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Optimising Cold in A Warm World: Advancing Energy Efficiency Measures in Hotel and Supermarket

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Chrisandini — chrisandini@wwf.id

WWF-Indonesia

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Commercial buildings holds significant opportunity to energy savings in Indonesia

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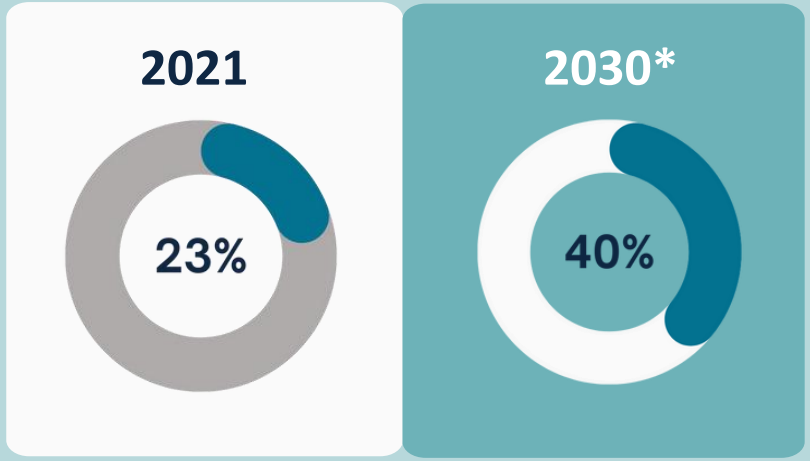
Buildings are responsible for ~**26% of global emissions** in 2022

Source: International Energy Agency (2023)

Share of Emissions from **the Building Sector in Indonesia** (2021 vs 2030)



Source: International Energy Agency (2022)
*Projected

The main factor is the **use of systems to control temperature and humidity** for business operations across the sub-sector.

Sub-sector		
Restaurants	Hospitals	Supermarkets
Offices	Schools	Hotels

Source: Ministry of Energy and Mineral Resources (MEMR), Republic of Indonesia (2023)

The Role of HVAC Systems in Supermarkets & Hotels

HVAC → Refrigerator, Air Conditioner

- Maintain air quality
- Comfort surroundings
- Customer satisfaction

The systems typically **operate 24/7**—leading to **high energy consumption**

Source: WWF-Indonesia (2025)

