

City-led Policy for Building Energy Efficiency Jakarta

Tokyo, 29th October 2015

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Past President ASHRAE Indonesia Chapter 2009-2010

Core Founder of GBCI

NATIONAL COMMITMENT TO REDUCE GHG EMISSION

Global Warming and Climate Change has been a Hot Issue

- National Commitment to reduce the GHG Emission in 2020

Own efforts

26%
(767 mln Ton)

Own efforts and
international support

41%
(26%+15%)

Presidential Reg No. 61/2011
RAN-GRK

Presidential Reg No. 71/2011
GHG Inventory and MRV

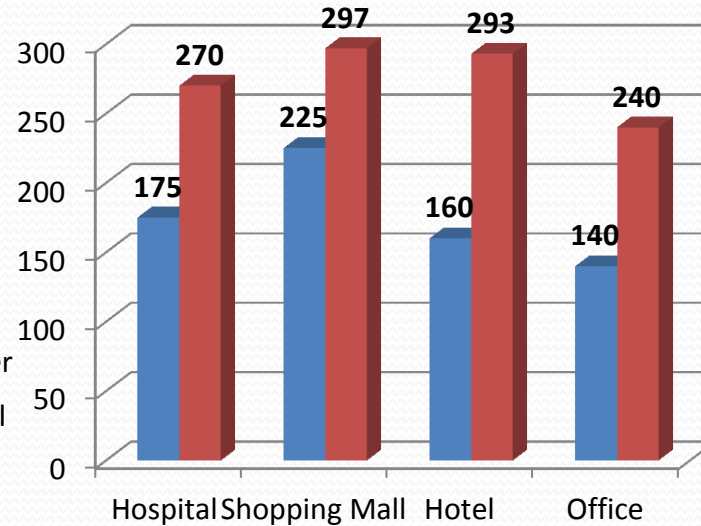
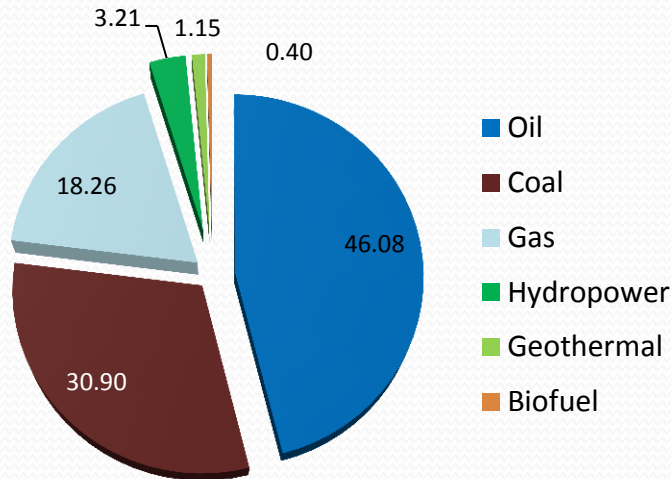
Through the development of
new renewable energy and
implementing energy
conservation by all sectors

Forestry, Peat Land, Agriculture (680 million ton)
Energy and transportation Sector (38 million ton)
Industry (1 million ton)
Waste (48 million ton)



Energy Condition

National Primary Energy Supply 2013



Energy Efficiency Index
(KWH/m2.yr)

■ Japan JICA Study 2009

■ Jakarta IFC Study 2011

POTENTIAL SAVINGS

Sector	Final Energy Consumption Per Sector Year 2013 (Million BOE) *	Potential of EC	Target of Energy Conservation Sectoral (2025)
Industry	355 (42.2%)	10 – 30%	17%
Transportation	324 (38.7%)	15 – 35%	20%
Household	100 (11.9%)	15 – 30%	15%
Commercial	36 (4.3%)	10 – 30%	15%
Others (Agriculture, Construction, and Mining)	23 (2.7%)	25%	-





❑ Not for profit organization

- Established : April 2008 by 50 core founder : individu professional and 20 corporate founding member.

