



**National Housing Authority**

# Developing Green Housing: Challenges & Opportunities

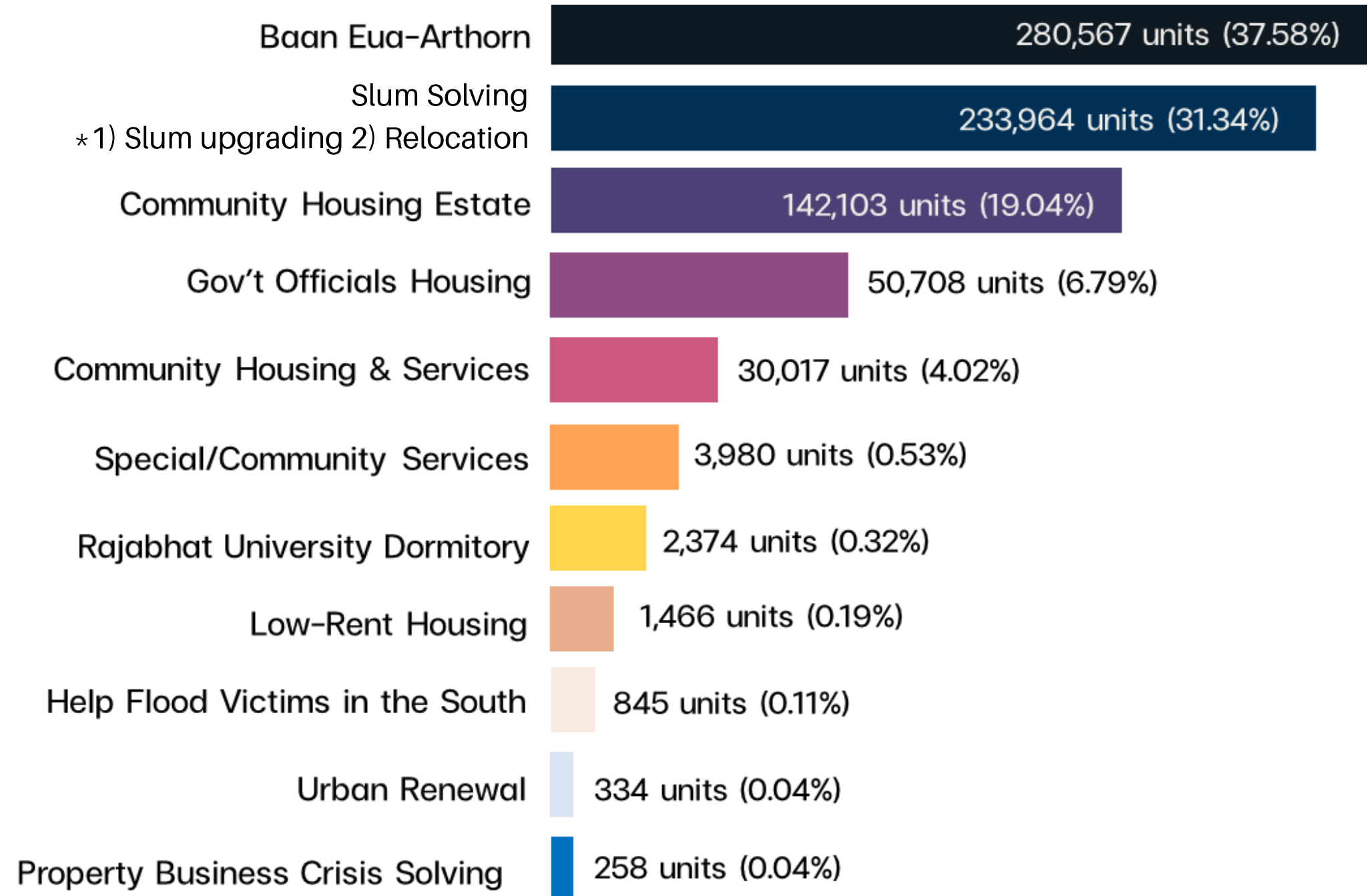
**Sukumaporn Jongpakdee**

**Ast. Governor, NHA**



September 2022

## Performance of Housing Development



Carrying out  
housing development works of

**746,616**  
**Units**

(Since 1976 - July 2022)

**49 YEARS**  
**Performance**

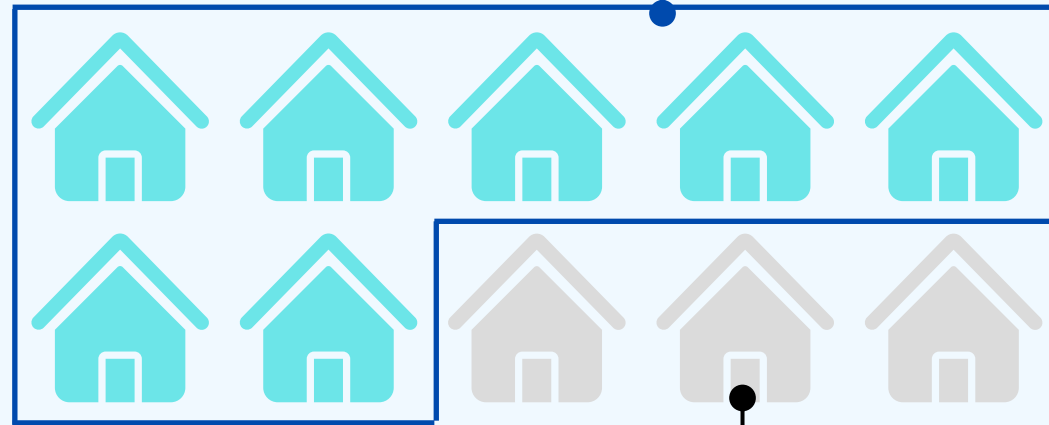
NHA, a state-owned enterprise, have a mandate to develop affordable housing for those in need of housing, especially low-income households in the country.



