Fostering Sustainable Buildings in Indonesia by Foreign Developer for Resilience

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WORLD SBE HONG KONG 2017
WORLD Sustainable Built Environment Conference
Organisers:
CONSTRUCTION INDUSTRY COUNCIL 建造業議會
HKGBC 香港綠色建築議會
SBE SERIES
International Co-owners:
CIB
iiSBE
UNEP Sustainable Buildings and Climate Initiative
FIDIC
Global Alliance for Buildings and Construction

Putting Ideas into Action
Grade A+ Office Development in Jakarta, Indonesia

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Awards & Accolades

- **Winner of the Special Recognition in Sustainable Development**
  2016 Indonesia Property Award
  (awarded to Developer)
- **Highly Commended Best Green Building Development**
  2015 South East Asia Property Awards
- **Winner of the Best Green Building Development**
  2015 Indonesia Property Awards
- **Finalist of the HKGBC 2014 Green Building Award** New Building Category
  (Building Under Design)

Presentation Road Map

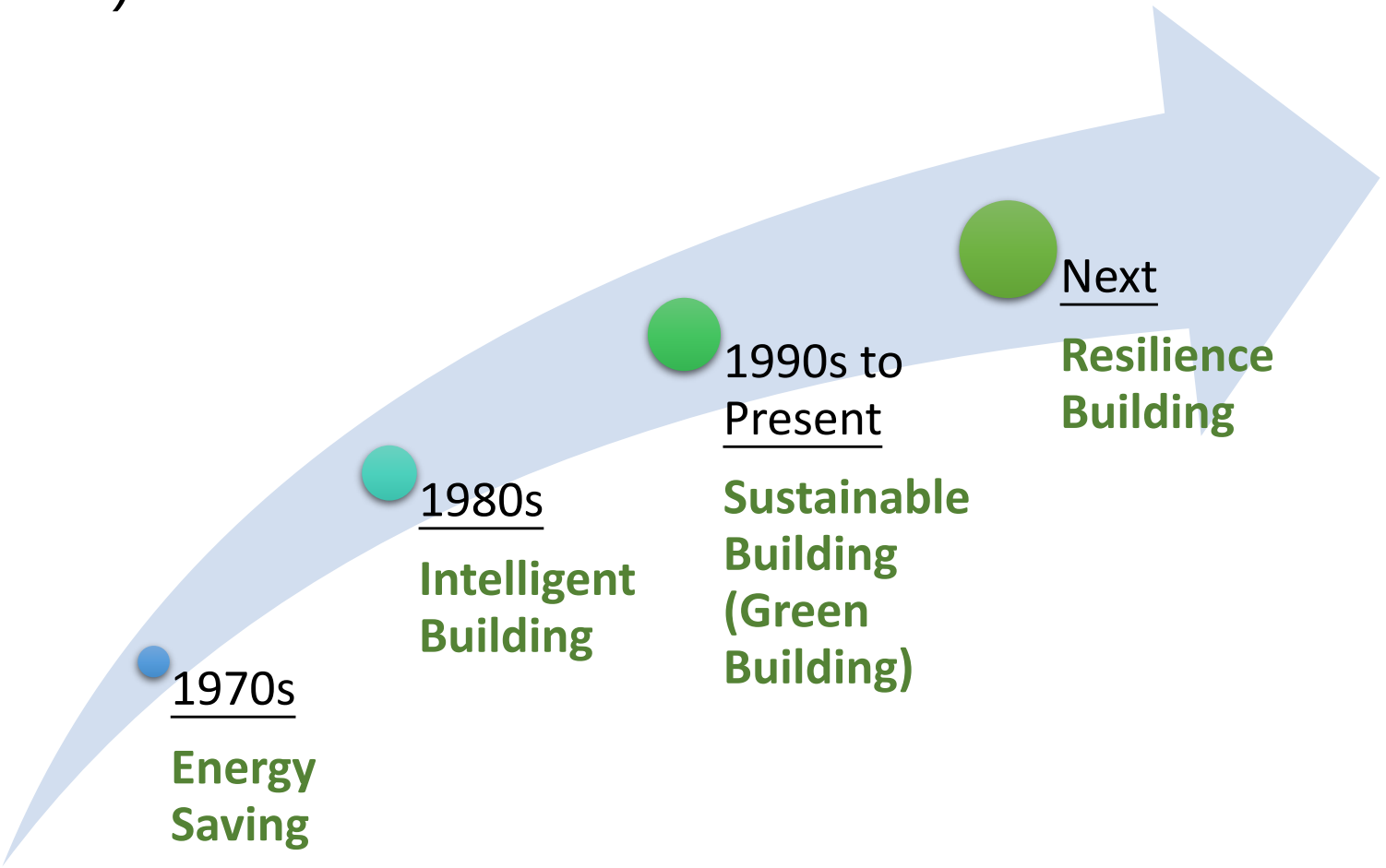
- Drivers
- From Sustainability to Resilience
- Local Context
- Approach to Sustainability and Resilience
- Resilience Features
- Conclusion

Drivers

- “Our Common Future”
- Public Awareness
- Corporate Social Responsibility (CSR)
- Government
- Professionals
- Technology
- Developer
- Main Driving Force?

