



ENERGY TRANSITION in the Philippines

TOWARDS A SECURE, AFFORDABLE AND
CLEAN ENERGY FUTURE

HAZİRAN 2023



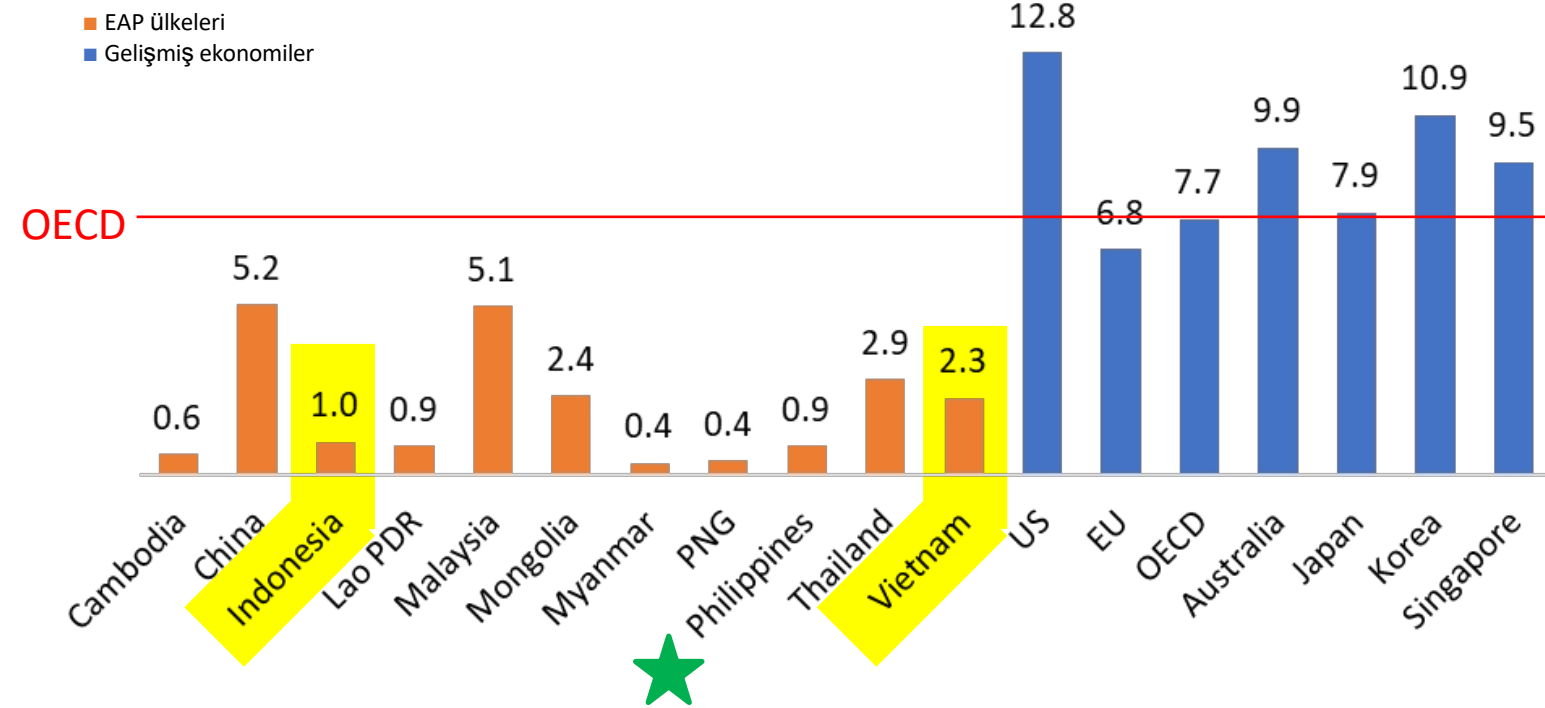
Feng Liu Senior Energy Specialist and Infrastructure Program Leader for the Philippines



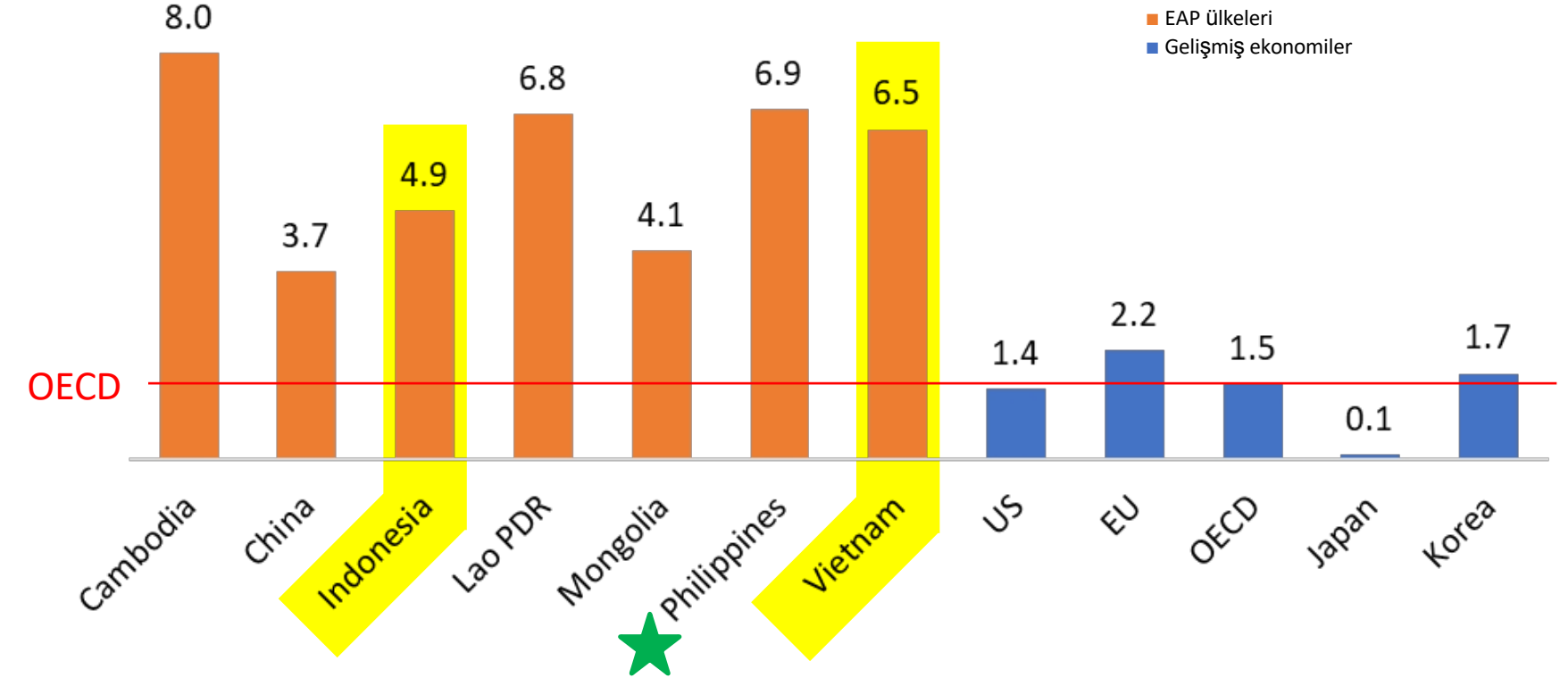
I. PHILIPPINES ENERGY SECTOR CONTEXT

The Philippine energy sector needs to grow rapidly to support the country's development ambition

