

International Energy Outlook 2021

with projections to 2050

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#IEO2021

October 6, 2021
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International Energy Outlook 2021 with projections to 2050












October 2021

U.S. Energy Information Administration
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U.S. Department of Energy
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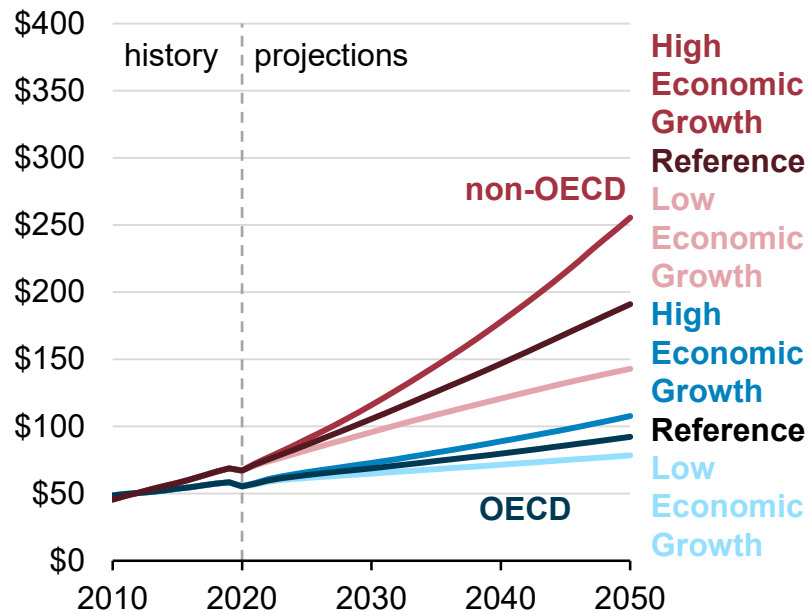
Macroeconomics and assumptions



OECD and non-OECD GDP and energy consumption

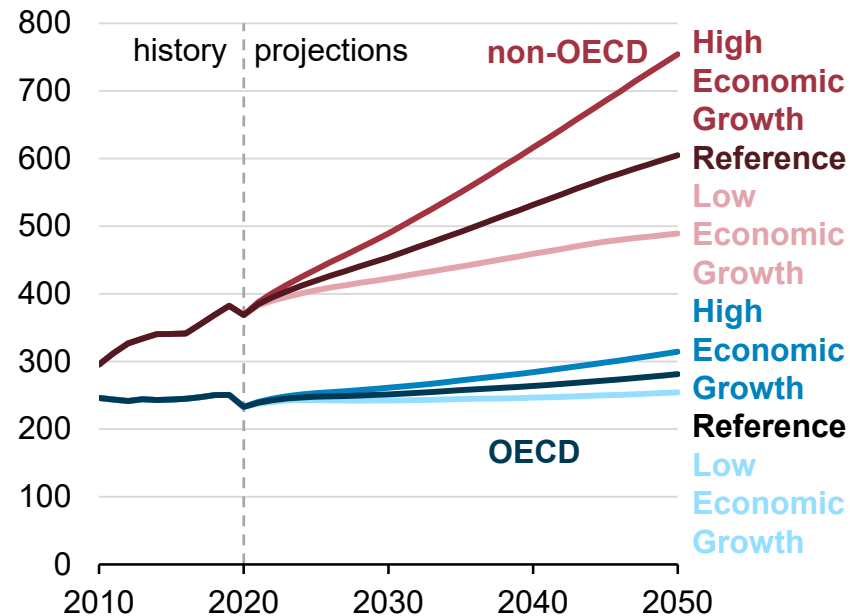
World GDP

trillion 2015 dollars, purchasing power parity (PPP)



Energy consumption

quadrillion British thermal units

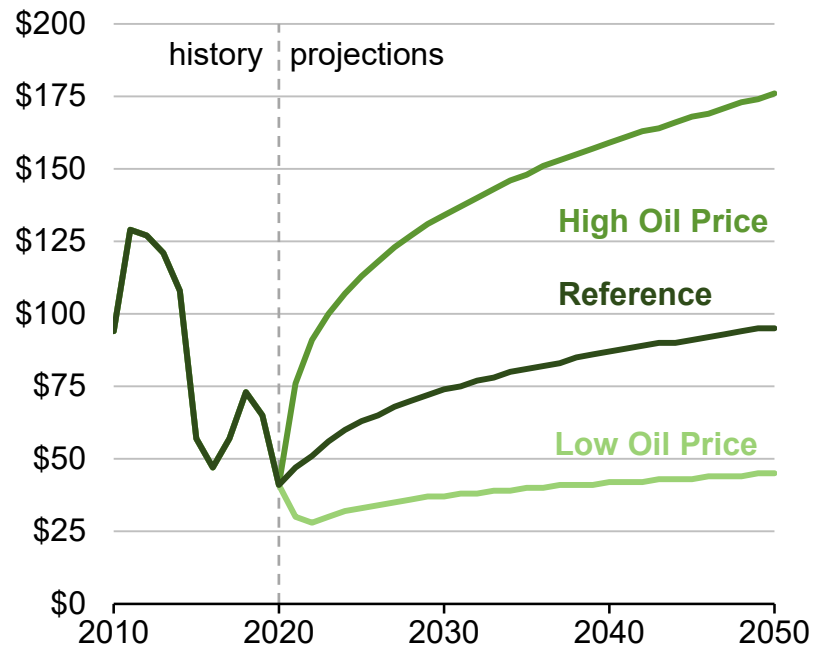




World oil prices and energy consumption

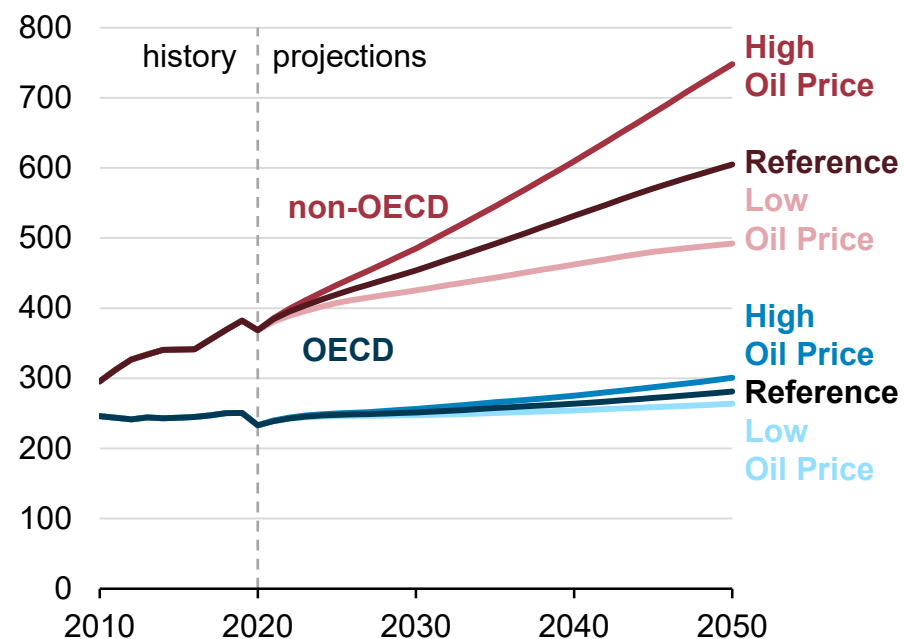
World oil prices

2020 dollars per barrel



World energy consumption

quadrillion British thermal units

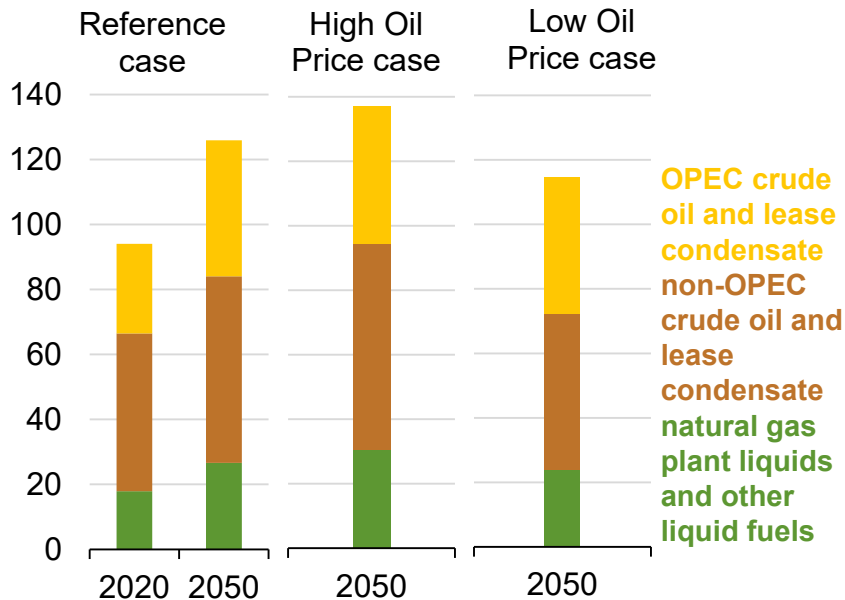




World petroleum and other liquid fuels production and consumption

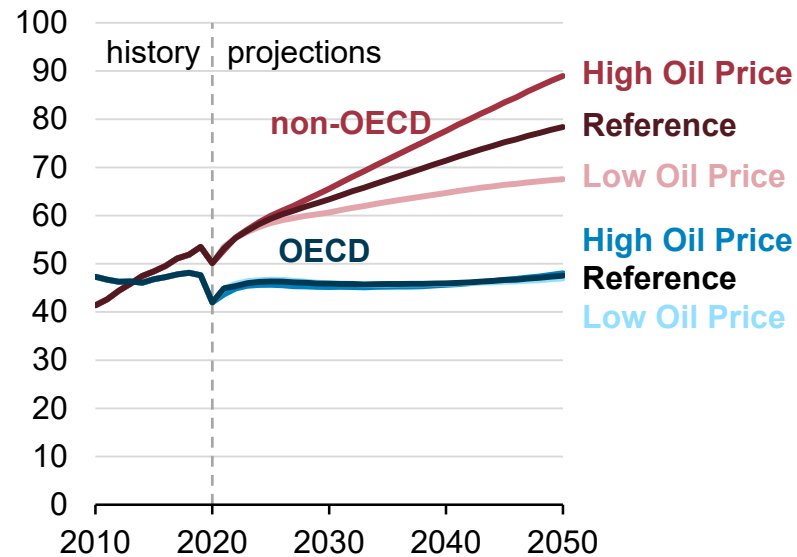
World petroleum and other liquid fuels production

million barrels per day



World petroleum and other liquid fuels consumption

million barrels per day

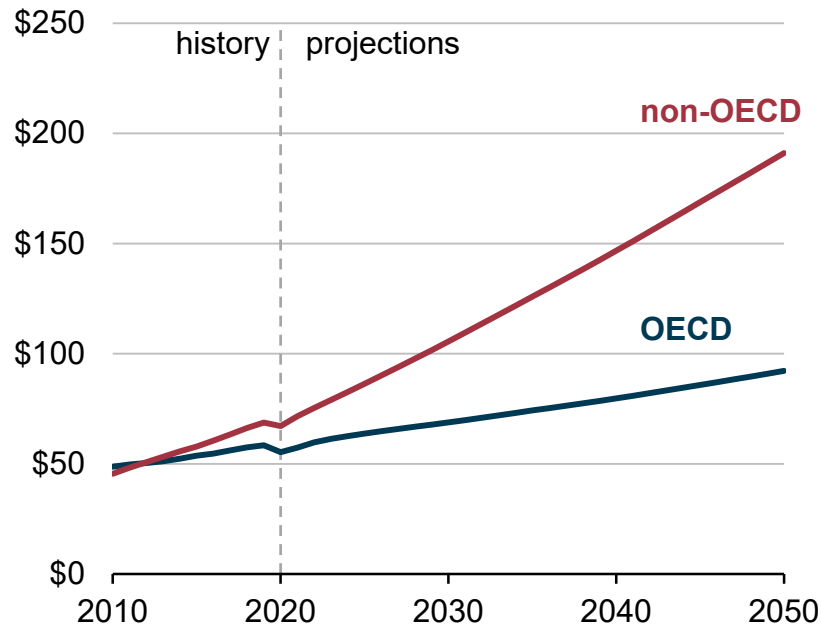




Economic growth and purchasing power

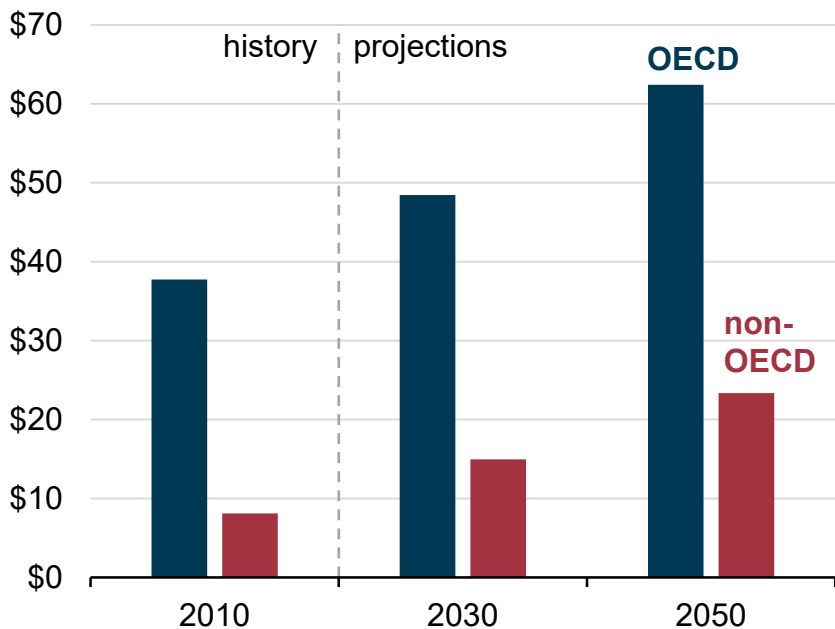
World GDP

trillion 2015 dollars, purchasing power parity (PPP)



World per capita GDP

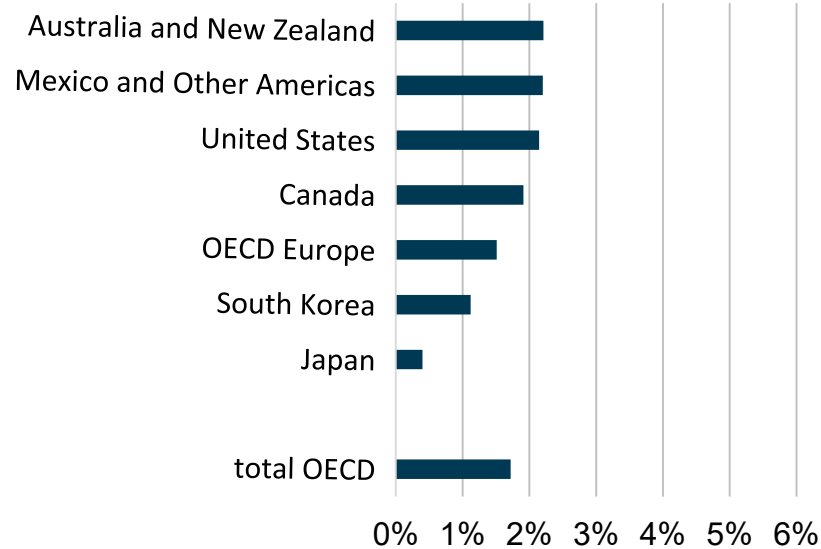
thousand 2015 dollars per person, purchasing power parity (PPP)



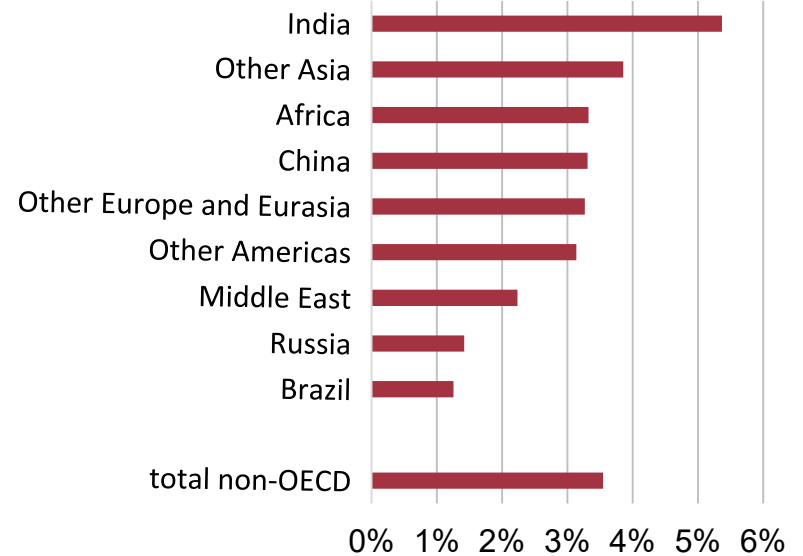


GDP growth rates by region

Average annual percentage change in GDP, OECD
2020–2050



Average annual percentage change in GDP, non-OECD
2020–2050





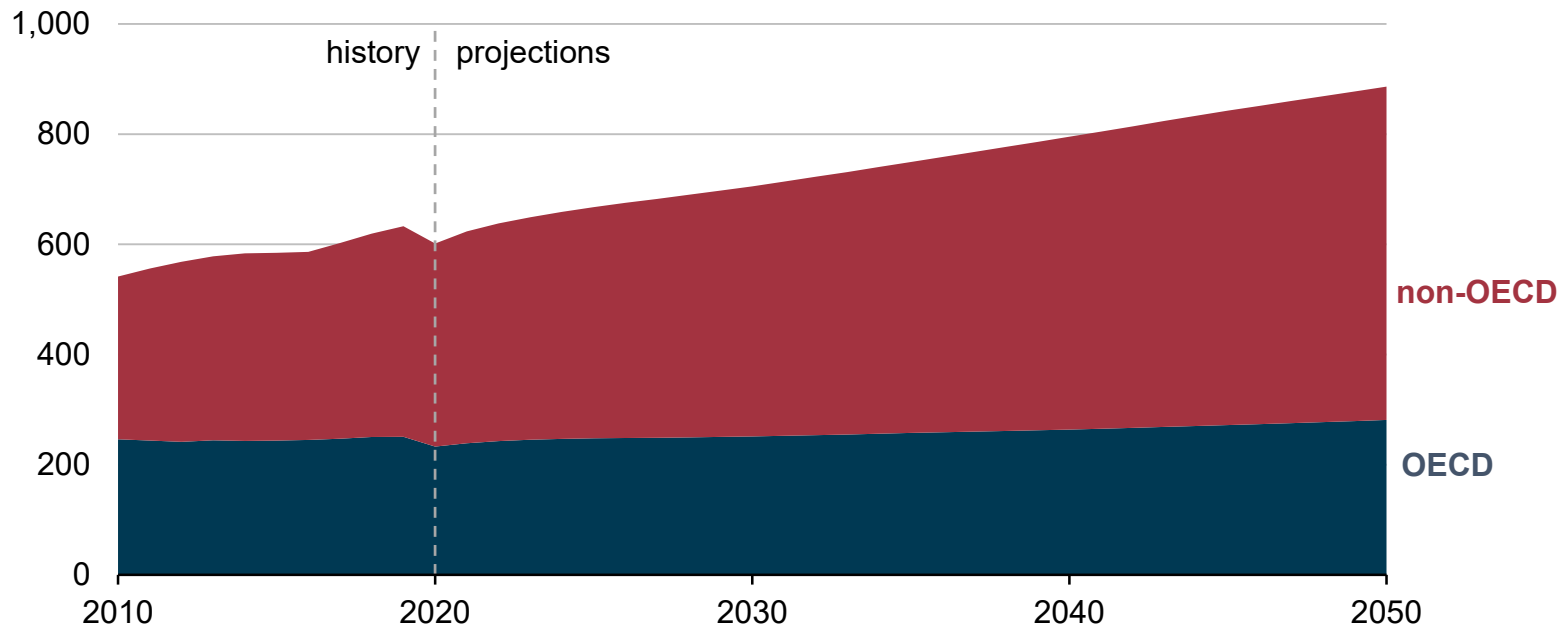
Consumption



World energy consumption

World energy consumption

quadrillion British thermal units

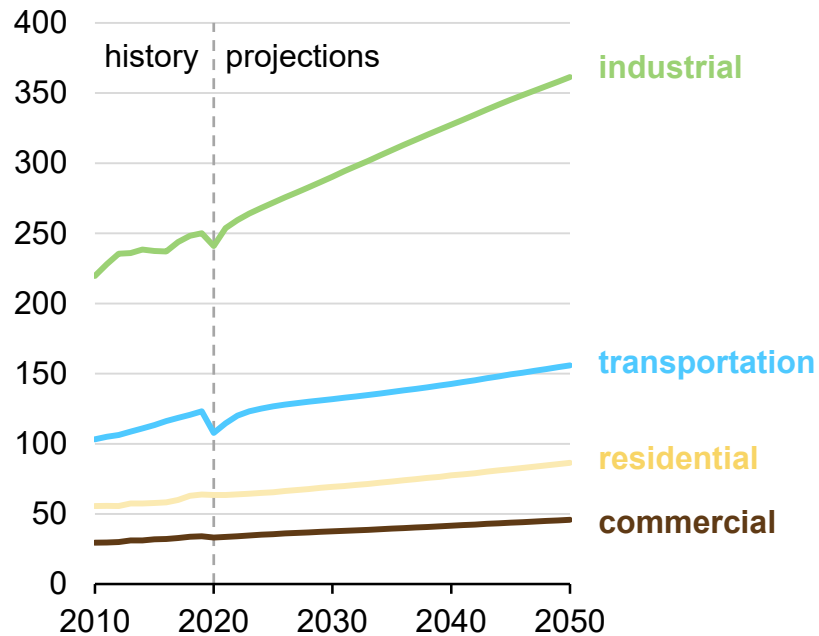




World energy consumption by sector and fuel

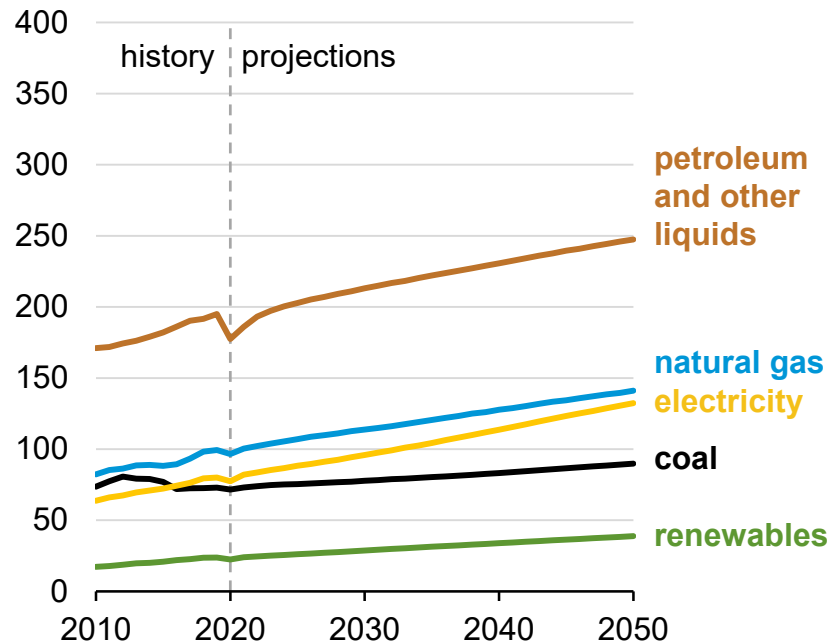
End-use energy consumption by sector, world

quadrillion British thermal units



End-use energy consumption by fuel, world

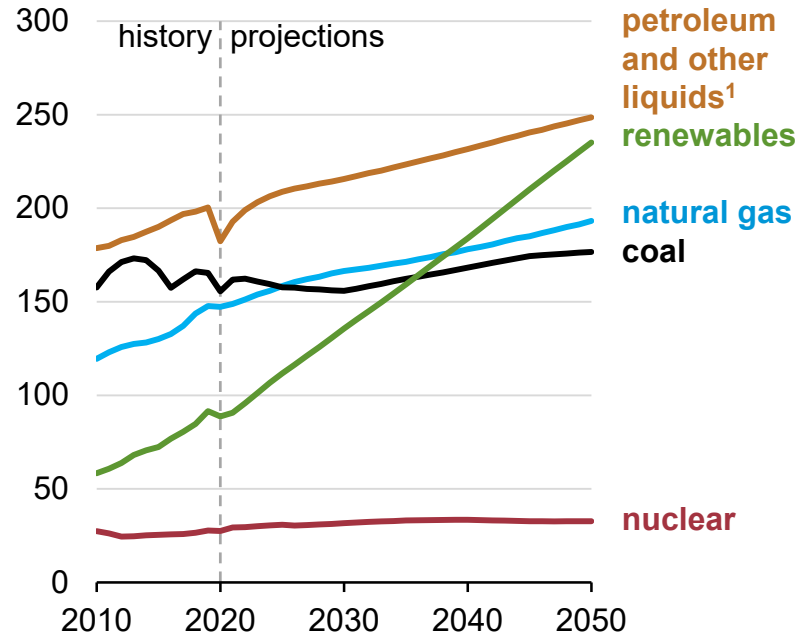
quadrillion British thermal units



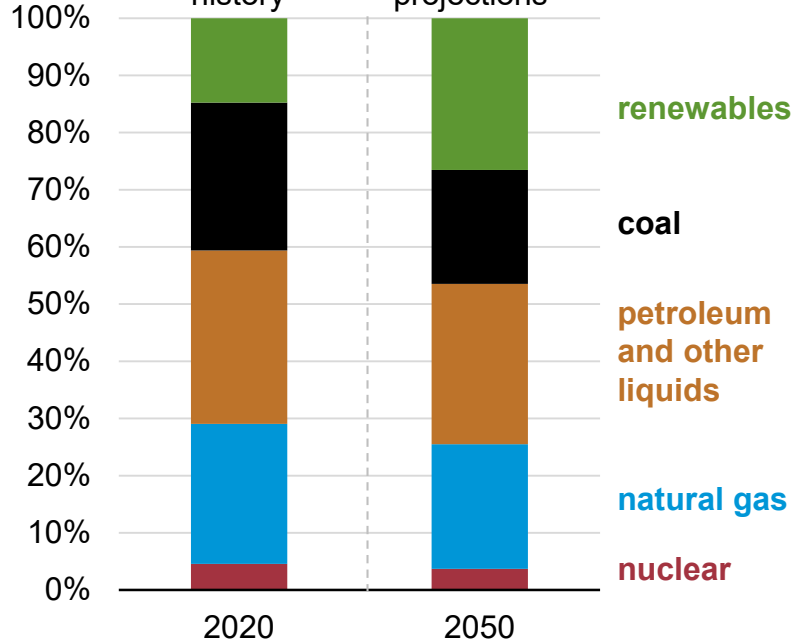


Primary energy consumption by energy source

Primary energy consumption by energy source, world
quadrillion British thermal units



Share of primary energy consumption by source, world
percentage



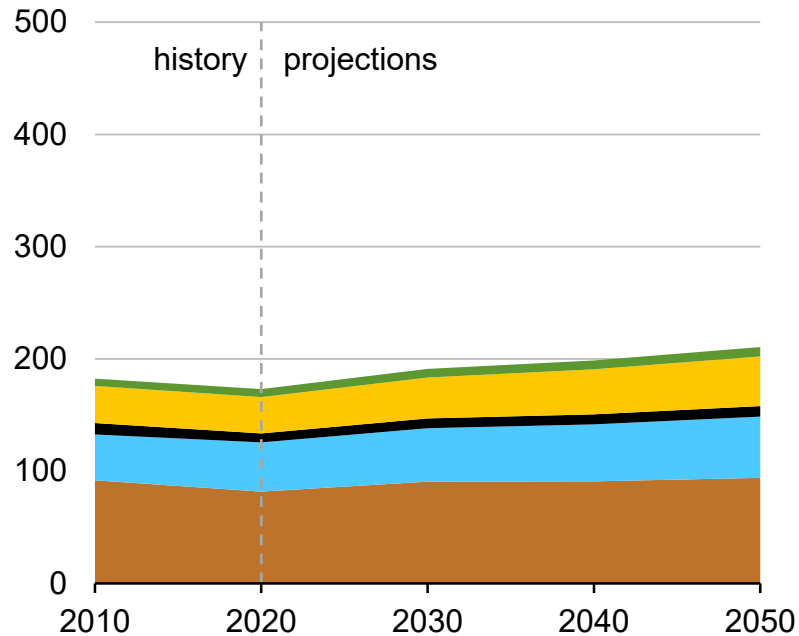
¹ includes biofuels



Energy consumption by fuel

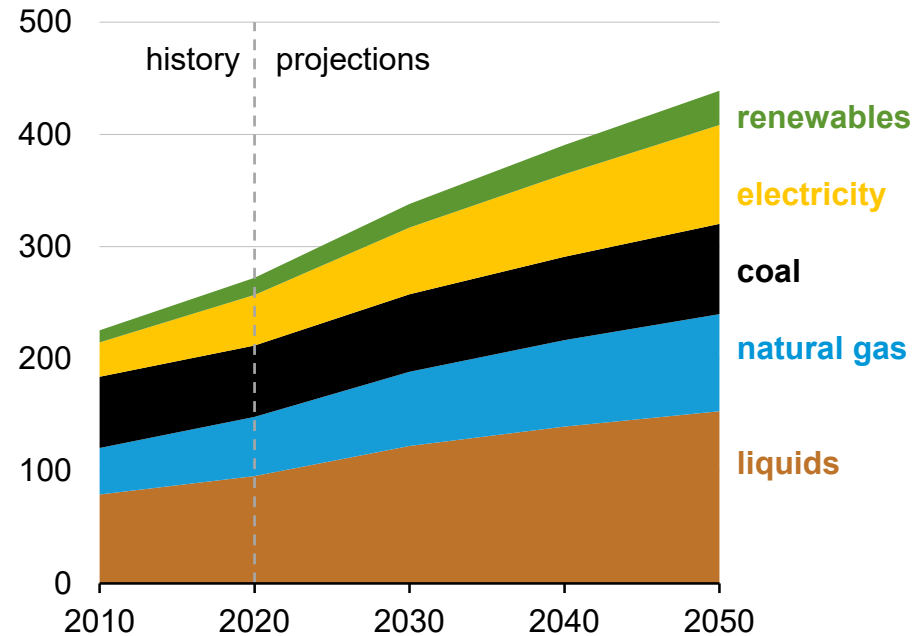
Delivered energy consumption by fuel, OECD

quadrillion British thermal units



Delivered energy consumption by fuel, non-OECD

quadrillion British thermal units

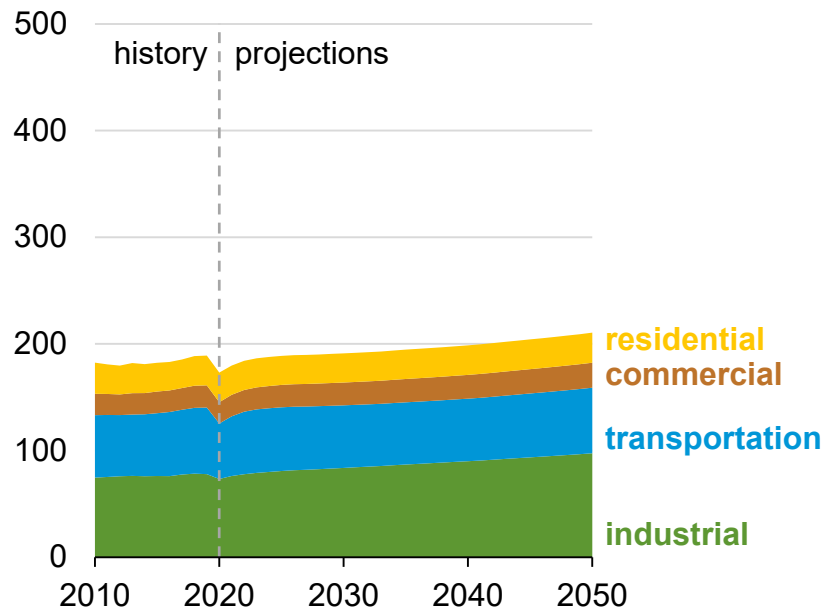




Energy consumption by end-use sector

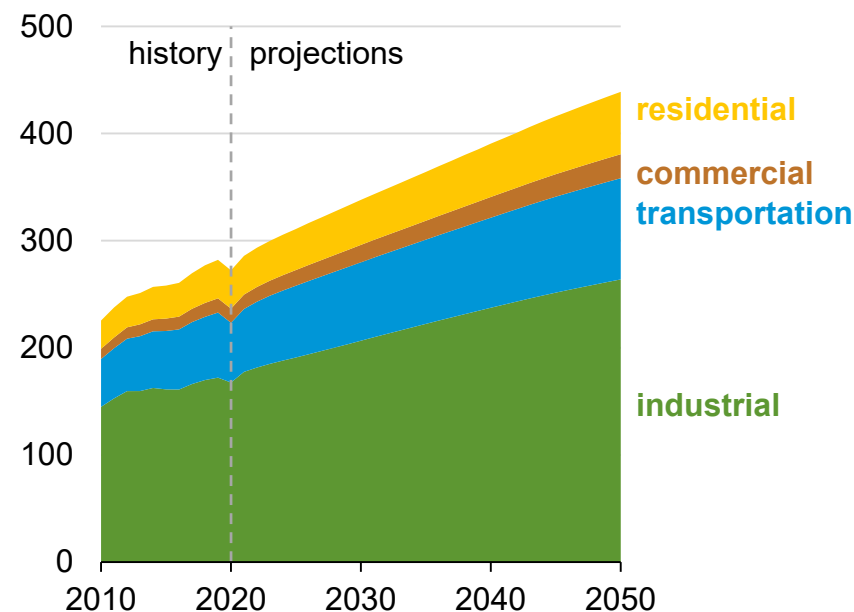
Energy consumption by sector, OECD

quadrillion British thermal units



Energy consumption by sector, non-OECD

quadrillion British thermal units

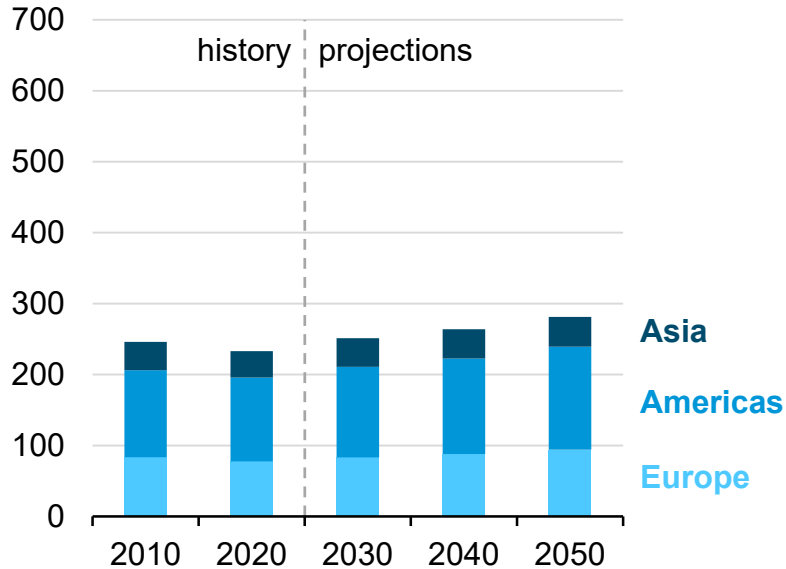




Energy consumption by region

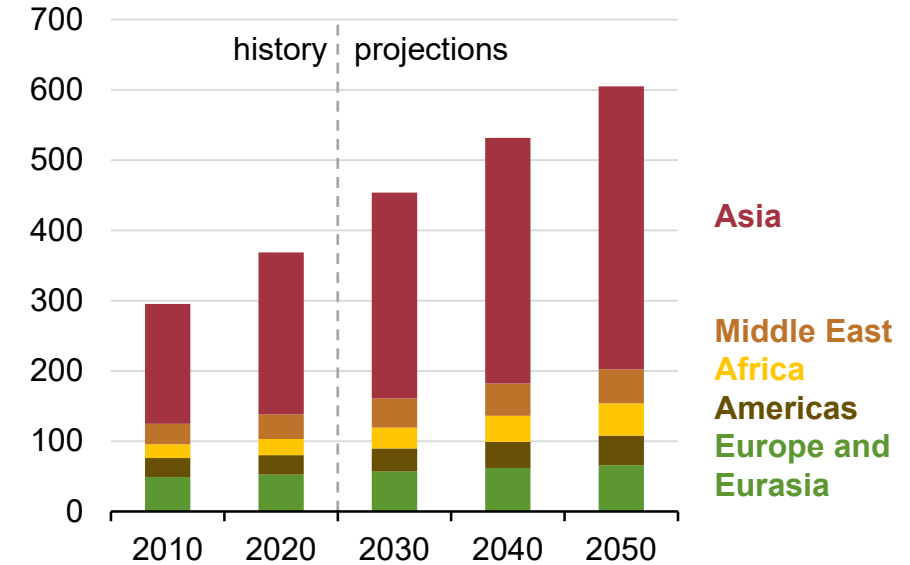
OECD energy consumption by region

quadrillion British thermal units



Non-OECD energy consumption by region

quadrillion British thermal units

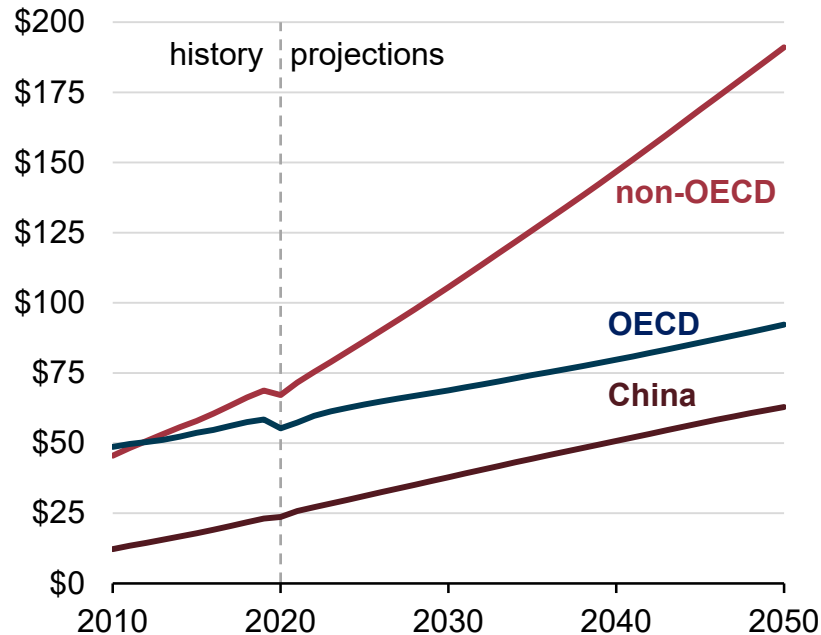




Economic growth and electricity use

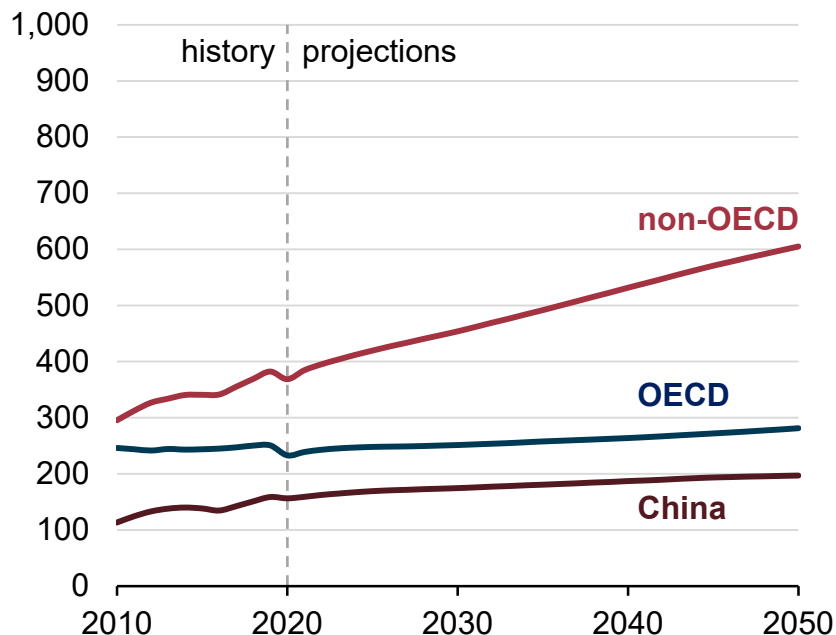
GDP, select regions

trillion 2015 dollars



World electricity use, select regions

quadrillion British thermal units





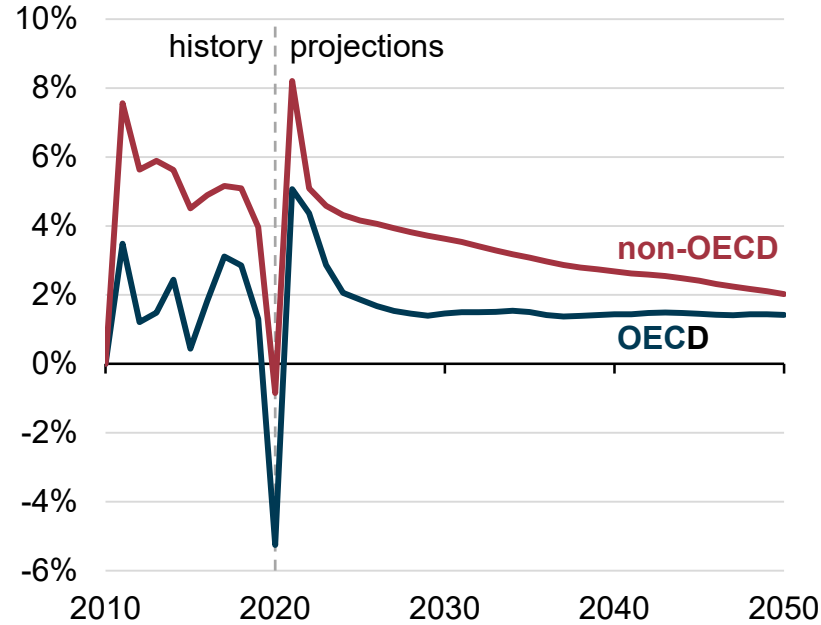
Industrial



Industrial economic growth and energy use

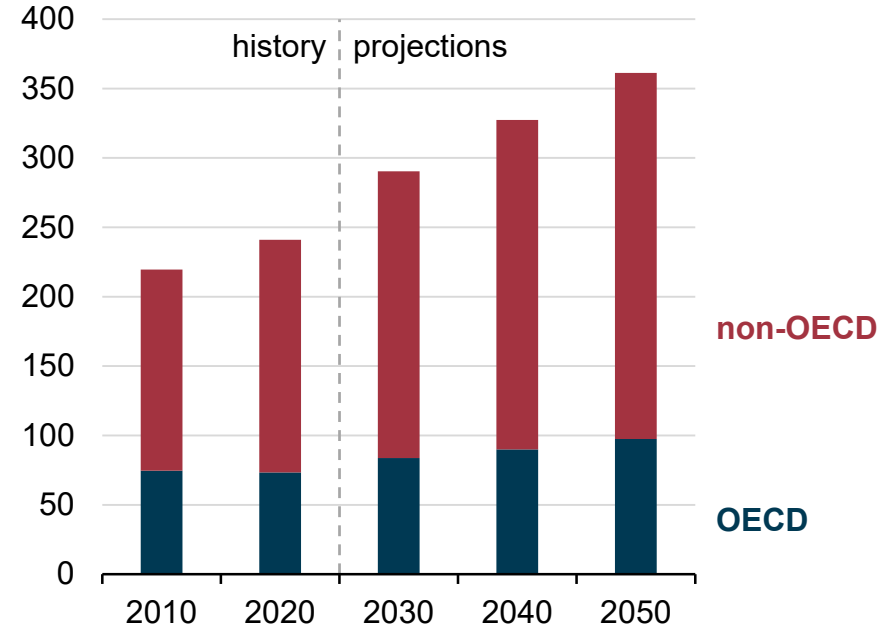
Industrial gross output growth

year-over-year percentage



Industrial energy consumption

quadrillion British thermal units

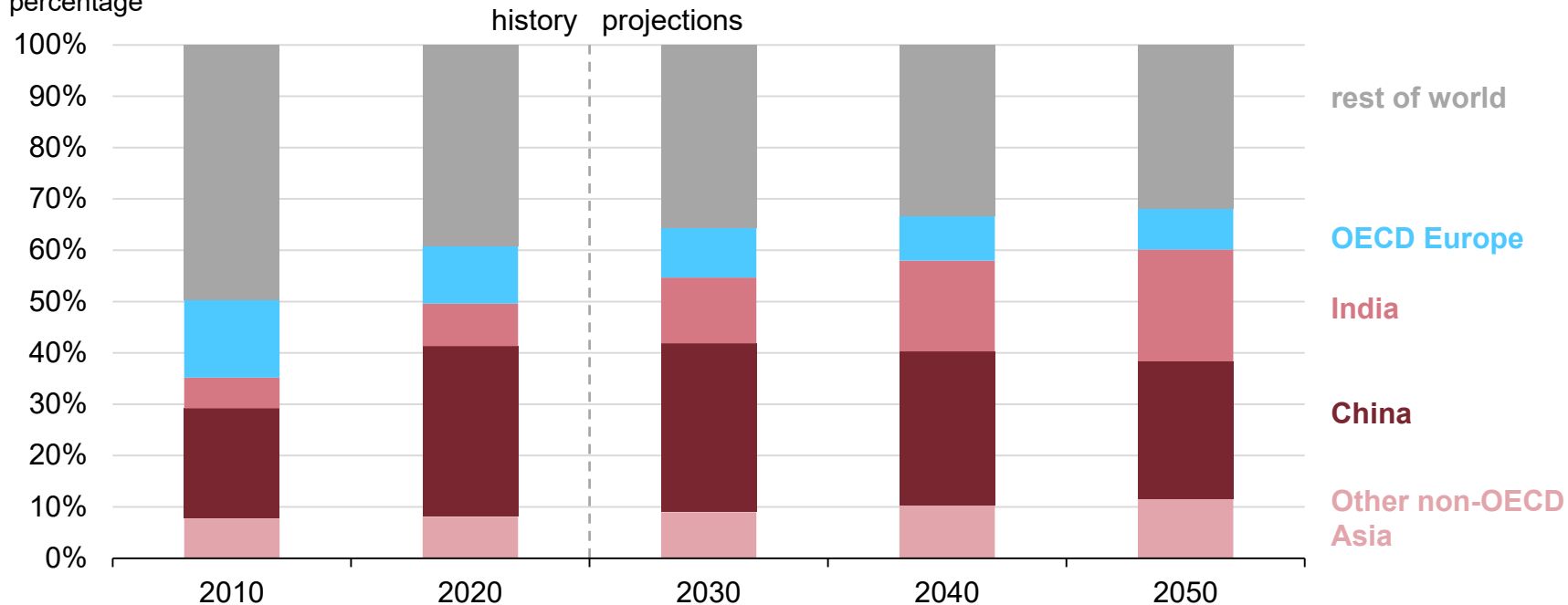




Global shares of industrial economic output

Share of energy-intensive manufacturing gross output by region

percentage

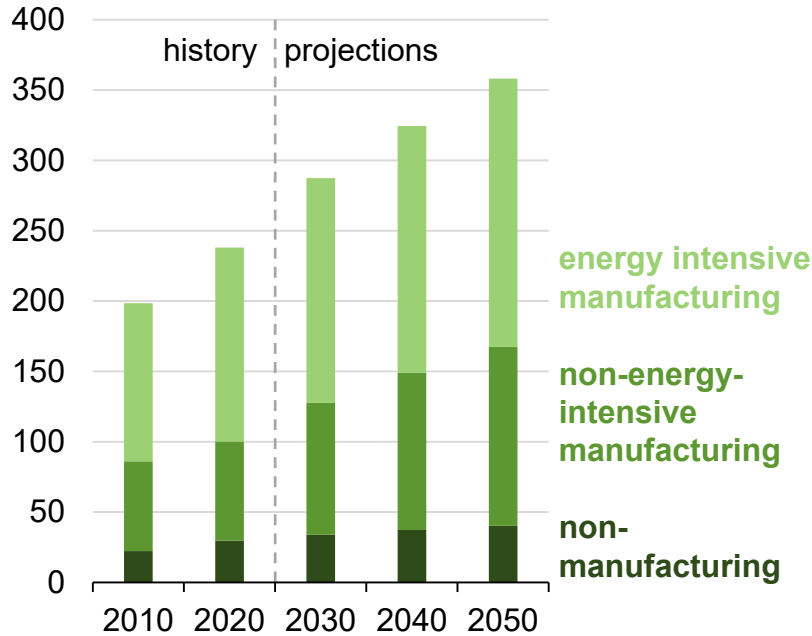




Industrial energy use and economic growth by industry type

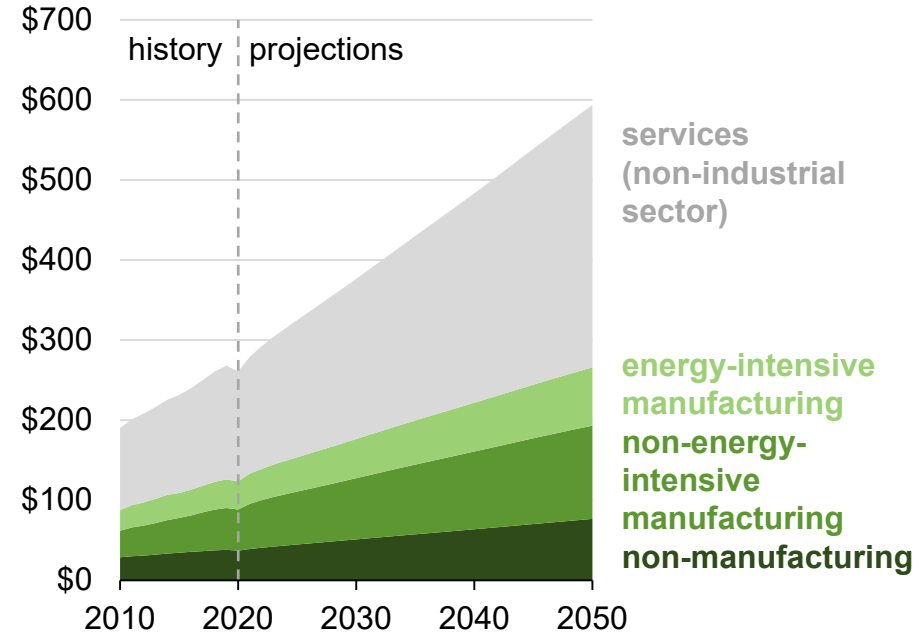
Energy consumption by industry, world

quadrillion British thermal units



Gross output by sector, world

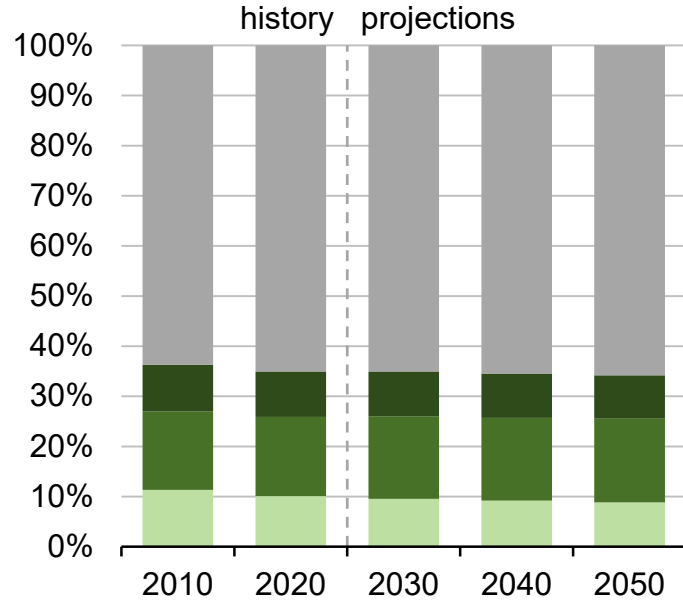
trillion 2015 dollars, purchasing power parity (PPP)



