

Joint UN Environment – UNFCCC
Workshop on Mitigation in the Building Sector
31 July – 1 August 2017, Bonn, Germany

Lesson Learned from Development of NAMAs in the Building Sector in Asia: Thailand

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Environmentalist

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Office of Natural Resources and Environmental Policy and Planning

Content

- NAMAs in the Building Sector in Thailand
 - Housing
 - Public Building

NAMAs in the Building Sector in Thailand



King Mongkut's
University of
Technology Thonburi
(KMUTT)

- Technical Advisor

Pollution Control
Department (PCD)

- Implementing Agency



Office of Natural and
Environmental Policy
and Planning (ONEP)

- Focal point



UN Environment

- Coordinating Agency



Electricity Generating
Authority of Thailand
(EGAT)

- Implementing Agency



National Housing
Authority (NHA)

- Implementing Agency



NAMAs in the Building Sector in Thailand



Housing

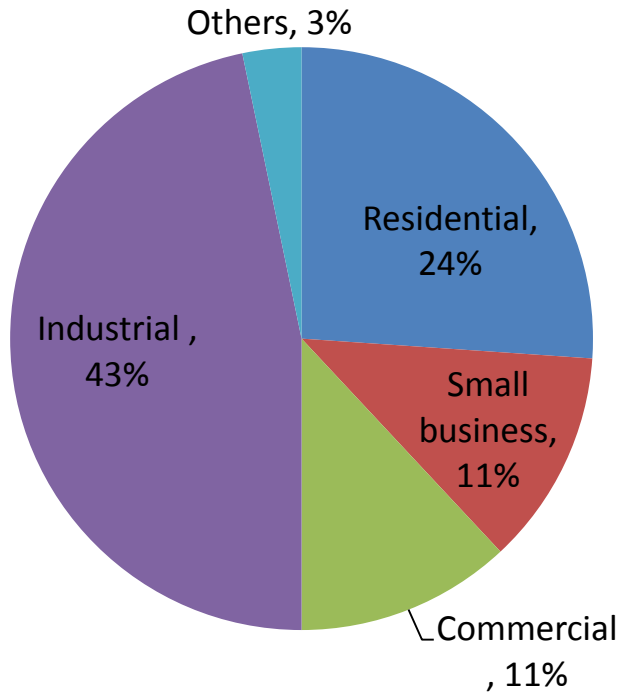


Public Building

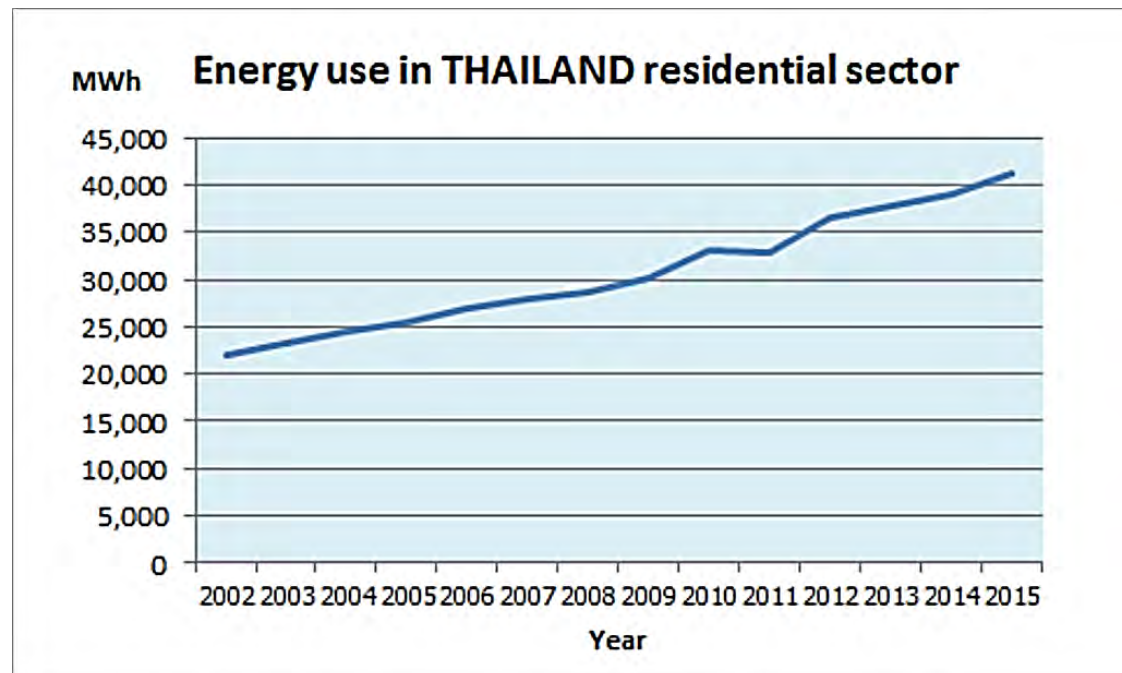


Housing NAMAs

Energy Use in Residential Sector in Thailand



Source: Department of Alternative Energy Development and Efficiency



Concept