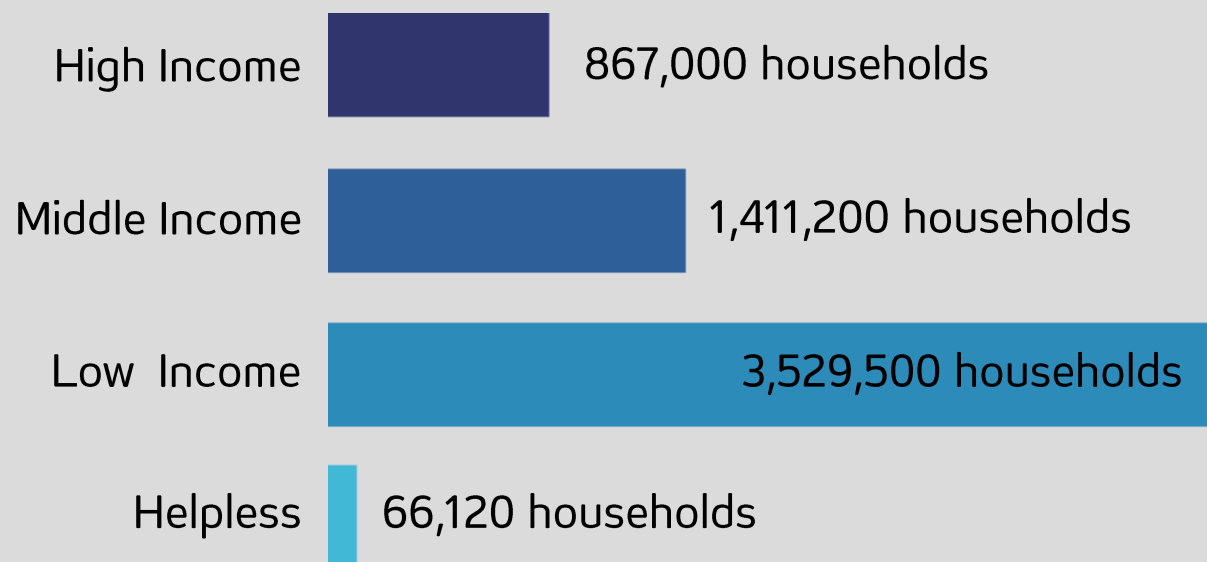
# Number of Households

## 21.32 Millions\*

Have housing ownership  
15.45 m. households (72.50%)



Have no ownership 5.87 m. households  
(27.50%)



