Menuju hunian hemat energi untuk kota Samarinda yang berkelanjutan dan ramah lingkungkan

Pemerintah Kota Samarinda
Selasa, 5th Oktober 2021

Agenda

- GBPN Initiative in Samarinda
- Decarbonization of the built environment: a common effort
- Technical orientations toward high performance building
- Samarinda as a Green Building champion for Indonesia

Agenda

- GBPN Initiative in Samarinda
- Decarbonization of the built environment: a common effort
- Technical orientations toward high performance building
- Samarinda as a Green Building champion for Indonesia

GBPN Funder: climateworks FOUNDATION

Komitmen Pengembangan Bangunan Rendah Karbon dalam rangka Sustainable development

Nasional

- UU 16/2016 Pengesahan Paris Agreement → Nationally Determined Contribution (NDC) : Pengurangan Emisi Gas Rumah Kaca 29%-41% dibandingkan Business as Usual
- Perpres 61/2011 Rencana Aksi Nasional Pengurangan GRK

- Inpres 2/2008 Penghematan Energi dan Air Bangunan Pemerintah
- Permen PUPR 02/2015 Bangunan Gedung Hijau

Daerah

- Pergub BGH 38/2012 DKI Jakarta
- Perwal BGH 1023/2016 Kota Bandung
- Perwal BGH 24/2019 Kota Semarang

The way to roll the role: policies reforms

- **Government Regulation Number 70/2009 concerning Energy Conservation** (State Gazette of the Republic of Indonesia of 2009 Number 171, Supplement to the State Gazette of the Republic of Indonesia Number 5083);

- **Government Regulation Number 79/2014 concerning National Energy Policy** (State Gazette of the Republic of Indonesia of 2014 Number 300, Supplement to State Gazette of the Republic of Indonesia Number 5609);

Omnibus Law 2020
Law No. 11 of 2020, issued in the State Gazette of the Republic of Indonesia No. 245 of 2020.

SALINAN

PRESIDEN
REPUBLIK INDONESIA

PERATURAN PEMERINTAH REPUBLIK INDONESIA
NOMOR 21 TAHUN 2021
TENTANG
PENYELENGGARAAN PENATAAN RUANG

DENGAN RAHMAT TUHAN YANG MAHA ESA
PRESIDEN REPUBLIK INDONESIA,

SALINAN

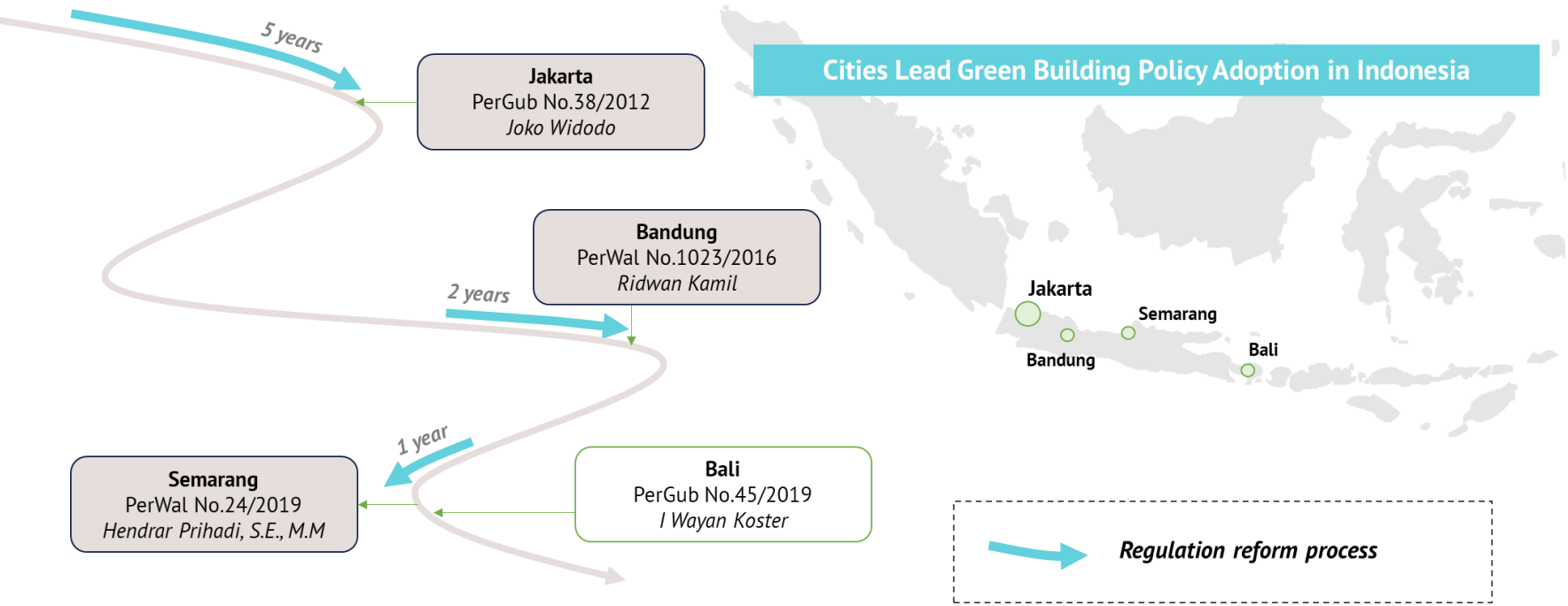
PRESIDEN
REPUBLIK INDONESIA

PERATURAN PEMERINTAH REPUBLIK INDONESIA
NOMOR 16 TAHUN 2021
TENTANG
PERATURAN PELAKSANAAN UNDANG-UNDANG NOMOR 28 TAHUN 2002
TENTANG BANGUNAN GEDUNG

DENGAN RAHMAT TUHAN YANG MAHA ESA

PRESIDEN REPUBLIK INDONESIA,

A strong push from motivated cities and political leaders



Gubernur Provinsi Daerah Khusus
Ibukota Jakarta

PERATURAN GUBERNUR PROVINSI DAERAH KHUSUS
IBUKOTA JAKARTA

NOMOR 38 TAHUN 2012

TENTANG

BANGUNAN GEDUNG HIJAU

DENGAN RAHMAT TUHAN YANG MAHA ESA

GUBERNUR PROVINSI DAERAH KHUSUS IBUKOTA JAKARTA,

SALINAN

GUBERNUR BALI

PERATURAN GUBERNUR BALI

NOMOR 45 TAHUN 2019

TENTANG

BALI ENERGI BERSIH

DENGAN RAHMAT TUHAN YANG MAHA ESA

GUBERNUR BALI,

GBPN

Funder: climateworks FOUNDATION

Potensi Konservasi Energi, Air dan Penurunan CO2*

389
buildings, with almost
24,369,891 m²

=

1,079,361
Metric tons
Potential CO_2 Emission Reduction

=

1,399,728
MWh
Potential Energy Savings

=

117,172,248
US$
Potential Electricity Cost Saving

5,615
buildings, with almost
1,410,574 m²

=

57,440
Metric tons
Potential CO_2 Emission Reduction

=

68,381
MWh
Potential Energy Savings

=

7,825,354
US$
Potential Cost Saving (energy and water)

Apabila peraturan BGH diimplementasikan secara keseluruhan, maka setiap tahunnya **Kota Semarang berpotensi menghemat :**

Penghematan Listrik

Penghematan Air

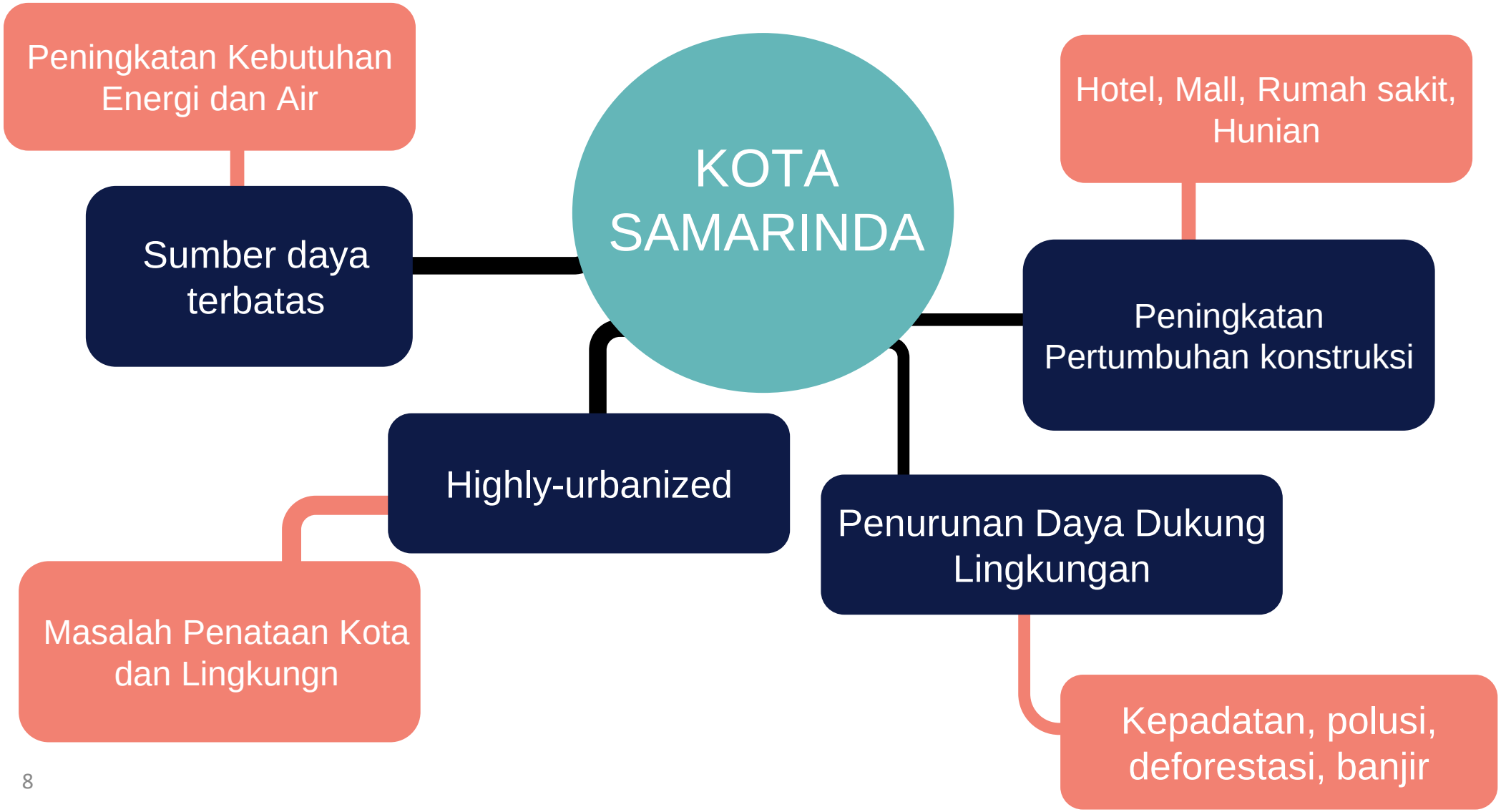
Pengurangan CO2

*Terhitung sampai dengan Juni 2019

Sumber : IFC Green Building Program, World Bank Group, 2019

GBPN Funder: climateworks FOUNDATION

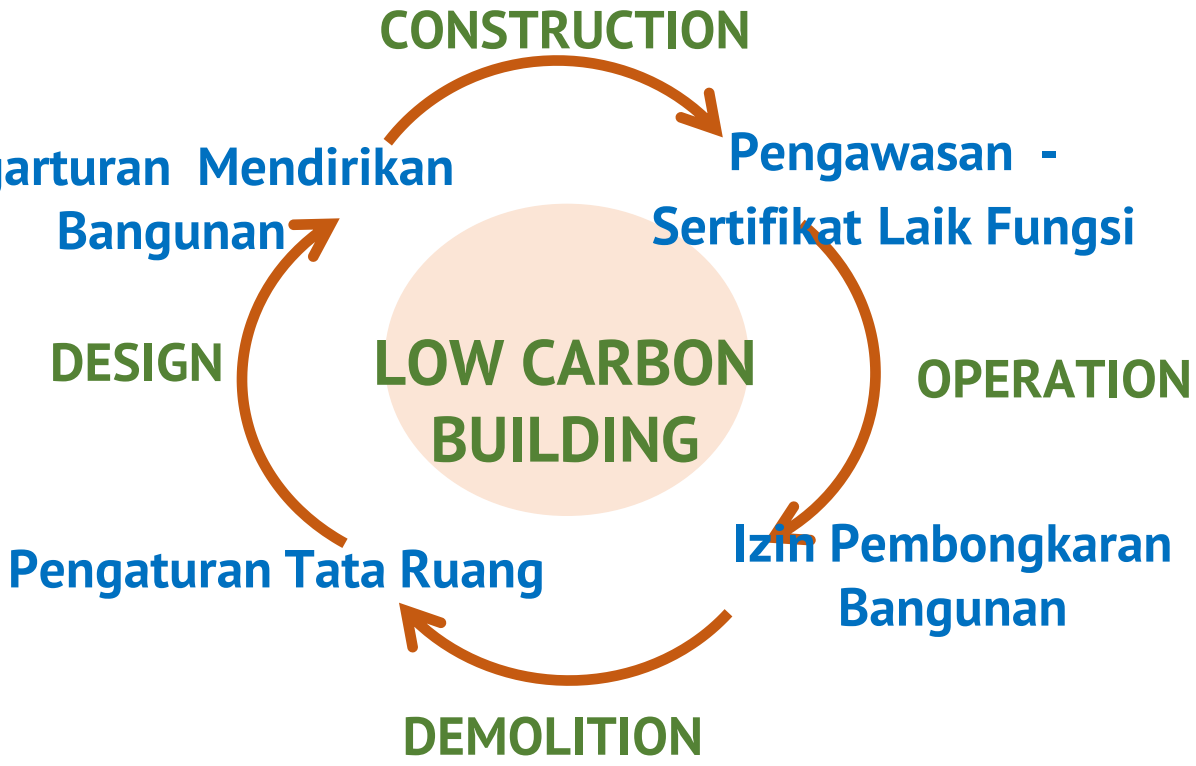
URGENSI BANGUNAN RENDAH KARBON BAGI KOTA SAMARINDA



GBPN Funder: climateworks FOUNDATION

Design Pengaturan Teknis **Bangunan** Rendah Karbon di Kota Samarinda

1. *Simple, High impact & Easy to implement*
2. *Berlaku Mandatory*
3. *Dikaitkan* dengan sistem perizinan bangunan (IMB & SLF)



Samarinda, Kalimantan Timur

Samarinda berkontribusi INDC dengan Peraturan Walikota Bangunan Rendah Karbon

Coalitions of highly motivated local actors:

- Pak Walikota, DR. H. Andi Harun
- Sekretaris Daerah, Dr. H Sugeng Chairuddin M.Si
- Assistant 2, Ibu Nina Endang Rahayu
- Dinas PUPR, Muh. Cecep Herly
- Dinas Lingkugan Hidup, Ibu Nurrahmani, SIP.,MM

Reformasi kebijakan partisipatif

- Dinas LH
- Dinas PUPR
- DPMPTSP
- TABG
- Industri
- Pemilik Bangunan
- Asosiasi

Tahap menuju bangunan rendah karbon

- Baselining work
- Technical recommendations
- Capacity Building
- Public consultations
- Policy launching
- Monitoring & Evaluation

Pengawasan, evaluasi dan upaya perbaikan

Biaya | Energi | Karbon

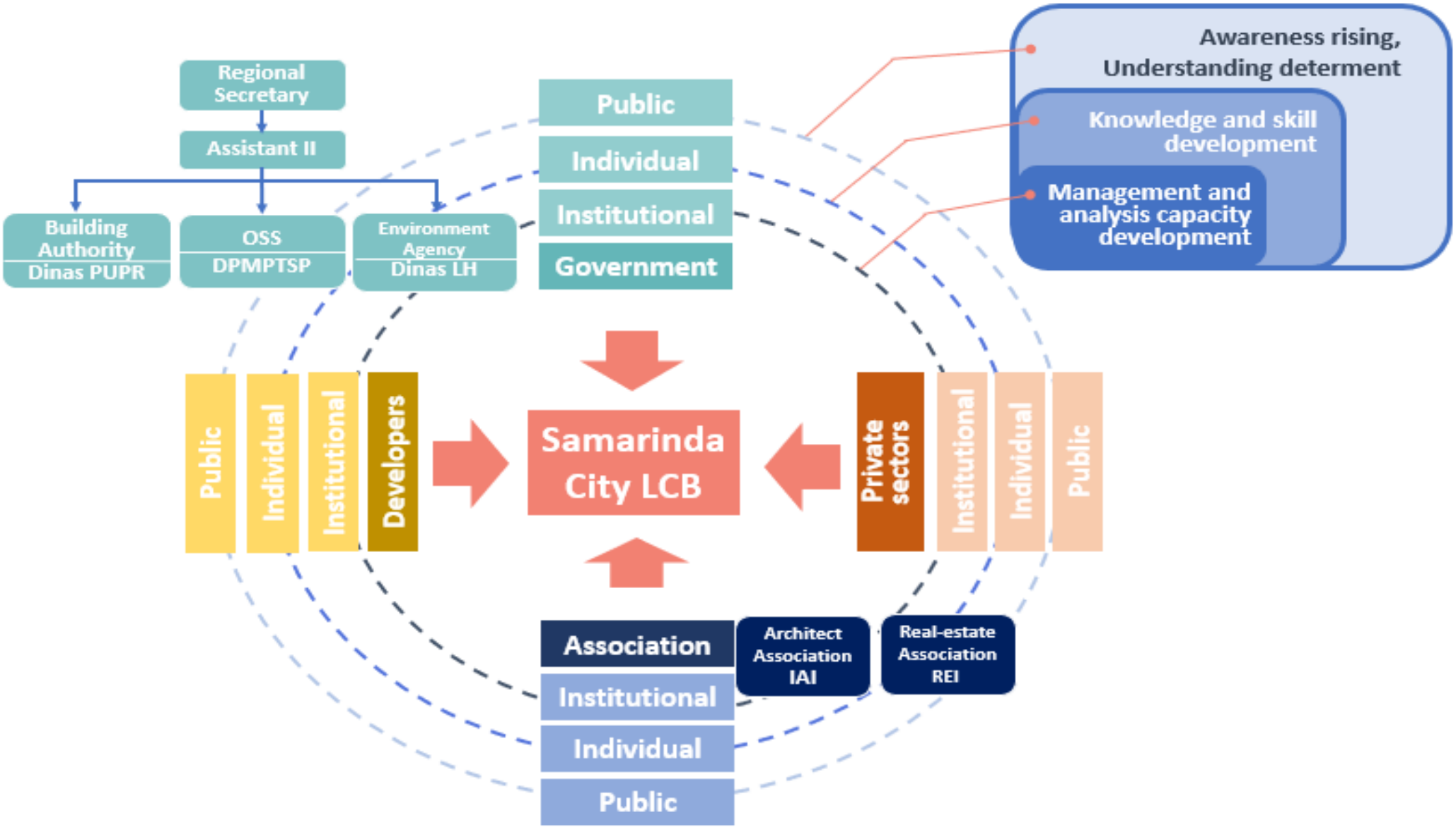
Hasil dan Manfaat

Implementasi peraturan: tercapainya target penghematan dan mengetahui kesenjangan dan potensi dalam implementasi.

Formulasi kebijakan yang didasarkan **pada data**.

GBPN

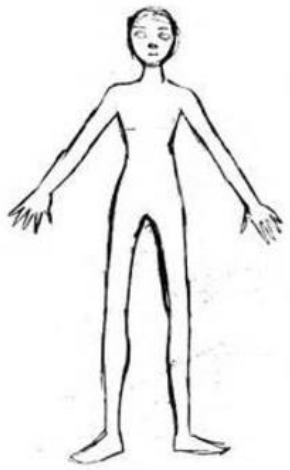
Funder: climateworks FOUNDATION



Agenda

- GBPN Initiative in Samarinda
- Decarbonization of the built environment: a common effort
- Technical orientations toward high performance building
- Samarinda as a Green Building champion for Indonesia

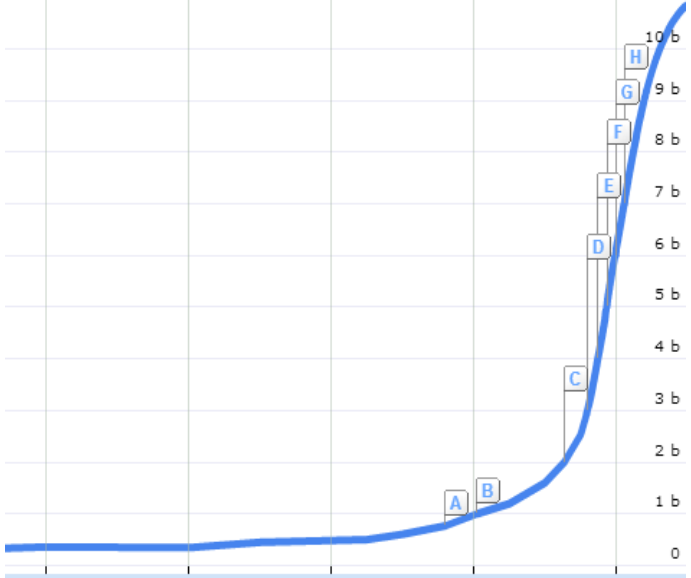
GBPN



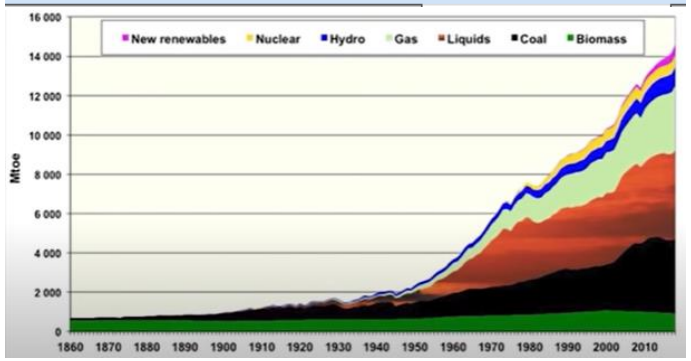
More and more people in the world:
a first ever situation in humankind !

Year 0: ***0.2 billions people***
Year 1800: ***1.0 billions people***
Today: ***7.2 billions people***

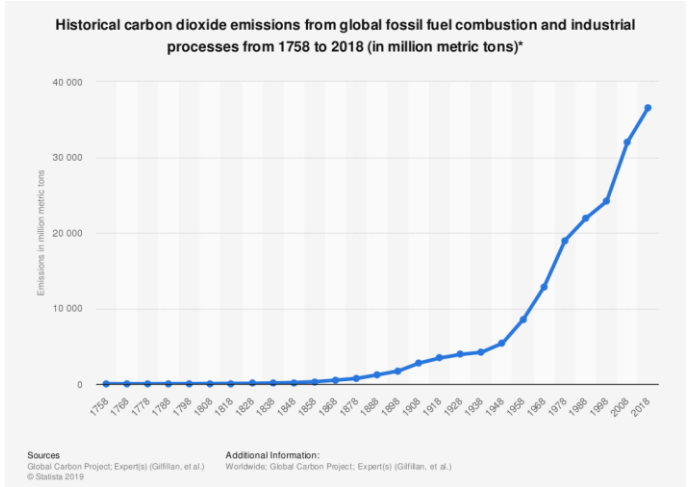
For the same planet !



World population



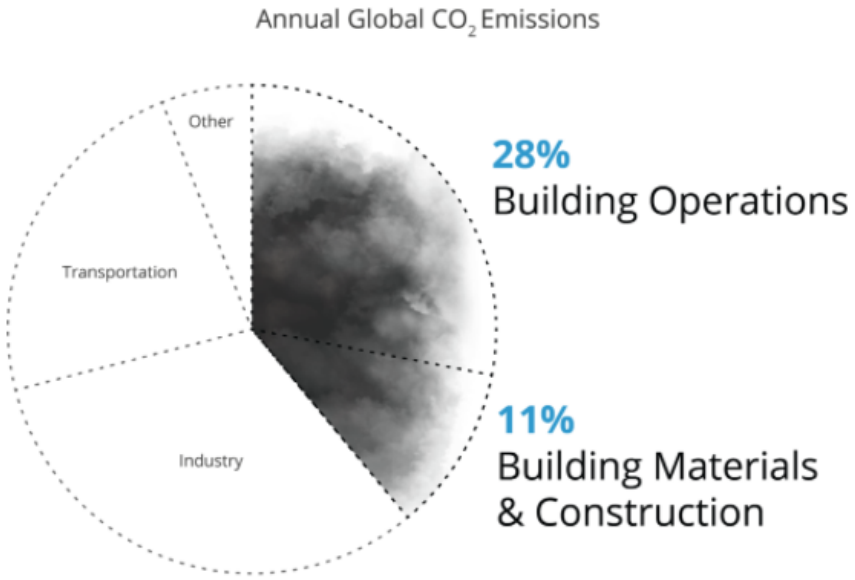
World energy demand



World CO2

GBPN

Buildings, 40% of the CO2 emissions



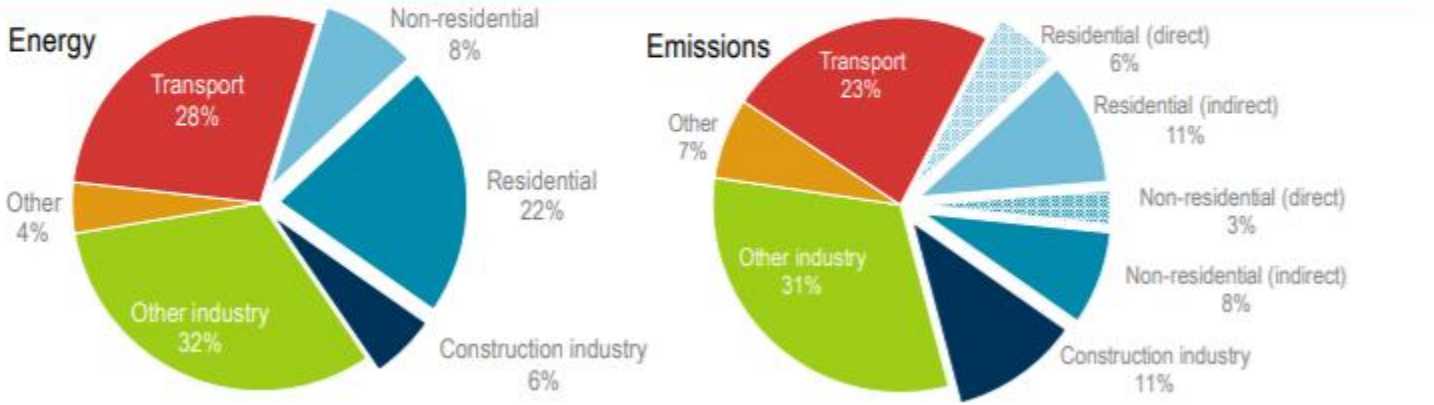
Data Sources: Global ABC Global Status Report 2018, EIA

Buildings generate nearly 40% of annual global CO2 emissions.

Of those total emissions, building operations are responsible for 28% annually, while building materials and construction (typically referred to as embodied carbon) are responsible for an additional 11% annually.

Building construction and operations accounted for the largest share of both global final energy use (36%) and energy-related CO_2 emissions (39%) in 2018 (Figure 2).

