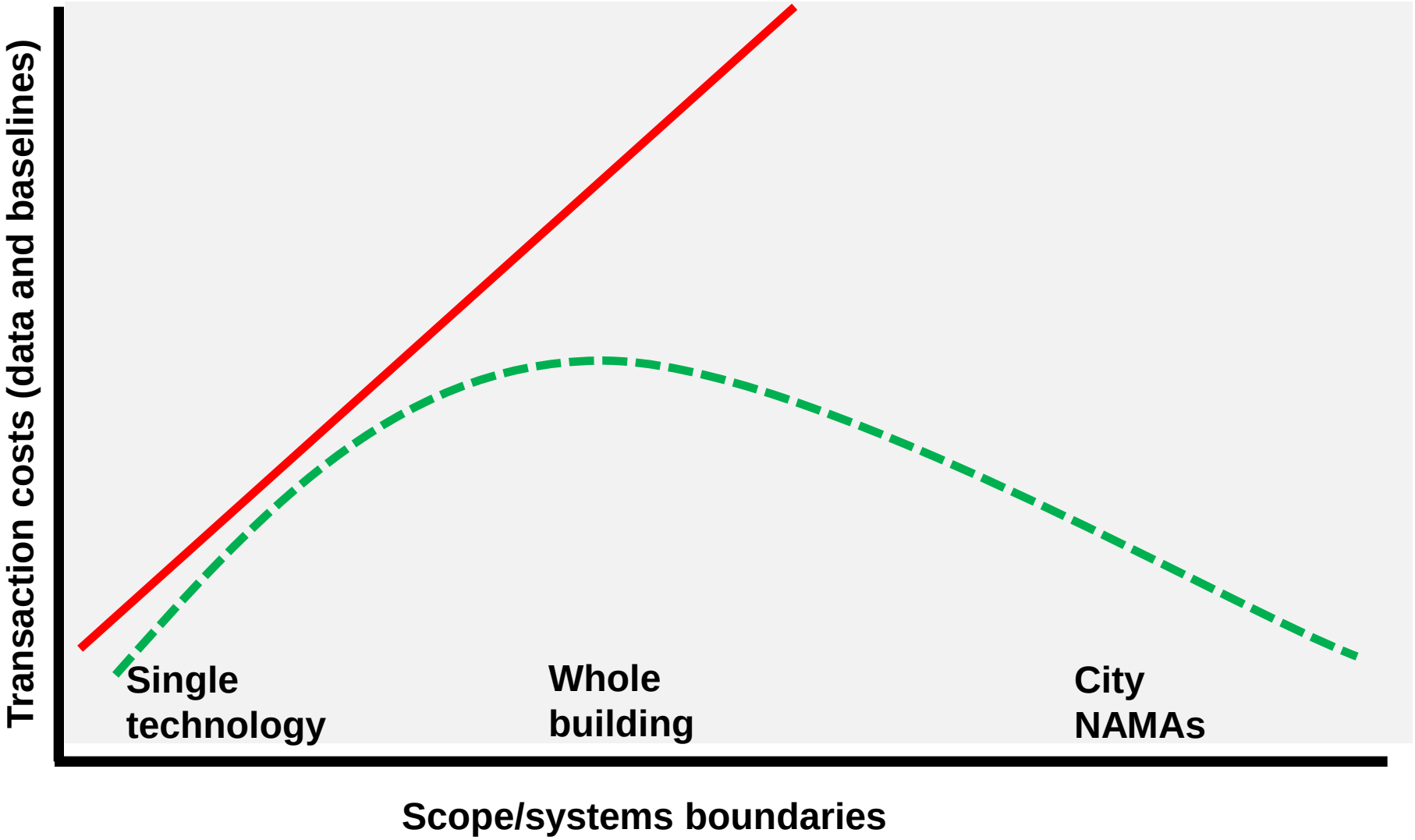
- building materials
- building envelope
- insulation
- flooring
- windows
- heating/cooling systems
- behavior and lifestyles

Actually expand scope beyond whole building: citywide NAMAs?



