

The Clean Energy and Net Zero Transitions

*How Energy Efficiency should
be the First Fuel of the World's
Decarbonization Pathways*



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World Clean Energy Conference
Philippine Edition 2022

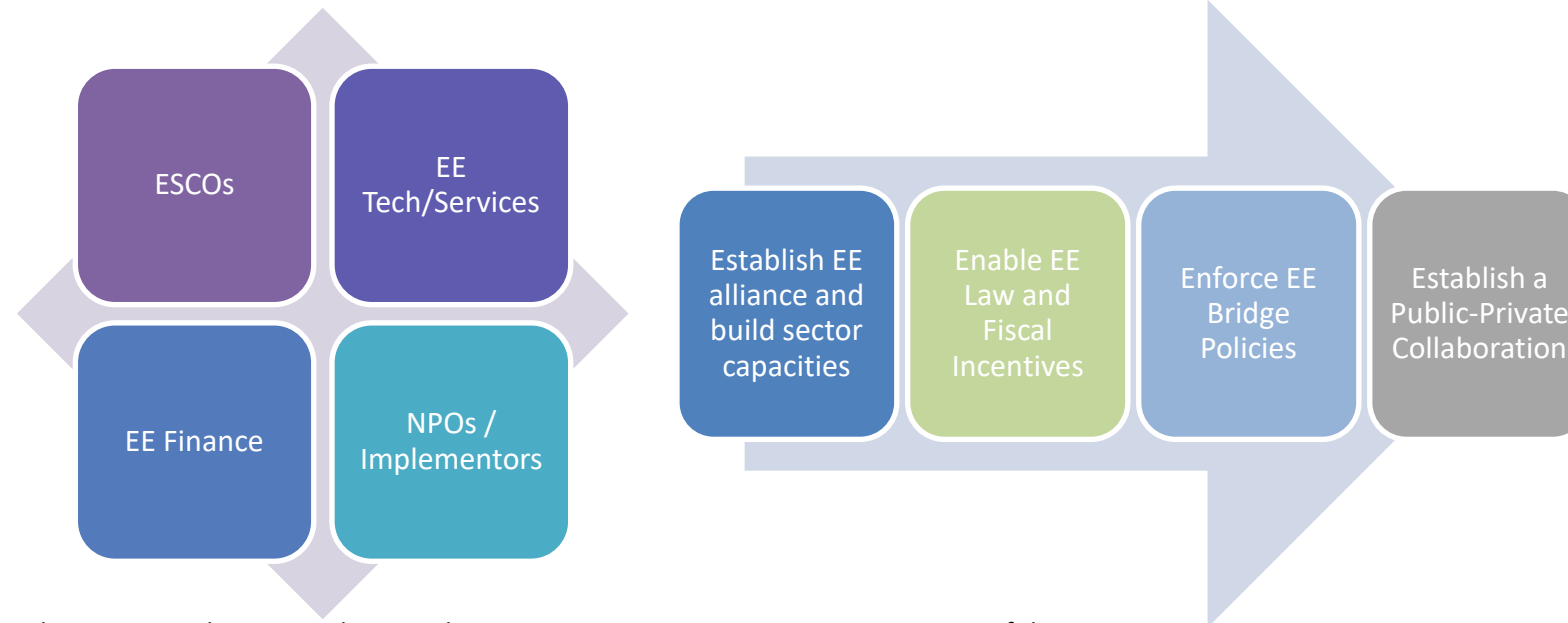
PE2 convenes
a wider range
of energy
efficiency
market
stakeholders

www.pe2.org



PE2's 4-point approach toward a long-term transformation of the EE market

www.pe2.org



PE2 has a 16-year history, with its predecessor Energy Service Company Association of the Philippines (ESCOPhil) established in May 2005 with the guidance and oversight of the Department of Energy.

PE2 was officially reorganized in April 2016 as a non-market, non-state, non-profit organization to embrace the needs of various EE market stakeholders through the following membership categories:

- **Regular A** – Accredited energy service companies (ESCOs)
- **Regular B** – EE technology/solutions/service providers, professional/legal services, contractors, EPCs, utilities
- **Regular C** – Financial institutions, equity providers, leasing cos, guarantee cos, fund managers
- **Associate D** – Non-profit, non-market, non-state civil society organizations, industry associations/chambers, foreign-assisted projects, academe and research institutes
- **Associate E** – Large organizations or enterprises which have mainstreamed EE in their core activities

EE Policy Reform Agenda

- Combined push for the swift passage of the EE&C Act and fiscal incentives
- Combined push for immediate enforcement of bridge policies
- Combined push for enabled Government procurement, budgeting and multi-year contracting of ESCO services and PPP transactions for EE projects in the public sector
- Co-establish a public-private-civil society collaborative platform that would sustain the long-term EE market transformation efforts

Strengthening the ESCO Industry

- Training of trainers and PE2 personnel related to performance contracting, IGAs, M&V and preparing investment-grade projects – certification of CEMs, CMVPs
- Preparation of Investment-Grade Projects
- Drafting and Adoption of Industry-Standard Performance Contracting Templates
- Preparation of a Business Plan for the Establishment, Seed Funding, Operation and Replenishment of an ESCO Guarantee Fund or Insurance Facility

APEIA

Asia-Pacific ESCO Industry Alliance

Ten country ESCO associations have officially established the Asia-Pacific ESCO Industry Alliance (APEIA) through its six meetings since June 2018.