Total 5,873,745 households

**National Housing Authority**  
**Affordable Housing Development Plan**  
**2,271,080 units**

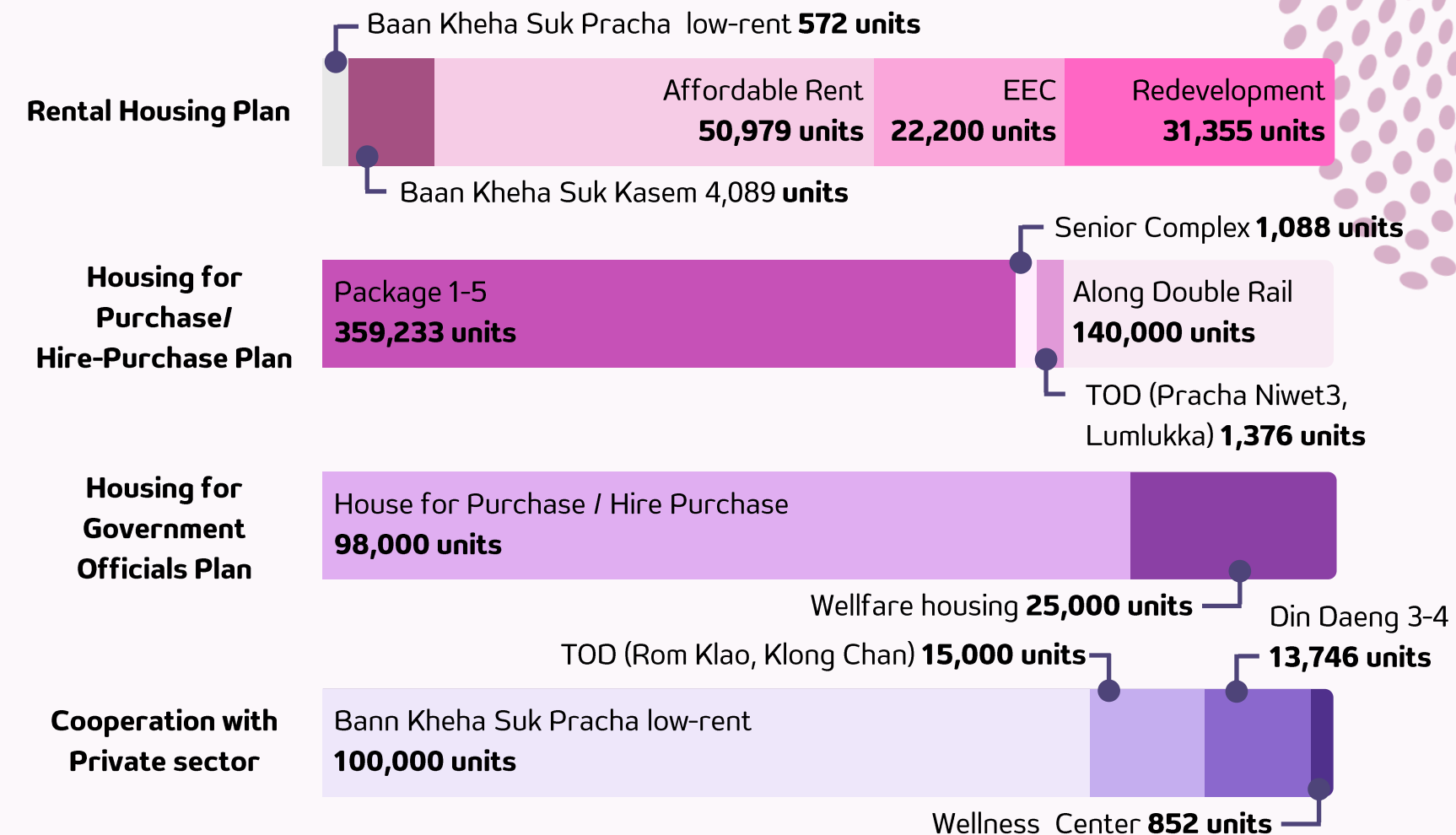
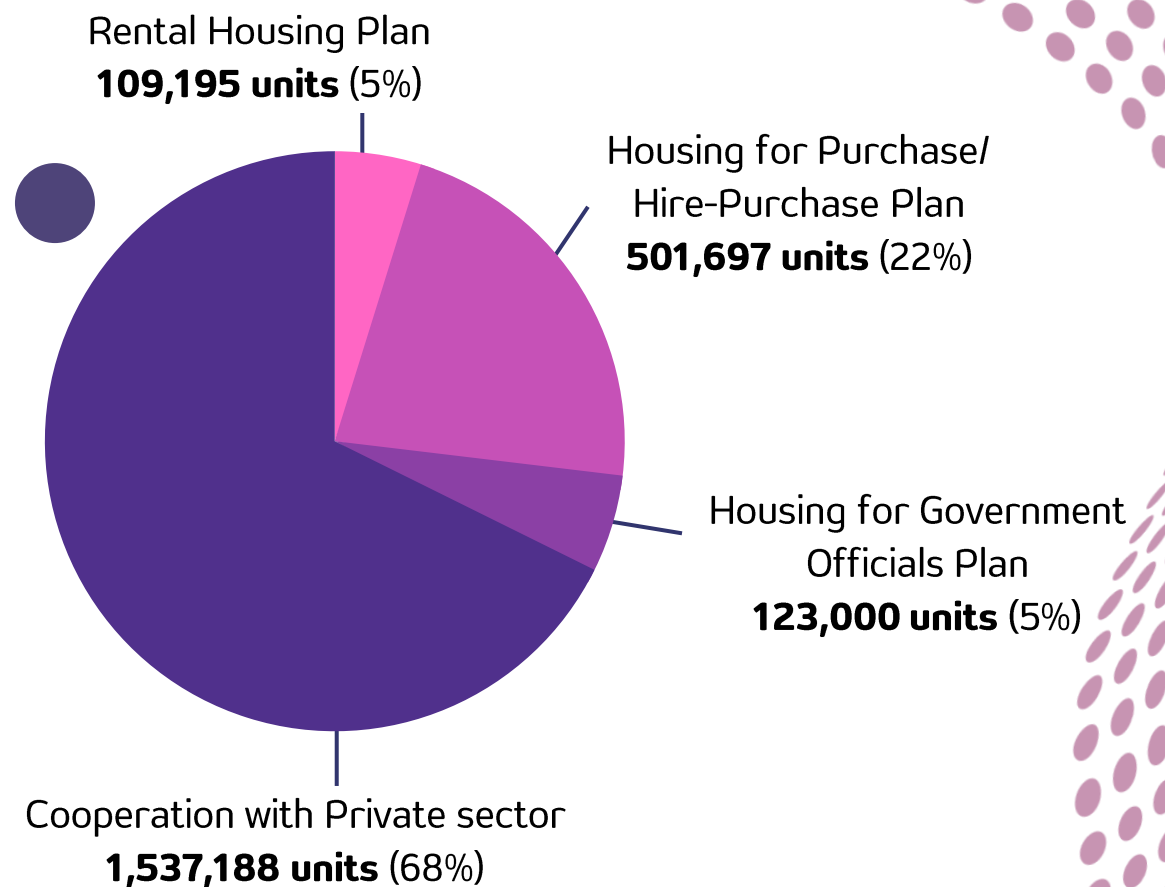
Social Development and Welfare (DSDW)  
**84,661 cases**

Community Organizations Development Institute (CODI)  
**1,053,702 households**

Department for Empowerment of Persons with Disabilities (DEP)  
**132,700 Units**

Department of Older Persons (DOP)  
**467,610 houses**

Private/Local Authority  
**1,863,992 units**



\*As a survey by NSO, referred in the 20-year Master Plan for Housing Development

To be developed by NHA totalling 733,892 units

Plan to raise up quality of life (Rent)

Plan to enhance residential security (Hire-purchase)

Plan to develop housing for government officials

Target Unit

109,195 units

501,697 units

123,000 units

Target Group



The low-income who are unable to own houses



The low-middle income, new graduates, nuclear family



Government officials

Project Type



Plan to cooperate with private sector to develop affordable housing

1,537,188 units



The low-middle income



# Contributions of affordable housing development to Sustainable Development Goals (SDGs)



**SDGs 1 No Poverty**

- Career training for community residents/ Smart & Sustainable Community For Better Well-Being
- Develop "Ban Kheha Sukpracha low-rent" for vulnerable and low-income people

**SDGs 3 Good Health and Well-Being**

- Smart & Sustainable Community For Better Well-Being

**SDGs 4 Quality Education**

- Smart & Sustainable Community For Better Well-Being

**SDGs 5 Gender Equality**

- Smart & Sustainable Community For Better Well-Being
- Dindaeng Smart Community & City
- Develop "Ban Kheha Sukpracha low-rent" for vulnerable and low-income people

