

Issue in Focus from IEO2020: Impacts of Changes in Natural Gas Prices and Renewable Capital Costs on the Asian Electric Sector



for

Center for Strategic and International Studies

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by

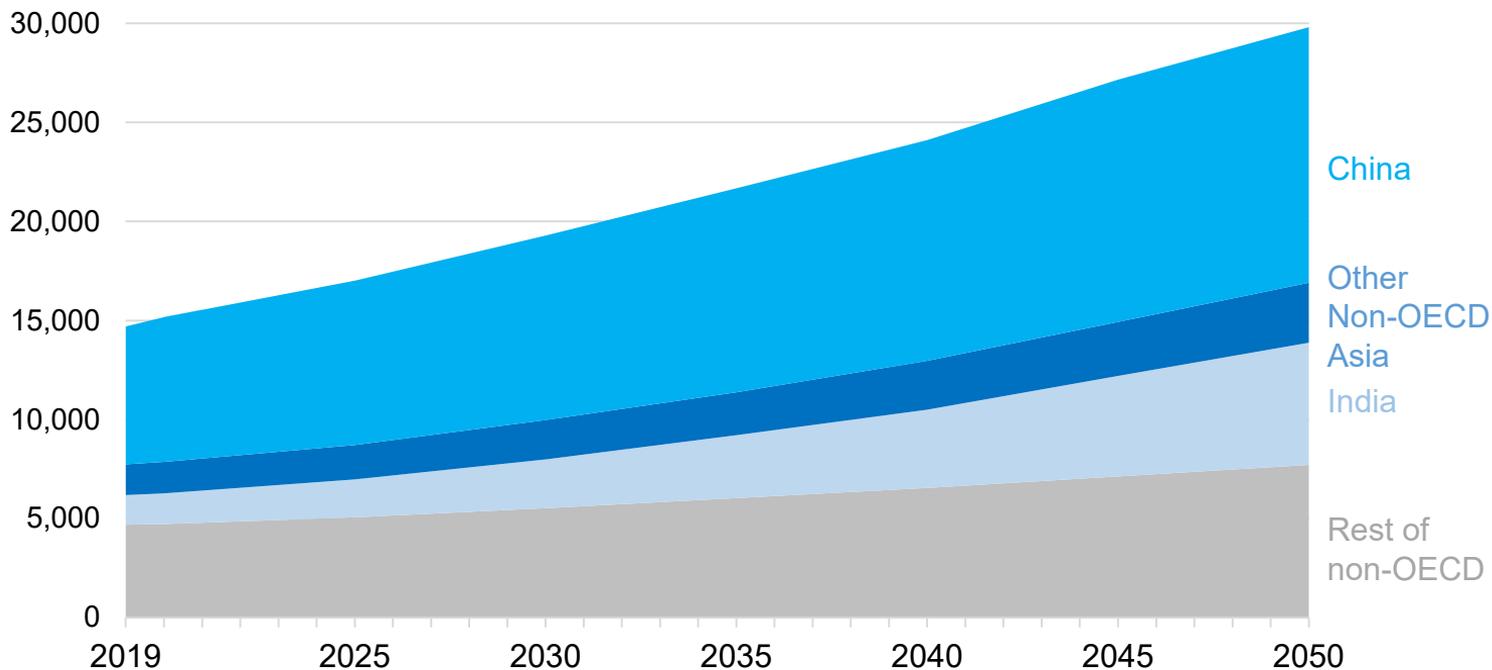
Michelle Bowman, Lead Operations Research Analyst

U.S. Energy Information Administration

Non-OECD electricity generation grows fastest in Asia

Electricity generation in non-OECD countries

billion kilowatthours



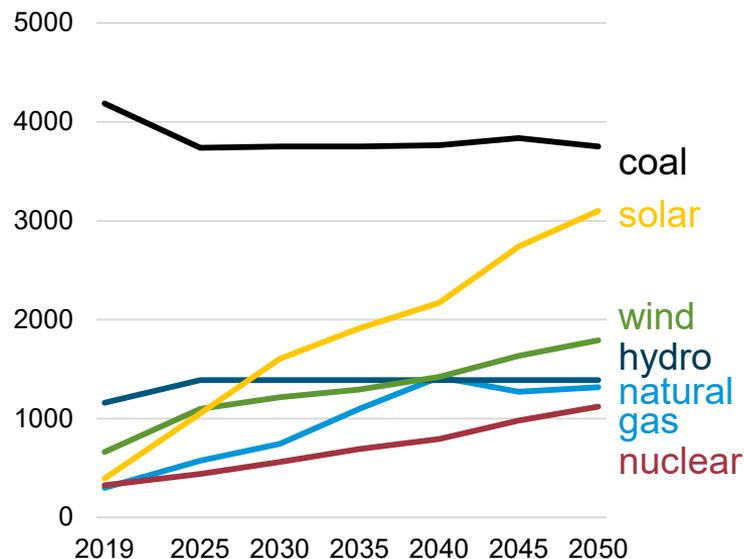
Source: Energy Information Administration, International Energy Outlook 2019