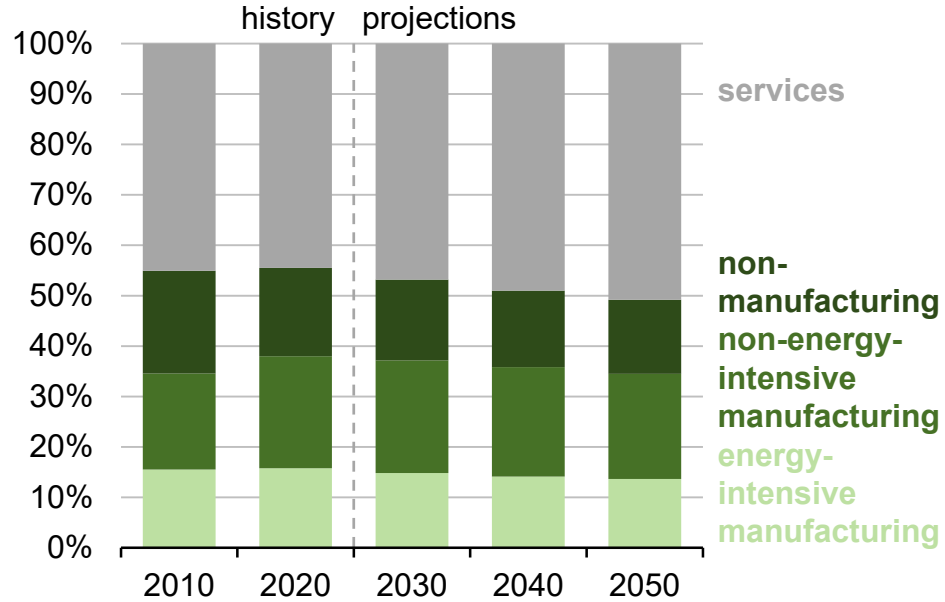


Share of industrial economic output by industry type

Shares of gross economic output by sector, OECD
percentage



Shares of gross economic output by sector, non-OECD
percentage

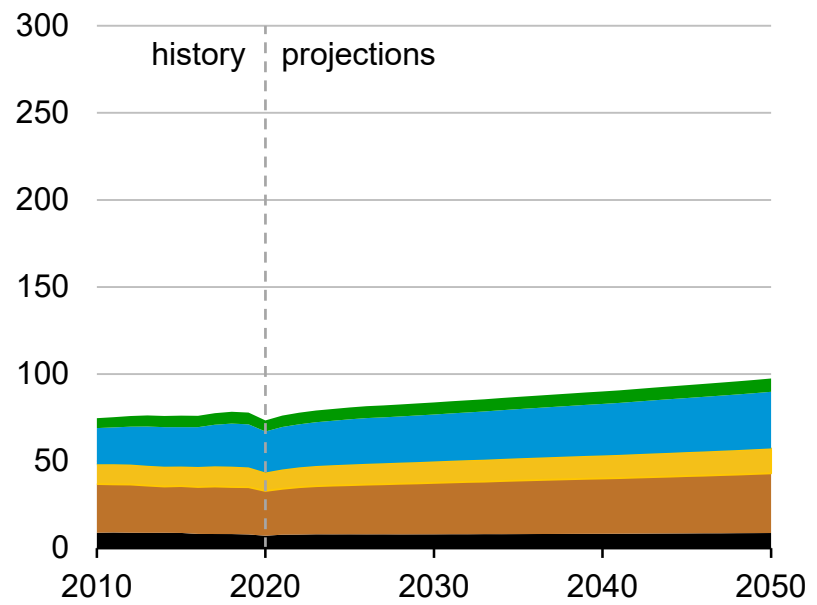




Industrial energy consumption by source

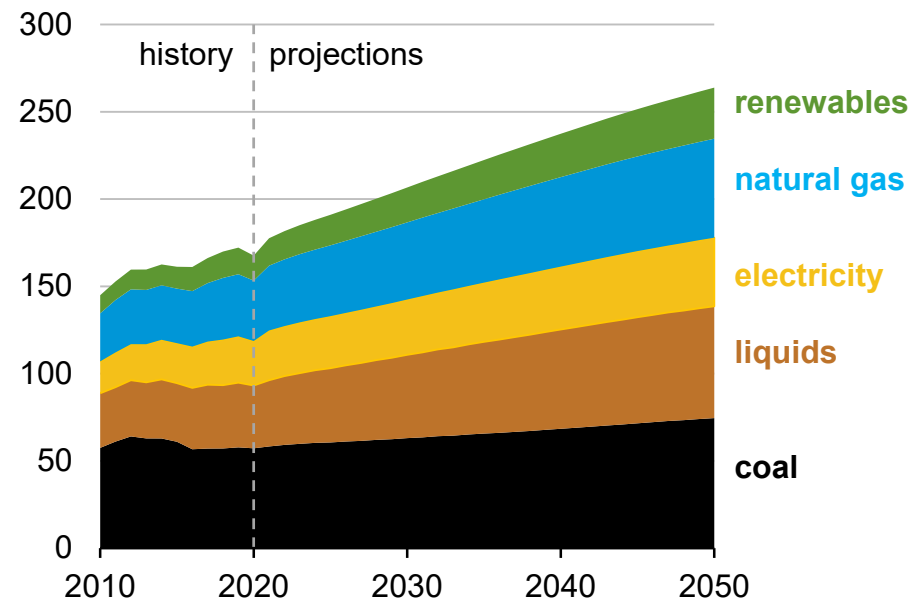
Industrial sector energy consumption by source, OECD

quadrillion British thermal units



Industrial sector energy consumption by source, non-OECD

quadrillion British thermal units

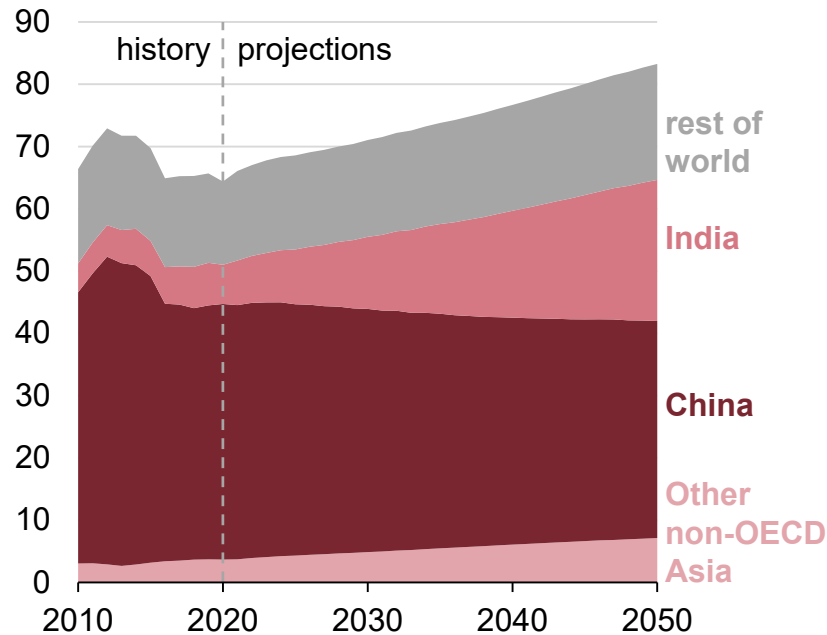




Industrial coal consumption

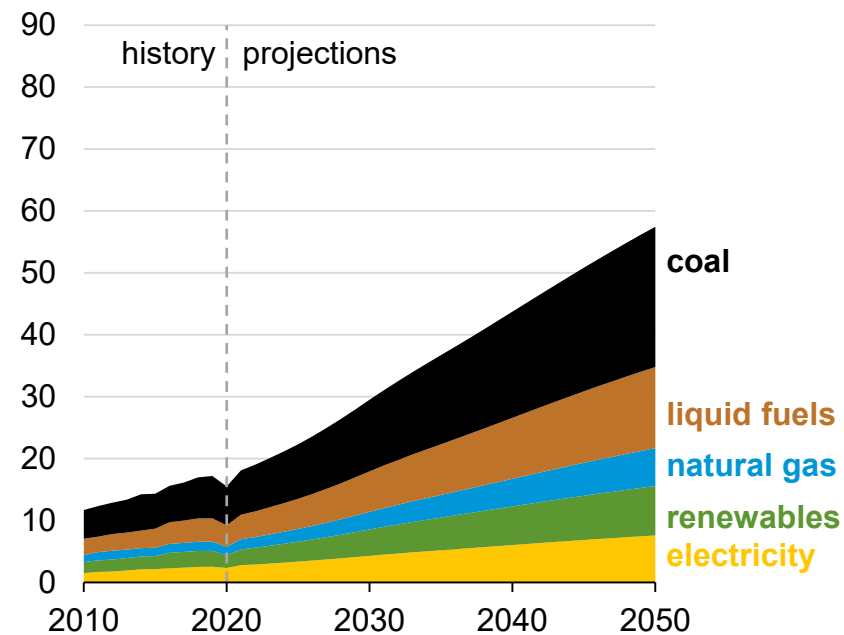
Industrial coal consumption

quadrillion British thermal units



Industrial energy consumption, India

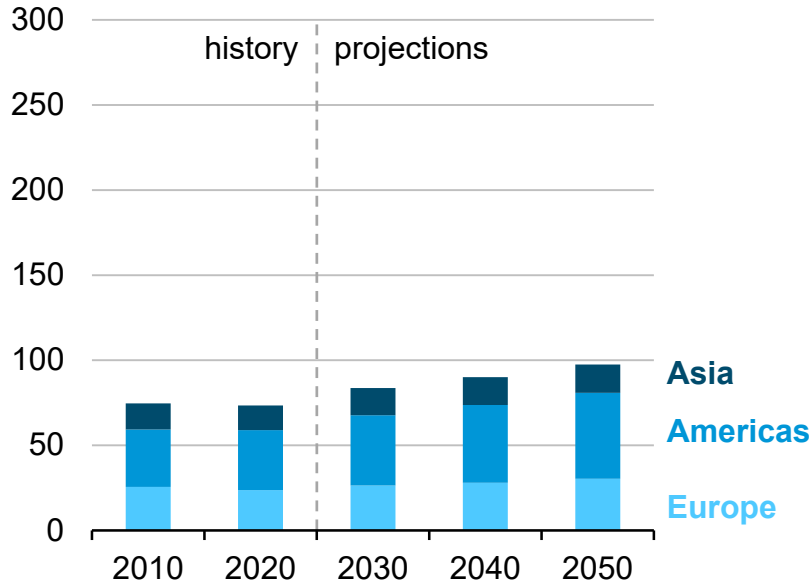
quadrillion British thermal units



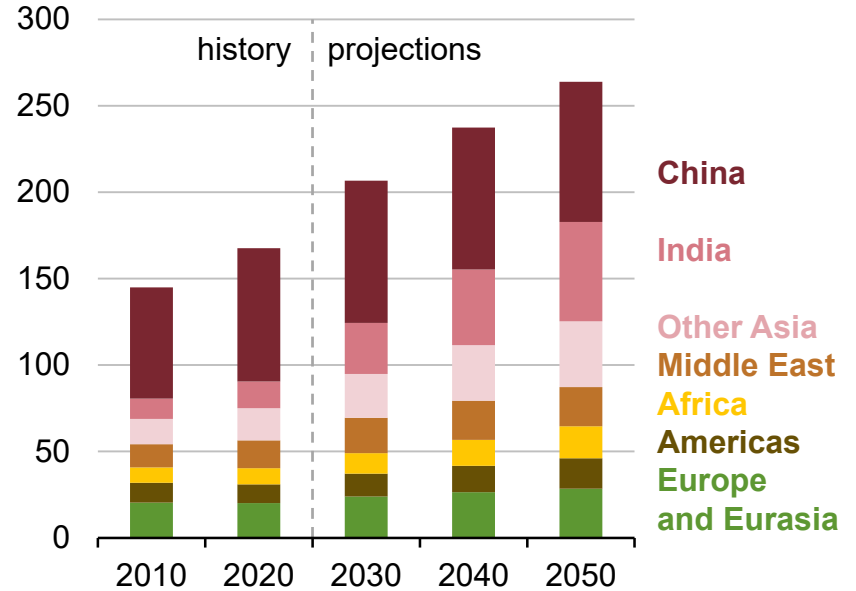


Industrial energy consumption by region

Industrial energy consumption, OECD
quadrillion British thermal units



Industrial energy consumption, non-OECD
quadrillion British thermal units

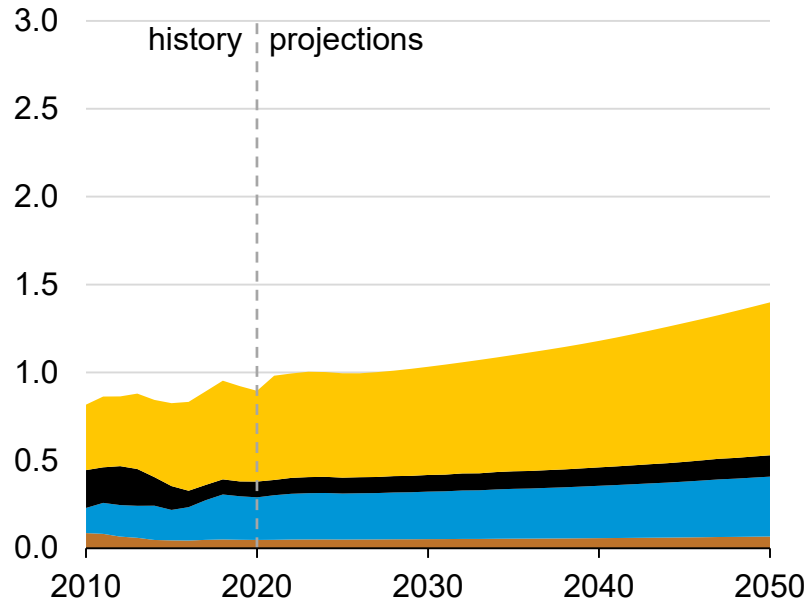




Motor vehicle and non ferrous metals production energy use by fuel, non-OECD

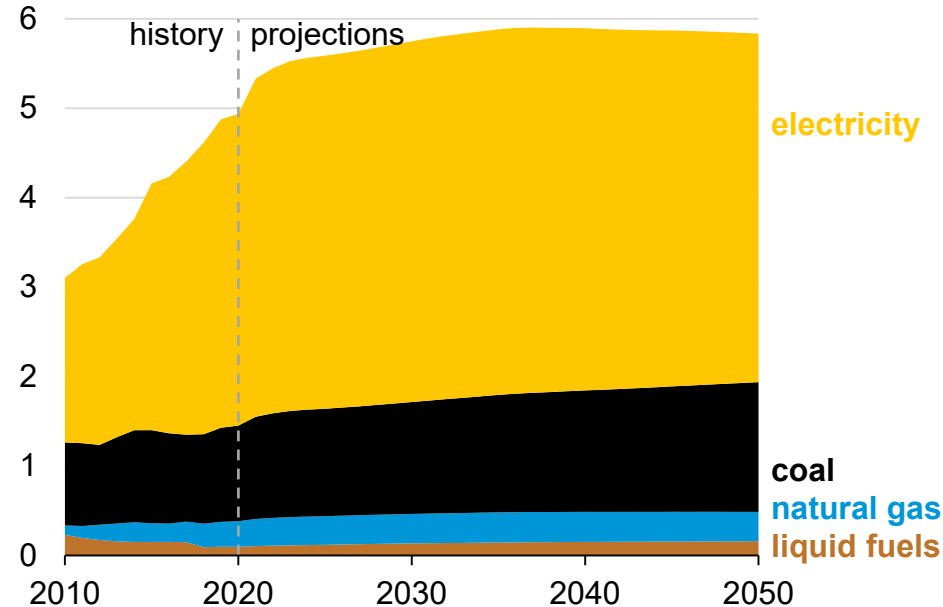
Energy consumption, non-OECD motor vehicle production

quadrillion British thermal units



Energy consumption, non-OECD nonferrous metals production

quadrillion British thermal units

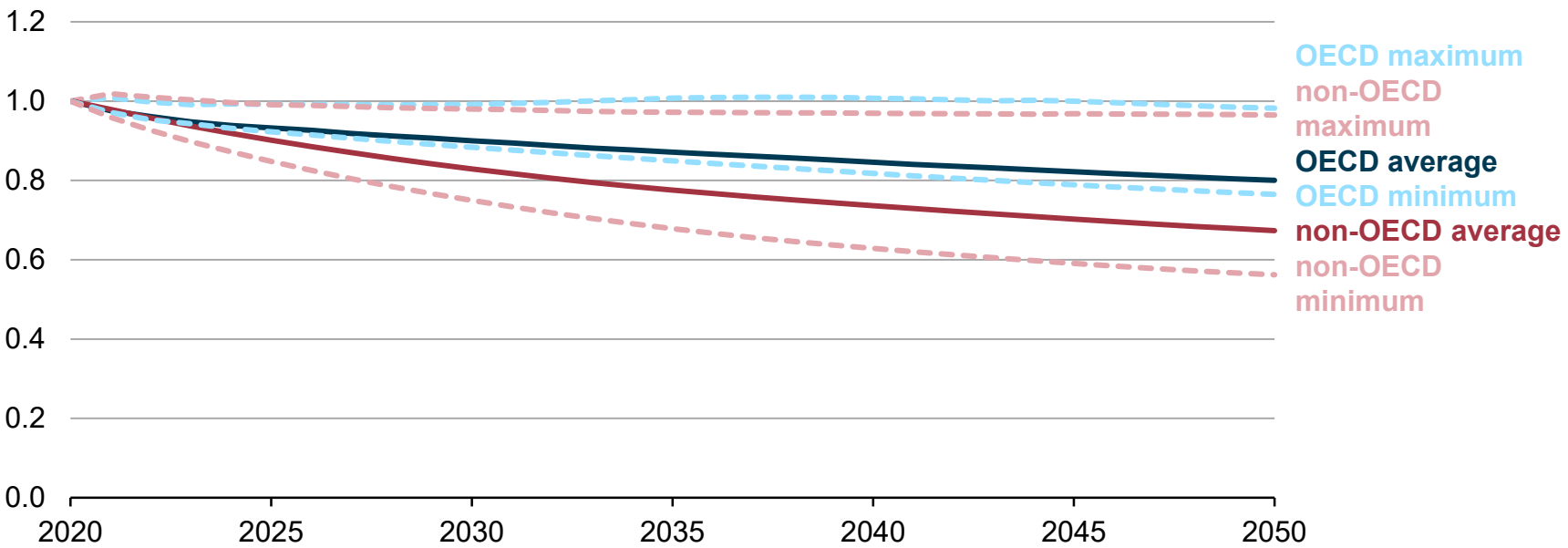




Changes in industrial energy intensity

Regional industrial energy intensity

index, 2020 = 1.0

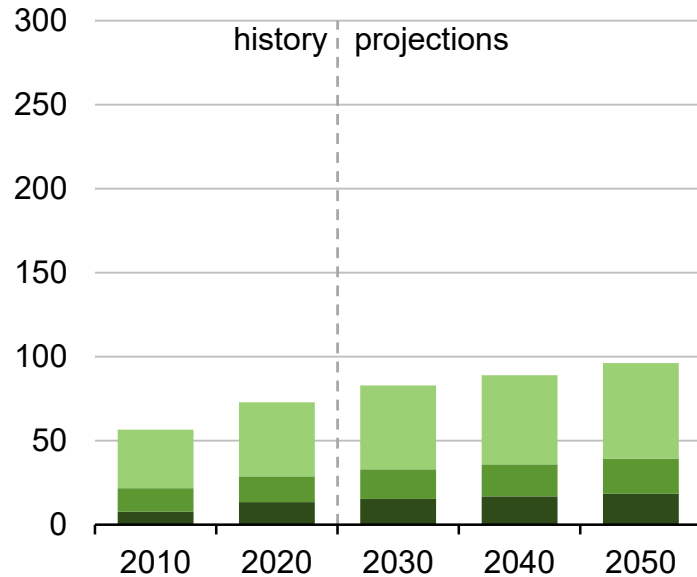


Note: Maximum and minimum refers to the highest or lowest IEO2021 region within or outside the OECD

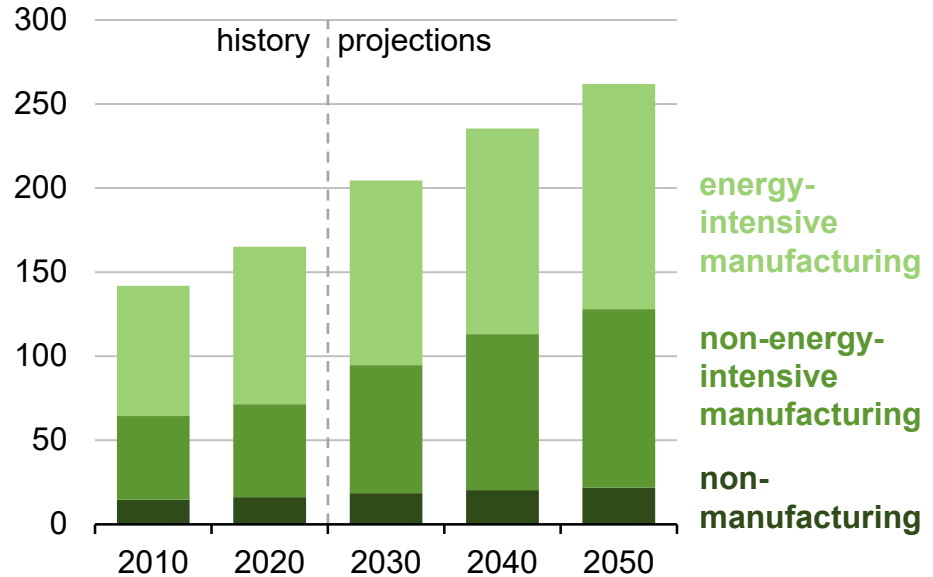


Energy consumption by industry type

Energy consumption by industry type, OECD
quadrillion British thermal units



Energy consumption by industry type, non-OECD
quadrillion British thermal units



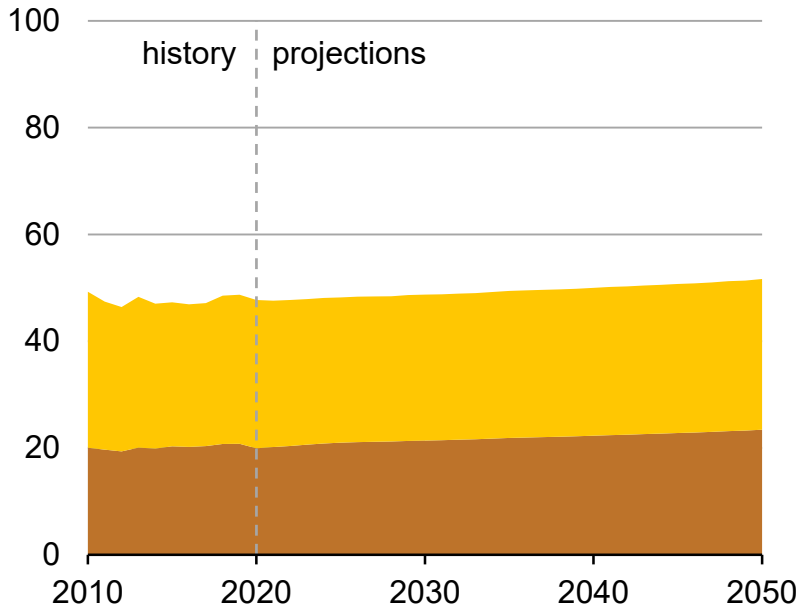


Buildings

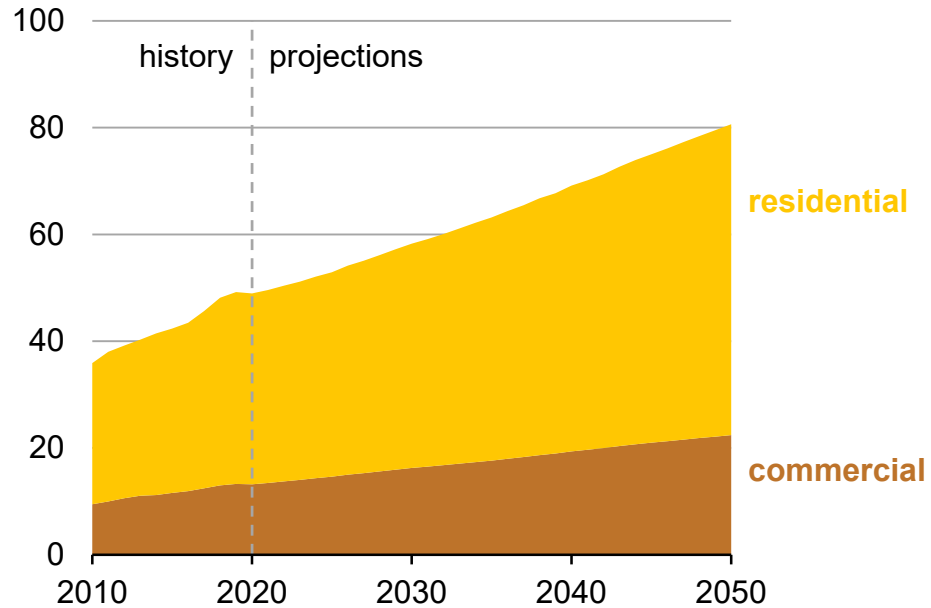


Residential and commercial buildings energy consumption

Building sector energy consumption, OECD
quadrillion British thermal units



Building sector energy consumption, non-OECD
quadrillion British thermal units

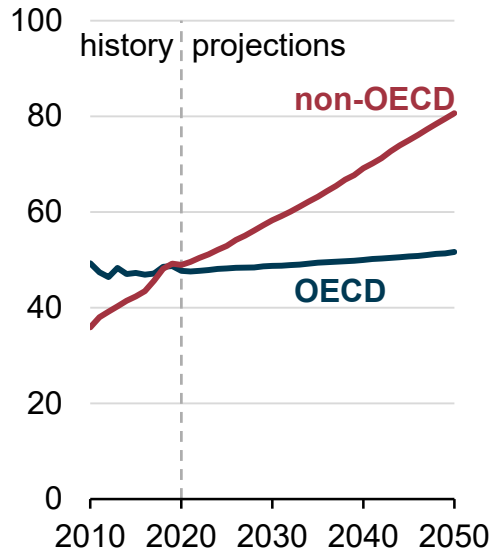




Buildings energy use

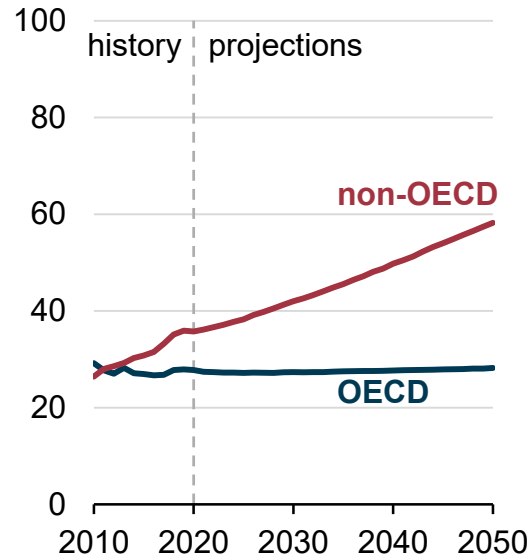
Buildings delivered energy consumption

quadrillion British thermal units



Residential delivered energy consumption

quadrillion British thermal units



Commercial delivered energy consumption

quadrillion British thermal units

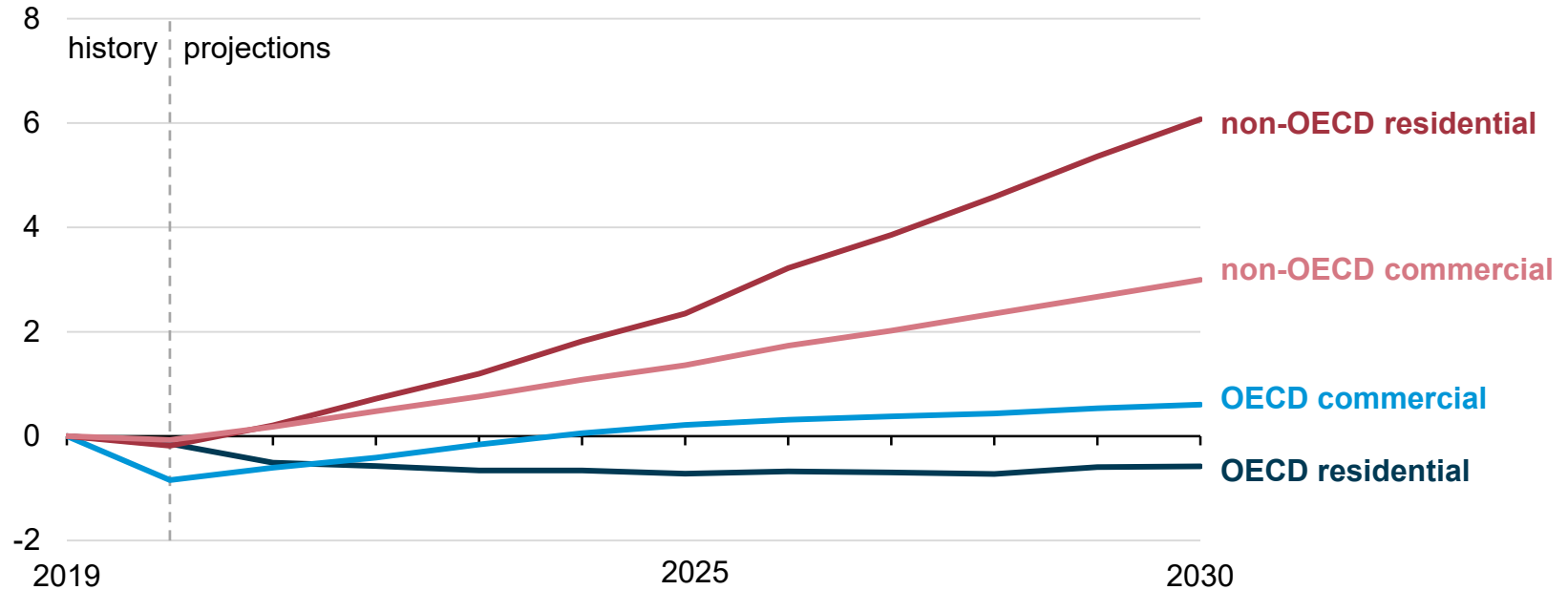




Residential and commercial buildings change in energy use since 2019

Change in buildings energy use by sector and region

quadrillion British thermal units (difference from 2019 values)

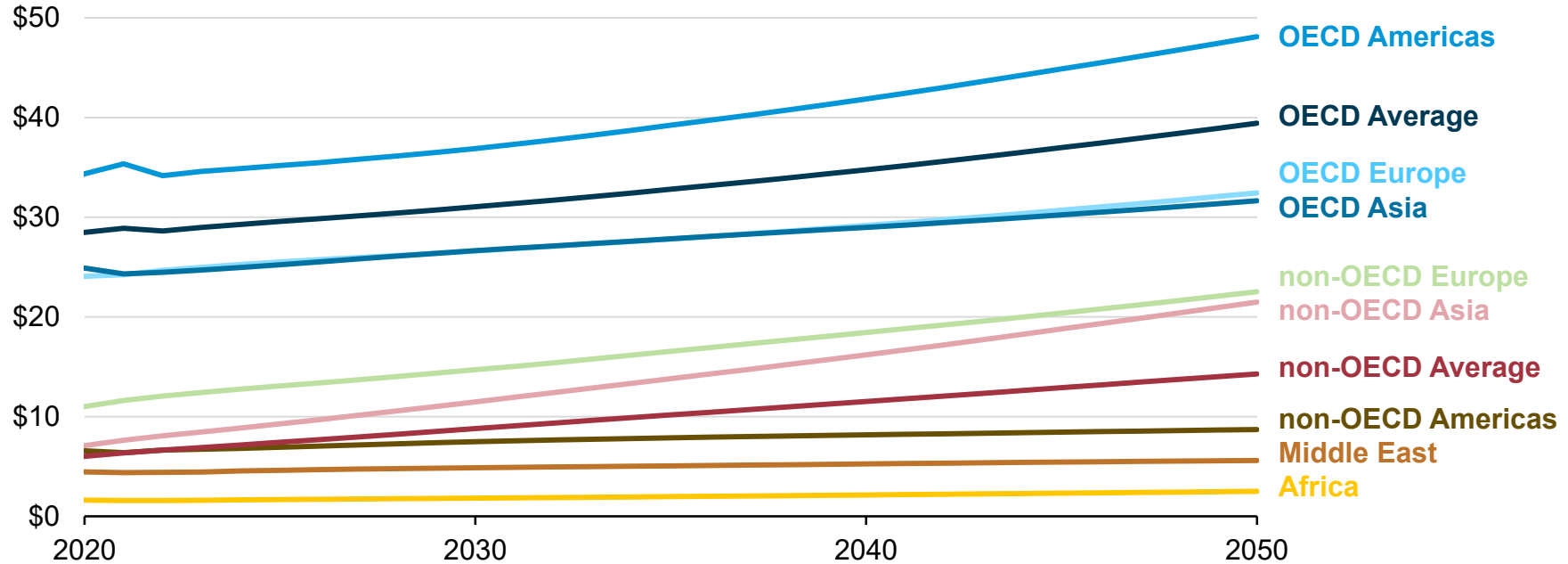




Household income by region

Household income per capita

thousand 2015 dollars per person, purchasing power parity (PPP)

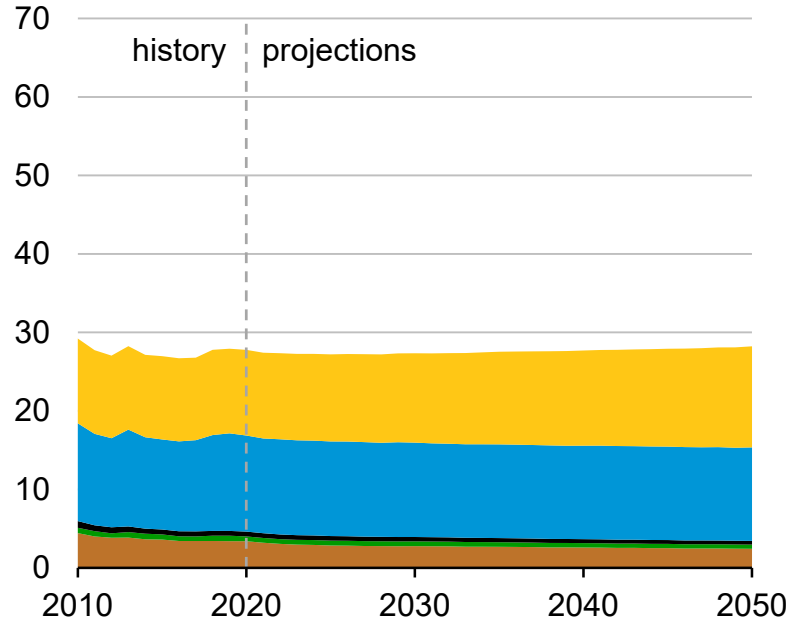




Residential energy consumption by fuel

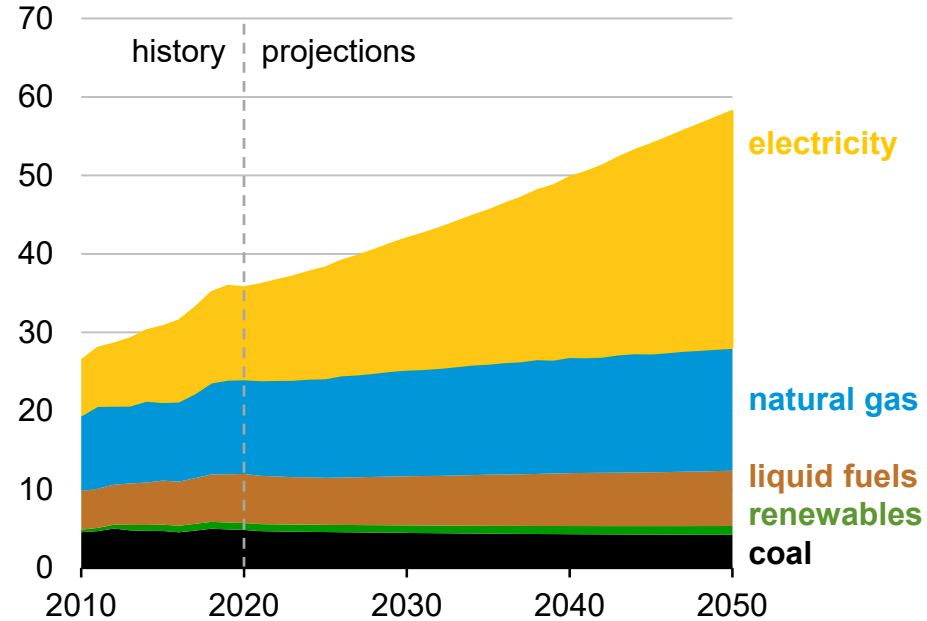
Residential sector energy consumption by fuel, OECD

quadrillion British thermal units



Residential sector energy consumption by fuel, non-OECD

quadrillion British thermal units

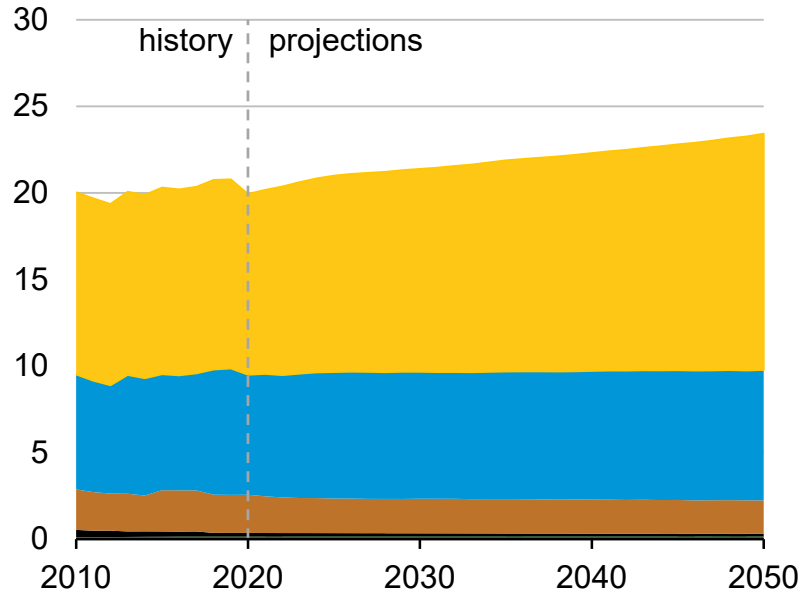




Commercial buildings energy consumption by fuel

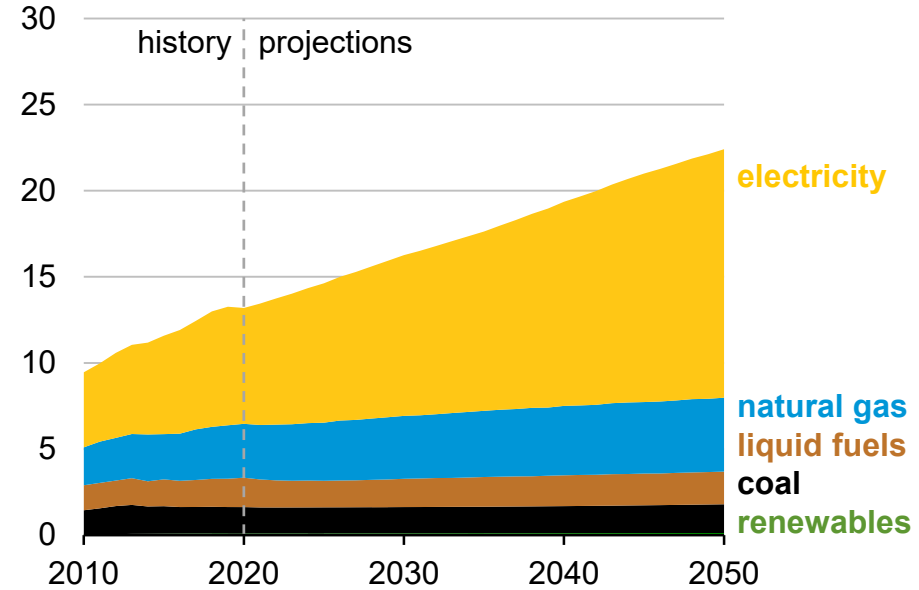
Commercial sector energy consumption by fuel, OECD

quadrillion British thermal units



Commercial sector energy consumption by fuel, non-OECD

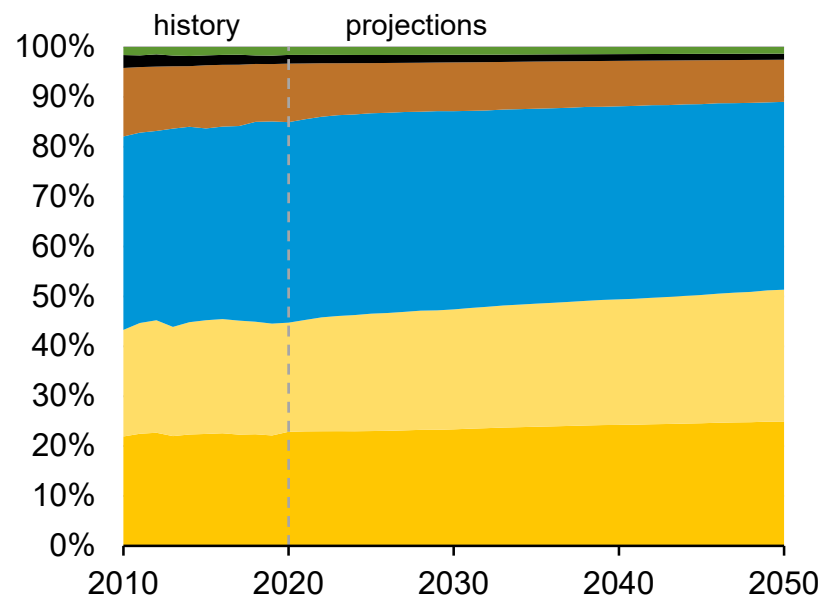
quadrillion British thermal units



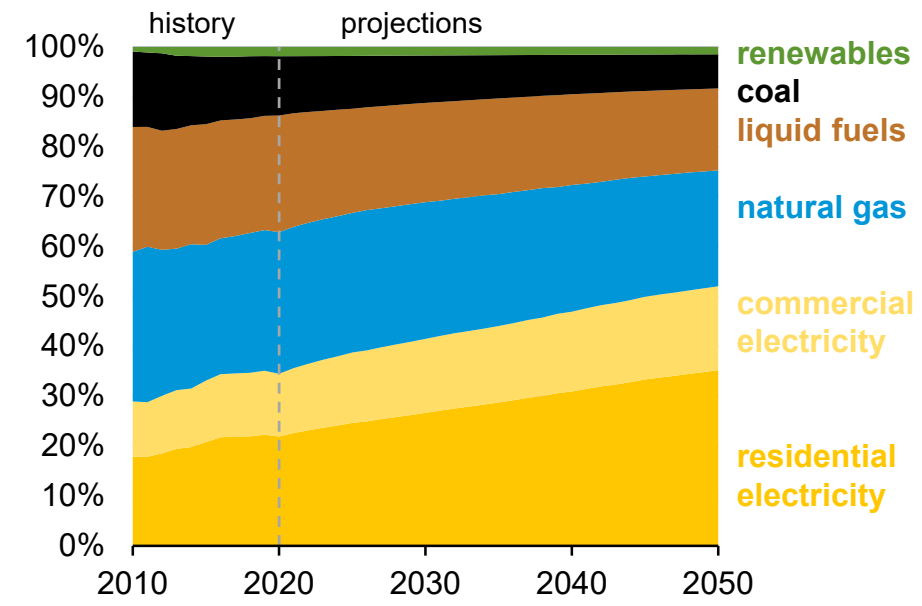


Shares of residential and commercial energy consumption by fuel

Buildings sector energy consumption by fuel, OECD
percentage



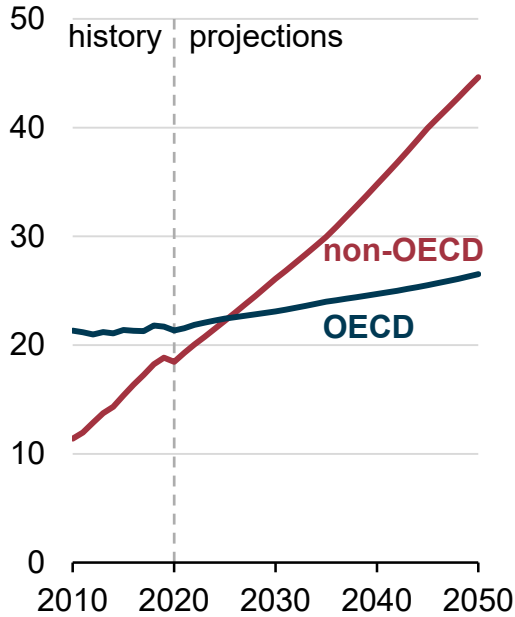
Buildings sector energy consumption by fuel, non-OECD
percentage



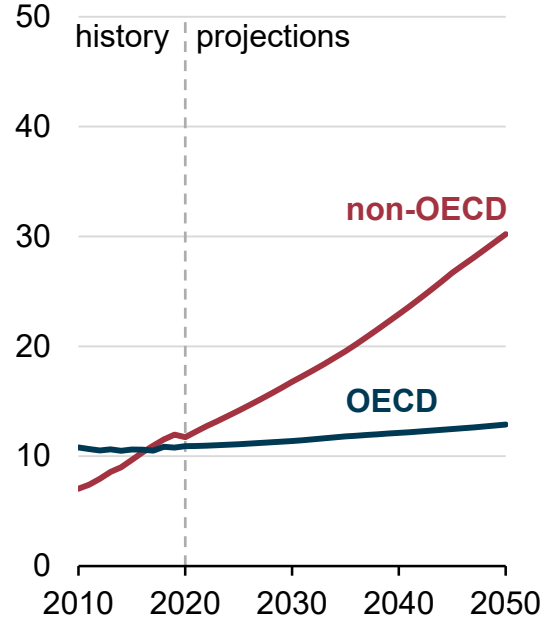


Buildings electricity consumption

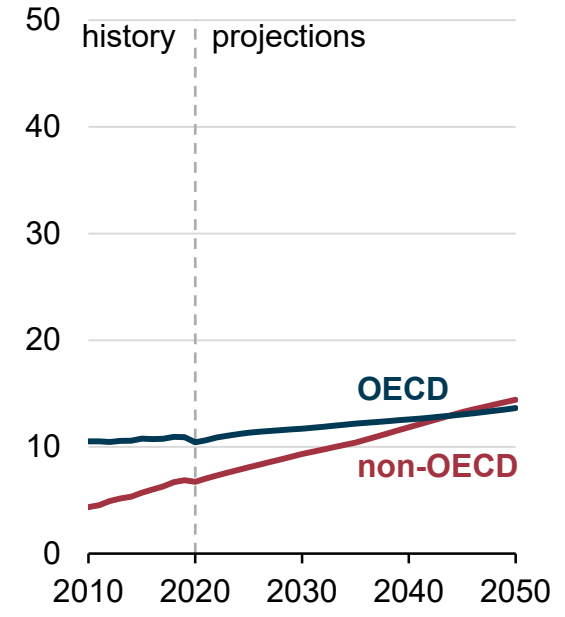
Buildings delivered electricity use
quadrillion British thermal units



Residential delivered electricity use
quadrillion British thermal units



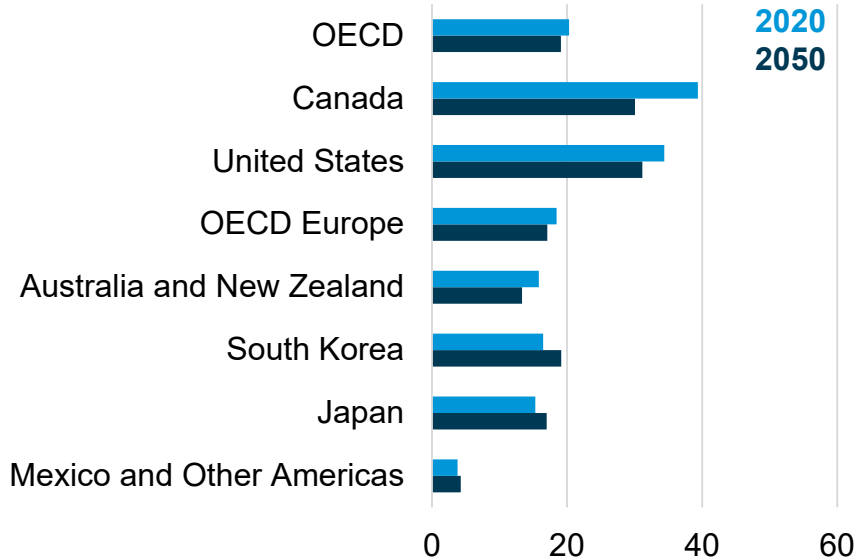
Commercial delivered electricity use
quadrillion British thermal units



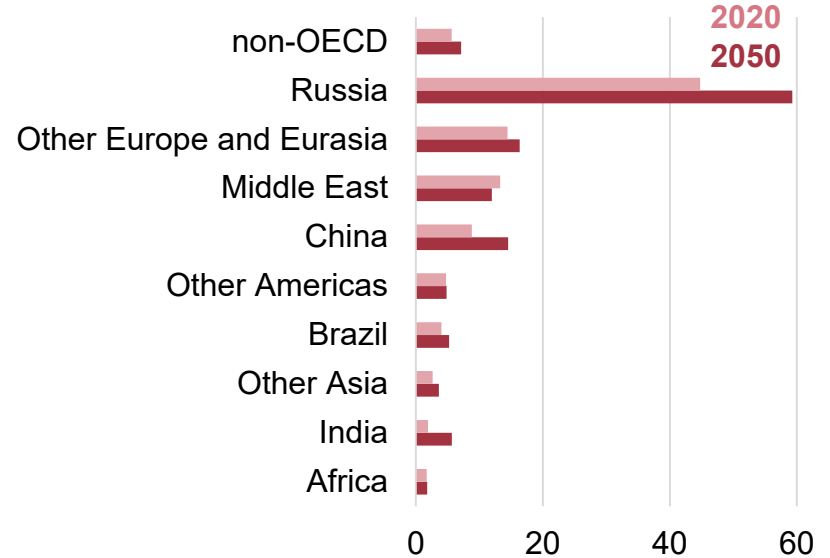


Residential buildings energy consumption

Residential energy consumption per person, OECD
million British thermal units per person



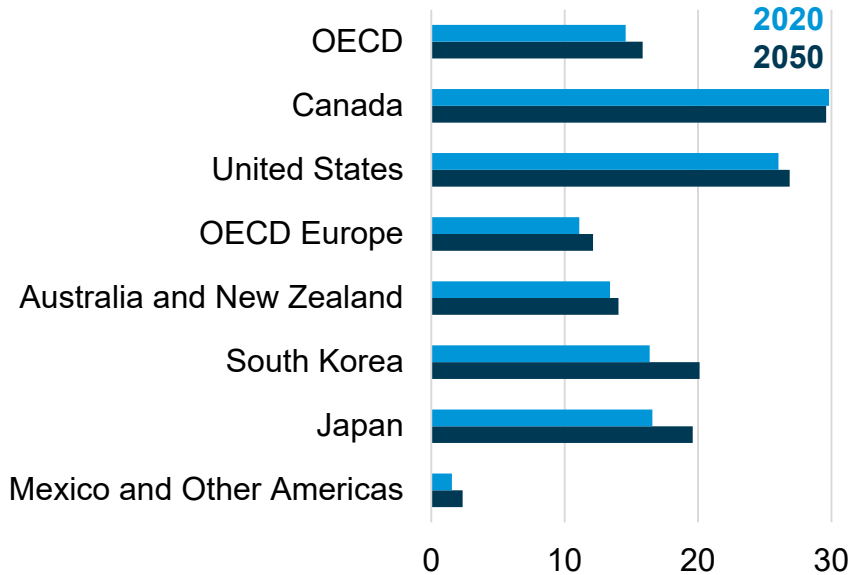
Residential energy consumption per person, non-OECD
million British thermal units per person



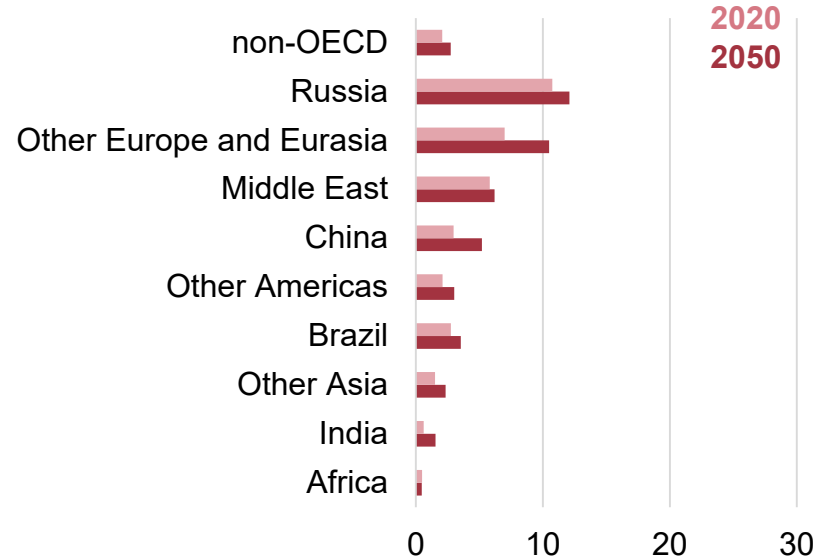


Commercial buildings energy consumption

Commercial energy consumption per person, OECD
million British thermal units per person



Commercial energy consumption per person, non-OECD
million British thermal units per person

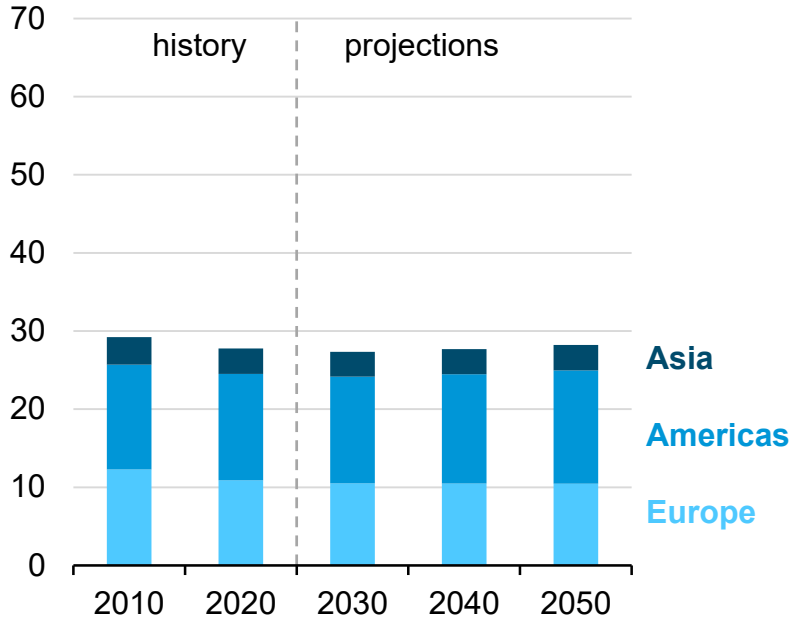




Residential energy use by region

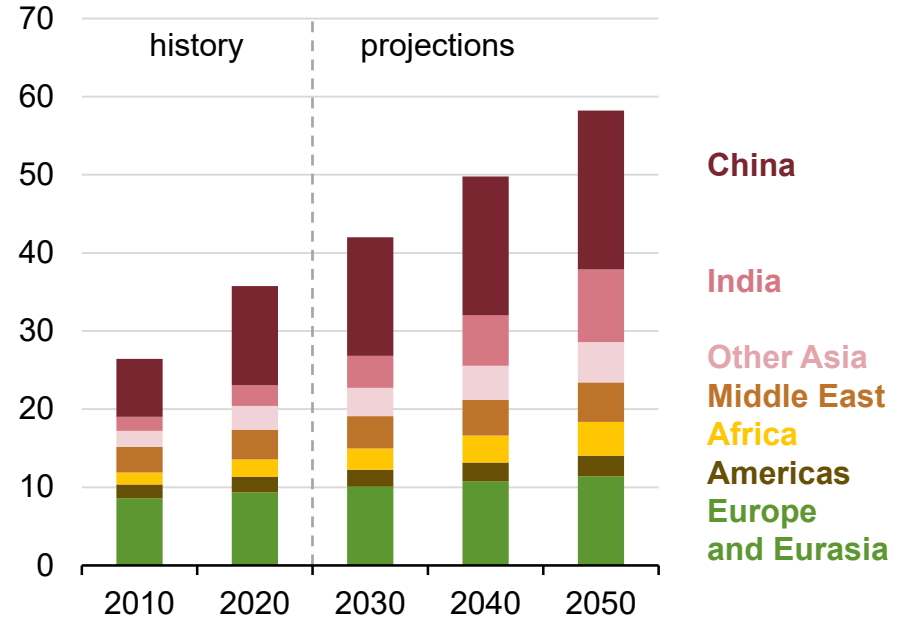
OECD residential energy consumption

quadrillion British thermal units



Non-OECD residential energy consumption

quadrillion British thermal units

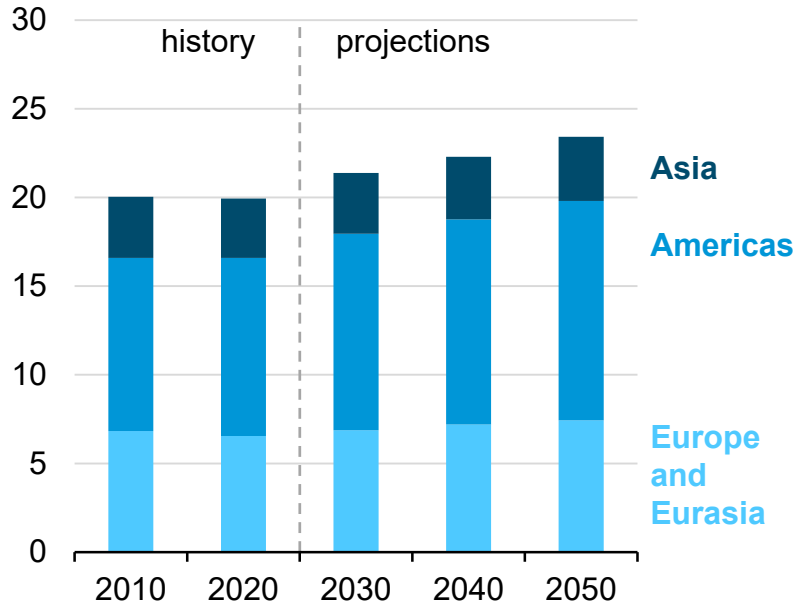




Commercial energy use by region

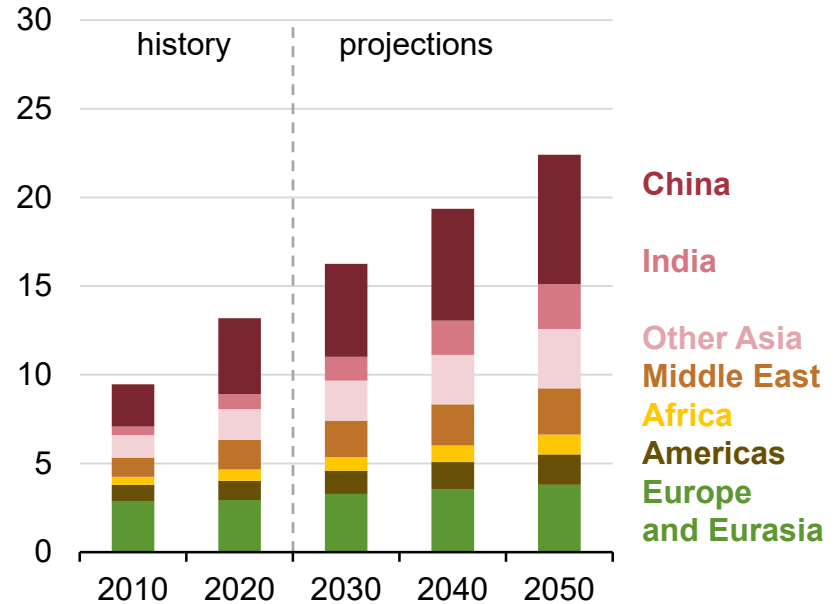
OECD commercial energy consumption

quadrillion British thermal units



Non-OECD commercial energy consumption

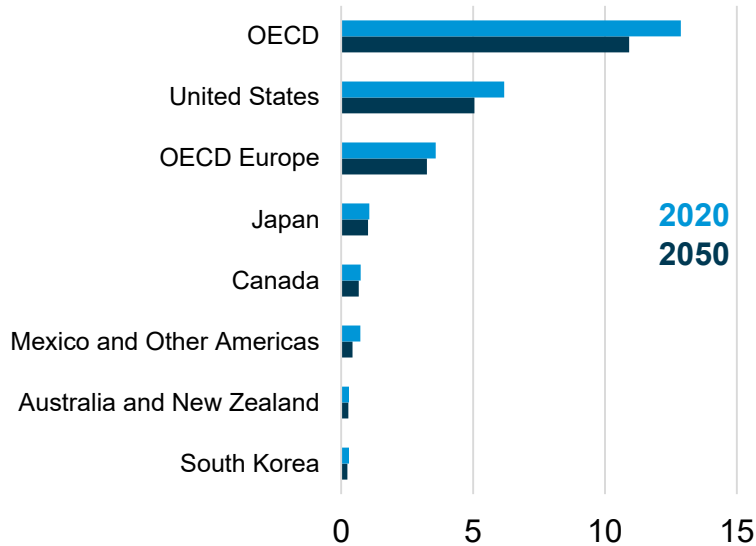
quadrillion British thermal units



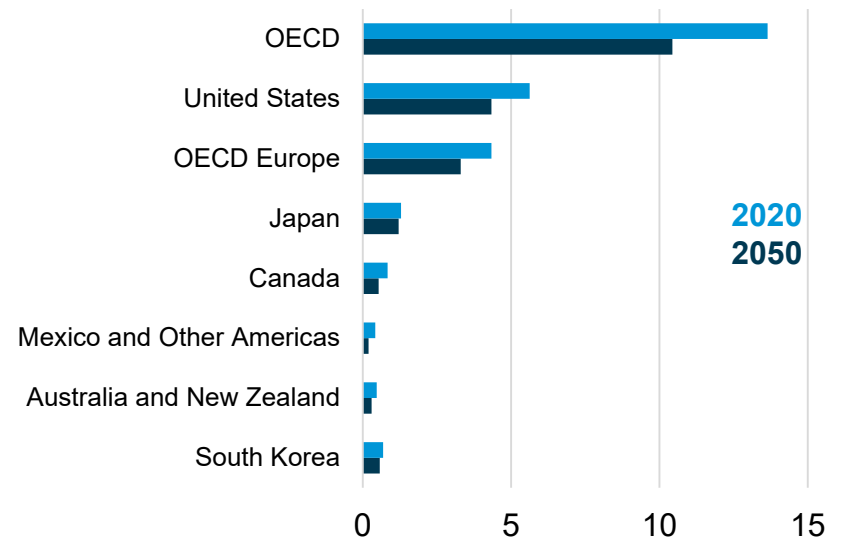


OECD energy use by building type

Residential delivered electricity consumption
quadrillion British thermal units



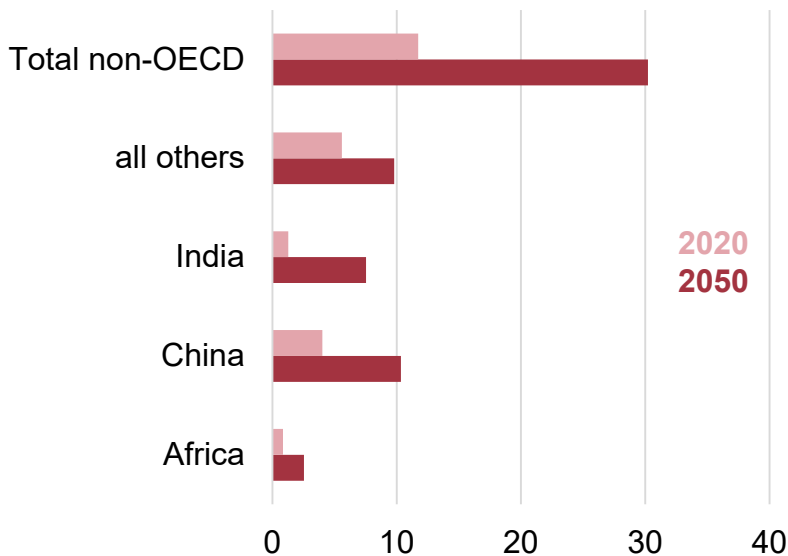
Commercial delivered electricity consumption
quadrillion British thermal units