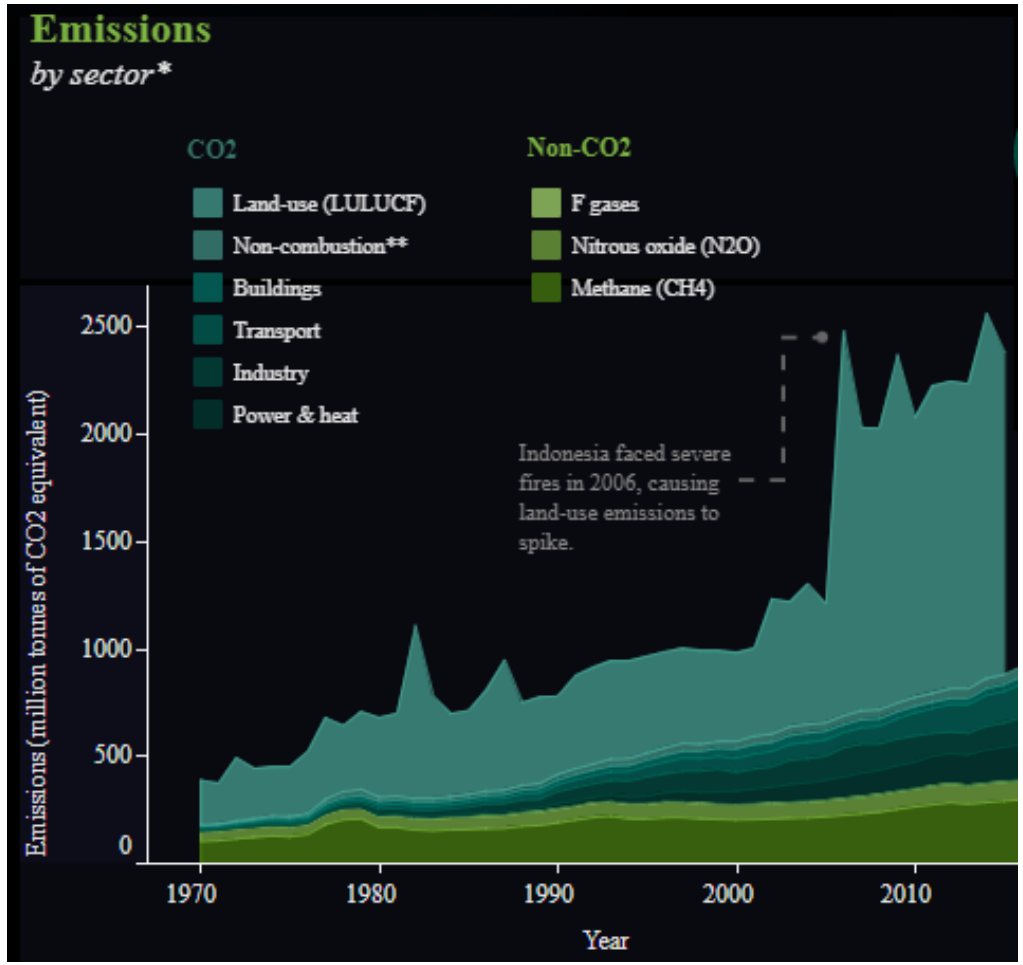
Figure 2 • Global share of buildings and construction final energy and emissions, 2018

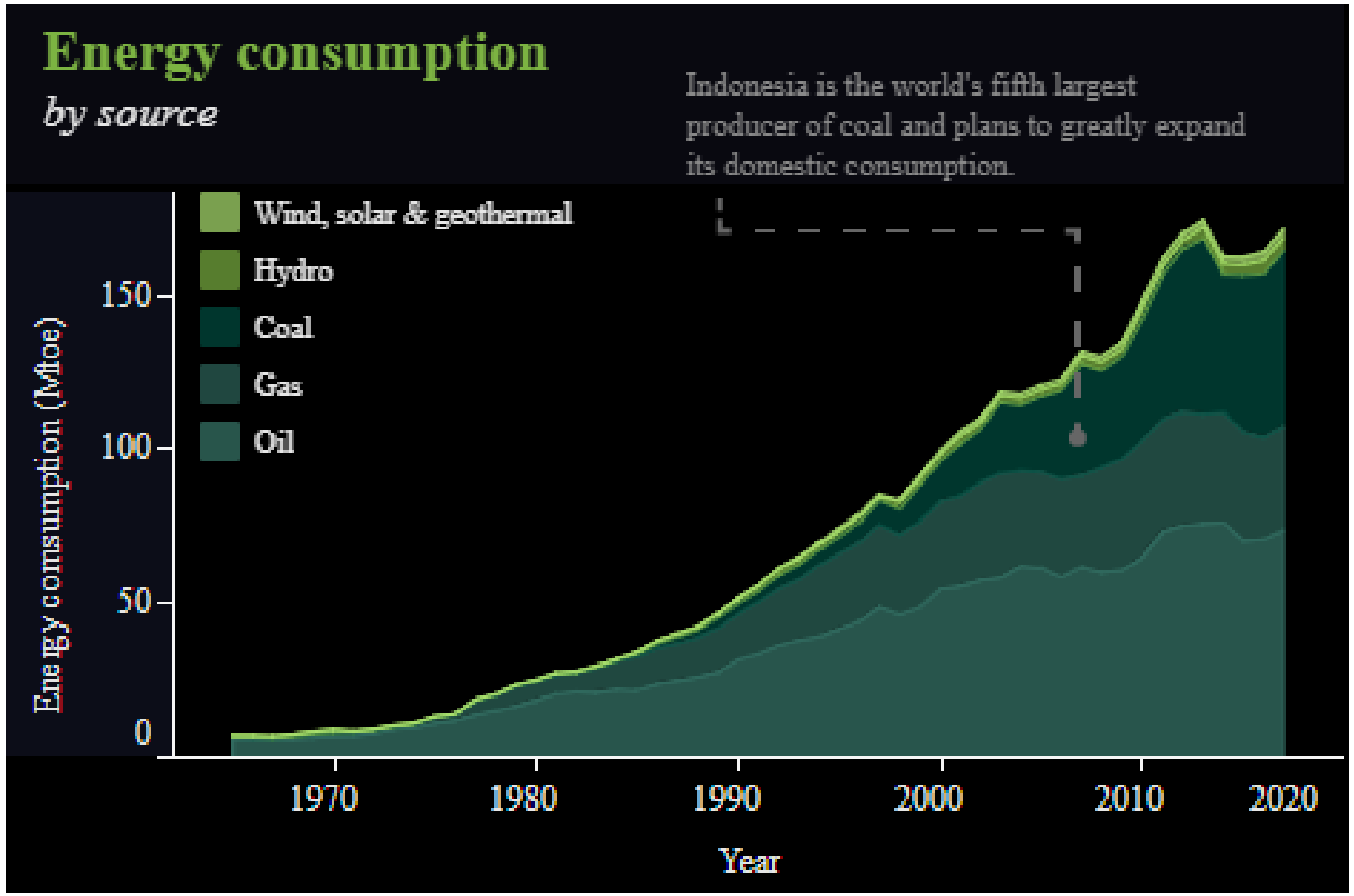


GBPN

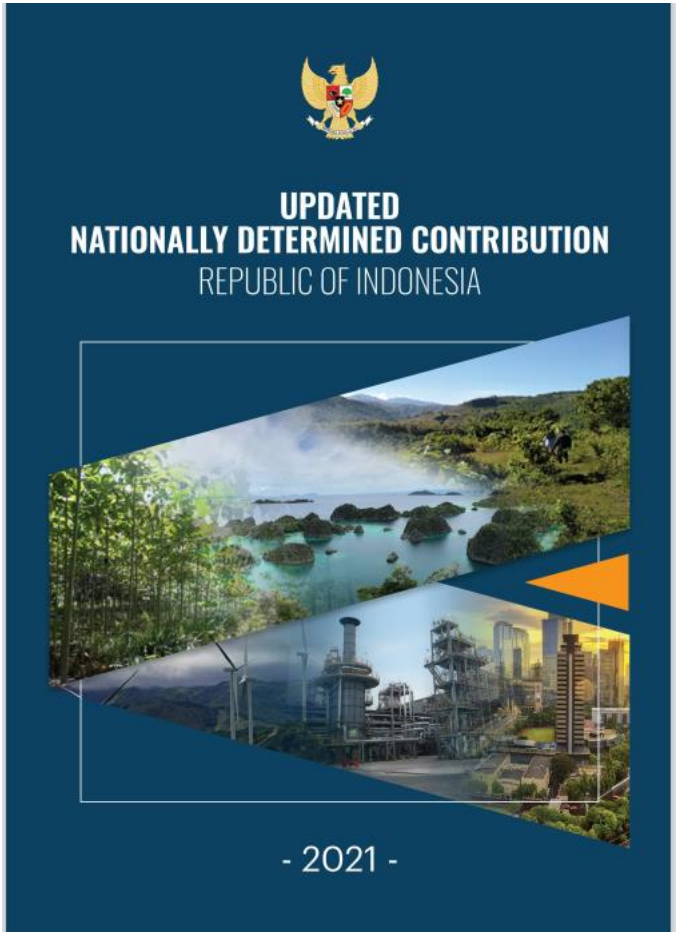
Indonesia, one of the biggest CO2 emitter in the world

The Carbon Brief Profile: Indonesia





The need for climate resilience: Indonesian perspective



The strategic approach of Indonesia's NDC is predicated on the following foundational principles:

1) **Employing a landscape approach**: efforts are inherently multi-sectoral in nature, Indonesia takes an integrated, landscape-scale approach covering terrestrial, coastal and marine ecosystems.

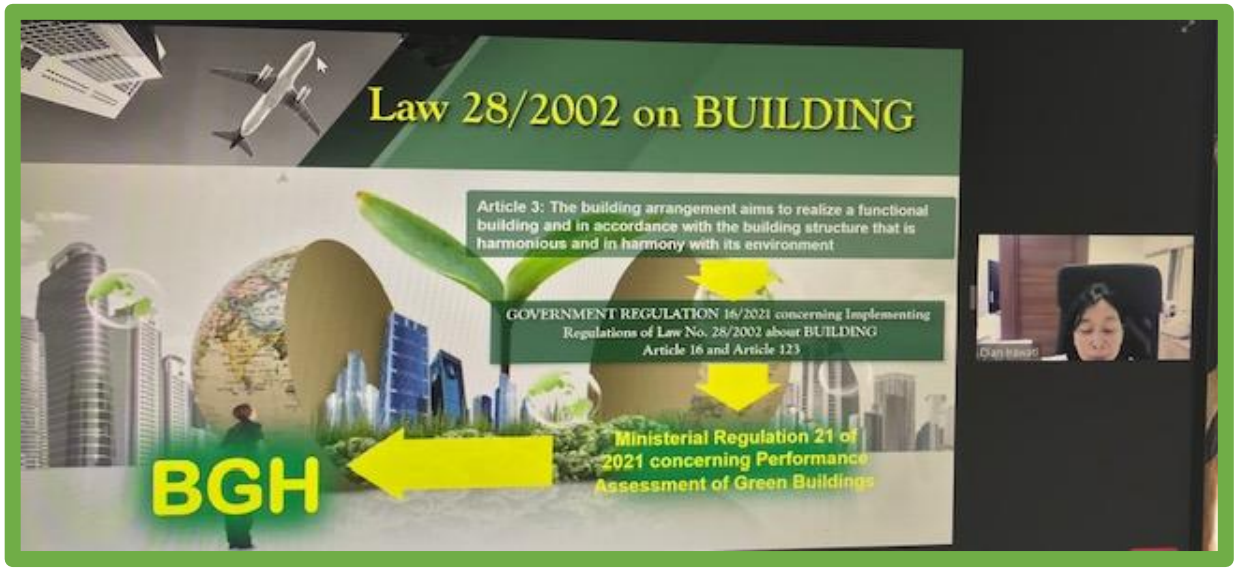
2**) Highlighting existing best practice**

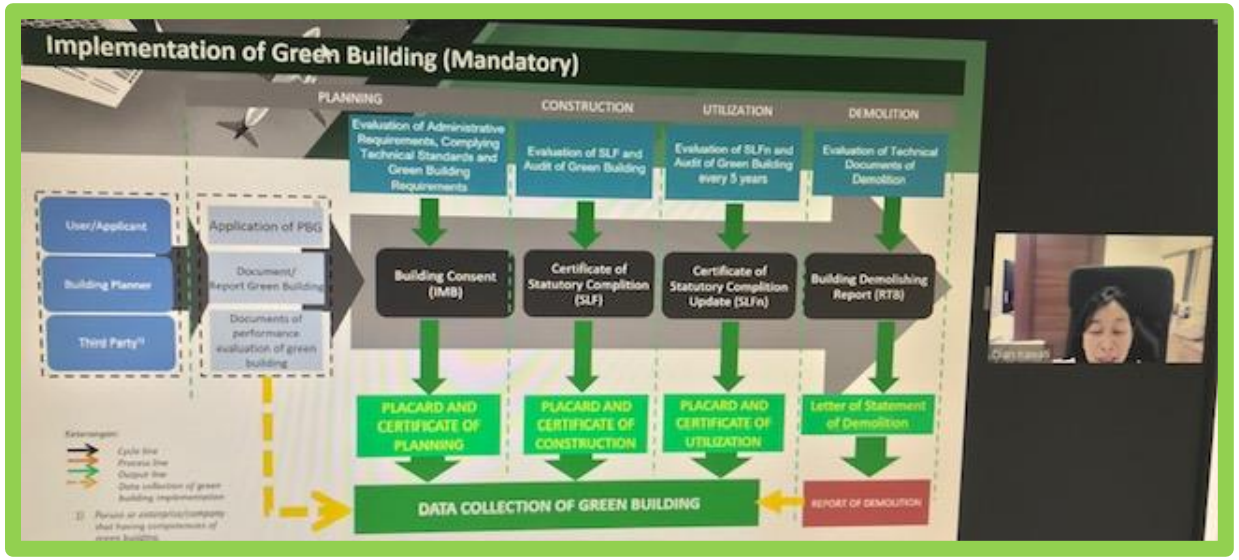
3) Mainstreaming climate agenda into development planning: recognizing the needs to integrate climate change into development and spatial planning and budgeting process

4) Promoting climate resilience in food, water and energy: by protecting and restoring key terrestrial, coastal and marine ecosystems

The way to roll the role: policies reforms

- ✓ Enables national and sub-national governments to policy plan, policy adopt and policy implement to activate and mobilize relevant law and regulations
- ✓ Push-factor to decarbonize
- ✓ Investor confidence – clarity and certainty of law
- ✓ Creates job and stimulates the economy
- ✓ Incentivizes private sector - law legislates for incentives (financial and non-financial)
- ✓ Enables harmonization international and domestic law instruments to bridge unmet ambition gaps from the unmet legal gaps in law and practice
- ✓ Enables for better Road Maps on Net Zero : cognizant of the branches of law that can make technical merit of energy policy to be better implemented





Ambitious decarbonization targets set

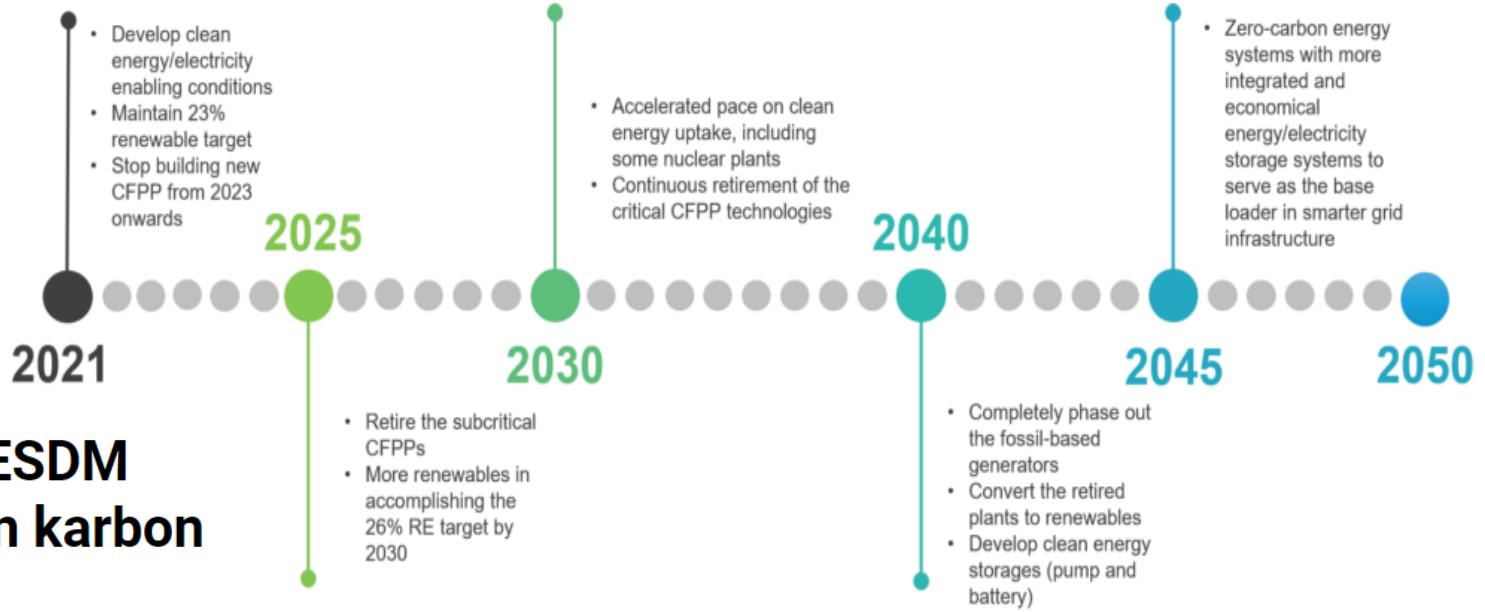
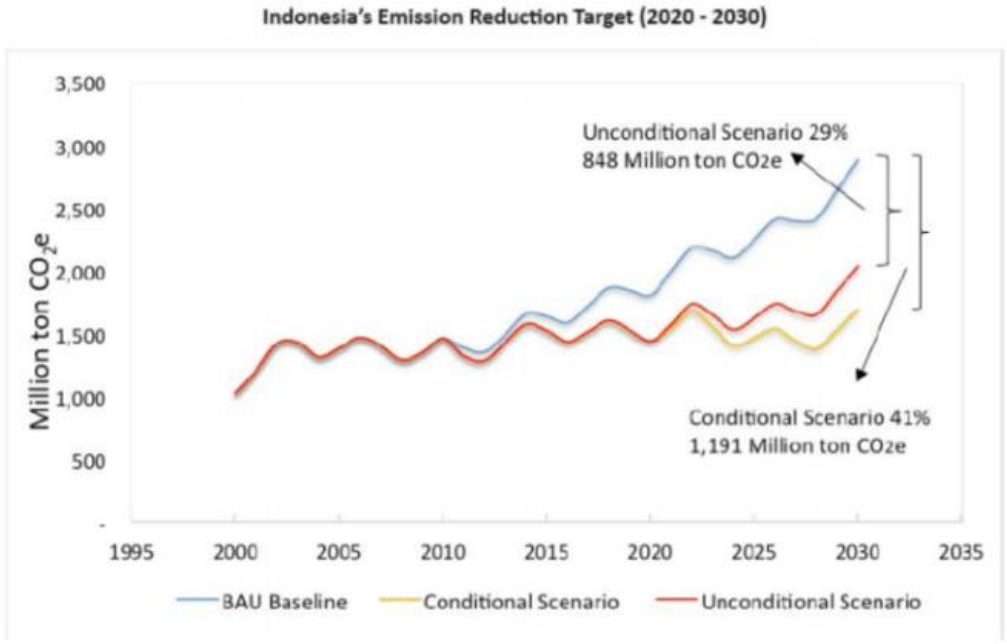


Figure 1. MEMR five-yearly strategies in achieving net zero carbon by 2050.
Source: MEMR's Power and Utility Strategies to Achieve Indonesia's Carbon Neutral by 2050 (draft 16 April 2021).

Isi Permen ESDM No 26/2021: Menteri ESDM bakal terbitkan mekanisme perdagangan karbon



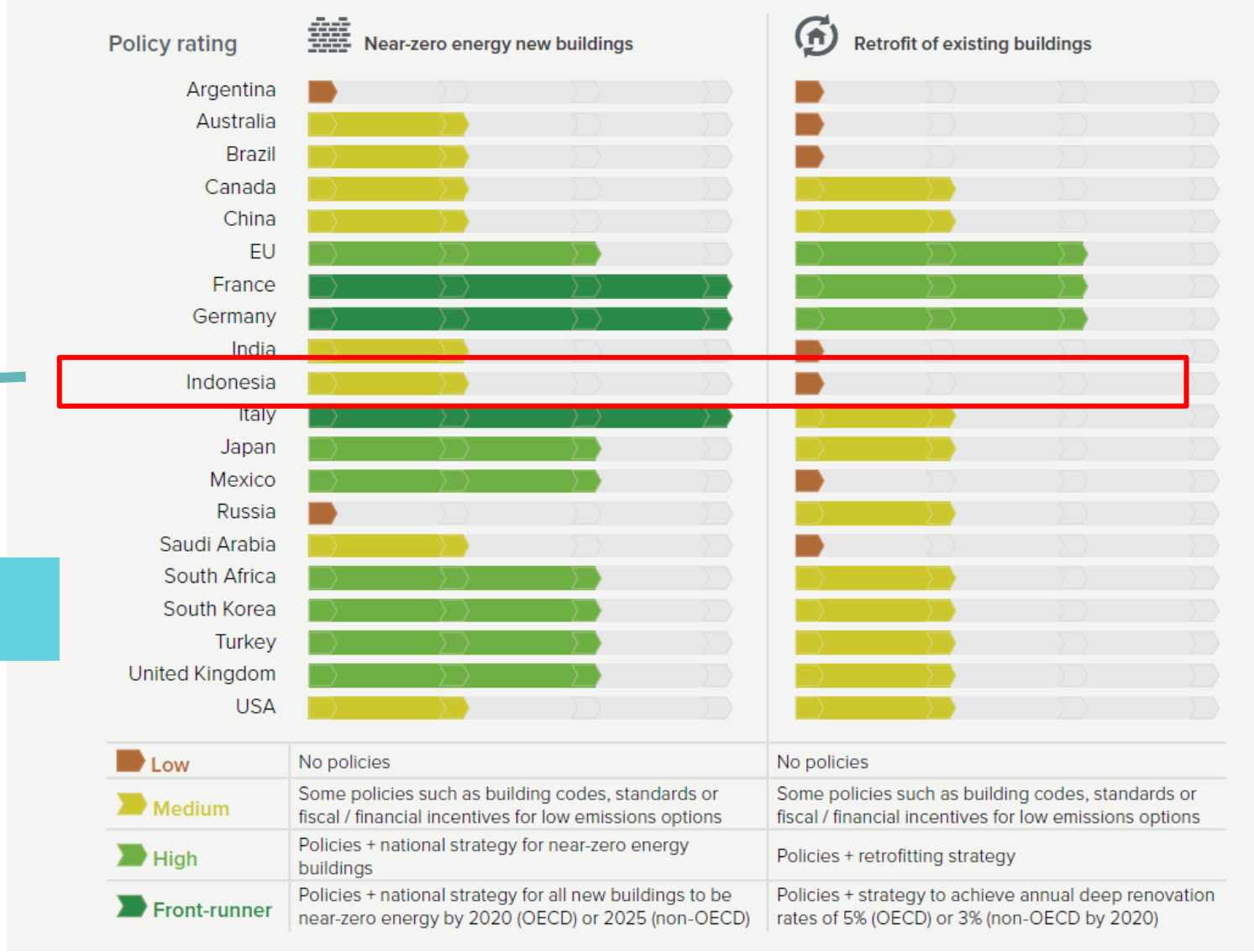
Note: Baseline has been calculated based on review process of National Mitigation Action Plan undertaken in 2015.

Source: Bappenas (2015)

GBPN

Some technical and organizational challenges toward policies development & implementation

Climate Transparency Report, 2021



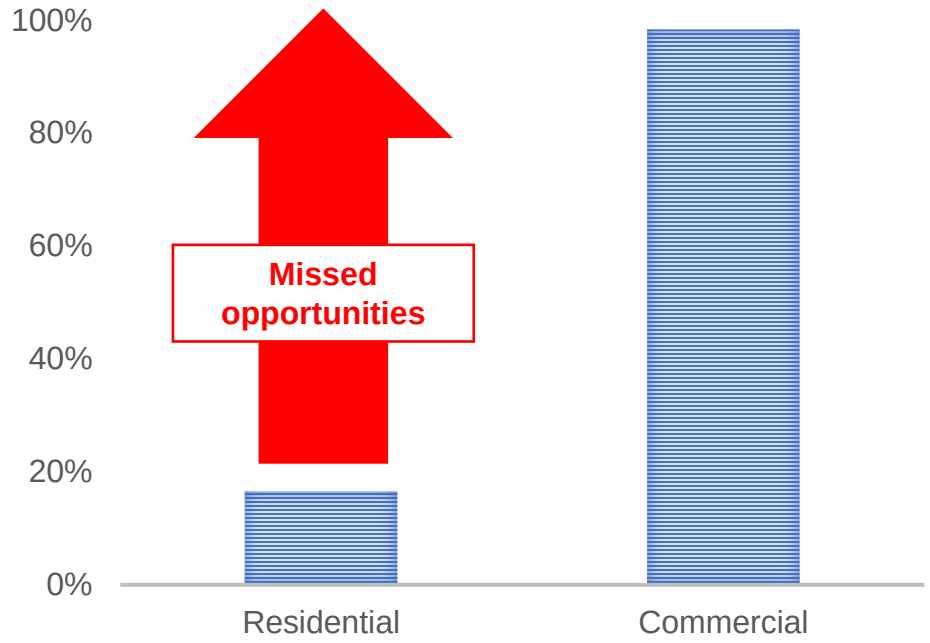
Indonesia G20 Chair as of 2022
Opportunities to become a new Green Building leader

GBPN

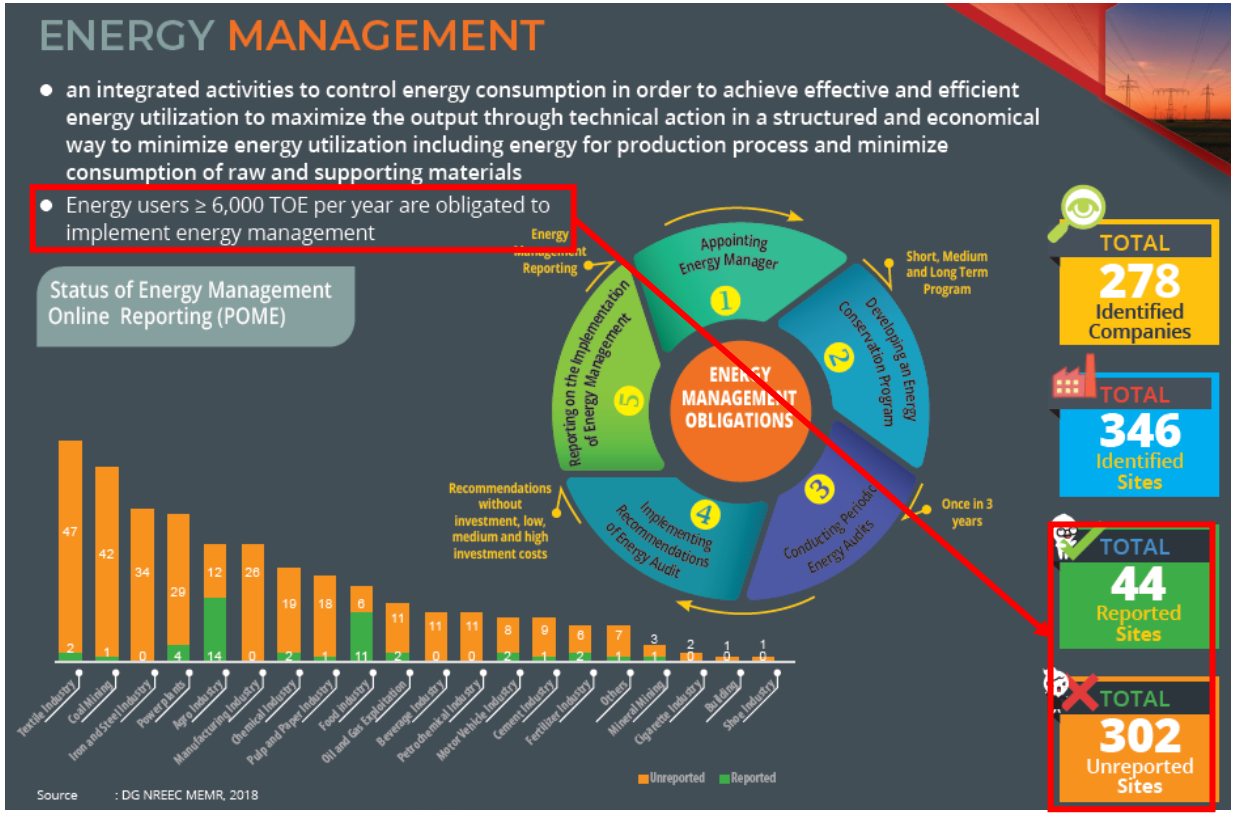
Some technical and organizational challenges toward policies development & implementation

