

Deep Trouble

2021

TRACKING GLOBAL COAL MINE PROPOSALS

Ryan Driskell Tate, Christine Shearer, and Andiswa Matikinca



ABOUT THE COVER

The cover photo shows the Bengalla coal mine in Australia. [Photo](#) by D. Sewell, licensed under CC by 2.0.



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Monitor**

ABOUT GLOBAL ENERGY MONITOR

Global Energy Monitor (GEM) develops and shares information on energy projects in support of the worldwide movement for clean energy. Current projects include the Global Coal Mine Tracker, Global Coal Plant Tracker, Global Fossil Infrastructure Tracker, Global Steel Plant Tracker, Europe Gas Tracker, CoalWire newsletter, Global Gas Plant Tracker, Global Registry of Fossil Fuels, Latin America Energy Portal, and GEM.wiki. For more information, visit www.globalenergymonitor.org.



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The Oxpeckers Center for Investigative Environmental Journalism combines traditional reporting with data analysis and geo-mapping to track eco-offenses in Africa. They develop and share [#MineAlert](#), a tool that maps data and documents South Africa's operating mines and applications for new mining projects. For more information, visit www.oxpeckers.org.

ABOUT THE GLOBAL COAL MINE TRACKER

The [Global Coal Mine Tracker](#) (GCMT) provides information on the world's major coal mines: every operating mine producing 5 million tonnes per annum (mtpa) or greater, and every proposed mine with a capacity of 1 mtpa or greater. The map and underlying data are updated bi-annually, in January and July. With each update, coverage is expanded to include smaller mines. By January 2022, GCMT will have cataloged every coal mine producing 1 mtpa or greater. Each mine included in the tracker is linked to a wiki page on [GEM.wiki](#), which provides additional details.

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FURTHER RESOURCES

For additional data on proposed and existing coal mines, see [Summary Data](#) of the Global Coal Mine Tracker (GCMT). For links to reports based on GCMT data, see [Reports & Briefings](#). To obtain primary data from the GCMT, use the [Data Request Form](#).

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SUMMARY / KEY FINDINGS

Coal producers **need to halt** all new mines and mine extensions and **reduce output** 11% each year through 2030 to stand any chance of limiting global warming to 1.5°C and achieving the targets of the Paris climate agreement. Yet rather than winding down production, coal operators continue to propose and build new mines.

This report provides the results of the first comprehensive global survey of coal mine proposals. Based on the survey, 2,277 million tonnes per annum (mtpa) of new coal mining capacity is currently under development, representing nearly 30% of 2019 global **production levels** (8,135 Mt). While three-fourths (1,663 mtpa) of proposed coal mine capacity is in the early stages of planning and thus vulnerable to cancellation, the remaining quarter (614 mtpa) of proposed mine capacity is already under construction. The prospect of a low-carbon transition puts these projects at risk of up to \$91 billion USD in stranded assets. But if they proceed, without unprecedented cutbacks in global production over the next decade, proposed capacity could boost supply to over four times a 1.5°C-compliant pathway.

The survey, carried out by Global Energy Monitor, includes all active coal mine proposals with a capacity of 1 mtpa or more. Key findings include:

- **Coal rush from hundreds of proposed mines.** There are 432 new mine developments and expansion projects currently announced or under development worldwide, amounting to 2,277 mtpa of new capacity. Of this, 614 mtpa is under construction and 1,663 mtpa is in planning.
- **New developments breach a 1.5°C pathway.** Development of these new mines runs contrary to the IEA's **new roadmap** for net-zero emissions, which requires no new coal mines or mine extensions beyond 2021, and the findings of the UN and leading research organizations that coal production must **decline 11%** each year through 2030 to remain consistent with a pathway to 1.5°C. If all proposed coal mine capacity currently under development is realized, coal production in 2030 will be over four times the 1.5°C-compliant pathway.
- **China, Australia, India, and Russia make up over three-fourths of new mine developments.** New capacity development is strongest in China, Australia, India, and Russia. Together, the

countries represent 77% (1,750 mtpa) of global coal mine development: China has 452 mtpa of coal mine capacity under construction and another 157 mtpa in planning; Australia has 31 mtpa under construction and 435 mtpa in planning; India has 13 mtpa under construction and 363 mtpa in planning; and Russia has 59 mtpa under construction and 240 mtpa in planning.

- **Four Chinese provinces account for nearly a quarter of all the proposed coal mine capacity worldwide.** About 24% (544 mtpa) of the world's proposed mine capacity is located in four Chinese provinces and regions: Inner Mongolia (234 mtpa), Xinjiang (123 mtpa), Shaanxi (95 mtpa), and Shanxi (92 mtpa).
- **Most proposed projects are publicly financed.** The majority of proposed coal mines in China and India are sponsored by state-owned enterprises wholly or partially owned by the government, meaning taxpayer money continues to subsidize mine projects to fuel province and state economies.
- **Usual corporate suspects in the mix.** Despite slumps and slowdowns in market demand, the world's largest energy conglomerates such as Glencore, Mechel, and BHP still remain invested in new mines and mine expansions, though small and independent firms have shown the greatest appetites for new projects, especially in Australia and Russia.
- **Greenfield developments lead the way.** Nearly two-thirds of mine proposals are "greenfield" developments, signalling the industry's willingness to break ground on new mines that tend to lock-in more long-term production and more future emissions than existing mines. The remainder are "brownfield" developments that expand the capacity of existing operations or recommission idle mines.
- **Beware of mid-size operations.** While mega coal mine projects often attract intense global opposition from climate activists and pose a financial risk for investors, the industry is primarily reliant on mid-size operations with lower public profiles to boost supply. The median size for a new coal proposal is 3.5 mtpa.
- **Thermal coal is still king.** Although power generation from the world's coal plants has been on the decline since 2019, thermal coal operations still dominate, making up 71% of proposed mine capacity. However, in North America the numbers are reversed, with metallurgical coal for steel-making accounting for 70% of proposed capacity.
- **Greenhouse gas emissions from new mines comparable to U.S. emissions.** The emissions from coal mine projects now on the drawing board would total between 5,000 and 5,800 Mt of CO₂ equivalent (CO₂e) each year from combustion and methane leakage (for CO₂e100 and CO₂e20, respectively), comparable to the current annual CO₂ emissions of the United States (5,100 Mt).
- **Stranded asset risk.** Coal mines and related infrastructure such as ports and railways are capital-intensive projects that cost tens of millions of dollars per mtpa mined to open. Yet the prospect of a low-carbon transition and tighter emission policies put these projects at risk of shutting down early, representing up to \$91 billion USD in stranded assets from coal mines alone.

INTRODUCTION: STILL DIGGING

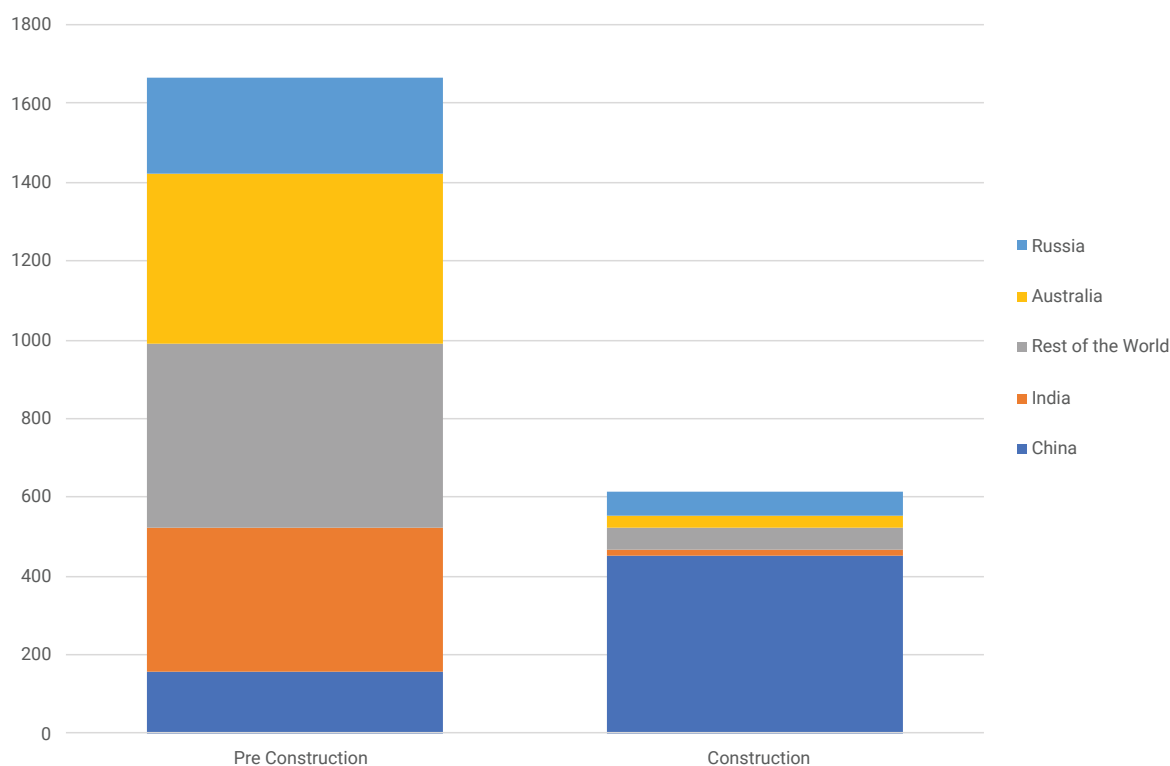
The coal industry faces a bust in its historic markets, but there's no end in sight in many parts of the world. Altogether, 2,277 million tonnes per annum (mtpa) of new coal mining capacity is on the drawing board, with one-quarter (614 mtpa) under construction and the remaining three-fourths in early stages of planning (1,663 mtpa) (see Appendix 1 for methodology).

The frenzy of new mine activity is strongest in China and India where state-owned enterprises (SOEs) with majority government ownership continue to invest in thermal coal mines and rely on subsidies to shield operations from external market pressures. Against market headwinds, even private coal companies in Australia and Russia remain committed to new projects, with small and independent firms showing a greater appetite for mine developments than multinationals. This is not to say the largest producers,

like Glencore, BHP, or Mechel, have opted out. They remain invested in new operations as they hold out hopes for rebounds in seaborne markets or heightened demands for metallurgical coal.