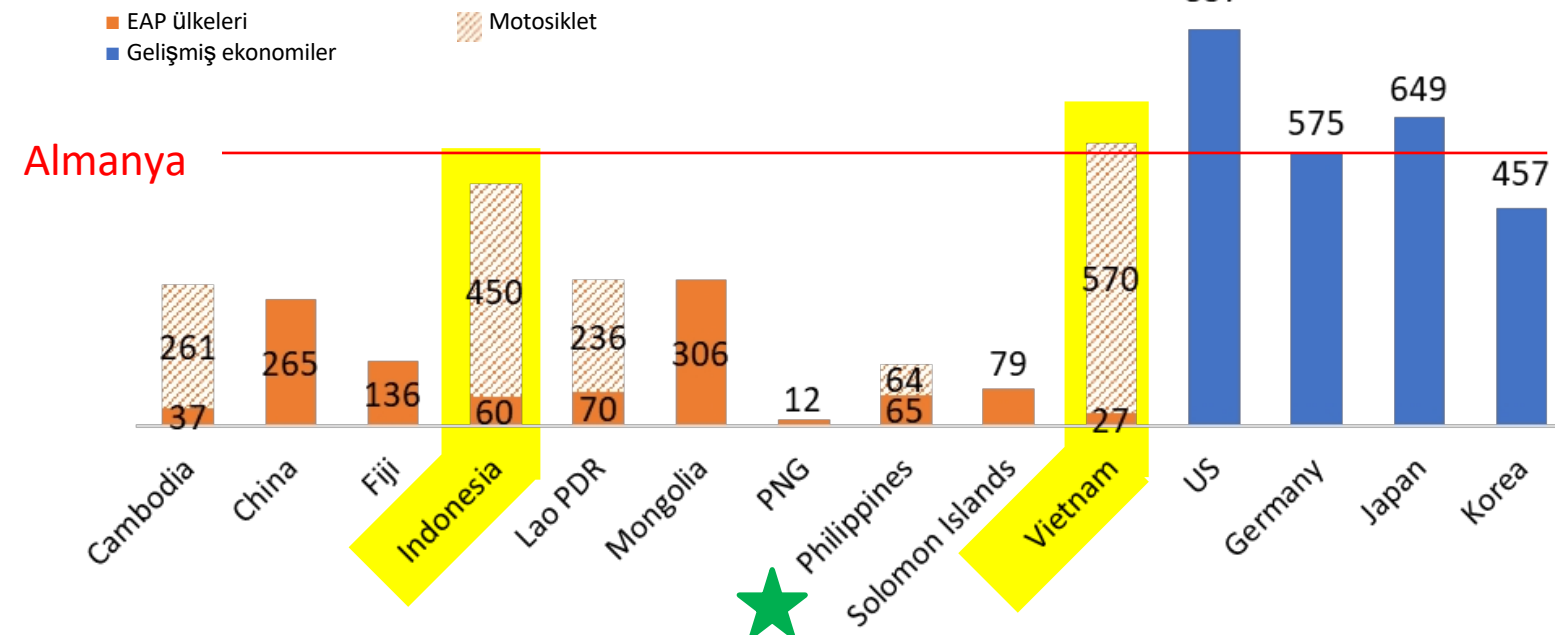
2019'da Kişi Başına Elektrik Tüketimi (Başına MWh)



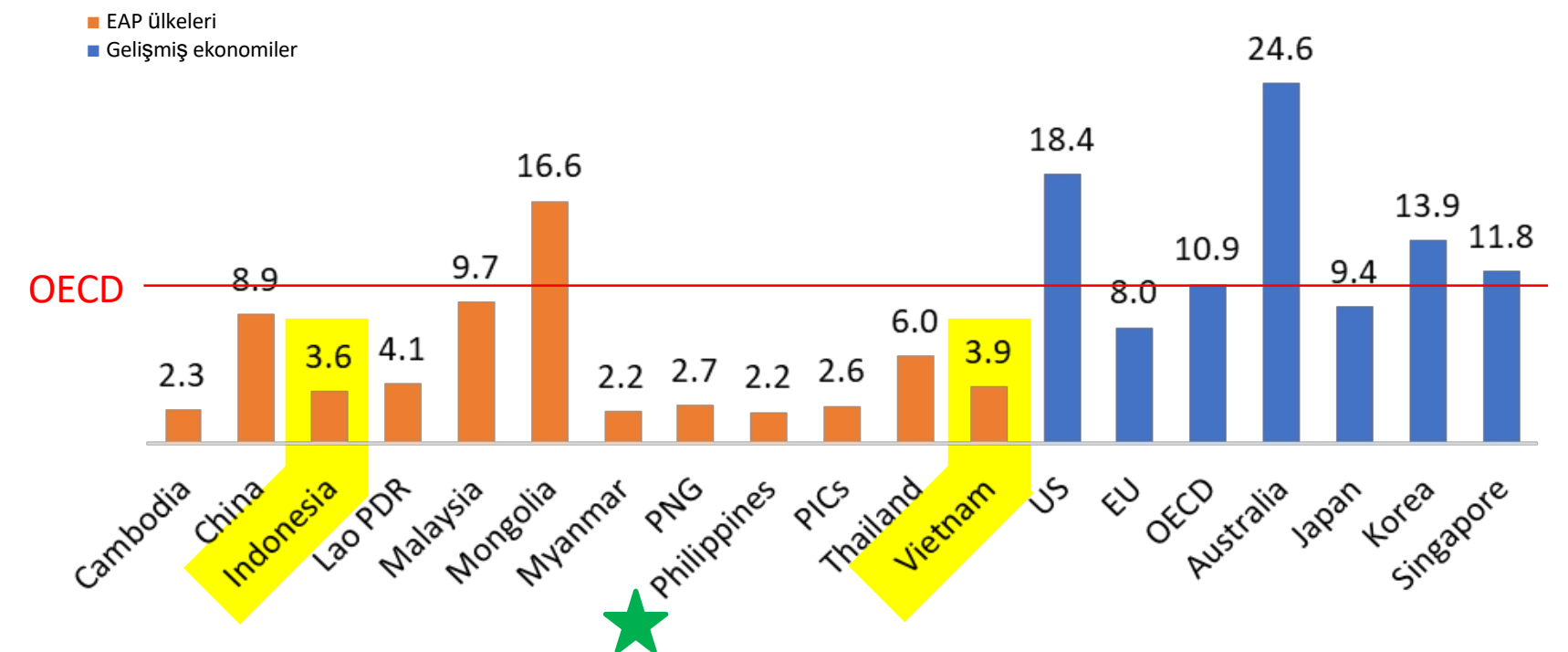
Elektrik talebi büyüme tahmini 2020-30 (%)