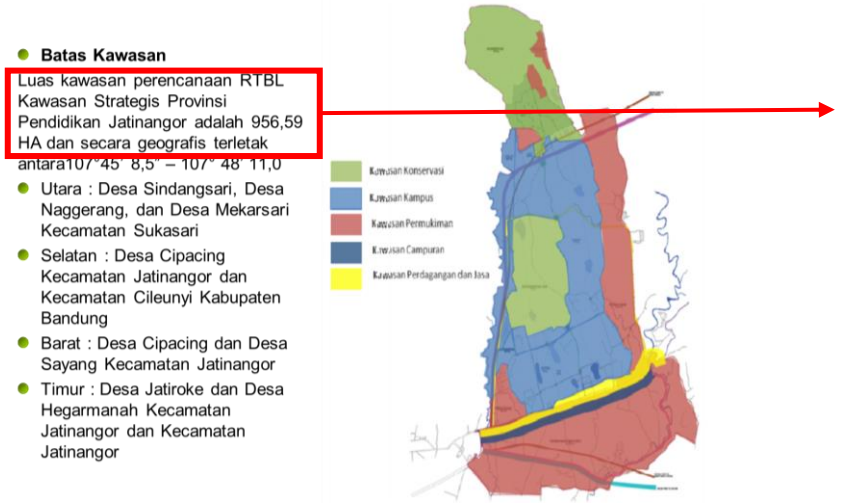
Industries

Buildings



Buildings with permits, East Kalimantan, GBPN Survey, 2021





Disconnected from policies

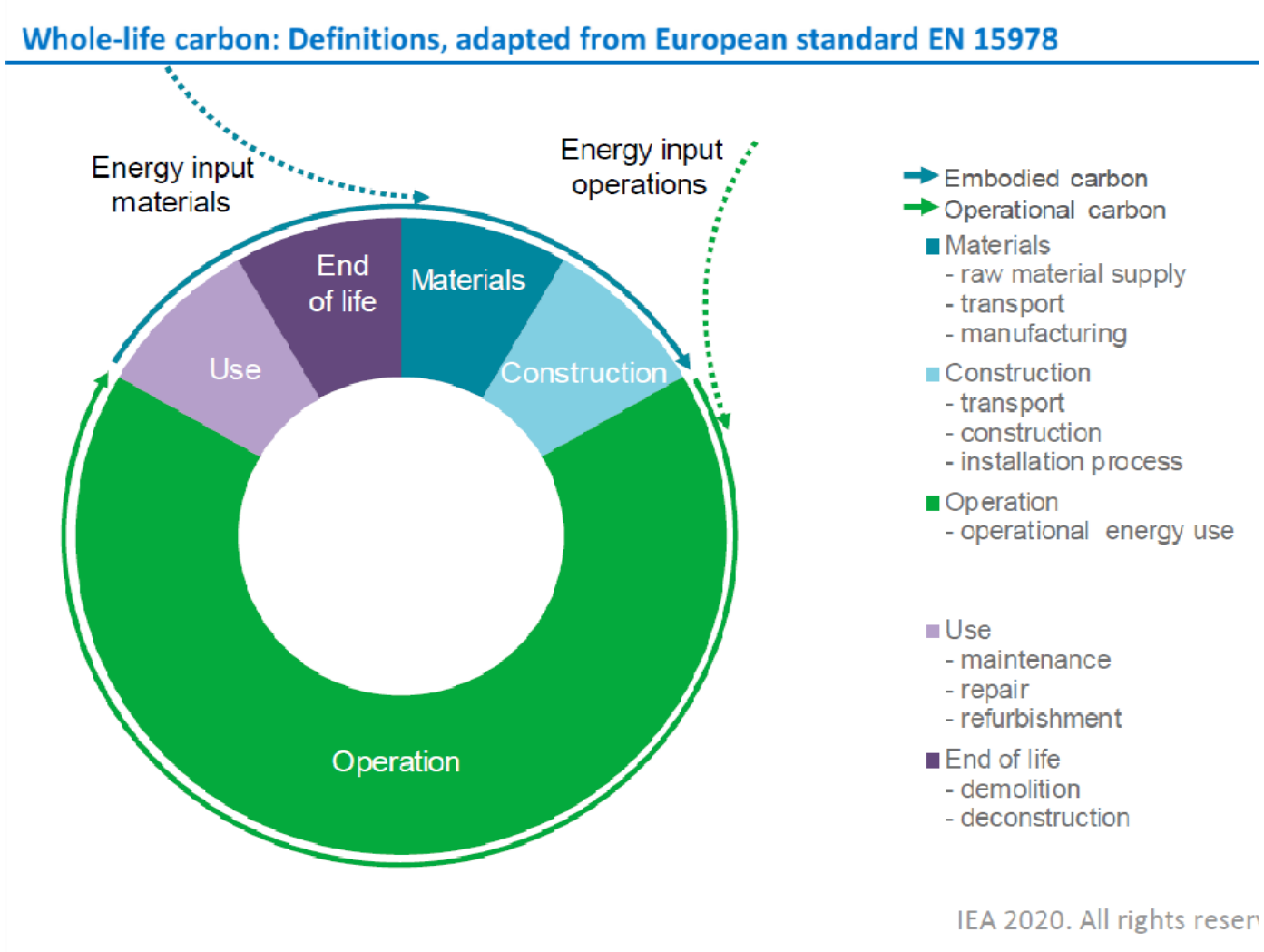
Urban Project / Planning

Review of RTBL Janinangor,LCED Program, PUPR/ADEME 2018

Agenda

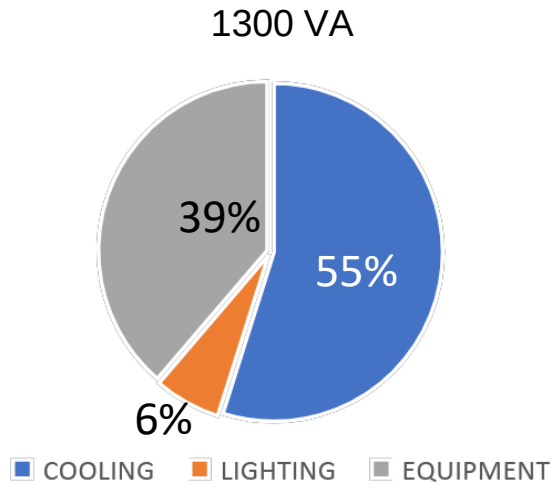
- GBPN Initiative in Samarinda
- Decarbonization of the built environment: a common effort
- Technical orientations toward high performance building
- Samarinda as a Green Building champion for Indonesia

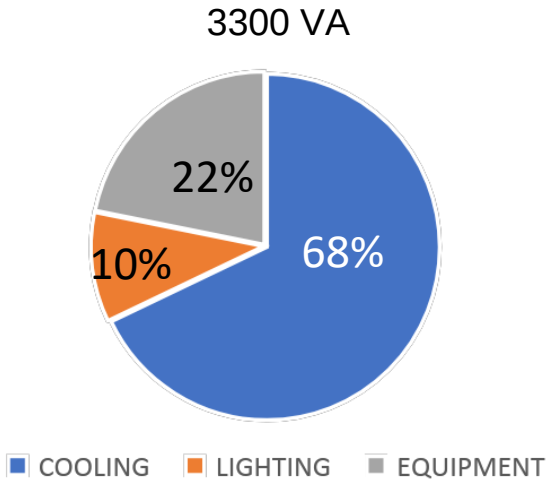
Building Carbon Footprint



Source: International Energy Agency

Energy end use breakdown

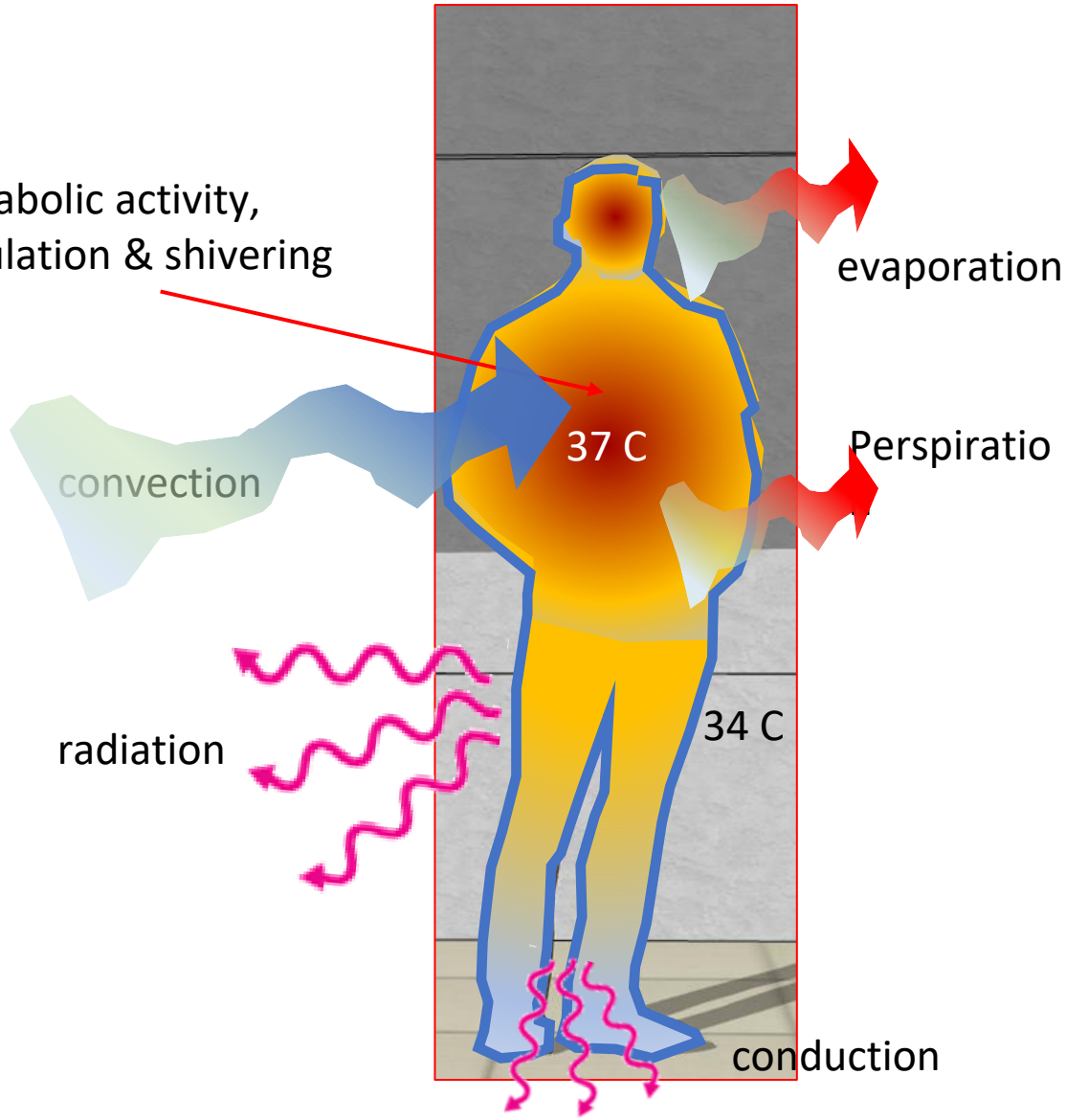




Thermal comfort – factors

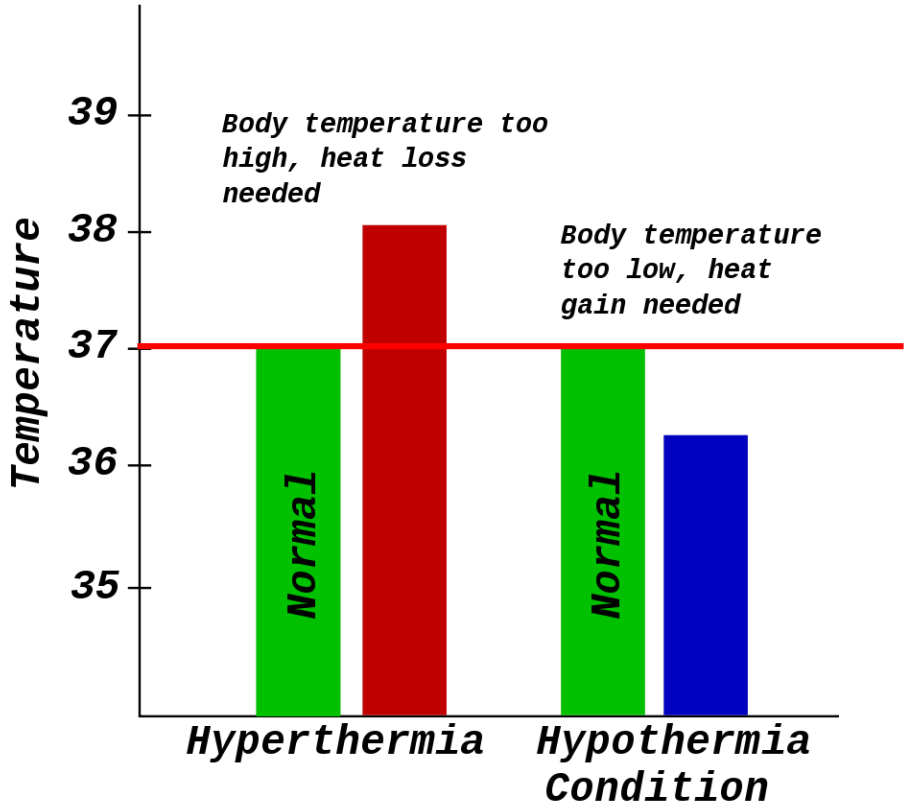
1. Aktivitas/metabolic rate
2. Pakaian
3. Temperature udara
4. Mean Radiant Temperature
5. Pergerakan udara / angin
6. Kelembaban udara

Thermoregulations – Heat transfer

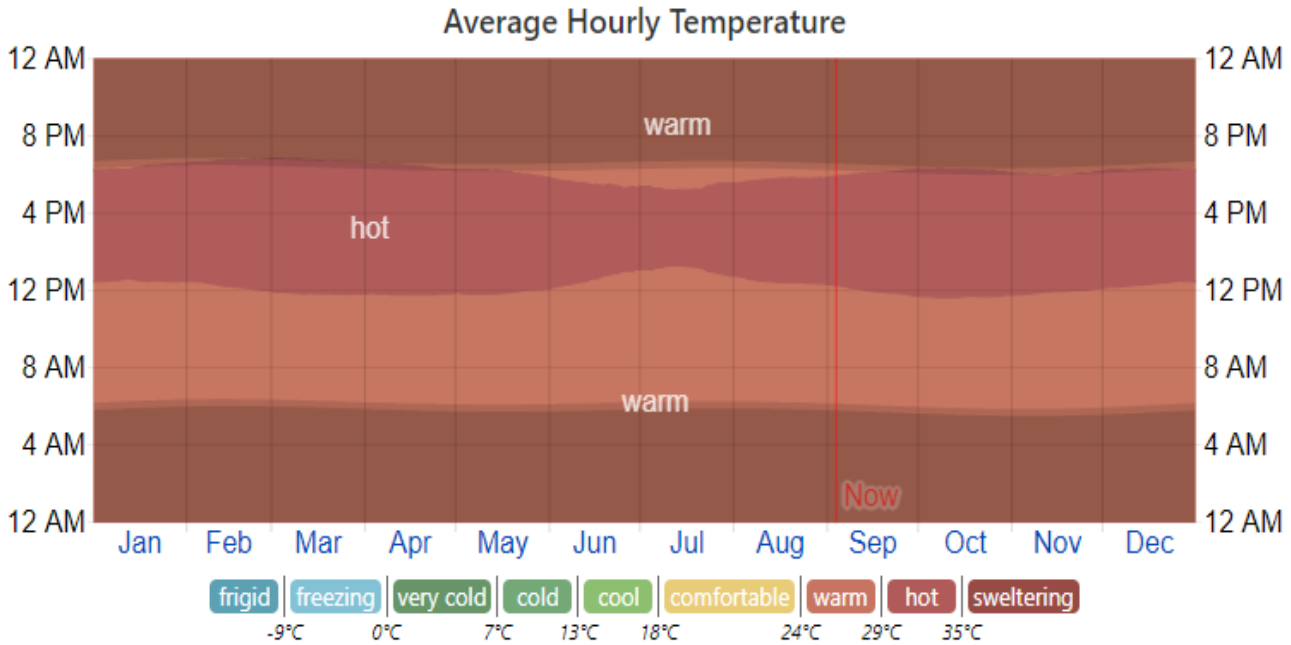


GBPN Funder: climateworks FOUNDATION

Thermoregulations untuk mempertahankan suhu tubuh dalam (core temperature) sekitar 37 C

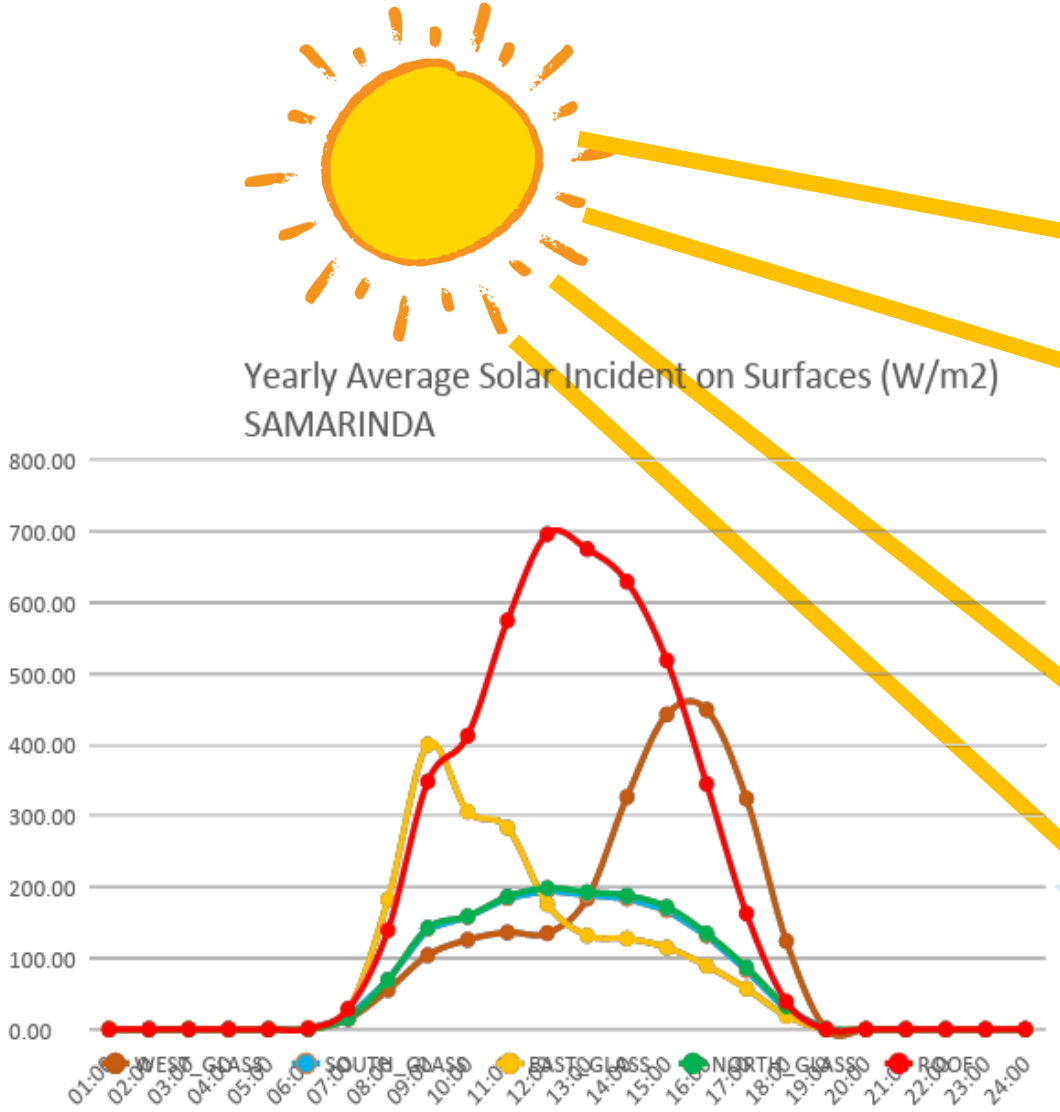


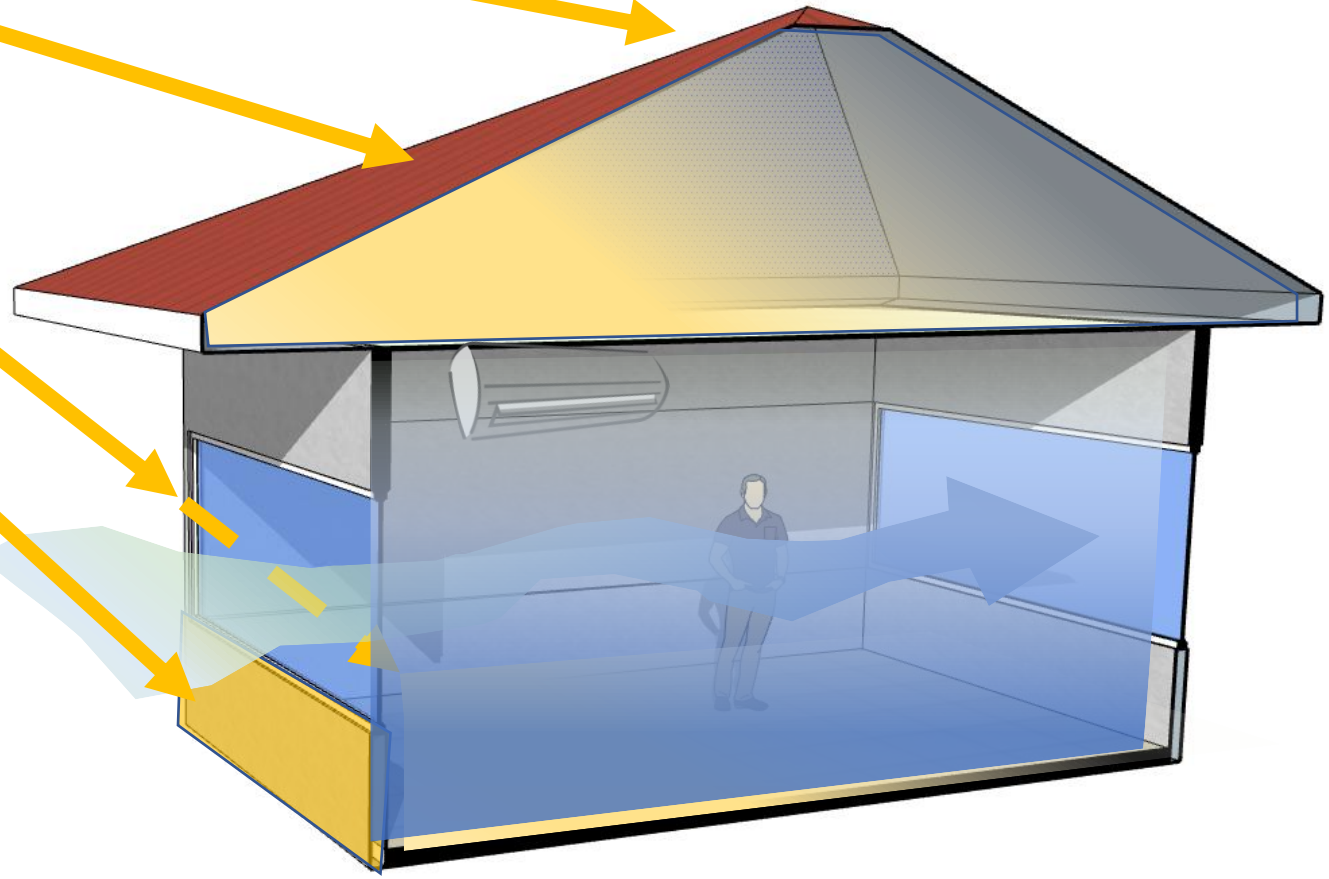
Di Samarinda kita perlu untuk membuang panas tubuh kita sebanyak mungkin untuk mendapatkan kenyamanan thermal



Climate in samarinda

Pertukaran panas antara rumah - lingkungan





Bayangkan ruangan dalam rumah anda yang anda anggap paling nyaman

Sebutkan tiga factor yang menyebabkan ruangan itu nyaman

Bayangkan ruangan dalam rumah anda yang anda anggap paling panas

Sebutkan tiga faktor yang menyebabkan ruangan itu panas dan tidak nyaman

GBPN Funder: climateworks FOUNDATION

Belajar dari nenek moyang kita – local wisdom

GBPN Funder: climateworks FOUNDATION

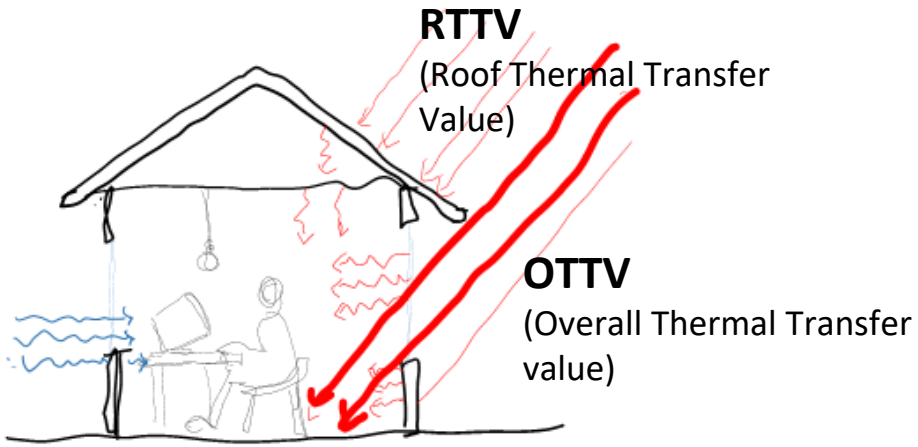
Rumah di jawa

Rumah Panjang, Dayak long houses

https://www.threadsoflife.com/kalimantan-2/

Rumah indisch

Energy saving in residential buildings



External cooling load

Untuk mendapatkan low carbon buildings mengurangi konsumsi energy

1. Menghindari panas masuk kedalam rumah
   a. Orientasi bangunan – Bukaan jendela
   b. Luas bukaan jendela
   c. shadings
   d. Jenis dinding
   e. Jenis penutup atap
2. Ceiling fan
   mendinginkan tubuh (mempercepat penguapan keringat)

Internal cooling load

3. Gunakan Peralatan listrik yang hemat
   a. Lampu
   b. AC
4. Gunakan peralatan listrik seperlunya
   a. Jam operasional
   b. AC temperature settings

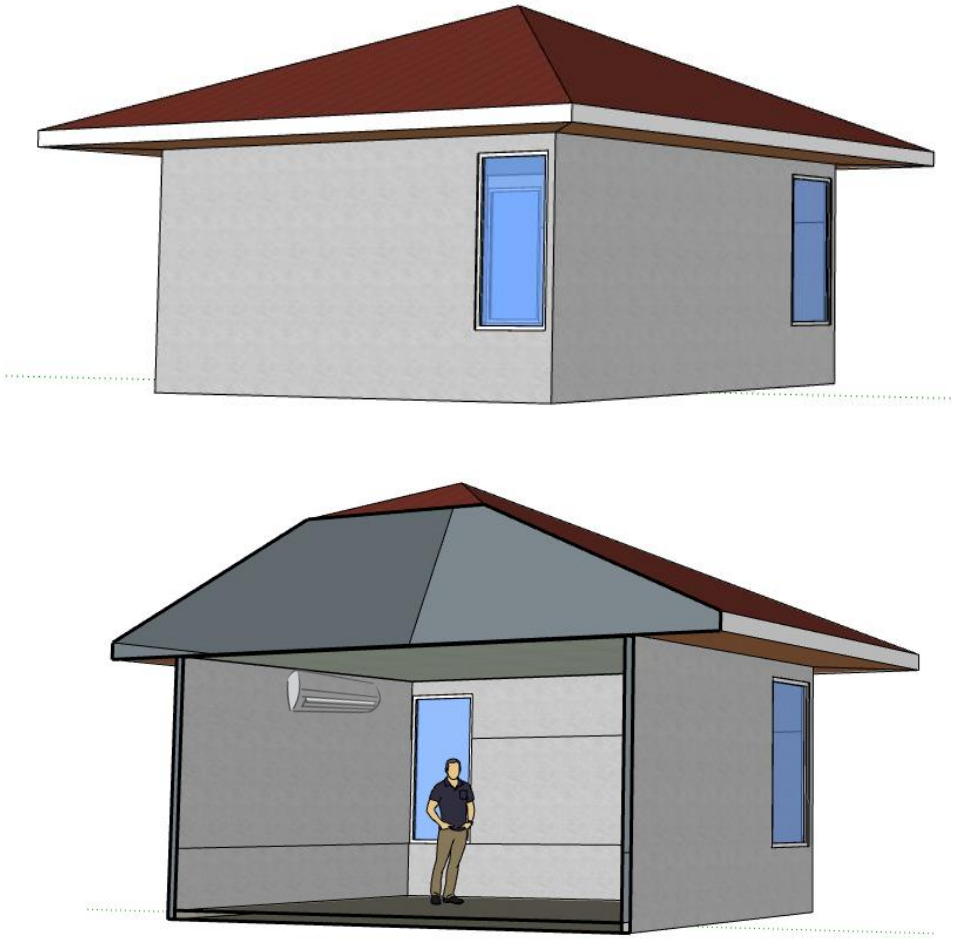
1. Menghindari panas masuk kedalam rumah
   a. Orientasi bangunan – Bukaan jendela
   b. Luas bukaan jendela
   c. shadings
   d. Jenis dinding
   e. Jenis penutup atap
2. Ceiling fan
   mendinginkan tubuh (mempercepat penguapan keringat)
3. Gunakan Peralatan listrik yang hemat
   a. Lampu
   b. AC
4. Gunakan peralatan listrik seperlunya
   a. Jam operasional
   b. AC temperature settings

Urutkan strategi penghematan energi yang menurut anda efektif untuk menurunkan konsumsi energy dengan tetap memperhatikan kenyamanan thermal

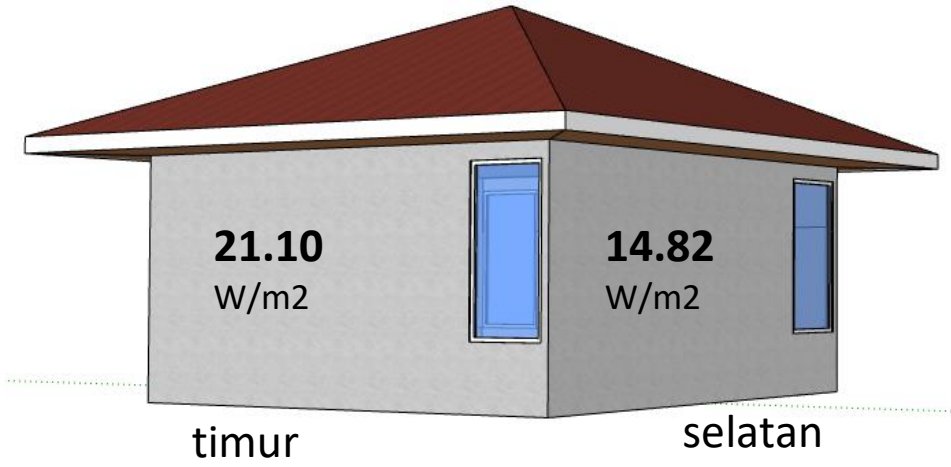
BUILDING COMPONENTS	BASE CASE	improvement		
Form	6mx6m			
Atap	metal roof	PVC		A
Ceiling	gypsum	No ceiling		B
WWR N+S	10%	40%		C
WWR E+W	10%	40%		D
Shading	no	shadings		E
Wall	brick	Bata ringan		F
AC COP	2.7	3.7		G
Temp setting (ºC)	22	25		H
Ceiling fan	No	yes		I
Lighting W/m2	5	2		J
Operational hours	12pm - 6am	6pm – 6am		K
MRT (ºC)	27.08			
Cooling load (W)	7,180			
kWh / Tahun	**11,157**			

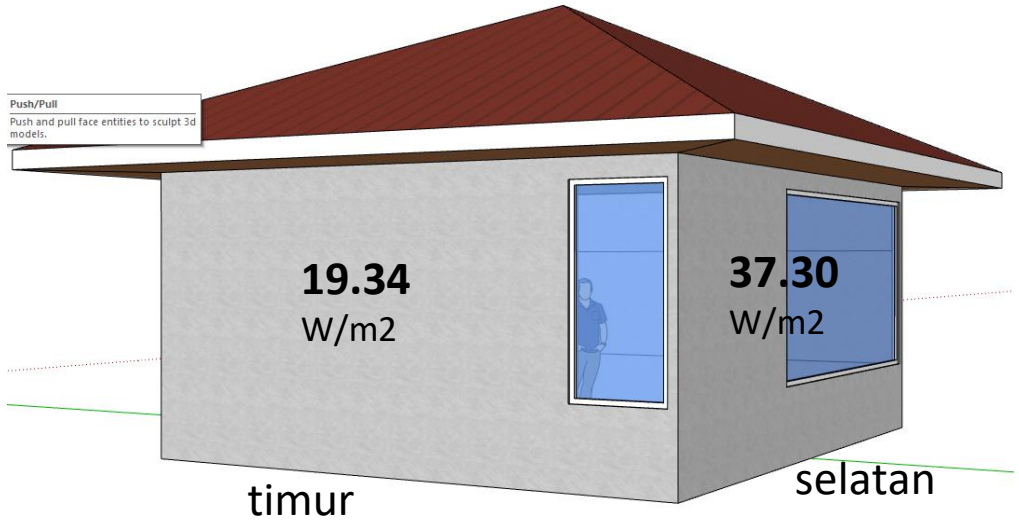
Mohon tuliskan urutan prioritas dari 11 pilihan diatas saat anda akan membangun rumah baru dan saat anda akan melakukan renovasi rumah yang anda tempati saat ini.