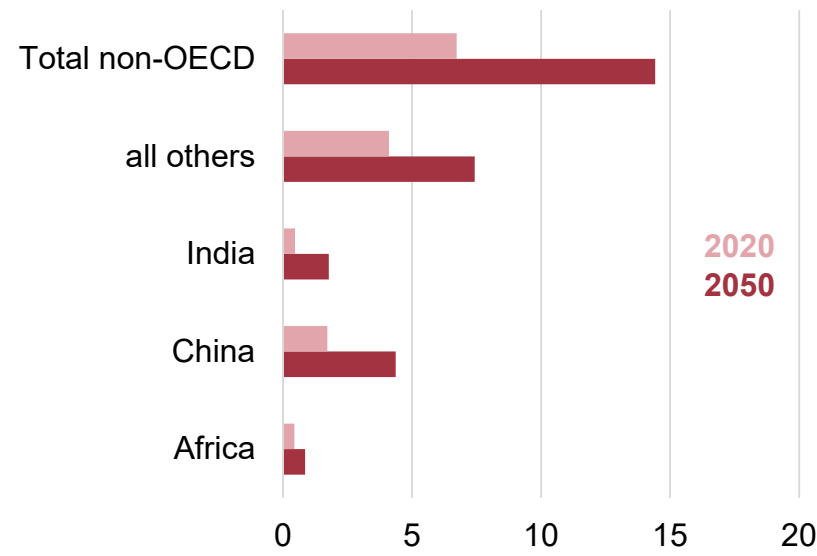


Non-OECD energy use by building type

Residential delivered electricity consumption
quadrillion British thermal units



Commercial delivered electricity consumption
quadrillion British thermal units





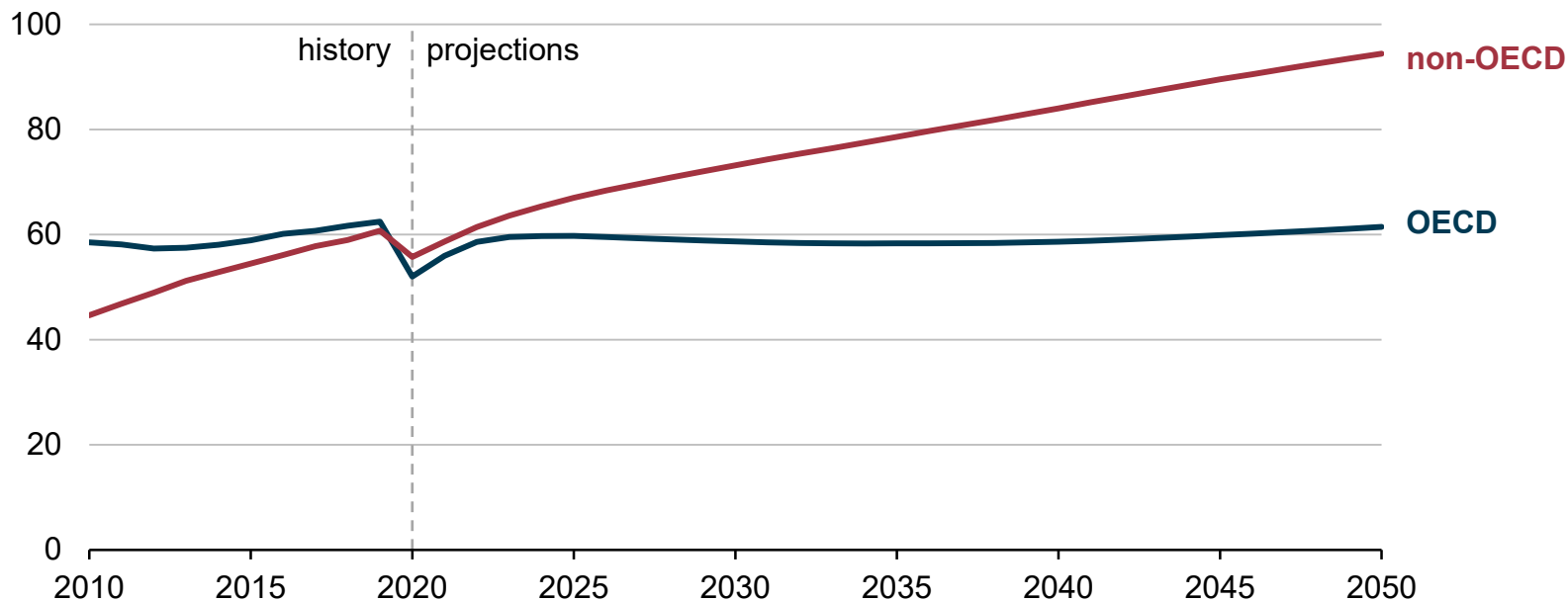
Transportation



Global transportation energy consumption

Transportation energy consumption

quadrillion British thermal units

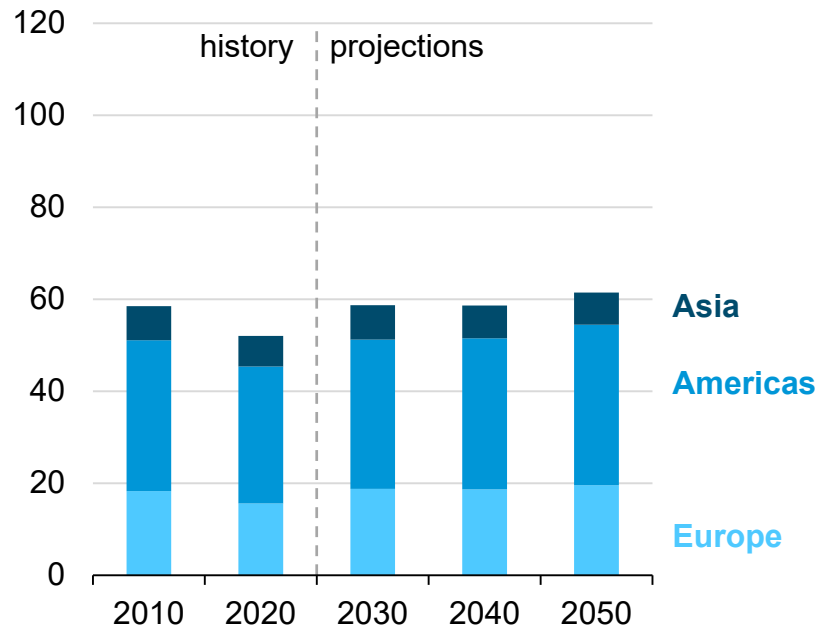




Transportation energy consumption by region

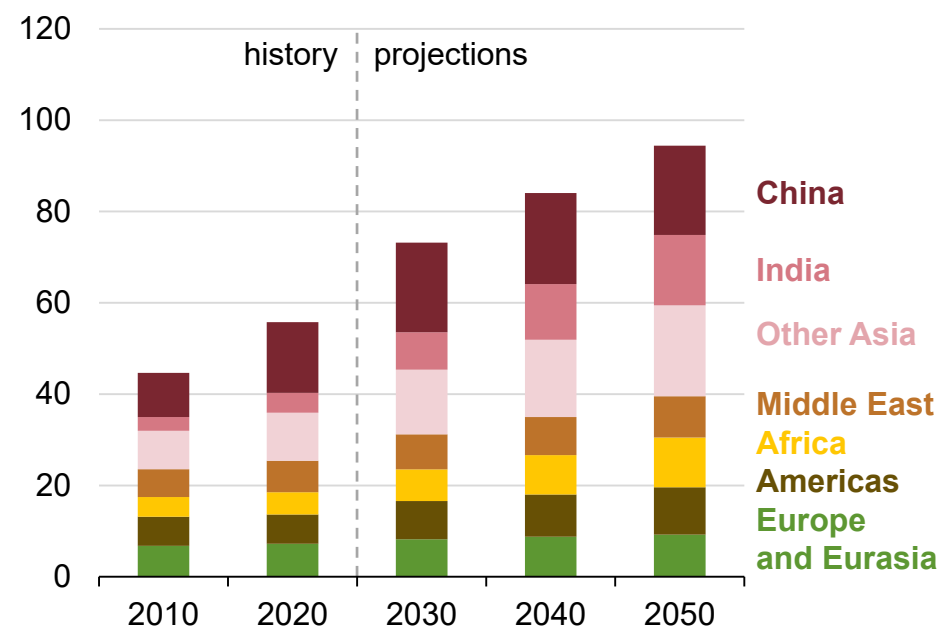
OECD transportation energy consumption

quadrillion British thermal units



Non-OECD transportation energy consumption

quadrillion British thermal units

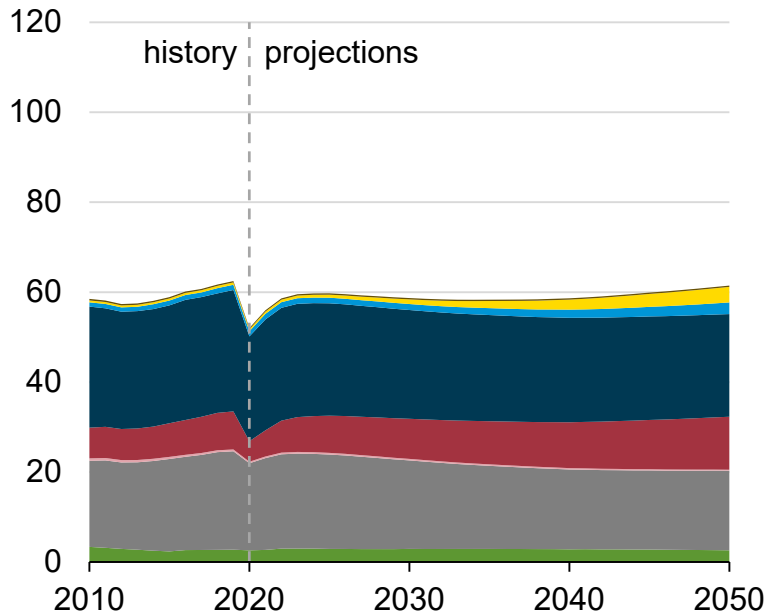




Transportation energy consumption by fuel type

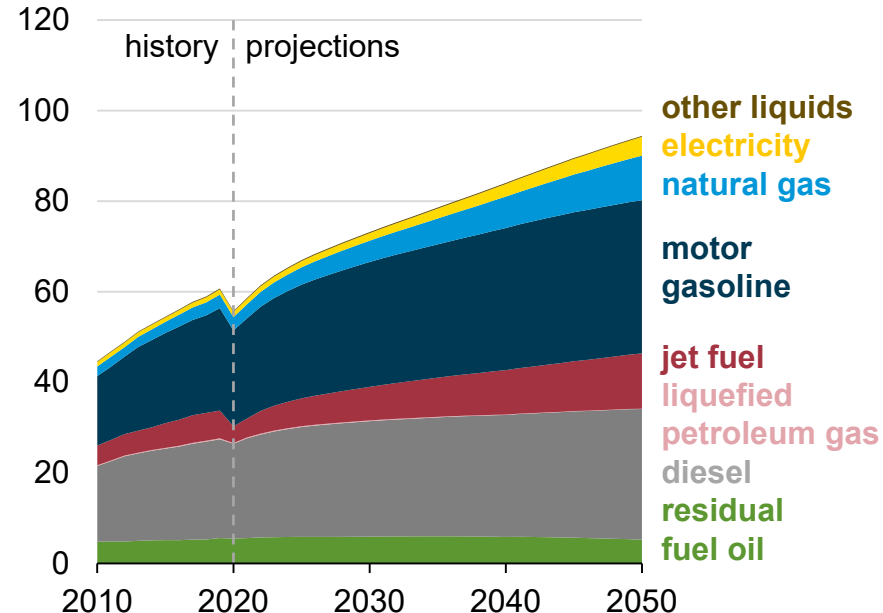
Transportation energy consumption, OECD

quadrillion British thermal units



Transportation energy consumption, non-OECD

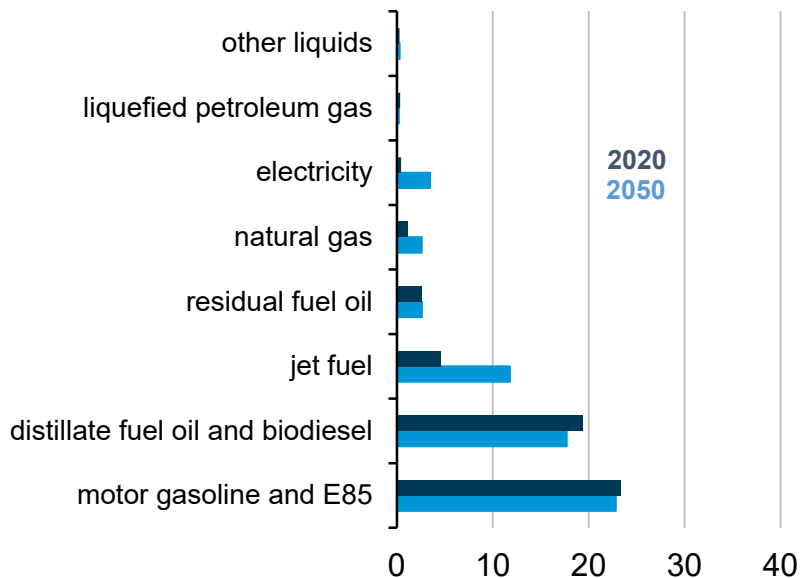
quadrillion British thermal units



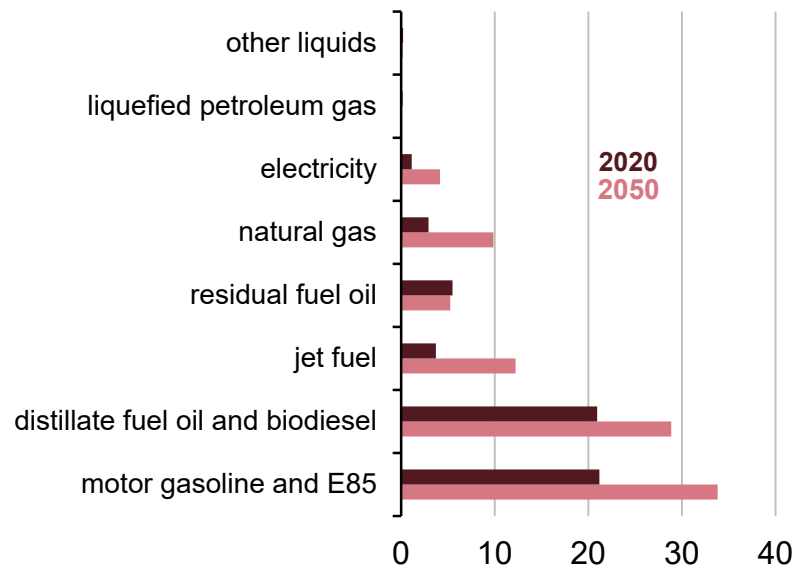


Transportation energy consumption by fuel type

Transportation energy consumption, OECD
quadrillion British thermal units



Transportation energy consumption, non-OECD
quadrillion British thermal units

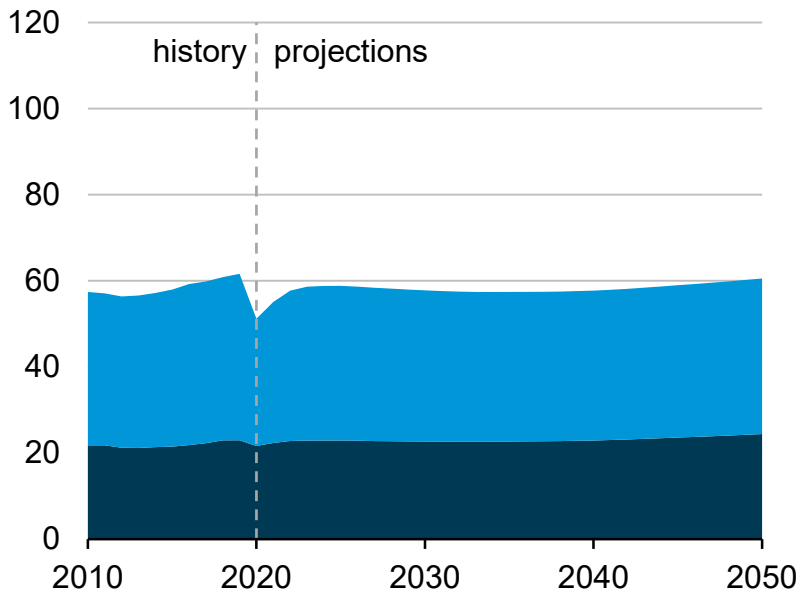




Transportation energy consumption by type

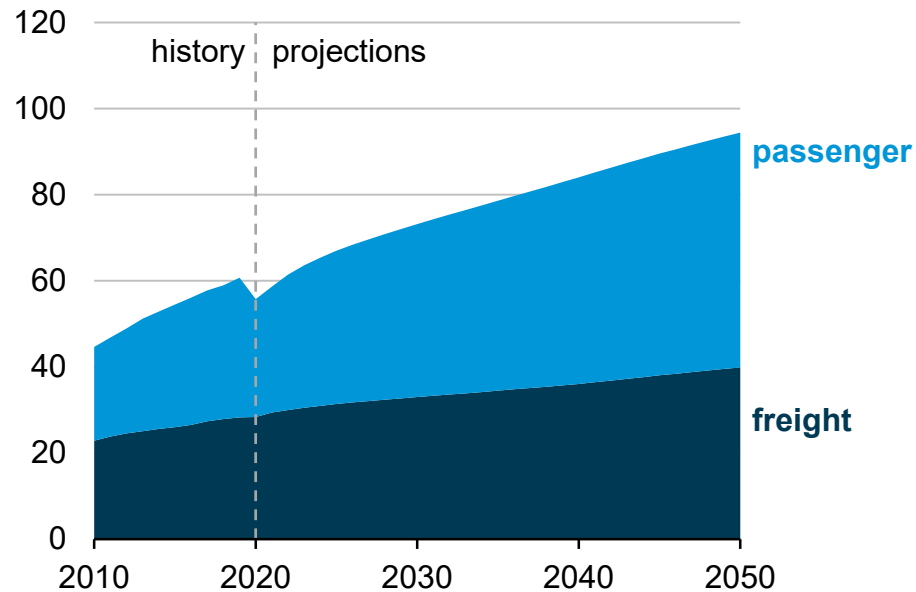
Transportation sector energy consumption, OECD

quadrillion British thermal units



Transportation sector energy consumption, non-OECD

quadrillion British thermal units

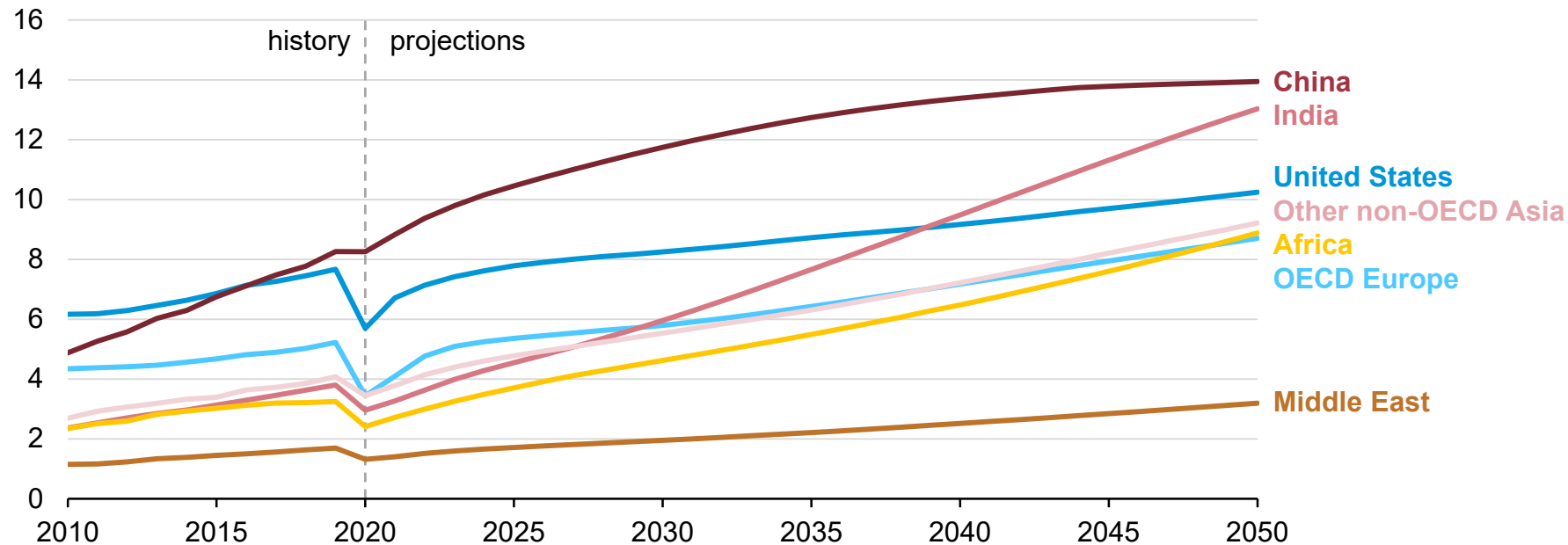




Passenger vehicle travel by region

Passenger vehicle travel, select regions

billion passenger miles traveled

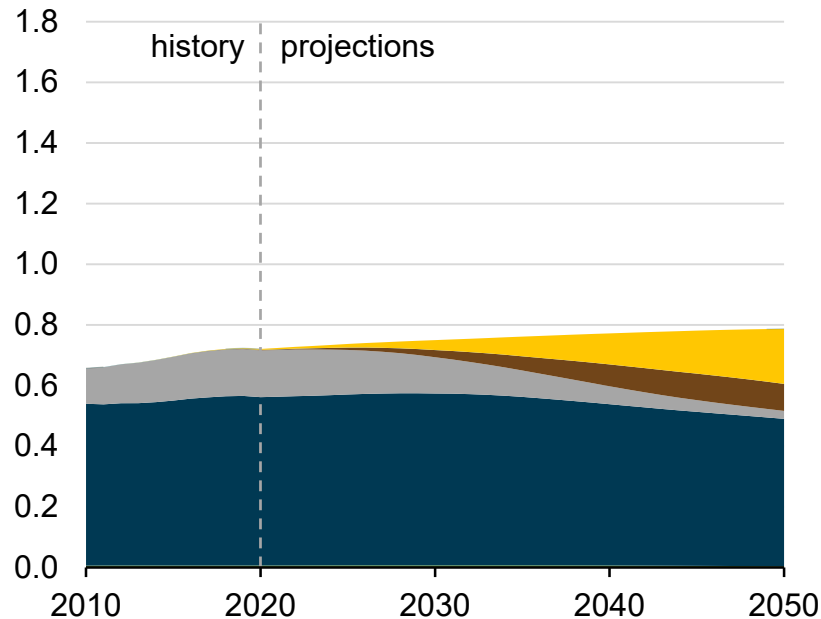




Global light-duty vehicle stock by fuel type

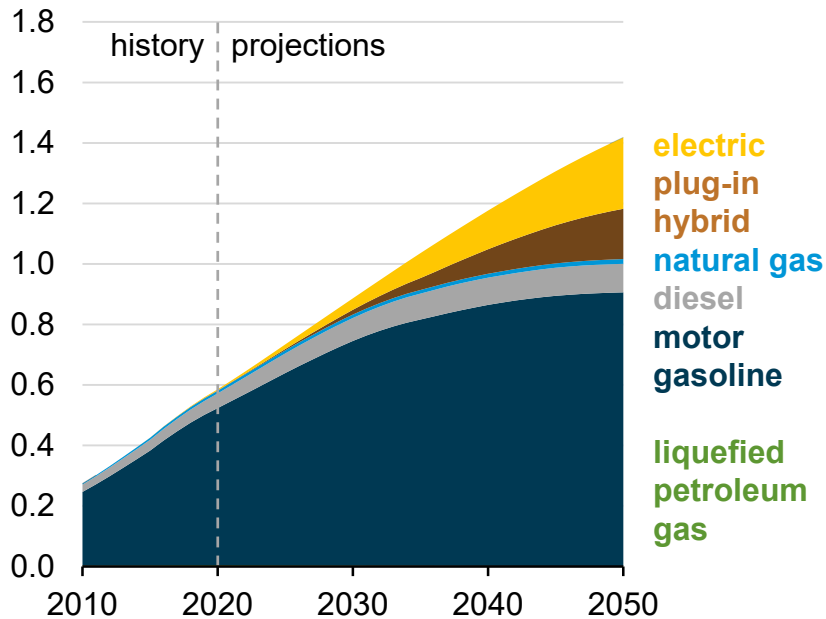
Light-duty vehicle stock, OECD

billions of vehicles



Light-duty vehicle stock, non-OECD

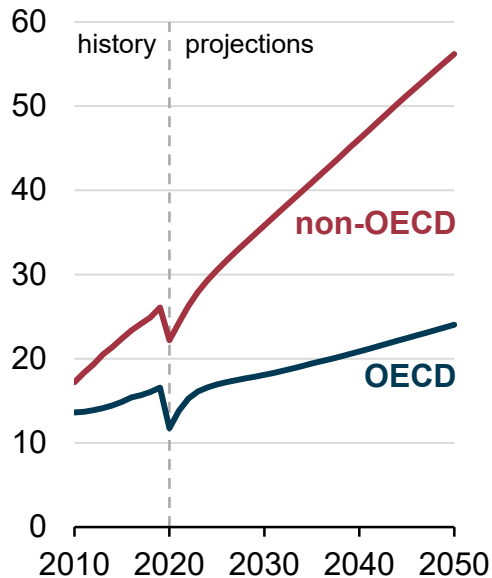
billions of vehicles



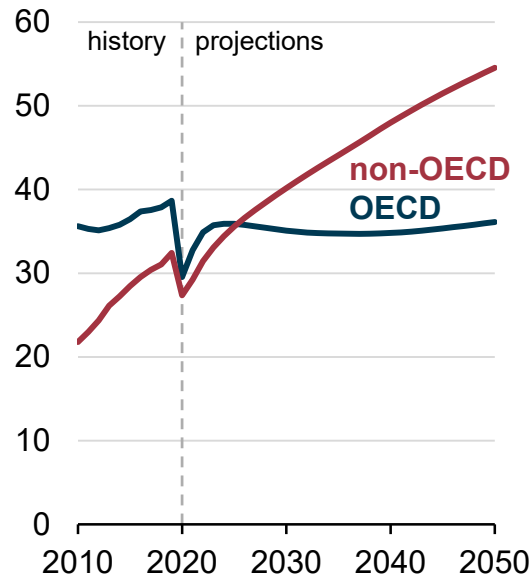


Passenger travel demand, energy use, and energy intensity

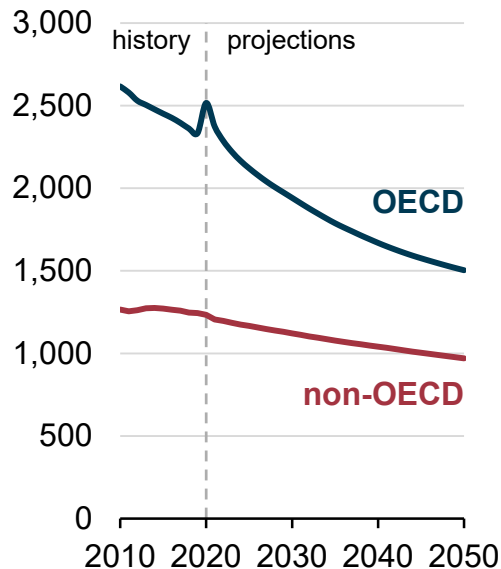
Passenger travel demand
trillion passenger-miles



Passenger travel energy use
quadrillion British thermal units



Passenger travel energy intensity
quadrillion British thermal units per passenger-mile

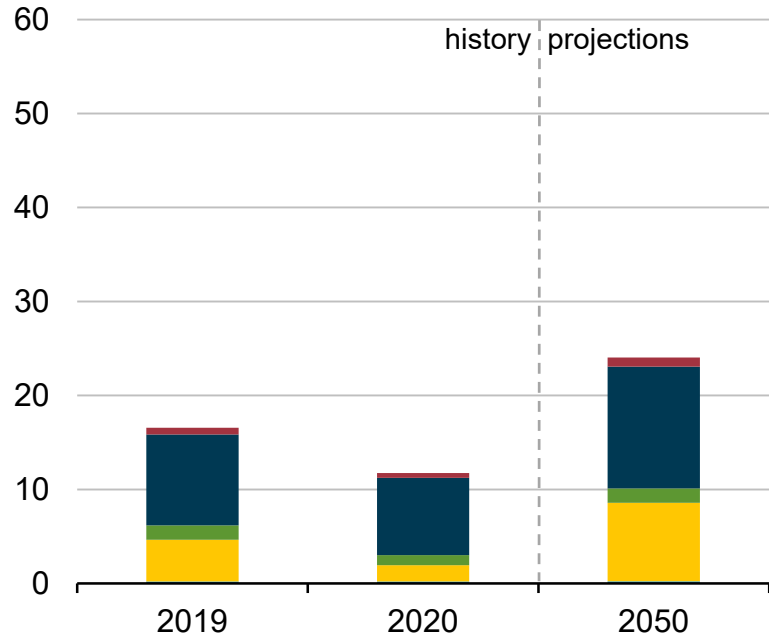




Passenger travel demand by mode

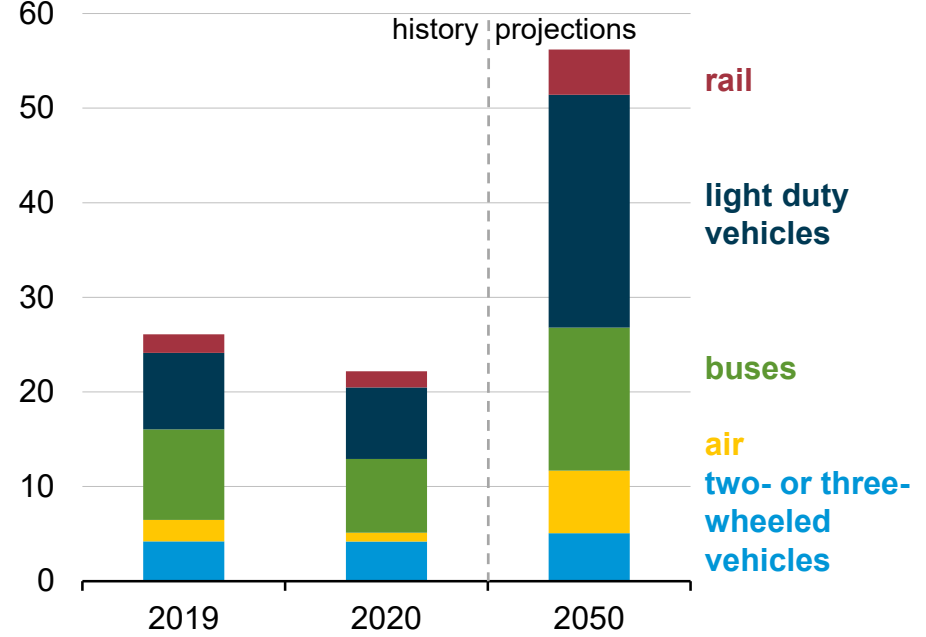
Passenger travel demand by mode, OECD

trillion passenger-miles



Passenger travel demand by mode, non-OECD

trillion passenger-miles

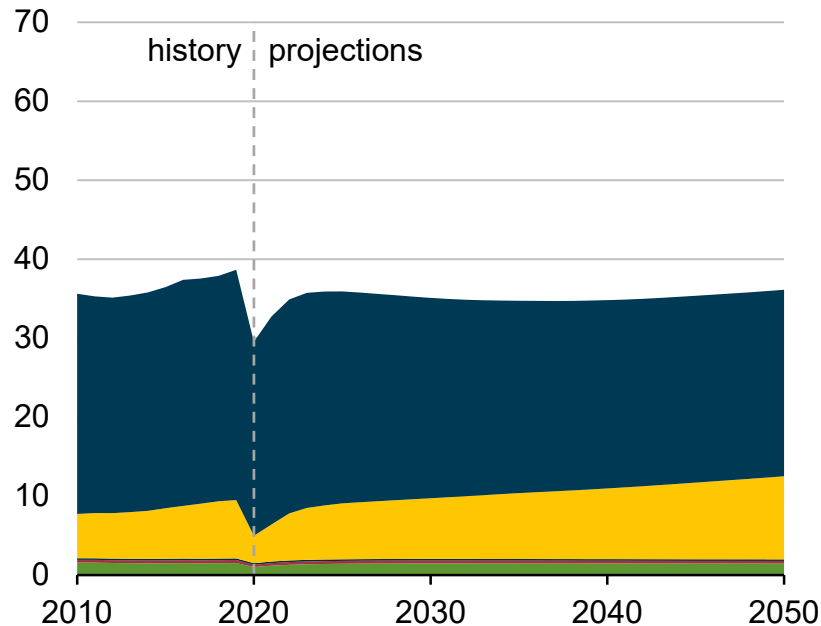




Passenger transportation energy consumption by mode

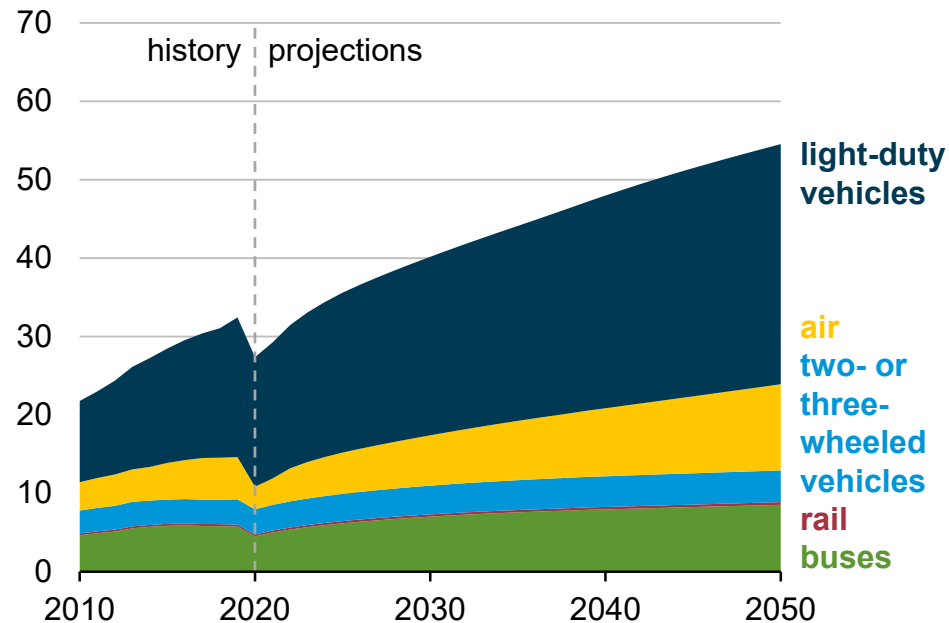
Passenger transportation energy consumption, OECD

quadrillion British thermal units



Passenger transportation energy consumption, non-OECD

quadrillion British thermal units

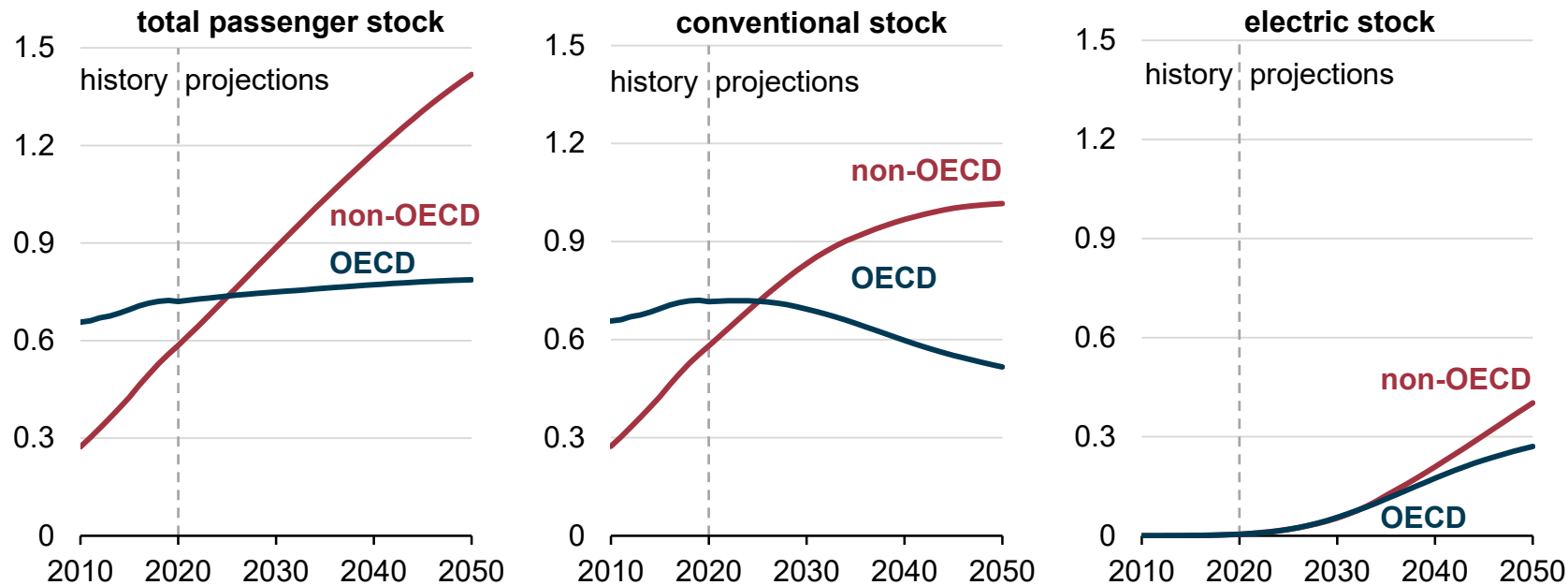




Light-duty passenger vehicle stock by technology

Light-duty passenger vehicle stock

billions of passenger vehicles

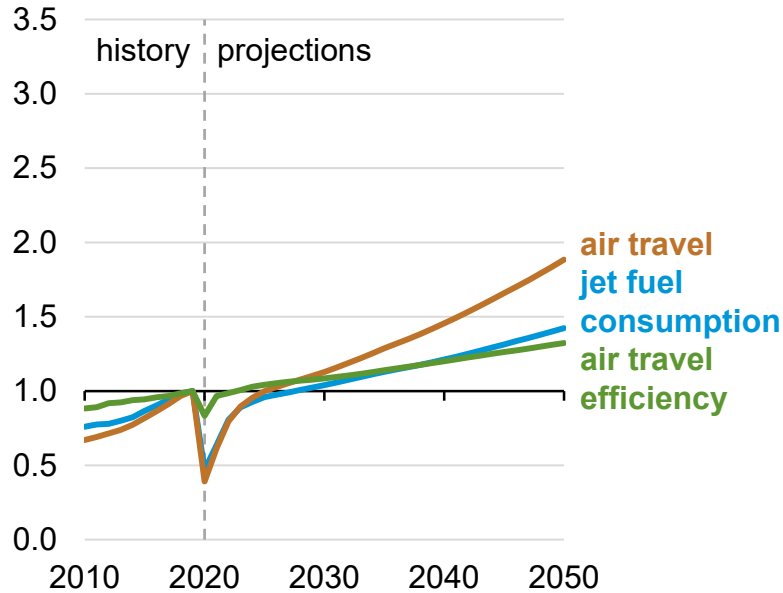


Note: Electric stock includes all-electric vehicles and plug-in hybrid electric vehicles.

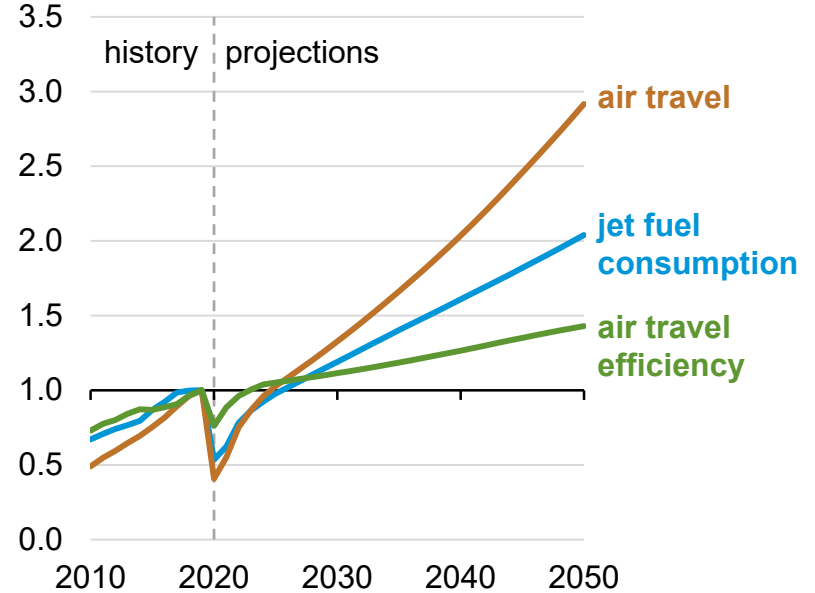


Passenger air travel, efficiency, and jet fuel consumption

Passenger air travel, efficiency, and jet fuel energy consumption, OECD
index, 2019 = 1.0



Passenger air travel, efficiency, and jet fuel energy consumption, non-OECD
index, 2019 = 1.0

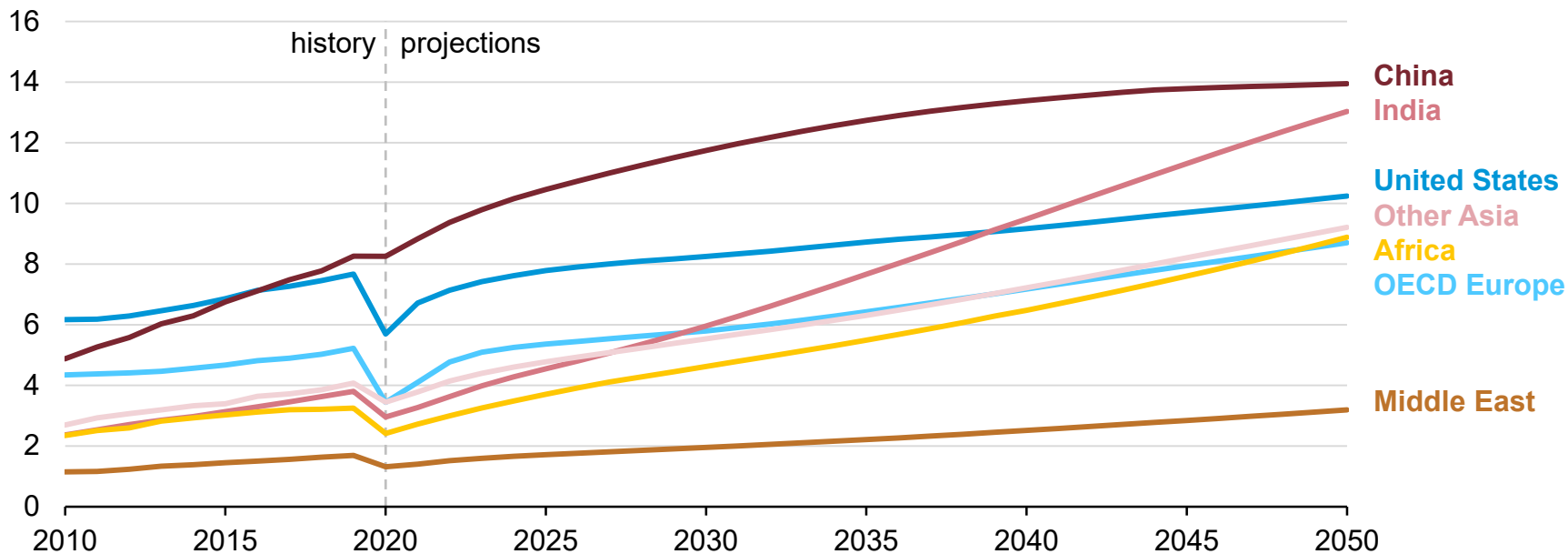




Passenger air travel by region

Passenger air travel, select regions

trillion passenger-miles traveled

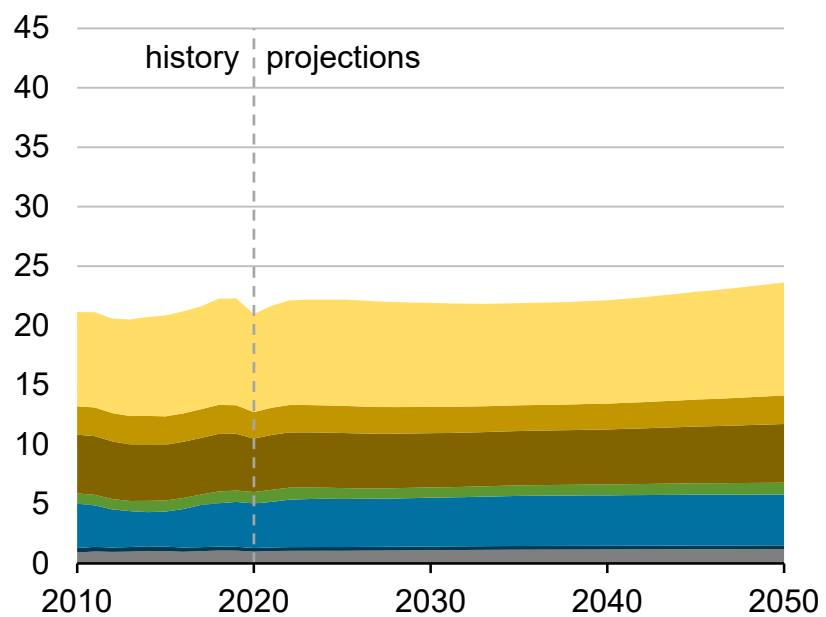




Freight transportation energy consumption by mode

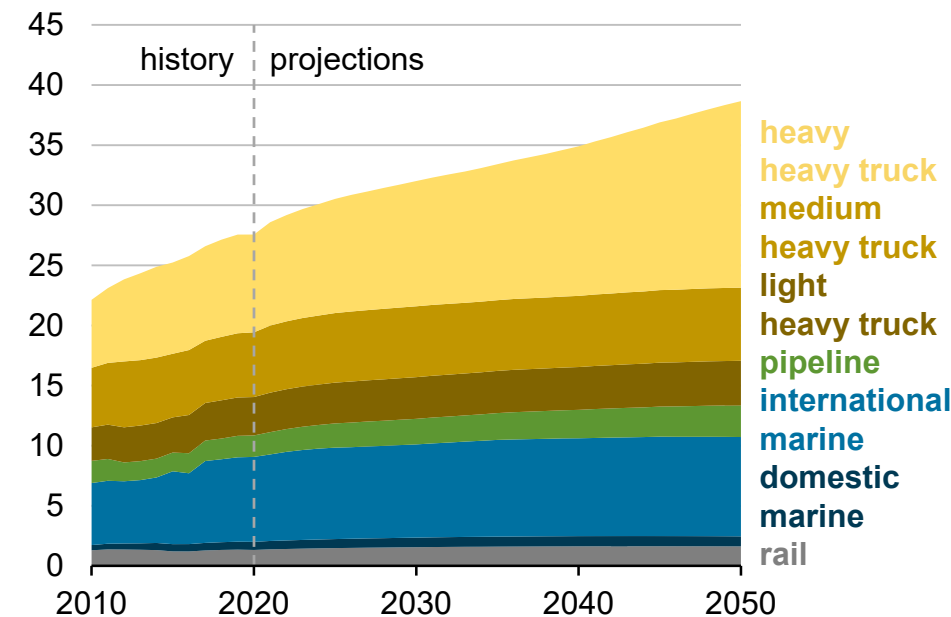
Freight transportation energy consumption, OECD

quadrillion British thermal units



Freight transportation energy consumption, non-OECD

quadrillion British thermal units





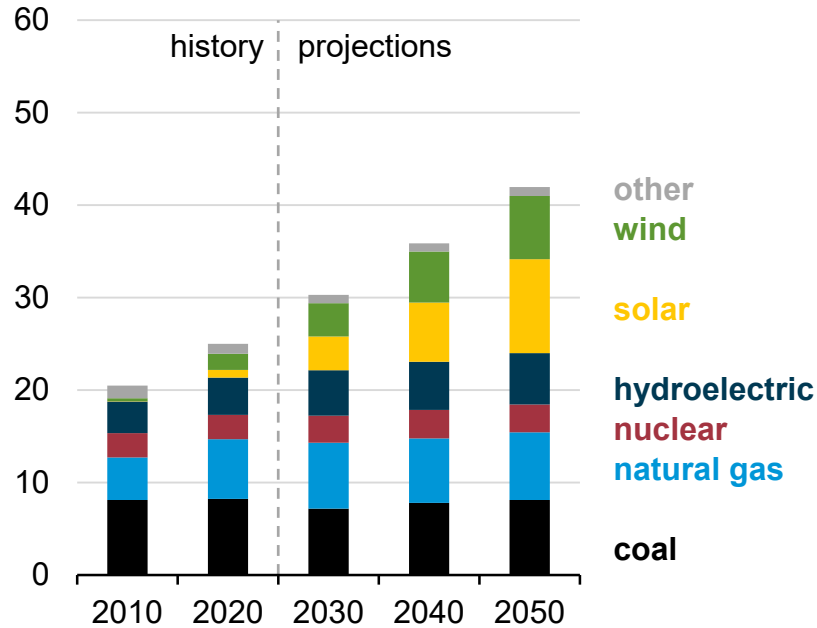
Electricity



World net electricity generation by source

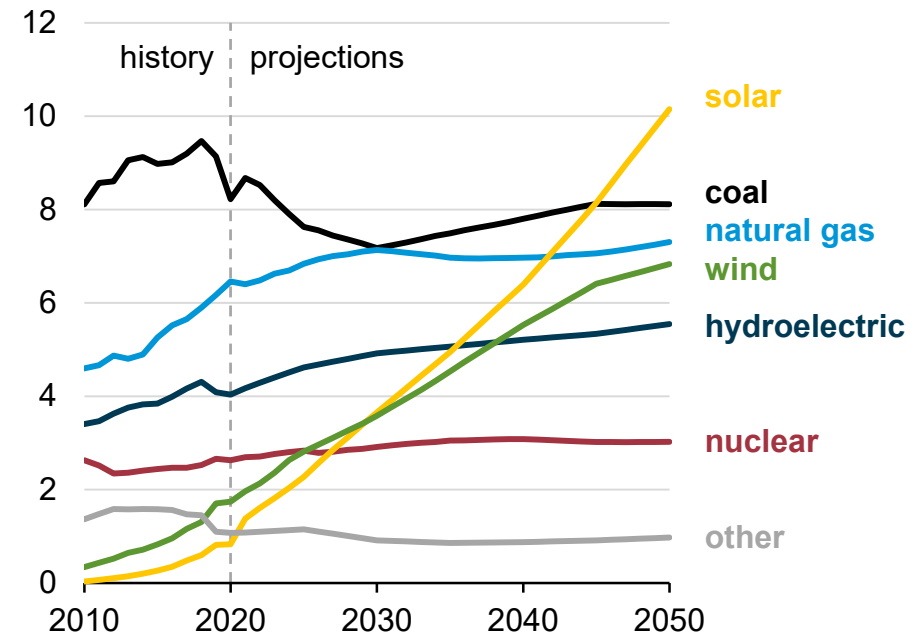
World net electricity generation by source