The industry is pursuing a substantial number of greenfield developments, which comprise two-thirds (1,471 mtpa) of the 2,277 mtpa of proposed capacity. Despite economic slumps in coal markets, rebuffs from banks and insurers, and resistance from civil society groups, state and private operators remain bullish on new mines. The size of these projects seems to have created a Goldilocks effect: most are in the mid-range, neither very large nor very small, with a median capacity of 3.5 mtpa. At this size, they are less vulnerable to the intense public scrutiny typically associated with coal megaprojects, while also being shielded from near-term consolidation and

Figure 1: Coal mining capacity under development (mtpa)



Source: [Global Coal Mine Tracker](#), Global Energy Monitor, January 2021

closure schemes, especially in China and India, where national governments have signalled plans to reduce the number of small mines in their portfolios.

But the future of new mine projects remains uncertain. Their viability is contingent on government policies related to the Paris climate agreement; in the event that governments impose tighter emission regulations, these operations face significant [stranded asset risk](#). If planned coal mines open as intended, but are forced to lower production levels or shut down early, they represent up to \$91 billion USD in stranded assets, based on the average capital costs to open a coal mine.¹

The risk of stranded assets is particularly acute for the one-fourth (614 mtpa) of new mine developments currently undergoing construction, amounting to \$27 billion USD in capital costs. The lion's share of these construction projects are located in China (452 mtpa), which has five times the number of construction projects than runner-ups Russia (59 mtpa) and Australia (31 mtpa) combined. The remaining three-fourths of new mines still in pre-construction planning (1,664 mtpa) are particularly vulnerable to the obstruction of mine financing and government approvals, meaning they may never open due to social and economic pressure to transition away from coal.

1. Assumes average capital costs of US\$26 million per mtpa for surface mines and US\$53 million per mtpa for underground mines in OECD nations ([Harper 2008](#)), and US\$38 million per mtpa for surface mines and US\$50 million per mtpa for underground mines in non-OECD nations ([Dipu 2011](#)).

GEOGRAPHIES OF PRODUCTION: WHERE ARE THE NEW MINES?

The world's 2,277 mtpa of proposed mine capacity is highly concentrated in a handful of heavy producers. At the national level, most proposed mine developments are clustered in China (609 mtpa), Australia (466 mtpa), India (376 mtpa), and Russia (299 mtpa). Together these countries make up 77% (1,750 mtpa) of all global mine development projects.

These new development projects perpetuate the broader trends in coal production over the last five

years. In 2019, global production increased by an estimated 1.6% (Table 1), spurred by new developments in China, India, Australia, and Russia where coal production remains *steady or rising*. While early global estimates show the onset of the Covid-19 pandemic *chipped away* at global production levels in 2020, it was not enough to significantly reduce output in China, the largest producer, where production *stagnated* at 3,840 Mt. In fact, the Covid-19 pandemic provoked *temporary mine shutdowns* in many parts of

FIGURE 2: Proposed coal mines by country or region (mtpa)



Source: Production (BGR Energy Study 2019), Proposed Projects (Global Coal Mine Tracker, Global Energy Monitor, January 2021).

Table 1: Coal production by country or region, 2015–2019 (mtpa)

Country/Region	2015	2016	2017	2018	2019	Difference 2018–2019	Difference 2015–2019
China	3,563	3,408	3,520	3,680	3,850	4.6%	8.0%
India	704	723	737	780	777	-0.4%	10.5%
United States	814	661	703	686	641	-6.6%	-21.2%
Indonesia	462	456	461	558	616	10.4%	33.4%
Australia	501	503	492	502	504	0.3%	0.6%
Russia	373	386	409	434	437	0.7%	17.1%
EU27+UK	500	459	463	442	375	-15.3%	-25.1%
Rest of the world	840	876	893	924	935	1.2%	11.3%
Global	7,756	7,471	7,678	8,007	8,135	1.6%	4.9%

Source: BGR Energy Study 2019

the world, but did not halt the pace of mine approvals or construction in India or China.

But the national view masks the origins and density of these projects. The fast-paced build out in China, which leads the world in new mine developments (609 mtpa), is driven by just four provinces: Inner Mongolia, Xinjiang, Shanxi, and Shaanxi Provinces amount to 89% (544 mt) of all the proposed capacity in China. What appears to be a coal boom in East Asia, or even China, is really a boom in a handful of China's coal-bearing provinces.

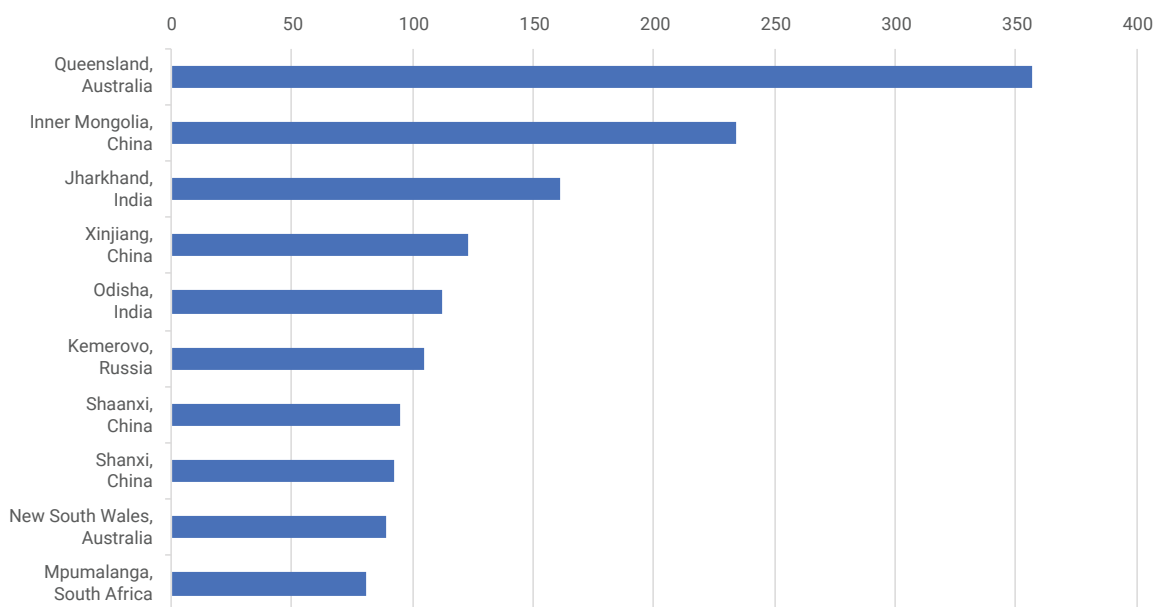
The same is true for new mine developments in Australia (466 mtpa), India (376 mtpa), and Russia (299 mtpa), where mining activity is heavily concentrated in traditional coal mining regions. The coal-fields of Queensland, Australia have more coal under development than any state or province in the world (357 mtpa), bolstered by projects in the Bowen and Galilee Basins. Likewise, the bulk of India's proposals are located in just three states: Jharkhand (161 mtpa), Odisha (112 mtpa), and Chhattisgarh (40 mtpa), which together comprise 77% of all the coal development in South Asia. Similarly, over one-third (105 mtpa) of all

mine projects in Russia are located in the coal-rich Kuznetsk Basin (Kuzbass) in Kemerovo Oblast.

But unlike China, where 74% of projects are already under construction, the vast majority of proposed mining capacity in Australia (94%), India (96%), and Russia (80%) are in pre-construction phases and have yet to undergo the build-out of mine infrastructure. Given their early stages of planning, these mines are particularly vulnerable to future status changes should investors, governments, or civil society groups avert financing or project approvals.

A second tier of mine developments in midsize producers, like South Africa (130 mtpa), Indonesia (70 mtpa), and Mozambique (54 mtpa), could significantly increase national output in those countries. South Africa accounts for 65% (130 mtpa) of proposed capacity in Africa and the Middle East. If all proposed mines went into operation, it would undergo a 51% increase in current production. Indonesia, the major driver of capacity growth in Southeast Asia, would undergo a 12% increase in production, with the province of East Kalimantan responsible for more than half of the region's new mine capacity (49 mtpa). The

FIGURE 3: Proposed coal mining capacity by states and provinces (mtpa)



Source: [Global Coal Mine Tracker](#), Global Energy Monitor, January 2021

potential coal rush in Mozambique, from 10.3 mtpa to 64.3 mtpa, would represent the largest percent shift of national output worldwide, though some companies [have already begun](#) to renege on their plans.

While much of Western Europe is phasing out coal, Poland (32 mtpa) and Turkey (22 mtpa) continue to build new operations, accounting for 60% of the region's new mine development. Most new capacity

remains under development in coal communities, such as Łódź (18 mtpa) and Lower Silesian (12 mtpa) in Poland, and Turkey's Black Sea province of Bartın (10 mtpa). As of 2020, 12% (56 mtpa) of the 453 mtpa proposed capacity in these regions is under construction, with the remaining 88% of capacity in pre-construction phases and subject to financial constraints or institutional and government restrictions in the coming years.

TAKING OWNERSHIP: WHO IS BUILDING NEW MINES?

There are 388 companies and state-owned enterprises invested in the development of coal mine projects around the world. A Top 10 list of companies building new mines is shown in Table 2. These operations are prorated by percent ownership in proposed mine projects. (A list of all companies can be found on the [Global Coal Mine Tracker](#) website.)

Virtually all mine development in India and China is by state-owned companies, with Coal India (243 mtpa) topping the list and China Datang (50 mtpa), NLC India (34 mtpa), and China Coal (32 mtpa) in the Top 10. This means public funding is effectively subsidizing new coal mines and related infrastructure development.

But private enterprises, including some of the world's largest multinationals, remain heavily invested in new mines and mine expansions, with Adani Group (67 mtpa) and Glencore (45 mtpa) invested in new developments worldwide and SibAnthracite Group (31 mtpa) continuing its build out in Russia.

Notably, several small and medium size firms, especially in Australia, have elbowed their way into the Top 10. This includes heavy investments from Mineralogy (106 mtpa), through its subsidiaries Waratah Coal and Central Queensland Coal, as well as Valiant Resources (48 mtpa), a small independent firm pursuing an ambitious coking project in Queensland. VostokCoal (35 mtpa), an independent Russian firm, rounds out the top tier of the list.

