



The Changing Coal Landscape In the United States

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United States Energy Association

USEA convenes, educates, and provides a nonpartisan forum for the global energy community. Internationally, USEA supports energy development by expanding access to safe, affordable, and clean energy in partnership with the U.S. Government.

- USEA is a non-profit, non-lobbying institution founded in 1924. We currently have 30 staff members who speak a total of 16 unique languages.
- USEA member organizations come from across the energy industry, including the National Mining Association (NMA), Smart Electric Power Alliance (SEPA), Edison Electric Institute (EEI), American Petroleum Institute (API), Tennessee Valley Authority (TVA), American Gas Association (AGA), North American Electric Reliability Corporation (NERC), IHS Markit, Arizona State University, and Brookhaven National Laboratory.
- Over the past three decades, USEA has worked in 104 countries across six continents in coordination with the U.S. Government to improve electricity access, reliability, and safety. We currently have ongoing projects in Africa, Eastern Europe, Central Asia, Southeast Asia, and South America.
- Funding agencies include the U.S. Agency for International Development (USAID), the U.S. Department of Energy (DOE), and the U.S. Department of State.

Realities To Consider



“Energy Never Sleeps”

- Energy impacts every living being.
- Directly or indirectly, all modern life is dependent on energy.

Reliable, Affordable, and Environmentally-conscious Energy

- A focus on development, delivery, distribution, and utilization is required for the health and well-being of the public.
- Assisting and building fair and transparent energy structures.
- A sincere, intense dedication to addressing problems of the past and looking to the future.
- An enhanced focus on energy availability and environmental considerations as we try to achieve a carbon neutral world.

Heightened Focus on Cybersecurity and Physical Security

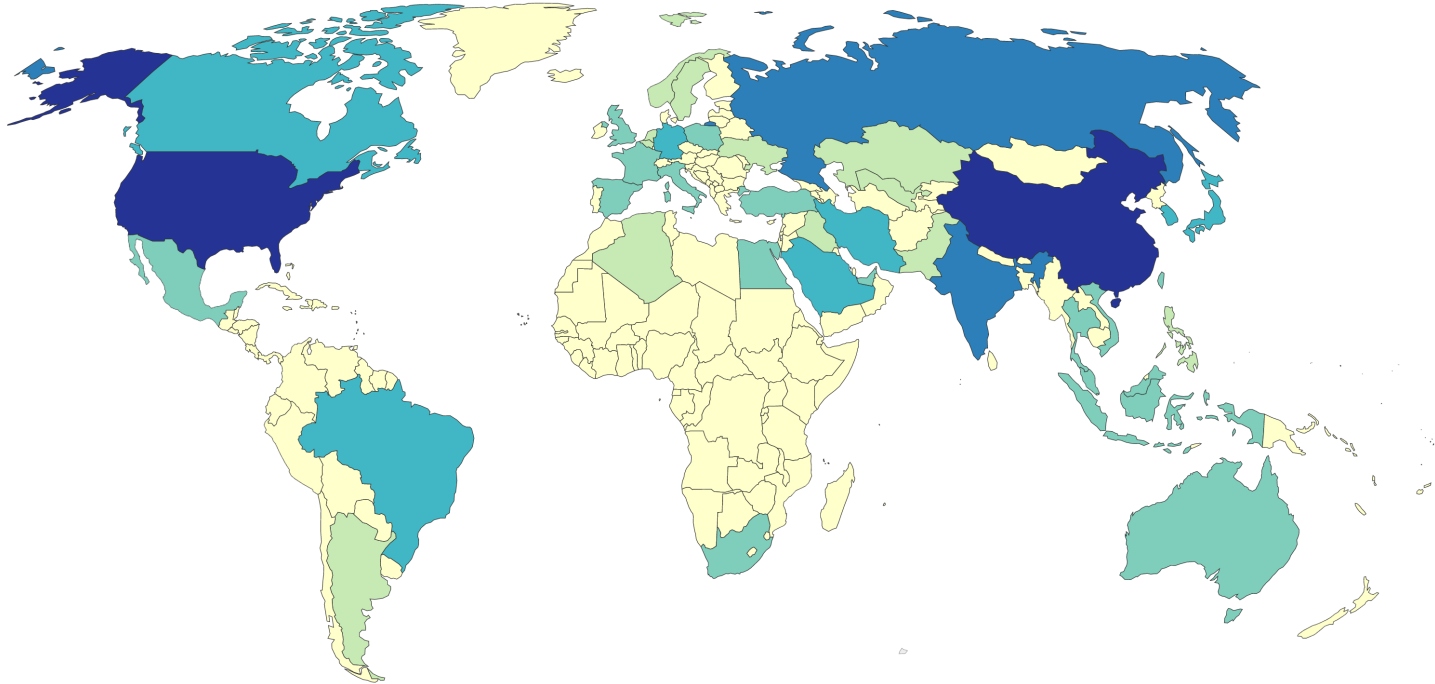
- The convergence of cybersecurity and physical security will reduce system vulnerabilities and enhance resilience.

Global Energy Consumption

Primary energy consumption, 2020

Primary energy consumption is measured in terawatt-hours (TWh).