trillion kilowatthours



World net electricity generation by source

trillion kilowatthours

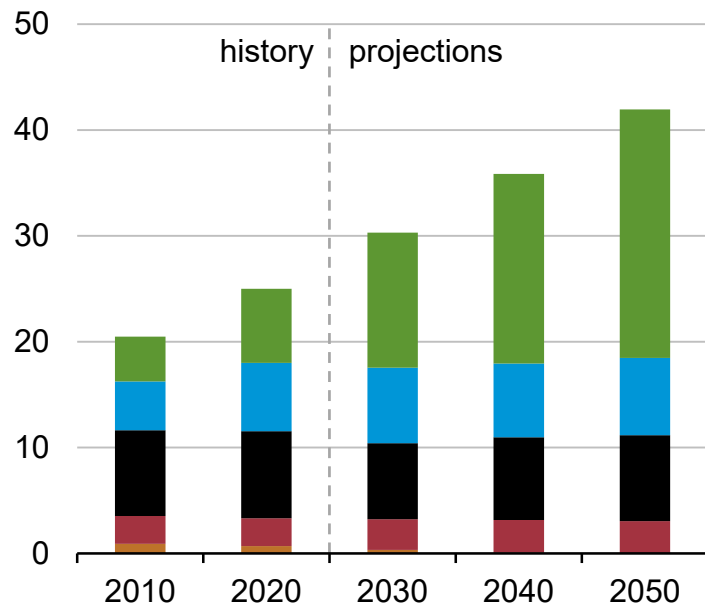




World net electricity generation shares by fuel

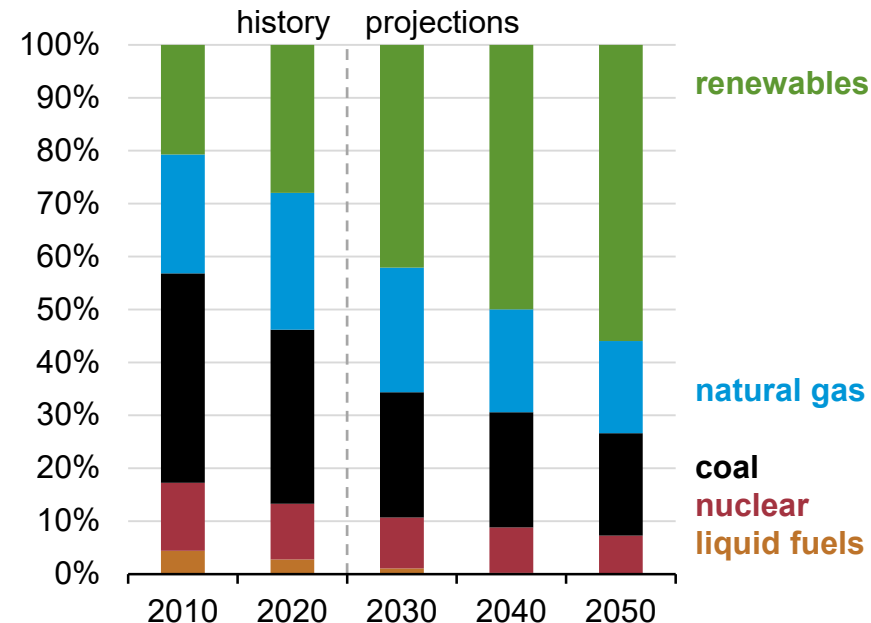
World net electricity generation by source

trillion kilowatthours



Share of net electricity generation

percentage

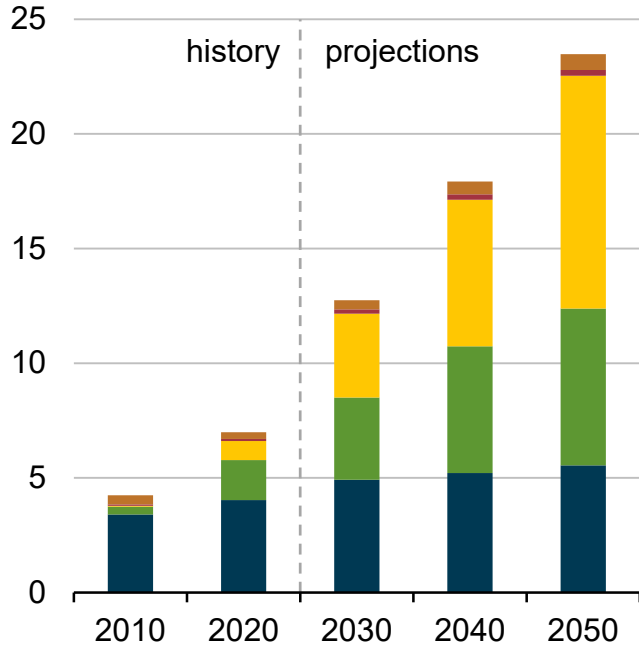




World net electricity generation from renewables

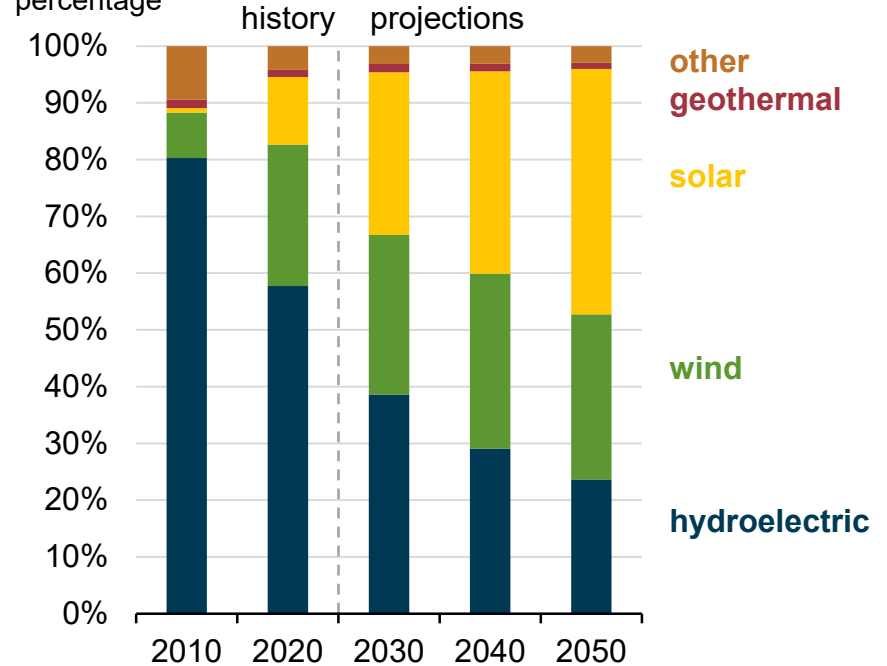
World net electricity generation from renewables

trillion kilowatthours



Share of renewable energy

percentage

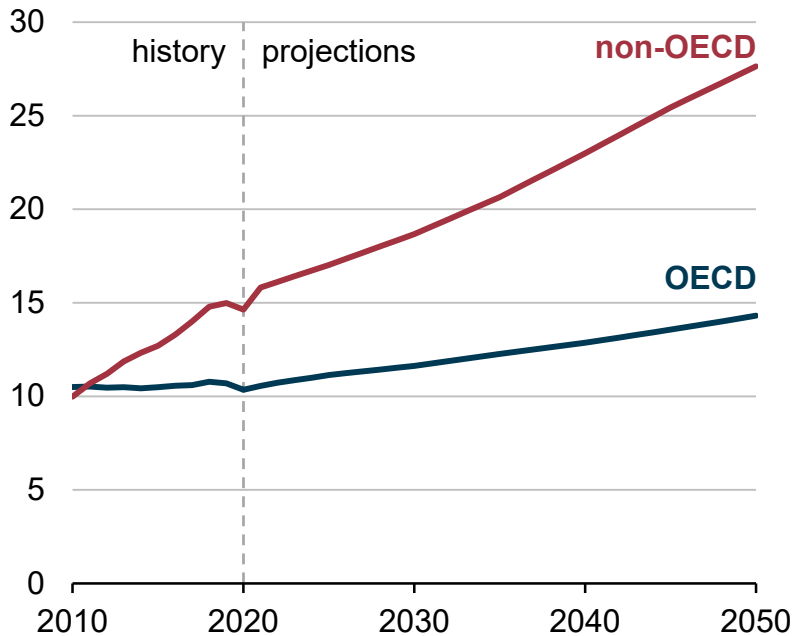




World net electricity generation by region and electricity use by sector

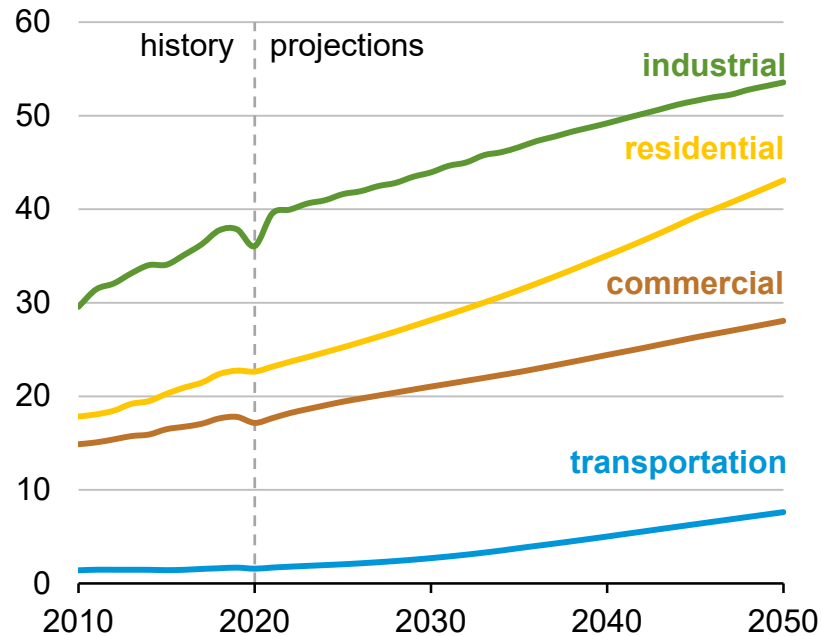
OECD and non-OECD net electricity generation

trillion kilowatthours



World electricity use by sector

quadrillion British thermal units

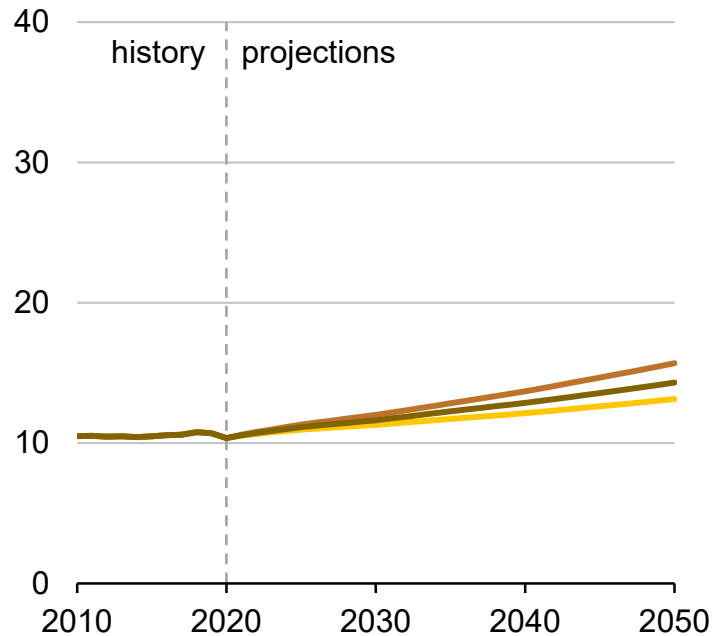




Electricity generation in Reference, High Economic Growth, and Low Economic Growth cases

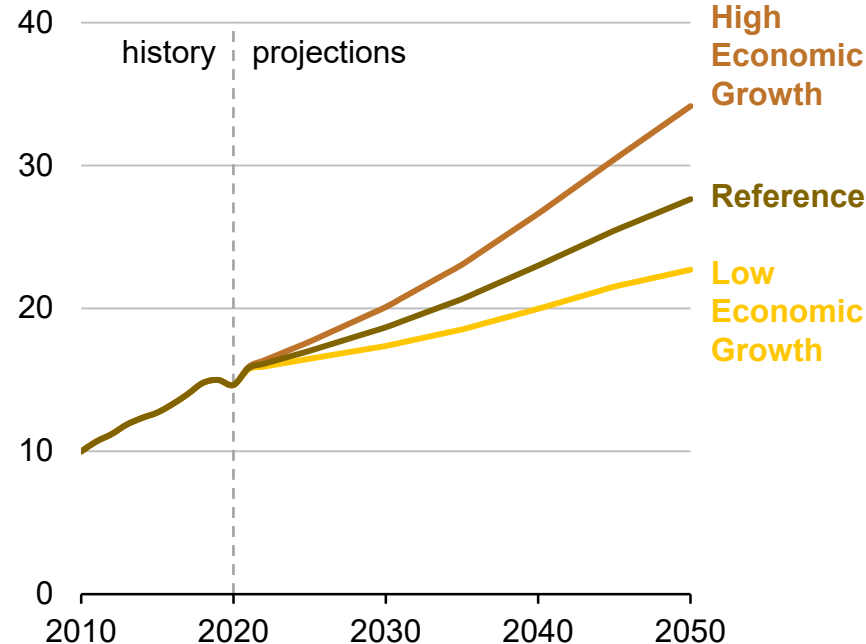
OECD electricity generation

trillion kilowatthours



Non-OECD electricity generation

trillion kilowatthours

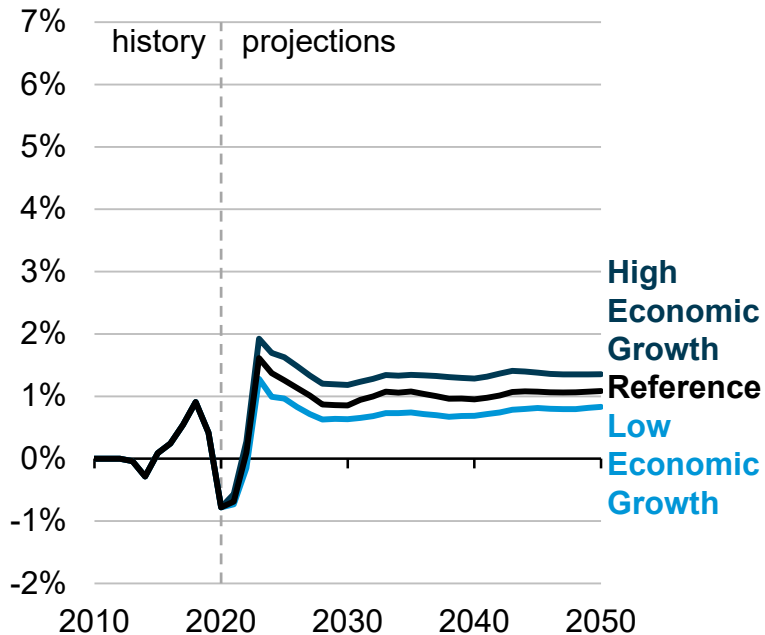




Electricity generation growth rate in Reference, High Economic Growth, and Low Economic Growth cases

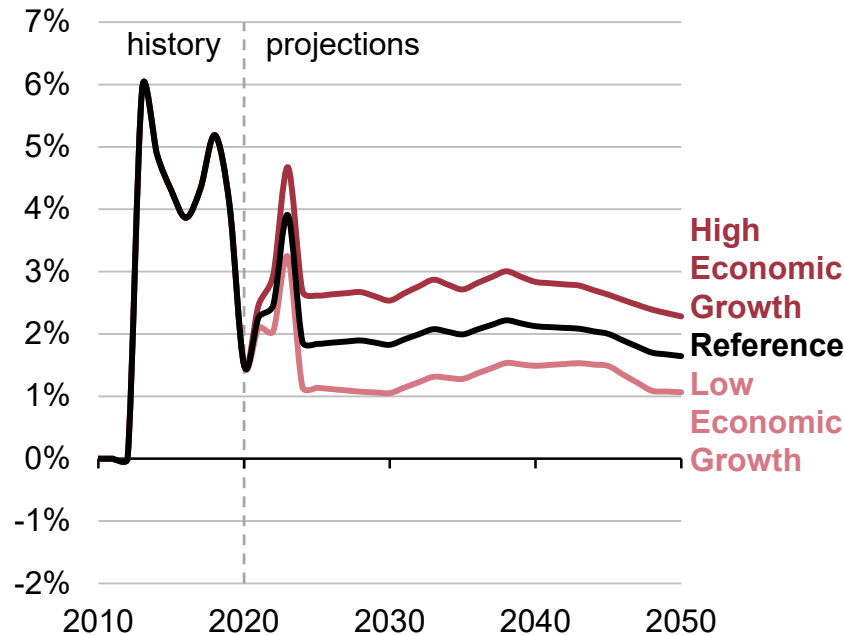
OECD electricity generation growth rate

3-year average, percentage



Non-OECD electricity generation growth rate

3-year average, percentage

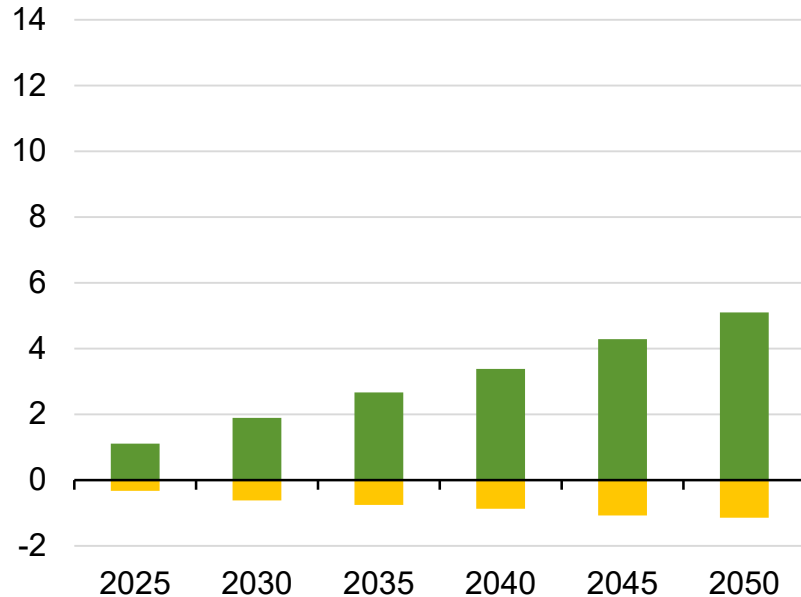




Electricity generation change from 2020, by type

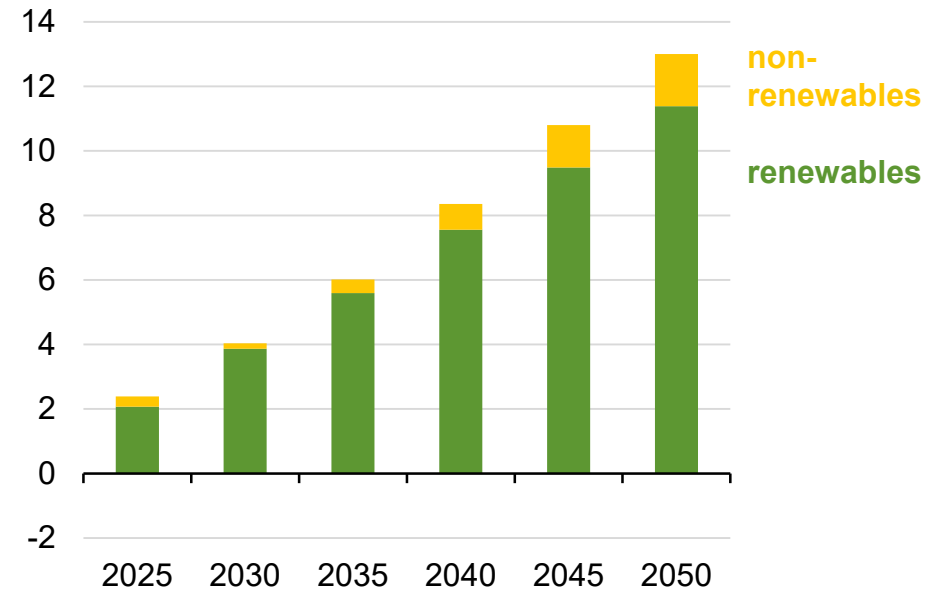
OECD electricity generation change from 2020, by type

trillion kilowatthours



Non-OECD electricity generation change from 2020, by type

trillion kilowatthours

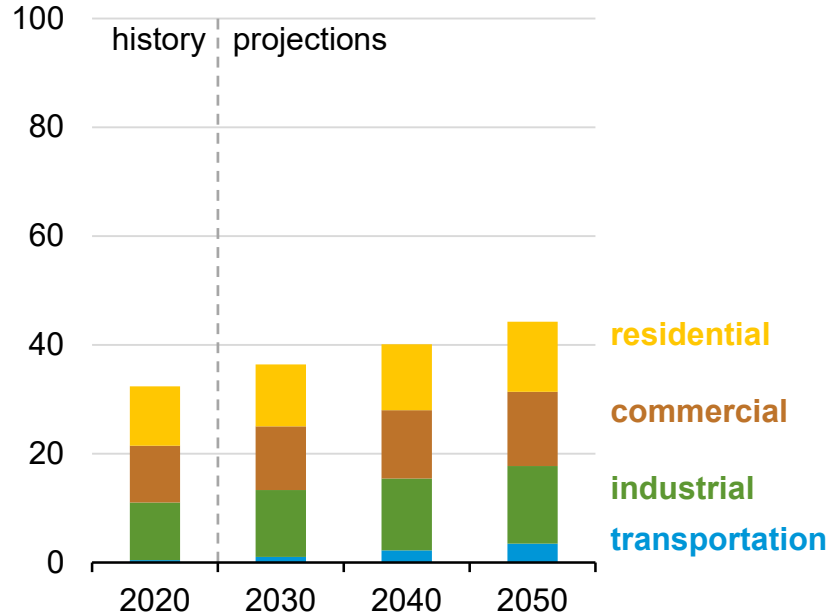




Total electricity consumption by sector

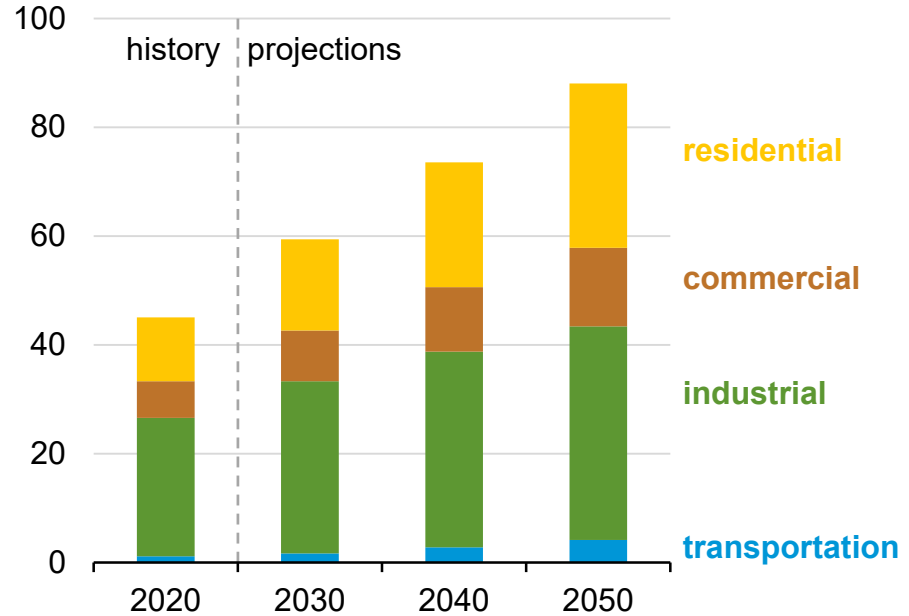
Total electricity consumption by sector, OECD

quadrillion British thermal units



Total electricity consumption by sector, non-OECD

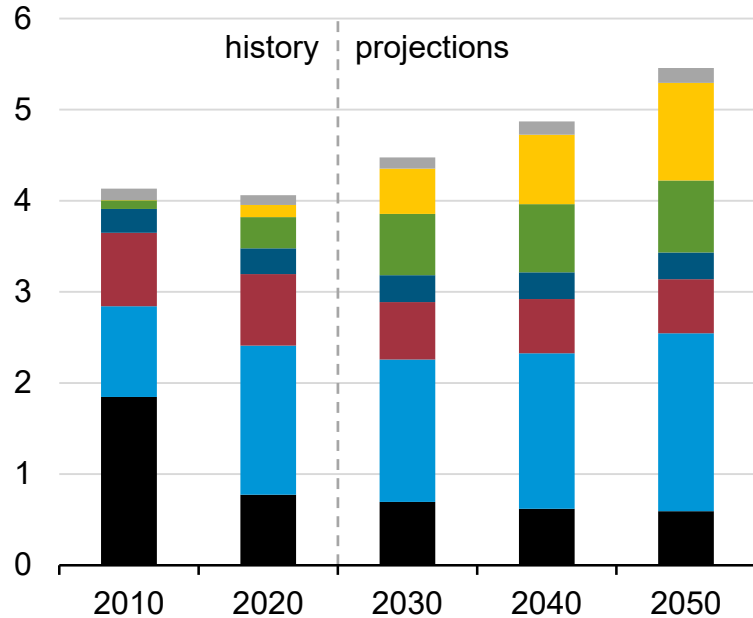
quadrillion British thermal units



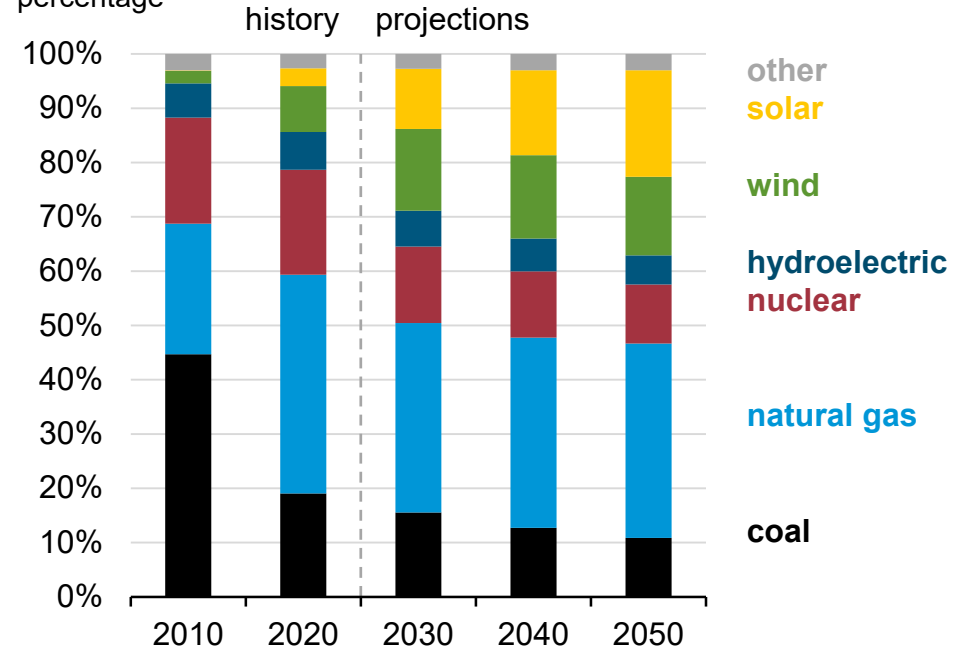


United States net electricity generation by source

Net electricity generation by source, United States
trillion kilowatthours



Share of net electricity generation, United States
percentage

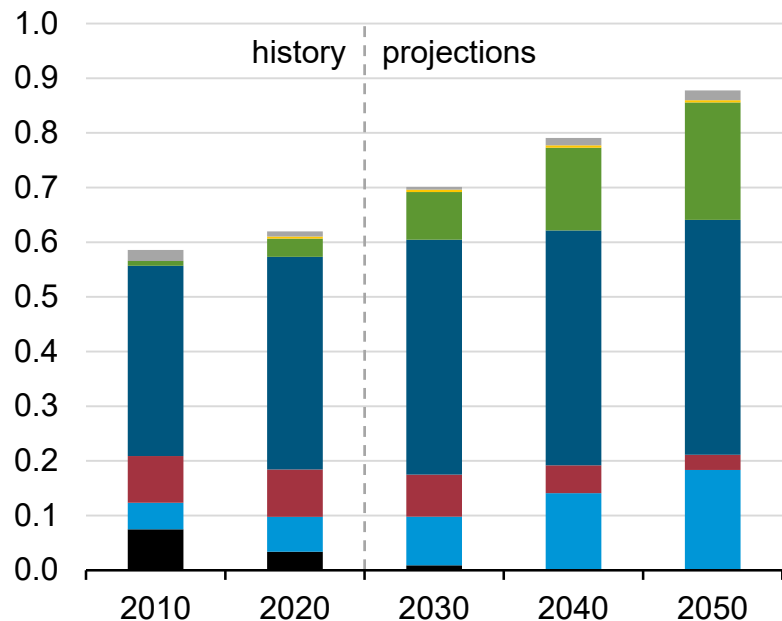




Canada net electricity generation by source

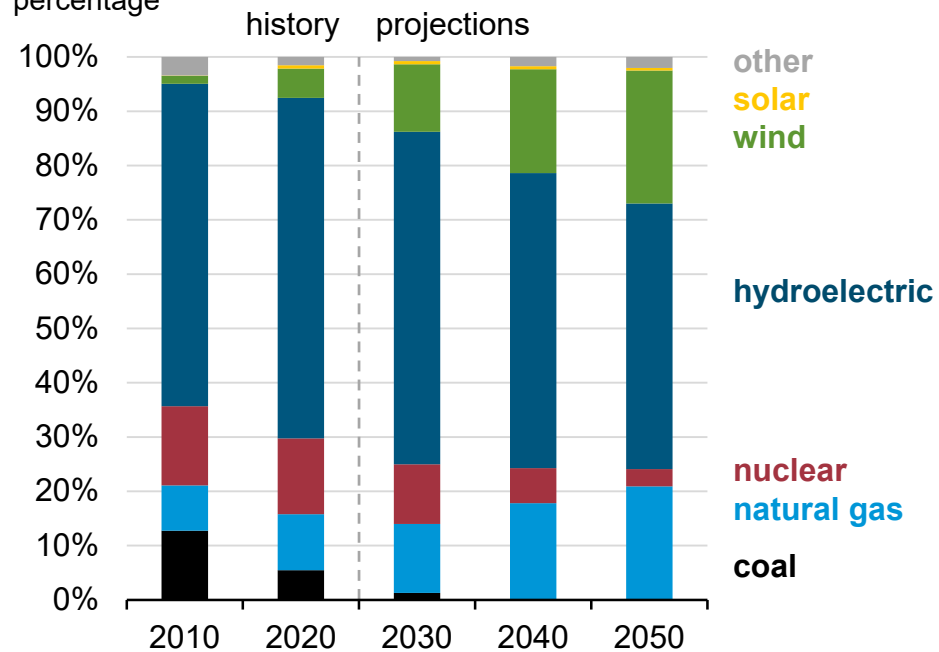
Net electricity generation by source, Canada

trillion kilowatthours



Share of net electricity generation, Canada

percentage

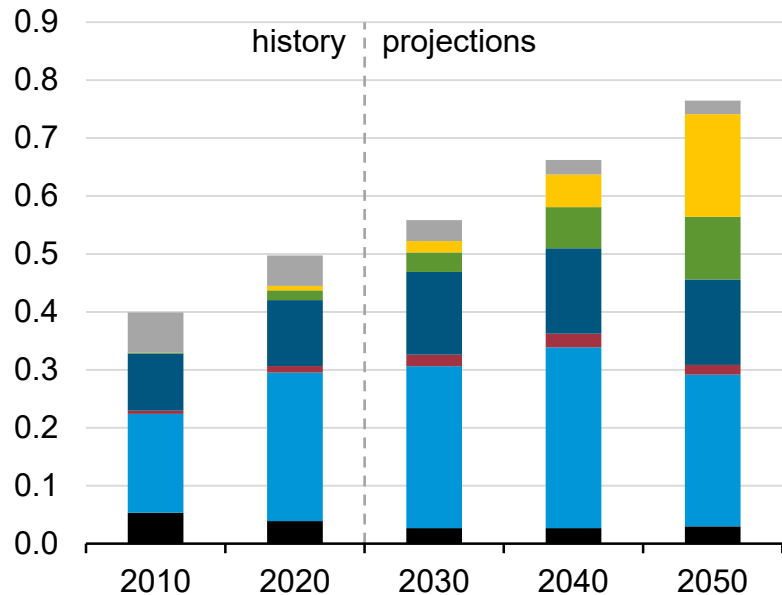




Mexico and other OECD Americas net electricity generation by source

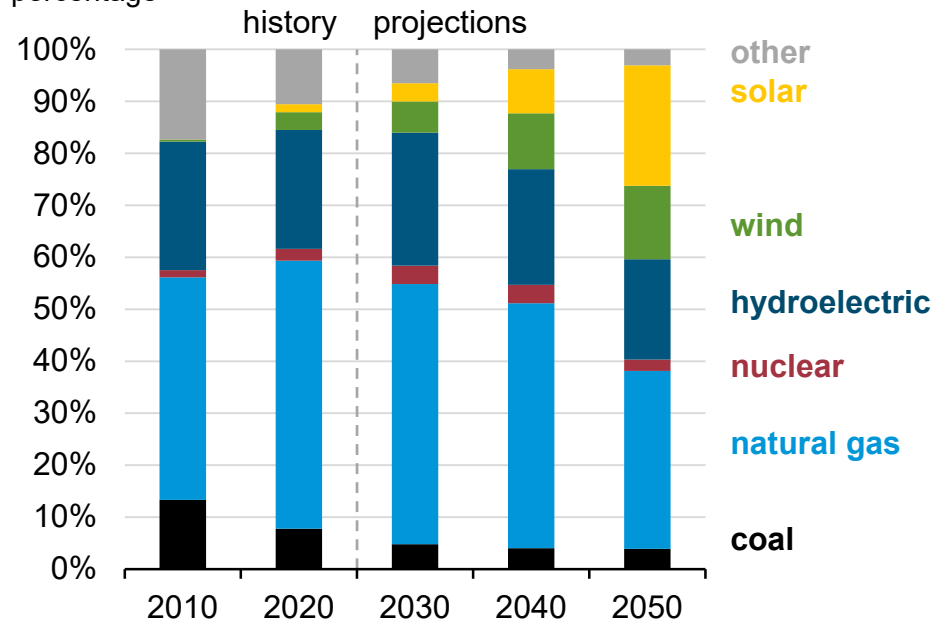
Net electricity generation by source, Mexico and other OECD Americas

trillion kilowatthours



Share of net electricity generation, Mexico and other OECD Americas

percentage

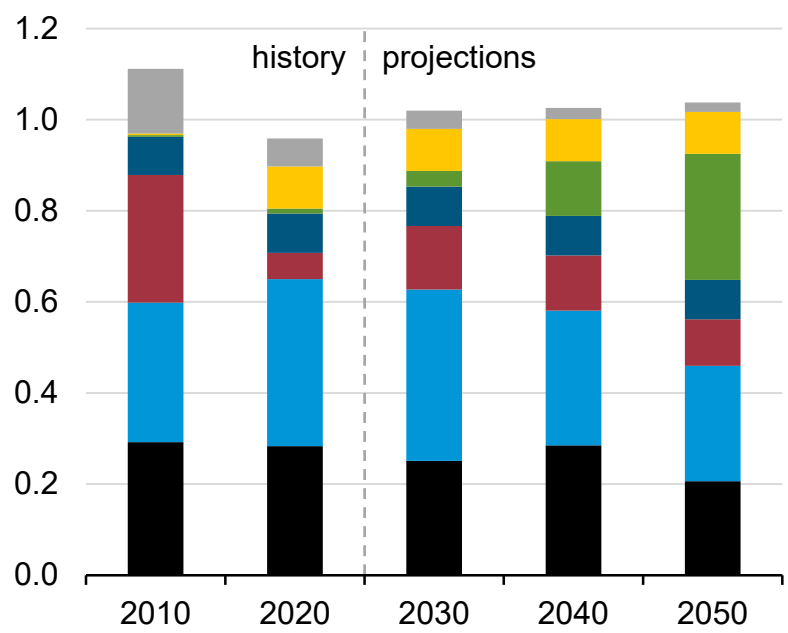




Japan net electricity generation by source

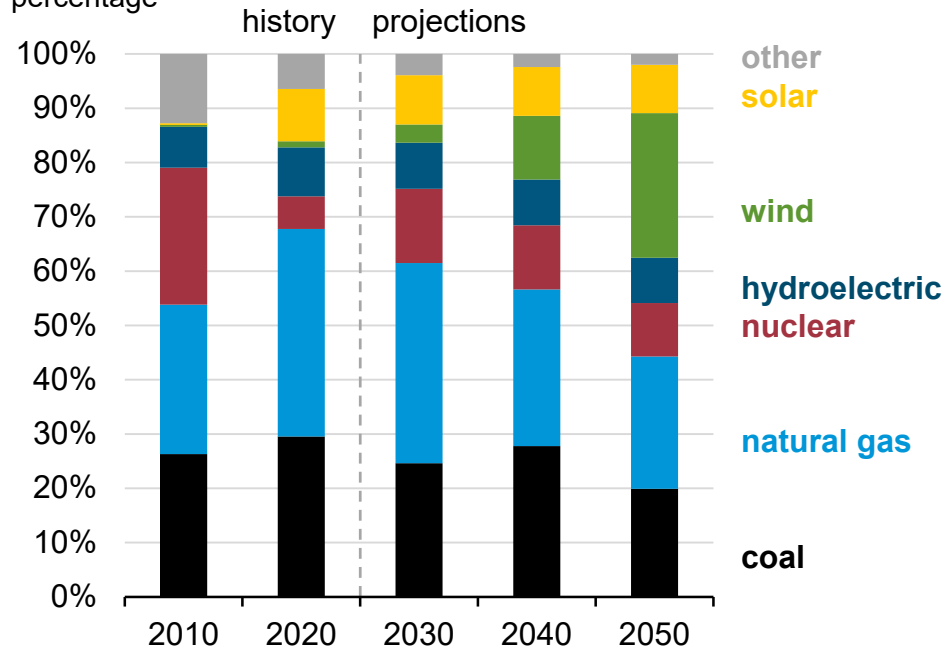
Net electricity generation by source, Japan

trillion kilowatthours



Share of net electricity generation, Japan

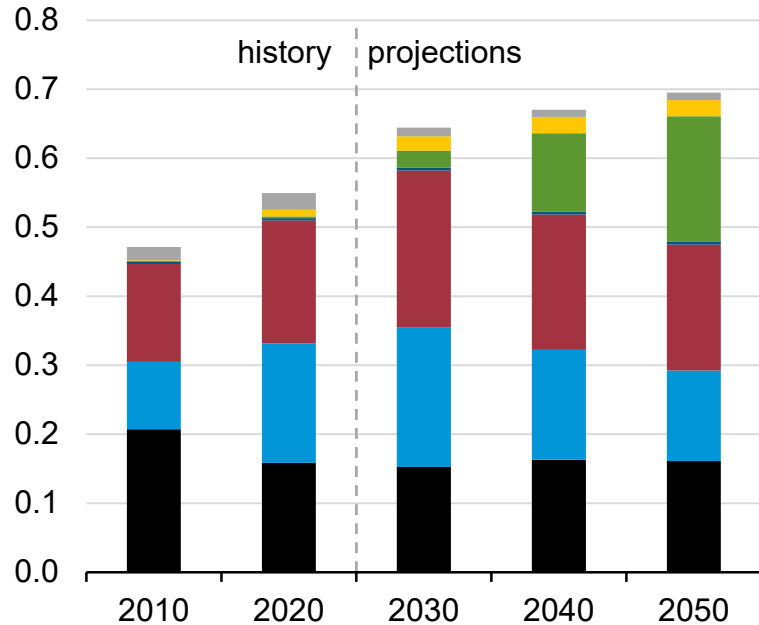
percentage



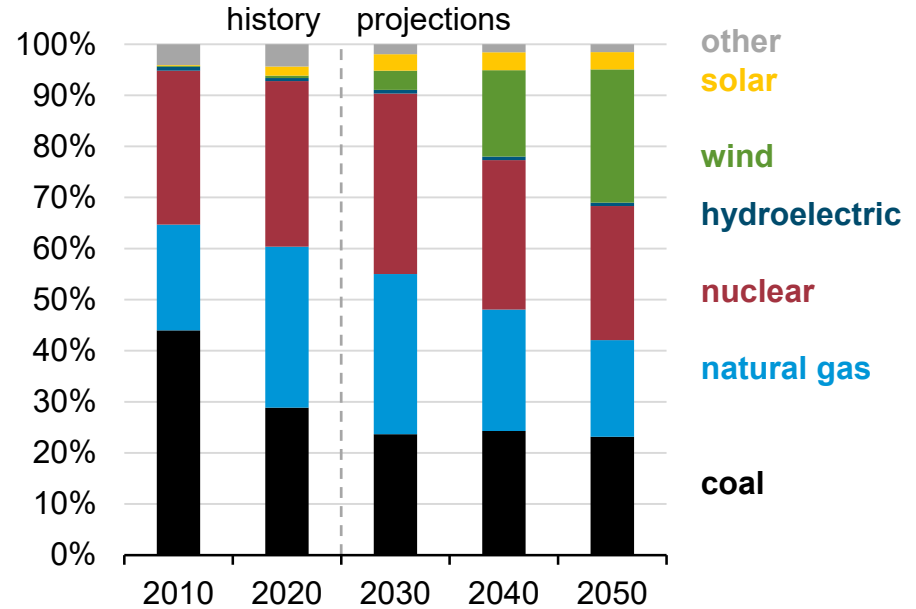


South Korea net electricity generation by source

Net electricity generation by source, South Korea
trillion kilowatthours



Share of net electricity generation, South Korea
percentage

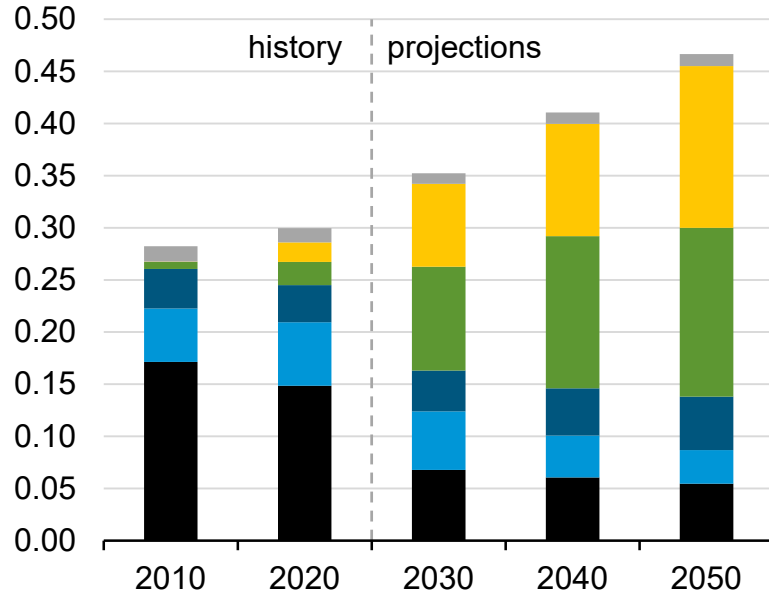




Australia and New Zealand net electricity generation by source

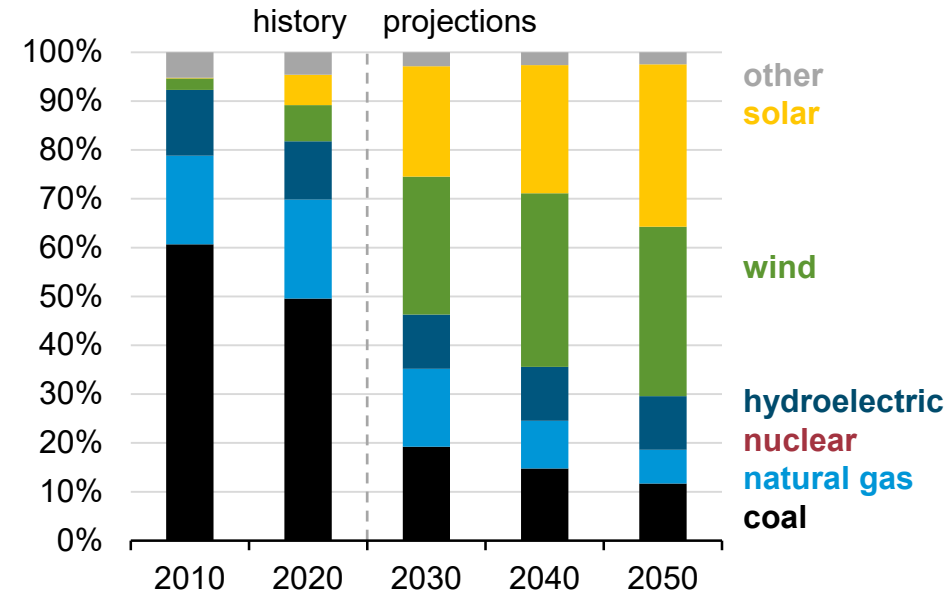
Net electricity generation by source, Australia and New Zealand

trillion kilowatthours



Share of net electricity generation, Australia and New Zealand

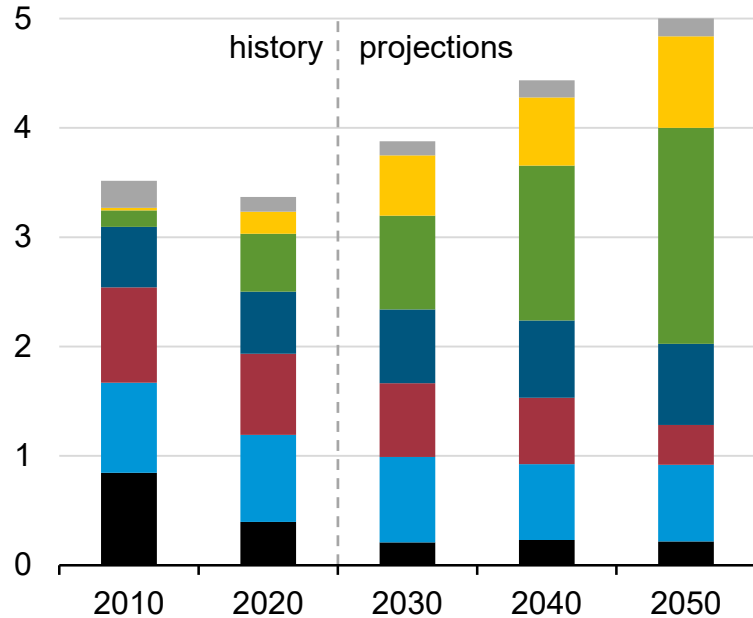
percentage



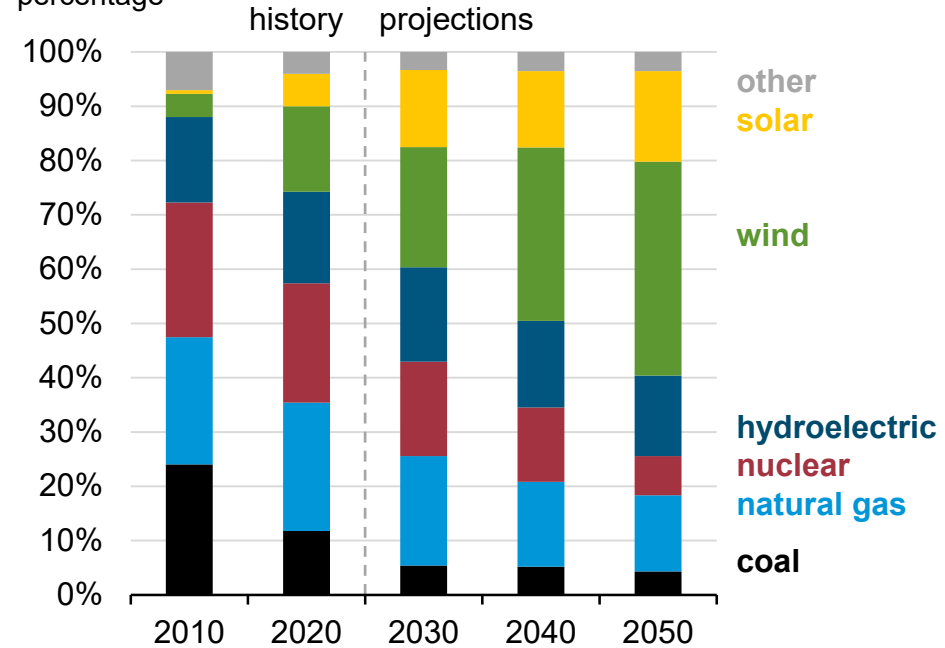


OECD Europe net electricity generation by source

Net electricity generation by source, OECD Europe
trillion kilowatthours



Share of net electricity generation, OECD Europe
percentage

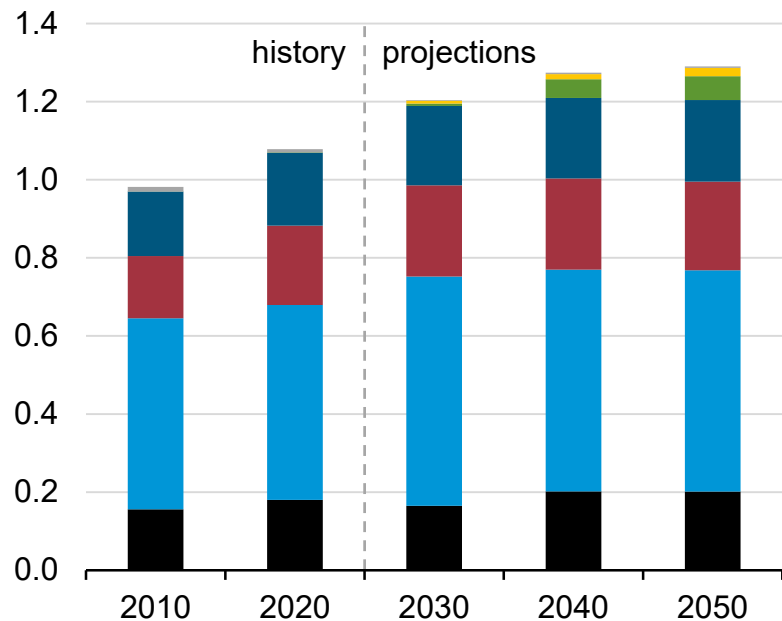




Russia net electricity generation by source

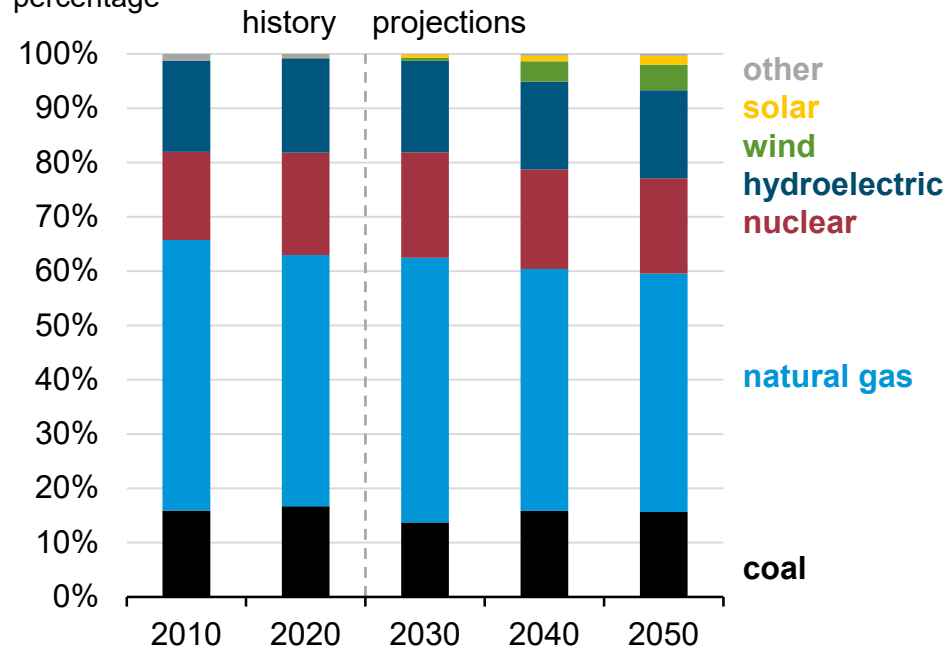
Net electricity generation by source, Russia

trillion kilowatthours



Share of net electricity generation, Russia

percentage

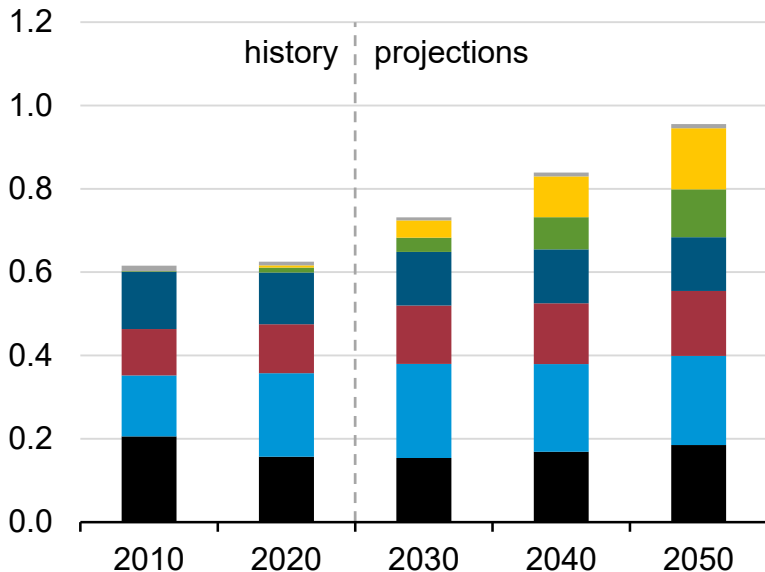




Other non-OECD Europe and Eurasia net electricity generation by source

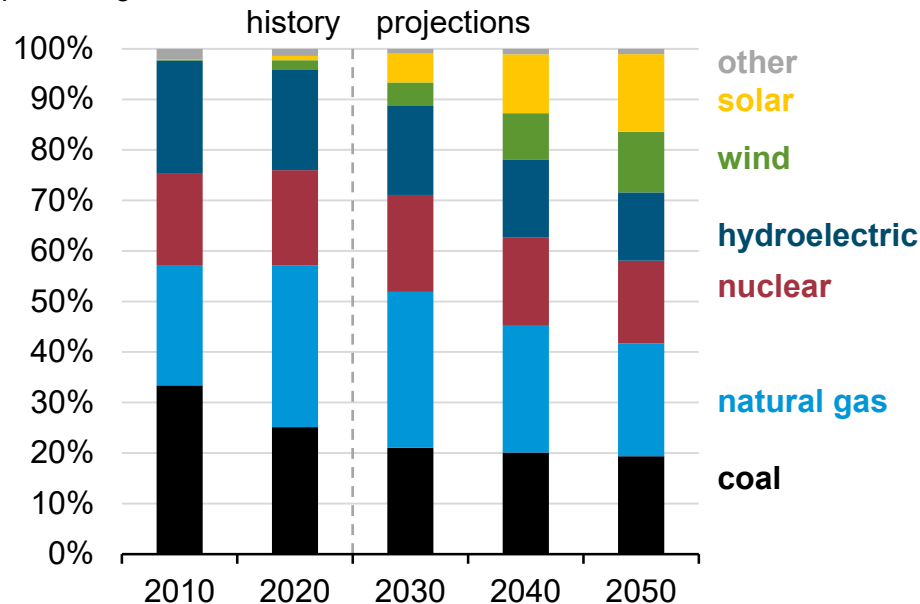
Net electricity generation by source, Other non-OECD Europe and Eurasia