Key Implementer



กรมส่งเสริมการเกษตร
National Housing Authority



EGAT
Power for Thai Happiness

Activities

Reduce Green house cost by research and Market activities

Standard setting and labelling scheme

Marketing and capacity building

Financial supports in form of low interest loan

NHA built greener houses for low and middle income buyers and drive the housing market to green standard



Project Activities

1

- Revise and harmonize green housing standard

2

- Develop labelling scheme for housing

3

- Research the cost structure of green products and green house cost

4

- Market activities with product suppliers by standard setting , certification and marketing

5

- Financial supports for incremental cost which will come from green housing fund, source from government and seed fund from NAMAs

6

- Capacity building of all stakeholders

7

- MRV units

Targets

Supply green
58,034 residential
units at affordable
price to low &
middle income
buyers in 5 years

Develop standard
and green and
energy efficient
label for houses

Lower the price of
green materials
and efficient low
income houses in
the market

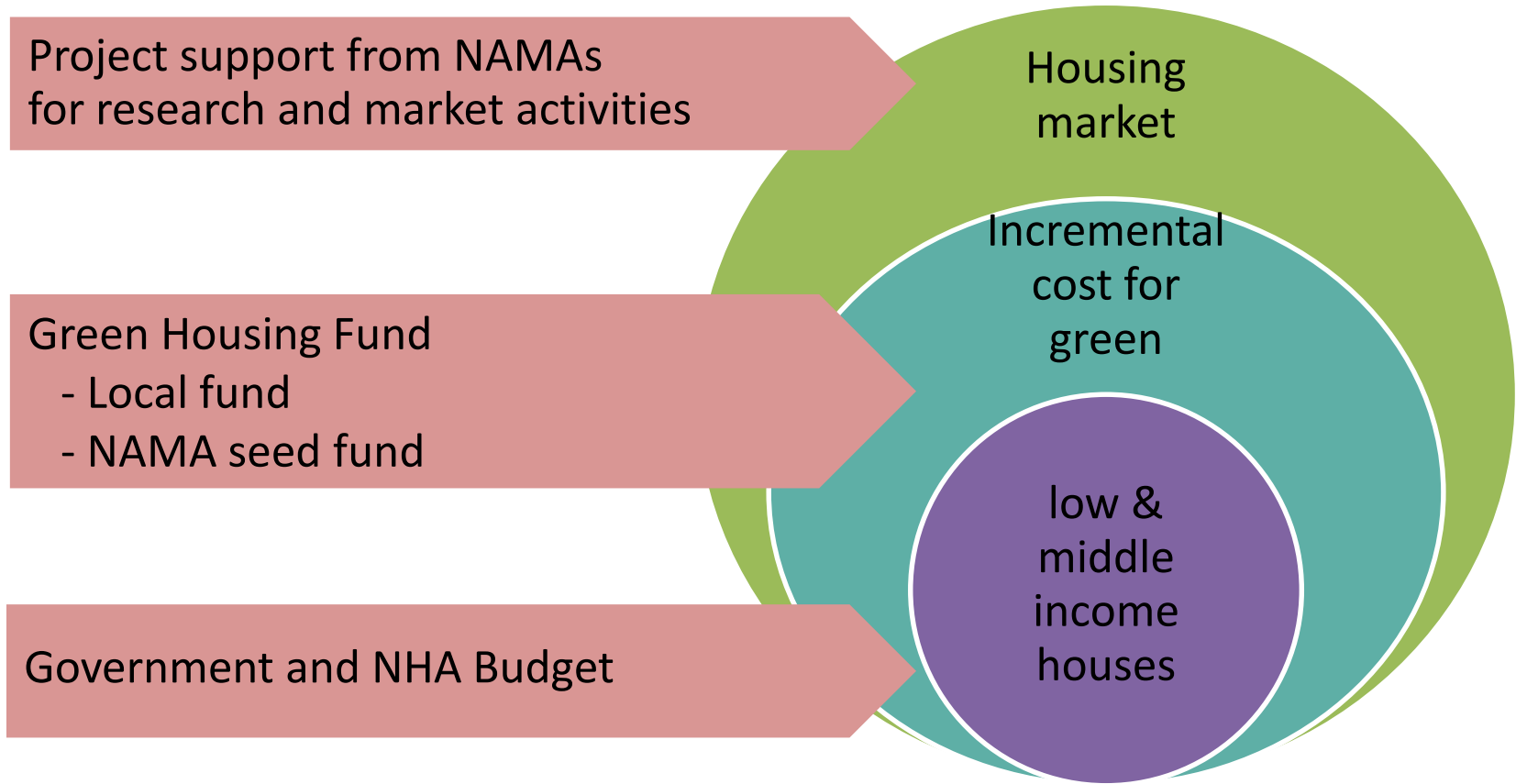
Raise market
awareness for
greener houses

