



JACKSON HOLE  
CENTER FOR GLOBAL AFFAIRS



# U.S.-China Coal Regions and the Energy Transition Track II Dialogue

1st Dialogue

U.S. – China Coal Economy Overview:  
Understanding the Key Challenges

---

## BACKGROUND

(For Internal Reference Only)

---

1st December 2021  
07:00 pm-10:00 pm (EST)



The purpose of this document is to provide background for the 2021-2022 U.S.-China Coal Regions and Energy Transition Track II Dialogue. The U.S.-China Coal Regions and Energy Transition Track II Dialogue's goal will be to help stakeholders and policymakers in U.S.-China coal producing regions understand the key themes and trends underway both in U.S. and China; to help develop new policy outcomes that can benefit coal communities facing the energy transition; and create a durable bridge between stakeholders in U.S.-China producing coal regions.

## Introduction and Background

Coal and climate change are inextricably intertwined because success in meeting global climate change ambitions is heavily dependent on the future of carbon emissions from coal-fired power used around the globe. Coal is the most carbon intensive fossil fuel and remains the primary baseload power source for the globe, including the two largest economies – the U.S. and China.

China is the globe's largest coal-producer and consumer, producing around 3.8 billion tons in 2020, led by the Chinese provinces of Shanxi, Shaanxi, and Inner Mongolia. The U.S. follows China with around 640 million tons produced in 2019, led by Wyoming, West Virginia, and Pennsylvania. The carbon emissions from these six coal regions from the globe's two largest economies, carbon emitters, and energy consumers, play a disproportionately large role in shaping the future of global climate change. That means that supporting their transition to a clean energy, low carbon future, could create a positive tipping point in global climate action.

There are several reasons why coal regions in the U.S. and China are seeking new models of economic prosperity. Globally, coal demand and employment is uncertain and facing long-term decline, driven by a combination of cheaper alternatives (renewables and natural gas), trends in automation, and leadership and public pressure to act on climate change. In areas where the coal economy is the backbone for communities in the U.S. and China – when these jobs are lost, economies and communities collapse as revenue dries up, unemployment increases, and young people leave.

In both the U.S. and China, there is a moral imperative not to leave these coal regions behind in the global energy transition underway. On January 27, 2021, President Biden signed Executive Order 14008 - Tackling the Climate Crisis at Home and Abroad which among other activities established the Interagency Working Group (IWG) on Coal and Power Plant Communities and Economic Revitalization. The future of coal communities has been identified as a national priority of the Biden Administration. The report of the IWG states:



*“Mining and power plant workers drove the industrial revolution and the economic growth that followed and have been essential to the growth of the United States. These Americans experienced numerous industrial transitions in the last 50 years, resulting from trade policies and myriad technological changes. Time and again, Energy Communities were promised everyone would benefit from a changing economy. In practice, the gains were not fully shared with Energy Communities. Today, many workers in these communities are still struggling as they deal with the challenges of a global pandemic, economic collapse, and the impacts of climate change. A national clean energy transformation will only be successful if it provides good-paying union jobs in growing markets and industries and secures the benefits that energy workers earned”.*

Moreover, there is also a tremendous opportunity and necessity to strengthen bridges between the U.S.-China in climate action that accelerates new models and policies benefiting the transformation of U.S.-China coal producing regions.

## U.S. Overview on Policy Making Frameworks in Coal and Climate Change

### U.S. federal leadership and climate change

In the United States, there is no comprehensive national climate or energy policy. This is in many reasons due to the political structure and shifting national priorities of the two parties. In the absence of a comprehensive national climate policy, the federal government utilizes a suite of tax incentives and regulatory authorities to meet varying Administration’s goals. For example, under the Trump Administration, which viewed the continued use of coal as a national priority, used the U.S. Environmental Protection Agency (EPA) to revise regulations for power plants to ensure that coal-powered plants could remain operational for as long as possible.