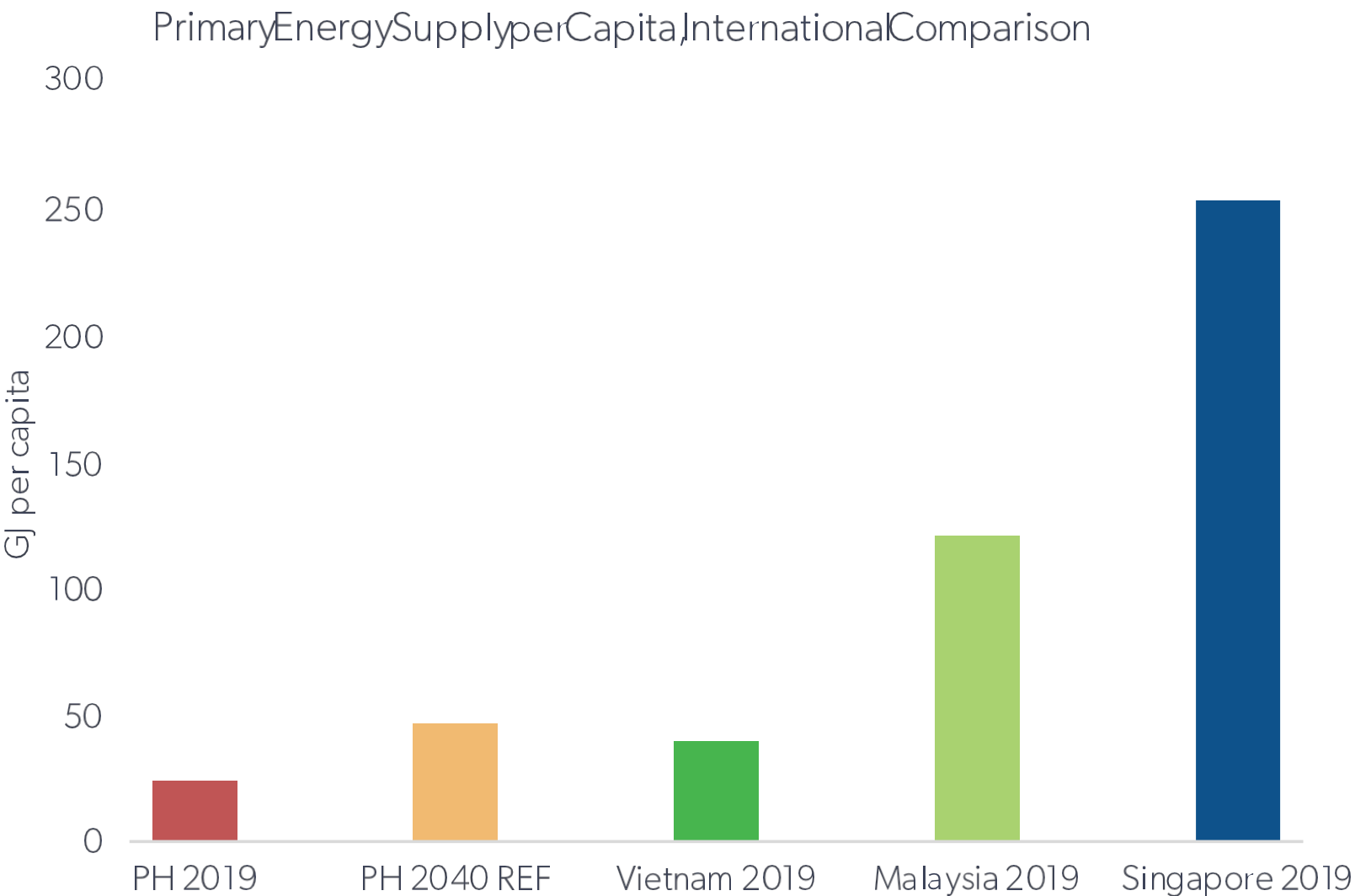
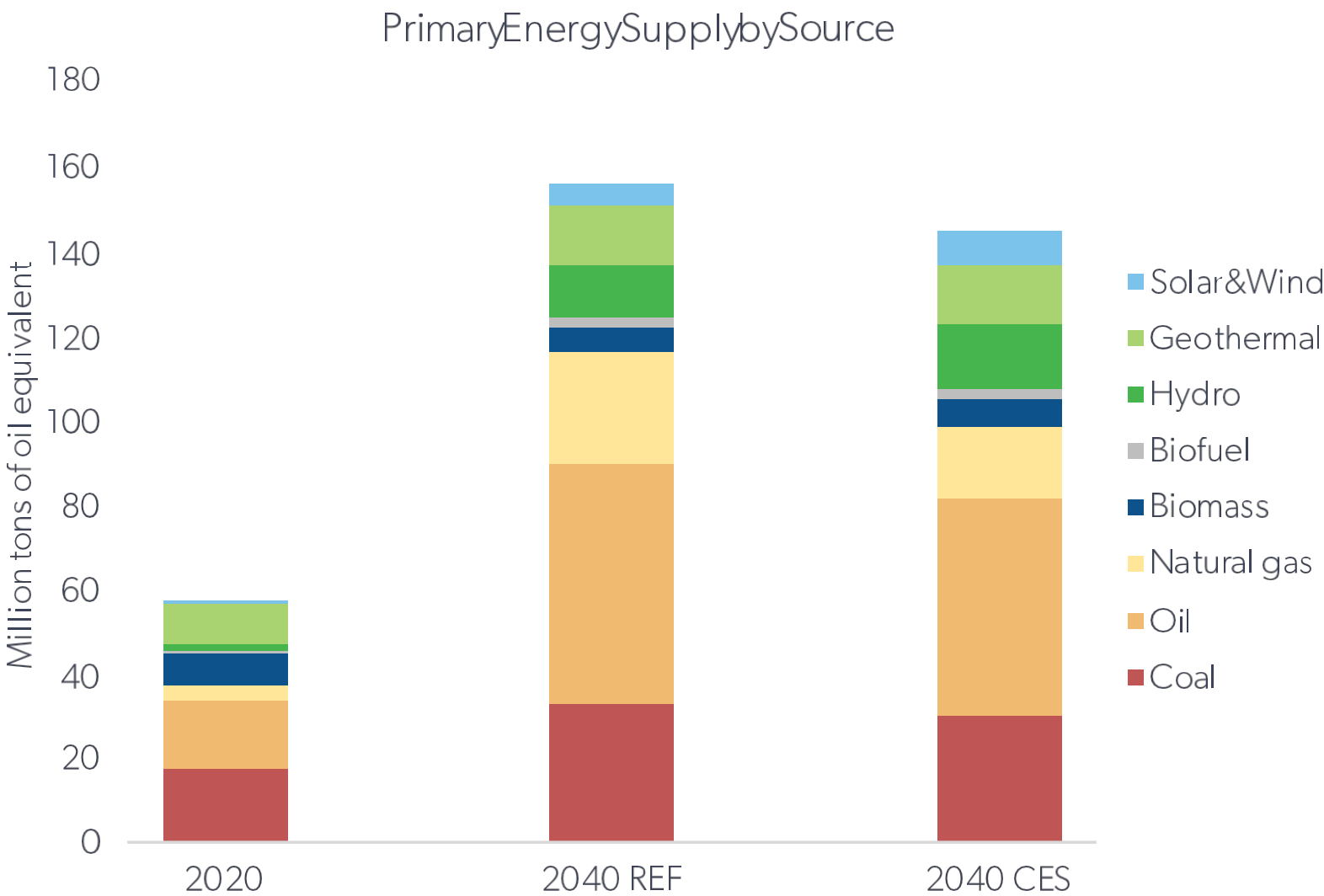
Motorizasyon Oranı (1.000 kişi başına araç)



2018'de kişi başına düşen emisyonlar (kişi başına tCO2eq, LUCF hariç)



Reliance on fossil fuels is projected to increase, but per capita energy consumption will remain low



(Kaynak:) (PEP2020-2040,) (Department) of Energy

Kaynaklar: Uluslararası Enerji Ajansı Enerji İstatistikleri

Key characteristics of the Philippine energy sector

Riskler/Tehditler:

1. **Highly reliant on imports** – fully dependent on imported oil, importing about 80 percent of its coal supply. The expected depletion of domestic gas reserves has triggered a rush to investing in LNG to power generation.
2. **High energy prices, especially electricity tariffs** due to geography and bureaucracy (which add to development cost), lack of competition in generation, and full cost passthrough.

Avantajlar/Fırsatlar:

3. **No explicit energy subsidies, except for targeted social subsidies** financed by surcharges to non-subsidized ratepayers, such as the lifeline electricity tariff and subsidies for off-grid diesel power systems.
4. **Private sector driven development** – all investments in the energy sector are financed by private sector except in select areas of off-grid electrification.
5. **Abundance of renewable energy resources**, particularly in solar and onshore/offshore wind. Large-scale solar and onshore wind have become cost-competitive compared to fossil-fuel-based power.

Filipinler Hükümeti Önemli bir enerji dönüşümü gündemi başlatıyor

Hükümetin mevcut hedefi, 2030 yılına kadar elektrik üretiminde yenilenebilir enerji kaynaklarının payının %35'e, 2040 yılına kadar ise %50'ye ulaşmasıdır.

The broad strategy of the government is to (1) scale up renewable energy deployment, particularly solar and wind (onshore and offshore); (2) cap the growth of coal-fired power; (3) ramp up LNG to power investment; (4) promote energy efficiency and demand-side management; and (5) open to developing other low-carbon technologies, such as nuclear power.

- ☐ Updated [Ulusal Yenilenebilir Enerji Programı](#) set new targets and increased mandatory Renewable Portfolio Standard
- ☐ 2020'de ilan edilen [Yeşil Alan Kömür Yakıtlı Enerji Projelerinin Onaylanmasına İlişkin Moratoryum](#), 2020-2040 Filipin Enerji Planına yansıtılmıştır, and upheld by the current administration.
- ☐ New [Doğal Gaz Gelişim Planı](#) (completed in 2022) aims to attract investments in the country's downstream natural gas industry
- ☐ First [Ulusal Enerji Verimliliği ve Tasarrufu](#) Plan (to be issued in 2023) will set energy efficiency targets and strengthen regulations and enforcement
- ☐ Feasibility of nuclear power is being assessed per [EO No.164, s.2022, Nükleer Enerji Programı ve Diğer Amaçlar için Ulusal Bir Tutum Benimsenmesi](#)

