International Energy Outlook 2018 (IEO2018)

for

Center for Strategic and International Studies

July 24, 2018 | Washington, DC

by

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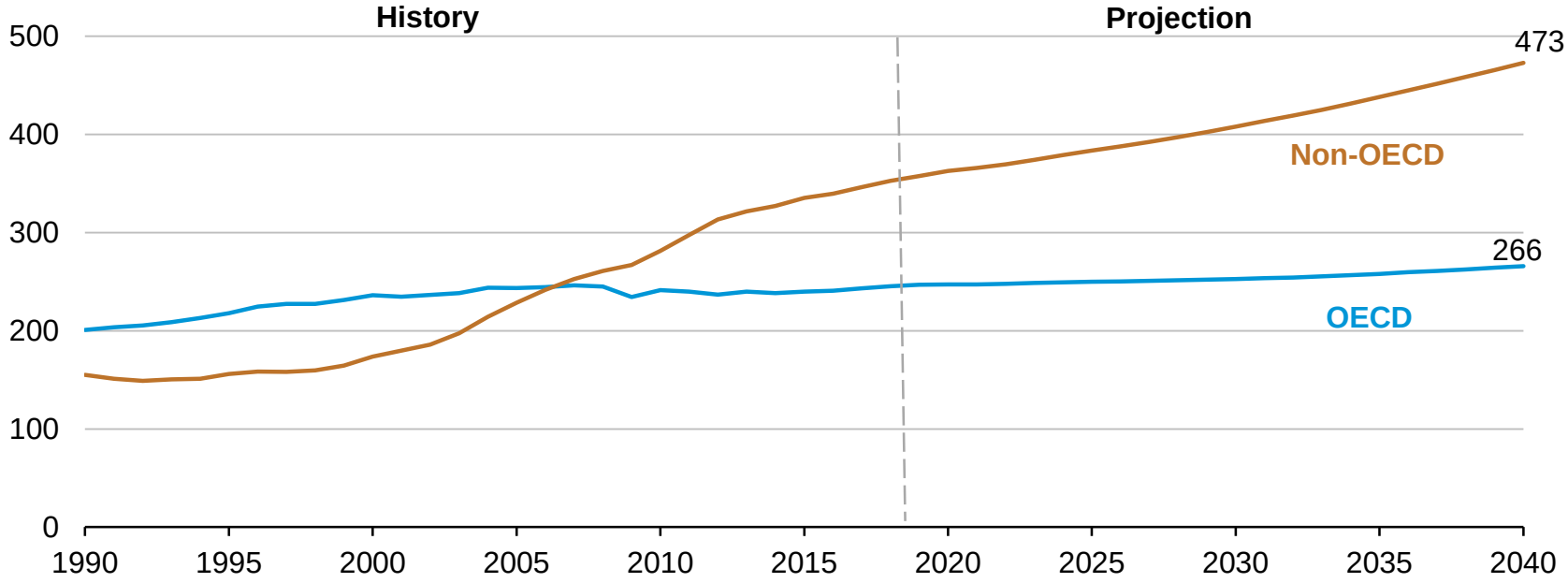
U.S. Energy Information Administration

Key takeaways

- Energy consumption in the non-OECD countries began to exceed OECD consumption in 2007 and is projected to reach nearly two-thirds of the 739 quadrillion Btu global energy consumption in 2040
- The world's energy consumption through 2040 increases, on average, for all fuels in the IEO2018 Reference case
- The IEO2018 side cases show higher economic growth drives increasing energy consumption, while services or manufacturing pathways to growth modulate that consumption
- Per capita energy consumption in India and Africa remain comparatively low despite high economic growth in the IEO2018 side cases
- IEO2018 side cases highlight the need to further explore the relationship between high economic growth, relative sizes of the services and manufacturing sectors, and energy consumption

Non-OECD nations are projected to account for 64% of the 739 quadrillion Btu global energy consumption by 2040

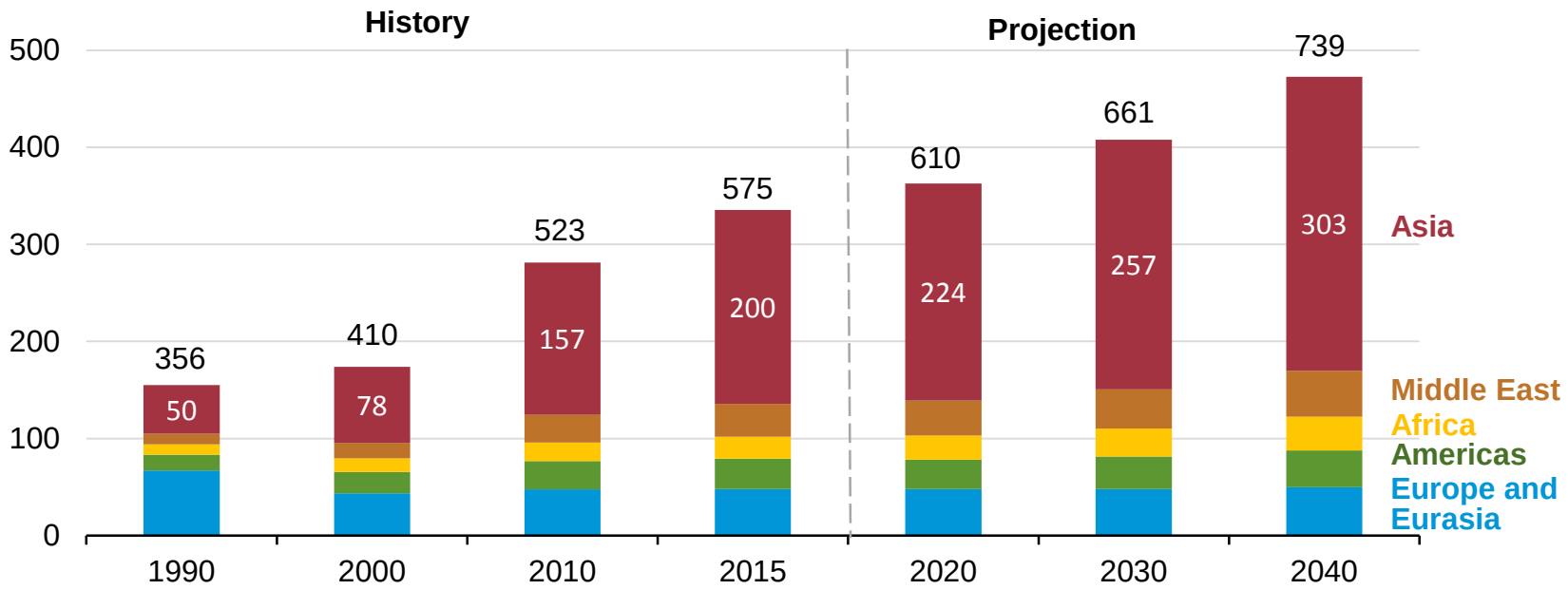
IEO2018 Reference case
world energy consumption
quadrillion Btu