**SDGs 7 Affordable and Clean Energy**

- Energy Efficiency Housing / House No. 5
- Smart & Sustainable Community For Better Well-Being
- Dindaeng Smart Community & City

**SDGs 9 Industry, Innovation and Infrastructure**

- Smart & Sustainable Community For Better Well-Being
- Dindaeng Smart Community & City

**SDGs 10 Reduced Inequalities**

- NHA Eco-Village / Eco-Friendly Housing
- Eco-efficiency in housing development
- Develop "Ban Kheha Sukpracha low-rent" for vulnerable and low-income people
- Smart & Sustainable Community
- Dindaeng Smart Community & City

**SDGs 11 Sustainable Cities and Communities**

- NHA Eco-Village / Eco-Friendly Housing
- Eco-efficiency in housing development
- Develop "Ban Kheha Sukpracha low-rent" for vulnerable and low-income people
- Smart & Sustainable Community
- Dindaeng Smart Community & City

**SDGs 12 Responsible Consumption and Production**

- NHA Eco-Village / Eco-Friendly Housing
- Develop "Ban Kheha Sukpracha low-rent" for vulnerable and low-income people
- Smart & Sustainable Community (Waste-to-Money)
- Dindaeng Smart Community & City

**SDGs 13 Responsible Consumption and Production**

- NHA Eco-Village / Eco-Friendly Housing
- Eco-efficiency in housing development
- Smart & Sustainable Community

**SDGs 15 Life on land**

- Develop "Ban Kheha Sukpracha low-rent" for vulnerable and low-income people

## Core Focus



## Contribution



## Commitment



# Bio Economy Circular Economy Green Economy

Bang Cha-lhong



## NHA with BCG Model:

NHA has incorporated the Bio-Circular-Green economy model (BCG) into NHA Strategic Plan 2017-2027 (B.E. 2560-2570, 2565 Revision)

BCG model will help creating economic wealth, social welfare and security, a more sustainable environment, and contribute to the UN's Sustainable Development Goals.



Ban Kheha Sukpracha

# Project Development Standard

Project categories (by size)

## Small scale

Village  
400 units

## Medium scale

Tombon/  
Subdistrict  
1,600 units










## Large scale

District  
4,800 units

## Town (New Town)

-  
14,400 units

### Community elements/basic services:

	Commercial areas	<span style="color: red;">●</span> <span style="color: purple;">●</span> <span style="color: blue;">●</span> <span style="color: green;">●</span>
	Child Daycare	<span style="color: red;">●</span> <span style="color: purple;">●</span> <span style="color: blue;">●</span> <span style="color: green;">●</span>
	Community center	<span style="color: red;">●</span> <span style="color: purple;">●</span> <span style="color: blue;">●</span> <span style="color: green;">●</span>
	Healthcare service center	<span style="color: red;">●</span> <span style="color: purple;">●</span> <span style="color: blue;">●</span> <span style="color: green;">●</span>
	Telecommunication center	<span style="color: red;">●</span> <span style="color: purple;">●</span> <span style="color: blue;">●</span> <span style="color: green;">●</span>
	Park/Sport field	<span style="color: purple;">●</span> <span style="color: blue;">●</span> <span style="color: green;">●</span>
	Educational services	<span style="color: red;">●</span> <span style="color: purple;">●</span> <span style="color: blue;">●</span> <span style="color: green;">●</span>
	Career Promotion center	<span style="color: blue;">●</span> <span style="color: green;">●</span>
	Public Transportation	<span style="color: blue;">●</span> <span style="color: green;">●</span>

## Project Developed

Operated by NHA

Baan Eua-arthorn



Rent

Community Housing



Hire-purchase



Baan Kheha Katanyu



Baan Kheha Sook-Kasem



Public Private Partnership

Din-Daeng



TOD (Romklao - Klongchan)

