

Financing Affordable Housing in Thailand through ESG bonds:  
Case Study of the National Housing  
Authority (NHA)

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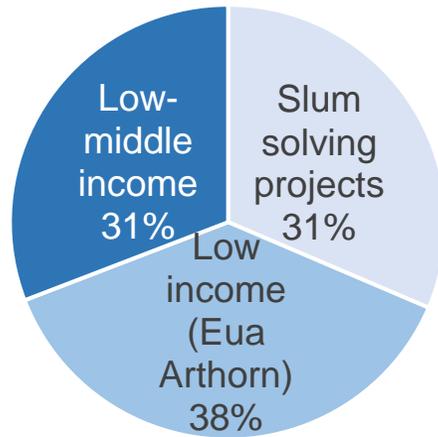


# About NHA



- State-Owned Enterprise
- Founded on 1973
- 745,000 units
- Affordable housing: Low-middle income

## Units break down



Source: <https://www.nha.co.th/bonds/>

## Low-income projects



## Low-middle income projects



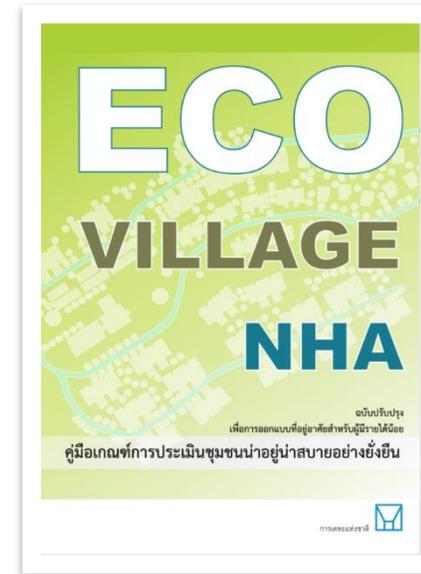
# NHA's going for Sustainable



## Label No.5

Thailand energy label

Developed by EGAT (Electricity Generation Authority of Thailand)



## ECO Village

NHA's design guideline

Developed by NHA

- 2,956 units already comply with the standards.
- All future development of NHA will comply with the standards.