Knowledge flow

Knowledge events (e.g. seminars, conferences, workshops, exhibitions) and knowledge-sharing channels (e.g. website, publications, other knowledge products)

ESCO sector development

Build technical capacities in nascent ESCO markets by organizing and conducting training programs leading to the certification of energy managers, measurement & verification professionals and other ESCO specialists

Carbon market transactions

Facilitate carbon asset management projects, carbon emission reduction and energy savings offset trading for RE and EE companies

Easing technology deployment

Facilitate and encourage research & development, test-bedding & pilot-testing of technologies in energy efficiency

Facilitating investments

Provide a platform for governmental, developmental and commercial investors to engage with developers of energy efficiency projects

Business development

Promote business development through conferences, ESCO trade missions, business matching meetings, exhibitions and other networking events

Enabling market interventions

Engage with the relevant government agencies, development agencies, international financial institutions and industry associations to mobilize grant, debt capital, knowledge and other in-kind resources to enable the implementation of the above-mentioned activities



China



India



Indonesia



Japan



Korea



Malaysia



Philippines



Singapore



Taiwan



Thailand

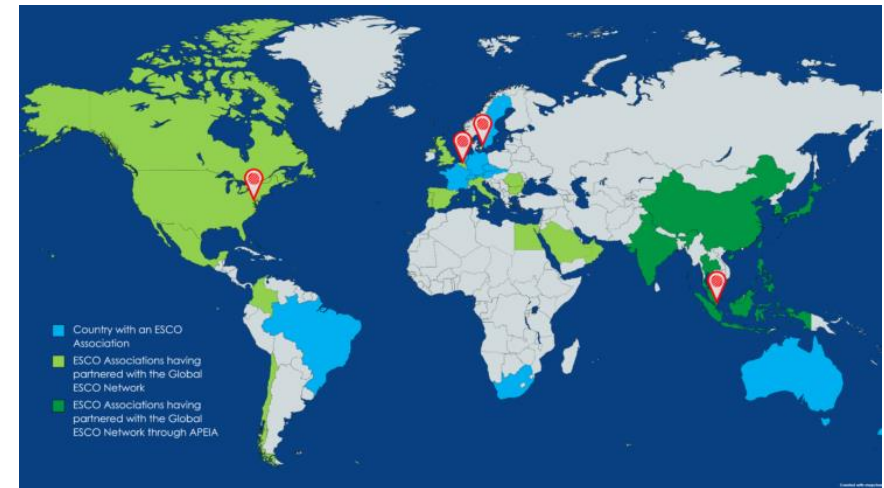
Global ESCO Network



The **Global ESCO Network** gathers ESCO associations of the world as well as international institutions and ESCO experts for the promotion of ESCOs and Energy Performance Contracting in response to the global climate change challenge and the goals set out by the Paris Agreement. It is the **Vision** of the Global ESCO Network **to be the global driver and inspire government actions for scaling up the contribution of ESCOs to the global response for mitigating the threat of climate change and the goals set out by the Paris Agreement.** To realize this, it is the **Mission** of the Global ESCO Network **to add to and reinforce existing efforts of National and Regional ESCO Associations to promote increased activities by the ESCO Sector at a global scale.**

The Global ESCO Network **recognizes the regional role of APEIA** as convener of ESCO associations under its membership and will work through APEIA to advance the Network's objectives in the Asia-Pacific region.

The Global ESCO Network has its Secretariat anchored in the **UNEP Copenhagen Climate Centre** and the **Efficiency Valuation Organization (EVO).**



Both the Paris agreement obligations by 2030 and Net-Zero aspirations by 2050 will urgently need significant emission reductions through scaled -up energy efficiency



Source: Global Carbon Budget Project

Energy efficiency is the world's 'first fuel' - and the main route to net zero, says IEA chief