Chiangmai Night Safari



Baan Kheha Sukpracha

**TARGET GROUP**



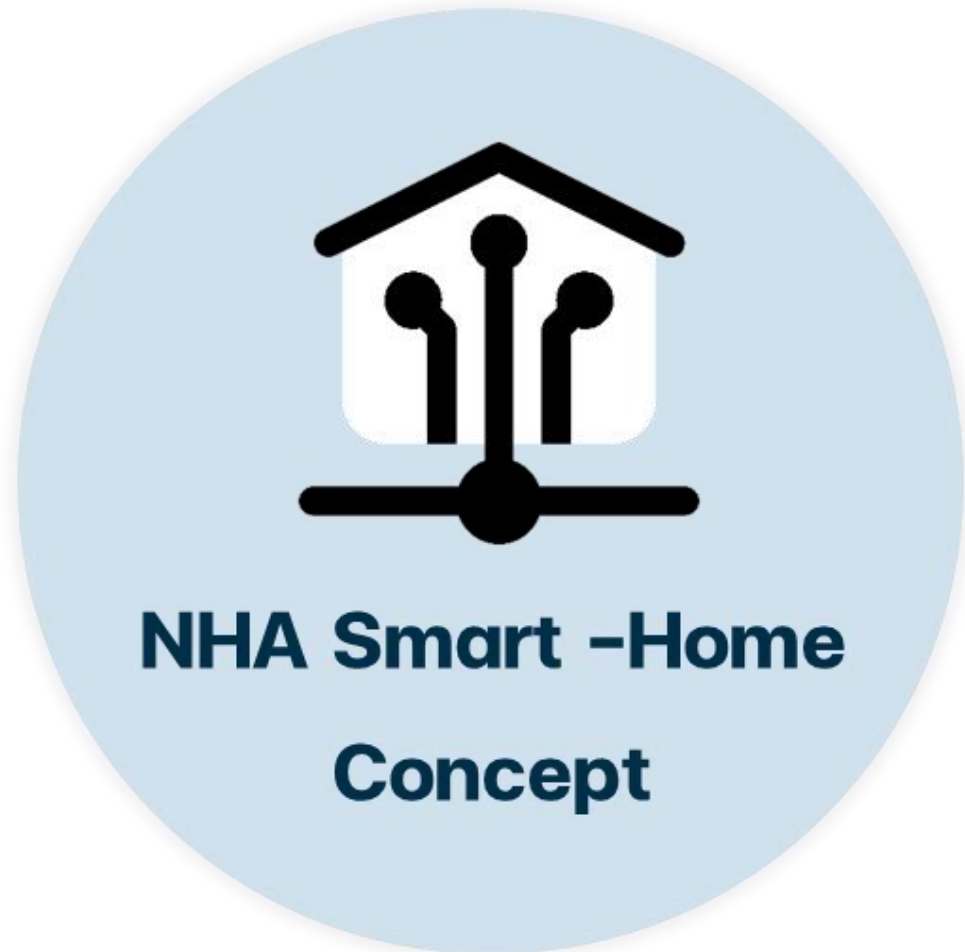
**Socialized**

- Low-income 0.4-0.5 M. Bht.
- Low-Middle income 0.7-0.9 M. Bht.

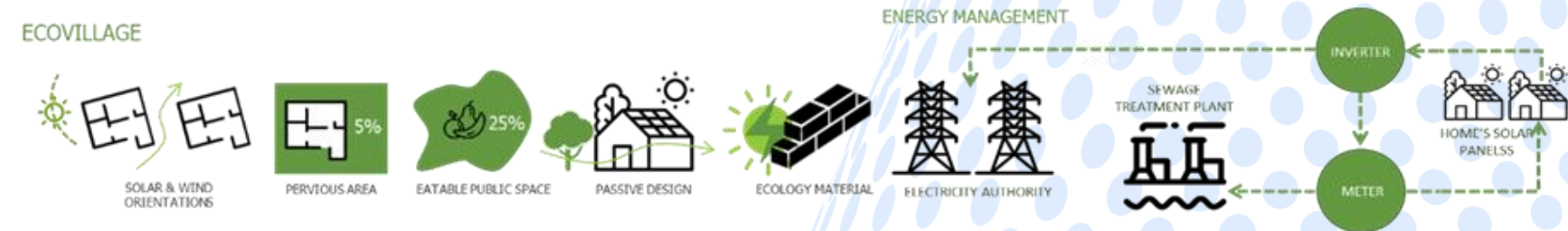


**Commercialized**

- Middle-Middle High income 1-3 M. Bht.



