ASEAN-IEA Webinar: The Role of Industry in Buildings Policy Development

Thursday, 22 July 2021 (14.00 – 16.00 GMT +7)

Opening Remarks

Mr. Gerald Gracius Y. Pascua

Senior Officer Energy, Energy and Minerals Division,
ASEAN Secretariat

Webinar Agenda

TIME (Jakarta)	ACTIVITIES
14:00 – 14:05	**Webinar opening by MC** Kianda Syahindra, ASEAN Centre for Energy
	Opening Remarks Mr. Gerald Gracius T. Pascua, ASEAN Secretariat
14:05 – 14:10	**Introduction and Webinar Overview** Kianda Syahindra, ASEAN Centre for Energy
14:10 – 15:50	Moderator: Dr. Ian Hamilton, UCL Energy Institute & International Energy Agency Panellists: 1. Mr. Ir. Mochammad Sulton Sahara, M.Eng., Certain Functional Officer, Associate Expert on Building and Housing, Directorate General of *Cipta Karya,* Ministry of Public Works and Public Housing, Indonesia, **"Policy Energy Conservation in Building in Indonesia"** 2. Mr. Zulkifli Zahari, President, Malaysia Association of Energy Service Companies, **"Building Energy Policy and Case Studies on How Energy Service Companies Can Contribute Towards The Delivery of Energy Efficiency in Buildings"** 3. Mr. Matthieu Caille, Consultant in Energy Efficiency & Low Carbon Development, GreenBuilding SAS / Global Buildings Performance Network, **"How Industries can Best Support Building's Policies Development Efforts toward Reaching NDC Targets?"** 4. Mr. Christopher Seeley, Energy Efficiency & Climate Change Expert and CEO, Climate Change Solutions (ESCO in Thailand), **"The Role of Industry in Buildings Policy Development "** 15-minute presentations each, followed by a Q&A Session.
15:50 – 15:55	**Closing Remarks** Mr. Muhammad Indra Wahyudin, ASEAN Secretariat
15:55 – 16:00	**Survey and Closing** Kianda Syahindra, ASEAN Centre for Energy
16:00	**End of Webinar**

Participants should ensure a convenient environment and reduce background noises such as turn-off cell phones and etc.

Participants should mute their microphones and keep their video cameras turned off so that the webinar can run smoothly without interruptions.

This webinar will be recorded and uploaded to our YouTube channel. We kindly ask for your understanding and consent in doing so.

For Q&A session:

- Those who wish to ask or speak may use the chat function in the control panel. The moderator will let the speakers know if there is are questions for them.

Moderator

Dr. Ian Hamilton

Associate Professor,

UCL Energy Institute & International Energy Agency

ASEAN-IEA Webinar: The Role of Industry in Buildings Policy Development

22nd July 2021

International Energy Agency

Introduction

PANEL AGENDA

Moderator: Dr Ian Hamilton, UCL Energy Institute & International Energy Agency

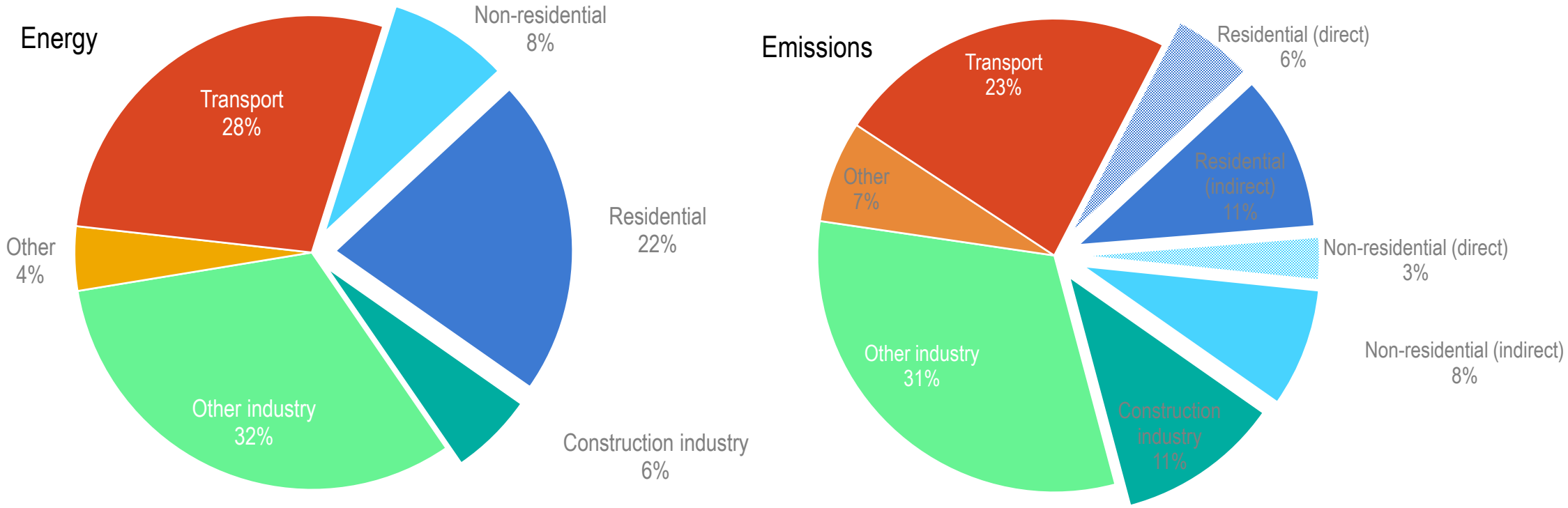
Speakers:

- Mr. Ir. Mochammad Sulton Sahara, M.Eng., Pejabat Fungsional Tertentu (JFT) Tata Bangunan dan Perumahan, Directorate General of Cipta Karya, Ministry of Public Works and Public Housing, Indonesia
- Mr. Zulkifli Zahari, President, Malaysia Association of Energy Service Companies
- Mr. Matthieu Caille, Consultant in Energy Efficiency & Low Carbon Development, GreenBuilding SAS / Global Buildings Performance Network
- Mr. Christopher C. Seeley, Energy Efficiency & Climate Change Expert and CEO, Climate Change Solutions (ESCO in Thailand)

Net-Zero Carbon

Why is buildings decarbonisation so critical?

Energy and emissions from buildings, globally

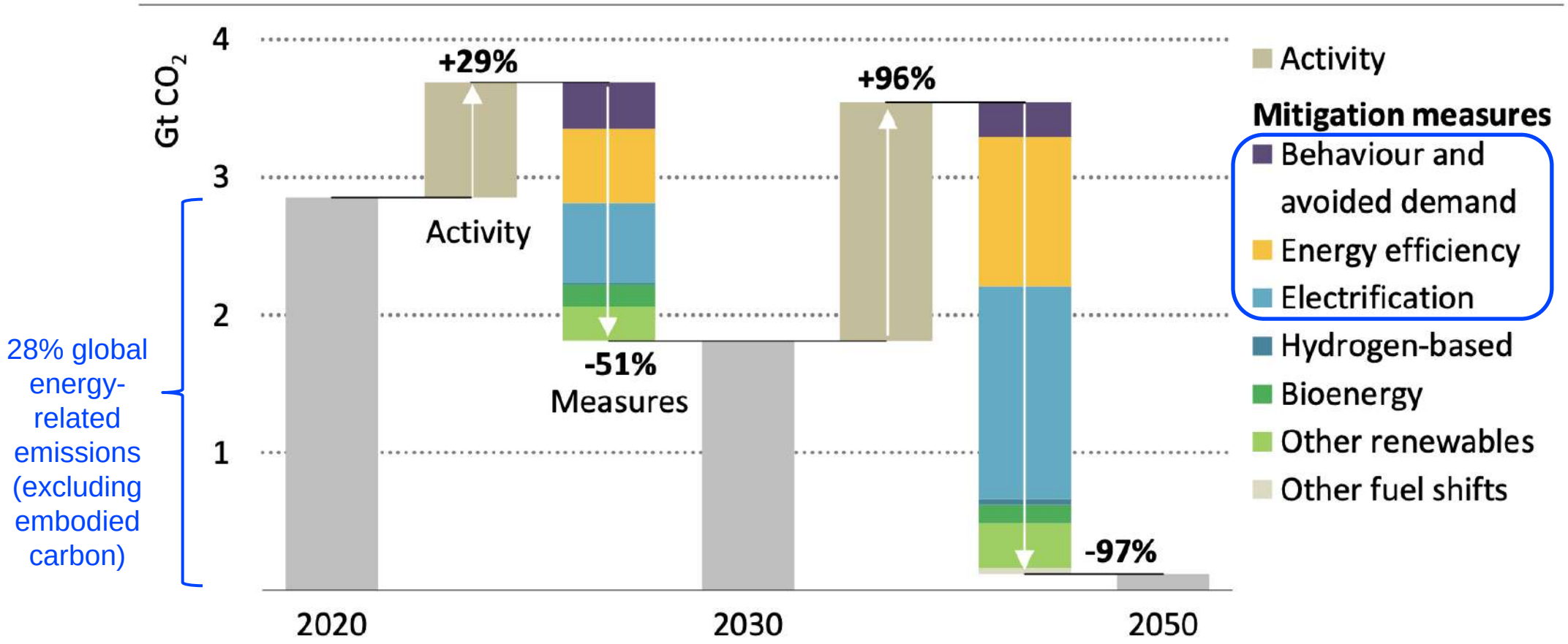


Source: GlobalABC/UNEP/IEA, (2019), *Global Status Report for Buildings and Construction 2019*

Buildings and construction are a key sector for the clean energy transition, and reaching the goals of the Paris Agreement

Buildings in a Net Zero Emissions Scenario

Global direct CO2 emissions reductions by mitigation in buildings in the NZE



Electrification and energy efficiency account for nearly 70% of buildings-related emissions reductions through to 2050

Source: IEA (2021), Net Zero by 2050, IEA, Paris https://www.iea.org/reports/net-zero-by-2050

What is needed to get to net-zero buildings?

	2020	2030	2050
Energy intensity	Improve by 6% per year 2020-2030	4% per year 2030-2040	3% per year 2040-2050
Share of existing buildings net-zero ready	<1%	20%	>85%
Avoided demand in homes from behaviour	-	12%	14%
Stock of heat pumps	180 million	600 million	1 800 million
Dwellings with solar thermal	250 million	400 million	1 200 million
Appliances unit consumption (relative to 2020)	-	-25%	-40%
Distributed PV generation	320 TWh	2 200 TWh	7 500 TWh

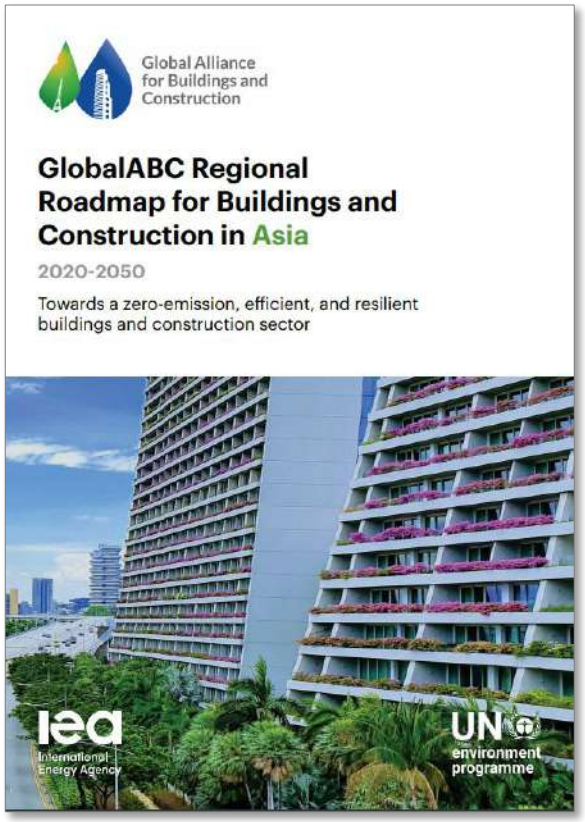
And also:

- ✓ 100% lighting by LEDs by 2030
- ✓ Universal access to electricity and clean cooking by 2030
- ✓ Most appliances and cooling systems sold are at today's best in class by 2035
- ✓ **All new buildings are zero-carbon-ready by 2030**
- ✓ **2.5% buildings are retrofitted to be zero-carbon-ready every year by 2030**

Source: IEA (2021), Net Zero by 2050, IEA, Paris https://www.iea.org/reports/net-zero-by-2050

ASEAN Roadmap for Sustainable Buildings and Construction 2020-2050

Building on the Regional Roadmap for Asia



Regional Roadmap for Asia

- Provides a comprehensive framework
- Contains info on “current status”
- Contains many examples and responses from ASEAN countries
- Network of key stakeholders (approx. 200 respondents/ participants/ reviewers)
- Highlights where the biggest data and ambition gaps are

Opportunity for ASEAN Roadmap

- More differentiation between member states or groups of member states
- Will be more specific in terms of which actions for which context, and about **how** to implement the recommended actions
- Integrate “enabling” actions on capacity building and finance with other actions
- **More targeted and specific actions**

ASEAN Roadmap - Draft vision and strategies, per theme

NEW BUILDINGS

New buildings are designed such that they enable higher levels of thermal comfort and energy efficiency, resulting in comfortable, affordable and low carbon buildings.

- Strengthen the adoption and compliance of mandatory building energy codes
- Boost market demand for efficient, low carbon buildings
- Boost capacity in delivery of efficient, low carbon buildings

EXISTING BUILDINGS

Existing buildings are retrofit to achieve an appropriately high level of energy performance to reduce fuel costs and improve thermal comfort.

- Promote the uptake of high performance fabric systems
- Boost the rate of energy efficiency retrofits
- Boost the quality of energy efficiency retrofits
- Promote the adoption of building performance standards and codes

SYSTEMS AND OPERATIONS

To promote the adoption of energy efficient systems and modes of operations that reduce energy bills and emissions, and increase comfort

- Improve quality, availability and efficiency of appliances and systems
- Encourage uptake of clean, smart and efficient devices and systems
- Improve efficiency of building operation
- Promote the recognition of good system and operational energy performance

MATERIALS

To mainstream the use of materials and construction techniques that lower embodied carbon and improve energy performance

- Promote new design and construction practices for greater material efficiency
- Decarbonise production of carbon intensive materials
- Collect data and promote disclosure of embodied carbon
- Governments leading by example

RESILIENCE

Cities are planned to limit construction in risk areas, ensuring critical urban infrastructure services, including vulnerable populations, and integrating resilience attributes in building materials.

- Improve adequacy and reliability of built environment resilience
- Foster a whole-of-government approach to resilience
- Integrate resilience in building codes and materials
- Increase and monitor data and information on disaster risks

URBAN PLANNING

Cities are developed using integrated approaches and policies to be more sustainable, resource-efficient, compact, connected, and liveable.

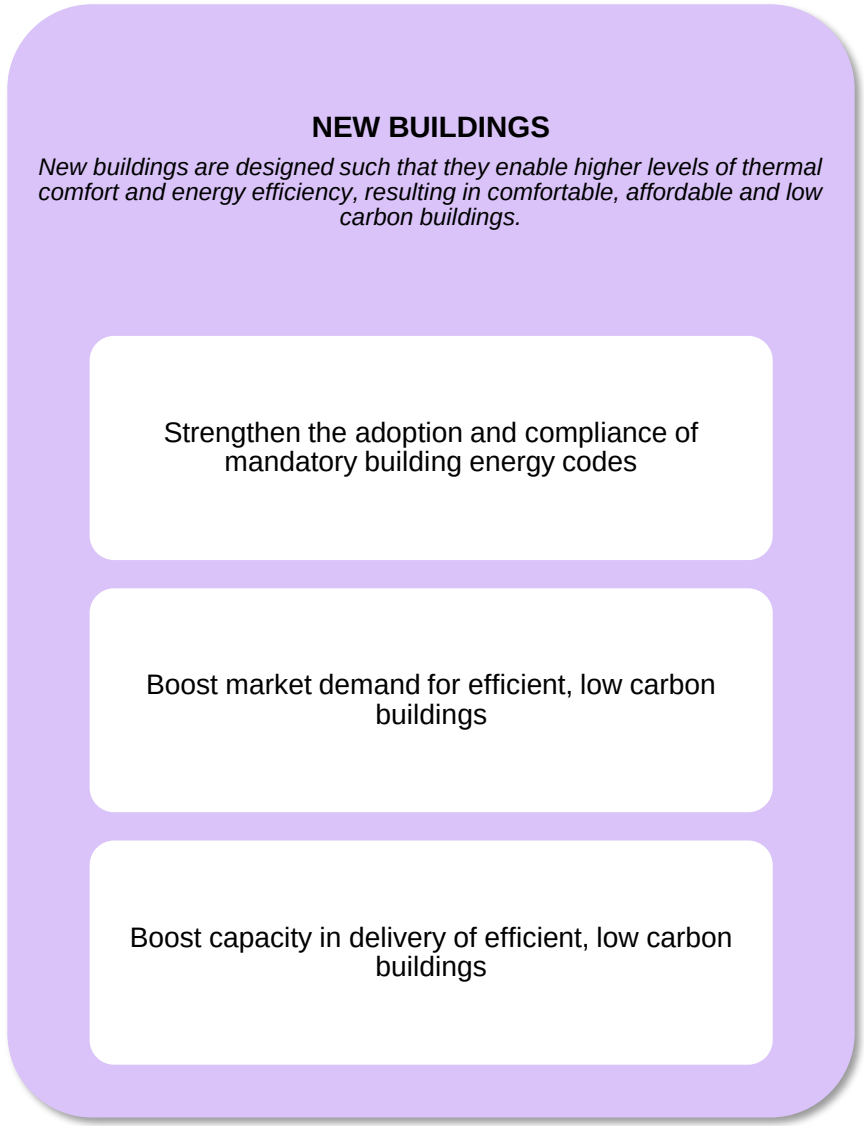
- Improve coordination and policy alignment for low-carbon development
- Boost low-carbon urban infrastructure and construction
- Expand capacity to deliver low-carbon urban development

INTEGRATION OF CLEAN ENERGY

Cities are powered by clean, integrated energy systems enabling buildings to provide flexibility to the power system with the right policies and regulations.

- Make commitments to net-zero carbon buildings over whole life-cycle
- Foster the uptake of clean and renewable energy
- Support clean and renewable energy through regulatory frameworks
- Promote grid interactive efficient buildings

New buildings draft vision and strategy



Example timeline: New buildings

Strategy elements to meet desired outcome eg. NB1

NB1: Strengthen the adoption of mandatory building energy codes

Timeframes:

	Current status	By 2025	By 2030	For net-zero carbon
NB.1.1 Increase strength and coverage of building energy codes	Across ASEAN, only Singapore has mandatory building energy codes covering all sectors (residential, commercial and public). Others have voluntary or mandatory codes for certain parts of the sector, often for buildings above a certain floor area, and others are still in development	All countries have mandatory building energy codes covering all sectors Most countries have a national standard for net-zero carbon buildings	Include requirements for embodied carbon, urban planning, resilience, RE in codes All countries have a national standard for net-zero carbon buildings	All countries and jurisdictions with net-zero carbon compatible codes
NB.1.2 Strengthen implementation capacity	Low implementation capacity at municipal level a barrier to adoption and enforcement of mandatory building codes. Low adoption of voluntary standards.	Tools developed to facilitate compliance checking and implementation Training programmes rolled out within government Most states/provinces adopt mandatory building code for State/provincial buildings	Continuation of capacity building and accreditation programmes to support the roll-out of building energy codes All states/provinces adopt mandatory building code for State/provincial buildings Most local/municipal authorities adopt building codes into byelaws	Ongoing capacity building at all levels of implementation chain. Full enforcement and compliance with building codes across all jurisdictions

Define milestones vs dates, to serve as indicators for tracking progress

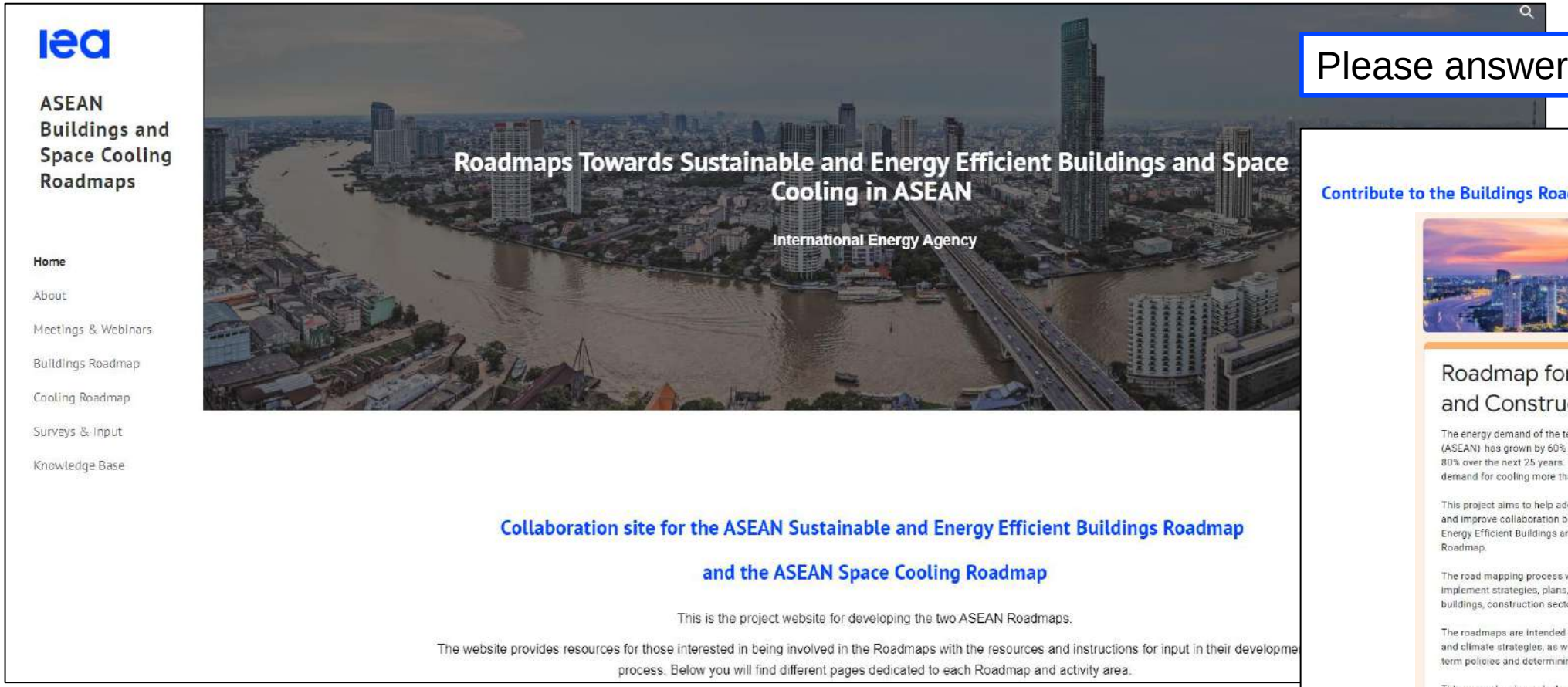
<Examples of proposed actions, examples, indicators for tracking progress>

Targeted actions to support strategy element, by group of countries where relevant

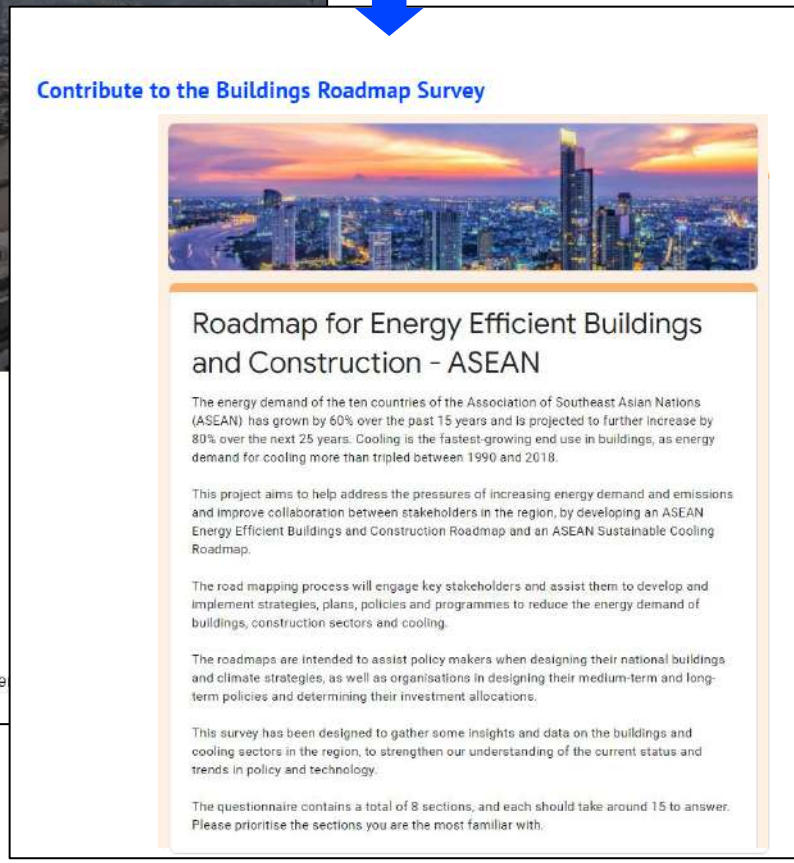
Examples of current good practice, from ASEAN or elsewhere

Contribute and keep in touch!