Our World
in Data



Source: BP Statistical Review of World Energy; and EIA

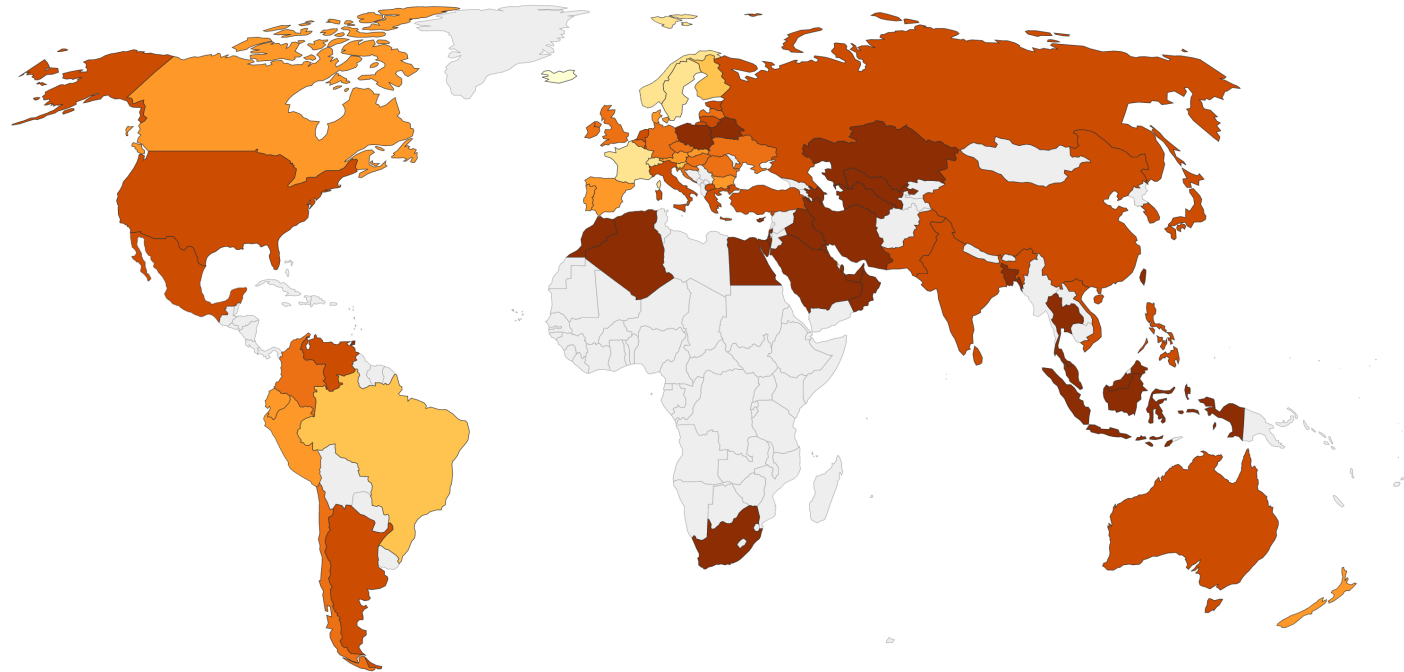
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Note: Data includes only commercially-traded fuels (coal, oil, gas), nuclear and modern renewables. It does not include traditional biomass.

Share of Primary Energy Consumption from Fossil Fuels

Share of primary energy from fossil fuels, 2020

Our World
in Data



No data 0% 25% 50% 60% 70% 80% 90% 100%

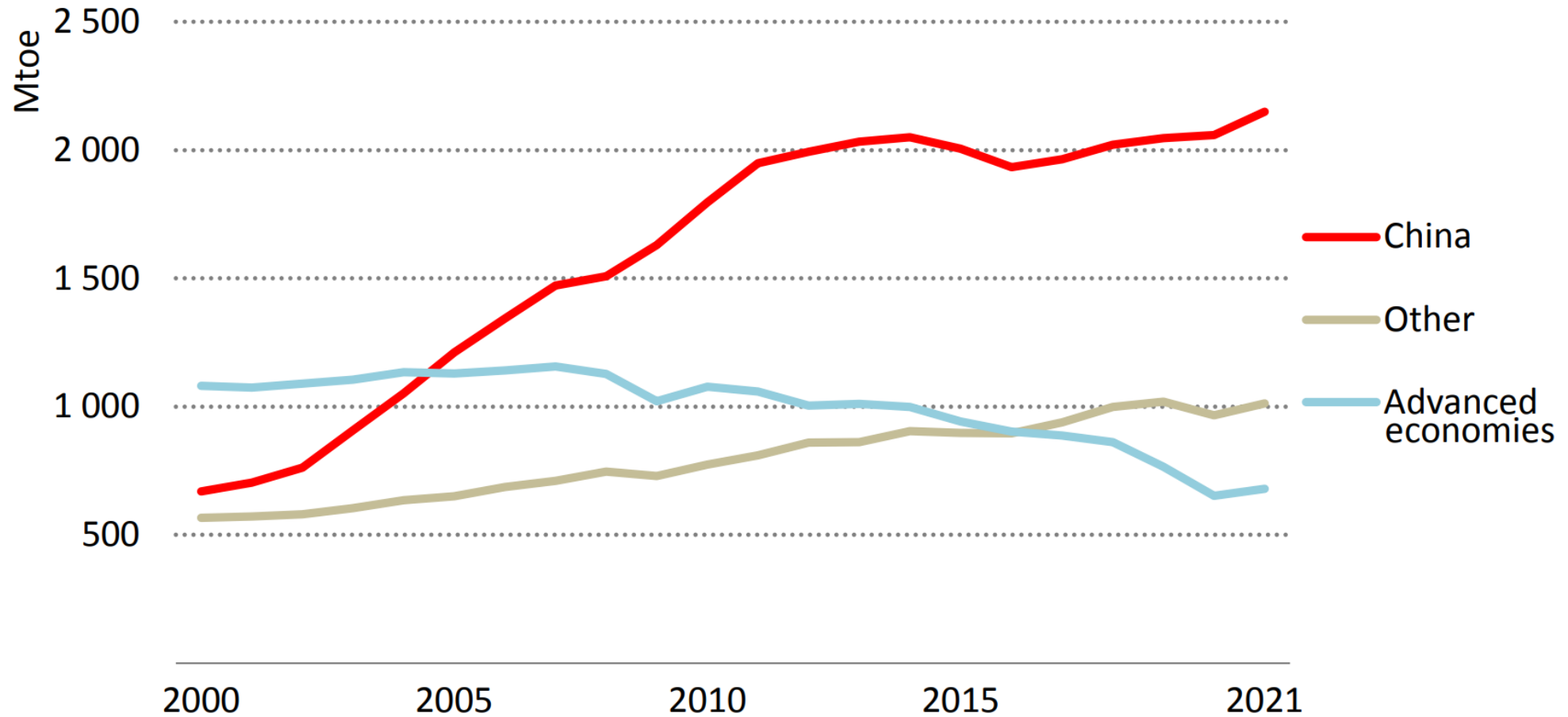
Source: Our World in Data based on BP Statistical Review of World Energy (2021)

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Note: Primary energy is calculated using the 'substitution method' which takes account of the inefficiencies energy production from fossil fuels.