Under the Biden Administration, these authorities will be used to meet the international climate goals negotiated by the Conference of the Parties (COP). This goal, also known as a Nationally Determined Commitment (NDC), is an economy-wide carbon reduction target of 50 percent less than 2005 levels in 2030 and net-zero by 2050. EPA’s regulatory authorities come from the Clean Air Act, which directs the agency to regulate greenhouse gases from mobile sources, also known as Corporate Average Fuel Efficiency standards (CAFE) and from stationary sources. At the Department of Energy (DOE), the Secretary of Energy has the authority to regulate appliance standards for dozens of household and commercial items such as refrigerators and lightbulbs. Further, federal tax policy and credits incentivize clean energy outcomes including the Production Tax Credit, Investment Tax Credit, and 45Q. These tax incentives have a proven track record of stimulating wind, solar and carbon capture respectively.

In addition to the authorities outlined above, the Administration has the ability to issue executive orders, which have the force of law. For example, in the early days of the Administration President Biden issued an executive order to pause coal leasing on federal lands – directly impacting communities such as Wyoming that mine heavily from federally owned lands.



In November 2021, Congress passed the \$1.2 Trillion Bipartisan Infrastructure Deal (Infrastructure Investment and Jobs Act) which promises to rebuild America's roads, bridges and rails, expand access to clean drinking water, expand high-speed internet, tackle the climate crisis, advance environmental justice, and invest in forgotten communities. The needs of coal communities featured significantly in the deal, with specific funds allocated for: Specifically as it relates to U.S. coal communities, prioritized investments include:

**Clean Energy:** the Bill outlines \$65 billion investments in clean energy transmission including upgrades in power infrastructure. The Bill also outlines new funding plans for the development, demonstration, and deployment of cutting-edge clean energy technologies to accelerate our transition to a zero-emission economy. Specific funding has been allocated to achieve the U.S.'s goal of net-zero by 2050, including:

- \$8 billion for clean hydrogen;
- more than \$10 billion for carbon capture, direct air capture and industrial emission reduction with a focus on projects and opportunities for fossil fuel workers;
- \$2.5 billion for advanced nuclear; and
- \$1 billion for demonstration projects in rural areas and \$500 million for demonstration projects in economically hard-hit communities.

**Rural Broadband:** the Bill delivers \$65 billion to deliver high-speed internet through broadband infrastructure. Rural communities and coal communities frequently do not have internet access, limiting their connectivity and access to economic opportunity.

**Electric Vehicles charging:** \$7.5 billion allocated to build national network of EV chargers across the U.S. while at the same time creating manufacturing jobs. The EV chargers are planned to be along highway corridors to facilitate long-distance travel.

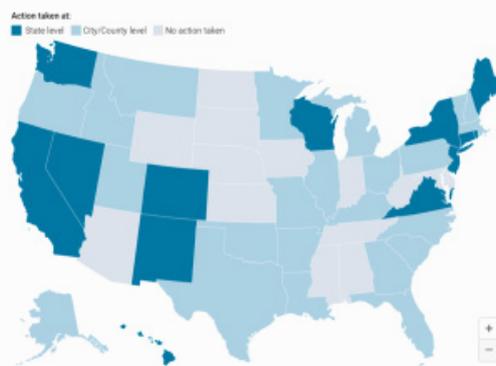
**Abandoned wells:** the Bill provides \$11.3 billion over the next fifteen years to clean up coal mine sites through the Abandoned Mine Lands (AML)" program.

### States and climate change

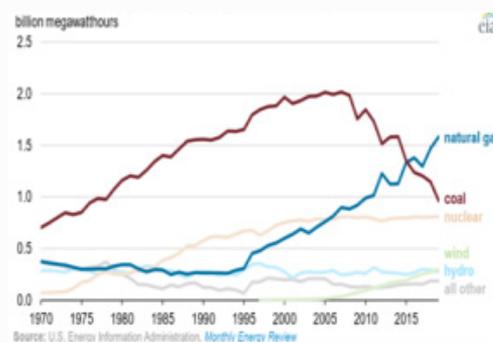
For coal and coal communities, despite the clear trend in declining demand, the lack of a consistent national strategy and changing messages depending on political power have meant that regional, state, local, and utility-led actions have played central roles in determining coal use. Until a national policy is established, the coal transition will continue to be regionally balanced against state leadership decisions and economics - competition from cheaper, cleaner energy sources, growing public concern about climate change in some states while at the same time a desire to see continued use of coal in others. In the absence of a federal strategy, states have filled the void, sometimes resulting in states working against each other. In communities where the coal industry maintains a large presence, states have advocated for coal's continued use. For example, Wyoming's Attorney General has sued Washington and Oregon for blocking port projects using the Clean Water Act authority that would



enable Wyoming's coal to reach Asian markets and passed state-level legislation to keep coal-fired power from being retired until other measures are explored. Ohio has coal subsidies in place to keep plants online despite their age and difficulty in competing with natural gas and renewables.