**1 Smart Environment - Eco-Friendly / Eco - Village / Energy Saving**



**2 Smart Design - for Aging Society / Universal Design (UD)**



**3 Smart Technology - Building Information Modelling : BIM / Pre-Fabrication/ Quality of Material**



**4 Smart Living - IOT / 4.0**



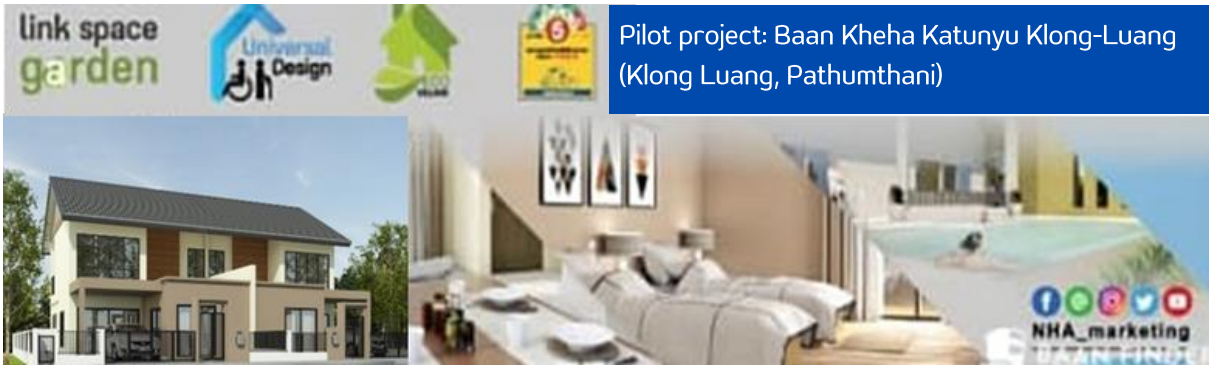
**5 Smart Cooperation**





# Tools & Mechanisms for Green Housing Product & Services

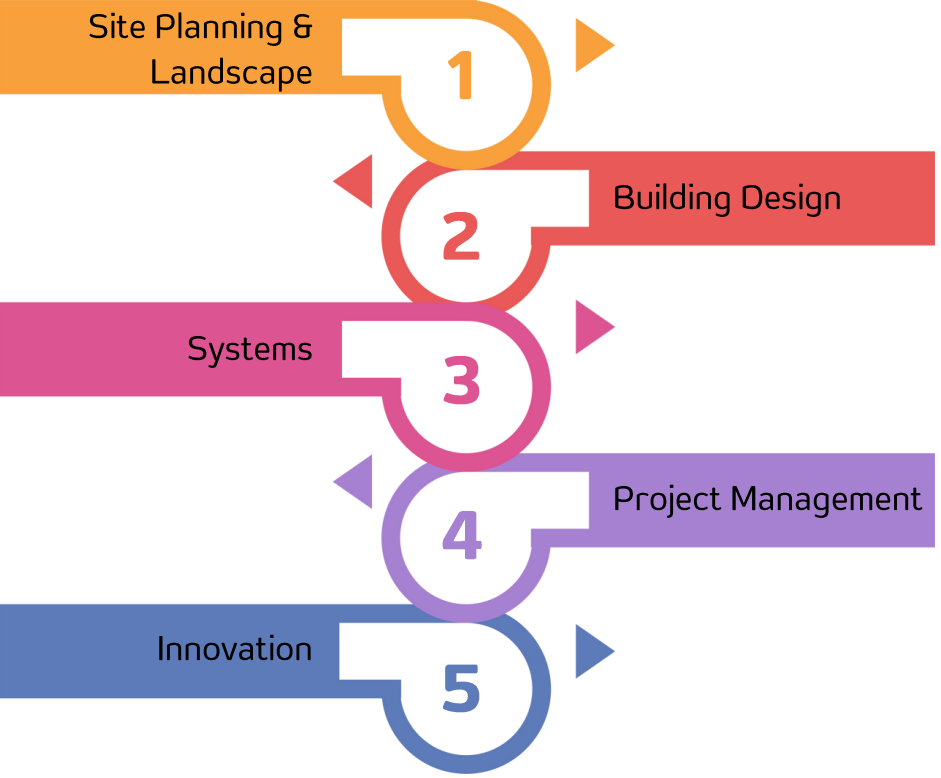
## • Residential Development



<b>NHA Eco-Village</b> Pass 18 Criteria	<b>NHA Eco-Village</b> Pass CERTIFY & 16 Criteria	<b>NHA Eco-Village</b> Pass SILVER & 16 Criteria	<b>NHA Eco-Village</b> Pass GOLD & 15 Criteria
<b>CERTIFY</b>	<b>SILVER</b>	<b>GOLD</b>	<b>PLATINUM</b>

### NHA ECO Village

### Principles of eco Village Development



### House No.5

to develop energy-saving and environment-friendly housing  
To bring about a better quality of life for residents  
by using eco-friendly materials in construction.



## • Community Development

### Green Cone

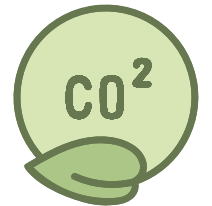
Green Cone was invented for community waste management, using microorganisms in the soil to decompose organic waste, esp. food waste.



## • Organizational Development

### ECO Efficiency

To assess the efficiency in environmental management strategy that aims to reduce resources of CO2 emission, using indicators to define the ratio of value added to environmental damages. Currently, NHA has measured the ratio of operating income and environmental impact in the form of the greenhouse as emissions (kg CO2e).



Reducing greenhouse gases

- Using energy-saving device
- Reduce energy consumption in the office
- Reduce waste and water loss

# Ban Kheha Sukpracha Affordable Rental Housing Project

## Sustainable Living Community

- Walk Friendly
- Safe and Secure Environment
- Incorporate more activities and green spaces
- Reduce residents' expenses



# Ban Kheha Sukpracha

## Affordable Rental Housing Project

- Target Group and Price rate

**TYPE X** approx. 30 sq.m  
Senior / Disabled  
starts at 1,500.- / months



**TYPE A** approx. 30 sq.m  
Single  
starts at 2,000.- / months



**TYPE B** approx. 40 sq.m  
The working age  
starts at 2,500.- / months



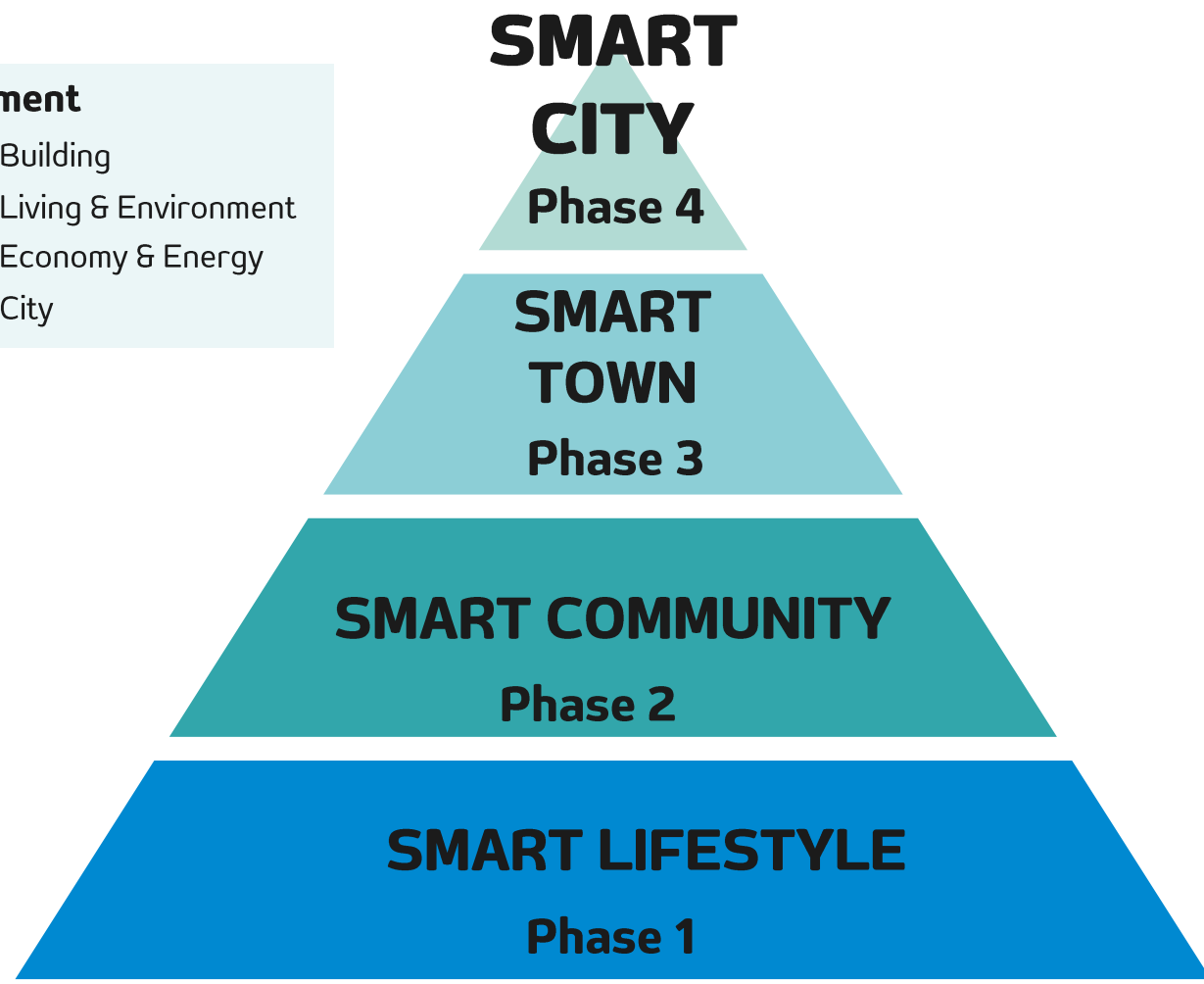
**TYPE C** approx. 50 sq.m  
Family  
starts at 3,000.- / months