Source: EIA, International Energy Outlook 2018

Asia is projected to have the largest increase in energy use of non-OECD regions

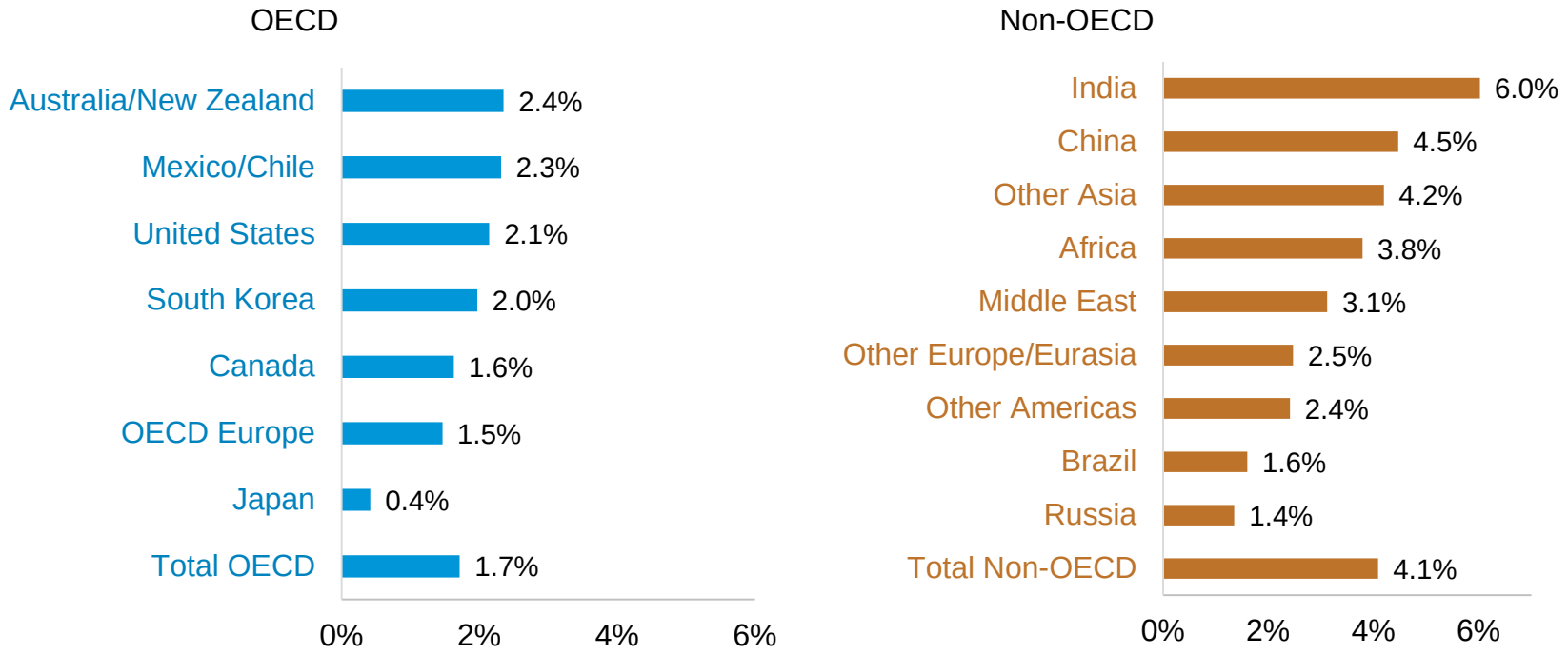
IEO2018 Reference case
non-OECD energy consumption by region
quadrillion Btu



Source: EIA, International Energy Outlook 2018

Many non-OECD countries are projected to lead global economic growth

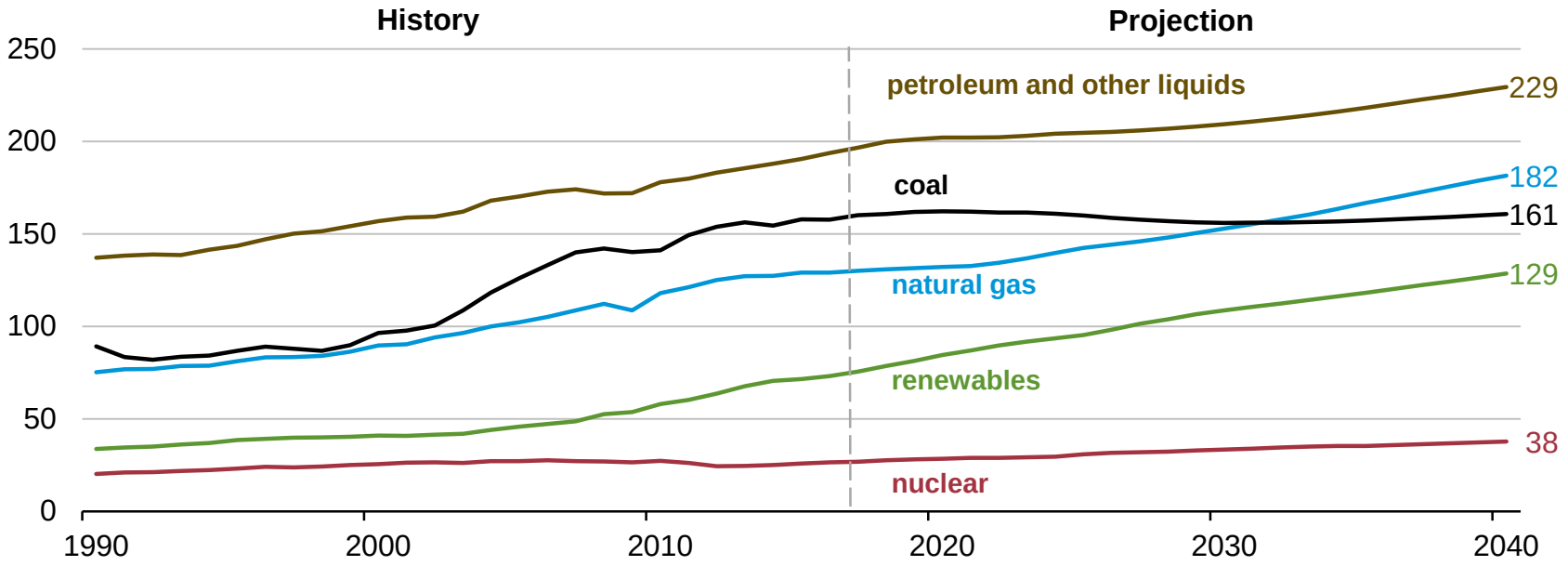
IEO2018 Reference case
average annual percent change in real GDP by region, 2015–40