From Sustainability to Resilience

From Sustainability to Resilience
(1 of 4)



From Sustainability to Resilience
(2 of 4)

Intelligent Buildings - Objectives

- Increasing the effective of office workers
- Creating an image for the users' customers and competitors
- Avoiding major refurbishment as office automation progress
- Flexibility to meet the future changes and expansions of the office
- Energy conservation with energy management facilities
- Effective management of resources

From Sustainability to Resilience

(3 of 4)

Sustainable Buildings – Key Issues

- Efficiency/productivity of construction process
- Minimization/recycling on construction waste
- Customers and end users focus
- Energy efficiency of buildings
- Indoor environmental quality
- Use of sustainable materials
- Promoting water efficiency
- Building service design
- Prevention of construction impact
- Building operation and maintenance
- Public participation

From Sustainability to Resilience
(4 of 4)

- {Resilience} capability to adapt to changing conditions and to maintain or regain functionality and vitality in the face of stress or disturbance. It is the capacity to bounce back after a disturbance or interruption

Resilient Design Institute

{In the Context of Built Environment}

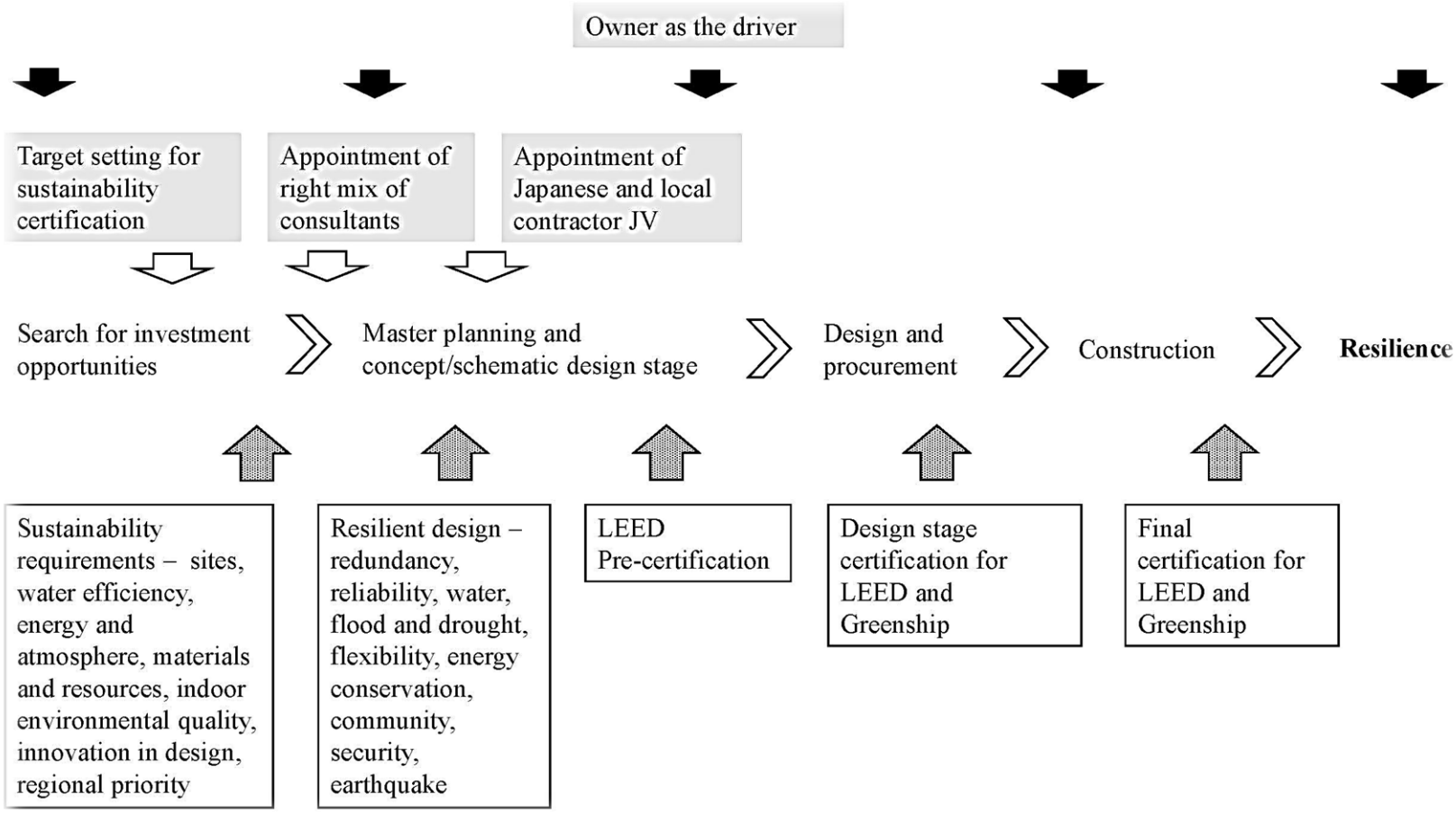
- incorporating into the design of a building, aspects and features that allow the building to carry out its intended functions, now and in the foreseeable future