BUILDING COMPONENTS	BASE CASE	improvement
form	6x6	
atap	metal roof	PVC
ceiling	gypsum	No ceiling
WWR N+S	10%	40%
WWR E+W	10%	40%
shading	no	shadings
Wall	brick	Bata ringan
AC COP	2.7	3.7
Temp setting (ºC)	22	25
Ceiling fan	No	yes
lighting W/m2	5	2
operational hours	12pm - 6am	6pm – 6am
MRT (ºC)	27.08	
Cooling load (W)	7,180	
kWh / Tahun	**11,157**	



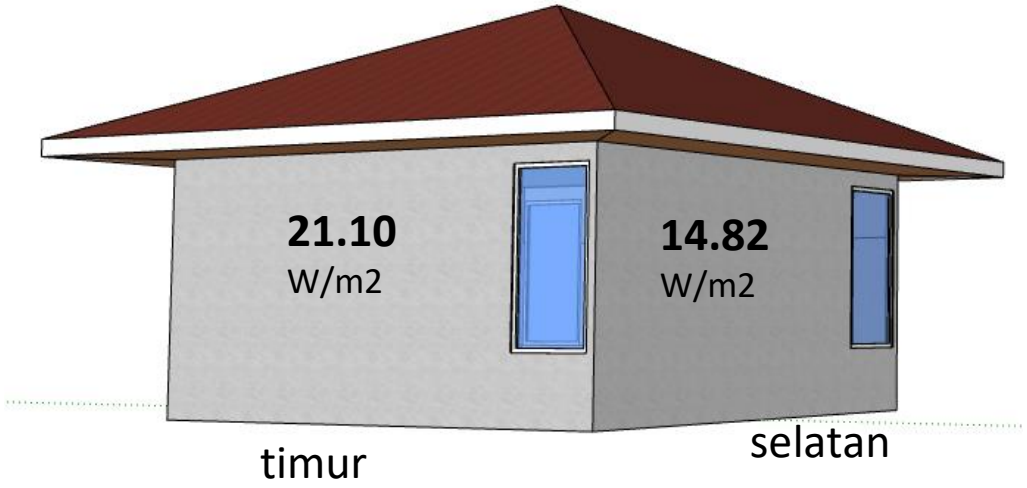
form	6x6	
atap	metal roof	
ceiling	gypsum	
WWR U + S	10%	40%
WWR T + B	10%	
shading	no	
Wall	brick	
AC COP	2.7	
Temp setting (ºC)	22	
Ceiling fan	No	
lighting W/m2	5	
operational hours	12pm - 6am	
MRT (ºC)	27.28	- 0.74%
Cooling load (W)	7,483.55	- 4.23%
kWh / Tahun	11,280.81	-1.11%

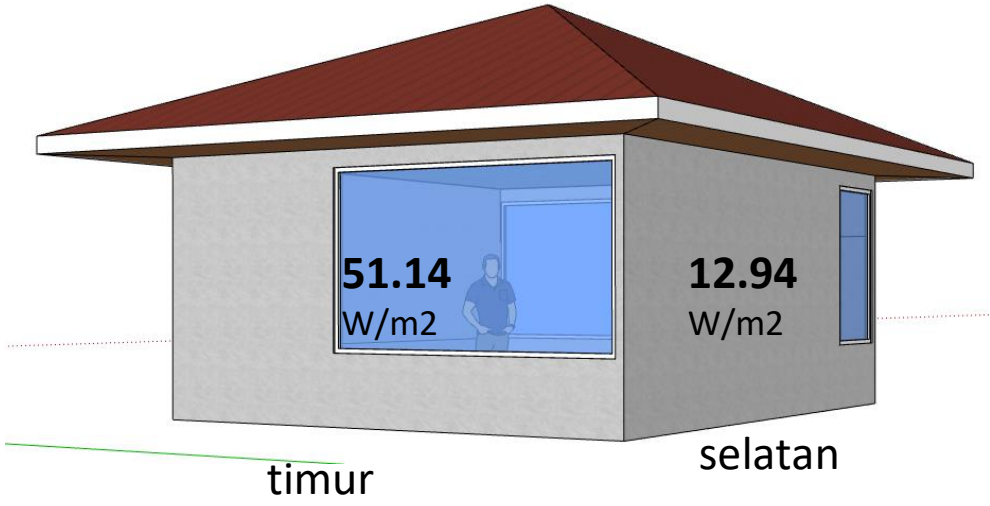




Kota	U	TL	T	TGR	S	BD	B	BL	Roof/ Horisontal
Samarinda	142	154	172	153	139	184	219	187	413

form	6x6	
atap	metal roof	
ceiling	gypsum	
WWR U + S	10%	
WWR T + B	10%	40%
shading	no	
Wall	brick	
AC COP	2.7	
Temp setting (ºC)	22	
Ceiling fan	no	
lighting W/m2	5	
operational hours	12pm - 6am	
MRT (ºC)	27.41	- 1.24%
Cooling load (W)	7,905.50	- 10.10%
kWh / Tahun	11,454.02	- 2.66%

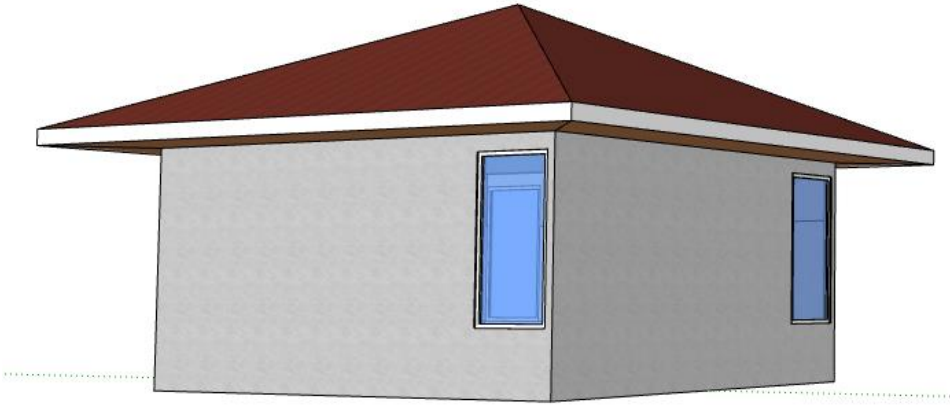




Kota	U	TL	T	TGR	S	BD	B	BL	Roof/ Horisontal
Samarinda	142	154	172	153	139	184	219	187	413

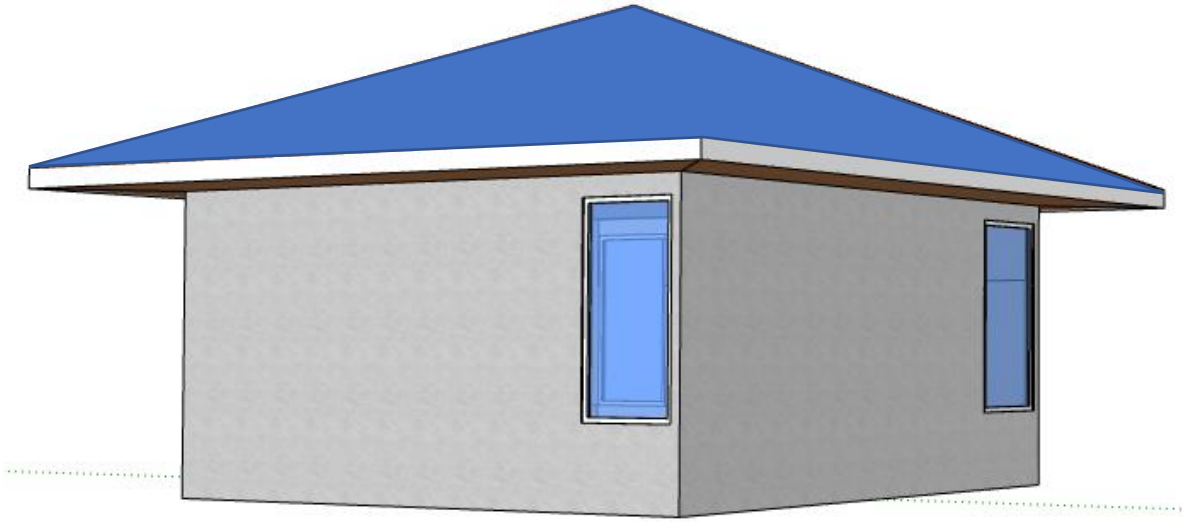
GBPN Funder: climateworks FOUNDATION

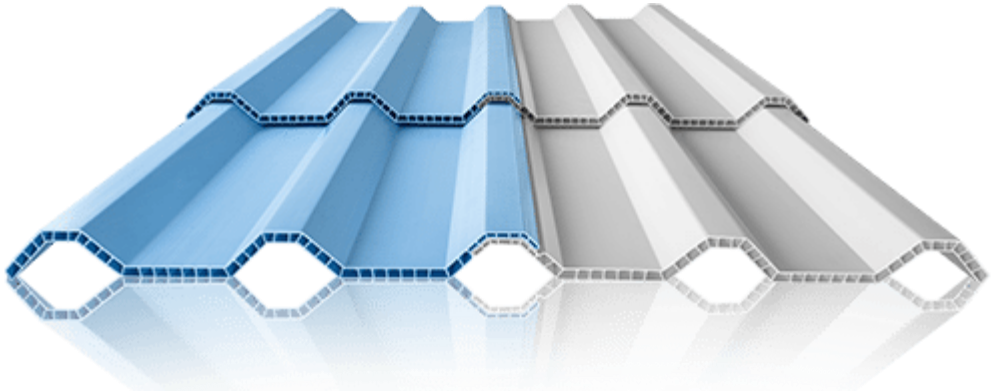
form	6x6	
atap	metal roof	
ceiling	gypsum	
WWR N+S	10%	
WWR E+W	10%	
shading	no	shadings
Wall	brick	
AC COP	2.7	
Temp setting (ºC)	22	
Ceiling fan	no	
lighting W/m2	5	
operational hours	12pm - 6am	
MRT (ºC)	26.88	0.71%
Cooling load (W)	6,983.90	**2.73%**
kWh / Tahun	10,953.38	**1.83%**



GBPN Funder: climateworks FOUNDATION

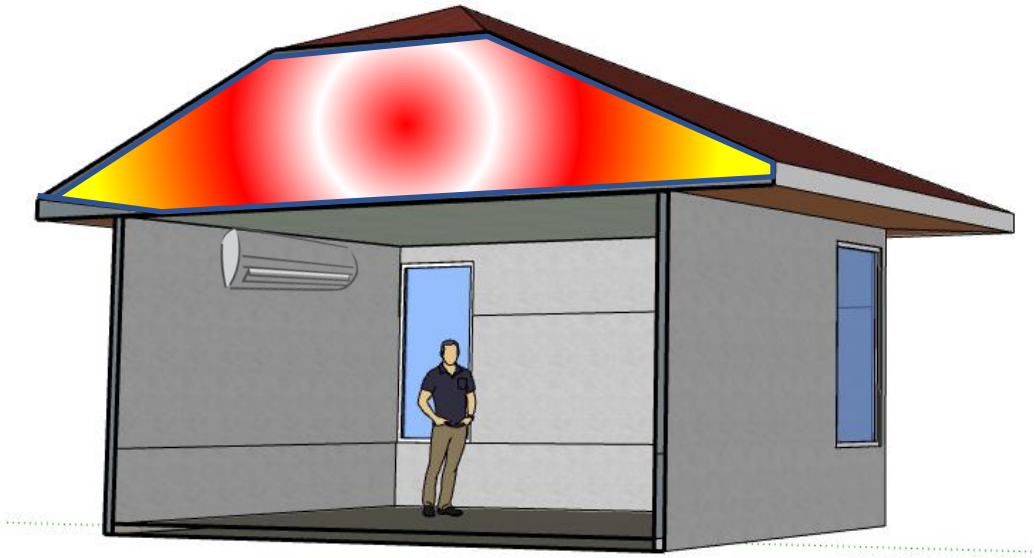
form	6x6	
atap	metal roof	PVC
ceiling	gypsum	
WWR N+S	10%	
WWR E+W	10%	
shading	no	
Wall	brick	
AC COP	2.7	
Temp setting	22	
Ceiling fan	no	
lighting W/m2 (ºC)	5	
operational hours	12pm - 6am	
MRT (ºC)	26.95	**0.46%**
Cooling load (W)	7,108.44	**1.00%**
kWh / Tahun	11,070.78	**0.78%**

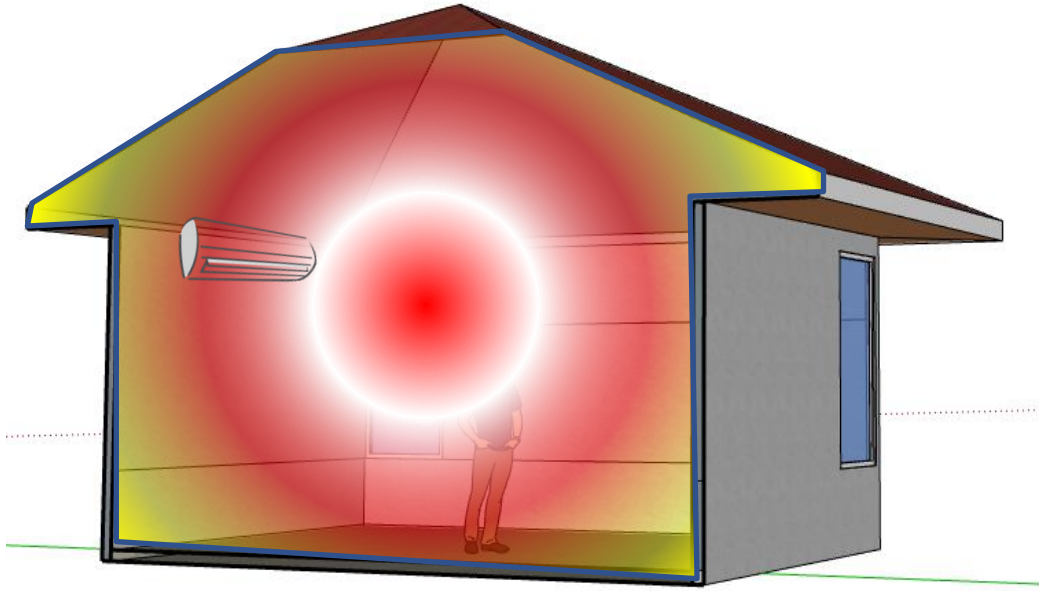




GBPN Funder: climateworks FOUNDATION

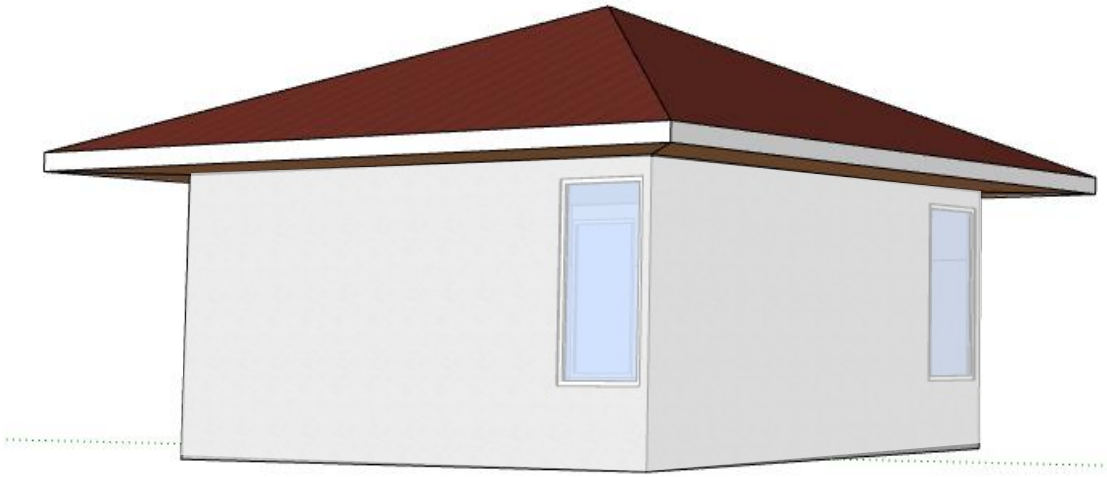
form	6x6	
atap	metal roof	
ceiling	gypsum	No ceiling
WWR N+S	10%	
WWR E+W	10%	
shading	no	
Wall	brick	
AC COP	2.7	
Temp setting (ºC)	22	
Ceiling fan	no	
lighting W/m2	5	
operational hours	12pm - 6am	
MRT (ºC)	28.54	-5.40%
Cooling load (W)	22,301.31	-210.60%
kWh / Tahun	19,969.07	-78.98%





GBPN Funder: climateworks FOUNDATION

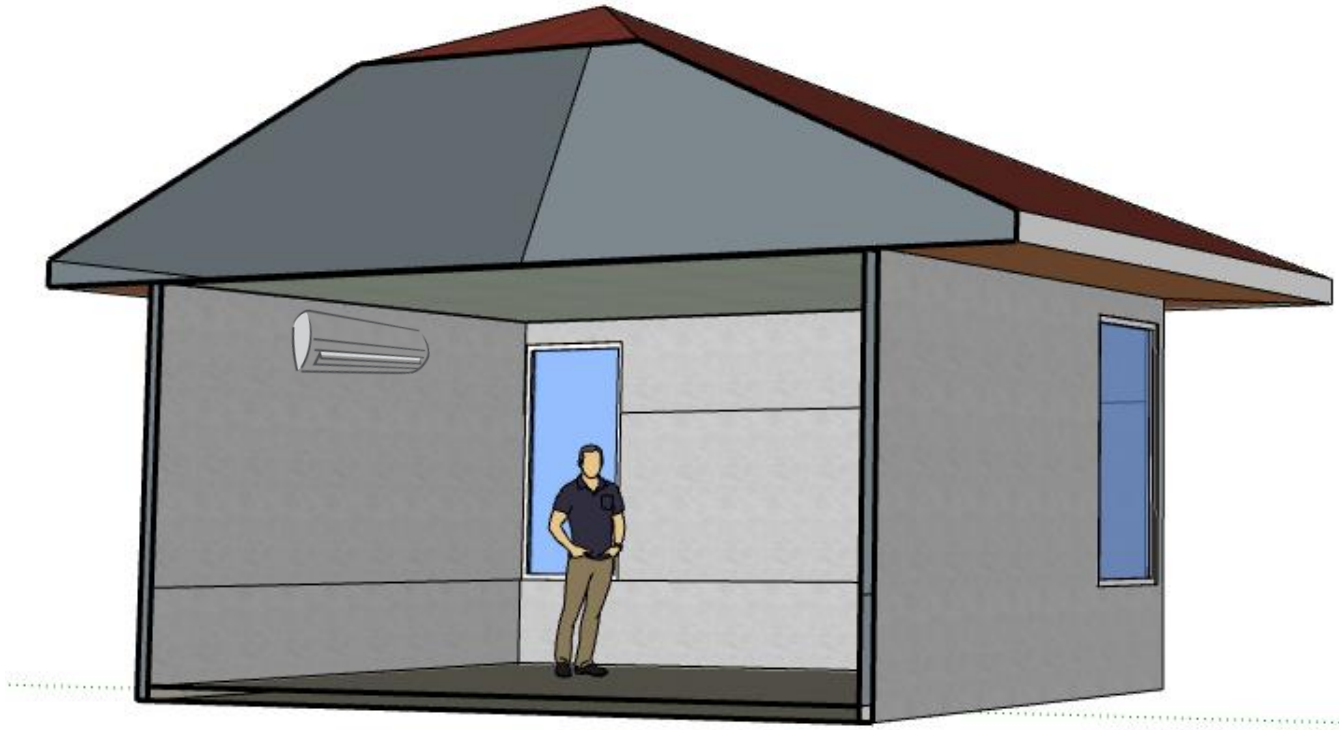
form	6x6	
atap	metal roof	
ceiling	gypsum	
WWR N+S	10%	
WWR E+W	10%	
shading	no	
Wall	Bata merah	Bata ringan
AC COP	2.7	
Temp setting (ºC)	22	
Ceiling fan	no	
lighting W/m2	5	
operational hours	12pm - 6am	
MRT (ºC)	26.61	**1.73%**
Cooling load (W)	7,407.64	-3.17%
kWh / Tahun	10,724.52	**3.88%**



GBPN Funder: climateworks FOUNDATION

form	6x6	
atap	metal roof	
ceiling	gypsum	
WWR N+S	10%	
WWR E+W	10%	
shading	no	
Wall	brick	
AC COP	2.7	3.7
Temp setting (ºC)	22	
Ceiling fan	no	
lighting W/m2	5	
operational hours	12pm - 6am	
MRT (ºC)	27.08	0.00%
Cooling load (W)	7,180	0.00%
kWh / Tahun	8,866	**20.53%**

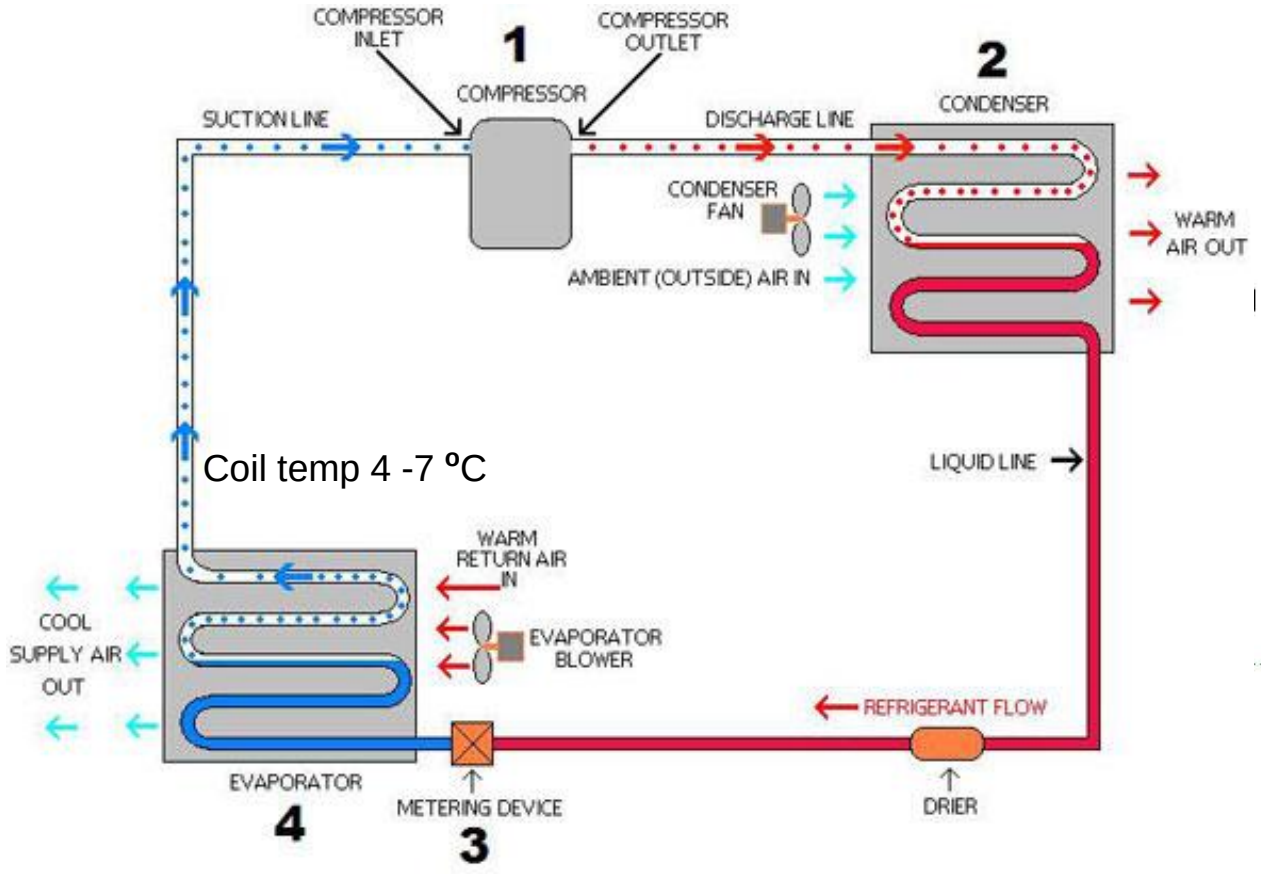
11,157



Inverter aircons are **inherently more energy-efficient** and will help you save on your monthly bills. Also, because of this energy-efficient feature, inverter aircons are regarded as an environmentally-friendly system as it uses 30-50% less energy than a non-inverter type.