TABLE 2: Coal Mine Developments by Company (mtpa)

Company	Proposed Mine Capacity (mtpa)
Coal India	243
Mineralogy	106
Adani Group	67
China Datang	50
Valiant Resources	48
Glencore	45
VostokCoal	35
NLC India	34
China Coal	32
SibAnthracite Group	31

Source: [Global Coal Mine Tracker](#), Global Energy Monitor, January 2021

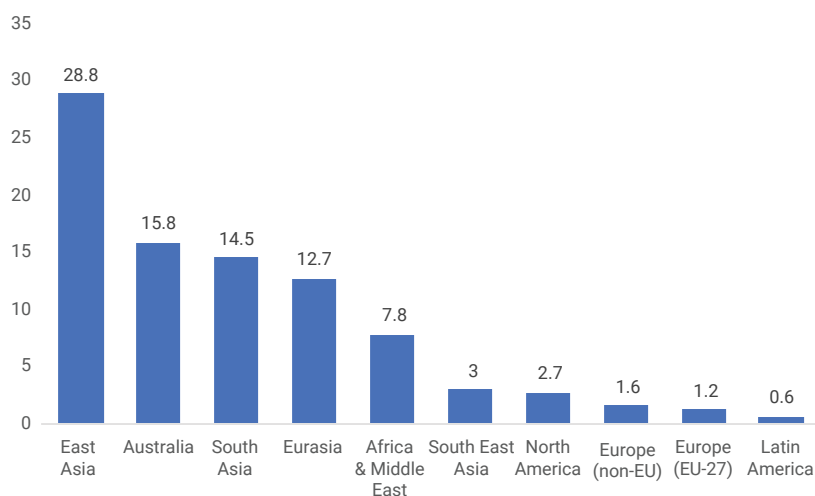
STRANDED ASSET RISK

The capital expenditures necessary to bring all 432 mine projects into operation is \$91 billion USD, based on the average capital costs to open a coal mine. If planned coal mines open as intended, but are forced to lower production levels or shut down early, they represent a significant stranded asset risk (see Appendix 1 for methodology).

That risk is most acute for the coal projects already under development with sunken costs. With one-fourth (614 mtpa) of new projects under construction,

\$27 billion USD in capital expenditures has likely been fixed in place, and vulnerable to closure or late-stage cancellations from the transition away from coal. The remaining three-fourths of coal projects (1,663 mtpa) are early phase developments and open to prospective cancellation owing to low-carbon transition and tighter emission policies. But if they continue to proceed, those operations put \$63 billion USD in capital costs at stranded asset risk.

Figure 4: Estimated Capital Cost of Projects Under Development (Billion USD)



Source: Global Energy Monitor

UNDERMINING PARIS CLIMATE AGREEMENT

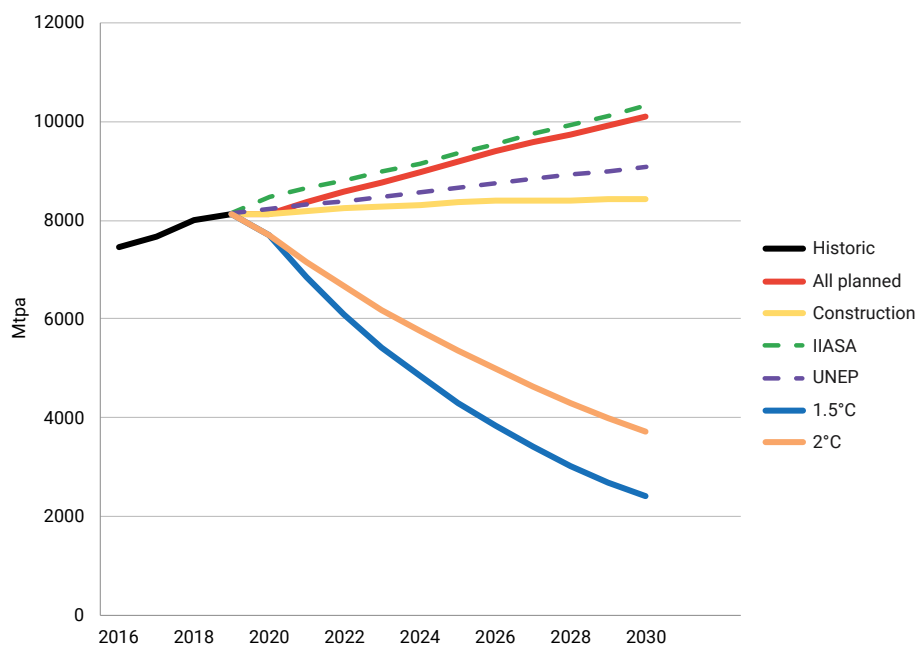
Despite political, social, and economic pressures on the coal industry, the world is not on course to phase out coal fast enough to avert the worst impacts of global climate change. The metric of a “production gap,” first developed by the United Nations Environment Program (UNEP) and several partners in 2019, shed light on the discrepancy between planned fossil fuel production and the reductions in production required to meet the Paris climate agreement. Estimating future coal mining production, the 2020 Production Gap report found that by 2030, coal-producing countries would mine about three to four times more coal than what is compatible with Paris climate goals. In contrast, the report estimated that coal production will need to decline 11% annually in order to maintain a pathway to hold warming to 1.5°C, and 7% annually to hold warming “well below” 2°C.

The estimates of the Production Gap Report relied on the best available data at the time: national energy strategies and outlooks of the eight largest

coal-producing countries accounting for over 60% of global production, used to create a global estimate of future production. GEM’s Global Coal Mine Tracker has extended that analysis by providing asset-level data on every announced, explored, permitted, and under-construction coal mine in the world with a proposed capacity of 1 mtpa or greater. By surveying current mine proposals, GEM is able to offer an estimate of future coal mining production based on project-level data for all countries.

Figure 5 shows two projections for future coal mining production: 1) if all 2,277 mtpa of proposed coal mining capacity opens evenly through 2030 (averaging 227.7 mtpa, red line) and 2) if only the 614 mtpa of capacity currently under construction opens evenly through 2030 (averaging 61.4 mtpa, yellow line). The proposed capacity has been added to 2019 production (8,135 Mt), minus production at mines planned for closure or likely to exhaust their recoverable reserves before 2030 (totaling 306.1 mtpa). These projections

Figure 5: Proposed increases in coal mining capacity are not compatible with the Paris climate agreement



Sources: Historic ([BGR Energy Study 2019](#)), All planned and Construction ([Global Coal Mine Tracker](#), January 2021), IIASA ([Kholod et al. 2020](#)), UNEP, 1.5C and 2C targets ([2020 Production Gap report](#))

are comparable to the UNEP's global forecast (dashed purple line) as well as "business as usual" coal production scenarios by climate and energy models (IAASA, grey dashed line), and show that projections of future production are not far off from actual coal mine proposals (see Appendix 2). The orange and blue lines represent the 7% and 11% annual reduction in coal mining from 2020 to 2030 that the UNEP has called for to keep warming "well below" 2°C, in line with the Paris climate agreement.

If all proposed coal mining capacity is realized, coal production in 2030 will be over four times the 1.5°C-compliant pathway, and nearly three times the 2°C-compliant pathway, as the proposals raise production to 10,106 Mt by 2030, while the UNEP reduction requires production be limited to between 2,400 and 3,600 Mt by 2030. Even if new capacity is limited to what is currently under construction and

Lock-in of future emissions

The [Special Report on 1.5°C](#) by the UN's Intergovernmental Panel on Climate Change estimates that CO₂ emissions from coal use needs to [fall](#) 50 to 80% by 2030 to keep warming well below 2°C. If proposed new mines open as intended, the CO₂ emissions from combustion will be equivalent to 4,639 Mt a year, a 14% [increase](#) over global CO₂ emissions in 2020 (34,100 Mt), barring declines elsewhere. In addition, the mines will [leak](#) an estimated 13.5 Mt of methane each year from broken coal seams and surrounding rock strata, based

all other planned capacity is cancelled, coal production in 2030 will still be 8,443 Mt, over three times the 1.5°C-compliant pathway and over two times the 2°C-compliant pathway.

Importantly, every year of increased production means steeper cuts are needed to meet the required decline in coal production. Even if future coal mining production is limited to what is currently under construction (yellow line), coal production would need to be cut 35 to 50% by 2025 and 55 to 70% by 2030 to meet the Paris-compatible pathways, after which holding warming to well below 2°C may be out of reach. The IEA's [new roadmap](#) for net-zero emissions by 2050, which limits global warming to 1.5°C, requires no new coal mines or mine extensions beyond 2021. Thus any new coal mine opened by the industry needs to be accompanied by a much greater number of mine closures to keep Paris goals within reach.

on coal mine depth and the gas content of the coal seam.

Combined, the annual greenhouse gas emissions from proposed coal mines will be between 5,000 and 5,800 Mt of CO₂-equivalent (CO₂e) each year (for CO₂e100 and CO₂e20, respectively), [comparable](#) to the annual CO₂ emissions of the United States (5,100 Mt). The build out of new mines, therefore, raises serious concerns about meeting the Paris climate agreement.

MINE BY DESIGN: A PROFILE OF OPERATIONS

While the age of coal sputters to an end in much of the world, two-thirds of mine proposals are “greenfield” developments (298 mines), signalling the industry’s willingness to break ground on new mines that lock-in future production and emissions. The remainder of operations consist of expansions to existing mines (122 mines) and recommissions of idled mines (7 mines). The trend is apparent [worldwide](#): among the largest producers, only Russia has more expansions on the books than greenfield projects. Given the uncertainty of greenfield developments, which require top-to-bottom permitting and financing, these projects pose stranded asset risks. Yet the industry’s push for greenfield mines demonstrates bullishness in the face of mounting odds. These mine projects are split equally between surface and underground operations (185 each), with 62 projects using mixed methods.

