



THE ECONOMIC AND STRATEGIC VALUE OF COAL

In an increasingly carbon-constrained world, coal faces numerous regulatory challenges particularly among the largest OECD economies, yet it is easy to overlook the positive contributions that coal mining and power generation can have in both OECD and non-OECD countries.

The report looks at the value of coal from both a broad economic perspective and an individual project basis. The value varies in different economies, ranging from mining employment to providing affordable and reliable electricity. Studies also measure the indirect value created by other businesses that transact with coal-related activities, such as equipment and maintenance contractors, fuel suppliers, and finance. This report presents evidence from a range of case studies in countries that account for more than 80% of the world's coal supply; they are Australia, Canada, China, Germany, Poland, India, Indonesia, Nigeria, Pakistan, South Africa, and the USA.

The findings suggest that modern energy production leads to economic growth, especially in industrialising nations. Conversely, energy price inflation can adversely affect economic growth; thus abundant and affordable energy based on coal can be a driver for development. In parts of Europe and North America, coal production is in decline, yet in the developing world, energy strategies are recognising the value of using indigenous coal reserves. Pakistan, for example, regularly suffers from electricity supply shortages. With the help of overseas funding and expertise, Pakistan recently commissioned two units of a 990 MW generating plant able to exploit local Thar lignite as part of a programme to help alleviate the country's power shortages. In South Africa, the state utility Eskom is developing the 4800 MW Medupi plant. Three of the six units are operational and supply electricity in a country where half the population lives below the poverty line, and unemployment runs at 27%. In addition to the direct effects of power station construction, large power projects also bring opportunities for the local mining sector, funding for better healthcare, education, and training for high-quality skilled employment. Thus, coal-related investments can help countries meet specific Sustainable Development Goals (SDGs) to promote universal access to affordable electricity in the poorest parts of the world.

In Asia, coal is a driving force for economic growth and employment. China accounts for half the world's coal production and consumption, and the coal sector alone employs a staggering three million people. Low-cost coal-fired power using indigenous coal has been the engine of the Chinese economic miracle since 2000. Similarly, India's energy economy is based on coal-fired power and has developed a coal industry that employs 300,000 people. The rate of growth in new coal-fired power capacity has slowed in recent years, and the demand for coal may follow a similar trend.

Nonetheless, new power developments still create opportunities for employment, skills training, and wealth creation in impoverished regions. For example, in India the 3960 MW Sasan Power Project is estimated to provide power to 17 million people and enable 22 million people to gain access to safe water supplies. During the construction phase, the Sasan project employed 21,000 people while a further 20,000 jobs were created indirectly. The value of new modern coal projects can, therefore, have a massive impact on communities where poverty is pervasive. Where such developments replace outdated practices, other benefits such as improved health and safety are a welcome consequence.

In most advanced economies, coal mining is in decline but remains a source of skilled employment. Australia, for example, is a leading exporter of hard coal and in 2018 the state of Queensland directly employed 20,000 people and created A\$20 billion of income. Coal exports raised A\$1 billion in royalties, thus providing necessary funding for public services. In Europe, the coal market in Germany and Poland supports over 160,000 jobs in the form of direct employment and indirect employment elsewhere in the economy.

In the USA, coal production is still around 700 Mt/y (2018) and is a sector that is important to mining communities in regions such as Virginia, Illinois, the Midwestern interior, and even parts of Alaska. Even though coal production is in decline due to competition from natural gas-fired power, coal-fired power has proven to be a vital backup to gas power and other sources during severe winters when gas supplies are under pressure.

Worldwide, the combustion of steam coal in power plants gives rise to large quantities of fly ash; this waste by-product can either be stored at considerable cost, or blended with Portland cement. Blending coal fly ash with cement reduces costs and CO₂ emissions from the energy-intensive process of manufacturing cement. Metallurgical coal is also a primary component of blast furnace steel production, the dominant form of steel production in the world today. Large quantities of affordable cement and steel are essential for rapid infrastructure and civil engineering developments in developing countries, and crucially the materials used in the construction of wind turbines and hydroelectric dams. Ironically, coal will play a part in the energy transition towards low carbon energy.

The report quantifies the value of coal mining and power generation to various economies. The creation of employment and income also multiplies throughout society due to increased spending on goods and services arising from coal-related activities. Other benefits include societal and community services which can impact thousands of people in terms of better education, healthcare and skills training as well as raising public revenues through taxation on coal. Even in a carbon-constrained world, significant positive impacts from coal can be felt in communities in the developing world and it still has a role in advanced economies.

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Each executive summary is based on a detailed study which is available separately from www.iea-coal.org. This is a summary of the report: The economic and strategic value of coal by Paul Baruya, CCC/296, ISBN 978-92-9029-619-5, 115 pp, October 2019.