- ASEAN Roadmaps collaboration website: access here

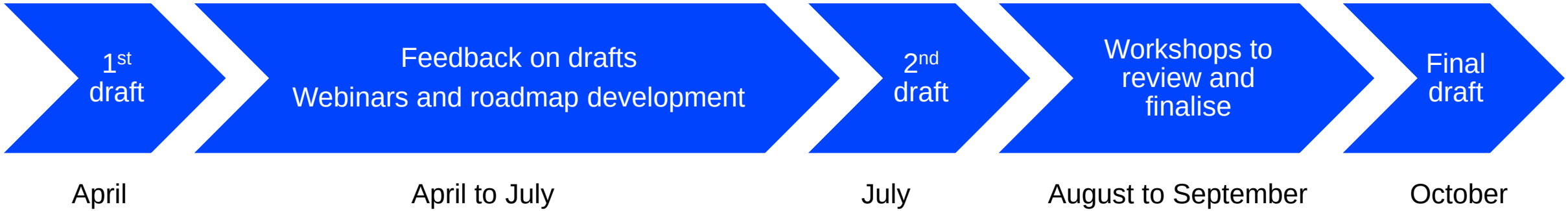


Please answer our survey here:



Buildings Roadmaps – next steps

- Seek feedback and input from AMS on policy mapping and available data sources to inform the roadmap.
- Continue analysis and research to inform and improve next drafts of roadmap alongside feedback from ASEAN.
- Continue to plan and deliver the webinar and workshop series with ACE
- if you have good case studies, reports, or datasets to support our roadmap on zero-emission, efficient and resilient buildings and construction in Southeast Asia, please get in touch!
- Project timeline:



Thank you for your engagement!

Keep in touch at
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i.hamilton@ucl.ac.uk

Moderator & Panelists

Moderator

Dr. Ian Hamilton

Associate Professor, UCL Energy Institute & International Energy Agency

Panelists

Mr. Ir. Mochammad Sulton Sahara, M.Eng.

Certain Functional Officer, Associate Expert on Building and Housing, Directorate General of *Cipta Karya*, Ministry of Public Works and Public Housing, Indonesia

Mr. Zulkifli Zahari

President, Malaysia Association of Energy Service Companies (MAESCO)

Mr. Matthieu Caille

Consultant in Energy Efficiency & Low Carbon Development, GreenBuilding SAS / Global Buildings Performance Network

Mr. Christopher C. Seeley

Energy Efficiency & Climate Change Expert and CEO, Climate Change Solutions (ESCO in Thailand)

1st Presentation

Policy Energy Conservation in Building in Indonesia

Mr. Ir. Mochammad Sulton Sahara, M.Eng.
Certain Functional Officer, Associate Expert on Building and Housing, Directorate General of *Cipta Karya*, Ministry of Public Works and Public Housing, Indonesia

MINISTRY OF PUBLIC WORKS
DIRECTORATE GENERAL OF HUMAN SETTLEMENTS
DIRECTORATE OF ENGINEERING DEVELOPMENT OF HUMAN SETTLEMENTS AND HOUSING

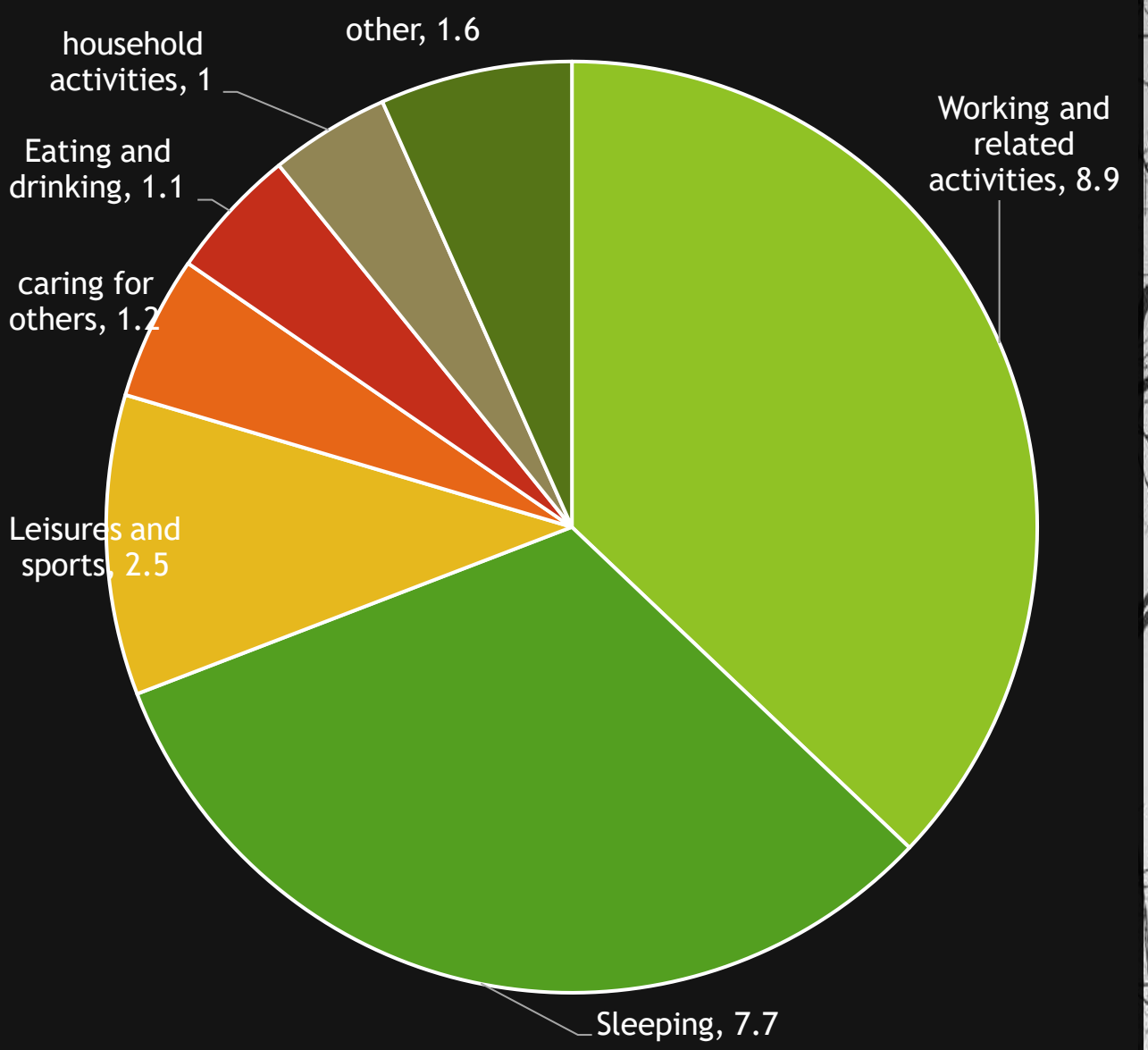
POLICY ENERGY CONSERVATION IN BUILDING IN INDONESIA

submitted by:

Ir. Mochammad Sulton Sahara, M.Eng.
Certain Functional Officers Associate Expert on Building and Housing

at the event
Meeting ASEAN-IEA Webinar:
The Role of Industry in Buildings Policy Development
Jakarta, 22 July 2021

BUILDING FACTS IN THE WORLD



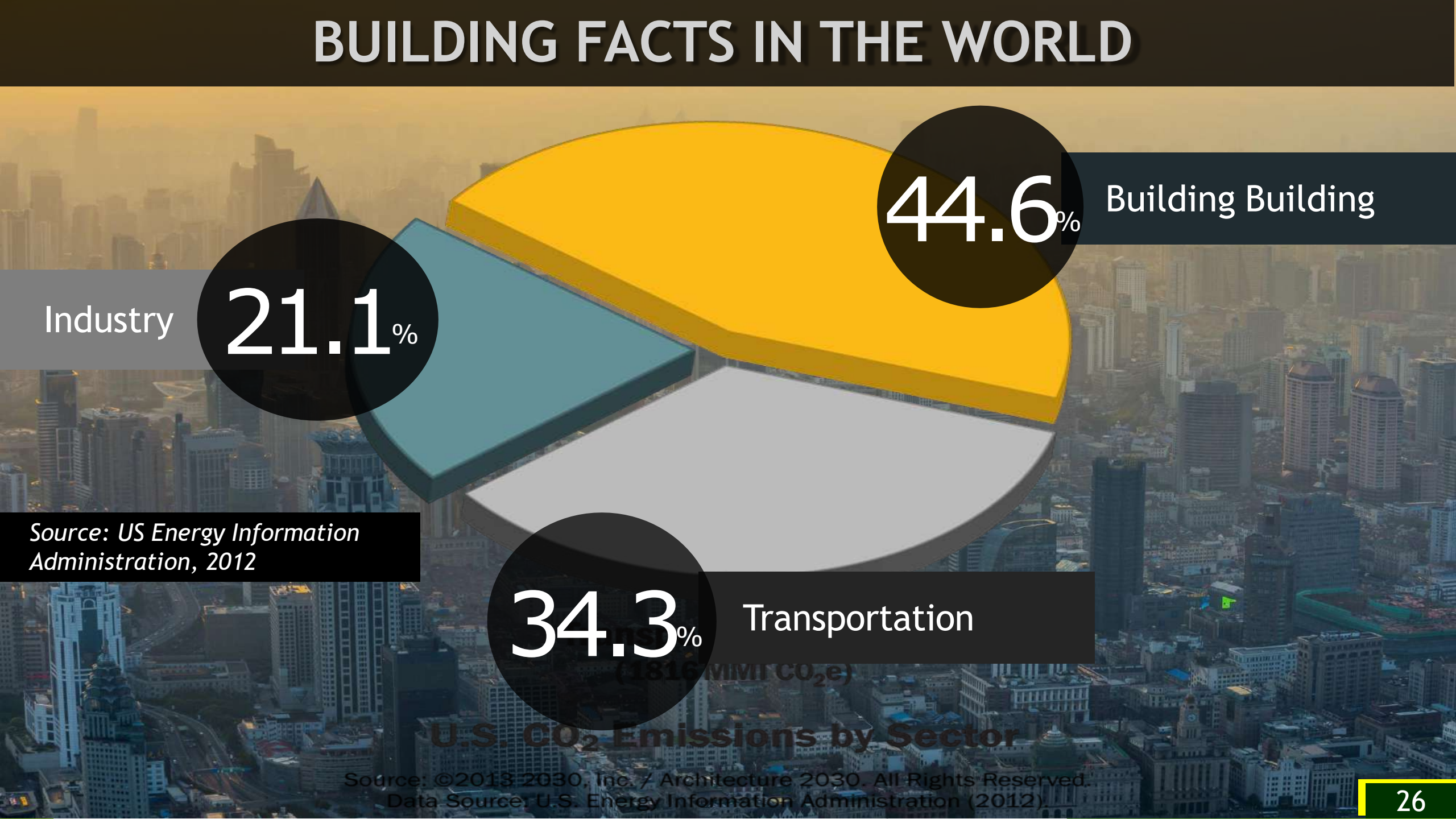
Source: bureau of labor statistics, American time use survey, 2014

93.3%

human time-activities carried out inside the building

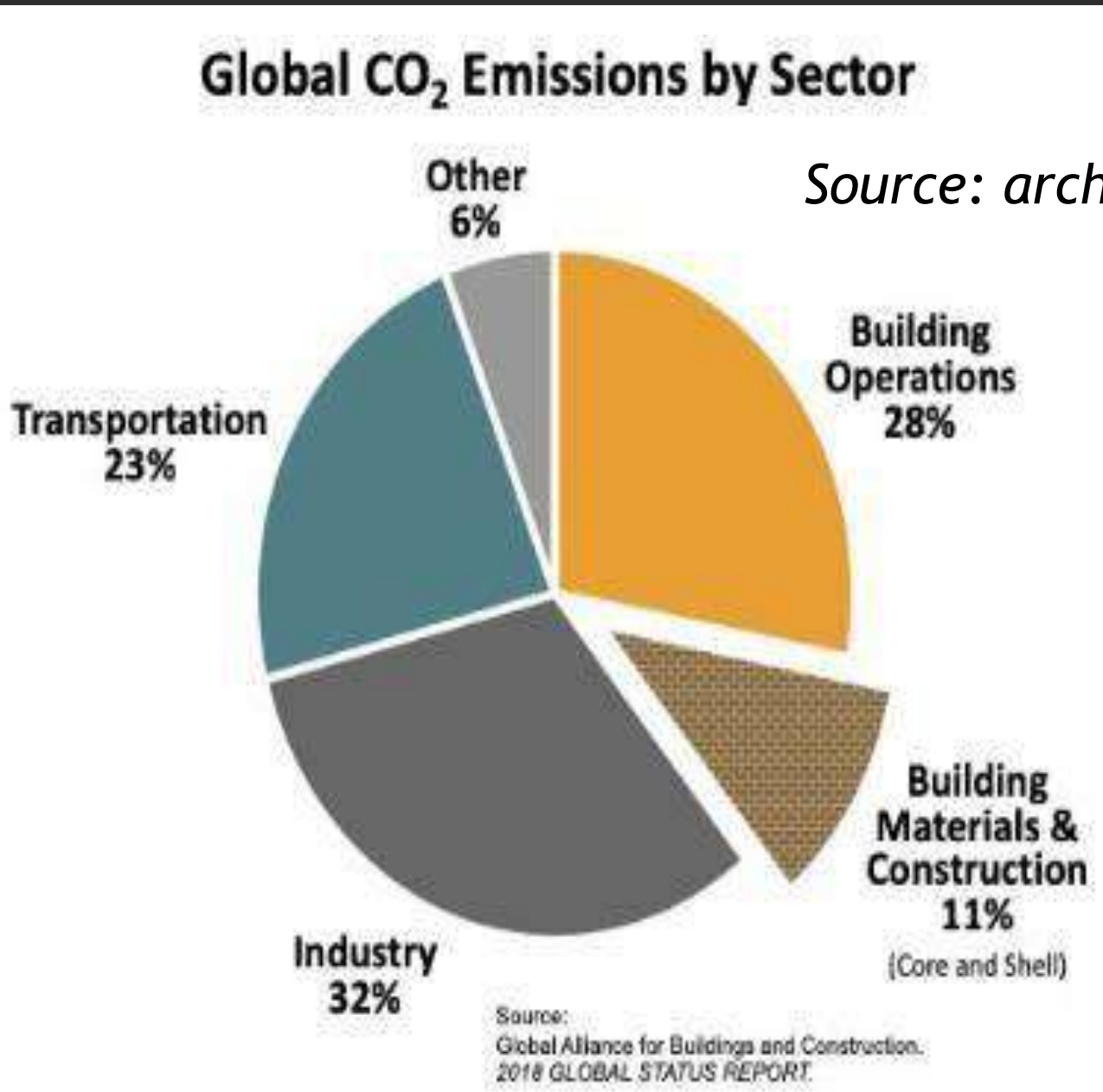
93.3%

BUILDING FACTS IN THE WORLD

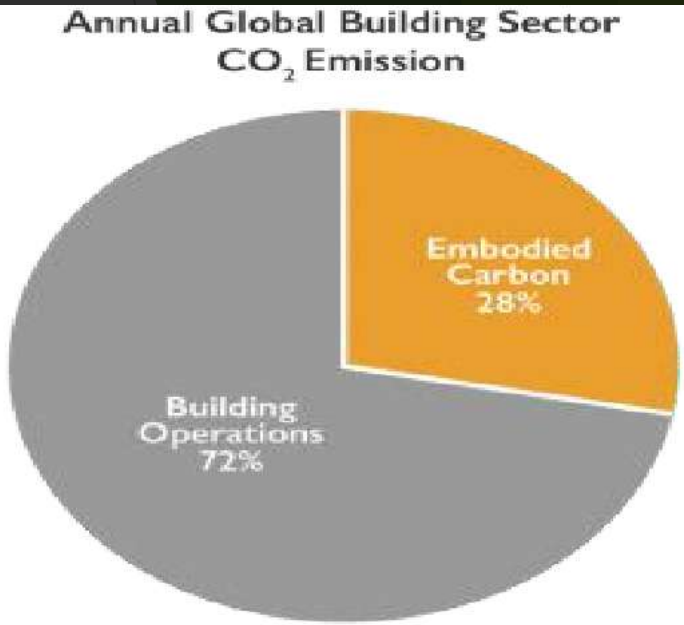


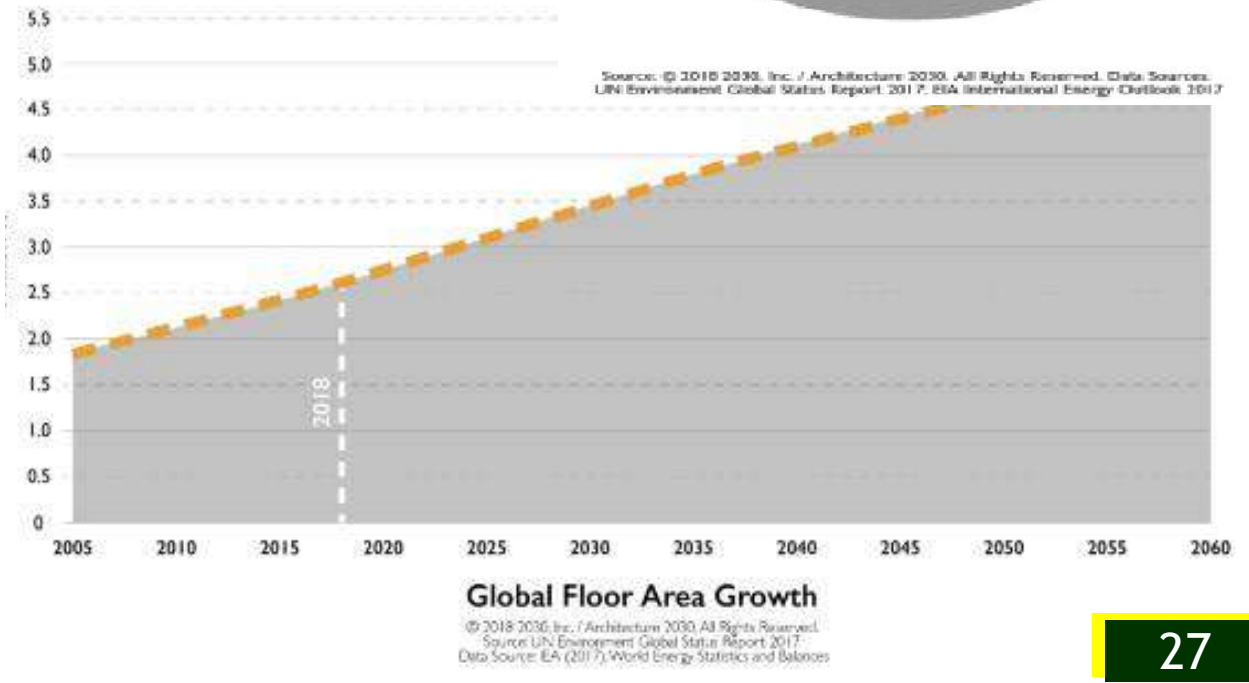
Source: US Energy Information Administration, 2012

BUILDING FACTS IN THE WORLD



Source: architecture2030.org

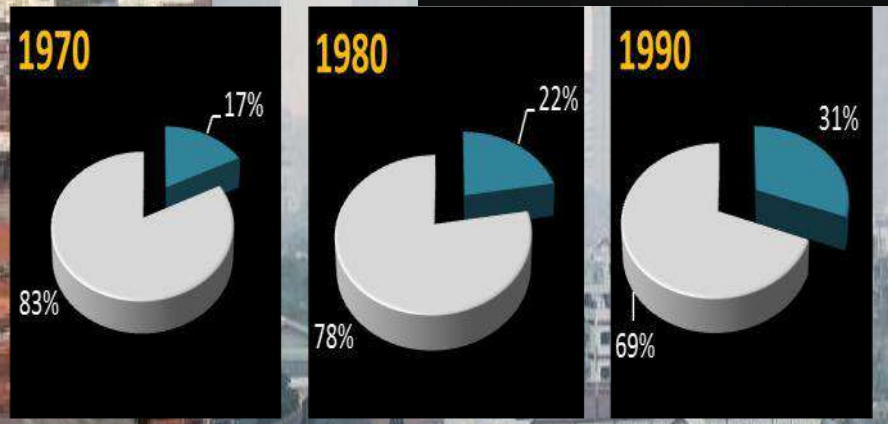


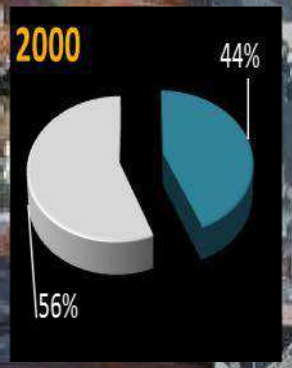


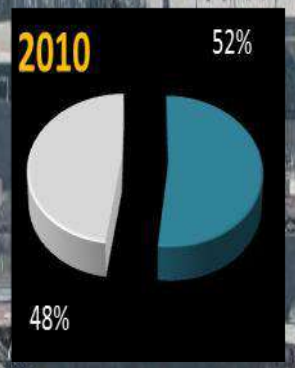
BUILDING FACTS IN THE WORLD

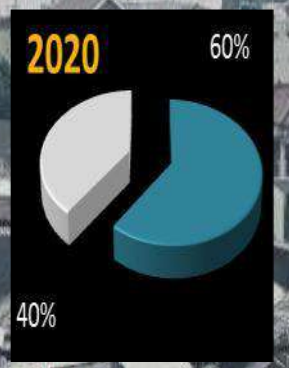
Enter City Era/Urban
Buildings are getting crowded

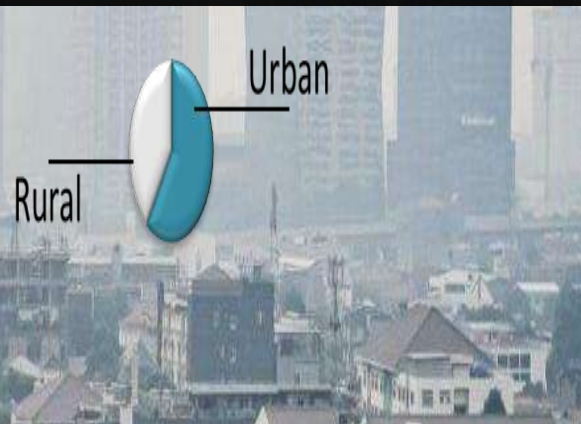
56,7% population population Indonesia Live in urban 2020, and will increase to **72,9%** at 2045 a know add **232 million** (Source senior Advisor to the Urban Regional Development Institute, Wahyu Mulyana, 2021)











Issue Urban

Cities as epicenters of growth, have various functions, but are faced with complicated actual problems that threaten their sustainability in the future.

Social

- **High urbanization and metropolis.**
- **Uncontrolled horizontal city sprawl.**
- **The urban poverty rate is still high.**
- **Limited access to public services (infrastructure & housing) for the poor.**

Economy

- **Uneven economic growth, still concentrated in metropolitan and big cities.**
- **Level of competition against world cities**
- **Increasing land value, making it difficult to acquire land for public interest (especially infrastructure).**
- **Increasingly limited natural resources (finite resources).**
- **Modernization that leads to the homogenization of the face of the city.**

Environment

- High Ecological Palm, low biocapacity, ecological overshoot occurs.
- **Environmental carrying capacity is declining.**
- **Repetitive flooding**
- **Congestion** traffic.
- The decline in the quantity and quality of urban green open spaces.

Entering the City/Urban Era...

Urbanization goes hand in hand with economic growth...

When cities with the smallest entities are buildings, Indonesia is transformed into a more modern one, almost not accompanied by an increase in the quality of its space.

Buildings are part of BIG PROBLEM. . .

. . .but, Buildings can be a **BIG SOLUTION** to this problem!

Law No. 28 of 2002 concerning Buildings (UUBG)
is the legal basis for the implementation of Buildings in Indonesia
to meet TECHNICAL STANDARDS.

Government Regulation Number 16 of 2021 concerning Implementing Regulations of Law Number 28/2002 concerning Buildings is a BUILDING CODE in Indonesia.