II.ENERJİ SEKTÖRÜ KARBONSUZLAŞTIRMA YOLLARI VE ETKİLERİ

Enerji sektörünün karbondan arındırılması

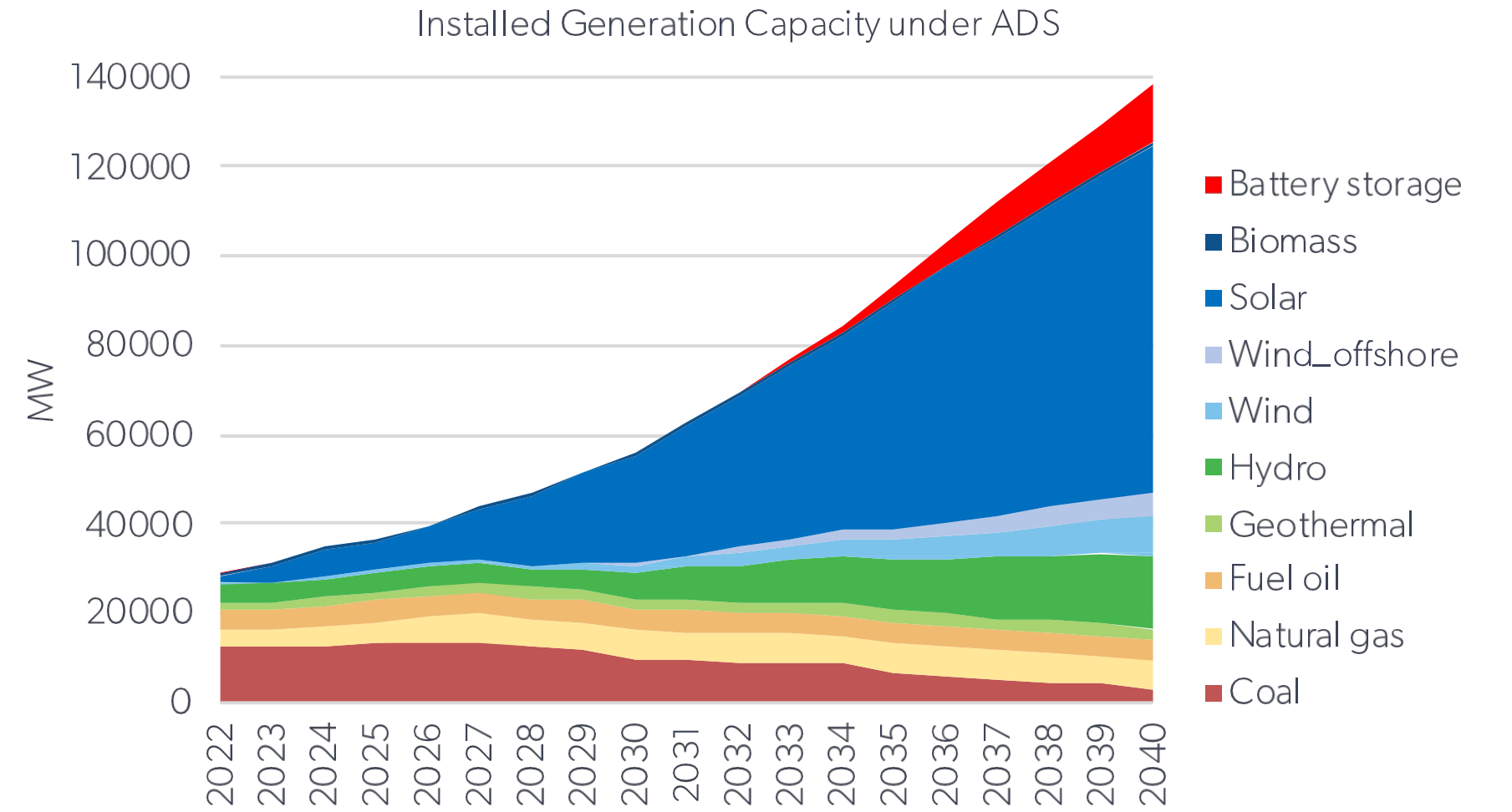
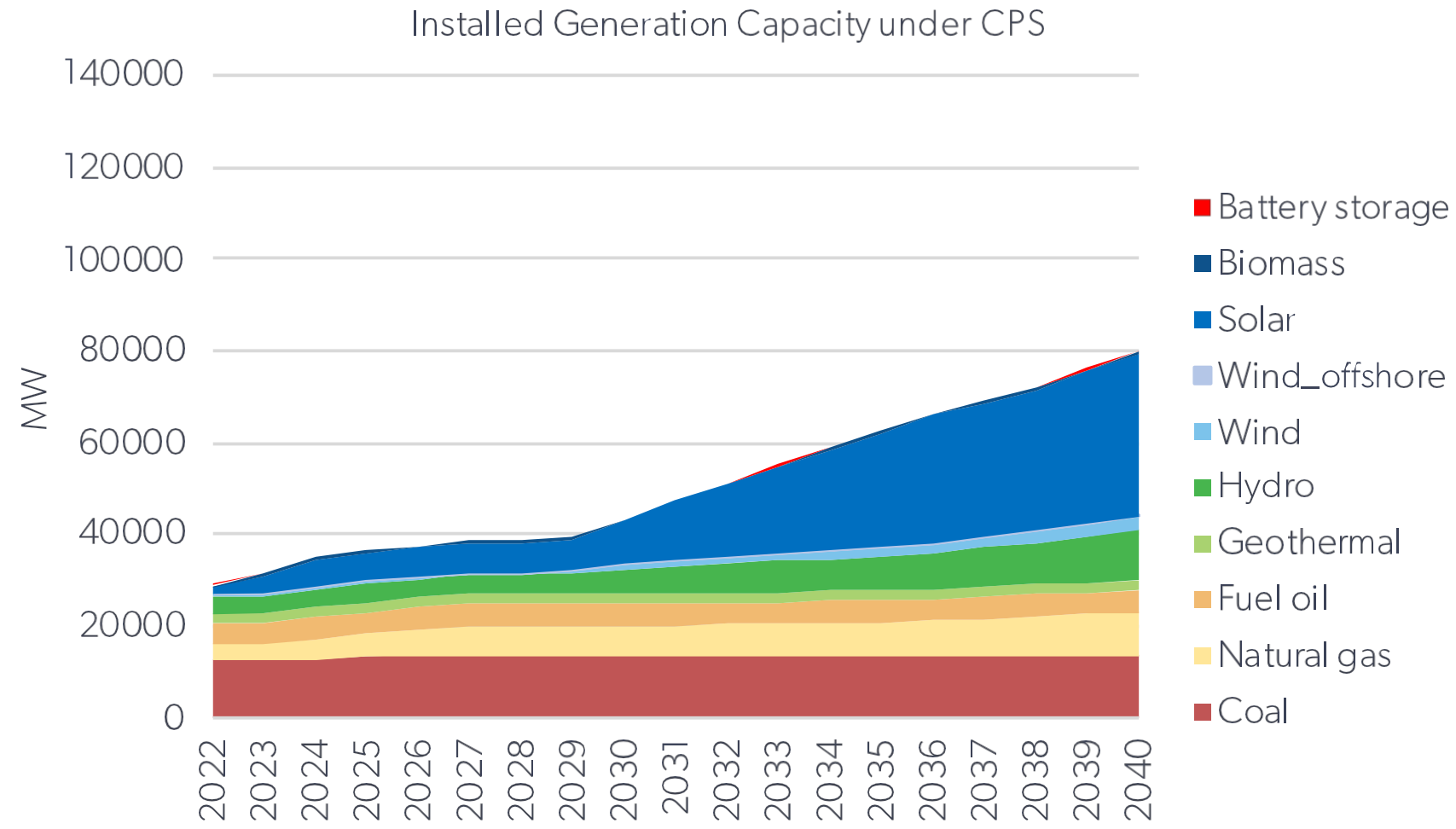
Filipinler'de enerji dönüşümünün anahtarıdır

To inform the discussion on energy transition pathways, the World Bank conducted an exploratory analysis of the decarbonization of the power sector:

- **Her zamanki gibi iş (BAU) senaryosu** is similar to the REF in PEP 2020-2040, but at a lower GDP growth rate (thus a corresponding lower power demand growth rate).
- **Mevcut politika senaryosu (CPS)** is similar to the CES in PEP 2020-2040 but also adjusted to a lower GDP growth rate. It represents the government's current ambitions in improving energy efficiency and developing e-mobility on the demand side and in scaling up renewable energy on the supply side.
- **Hızlandırılmış dekarbonizasyon senaryosu (ADS)** analyzes how power system expansion needs to adapt to achieving the goal of reducing annual CO₂ emissions by 80 percent by 2040, compared with BAU, in response to the same electricity demand growth as in CPS.