Source: EIA, International Energy Outlook 2018

World energy consumption increases for fuels other than coal

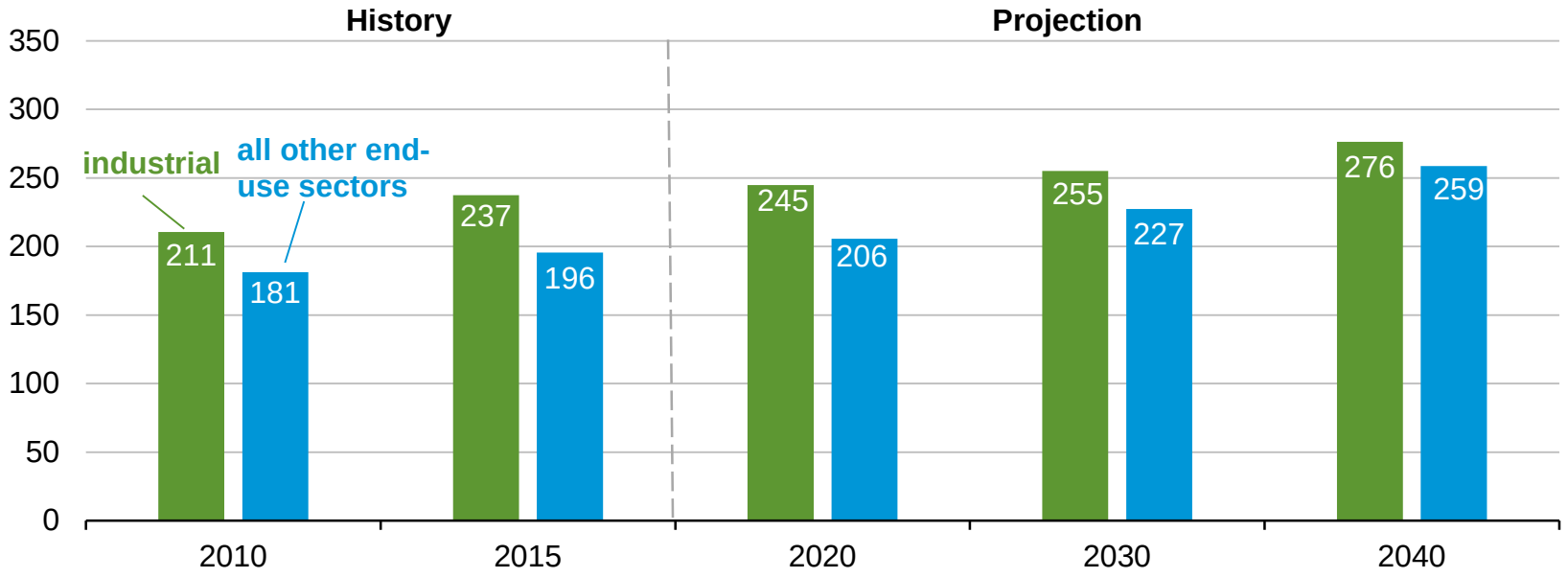
IEO2018 Reference case
world energy consumption by energy source
quadrillion Btu



Source: EIA, International Energy Outlook 2018

The industrial sector accounts for the largest share of world energy consumption

IEO2018 Reference case
world delivered energy consumption in the industrial and all other end-use sectors
quadrillion Btu

