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WORLD GREEN BUILDING COUNCIL

GREEN BUILDING COUNCIL INDONESIA

Significant Trends in Green Building Industry

a webinar @Britcham 14 July 2022

Iwan Prijanto
Chairperson GBC Indonesia
CEO DEX Solusi Transit

Global Greenhouse Gas Emissions by Gas

Building consume

35%
World Energy

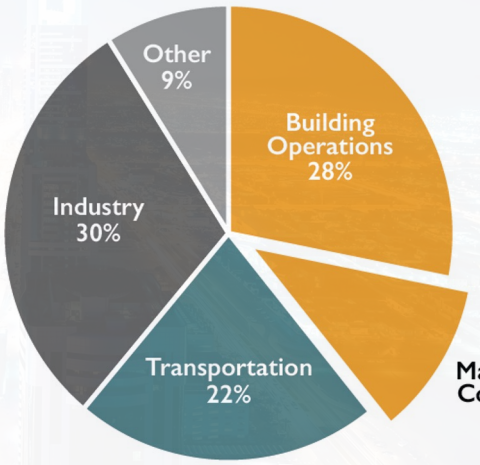
12%
Water

Generate

25%
Waste

39%
GHG Emission

Global CO_2 Emissions by Sector



Whole Life Carbon Vision

Target Karbon Netral dari World Green Building Council

2050

New buildings, infrastructure and renovations will have **net zero embodied carbon,** and all buildings, including existing buildings, must be **net zero operational carbon.**

2030

New buildings, infrastructure and renovations will have at least **40% less embodied carbon** with significant **upfront carbon** reduction, and all new buildings must be **net zero operational carbon.**

Net Zero Carbon Buildings Commitment

All buildings within direct control to operate at net zero carbon by 2030

Net Zero Operational Carbon

Net Zero Embodied Carbon

Net Zero Operational Carbon

Definition

A net zero carbon building is highly energy efficient with all remaining energy from onsite and/or offsite renewable sources

Guiding Principles

1. **Measure and disclose carbon**
   Carbon is the ultimate metric to track, and buildings must achieve an annual operational net zero carbon emissions balance based on metered data
2. **Reduce energy demand**
   Prioritise energy efficiency to ensure that buildings are performing as efficiently as possible, and not wasting energy
3. **Generate balance from renewables**
   Supply remaining demand from renewable energy sources, preferably on-site followed by off-site, or from offsets
4. **Improve verification and rigour**
   Over time, progress to include embodied carbon and other impact areas such as zero water and zero waste

Net Zero Embodied Carbon

Definition

A net zero **embodied carbon** building (new or renovated) or infrastructure asset is highly resource efficient with **upfront carbon** minimised to the greatest extent possible and all remaining **embodied carbon** reduced or, as a last resort, offset in order to achieve net zero across the lifecycle.

Guiding Principles

1. **Prevent**
   Avoid embodied carbon from the outset by considering alternative strategies to deliver the desired function
2. **Reduce and optimise**
   Evaluate each design choice in terms of the upfront carbon reductions and as part of a whole lifecycle approach
3. **Plan for the future**
   Take steps to avoid future embodied carbon during and at end of life
4. **Offset**
   As a last resort, offset residual embodied carbon emissions within the project or organisational boundary where possible or if necessary through verified offset schemes

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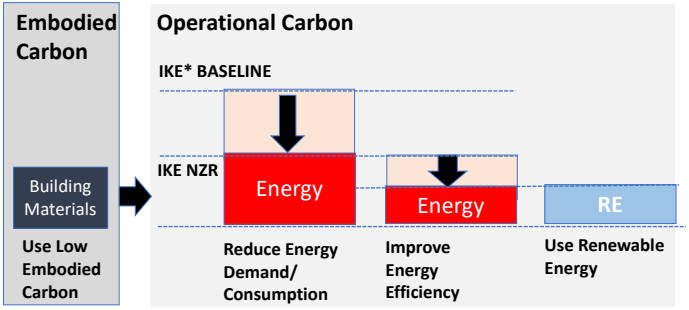
Basic Net Zero Roadmap Framework

Net Zero Carbon
Logical Framework – Demand-driven Consolidation



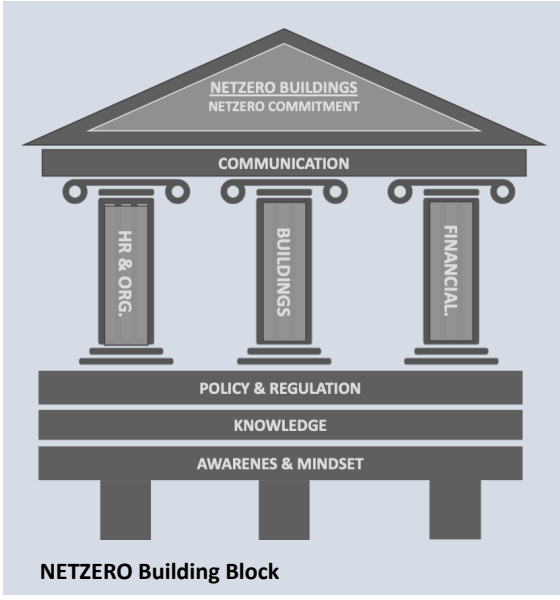
Find the most energy efficient way to conduct activities:

Natural ventilation instead of AC
Daylight instead of Artificial lights
Walk instead of using vehicle
Bicycle instead of cars
Etc….

IKE* : Indeks Konsumsi Energi

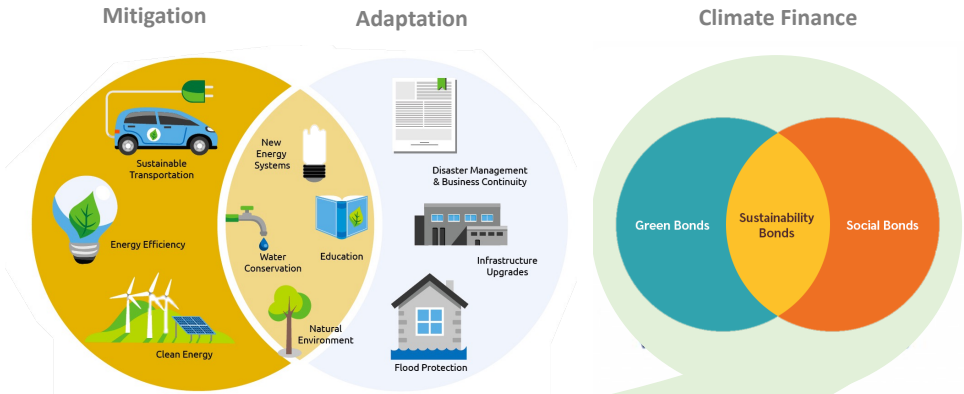
NZR** : Net Zero Ready

Prepared by Iwan Prijanto GBCI for WG Public Housing@Mar2022



NETZERO Building Block

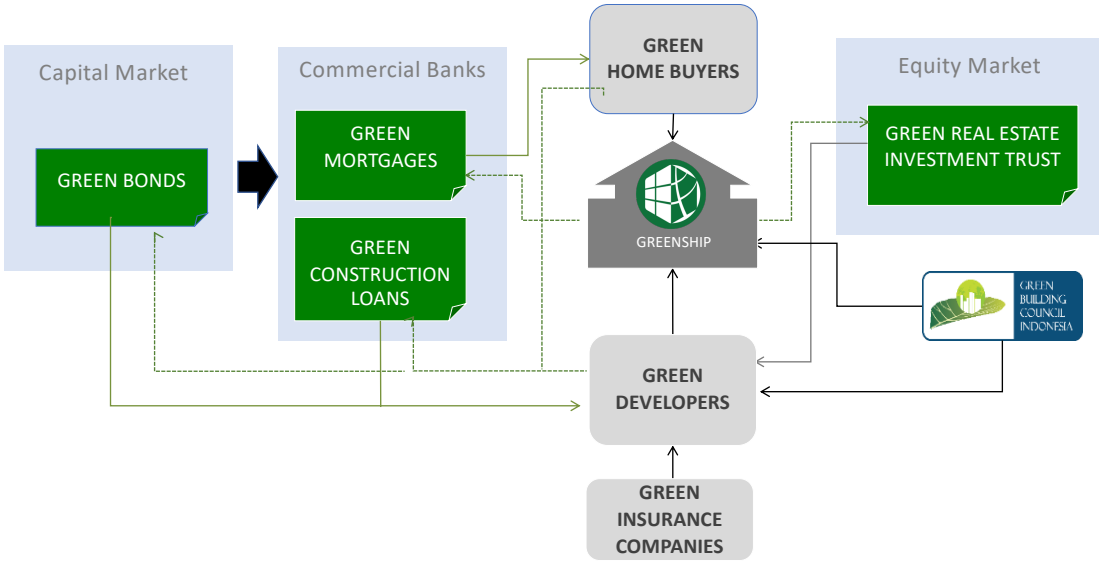
Paris Climate Agreement



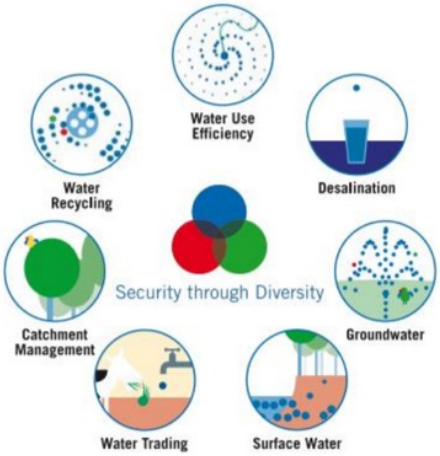
Modified from: https://squamish.ca/climateaction/climate-adaptation/