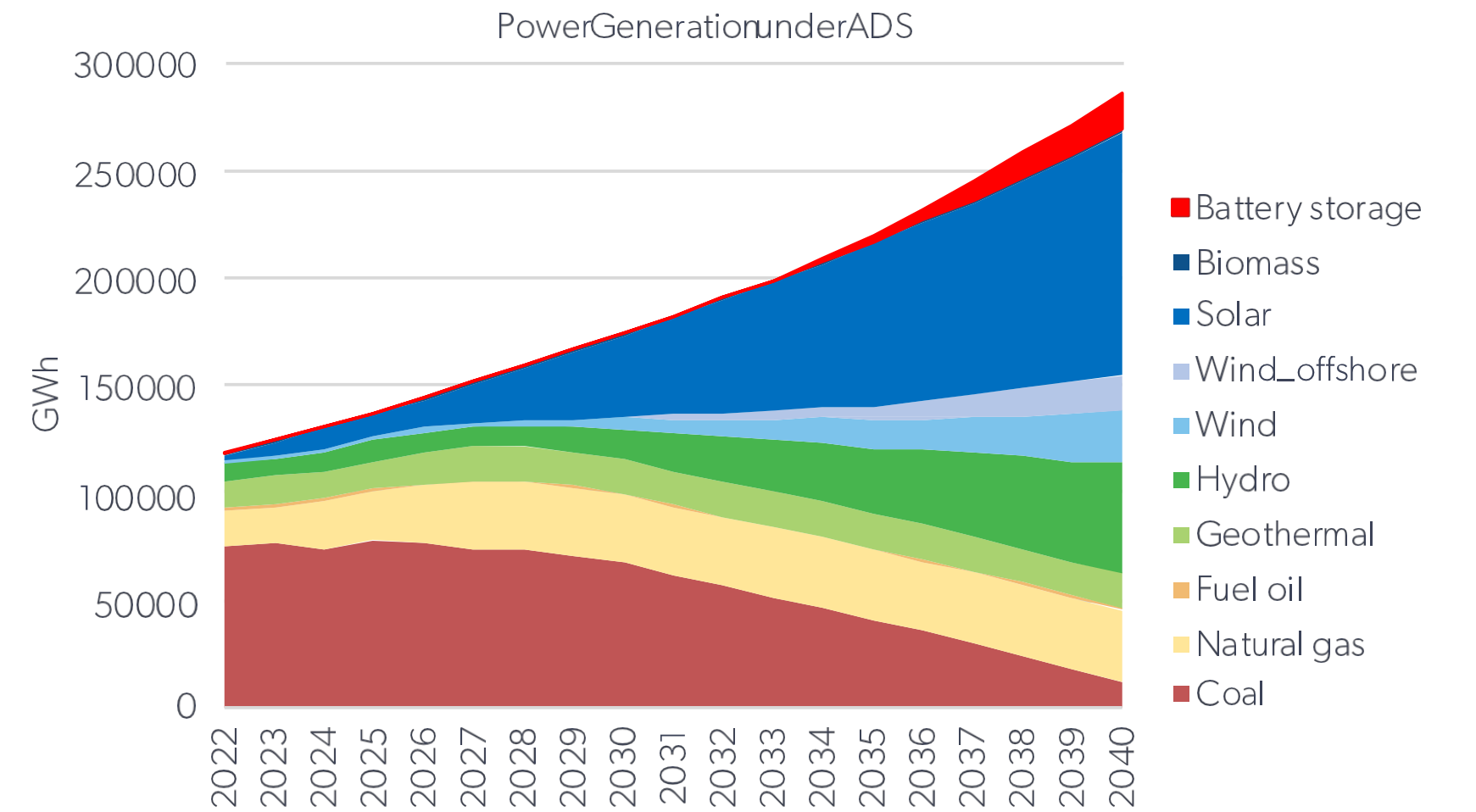
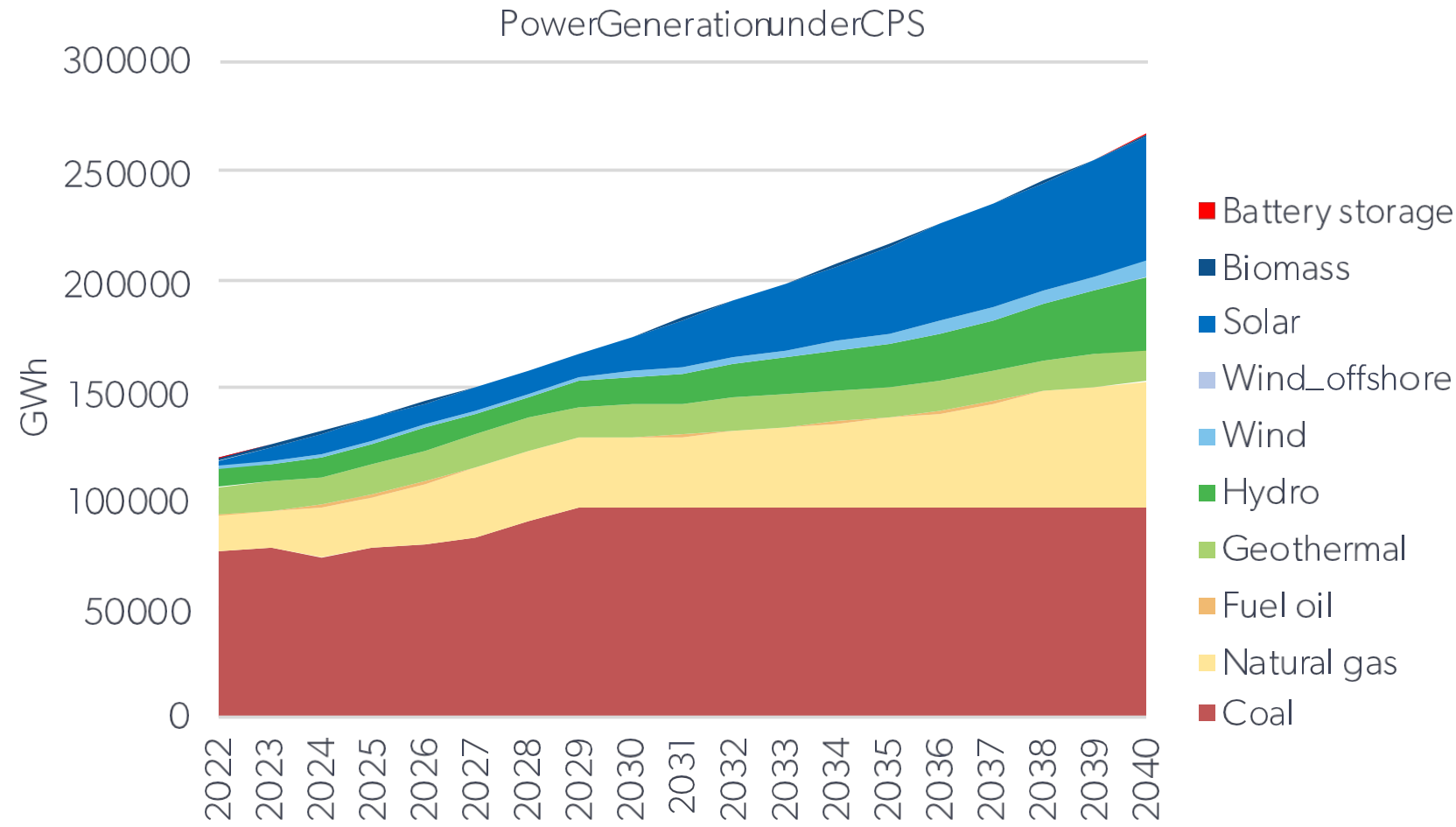
ADS, 2040 yılında derin bir emisyon azaltım hedefiyle, net emisyonu ulaşmak için faydalı analitik bilgiler sağlamaktadır. 2040'tan sonra enerji sektöründe sıfır emisyon.

Hızlandırılmış dekarbonizasyon önemli değişikliklere yol açacaktır enerji üretim teknolojileri karışımında ...



