NAMA Options in the Building Sector

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Jens Laustsen
Owner and Director
2peach
Hot Climate Examples

Mexico

Singapore

Egypt
Example Mexico

- Mexican experience with low energy and zero energy
- Most examples low income housing
- Green mortgage and a zero energy home initiative
- Costs kept low though intensive design phase
- Simple measures
- Shading central
- Came close to zero energy:
  - Zero energy ready
  - Close by zero energy
  - (subsidized electricity)
The Mexican Example

The Mexican example is interesting:

• Based on holistic design
• Some buildings trying to reach zero
• General design “charette”
• Main focus on buildings and avoid cooling needs
• Capacity building in the industry and in institutions
• Support low income housing
• Potential for upscale - replication
• Companies built each more than 60,000 houses per year – main segment of buildings
• Mix of national initiatives a international
In hot and humid climates

I very hot climates shading is a key element

Traditional housing in Singapore, JL 2009
Zero Energy in Singapore

- High insulation levels
- Efficient Windows
- Shading / threes
- Greening facades
- Efficient Cooling, Vent.
- Solar PV
The Singaporean Example

The Singaporean experience is interesting:

- Because climate is very similar to many places in this region – hot and very humid
- It is based on the Green Master Plan
  - A very holistic policy approach combining many initiatives
  - Regular review
- High focus on Non Residential sector
- Long experience with building codes
- Highly supported by government and integrated in other policies
- Other types of incentives
  - Extra floor, attractive areas
Generic Architecture

Shading in India – Hot and Dry Climate

Ventilation Cooling in Egypt

MISR technical university Cairo

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Generic Architecture

Old solutions – generic architecture used in new ways

Source: Professor Ahmed Abdin, Cairo Technical University
Protected against the sun!

The main entrance roof is a series of stepped domes that ascend to the climax, the Logos.

Stepped domes of entrance roof

External envelope system.
The Egyptian Example

The Egyptian and Indian examples are interesting:

• Because they built on bioclimatic design
• Highly adapted to local conditions
• Use relative simple and low technology measures
• Intelligent design
• Shading / avoiding negative impacts of daylight penetrating buildings
  – But still using daylight
• Trying to reach comfort levels in different ways
  – Not strict focus on fixed indoor temperature
• Learning from history
• Cultural heritage and easier adaptable to skills
• Integrate in Requirements or built up scale
Implementing

- Development projects / experiments
- Demonstration projects
- Strong incentives for individual projects
- General incentives
- Building Codes / regulation for renovation
- Enforcement of Building Codes
- Information and Incentives

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<th>Implementing</th>
<th>Small Impact</th>
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Share in per cent

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Policies for Efficient Buildings

- Research and Development
- Demonstration
- Regulation
  - BC building parts
  - BC performance
- Certification and inspection
  - Buildings beyond
  - Compliance
- Finance
  - Subsidy
  - Loans
- Incentives
  - Economic
  - Others
- Information
  - General information
- Product standards
- Product labels
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Interest for international NAMA funding / projects

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Building Codes

Building codes & large financial support to upscale:
• Interesting as they obtain scale and large savings
• Control of savings is relative small compared to savings
  – Not control each building but representative sample
• Sample of buildings can adjust for behaviour
• Can for instance focus on:
  – Development and implementation of building codes
  – Enforcement
  – Guidelines to prepare or support BC’s
  – Help to build capacity
  – Create finance systems

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Roadmap

Support for smaller upscale and demonstration
• Can become especially interesting if they lead to BC’s
• If they help to document and prepare codes
• If they help to increase knowledge and data on buildings and construction
• Support larger targets
• Are part of Roadmap, which support multiple steps in the process up-scaling
• Strong focus on combination

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Implementing

Demonstration developed as part of strategy leading to larger impact

Share in per cent

Years

Small Impact

Large Impact

Development projects / experiments

Demonstration projects

Strong incentives for individual projects

General incentives

Building Codes / regulation for renovation

Enforcement of Building Codes

Information and Incentives

Small Impact

Upscale

2015
Implementing Development projects / experiments
Demonstration projects
Strong incentives for individual projects
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Roadmap

Share in per cent

Years

Small Impact

Large Impact

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Data

Support for development of capacity and data is essential:

• Strong focus on combination
• Each step should include capacity and data development / improvement / validation
• Supporting implementation of next step
• Need data to document potentials
• But also to document impact of NAMA’s
• Without data we fly blind!

• Development of more data on buildings and efficiency I one first key element