States with Clean Energy Policies



U.S. Power mix circa 2019

At the same time, many states across the country are passing mandates for clean energy. 15 states and territories have undertaken climate action towards 100 percent clean energy and 10 states, along with Washington, D.C., and Puerto Rico, that have passed 100 percent clean energy legislation and economy-wide greenhouse gas pollution-reduction programs. However, states are limited in their actions with constitutional requirements for balanced budgets and lack the power to provide the large-scale stimulus needed to massively reinvest in new industries and opportunities as coal communities are hollowed out.

Until a national policy is established, the coal transition will continue to be regionally balanced against state leadership decisions and economics - competition from cheaper, cleaner energy sources, as well growing public concern about climate change. In the meantime, coal use continues to be sizable and a dependable part of overall generation – 19.3 percent of the U.S.'s power, comparable to nuclear and nearly twice as much as the electricity generated by wind and solar.

### China Central Government Policymaking Frameworks in Climate Change and Coal

In China, comprehensive national climate and energy policy making is led by the Central Committee of the Communist Party of China (中共中央) and the State Council (国务院). In October 2021, State Council issues Carbon Peak Action Plan by 2030. Leading groups are formed for specific topic. For example, Carbon peak and carbon neutral leading group held its first plenary meeting in May 2021. The National Development and Reform Commission (NDRC) (发改委), the Ministry of Industry and Information Technology (MIIT) (工信部), the Ministry of Finance (财政部) and the Ministry of Science and Technology (科技部) also said they are speeding up the formulation of implementation plans. To develop a specific policy, normally relevant ministries start with making drafts. After that, they will hold symposiums and conducted surveys to solicit opinions from relevant departments, local governments, industry associations, enterprises, research institutions and experts to improve the policy further.

The National Energy Administration (NEA) (国家能源局) is managed by NDRC. Departments under the National Energy Administration focus on different energy specifically, including electricity, coal, petroleum and natural gas, new and renewable sources of energy. The National Energy Administration is mainly responsible for



drafting and submitting laws and regulations, organizing the formulation of industrial policies and related standards for coal, petroleum, natural gas, nuclear, electric power, new and renewable energy, and supervising the operation of power market. NEA also seeks public opinion in developing rules and regulations.

Usually, China runs a new policy on some pilots. For instance, since June in 2013, pilot carbon trading operation has been carried out in Beijing and other seven provinces and cities. In 2021, 259 entities in 17 provinces joined green power trading pilot.

### **The Role of China's Provinces in Decision making**

The National Energy Administration has six regional regulatory bureaus and twelve provincial regulatory offices. They are responsible for supervising electricity market operation, according to the authorization from National Energy Administration. Development and Reform Commission in each province together with ministries are responsible for policy setting. The program of mine lots with planning scale less than 10 million a year can be approved by provinces, and reported to NDRC. Whereas those are larger than 10 million should be approved by NRDC directly.