Alfraidi & Boussabaine 2015

Local Context

- Culture
- Technology Savvy
- Project Management Knowhow
- Mindset
- Infrastructure
- Experience in Sustainable Building Projects
- Authority Approval Process
- Design, Quality Control and Construction Methodology
- Language Barrier

Approach to Sustainability and Resilience



Resilience Features (1 of 8)

Redundancy & Reliability	100% backup power by diesel generator
	Dual electrical risers
	Dual telecommunication lead in and risers
	Spare chiller cooling capacity for future increase in load
	100% Wi-Fi coverage in common area for connectivity
	100% mobile network coverage for connectivity

Resilience Features (2 of 8)

Water	Reduction in water use by using efficient water devices and sanitary fitments
	Deep wells as backup water supply

Resilience Features (3 of 8)

Flood and drought	Zero run-off design
	Ground floor level at 1m above the flood plain
	Water gates to prevent back flow
	Critical equipment on higher level
	Long soak pond to control site run-off
	Greywater and black water recycling
	Rainwater harvesting
	Drip irrigation system and indigenous plants to reduce landscape water use

Resilience Features (4 of 8)

Flexibility	Modular and standardized design
	Raised flooring
	High floor to floor and high false ceiling
	VAV integrated with lighting system
	Coordinated ceiling and floor grids, column spacing and facade modular size
	Spare electrical and chilled water supply in each tenancy floor

Resilience Features (5 of 8)

Energy Conservation	Waste heat recovery from toilet exhaust
	Chillers optimization control
	LED lighting with daylight sensors and motion sensors
	VVVF lift system with full DCS and regenerative braking
	25%, 30% and 33% saving as compared to baselines of LEED, Green Mark and Greenship respectively

Resilience Features (6 of 8)

Community	Clear goals for sustainability parameters in tenancy lease, fit-out guidelines and manual
	Post occupation evaluation
	Measurement and verification plan to mitigate deviation of building performance

Resilience Features (7 of 8)

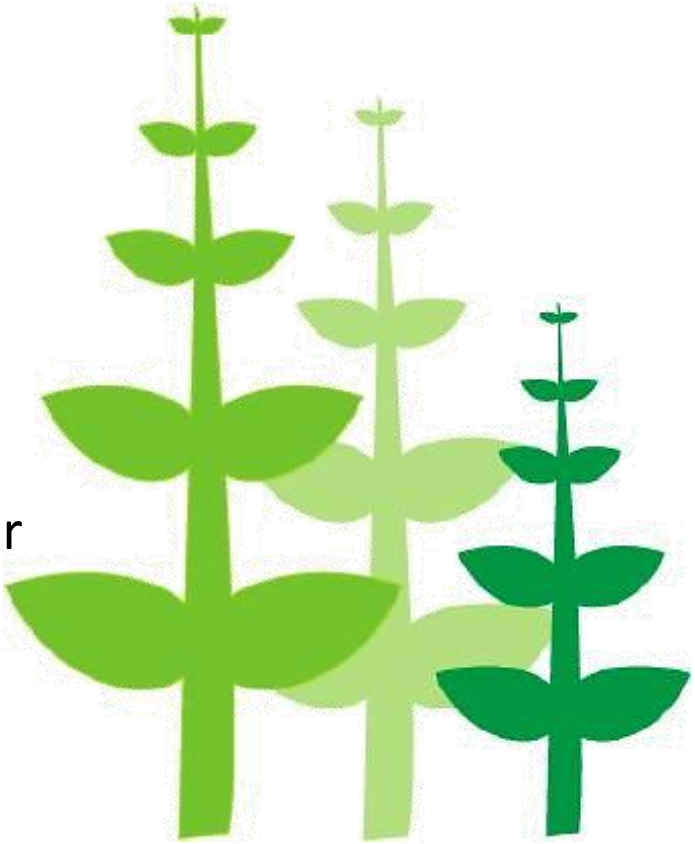
Earthquake	New Indonesian earthquake regulation (SNI 1626:2012) – "life Safety" performance to withstand 8.5 Richter scale
	"Immediate Occupancy" - Maximum Considered Earthquake (once in approx. 2,475 years return period i.e. 2% probability of being exceeded in 50 years)
	Importance Factor of 1.25 – withstand 25% more seismic forces
	Composite structure with concrete filled steel tube column and shear wall system (diagonal viscous damper or friction pad)

Resilience Features (8 of 8)

Security	Risk assessment – ISO 31000 Standard for Risk Management
	Blast assessment
	Medium and higher risk scenarios – detection, delaying, deploying coordinated response
	Defence for limiting prolonged outage of operations
	Physical protection, automatic access control, CCTV, automative number plate recognition, intrusion detection, vehicle and personnel screening system against bomb blast, petty/opportunisitic theft, office theft, trespass and sabotage

Conclusion

- PMBOK© Knowledge areas
- Right mix of local and overseas professionals and early appointments
- Japanese/local reputable builder joint partnership
- Setting target at project outset
- Early involvement of the main contractor
- Developer's project management team as the process driver
- Step-by-step approach certification



Thank you