Kaynak: Dünya Bankası personel tahminleri

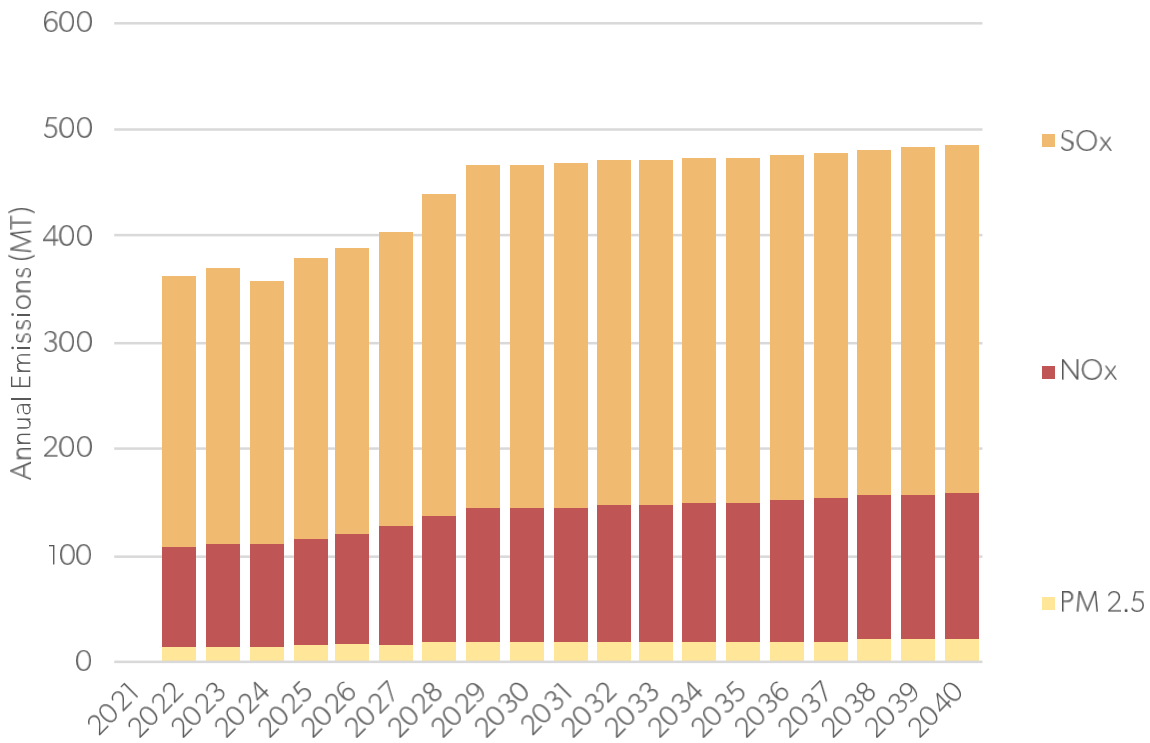
...ve enerji kaynakları



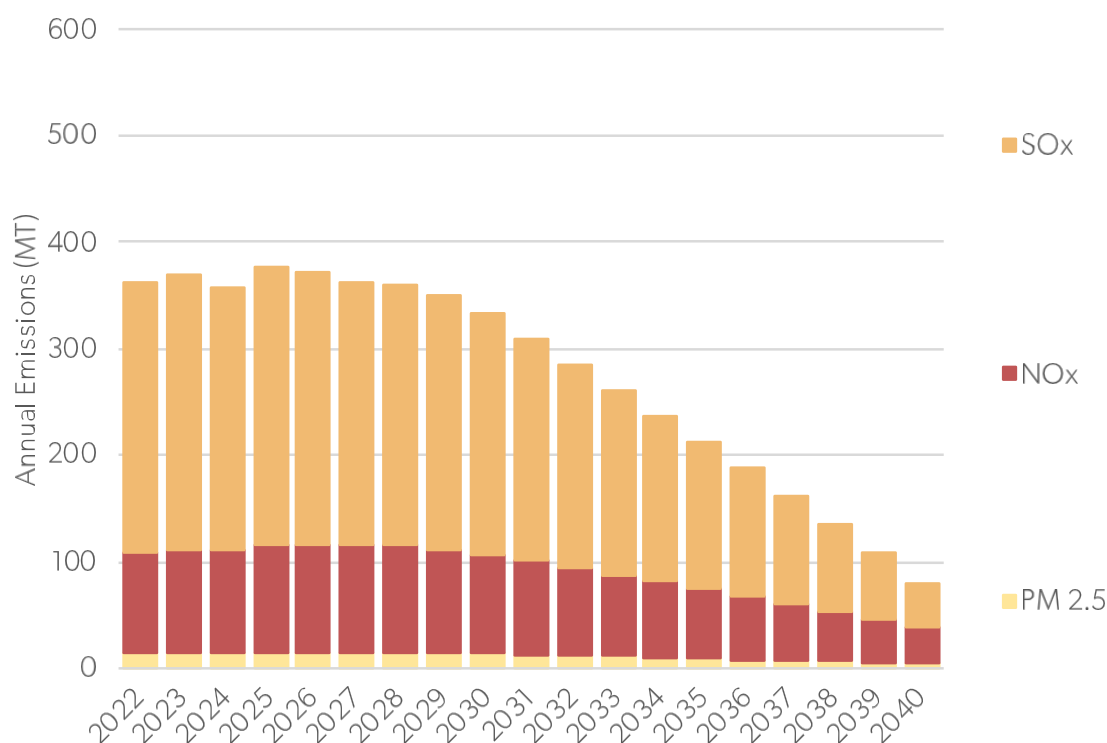
Kaynak: Dünya Bankası personel tahminleri

The ADS pathway would lead to large reduction in emissions of CO₂ and air pollutants

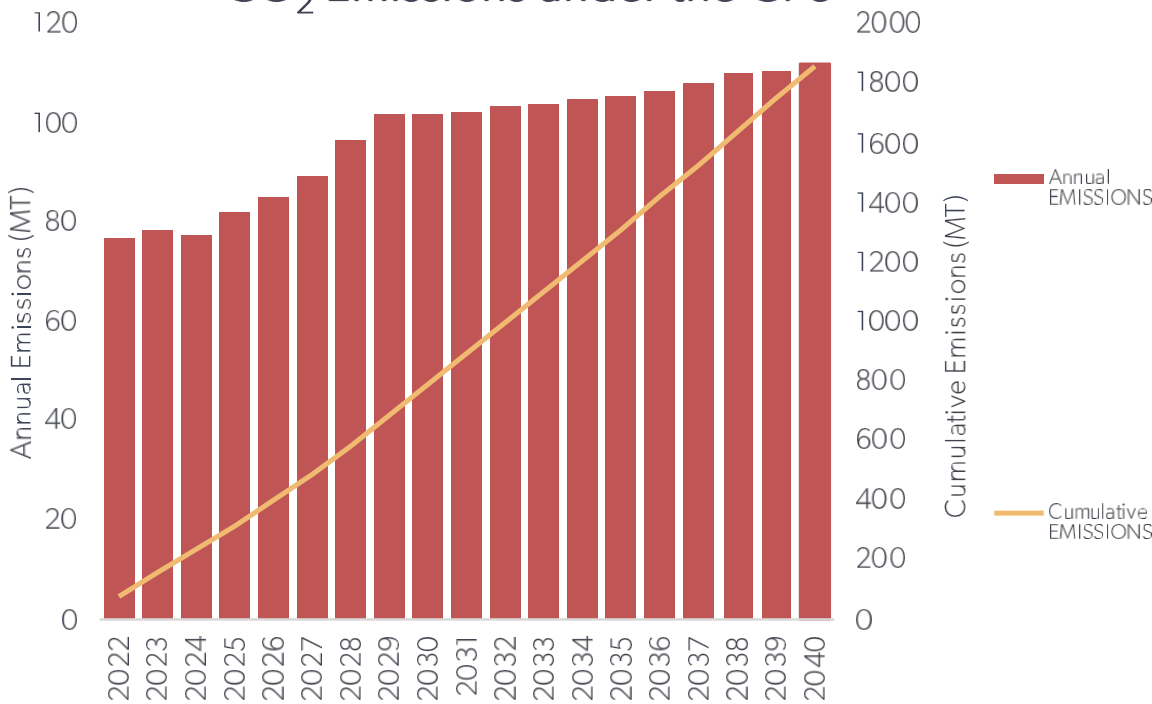
Annual Emissions of Air Pollutants under the CPS



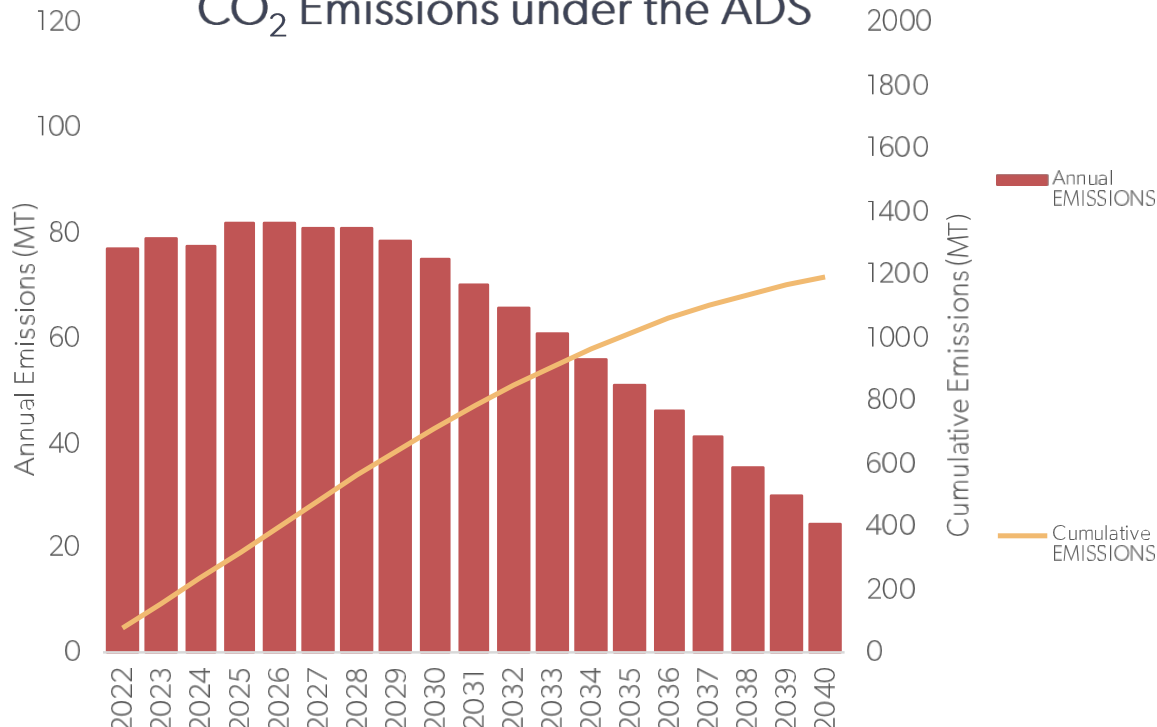
Annual Emissions of Air Pollutants under the ADS