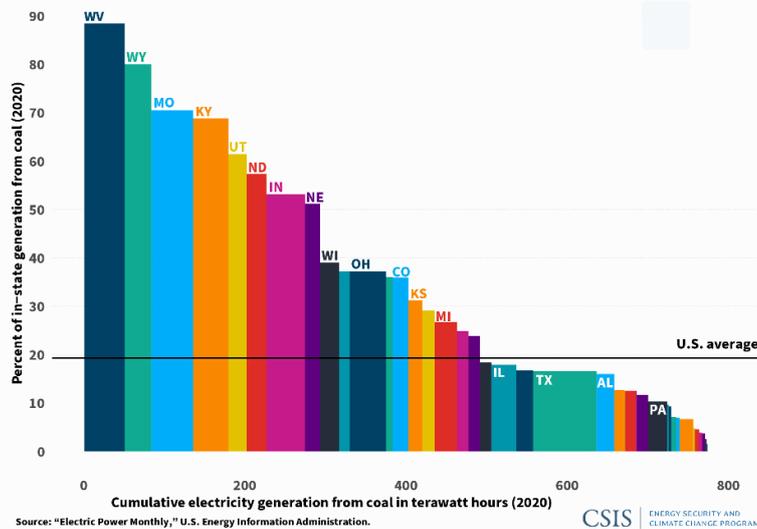
In most cases, policy systems at the provincial level are aligned with those at the central level. Specifically, the pace of subsequent policies may vary among provinces. Take the aim of carbon peak and carbon neutral for an example, among the 8 provinces and cities that clearly planned to reach the peak in advance, Qinghai, Hainan, Tianjin and Shanghai have stepped into the plateau stage. There is less pressure to reach the peak in the follow-up period, and more attention may be paid to the realization of carbon neutrality target. Whereas the carbon emissions of Hebei, Shandong, Shanxi, Inner Mongolia and other industrial and resource-rich provinces are still in the upward stage, with high peak pressure. It is expected that the follow-up emission reduction measures such as strict control of new production capacity will be relatively strict.

## **The Outlook for Coal**

### **U.S. Coal Background and the Outlook for Coal**

Nationwide coal is on the decline: heavily impacted by affordable natural gas, cost competitive renewable and regulations set by EPA. In 2019 there were 241 coal powered units across the U.S. with an installed capacity was about 236 GW. Over the next three decades, 80 coal plants with a total capacity of 98.3 GW are scheduled for retirement, with 12 planned retirements coming in 2022. Many of these plants will be transitioned to natural gas and there are more than 200 new natural gas plants planned in the U.S.

However, many of the largest coal plants continue to operate. Eight of the top 10 coal-fired plants in the U.S. – with generating capacities between 3.4 and 2.4 GW have no firm retirement dates – plants run by the nation's largest utilities such as Southern Company, Duke Energy, and AEP and operating largely in the American rustbelt and southeast – Michigan, Indiana, West Virginia, Ohio, Tennessee, Georgia, and Alabama. Coal also provides over half of the electricity in: West Virginia, Wyoming, Missouri, Kentucky, Utah, North Dakota, Indiana, and Nebraska. These eight states accounted for just 11 percent of U.S. power generation in 2020, but 38 percent of its coal-fired generation. These states are on the future of coal and the decisions and policies from these states regarding coal will be a deciding element regarding coal's future in the U.S.



## China Coal Background and the Outlook for Coal

In 2019, China's coal-powered installed capacity is around 1041 GW. In China, the electric power industry is dominated by thermal power generation. In 2018, installed thermal power capacity accounted for 69.8% of total electricity generation, in which coal power took up 66.5%. Proportion of installed thermal power capacity was 59.2% in 2019. Besides, in 2019, China's coal-fired power generation accounted for 50.2% of the world's total coal-fired power generation, ranking first in the world. In China, 43.8GW of new coal-fired power stations came on stream, despite the closure of 7GW of capacity in 2019. China proposes that by 2025, coal production will be controlled around 4.1 billion, and number of coal mines will be under 4,000. It is estimated that by 2050, the power industry will reduce the use of coal by 2.1 billion tons, and the overall installed capacity of coal power will be less than 10%. Inner Mongolia, Shanxi and Shaanxi are the top three coal producing provinces in China. Shanxi, Inner Mongolia and Shandong are the top three coal consuming provinces.

## U.S. Coal Regions Profiles: Wyoming, West Virginia, and Pennsylvania

**Wyoming**, the nation's smallest state with a population 578,000, has been the top coal-producing state since 1986, accounting for about 39 percent of all coal mined in the United States in 2019, and having more than one-third of U.S. coal reserves at producing mines. Wyoming produced 218 million tons of coal in 2020, a 21 percent decline from 2019, and down from a high in 2008 of 468 million tons. In 2019, 5,399 people were working in Wyoming's coal industry, down from 6,287 in 2008.