# NHA Finance Framework



ฉลากประหยัดไฟฟ้าเบอร์ 5  
**ของบ้าน**  
Home No.5

## National Housing Authority Sustainable Finance Framework

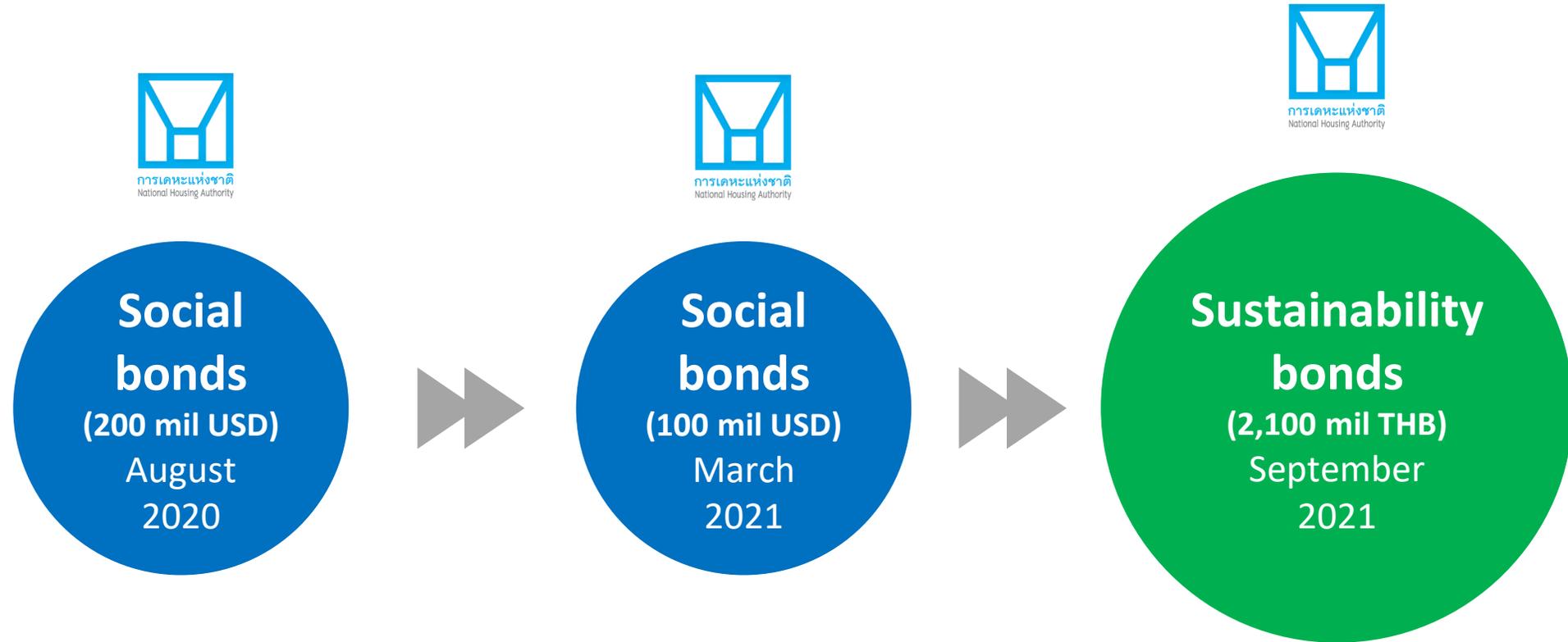
AUGUST 2021

National Housing Authority



Source: <https://www.nha.co.th/bonds/>

# 2021 Sustainability Bond



1<sup>st</sup> sustainability bond  
issued by a State-Owned Enterprise  
in ASEAN

# 2021 Sustainability Bond: Asset

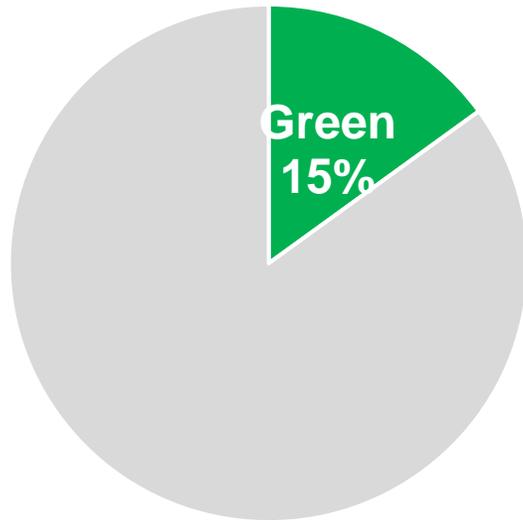
Summary of NHA label No. 5 projects included in the green bond

Project	Picture	Units	Label no.5	Avg. area per unit	Baseline		Label No.5		Savings	
					Energy intensity (kWh/m <sup>2</sup> a)	Total energy (kWh/a)	Energy intensity (kWh/m <sup>2</sup> a)	Total energy (kWh/a)	Total (kWh/a)	%
<b>2018 projects</b>										
1 TOD Prachanives 3, Nonthaburi TOD ประชาภิเวศน์ 3		556	Yes	30.3	101.6	1,711,635	80.0	1,347,744	363,891	21%
2 Khonkaen Green ville, Khonkaen เดอะชุมชนเชิงพาณิชย์ ขอนแก่นกรีนวิลล์		90	Yes	109.7	42.5	419,246	30.0	296,397	122,849	29%
3 Bang pa in phase 2 no.6, Ayutthaya เดอะชุมชนเชิงสังคมอยุธยา (บางปะอิน) ระยะที่ 2 (2)		410	Yes	48.6	54.2	1,078,645	41.0	816,329	262,316	24%
<b>2019 projects</b>										
4 Semi-detached Suphan (U-Ya 1 projects) แฝด สุพรรณ		186	Yes	49.8	53.6	495,988	39.8	368,289	127,698	26%
5 Terraced Suphan (U-Ya 1 projects) สุพรรณบ้านแถว		136	Yes	54.3	63.8	471,454	45.3	334,314	137,140	29%
6 Terraced Bang Pli 3, Samutprakarn บางพลี 3 บ้านแถว		184	Yes	75.8	44.6	622,712	33.0	460,197	162,515	26%