Emission Reduction Potential

TYPE	Standard house				Green house					
	Number of units	Investment cost (MB)	Energy use (MWh)	CO ₂ emission (ton)	Energy use (MWh)	CO ₂ emission (ton)	Incremental cost	Energy saving (KWh)	Energy saving (MB)	CO ₂ reduction in 10 yrs (ton)
Single House	13,964	22,525	395,563	291,452	184,221	178,040	201	211,342	1,028	113,412
Twin House	7,344	9,931	228,269	164,502	113,631	101,780	105	114,638	558	62,721
Row House	7,524	6,890	147,761	180,136	75,209	131,014	104	72,552	353	49,122
Condominium	29,211	11,458	678,730	615,980	387,933	391,010	4,155	290,796	1,414	224,970
Total	58,043	50,804	1,450,323	1,252,070	760,994	801,844	826	689,328	3,352	450,225

Number of units : 58,034 units
 Investment: 50,804 Million Baht
 Incremental cost: 826 Million Baht
 Energy saving: 689,328 MWh in 10 years
 Emission reduction: 450,225 ton in 10 years

Financial Mechanism



Transformation and Sustainability

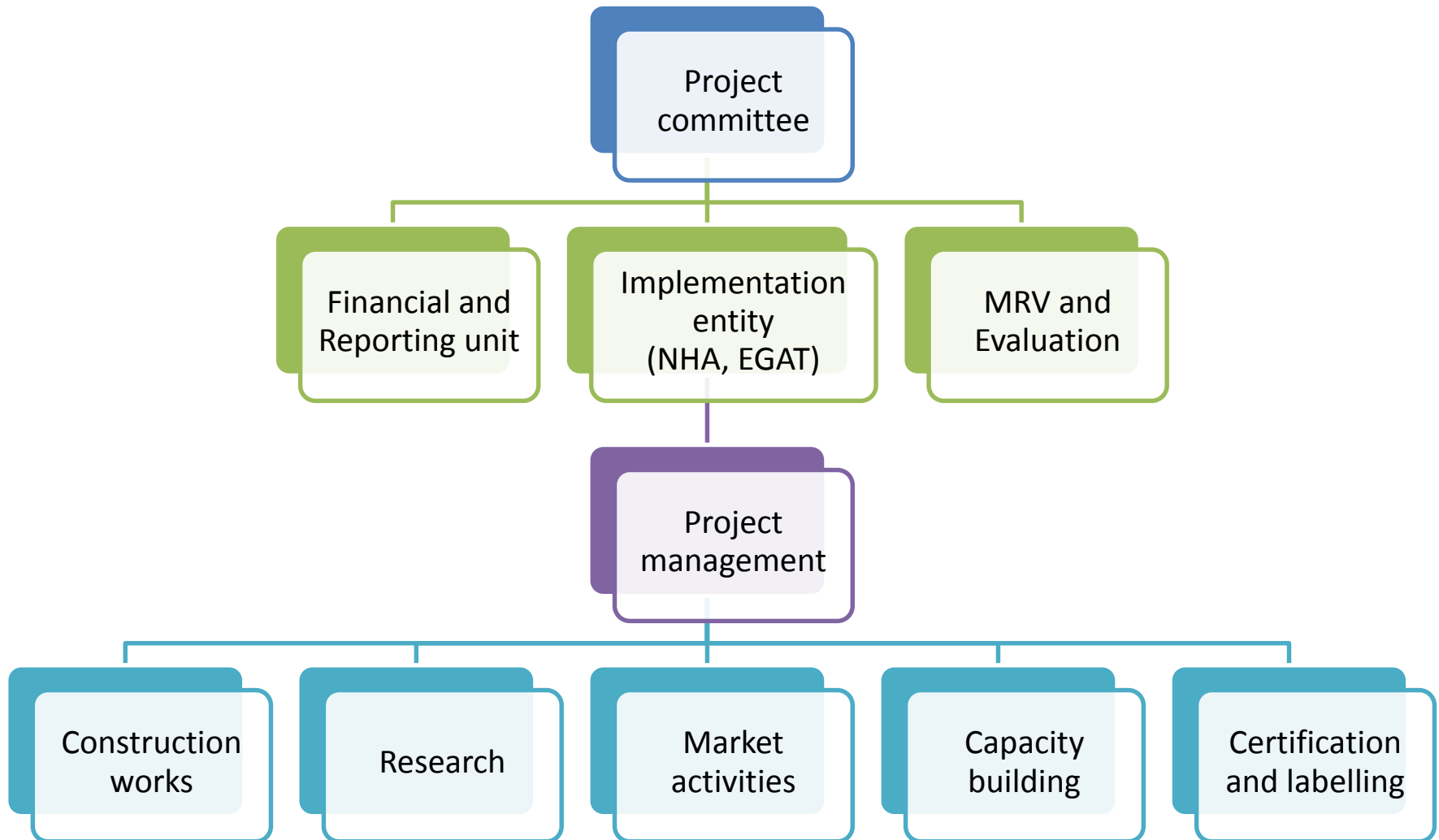
Transformation

- impact on housing market to move to green house

Sustainability

- Create need of green materials and lower the market cost by high volume
- Better the standard of living of low income

Organisation and Management



Expected Impacts

Components	Status
<p>GHG reductions:</p> <ul style="list-style-type: none">• GHG mitigation scenarios• Estimated GHG impact and how it relates to national targets	<p>Pending</p> <p>Calculations needs to be verified. KMUTT will share survey data with project team.</p>
<p>Transformation Change</p> <ul style="list-style-type: none">• How does the NAMA contribute to a transformation within the (sub)national building sector or within building sector policy	<p>Complete</p> <ul style="list-style-type: none">- To transform residential sector to green housing, through lowering of green housing cost, and raising awareness- At equipment level, to achieve 100% adoption rate for EE lighting, EE A/C
<p>Sustainable development benefits:</p> <ul style="list-style-type: none">• What other benefits are achieved through the NAMA (social, environmental, economic, health etc.)	<p>Complete</p> <p><i><next slide></i></p>

Co-Benefits



Economic

- Reduced electricity bill for consumers
- Increased energy security from demand-side reductions
- Increased technology uptake and potential attraction of investors