trillion kilowatthours



Share of net electricity generation, Other non-OECD Europe and Eurasia

percentage

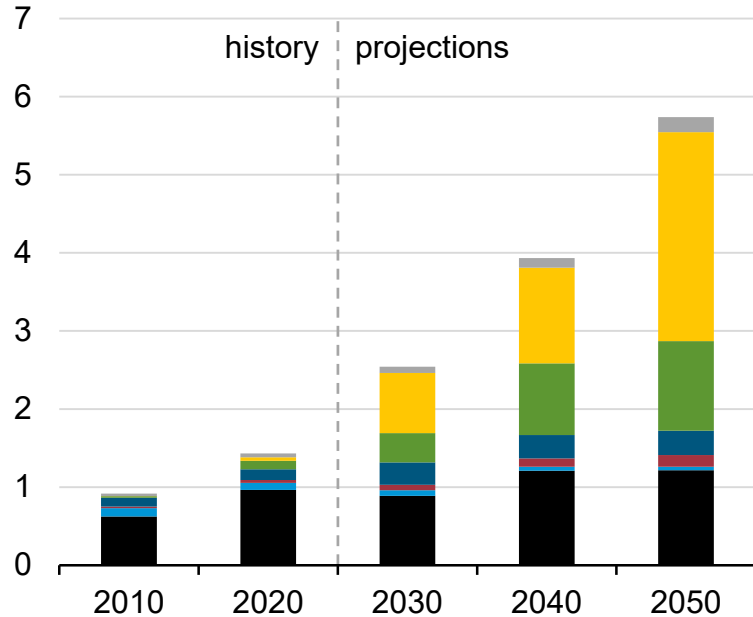




India net electricity generation by source

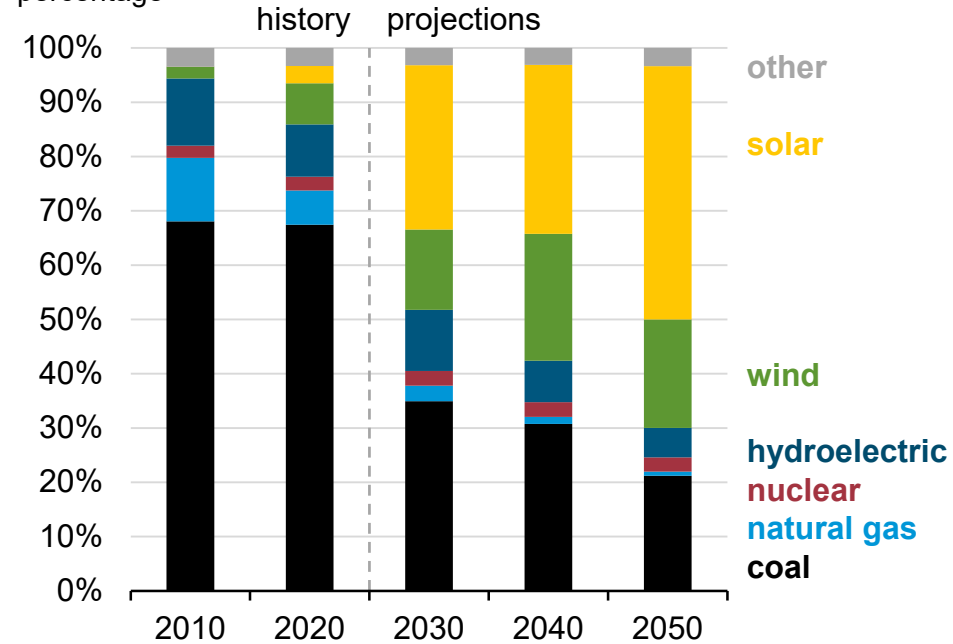
Net electricity generation by source, India

trillion kilowatthours



Share of net electricity generation, India

percentage

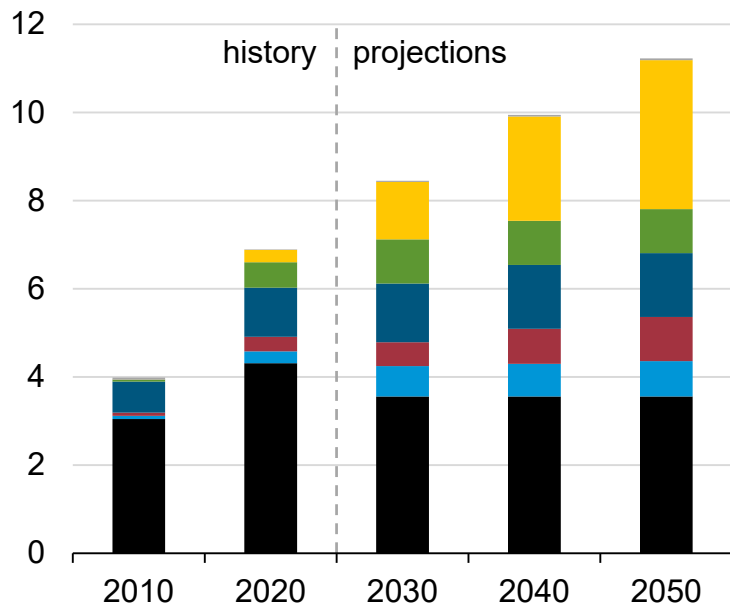




China net electricity generation by source

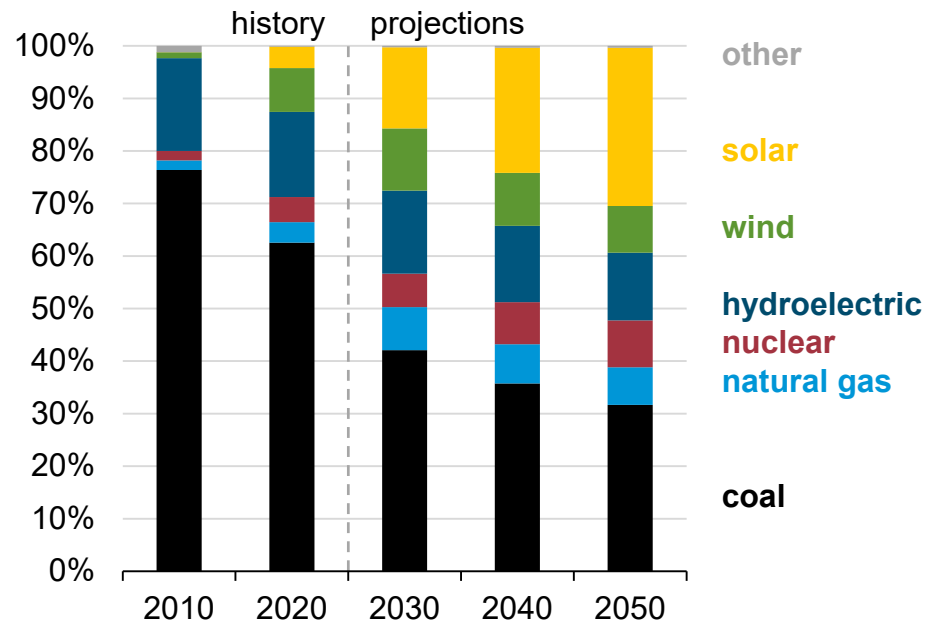
Net electricity generation by source, China

trillion kilowatthours



Share of net electricity generation, China

percentage

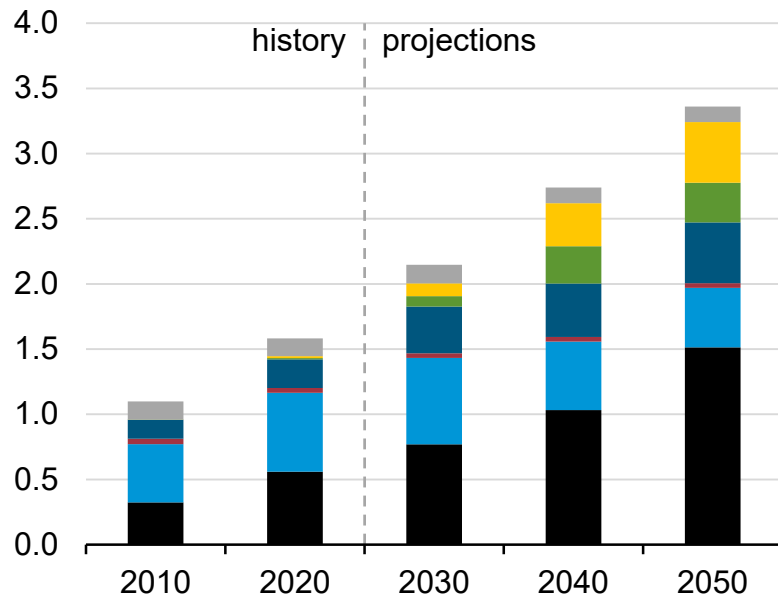




Other non-OECD Asia net electricity generation by source

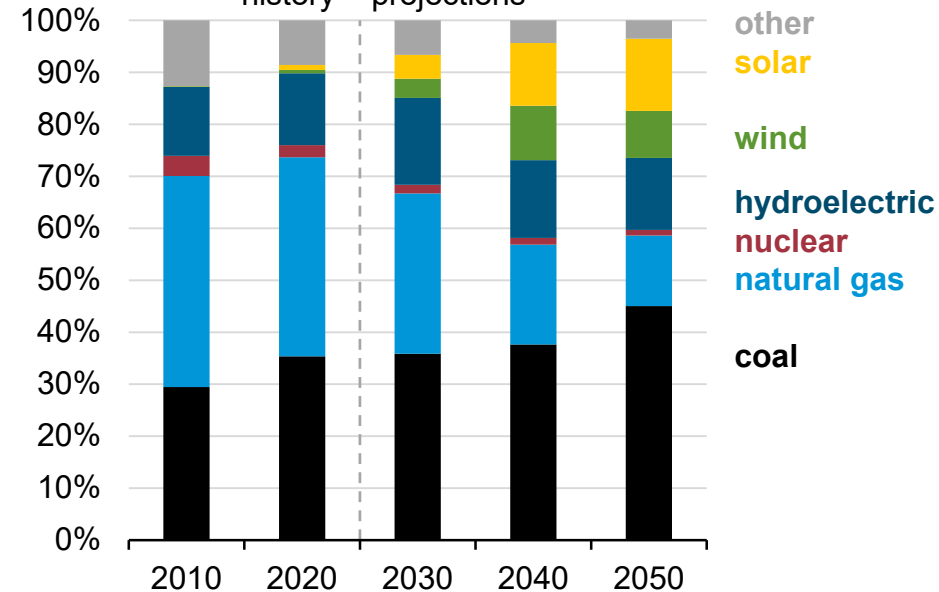
Net electricity generation by source, Other non-OECD Asia

trillion kilowatthours



Share of net electricity generation, Other non-OECD Asia

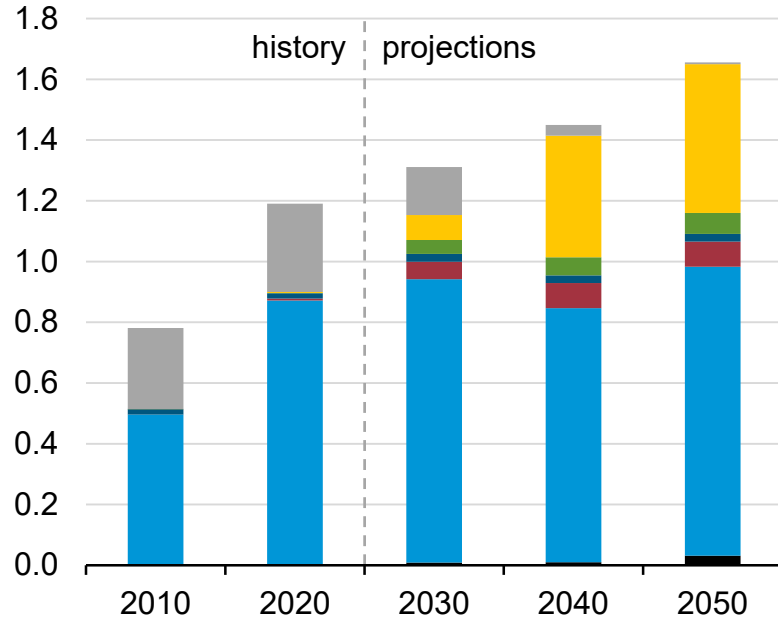
percentage



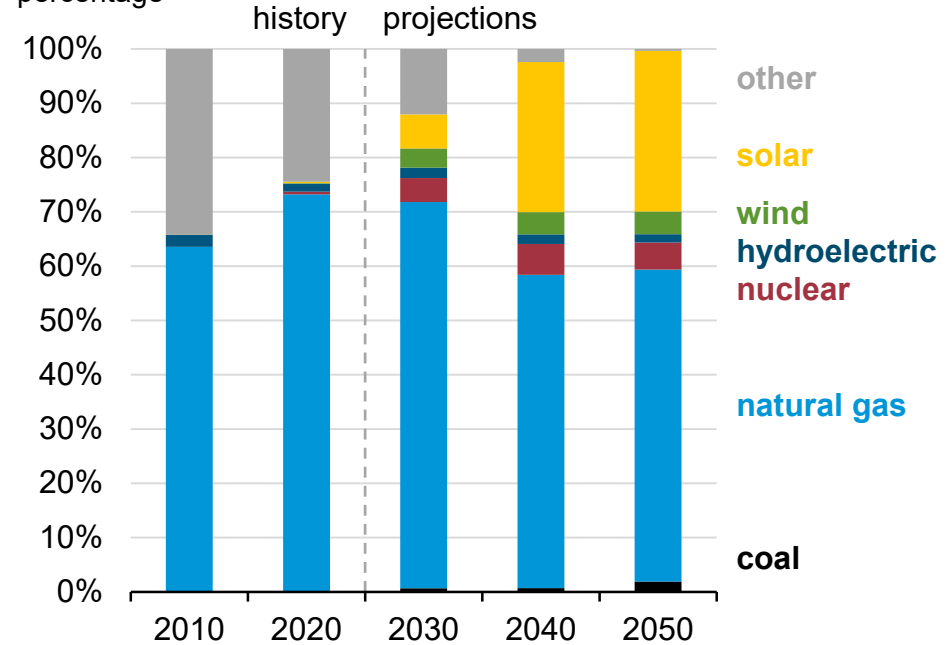


Middle East net electricity generation by source

Net electricity generation by source, Middle East
trillion kilowatthours



Share of net electricity generation, Middle East
percentage

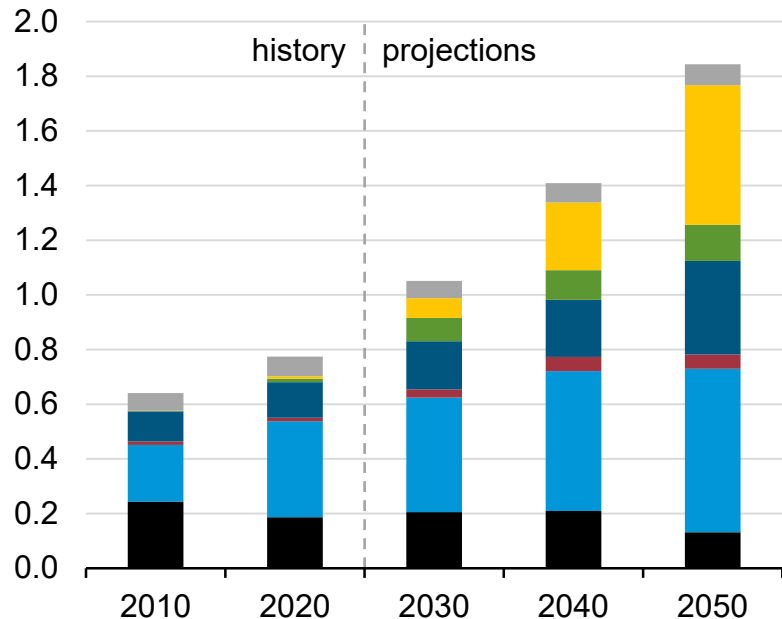




Africa net electricity generation by source

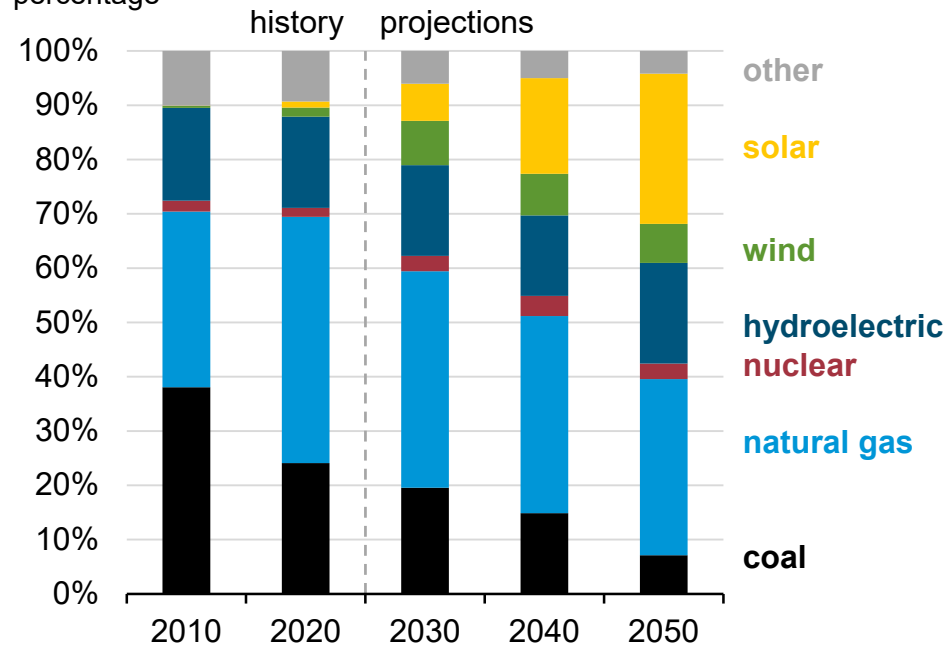
Net electricity generation by source, Africa

trillion kilowatthours



Share of net electricity generation, Africa

percentage

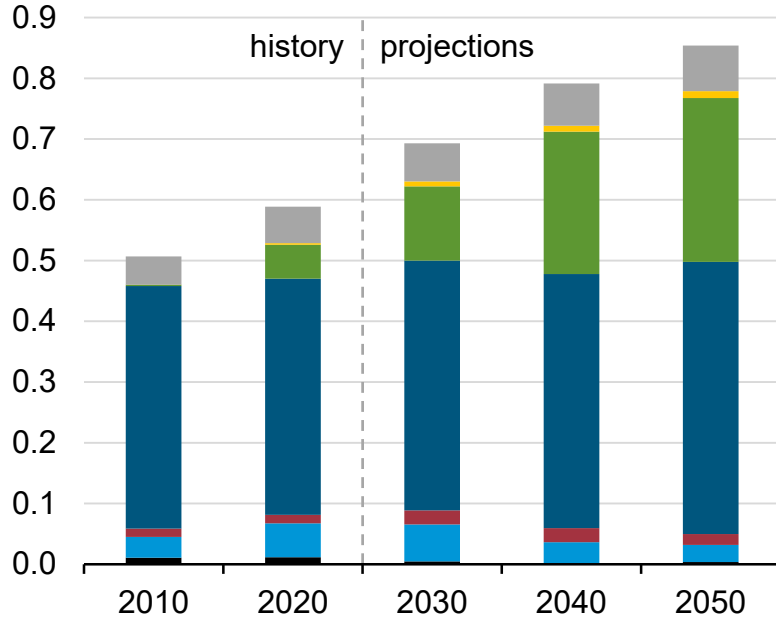




Brazil net electricity generation by source

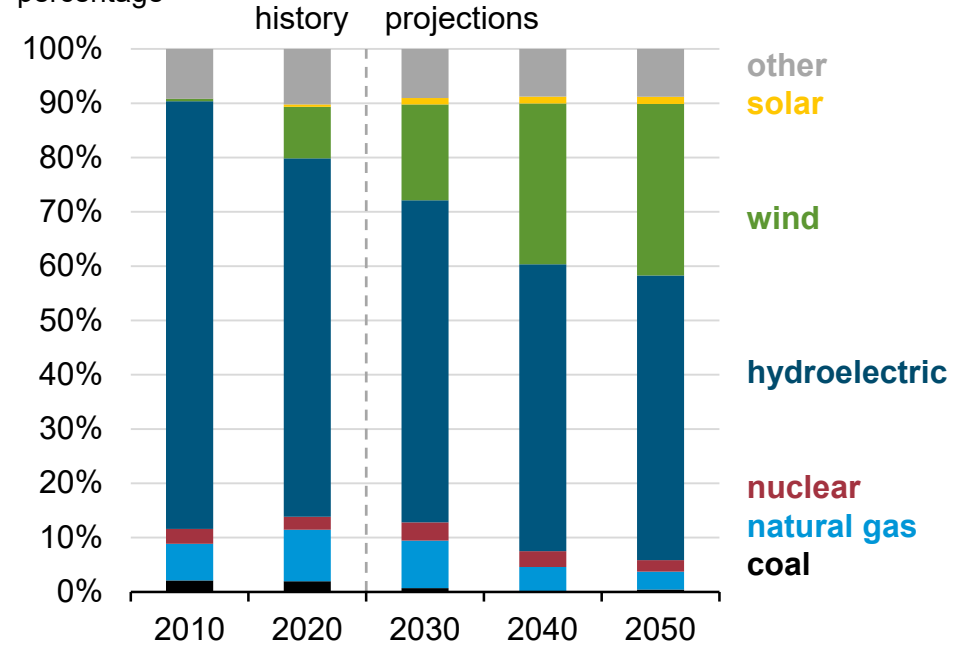
Net electricity generation by source, Brazil

trillion kilowatthours



Share of net electricity generation, Brazil

percentage

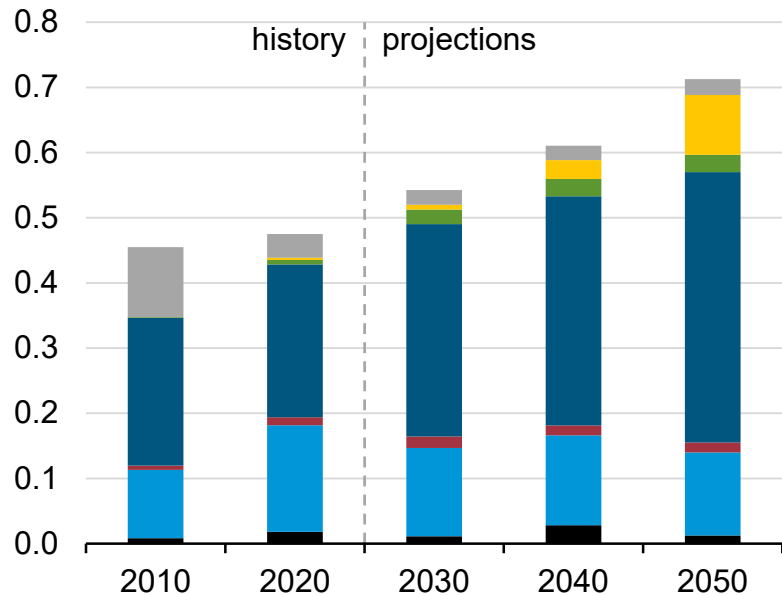




Other non-OECD Americas net electricity generation by source

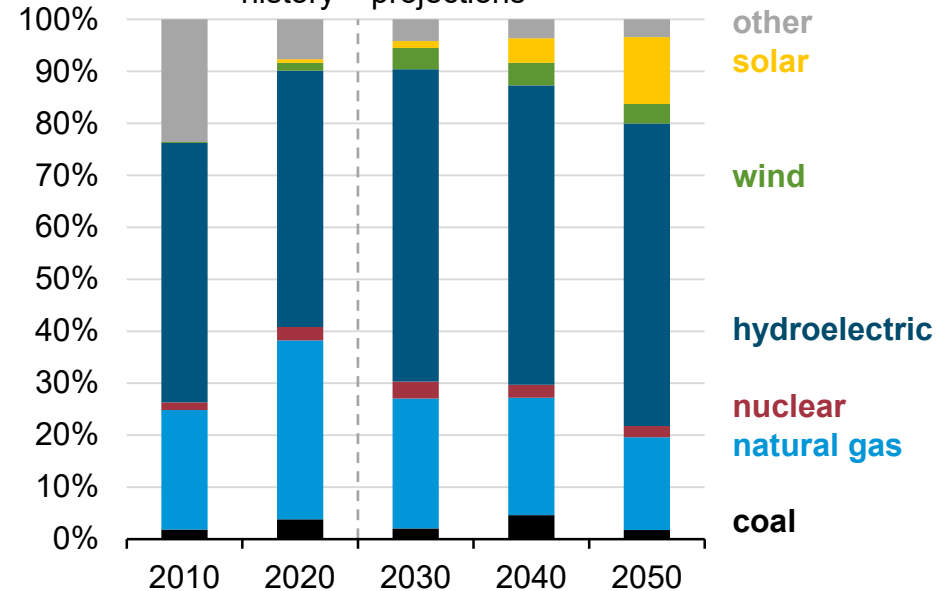
Net electricity generation by source, Other non-OECD Americas

trillion kilowatthours



Share of net electricity generation, Other non-OECD Americas

percentage

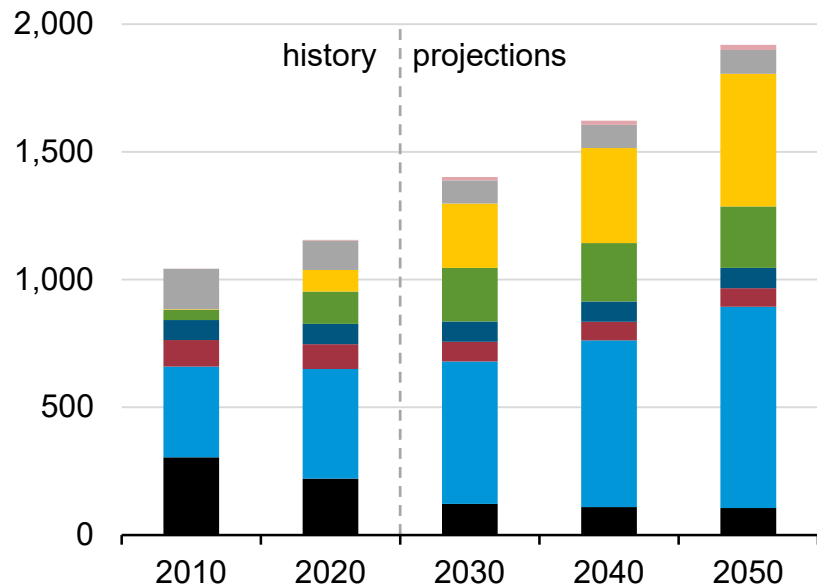




United States electric generating capacity by source

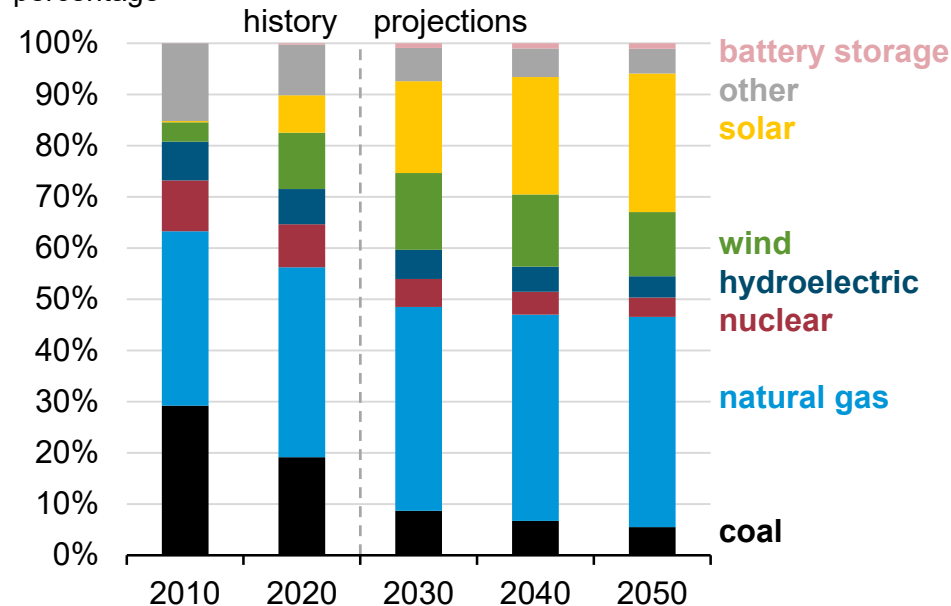
Installed electric generating capacity by source, United States

gigawatts



Share of installed electric generating capacity, United States

percentage

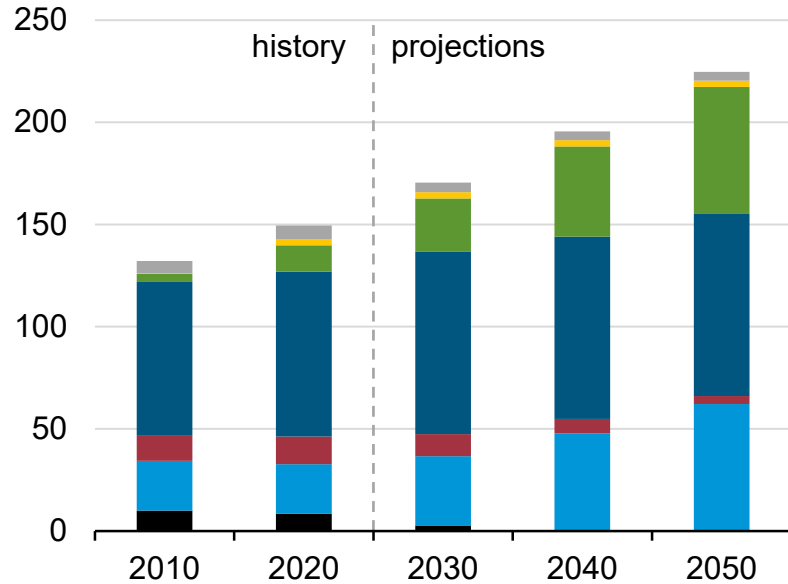




Canada electric generating capacity by source

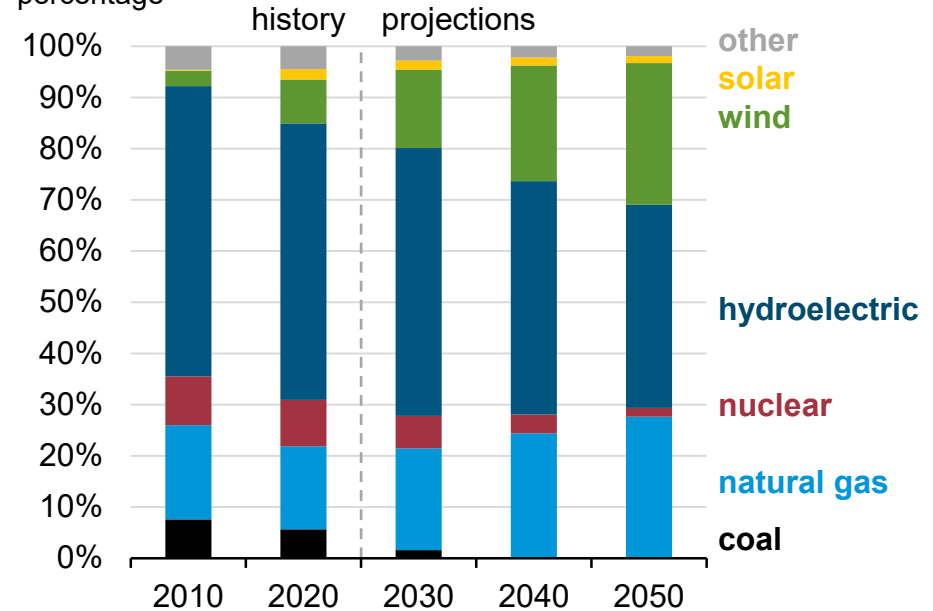
Installed electric generating capacity by source, Canada

gigawatts



Share of installed electric generating capacity, Canada

percentage

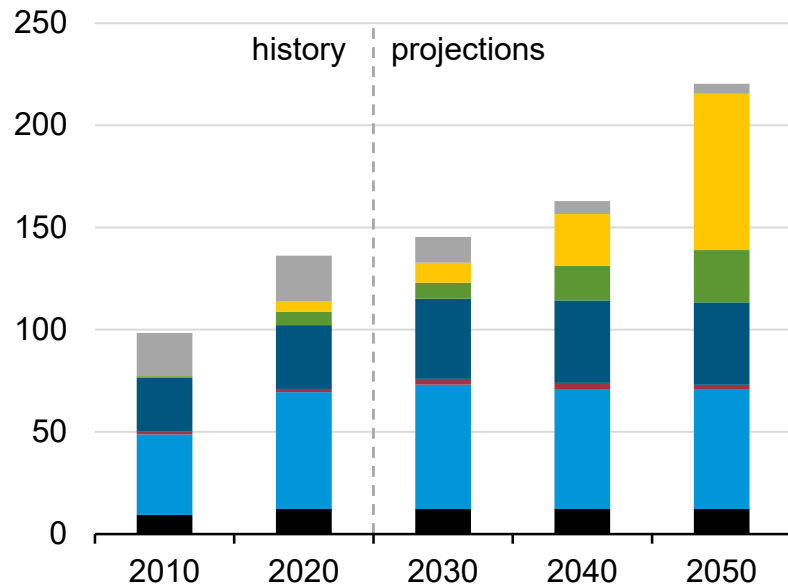




Mexico and other OECD Americas electric generating capacity by source

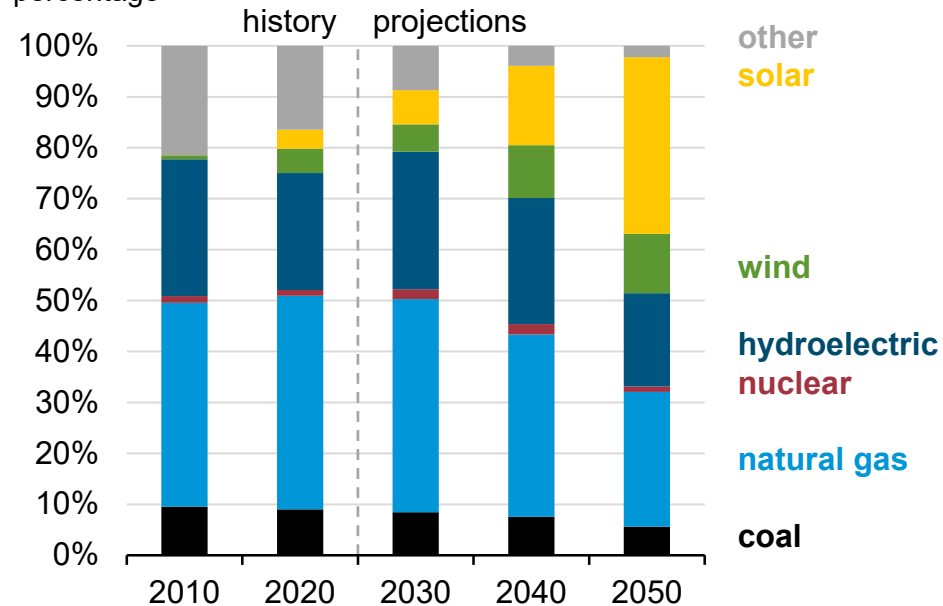
Installed electric generating capacity by source, Mexico and other OECD Americas

gigawatts



Share of installed electric generating capacity, Mexico and other OECD Americas

percentage

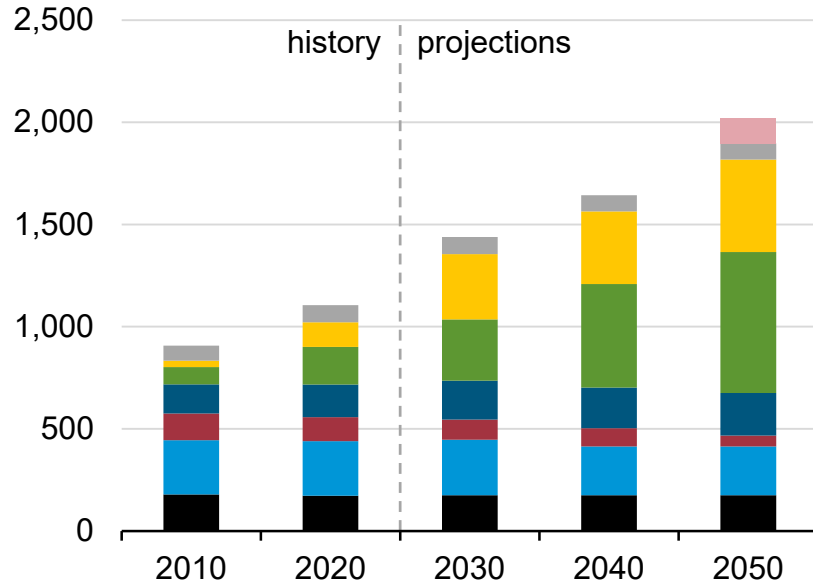




OECD Europe electric generating capacity by source

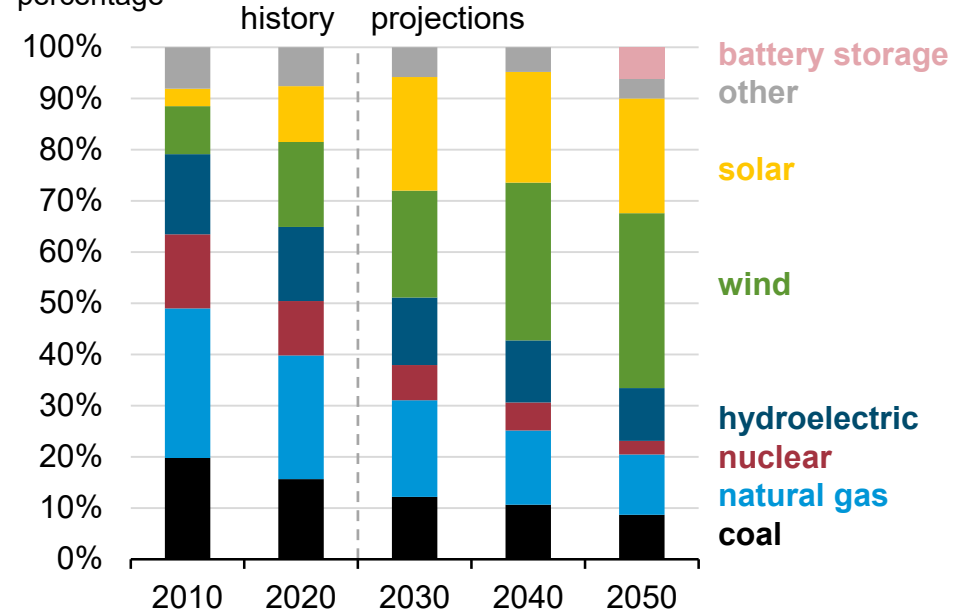
Installed electric generating capacity by source, OECD Europe

gigawatts



Share of installed electric generating capacity, OECD Europe

percentage

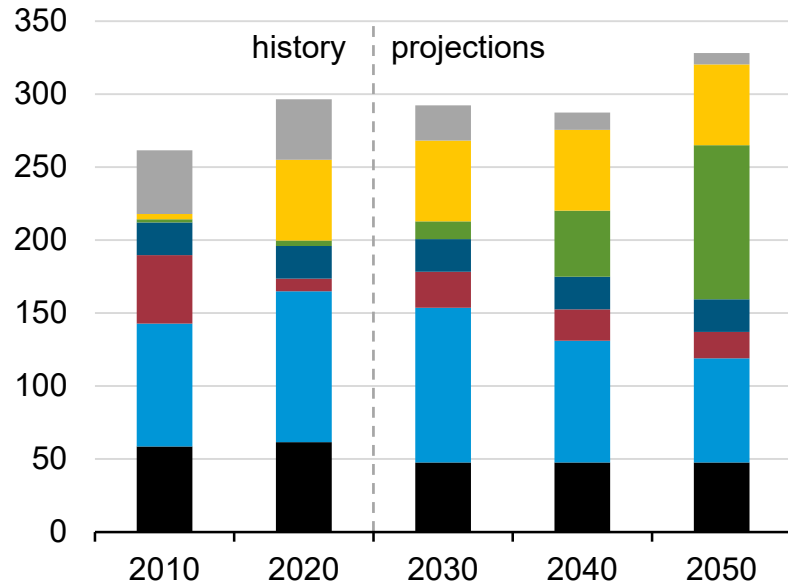




Japan electric generating capacity by source

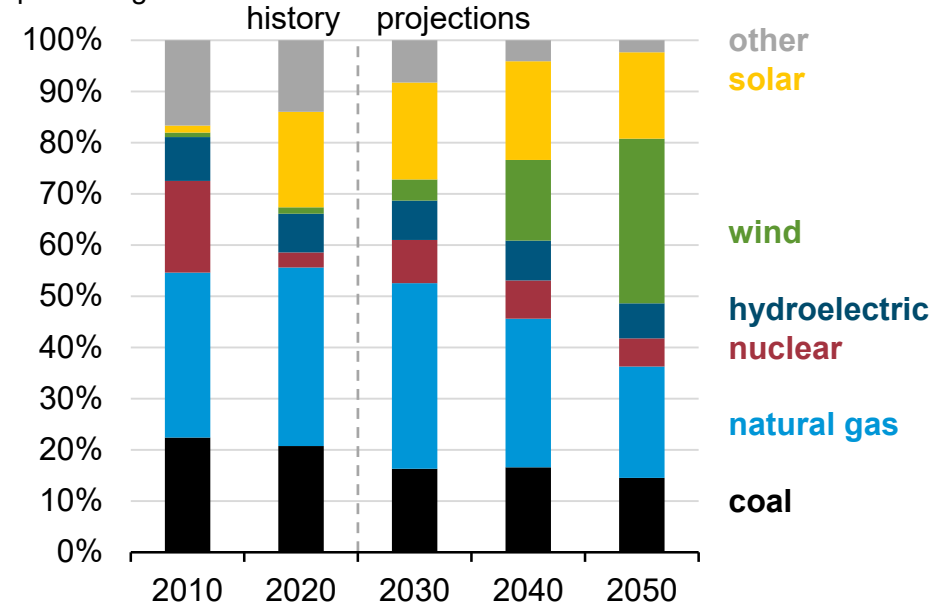
Installed electric generating capacity by source, Japan

gigawatts



Share of installed electric generating capacity, Japan

percentage

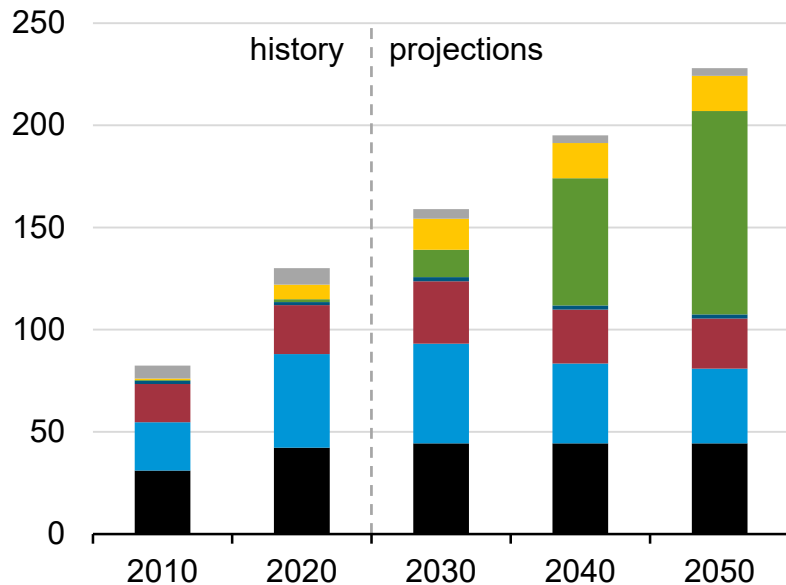




South Korea electric generating capacity by source

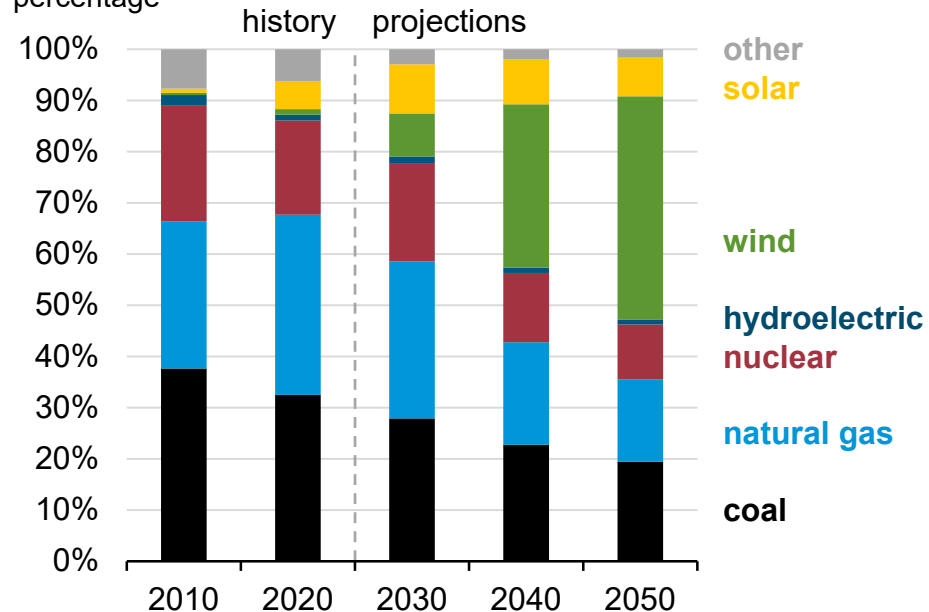
Installed electric generating capacity by source, South Korea

gigawatts



Share of installed electric generating capacity, South Korea

percentage

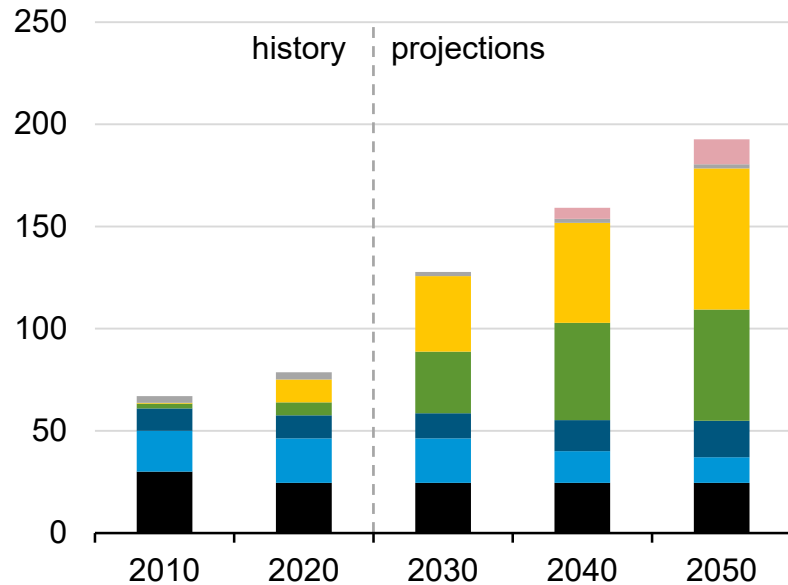




Australia and New Zealand electric generating capacity by source

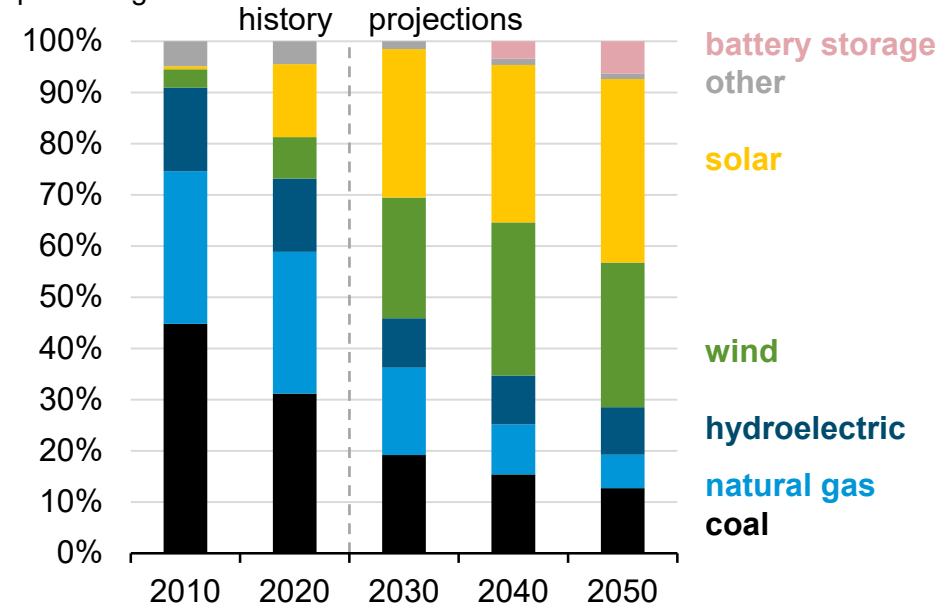
Installed electric generating capacity by source, Australia and New Zealand

gigawatts



Share of installed electric generating capacity, Australia and New Zealand

percentage

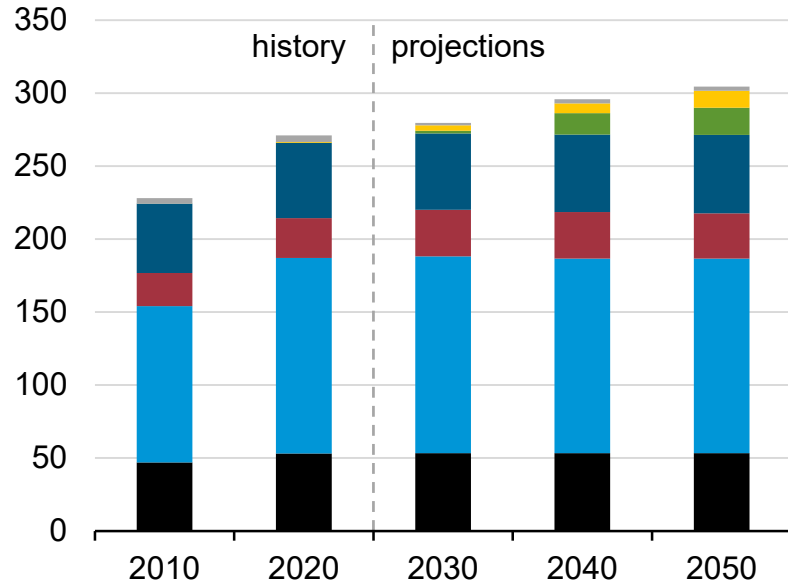




Russia electric generating capacity by source

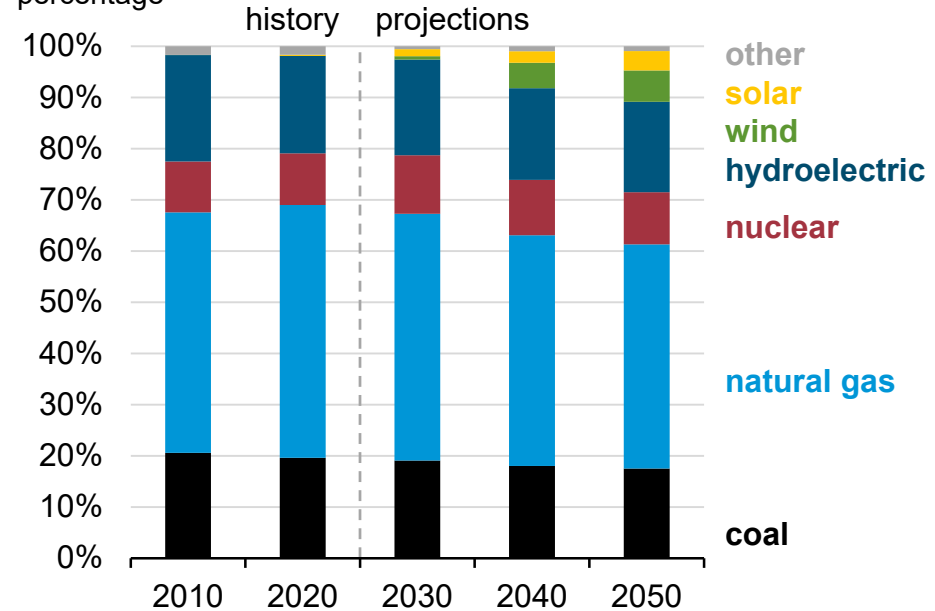
Installed electric generating capacity by source, Russia

gigawatts



Share of installed electric generating capacity, Russia

percentage

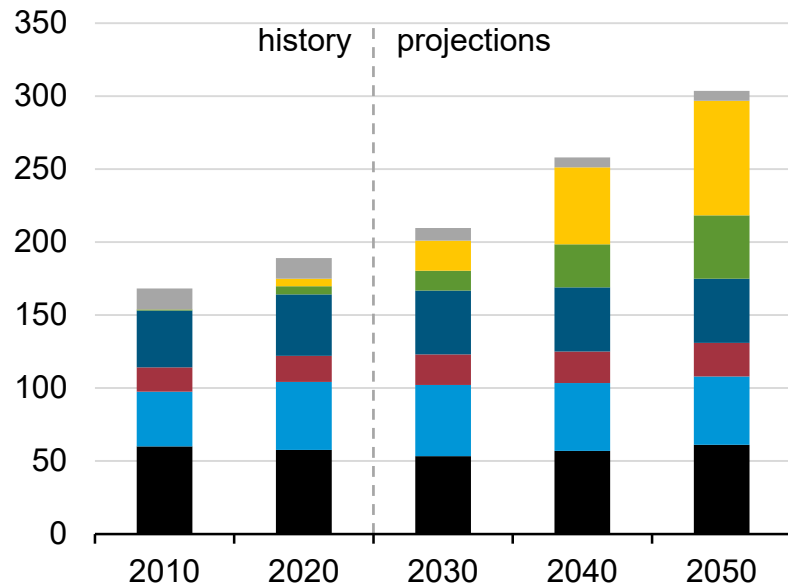




Other non-OECD Europe and Eurasia electric generating capacity by source

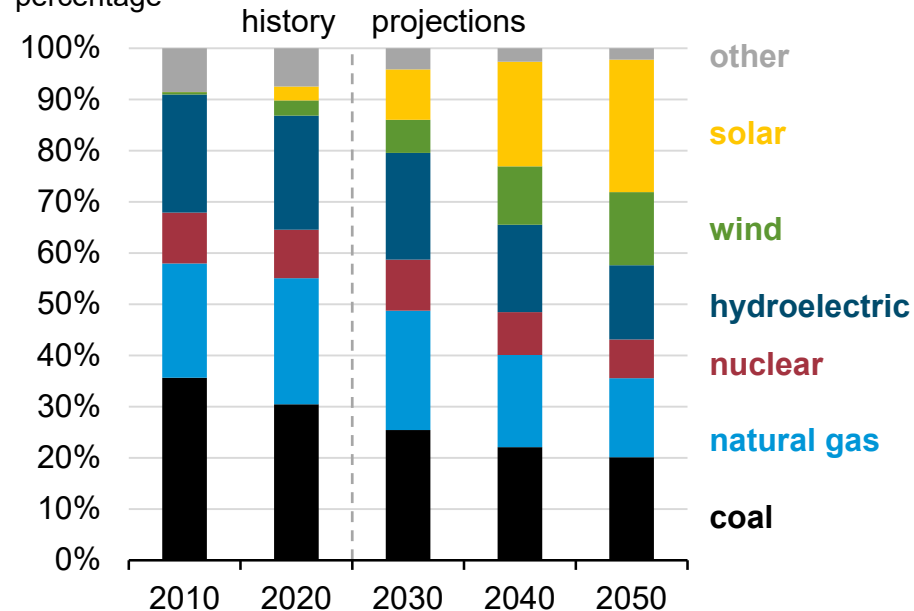
Installed electric generating capacity by source, Other non-OECD Europe and Eurasia

gigawatts



Share of installed electric generating capacity, Other non-OECD Europe and Eurasia