While there are [prominent cases](#) of resistance to new greenfield mines, such as the mega Carmichael Mine (60 mtpa) in Australia, many new mines—especially expansions—fly under the radar. This year, two Canadian mine expansion projects ([Vista mine expansion](#)

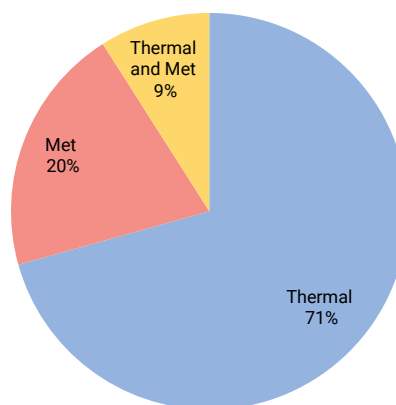
and [Castle Mountain](#) project) “[slipped through the cracks](#)” of federal environmental assessment until civil society raised alarms with the Minister of Environment and Climate Change. In traditional coal communities like Russia’s Kuzbass, Poland’s Lower Silesia, and China’s Shaanxi Province, new mines received even less scrutiny. In the U.S., the [Longview coal mine](#) in West Virginia, for instance, has escaped widespread opposition, even though the proposed Appalachia mine, owned by foreign investors and intended for export to Asia, will contribute 4 million short tons a year to U.S. production.

The median capacity for a new mine is 3.5 mtpa, a relatively mid-size that has allowed many proposals to evade the public scrutiny associated with coal mega projects, while still contributing significantly to new production and emissions. It has helped insulate them from potential consolidation and closure, especially in China and India where national governments have signalled plans to reduce the number of small mines in their portfolios (typically those producing well below 1 mtpa).

Thermal coal dominates, but metallurgical coal prominent in proposed mines

Coal-fired power generation has been on the [decline](#) since 2019, but thermal coal mines, intended for power plants, still dominate development plans. Where coal type is known, thermal coal accounts for 71% of planned capacity, while metallurgical coal for steelmaking accounts for 20% and mixed for 9%, showing that thermal continues to carry sway (Figure 6). About 216 projects are thermal coal operations, amounting to 1,276 mtpa, with an additional 21 projects providing both thermal and metallurgical coal to industrial consumers amounting to 163 mtpa. In addition, about 117 bituminous coal mines of undefined grade and consumer amounts to 473 mtpa of proposed coal mining capacity.

Figure 6: Planned coal mining capacity by type



Source: [Global Coal Mine Tracker](#), Global Energy Monitor, January 2021

There are 78 metallurgical coal projects proposed worldwide for steel-making and mixed industrial consumers, whose production has [held steady](#) since 2018. The overwhelming share of metallurgical projects are located in Australia (164 mtpa) and Russia (97 mtpa) and North America (75 mtpa), which all rely heavily on exports to the Asia-Pacific region. Australia, the world's largest exporter of metallurgical coal, initially anticipated high demands in 2020 from traditional

consumers in China, but found their tankers lined up outside ports after Beijing imposed tariffs on Australian imports amid a growing trade war. Russia, the world's fifth largest exporter of metallurgical coal, has kept a keen eye on the region's metallurgical market, and has since hustled for a larger share of the pie. Moscow moved in early in 2021 to [fill the gap](#) in China once occupied by Australia.

WAYUU RESISTANCE AT CERREJON

On the northernmost tip of Guajira Peninsula, near the Venezuelan border, indigenous communities and workers remain locked in a standoff with the international mining industry. The heavyweights of the coal business—BHP, Anglo American, and Glencore—own the [Cerrejón coal mine](#), the largest open pit coal mine in Latin America. For three decades, the indigenous Wayuu people of northern Colombia have fought to protect their ancestral lands and community from the mine's impacts including noxious pollution and excessive water use. Human Rights Watch, in a [2017 report](#) to the United Nations, described the Wayuu as wracked by "humanitarian crisis . . . caused by extremely limited access to food and water compounded with high levels of poverty and equally limited access to basic services."

In 2020, Wayuu community leaders appealed to the United Nations to intervene in their struggle. They claimed that the Cerrejon mine violated water rights and caused poor air quality that exacerbated the risks of Covid-19. By September, an UN Special Rapporteur on human rights and the environment [called](#) for a halt to mine operations "until it can be shown to be safe." The recommendation landed at an

opportune time. A month earlier, in August, coal miners at Cerrejon walked off the job and ground production to a halt. While the union, Sintracarbon, demanded better pay and benefits, the major bone of contention in labor negotiations was 1,250 job [losses](#) and a new work shift that miners said jeopardized their wellbeing—a so-called "shift of death." By December, the strike [came to an unceremonious end](#), with a new three-year contract, shortly after Cerrejon [announced](#) a preliminary agreement with the Wayuu (which indigenous community leaders adamantly denied).

The controversies that erupted over Cerrejon in 2020 and again in early 2021, when workers blocked railway lines, remain largely unresolved and demonstrate the stakes of local conflict in the midst of global coal transitions. The construction of new mines poses continued threats to local and Indigenous communities and environmentally sensitive bioregions. Just as the Wangan and Jagalingou Nation [fight](#) the Carmichael mine in Australia, and indigenous villagers in India [resist](#) the expansion of the [Parsa East mine](#), and communities around the world mobilize to fight the build out of new mines in the years ahead.

CHINA

China leads the world in proposed coal mining capacity, with 452 mtpa under construction and another 157 mtpa in planning, for a total of 609 mtpa of capacity under development. Coal production has been on the rise in China since 2017, but the pressure for new mines accelerated after the Covid-19 pandemic, as provinces used new coal projects to [stimulate](#) local economies in the wake of the economic slowdown. This effort has been highly concentrated: About 90% (544 mtpa) of China's proposed coal mining capacity is located in just four Chinese provinces and regions, namely Inner Mongolia (234 mtpa), Xinjiang (123 mtpa), Shaanxi (95 mtpa), and Shanxi (92 mtpa). While the central government recently [pledged](#) that China will aim to reach net zero carbon emissions by 2060, coal-dependent provinces and companies are [pushing](#) to expand the country's coal mining capacity.

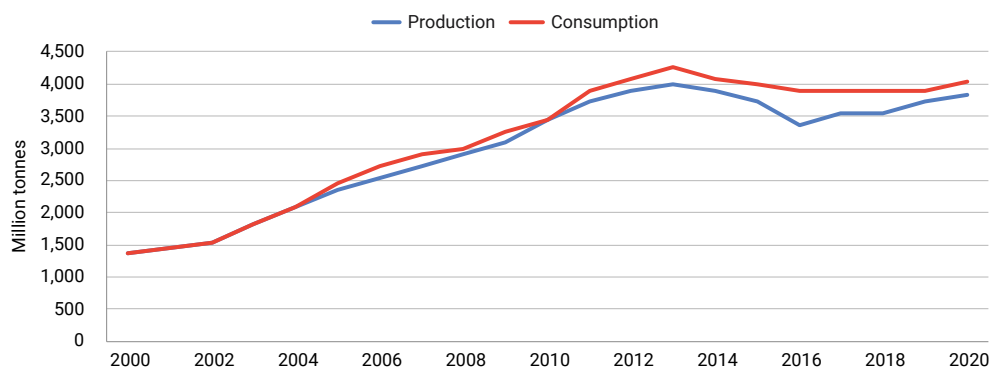
The coal mine build-out represents a marked shift from where the country appeared to be heading in 2015. That year the central government issued a policy for coal “decapacity”, signaling its potential to wind down the country's growing coal use. The policy involved the closure of smaller mines, consolidation and integration of mine operations, and the creation of a fund for worker transition. The policy also included a three-year ban on raising coal mining capacity through 2018, meaning no new coal mines could be opened unless an equivalent amount of

capacity was closed. Government efforts to improve the energy structure and tackle pollution saw coal consumption consistently fall between 2014 and 2016, after peaking at 4,264 Mt in 2013.

However, by 2016 the country's economy was beginning to slow, leading the central government to introduce a large [stimulus spending package](#), with emphasis on coal-intensive heavy industry. In addition, the [transfer](#) of coal power permitting authority from the central government to the provinces in late 2014 led to a frenzy of new coal plant construction. By 2017, China's coal consumption and production was back on the rise (Figure 7), reaching 3,840 mtpa of production and 4,040 mtpa of consumption in 2020. Of coal [consumed in 2020](#), about 55% was for power generation, 20% for iron and steelmaking, and the remaining quarter for industrial uses such as cement and chemical production.

To meet the increase in coal consumption, China's National Energy Administration (NEA) [approved](#) 64.1 mtpa of new coal mining capacity in 2018, followed by 195.7 mtpa in 2019. Based on GEM analysis, most of the mines appeared to have begun construction before the permits were granted, meaning the permits were applied retro-actively to coal mines that had been operating illegally. In 2020, the NEA [approved](#) 22 mining projects totaling 42.6 mtpa of

Figure 7: China coal consumption and production



Source: [China National Bureau of Statistics](#), 2000–2020

coal mining capacity, and **another** six projects totaling 15.3 mtpa in January 2021. Of these 28 coal mining projects permitted, 26 are located in just one region: Xinjiang.

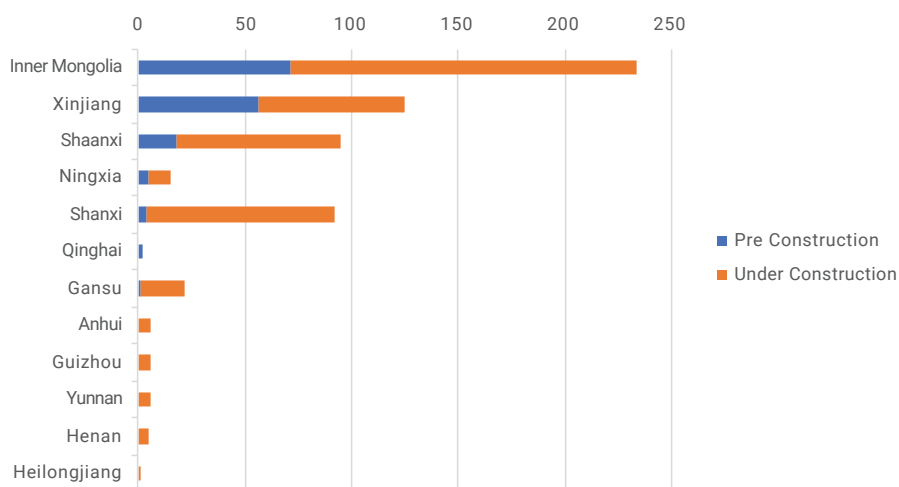
In January 2021, an unprecedented report by China’s powerful Central Environment Inspection Group **criticized** the NEA for lax enforcement of the country’s restrictions on coal development, including coal mining. According to the report, inspection of three provinces found that 121 coal mines were **exceeding** production quotas by as much as 30%. The NEA is required to submit a “rectification plan” which should provide the first indication of whether the central government plans to clamp down on illegal coal mining.