- GBCI Rating Tools : **GREENSHIP**
Launching on early 2010



- Deeply involved in developing some regulations & activity :



- Environment Minister Decree no.8/2010 about Green Building Certification



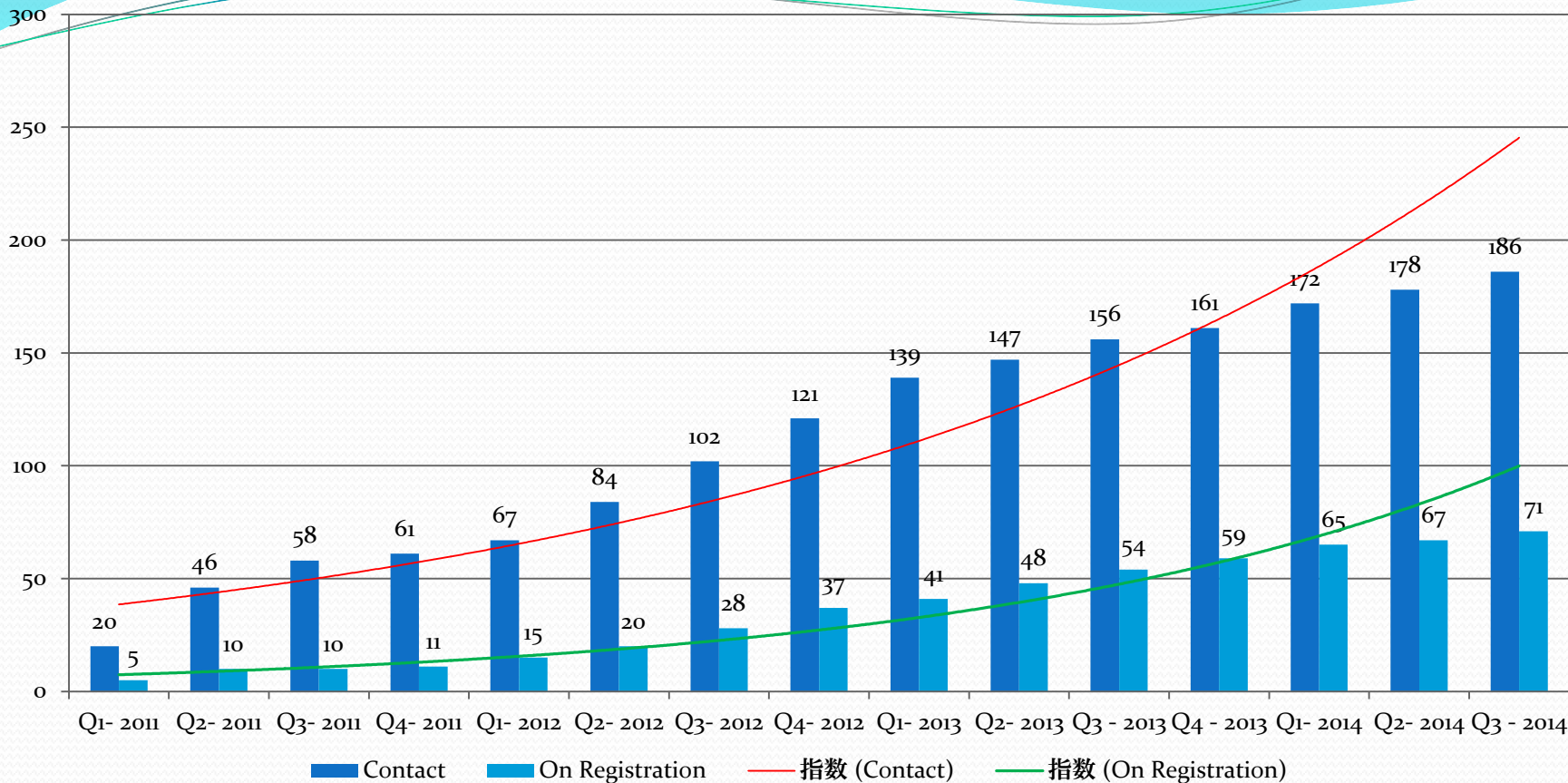
- Jakarta Governor Decree no.38/2012 for Green Building



- Public Works Minister Decree No.2/2015 for Sustainability Building



- Local Partner for EDGE Certification Program



No.	Nama Proyek	NLAI (m2)	Energy Saving		CO2 Reduction (Ton)
			%	KWH/year	
1	New Building (Certified)	2,218	44.2%	0,181,516	9,072
2	New Building (DR)	68,325	27.8%	2,529,048	28,983
3	Existing Building	14,775	11.2%	4,565,148	12,978
TOTAL		75,318	23.5%	7,275,712	51,033