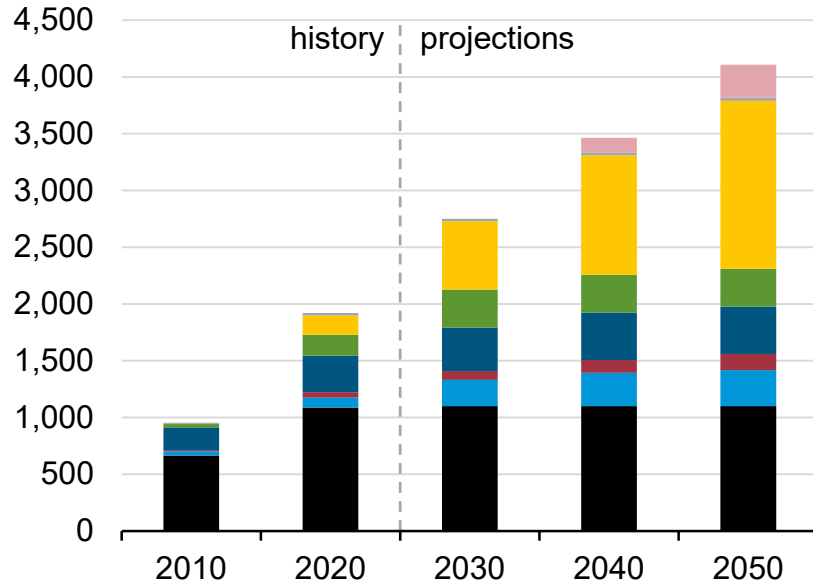
percentage



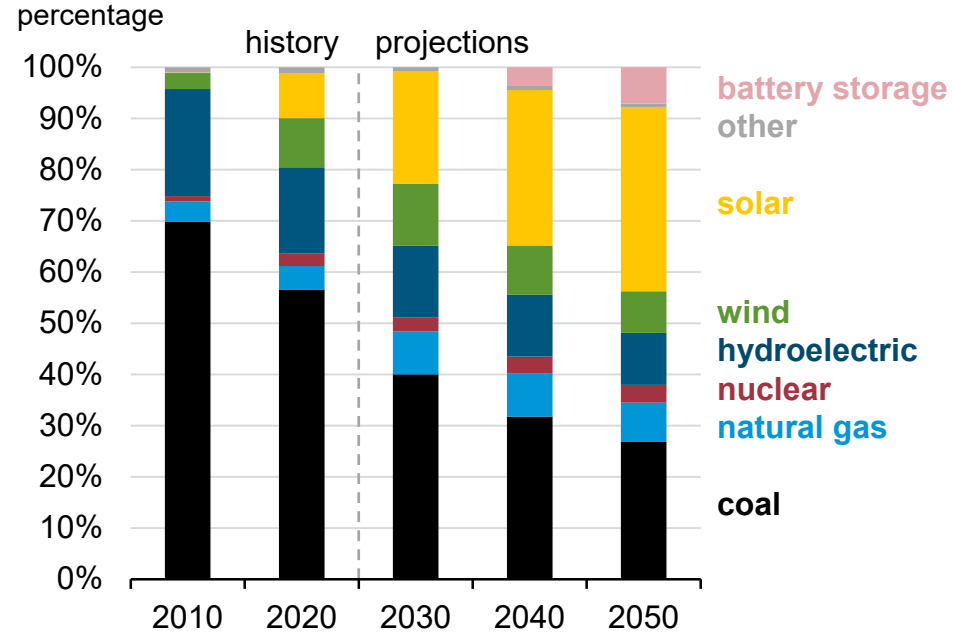


China electric generating capacity by source

Installed electric generating capacity by source, China
gigawatts



Share of installed electric generating capacity, China
percentage

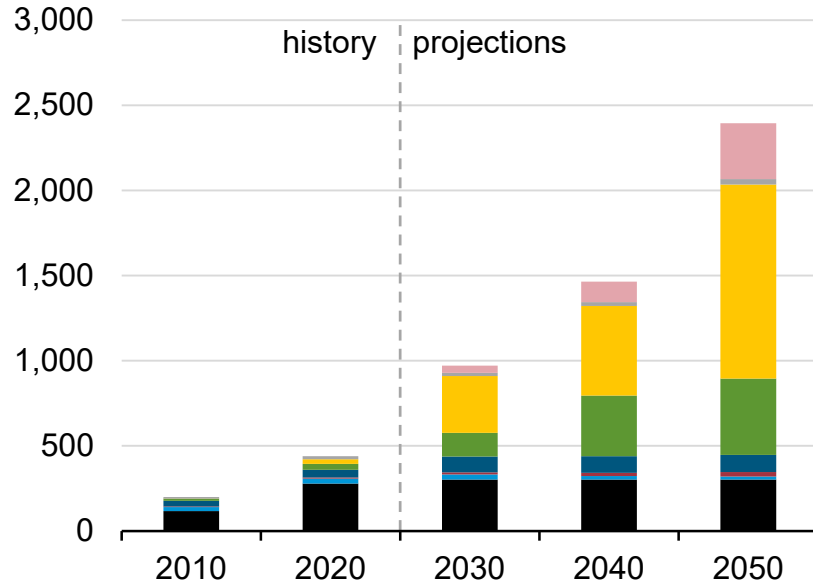




India electric generating capacity by source

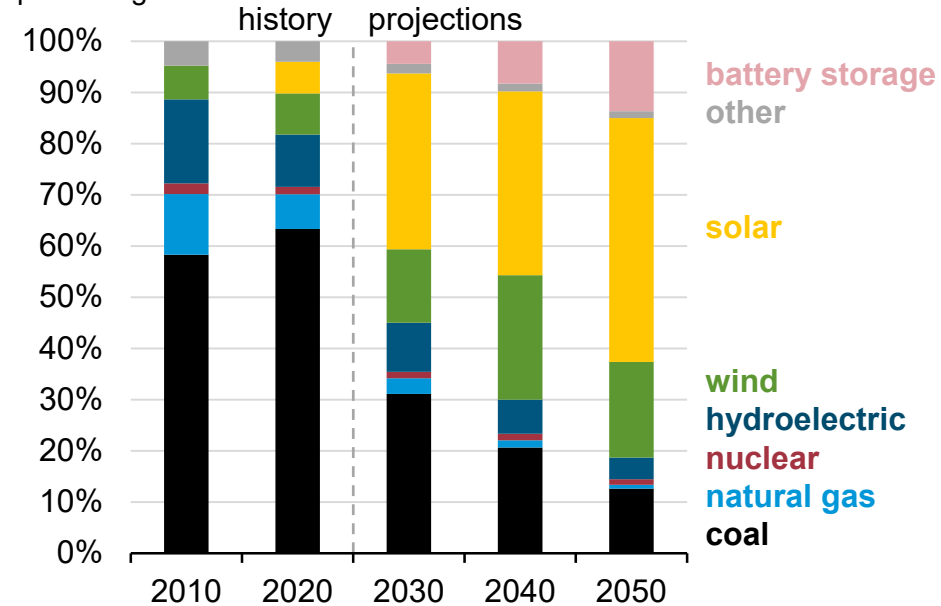
Installed electric generating capacity by source, India

gigawatts



Share of installed electric generating capacity, India

percentage

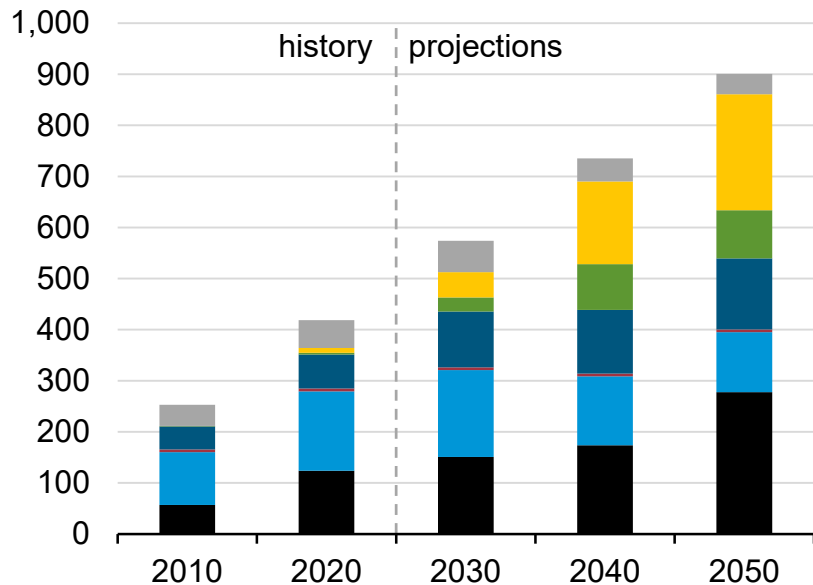




Other non-OECD Asia electric generating capacity by source

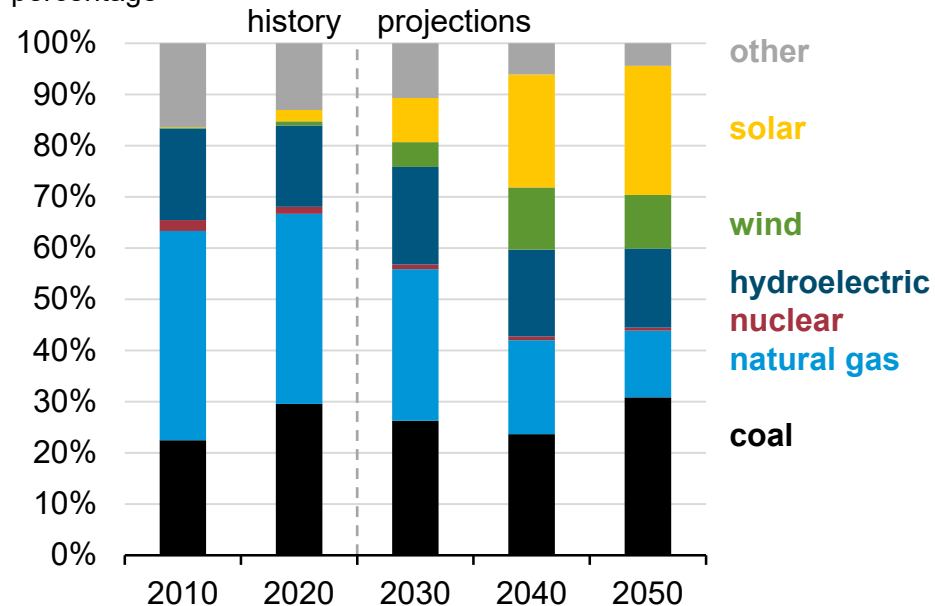
Installed electric generating capacity by source, Other non-OECD Asia

gigawatts



Share of installed electric generating capacity, Other non-OECD Asia

percentage

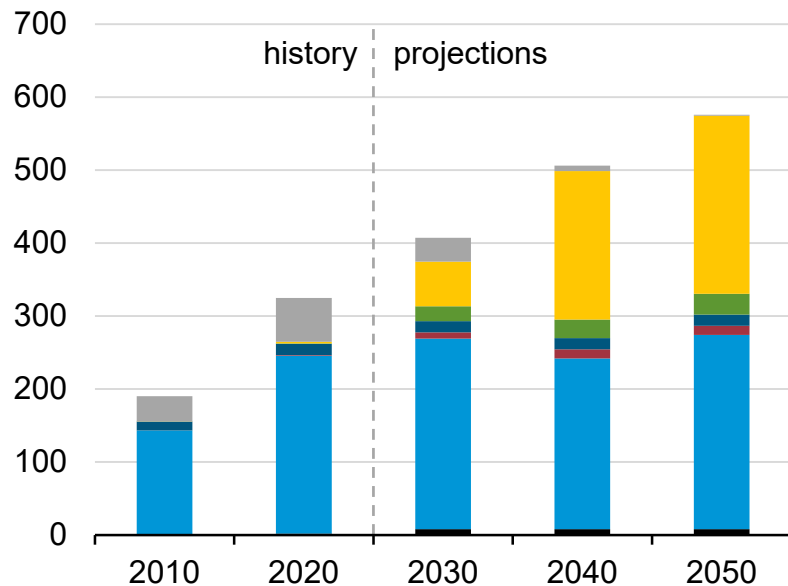




Middle East electric generating capacity by source

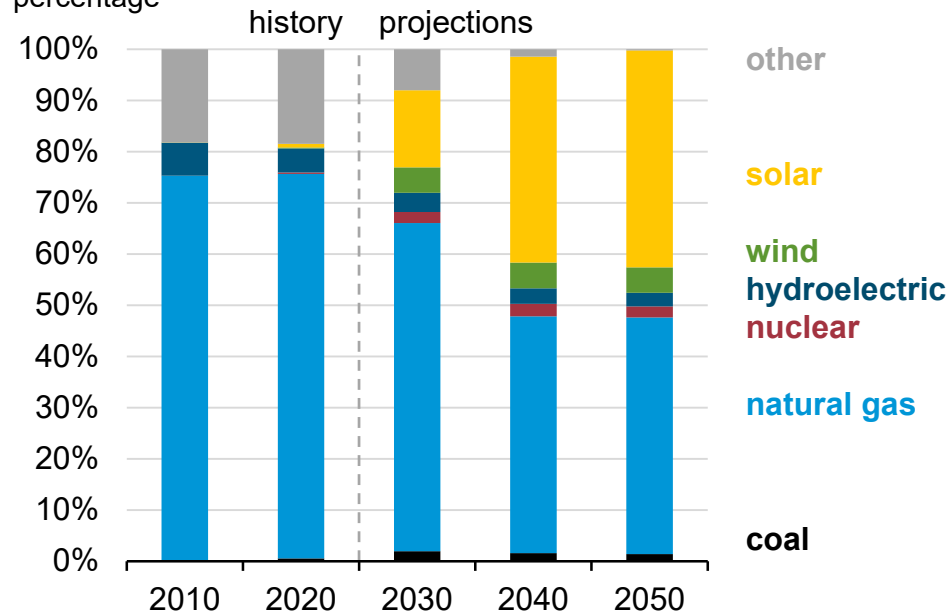
Installed electric generating capacity by source, Middle East

gigawatts



Share of installed electric generating capacity, Middle East

percentage

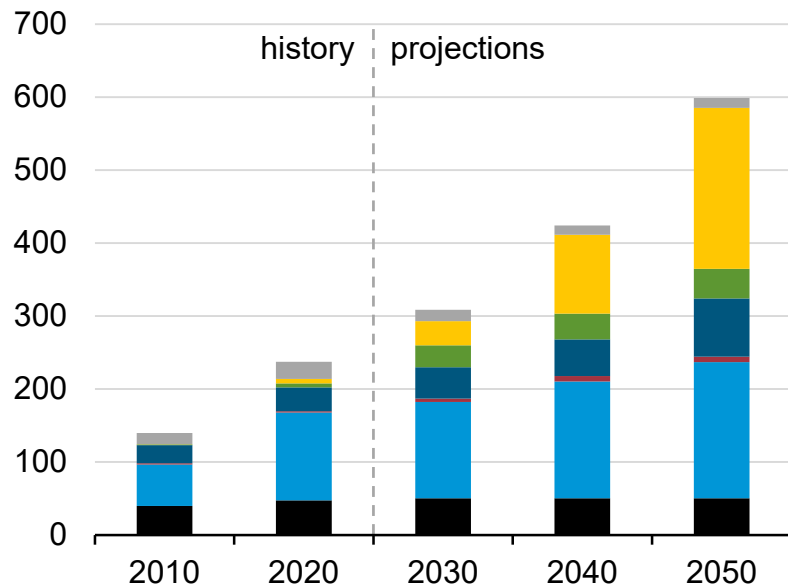




Africa electric generating capacity by source

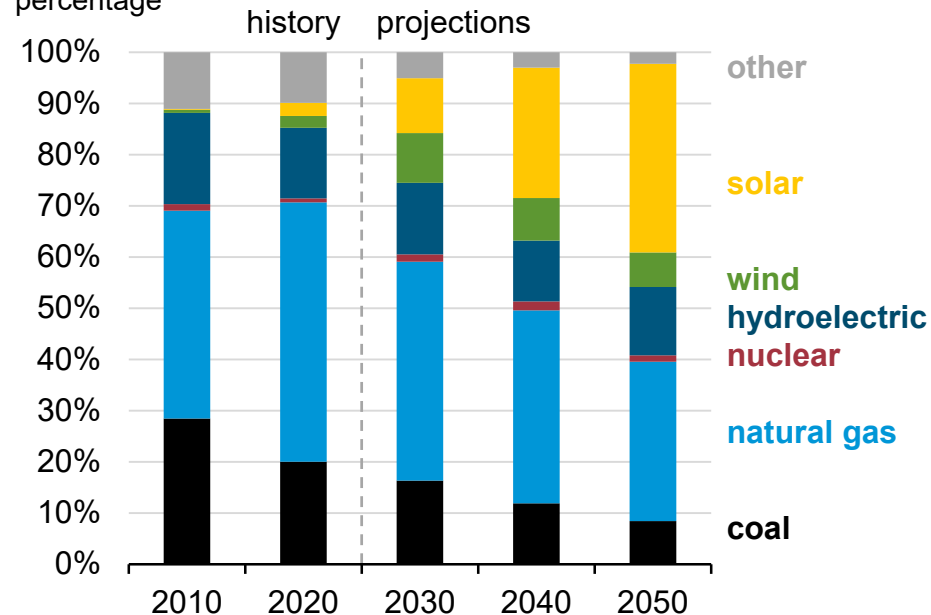
Installed electric generating capacity by source, Africa

gigawatts



Share of installed electric generating capacity, Africa

percentage

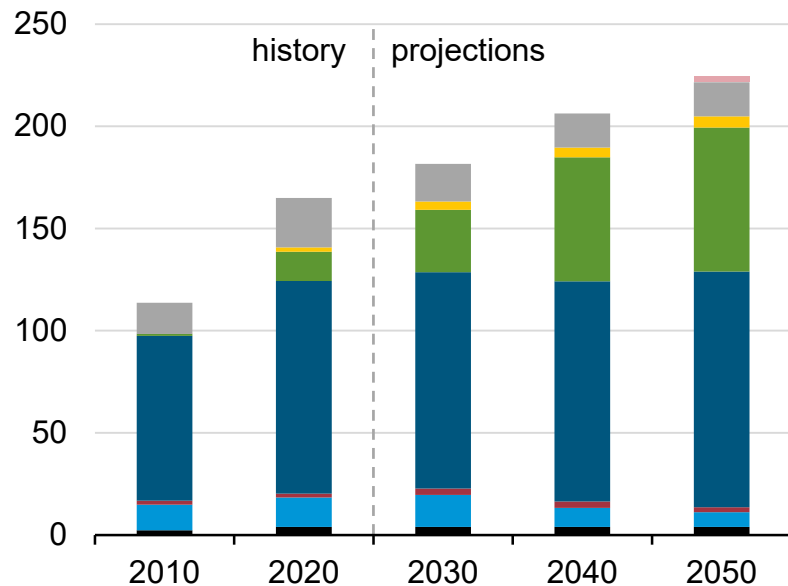




Brazil electric generating capacity by source

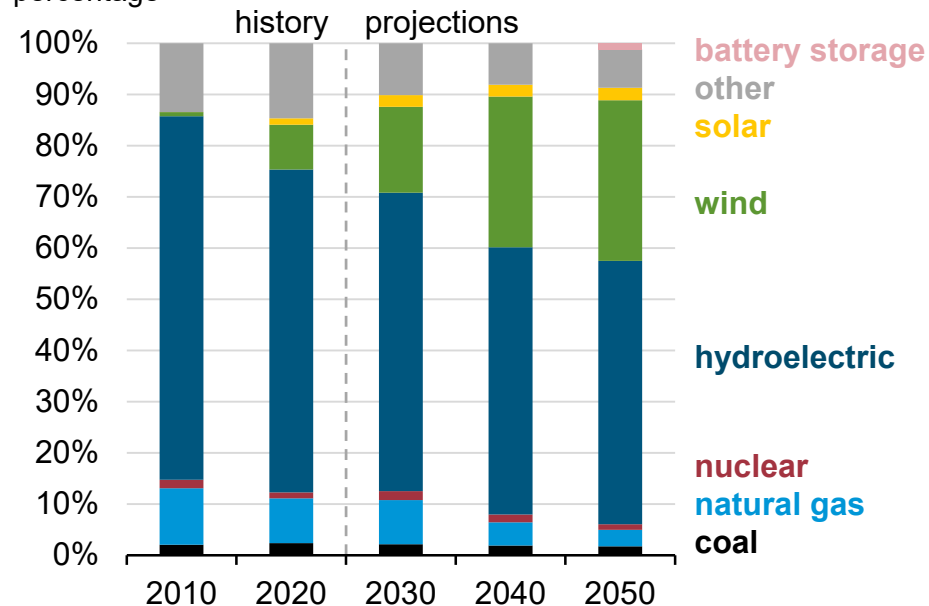
Installed electric generating capacity by source, Brazil

gigawatts



Share of installed electric generating capacity, Brazil

percentage

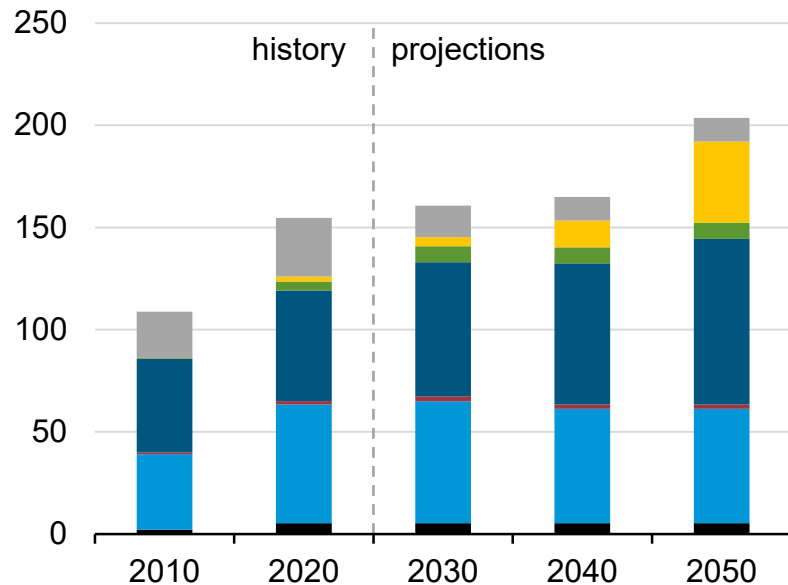




Other non-OECD Americas electric generating capacity by source

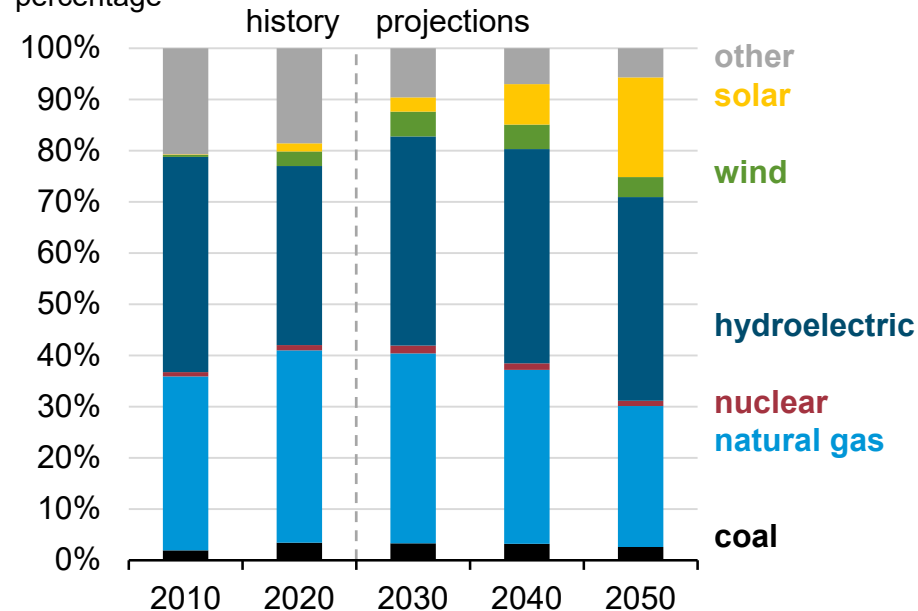
Installed electric generating capacity by source, Other non-OECD Americas