Dr. Fatih Birol, IEA

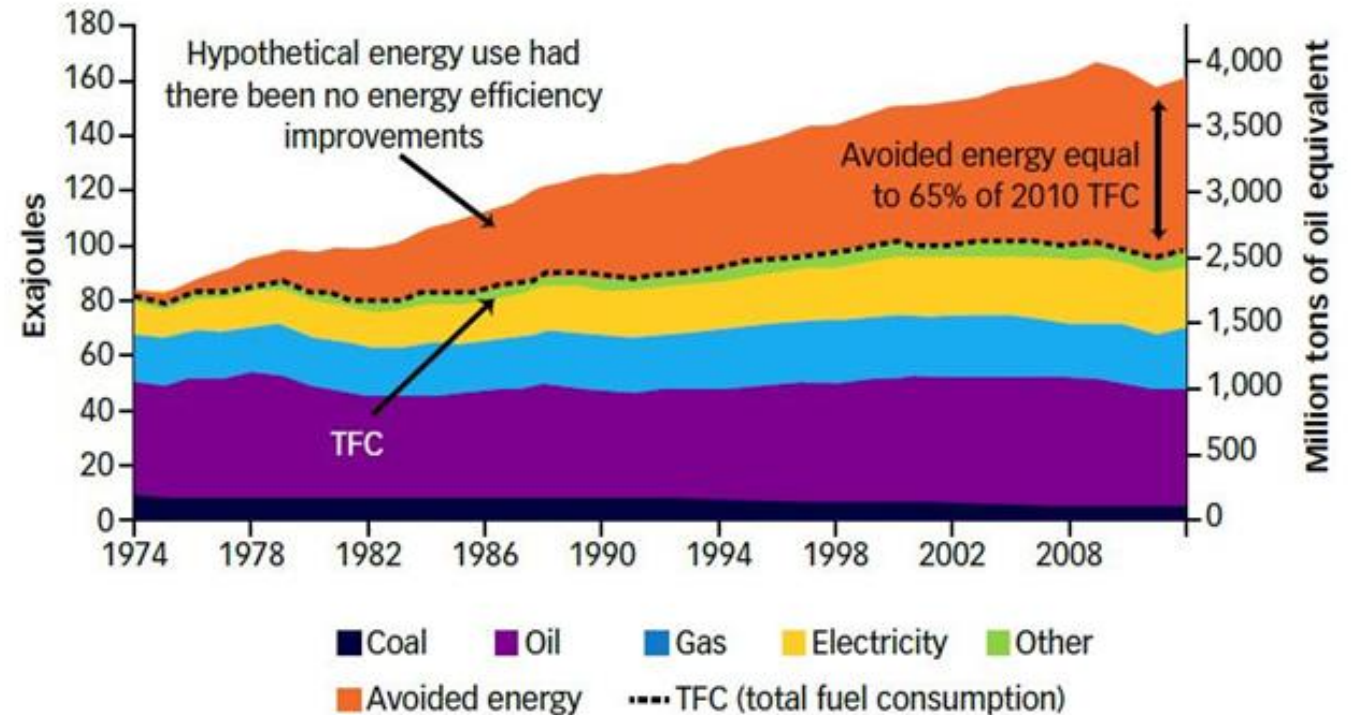
WEF Davos Meetings, Jan 2022



IEA estimates that the “Efficient World Scenario” will need
USD 24.5 trillion in EE investments from 2017-2040

(Source: IEA Energy Efficiency 2018)

A study of 11 OECD countries showed that 65% of total final consumption was actually displaced by energy efficiency, clearly making it the largest and first fuel source.

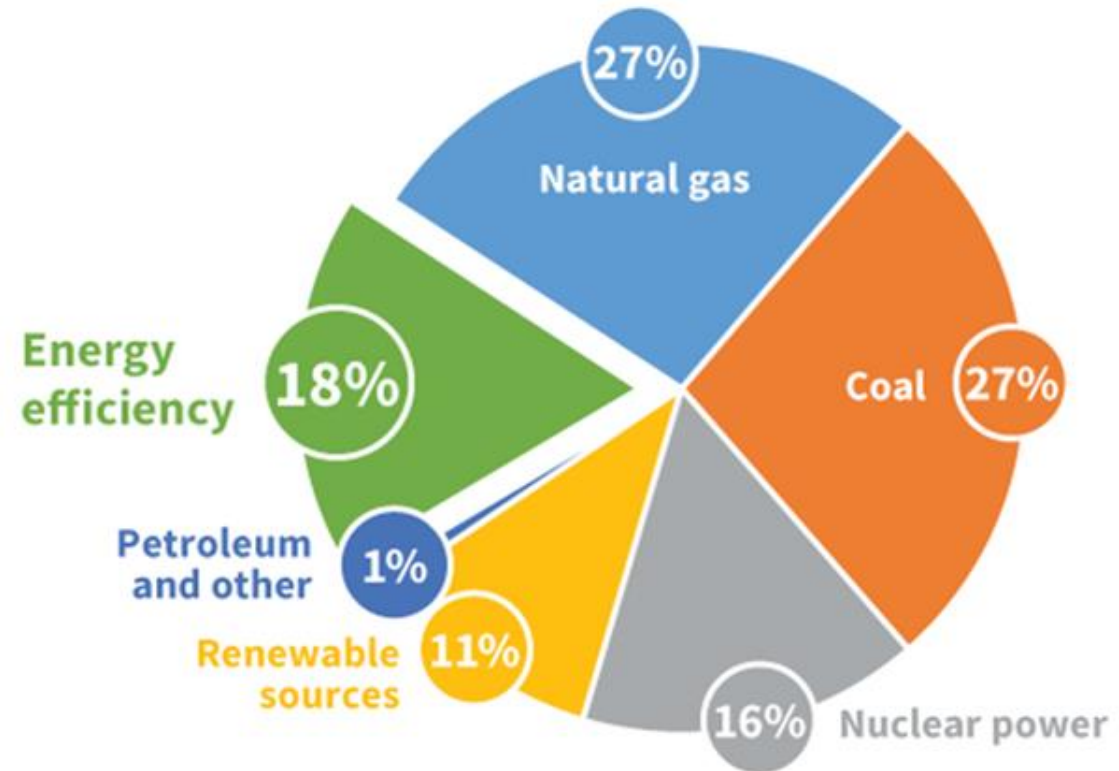


Source: IEA 2013.



Global energy markets should gravitate toward planning energy efficiency as a primary energy resource – an indigenous fuel to be dispatched with priority.