LAW NO 28 YEAR 2002 CONCERNING BUILDING

Article 3:
The building arrangement aims to realize a building that is functional and in accordance with the building layout that is **harmonious and in harmony with its environment.**

SUSTAINABLE BUILDING

Spatial Level (Spatial Hierarchy)

as a whole and as a piece

Law 26/2007 on Spatial Planning mandates the creation of a safe, comfortable, productive and sustainable space, as a pillar of urban and regional development reform

Nasional /National

Provinsi /Province

Kawasan /District

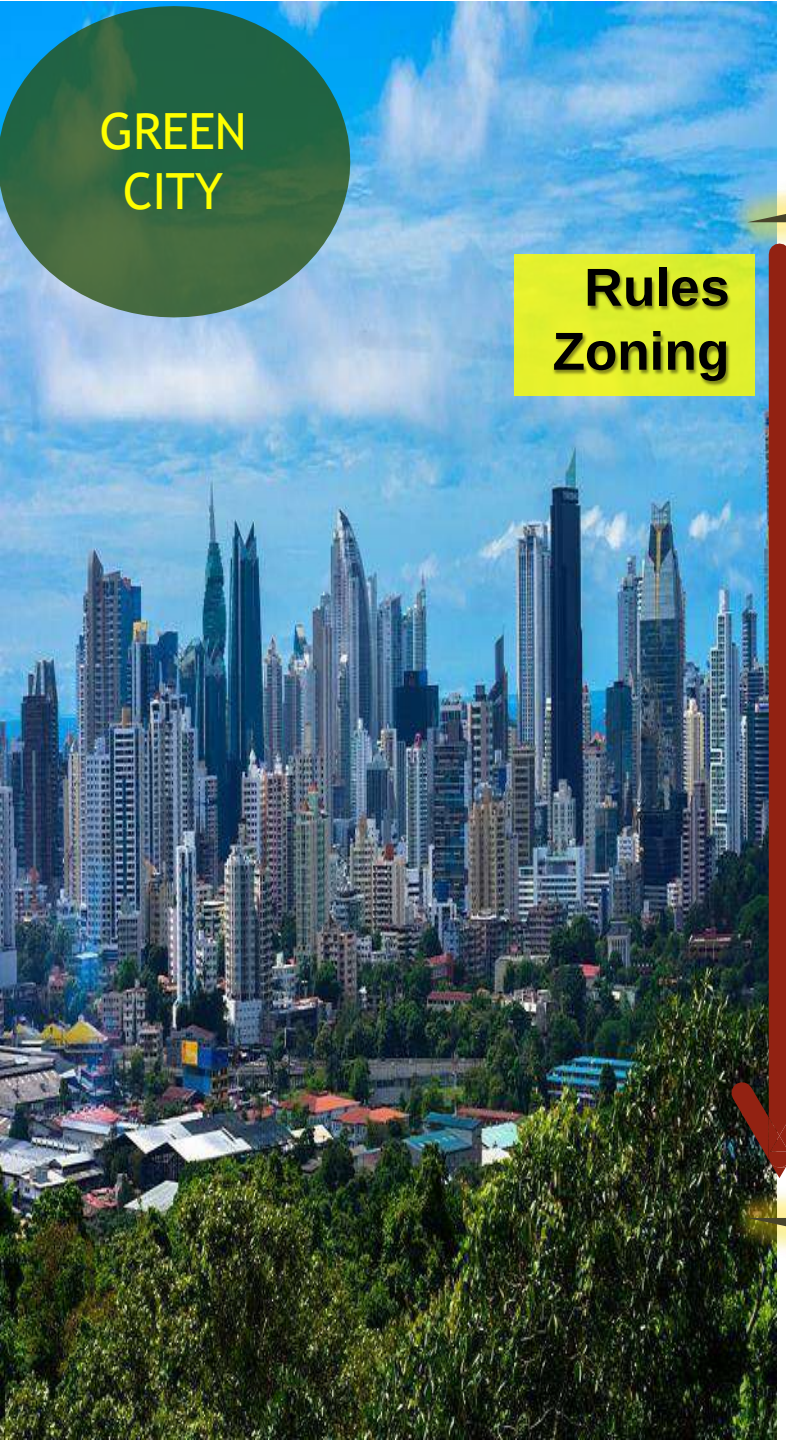
Persil/Bangunan
Site/Building

Pulau /Island

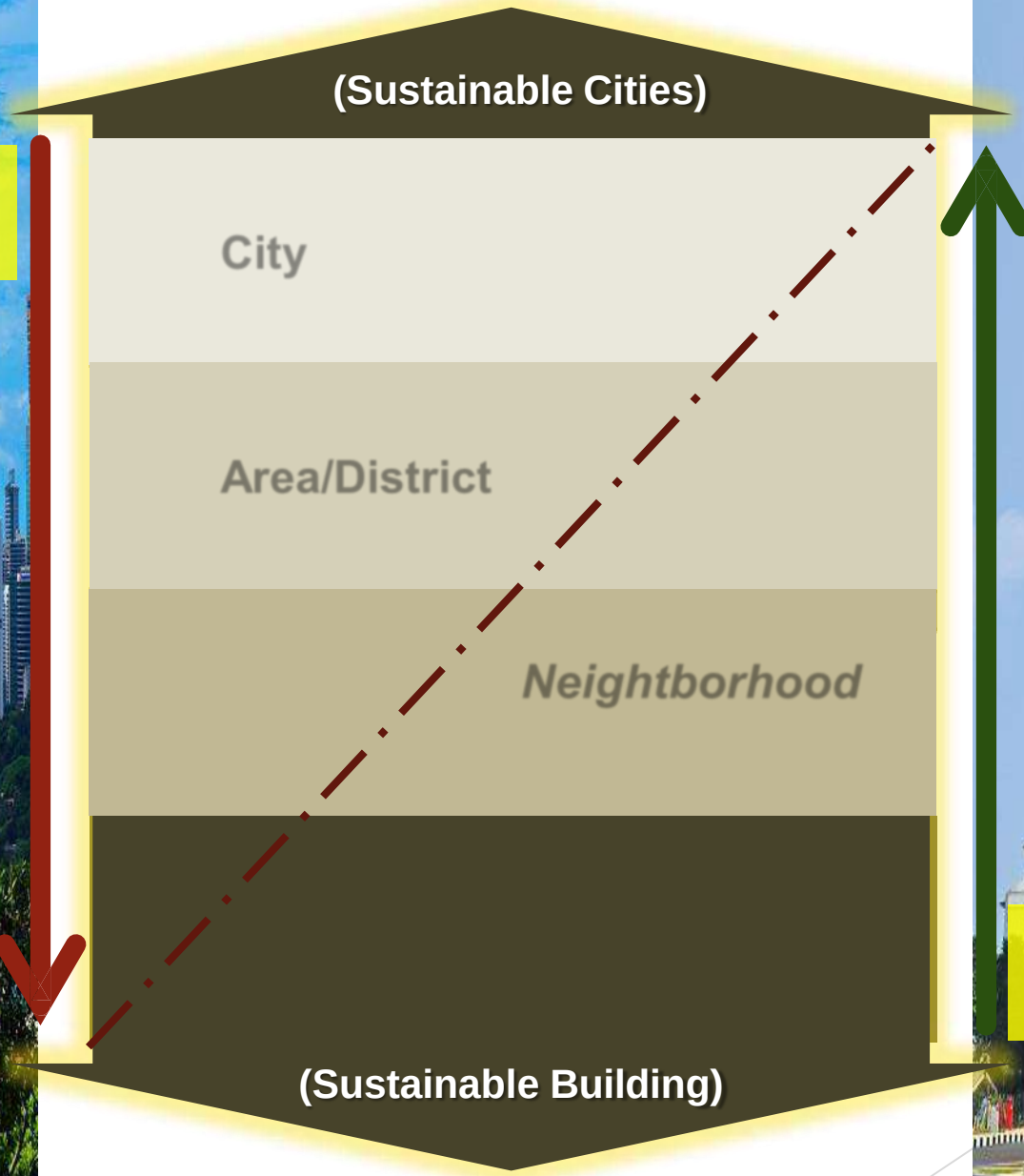
Kota/Kabupaten
City/Region

Lingkungan /Neighborhood

Sustainable Urban Development (SUD) at 4 levels: Building/Site, Neighborhood, District and City/Region



Law 26/2007 Spatial Planning

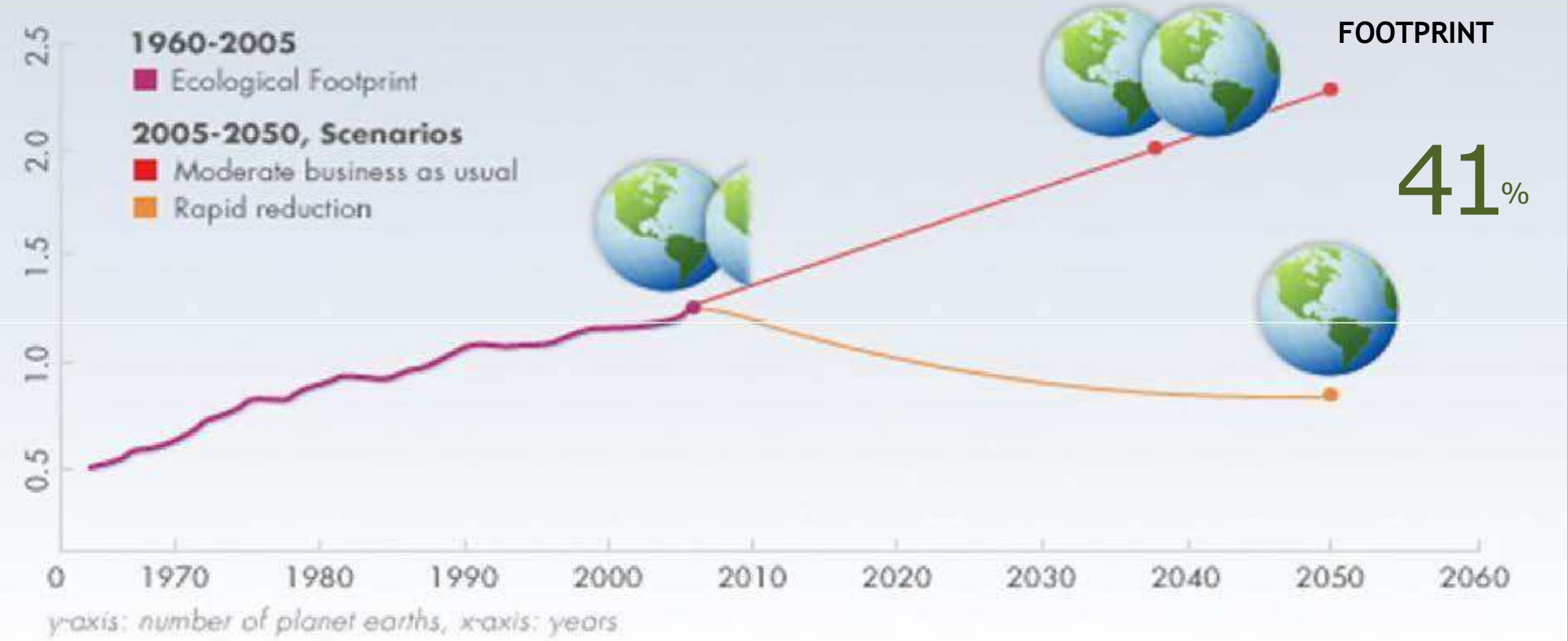


Rules
Zoning

Building
Code

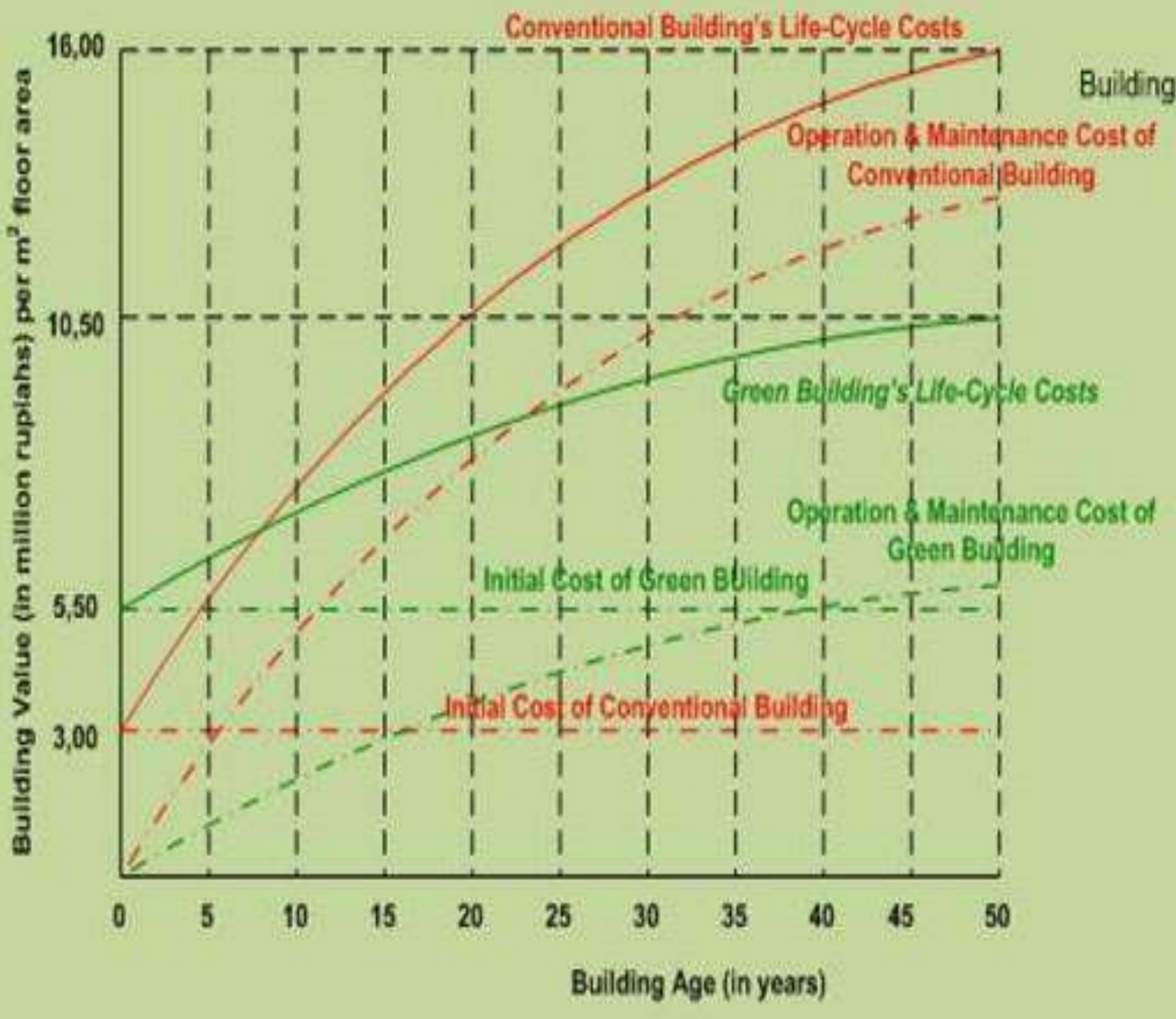
Law 28/2002 Buildings

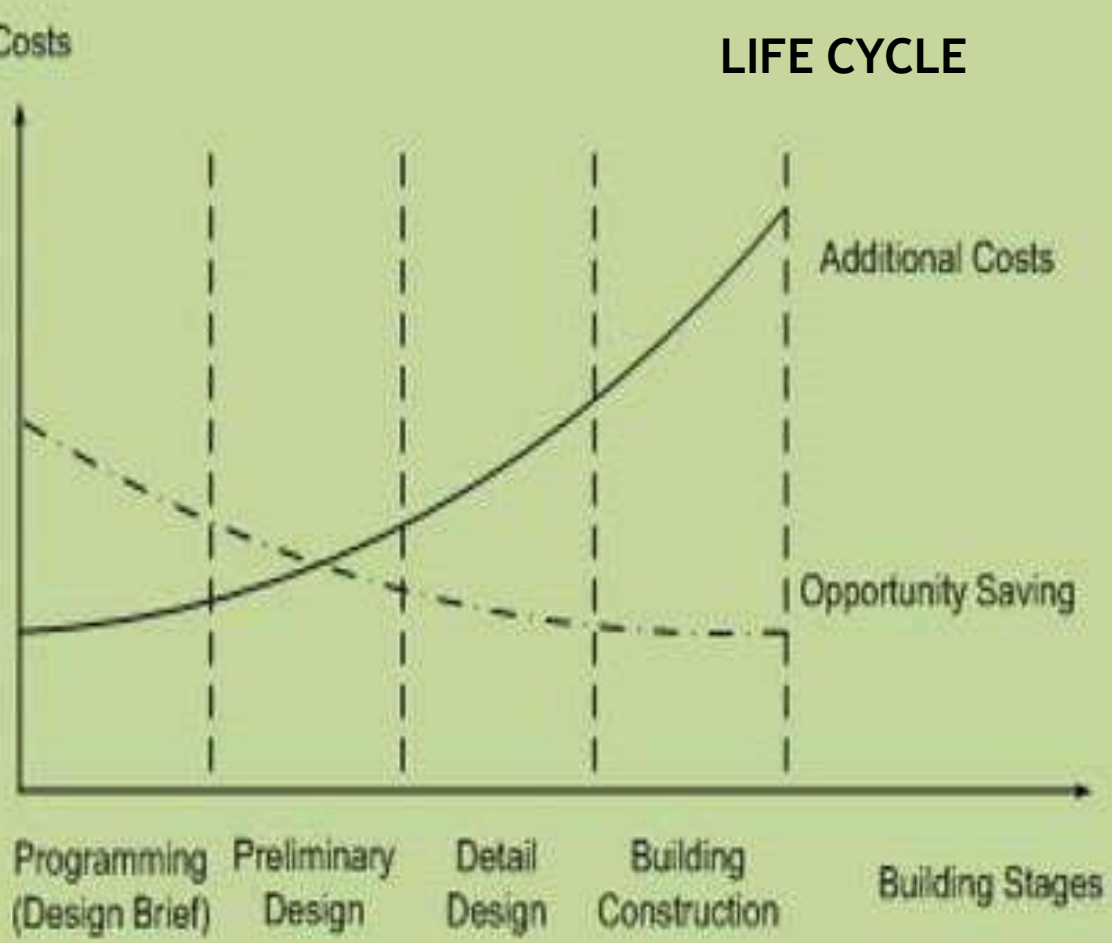
Building Operation Mission Green



Sumber: Global Footprint Netwo

Building Operation Mission Green





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BGH Supports National Action Plan-Mitigation Climate Change Adaptation

National Plan for Reducing Greenhouse Gas Emissions

In order to follow up on the Bali Action Plan agreement at the 13th Conferences of Parties (COP) of the United Nations Frameworks Convention on Climate Change (UNFCCC) and the results of COP-15 in Copenhagen and COP-16 in Cancun as well as fulfill the commitments of the Government of Indonesia in the G- 20 in Pittsburgh, **In order to reduce greenhouse gas emissions by 26% on their own (or by 41% if they receive international assistance) by 2020 from conditions without an action plan (business as usual / BAU), it is necessary to develop steps to reduce greenhouse gas emissions. .**

"Indonesia will reach **26%** **(41%** *with help international*) for subtraction emission GHG, compared with ***"Business as Usual"*** year 2020"

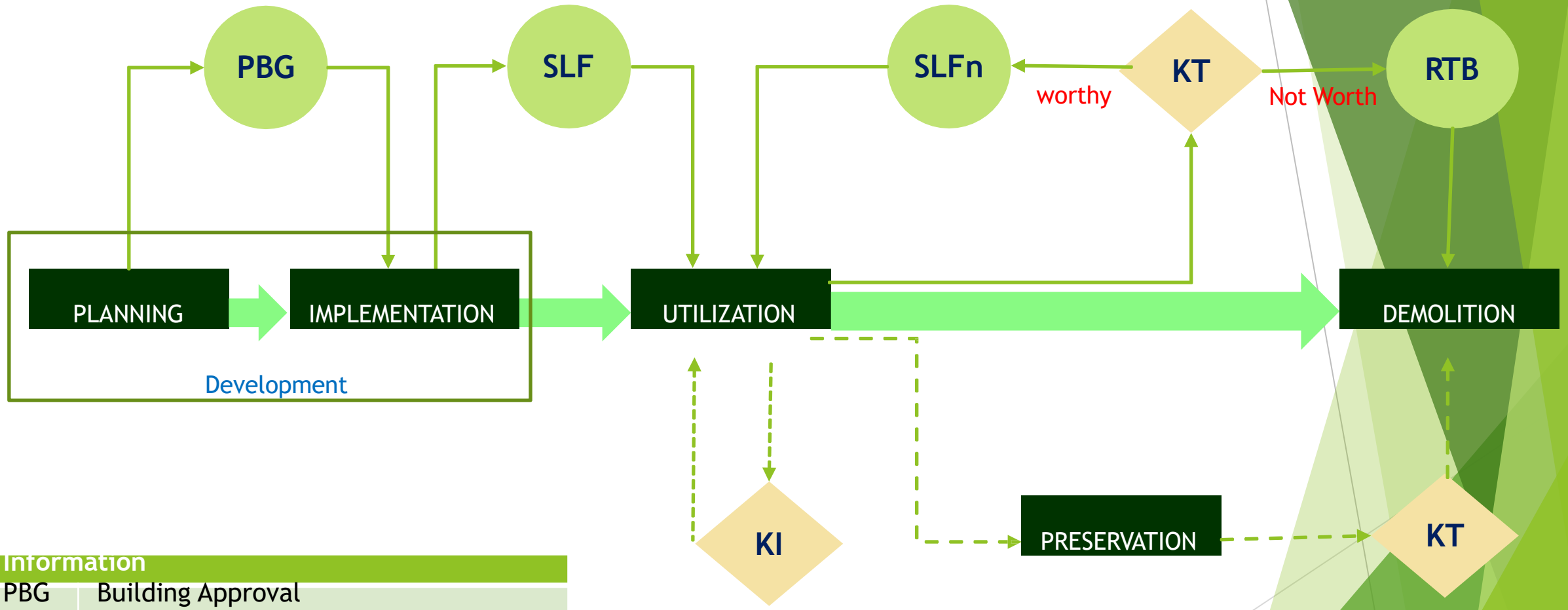
President Yudhoyono, 2009

26%

41%

Building building will play a role big for reach Target National

Building Management in Indonesia



Information	
PBG	Building Approval
SLF	Functional Eligibility Certificate
SLFn	Functional Eligibility Certificate nth (Extension)
RTB	Dismantling Technical Plan
KI	Identification Study
KT	Technical Study

Minister of PUPR Regulation No. 21/2021 concerning National Green Building Performance Assessment

Form Rating	Total
Category	7
Criteria	29
Sub-Criteria	77
Points	165

BGH

Green Building = Bangunan Gedung Hijau BGH

SLF

Functional Eligibility Certificate = Sertifikat Laik Fungsi SLF

PBG

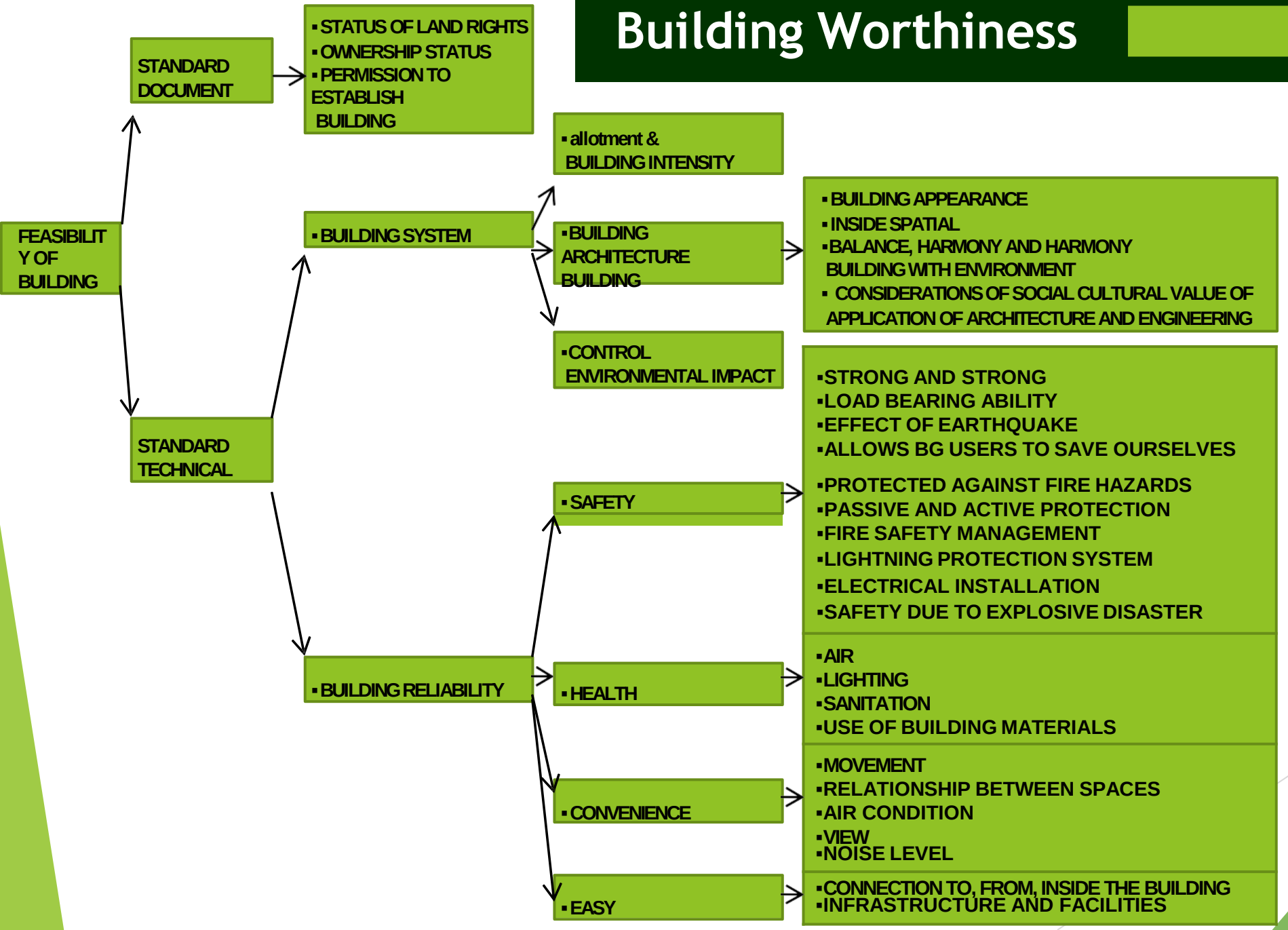
Building Approval = Persetujuan Bangunan Gedung PBG

A Green Building (BGH) is a building that:

1. Fulfill: ***Standard Document + Technical Standard*** of Building Code
2. Fulfill: **BGH standard** must in tune and compatible with friendly environment life.