Energy savings potential—existing & new

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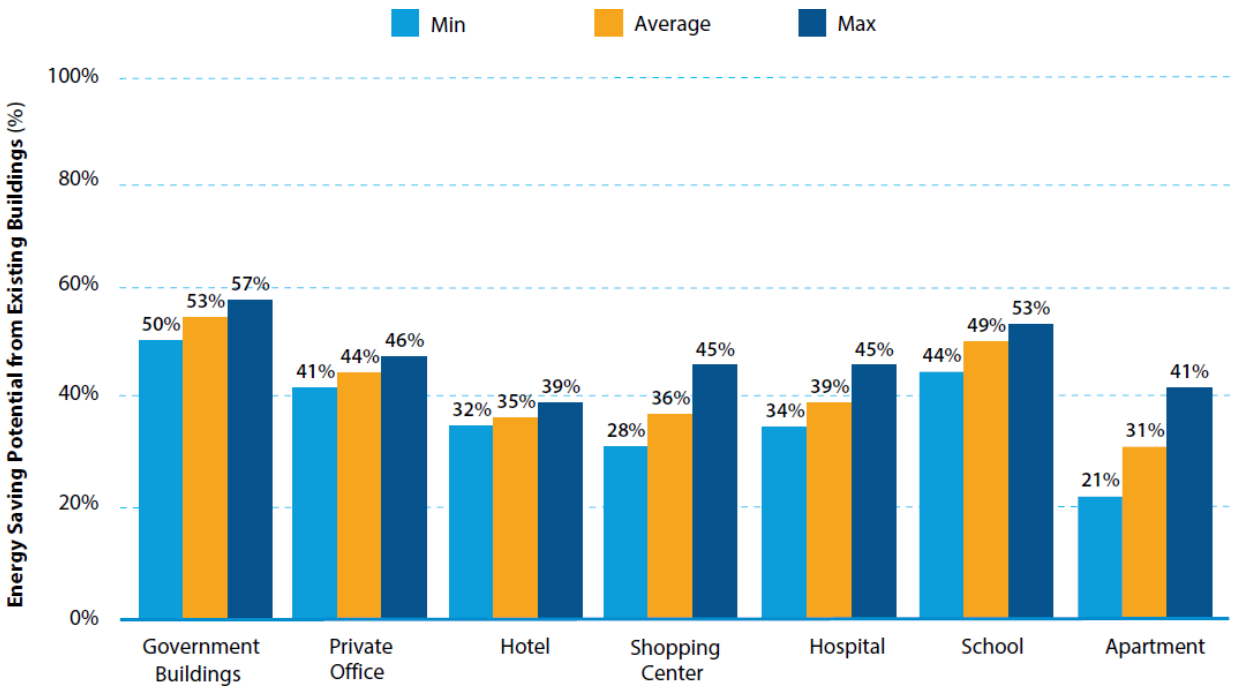
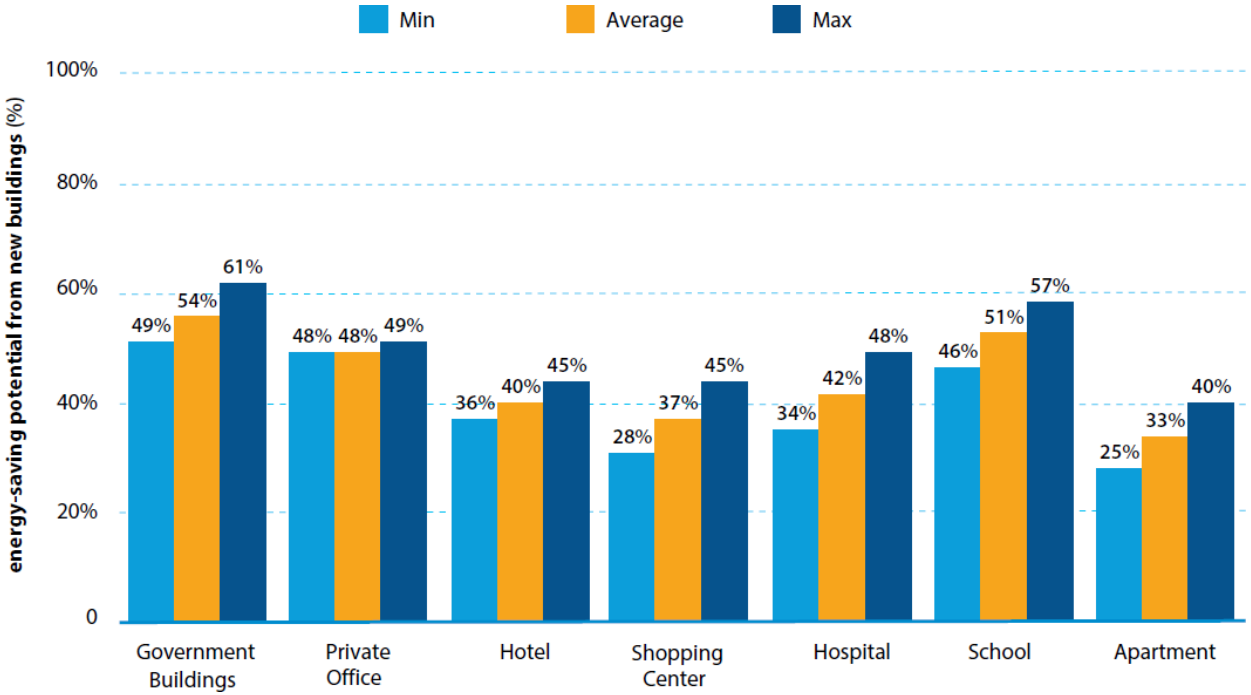


Energy Saving Potential from Existing Buildings



Energy Saving Potential from New Buildings

A study on buildings in 5 Indonesian cities obtained by applying several design strategies further emphasised the importance

(facades modification for complying with OTTV regulation, lighting fixtures with better LPD, changing the AC setpoint higher)

Source: Alfata et al. (2023)

There are 1000+ supermarkets and 4000+ hotels across Indonesia

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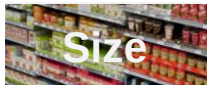
Case Studies

	Supermarket		Hotel
 Key	▪ **Largest supermarket chain** in Indonesia	 Key	▪ Chain with **>100+ portfolio** under management
 Type	▪ A **store and distribution** center	 Type	▪ **2 hotel** accommodations
 Size	▪ **Medium**-sized	 Size	▪ **Mid- and upper-scale (**3 to 5 stars**)**
 Unit	▪ In total, over **200** outlets	 Units	▪ In total, over **100** hotels

Building upon this supermarket and hotel as the case studies, **WWF-Indonesia** has **developed tailored guidelines for both company that were made deriving from conducted energy audits.** Within this scope, **we used upscale-oriented approach to ensure a company-wide adoption, using a sampling from the most representative example of their portfolio.**

Findings: Efficiency is there, yet high-energy equipment & facilities are overlooked

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Energy-saving opportunities identified in **supermarket**: Refrigeration optimization, lighting upgrades, electronics saver mode enhancement