Source: Adapted from Hinostroza et al., 2007, and Figueres and Philips, 2007

Tension: project scope versus transaction costs



How do different approaches to MRV handle this tension?

1. CDM AMS-II.E energy efficiency and fuel switching measures for buildings

2. CDM AMS0091 Energy efficiency technologies and fuel switching in new buildings

3. Global Environmental Facility (GEF)

4. Citywide NAMAs

1. CDM: AMS-II.E

Energy efficiency and fuel switching measures for buildings

- Small scale methodology-technology specific baselines for various energy efficiency and fuel switching measures
- Includes **stringent** baseline setting
- Require comparing project emissions to baselines for **BAU technologies and measures.**
- Does not include multiple interventions or indirect changes in lifestyles and user behavior.

2. CDM AMS0091

Energy efficiency technologies and fuel switching in new buildings

- Applies to efficiency measures and/or fuel switching in new building units (residential, commercial, and/or institutional building units)

- Capture a range interventions as well as difficult-to-measure lifestyle changes.

- **Benchmarking*** (control group) approach to establish additionality and construct baselines

*The top 20% of buildings not covered by the project in emissions per gross floor area (tCO2e/m2) over the past five years.

3. The Global Environmental Facility (GEF)

- Working on MRVing GHGs in the building sectors; MRV GHG emissions from the catchall category of “energy efficiency” (GEF, 2008)

- **Technologies and enabling environments** (not specific to buildings)

- 1) direct impacts of the project; 2) post-project impacts; and 3) indirect impacts.

4. Citywide NAMAs

- Buildings and other infrastructure—built environment

- Two-tiered methodologies
  - Rigorous methodologies for similar buildings
  - Flexible “estimation” rules using energy intensity indicators for citywide reductions

- Flexible though more details needed

Concluding Thoughts

Methodology	Scope	Baseline Setting/ Additionality	Data Requirements
CDM AMS-II.E	Technology specific solutions	Rigorous	Significant, especially for new buildings
CDM AMS0091	Whole buildings	Innovative benchmarking	Significant, especially for benchmarks
GEF Energy Efficiency	Technologies and enabling environments (not specific to buildings)	Flexible	Flexible (includes indirect and post-project impacts)
Citywide NAMAs	Buildings and Other Infrastructure	Potentially Flexible	Flexible, though more detail needed

Concluding Thoughts

- Literature focused on increasing MRV accuracy
  - Dynamic baselines
  - Rebound effects
  - Lifecycle emissions

- Must balance costs and **benefits** of accuracy
  - **Co-benefits**

Knowledge sharing: Learn from India's work on AMS-II.E

Project Name	Status	Host Country	Annual Average CERs
Energy efficiency measures in "Technopolis".	Undergoing Registration	India	8,448
Energy Efficiency Improvement Measures in a commercial building facility	Undergoing Registration	India	7,053
Energy I	s Check	India	6,181
Energy (of Serer	s Check	India	29,884
Energy (	on	India	1,938
Green B	on	India	788
Energy I	on	India	3,334
Energy Efficiency Measures at MindSpace Building No 11 at Hyderabad	Validation	India	7,926
Energy Efficiency Measures at MindSpace Building No 6 at Hyderabad	Validation	India	5,312
Energy Efficiency Measures at MindSpace Building No 9 at Hyderabad	Validation	India	16,285
Energy Efficient Green Building at Mumbai by ONGC Limited	Validation	India	5,115
Green Building at Kolkata	Validation	India	1,881
Energy efficiency measures in Ecospace, Kolkata, West Bengal	Validation	India	7,359
Energy efficiency improvement measures in FORTIS Hospital buildings at Shalimar Bagh, New Delhi, and Gurgaon, Haryana India	Validation	India	4,942
Energy efficiency measures at Terminal T3	Validation	India	16,455