Building Worthiness

SLF

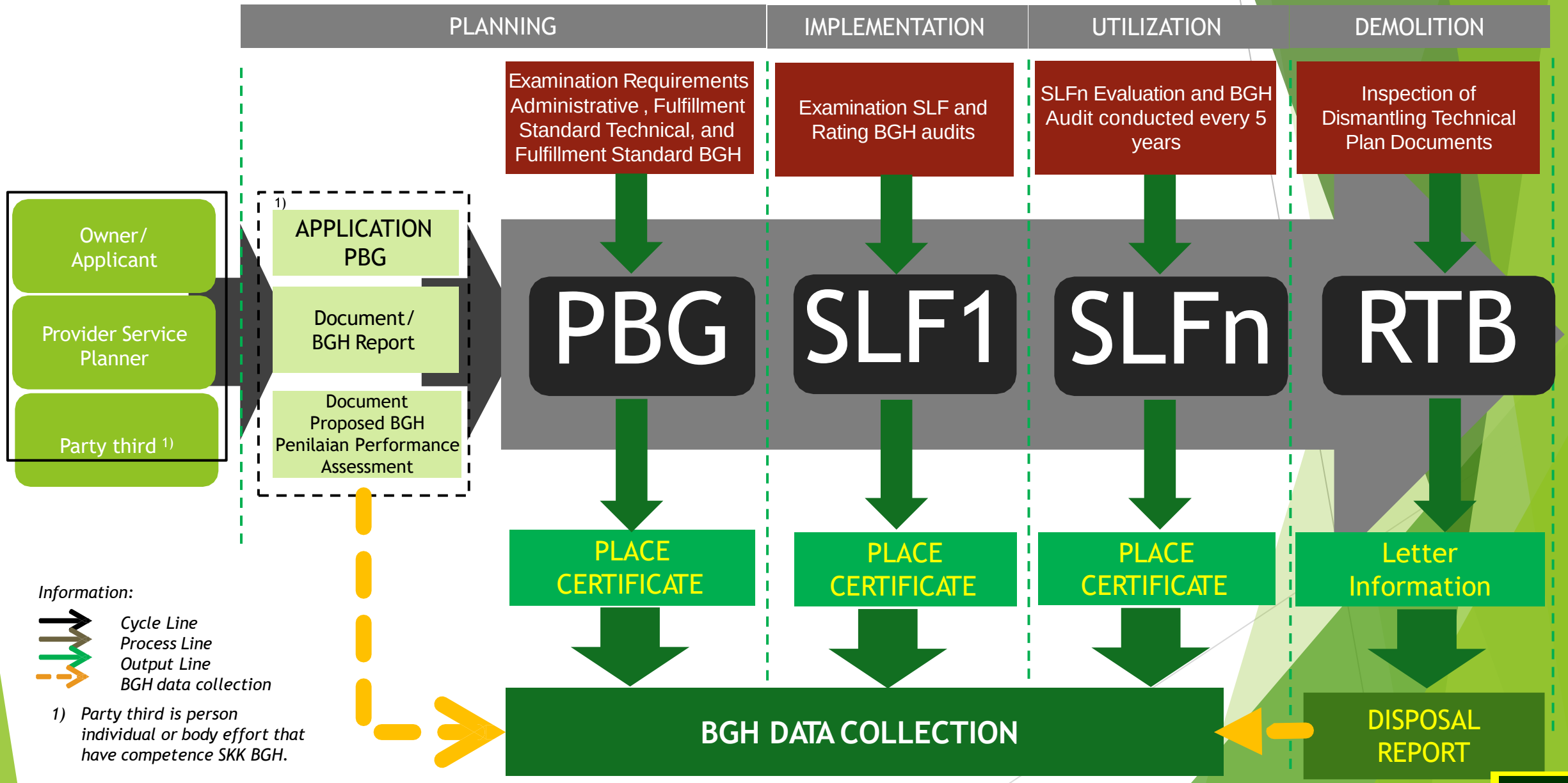


Certificate of Eligibility for Building Functions

SLF

Sertifikat Laik Fungsi

Implementation of BGH (mandatory)

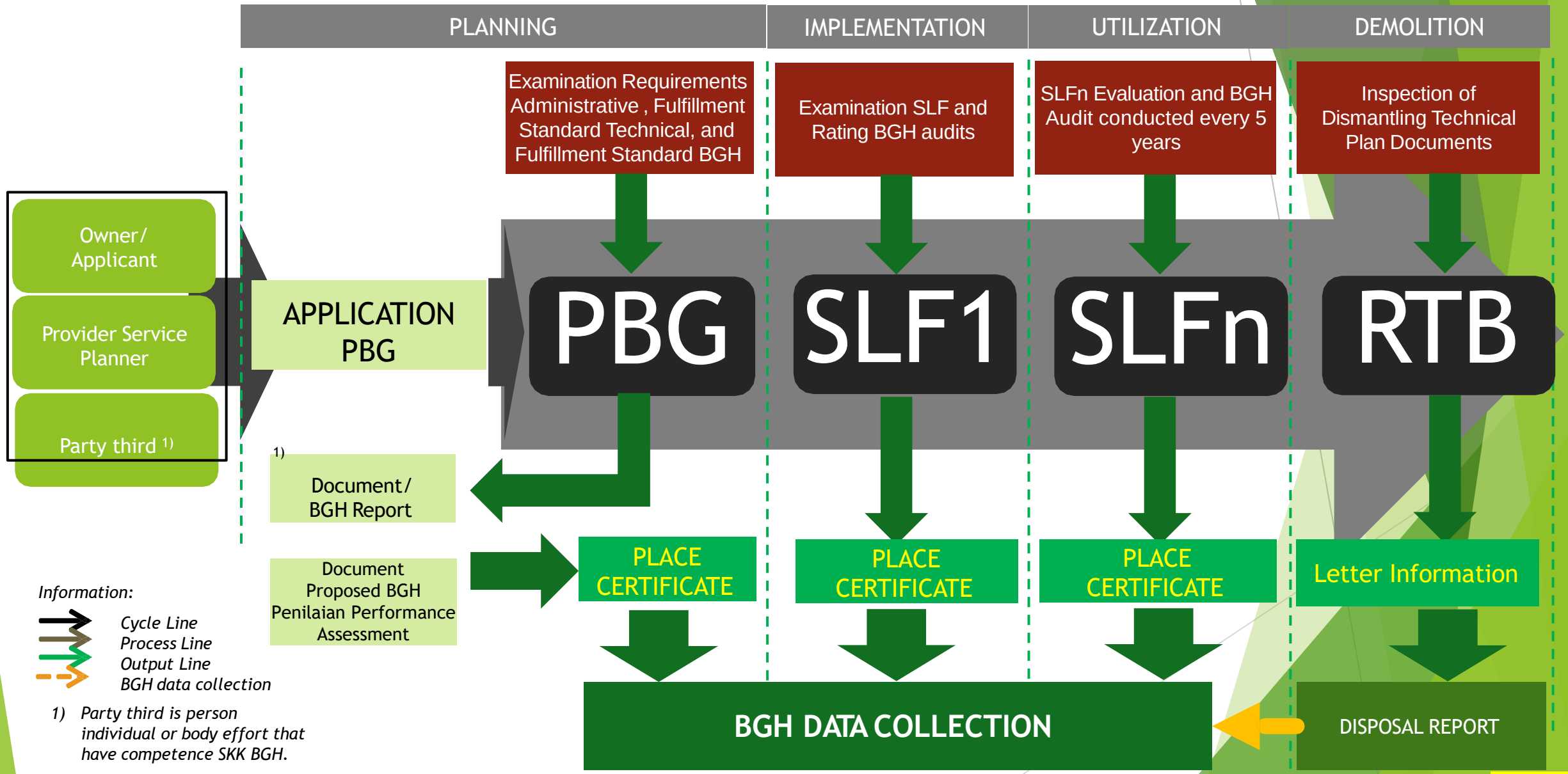


Information:

Cycle Line
Process Line
Output Line
BGH data collection

1) *Party third is person individual or body effort that have competence SKK BGH.*

Implementation of BGH (recommended)



GREEN BUILDING

Buildings that meet the Technical Standards for buildings and have **significantly measurable** performance in **saving energy, water, and other resources** through the application of green principles in accordance with functions and classifications in each stage of its implementation.

Comparison Rating

BREEAM	
Pass	30 %
Good	45 %
Very Good	55 %
Excellent	70 %
Outstanding	85 %

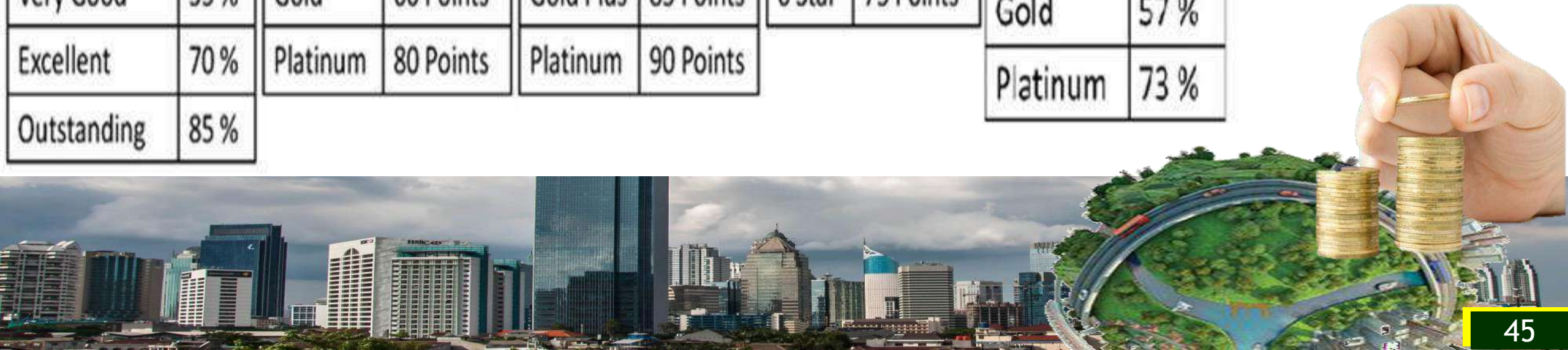
LEED	
Certified	40 Points
Silver	50 Points
Gold	60 Points
Platinum	80 Points

Green Mark	
Certified	50 Points
Gold	75 Points
Gold Plus	85 Points
Platinum	90 Points

Green Star	
4 Star	45 Points
5 Star	60 Points
6 Star	75 Points

GREENSHIP	
Bronze	35 %
Silver	46 %
Gold	57 %
Platinum	73 %

BGH-GARUDA		
Pratama	45%	74,25 poin
Madya	65%	107,25 poin
Utama	80%	132,00 poin



PERFORMANCE ASSESSMENT OF INDONESIAN GREEN BUILDINGS

INDONESIA GREEN BUILDING STANDARD

TECHNICAL STANDARDS

165 STANDARD POINTS	7 ORDER OF FULFILLMENT	4 TAHAPAN	3 PERINGKAT	2 KATEGORI	1 LOGO
Site management; energy use efficiency; efficiency of water use; indoor air quality; the use of environmentally friendly materials; waste management; wastewater management, green construction principles, utilization management, demolition methods that refer to improving the quality of post-demolition sites since the planning, implementation, utilization and demolition .yg mengacu pada peningkatan kualitas tapak pasca pembongkaran sejak dari perencanaan, pelaksanaan, pemanfaatan dan pembongkaran.	1. New Building-compulsory; 2. New Building-recommeded; 3. Existing Building-Compulsory; 4. Existing Building-recommede 5. Community Housing-recomme 6. New Area-recommended; 7. Exixting Area-recommended	Planning Construction Utilization Demolition	UTAMA (PLATINUM) MADYA (GOLD) PRATAMA (SILVER)	Mandatory Recommended	

16 GREEN BUILDING PERFORMANCE ASSESSMENT

GREEN BUILDING		RESIDENTIAL COMMUNITY-GREEN AREA		
NEW GREEN BUILDING	EXISTING GREEN BUILDING	COMMUNITY GREEN RESIDENCE	NEW GREEN AREA	EXISTING GREEN AREA
01. PLANNING		07. PLANNING	11. PLANNING	
02. CONSTRUCTION		08. CONSTRUCTION	12. CONSTRUCTION	
03. UTILIZATION	05. UTILIZATION	09. UTILIZATION	13. UTILIZATION	15. UTILIZATION
04. DEMOLITION	06. DEMOLITION	10. DEMOLITION	14. DEMOLITION	16. DEMOLITIO

National Placard Green Building

ONLY CERTIFICATE"*GREEN BUILDING*"
PANCASILA GARUDA LOGO

45%≤PRATAMA<65%	65%≤MADYA<80%	80%≤UTAMA≤100%
74.25≤PRATAMA<107.25	107.25≤MADYA<132.00	132.00≤UTAMA≤165.00

Green Building Certificate

NEW BGH PLANNING GREEN BUILDING PERFORMANCE

Conservation Energy **25%** **10%** Conservation Water

Rating Performance Step Planning, as tool for rate plan technical building that have Fulfill requirements technical for published Building Approval (PBG Persetujuan Bangunan Gedung).

Rating Performance Step planning consist from 7 aspect with total score 165 points that is:

1. Site Management
2. Efficiency Use Energy
3. Efficiency Use Water
4. Indoor Air Quality
5. Eco-Friendly Material
6. Solid Waste Management
7. Waste Water Management

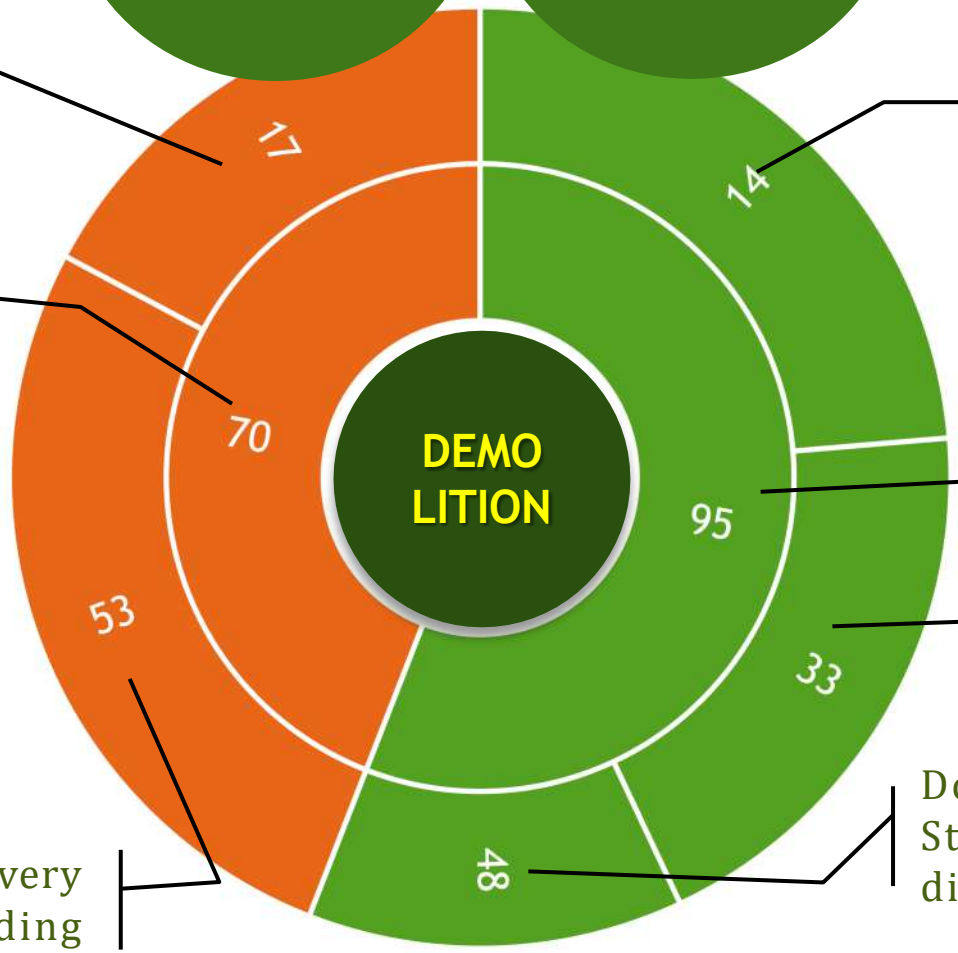
THE PERFORMANCE OF DEMOLITION GREEN BUILDING

Decrease GHG

26%

41%

With Help International



Effort Recovery Waste Construction

ENVIRONMENTAL SITE RECOVERY EFFORT

Documentation Whole Material

DISPOSAL PROCEDURE

Documentation Material Used Back

Documentation Structure Y Will disassembled

Effort Recovery Footprint Building

SPECIAL!

PERFORMANCE OF DEMOLITION GREEN BUILDING

41%

With Help International

Decrease GHG

26%

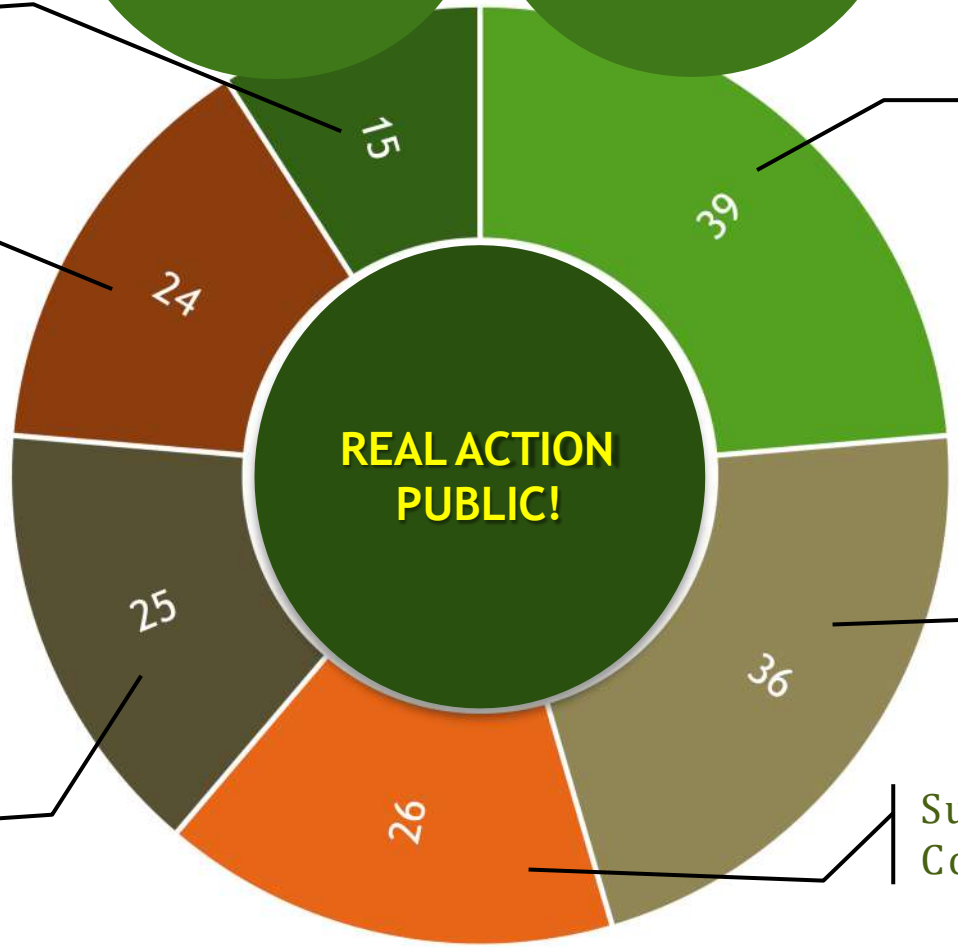
GREEN COMMUNITY RESIDENTIAL GREEN BUILDING PERFORMANCE

Conservation Energy

25%

10%

Conservation Water



Use
Material Local

Optimization Function
Outdoor

Subtraction
Consumption Energy

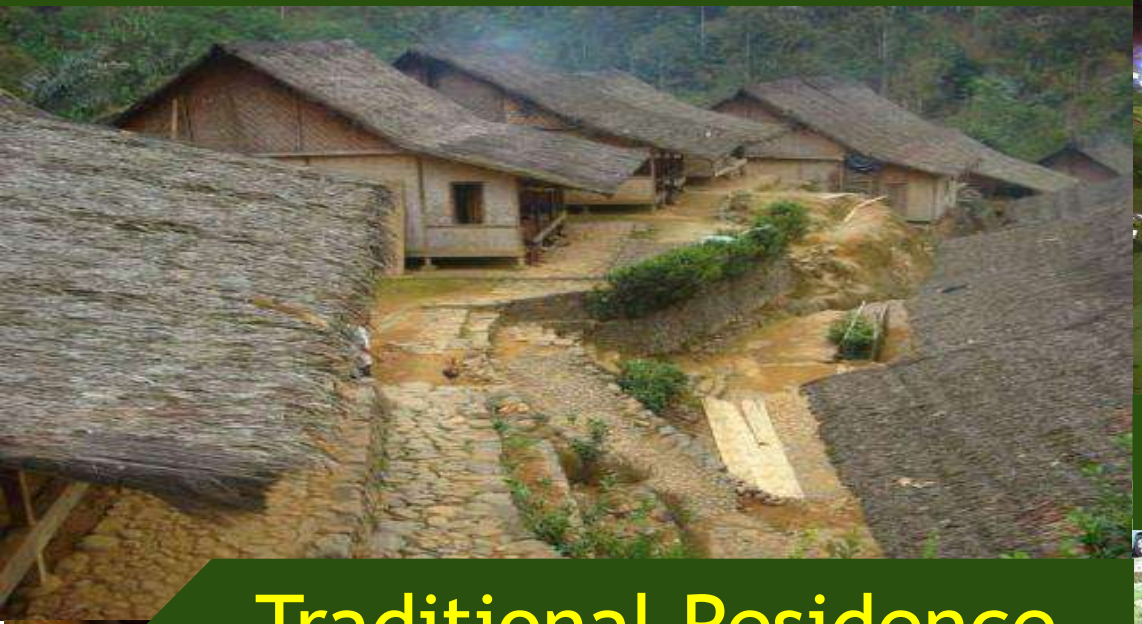
Management Trash
By Independent

Management
Footprint

Subtraction
Consumption Water

SPECIAL!

GREEN COMMUNITY RESIDENTIAL GREEN BUILDING PERFORMANCE



Traditional Residence

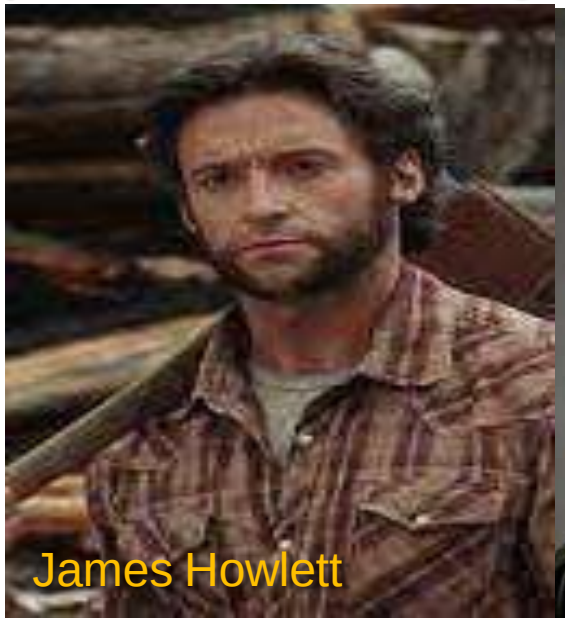
Source : http://way4x.wordpress.com/cepat-tanah-leluhur/sejarah-suku-baduy/perkampungan-suku-baduy/

Urban Heterogeneous Residential

CONCLUSION

the need for strong CHANGE support from all actors implementing energy conservation, to jointly strengthen the Green Building institution in government agencies and the community. So that we can carefully anticipate global warming and climate change with a focus on conserving energy, and eliminating waste through empowering state institutions. So that the value of this business can become a reality to be able to save the world. Because in essence, the Earth that we inhabit comes from the inheritance of our ancestors, but it is a loan from our children and grandchildren. Our obligation to return it in a state of sleep: GREEN.

You know personal following this? Look not anyone…. ?



For a power, for Becomes hero them must:

CHANGE!!

we must CHANGE, so that heroism is always there...