NEW BUILDING

EXISTING BUILDING



PT DAHANA .Tbk
GFA : 5108 m²

Energy saving : 42%



BCA TOWER
GFA : 71000 m²

Energy saving : 18%



Public Works Ministry Office
GFA : 25.440 m²

Energy saving : 38%



Sampoerna Strategic Square
GFA : 35471 m²

Energy saving : 10%



Institut Teknologi & Sains Bandung
GFA : 16.529 m²

Energy saving : 20%



German Centre Indonesia
GFA : 15000 m²

Energy saving : 12%



Excellence in Design for Greater Efficiencies (EDGE)

Assessment Tool

+

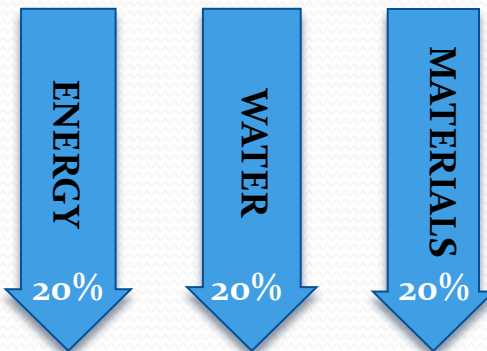
Global Standard)

+

Certification System



Free Web tool, can be used for
design guidance and evaluation
www.edgebuildings.com



Dynamically calculated
baseline using typical
construction practice for
the building type



Design certification +
Construction
certification issued after
audits

- **Free** : EDGE is free to anyone who registers (only certification carries a modest price tag).
- **Smart** : View capital costs and the payback period for commercial buildings.
- **Achieve** : The EDGE standard when **20% efficiency is met in energy, water, and embodied energy in materials**
- **Certify** : For a small investment, obtain EDGE certification and increase the **marketability** of your building project.

Homes	Hotels	Retail	Offices	Hospitals
RESULTS	Final Ener... 483.519 kWh/Month Final Wate... 0.920 m³/Month	Operational CO ₂ S... 1.506 tCO ₂ /Y... Embodied Energy... 385 MJ/m²	Base Case Util... 1.058 mRp/... Utility Costs Re... 236 mRp/...	Increment... 4.28 mRp Payback in... 1.7 yrs.
Design	Energy: 22....	Water: 20.9...	Materials: 2...	My Projects

Energy Efficiency Measures

Select options from the list below

OFE01 ☒ Reduced Window to Wall Ratio - WWR of 30%

OFE02 ☒ Reflective Paint/Tiles for Roof - Solar Reflectivity (SR) of 70%

OFE03 ☒ Reflective Paint for External Walls - Solar Reflectivity (SR) of 70%

OFE04 ☒ External Shading Devices - Annual Average Shading Factor (AASF) of 0.59

OFE05 ☒ Insulation of Roof Surface - U Value of 0.393

OFE06 ☒ Insulation of External Walls - U Value of 0.47

OFE07 ☒ Low-E Coated Glass - U Value of 3 W/m² K and SHGC of 0.45

OFE08 ☒ Higher Thermal Performance Glass - U Value of 1.95 W/m² K and SHGC of 0.28

OFE09 ☒ Natural Ventilation with Operable Windows and No A/C

OFE10 ☒ Ceiling Fans for Office Spaces

OFE11 ☒ Variable Refrigerant Volume (VRV) Cooling System - COP of 3.5

OFE12 ☒ Air Conditioning with Air Cooled Screw Chiller - COP of 3.3

OFE13 ☒ Air Conditioning with Water Cooled Chiller - COP of 6.71

OFE14 ☒ Ground Source Heat Pump - COP of 4.1

OFE15 ☒ Absorption Chiller Powered by Waste Heat for Space Heating - COP of 0.7

OFE16 ☒ Radiant Cooling and Heating System - COP of RC 7.87

OFE17 ☒ Recovery of Waste Heat from the Generator for Space Heating

OFE18 ☒ Variable Speed Drives on the Fans of Cooling Towers

OFE19 ☒ Variable Frequency Drives in AHUs

OFE20 ☒ Variable Speed Drives Pumps

OFE21 ☒ Sensible Heat Recovery from Exhaust Air - Efficiency of 60%

OFE22 ☒ High Efficiency Condensing Boiler for Space Heating - Efficiency of 90%

OFE23 ☒ Air Economizers During Favorable Outdoor Conditions

OFE24 ☒ Energy-Saving Light Bulbs - Internal Spaces

OFE25 ☒ Energy-Saving Light Bulbs - External Spaces

OFE26 ☒ Lighting Controls for Corridors and Staircases

OFE27 ☒ Occupancy Sensors in Bathrooms, Conference Rooms, and Closed Cabins

OFE28 ☒ Occupancy Sensors in Open Offices

OFE29 ☒ Daylight Photoelectric Sensors for Internal Spaces

OFE30 ☒ Solar Photovoltaics - 25% of Total Energy Demand

Edit default values, if required

North

South

East

West

Northeast

Northwest

Southeast

Southwest

SR

SR

AASF

[W/m².k] **0.555**

[W/m².k]