Energy-saving opportunities identified in **hotel**: Chiller replacement, FCU management, lighting sensors, building systems upgrades

Shared insights:
Standardised building codes within chains; Need for structured energy management systems (ISO 50001)

The payback period for most measures are expected to be short to medium term

Homogeneity of operation presents wider opportunity; however, solutions should be **tailored** to each circumstances

Bottom line is everything at the end for business. Frame energy audit as an assessment for unlocking wider opportunity that benefits the business

Business structure understanding is important to advancing energy efficiency measures at the sectors

Implementing the recommended energy conservation measures can **significantly reduce the carbon footprint and energy bills**

ESCOs models works—but Indonesia needs supporting conditions to make them effective

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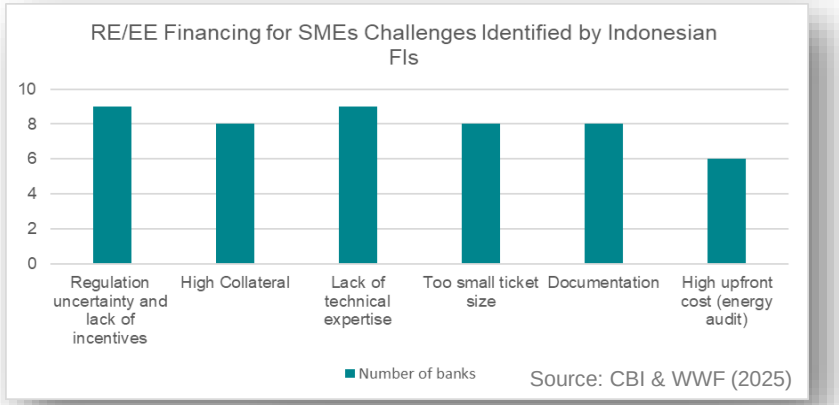
Energy savings companies (ESCOs) can address 3 key issues in financing decarbonisation,

- This **converts a capex to opex** for companies
- The ESCO also **provides performance/savings guarantees** for their solutions
- **Payment terms are often tied** to the energy savings during the lease period after which the company owns the equipment



Applicable ESCOs

ESCOs suit smaller, balance sheet-constrained firms seeking guaranteed savings

RE ESCOs thrive in rooftop solar with long leases (up to 25 years) and 10–15% cheaper rates than PLN

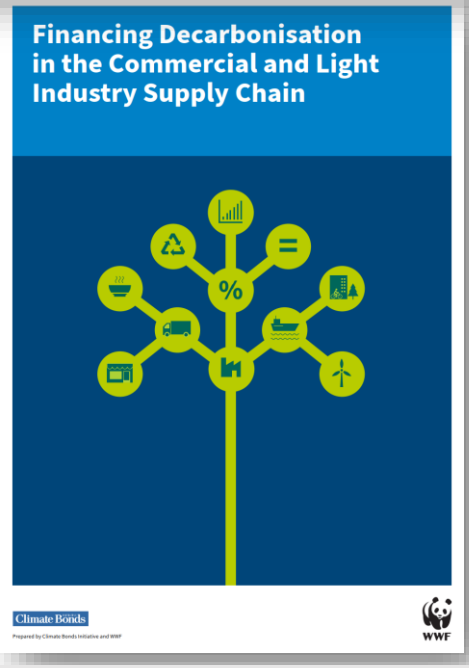
Challenges for ESCOs

Reluctance to pay for upfront energy audits (critical for EE)

Limited bank funding due to collateral and performance risk concerns

Few EE ESCO players due to solution complexity and talent shortage

Lack of clear EE ESCO standards hampers credibility assessment



Funnelling the findings to policies and regulations

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Energy conservation in commercial buildings

Regulation of Minister of Public Works and Housing No. 21/2021 on Performance Assessment of Green Buildings

Provides technical standards for green buildings, with energy efficiency as one of the key criteria. Whether a building is required to meet these standards depends on its designated function and total floor area. Energy performance tracking, **no mandatory reporting to MEMR**.

Government Regulation No. 33/2023 on Energy Conservation (In line with Regulation of Minister of Energy and Mineral Resources)

Energy users in the building sector who consume energy ≥500 toe/year are required to implement energy conservation activities through energy management and **reported to the MEMR annually**.

Identified Gaps

- Policy relevance: Development of sectoral guidelines; Opportunity to mainstream EE into commercial building regulations; Need for incentives, capacity building, and national standards
- Business expansion in both case studies highlights the strong potential of standard building codes, combined with energy management system, to curb future energy demand growth
- Highlight commercial buildings with large footprints as strategic priority; Encourage: Businesses to audit, plan, and invest

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WWF, 28 rue Mauverney, 1196 Gland, Switzerland. Tel. +41 22 364 9111

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