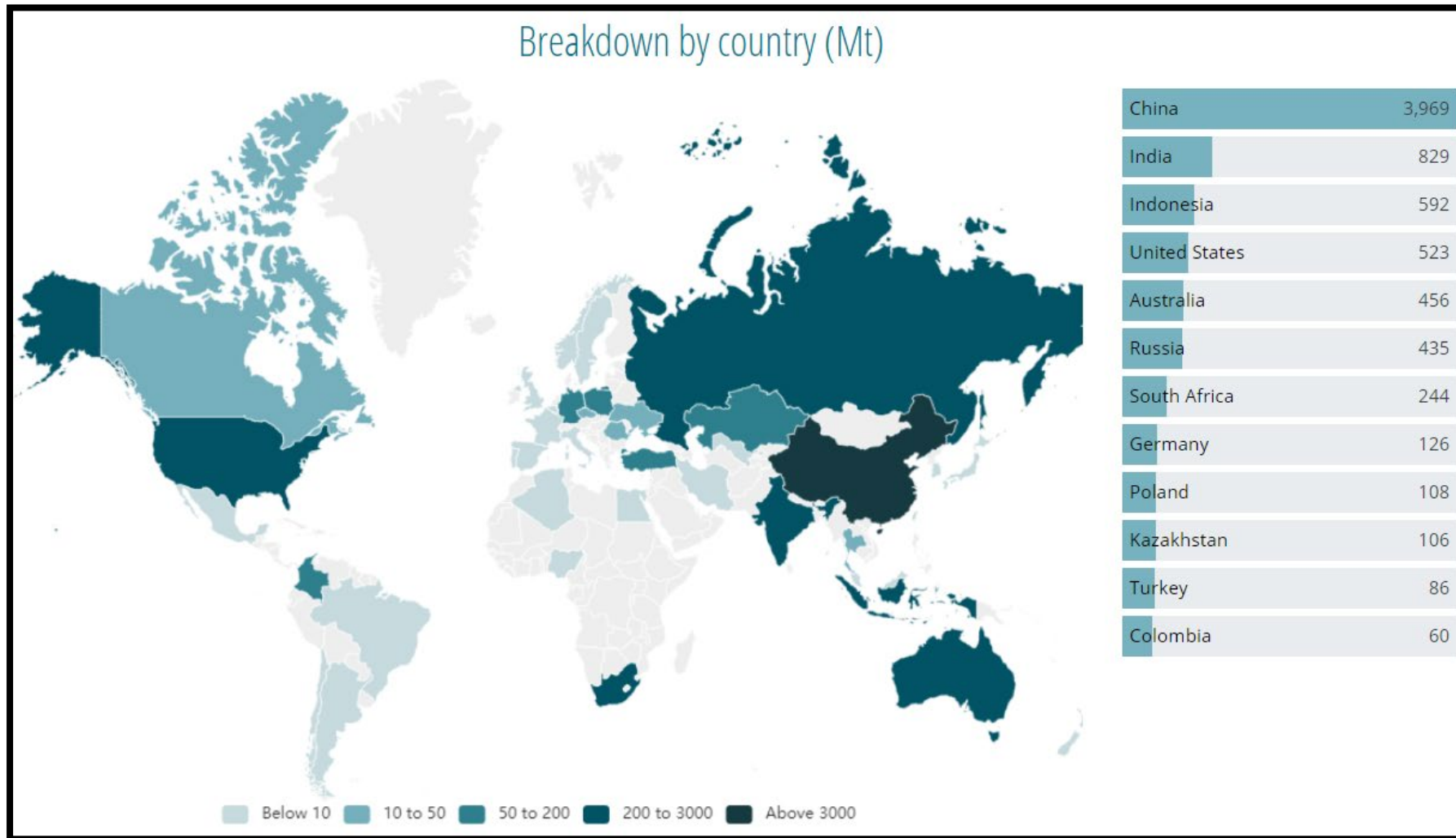
Global Coal Consumption

Coal consumption by region, 2000 to 2021

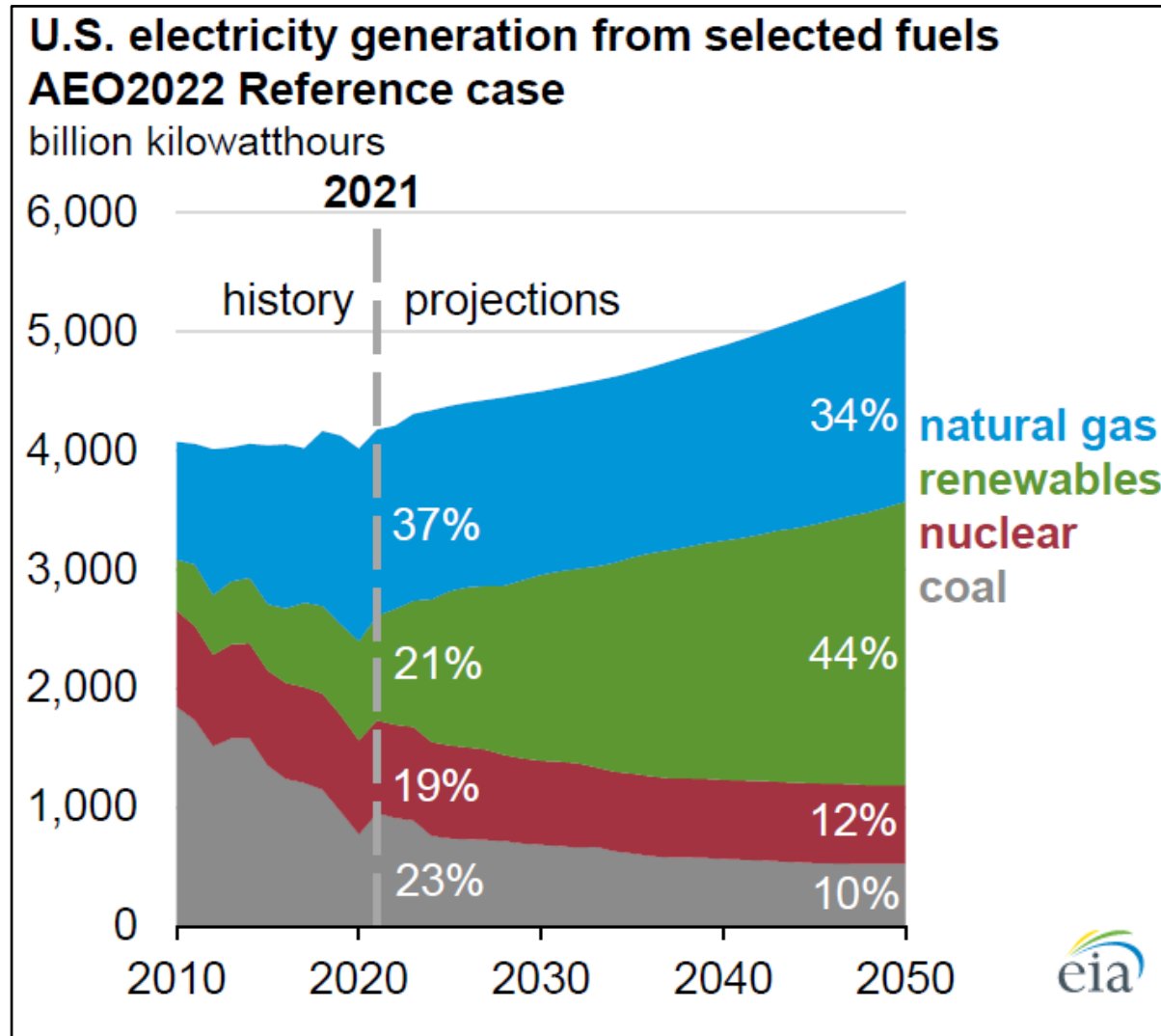