Share of US electricity generation by resource in 2015



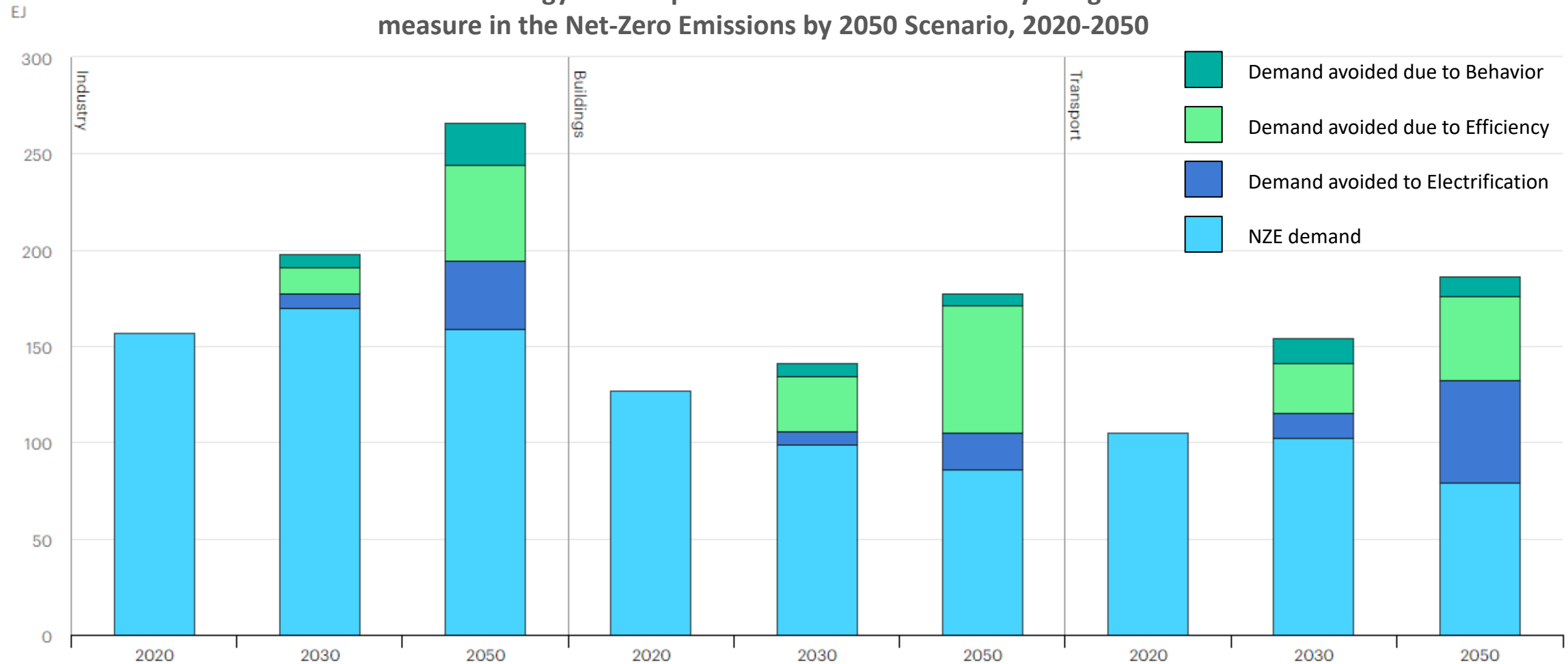
Source: EIA for all except energy efficiency, which is based on ACEEE estimates. EIA data source is May 2016 Monthly Energy Review, Table 7.2a Electricity Net Generation: Total (All Sectors).

IEA: Energy efficiency is a critical component of Net Zero



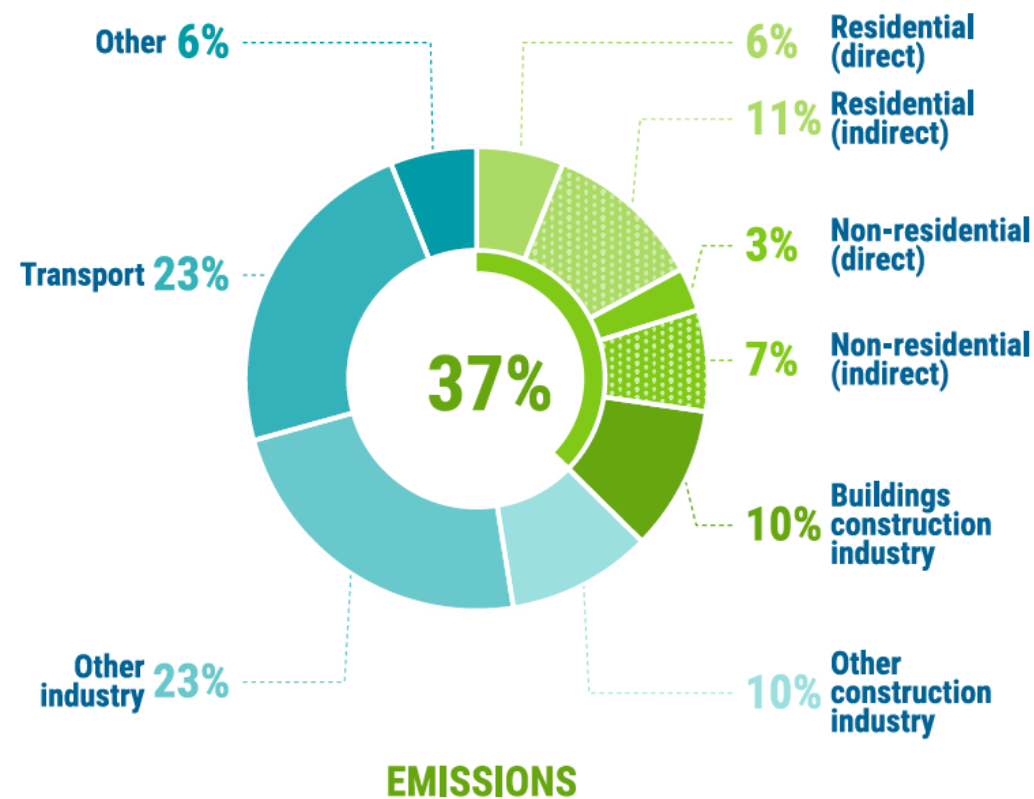
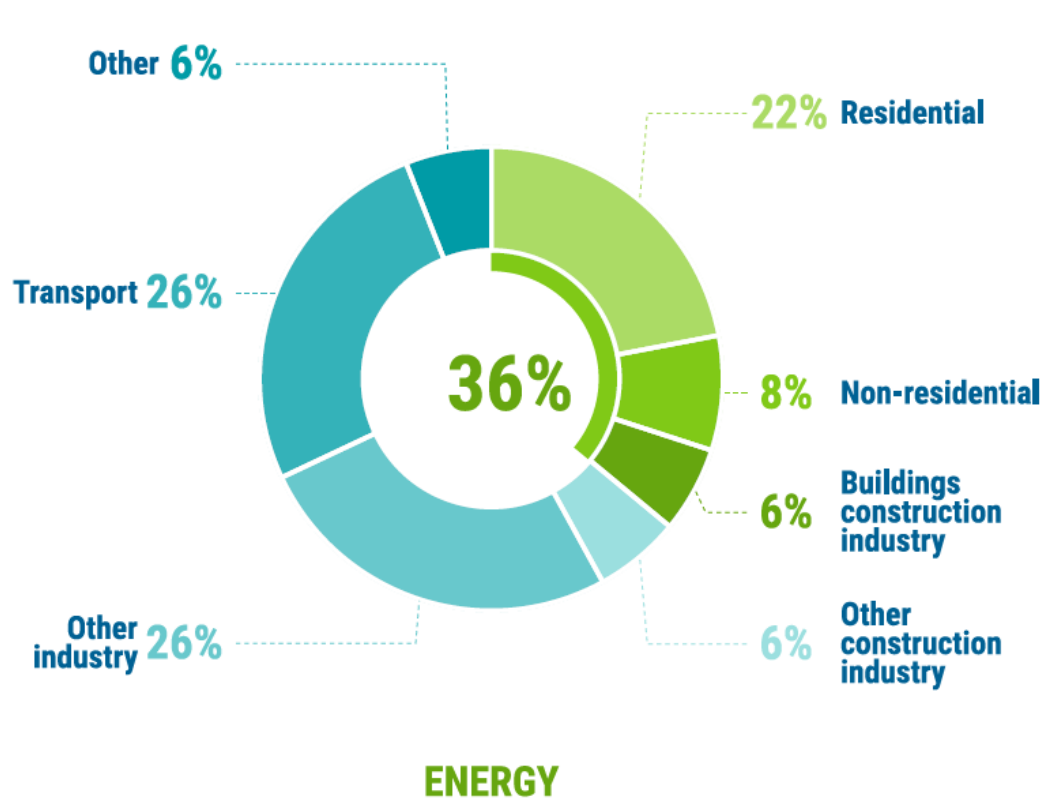
IEA's Net-Zero Emissions by 2050 (NZE) Scenario – global energy demand in 2050 to be around 8% lower than today but will need to serve an economy more than twice as big and a population with 2 billion more people.