Project	Picture	Units	Label no.5	Avg. area per unit	Baseline		Label No.5		Savings	
					Energy intensity (kWh/m <sup>2</sup> a)	Total energy (kWh/a)	Energy intensity (kWh/m <sup>2</sup> a)	Total energy (kWh/a)	Total (kWh/a)	%
7 Detached Sam Phrao, Udon thani บ้านเดี่ยวสามพร้าว		20	Yes	105.3	47.8	100,667	32.9	69,287	31,379	31%
8 Semi-detached Sam Phrao, Udon thani บ้านแฝดสามพร้าว		46	Yes	90.8	54.0	225,547	36.9	154,124	71,423	32%
9 Semi-detached Pon Manee, Nakhon Nayok บ้านแฝดพรมณี		498	Yes	48.6	56.1	1,355,934	41.4	1,000,518	355,415	26%
10 Sawang Dan Din, Sakon Nakhon บ้านสว่างแดนดิน		278	Yes	48.6	56.1	757,176	41.4	558,772	198,404	26%
<b>2020 projects</b>										
11 Semi-detached Bang Krabue, Sing Buri จ. สิงห์บุรี (บางกระบือ)		224	Yes	48.6	54.2	589,174	41.3	448,884	140,290	24%
12 Detached Pho Rai Wan, Phetchaburi เพชรบุรี (โพไร่หวาน)		328	Yes	52.5	69.8	1,201,956	47.5	817,950	384,006	32%

## 2021 Sustainability Bond: Asset

Asset pool value



117,866 MWh  
412 Mil THB Energy cost  
Saved  
(Over 50 years)

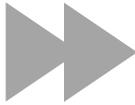
**25% Energy saving**  
Compared to conventional NHA housing

Source: <https://www.nha.co.th/bonds/>

# 2021 Sustainability Bond: Asset



Local investor



International investor?

# Outlook for international markets: Climate Bonds



## Requirement of assets



Source: <https://www.climatebonds.net/>

# Outlook for international markets: Climate Bonds

## Different standard have different scope

Label / Standard	Environment topics							Health & well-being topics		
	Location	Site development	Water saving	Energy saving	Carbon footprint of material	Commissioning	Construction site management	Low toxic material	Indoor air quality	Visual/ Thermal comfort
Thai Building Energy Code (BEC)	-	-	-	✓	-	-	-	-	-	-
<b>NHA</b> TREES	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Eco Village	✓	✓	✓	✓	-	-	✓	✓	✓	-
Label No. 5	-	-	-	✓	-	-	-	-	-	-
EDGE	-	-	✓	✓	✓	-	-	-	-	-
LEED	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