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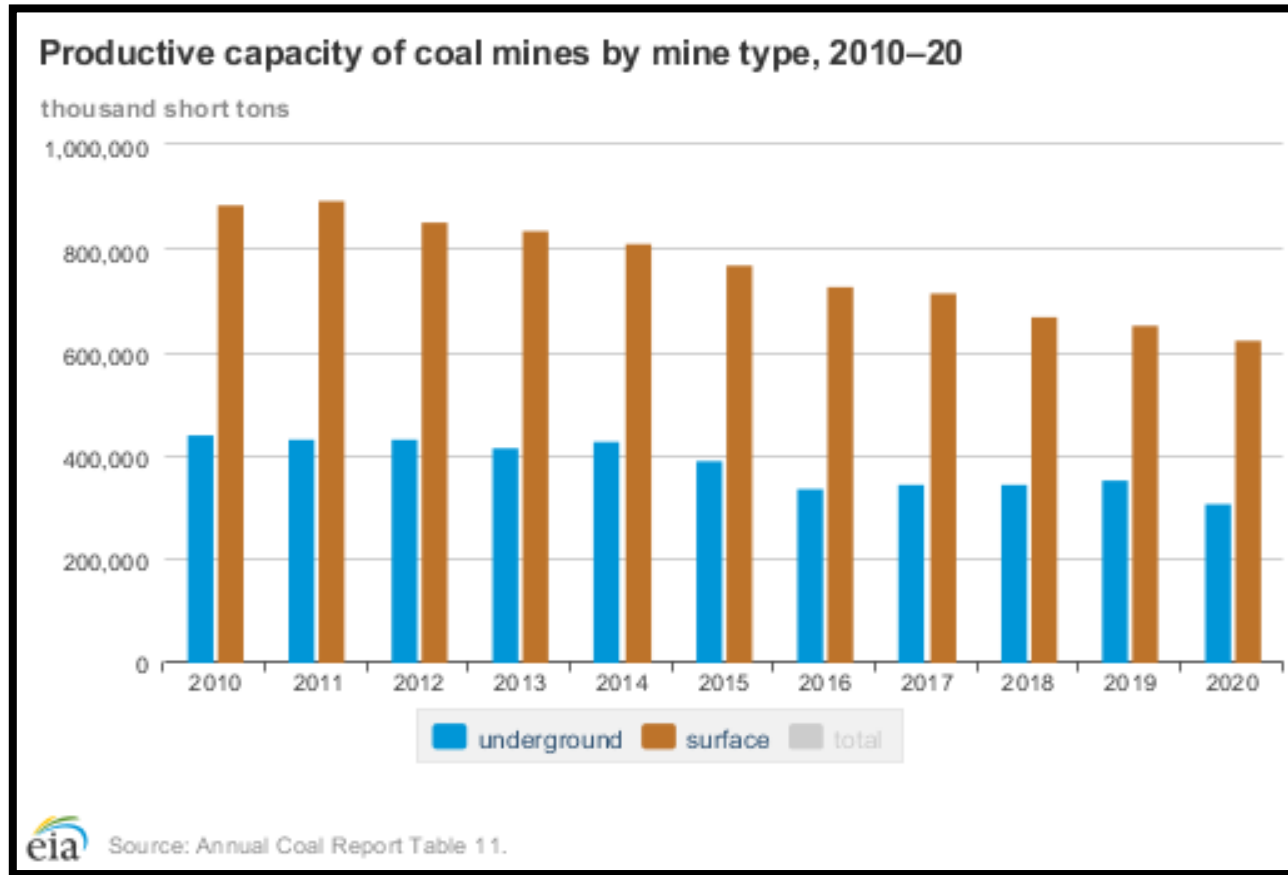
Global Coal Production