Environmental

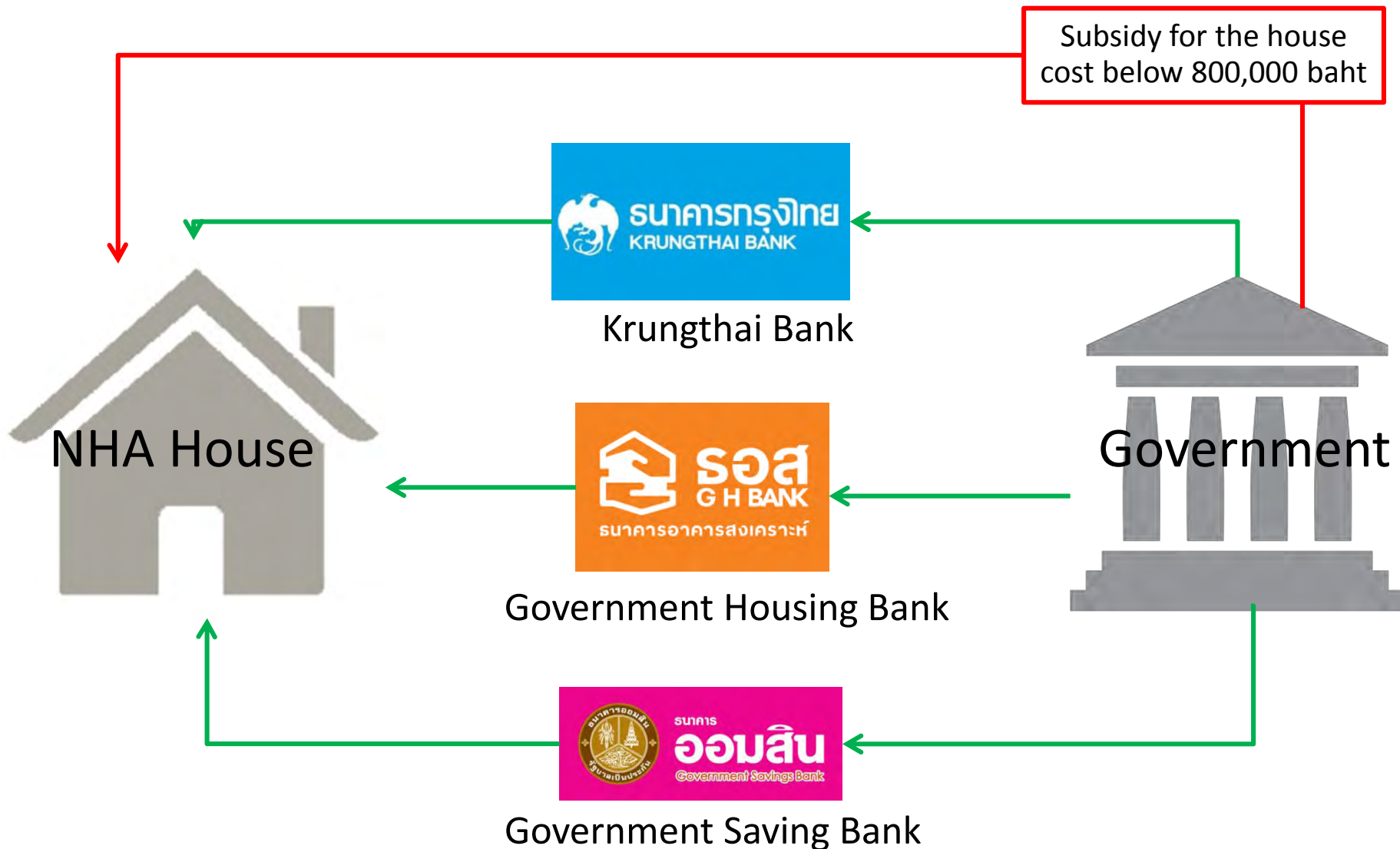
- Reduced GHG emissions from reduced electricity generation
- Reduced use of water and other natural resources
- Adaptation to climate change effects (e.g. through passive design to reduce heat gain, rainwater storage facilities)



Social

- Welfare gains from reduced electricity bills, especially for the lower income population
- Positive health effects from better air quality