gigawatts



Share of installed electric generating capacity, Other non-OECD Americas

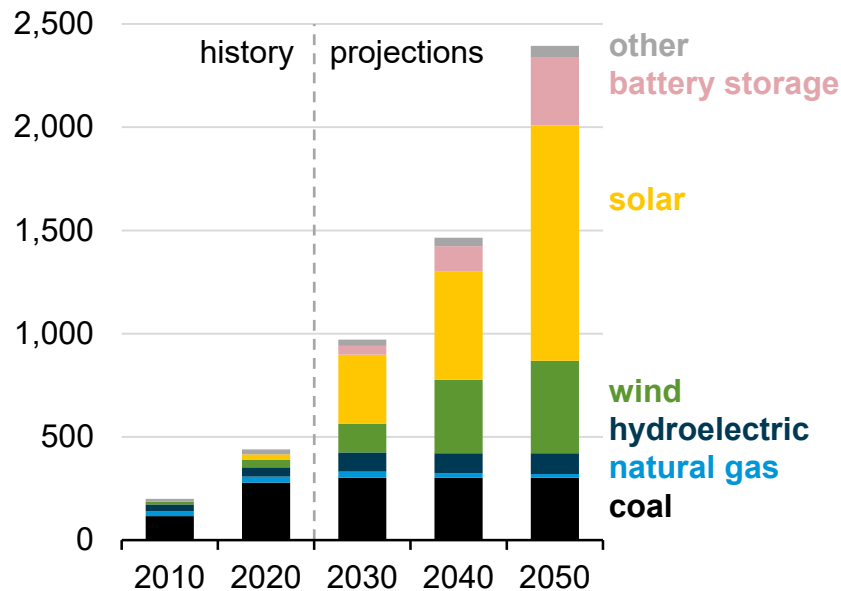
percentage



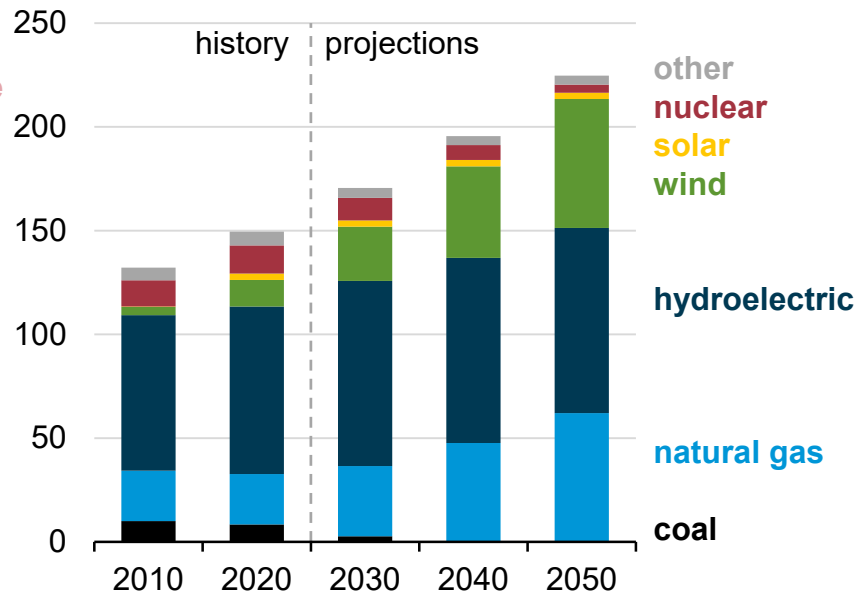


India and Canada electric generating capacity by source

Installed electric generating capacity, India
gigawatts



Installed electric generating capacity, Canada
gigawatts





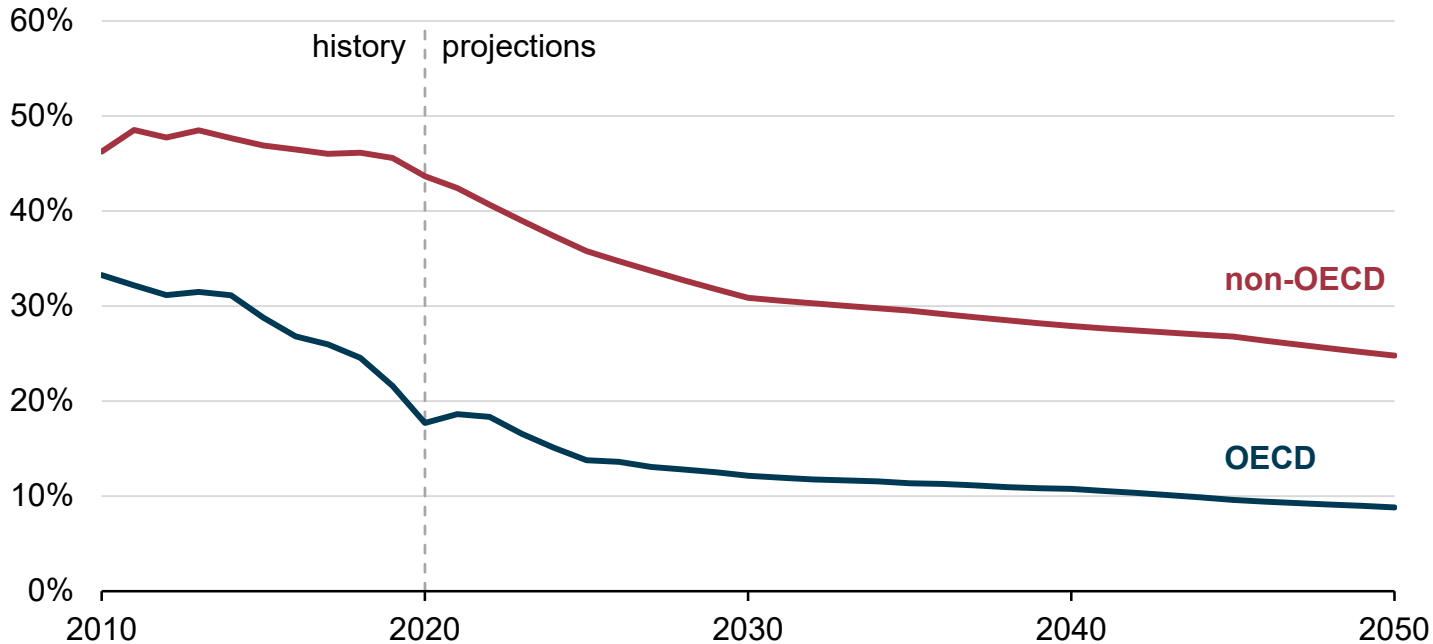
Coal



OECD and non-OECD coal share of electric power

Coal share of electric power generation

percentage

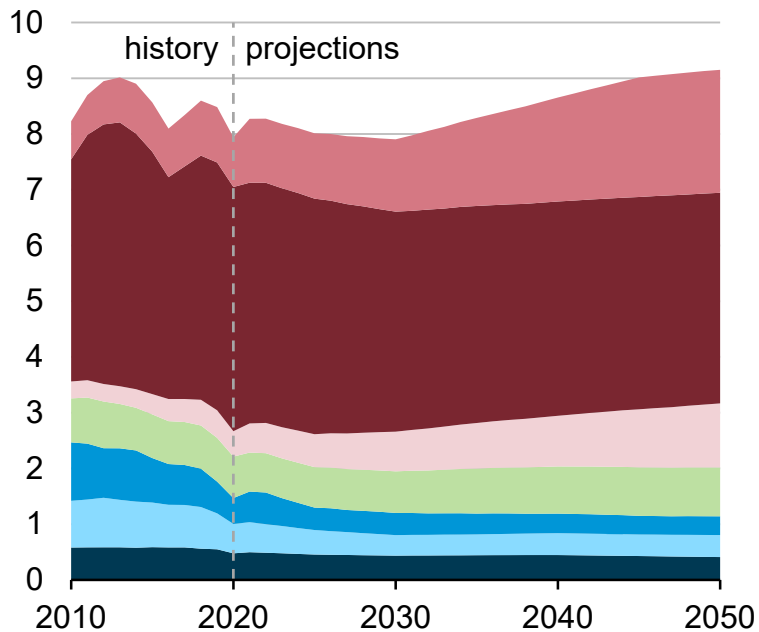




World coal consumption and production

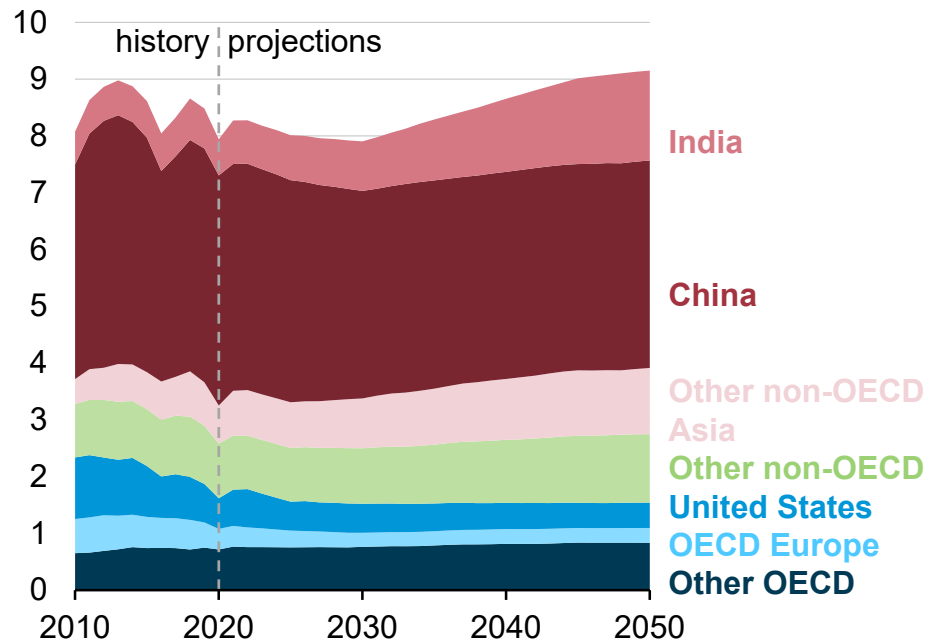
World coal consumption

billion short tons



World coal production

billion short tons

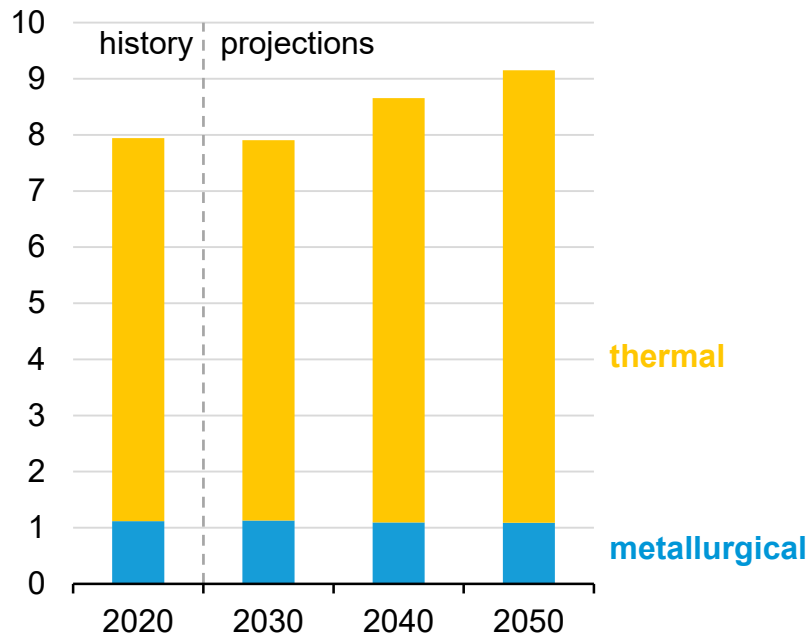




World coal consumption and trade by subtypes

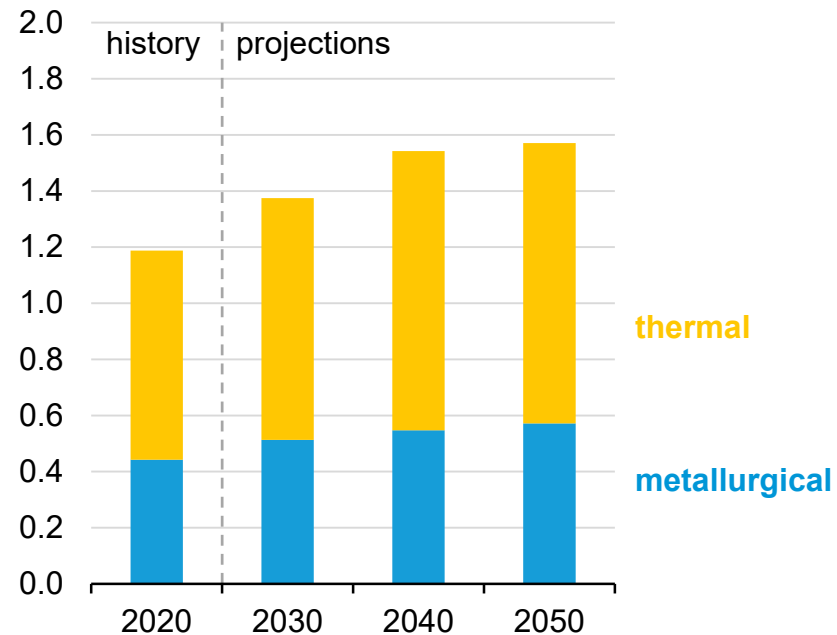
World coal consumption by subtypes

billion short tons



World coal trade by subtypes

billion short tons

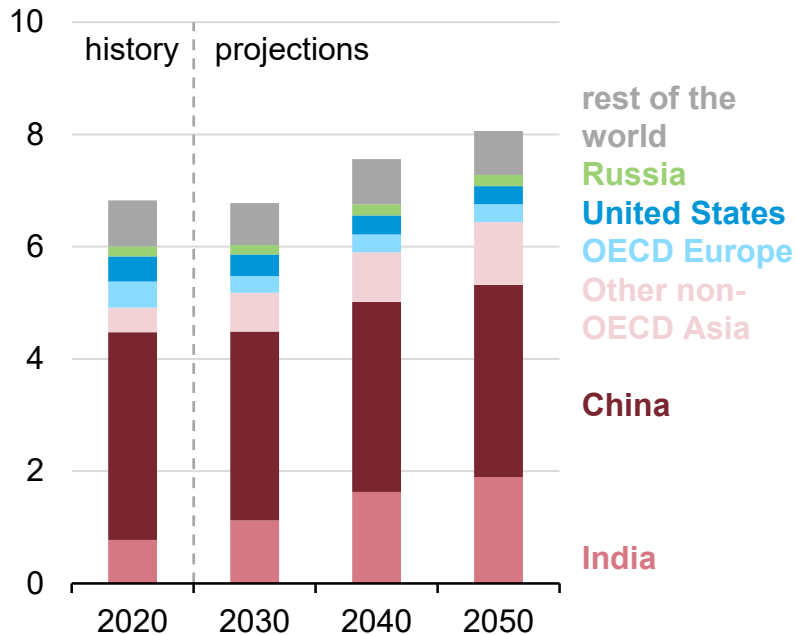




World thermal coal consumption and production

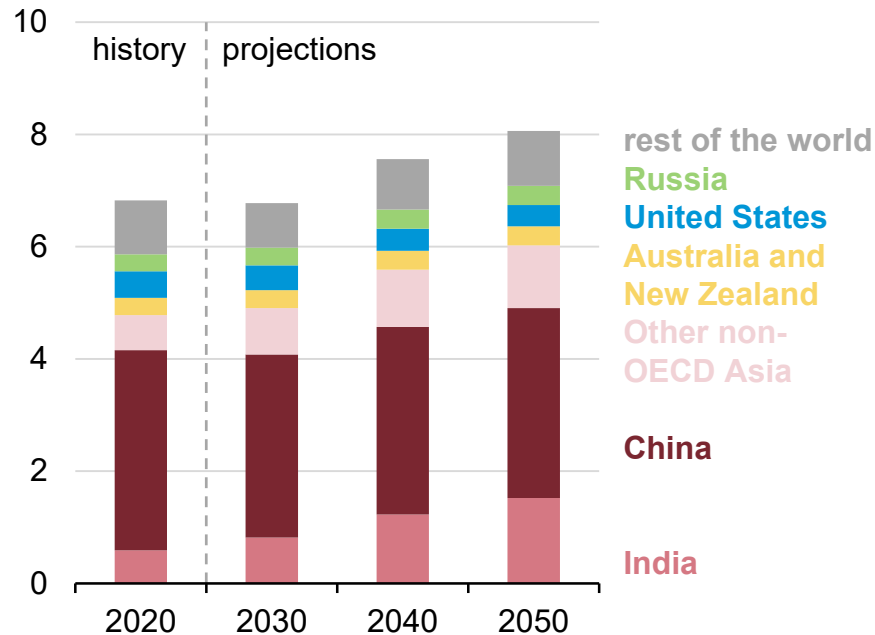
Thermal coal consumption

billion short tons



Thermal coal production

billion short tons

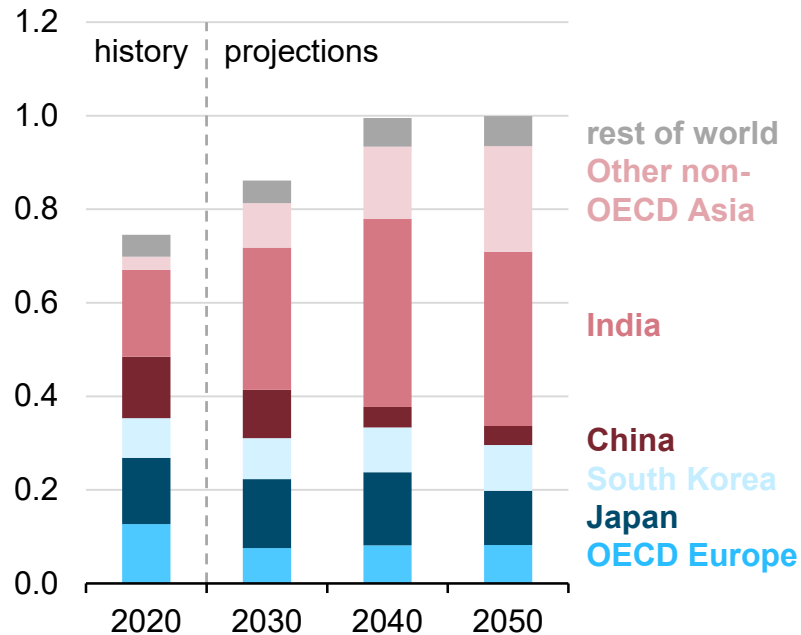




World thermal coal imports and exports

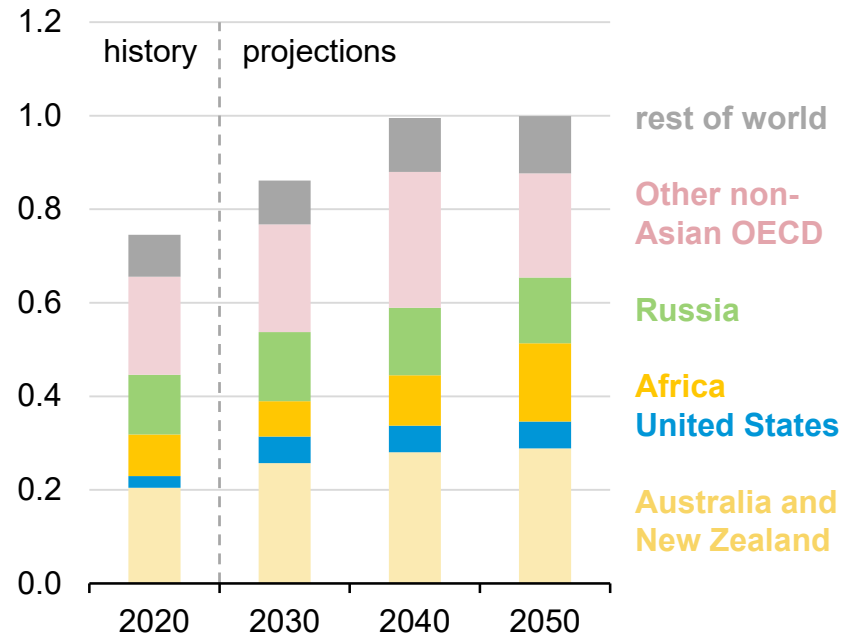
Thermal coal imports

billion short tons



Thermal coal exports

billion short tons

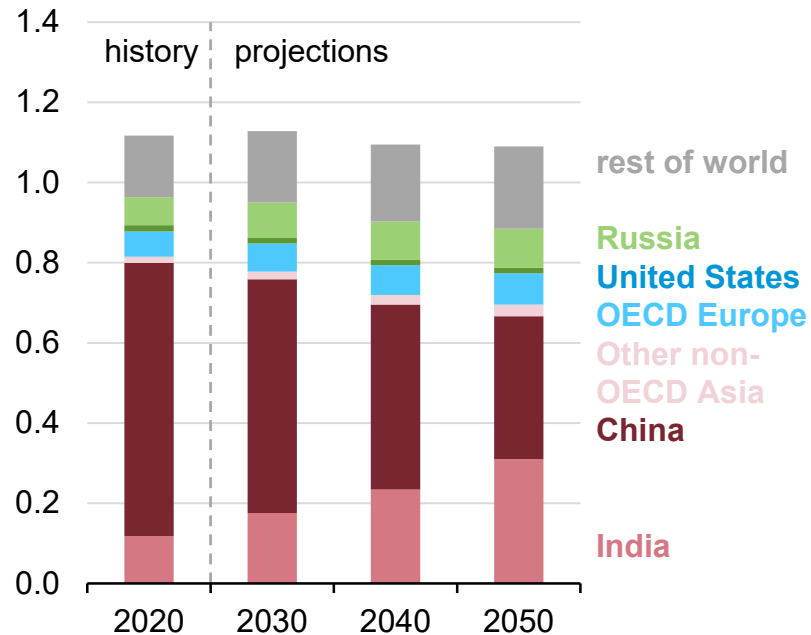




World metallurgical coal consumption and production

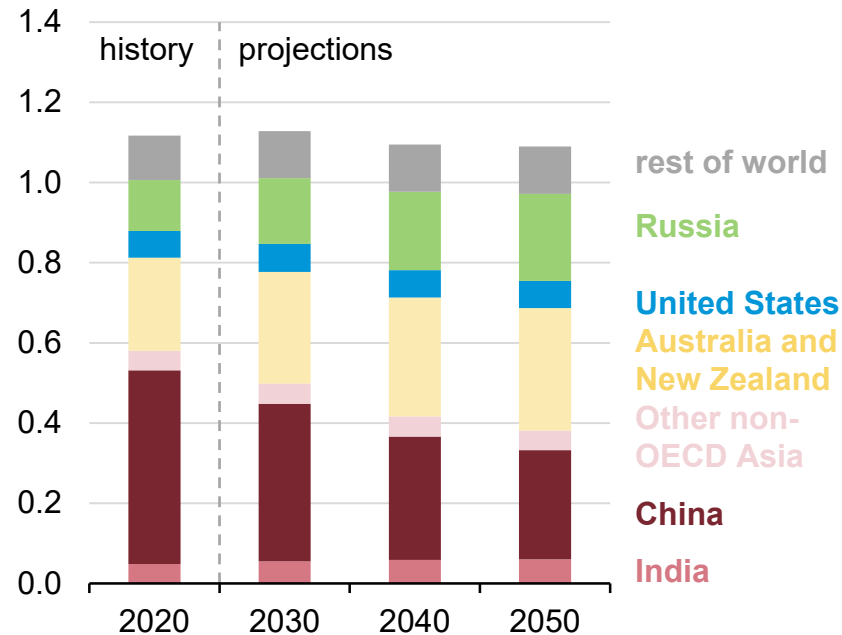
Metallurgical coal consumption

billion short tons



Metallurgical coal production

billion short tons

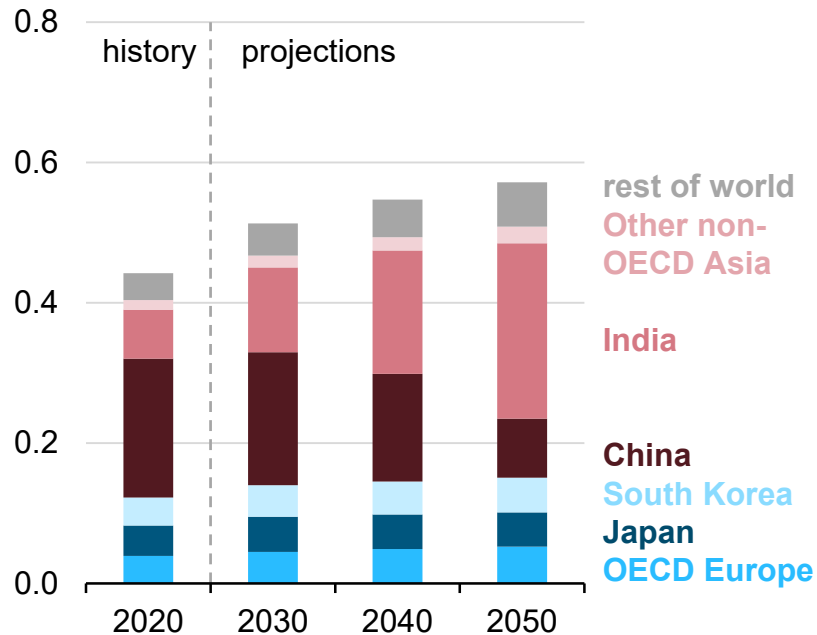




World metallurgical coal imports and exports

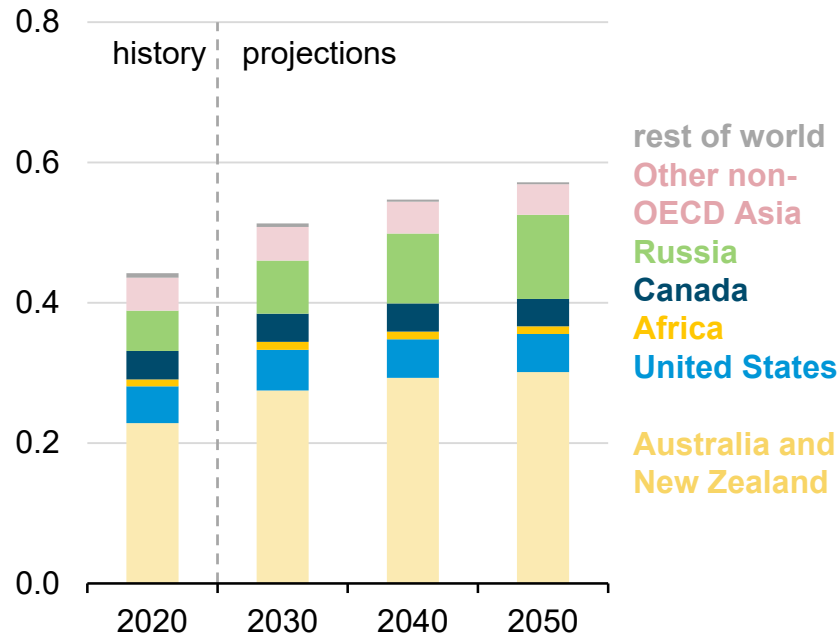
Metallurgical coal imports

billion short tons



Metallurgical coal exports

billion short tons

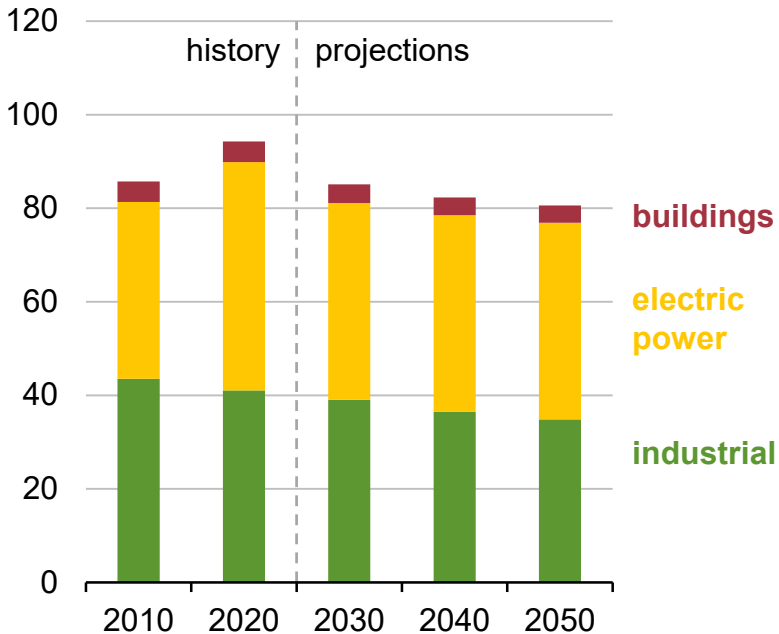




China coal consumption and supply

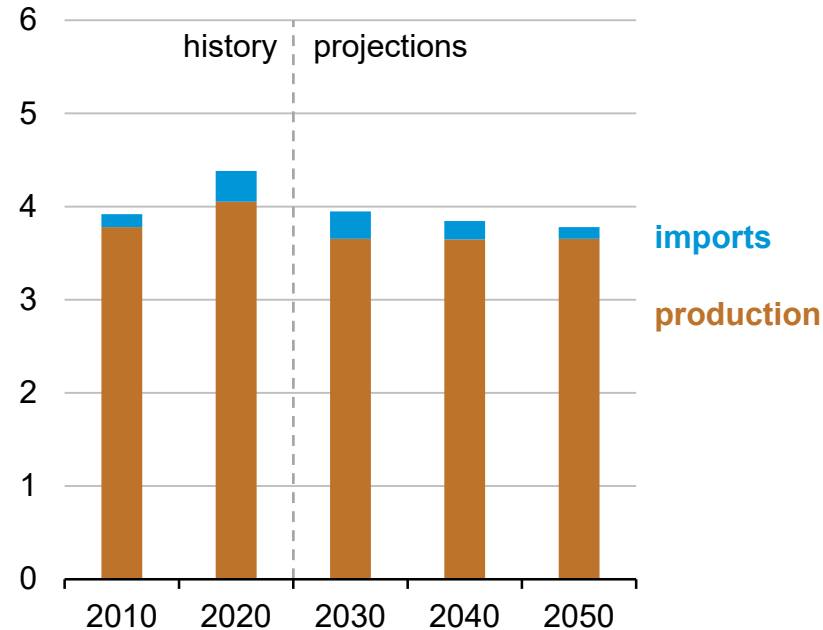
Coal consumption in China

quadrillion British thermal units



Coal supply in China

billion short tons

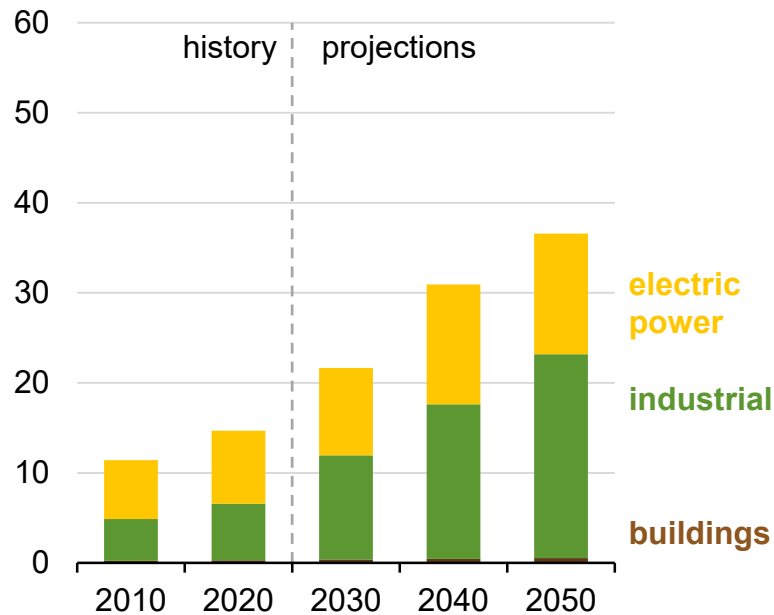




India coal and power sector consumption

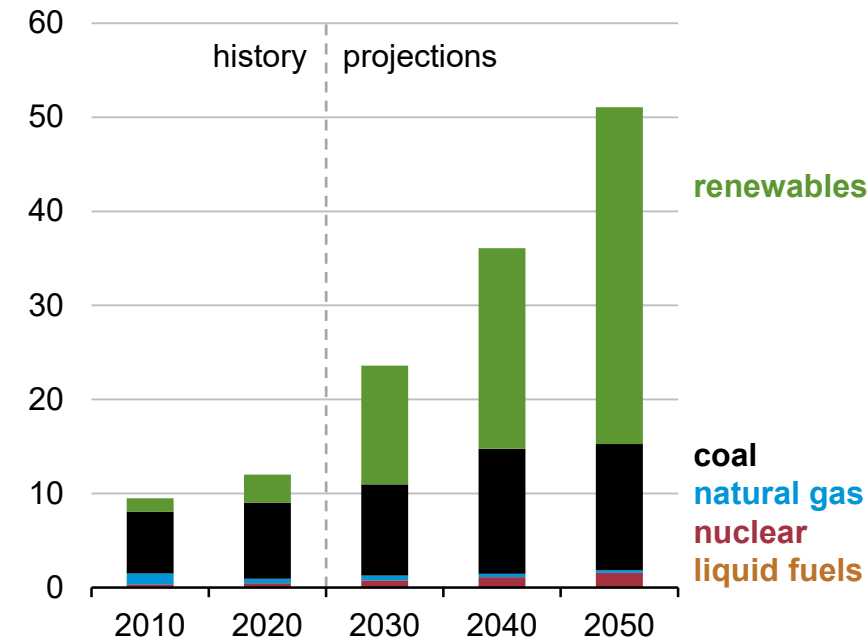
Coal consumption by sector, India

quadrillion British thermal units



Power sector energy consumption by source, India

quadrillion British thermal units





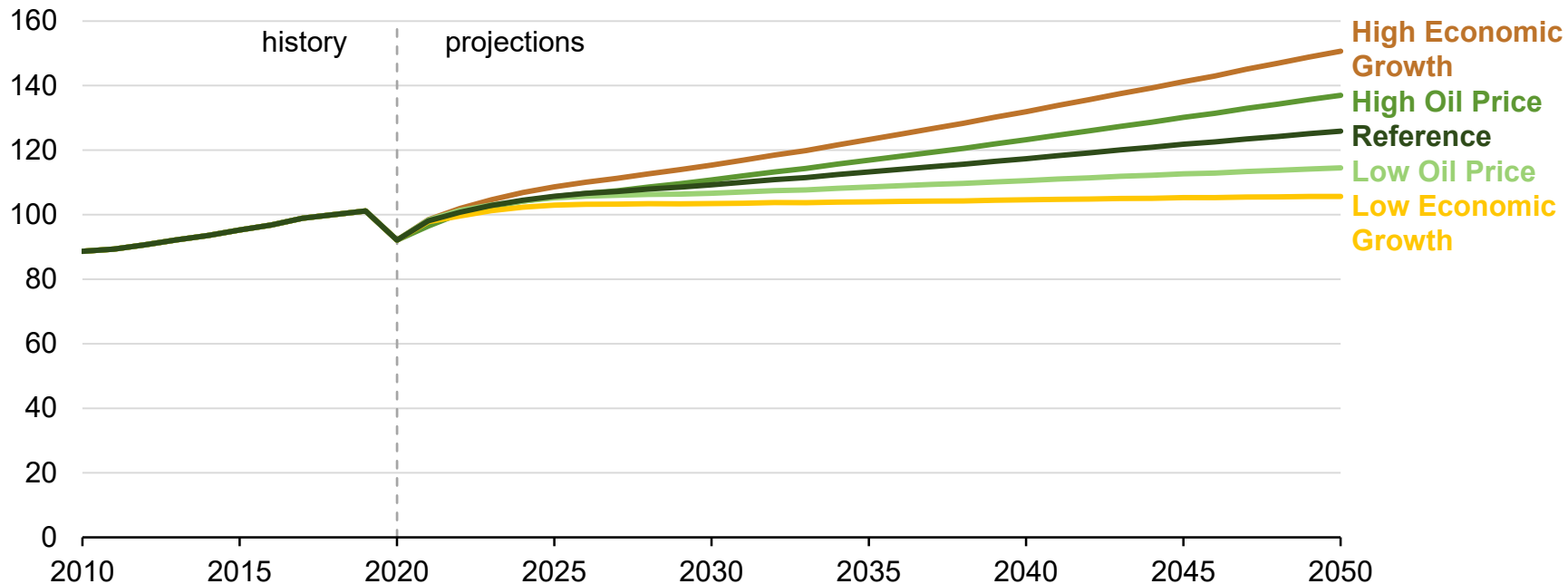
Petroleum and other
liquids



Liquid fuels consumption across cases

World liquid fuels consumption

million barrels per day

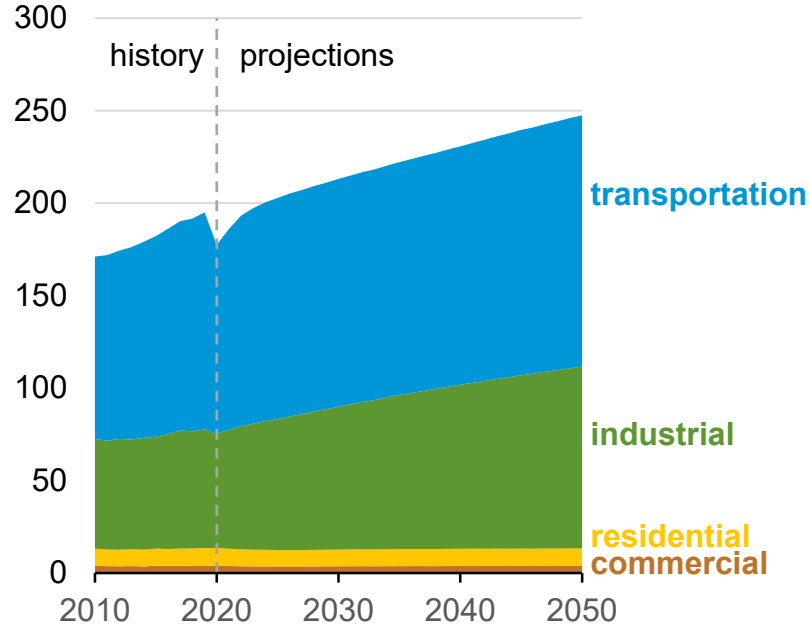




Liquid fuels consumption by sector and region

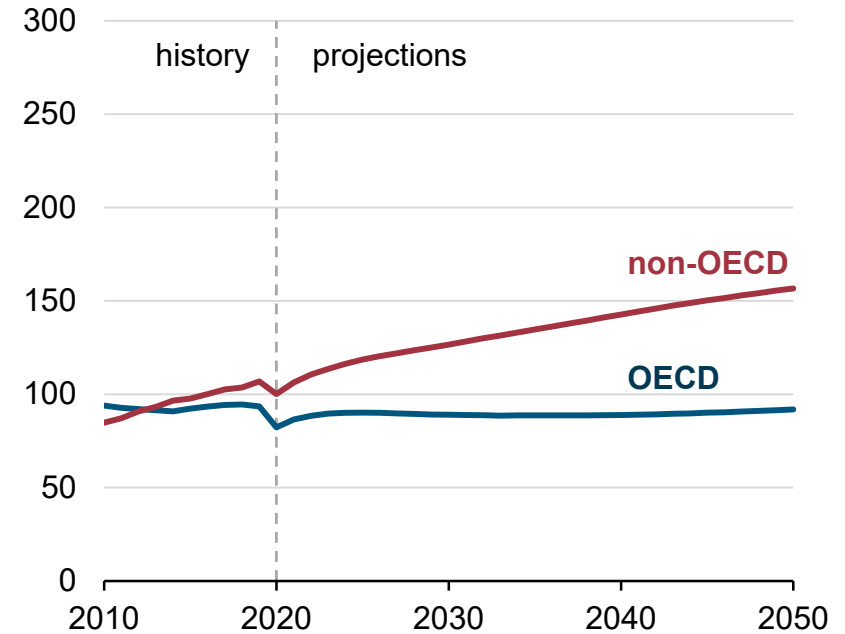
Petroleum and other liquid fuels consumption

quadrillion British thermal units



Petroleum and other liquid fuels consumption

quadrillion British thermal units

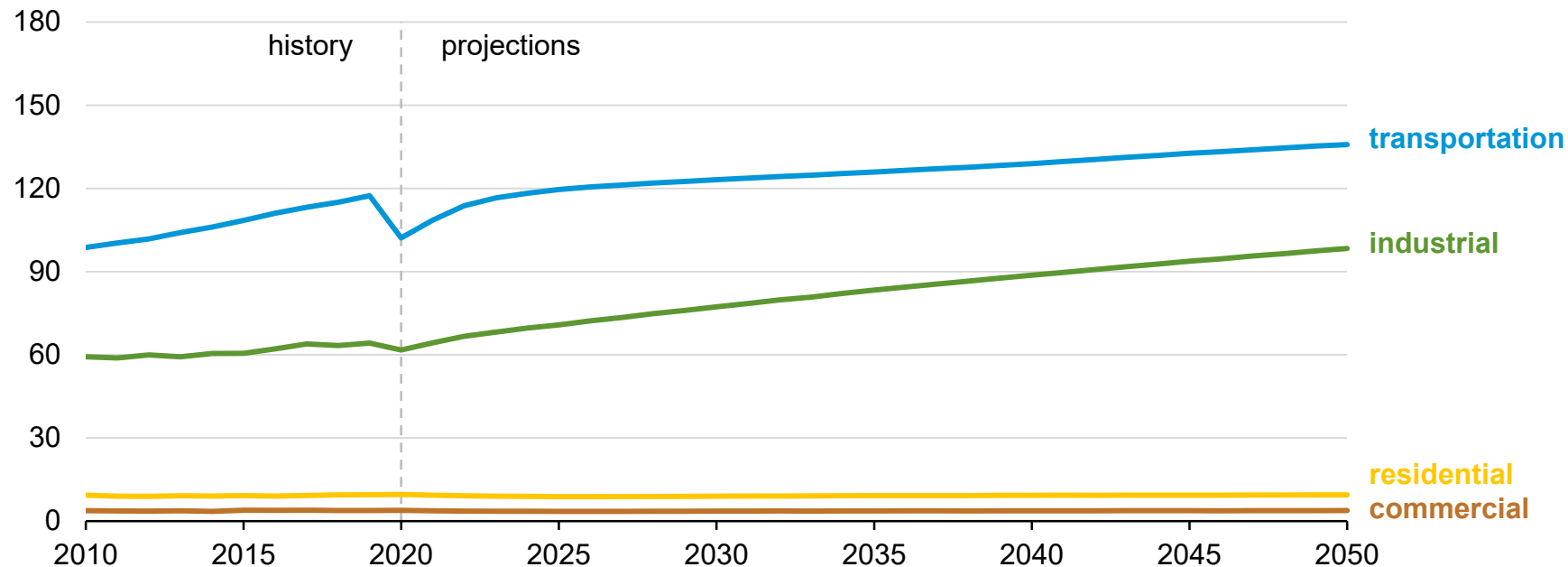




Petroleum and other liquids consumption

End-use sector liquid fuels consumption, world

quadrillion British thermal units

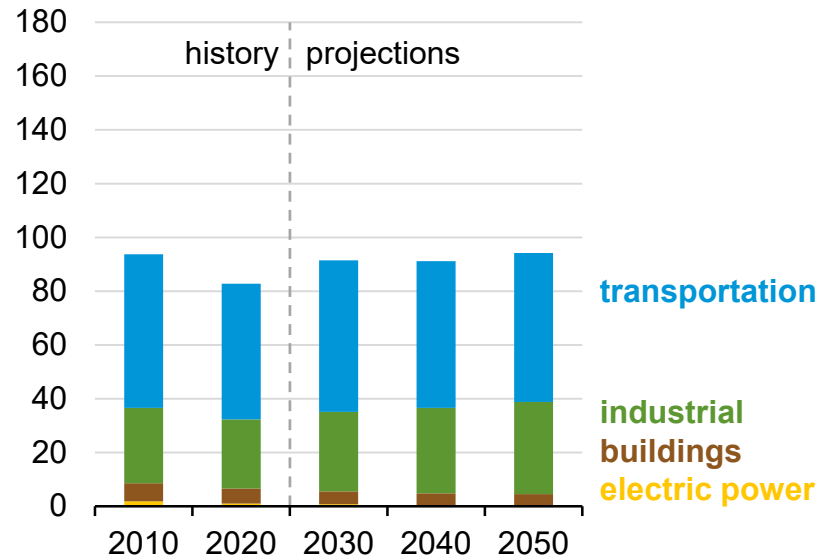




OECD and non-OECD liquid fuels consumption by sector

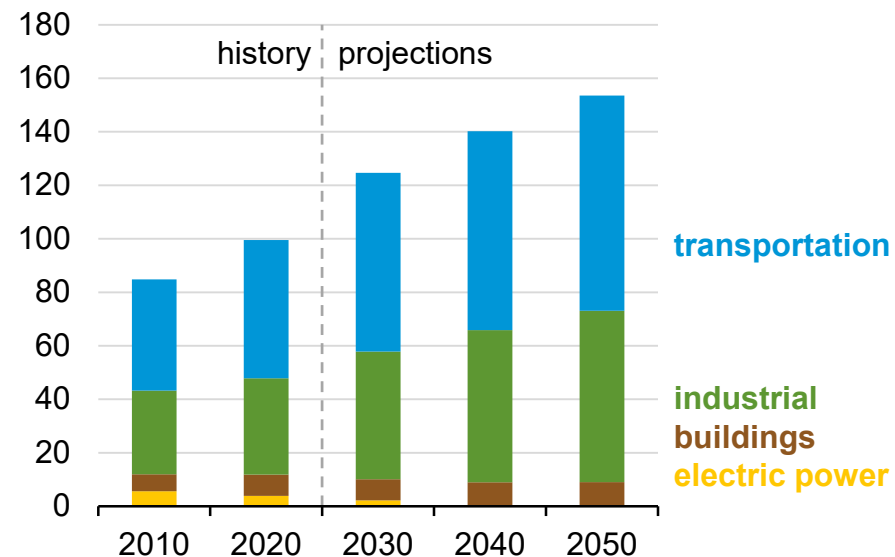
Refined petroleum and other liquids consumption by sector, OECD

quadrillion British thermal units



Refined petroleum and other liquids consumption by sector, non-OECD

quadrillion British thermal units

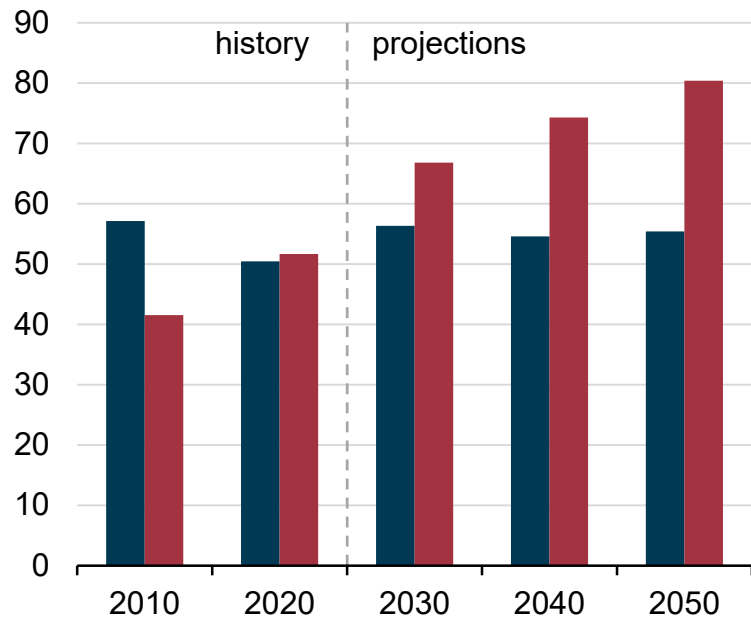




OECD and non-OECD liquid fuels consumption in the transportation and industrial sectors

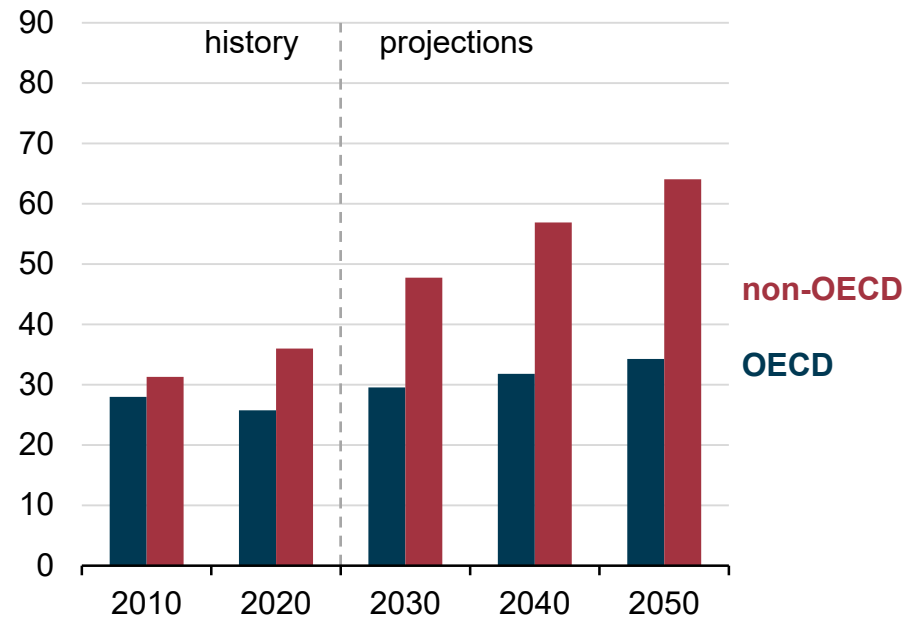
Refined petroleum and other liquids consumption, transportation

quadrillion British thermal units



Refined petroleum and other liquids consumption, industrial

quadrillion British thermal units

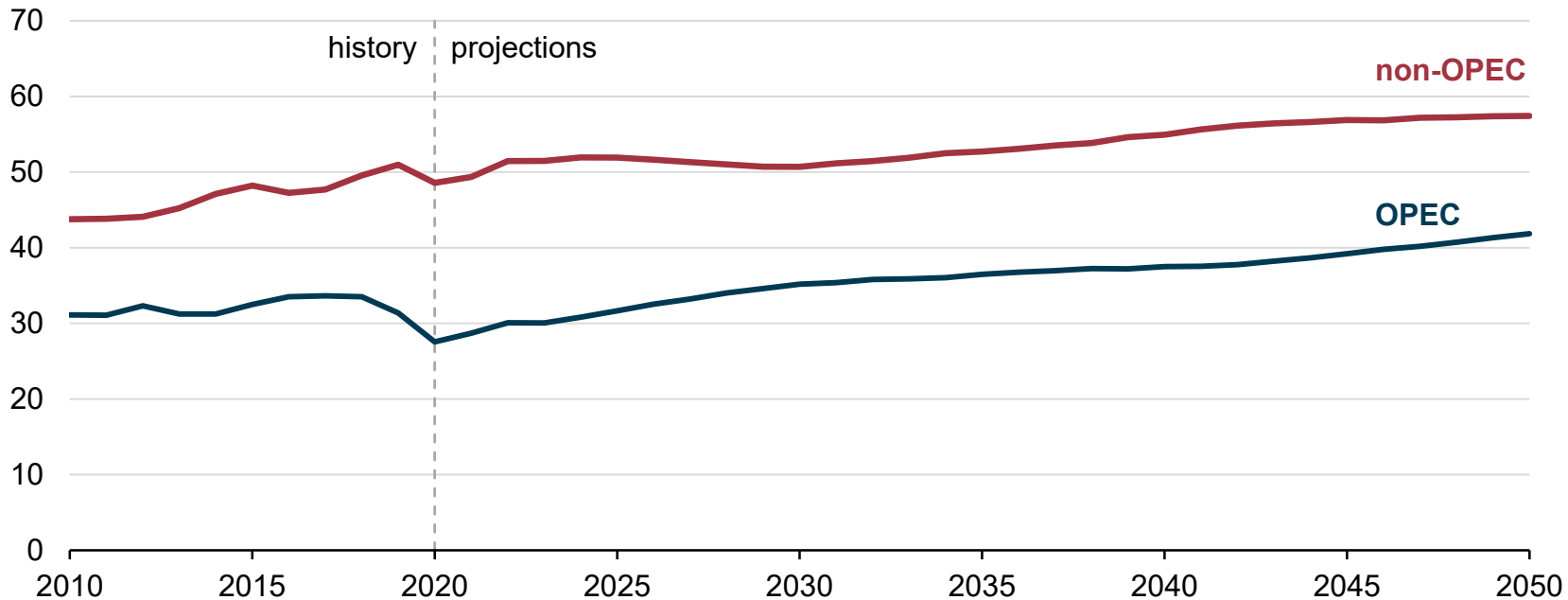




OPEC and non-OPEC crude oil and lease condensate production

World crude oil and lease condensate production

million barrels per day

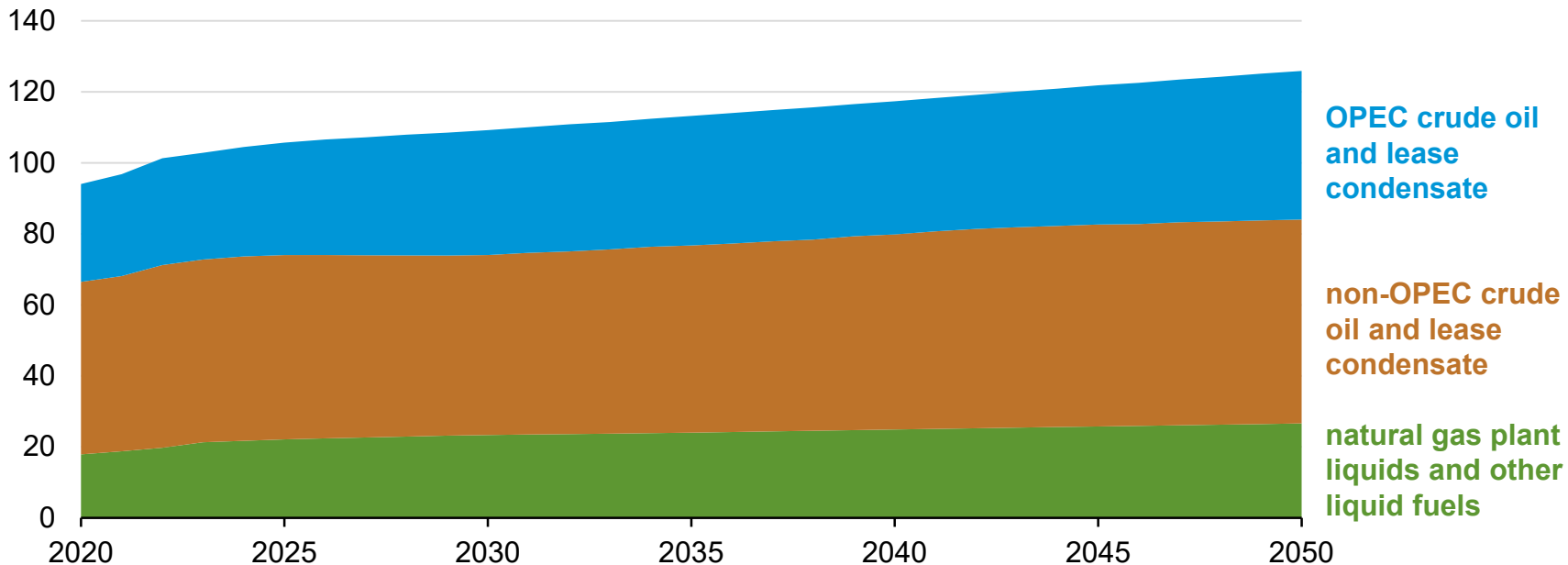




World liquid fuels production

World petroleum and other liquid fuels production

million barrels per day

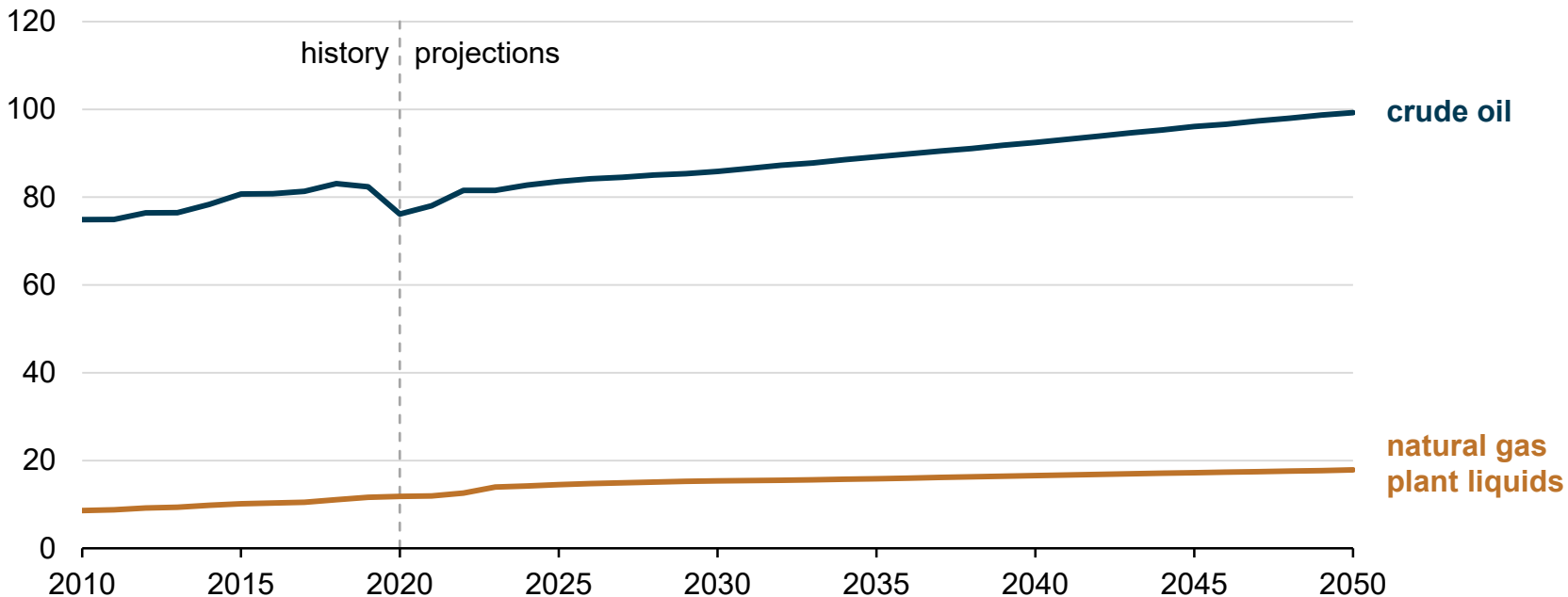




World crude oil and natural gas plant liquids production

World liquid fuels production by select type

millions of barrels per day

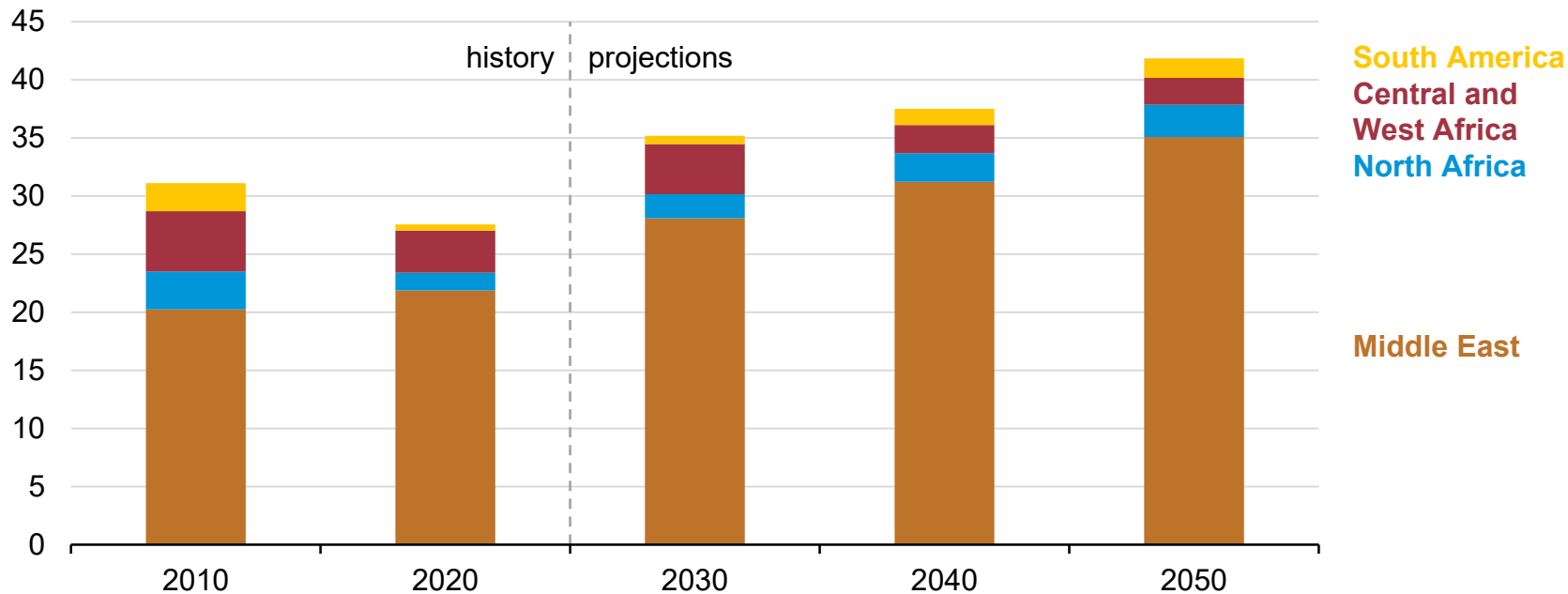




OPEC crude oil production by region

OPEC crude oil and lease condensate production by select regions

million barrels per day

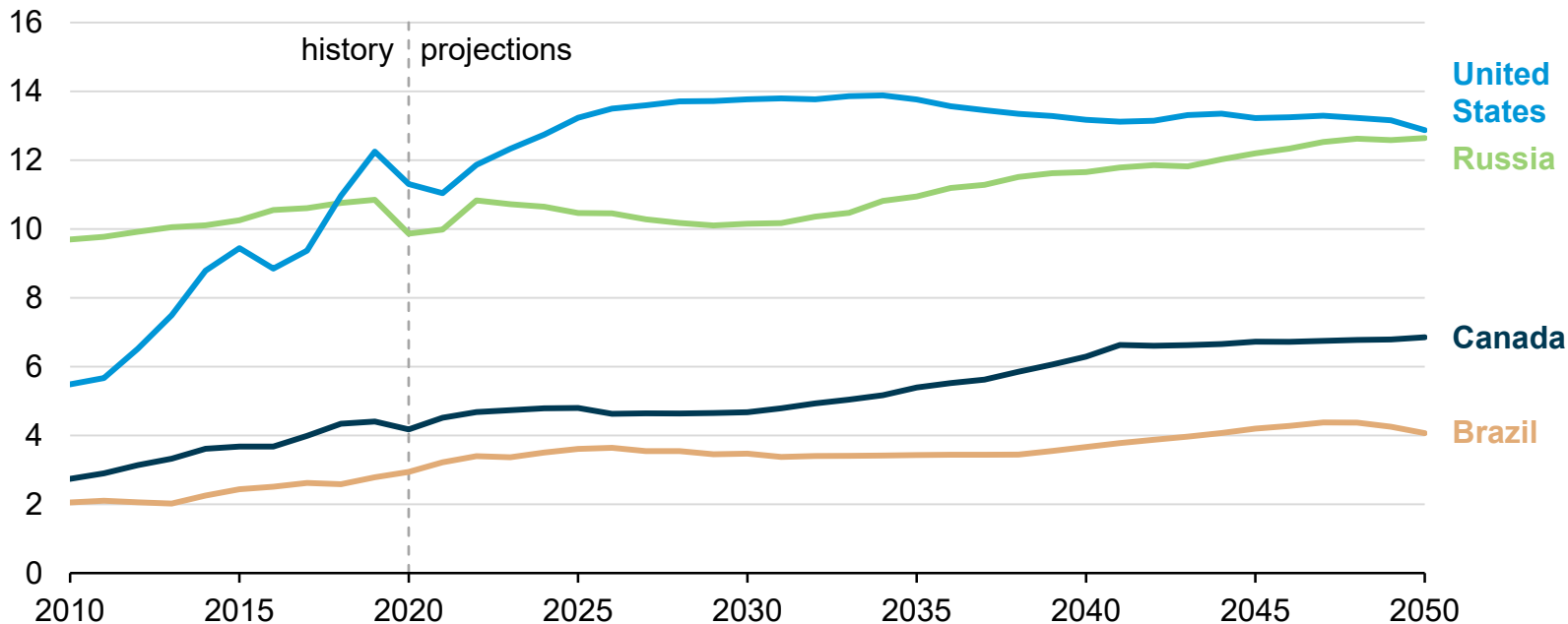




Non-OPEC crude oil production by region

Non-OPEC crude oil and lease condensate production by select regions

millions of barrels per day

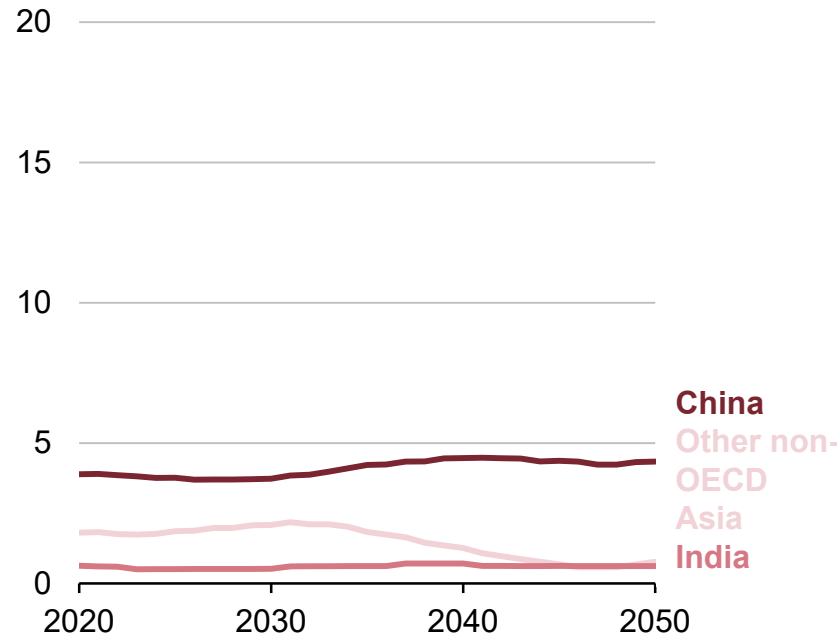




Non-OECD Asia crude oil production and liquid fuels consumption

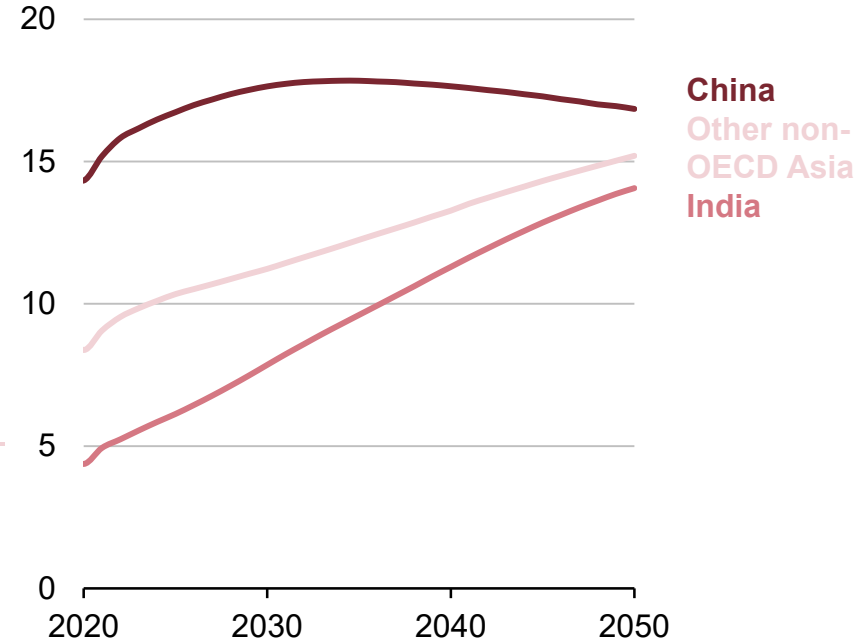
Crude oil production by select regions

million barrels per day



Total liquid fuels consumption by select regions

million barrels per day





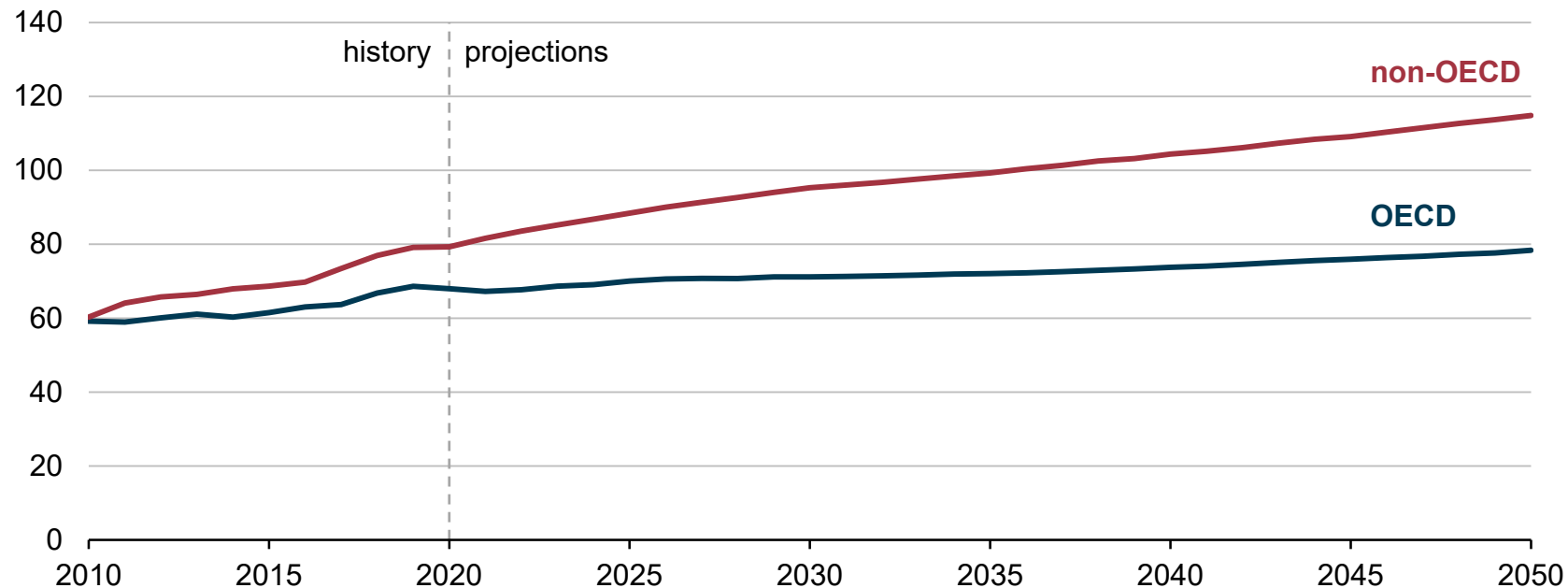
Natural Gas



OECD and non-OECD natural gas consumption

World natural gas consumption

quadrillion British thermal units

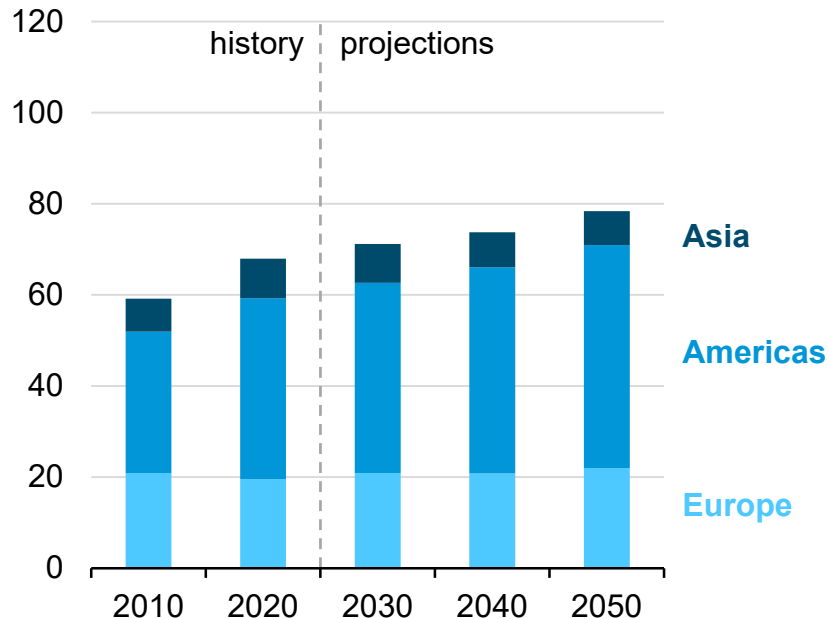




OECD and non-OECD natural gas consumption by region

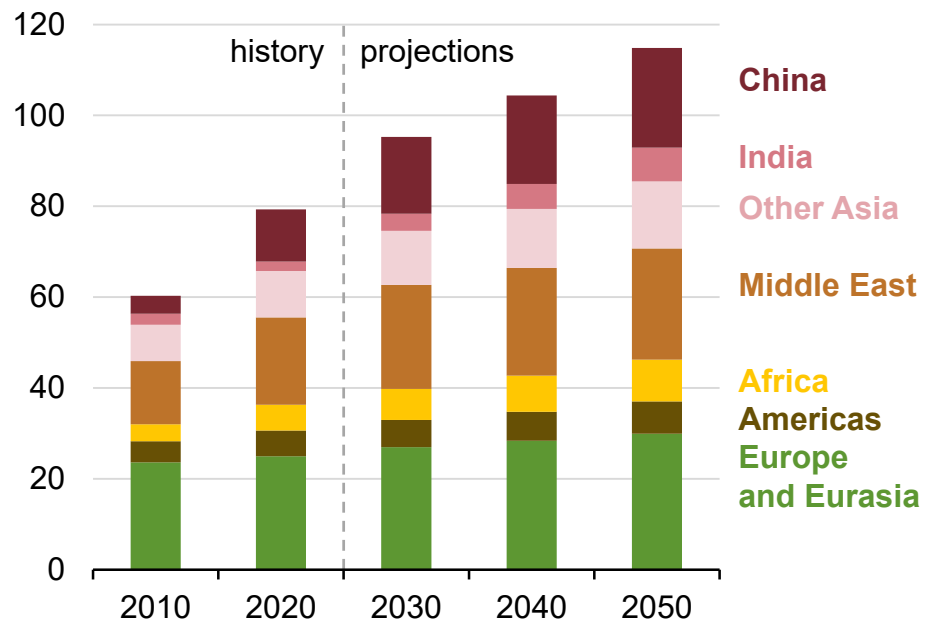
OECD natural gas consumption

quadrillion British thermal units



Non-OECD natural gas consumption

quadrillion British thermal units

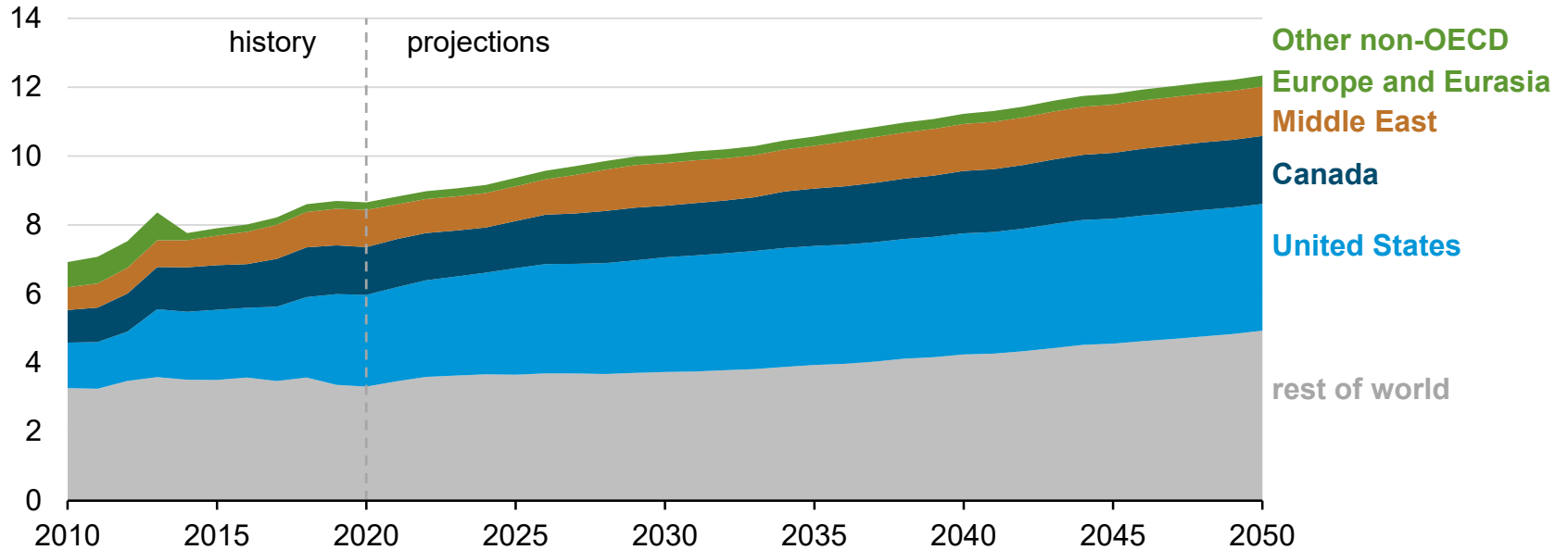




Natural gas consumption for oil and natural gas extraction

Natural gas consumption for oil and natural gas extraction industries

quadrillion British thermal units

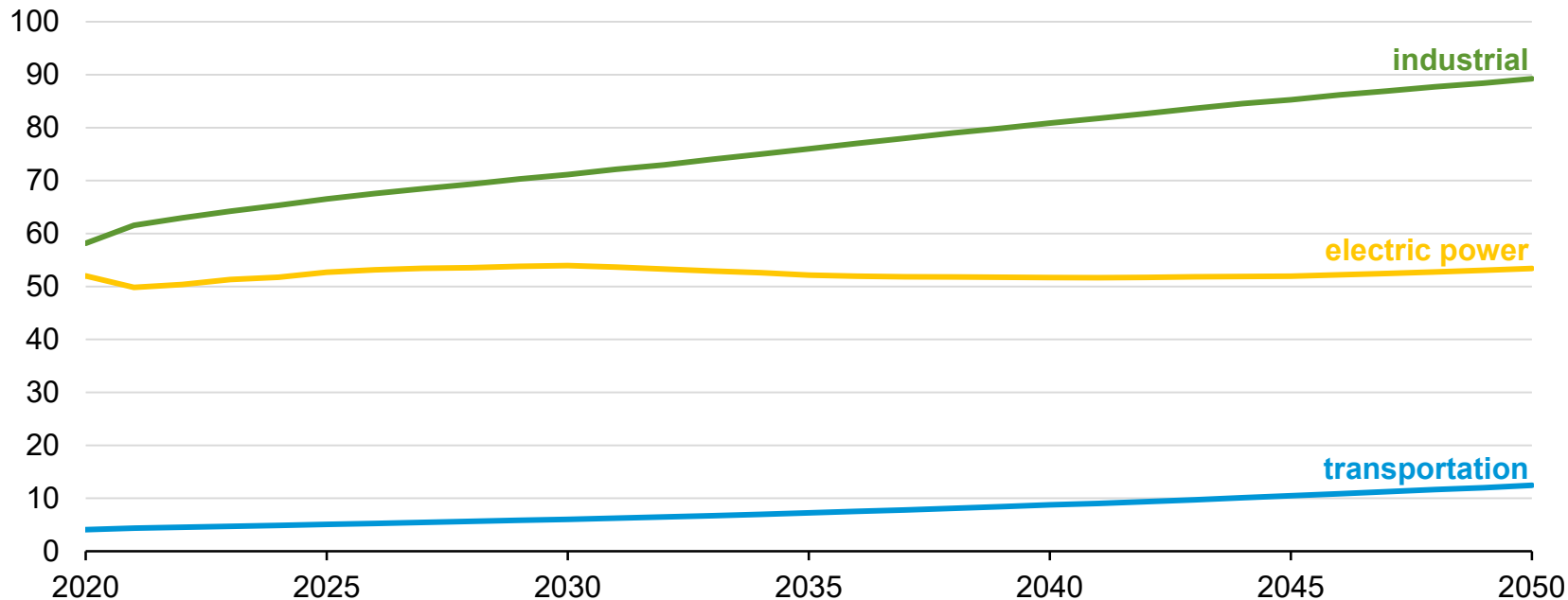




World natural gas consumption by sector

World natural gas consumption by sector

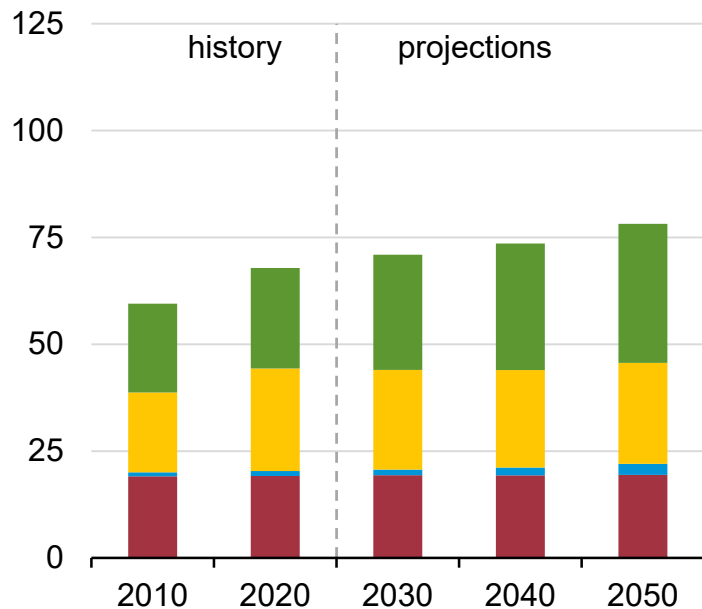
quadrillion British thermal units



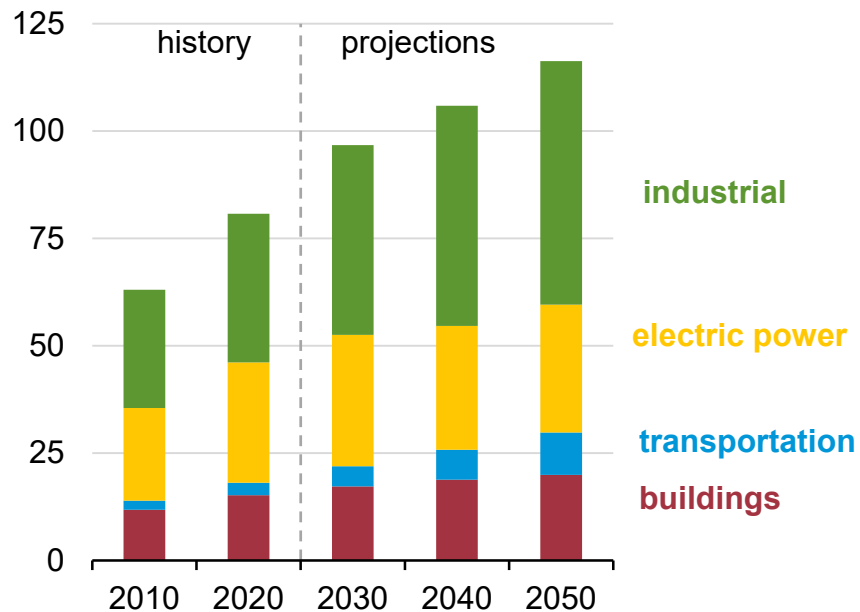


OECD and non-OECD natural gas consumption by sector

Natural gas consumption by sector, OECD
quadrillion British thermal units



Natural gas consumption by sector, non-OECD
quadrillion British thermal units

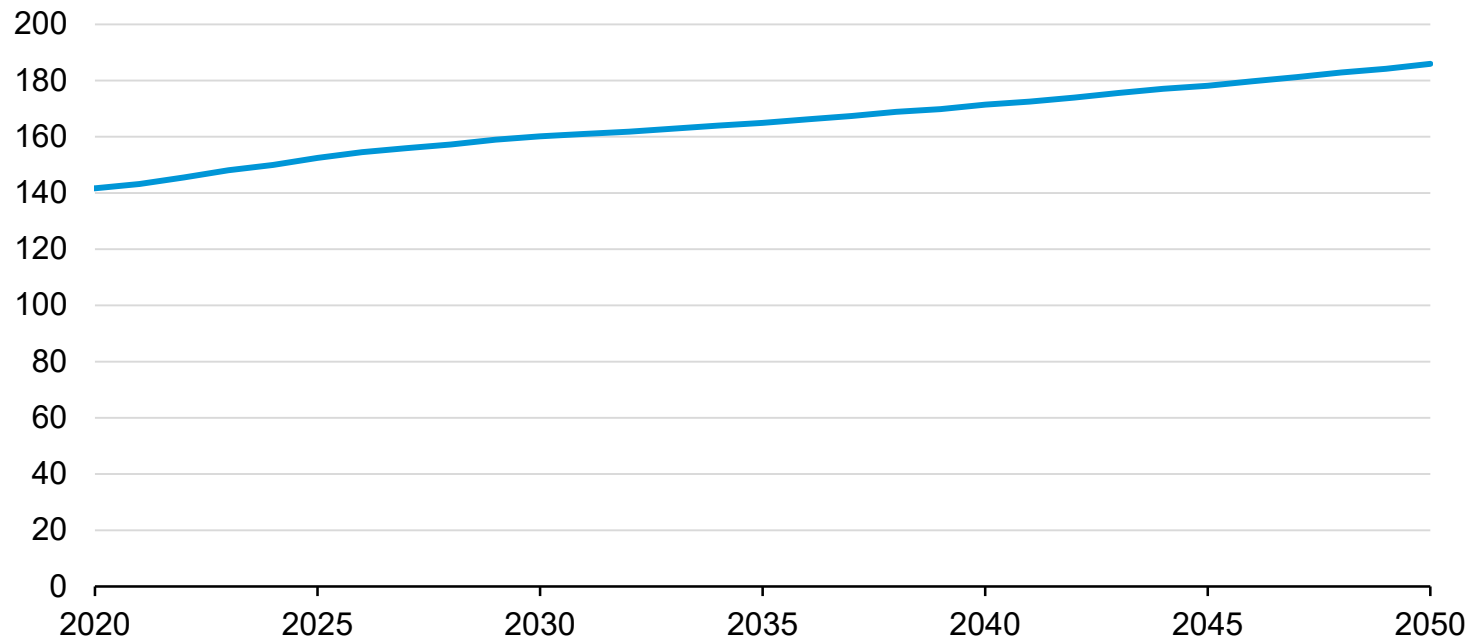




World natural gas production

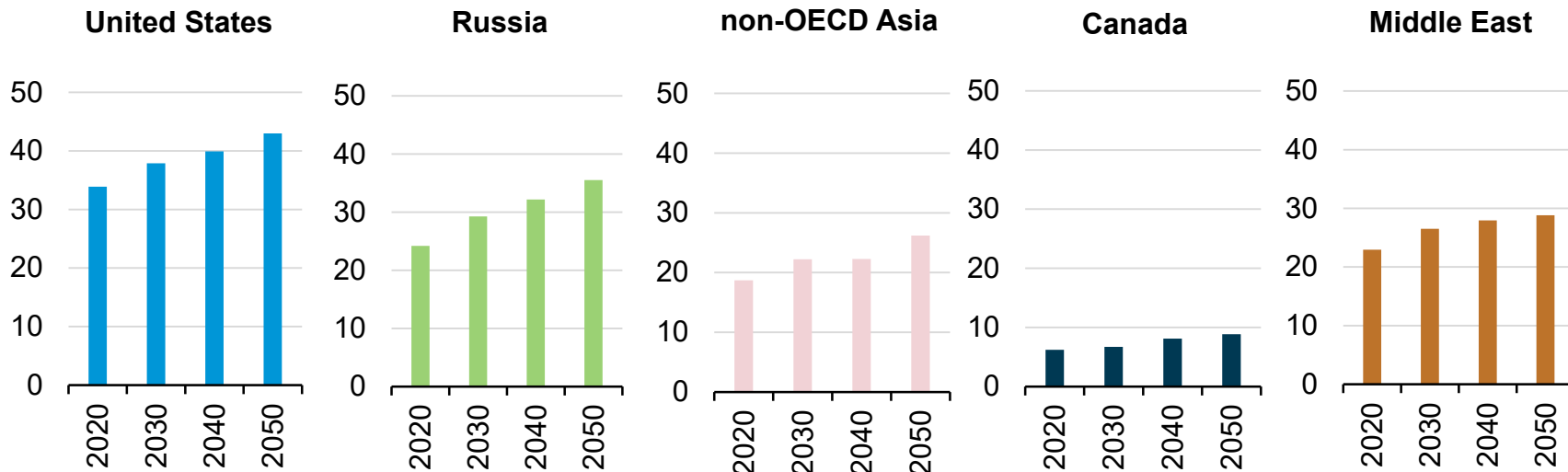
World natural gas production

trillion cubic feet



Natural gas production, top producing regions

Natural gas production by region, select regions
trillion cubic feet

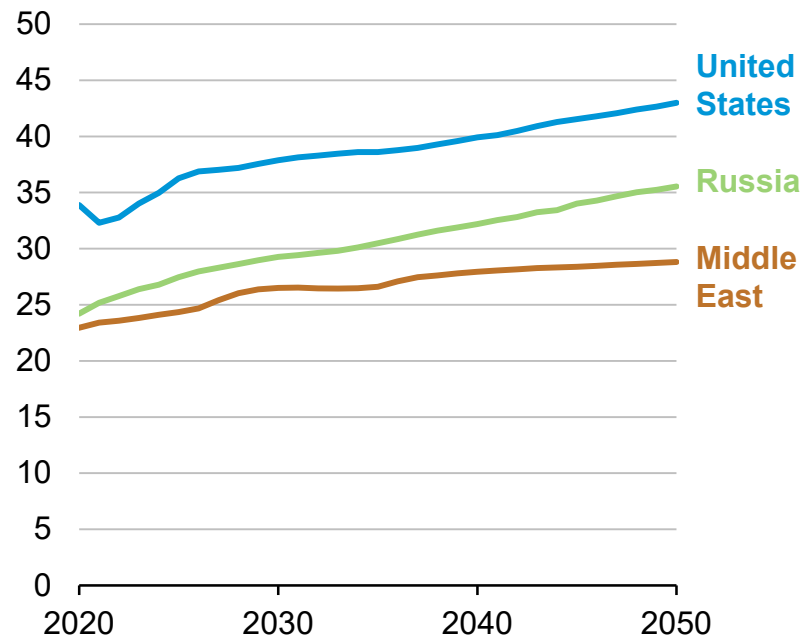




Natural gas production and net exports, top producing regions

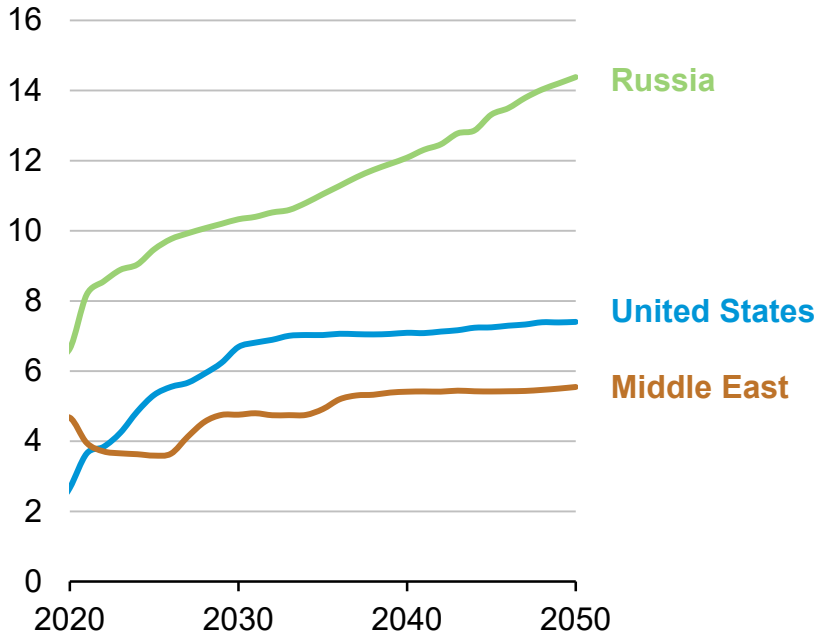
Natural gas production by select regions