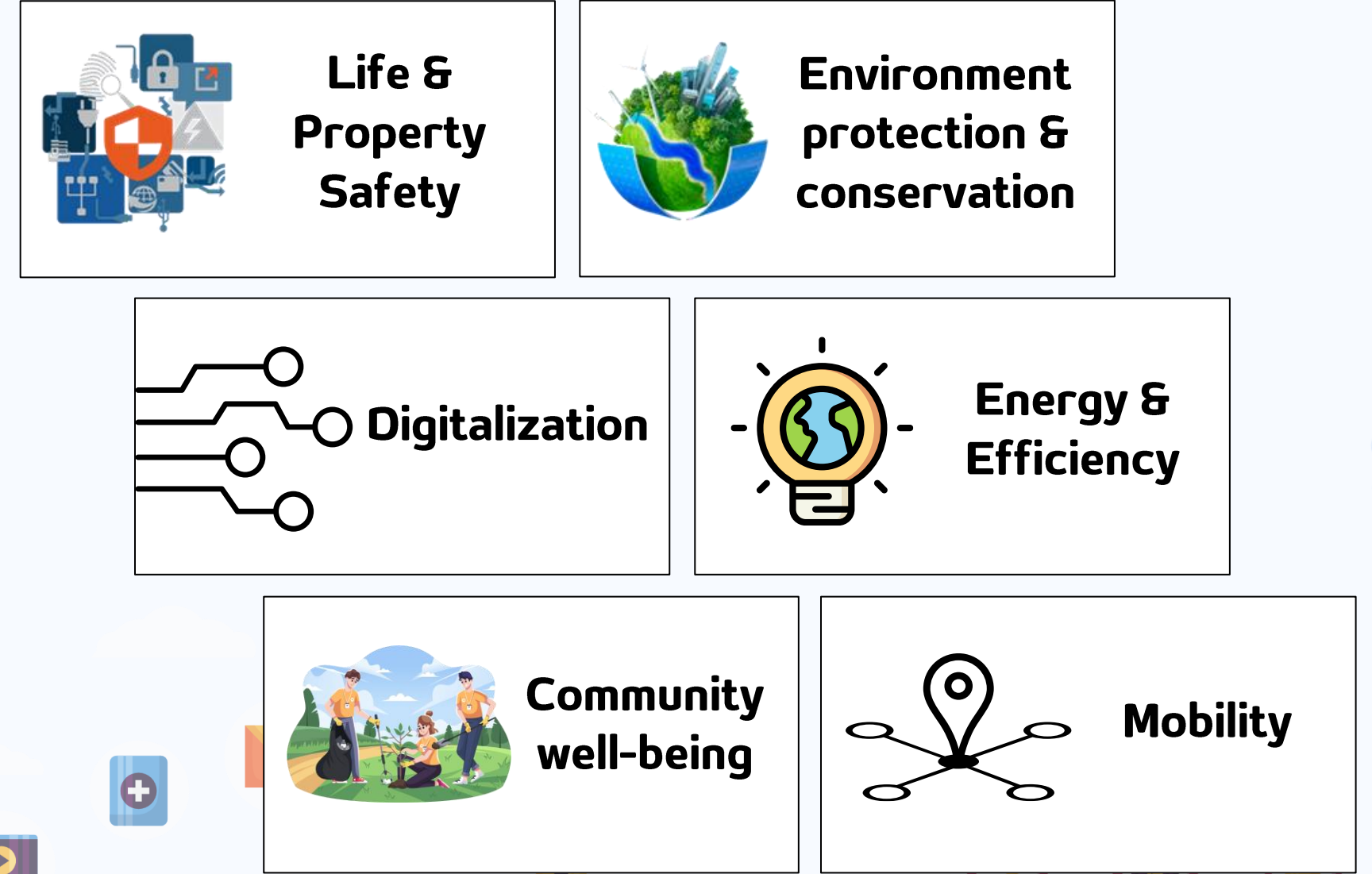
**Goal of development**

- Phase 1: Smart Building
- Phase 2: Smart Living & Environment
- Phase 3: Smart Economy & Energy
- Phase 4: Smart City



# Din Daeng Smart Community & City

Development of Din Daeng Smart Community & City is divided into 4 phases, taking 8 years, in lines with project construction period. Beneficiaries of the project are the existing tenants of 6,546 units and the new tenants of 13,746 units. The concept of Smart City is applied to achieve the goal of environmentally friendly development.