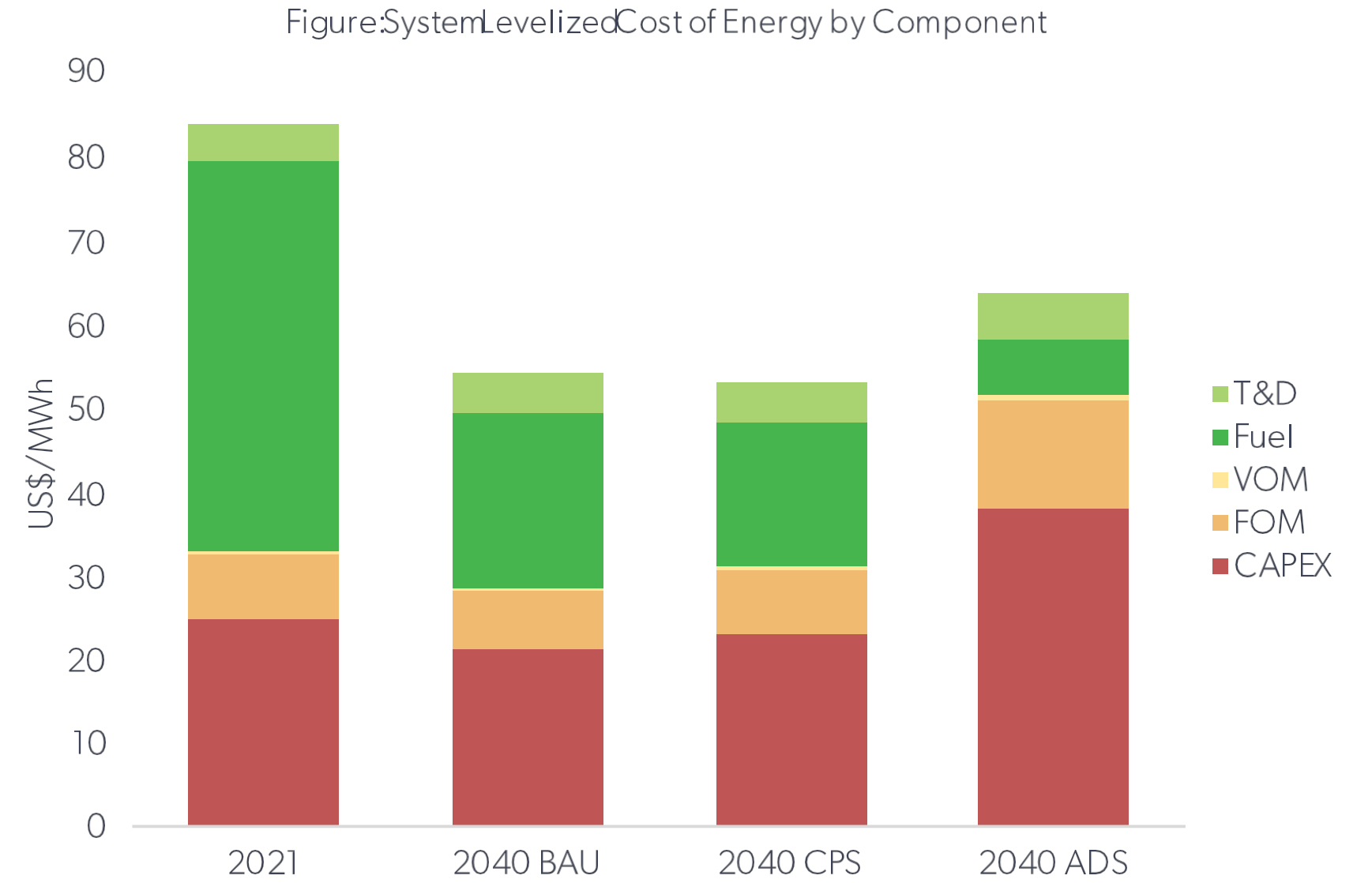
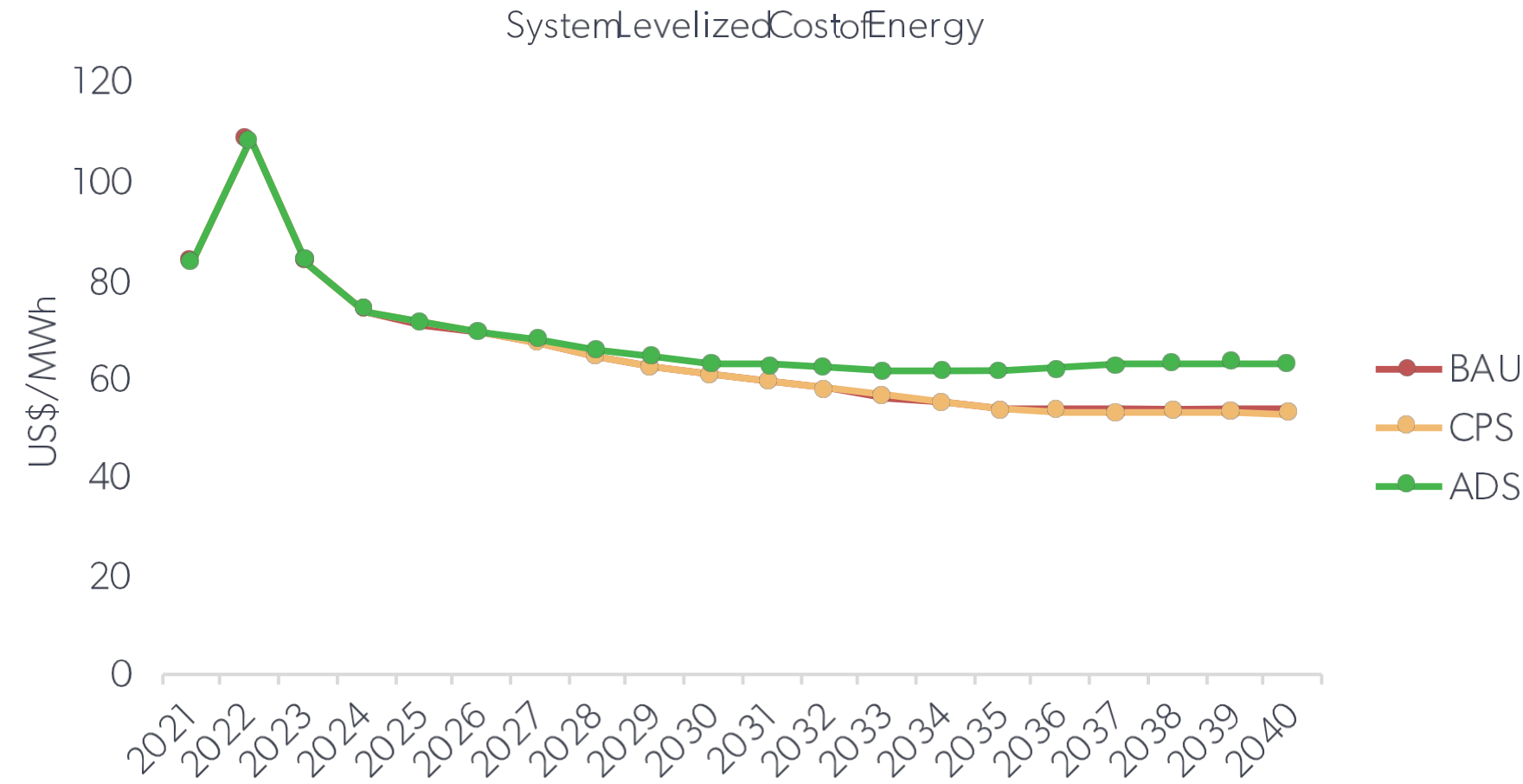
CO₂ Emissions under the CPS



