# *'Metal Commodities Find New Markets'*

***A range of environmental and social imperatives are creating new markets for aluminum, platinum and diamonds, helping to offset the sustainability challenges the metals and mining sectors face, says Devin Crago.***

Conventional wisdom holds that the primary determinant of share price performance among metals and mining companies is the underlying metal price.

While the interplay between global supply and demand for metals clearly remains of paramount importance to investor returns, there is mounting evidence that metals and mining companies are now seeking to break free of this cycle via the development of novel environmental applications for their products.

Aluminum producers and platinum miners are leading the charge with their respective forays into lightweight transportation products and pollution-reduction technologies – but they are not alone in their efforts. In fact, companies across the full spectrum of the metals industry are learning how innovative metals applications can contribute to environmental solutions while also catalyzing top-line revenue growth.

## Aluminum

For the aluminum majors – Alcoa, Alcan, Pechiney, BHP Billiton and Norsk Hydro – the environmental attributes of aluminum are providing a significant boost to revenue growth in the transportation markets. Aluminum content in transport applications has seen exponential growth: between 1991-2001 aluminum use in cars has doubled; its use in SUV and light-truck applications has tripled.

The predictable result has been a substantial improvement in market share for various aluminum producers. Alcoa's revenues from the transportation market have increased from $4.0 billion in 1999 to $5.1 billion in 2002. Pechiney saw €500 million of its 2001 net sales flow from the automotive sector while volumes increased by 11 percent over 2000.

Undoubtedly, the key drivers spurring the expansion of aluminum's share of the transportation market relate in large part to a converging set of global environmental trends:

i) Vehicle Fuel Efficiency:

First among these trends is the growing policy emphasis on raising motor vehicle fuel economy standards. Within the US, political deliberations continue over the national energy policy and fuel economy continues to be a key point of contention. The see-saw debate between proponents and detractors of higher standards is ongoing, but as the policy framework continues to evolve the aluminum industry is building a convincing argument that aluminum will be an integral part of future efforts to improve automotive fuel economy. According to the international trade group Aluminum Association Inc., using aluminum to cut a vehicle's weight by 10% can boost its fuel economy up to 8%, or as much as 2.5 extra miles per gallon.

What's more, as post-September 11$^{th}$ concerns over dependence on foreign oil have become a priority issue in OECD nations, new linkages are being made between automotive oil consumption and international security. Dianne Feinstein, a senior California senator, has been a vocal advocate of this thesis. In 2001 Senator Feinstein asserted: "The most effective step our

nation could take to limit dependence on foreign oil and reduce global warming is to require improved fuel efficiency for sport utility vehicles and other light trucks." Such linkages are amplifying the case for increasing fuel economy standards and consequently driving demand for aluminum applications.

ii) Climate Change:

A second closely related trend driving aluminum consumption is global climate change. The collective advancement of the climate change agenda by international agencies, national governments, investors and the corporate world is creating conditions for major shifts in market dynamics. Since the transportation sector currently accounts for a significant part of global greenhouse gas emissions (over 25% in both the US and Canada), it has become a primary target for government action to reduce emissions.

The aluminum majors have for the most part proven keenly aware of the competitive opportunities that these developments afford, and have been quick to enter the fray for the benefit of shareholders. Via an assortment of R&D and strategic partnerships, several firms have sought to provide the technological advances that will allow the transportation sector to reduce its emissions-intensity.

As a starting point, the aluminum industry has put forth a simple yet compelling case for aluminum: the lightweight metal can reduce net vehicle weight, which leads to enhanced fuel efficiency and reduced emissions. The Aluminum Association points to specific lifecycle studies which demonstrate that over the average lifetime of a vehicle, every pound of aluminum that replaces two pounds of steel can save 20 pounds of $CO_2$ from being emitted.

With the transportation sector anticipated to contribute an increasing percentage of global greenhouse gas emissions in the coming decades, there is clearly a market opportunity for aluminum producers to profit by providing emissions-reduction solutions to the transportation markets.

Perhaps showing the most leadership in the corporate arena is Alcoa. In partnership with Audi, the company spearheaded a 10-year development effort to create a patented aluminum frame for the automotive market. The cornerstone technology is the Audi Space Frame which eventually became the structural foundation for the highly successful Audi A8, the world's first aluminum-intensive production car. The frame is 40 percent lighter than a steel frame, and the A8 itself was awarded five-star safety ratings for head-on crash test results. Other firms including Honda, Nissan, Ford, GM, BMW and others are also increasing aluminum use in vehicles, thus driving demand for the aluminum majors.

## Platinum Group Metals

Similar to aluminum, a key driver of demand for platinum group metals (PGM) is the inherent environmental properties associated with the metals. These material qualities are being leveraged by innovative PGM-focused companies that have recognized a market opportunity in providing emissions-control solutions - and are riding a tidal wave of global legislation to the bank.