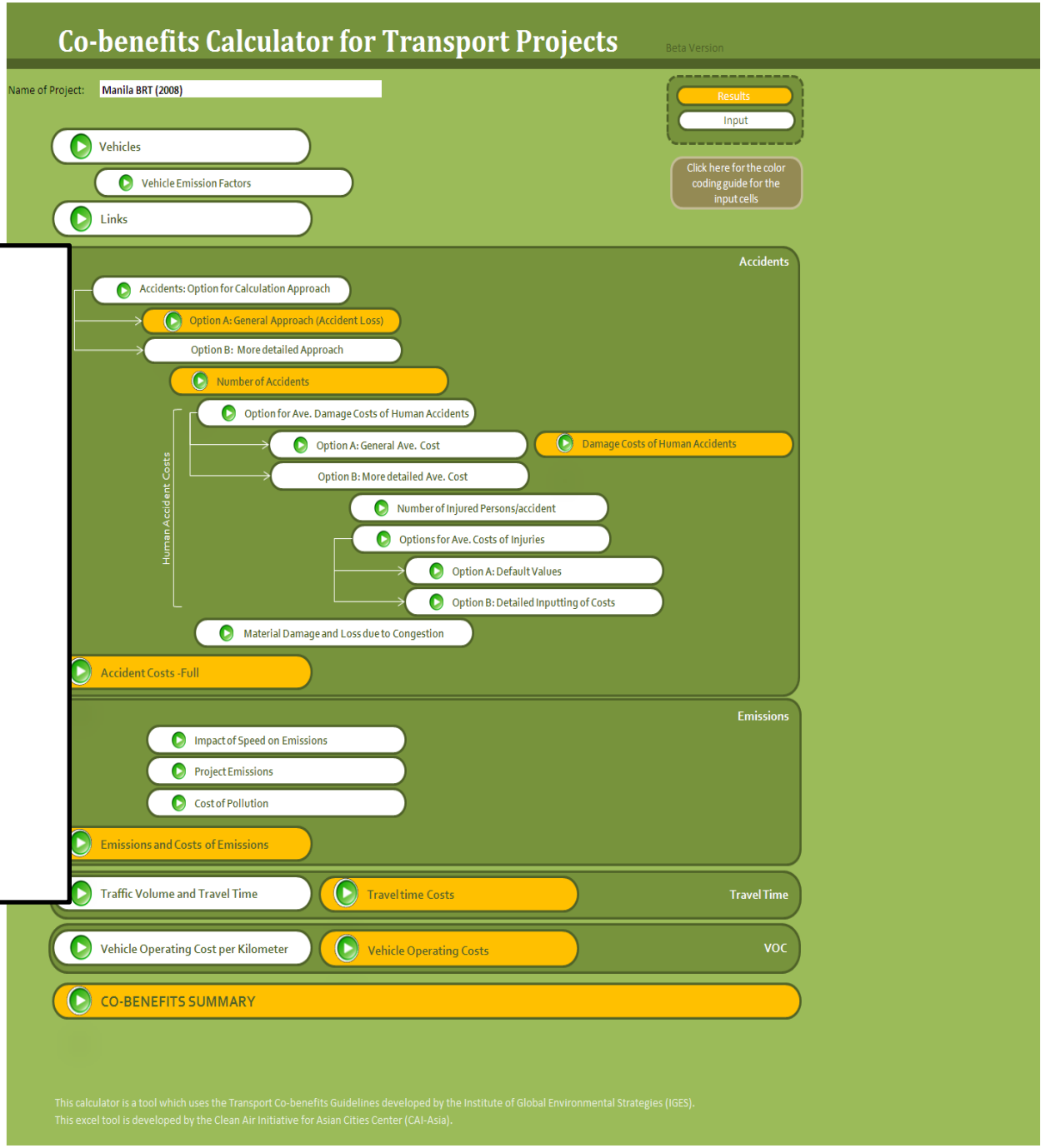
Source: IGES, 2012

NOTE: The only project using AMS-II.E that has received credits is in South Africa (CDM Lusaka Sustainable Energy Project 1)

Concluding Thoughts

- Consider:
  - less rigorous sampling for benchmarking
  - i.e. top 40% in past two years
  - Multiplication factors to post-project and indirect impacts
  - Citywide/district-wide “estimation rules” for energy intensity

“Sketch” models to increase ownership of MRV



Thank you

http://www.cobenefit.org