Reference case projections result from specific natural gas price and renewable energy capital cost assumptions

Electricity generation by fuel, China

Comparative Reference case

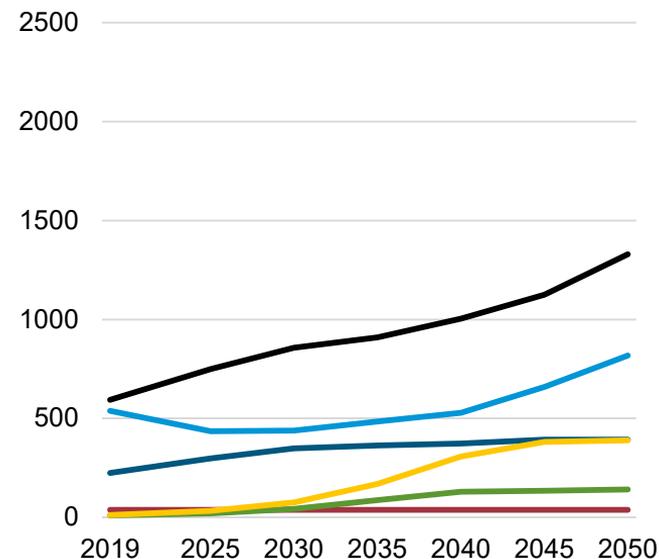
billion kilowatthours



Electricity generation by fuel, Other Non-OECD Asia

Comparative Reference case

billion kilowatthours



Note: Other fuels representing a small percentage of generation are not shown

Source: Energy Information Administration, International Energy Outlook 2020 Comparative Reference case

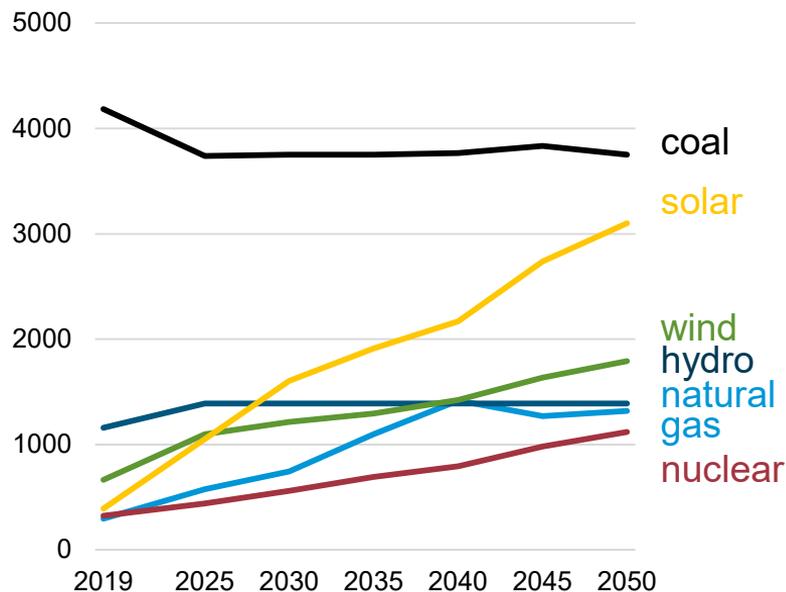
Changes in natural gas prices and renewable energy capital costs could shift the electricity sector fuel mix in Asia

		Renewables capital cost		
		High	Nominal	Low
Delivered natural gas price	High	High High		
	Nominal		Comparative Reference case	
	Low			Low Low

In China, economics of competing technologies and emissions policies drive decreases in coal generation

Electricity generation by fuel, China

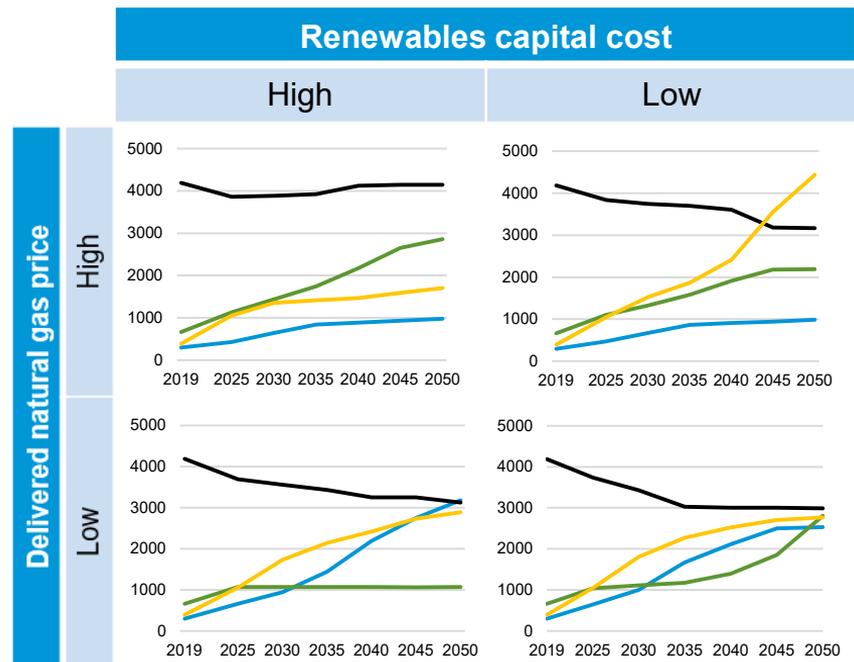
Comparative Reference case
billion kilowatthours