THANK YOU

01. Performance Assessment of New Building Planning

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	SITE MANAGEMENT	23%	38
B.	ENERGY USE EFFICIENCY	28%	46
C	WATER USE EFFICIENCY	13%	22
D	INDOOR AIR QUALITY	12%	19
E	USE OF ENVIRONMENTALLY FRIENDLY MATERIALS	13%	21
F	WASTE MANAGEMENT	4%	7
G	WASTEWATER MANAGEMENT	7%	12
	NUMBER OF POINTS	100%	**165**

02. Performance Assessment of New Building Construction

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	CONFORMITY OF GREEN BUILDING CONSTRUCTION PERFORMANCE	45%	74
B.	GREEN CONSTRUCTION PROCESS	36%	60
C.	GREEN BEHAVIOR PRACTICES	12%	20
D.	GREEN SUPPLY CHAIN	7%	11
	NUMBER OF POINTS	100%	**165**

03. Performance Assessment of Utilization of New Buildings

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	ORGANIZATION AND GOVERNANCE OF GREEN BUILDINGS	35%	58
B.	MAINTENANCE OF BGH PERFORMANCE AT THE TIME OF UTILIZATION	59%	98
C.	ROLE OF RESIDENTS /USERS OF GREEN BUILDINGS	5%	9
	NUMBER OF POINTS	100%	**165**

04. Performance Assessment of Building Demolition

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	DISASSEMBLY PROCEDURE	58%	95
B.	ENVIRONMENTAL FOOTPRINT RECOVERY EFFORTS	42%	70
	NUMBER OF POINTS	100%	**165**

05. Performance Assessment of Utilization of Existing Buildings

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	ORGANIZATION AND GOVERNANCE OF GREEN BUILDINGS	50%	83
B.	RETROFITTING CONSTRUCTION PROCESS	16%	26
C.	MAINTENANCE OF BGH PERFORMANCE AT THE TIME OF UTILIZATION	30%	50
D.	ROLE OF RESIDENTS /USERS OF GREEN BUILDINGS	4%	6
	NUMBER OF POINTS	100%	**165**

06. Performance Assessment of Demolition of Existing Building

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	DEMOLITION PROCEDURE	58%	95
B.	ENVIRONMENTAL FOOTPRINT RECOVERY EFFORTS	42%	70
	NUMBER OF POINTS	100%	**165**

07. Performance Assessment of Planning of Community Green

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	REDUCTION OF ENERGY CONSUMPTION	24%	39
B.	REDUCTION OF WATER CONSUMPTION	16%	26
C.	SELF-MANAGEMENT OF WASTE	22%	36
D.	USE OF LOCAL AND ENVIRONMENTALLY FRIENDLY BUILDING MATERIALS	9%	15
E.	OPTIMIZATION OF GREEN OPEN SPACE	15%	24
F.	SITE MANAGEMENT	15%	25
	NUMBER OF POINTS	100%	**165**

08. Performance Assessment of Construction of Community Gr

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	CONFORMITY OF CONSTRUCTION IMPLEMENTATION PERFORMANCE	21%	34
B.	GREEN CONSTRUCTION PROCESS	55%	90
C.	GREEN SUPPLY CHAIN	25%	41
	NUMBER OF POINTS	100%	**165**

09. Performance Assessment of Utilization of Community Gree

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	GREEN ENVIRONMENT ORGANIZATION AND GOVERNANCE		
1.	Community Adherence to Green Norms	54.5%	90
2.	Environmental Conservation Ordinances	45.5%	75
	NUMBER OF POINTS	100%	**165**

10. Performance Assessment of Demolition of Community Gree

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	MATERIAL MANAGEMENT	54.5%	90
B.	ENVIRONMENTAL FOOTPRINT RECOVERY	45.5%	75
	NUMBER OF POINTS	100%	**165**

11. Performance Assessment of Planning of Green Area

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	IMPROVING THE WELFARE OF THE LOCAL POPULATION	10%	16
B.	IMPROVEMENT OF INFRASTRUCTURE AND FACILITIES SERVICES IN THE REGION	16%	27
C.	IMPROVEMENT OF INFRASTRUCTURE AND FACILITIES SERVICES IN THE REGION	23%	38
D.	REDUCTION OF THERMAL IMPACTS ON OTHER REGIONS IN THE DRY SEASON	8%	14
E.	REDUCTION OF INFRASTRUCTURE AND FACILITIES BURDEN	32%	52
F.	USE OF ENVIRONMENTALLY FRIENDLY MATERIALS	11%	18
	NUMBER OF POINTS	100%	**165**

12. Performance Assessment of Construction of Green Area

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	CONFORMITY OF CONSTRUCTION IMPLEMENTATION PERFORMANCE	24.2%	40
B.	GREEN CONSTRUCTION PROCESS	58.2%	96
C.	GREEN SUPPLY CHAIN	17.6%	29
	NUMBER OF POINTS	100%	**165**

13. Performance Assessment of Utilization of Green Area

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	ORGANIZATION AND GOVERNANCE OF GREEN	49%	81
B.	MAINTENANCE OF GREEN AREA PERFORMANCE AT THE TIME OF UTILIZATION	51%	84
	NUMBER OF POINTS	100%	**165**

14. Performance Assessment of Demolition of Green Area

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	DISPOSAL MATERIAL MANAGEMENT	55%	91
B.	ENVIRONMENTAL SITE RECOVERY	45%	74
	NUMBER OF POINTS	100%	**165**

15. Performance Assessment of Utilization of Existing Green Ar

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	GREEN AREA ORGANIZATION AND GOVERNANCE	48%	79
B.	GREEN AREA RETROFITTING CONSTRUCTION PROCESS	7%	11
C.	MAINTENANCE OF GREEN AREA PERFORMANCE DURING UTILIZATION	45%	75
	NUMBER OF POINTS	100%	**165**

16. Performance Assessment of Demolition of Exisiting Green Area

NO	PERFORMANCE ASSESSMENT	VALUE	
		%	POINT
A.	DISPOSAL MATERIAL MANAGEMENT	55%	91
B.	ENVIRONMENTAL SITE RECOVERY	45%	74
	NUMBER OF POINTS	100%	**165**

2nd Presentation

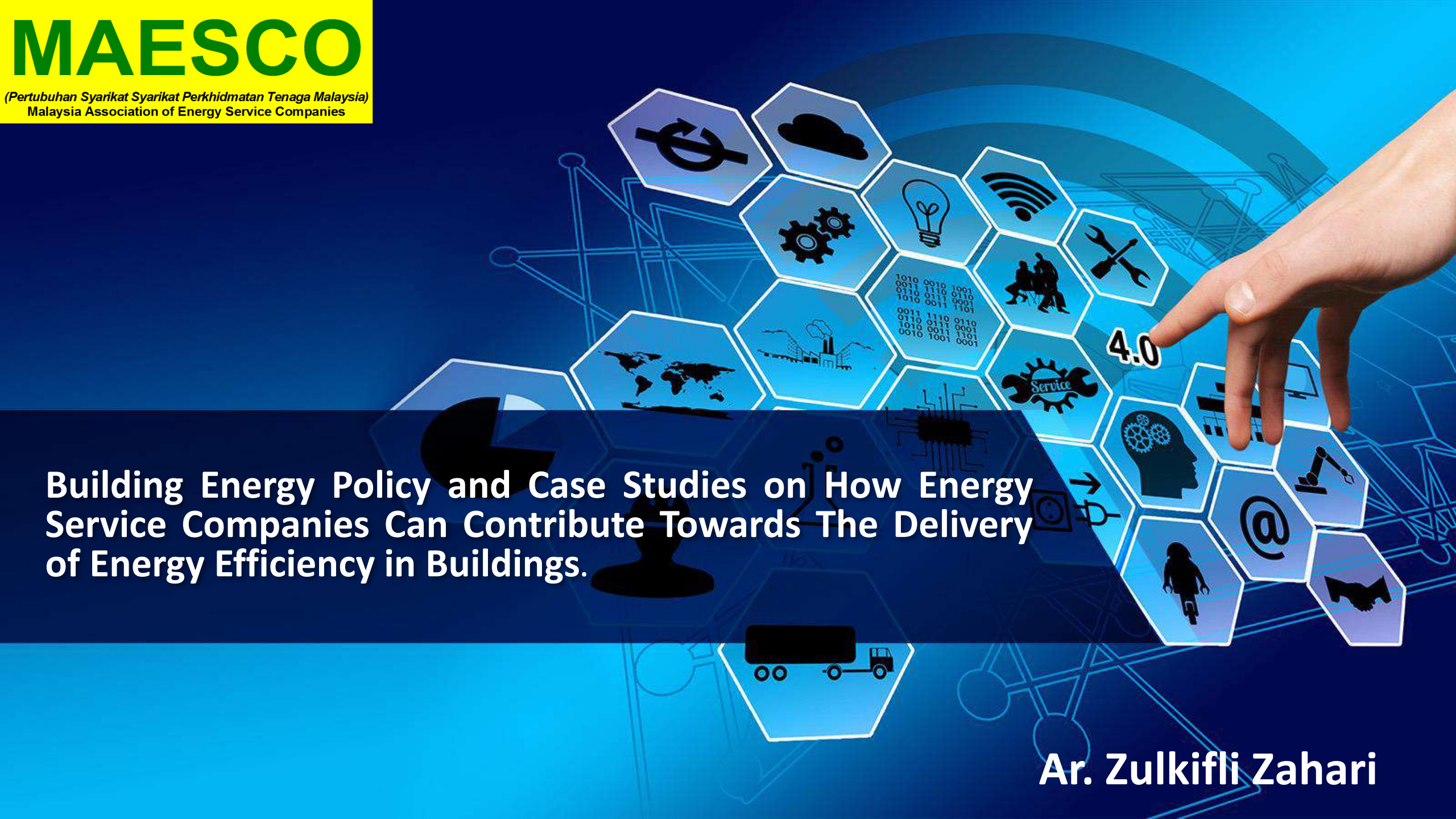
Building Energy Policy and Case Studies on How Energy Service Companies Can Contribute Towards The Delivery of Energy Efficiency in Buildings

Mr. Zulkifli Zahari

President, Malaysia Association of Energy Service Companies (MAESCO)

MAESCO

(Pertubuhan Syarikat Syarikat Perkhidmatan Tenaga Malaysia)
Malaysia Association of Energy Service Companies



Building Energy Policy and Case Studies on How Energy Service Companies Can Contribute Towards The Delivery of Energy Efficiency in Buildings.

Ar. Zulkifli Zahari

GOVERNMENT INITIATIVES OF ENERGY EFFICIENCY INVOLVING BUILDINGS IN MALAYSIA

INITIATIVES	YEAR
Malaysian Industrial EE Improvement Project (MIEEIP)	2000-2007
Efficient Management of Electrical Energy Regulation (EMEER)	2008
National EE Action Plan (NEEAP)	2016-2025
Building Sector EE Project (BSEEP)	2011-2016

Policy/Regulatory Issues

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Malaysia Association of Energy Service Companies

Under Attention and Review by Stakehoders

- No strong integrated energy policy or strategy by GOM to guide activities and investments for EE in Buildings.
- Statements on EE in 11th Malaysia Plan are general and without distinct targets. 12th Malaysia Plan (2021-2025) not tabled.
- The current voluntary code of practice for EE building design, MS 1525:2007, has not yet been made mandatory incorporated into the Uniform Building Bylaws (UBBL) despite various efforts to this end over the last 5 years.
- There are no regulations or mandatory legislation in place to support Energy Efficiency in the building sector
- Subsidized energy prices skew the market, and furthermore it is not clear that electricity tariffs give enough incentive for spontaneous EE project development and implementation
- There is no clear system to monitor , gather, analyze and disseminate information on developments and progress on energy efficiency. This hampers not only awareness in general but also the development of effective policies and targets, as well as making it impossible to assess whether or not existing initiatives are successful or not and thus whether or not to continue funding, strengthen it , or redirect it to other, more effective, measures

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MS 1525

Energy Efficiency and Use of Renewable Energy in Non Residential Buildings (Update 2019)

JULY 2021

MALAYSIAN STANDARD

MS 1525:2014

Energy efficiency and use of renewable energy for non-residential buildings - Code of practice
(Second revision)

ICS: 91.040.01

Descriptors: energy efficiency, renewable energy, non-residential, buildings, code of practice, energy

DEPARTMENT OF STANDARDS MALAYSIA

PURPOSE OF THE STANDARDS

- **To encourage the design of new and existing buildings so that they may be constructed, operated and maintained in a manner that reduces the use of energy without constraining the building function, nor the comfort or productivity of the occupants and with appropriate regard for cost considerations.**

- To provide the criteria and minimum standards for energy efficiency in the design of new buildings, retrofit of existing buildings and provide methods for determining compliance with these criteria and minimum standards.

- To provide guidance for energy efficiency designs that demonstrate good professional judgement and exceeds minimum standards criteria.

SCOPE OF STANDARDS

The Malaysian Standard sets forth the requirements for the effective use of new and existing buildings for human occupancy, covering

- ✓ **passive design strategies**
- ✓ **electric power and distribution,**
- ✓ **lighting,**
- ✓ **air conditioning,**
- ✓ **building envelope and**
- ✓ **control system for energy management.**

The Malaysian Standard covers new and existing buildings such as offices, hotels, shopping complexes and department stores as well as those portions of factory and industrial buildings that are used primarily for human occupancy.

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GREEN BUILDING TOOLS IN MALAYSIA ADOPTING MS 1525

-GREEN BUILDING INDEX
-GREEN RE
-My CREST

JULY 2021

FIGURE 6: GBI WEIGHTING ON MAIN CRITERIA

greenbuildingindex

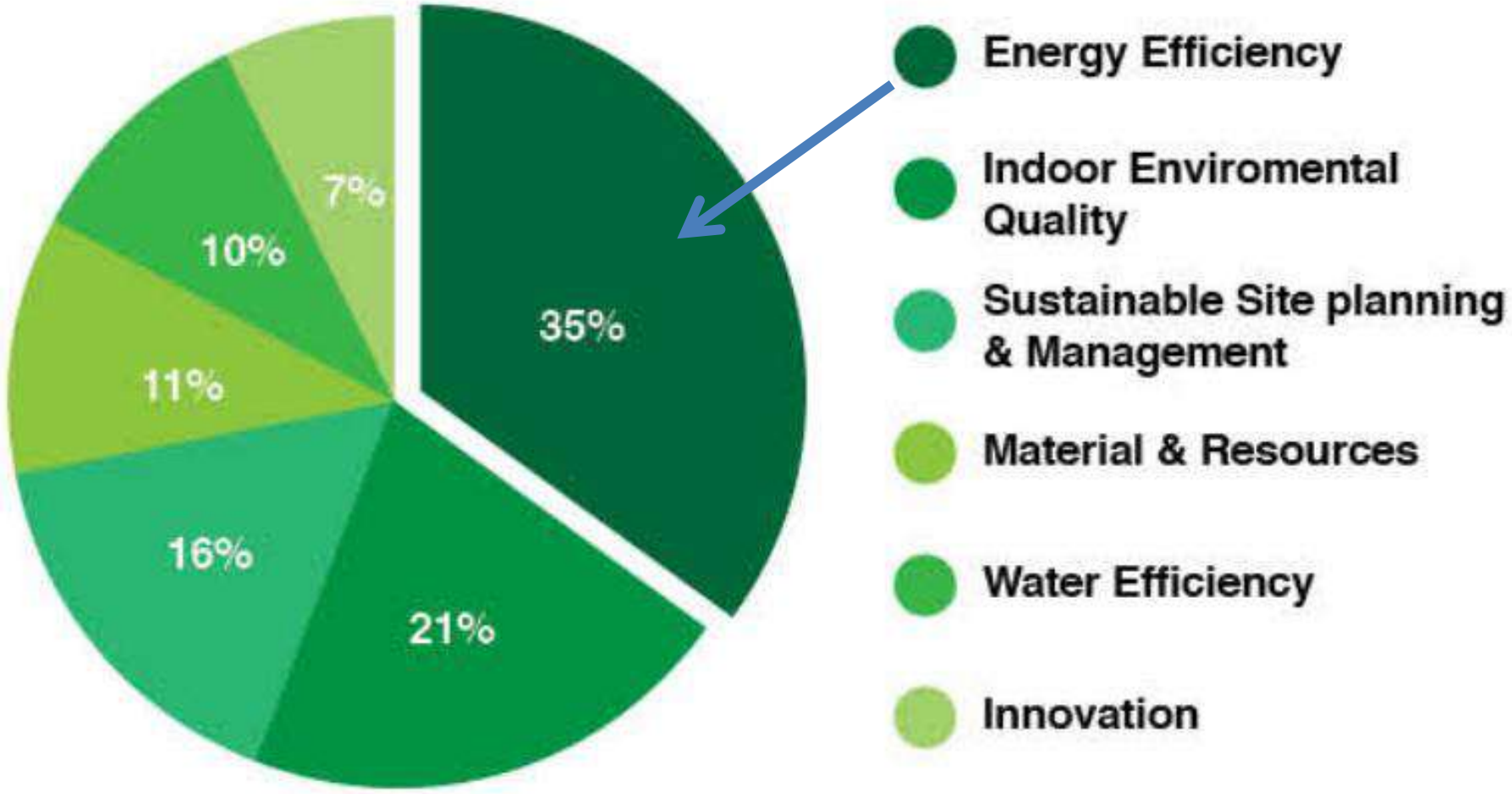

FIGURE 7: GREENRE WEIGHTING ON MAIN CRITERIA

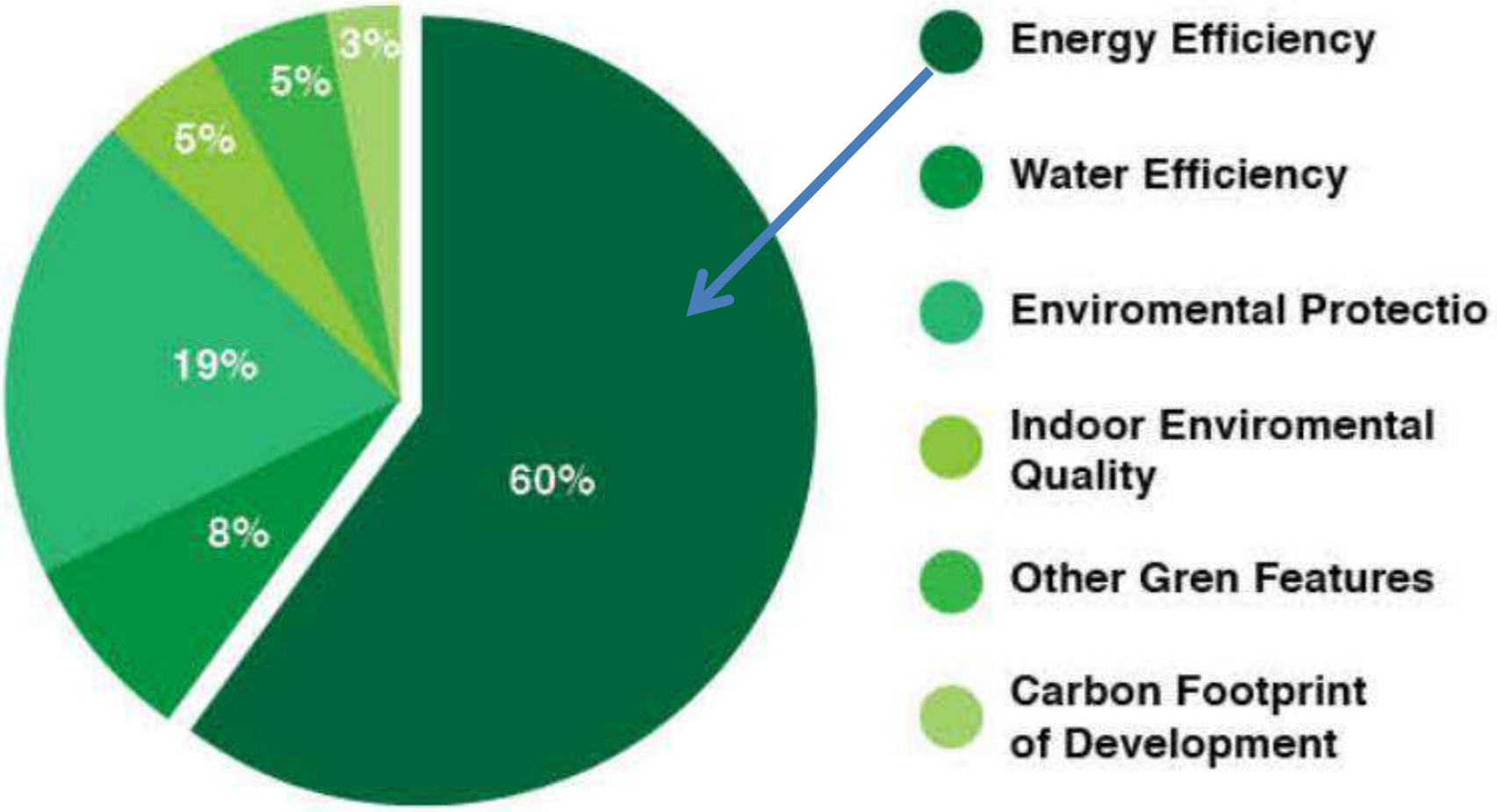

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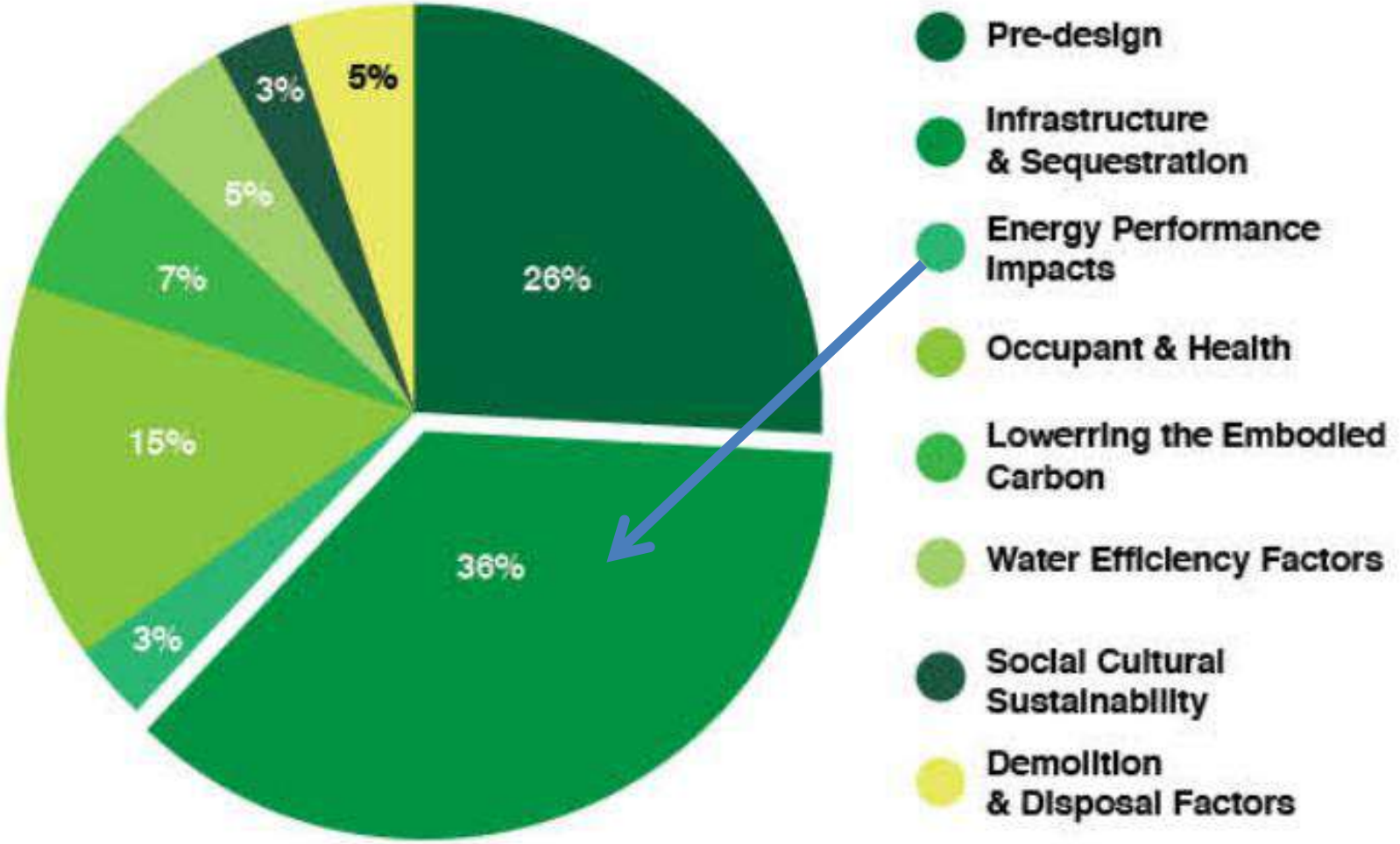
FIGURE 8: MYCREST WEIGHTING ON MAIN CRITERIA



MyCREST
MALAYSIAN CARBON REDUCTION & ENVIRONMENTAL SUSTAINABILITY TOOL

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EFFICIENT MANAGEMENT OF ELECTRICAL ENERGY REGULATION 2008 (EMEER 2008)

Suruhanjaya Tenaga
Energy Commission

EMEER 2008

EFFICIENT MANAGEMENT OF ELECTRICAL ENERGY REGULATIONS 2008

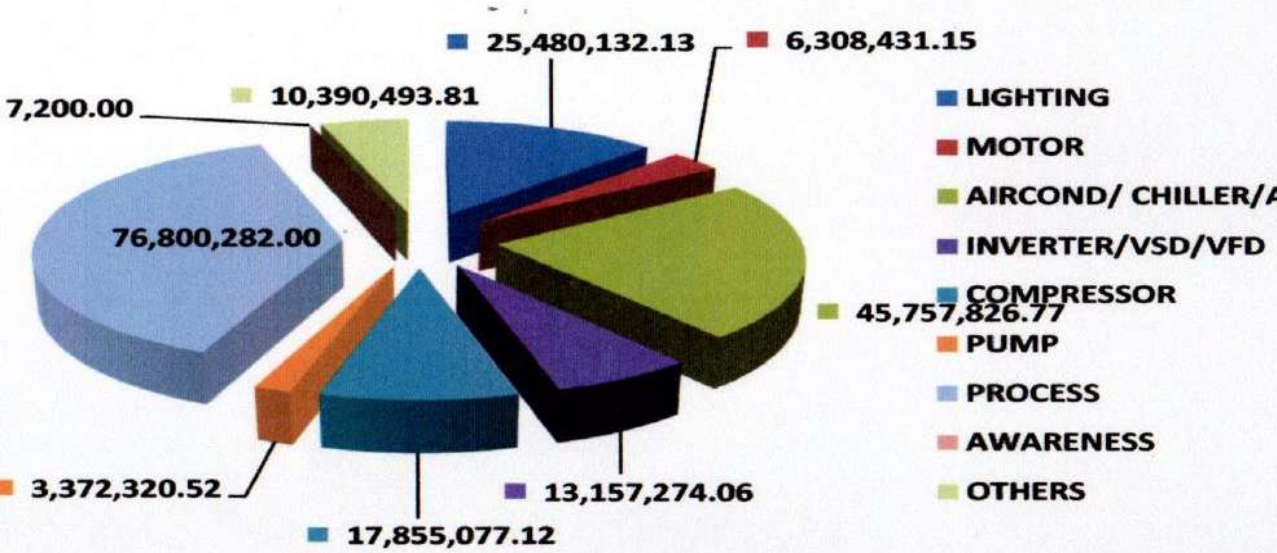
Applicable to:

Any installation which receives electrical energy from a licensee or supply authority– Consume equal or exceeding 3,000,000 kWh any period of 6 consecutive months

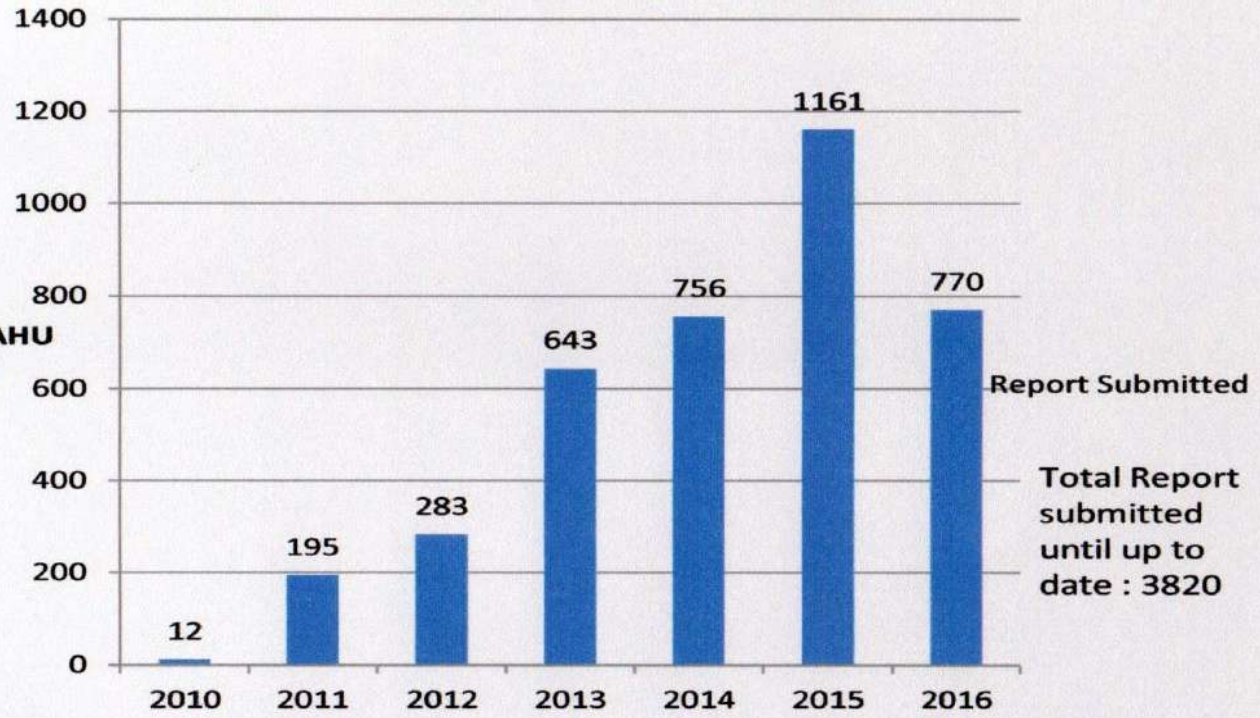
Installation worked or operated by a private installation licensee– Generate equal or exceeding 3,000,000 kWh any period of 6 consecutive months

Suruhanjaya Tenaga
Energy Commission

kWh SAVING PER ACTIVITY IMPLEMENTED IN 2015

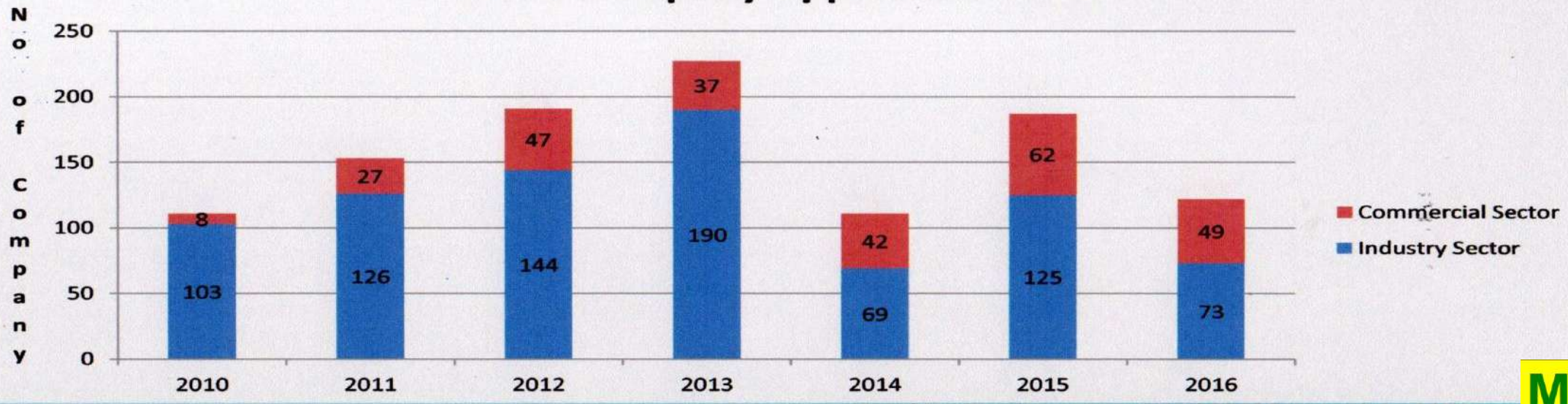


Report Submitted



Total Report submitted until up to date : 3820

No of Company Appointed REEM



Total No Company Appointed REEM up to date 1102

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Malaysia Association of Energy Service Companies

Building Sector Energy Efficiency Project (BSEEP)

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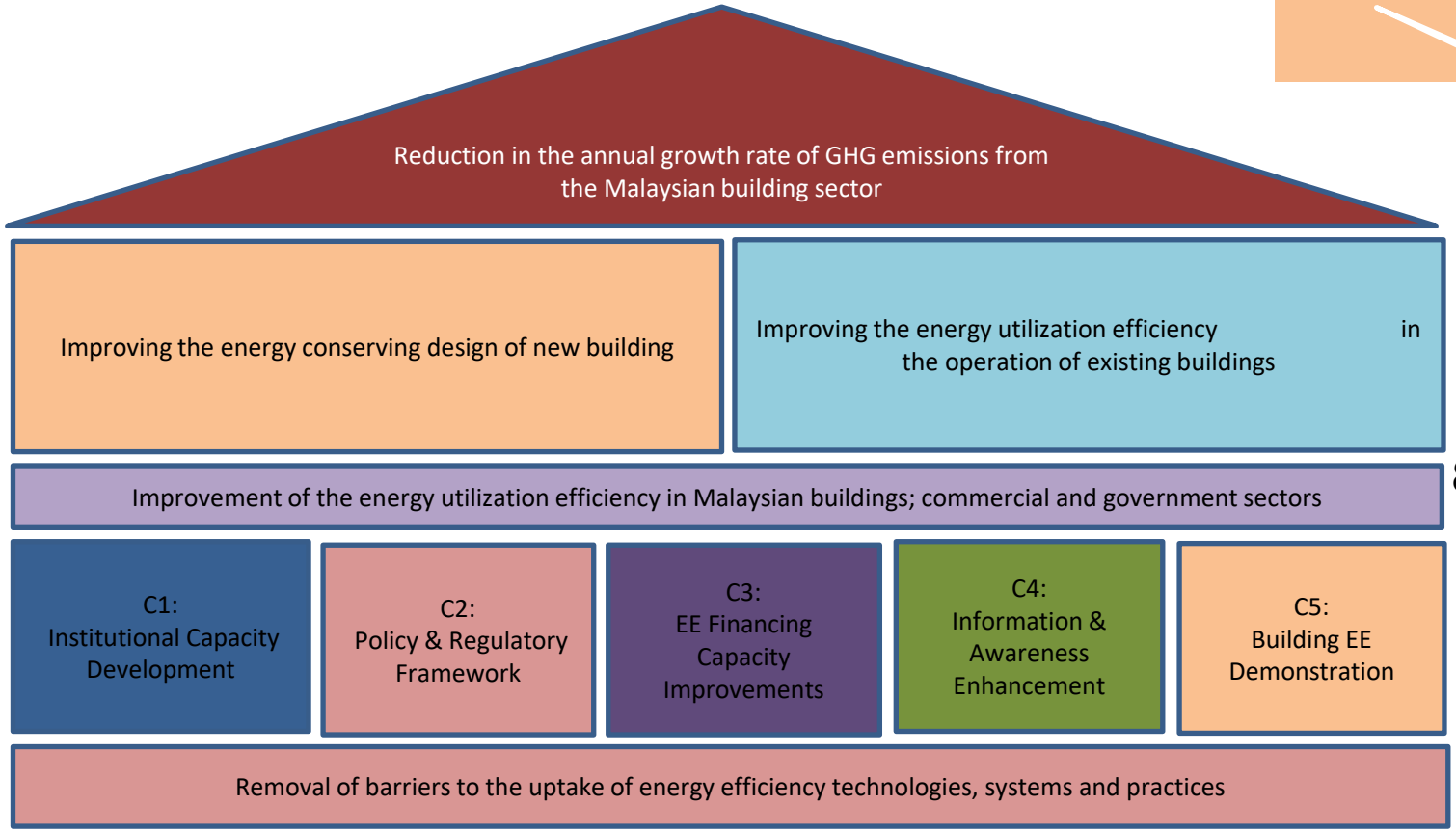
Malaysia Association of Energy Service Companies

BSEEP Achievements



PROJECT CUMULATIVE EMISSION REDUCTION 2011 – 2017 - 2037

122 GWh/ 89.9 kt CO2eq by 2017

7,061 GWh

Post Project Emission Reduction

1,888.12 kt CO_2eq by 2037

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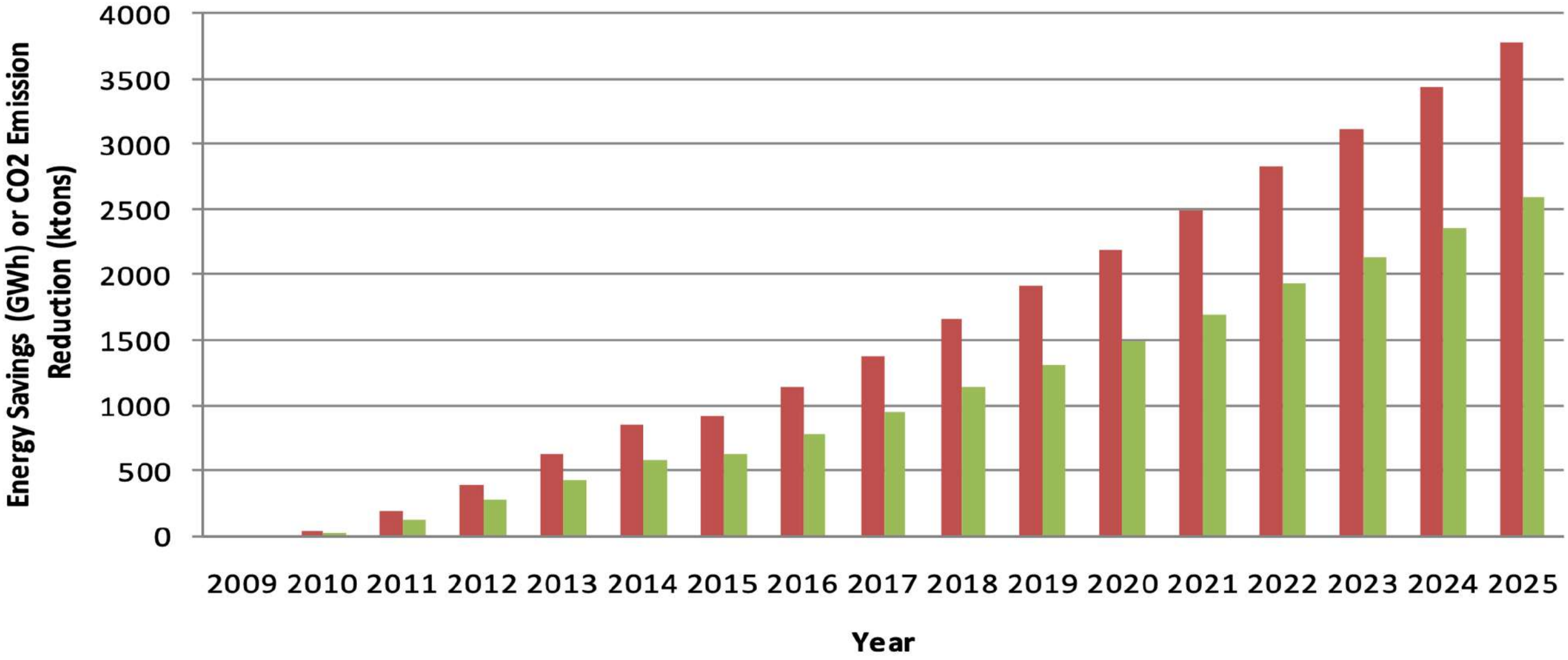
Fig. 4: BSEEP - Buildings Sector Forecast Energy Annual Savings & Annual CO_2 Emission Reductions



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THE NEED FOR A DEDICATED BUILDING SECTOR ENERGY EFFICIENCY REGULATION

- Implementing Agency
- Data collection and establish Database
- Building Energy labelling
- Compliance with prescribed Building Energy Intensity
- Building Energy Audits
- Reporting
- Penalties for non-compliance

EPC Fund for EE Project

Back to WhatsApp 7:51 PM 50%

bernama.com

BERNAMA.com

News

RM200 Mln EPC Fund To Boost Energy-Efficient Projects

PUTRAJAYA, Aug 16 (Bernama) -- The RM200 million Energy Performance Contracting Fund (EPC Fund) is now available for energy service companies (ESCOs) to implement energy-efficient projects in the country, said Energy, Green Technology and Water Minister, Datuk Seri Dr Maximus Ongkili.

He said the fund was provided by Malaysia Debt Ventures Bhd, a subsidiary of Finance Ministry with a credit guarantee fund support of RM12 million from the ministry and the United Nations Development Programme-Global Environmental Facility.

"The establishment of the fund was approved during the first Green Technology and Climate Change Meeting 2017, which was chaired by Prime Minister Datuk Seri Najib Tun Razak on March 2 this year.....

EPC FUND

RM 200 MILLION

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FISCAL INCENTIVES

Suruhanjaya Tenaga
Energy Commission

ELIGIBLE COMPANIES

Companies Providing Conservation Services

- Pioneer Status (PS) with tax exemption of 100% of statutory income for 10 years
- Investment Tax Allowance (ITA) of 100% on qualifying capital expenditure incurred within a period of 5 years to be utilized against 100% of the statutory income for each year of assessment (Through Energy Performance Contracting (EPC) Services Activity)

Companies which incur capital expenditure for conserving energy for own consumption

- ITA of 100% on qualifying capital expenditure incurred within a period of 5 years to be utilised against 100% of the statutory income for each year of assessment

ALL APPLICATION OF EE INCENTIVES SHALL APPLY THROUGH MIDA

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MIDA
MALAYSIAN INVESTMENT DEVELOPMENT AUTHORITY

GENERAL CRITERIA OF EE ITA EVALUATION

Energy Efficiency

- Ex 1: Chiller replacement with high efficient chiller
- Ex 2: Application of VSD at pump and motor

Energy Conservation

- Ex 1: Heat pump application
- Ex 2: Heat Recovery
- Ex 3: Co-Generation

ROI ≤ 10 Years

For Lighting type of project, under LHDN and MOF code of definition, it was not categorized as CAPEX as the nature of lighting to be replaced yearly basis (consumable), thus, lighting will not be considered under the existing ITA.

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Suruhanjaya Tenaga
Energy Commission

BSEEP DEMONSTRATION PROJECT

No.	Demonstration Project	Building Type	Tentative Energy Efficiency Technology /Technique to be Demonstrated	Estimated Annual Energy Savings kWh
1	Design and Construction of Nurses College at Parit Jaya	Institutional	Application of insulated facades and roof, window shading and ID design for maximum daylight use and maximum visual comfort, use of VRV split A/C systems, airtight building, high efficiency lighting system controlled according to occupancy and daylight availability.	711,750
2	Design and Construction of Government Health Clinic & Quarters at Nilai, Seremban	Institutional/ Residential	Strategic layout of A/C zones and naturally ventilated zones for reduced A/C load and reduced risk of humidity and mold growth, insulated facades and roof, façade, shading and ID design for maximum daylight use and maximum visual comfort, high performance glazing, use of VRV split A/C systems, airtight building with CO_2 control of ventilation air inlet, high efficiency lighting system controlled according to occupancy and daylight availability, individual fluorescent desk lamps.	209,625
3	Design of New UTM Building, Jl. Semarak	Institutional/ Office	Building orientation, insulated facades and roof, façade, shading and ID design for maximum daylight use and maximum visual comfort, low E glazing, design of staircases for reduced use of lifts, high performance chiller, low pressure ventilation system and AHU's with VAV, high efficiency pumps, motors and AHU fans, airtight building with CO_2 control of ventilation air inlet, high efficiency lighting system controlled according to occupancy and daylight availability, individual fluorescent desk lamps.	1,935,000
4	Retrofit of JKR Blok F Building	Office	Installation of a high efficiency lighting system controlled according to occupancy and daylight availability, installation of a new internal shading system for improved daylight availability and improved visual comfort, personal fluorescent desk lamps, weather stripping of windows and doors for reduced infiltration of outside air, improved fans and fan motors, high EE pumps, implementation of awareness program to improve energy performance.	1,520,000
5	Retrofit of Prime Minister's Office	Office	Optimization of the Building and Energy Management System for optimal energy performance and user comfort, adjustment and optimization of the performance of the AHUs with fans and motors, rewiring of wiring of the lighting system in offices towards the facade so that daylight controls can be installed, installation of motion controls of lighting in chosen areas of the building, use of fluorescent task lights in offices towards the façade to reduce the use of general office lighting, implementation of an awareness program to improve energy performance,	4,800,000
6	Retrofit of Ministry of Natural Resources and Environment's Building	Office	Optimization of the Building and Energy Management System for optimal energy performance and user comfort, adjustment and optimization of the performance of the AHUs with fans and motors, rewiring of wiring of the lighting system in offices towards the façade so that daylight controls can be installed, installation of motion controls of lighting in chosen areas of the building, use of fluorescent task lights in offices towards the façade to reduce the use of general office lighting, implementation of an awareness program to improve energy performance.	4,800,000

No.	Demonstration Project	Building Type	Tentative Energy Efficiency Technology /Technique to be Demonstrated	Estimated Annual Energy Savings kWh
7	Design and Construction of New Building of Ministry of Trade and Industry	Office	Building orientation, use of vegetation , use of water body, energy efficient transport/lift system, insulated facades and roof, façade, shading and ID design for maximum daylight use and maximum visual comfort, high performance glazing, high performance chiller, low pressure ventilation system and AHU's with VAV, high efficiency pumps, motors and AHU fans, high performance lifts with electricity regeneration, airtight building with CO_2 control of ventilation air inlet, high efficiency lighting system controlled according to occupancy and daylight availability. Image/impact of Malaysia's seriousness on sustainability to potential foreign investors.	3,800,000
8	Design and Construction of Housing Estate, Klang Valley	Residential	Building orientation, shading of walls via window overhang and other measures, use of improved glazing with less heat transmission, use of vegetation around the building, use of water bodies, insulated walls and highly insulated roofs, use of VRV split A/C systems, implementation of an airtight building envelope, design of windows and ventilation openings for optimal natural ventilation when the climate allows for this, use of efficient lighting systems, installation of energy efficient fridges and energy efficient washing machines, installation of solar water heaters.	550,000
9	Design and Construction of New Office Building of Putra Perdana	Office	Building orientation, insulated facades and roof, façade, shading and ID design for maximum daylight use and maximum visual comfort, high performance glazing, design of staircases for reduced use of lifts, high performance chiller, low pressure ventilation system and AHU's with VAV, high efficiency pumps, motors and AHU fans, airtight building with CO_2 control of ventilation air inlet, high efficiency lighting system controlled according to occupancy and daylight availability, individual LED desk lamps.	2,250,000
10	Design and Construction of New Office Building of Sime Darby	Office	Building orientation, insulated facades and roof, façade, shading and ID design for maximum daylight use and maximum visual comfort, high performance glazing, high performance chiller, low pressure ventilation system and AHU's with VAV, high efficiency pumps, motors and AHU fans, high performance lifts with electricity regeneration, airtight building with CO_2 control of ventilation air inlet, high efficiency lighting system controlled according to occupancy and daylight availability.	2,250,000
TOTAL (kWh savings)				**22,826,375**
TOTAL CO_2 (ton CO_2eq)				**15, 613**
NOTES: Electricity price = 0.4 MYR/kWh (USD 0.11/kWh); CO_2 Factor = 0.684 ton/MWh				

ESCO's Contribution towards Delivering Energy Efficient Buildings

MAESCO

(Pertubuhan Syarikat Syarikat Perkhidmatan Tenaga Malaysia)

Malaysia Association of Energy Service Companies

COMMON Options for EPC MODEL

1. GUARANTEED SAVING

- The loan goes on the client's balance sheet

2. SHARED SAVING

- The loan goes on ESCO's balance sheet

BOTH PERFORMANCE GUARANTEED!

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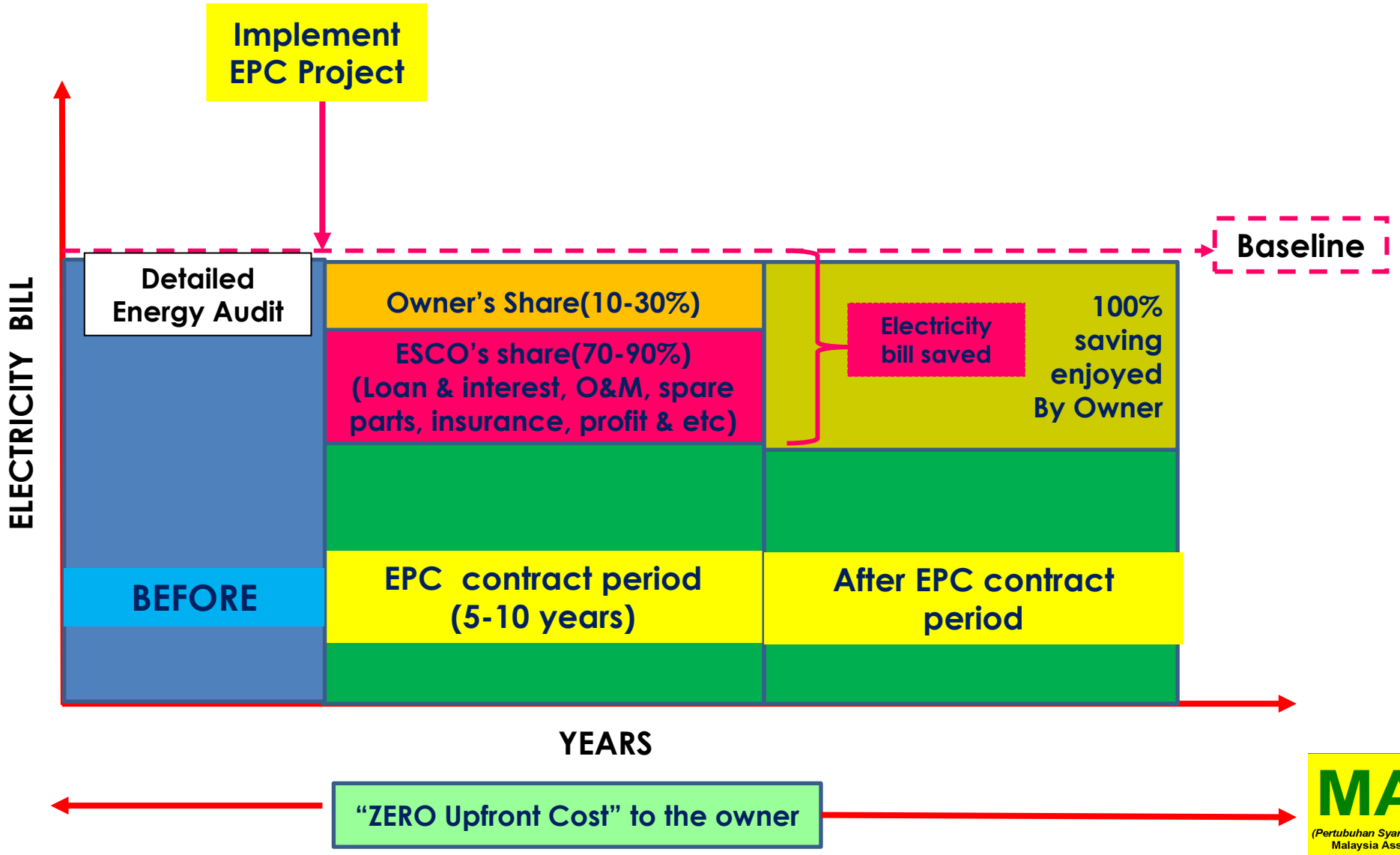
Malaysia Association of Energy Service Companies

EPC –SHARED SAVING



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Malaysia Association of Energy Service Companies

Case Study 1

Telco Company, Malaysia by Factor Four Technology Sdn. Bhd – Shared Savings Contract for 10 years

BEFORE RETROFIT – 591 kW

- **Air Cooled Chillers operating**
  - **300 kW +**
- **Additional pumps in operation to counter valve problems**
  - **48 kW +**
- ***Measured CHWS Temperature Summary***
  - **Ave CHWS Temp June 2003 = 9 Deg C**

Measured Chiller Plant Efficiency : 2.0 kW/ton

AFTER RETROFIT – 164 kW

- **Measured Average Power Consumption by Each Equipment (Water Cooled Chiller) in April 2001**

- **400 RT Chiller =140 kW (Max 215 kW)**
- **CHW Pump = 8.1 kW (Max 8.9 kW)**
- **CW Pump = 7.5 kW (Max 9.2 kW)**
- **Cooling Towers = 9 kW (Max 19 kW)**
- ***Measured Power Consumption Summary***
  - **Ave Ch Plant kW for March 2006 = 160 kW (Max 180 kW)**
- ***Measured CHWS Temperature Summary***
  - **Ave CHWS Temp March 2006 = 7.5 Deg C**

Measured Chiller Plant Efficiency : 0.60 kW/ton

Case Study 2

Universiti Teknologi Malaysia

MAIN RESULTS:

a) Saving of 318.00 kW or **39%**
b) Lighting intensity Watt/m^2 reduced from 24.7 to 7.5 - reduction of 70%
c) kWh per annum /area (kWh/m^2) from 169 to 99 - reduction of 58%
d) Improvement in comfort condition of the library
e) Savings worth RM 340,000 per annum

The electronic ballast was selected based on this criteria:

1. Total Harmonic Distortion (THD) of less than 20% or 10% depending on the model of the ballast.
2. Power factor > 95%
3. Lamp current Crest Factor less than 1.7
4. Minimum starting temperature of –20^{0}F to 50^{0}F
5. Minimum detectable flicker – high frequency

The retrofit works undertaken to improve the efficiency were:

- Replaced old oversized motor with new Super-E type
- Replace old fan and motor pulleys with optimally designed size
- Alignment of pulleys to reduce transmission losses
- Electrical connection to motor and necessary adjustment of over load relay setting.
- Control and Monitoring

Total Savings Calculation for Phase I, II and III

Power (kW) Savings
The total savings from Phase 1, Phase II and Phase III > Total Savings = [5] + [8]+ [11] + [13] kW = **318** kW [15]
With the cost of electricity at:-

kWh Cost = 0.19 RM/kWh [16]
Peak kW Cost = 17.30 RM/kW/month [17]

calculation of savings per month can be expressed as follows:-

Savings = kWh savings + Max. demand savings = (318 kW x N x 0.19 RM/kWh) + (318 x 17.3 RM/kW) [18]

where N is the number of operating hours per month.