In March 2021, the China Coal Association **announced** the country will limit its annual coal output to around 4,100 mtpa, and limit the commodity’s use to 4,200 mtpa by the end of the country’s 14th Five-Year-Plan period (2021–25). Compared to 2020, the cap would allow annual coal consumption to grow by 160 mtpa,

and coal production to grow by 260 mtpa—significantly lower than the 609 mtpa of coal mining capacity that China has in planning unless 350 mtpa of annual capacity is closed. Any additional new coal mining capacity will require equivalent closures to meet the China Coal Association’s coal production cap.

In April 2021, President Xi **announced** at the Climate Leaders’ Summit that the country will “strictly limit the increase in coal consumption over the 14th Five-Year Plan period and phase it down in the 15th Five-Year Plan period.” The announcement suggests the country’s coal consumption—and thus its CO₂ emissions—should peak by 2025, and phase down through 2030. While a welcome acceleration in the country’s previous target of peaking CO₂ “before 2030”, China’s planned increase in coal production through 2025 is still in stark contrast to the immediate 11% annual declines in coal production that the UN and leading research organizations have called for to meet the Paris climate agreement.

FIGURE 8: Coal Mine Proposals in China’s Provinces (mtpa)



Source: [Global Coal Mine Tracker](#), Global Energy Monitor, January 2021

INDIA

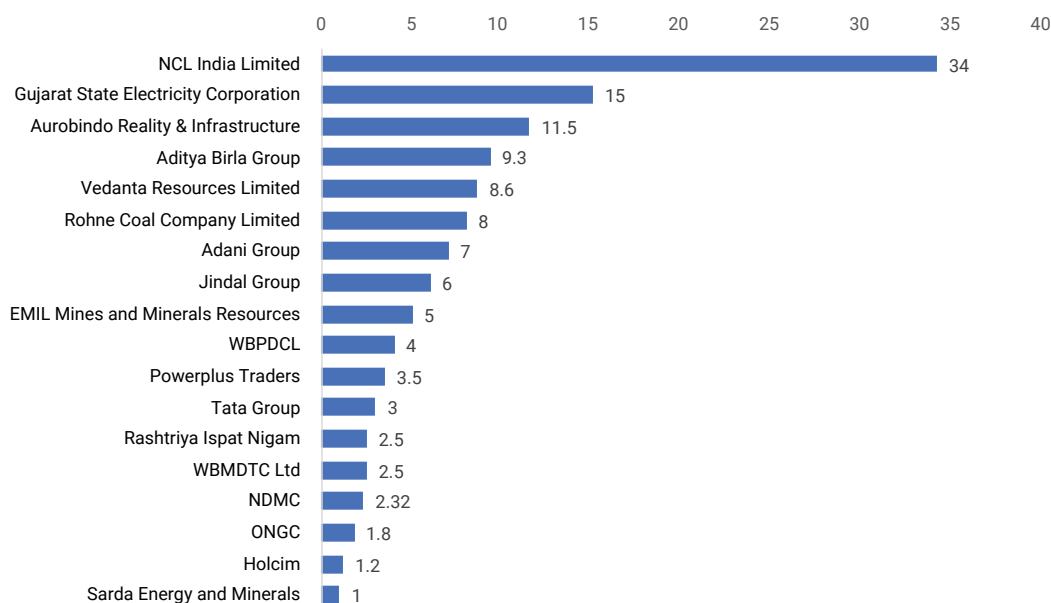
India ranks third in the world for proposed mine capacity, with 363 mtpa in planning and 13 mtpa under construction. The country has had a long-standing goal of replacing its coal imports, **totaling** 250 Mt in 2019, with domestic coal output. To accomplish this, the government has directed state-owned enterprise (SOE) Coal India Ltd (CIL) to increase its coal production, despite studies finding that 70% of CIL's active mines currently operate at a **financial loss** due to low labor productivity. Even with the push, proposed coal mines by SOEs have fallen short of national targets, which coincides with the Indian government's unusual move in 2020 of inviting foreign interests to mine its coal.

In 2020, the government **directed** CIL to replace 100 mtpa of imports with domestic coal in the fiscal year 2020–21 and cease imports altogether by **producing** 1,000 mtpa in 2023–24. As of 2020, CIL currently **accounts** for 80% of India's domestic production and in 2019–20 **produced** 602 mtpa. Based on GEM analysis, 66% (250 mtpa) of India's proposed mine capacity is currently controlled by CIL. On its own, 9 mtpa currently under construction by CIL is insufficient to

meet the government's target of replacing 100 mtpa in imports next year, nor is the full build-out of all CIL's proposed capacity (250 mtpa) enough to guarantee production of 1,000 mtpa by 2024. To close the gap, India will have to rely on its record **stockpile** of 132 Mt set aside during the Covid-19 pandemic. This past year, CIL implemented several haphazard measures to boost supply, such as **recommissioning** smaller mines, some after 20 years of closure, even as 46 active mines remain **idle** or on care-and-maintenance and 13 are producing less than a nominal 10,000 tonnes per year.

But to really meet its domestic coal targets, the national government has signaled its willingness to break from its reliance on CIL to boost national production. Over the last few years, private contractors have begun to operate a larger share of CIL mines and the national government has moved to ease the tendering process. Currently, 57.8 mtpa of proposed mine capacity is under development by non-CIL government and state-owned enterprises, including NCL India Limited (34 mtpa), Gujarat State Electricity Corporation (15 mtpa), and the state of West Bengal

FIGURE 9: India mine proposals by private and non-CIL state producers (mtpa)



Source: [Global Coal Mine Tracker](#), Global Energy Monitor, January 2021

(6.5 mtpa). An additional 68.4 mtpa of new capacity is planned by private companies, including Aurobindo Reality and Infrastructure (11.5 mtpa), Aditya Birla Group (9.3 mtpa), Vedanta Resources Limited (8.6 mtpa), Rohne Coal Company (8 mtpa), and Adani Group (7 mtpa).

In June 2020, India for the first time opened public coal blocks for auction to private companies with direct foreign investment. The move largely backfired after the coal blocks struggled to secure bidders. While 40 coal blocks were initially announced for sale, the government later revised them to 38, of which only 23 [received qualifying bids](#) and only 19 were allocated to a winning bidder before the end of the year. In all, the initial plan put 186 mtpa of productive capacity up for sale, but only one quarter (51 mtpa) was allocated, and none of it to foreign buyers. In addition, allocations went to the smallest coal blocks with the least risk, with a median capacity of just 1.2 mtpa. When four large blocks were [reauctioned](#) in the opening months of 2021, only one received a bidder.

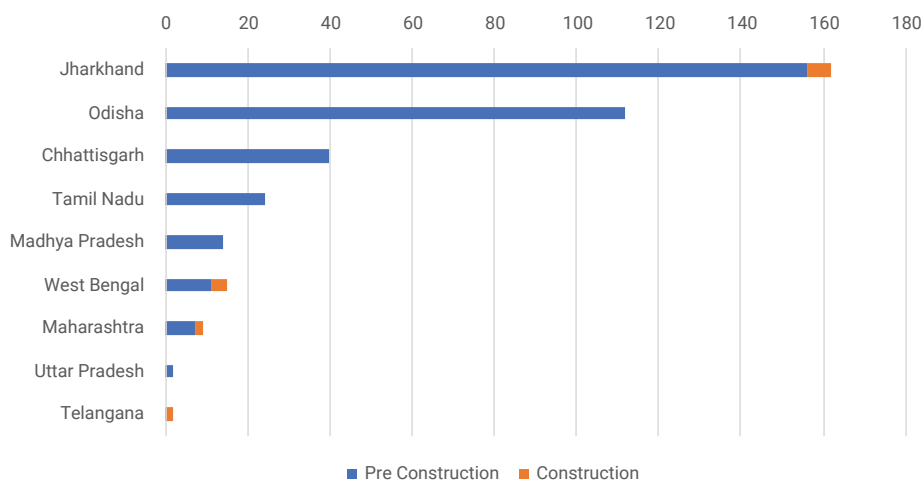
Undeterred, the national government announced in March 2021 that it would put an additional 67 coal blocks up for sale, the most of any previous auction.

Those auctions will take place from June to July 2021, even as the country comes under [growing pressure](#) to set a net-zero emissions target and CIL moves to diversify its portfolio into renewables.

All told, 52 coal mines over 1 mtpa remain under development in India with 33 still on the books after allocations from previous tranches, while an additional 54 mines are at risk of being shelved from [ongoing delays](#). Yet most mine projects remain early phase developments that face uncertain timelines and futures. As of 2020, 38 proposed mines have been announced or in exploration, 10 fully permitted but yet to break ground, and 4 mine projects currently under construction.

As in much of the world, India’s mining proposals are highly concentrated, with 83% (313 mtpa) of the nation’s planned capacity located in just three states: Jharkhand (161 mtpa), Odisha (112 mtpa), and Chhattisgarh (40 mtpa). The single largest project in the country, the [Siarmal Open Cast mine](#) in Sundergarh, Odisha could produce 50 mtpa at peak capacity, with an [operational life](#) of 38 years, making it the second largest proposed coal mine in the world after Australia’s Carmichael Project (60 mtpa).

Figure 10. Coal Mine Development by Indian States (mtpa)



Source: [Global Coal Mine Tracker](#), Global Energy Monitor, January 2021

AUSTRALIA

Australia is second only to China in the number of coal mine proposals under development, with 435 mtpa in planning and 31 mtpa undergoing construction. While the economic volatility of the Covid-19 pandemic led to a host of cost reductions and investment deferrals in 2020, Australian operators continue to justify new mine projects based on consumer demands in the Asia Pacific. Australia now accounts for 20% of the world's proposed coal mine capacity with all 52 proposals clustered in the coal-rich basins of Queensland and New South Wales.