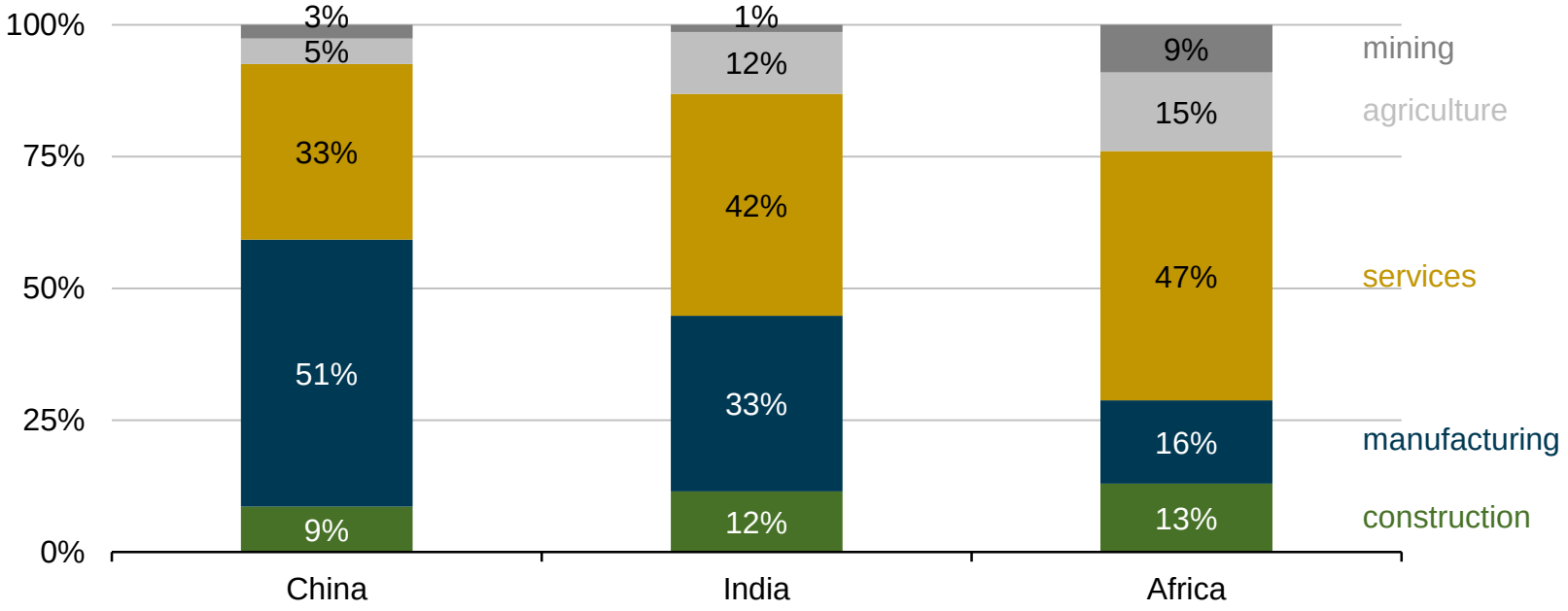


Source: EIA, International Energy Outlook 2018

Sector shares in China, India, and Africa start at different points in 2015

sector share of total gross output in 2015

percent



Source: EIA, International Energy Outlook 2018

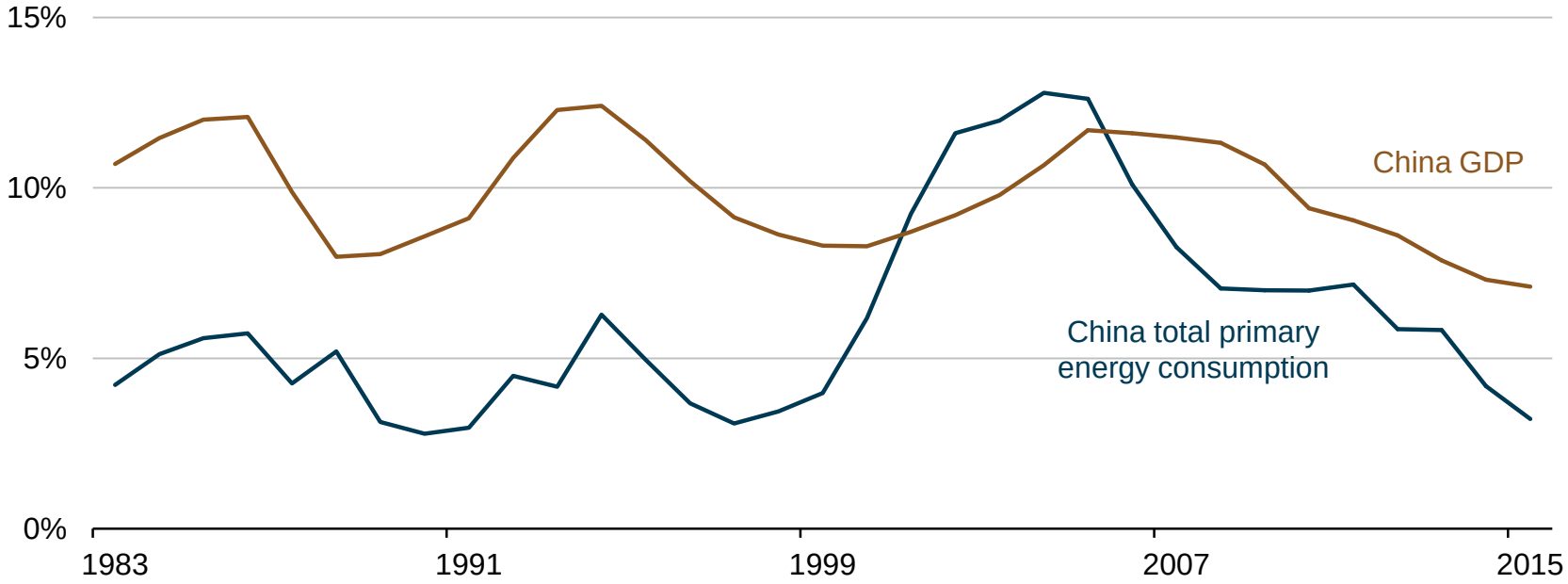
IEO2018 examines comparative economic growth cases in China, India, and Africa

- **China:** Two cases that assume GDP will grow 5.7%/year from 2015 to 2040, compared with 4.5%/year in the IEO2018 Reference case
  - A more rapid transition to a consumption-led economy and increased demand for services; the personal consumption share of GDP rises to 60% by 2040, compared with 50% in the IEO2018 Reference case
  - China continues its large industrial investment- and export-led growth; the investment share of GDP is 51% in 2040, compared with 32% in the IEO2018 Reference case
- **India:** Three cases that assume GDP will grow about 7.1%/year from 2015 to 2040, compared with 6.0%/year in the IEO2018 Reference case
  - An investment-led economy with more industrial sector investment; the investment share of GDP rises from 29% in the IEO2018 Reference case in 2040 to 38%, loosely patterned after China's recent growth
  - An export-led economy with more output from trade-sensitive, energy-intensive industries such as chemicals and refining; the export share of GDP increases from 23% in the IEO2018 Reference case in 2040 to 55%, loosely patterned after South Korea
  - A personal consumption-led economy with more output from services; the personal consumption share of GDP rises from 61% in the IEO2018 Reference case in 2040 to 67%, loosely based upon current U.S. levels of personal consumption
- **Africa:** One case that assumes GDP will grow 5.0%/year from 2015 to 2040, compared with 3.8%/year in the IEO2018 Reference case