- Job creation and economic development
- Capacity building and skills development

Government Policy on NHA House



Green Housing Pilot Projects

Patum Thani
589 units

Si Sa Ket
345 units

Rayong
334 units



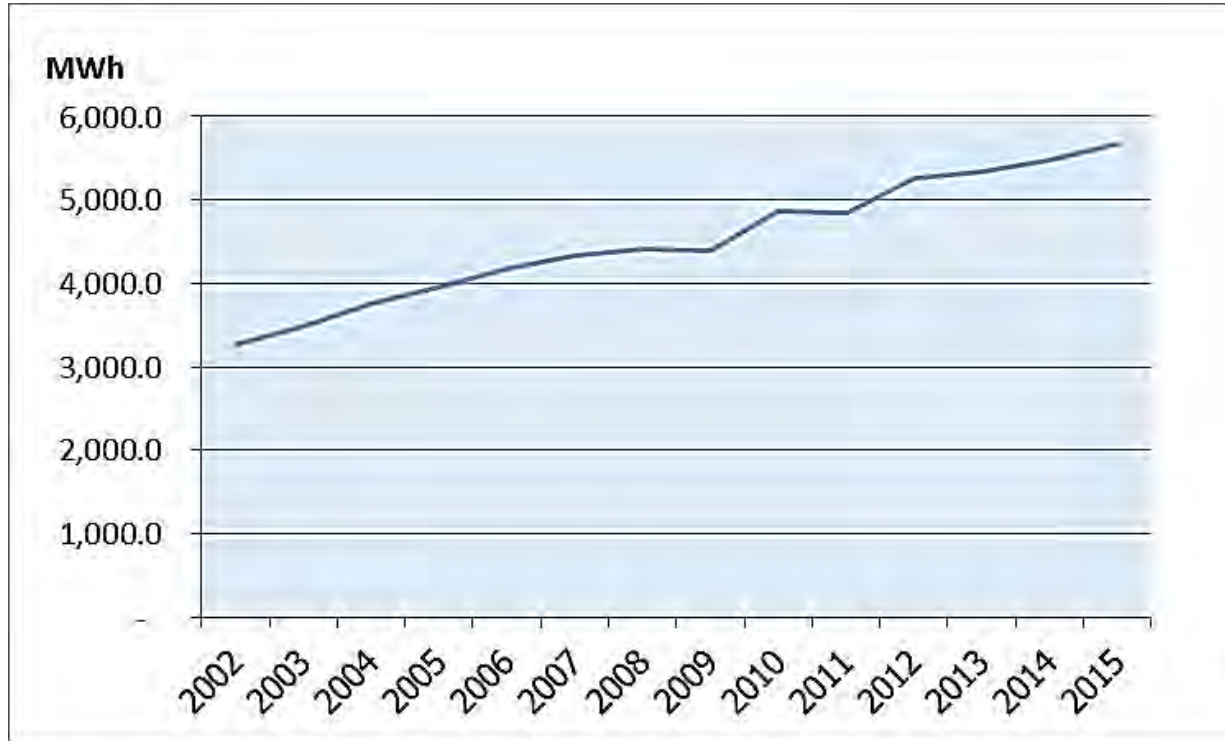
- Mid-scale housing projects
- Expected construction on July 2017-October 2018
- Focus on energy efficient standards in green construction, maintenance and long-term evaluation