[W/m².k] **5.2**

SHGC

[W/m².k]

SHGC

SHGC

COP

COP

COP

COP

COP

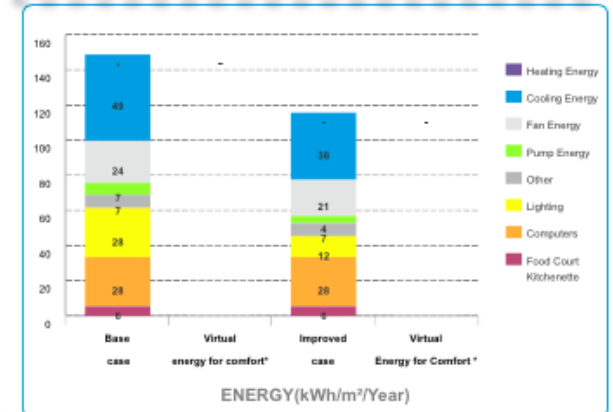
% Eff.

% Eff.

% of Annual Electricity Use

Capacity (kWp)

22.56% Meets EDGE Energy Standard



*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

How
EDGE
works?



ASHRAE
INDONESIA CHAPTER



Local Provincial Government of Jakarta

JAKARTA GREEN BUILDING REGULATION

Governor Decree No.38/2012

GOVERNMENT



AS A COMMITMENT FOR
DECREASING CO₂ EMISSION

BUILDING OWNER, TENANTS AND VISITOR



GREEN BUILDING DESIGN, CONSTRUCTION AND
OPERATION

1
**GOAL &
VALUE**

Construction
Permit

Occupancy
Permit

**NEW
BUILDING**

**EXISTING
BUILDING**

**GOVERNOR DECREE FOR
GREEN BUILDING
MANDATORY**


**CERTIFICATION BY GBCI
VOLUNTARY**



ECCJ



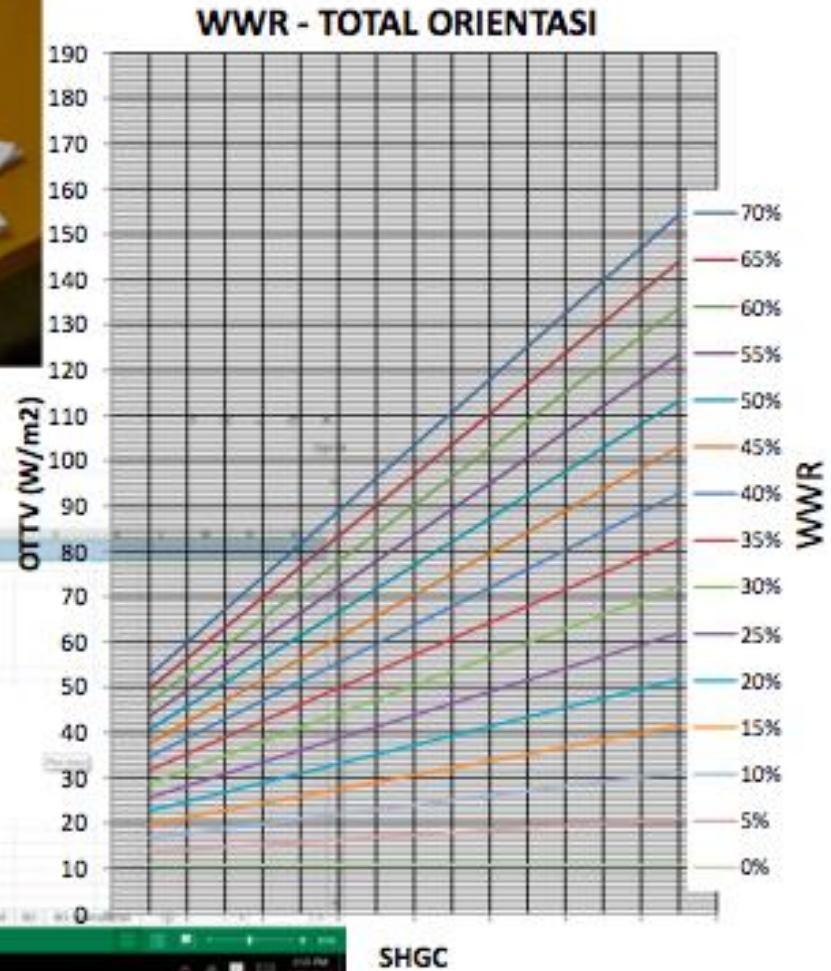
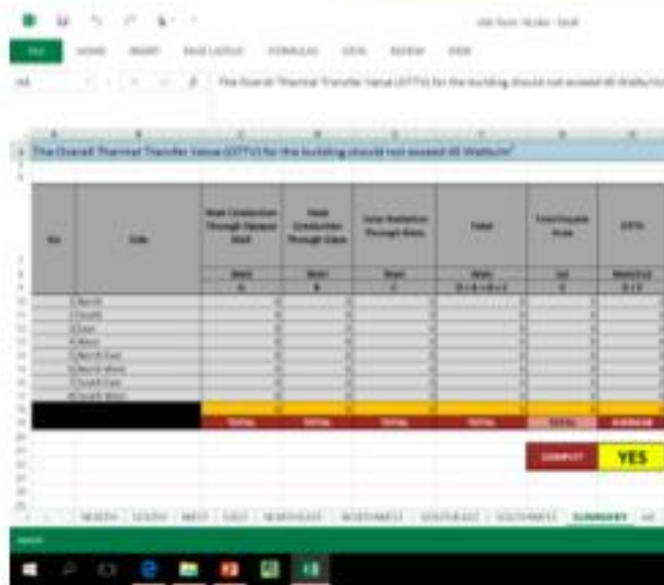
Mandatory for type of building :

