# Effecting Market Transformation in Building Construction: Critical Factors

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International Workshop: Mainstreaming Building Energy Efficiency Codes in Developing Countries

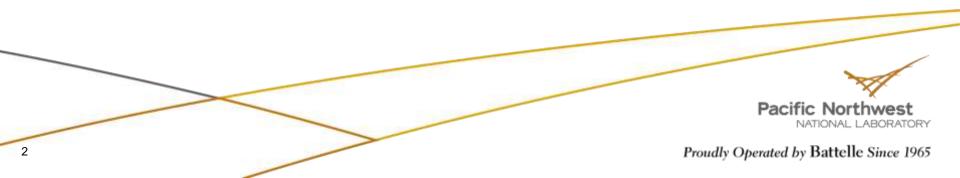
World Bank, November 19, 2009



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### **Points of Departure**

- Buildings account for a large amount of total energy use, and growing in developing world
- Much of energy footprint of building is set at construction
- Building energy codes can be powerful, effective tool
  - Cases in China and U.S.
  - Potential for zero energy buildings in the building energy code
- Enforcement as a weak link



#### **New Construction and Building Energy Codes**

- China alone accounts for about 50% of annual global new construction, adding about 1.8 bill. m<sup>2</sup> per year
- India and other developing countries also typically have high rates of new construction
- Buildings last 30-50 years.



#### **Lessons Learned**

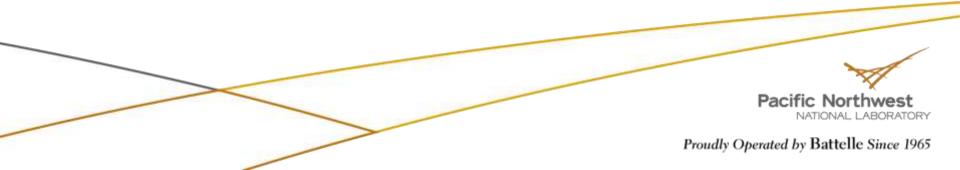
- Code requirements are becoming more stringent, common
- More experimentation with enforcement mechanisms
  - Sticks and carrots are getting stronger
- Enforcement design essential
  - Real penalties and rewards important
  - Training and tools to support process
  - Quality inspection without conflict of interest
  - Creative use of 3<sup>rd</sup> parties to ensure quality code oversight while keeping government costs low
- Metrics: how do you know enforcement is working
  - No global standard, which makes it harder to compare enforcement approaches

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### Lessons Learned, 2

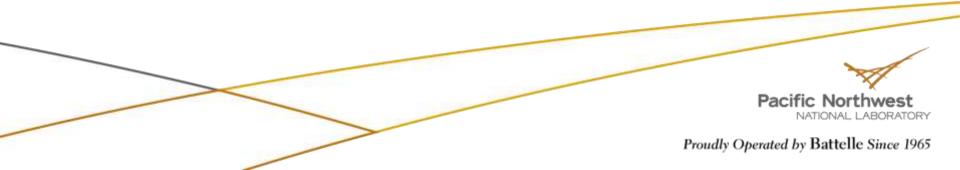
China has improved enforcement rapidly. How applicable are the lessons?

- Authoritarian powers—not so applicable
- Structure of multiple checks paid for mostly by developer—may be applicable
- Mexico is applying an interesting new carrot for highquality construction



## **Challenges and Questions**

- Balance between flexibility and complexity of requirements, on one hard, and compliance, on other
- Do we need to consider behavioral issues particularly as requirements get stronger? If so, how?
- How can we best allow for rapid and ongoing improvement in requirements?



Climate scientists and architects say that no single policy change could do more to save energy over the long run — and reduce the nation's contribution to global warming than building codes that make saving energy

the law.

Clifford Krauss New York Times July 2009