## Climate Bond

# Outlook for international markets: Climate Bonds

## Local



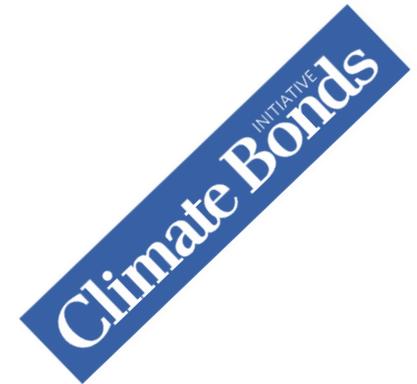
by  **EGAT**



## International



by  **IFC**  
International  
Finance  
Corporation  
WORLD BANK GROUP



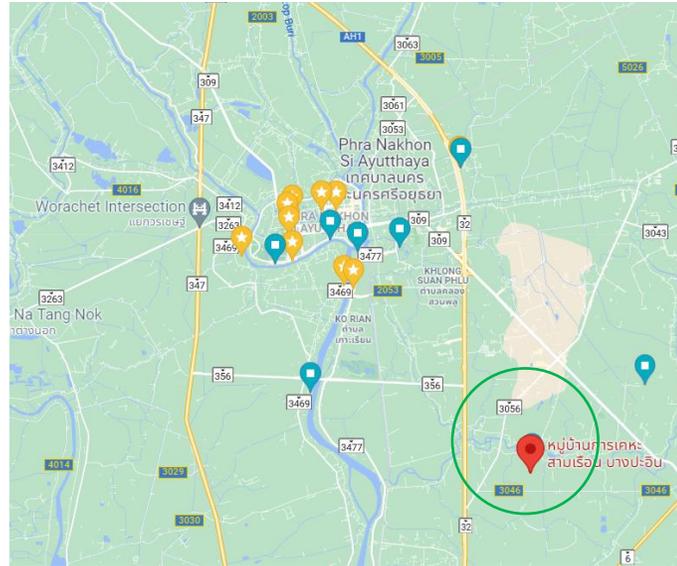
# Outlook for international markets: Project case study



\*ภาพก่อสร้างและบรรยากาศจำลอง

โครงการเคหะชุมชนและบริการชุมชน  
พระนครศรีอยุธยา (บางปะอิน)

บ้านแฝด 2 ชั้น  
2 ห้องนอน 1 ห้องน้ำ



# Outlook for international markets: Project case study



## Area

Floor Area: 48.6 m<sup>2</sup>

Window area: 16%

Occupants: 3

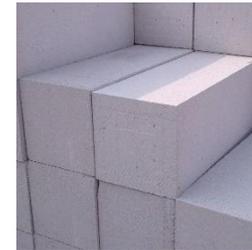
## Material

Wall: AAC block

Roof: Cement + 2" insulation

Glazing: Single

Renewable: No



AAC block

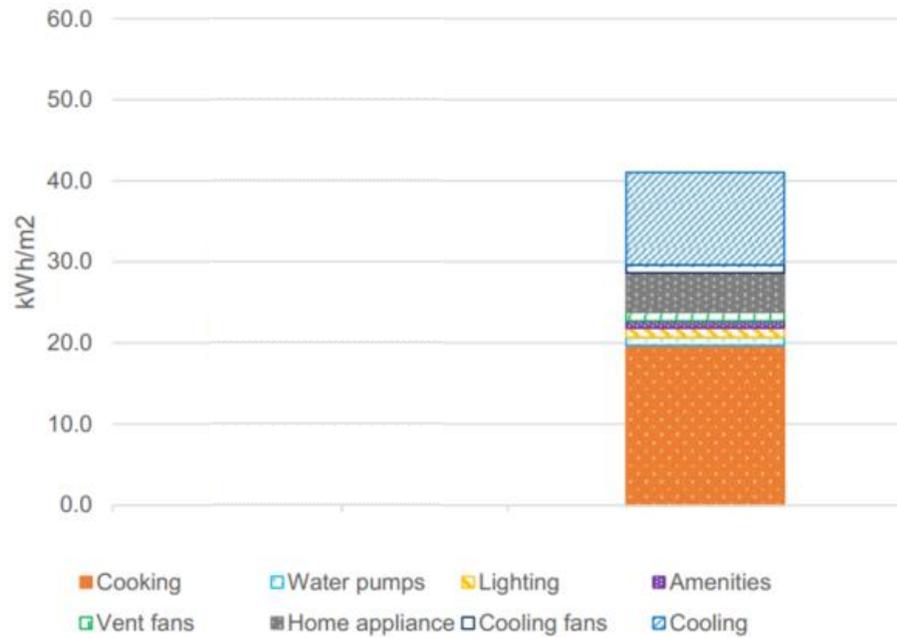


Insulation on the roof

# Outlook for international markets: EDGE certification

- Energy use of the current asset

<b>Project Name:</b>	Bang pa in phase 2 no.6		
<b>Location:</b>	Ayutthaya		
<b>Home type:</b>	Semi-detached		
No. of buildings:	205	Units per building	2
No. of units:	410	Area per units	48.6 m <sup>2</sup>



- Improvement needed to become EDGE certified





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Thank you  
for your attention!