As the world's largest coal exporter, Australia is [reliant](#) on seaborne trade with the Asia Pacific region. But this dependency became a challenge in 2020, when thermal coal prices fell to their lowest level in fourteen years. According to the office of Australia's chief economist, one-third of the nation's mines supplying seaborne thermal coal markets have now become "[uneconomic](#)." Despite this finding, our survey shows 213 mtpa of thermal coal projects remain in development, with an additional 75 mtpa of mixed thermal-metallurgical projects. By far, the Carmichael coal mine has provoked the greatest international controversy, given its size (60 mtpa), the [weak finances](#) of its Indian parent company Adani Group, and its potential, through the provision of new rail infrastructure, to open the door to several shelved mega coal mining projects in the region, such as [Kevin's Corner](#) and the [Alpha Coal Project](#). Yet much of the thermal development in Australia is taking place at a smaller scale (with a median size of 5 mtpa) and currently no stand alone thermal coal project has yet to begin construction.

In fact, all of Australia's thermal mine proposals are early phase developments and thus vulnerable to cancellation, especially with foreign governments moving to cut emissions and reduce demand. Among Australia's biggest importers, Japan plans to [eliminate](#) as much as 90 percent of its older coal-fired plants by 2030; India intends to phase out coal imports by 2024; China recently announced plans to limit coal consumption and achieve carbon neutrality by 2060;

and South Korea and Taiwan [have announced](#) net-zero targets for mid-century. If these policies come to fruition, Australia's current mine thermal projects (245 mtpa) could become stranded assets. The only potential driver for thermal coal projects remains Vietnam, where thermal imports are expected to grow this decade.

The outlook for metallurgical coal markets remains just as uncertain. In 2019, Australia was responsible for 55 percent of the world's supply of coking coal, but export earnings fell in 2020. Australian operators have since curtailed production and announced temporary closures of coking mines, such as the [Middlemout mine](#) and [Metropolitan mine](#). The investments in metallurgical mine projects have begun to slow, but 164 mtpa remains under development. A great deal of new activity is led by smaller firms, such as Mineralogy (106 mtpa), Valiant Resources (48 mtpa), Whitehaven (21 mtpa), and Pembroke (15 mtpa), though larger multinationals like Glencore (16 mtpa), BHP (7 mtpa), and Peabody (7 mtpa) have stayed in the mix.

China, the [biggest consumer](#) of Australia's metallurgical exports (27%), effectively ended trade last year after a diplomatic dispute over the origins of Covid-19. The office of Australia's chief economist has yet to factor these restrictions into long-term forecasts. As a result, the geopolitical row may put greater downward pressure on Australia's metallurgical mines than anticipated, especially with Russia [eager to expand](#) its footprint in the Asia Pacific. On the other hand, Australia's second biggest consumer, India (21%), intends to increase its consumption of metallurgical coal for steel making. India has limited domestic reserves of coking coals and [struggled](#) to extract those reserves safely. According to our analysis, India has only 2.6 mtpa of metallurgical coal in development, so even as India's national government intends to phase out coal imports, the country will likely remain reliant on seaborne markets for coking coal into the foreseeable future, providing a potential lifeline to Australian mine projects. Japan (17%) and South Korea (13%) have [similarly](#) left the door open for Australia's

metallurgical coal mines, even as they restrict thermal coal projects in climate-related policies. Yet the

NORTH AMERICA

North America has 26 mine projects in development, amounting to 72 mtpa of new capacity. Most are early phase developments with just two mines under construction ([Murray River Coal Mine](#) and [Blue Creek Coal Mine](#)) totalling 10 mtpa. While the region is responsible for a small share of proposed global mine capacity (3%), its operators are at the forefront of a global shift toward metallurgical coal, which accounts for 70% (50 mtpa) of the region's current proposals. The preference for metallurgical coal reflects the continued slump in thermal coal markets that has weakened production in both the U.S., the world's third largest coal producer, and Canada, the thirteenth largest, over the last decade. Whether metallurgical coal proves to be a saving grace for large North American producers depends on demand in the Asia Pacific region.

In 2019, U.S. coal production fell to its lowest levels since the 1978 miner's strike. The slump has been long in the making, compounding a decade-long collapse in domestic coal use for power generation and lower demand in Europe. The number of U.S. coal mines shrank by half from 2008 to 2019, with major bankruptcies rocking the industry throughout the 2010s. During the Covid-19 pandemic production fell even further, with several mines announcing temporary closures after positive cases of coronavirus and once sturdy operators filing for bankruptcy. The country's largest coal mine, North Antelope Rochelle, experienced a [\\$1.42 billion write down](#) by its owner Peabody in August. By the end of 2020, production reached its lowest levels since the 1960s, though it is expected to rebound slightly in 2021.

RUSSIA

Russia, the sixth largest producer in the world, has proposed 58 coal projects, amounting to 299 mtpa of new capacity. The new development signifies business-as-usual for Moscow's coal strategy, which

[growing interest](#) in hydrogen, as an alternative to coking coal in steel making, could undermine those plans.

Thermal coal producers have been the hardest hit. Peabody and Arch Resources have even put their heads together about building a joint venture to manage thermal coal assets to weather the collapse. To protect themselves, U.S. operators are also increasing their investments in new metallurgical mines, such as the [Blue Creek mine](#) in Alabama and [Leer South mine](#) in West Virginia. In the U.S., not [since 1961](#) have coking coal plants and other industrial users consumed more coal than electric utilities. Currently the coal industry only supplies 47 mtpa to coking and industrial consumers.

Similarly, Canadian operators have readily embraced a revival of metallurgical production, which is not affected by shifts in power generation. As of 2020, 90% (34 mtpa) of Canada's proposed coal mines are metallurgical projects, most located in British Columbia where the coalfields are rich in coking coal. Canada is the fourth largest exporter of coal [meeting consumer demands](#) in South Korea, Japan, and India. If these new metallurgical projects were to go into operation, they could effectively double the size of Canada's metallurgical coal export economy. The operations, though, are early phase developments by mostly small-to-midsize firms. Vancouver-based Teck Resources, the largest metallurgical coal producer in North America, recently shelved its metallurgical coal [Quinette Project](#), and has no active proposals, just [life of mine extensions](#), signaling some hesitancy from large producers about scaling-up too quickly.

remains bullish on coal demand, both domestically and abroad. Over the last decade, Russia has [commissioned](#) 300 mtpa of new coal mining capacity, while the Ministry of Energy continues to push

for a series of ambitious coal plans. There is already 59 mtpa of new coal mine capacity currently under-going construction, even as Russia's current production (440 mtpa) exceeds the ambitious production targets originally set for 2030. This past year, Moscow [revised its coal production targets](#) upward with a \$83 billion USD coal development program intended to reach 550 mtpa (on the low end) and 670 mtpa (on the high end) by 2035—a 25 to 50% increase over current production levels.

Mines currently under development are enough to meet these ambitious targets. A large share of total proposals (148 mtpa) comes from greenfield developments. The VostokCoal company, for instance, is currently [developing](#) a 30 mtpa coal mine on the northeastern tip of the Arctic Peninsula. The mine is one of several that VostokCoal has licensed in the region, even after the government [fined](#) the company \$9.1 million USD for environmental violations. Another major greenfield project is Coalstar's [Beisky-Zapadny coal mine](#), with a proposed capacity of 20 mtpa, in Khakassia. In addition to these greenfield developments, over half of current proposals consist of mine expansions, with the industry making a major play in metallurgical coal markets. Tuva Energy Industry Corporation, for instance, has proposed a 13 mtpa expansion of the [Elegest coal mine](#), which would make it Russia's largest coking coal mine, and steel-producer Mechel has planned to expand the [Sibirginsky coal mine](#) by 17.5 mtpa.

Russia's near-term goal is to outcompete Australia and Indonesia, its chief rivals in the seaborne market. The Ministry of Energy anticipates an increase in the global coal trade over the next 15 years and expects China, South Korea, India, Pakistan, and Japan to drive global consumption. This prioritization

SOUTH AFRICA

South Africa's coal production and consumption is ranked seventh in the world, with reported [production](#) at 258 Mt in 2019. The nation's industry has been historically [dominated](#) by global giants like Anglo American, Sasol Mining, BHP Billiton Energy Coal South

of coal exports to Asia is part of Russia's larger [“de-dollarization” strategy](#) to reduce the threat of U.S. sanctions. To better reach the Asia-Pacific, Russia has [pushed](#) for new export infrastructures, particularly in the Far East and Arctic Basin. The coal infrastructure projects currently underway include the modernization of the Baikal–Amur Mainline (BAM) and Trans-Siberian Railway (Transsib). These coal projects remain [critical](#) since 60% of the country's production and 75% of its exports originate in the landlocked Kuzbass. Our survey found 35% of new mine capacity (105 mtpa) remains concentrated in the Kuzbass, but in a sign of national plans to reach export terminals, almost half of new development activity is spread across other mining regions, including Krasnoyarsk Krai, (45 mtpa), Khakassia (32 mtpa), Tuva (27 mtpa) Amur Oblast (20 mtpa), and Sakha (17 mtpa).

The optimism of the Ministry of Energy [aligns](#) with Russia's private sector forecasts, but Russia's own Ministry of Economic Development (MED) harbors doubts. In 2020, MED argued that “the industry will not be developing in the foreseeable future,” anticipating that the slump in global consumption combined with a series of climate-related policies in Asia will tighten the outlook for exports, putting Russia in a situation similar to Australia. But the opening of new mines certainly remains possible. Russia underwent a similar expansion over the last two decades (about half of Russia's currently operating mines are less than twenty years old) and an ongoing trade conflict between China and Australia has now handed Russia a bigger share of the seaborne market in 2021. All the while, Russia's commitments to reduce greenhouse gas emissions under the Paris Agreement [are not particularly ambitious](#), suggesting Moscow's coal-heavy energy strategy could still carry forward.

Africa (Becs) and Xstrata (Glencore). But a number of companies, including [Anglo American](#), [Glencore](#), and [South32](#), which spun out of BHP Billiton in 2015, have exited in recent years or are in the process of exiting in the near future. The decision to exit South Africa's

coal sector has not entirely slowed production with a number of small and medium-scale firms, including Seriti Resources and Exxaro, [filling the void](#).

Still, over the last decade net investments in South Africa's coal sector has declined by R2-billion. In 2019, South Africa's Integrated Resource Plan [laid out](#) intentions to diversify the country's power mix by 2030. But the industry's fall in investments is also attributable to a funding environment shifting away from new coal projects. The pressures from environmental lobbying and recent [litigation](#) have set a precedent for future investments, requiring projects to complete climate impact assessments before receiving a license. On top of that, the altered customer base for coal exports, especially in India, which is the largest importer of South African coal, has reduced the industry's long-term prospects. The country's other major importers—South Korea, Pakistan, and Vietnam—have varying intentions to swap fossil fuels for renewables.

