AGRITRADE RESOURCES LIMITED (1131. HK)

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www.agritraderesources.com

ALL ABOUT COAL

Snapshot of coal

- Coal is one of the oldest, most readily available and widely-employed fossil fuels globally.
- Mined commercially in over 50 countries, coal is used in **over 70 countries** for **electricity generation**, steel production, cement manufacturing and liquid fuel.
- Coal generates 42% of the world's electricity and over 60% of global steel production is dependent on it.
- One of the most efficient sources of energy, heat and power, **every kg of coal can release ~6,453 kcal of energy when burned.**
- Two broad categories of coal are steaming/ thermal coal and metallurgical/ coking coal:
    - Steaming/ thermal coal is mainly used as fuel to generate heat and electricity.
    - Metallurgical/ coking coal is used to produce coke for steel making.

Ranks of coal (in decreasing level)

- Coal is classified as high or low-rank based on their carbon content/ energy density (energy value per unit mass)

Name	Description	Calorific value*	How it looks
Anthracite (highest rank)	Hard black coal with high carbon content (92-98%) and energy density, for domestic/ industrial uses, including smokeless fuel	7,738 kcal/kg – 8,095 kcal/kg	
Bituminous	Soft black coal that can be used for thermal or metallurgical applications	4,048 kcal/kg – 5,536 kcal/kg	
Sub-bituminous	Soft black coal with energy density lower than bituminous coal; the most common type of coal used for electricity generation	3,571 kcal/kg – 6,429 kcal/kg	
Lignite (lowest rank)	Light brown coal with high moisture content and low energy density, used mainly for electricity generation	<3,881 kcal/kg	

*Source: http://www.engineeringtoolbox.com/fuels-higher-calorific-values-d_169.html. Pictures : internet sources

High rank vs. Low rank coal

- Low rank coal includes lignite and sub-bituminous coal.
- More than 50% of the world's coal reserve is low rank coal.
- Compared to high rank coal, lower-ranked coal has higher moisture, higher reactivity, lower ash content and lower energy density.

Senamas Energindo Mineral, Agritrade Resources

Did you know….

- **Agritrade Resources** mines low-sulphur, low-pollutant thermal, sub-bituminous coal (calorific value of 3,700 kcal/kg) at its Senamas Energindo Mineral (SEM) mine in Central Kalimantan, Indonesia.
- Sells mainly to domestic traders and power generation plants, and international markets such as China and India.
- **Increasing global demand** for low rank coal with rising energy costs as power plants seek to control costs.

ALL ABOUT COAL

Market terminology and statistics

- **Coal resources:** The amount of coal in the ground, sub-divided in order of decreasing geological confidence.

1.	Measured resource	High confidence
2.	Indicated resource	Reasonable confidence
3.	Inferred resource	Low confidence

- **Coal reserves:** Amount of measured or indicated coal resources that could be **economically mined** are called **proven coal reserves** and **probable coal reserves** respectively.

According to **World Coal Association** (WCA):-

- Global proven coal reserves estimated at over **847 billion tonnes,** more abundant than oil and gas.
- At current rates of production (as at 2012), coal supplies should last for **~118 years until 2130**.
- China has the world's largest coal reserves at **114 billion tonnes** (as at 2010).

Coal consumption trends

- Since 2000, global coal consumption has grown faster than any other fuel.
- ~6.1 billion tonnes of hard coal and ~1 billion tonnes of brown coal were used in 2011.
- International Energy Agency (IEA) estimates that in 2035 there will still be one billion people without access to electricity.
- Coal usage estimated to **increase 53% over the next 20 years**, led by **demand from developing countries** for power generation. These countries will account for **95% of the increase in coal usage**.

Source: WCA, www.coalspot.com

Coal loading onto Mother Vessel

Demand and supply

- **Major exporters** are Australia, Colombia, Indonesia, South Africa and United States.
- **Major producers** of thermal coal are Germany, Indonesia, Russia, China and Australia.
- China, India, USA, Russia and Japan combined account for 77% of total global coal use.

Surveyors collecting coal at SEM Pit, Agritrade Resources

Outlook and prospects

- Coal plays a significant role in supporting global economic development, alleviating poverty as businesses and industries use it as reliable base load electricity for expansion.
- Coal is sought after as an **economically viable** source of energy, especially in developing countries e.g. Indonesia, China, Southeast Asia.
- Major expansion in global thermal coal trade is expected over the next 20 years.

Thermal coal demand trends

- **Long term thermal coal supply** to remain strong with Asia's expanding seaborne trade albeit at **high prices**.
- Long term thermal coal prices expected to remain firm in spite of supply expansion.
- **Demand to be concentrated in Asia driven by China and India**, the world's largest thermal coal importers.

Source: WCA, Wood Mackenzie, www.coalspot.com

SEM Coal

- Our Specification:

		Typical
Total moisture	(ARB)	38% - 42%
Inherent moisture	(ADB)	13% - 16%
Ash Content	(ADB)	4% - 6%
Volatile Matter	(ADB)	37% - 43%
Fixed Carbon	(ADB)	37% - 41%
Total Sulphur	(ADB)	0.1% - 0.3%
Gross Calorific Value	(ADB)	5,300 kcal/kg
	(GAR)	3,700 kcal/kg
HardGrove Grindability Index		63