Note: Other fuels representing a small percentage of generation are not shown
Source: Energy Information Administration, International Energy Outlook 2020

Electricity generation by select fuels, China

billion kilowatthours

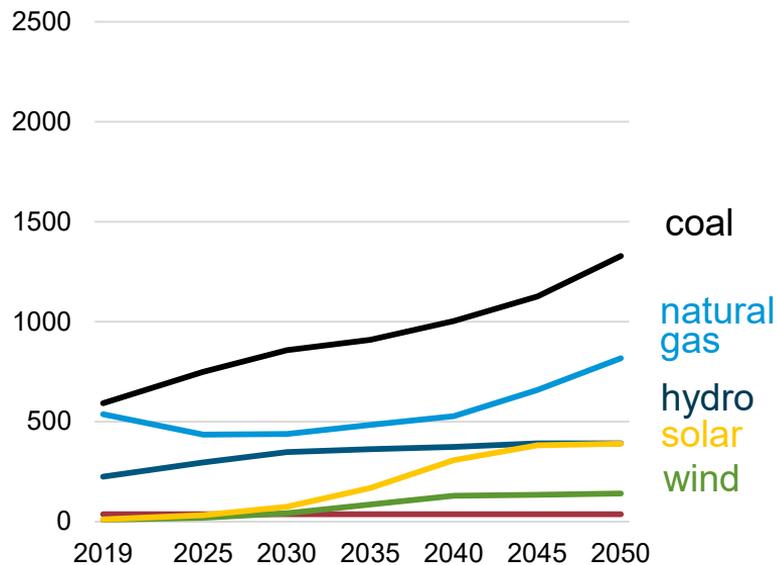


In Other Non-OECD Asia, competition exists between coal, natural gas, and renewable technologies

Electricity generation by fuel, Other Non-OECD Asia

Comparative Reference case

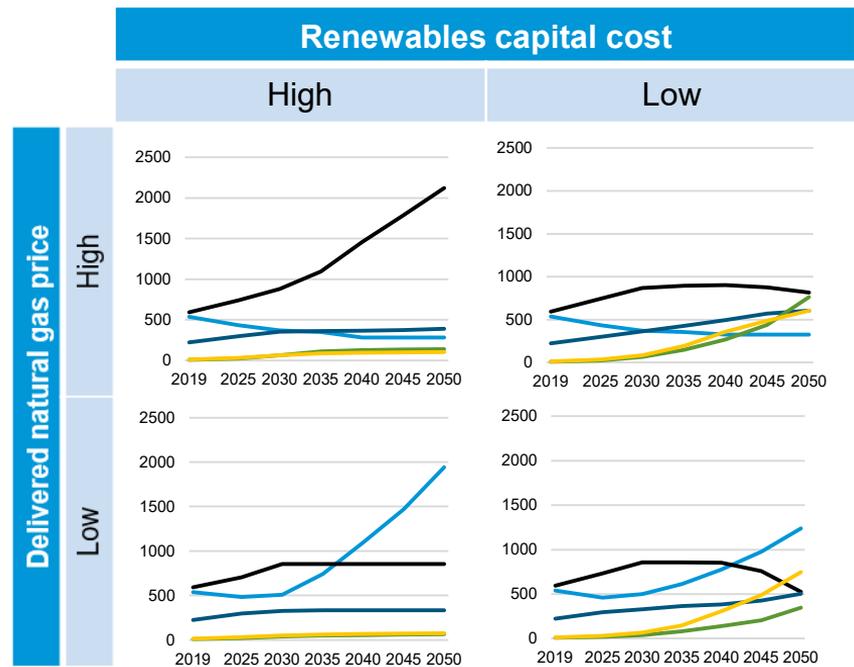
billion kilowatthours



Note: Other fuels representing a small percentage of generation are not shown
 Source: Energy Information Administration, International Energy Outlook 2020

Electricity generation by select fuels, Other Non-OECD Asia

billion kilowatthours



Polices, markets, and resources determine the impact of natural gas prices and renewable capital costs on Asia's generation mix

- **China:** Emission policies favor growth away from coal-fired generation
 - Low natural gas prices significantly shift the generation mix to predominantly natural gas
 - High natural gas prices with low renewable costs could lead to solar becoming the predominant source of electricity generation by 2050
- **Other Non-OECD Asia:** Without a unified emissions policy, coal, natural gas, and renewables compete, but fossil fuels remain the dominant source of generation in all cases
 - Low natural gas prices could make natural gas the primary fuel for electricity generation
 - High natural gas prices coupled with low renewable capital costs could double solar, wind, and hydropower generation over Comparative Reference case levels