Iwan Prijanto@DEX@April 2022

Financing Architecture for Green Buildings - Simplified



Holistic view of Water Conservation



"Adoption of a 'security through diversity' approach to managing water resources" Source: International Water Association (IWA)


SMART BUILDING & SMART CITY
Aiming for the Outcome of Smart City not just the Output
"A Smart Building & Smart city is not about technology – **it's about transformation**, It is supposed to increase the wellbeing quality and sustainability of human civilization"
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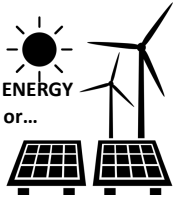
The Potential of Circular Economy in Total NetZero Process in Indonesia

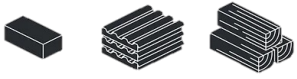
IMPROVE ENERGY EFFICIENCY

REDUCE ENERGY CONSUMPTION
Promote Natural Ventilation



USE RENEWABLE ENERGY
Onsite &/ Offsite or…

LOW EMBODIED CARBON BUILDING MATERIALS



High tech Wood / Bamboo etc

BALANCE THE CARBON EMISSION
→ carbon offsetting in **RE** & **REFORESTATION & SUSTAINABLE PLANTATION**

Teraskita

Developer: PT Waskita Karya (Persero)

Economic Benefits as The Most Universal Accepted Value

This 16-storey mixed use building comprises of an office and a 3-star hotel with 149 rooms.

GREENSHIP New Building - Gold

Energy

Optimum window sizing and high performance glass (OTTV of 39 W/m2) to reduce the cooling load, energy-efficient variable refrigerant flow (VRF) cooling system (COP of 3.6), energy-efficient lighting systems and lighting controlled by natural light sensors.

Water

Low-flow plumbing fixtures, recycled water and rainwater harvesting used for all flushing and landscape irrigation.

Materials

Recycled content in steel and concrete sourced from and manufactured within Indonesia, zero ozone depleting refrigerant, and certified wood.

INCREMENTAL COST **0.34%**

COMPARED A TYPICAL O AND HOTEL

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PAYBACK **0.3** YEARS

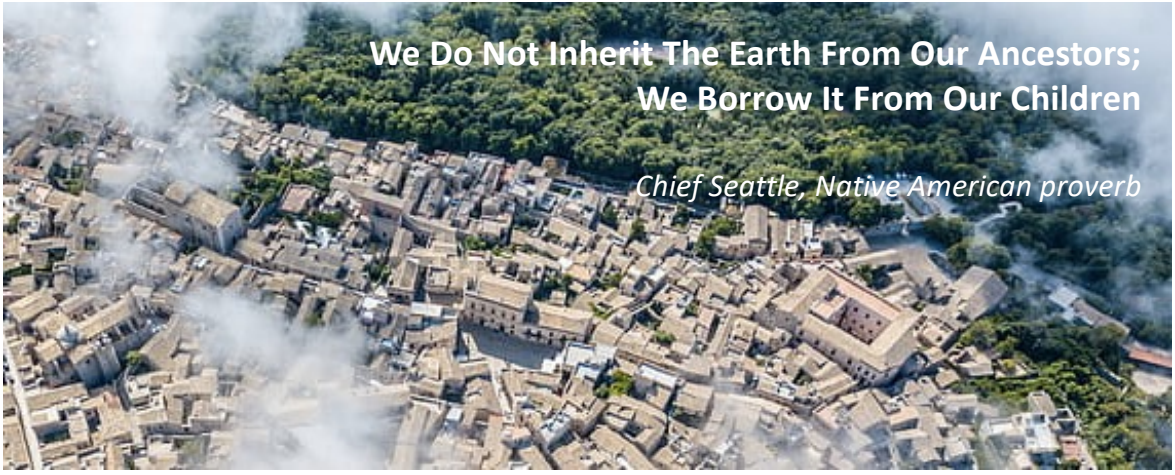
UTILITY COST SAVINGS PER YEAR **46%**

IDR 2.7 billion

Equivalent to **energy** consumption of **450** low income houses

Equivalent to **water** consumption of **147**

"I feel comfortable working in this building as it opens to surrounding green spaces, allowing fresh air during work hours."
- *Natalia Paulus, Tenant*



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TERIMA KASIH