Each of the major global producers of platinum group metals is keenly aware of the role that environmental concerns have for future profitability. In their corporate presentations to the

investment world the central platform for future growth is focused clearly on two factors: ever-tightening emission control legislation and demand for platinum jewelry.

On the emission control front, increasing demand for platinum group metals is due to their integral role as components of catalytic converters and fuel cells.

i) Catalytic Converters

The impetus behind growth in the catalytic converter market is relatively straightforward. Public concerns over air pollution have resulted in the global proliferation of a range of emissions legislation. The pollution abatement potential of catalytic converters has led to a rapid surge in their application in automotive markets: since 1981 all cars and light duty trucks sold in the US must be equipped with catalytic converters and fully 85 percent of cars sold worldwide are now fitted with 3-way catalytic converters.

Lonmin, one of the world's top platinum producers, predicts that with the imminent introduction of stricter emission control legislation worldwide, all vehicles in the industrialized world will be fitted with autocatalyst exhaust systems by 2010. Market research suggests that this growth is already benefiting platinum producers and technology suppliers. Johnson Matthey, a UK-based advanced materials technology company, reported in its 2003 review of the platinum market that consumption of platinum in autocatalysts grew by 17% in 2002.

ii) Fuel Cells

Looking forward into the era of fuel cells, PGM are leading candidates as indispensable elements of both mobile and stationary fuel cell applications. These technologies are being resolutely pursued by a number of well-capitalized, innovative firms that are determined to hold significant shares of future markets.

Indeed, in the mobile fuel cell arena most of the world’s automotive leaders – including Honda, Toyota, DaimlerChrysler, GM, Ford, Hyundai and Volkswagen – have a fuel cell vehicle in development. These private sector advances have recently been bolstered by the announcement in President Bush’s 2003 State of the Union address that $1.2 billion in federal funding will be allocated to develop hydrogen powered automobiles.

As for the stationary fuel cell markets, although revenues are not expected to benefit the corporate income statement in the short term, leading companies are anticipating future growth and positioning themselves accordingly.

For both the catalyst and fuel cell markets, several notables are well positioned to capitalize on this demand, largely predicated on their market positioning in platinum production. World platinum production in 2001 was dominated by several players: Anglo Platinum (36%), Impala Platinum (22%), Norilsk Nickel (17%), Lonmin (12%) and Inco (3%). Other firms, including Johnson Matthey, have orchestrated strategic partnerships with platinum suppliers and are set to profit through the development of PGM-based catalyst and fuel cell technologies.

Diamonds

Perhaps the most innovative strategy to move a mineral beyond a simple commodity has emerged from the diamond industry. The sector has a history of increasing margins through the use of effective branding. Consumers worldwide are hard pressed to escape the "Diamonds are Forever" tag line; Tiffany's is a renowned example of a retailer that has traded on its name to provide superior diamonds.

And now the producers themselves are getting in on the act. New efforts to increase brand equity are emerging from the starting point of the diamond trade's so-called "mine-to-mistress" value chain: the mine itself is becoming a selling point for leading firms. The aim of the new strategy is to promote product differentiation by branding select diamonds as certified to high environmental and social standards.

The timeliness of the new strategy could hardly be better. DeBeers has been busy pushing an industry-wide effort to boost demand by promoting branding competition among various producers. Estimates suggest there are at least 90 independent diamond brands on the market at present, and environmental and social criteria could prove to be yet another marketing advantage.

Lending credence to the possibilities of such marketing has been the upswing in consumer concern surrounding international trade in so-called "conflict" or "blood" diamonds. A major international effort to curb the distribution of conflict diamonds – the UN-backed Kimberly Process – has seen tremendous industry support, in part due to fears that tainted diamonds have damaged the mineral's invaluable image. The trade in conflict diamonds is believed to comprise about 3 percent of the annual global diamond trade, and the Kimberly Process is specifically designed to eliminate this remaining percentage. Thus, consumer concerns have opened a window of opportunity for diamond producers who are able to certify their products and avoid perceptions of complicity in human rights transgressions.

BHP Billiton is especially well-positioned to benefit, holding majority ownership in the Ekati diamond mine in northern Canada. On the basis of the Canadian origin of Ekati diamonds, the company has created a global brand called AURIAS and is actively marketing the branded stones as adhering to high environmental and social standards. Other diamond producers, if they haven't already, are likely to follow suit as product differentiation by branding becomes a new feature on the competitive landscape of the diamond trade.

## Conclusion

Metals and mining firms have grappled with the issue of decoupling market performance from underlying commodity prices for many years, with little success. But a handful of innovative firms are poised to move their products beyond mere commodity status. The rise of sustainability as a central tenet of government policy and corporate identity may provide the impetus for leading firms to make this leap once and for all.

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