To calculate average savings per month, we will use 20 weekdays @ 15.5 working hours, 4 Saturdays @ 9 working hours, and 4 Sundays @ 8 working hours, which makes:-

N = (20 x 15.5) + (4 x 9) + (4 x 8) = **378** hours per month [19]

Average monthly kWh savings and max. demand savings, therefore : ***kWh Savings = RM 22,839.50 per month***
Max. demand Savings = RM 5501.57 per month

Total Monthly Savings : RM 28,341.07

Annual Savings = RM 340,092.84 [20]

BENEFITS WORKING WITH ESCOs

- **ESCO is a one-stop solution provider which aims to bring together capital and technology to develop and implement turnkey solutions that enable companies to reduce their energy consumption and operating costs while meeting sustainability goals:**
  - No upfront investment for the Host on Shared Savings Basis.
  - Enduring Operating Cost Savings.
  - Asset Upgrade and Value Uplift.
  - Carbon Emissions Reductions/Compliance with Building /Energy Management Regulation.
  - Corporate Social Responsibility agenda.
  - Highest Performance Standards with equipment and technology that is commercially proven and with warranties and guarantees as to the performance of contractors and suppliers.
  - Savings Cover the Investment Cost.
  - Risk Transfer.
  - Service payment only starts when the equipment is fully installed and commissioned. As a result, the Host transfers all the procurement and construction risks to ESCO
  - Flexible Service Payment including shared savings, progressive payment, buy-out clause etc.
  - Collateral or Guarantee Requirement subject to a credit risk assessment funding for the project without any collateral or corporate/directors guarantee from the Host.

Training Programs conducted by MAESCO

TRAINING PROGRAMS	DURATION
Energy Management Training Course (EMTC) including EE Project Presentation and Interview	5 Days
Certified Energy Auditor Training Course (CEA)	4 Days
Accredited Energy Measurement and Verification (AEMVP)	4 Days
Technical and Professional Practice courses for CPD and capacity Building Purposes	1/2 to 2 days

MAESCO a founding member of Asia-Pacific ESCO Industry Alliance (APEIA)

On 17 June 2019, a new milestone was set when our President Ar Zulkifli Zahari signed a Joint Statement among the eight (8) national ESCO associations of Asia-Pacific to form APEIA. Besides MAESCO, the other seven (7) country ESCO associations of APEIA are EMCA (China), JAESCO (Japan), PE2 (Philippines), SEAS (Singapore), TESA (Taiwan), AEEE (India) and KAESCO (Korea).

The primary objectives of APEIA are:

1. To liaise with national and international ESCO, EE industry and business organizations for the benefit of Members and to represent the Association at international organizations, networks, meetings and forums;
2. To provide a regular forum for discussion, exchange of views and information on matters of common interest among Members and organizations/associations with similar aims;
3. To organize educational programmes, training and professional examinations on subjects relating to EE systems, practices and policies, and related subjects; and,
4. To maintain a directory of Member organizations promoting EE and ESCO practices and policies.

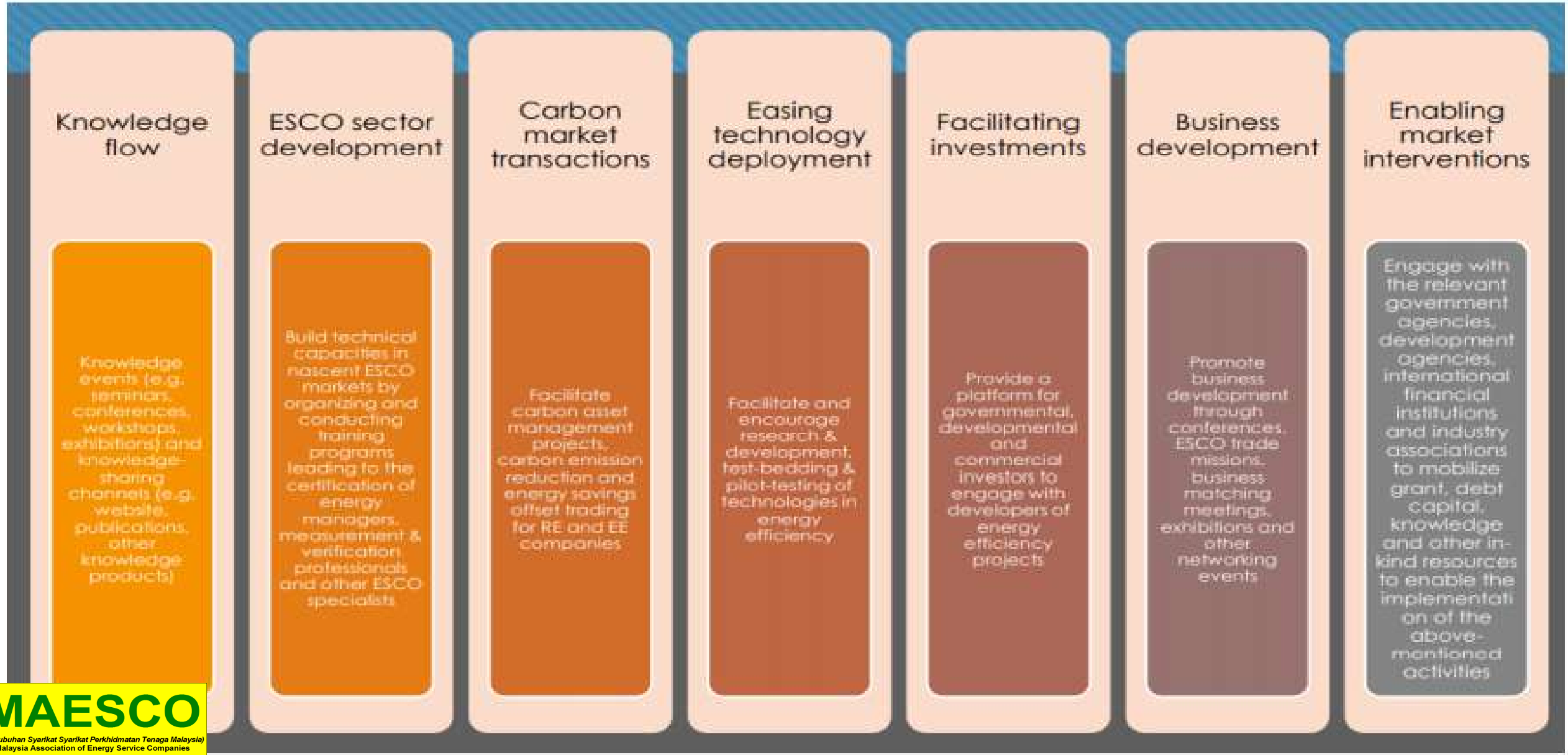
APEIA

Asia-Pacific ESCO Industry Alliance

China | India | Japan | Korea | Malaysia | Philippines | Singapore | Taiwan

MAESCO
(Pertubuhan Syarikat Syarikat Perkhidmatan Tenaga Malaysia)
Malaysia Association of Energy Service Companies

We look forward to synergise with all ESCO organisations of APEIA to achieve the 7 deliverables as depicted below.



Thank You

MAESCO
(Pertubuhan Syarikat Syarikat Perkhidmatan Tenaga Malaysia)
Malaysia Association of Energy Service Companies

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Petaling Jaya, Selangor Darul Ehsan
Tel : 03-78730784/5/6
Fax : 03-78730769
Email : training@maesco.org.my
Website : www.maesco.org.my

3rd Presentation

How Industries can Best Support Building's Policies Development Efforts toward Reaching NDC Targets?

Mr. Matthieu Caille

Consultant in Energy Efficiency & Low Carbon Development, GreenBuilding SAS / Global Buildings Performance Network

Webinar on Role of Industry in Buildings Policy Development

Prepared by : Matthieu Caille

Created July 2021

GBPN

Matthieu Caille (Mamat)

31, French citizen

Mechanical Engineer

Based in Yogyakarta / 8 years in Indonesia

Presentation Agenda

- Indonesian buildings: context
- Toward a more holistic and comprehensive supply chain of buildings
- **Industry support**: Inform policy makers on policies development & implementation gaps
- **Industry support**: Inspire policies reform & market growth through sharing best practices
- **Industry support**: Leverage and accelerate market transformation through activities/capacities alignment and coordination

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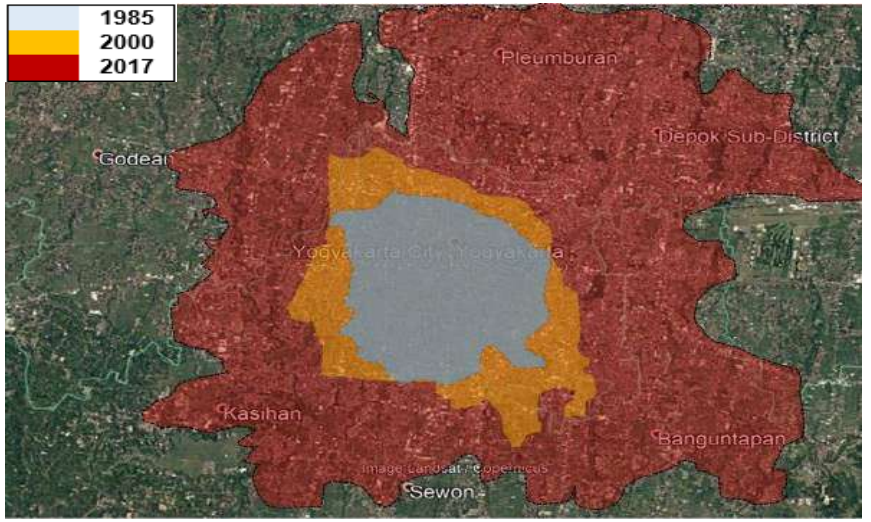
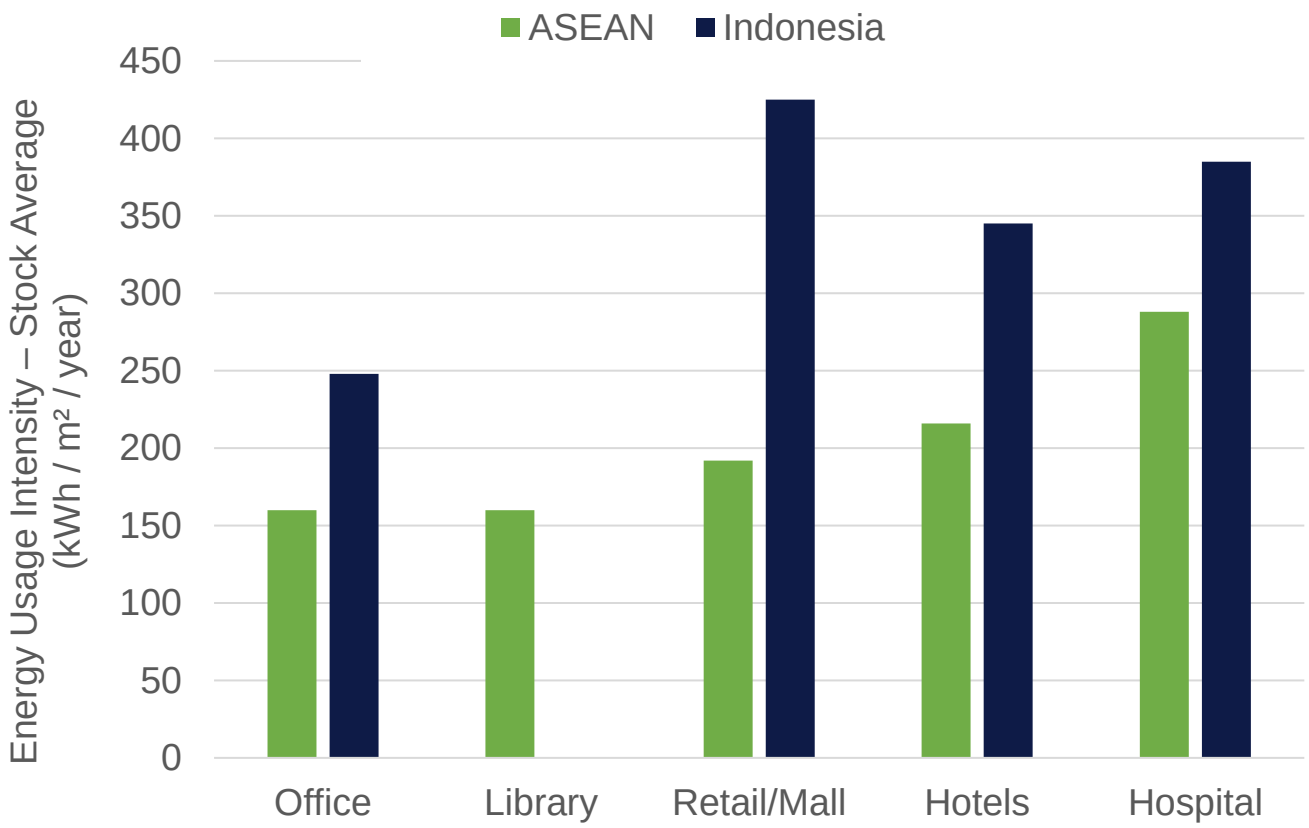
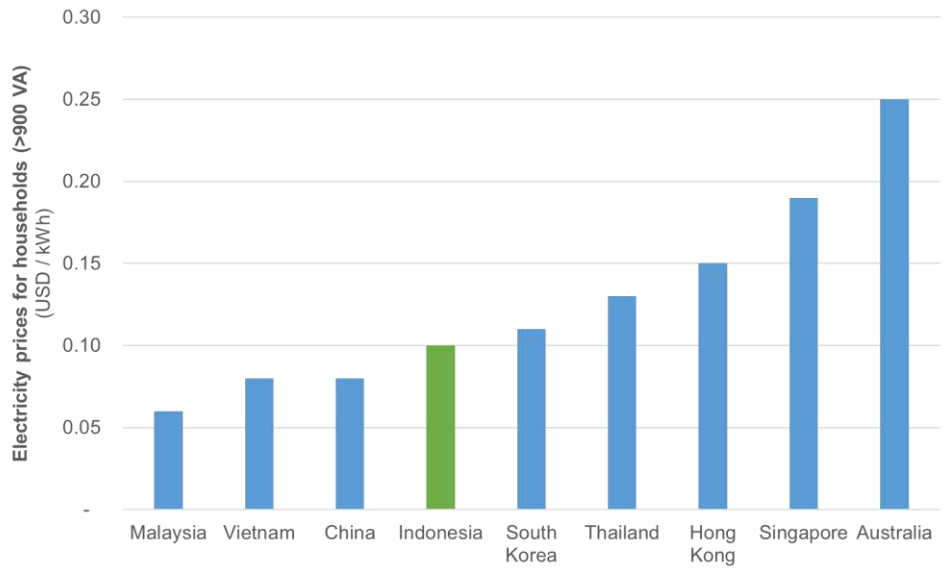
Indonesian Buildings Context: Slow and challenging improvement

70% of the Indonesian population will live in cities by 2045.
(World Bank)



Urban sprawl in Indonesia: example of the urban development in Yogyakarta





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The Building System Carbon Framework, WBCSD

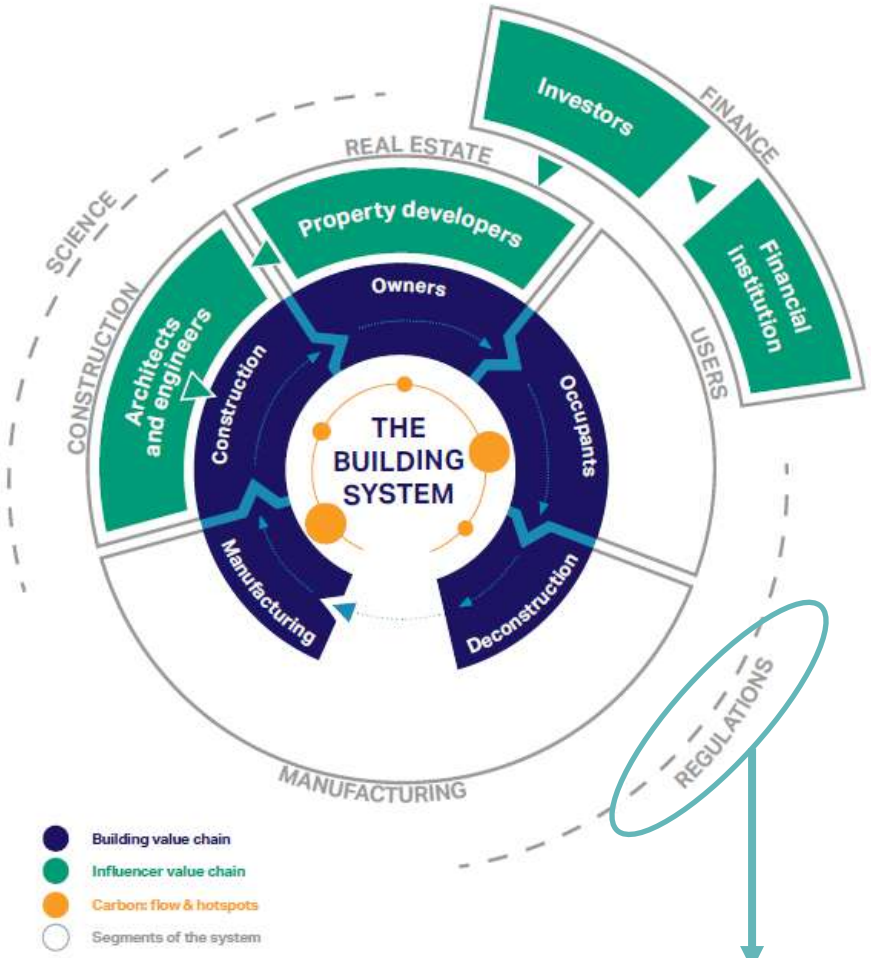
Toward a **more holistic and comprehensive approach** of the building's supply chain

- *Building's Energy Efficiency and Conservation Roadmaps*
- *Policies Development/Reform*

Should be holistic

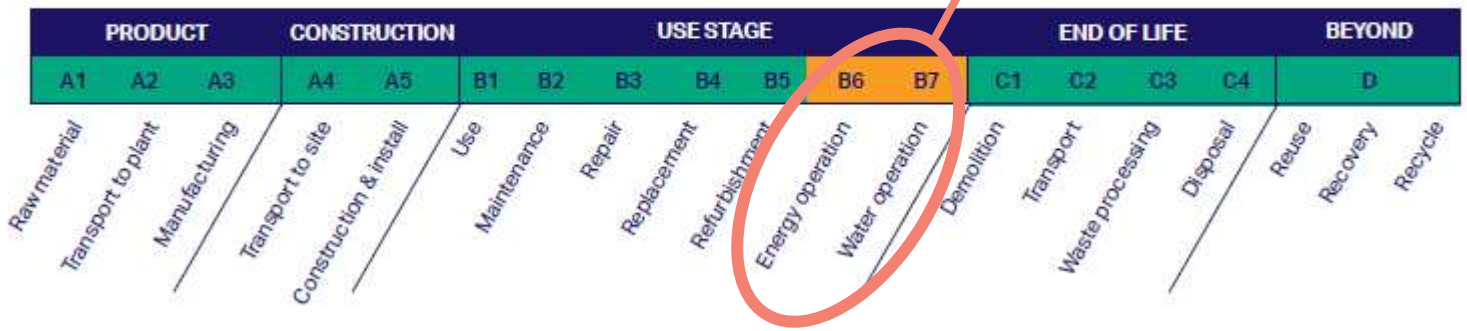
A variety of actors

Figure 2: The value chains of the building and construction system



Distributed along the supply chain

Figure 4: EN15978:2011 buildings standards refering to the different building stages of the life-cycle of buildings



Cross-sectorial
Cross-ministries

GBPN-HIDUP's Coalition approach

Breaking barriers between public and private stakeholders
Creating safe-space to enable policies reform

Public / Private stakeholders Focus Group Discussion toward **building regulation reform**

Engagement with local actors:
Understanding gaps and policy ask

Webinar: Industries decarbonization champions (industries)
Building materials manufacturer / developer / ESCO

GBPN

Inform policy makers on policies development & implementation gaps.

Adopting a **strong participative approach** with local actors *throughout policy reform processes* to:

Develop a **common understanding** of the goals and objectives achieved from transitioning

Comprehend **challenges and capacity building needs**

Facilitate ***regulation adoption*** *and* ***improve compliance rates***

Enhance regulations adoption through collaborative regulation design & drafting

- Status-quo and capacity mapping
- Raising awareness and knowledge sharing
- Technical and administrative guidelines development
- Multi stakeholder consultations

Acceptance by the private sector:

- Building practitioners
- Industries (building materials manufacturers)
- Associations
- Building owners

Greater ownership among public authorities:

- Across key ministries
- Throughout key city / regency services

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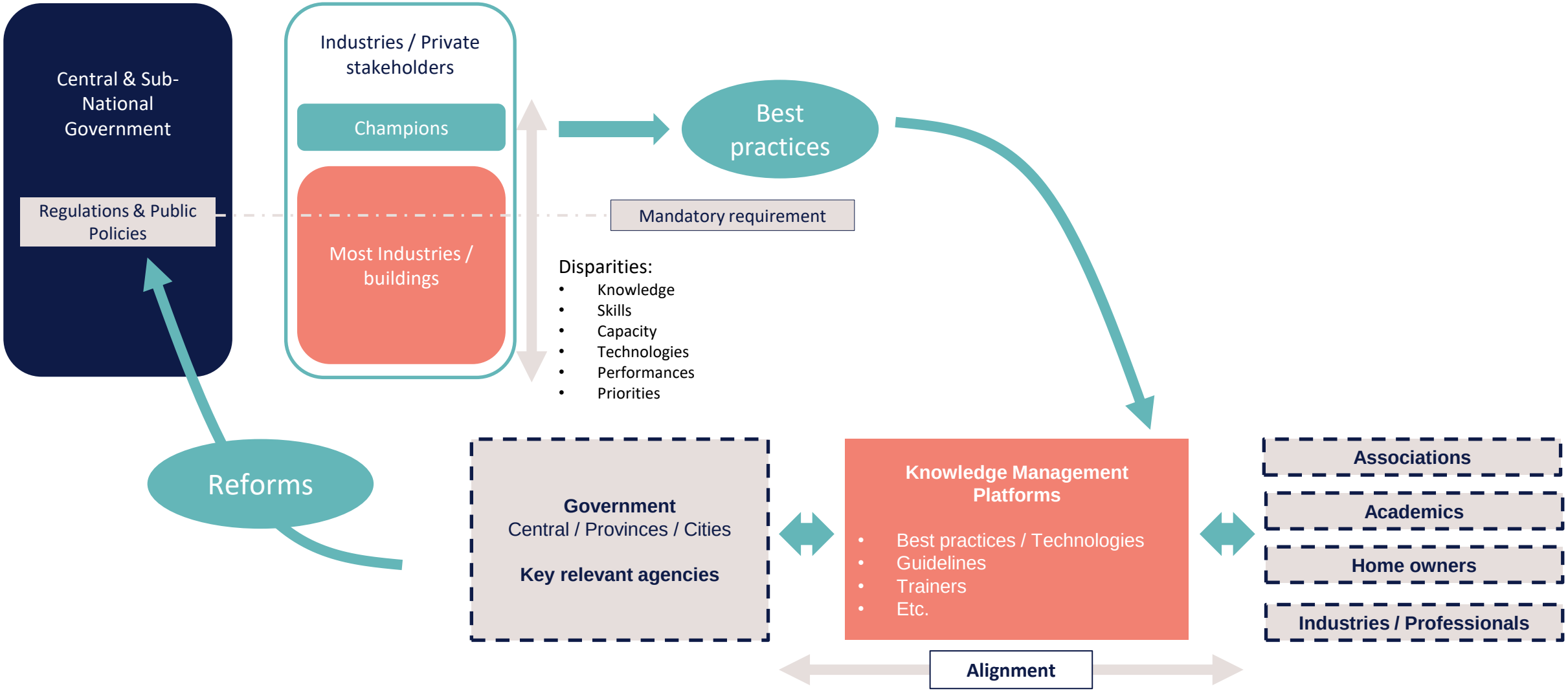
Inspire policies reform & market growth through sharing best practices.