Total final energy consumption and demand avoided by mitigation measure in the Net-Zero Emissions by 2050 Scenario, 2020-2050



Source: IEA, Jun 2021

Buildings and Construction's Share of Global Final Energy and Energy-related CO2 Emissions, 2020



Source: UNEP 2021 Global Status Report for Buildings and Construction

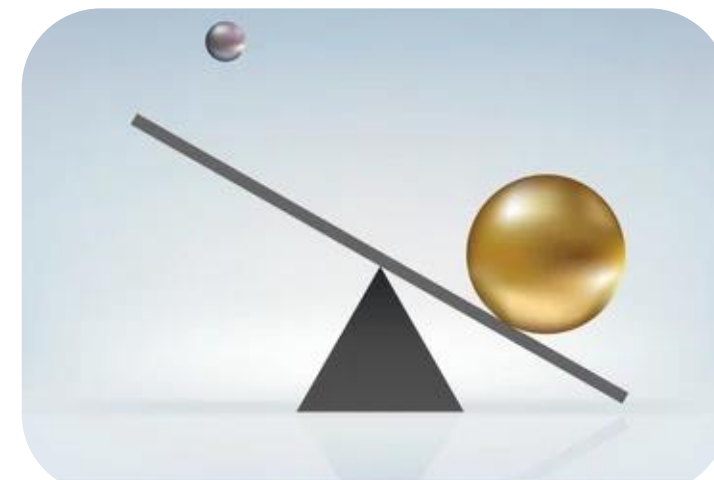
Building EE v. Building and Construction Sector



Investment in building energy efficiency across global markets increased to USD 152 billion in 2019, an increase of 3% from 2018.



However, building efficiency remains a mere 2.7% of the USD 5.8 trillion spent in the building and construction sector



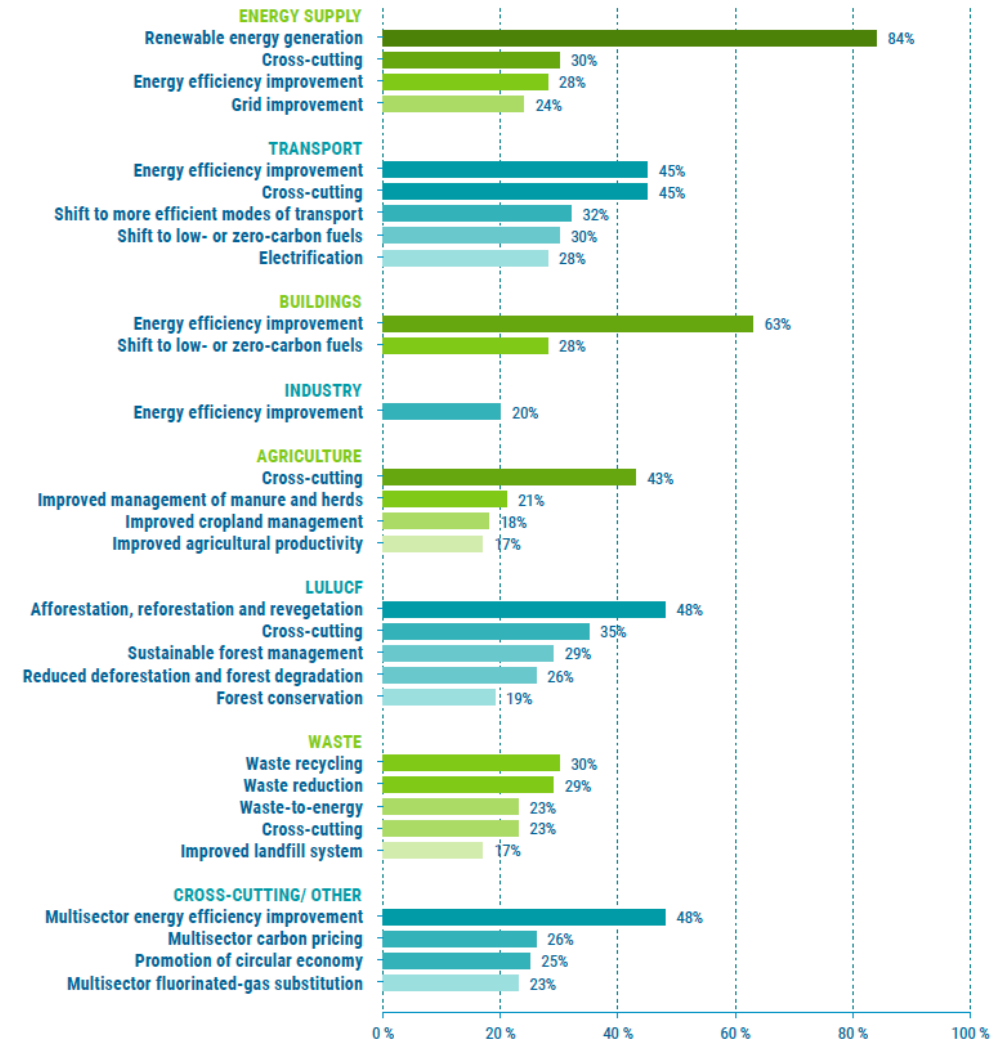
In the buildings sector, for every \$1 spent on energy efficiency, \$37 is spent on conventional construction approaches.