GBPN Funder: climateworks FOUNDATION

form	6x6	
atap	metal roof	
ceiling	gypsum	
WWR N+S	10%	
WWR E+W	10%	
shading	no	
Wall	brick	
AC COP	2.7	
Temp setting (ºC)	22	25
Ceiling fan	no	
lighting W/m2	5	
operational hours	12pm - 6am	
MRT (ºC)	27.78	-2.60%
Cooling load (W)	5,183.71	**27.81%**
kWh / Tahun	8,000.32	**28.30%**

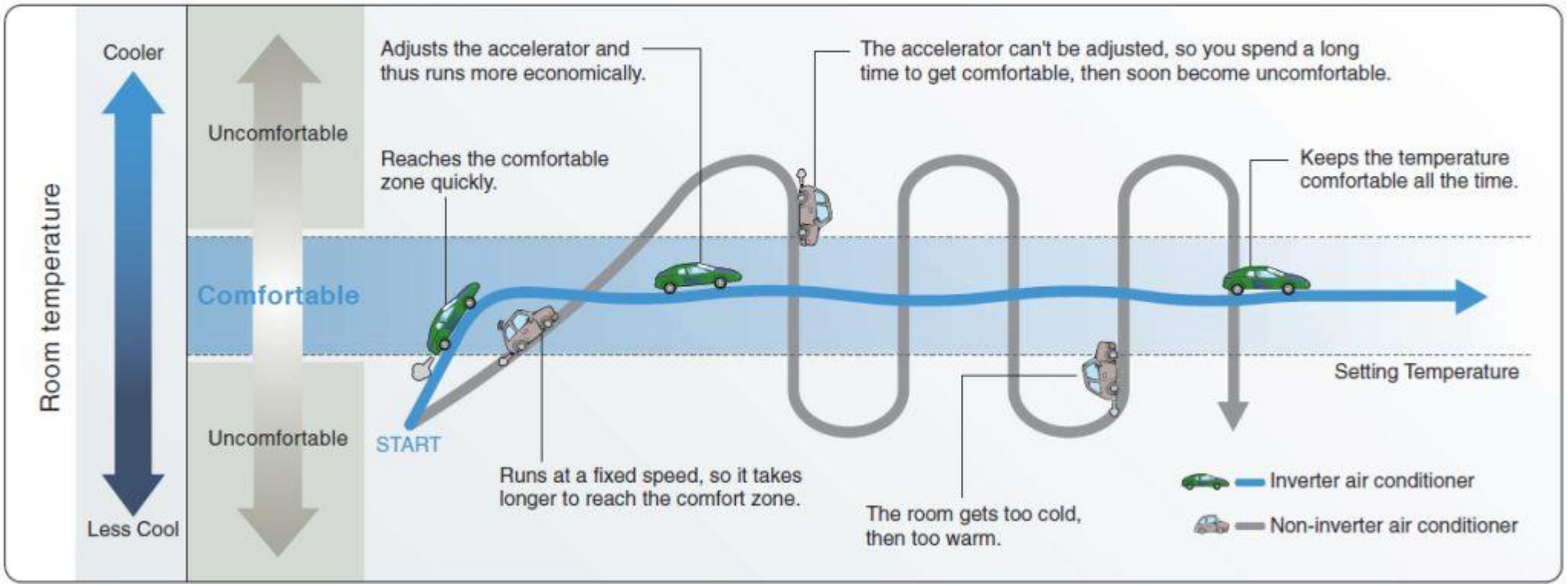


- Menurunkan temperature setting pada thermostat tidak akan mempercepat pendinginan ruang anda
- Kerugian temperature setting yang terlalu dingin → akan bekerja terus karena kemungkinan suhu ruangan yang diinginkan tidak akan pernah tercapai.

The Advantages of Inverter Control

Comparing inverter and non-inverter air conditioners to cars…

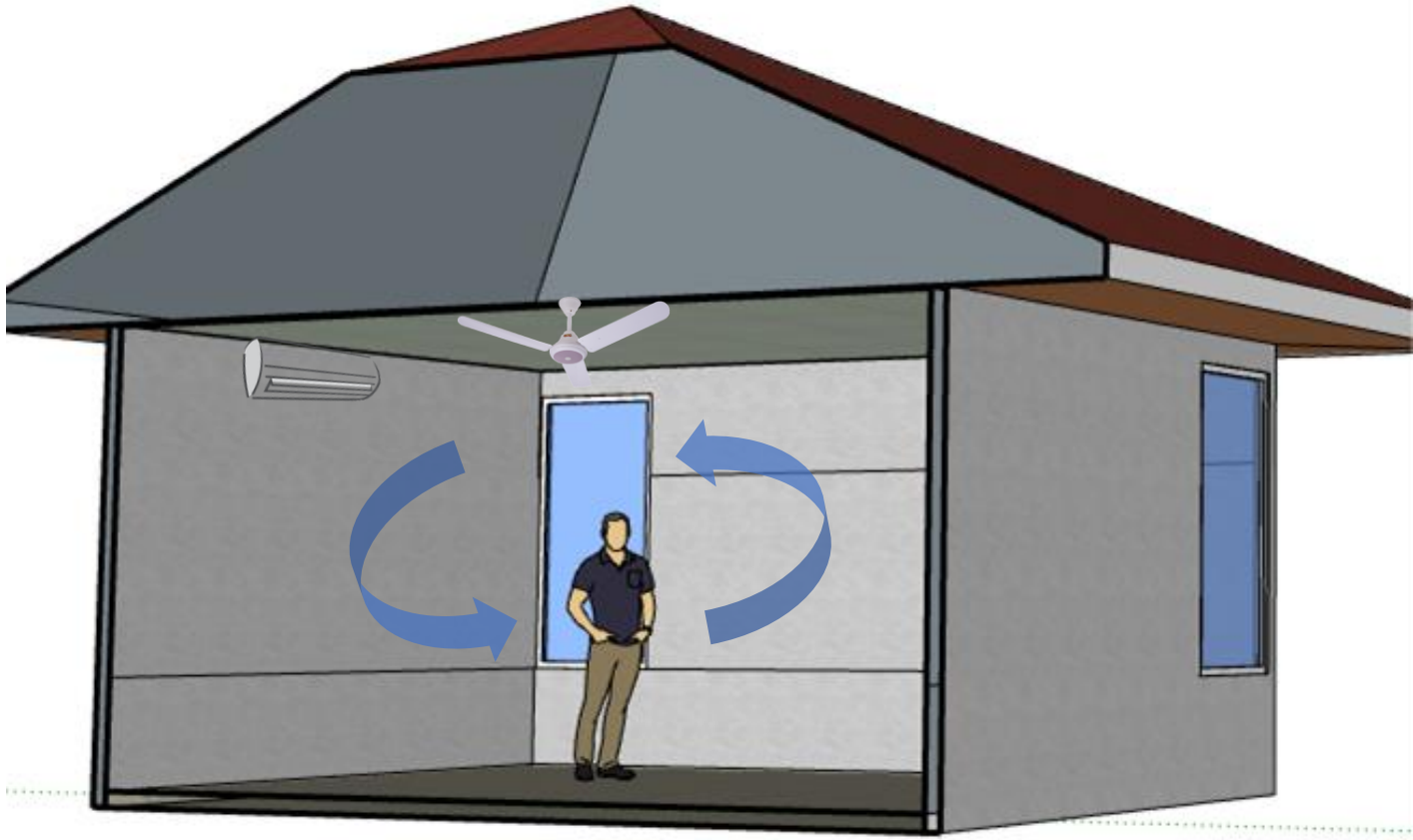
*Image of output power fluctuation



Source: https://gharpedia.com/blog/inverter-ac-system-pros-cons/

GBPN Funder: climateworks FOUNDATION

form	6x6	
atap	metal roof	
ceiling	gypsum	
WWR N+S	10%	
WWR E+W	10%	
shading	no	
Wall	brick	
AC COP	2.7	
Temp setting (ºC)	22	25
Ceiling fan	no	YES
lighting W/m2	5	
operational hours	12pm - 6am	
MRT (ºC)	28.92	-6.81%
Cooling load (W)	3,496.40	**51.30%**
kWh / Tahun	5,861.52	**47.46%**



GBPN Funder: climateworks FOUNDATION

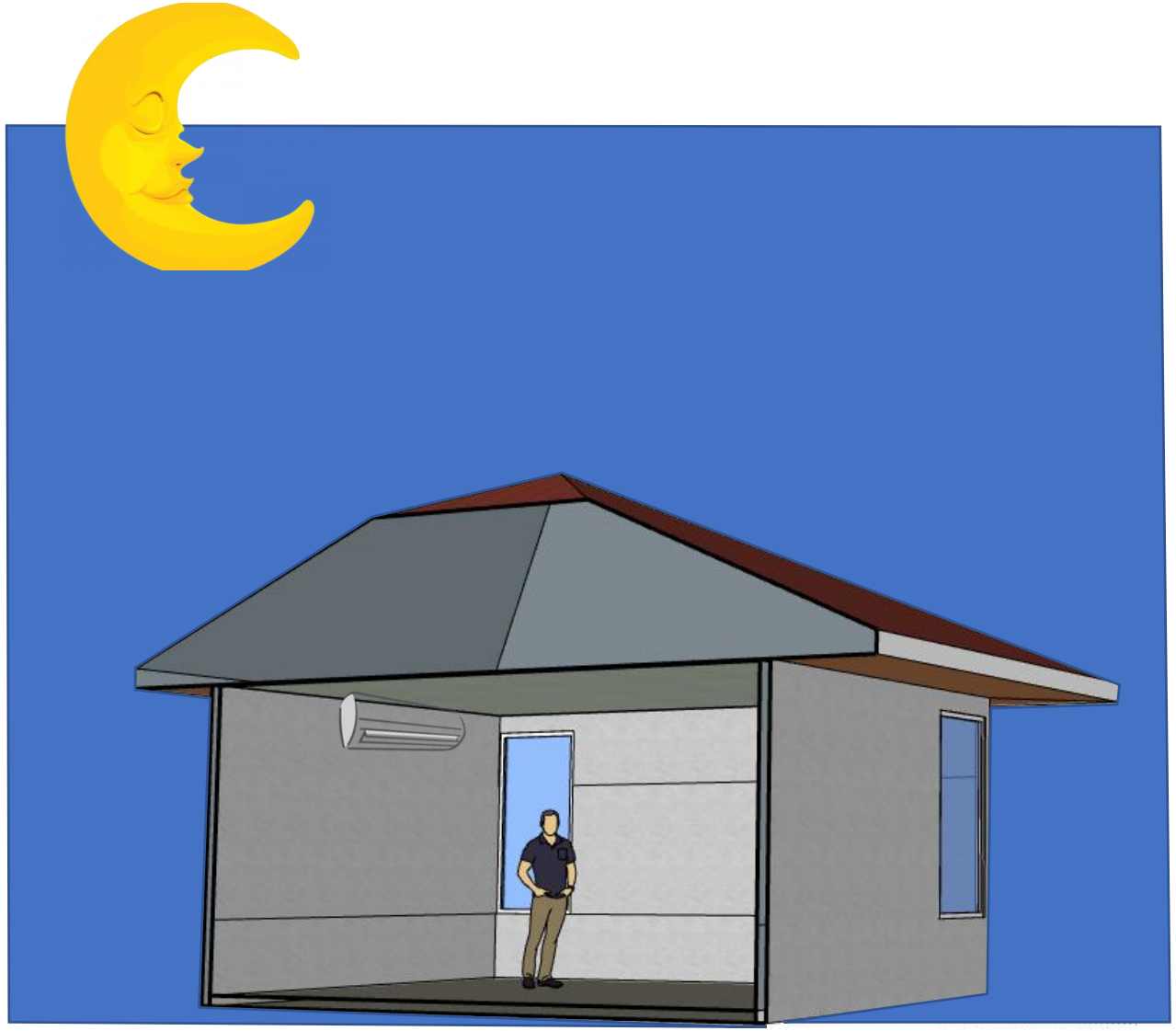
Implementation of hybrid cooling AC + ceiling fan

Green office interior
PT. Pan Brothers

Design Studio interior
Department of Architecture & Planning, UGM

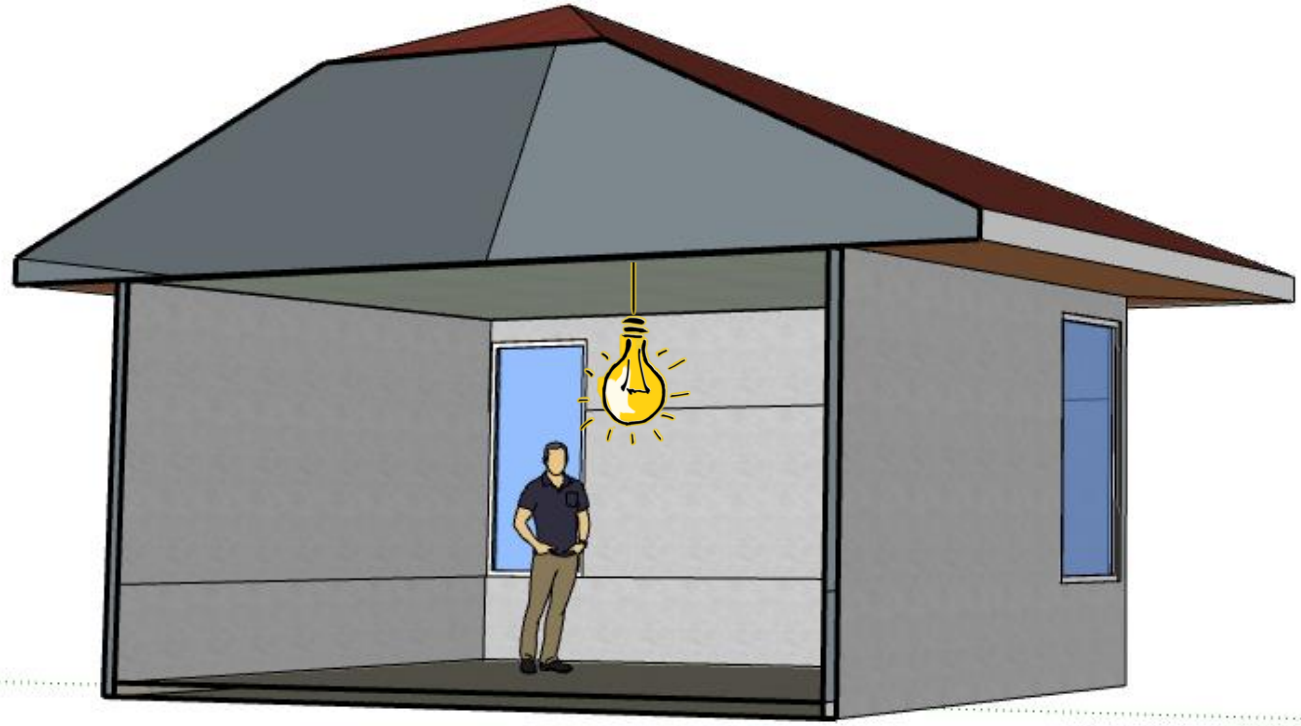
GBPN Funder: climateworks FOUNDATION

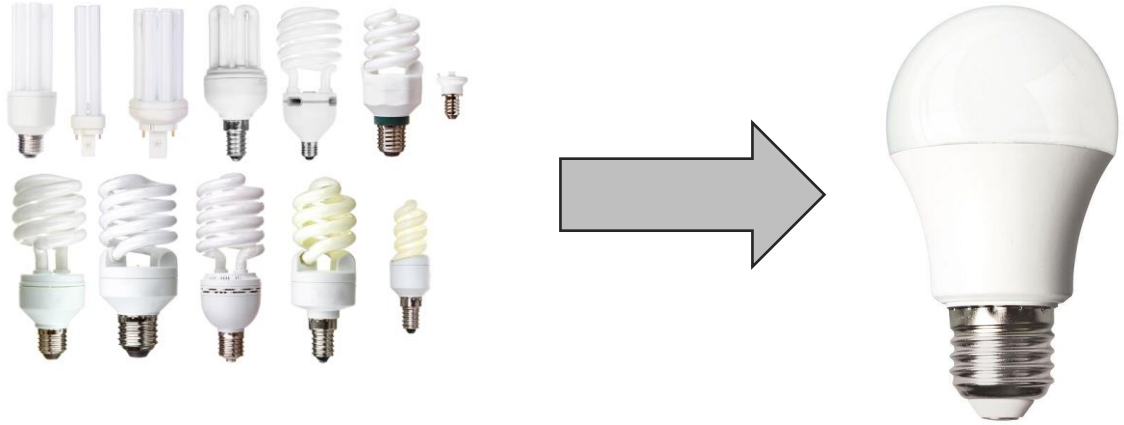
form	6x6	
atap	metal roof	
ceiling	gypsum	
WWR N+S	10%	
WWR E+W	10%	
Shading	no	
Wall	brick	
AC COP	2.7	
Temp setting (ºC)	22	
Ceiling fan	no	
lighting W/m2	5	
operational hours	12pm - 6am	6pm-6am
MRT (ºC)	25.68	**5.17%**
Cooling load (W)	7,154.67	**0.36%**
kWh / Tahun	7,614.60	**31.75%**



GBPN Funder: climateworks FOUNDATION

form	6x6	
atap	metal roof	
ceiling	gypsum	
WWR N+S	10%	
WWR E+W	10%	
shading	no	
Wall	brick	
AC COP	2.7	
Temp setting (ºC)	22	
Ceiling fan	No	
lighting W/m2	5	2
operational hours	12pm - 6am	
MRT (ºC)	27.04	**0.12%**
Cooling load (W)	7,197.39	-0.24%
kWh / Tahun	10,568.01	**5.28%**





BUILDING COMPONENTS	BASE CASE	improvement		
Form	6mx6m			
Atap	metal roof	PVC	**0.78%**	A
Ceiling	gypsum	No ceiling	-78.98%	B
WWR N+S	10%	40%	-1.11%	C
WWR E+W	10%	40%	- 2.66%	D
Shading	no	shadings	**1.83%**	E
Wall	brick	Bata ringan	**3.88%**	F
AC COP	2.7	3.7	**20.53%**	G
Temp setting (ºC)	22	25	**28.30%**	H
Ceiling fan	No	yes	**47.46%**	I
Lighting W/m2	5	2	**5.28%**	J
Operational hours	12pm - 6am	6pm – 6am	**31.75%**	K
MRT (ºC)	27.08			
Cooling load (W)	7,180			
kWh / Tahun	**11,157**			

Mohon tuliskan urutan prioritas dari 11 pilihan diatas saat anda akan membangun rumah baru dan saat anda akan melakukan renovasi rumah yang anda tempati saat ini.

Pohon, tumbuhan dan kolam air bisa menyerap panas dengan baik sehingga udara sekeliling rumah menjadi lebih sejuk

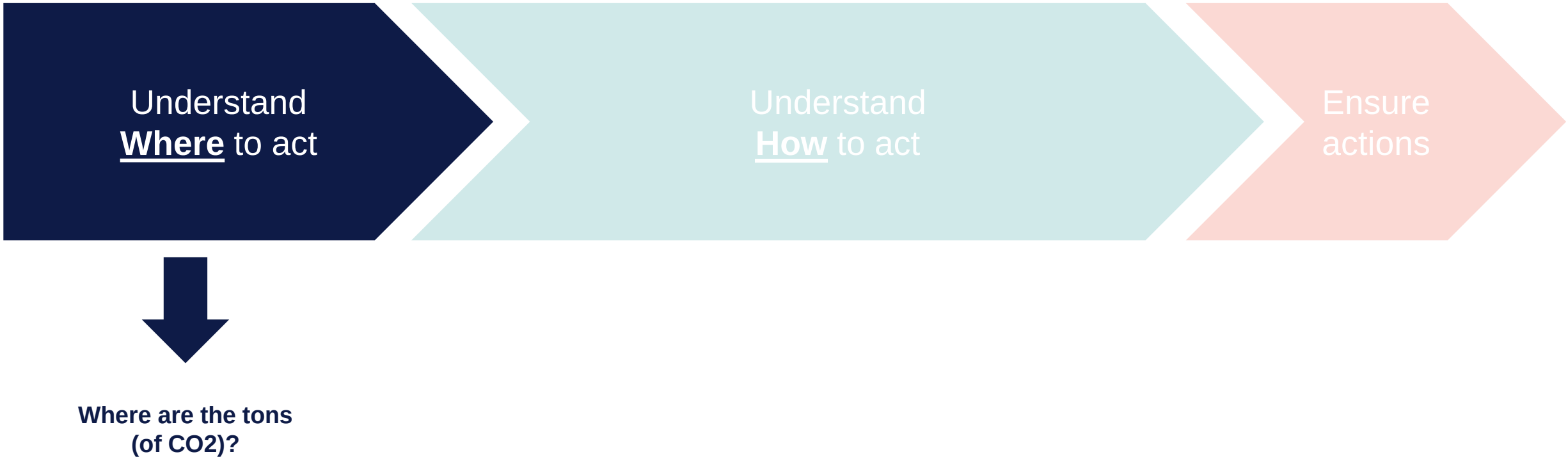
Agenda

- GBPN Initiative in Samarinda
- Decarbonization of the built environment: a common effort
- Technical orientations toward high performance building
- Samarinda as a Green Building champion for Indonesia

How to **prioritize** policy actions (technical guidelines & organizational) to effectively
decarbonize the built environment?

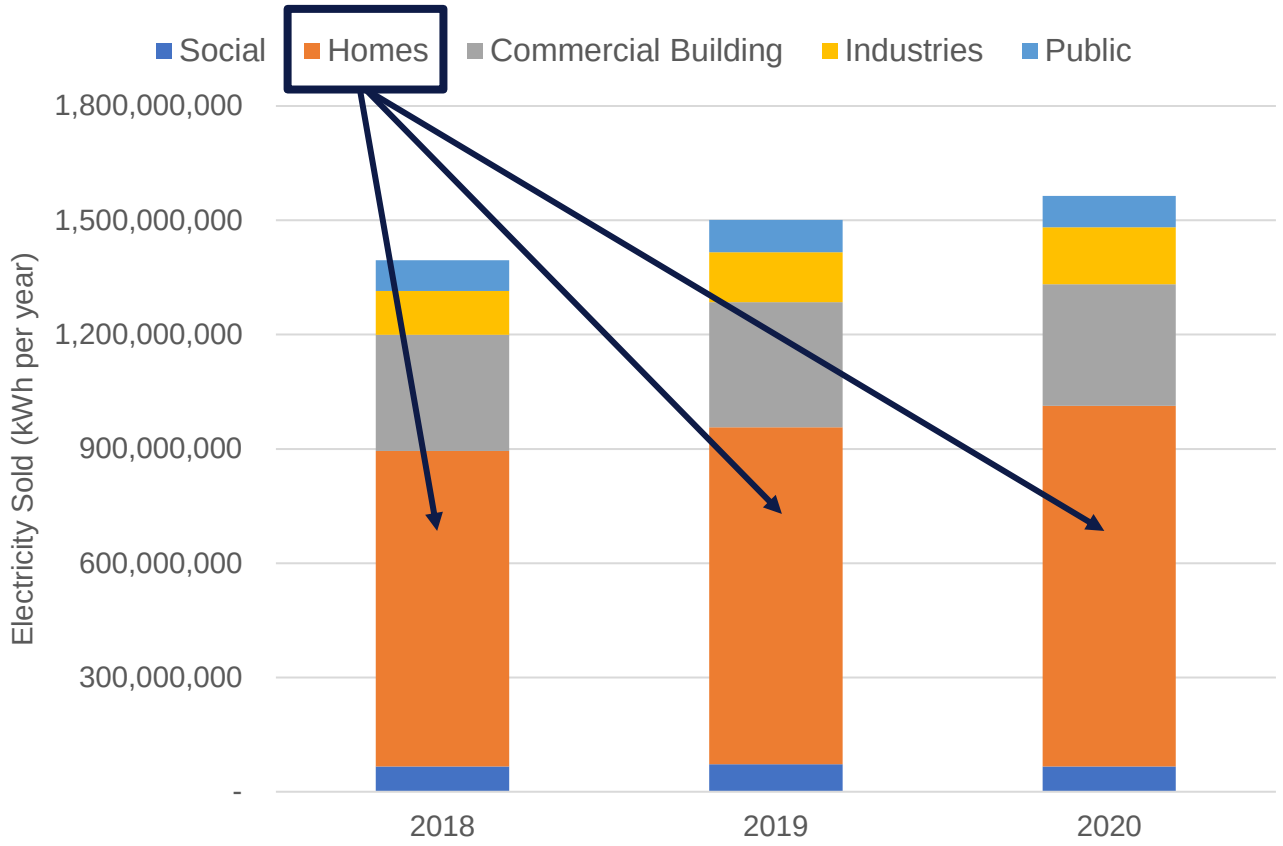
How to **prioritize** policy actions (technical guidelines)
to effectively
decarbonize the built environment?

How to **prioritize** policy actions (technical guidelines)
to effectively
decarbonize the built environment?



How to **prioritize** policy actions (technical guidelines) to effectively decarbonize the built environment?

Understand **Where** to act



Homes in Samarinda:

- 65% of the total electricity demand
- Growing trend
- Demand increases by +9% every year

Data source: PLN Samarinda, 2021

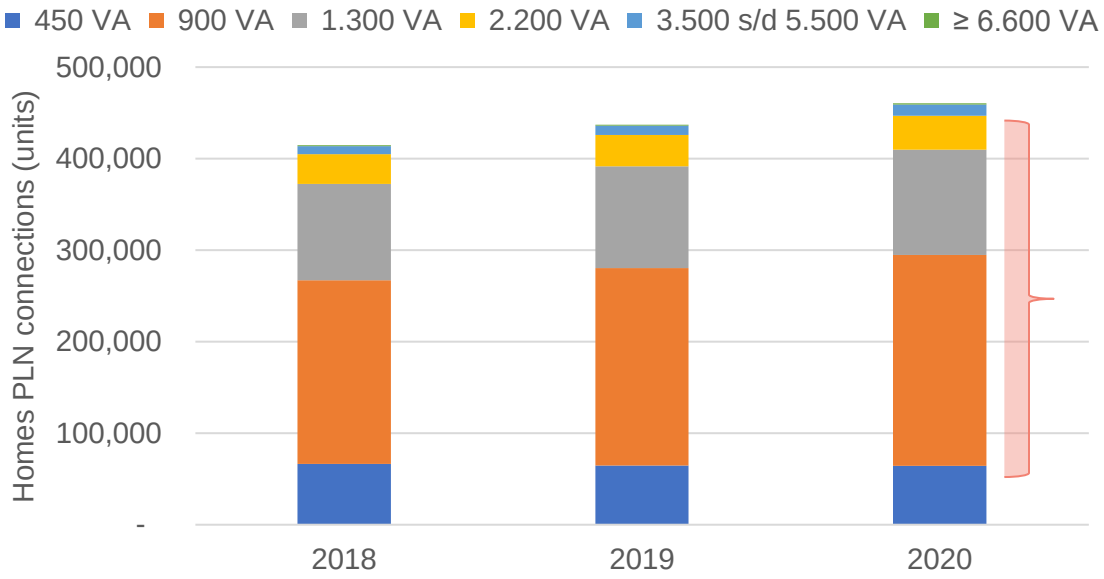
How to **prioritize** policy actions (technical guidelines) to effectively
decarbonize the built environment?

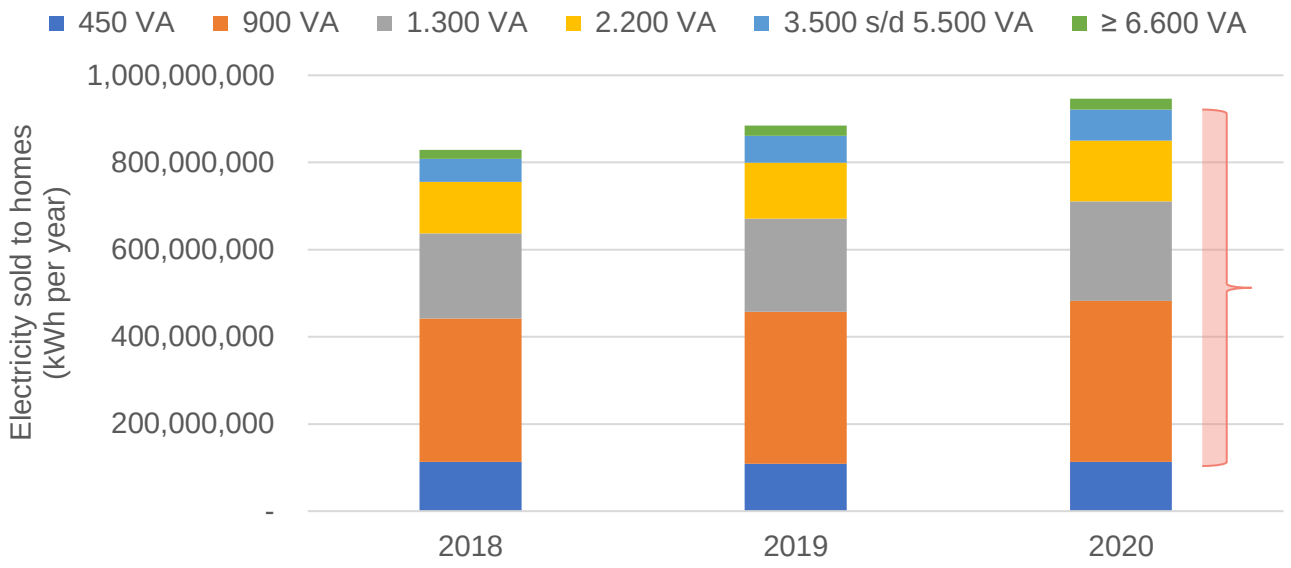
Understand **Where** to act

Development focus

900 VA
1300 VA
2200 VA
3300 VA

Data source: PLN Samarinda, 2021





	2018 Homes	2019 Homes	2020 Homes
450 VA	66,363	64,583	64,156
900 VA	200,913	215,831	230,662
1.300 VA	105,343	111,446	114,962
2.200 VA	32,302	34,289	37,115
3.500 s/d 5.500 VA	8,854	9,946	12,330
≥ 6.600 VA	1,037	1,231	1,369

	2018 kWh	2019 kWh	2020 kWh
450 VA	113,203,295	108,560,762	113,003,067
900 VA	328,440,281	348,918,116	369,616,674
1.300 VA	195,384,177	213,576,379	227,860,226
2.200 VA	118,094,540	128,623,458	139,621,724
3.500 s/d 5.500 VA	53,334,528	61,423,339	70,750,577
≥ 6.600 VA	20,317,306	23,375,071	25,472,137

How to **prioritize** policy actions (technical guidelines) to effectively
decarbonize the built environment?