Public Building

Energy Use in Public Building in Thailand



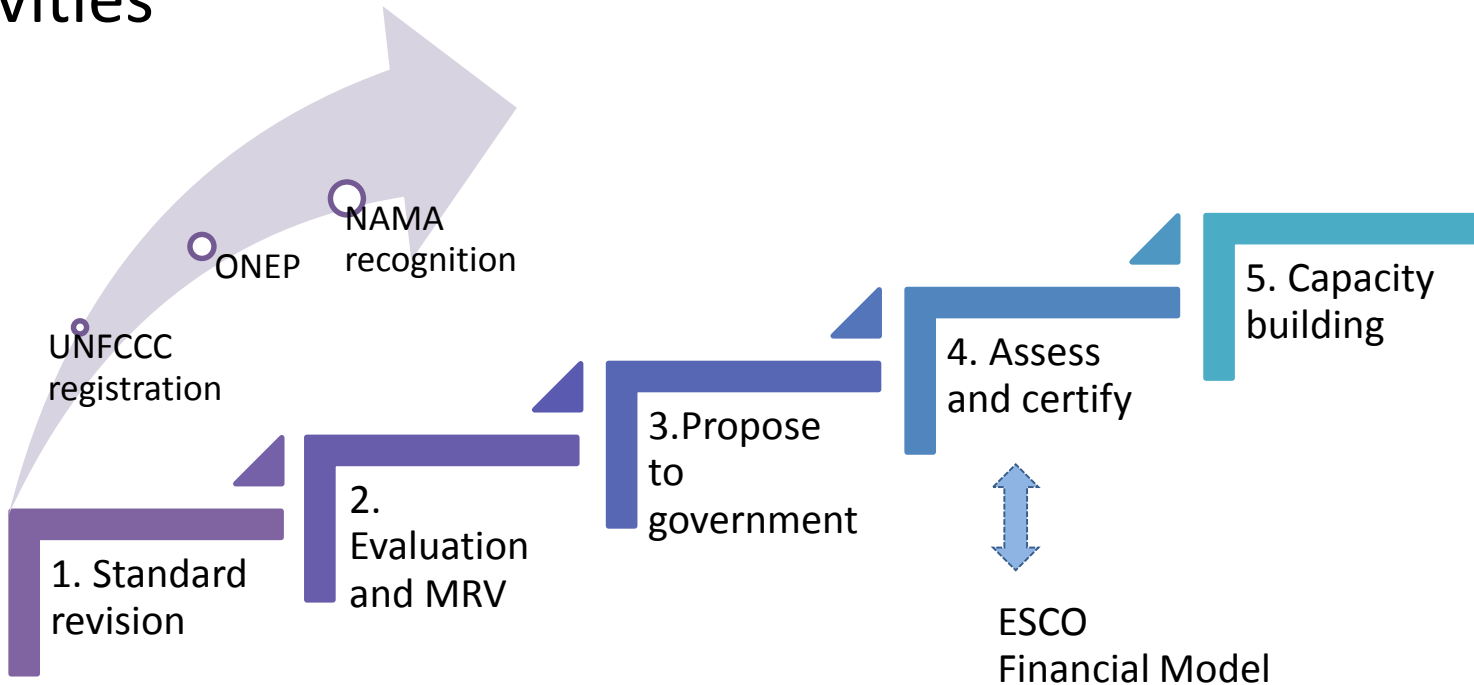
- Public building use 3.2-3.5% of Thailand electricity consumption and about 20% of all commercial building use
- Existing buildings not governed by Building Energy Code
- Improvement Potentials is available