The majority of Wyoming coal is sub-bituminous. This coal contains less sulfur and is considered cleaner burning, and better for the environment. The combination of the Clean Air Act of 1970 mandating pollution reductions at coal-fired power plants and the deregulation of the railroad industry kickstarted demand for the low-sulfur content of the state's coal.



Sixteen coal mines are in operation in Wyoming, located in three counties: Campbell, Lincoln, and Sweetwater. The majority of the coal, however, is produced from the 11 mines in Campbell County location for the Powder River Basin, using surface mining techniques. Nearly all of the coal mined in Wyoming is shipped via rail to destinations across Wyoming and 27 other states. The top consumers of Wyoming coal are coal-fired power plants in Texas, Missouri, Wyoming and Illinois. While the majority of the coal is used to generate electricity at power plants, it is also delivered to industrial plants and commercial facilities.

Taxes and royalties from fossil fuel production provide more than half of state revenues that support schools and the health-care system. As such, the decline in coal has meant extreme coming budget shortfalls for Wyoming combined with an undiversified economic outlook.

Rocky Mountain Power (RMP) is Wyoming's largest electric utility. With coverage of most of Wyoming, RMP is regulated by the state and plays a large role in shaping the Wyoming energy marketplace. RMP's Integrated Resources Plans indicates plans to invest substantially in renewables, no new investment in coal or natural gas, and plans to retire 14 of its 22 active coal units by 2030 and another five by 2040. The remaining three plants will be shuttered shortly afterward.

**West Virginia**, with a population 1.8 million, is the nation's second-largest coal producer and accounted for 13 percent of U.S. total coal production. More than one-third of the more than 93 million tons of coal mined in West Virginia was exported to foreign markets, down from 144 million tons in 2009. Coal-fired electric power plants accounted for 91 percent of West Virginia's electricity net generation in 2019, renewable energy resources—primarily hydroelectric power and wind energy—contributed almost 6 percent and natural gas provided more than 3 percent.

Coal is found in 53 of West Virginia's 55 Counties-- only Jefferson and Hardy in the eastern panhandle have no coal. Forty-three counties have reserves of minable (economic) coal. The West Virginia Coal Industry provides approximately 13,000 jobs between underground and surface mining and the state leads the nation in underground coal production. There are currently 10 coal fired electric generating facilities located in West Virginia.

In 2019, coal mining generated approximately \$9.1 billion in total economic activity in the state and supported nearly 27,000 jobs with total employee compensation of \$2.1 billion. Mining also generated around \$514 million in severance taxes and other state and local taxes. A recent study commissioned by the West Virginia Coal Association and conducted by the West Virginia University Bureau for Business and Economic Research, shows in 2019 the coal economy generated approximately \$14 billion in economic activity for the state. This amounts to approximately 17 percent of the state's total economic output or one out of every six dollars generated. For context, total economic output for the state (GDP) was around \$77 billion.

The four largest regulated electric utilities in West Virginia are Appalachian Power Company (APCo) and Wheeling Power Company (WPCo), Monongahela Power Company (MPC) and Potomac Edison (PE). APCo, WPCo and MPC are regulated electric distribution utilities that own generation facilities.

**Pennsylvania**, has a population of 12.8 million and has been coal mining for more than 200 years. Today, it is the fourth largest coal-producing state in the nation – producing 50 million tons in 2019 - and the only state that produces anthracite coal in addition to bituminous coal. Pennsylvania is the third-largest net supplier of energy to other states, after Wyoming and Texas.