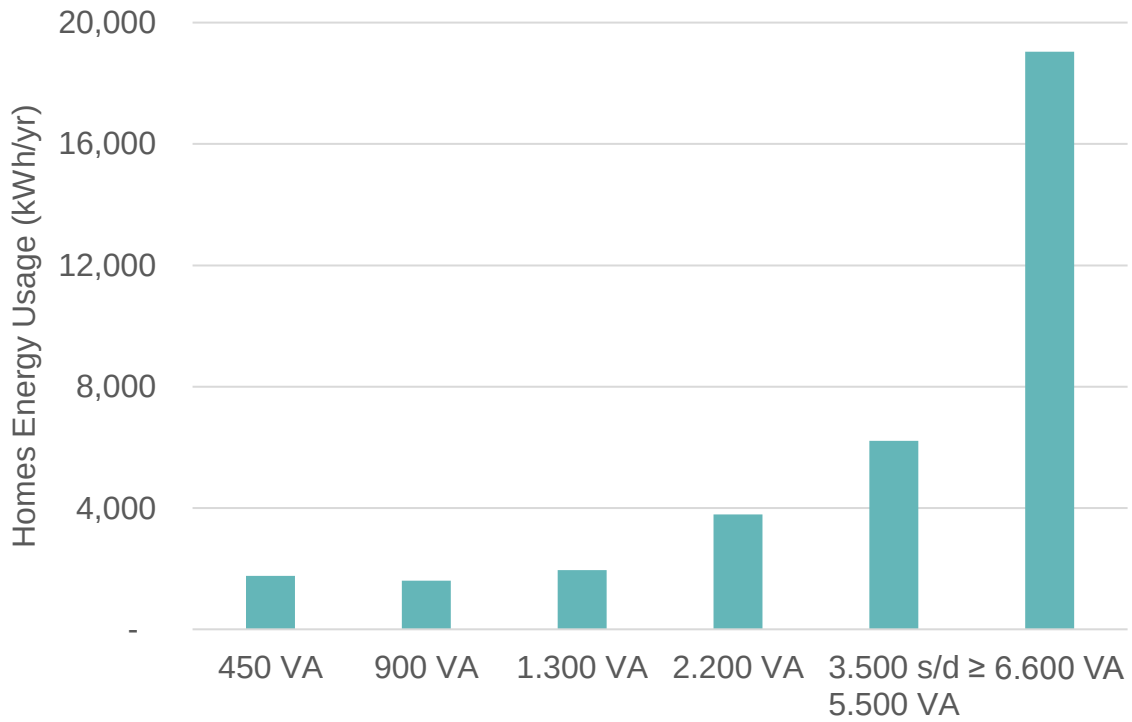
Understand **Where** to act

Development focus

900 VA
1300 VA
2200 VA
3300 VA

Homes segments electricity usage* vary from:		
450 VA	1,764	kWh/yr
900 VA	1,602	kWh/yr
1.300 VA	1,956	kWh/yr
2.200 VA	3,792	kWh/yr
3.500 s/d 5.500 VA	6,216	kWh/yr
≥ 6.600 VA	19,044	kWh/yr

Data source: PLN Samarinda, 2021

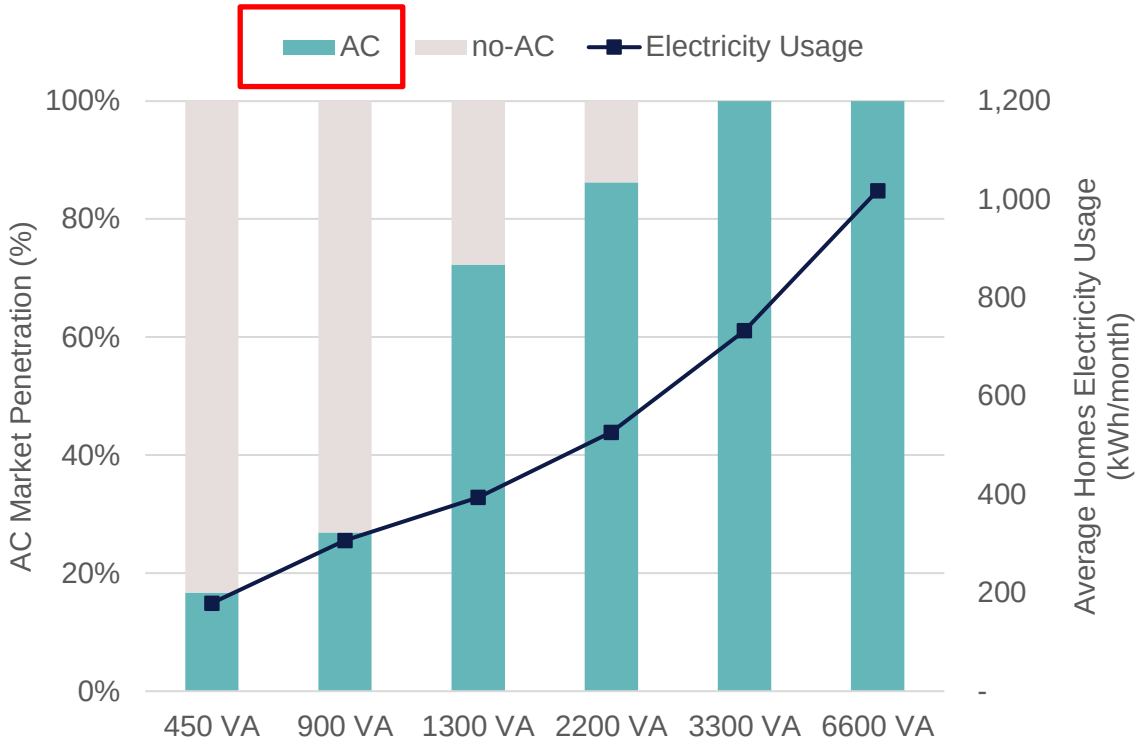


How to **prioritize** policy actions (technical guidelines) to effectively
decarbonize the built environment?

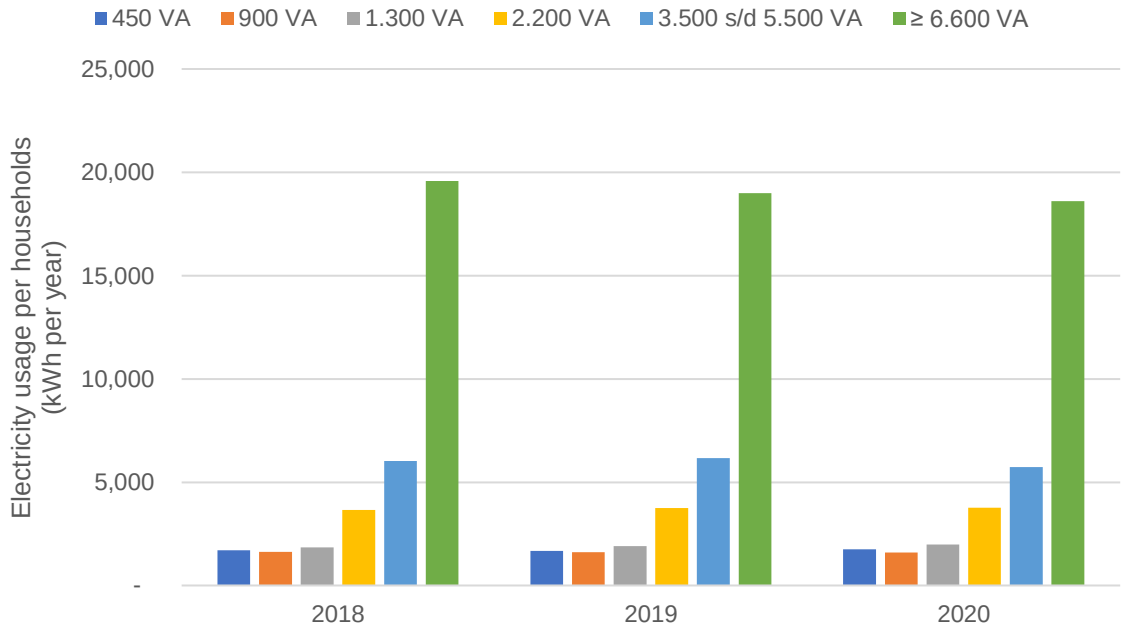
Understand **Where** to act

Development focus

900 VA
1300 VA
2200 VA
3300 VA

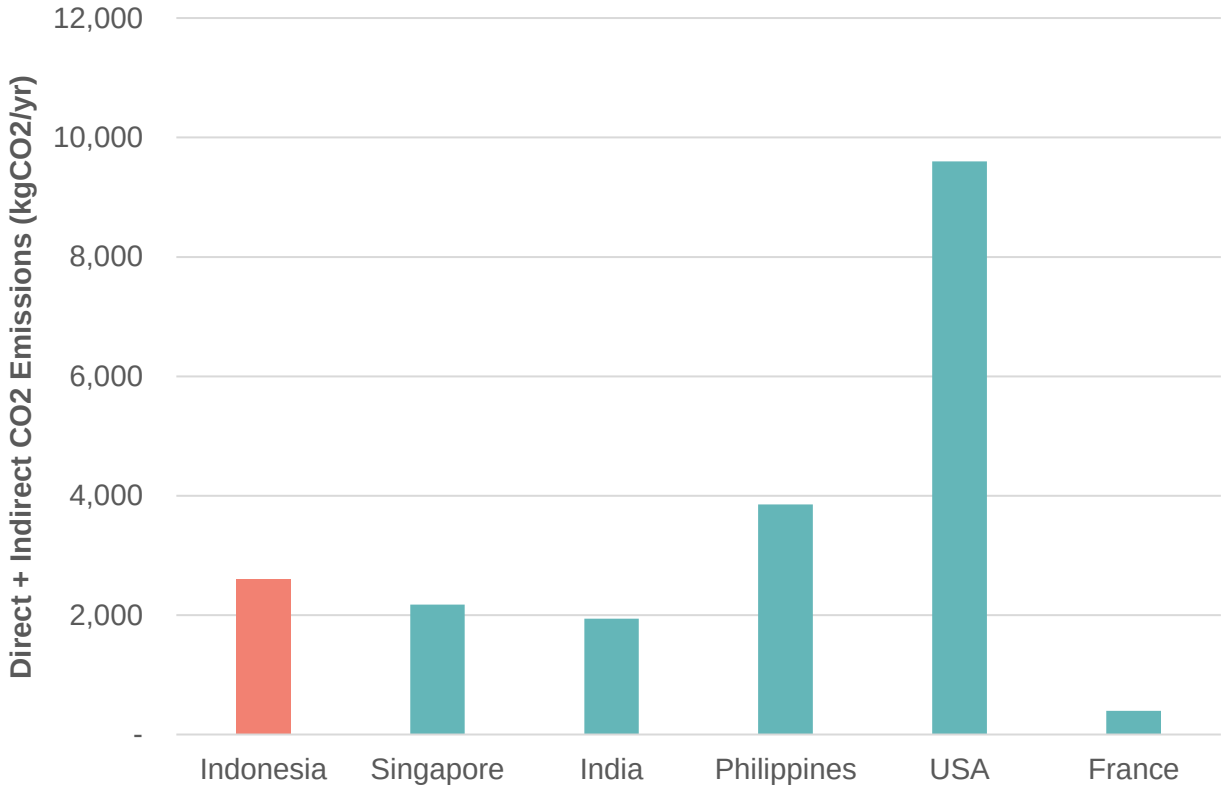


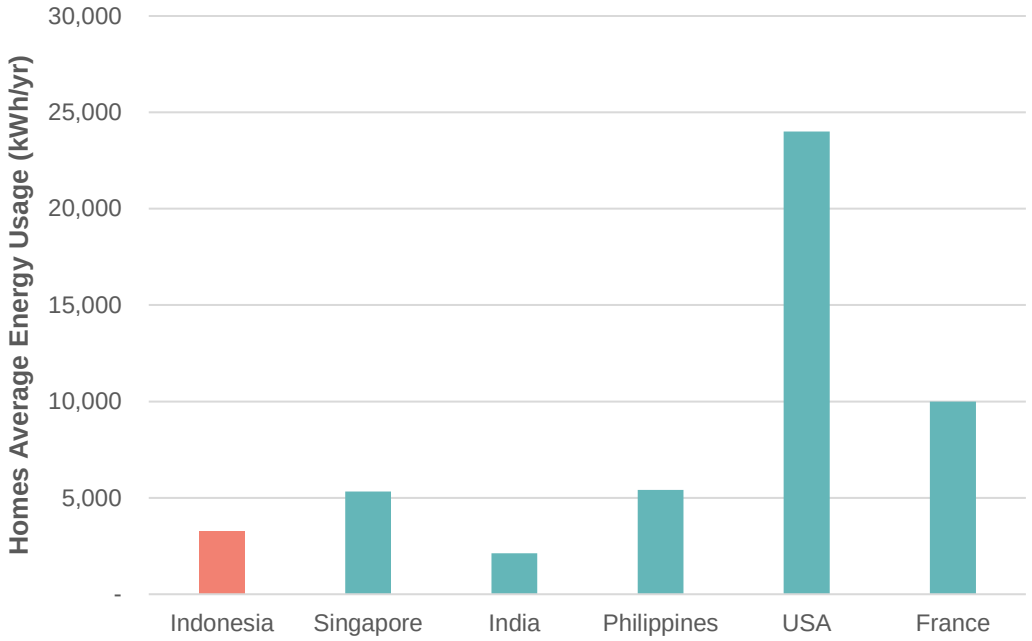
Data source: Survey GBPN & UNTAG

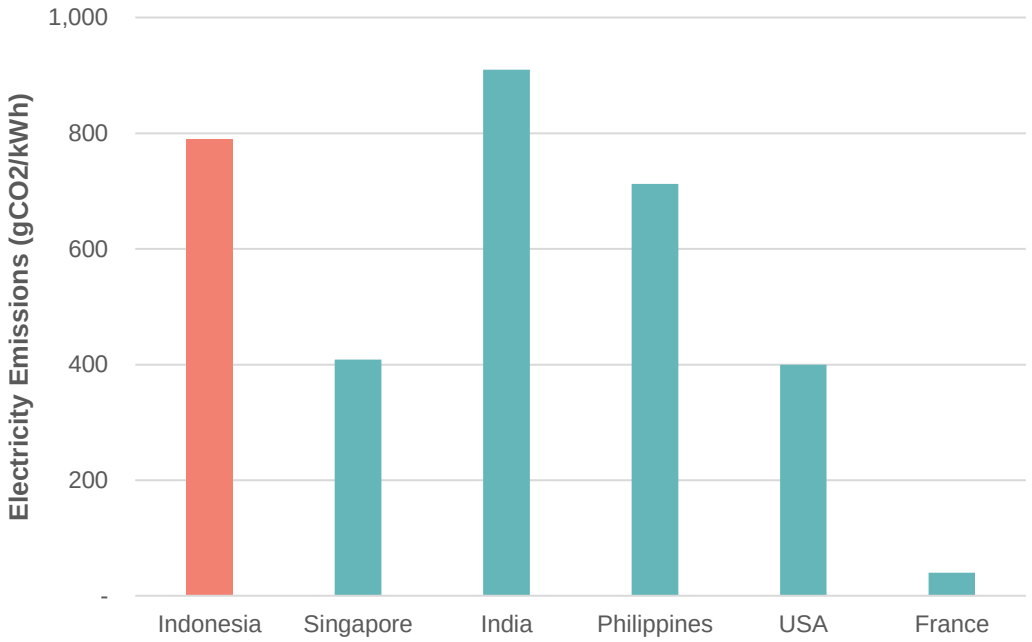


Data source: PLN Samarinda, 2021

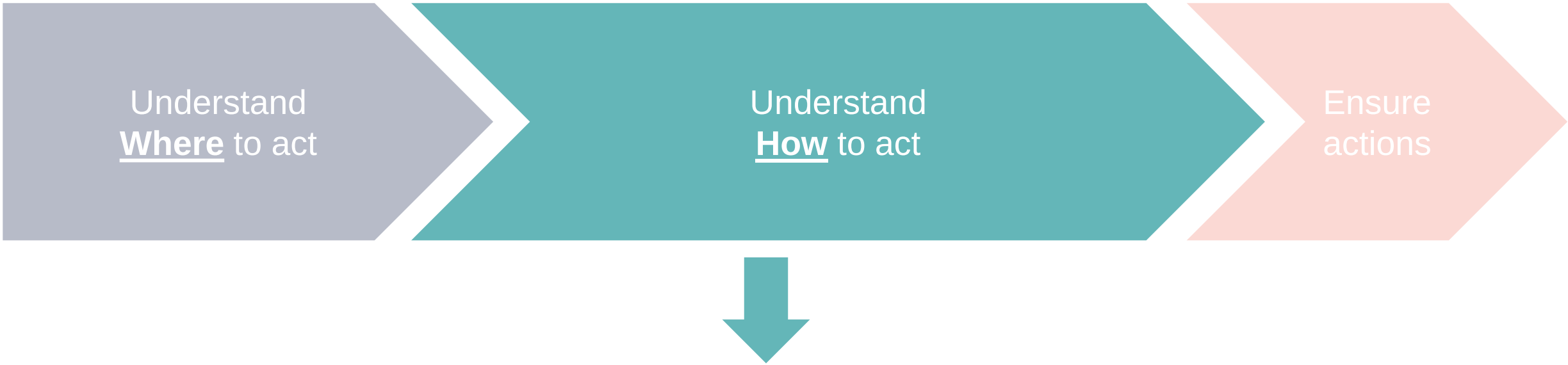
How to **prioritize** policy actions (technical guidelines) to effectively
decarbonize the built environment?







How to **prioritize** policy actions (technical guidelines)
to effectively
decarbonize the built environment?



How to **prioritize** policy actions (technical guidelines) to effectively decarbonize the built environment?

Understand **How** to act

Data source: GBPN / UNTAG Samarinda, 2021

Baselining Work

Samarinda Homes, **today**




Parameter	Unit	900 VA	1300 VA	2200 VA	3300 VA
Orientation	Degrees	270	270	270	270
Gross Floor Area	m2	54	70	97	130
Floors	unit	1	1	1	2
Bedrooms	unit	2	2	3	3+1
Bathrooms	unit	1	1	2	3
Pitch roof	N/A	metal sheet	metal sheet	metal sheet	metal sheet
Ceiling	N/A	gypsum	gypsum	gypsum	gypsum
Walls	N/A	red brick	red brick	red brick	red brick
WWR	N/A	20%	20%	20%	20%
Glass	N/A	5mm clear	5mm clear	5mm clear	5mm clear

How to **prioritize** policy actions (technical guidelines) to effectively decarbonize the built environment?

Understand **How** to act

Data source: GBPN / UNTAG Samarinda, 2021

Baselining Work

Samarinda Homes, **today**




AC specifications	**COP**	**2.7**	**2.7**	**2.7**	**2.7**
	hours / Bedroom / day	6	6	13	13
AC temp setting	Celsius	22	22	22	22
Lighting	Watts	16	16	16	16
	Units	6	6	10	14
	Hours per unit per day	7	7	12	12
Home appliances				variable	

GBPN

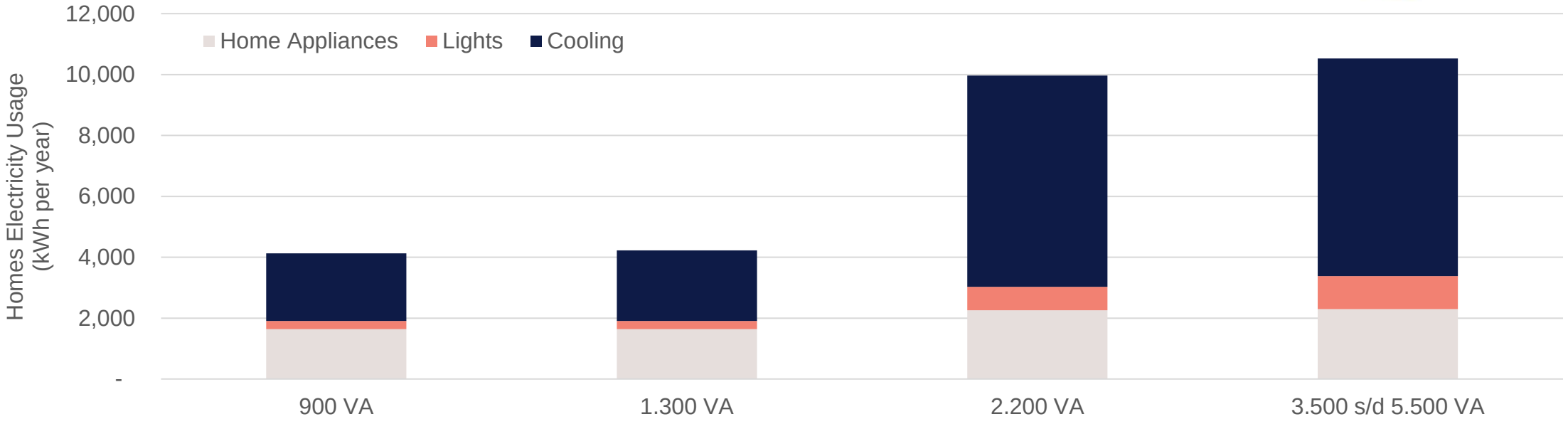
How to **prioritize** policy actions (technical guidelines) to effectively decarbonize the built environment?

Understand **How** to act

Data source: GBPN, 2021

Baselining Work

Samarinda Homes, **today**



How to **prioritize** policy actions (technical guidelines) to effectively decarbonize the built environment?

Understand **How** to act

Improvement opportunities

Samarinda Homes, **tomorrow**

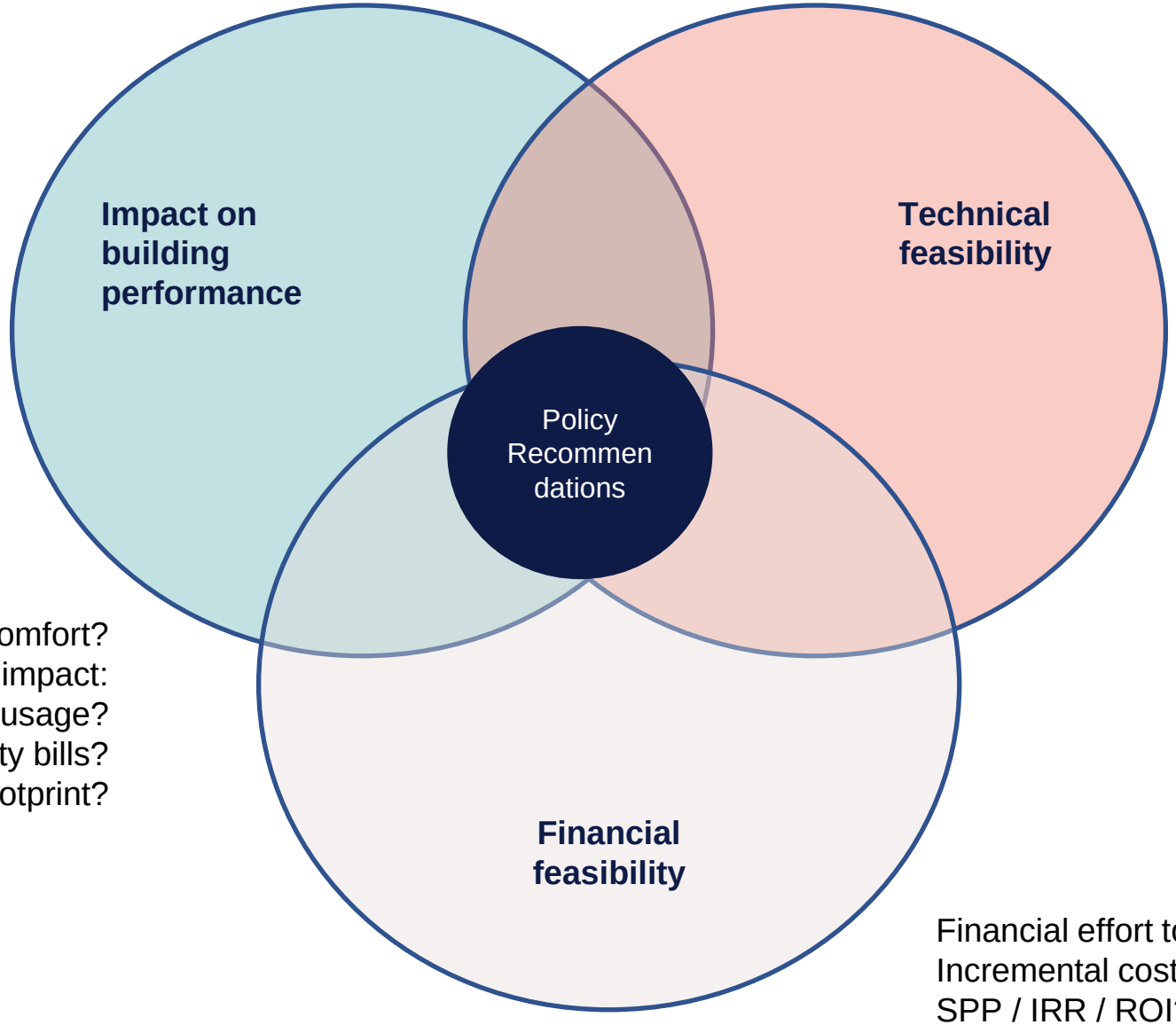
Building Envelope

Equipment / MEPS

Behaviours

How to prioritize technical recommendations / guidelines
As part of highly adopted and goal-oriented policy reform?

- Building Envelope
- Equipment / MEPS
- Behaviours



Product / service market readiness?
Expertise / capacity availability?

How does the solution impact comfort?
How does the solution impact:
- Energy usage?
- Utility bills?
- CO2 footprint?

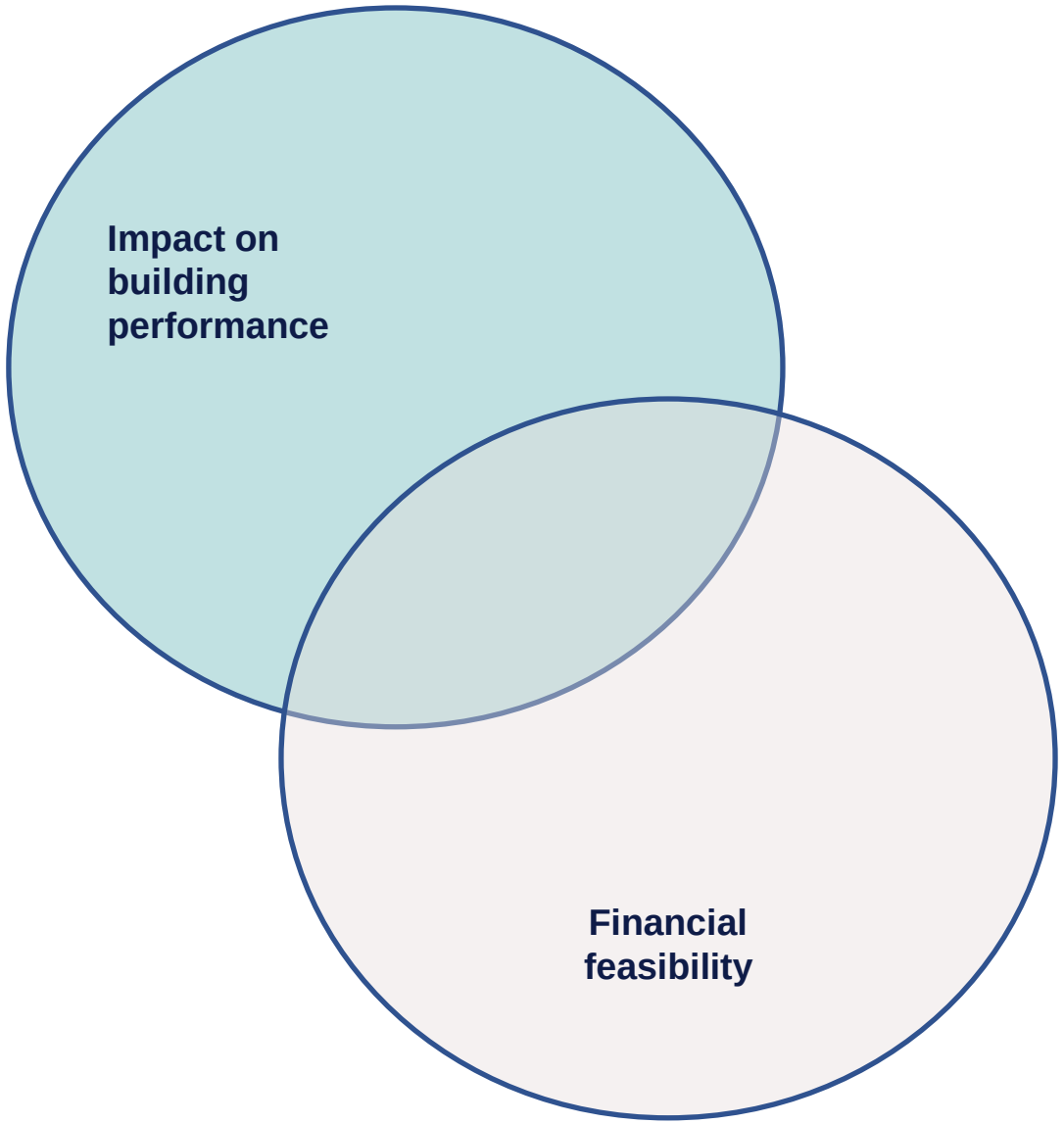
Financial effort to implement the solution?
Incremental cost?
SPP / IRR / ROI?
Incentives?