Concept

Key Implementer



Activities



Emission Reduction Potential: Large Government Buildings

Government BLDG.	number (bldg.)	Electricity use(kWh/y)	Energy saving (kWh/y)	Investment (baht)	GHG reduction (ton/y)
Office	331	893,881,667	187,385,387	3,481,354,773	97,721
Education	128	1,018,708,956	164,580,570	2,744,855,958	85,829
Hospital	180	860,540,546	164,961,056	1,616,004,443	86,027
Total	639	2,773,131,169	516,927,014	7,842,215,175	269,577

The potential of GHG reduction in existing large buildings is 269,577 ton/yr.

Emission Reduction Potential: Pilot Government Buildings

Parameters	value	unit
Number of buildings	10	Bldg./year
Total building area	89,232	Sq.meter
Investment	48	Million Baht/year
Energy saving	3,132	MWh/year
Energy cost saving	12.53	Million Baht/year
Emission reduction	1,634	Ton/year

Transformation and Sustainability

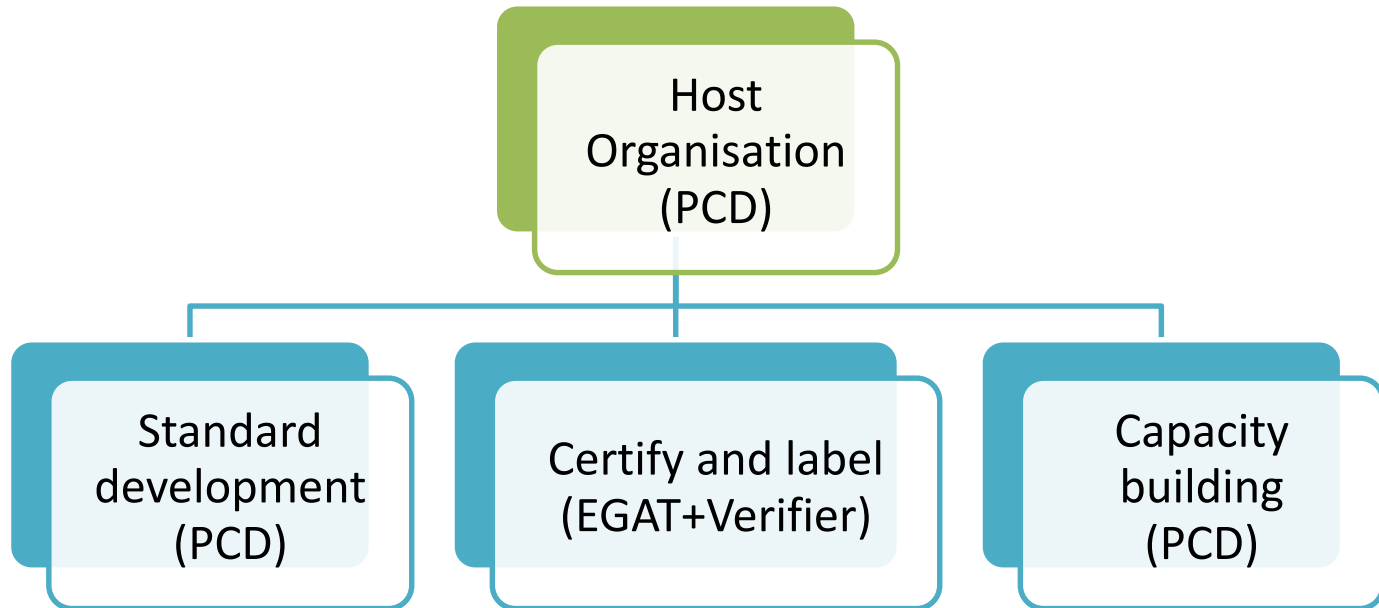
Transformation

- All Government buildings move to better quality and energy efficiency
- Revise the budgetary system to support green buildings