Pennsylvania is second only to Texas in estimated proved natural gas reserves, which nearly tripled from 2012 to 2018 because of natural gas development in the Marcellus Shale. In 2010, coal provided 48% of the state's electricity net generation and natural gas accounted for 15%. By 2019, coal had declined to 17% of the state's net generation and the share of natural gas generation nearly tripled to 43%. Pennsylvania ranks second in the nation, after Illinois, in nuclear power generating capacity. Many of Pennsylvania's coal-fired power plants have been retired with the increased availability of competitively priced natural gas, and nearly 3,000 megawatts of the state's coal-fired summer generating capacity shut down between 2015 and mid-2020. In the same period, almost 9,500 megawatts of natural gas-fired capacity came online, and almost all the generating capacity from natural gas. In 2019, natural gas-fired power plants were the largest provider of in-state electricity for the first time, taking over the top spot from nuclear power. Coal-fired power plants were the third-largest providers of in-state electricity

The Pennsylvania coal industry supports about 17,000 people employed directly and indirectly including 5,300 mining jobs in 2019 (3,800 underground, 1,500 surface). Further, for a state with a 2020 GDP of nearly \$700 billion, coal mining still accounts for nearly \$7 billion in economic activity in the state.

Pennsylvania has 11 utility companies. The largest are PECO Energy Company, PPL Electric Utilities Corporation, and Duquesne Light Company. PECO is the largest electric and natural gas utility in Pennsylvania, serving approximately 1.6 million electric customers and more than 511,000 natural gas customers in southeastern Pennsylvania. PPL Electric Utilities has customers in 29 of the state's 67 counties and serves central and eastern Pennsylvania. Duquesne Light Company serves Allegheny and Beaver counties – the Pittsburgh metropolitan area in western Pennsylvania.

### **China Coal Regions Profiles: Shanxi, Shaanxi, and Inner Mongolia**

Shanxi, with a population of 34.9 million, has a scale coal mining history starting at Ming Dynasty. Shanxi covers an area of 157,000 square kilometers, with 57,000 square kilometers of coal-bearing area, accounting for nearly 40%. Shanxi produced 988 million tons of coal in 2019, ranking second in the nation, and accounting for 26% of the country's coal production. Compared to 2018, the coal production increased 7%. Shanxi produced 8.3 billion cubic natural gas in 2019, increasing 56% in comparison to 2018. From 1999 to 2019, Shanxi did not produce any crude oil.

In 2020, fire power generation provided 69 million kilowatt-hour electricity, increased 2.8% compared to 2019. Shanxi consumed 139 million tons of coal in electricity generation in 2019. Since 1949, Shanxi has supplied coal for 28 provinces, autonomous regions and municipalities.

**Shanxi** has over 3300 companies in coal industry in 2018, ranking first in the nation, and providing over 1 million jobs altogether. Also, Shanxi has 37 companies in extra ction of petroleum and natural gas in 2018, which provided 5,800 jobs. The largest four coal industry companies in Shanxi are Jinneng Holding Group (晋能控股集团), Shanxi Coking Coal Group (山西焦煤集团), Huayang Group (华阳集团) and Lu'an Chemical Group (潞安化工集团). Jinneng Holding Group is the largest utility company in Shanxi, which owns three listed corporations and provides 473,000 jobs. Its coal production capacity is about 440 million tons, and installed power capacity exceeds 38 million kilowatt. Shanxi Coking Coal Group owns three listed companies. Also, some of its leading product, including strong-viscous coking coal and fat coal, are scarce resources in the world.

Shaanxi, with a population of 39.5 million, has 176 billion tons of ensured reserved coal in 2020, ranking fourth in China. Shaanxi produced 636 million tons of coal in



2019, ranking third in China, increasing 1% compared to 2018, and accounting for 17% of total coal production. Shaanxi produced 27 million tons of crude oil in 2020, dropping 24% compared to 2019; and 52.7 billion cubic meters natural gas in 2020, increasing 11% in comparison to 2019.

From 2015 to 2020, the generating energy in Shaanxi increased continuously. 229 billion kilowatt of electricity was generated in 2020. In 2020, coal provided 80% of Shaanxi's electricity net generation, and crude oil together with natural gas accounted for 18%, while renewable energy resource contributed 2%. Compared to that in 2010, the proportion of renewable energy had doubled in 2020.