China’s GDP and energy consumption growth have slowed in recent years

Chinese GDP and energy consumption

annual growth rate, five-year moving average

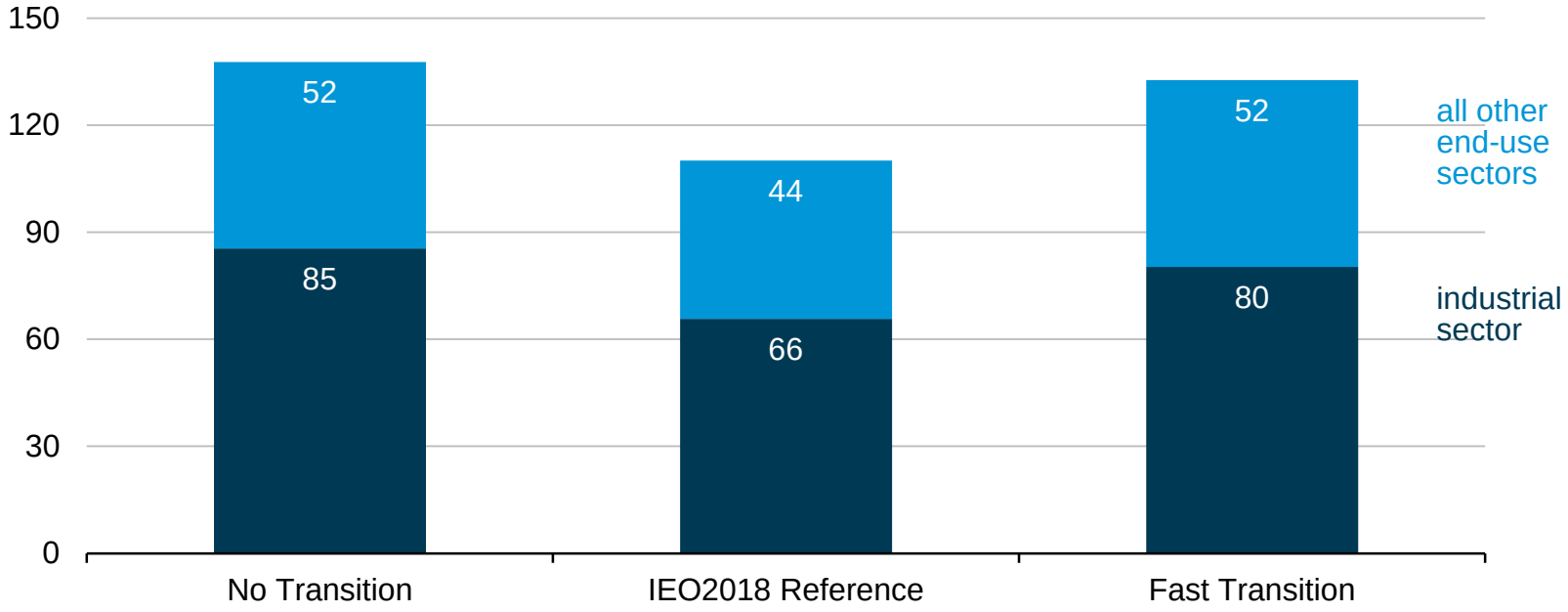


Source: EIA, International Energy Outlook 2018

Industrial sector growth is projected to result in energy consumption differences

Chinese delivered energy consumption in 2040

quadrillion Btu

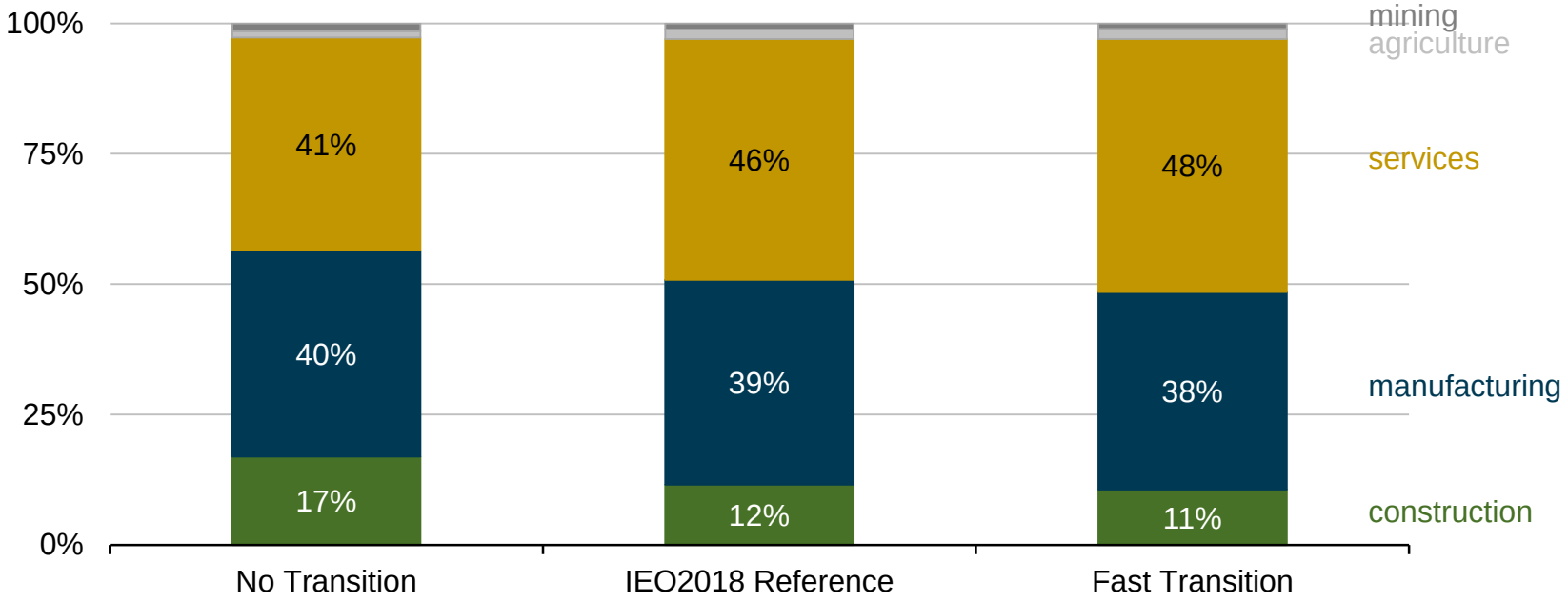


Source: EIA, International Energy Outlook 2018

Small changes in the manufacturing share of total gross output drive larger changes in energy consumption