 MALL	 OFFICE	 APARTEMEN	> 50.000 m^2
 HOTEL	 HOSPITAL		> 20.000 m^2
 CAMPUS	 SCHOOL		> 10.000 m^2





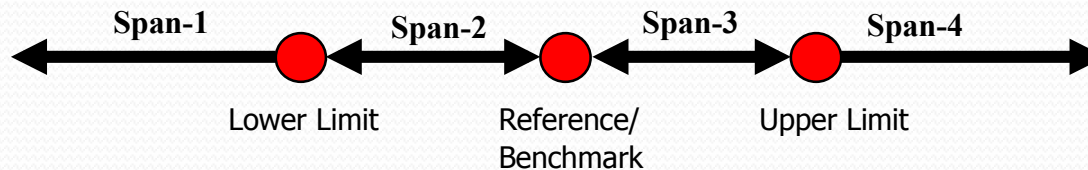
Design tools





Annual Report Energy Consumption - EEI

EEI : Energy Efficiency Index (KWH/m².year)



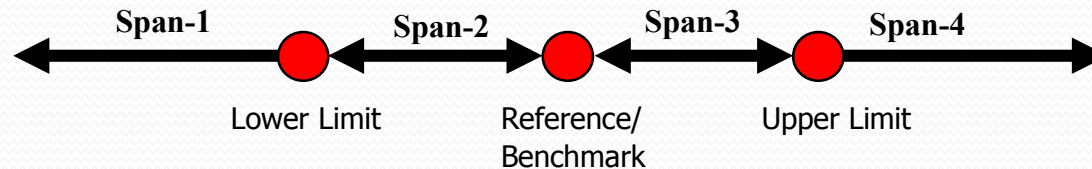
Building Type	Span EEI (KWH/m ² /year)		
	Lower Limit	Reference/Benchmark	Upper Limit
Office	210	250	285
Hotel	290	350	400
Apartement	300	350	400
School	195	235	265
Hospital	320	400	450
Shopping Mall	350	450	500





Energy Efficiency Plan & Target

EEI Analysis & Action Plan for Following-up



SPAN	ENERGY CONSUMPTION	ACTION PLAN
1	Prudent/Saving	Maintain performance by keeping implementing SOP dan systematic maintenance.
2	Less Prudent/Saving	Improvement the performance by doing <i>Tuning Up</i>
3	Rather Wasteful	Need a change and doing Upgrading Performance
4	Wasteful/Prodigal	Require to do <i>retrofitting</i> or <i>replacement</i>