U.S. Electricity Generation By Source



Capacity of U.S. Coal Mines by Type



U.S. Coal Production by State

U.S. Coal Production by State & Rank (Thousand Short Tons)



State	2021 Total	% of Total U.S.	Historical High	Year
1 Wyoming	239,180	41.4%	467,644	2008
2 West Virginia	78,587	13.6%	176,157	1947
3 Pennsylvania	42,360	7.3%	277,377	1918
4 Illinois	36,770	6.4%	89,281	1918
5 Montana	28,580	4.9%	44,786	2008
6 Kentucky	26,632	4.6%	173,322	1990
7 North Dakota	26,543	4.6%	32,286	1994
8 Indiana	19,470	3.4%	39,267	2014
9 Texas	17,250	3.0%	55,755	1990
10 Utah	12,344	2.1%	27,507	1996
11 Colorado	11,875	2.1%	39,870	2004
12 Virginia	10,812	1.9%	46,917	1990
13 Alabama	9,318	1.6%	29,030	1990
14 New Mexico	9,265	1.6%	29,618	2001
15 Mississippi	3,201	0.6%	4,004	2010

Top Annual Coal Wages, By State

Annual Coal Wages vs.
All Industries, 2021



Top States	Coal Mining (average)	All industries ^{1/} (average)
Alabama	\$105,924	\$53,683
Alaska ^{el}	\$97,000	\$61,867
Colorado	\$107,271	\$71,520
Illinois ^{el}	\$91,000	\$71,086
Indiana	\$91,000	\$55,413
Kentucky	\$79,914	\$52,948
Maryland ^{el}	\$82,000	\$69,420
Montana ^{el}	\$95,000	\$50,756
New Mexico ^{el}	\$90,000	\$50,875
North Dakota	\$117,894	\$57,614
Ohio	\$80,956	\$57,926
Pennsylvania ^{el}	\$93,000	\$64,749
Tennessee	\$67,155	\$59,739
Texas	\$110,985	\$67,103
Utah	\$82,216	\$58,288
Virginia ^{el}	\$86,000	\$68,143
West Virginia	\$91,680	\$49,748
Wyoming	\$94,807	\$52,548

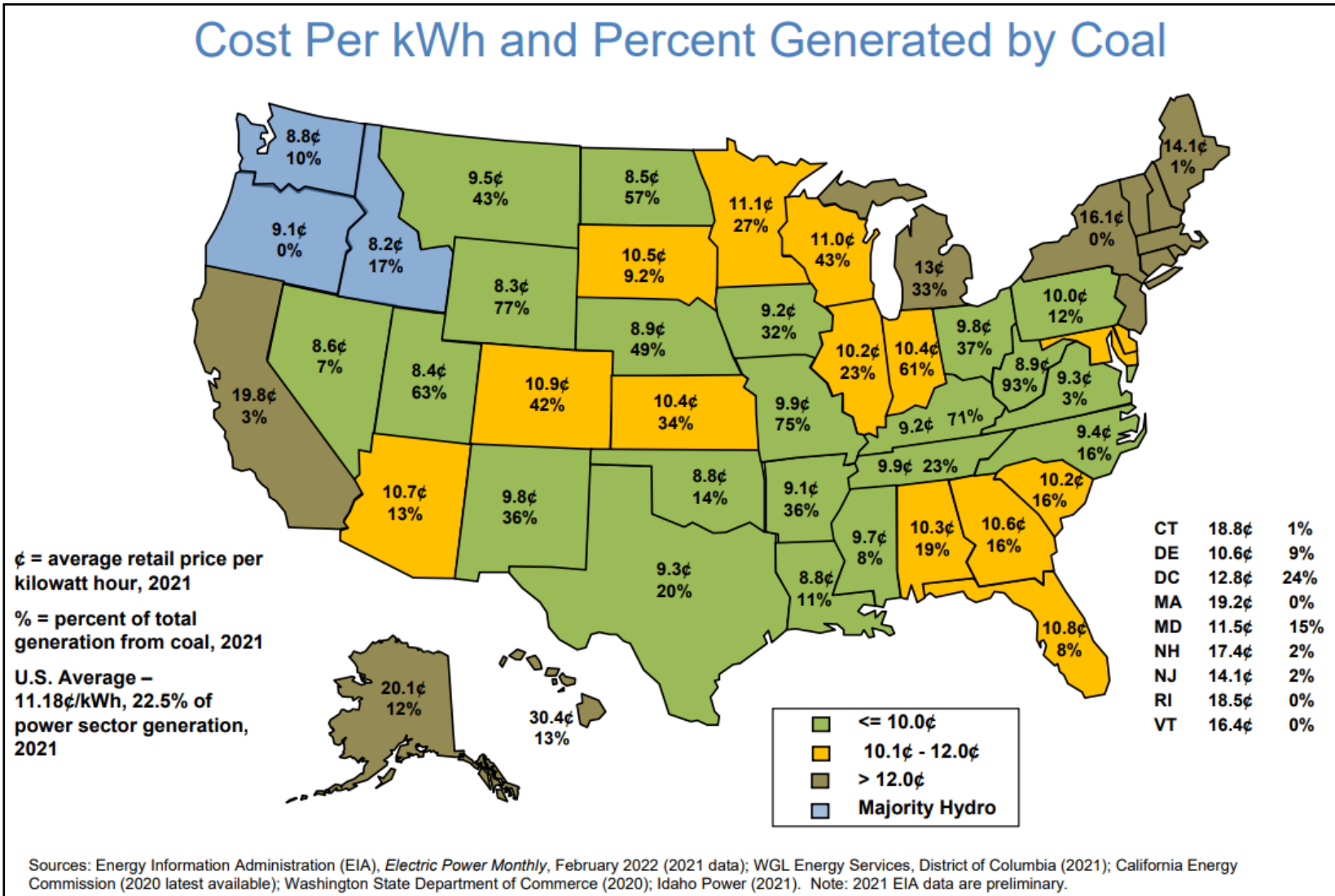
Average wage for all U.S. coal miners: \$93,759

Average wage for all U.S. workers: \$68,030

Percent above average U.S. wage: 38 percent

Cost of Electricity & % Generated by Coal

Cost Per kWh and Percent Generated by Coal



Sources: Energy Information Administration (EIA), *Electric Power Monthly*, February 2022 (2021 data); WGL Energy Services, District of Columbia (2021); California Energy Commission (2020 latest available); Washington State Department of Commerce (2020); Idaho Power (2021). Note: 2021 EIA data are preliminary.