sector share of total gross output in 2040

percent

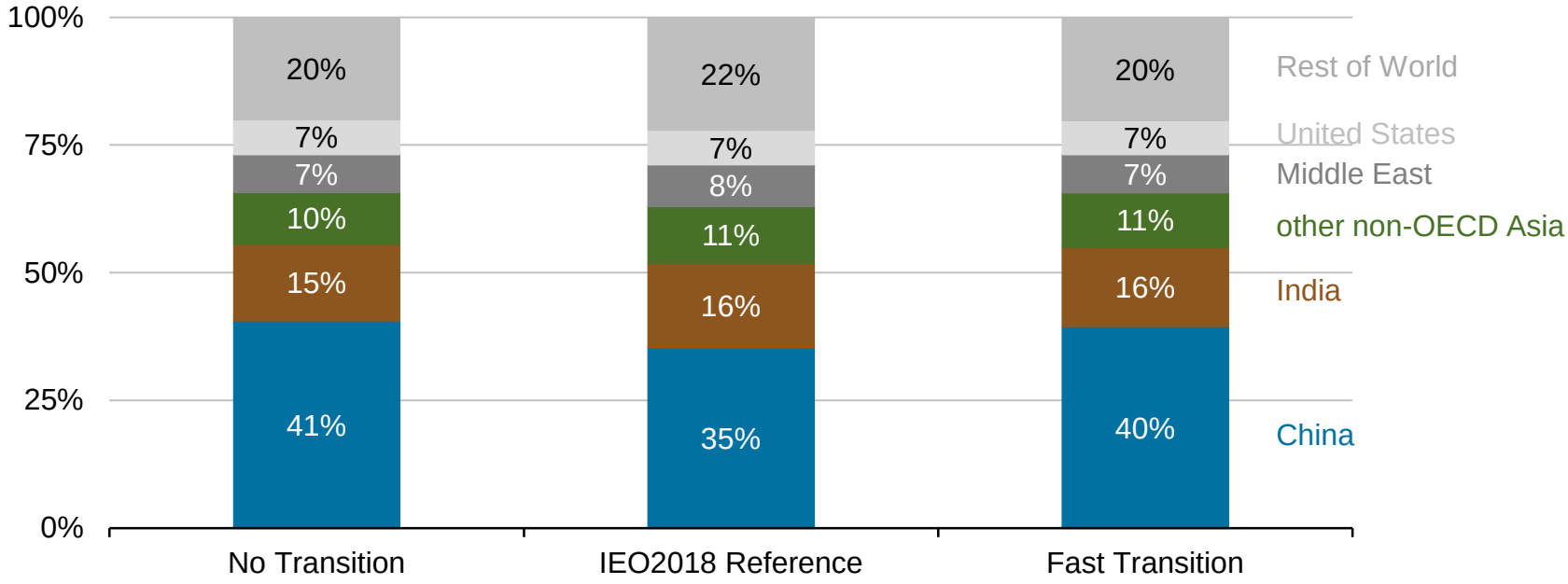


Source: EIA, International Energy Outlook 2018

China's economic growth in the side cases leads to gains in its share of global energy-intensive goods production

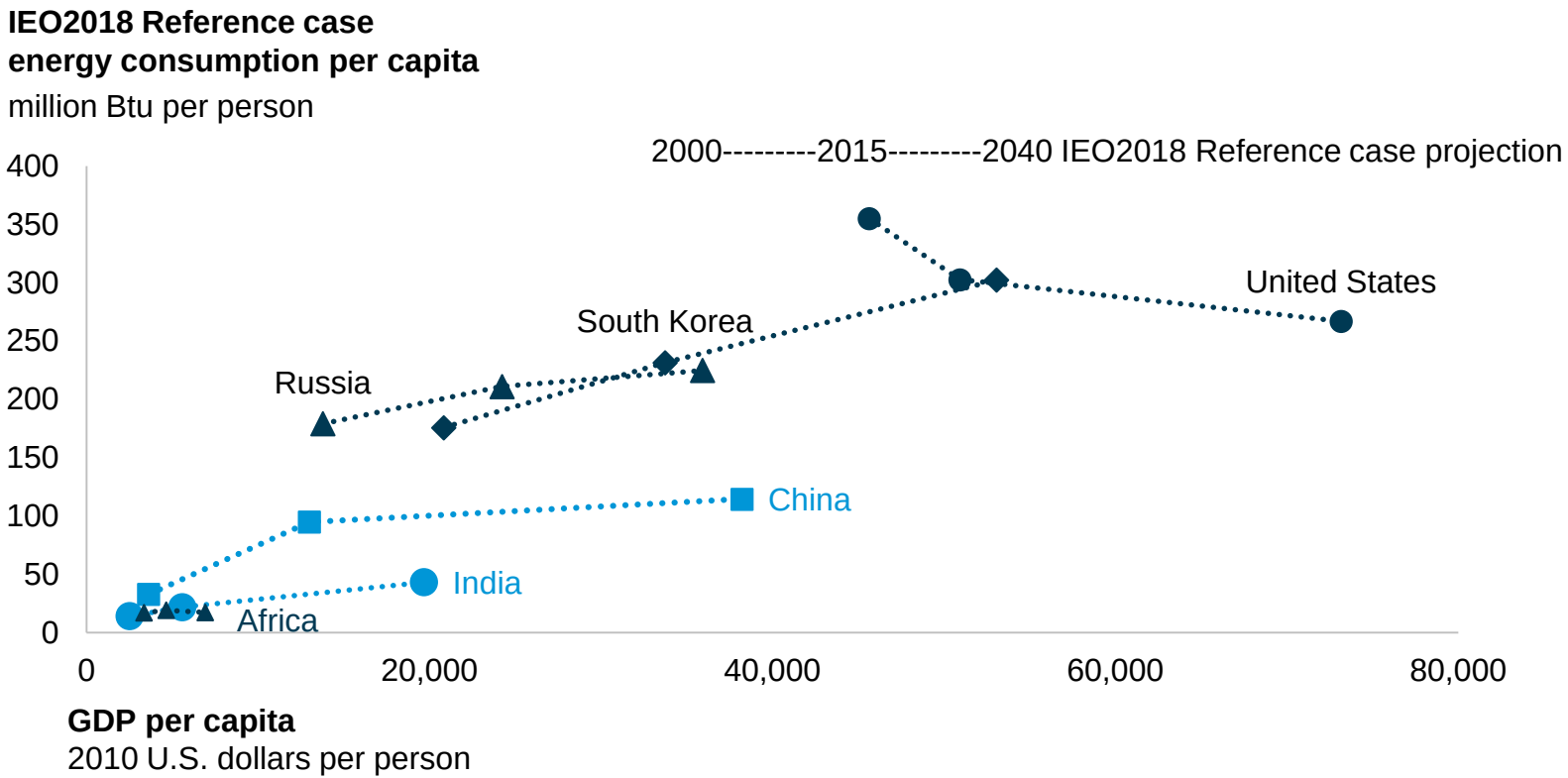
region share of global energy-intensive sector gross output in 2040

percent



Source: EIA, International Energy Outlook 2018

India’s per capita income and energy consumption continue to lag other major economies