BBB (Building Back Better) through Paris Climate Agreement NDCs

- Across 192 countries' Nationally Determined Contributions (NDCs), improvement in the energy efficiency of buildings is the second most frequently referred to policy.
- Through 2026, countries will have to significantly raise their ambitions of their NDCs, and building energy efficiency should remain a main pillar.
- Although green building certification adoption increased 13.9 per cent from 2019-2020, countries should expand certification to cover all building types.
- By middle of this decade, global investment in energy efficiency will need to double its growth rate to more than 3 per cent annually. Such sharp growth will need a major shift from public sector funding to private sector investments.

Source: UNEP 2021 Global Status Report for Buildings and Construction

Share of Parties referring to the frequency indicated mitigation options in Nationally Determined Contributions (NDCs)



Buildings and the Net Zero Aspirations

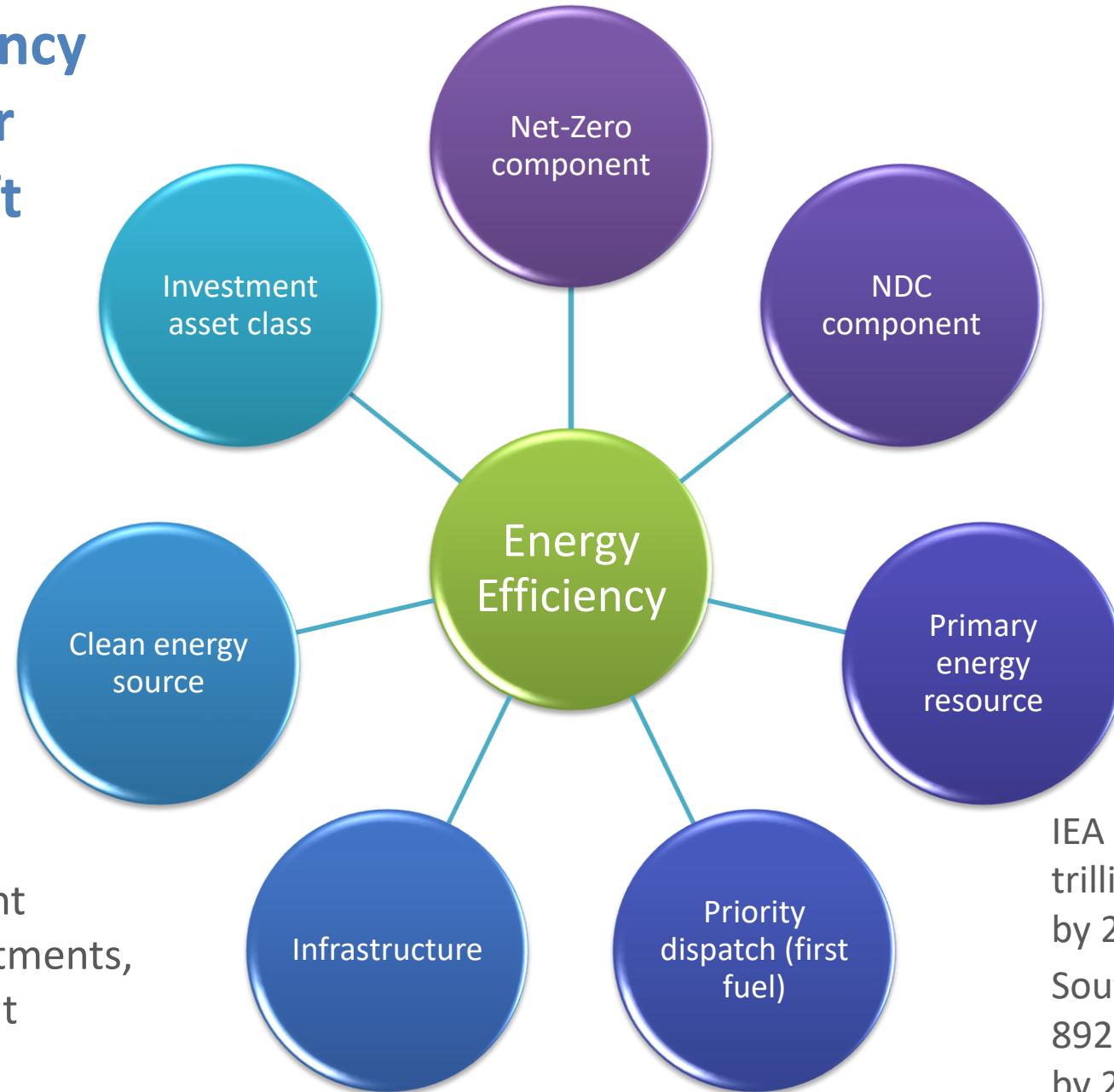


***“By 2030, the built environment should halve its emissions, whereby 100 per cent of new buildings must be net-zero carbon in operation, with widespread energy efficiency retrofit of existing assets well underway, and embodied carbon must be reduced by at least 40 per cent, with leading projects achieving at least 50 per cent reductions in embodied carbon.*”**

By 2050, at the latest, all new and existing assets must be net zero across the whole life cycle, including operational and embodied emissions.”