Potential Saving

Type of building	No of Bldg	Floor Area (m ²)	Saving		GHG Saving	Saving Cost
			%	MWh/yr		USD/yr
New Building	60	1,589,057	40.8%	162,120	14,943	2,969,597
Existing Building	75	604,968	12.9%	13,010	51,024	7,040,837
Total	135	2,194,025	18.3%	175,130	65,967	10,010,434

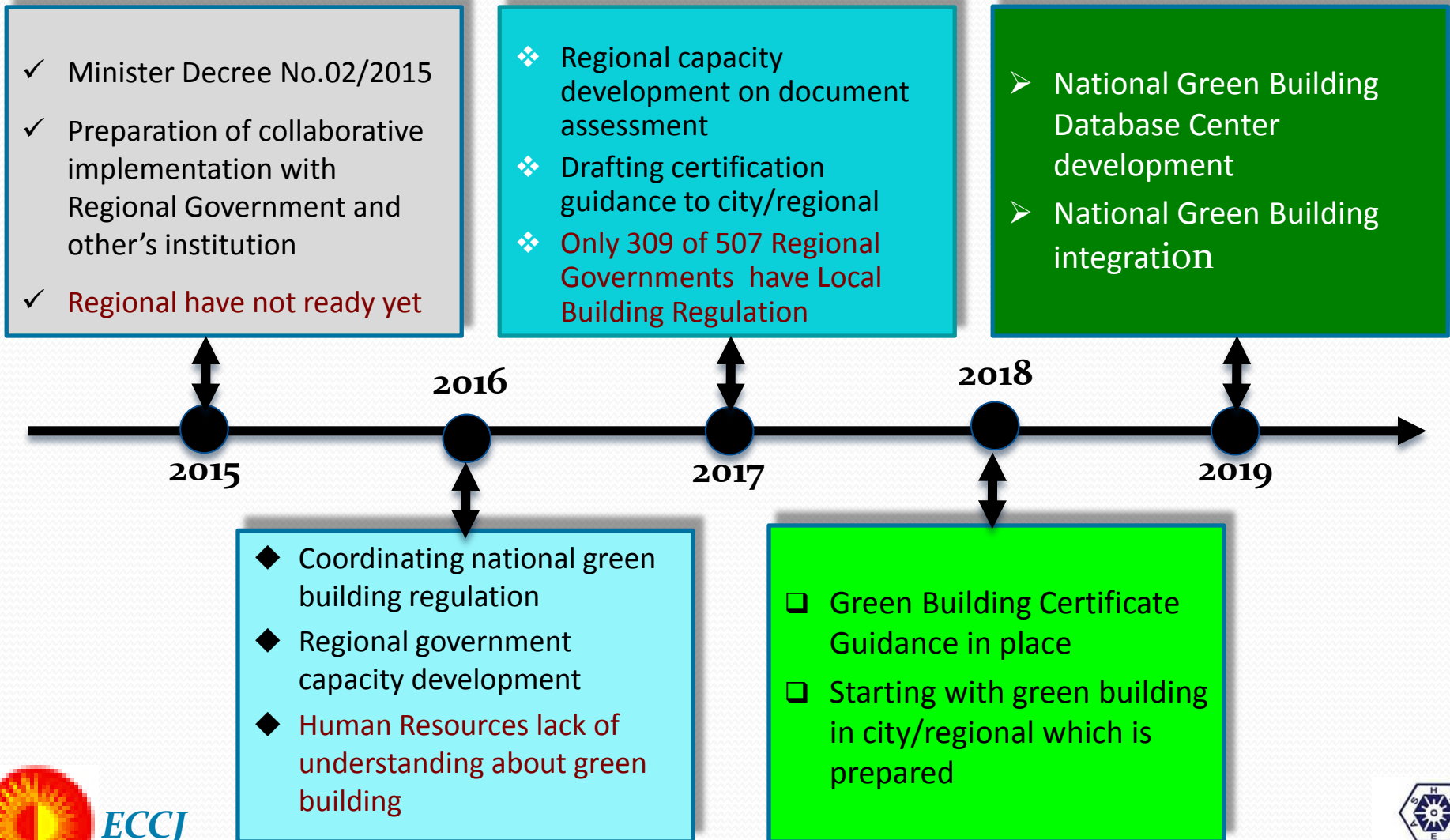


Central Government

Ministry of Public Works Regulation

Ministry Decree No. 02/2015

Green Building Implementation Guidance Strategy Timeline





Thank you!



ECCJ



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