Coal: From Rock to Energy

Coal is a combustible sedimentary rock that has been used for centuries to generate energy. Despite growing global pressure for an energy transition, it remains a central energy source in many regions, particularly in Asia, and constitutes a strategic asset for several industrial markets, including electricity generation and steelmaking. Understanding its value chain from extraction to energy use allows for anticipation of market dynamics, geopolitical risks, and environmental challenges that influence investment decisions.

1. From Deposit to Combustion: The Industrial Chain

Coal is formed from plant remains buried and compressed over millions of years. Several types of coal are distinguished: anthracite, bituminous, sub-bituminous, and lignite. They are classified according to their carbon content and calorific value. Mining is mainly carried out via open-cast or underground mines.

Once extracted, coal is transported by rail, ship, or pipeline to thermal power plants, heavy industries (steel, cement), or cogeneration facilities. Energy produced through coal combustion remains one of the most widespread means of generating large-scale electricity, particularly in emerging economies.

2. Global Production & Consumption

Global coal production recently reached historical levels: it stood at approximately **9.15 billion tonnes in 2024**, with continuous growth since 2021 to meet strong energy demand. This trend is explained by the growth in electricity demand in many countries, despite the expansion of renewable energies.

Global coal consumption has also increased, reaching approximately **8.8 billion tonnes in 2024**, also at a record level. The majority of demand is driven by the electricity sector, which accounts for about two-thirds of total consumption, with a particularly high share in Asian economies.

> China stands out as the world's leading producer and consumer: in 2024, it accounted for over 50% of global production and a significant portion of total energy consumption, particularly for electricity generation and as an industrial raw material.

3. Energy Use and Markets

Coal is mainly used for:

Electricity Production

It still powers a large proportion of the electricity mix in many countries, although this trend is declining in some regions.

Heavy Industries

Notably blast furnaces for steelmaking (metallurgy) and cement production.

Industrial Heat

In processes requiring high temperatures.

Coal consumption remains dominated by emerging economies (China, India, Indonesia), while advanced countries are gradually reducing its share in the energy mix in favour of renewables.

4. Price Trends and Market Dynamics

After reaching historically high levels of demand and production in recent years, coal prices fell in 2025, partly due to abundant supply in the face of moderate demand in some regions and increased integration of renewable energies.

The expected stability or slight decline in global demand in 2025, particularly in China and India, exerts downward pressure on international prices. In December 2025, coal is trading around **108.50 USD/tonne**, according to the ICE European market and the IEA. This development also reflects the growing competition from alternative energy sources and high inventory levels.

5. Volatility Factors & Investment Risks

For investors, coal presents specific characteristics:

Reliance on Economic Cycles

Demand for coal is strongly correlated with electricity needs and industrial activity. Sustained economic growth or a short-term increase in electricity demand can stimulate coal demand, while an economic slowdown can reduce it.

Energy Transition

The progression of renewable energies (solar, wind) and improved energy efficiency are permanently altering global demand. In several advanced markets, electricity generated from renewable sources will surpass that produced by coal-fired power plants, marking a turning point in the global energy balance.

Geopolitical Risks

The concentration of coal in certain regions (mainly Asia) creates dependencies and risks of supply chain disruptions, particularly related to trade policies or geopolitical events.

Environmental Regulation

Climate standards aimed at limiting CO_2 emissions are progressively influencing the strategies of major coal consumers, even if the reduction varies greatly by region.

6. Medium-Term Outlook (2025–2030)

01

Global Demand

According to the latest data, coal demand is expected to remain broadly stable around the very high levels reached in 2024–2025, with slight regional fluctuations depending on local economic and energy trajectories.

02

Partial Transition to Renewables

Although renewable energies are progressing rapidly, curbing coal growth in some advanced regions, demand remains robust in economies where coal remains a reliable and inexpensive source for basic energy and heavy industry.

03

Regulatory & Environmental Challenges

International climate commitments continue to push for a gradual reduction in coal use, even if objectives vary by country and national energy priorities.

Conclusion

> From rocky deposits to the engine rooms of power plants, coal remains a pillar of global energy, particularly in emerging economies. Despite energy transition efforts and the rise of renewables, coal demand and production remain at historically high levels in 2025 (≈ 8.8 billion tonnes), with production slightly exceeding 9 billion tonnes.

For investors, coal is both a strategic energy source and an asset marked by structural risks related to the environment, geopolitics, and evolving energy markets. A thorough understanding of regional demand dynamics, prices, and climate policies is essential to navigate this complex and transitioning market.

Sources

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