United Nations Framework Convention on Climate Change’s Marrakech Partnership for Global Climate Action Human Settlements Pathway

Energy efficiency needs a major paradigm shift



The world needs to mobilize a significant amount of EE investments, typically double that required for RE.

IEA estimates USD 24.5 trillion required for global EE by 2040. (IEA)
Southeast Asia will need USD 892 billion in EE investments by 2040. (Ablaza)

Philippines: Economic and development impacts of reducing 182 Mtoe in final energy consumption through EE&C by 2040



Economic

- PHP 36 trillion in end-use savings
- Reduced dependence on imported fossil fuels
- Incremental GDP growth
- 9 million green jobs
- Over 500% Gov't recovery of fiscal incentives through additional tax revenues



Energy Security

- 45,900 MW deferred energy infrastructure capital requirements for energy production, transmission and distribution
- Decelerated rise in energy prices



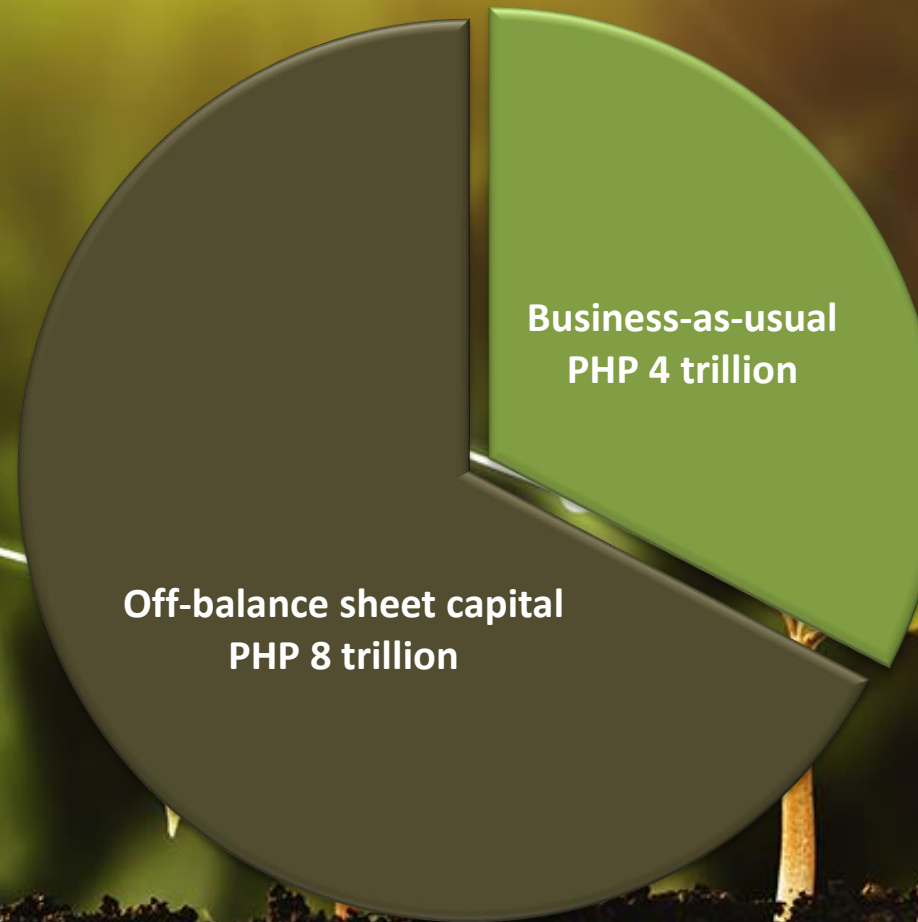
Climate Change Mitigation

- Up to 1.7 GtCO₂e in greenhouse gas emission reduction
- Contributing to Paris climate agreement obligations
- Attracts climate funding

Philippines' EE capital requirements, 2017-2040

Off-balance sheet* EE capital flows through:

- ESCO performance contracts
- PPP transactions
- JV agreements
- Government, large-scale retrofit programs
- Other off-balance-sheet* modalities

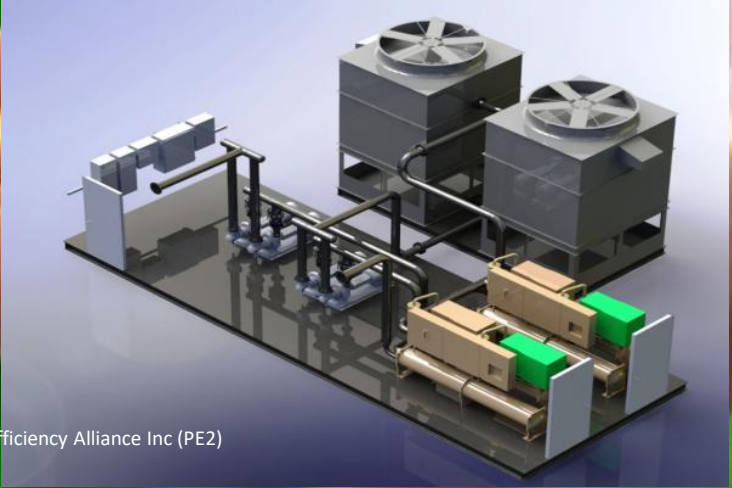


Business-as-usual EE capital to be mobilized through:

- Self-financed
- Debt-financed
- Lease-financed
- Other on-balance-sheet* modalities

* Balance sheet of host or end-user of EE project

Deploying EE technologies, solutions, services and financing



Energy efficiency can generate 45% more jobs than infrastructure projects for the same amount of stimulus or capital funding.

