Fostering Sustainable Buildings in Indonesia by Foreign Developer for Resilience

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Former Assistant Project Director
Pacific Century Premium Developments Limited
Putting Ideas into Action
Grade A+ Office Development
in Jakarta, Indonesia
Grade A+ Office Development in Jakarta, Indonesia

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)

1970s Energy Saving
1980s Intelligent Building
1990s to Present Sustainable Building (Green Building)
Next Resilience Building
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.

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.

Resilient Design Institute

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

Owner as the driver

- Target setting for sustainability certification
- Appointment of right mix of consultants
- Appointment of Japanese and local contractor JV
- Search for investment opportunities
- Master planning and concept/schematic design stage
- Design and procurement
- Construction
- Resilience

Sustainability requirements – sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation in design, regional priority

Resilient design – redundancy, reliability, water, flood and drought, flexibility, energy conservation, community, security, earthquake

LEED Pre-certification

Design stage certification for LEED and Greenship

Final certification for LEED and Greenship
## Resilience Features

### 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
<table>
<thead>
<tr>
<th>Water</th>
<th>Reduction in water use by using efficient water devices and sanitary fitments</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Deep wells as backup water supply</td>
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</table>
### 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

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Post occupation evaluation

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Measurement and verification plan to mitigate deviation of building performance
## Resilience Features (7 of 8)

<table>
<thead>
<tr>
<th><strong>Earthquake</strong></th>
<th>New Indonesian earthquake regulation (SNI 1626:2012) – “life Safety” performance to withstand 8.5 Richter scale</th>
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<tbody>
<tr>
<td></td>
<td>“Immediate Occupancy” - Maximum Considered Earthquake (once in approx. 2,475 years return period i.e. 2% probability of being exceeded in 50 years)</td>
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<td>Importance Factor of 1.25 – withstand 25% more seismic forces</td>
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<td>Composite structure with concrete filled steel tube column and shear wall system (diagonal viscous damper or friction pad)</td>
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## Resilience Features (8 of 8)

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