**Shaanxi** had 1,002 companies which provided 185,000 jobs in mining and washing of coal industry in 2018, ranking third in the nation. The largest four companies are Shaanxi Coal and Chemical Group (陕西煤业化工集团有限责任公司), Bin County Coal Limited Company (彬县煤炭有限责任公司), Shaanxi Yanchang Petroleum Group (陕西延长石油集团) and Shaanxi Yulin Energy Group (陕西榆林能源集团有限公司). Shaanxi Coal and Chemical Group is the largest coal industry company in Shaanxi. Its business scope includes coal, steel and electricity. It owns 4 listed companies and provides over 120,000 jobs. In 2020, Shaanxi Coal Group produced 195 million tons of coal, 18.81 million tons of various chemical products, 13.18 million tons of crude steel, 39.8 billion kilowatt of power generation, and 7.78 million tons of cement products. Bin County Coal Limited Company, which provides over 20,000 jobs, paid 519 million yuan tax fee in 2020. Shaanxi Yanchang Petroleum Group makes effort in photovoltaic power generation especially.

**Inner Mongolia**, with a population of 24 million, has the highest coal production. It produced 1.09 billion tons of coal in 2019, accounting for 28% of nation's total coal production. Compared to 2018, the coal production increased 10%. Inner Mongolia produced 149,000 tons of crude oil in 2019, dropping 67% compared to 458,000 tons in 2015; and 2.2 billion cubic meters natural gas in 2019, increasing 37% in comparison to 2018.

Regarding energy produced by Inner Mongolia in 2019, coal accounted for 95.36%, crude oil took up 0.03%, natural gas accounted for 0.42%, and hydro power, nuclear power and other energy contributed 4.19%. The proportion of energy provided by crude oil decreased constantly in nearly 20 years, and the proportion of natural gas dropped sharply in 2018, whereas the energy provided by hydro power, nuclear power and other energy increased steadily since they were used.

Inner Mongolia has 968 companies in coal industry in 2018, providing 194,000 jobs in total. In extraction of petroleum and natural gas industry, Inner Mongolia has 64 companies and provides 3,800 jobs in 2018, ranking first in the nation.

The largest four utility companies are Inner Mongolia Yitai Group (内蒙古伊泰集团有限公司), Inner Mongolia Huolinhe Open pit Coal Company (内蒙古霍林河露天煤业股份有限公司), Inner Mongolia Huineng Group (内蒙古汇能煤电集团有限公司) and Inner Mongolia Shendong Tianlong Group (内蒙古神东天隆集团). Inner Mongolia Yitai Group has customers from 17 other provinces in China, as well as Russia and Australia. It has over 6,300 employees. The company has 11 large and medium-sized mines, with a total production capacity of more than 50 million tons per year. The coal produced has the advantages of low ash, ultra-low sulfur, ultra-low phosphorus and high calorific value. Inner Mongolia Huineng Group provides 20,000 jobs. The company now has a production capacity of 40 million tons of coal, 210,000 kilowatt of electric power, 400 million cubic meters of coal-to-gas and 400 million cubic meters of liquefied natural gas.



## Conclusion

Coal and climate change are closely related. Achieving emission reduction targets relies on the underuse and clean utilization of coal and development of renewables. China and America are the two largest coal producer and consumer in the world, which makes an important difference in tackling climate change in the future. Both America and China has attached importance to energy revolution and low-carbon energy development.

In the United States, no comprehensive national climate or energy policy is introduced by central government. The federal government utilizes a suite of tax incentives and regulatory authorities to meet varying Administration's goals. Thus, regional, state, local, and utility-led actions have played central roles in determining coal use in each state. In China, comprehensive national climate and energy policy setting is led by leading group on specific topic. Ministries will then draft and improve policies. Provincial policy system is usually consistent with central, but policies can be adjusted according to their actual phases.

In the United States, nationwide coal using is on the decline, because of affordable natural gas, cost competitive renewable and regulations set by EPA. Wyoming, West Virginia, and Pennsylvania are three significant coal producing and consuming states in America. In China, coal-fired electricity power dominates the electricity industry, and installed-capacity of coal-fired plants still increased in 2019. Shanxi, Shaanxi, and Inner Mongolia are the top three coal producing provinces in China. We hope the U.S. and China, as well as the major coal regions of both countries, can strengthen communication, explore ways of collaboration, to further policy outcomes that can benefit coal communities and enhance climate actions.