The U.S. Coal Miner

Profile of the U.S. Coal Miner, 2021



Age (2021 median): ^{1/}	44
Age (mean): ^{2/}	44
<hr/>	
Women (Percent): ^{1/}	9
<hr/>	
Education (percent): ^{3/}	
High School Diploma -	> 75
Bachelors Degree or Beyond -	3
<hr/>	
Work Experience (median, years): ^{3/}	16
<hr/>	
Job-related Training (hours annually): ^{4/}	10 to 25
Safety Training (hours annually): ^{4/}	
New Miners -	24
Refresher -	8
<hr/>	
Earnings (\$): ^{1/}	
Average Hourly -	\$35.66
Average Weekly -	\$1,803
Average Annual -	\$93,759
Average Hours Worked Weekly -	45
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Other: ^{4/}	
Number of Mine Workers -	61,324
Number of Mining Operations -	970

SOURCES:

1/ Bureau of Labor Statistics (CES, QCEW, and CPS).

2/ NMA coal industry survey (2015 latest available).

3/ NIOSH, Survey of Mining Population, June 2012 (2012 latest available)

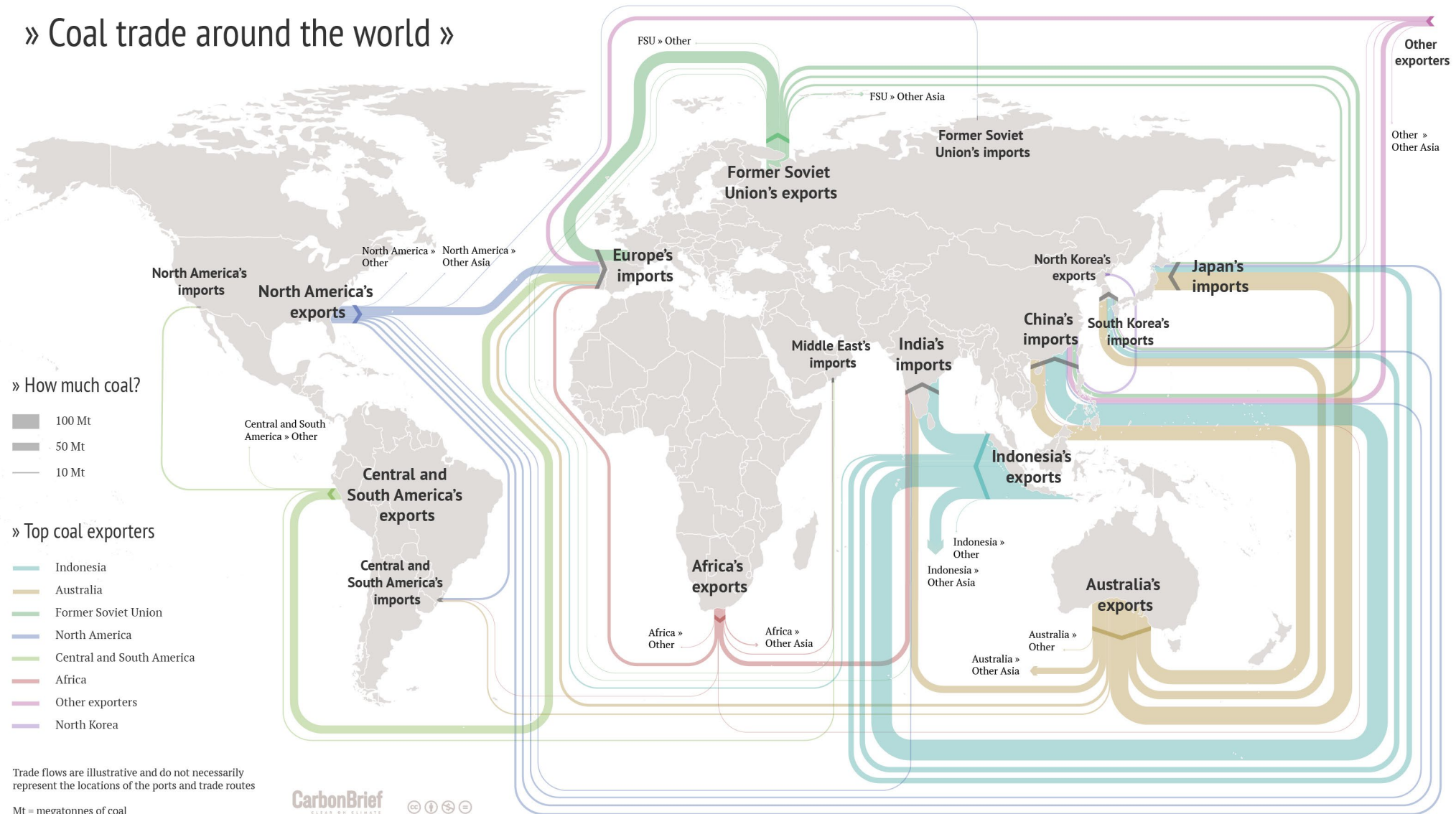
4/ MSHA, *MSHA at a Glance*, May 2022

2021 data unless otherwise noted.