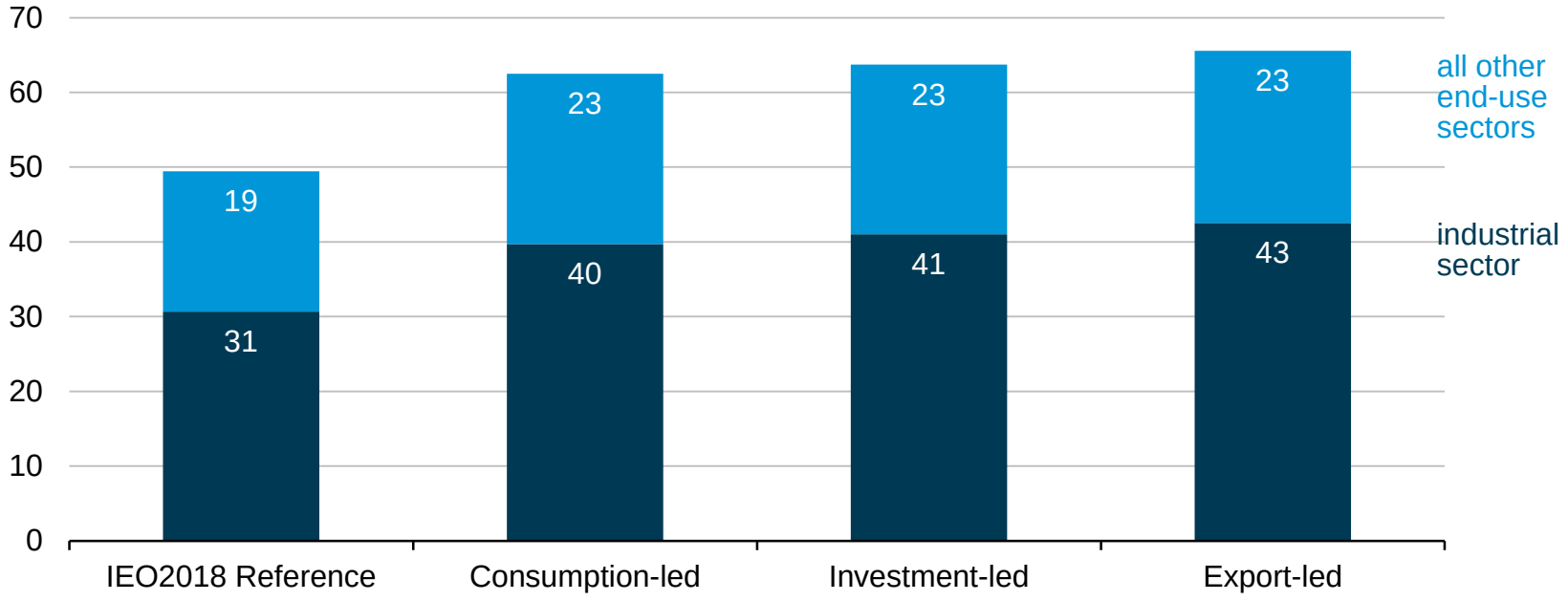


Source: EIA, International Energy Outlook 2018

Differences in energy consumption between India's high-growth cases are small

Indian energy consumption in 2040

quadrillion Btu

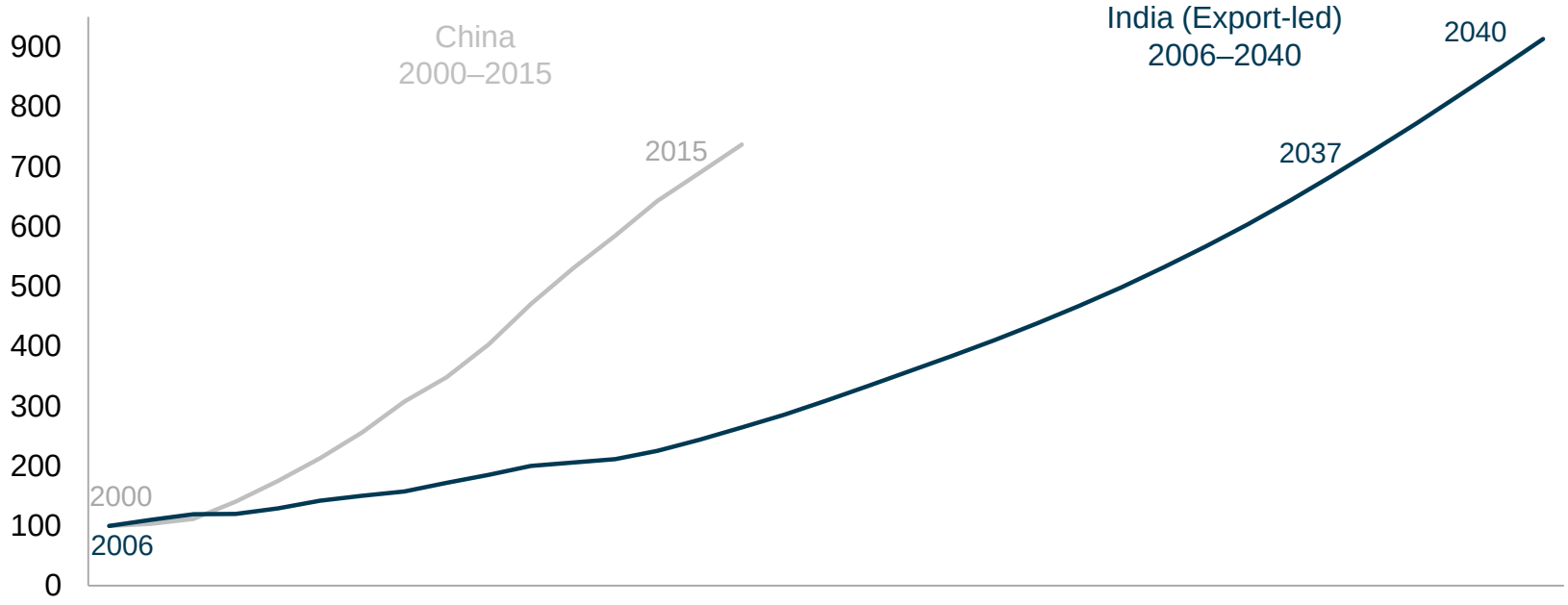


Source: EIA, International Energy Outlook 2018

When starting from similar levels of GDP per person, India's energy-intensive production does not reach historic Chinese production levels until after 2035

energy-intensive manufacturing gross output

2010 U.S. dollar index, selected start year = 100



Source: EIA, International Energy Outlook 2018

Services are the largest share of GDP for six countries that represent nearly two-thirds of African GDP