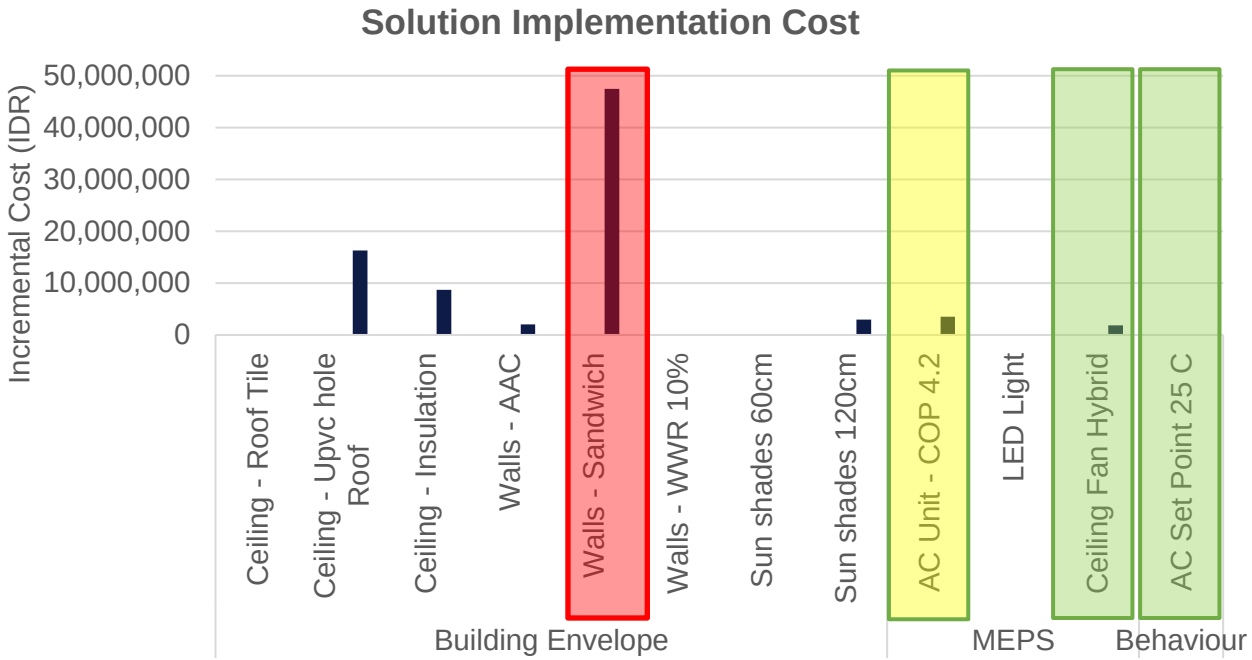
How to prioritize technical recommendations / guidelines
As part of highly adopted and goal-oriented policy reform?

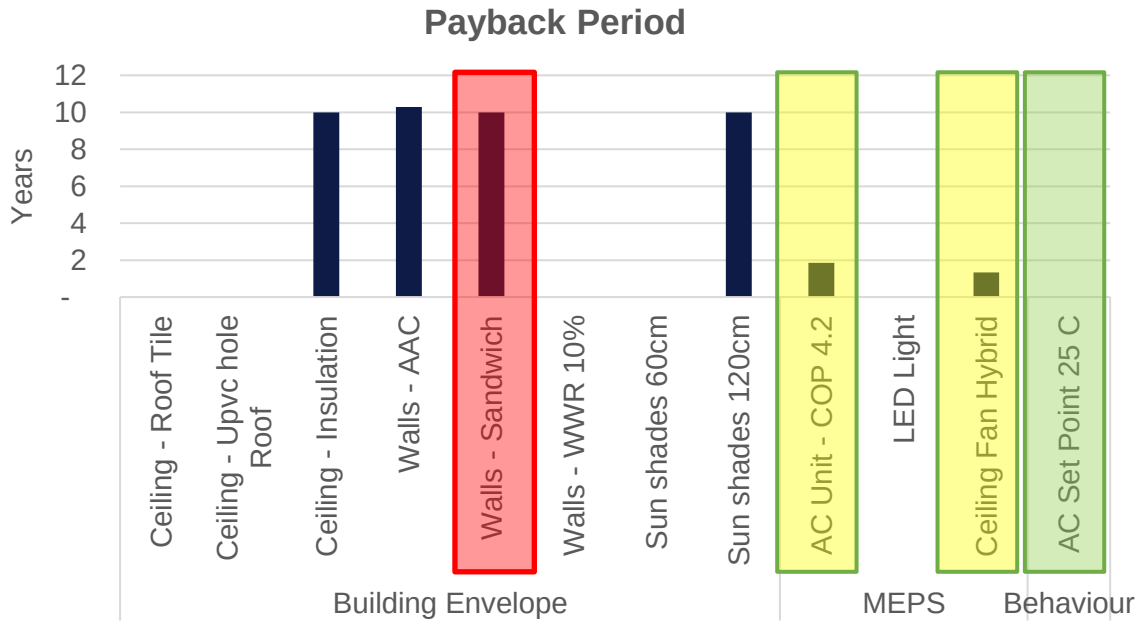
Impact on building performance

Highest opportunities for Energy Savings

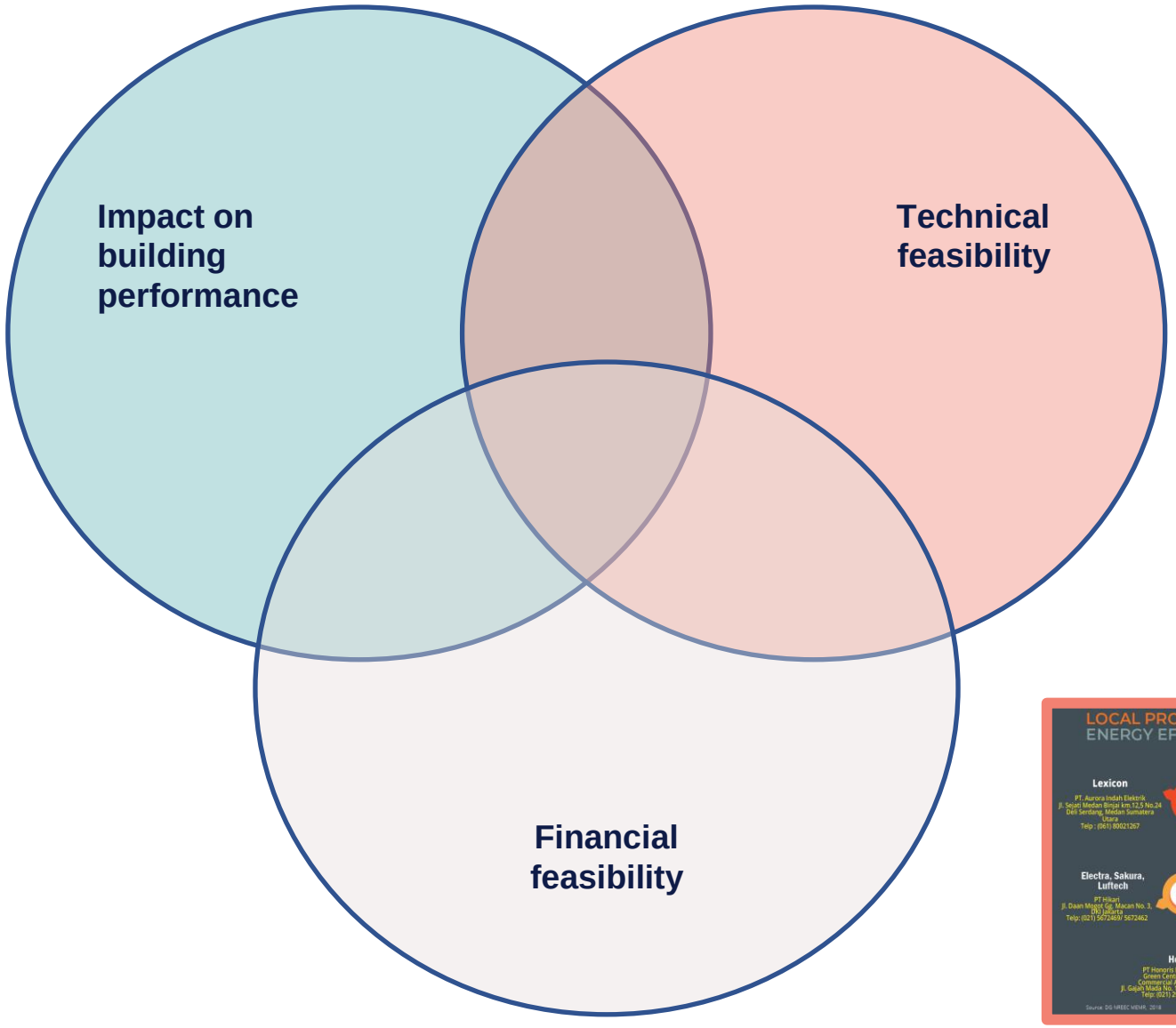
How to prioritize technical recommendations / guidelines
As part of highly adopted and goal-oriented policy reform?

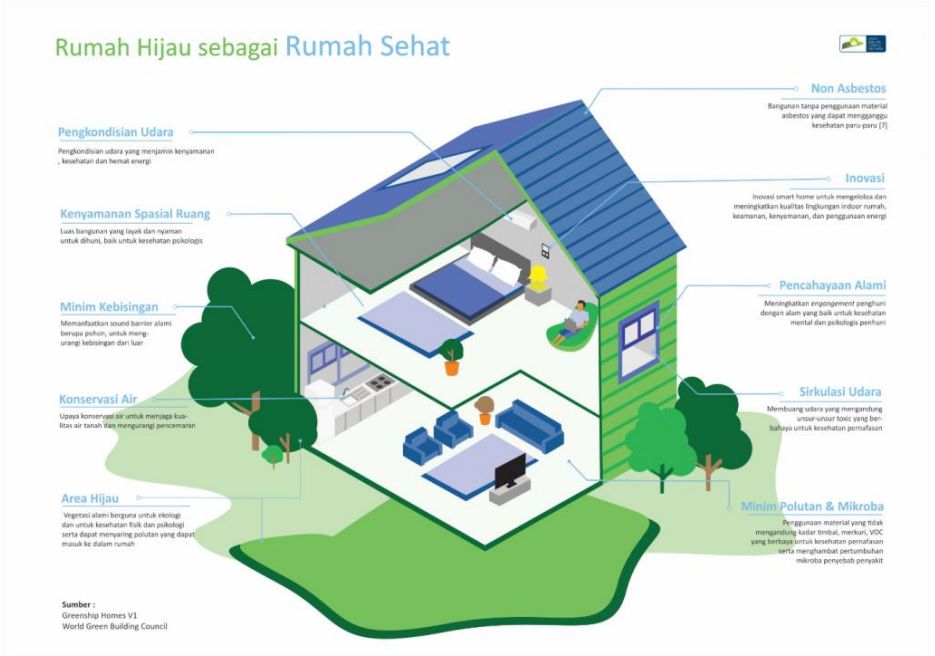


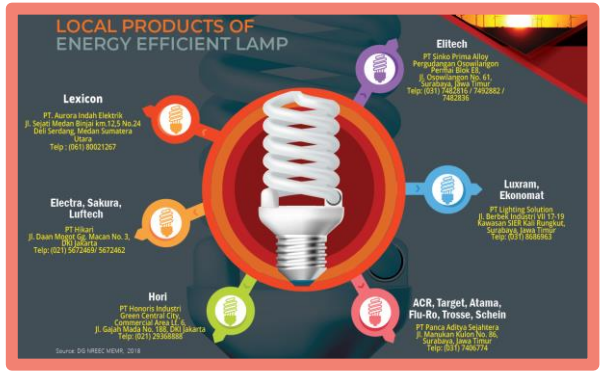


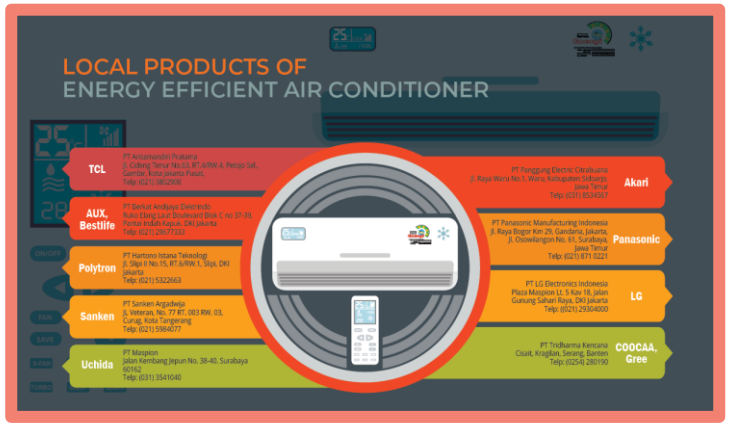


How to prioritize technical recommendations / guidelines
As part of highly adopted and goal-oriented policy reform?









How to prioritize technical recommendations / guidelines
As part of highly adopted and goal-oriented policy reform?

Energy Efficiency Measures Comparative Analysis		Potential Energy Savings	Simple Payback Period	Incremental Cost	Market readiness	
		%	Years	IDR		
Building Envelope	Ceiling - Roof Tile	1%	-			*recommended*
	Ceiling - Upvc hole Roof	0%	-	16,271,287		
	Ceiling - Insulation	1%	>10	8,719,730		
	Walls - AAC	2%	7	2,022,772		
	Walls - Sandwich	9%	>10	47,429,882		
	Walls - WWR 10%	1%	-	-		
	Sun shades 60cm	1%	-	-		
	Sun shades 120cm	1%	>10	2,933,822		
MEPS	AC Unit - COP 4.2	21%	2	3,500,000		*recommended*
	LED Light	2%	-			*recommended*
Behaviour	Ceiling Fan Hybrid	16%	1	1,838,760		*recommended*
	AC Set Point 25 C	8%	-			*recommended*

Policy recommendation as of now

Development focus for tomorrow / Needs for incentives

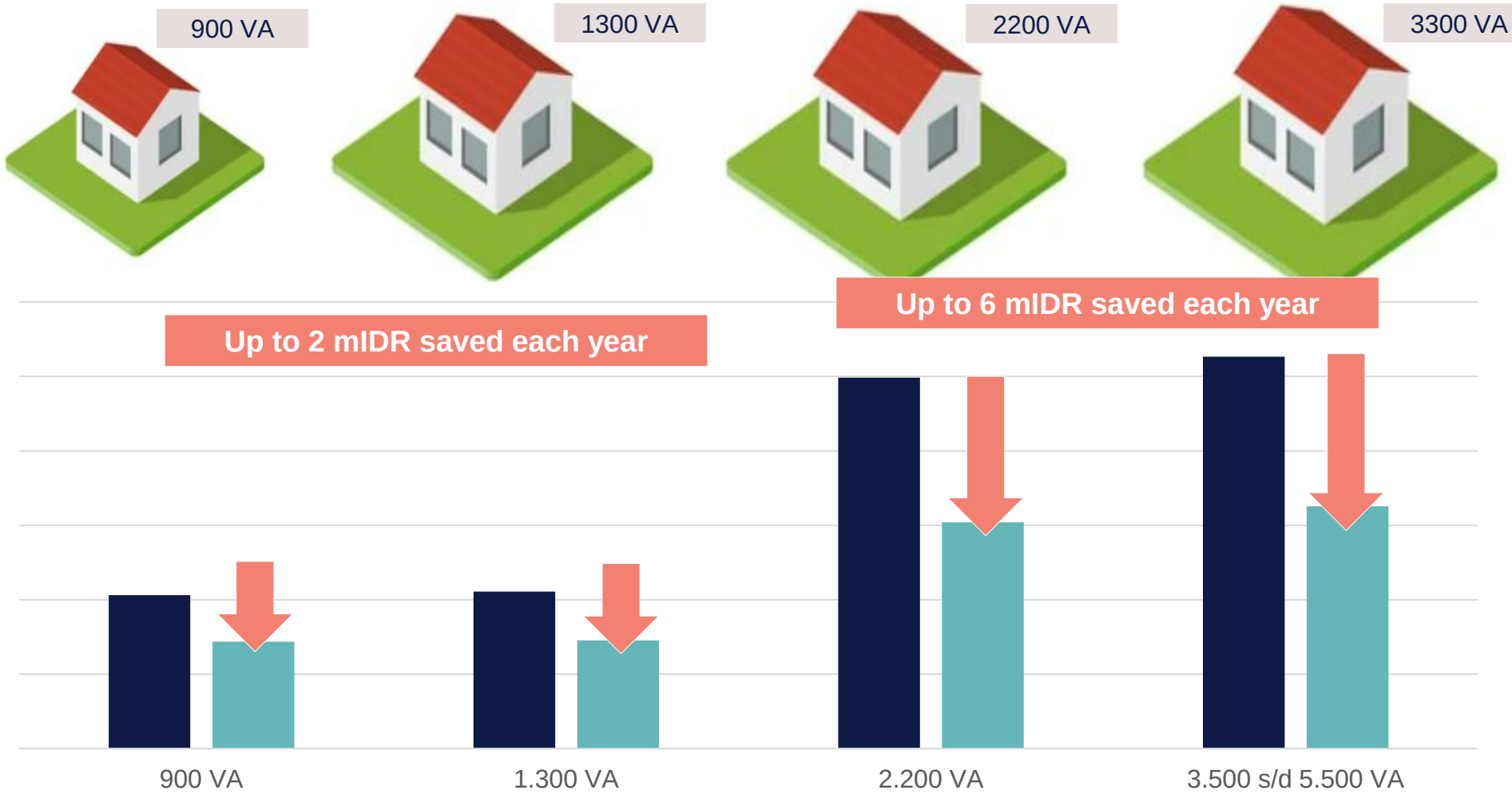
How to **prioritize** policy actions (technical guidelines) to effectively decarbonize the built environment?

Understand **How** to act

Data source: GBPN, 2021

Energy Modeling

Samarinda Homes, **tomorrow**



GBPN

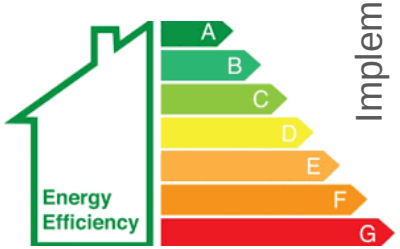
How to **prioritize** policy actions (technical guidelines) to effectively decarbonize the built environment?

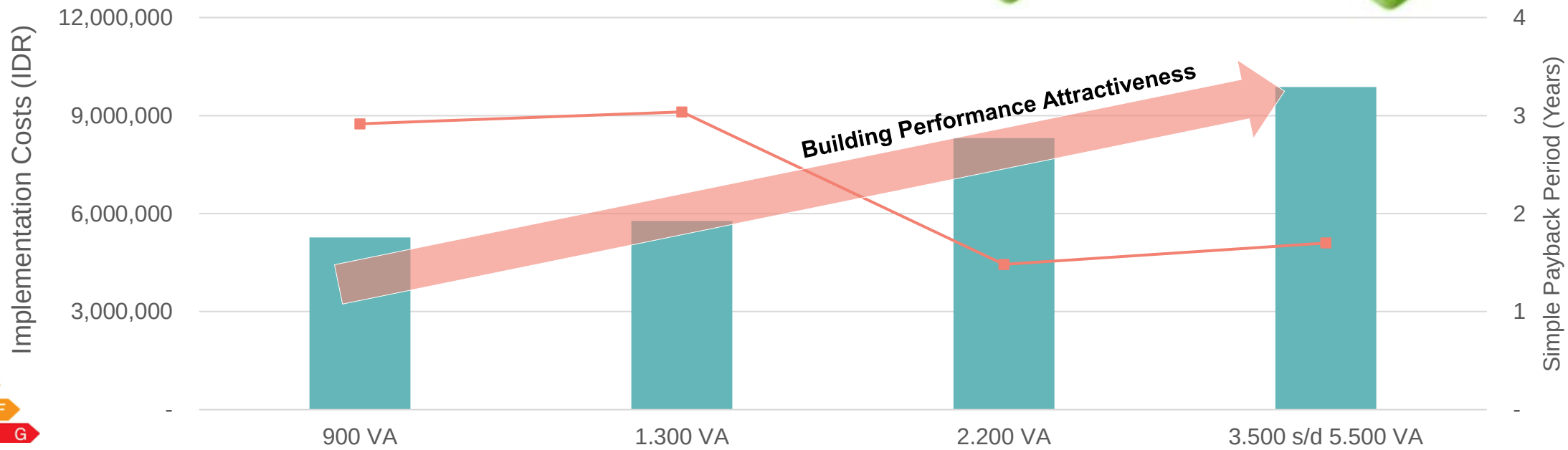
Understand **How** to act

Data source: GBPN, 2021

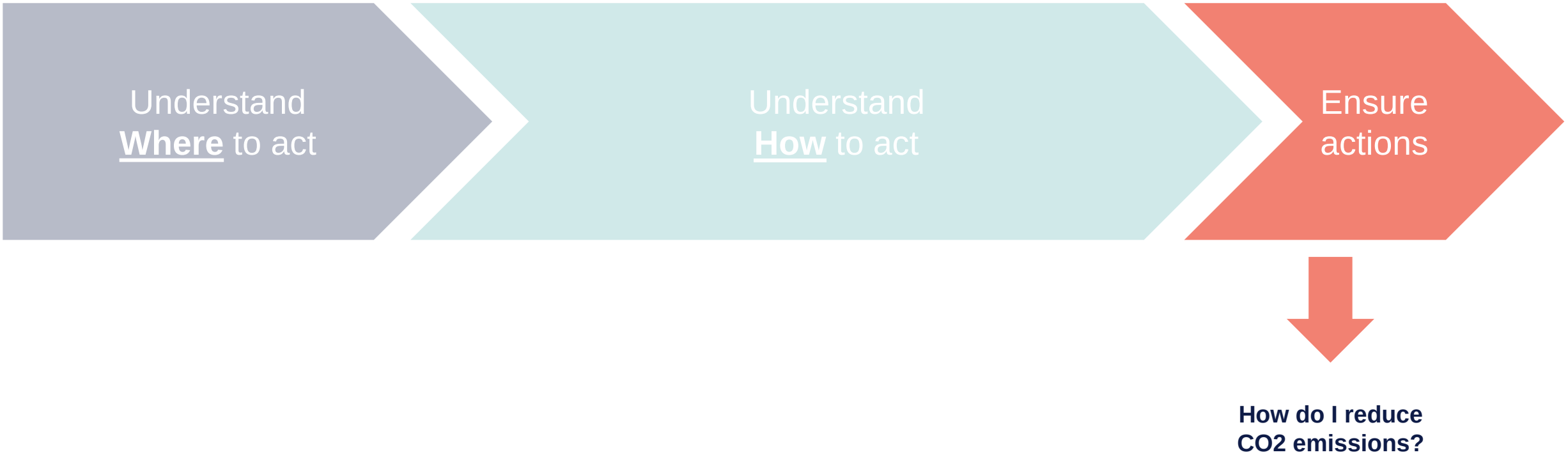
Energy Modeling

Samarinda Homes, **tomorrow**





How to **prioritize** policy actions (technical guidelines)
to effectively
decarbonize the built environment?

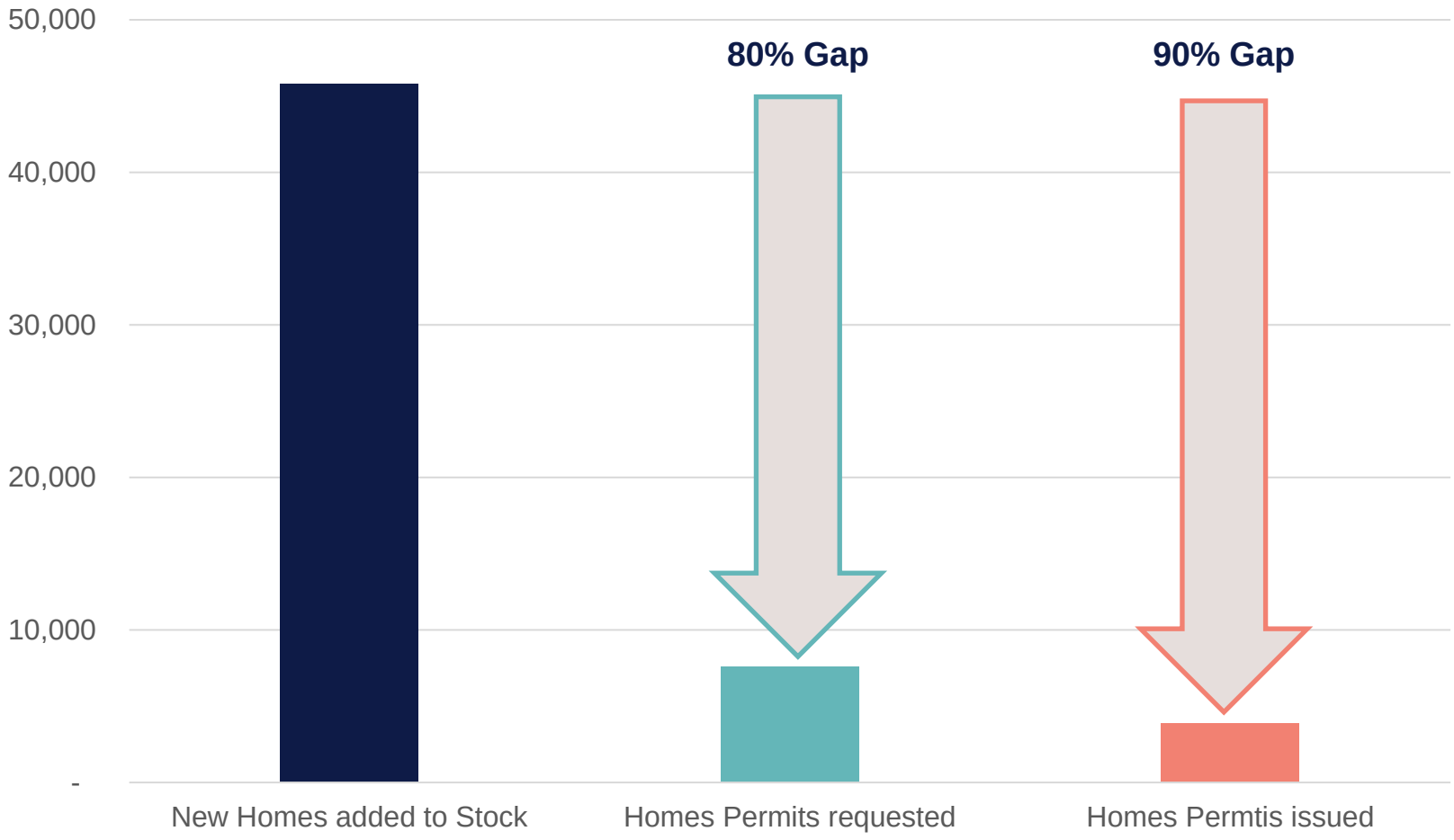


How to **prioritize** policy actions (technical guidelines) to effectively decarbonize the built environment?