CO₂ Emissions under the ADS



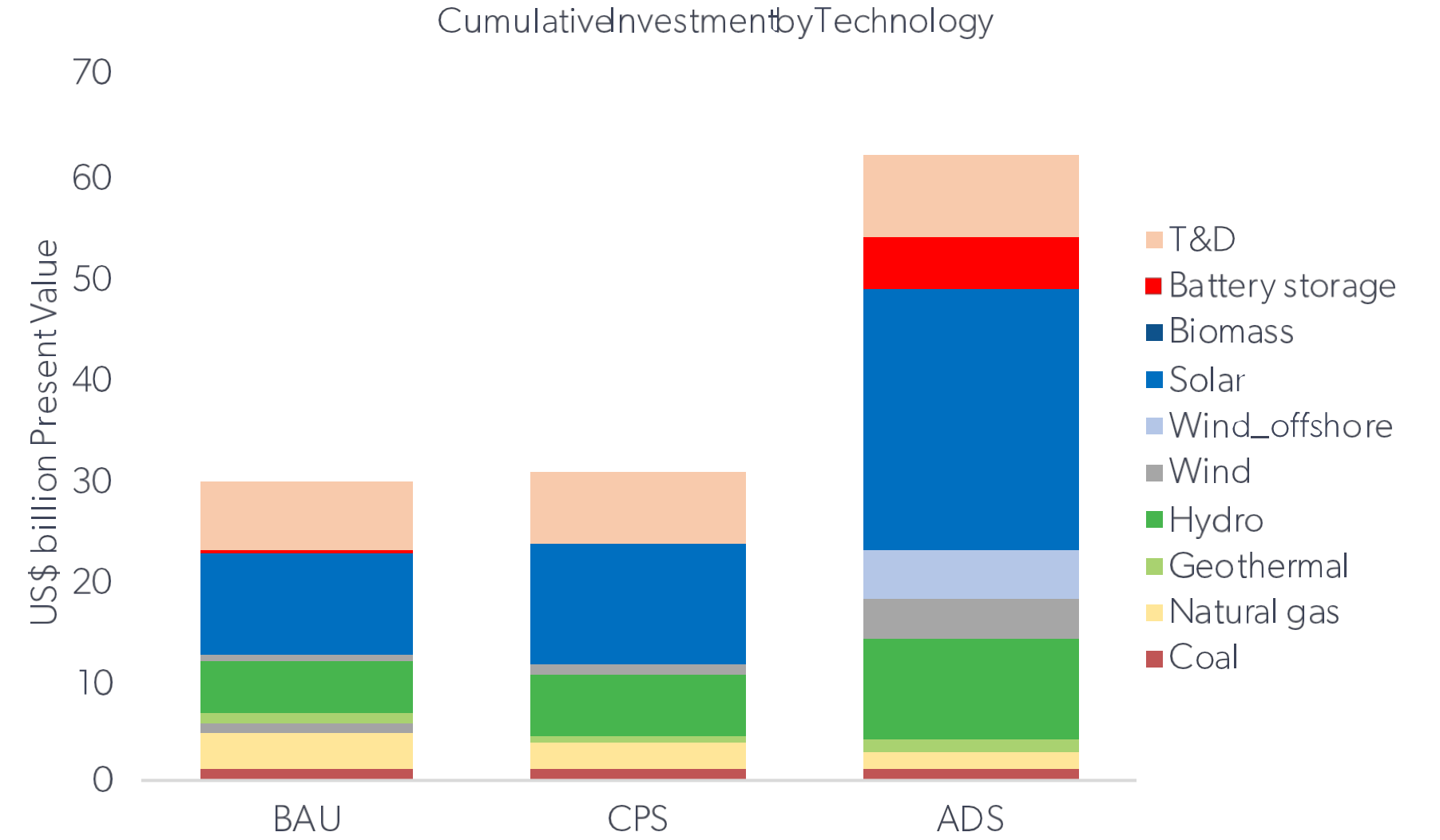
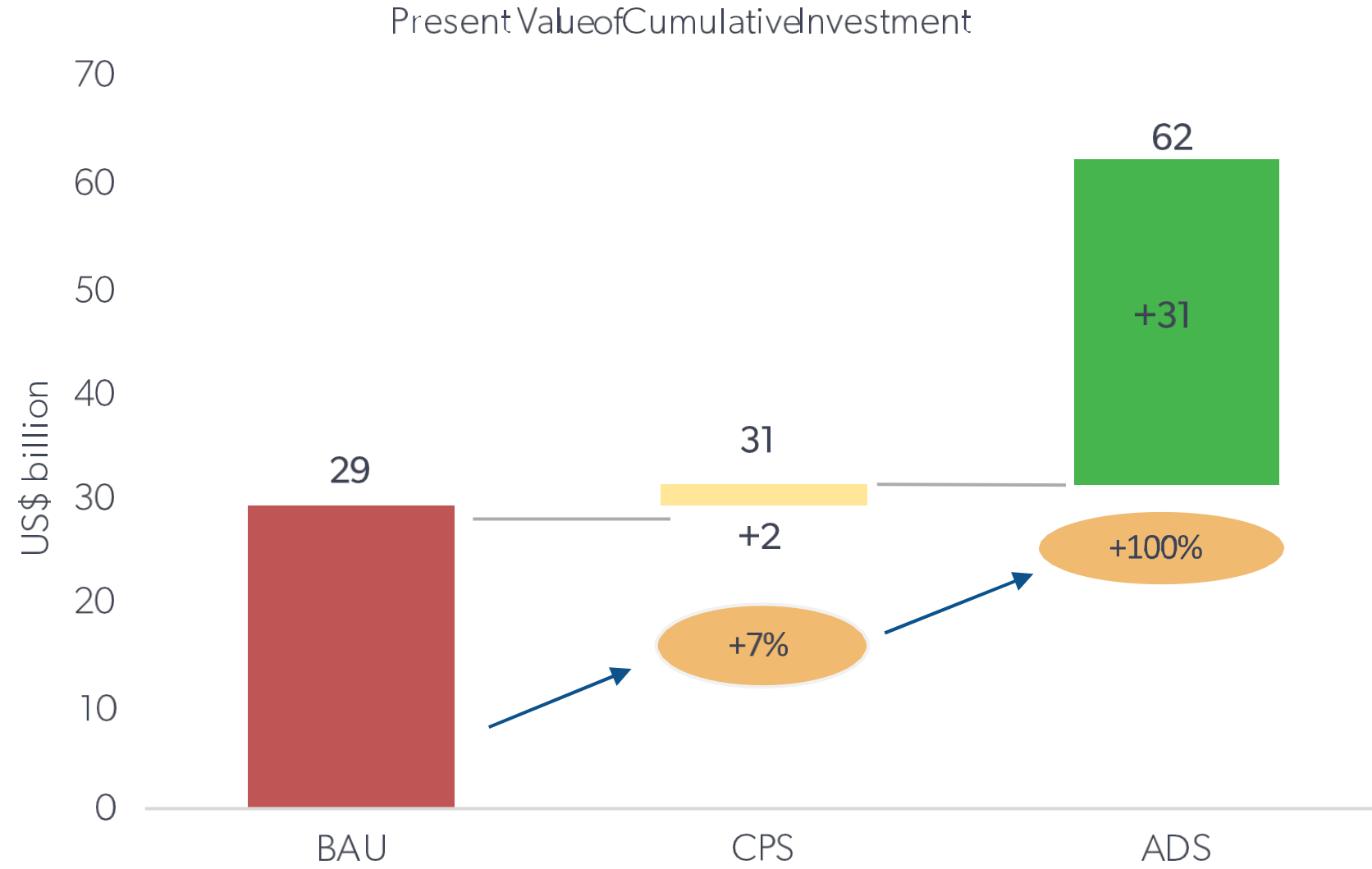
Sistem seviyelendirilmiş elektrik maliyetinin düşeceği öngörülmektedir



Kaynak: Dünya Bankası personel tahminleri.

Not: CAPEX= sermaye harcamaları, FOM= sabit işletme ve bakım, VOM= değişken işletme ve bakım, T&D= iletim ve dağıtım.

ADS, yenilenebilir enerjinin yaygınlaştırılması ve entegrasyonu için sermaye harcamalarında önemli bir artış gerektirecektir



Kaynak: Dünya Bankası personel tahminleri

2021 fiyatlarıyla 2040 yılına kadar iskonto edilmemiş kümülatif yatırım:

BAU - 52 milyar ABD Doları CPS - 57 milyar ABD Doları ADS - 127 milyar ABD Doları

Hızlandırılmış dekarbonizasyon mantıklı mı?

ADS ve CPS maliyetlerinin karşılaştırılması, 2022-2040, milyar ABD doları bugünkü değer

	CPS	ADS	DEVIATION	DEĞİŞİM
Capital costs for new generation and storage	23.5	53.9	30.4	129%
Grid network expansion and upgrade costs	7.1	7.8	0.7	10%
Capital costs of existing generation and grid assets *	23.7	5.3	-18.4	-78%
Variable operational and maintenance costs	0.6	0.9	0.3	50%
Fixed operational and maintenance costs	14.2	17.3	3.1	22%
Fuel costs	56.3	47.8	-8.5	-15%
TOTAL SYSTEM COST	125.4	133	7.6	6%
Cost of stranded assets	0	10	10	NA
Local environmental damage costs	14.5	9.8	-4.7	-32%
Global environmental damage costs	51	35	-16	-31%
NET COST	190.9	187.8	-3.1	-2%

Source: World Bank staff estimates

Note: NA = Not applicable. * The large reduction of capital expenditure from existing generation and grid assets under the ADS is due to the decommissioning of CFPPs.

The broad conclusion of this analysis is that in order to raise the ambition of Philippines' decarbonization efforts to bring about additional local and global environmental benefits commensurate international assistance in cost sharing would be needed.



III. POLICIES FOR A SECURE, AFFORDABLE AND CLEAN ENERGY FUTURE



Önümüzdeki beş yıl içinde enerji dönüşümü için bir temel

1. Increase the implementation of utility-scale solar and wind power projects to bring variable renewable energy sources to a tipping point in power generation
2. Prioritize planning and investments in transmission capacity and grid flexibility
3. Prudently pursue the LNG-to-power program to secure reliable power supply and increase the system flexibility for integrating variable renewable energy
4. Prioritize energy efficiency and demand-side management for buildings and industries
5. Improve power system planning to better guide energy transition investment decisions
6. Consider the use of an appropriate carbon pricing instrument to level the playing field between RE and fossil fuels while generating revenues
7. Establish a framework for addressing the early retirement of coal-fired power plants and ensuring a just energy transition