Yet even with the decline in net investments, the country's coal reserves are projected to last for the next fifty years. South Africa has 30 proposed coal mines with a projected output of 129.5 mtpa. Of these 30 proposed projects, 21 are based in the Mpumalanga province, which is currently close to being mined out and already accounts for [83% of South Africa's coal production](#). Seven of the remaining nine projects are located in Limpopo, which are said to contain about 70% of the country's remaining coal resources, and are seen as a point of interest for future development

EUROPE

Coal production has [plummeted](#) in Europe with several countries adopting coal phase-out plans and mine operators facing declining demand from power companies due to competition from renewables and gas. In 2019, EU coal-fired power generation fell to a historic low, and was [exceeded](#) by renewable power generation for the first time. Even before the onset of the Covid-19 crisis, the region's production dropped 15% to 373 Mt in 2019 (Table 1). Only modest recoveries are expected in 2021, and not enough to reverse downward trends. But coal has proven difficult to

projects. KwaZulu-Natal and Gauteng have one proposed coal mine each.

The continued build-out in Mpumalanga comes after a [2019 Greenpeace study](#) ranked it the world's largest power plant emission hotspot and second in the world for sulfur dioxide (SO₂) emissions. The province is home to [twelve of the country's coal-fired power stations](#) run by the state-owned energy company Eskom. According to Eskom, 25% of South Africa's marketable coal is exported internationally and 53% of the remaining coal used for domestic electricity production.

The country's economy remains heavily dependent on coal for 70% of its power generation. South Africa currently has 18 coal-fired power plants and two of the proposed coal mines set to supply 6.3 mtpa to existing coal power stations in Mpumalanga: the 2,352 MW [Arnot power station](#) and 3,600 MW [Matla power station](#). Three of the proposed coal mines are set to supply 22 mtpa to three proposed power stations. All of these proposals, the 1,200 MW [Thabametsi coal plant](#) outside Lephalale in Limpopo, and the 300 MW [Khanyisa coal plant](#) and the 4,800 MW [Kusile Power Station](#) in Witbank, have been heavily contested. The environmental approval for Thabametsi was [set aside in November 2020](#) by a High Court judge due to the minister of Environmental Affairs' failure to take into account the climate change impacts of this proposed coal-fired power station, while NGOs say the environmental authorization granted to Khanyisa expired in 2020.

dislodge in Central and Eastern Europe. As of 2020, the region has 15 coal mine projects, amounting to 87 mtpa of new mine capacity, although all are early phase developments with none under construction.

While new proposals are split evenly across the EU (45 mtpa) and non-EU (42 mtpa), Central and Eastern Europe accounts for 94% of new mine developments. Only the UK's [Woodhouse Colliery](#) (3 mtpa) is located in Western Europe. By contrast, Turkey has four new mine proposals (22 mtpa) and Poland has three

(32 mtpa). Kazakhstan (16 mtpa) and Serbia (15 mtpa) have two each. The new mine capacity in Romania (5 mtpa), Serbia (15 mtpa), Czech Republic (9 mtpa), and North Macedonia (3 mtpa) all hinge on a single project.

Most of these proposals are sited in traditional mining regions, such as Poland's Łódź (18 mtpa) and Lower Silesian (12 mtpa), and Turkey's Black Sea province of Bartın (10 mtpa). In 2020, these same regions were particularly **hard hit** by the Covid-19 crisis, with coal miners and their families in Poland's Lower Silesian making up 16% of the nation's positive cases over the summer. While some mines halted production temporarily, many others continued to operate as essential businesses.

In 2020, the Polish government halted coal imports to protect domestic state-owned producers. Poland employs more than half of Europe's coal workforce and its plan to extend the life of existing mines has

heightened tensions with the European Union, with the majority of EU countries planning to phase out coal by 2030. The **Turow mine extension** on the Czech border could cost Poland access to the EU's "Just Transition Fund", which requires nations to submit plans for mine closures. In September 2020, state-owned enterprise Polska Grupa Gornicza (PGG) **announced plans** to close all of its mines by 2049, following a strike of 200 coal miners in Silesia. The late date shows the troubling gap between Poland and EU timelines for a coal phaseout.

In Eurasia, the second-largest producer in the region Kazakhstan is planning to increase production at existing mines and promote future growth, as **detailed** in its Roadmap for the Development of the Coal Industry 2019–2021. Currently, 16 mtpa are under development, although Kazakhstan continues to struggle to make inroads with export markets given the high transportation costs from its remote operations.

SOUTH AND SOUTHEAST ASIA

South and Southeast Asia make up 21% (483 mtpa) of proposed coal mining capacity on the globe. Proposed capacity in Southeast Asia is dominated by Indonesia, with 21 mtpa under construction and another 49 mtpa in planning, followed by the Philippines, with 8 mtpa in planning. Outside India, proposed capacity in South Asia is led by Bangladesh, with 19 mtpa of coal mining capacity in planning

Coal production in Indonesia has grown by a third (154 mtpa) since 2015, from 462 mtpa to 616 mtpa (Table 1). During that time its **coal exports** grew by a quarter (90 mtpa), from 360 mtpa in 2015 to 450 mtpa in 2019. The remaining increase in coal production has helped fuel a 40% rise in both domestic coal **consumption** and domestic coal-fired capacity, with the nation's coal-fired power capacity **increasing** from 17.2 GW in 2015 to 27.4 GW in 2020.

The quick ramp-up of coal power has been part of a **national plan** to mine and use domestic coal, making the country now the world's **largest** thermal coal exporter. The development has been highly

concentrated, with 70% of planned new mine capacity (49 mtpa) coming from East Kalimantan alone. While the Indonesian government has consistently **scaled back** the amount of coal plants in its future energy plans, leading to over 30 GW of coal plant **cancellations**, the country still has 10.7 GW of coal power under construction, **second** only to China (88.1 GW) and India (36.6 GW).

Combined with 21 mtpa of annual coal mining capacity under construction, Indonesia is poised to continue growing its domestic coal output. The same cannot be said of the Philippines and Bangladesh, where coal mining plans may well be cancelled as plans for new domestic coal plants **collapse**.

In the Philippines, coal mining production has nearly doubled since 2015, from 8.2 mtpa to 15.3 mtpa. Over the same period, the country also **doubled** its coal-fired capacity from 5.0 to 10.3 GW. Yet the growth in domestic production is not enough to cover the country's growing coal consumption, with 27.7 mtpa **imported** in 2019. In addition, the Philippines also

exported 5 mtpa of coal in 2018 and 10 mtpa in 2019, mainly to China.

Coal mining capacity under development in the Philippines consists of a proposed doubling of the [Semirara Molave Coal Project](#), from an annual production of 8 to 16 mtpa. According to the mine's [Project Description for Scoping](#), about a quarter of the increased capacity would go to fuel a proposed expansion of the [Calaca coal-fired power station](#) in the province of Batangas.

In October 2020 the Philippine Department of Energy declared a [moratorium](#) on new coal plants that were not already in the permitting pipeline. In November 2020, plans for the Calaca expansion were [called off](#), with Meralco president Rogelio Singson saying the cancellation was the result of the DOE's moratorium on new coal plants. It is unclear if the coal mine will also be cancelled, or will seek out new customers.

Following India, Bangladesh leads proposed coal mining capacity in South Asia, with 19 mtpa in planning. The proposed mining capacity is part of a government push to expand domestic coal power capacity in the country: Bangladesh's [2016 Master Plan "Revisited"](#) projected coal power growing from 0.5 GW in 2018 to 25.5 GW by 2040.

AFRICA

Africa is home to 9% (198 mtpa) of proposed coal mine capacity on the globe, although two-thirds (130 mtpa) is located in South Africa alone. The remaining capacity is primarily located in Mozambique, with 54 mtpa of annual new coal mining capacity planned, followed by Botswana (6 mtpa planned), Zimbabwe (4 mtpa under construction), Tanzania (4 mtpa planned), and Niger (1 mtpa planned). Most of these proposals are intended for coal exports, and in fact the proposals that are for domestic use are the most uncertain and likely to be cancelled.

The potential coal rush in Mozambique, with 54 mtpa of capacity proposed on top of an annual production of 10.3 Mt in 2020, would represent the largest percent shift of national output worldwide. Planned

Yet many of the coal projects have [struggled](#) to get off the ground, with only five coal plants totaling 4.7 GW currently under construction, and operating coal power capacity rising to just 1.2 GW as of 2020. Public opposition to building large coal power complexes and mines in the densely-populated country has been fierce: two people died protesting the [Phulbari coal plant and mine](#), while twelve people died protesting the [S. Alam coal plant](#).

Facing strong public opposition and delays, the Bangladesh Energy Ministry finalized plans in November 2020 to cancel all coal plants not currently under construction. The exact details are [expected](#) in late 2021, when the government outlines its next power sector master plan. In canceling the coal plants, government officials [cited](#) difficulties in securing domestic coal as a primary reason for transitioning away from the fuel.

The main proposals for coal mines in Bangladesh are the 16 mtpa [Phulbari coal mine](#) and the 3 mtpa [Dighipara coal mine](#). Given that both proposals are to feed domestic coal plants, they may well be cancelled once the government finalizes a move away from coal power.

coal-mining capacity in Mozambique is dominated by metallurgical coal operations for international steel-making, specifically:

- the proposed 17 mtpa [Revubòè coal mine](#) sponsored by Japanese and Korean steelmakers, including Nippon Steel and POSCO
- a 15 mtpa expansion of the [Benga coal mine](#) by International Coal Ventures Limited (ICVL), majority-owned by the Steel Authority of India Limited (SAIL)
- the proposed 12 mtpa [Zambeze coal mine](#) by ICVL
- a 4 mtpa expansion of the [Moatize coal mine](#) by Brazilian steelmaker Vale.

In Botswana, proposed coal mining capacity is divided between proposals for domestic coal power use and coal exports. The proposed 1.2 mtpa [Mmamabula coal mine](#) was originally intended for a number of planned coal plants that have languished due to lack of funding, making the mine's future uncertain. Owners of the [Morupule coal mine](#) have proposed a 3 mtpa expansion to fuel the 600 MW [Morupule B coal plant](#), a plant that has suffered multiple breakdowns due to poor construction and whose long-planned expansion to 1,200 MW looks increasingly unlikely. Finally, there

is a proposed 2 mtpa expansion of the [Masama coal mine](#), which primarily exports coal to South Africa.