Comparison of Labor Intensities between Build, Build, Build Program and Energy Efficiency Investments in the Philippines

	Build, Build, Build (BBB) Program 2019-2022	Proposed BBB component of PESA Bill 2021-2023	Energy Efficiency and Conservation Roadmap 2017-2040	Proposed Energy Efficiency component of PESA Bill 2021-2023
Estimated Investments	PHP 8,500 billion* (USD 170 billion)	PHP 650 billion (USD 13 billion)	PHP 12,190 billion (USD 245 billion)	PHP 55 billion (USD 1.1 billion)
Jobs Created	4.4 million jobs**	336,400 jobs***	9.123 million jobs	41,200 jobs
Labor Intensity (Jobs / PHP 50 million)	25.88 jobs / PHP 50 million (25.88 jobs / USD million)		37.42 jobs / PHP 50 million (37.42 jobs / USD million)	

*Calculated from average of DBM estimates of PHP 8 trillion – PHP 9 trillion investment target through Duterte administration.

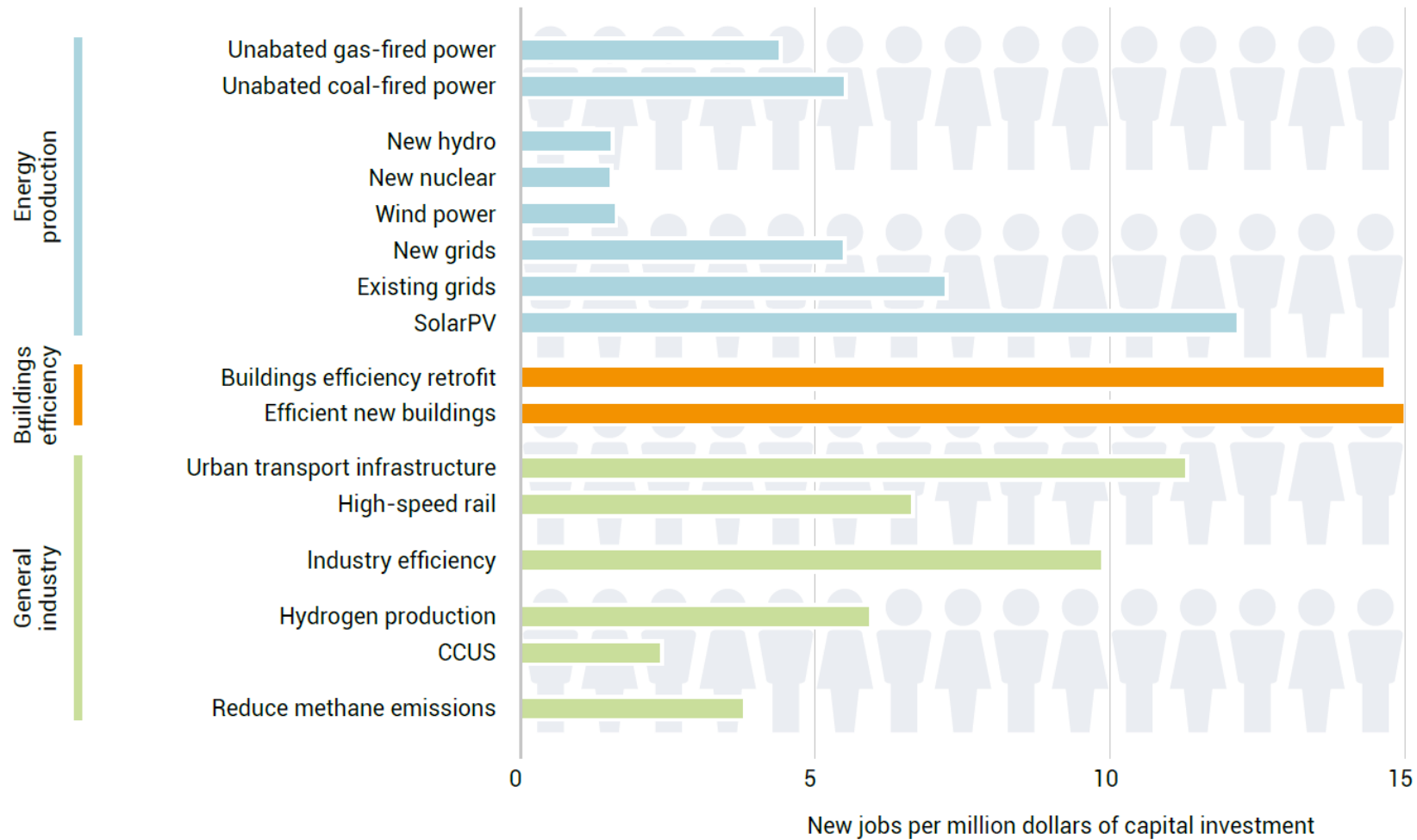
**Calculated for a 4-year period from DBM estimate of 1.1 million jobs created annually.

***Calculated using labor intensity of entire BBB program.

**GROWTH
START**

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EE in buildings creates more jobs than other decarbonizing actions in energy sector



Source: IEA Sustainable Recovery, 2020

Over 9 million energy efficiency jobs can be generated in the Philippines through 2040, if the economy succeeds in mobilizing PHP 12 trillion in EE capital flows.

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