Updated: June 2022

Global Coal Trade

» Coal trade around the world »

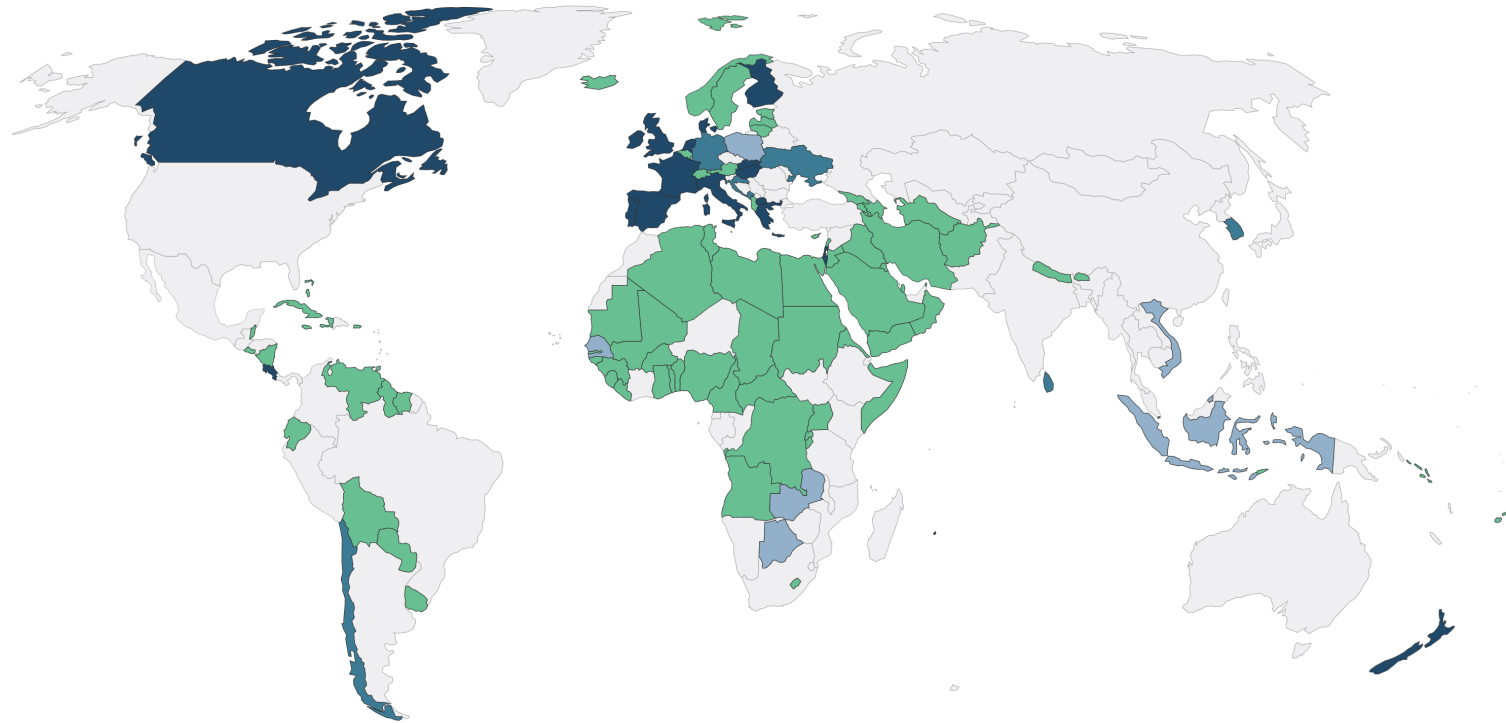


Phasing Out Coal

When will countries phase out coal power?

This measures pledges to phase out coal from the electricity mix.

Our World
in Data



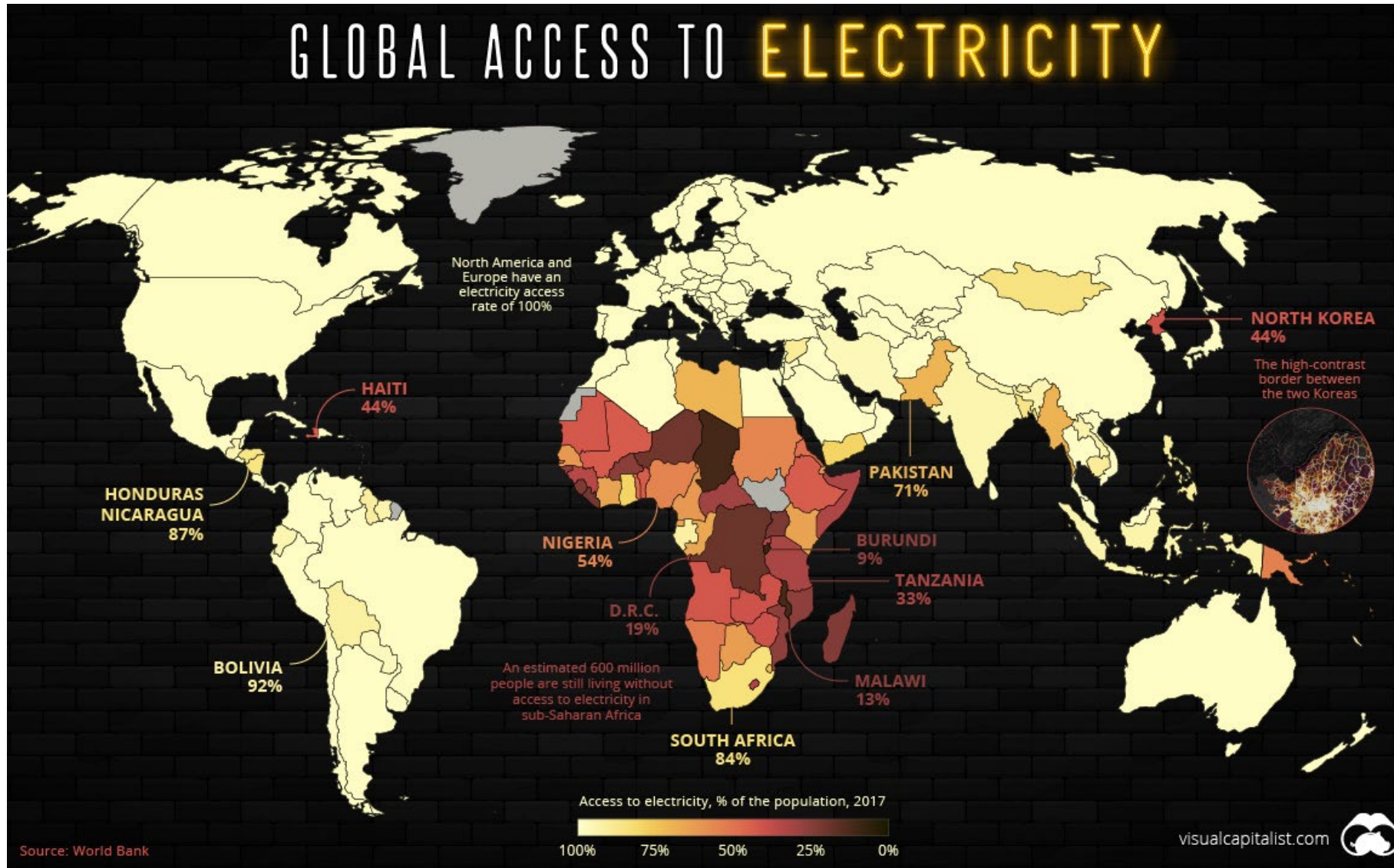
■ Coal free ■ Phase out by 2030 ■ Phase out by 2040 ■ Phase out in 2040s ■ No pledge

