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Although low-CV (calorific value) coals account for nearly half of the world's reserves, global seaborne trade has long centred on higher grade fuels, and existing boiler specifications, plant supply chains and contract terms often preclude the use of coal with CV's much below 5,000 kcal, at least without preparation and blending.

Nevertheless, dwindling economically recoverable resources of high-grade bituminous and anthracite coals, along with chronic logistical problems facing established export markets, have caused customers – particularly in quickly expanding Asian markets - to re-evaluate their stance on traded low-CV sub-bituminous coals. Indonesia in particular now has several major companies specialising in lower-grade thermal exports for blending and use by Indian power stations.

The low-CV seaborne trade, however, has not yet seen development of market maturity commensurate with its growth in volume. Existing agreement structures and indices don't scale down well to very low heat value specifications, so potential buyers must rely more upon ad hoc agreements and spot purchases.

There is a danger of overpaying in such circumstances; it is not enough simply to prorate prices relative to higher CV coals on the basis of comparative calorific values. In order to develop a purchasing agreement under fair terms, buyers need to take into account the logistical hurdles and expenses low-CV fuels can add to their supply chain, and they need a strategic understanding of the market in which they are operating in order to develop an informed overview of likely pricing evolution over the medium and long-terms.

In terms of tonnage, lower quality (lignite and sub bituminous) coals account for just under half of the world's recoverable resources. And although global trade markets are still dominated by higher quality (anthracite and bituminous) coals, problems associated with sourcing these – including dwindling recoverable reserves and recurring logistical problems in established export networks – have turned the attention of an increasing number of power generators toward the prospect of using low-CV (calorific value) coals. In particular, several producers in Indonesia - where low rank coals make up about 65% of the coal reserves - have become specialists in exporting lower grade sub bituminous coals. In turn, power generators in the major import market of India have built boilers specifically designed to burn a blend of low-CV Indonesian and South African coals.

Although the growth of this trade has been impressive, it remains a niche market so far. Overall, low fuel energy values dictate higher consumption per megawatt hour, and high moisture and ash content make low-CV coals unsuitable for consumption in many existing power plants, at least without treatment. It is nevertheless possible and economically sensible in some circumstances to use low-CV feedstock after some combination of ash abatement, drying and blending with higher grade stocks. Low-CV coal can also provide an advantage where other characteristics besides heat content are important: there is an increasing trade in low-CV/low sulphur coals, for instance, to help meet SOx emissions standards without use of expensive stack-scrubbing technologies; and lower CV coals may be especially suited for gasification, as the need for consistency of quality tends override the need for high calorific value for gas turbine operation.

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Although coal contract standards have become commonplace through mechanisms such as index pricing and standard coal contract agreements, such instruments are understandably tailored to deal with traditionally traded higher- and medium-quality coals, and the lowest heat value specification found within any existing Standard Coal Trading Agreement (SCOTA) terms is 4,600 kilocalories per kilogram, net-as-received. For traded coal of much lower quality the market tends to be much less defined, with price levels and supply terms more prone to settlement through spot agreements and two-party negotiation.

The problem– and opportunity - facing a buyer of below-spec or off-spec coal, then, is to obtain orders at a suitable discount. In attempting to do so, there are reasons that an inadequately informed buyer may be in danger of paying too much.

Typically, the pricing of coal should not be based simply on a straight proration of net calorific value against a benchmark – that is, a standard contract price per ton for a type of 5,000 kcal coal will not be 5/6 that of a 6,000 kcal hard bituminous product, not only because of likely variances in sulphur, nitrogen, volatiles and other characteristics, but because of the additional complexities and negative economies inherent in the shipment, storage and burning of lower CV coals:

- per unit energy, additional capacity at all links in the transport chain – from rails, trucks, or barges to loading facilities and freight vessels – will be necessary for transshipment of low-CV coals, making transportation costs higher;
- capital costs at the power station will rise as additional grinding and drying capacity will be necessary, due not only to the increased volume of coal but also to the higher moisture content of low-CV coal. Storage capacity will also need to be increased, and on top of this, significant costs may be incurred due to uneconomic plant capacity increases needed;
- boiler operations may be adversely affected by the use of coals or blends outside of standard specification, leading not only to reduced efficiency but to additional maintenance and replacement costs due to performance variance and possible ash slugging;
- finally, lower power output and additional fuel input lead to a reduction in a power plant's overall capacity. Depending on the nature of the electricity market and whether the station runs at baseline or peaking, this can adversely affect profitability.

In order to develop a purchasing agreement under fair terms, buyers considering sourcing in a low-CV market need to be aware not only of the specific logistical hurdles and expenses these fuels can add to their supply chain, they need a strategic understanding of the market in which they are operating in order to develop an informed overview of likely pricing evolution over the medium and long-terms. If you would like to know more about pricing low-CV coal, please contact Energy Edge's [Martin Bloemendal](#) today.

***Martin Bloemendal** has over 30 years experience in energy, coal and logistics markets and is well-known for developing market concepts (e.g. "Battle Coal", "Gigajoule deals", etc.) which improve competitive edge. He is a member of EURACOAL's market committee and is experienced in coal blends and using biomass together with coal. Moreover, he is a member of the investment committee of a greenhouse gas credits aggregation pool. He was the Managing Director of GKE in Holland, responsible for buying all the coal for the Dutch utilities*