Ensure actions

Point of Attention

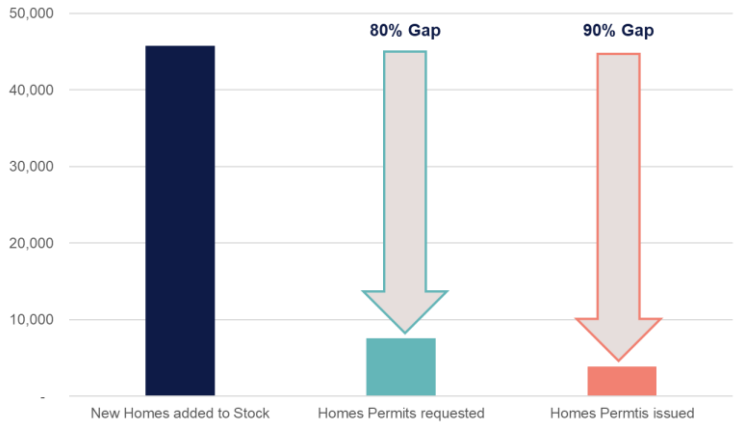
Impact of current policies reform?



Data source: PLN Samarinda, 2021
DPMPSTP Samarinda

How to **prioritize** policy actions (technical guidelines) to effectively decarbonize the built environment?

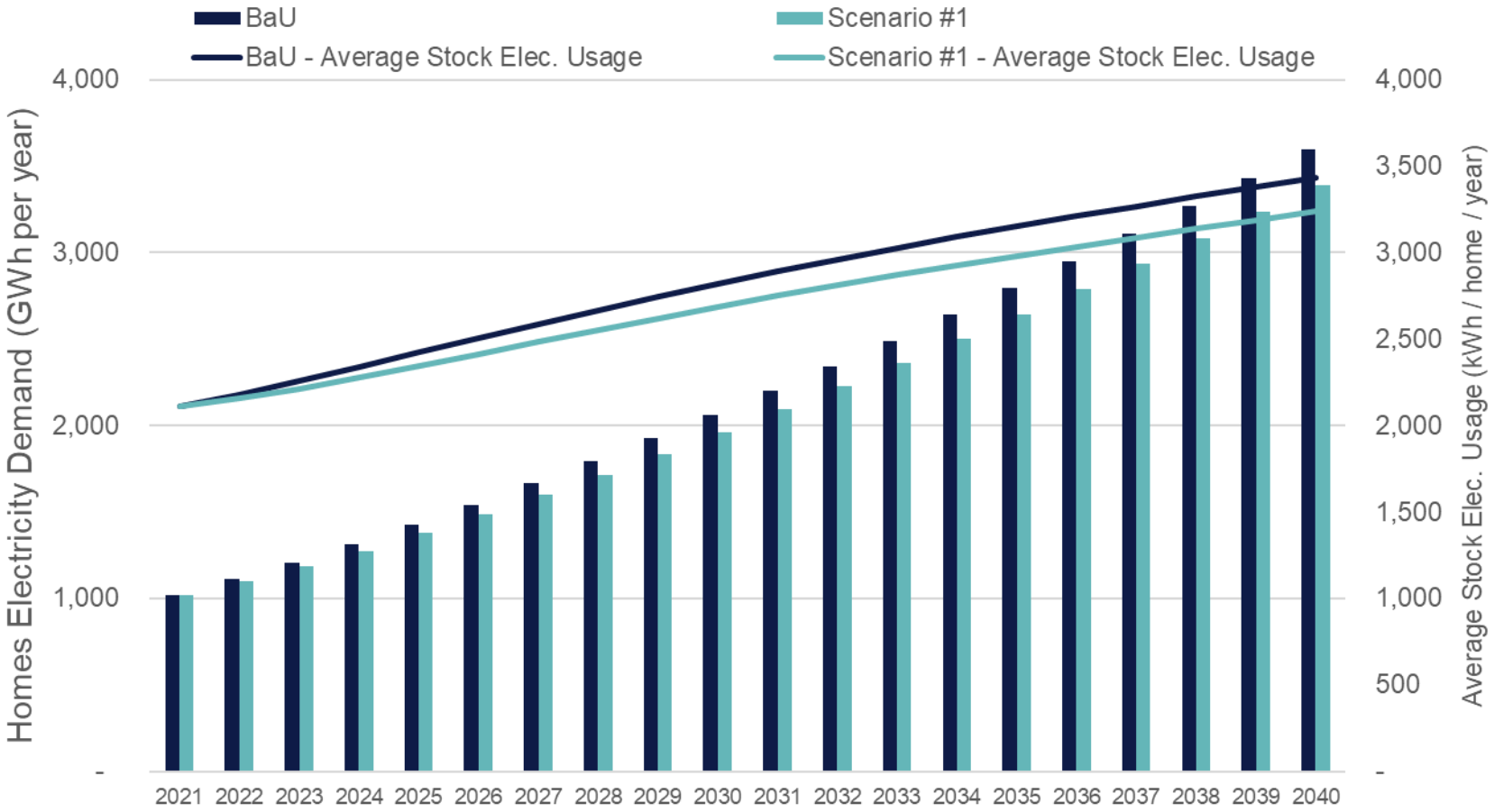
Ensure actions



Without

an increase in permit process adoption / regulation compliance rates

savings **will not be achieved**.



GBPN

How to **prioritize** policy actions
to effectively
decarbonize the built environment?

Ensure actions

Same Technical Guidelines

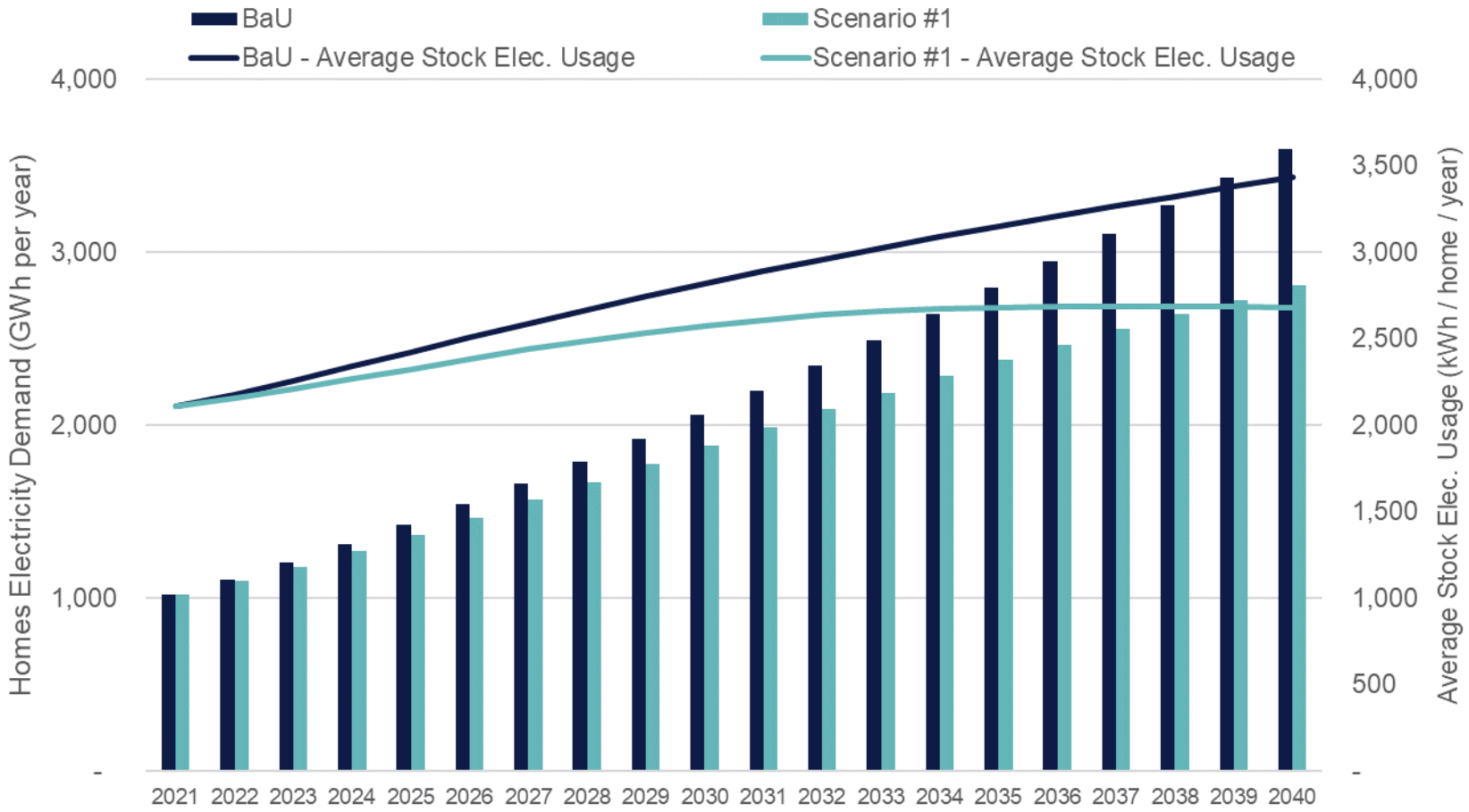
\+ Capacity Building / Knowledge Management / SOP

Inclusive, participative approach toward policy reform

Communication, raising awareness campaigns on benefits / co-benefits of **Higher Building Performance**

SOP for permits procedures, coordinated and socialized among services (PUPR, DPMPTSP, …)

Better resources management



How to **prioritize** policy actions (technical guidelines)
to effectively
decarbonize the built environment?

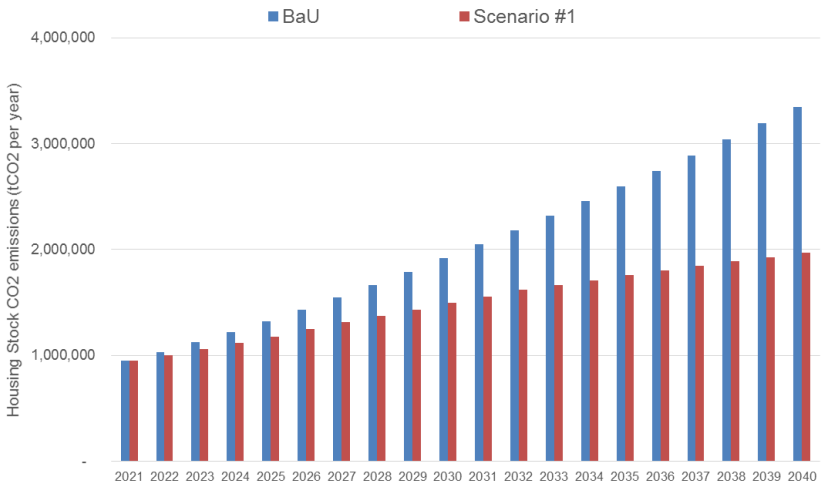
Suggested Orientations and Policies Strategies

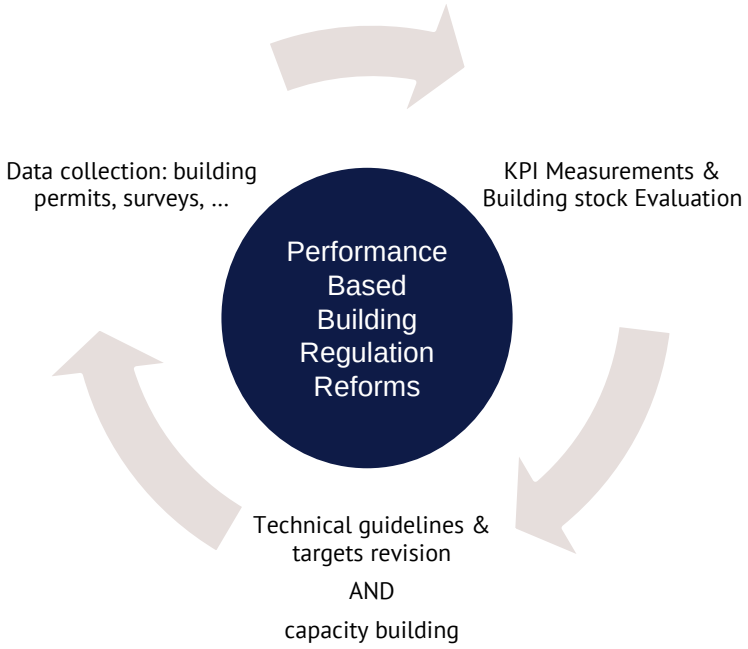
Toward more effective
Decarbonization of the built environment

GBPN

Data driven policies reform to ensure a phased transition toward low carbon buildings/cities.

<u>Realistic</u>, phased mitigation trajectories





Benchmarking baselines development (at city or national level) with low carbon best practices will allow identifying *evidence-based* **Mitigations Opportunities**, and help define clear orientations as part of the policy reform process, to ensure reaching decarbonisation goals.

Definition of **key data and KPI** for building stock & performance evaluation

Definition of sound **<u>data collection protocols</u>** through local actors

Socialization and standardization of **<u>those protocols</u>** with **relevant key stakeholders**

Capacity building of building authorities: *data processing & evaluation* toward impactful policy reform

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

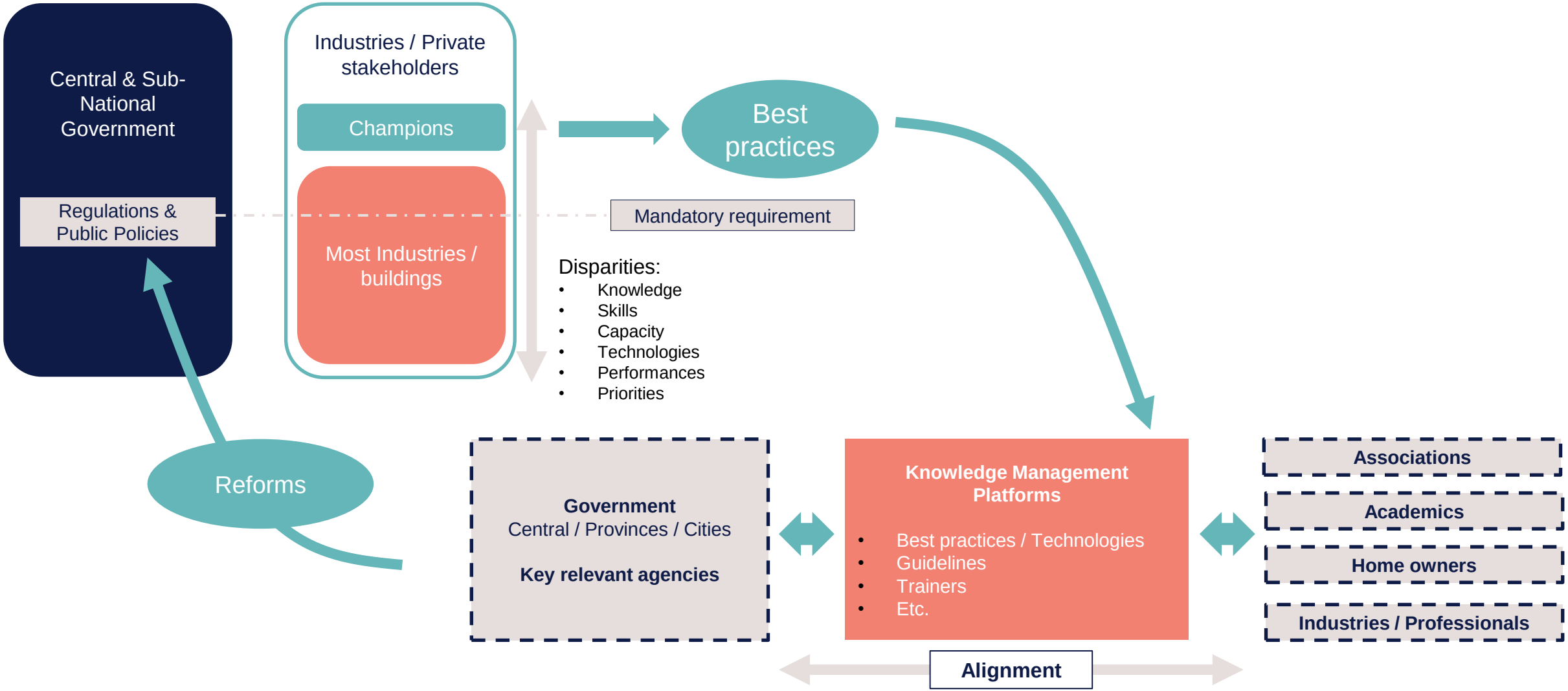
- Status-quo and capacity mapping
- Raising awareness and knowledge sharing
- Technical and administrative guidelines development
- Multi stakeholder consultations

Acceptance by the private sector:
- Building practitioners
- Industries (building materials manufacturers)
- Associations
- Building owners

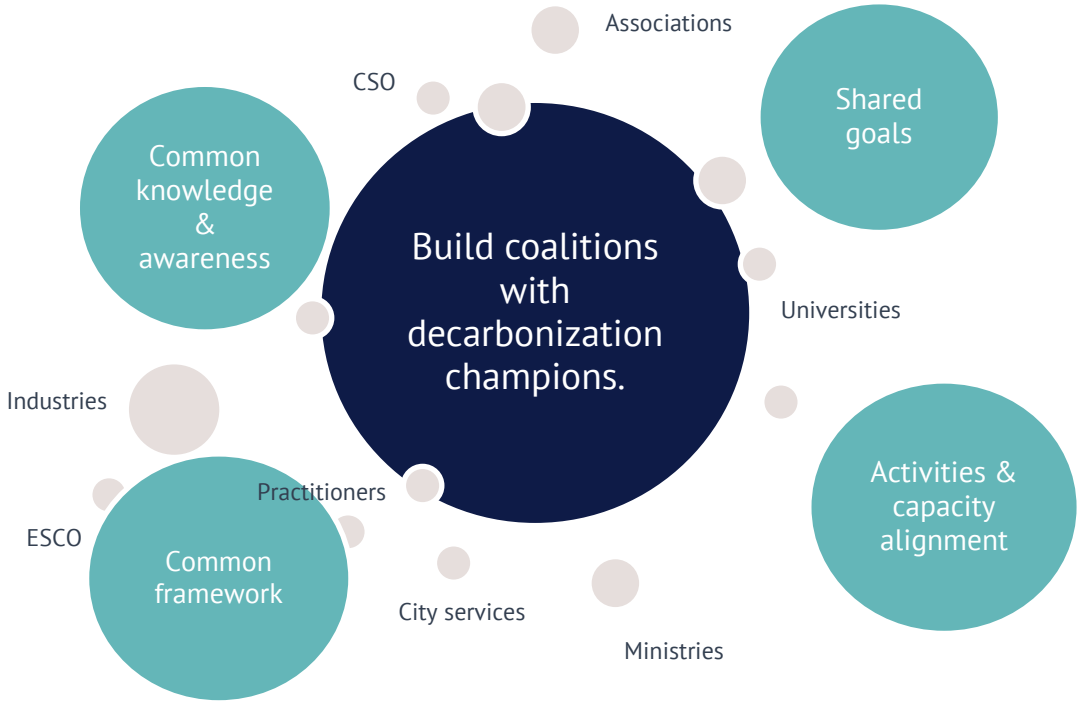
Greater ownership among public authorities:
- Across key ministries
- Throughout key city / regency services

GBPN

Public-private, cross sectorial **sustainable Knowledge Transfer & alignment** to ensure effective transition.



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



The **<u>up-take</u>** 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:**

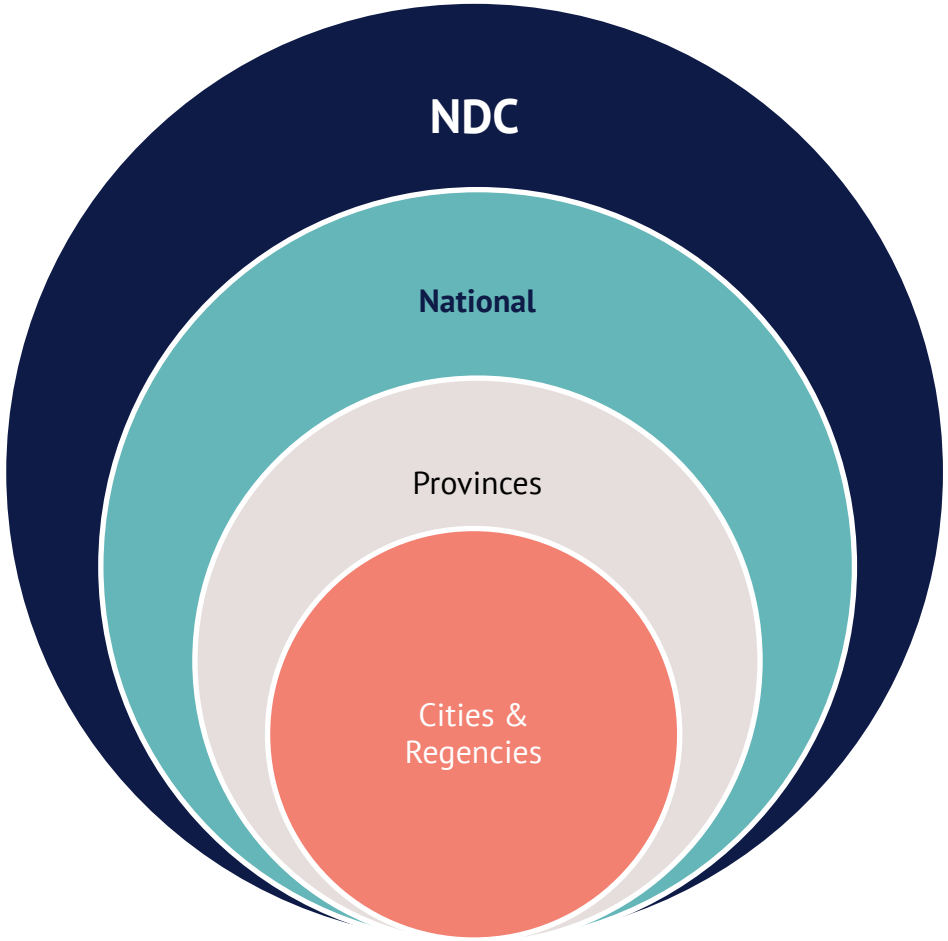
- **Recognized**
- **socialized and**
- **encouraged**.

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

Review low carbon buildings related public policies: implementation, savings achieved and gap-analysis.

1. Build evidence-based decarbonization cases in high-impact **cities/regencies**.
2. Identify best practices (regulation, project, incentive) scalability considerations.
3. Establish relevant and effective replication mechanisms with key stakeholders.
4. Prioritize program and projects implementations based on and aligned with Indonesia NDC targets.

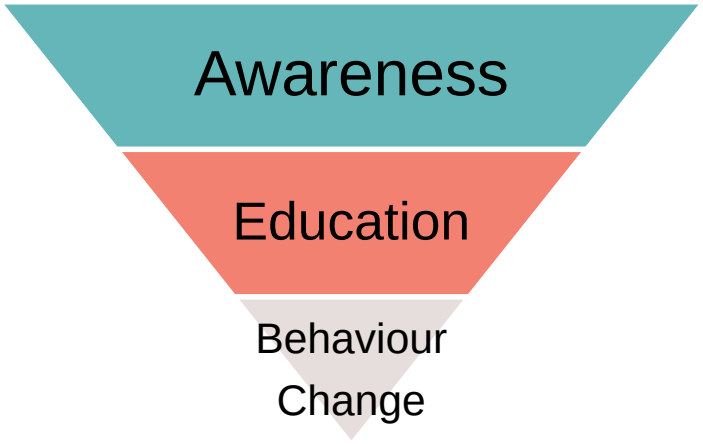


Effective and rapid scaling up of building best practices will rely upon:

- a good understanding of the gaps and challenges toward their implementation and enforcement
- the opportunities and limits of the new regulations and regulatory tools developed (such as the SIMBG)
- the implication and involvement of key and relevant actors such as the Ministry of Home Affairs.

Raise public awareness to change the low carbon buildings narrative.

1. Develop an awareness-raising strategy and identify stakeholders and potential coalition
2. Identify target audience and develop key messages that tailored to each audience.
3. Identify most impactful channels, media and platform
4. Plan and run awareness activities such as webinars, FGDs, trainings, media interviews, podcast, etc



Developing a good awareness-raising strategy is a key step to **inform and educate people,** especially about the co-benefits of low carbon buildings, such as:

- Comfort improvement,
- Health improvement,
- Homes running costs reduction.

A good awareness-raising strategy will build upon and rely on evidence based recommendations from case studies, to effectively influence behaviour and beliefs of the targeted audiences, that might also influence over-all public opinion.

Raising Awareness

Policy Makers	Professionals	Users

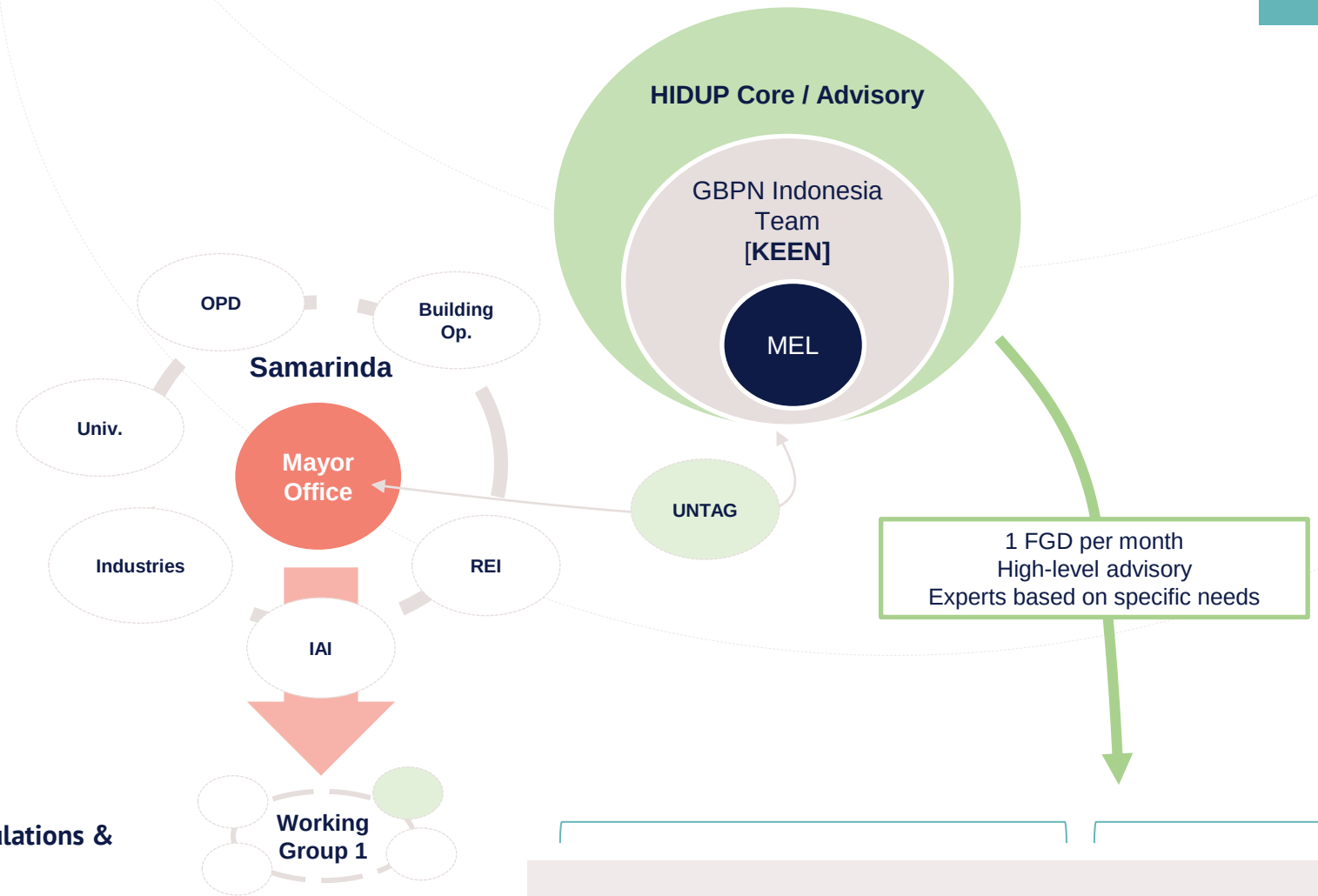
Awareness-raising and dissemination is critical to promote participatory and inclusive process to reach the target for building decarbonization especially in residential.

This shift needs demonstration projects, documentation and institutionalization of knowledge hubs that can provide personal advice to homeowners about cost-effective ways to lower their carbon emissions, but more importantly, to live better in their buildings.

Finally, aligning with cultural specificities and trends will ensure the large scale adoption of the message conveyed.

HIDUP Indonesia
Setting the OKR
Engagement strategies

HIDUP Coalition Pilot Jurisdiction
Implement the projects



WG Leads

Theme #1:
Public Policies, Regulations & Incentives

Theme #2:
Market knowledge, Technologies & Financing

Theme #3:
Raising awareness among stakeholders

Bi-weekly meetings

- WG members identification
- **Gaps & Needs** Mapping
- Targets & objectives definition
- Roadmap and activities set-up

Monthly meetings

- FGD and sharing sessions
- Trainings
- Resources management
- …

Decarbonization of the building supply chain

Thank you!
See you soon..

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