Source: Powering Past Coal Alliance; Ember Climate; Beyond Coal EU; Bloomberg Coal Countdown and other sources

Note: Where a concrete phase out date is not defined, we have allocated the final year of the target decade. For example, "Phase out in the 2040s" is given a target date of 2049.

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Global Electricity Access



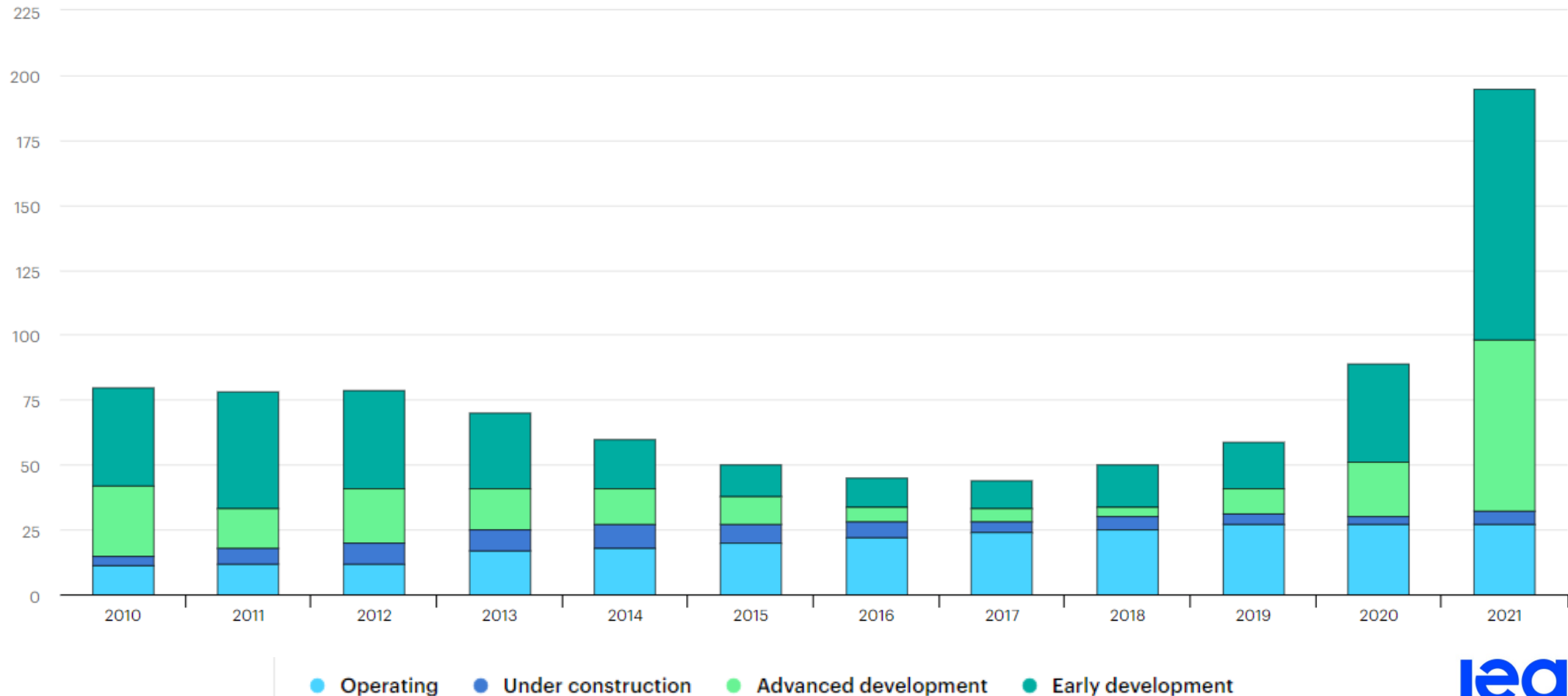
- 760 million people, about 10.5% of the world's population, still do not have access to electricity.
- 60% of sub-Saharan Africa (600 million people) do not have access to electricity.

Our World in Data

Global CCUS Facilities: Operating & Development

World large-scale CCUS facilities operating and in development, 2010-2021

Number of Facilities



Concluding Observations



- The political landscape is rapidly shifting, with an enhanced focus on environment and climate change. Nevertheless, there will be high dependence on fossil fuels for the foreseeable future, before carbon neutrality can be achieved.
- Imports and exports are unpredictable worldwide, due to wars disrupting shipping patterns and transportation, geopolitics, pandemics, and other known and unknown variables.
- Increased risks associated with cybersecurity, physical security, and other possible incursions and disruptions with the potential to affect overall national security.
- New energy technologies, including advanced storage systems, will emerge to address climate change and to improve the state of the world's energy supply, transportation, and utilization.
- Changes in the energy and environmental arena will accelerate dramatically and unpredictably.