Sustainability

- Government policy to improve existing buildings

Organisation and Management



Expected Impacts

Components	Status
<p>GHG reductions:</p> <ul style="list-style-type: none">• GHG mitigation scenarios• Estimated GHG impact and how it relates to national targets	<p>Pending</p> <p>Calculations needs to be verified. KMUTT will provide data on existing public building stock data for scenario planning.</p>
<p>Transformation Change</p> <ul style="list-style-type: none">• How does the NAMA contribute to a transformation within the (sub)national building sector or within building sector policy	<p>Complete</p> <ul style="list-style-type: none">- 100% green existing public buildings, through policy for retrofitting buildings- To transform private sector to achieve green commercial buildings (lower cost, raising awareness)- At equipment level, to achieve 100% adoption rate for EE lighting, EE A/C, EE office equipment
<p>Sustainable development benefits:</p> <ul style="list-style-type: none">• What other benefits are achieved through the NAMA (social, environmental, economic, health etc.)	<p>Complete</p> <p><i><next slide></i></p>

Co-Benefits



Economic

- Reduced utility cost of government budget
- Increased energy security from demand-side reductions
- Increased market demand for energy efficiency products and business
- Increased productivity from a greener and healthier work



Environmental

- Reduced GHG emissions from reduced electricity generation
- Reduced use of water and other natural resources
- improved government building environment



Social

- Positive health effects from better air quality
- Job creation and economic development
- Capacity building and skills development

Thailand's Green Public Procurement

- Lunched since 2008
- Criteria for Green Products and Services
 - Description
 - Environmental Impacts
 - Selection Principle
 - Impacts of Product Life Cycle
 - Resource Efficiency
 - Ease of Replacement
 - Plentiful Purchasing
 - Evidence or Label of Standard
- 17 Products: Computer Paper, Coloured Paper, Correction Liquid, Toilet Paper, Fluorescent Lamp, Primary Battery, Document Box, Photocopier, Printer, Metal Equipment, Envelope, Toner Cartridge, Whiteboard Pen, Paints, Car, Lubricant Oil, Fuel
- 5 Services: Petrol Station, Car Services, Hotel, Cleaning Services, Photocopier Rental



Communication

Label no.5

- Launch since 1993
- 27 Product i.e. Refrigerator, Air-conditioning, Microwave oven, Washing machine, Electric fan, Electric kettle, Fluorescent bulb, Iron, Water heater, LED bulb, etc.
- Mobile Application



Market Mechanism

Green Housing Pilot Projects

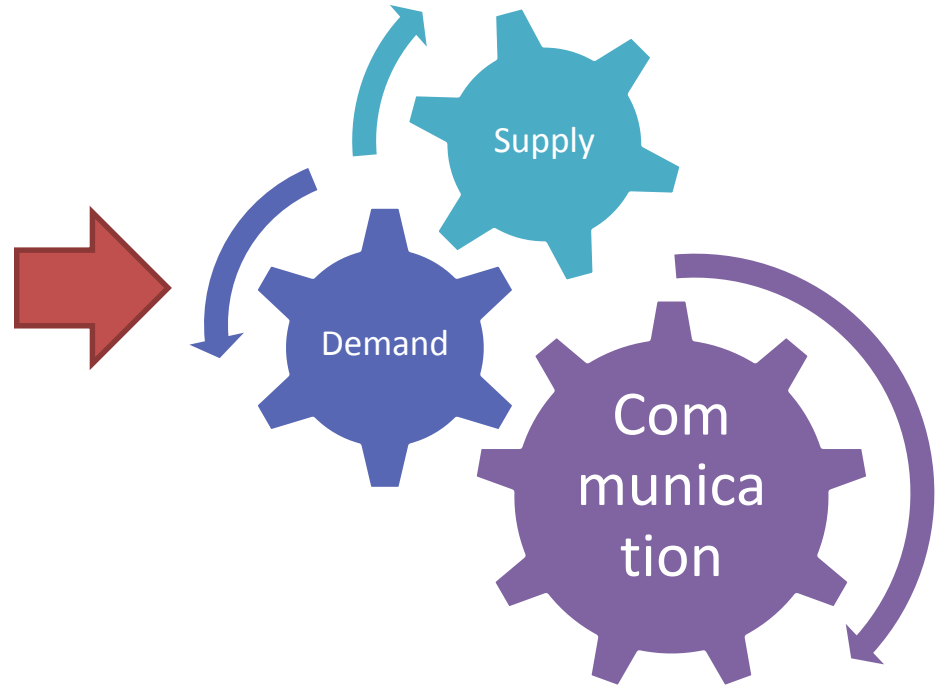
Patum Thani

Si Sa Ket

Rayong

Public Green Building

Green Public Procurement



Thank you



Climate Change Management and Coordination Division
Office of Natural Resources and Environmental Policy and Planning

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