The planned coal mining capacity in Tanzania and Niger are for proposed coal plants that have been stalled for a decade, specifically the 4 mtpa [Ngaka coal mine](#) for the [Ngaka coal plant](#), and the proposed 1 mtpa [Salkadamna coal mine](#) for the [Salkadamna coal plant](#). Given the long delays for these coal plants, the prospect for the companion coal mine projects look unlikely, unless other buyers are found.

LATIN AMERICA

Latin America makes up just 0.7% (16 mtpa) of proposed global coal mining capacity. The majority of proposed capacity is located in Colombia (3 mtpa under construction and another 7 mtpa planned), followed by Brazil with 5 mtpa of capacity planned and Venezuela with 1 mtpa planned.

Notably, all proposed coal mining capacity in Colombia is sponsored by Yildirim Holding of Turkey. The coal mines would fuel the 3 GW of new coal-fired power projects in Turkey that the company is pursuing. Most of the coal mined in the country is exported abroad while locals deal with the effects, including water and soil pollution, displacement, and anti-union repression and [murder](#) by paramilitary groups in the early 2000s.

In Brazil, the 5 mtpa [Guaíba mine](#) is sponsored by Copelmi Mineração, the country's largest private coal mining company. If approved, it would be the largest open-pit coal mine in Brazil. In February 2020, a Brazilian federal judge suspended the environmental licensing process for the mine, citing Copelmi's failure to consider the mine's impact on the nearby indigenous community of Aldeia TeKoá Guajayvi.

In Venezuela, proposed capacity consists solely of the planned 1 mtpa [Las Lajitas mine](#). Coal from the mine would primarily be sold to Venezuela's Dutch-owned Lomas de Niquel slag-to-nickel project, with the remainder to be exported internationally.

APPENDIX 1: METHODOLOGY

The Global Coal Mine Tracker surveyed every announced, explored, permitted, and under-construction coal mine in the world with a proposed capacity of 1 mtpa or greater. A proposal is considered active if it has shown activity during the previous two years. In this report, a project listed as “pre-construction” has yet to build mine infrastructure—that includes projects that have been announced, explored, or permitted but yet to begin construction. A project listed as “construction” has begun to build mine infrastructure, but yet to begin commercial operation.

The 2,277 mtpa of proposed capacity represents plans to scale-up existing coal mining operations, either through building new mines (greenfield developments) or expanding the capacity of existing mines (brownfield developments). For brownfield developments, our methodology makes a distinction between mine extensions and mine expansions. A mine extension seeks to prolong the life of a mine, but not increase its capacity. By contrast, a mine expansion intends to increase the designed capacity of an operation and scale-up production. For instance, a mine

producing 3 mtpa, with plans to expand to 5 mtpa has a proposed expansion of 2 mtpa, with only 2 mtpa tallied in the 2,277 mtpa of proposed capacity. After operation, coal mines may produce less coal than their designed capacity.

On stranded assets, GEM’s analysis is based on a global average for capital costs of surface and underground mines in Australia ([Harper 2008](#)) and India ([Dipu 2011](#)). These averages are then applied to OECD and non-OECD countries, respectively, per ton of proposed coal mine capacity by mine type. Capital costs are estimated at \$26 million USD per mtpa for surface mines and \$53 million USD per mtpa for underground mines in OECD nations ([Harper 2008](#)), and \$38 million USD per mtpa for surface mines and \$50 million USD per mtpa for underground mines in non-OECD nations ([Dipu 2011](#)). Capital costs cover the funds needed to open the mine, but not the operating costs needed to keep the mine running.

For more information, see the [Methodology](#) page of the Global Coal Mine Tracker.

APPENDIX 2: PROJECTIONS

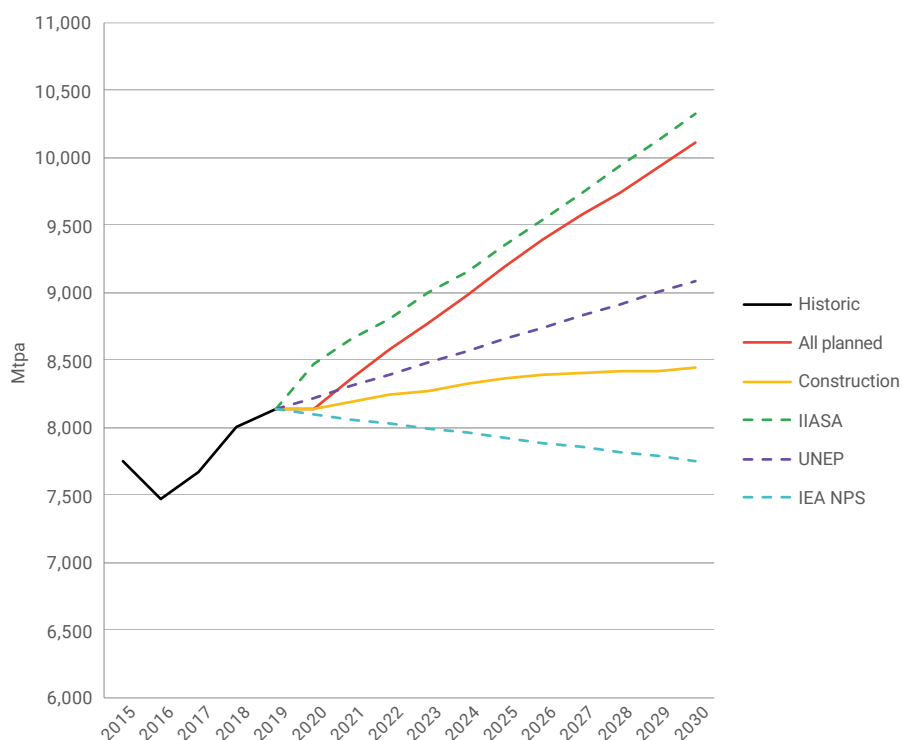
This report offers two projections for future coal mining production: 1) if all 2,277 mtpa of proposed coal mining capacity comes online evenly through 2030 (averaging 227.7 mtpa) and 2) if only the 614 mtpa of capacity currently under construction comes online evenly through 2030 (averaging 61.4 mtpa). The annual increase in capacity is added to 2019 production (8,135 Mt), which is assumed to remain constant through 2030, minus 306.1 mtpa of operating coal mining capacity planned for closure or expected to exhaust their proven reserves before 2030. Constant levels of coal production are assumed—minus actual depletion of coal reserves—given the myriad of factors that make fluctuations in future coal mine production levels difficult to predict, such as coal prices, corporate restructuring, changes in national energy plans, and climate-related policies.

We then compared our projections to other global forecasts derived from national energy plans as well as estimates of future production from climate and energy models, known as integrated assessment models (IAMs). Our projection for all proposed coal mining capacity online (red solid line) runs about 200 mtpa below the [SSP2-Baseline scenarios](#) produced by six Integrated Assessment Models (AIM/CGE, GCAM4, IMAGE, MESSAGE-GLOBIOM, REMIND-MAGPIE, and WITCH-GLOBIOM) (IAASA, green dotted lines). This projection can be seen as a highly optimistic scenario for the coal mining industry, in which all proposed coal mining capacity is realized over the decade.

UNEP’s projection for future coal mining production in the 2020 [Production Gap](#) report (dashed purple line) falls just between our projection for all proposed

capacity coming online (red solid line) and only capacity under construction coming online (solid yellow line). UNEP's projection is based on the national energy strategies and outlooks of the eight largest coal-producing countries (over 60% of global production), used to derive an estimate of future global production. Compared to the GCMT, the UNEP projection would be equivalent to all capacity under construction coming online by 2030, as well as 40% (650 mtpa) of capacity in pre-construction planning.

Finally, the IEA NPS scenario (dashed blue lines) shows the reductions in coal mining production expected if countries follow through on their announced climate policy initiatives, as estimated by the International Energy Agency (IEA). It is far below our projection for coal mining under construction (yellow solid line), and shows any planned increase in coal mining capacity is inconsistent with countries' stated climate policies, much less the ambitious temperature target of the Paris climate agreement.



Sources: Historic ([BGR Energy Study 2019](#)), All planned and Construction ([Global Coal Mine Tracker](#), January 2021), IIASA ([Kholod et al. 2020](#)), UNEP, IEA NPS ([2020 Production Gap report](#))

APPENDIX 3

Coal Mine Development Projects by Country (mtpa)

Country	Pre Construction	Construction	Total
Australia	435	31	466
Bangladesh	19	0	19
Botswana	6	0	6
Brazil	5	0	5
Cambodia	1	0	1
Canada	33	6	39
China	157	452	609
Colombia	7	3	10
Czech Republic	9	0	9
India	363	13	376
Indonesia	49	21	70
Kazakhstan	16	0	16
Laos	2	0	2
Mongolia	22	0	22
Mozambique	54	0	54
Niger	1	0	1
North Macedonia	3	0	3
Pakistan	8	0	8
Philippines	8	0	8
Poland	32	0	32
Romania	5	0	5
Russia	240	59	299
Serbia	15	0	15
South Africa	111	19	130
Tanzania	4	0	4
Turkey	22	0	22
United Kingdom	3	0	3
United States	29	4	33
Uzbekistan	5	4	9
Venezuela	1	0	1
Zimbabwe	0	4	4
Total	1663	614	2277

APPENDIX 4

Number of Coal Mine Development Projects by Country

Country	Proposed Mine Projects
Australia	52
Bangladesh	2
Botswana	3
Brazil	1
Cambodia	1
Canada	13
China	140
Colombia	3
Czech Republic	1
India	52
Indonesia	11
Kazakhstan	2
Laos	1
Mongolia	4
Mozambique	6
Niger	1
North Macedonia	1
Pakistan	1
Philippines	1
Poland	3
Romania	1
Russia	58
Serbia	2
South Africa	29
Tanzania	1
Turkey	4
United Kingdom	1
United States	13
Uzbekistan	3
Venezuela	1
Zimbabwe	1
Total*	413

*Note: 413 projects is a total of unique projects, not including 19 multi-stage expansion proposals, which totals 432 active projects.