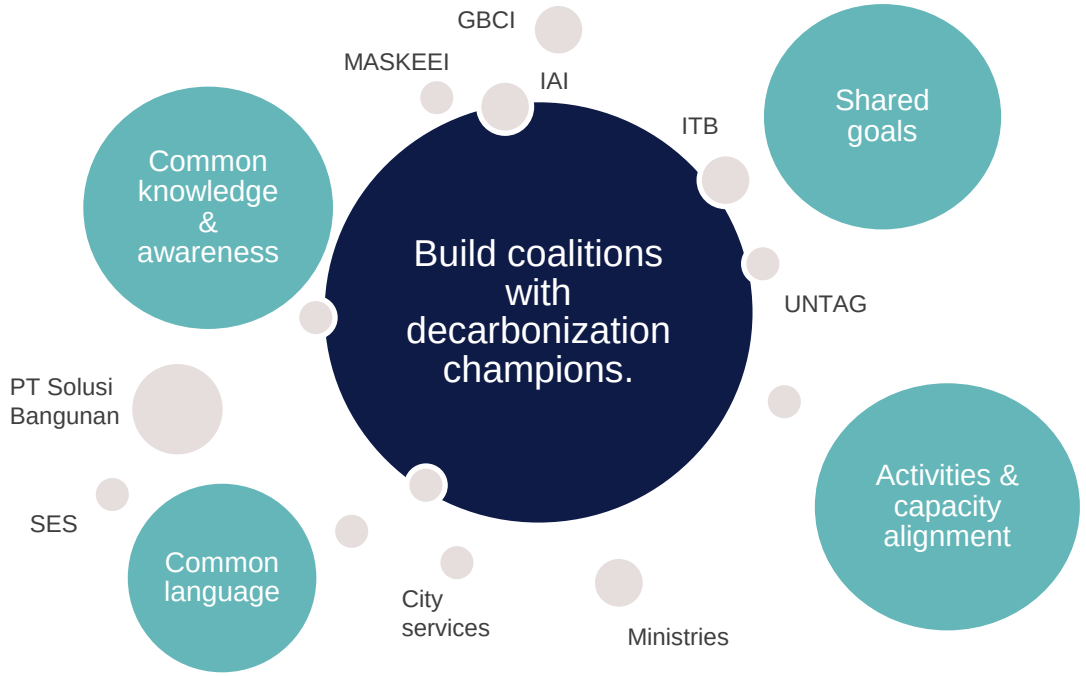


Leverage and accelerate market transformation through activities/capacities alignment and coordination among peers.

The **up-take** of sustainable and decarbonized strategies and solutions within the industries and local experts (developers, designers, builders, utility providers) best practices **highly depends on each other's motivation.**

In line with the government commitment to address climate change issues, as stipulated within the Indonesia Nationally Determined Contribution (NDC), **such initiatives should be:**

- **Recognized**
- **socialized and**
- **encouraged**.



Establishing alliances and coalitions of decarbonisations champions, at national and sub-national levels, is a strong alternative to **foster the large-scale adoption** of best practices and high performance buildings throughout Indonesia, as a **contribution toward NDC targets completion**.

GBPN

THANK YOU…

For joining us to drive change together,

Toward a sustainable and low carbon future in Indonesia

Consult our web site: www.gbpn.org

Follow us on Twitter: @GBPN_org

Send us an email: info@gbpn.org

4th Presentation

The Role of Industry in Buildings Policy Development

Mr. Christopher C. Seeley
Energy Efficiency & Climate Change Expert and CEO, Climate Change Solutions (ESCO in Thailand)

ASEAN-IEA Webinar: The Role of Industry in Buildings Policy Development

Hosted by: ASEAN Centre for Energy

Organised by: International Energy Agency, the ASEAN Centre for Energy, and the ASEAN Secretariat.

With support from: ASEAN-Australia Development Cooperation Program Phase II (AADCP II)

22 July 2021

Christopher C. Seeley

ccseeley@climate-change-solutions.net

Who we are

Climate Change Solutions

Good Ideas Make
Everything Better

A specialist firm providing advisory, project development, and project implementation services in the areas of Energy Efficiency and small-scale Renewable Energy projects across the ASEAN region since 2010.

We offer turnkey energy efficiency projects using traditional ESCO delivery models (guaranteed savings/performance and Energy Purchase Agreements) with the ability to invest into projects on long-term repayment structures.

OF LEARNING

2010 – today

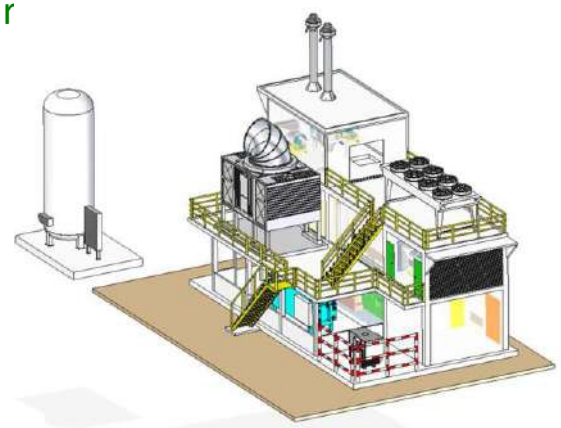
Energy Efficiency Technologies & Solutions

- HVAC systems (VRV, Chillers, absorption chillers)
- Heat Pump systems
- Co-generation/Tri-generation systems (waste heat recovery)
- Building Energy Management Systems (BEMS)
- Energy Recovery Ventilation (ERV) systems
- LEDs & Lighting Control systems
- Solar

Magnetic Bearing Oil Free Chiller

High Efficiency VSD Chiller

Waste Heat Recovery Boiler



LNG Gas Plant (for Tri-gen)

Air-Source & Water-source Heat Pumps, CO2-based Heat Pump

Gas engine generator/absorption chiller

4-Star Resort Chonburi, Thailand

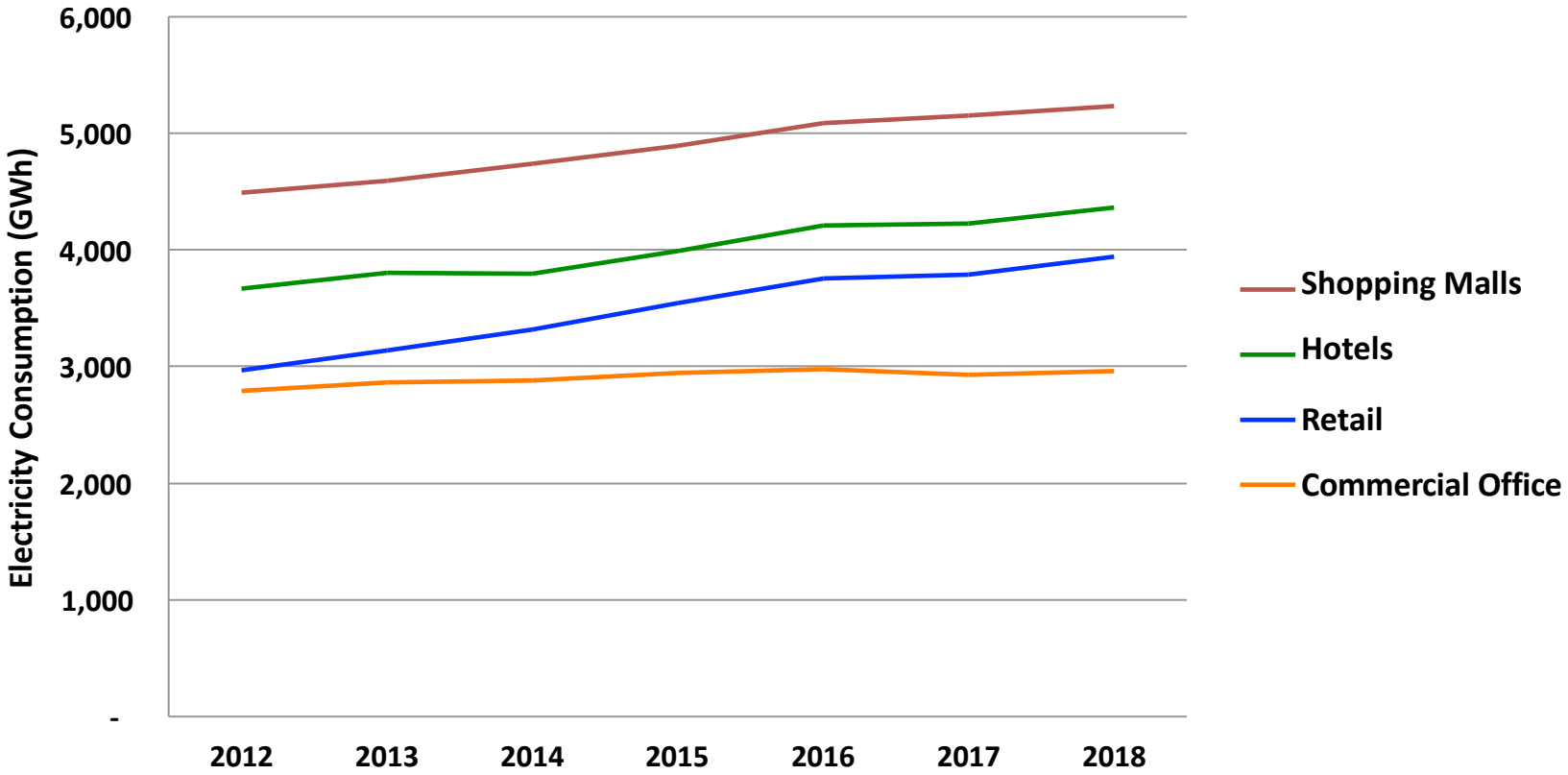
#	Project Description	Total Contract Value (US$)	Term (Yrs)
1	Magnetic bearing (Oil-free) Chiller	~700,000	3
2	Heat Pump System (Water-Water)		
3	Solar PV Rooftop		
4	Lighting - LEDs		

5-Star Resort Samui, Thailand

Item	Solutions	Contract Value (US$)	Term (Yrs)
1	HVAC system	~1,000,000	7
2	Heat Pump System		
3	Occupancy Based Control System for guestrooms		

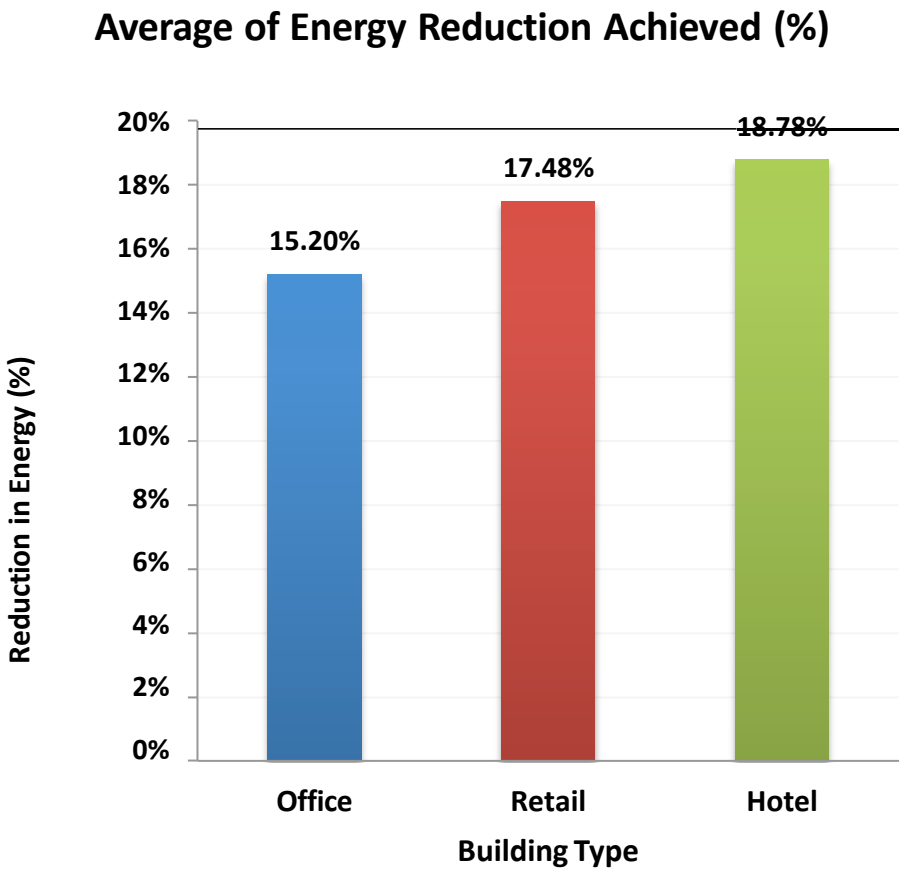
Background Information

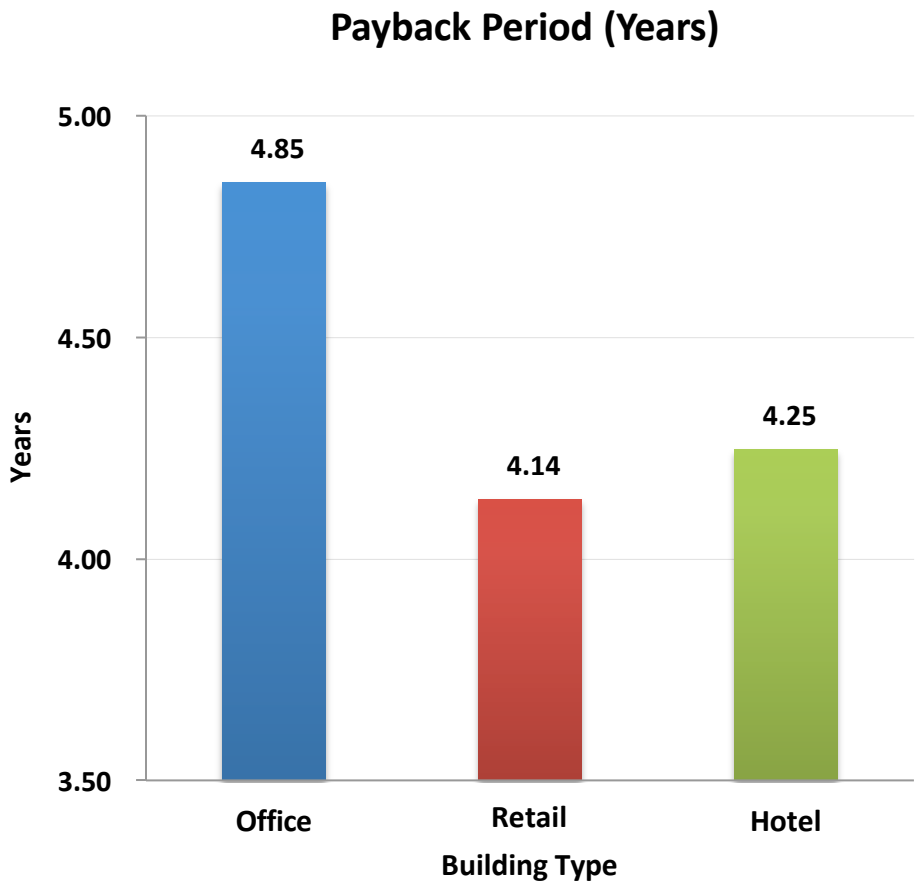
Total Electricity Consumption in Thailand 2012-2018 (by Building Type)



(Ministry of Energy Thailand, 2019)

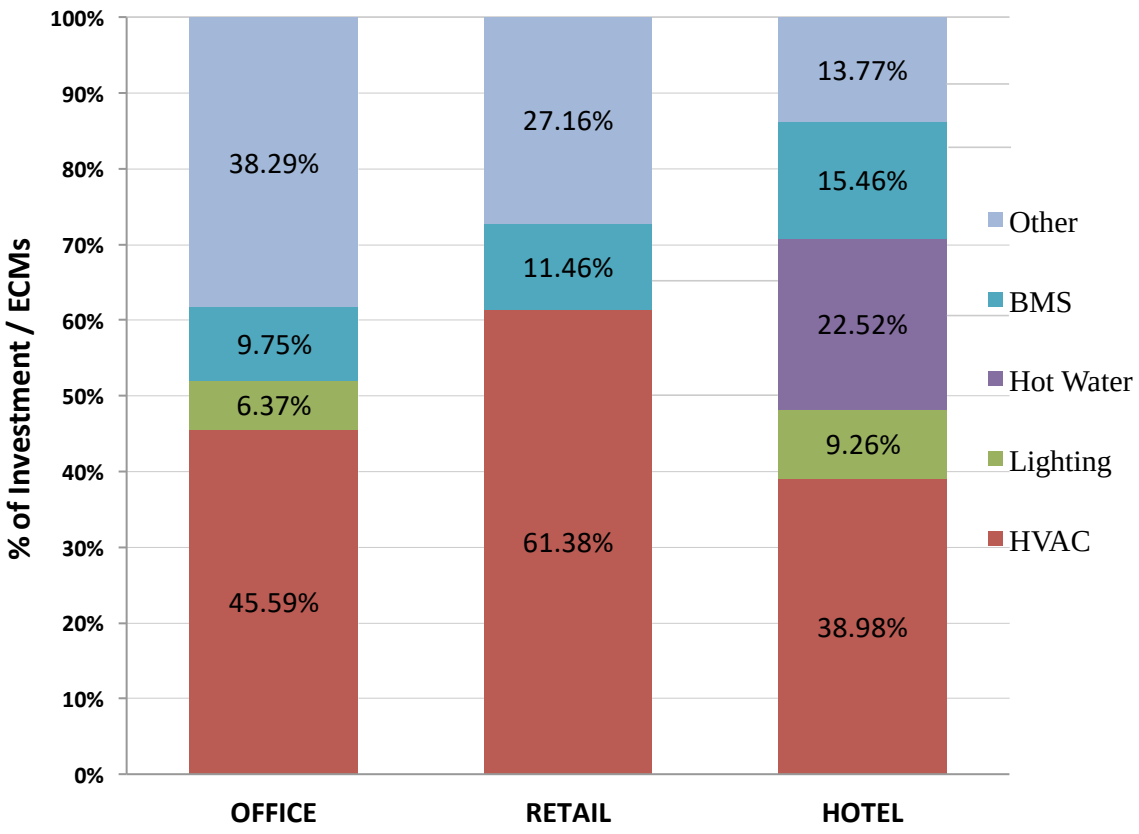
ESCO – Energy Efficiency Retrofit Case Studies in Thailand (x42)



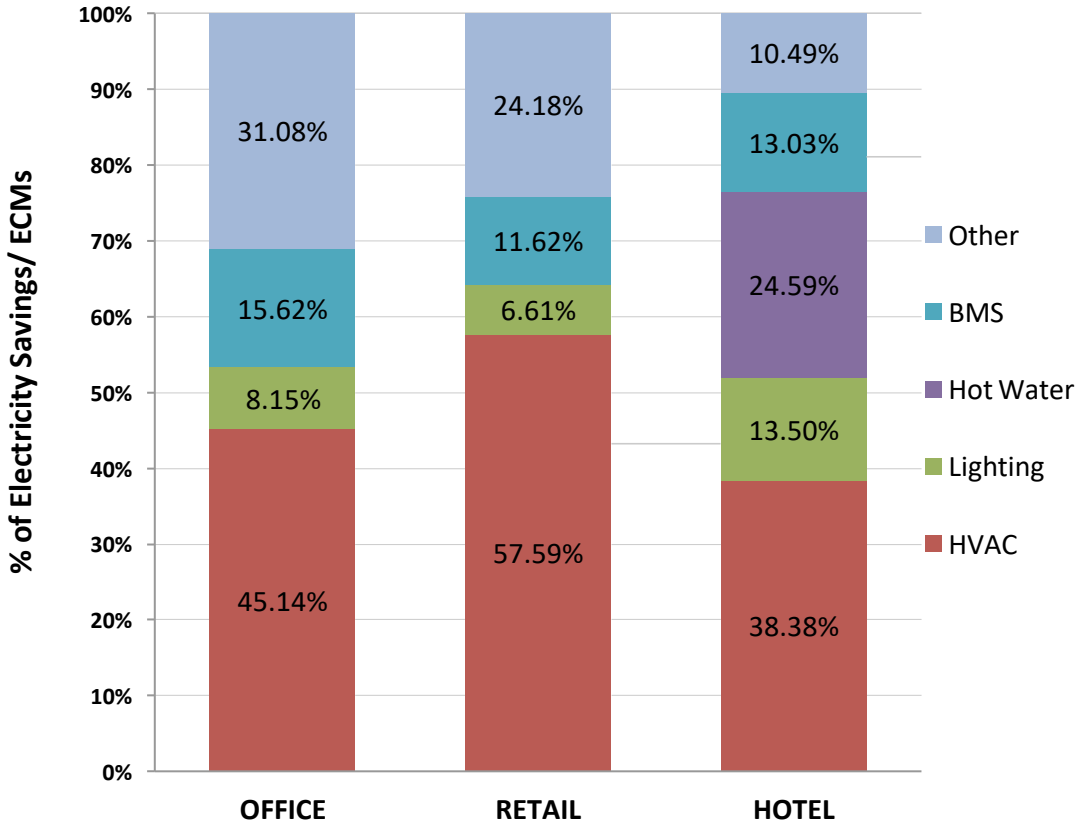


ESCO – Energy Efficiency Retrofit Case Studies in Thailand (x42)

Proportion of Total Investment Per ECM Category (%)



Proportion of Total Savings Per ECM Category



Investment 'Opportunity'

Building Type	Total 'Size' (m2)	Total Energy Reduction (MWh/annum)	Total GHG Reduction (mtCO2e/annum)	Total Reduction in Energy Cost (US$/annum)	Total Investment (US$)	Payback (Years)
Hotel	29,580,450	1,091,275	618,098	123,208,470	429,708,338	3.49
Retail						
Office						

3 Key Points

Objective:
To reduce Greenhouse Gas (GHG) emissions by scaling up private sector 'investment' (participation/commitment) in energy efficiency in both commercial buildings and industrial buildings

1. **SMEs** (Building Owners) - **High Potential**
    - Large opportunity for Energy Efficiency / Energy Reduction in buildings in Thailand (as a group represent ~50% of total electricity consumption)
    - Many programs have focused on Designated Buildings and Factories (very large energy consumers) but not on SMEs
    - Have a need for ESCO services (both external expertise and financing options)

1. **Banks and Financial Institutions** – an essential group to provide loans (to ESCOs) so that they can invest into energy efficiency projects.

2. **Model of preference/highest potential** – Shared savings, leasing, 'chauffage' (EPA)

Initiatives/Policies/Partnerships

Initiatives/Policies/Partnerships that will deliver:

1. **Greater participation by Private Financial Institutions**
   - Identify and establish other sources of capital for ESCOs - Regional banks, (VC, PE, FinTech)

2. **Risk sharing facilities (to enable ESCOs to satisfy bank requirements and access loans more easily):**
   - Portfolio guarantees (for banks)
   - Individual project guarantees
   - Partial credit guarantees
   - Insurance policies

3. **Establish a grant facility to co-finance the costs of Investment Grade Audits (IGA)**
   - Build a pipeline of projects (no IGA = no projects)
   - Build capacity of ESCOs to undertake IGAs ('bankable' projects)
   - Build capacity of building owners to understand the value of an IGA (investment decision)

Thank you

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Q&A Session

Moderator

Dr. Ian Hamilton

Associate Professor, UCL Energy Institute & International Energy Agency

Panelists

Mr. Ir. Mochammad Sulton Sahara, M.Eng.

Certain Functional Officer, Associate Expert on Building and Housing, Directorate General of *Cipta Karya*, Ministry of Public Works and Public Housing, Indonesia

Mr. Zulkifli Zahari

President, Malaysia Association of Energy Service Companies (MAESCO)

Mr. Matthieu Caille

Consultant in Energy Efficiency & Low Carbon Development, GreenBuilding SAS / Global Buildings Performance Network

Mr. Christopher C. Seeley

Energy Efficiency & Climate Change Expert and CEO, Climate Change Solutions (ESCO in Thailand)

Closing Remarks

Mr. Muhammad Indra Wahyudin

Officer, Energy and Minerals Division, ASEAN Secretariat

Roadmap Survey

Roadmap for Energy Efficient Buildings and Construction - ASEAN

The energy demand of the ten countries of the Association of Southeast Asian Nations (ASEAN) has grown by 60% over the past 15 years and is projected to further increase by 80% over the next 25 years. Cooling is the fastest-growing end use in buildings, as energy demand for cooling more than tripled between 1990 and 2018.

This project aims to help address the pressures of increasing energy demand and emissions and improve collaboration between stakeholders in the region, by developing an ASEAN Energy Efficient Buildings and Construction Roadmap and an ASEAN Sustainable Cooling Roadmap.

The road mapping process will engage key stakeholders and assist them to develop and implement strategies, plans, policies and programmes to reduce the energy demand of buildings, construction sectors and cooling.

The roadmaps are intended to assist policy makers when designing their national buildings and climate strategies, as well as organisations in designing their medium-term and long-term policies and determining their investment allocations.

THANK YOU