trillion cubic feet



Net exports of natural gas

trillion cubic feet

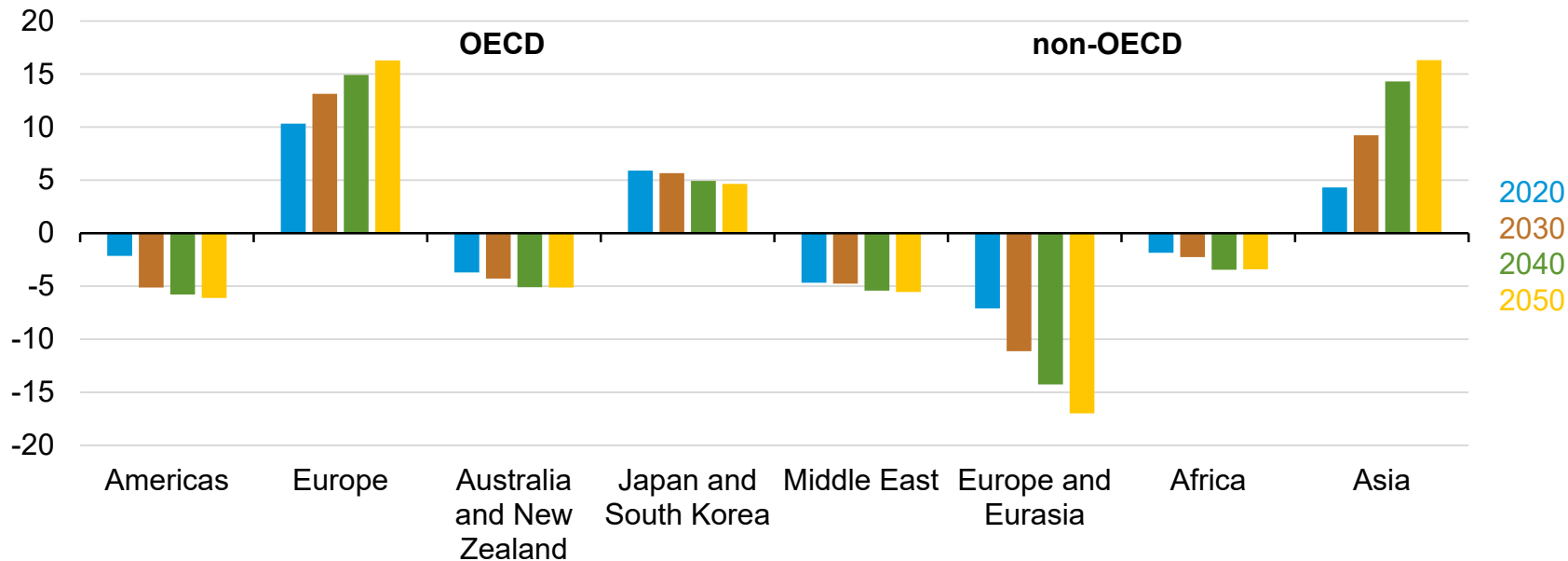




OECD and non-OECD natural gas net imports

Net imports of natural gas

trillion cubic feet

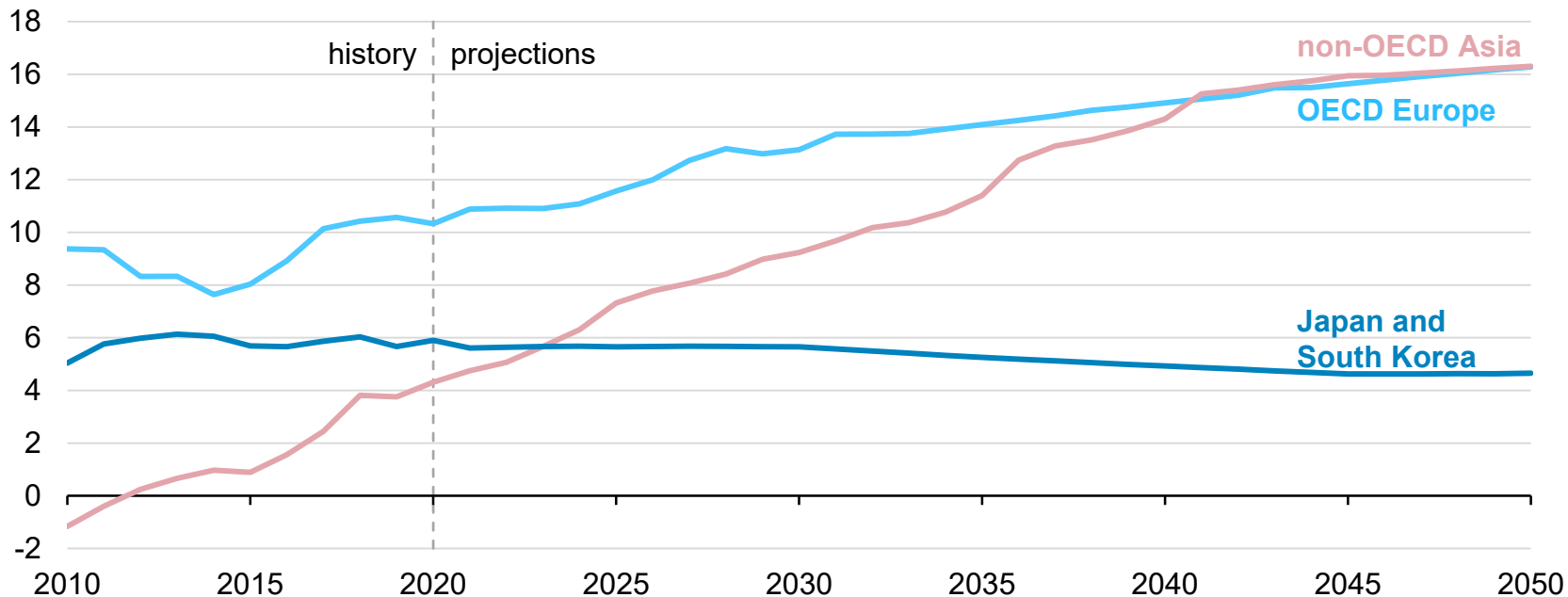




Natural gas net imports, top importing regions

Net imports of natural gas

trillion cubic feet

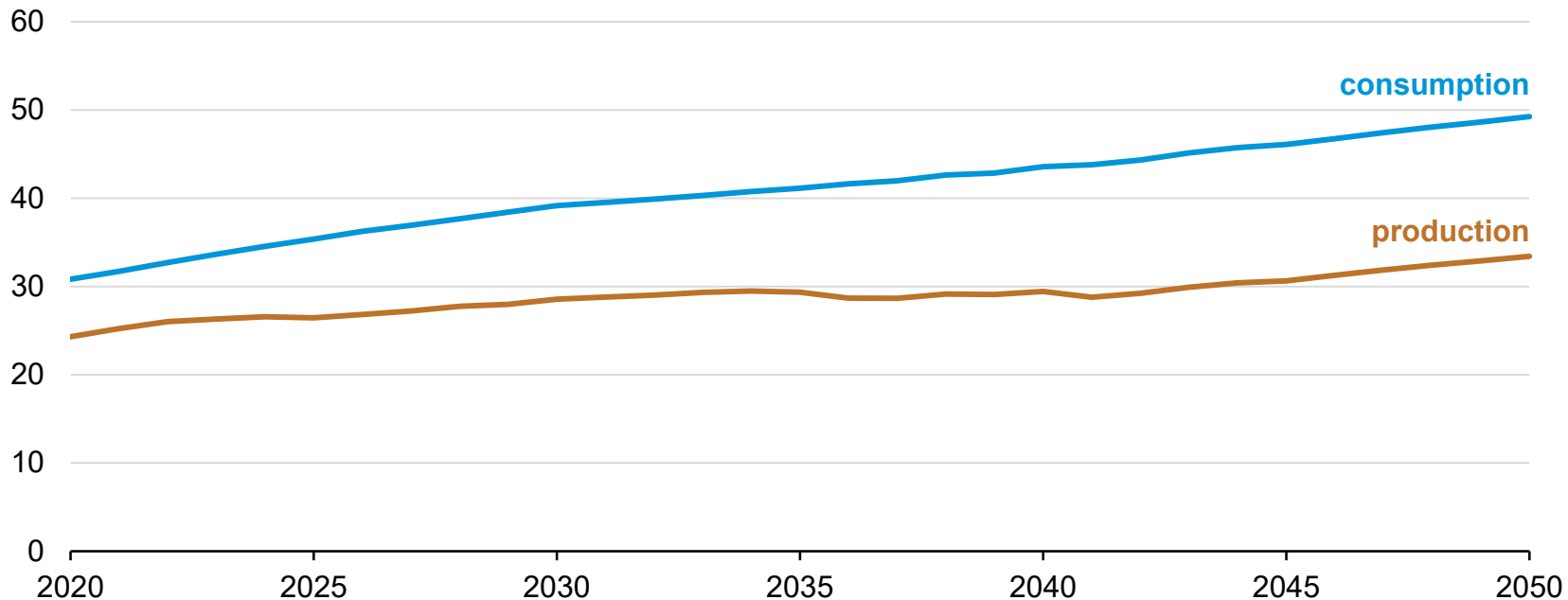




Asia natural gas production and consumption

Natural gas consumption and production, Asia

trillion cubic feet





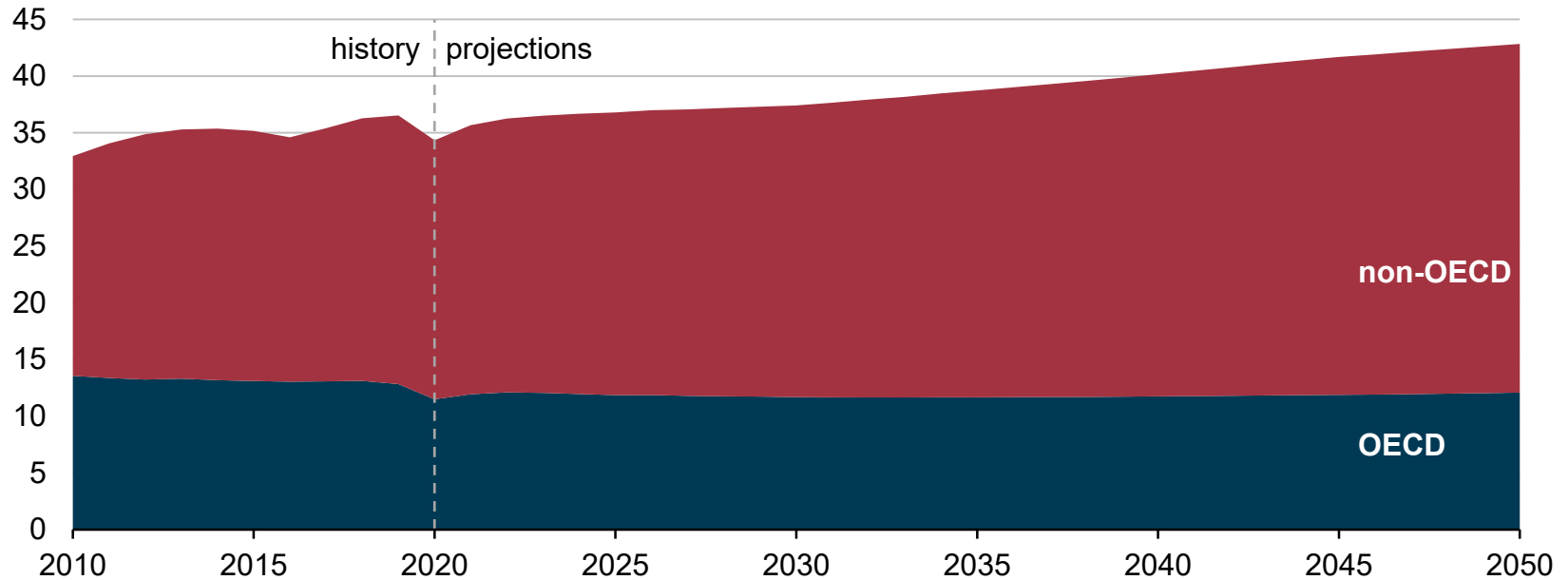
Emissions



OECD and non-OECD energy-related carbon dioxide emissions

Energy-related carbon dioxide emissions

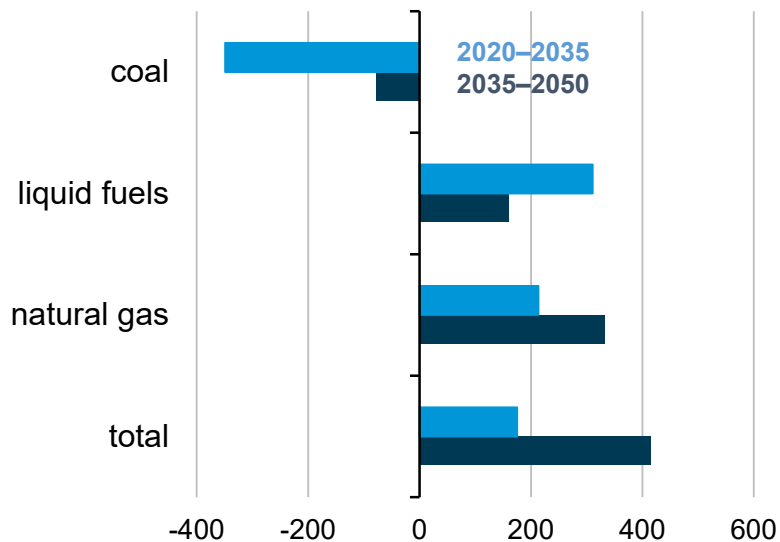
billion metric tons



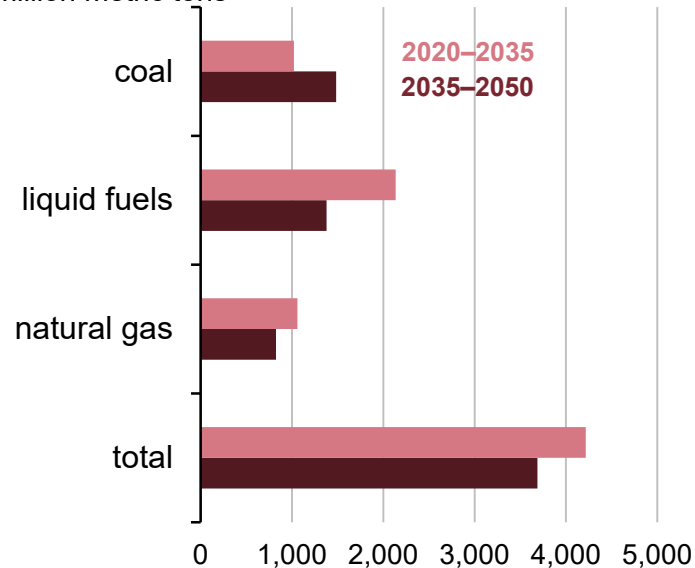


Net change in OECD and non-OECD energy-related carbon dioxide emissions by fossil fuel source

Net change in carbon dioxide emissions, OECD
million metric tons



Net change in carbon dioxide emissions, non-OECD
million metric tons

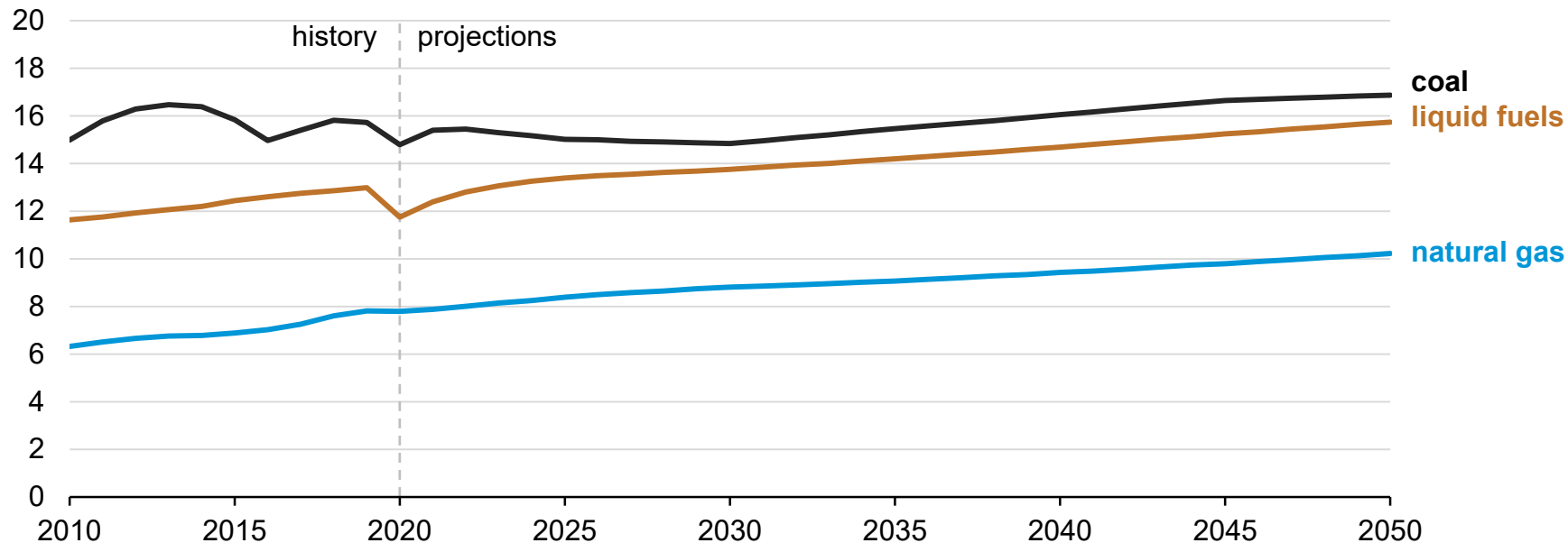




World energy-related carbon dioxide emissions by fuel type

Energy-related carbon dioxide emissions

billion metric tons

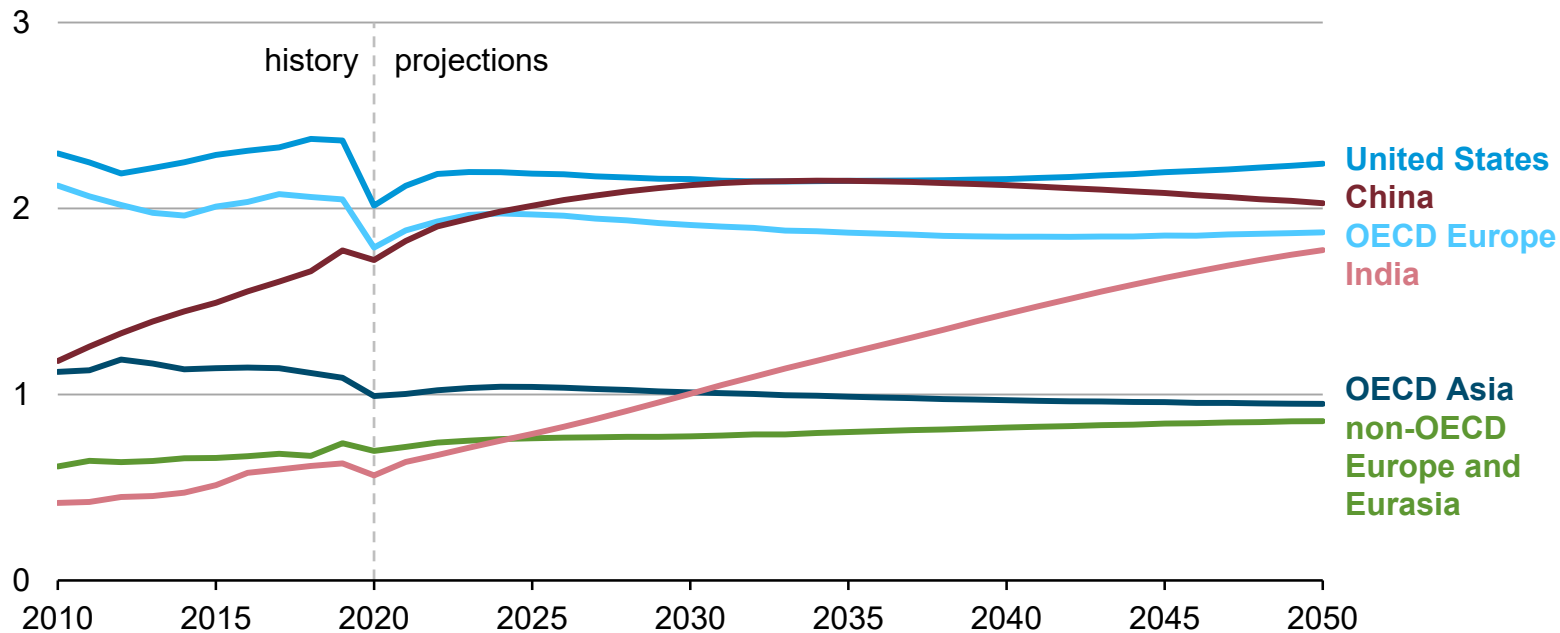




Petroleum liquids carbon dioxide emissions by region

Liquid fuels-related carbon dioxide emissions for select regions

billion metric tons

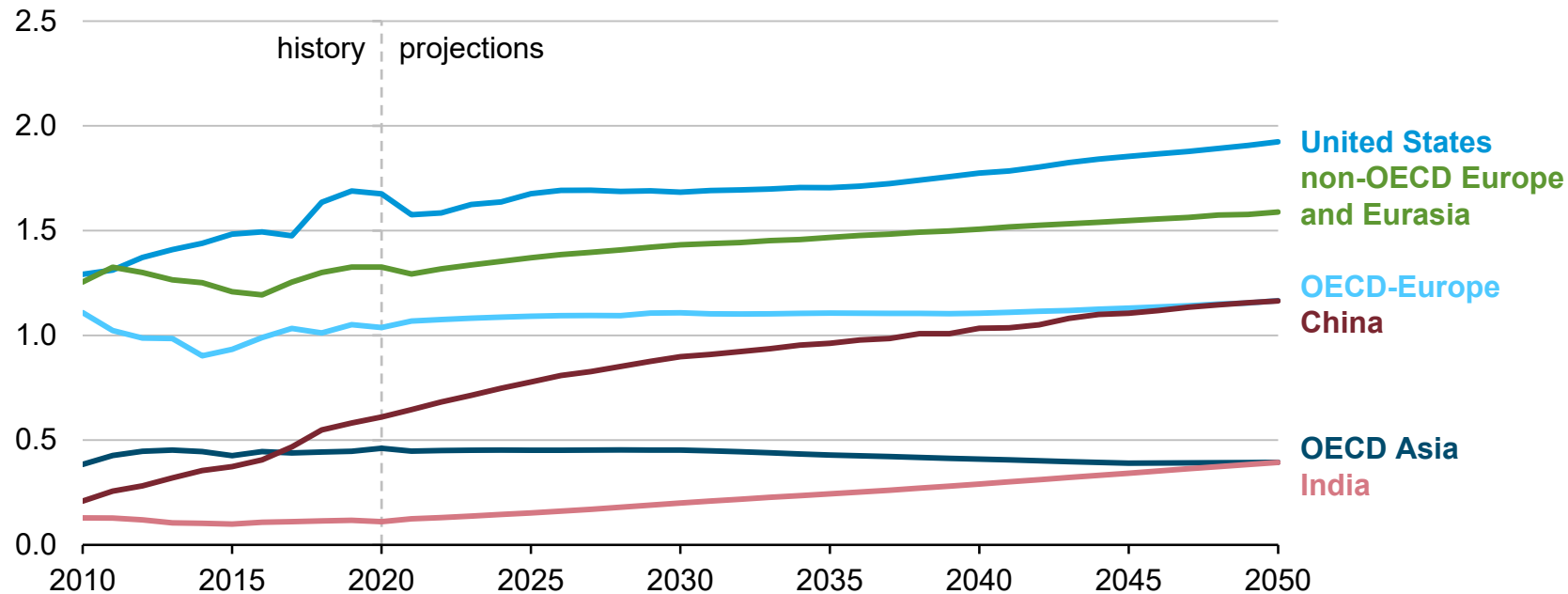




Natural gas carbon dioxide emissions by region

Natural gas-related carbon dioxide emissions for select regions

billion metric tons

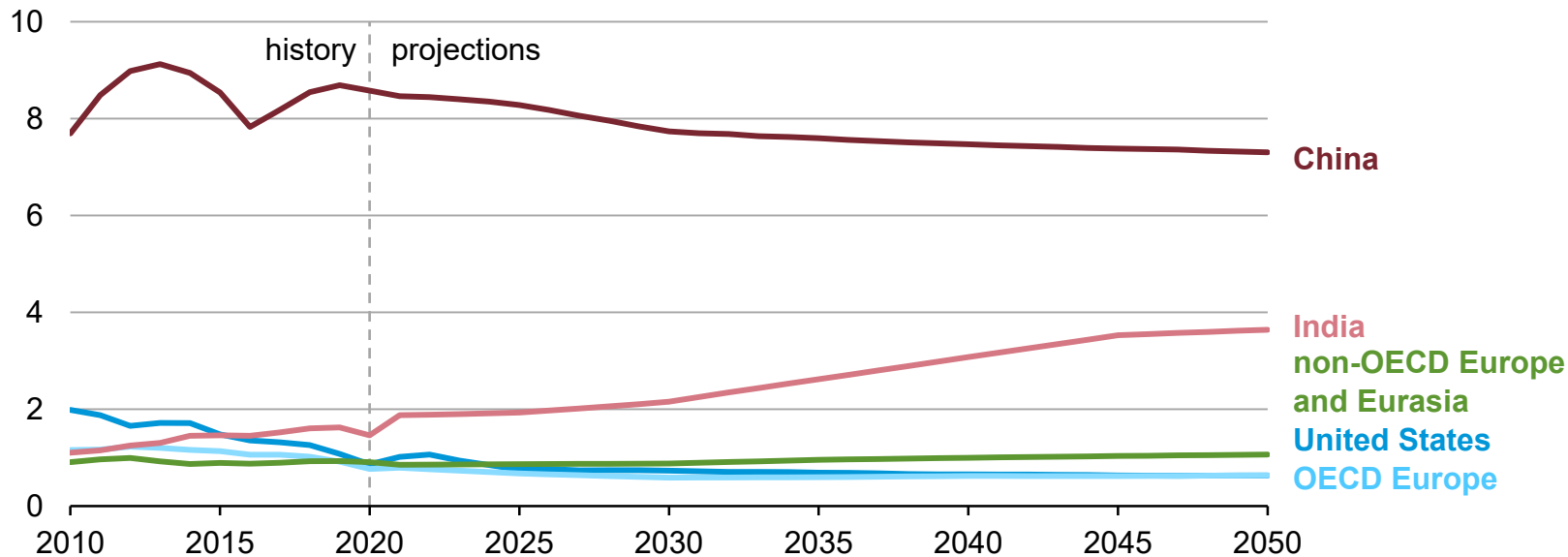




Coal carbon dioxide emissions by region

Coal-related carbon dioxide emissions for selected countries/regions

billion metric tons

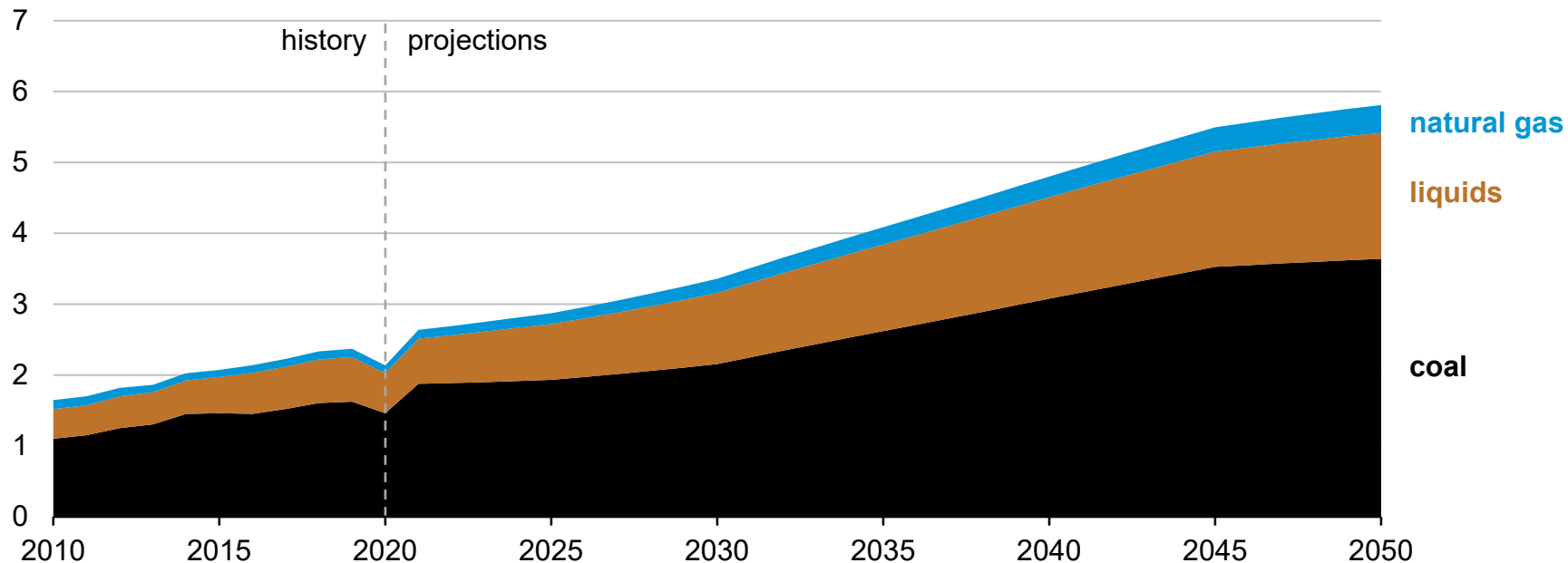




Energy-related carbon dioxide emissions in India by fossil fuel source

Energy-related carbon dioxide emissions by fuel type, India

billion metric tons

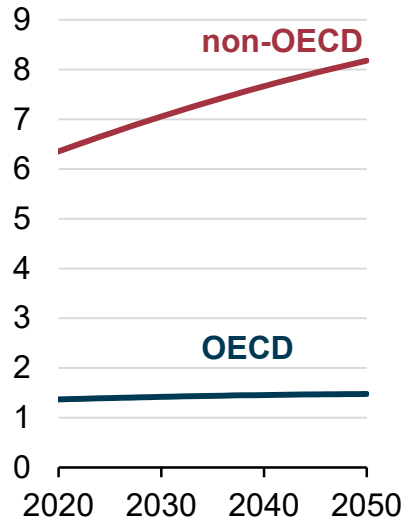




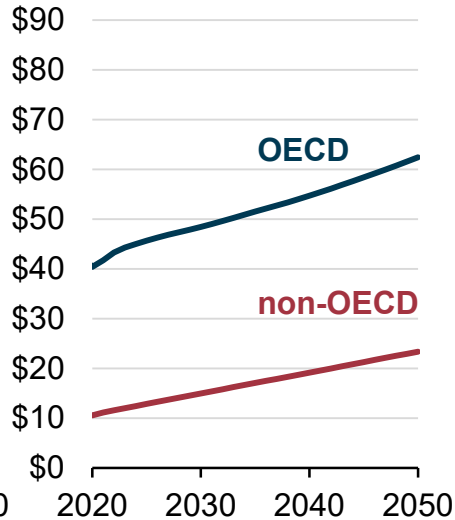
OECD and non-OECD Kaya identity components

Kaya identity components

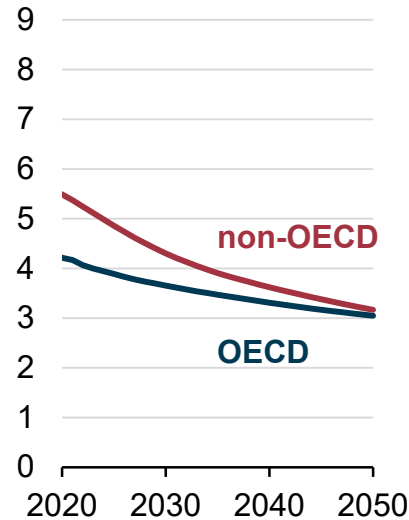
Population
billion people



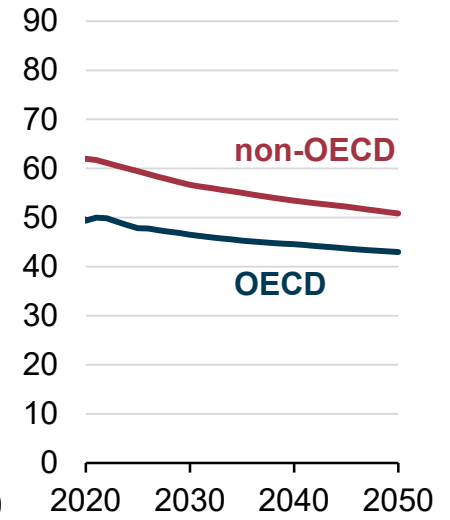
Per capita GDP
thousand dollars per person



Energy intensity
thousand British thermal units per dollar



Carbon intensity
metric tons CO₂ per billion British thermal units

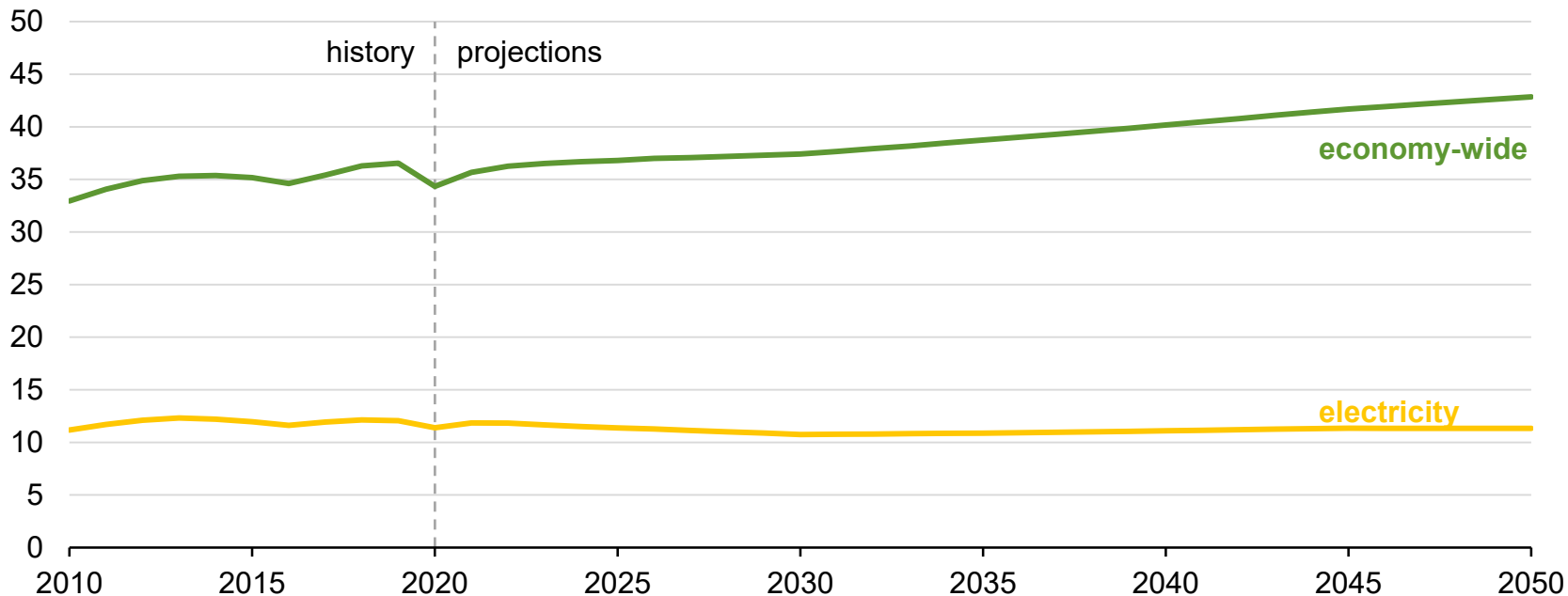




World energy-related and electricity-related carbon dioxide emissions

World carbon dioxide emissions

billion metric tons

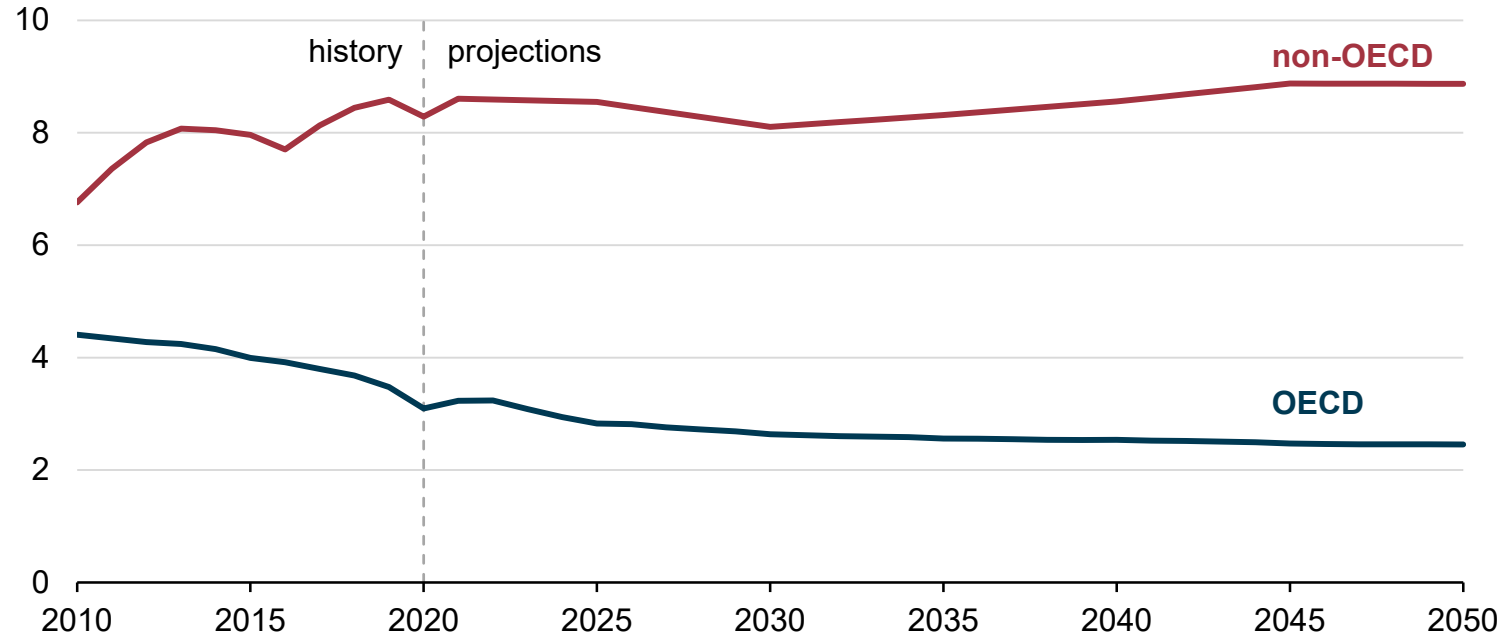




Carbon dioxide emissions from electricity generation

Electricity carbon dioxide emissions, OECD versus non-OECD

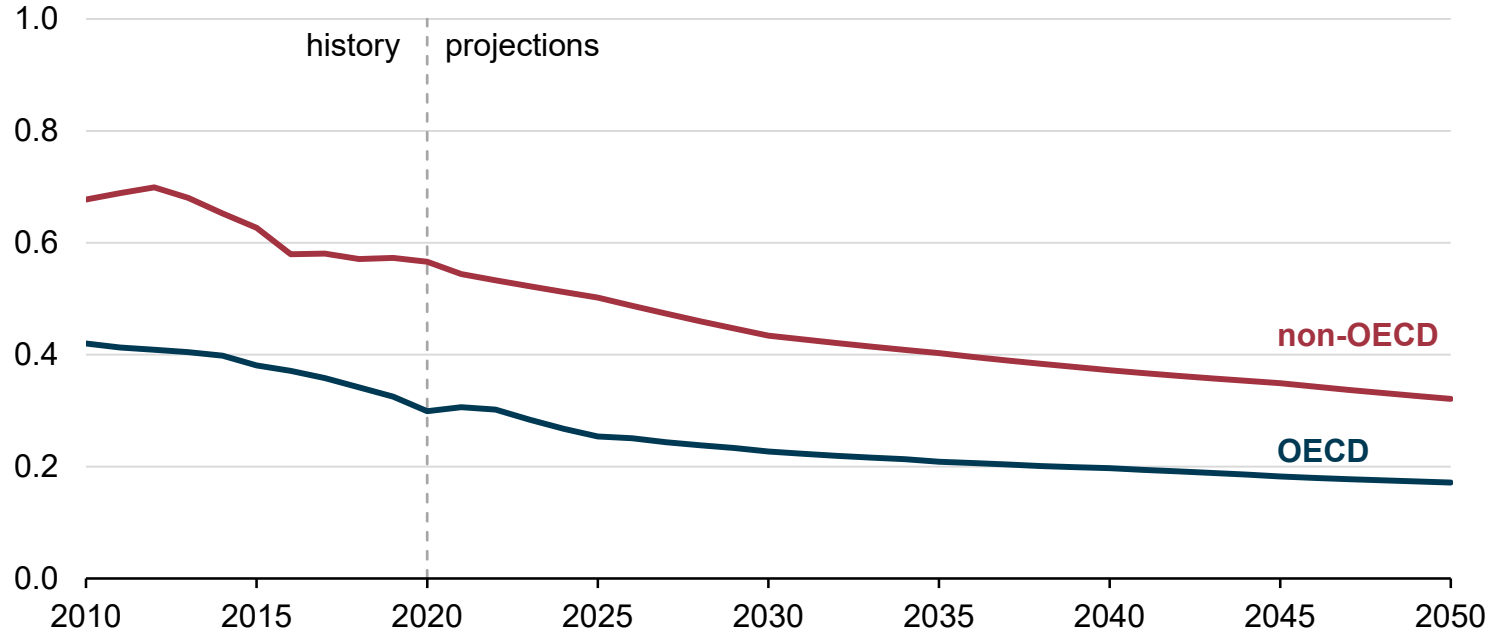
billion metric tons





OECD and non-OECD carbon dioxide intensity of electricity

Electricity carbon dioxide emissions intensity
million metric tons CO₂ per billion kilowatthour





References



Acronyms and abbreviations

- b/d = barrels per day
- Btu = British thermal unit
- CO₂ = carbon dioxide
- EIA = U.S. Energy Information Administration
- GDP = gross domestic product
- GTL = gas-to-liquids
- GW = gigawatts
- IEO = *International Energy Outlook*
- LNG = liquefied natural gas
- PPP = purchasing power parity



Acronyms and abbreviations

- OECD = Organization for Economic Cooperation and Development
- OPEC = Organization of the Petroleum Exporting Countries = Algeria, Angola, Congo, Ecuador, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, United Arab Emirates, and Venezuela.
- Petroleum and other liquids = crude oil and lease condensate (including tight oil, shale oil, extra-heavy oil, field condensate, and bitumen) and other liquid fuels (natural gas plant liquids, liquids from renewable sources [biofuels, including ethanol, biodiesel, and biomass-to-liquids], liquids from natural gas [gas-to-liquids], liquids from coal [coal-to-liquids], and liquids from kerogen [oil shale]).
- Tcf = trillion cubic feet



IEO regional definitions: OECD Regions

- OECD Americas = United States, Canada, Chile, Colombia, Puerto Rico, U.S. Virgin Islands and Mexico.
- OECD Europe = Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, and United Kingdom. (Note: Israel is included in OECD Europe for statistical reporting purposes.)
- OECD Asia = Australia, American Samoa, Guam, Japan, New Zealand, and South Korea.



IEO regional definitions: non-OECD Regions

- Other non-OECD Europe and Eurasia = Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Faroe Islands, Georgia, Gibraltar, Kazakhstan, Kosovo, Macedonia, Malta, Moldova, Montenegro, Romania, Russia, Serbia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.
- Other non-OECD Asia = Afghanistan, Bangladesh, Bhutan, Brunei, Burma (Myanmar), Cambodia (Kampuchea), Cook Islands, Fiji, French Polynesia, Hong Kong, Indonesia, Kiribati, Laos, Macau, Malaysia, Maldives, Mongolia, Nauru, Nepal, New Caledonia, Niue, Northern Mariana Islands North Korea, Pakistan, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, Sri Lanka, Taiwan, Thailand, Timor-Leste (East Timor), Tonga, Vanuatu, Vietnam, and Wake Islands.
- Middle East = Bahrain, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestinian Territories, Qatar, Saudi Arabia, Syria, United Arab Emirates, and Yemen.

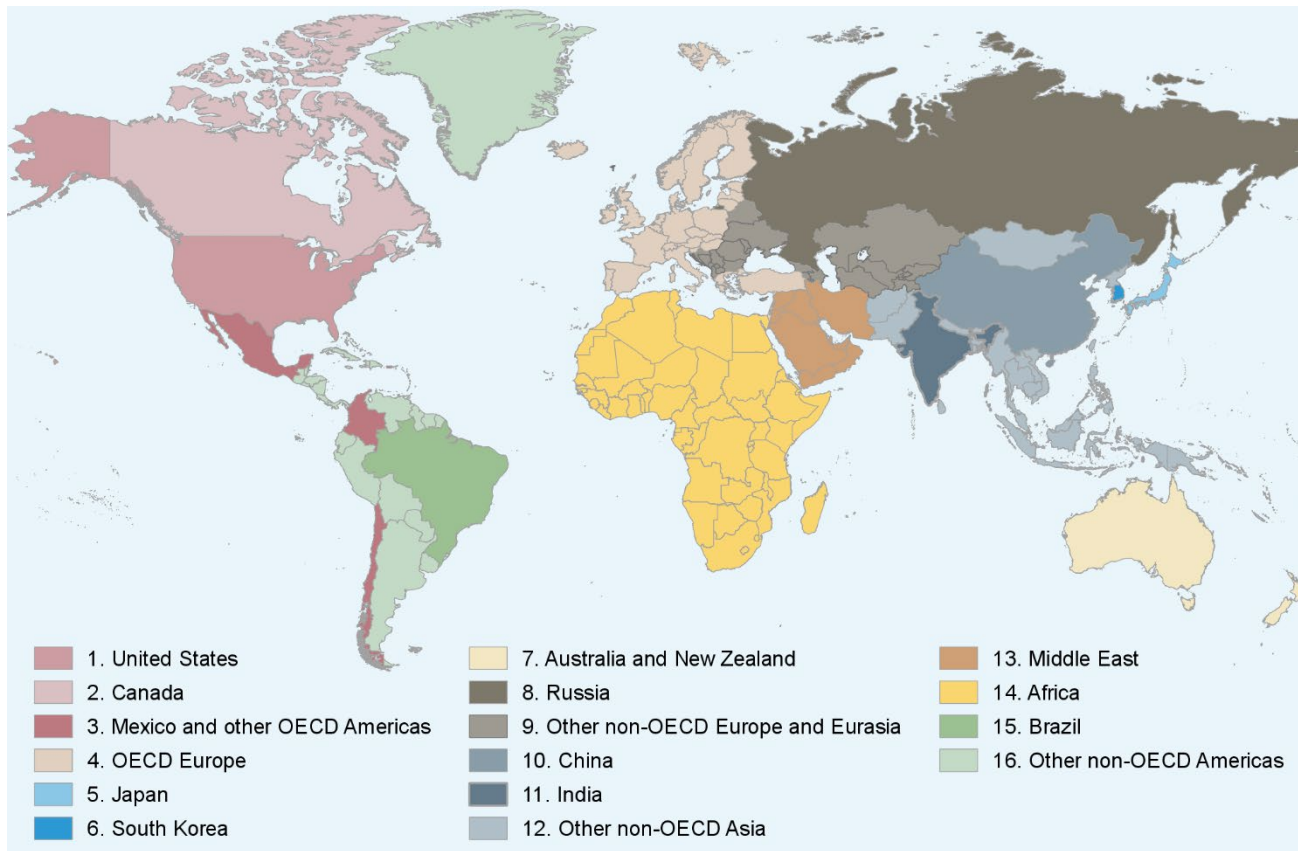


IEO regional definitions: non-OECD Regions

- Africa = Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Brazzaville), Congo (Kinshasa), Côte d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, The Gambia, Ghana, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Reunion, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, St. Helena, Sudan, Tanzania, Togo, Tunisia, Uganda, Western Sahara, Zambia, and Zimbabwe
- Other non-OECD Americas = Antarctica, Antigua and Barbuda, Argentina, Aruba, The Bahamas, Barbados, Belize, Bermuda, Bolivia, British Virgin Islands, Cayman Islands, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Falkland Islands, French Guiana, Greenland, Grenada, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Montserrat, Netherlands Antilles, Nicaragua, Panama, Paraguay, Peru, St. Kitts and Nevis, St. Lucia, St. Pierre and Miquelon, St. Vincent/Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Islands, Uruguay and Venezuela.



Map of IEO regions





For more information

U.S. Energy Information Administration home page | www.eia.gov

Short-Term Energy Outlook | www.eia.gov/outlooks/steo

Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

Today in Energy | www.eia.gov/todayinenergy