# NHA with COP26

"Green Community" with Innovation-Technology towards the goal "Net-Zero Carbon Emissions"



Smart and Sustainable Community Pilot Project:  
Baan Eua-Arthorn (Bang Cha-Ihong)

- NHA has significant concerns about environmental protection and conservation.
- Design and construction of affordable housing are required to comply with NHA Eco-village Criteria and Green standards.
- Community management has incorporated environmental protection and conservation concept and practices.
- Community residents are enhanced to participate in self-managing their community.

## Energy Saving & Efficiency

ประหยัดไฟเริ่มที่ ใจของคุณ

**คอมพิวเตอร์**  
ตั้งค่าให้คอมพิวเตอร์หยุดทำงาน (Computer Sleeps) เมื่อไม่ได้ใช้งานเป็นเวลานาน ๆ

**ฉนวนกันความร้อน**  
บุฉนวนตามหลังคา และฝ้าเพดาน ป้องกันความร้อนจากภายนอก

**เครื่องปรับอากาศ**  
- ปรับแอร์ 25+1 องศา ประหยัดกว่าอีก 10%  
- ปิดแอร์ 30 นาที ก่อนจะออกจากห้อง  
- ล้างแอร์ทุก 6 เดือน ประหยัดไฟ 10%

**ตู้เย็น**  
- ใช้น้ำอาหารร้อนเข้าตู้เย็น  
- ทำความสะอาดตู้เย็นเป็นประจำ  
- ไม่วางตู้เย็นไว้บนห้องที่มีเครื่องปรับอากาศ  
- ตรวจสอบตู้เย็นให้ห่างจากผนังด้านละอย่างน้อย 15 ซม.

**กระจกหน้าต่าง**  
ควรติดตั้งแผ่นป้องกันที่ซี่และไม่มีขอบเหล็กที่ไร้รอยต่อ

**โทรทัศน์**  
ปิดทีวี ๑๐๐% เมื่อไม่ใช้

**หลอดไฟ**  
- ใช้หลอด LED ประหยัดกว่า สว่างกว่า  
- ปิดไฟดวงที่ไม่ใช้ สว่างไสว พอเพียง  
- ทำความสะอาดหลอดไฟอย่างน้อย 4 ครั้งต่อปี

**ป้องกันแสงแดด**  
ใช้ม่านหรือมู่ลี่กันแสงแดดส่องเข้ามาในครัวอาหาร

**เครื่องซักผ้า**  
ใช้เครื่องซักผ้าขนาดน้ำหนักที่กำหนดมา

**เตาแก๊ส**  
- อดบปิ้งก่อนที่หัวแก๊สจะดับท้ายเครื่อง  
- ไม่ปิดฝาด้านห้องแอร์

**ต้นไม้**  
ปลูกพืชคลุมดินเพื่อช่วยความชื้น และเพิ่มความร้อนขึ้นให้กับดินทำให้บ้านเย็นขึ้น

SCAN ME

แบบทดสอบความรู้

Accelerating construction of energy efficient green housing units in Thailand Pilot Project:  
Low-Rent Housing Petchaburi (Po Rai wan)



Thailand Climate Action Conference



# Challenges

## Main Challenges:



- **Financial Pressure**

Cost-Benefit consideration; investment in eco-friendly affordable housing seems infeasible.



- **Technical limitation**

- Improvement of technical skills in Green Building.
- Upgrading "NHA Eco-Village Criteria" to "EDGE certification"



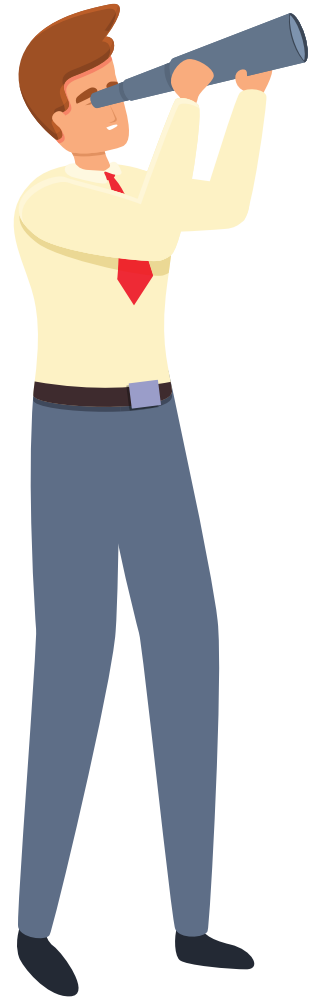
- **Inadequate promotion**

- Use of Green material
- Use of NHA Eco-Village Criteria as a requirement when the design of NHA new building is made.

## Solutions:

- ✓ To develop affordable housing technology using R&D.
- ✓ To promote R&D to have innovations in Green residential development.
- ✓ To adopt an appropriate strategy and innovation for new housing project development.
- ✓ To strengthen technical capacity and know-how of Green Building technology and project construction management.

# To provide quality affordable housing to deliver happiness and good quality of life.



## 2026-2027 Sustainable Organization

- Cohesive community, happy and good quality of life
- To magnify EDGE in new housing development
- Study to apply LEED standards in NHA project design.
- To sustain Smart City standard of Din Daeng Urban Renewal Project

## 2024-2025 Synergy & Supply Chain

- To keep magnifying the Smart Sustainable Community (SSC)
- To magnify House No. 5 Labeling to NHA new housing projects
- To deploy EDGE standard in residential project development
- To sustain Smart City standard of Din Daeng Urban Renewal Project

## 2023

### Speed & Strengthening

- To magnify the Smart Sustainable Community (SSC)
- To magnify House No. 5 Labeling to NHA new housing project
- To sustain Smart City standard of Din Daeng Urban Renewal Project

 **Opportunities**

# THE FUTURE

NHA strives to develop quality housing to raise the people's better quality of life towards sustainable development

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