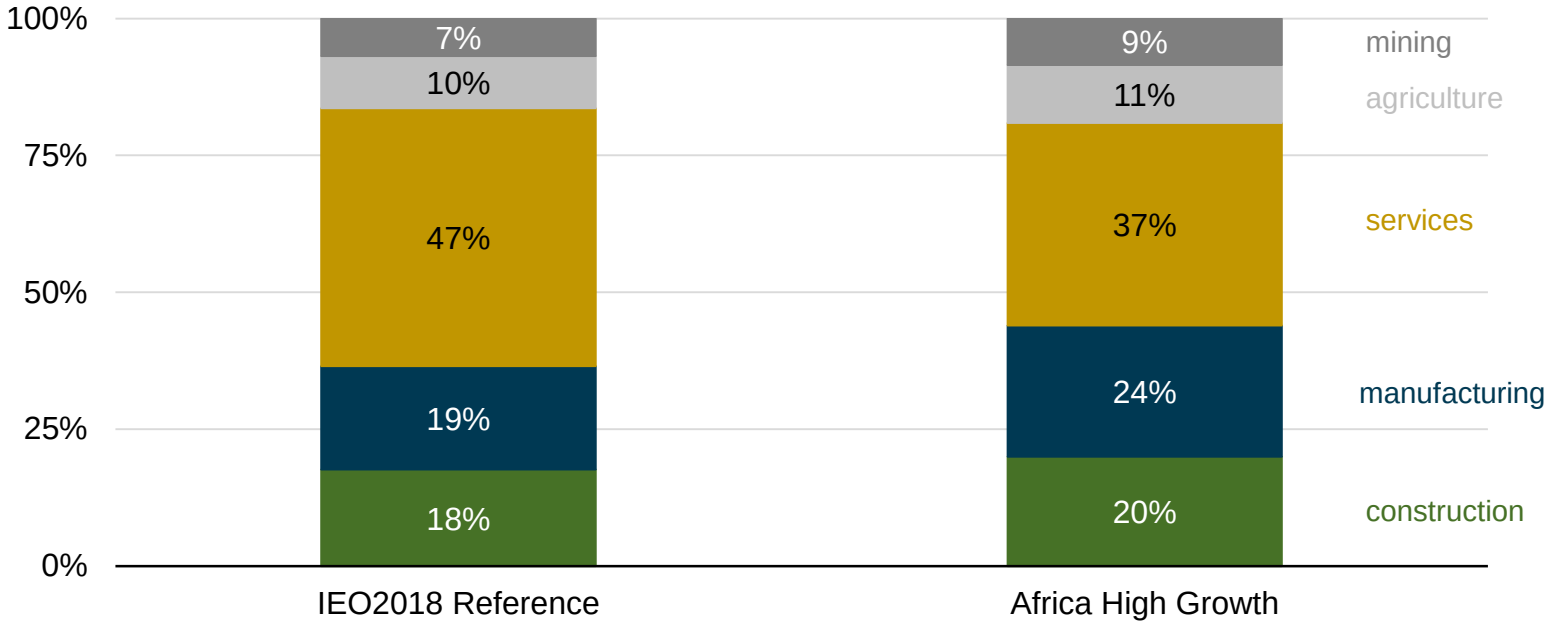
Country	Services share	Manufacturing share
South Africa	71%	13%
Morocco	62%	16%
Nigeria	59%	9%
Egypt	52%	13%
Algeria	44%	5%
Angola	44%	5%

Source: IHS Markit and Oxford Economics

Faster economic growth in Africa leads to an increased share for the manufacturing sector and a lower share for services compared with the IEO2018 Reference case

sector share of total gross output in 2040

percent

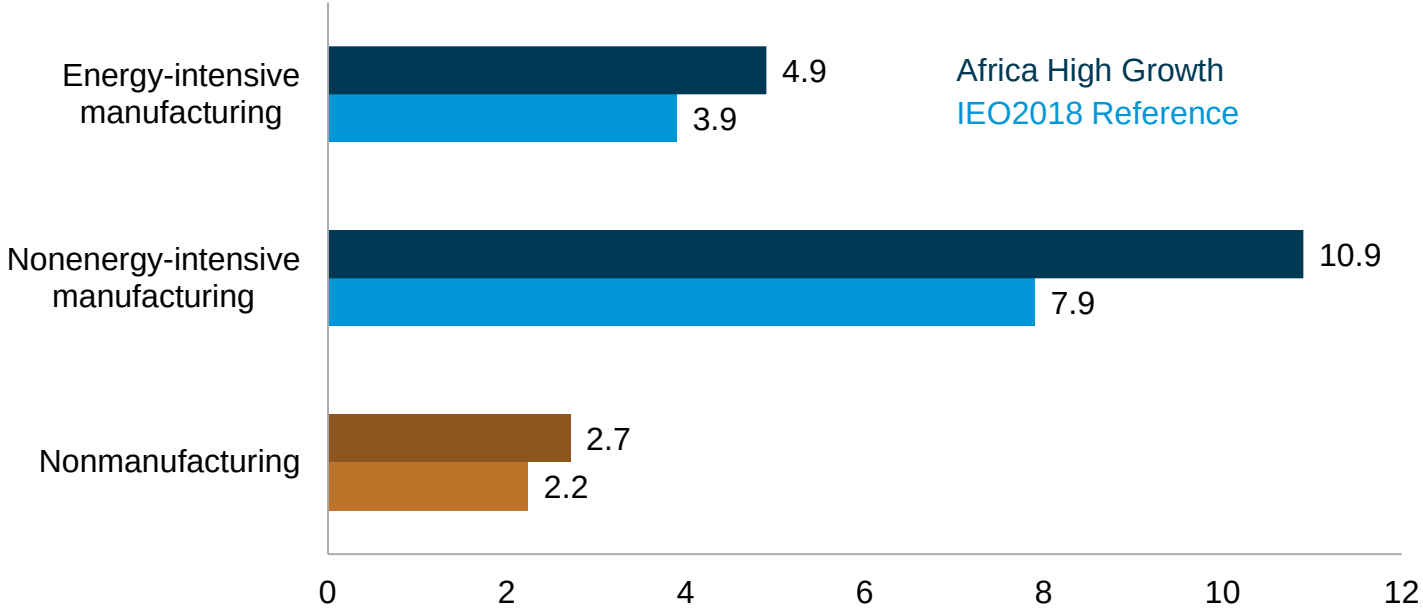


Source: EIA, International Energy Outlook 2018

Manufacturing energy consumption increases more than nonmanufacturing energy consumption when compared with the IEO2018 Reference case in 2040

industrial sector energy consumption in 2040

quadrillion Btu



Source: EIA, International Energy Outlook 2018

Key IEO2018 questions for panelists

- What is surprising?
- What is expected?
- What are your insights?
- Which topics would you explore more deeply?

For more information

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