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Game of Stones: Disrupting the Diamond Trade



Diamonds grown in the lab have matured enough in size and quality to compete against traditionally mined gems. At stake is the \$14 billion rough diamond market.

In its elemental composition, diamonds are just carbon, the fourth most common substance in the universe. A lump of coal is probably its humblest form: brittle, flammable, and entirely unsuitable as a promise and proposal of undying devotion.

But part of the allure of diamonds is how they are forged and transformed by monumental terrestrial forces over eons. Bury pure carbon 100 to 300 miles underground, subjected to extreme heat and pressure over millennia, then wait for volcanic and seismic activity to bring it closer to the surface; now, mine, cut, and polish it to brilliance, and we have—bling!

For thousands of years, diamonds have occupied rarified strata of social status and market value. That could change, amid significant recent advances in technology to grow large, colorless, cultured diamonds that are nearly indistinguishable from mined gems—all in a process that takes days, not millions of years. “The issue of lab-grown diamonds is dominating industry debate right now,” says Neri Tollardo, an analyst with Morgan Stanley's Europe, Middle East and Africa Metals & Mining research

team.

Indeed, commercially viable lab-grown diamonds that are less expensive and conflict-free may well appeal to younger, socially conscious consumers, with disruptive consequences for the \$14 billion global rough diamond market. A new [Morgan Stanley Research](#) report, "Game of Stones - Lab vs. Pipe," looks at whether lab-made diamonds could threaten incumbents and to what extent. "The most likely scenario is that the lab-grown diamond market finds its own niche, increasing the diamond jewelry market and taking limited market share from miners," says Tollardo.

This isn't to say that incumbents shouldn't take the threat seriously. On the contrary, diamond miners need to step up their ad spend to avoid losing market share. Meanwhile, the lab-grown diamond companies also need to walk a fine line between consumer acceptance of lower-cost alternatives and devaluing the overall market and profit margins.

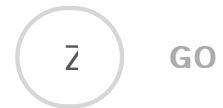
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Better Technology, Bigger Diamonds

Lab-produced diamonds aren't a new phenomenon. Scientists have been synthesizing them for decades, producing the first gem-quality diamonds in the 1950s. Around the turn of this century, new niche players began ramping up efforts to establish a market for gem-quality lab-made diamonds.

Recently, several factors have converged to make lab-produced gems more scalable and desirable. Whereas previous crops of manufactured diamonds were small, colored stones, in 2014, companies started to grow large, colorless stones, and with enough volume to appeal to retailers. "In 2015, one producer unveiled a 10-carat polished diamond of VS1 clarity and E color—created in less than 300 hours," says Menno Sanderse, head of the EMEA Metals & Mining team.

Modern screening machines can detect lab-made gems, namely by looking at

growth patterns. Still, even to the trained eye, high-quality lab-made diamonds can be indistinguishable from mined diamonds.

The Economics of Cultured Bling

Despite technological improvements, the cost of manufacturing a diamond does not appear to be dramatically different from mining one. In the case of high-pressure, high-temperature technology, the main production cost is the electricity needed to power machines that must replicate the conditions needed to grow diamonds. Morgan Stanley estimates that the capital costs for lab-grown diamonds are negligibly lower than mined diamonds: \$343 per carat vs. \$367 per carat for mined.

Yet, at the wholesale level, they may sell at a 30% to 40% discount to mined stone. This is in part because lab-grown diamond producers are a fragmented, independent channel, while the mined diamond industry is highly consolidated and coordinated, in terms of supply, distribution, marketing and pricing. The labs aren't just competing with the mined diamond industry, but also with each other for market share.

While the lower price point appeals to

some consumers—and retailers looking to revive shrinking margins—the environmental and social benefits of lab-grown diamonds can be another selling point. Many of today's younger consumers aren't only open to alternatives, they are willing to pay a premium for products that have a low environmental impact or are socially responsible.

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All told, the market for manufactured diamonds is still tiny. Sales of rough lab-made diamonds are between \$75 million and \$220 million, which at the midpoint is just 1% of the global market value of rough diamonds. The low-hanging fruit is gem-quality melee diamonds, which are less than half a carat in rough form and can be produced using large existing capacity currently focused on the industrial market for drill bits, saws, and sanding equipment. In what Morgan Stanley considers the most likely scenario, lab-grown diamonds could take a 15% market share in gem-quality melee diamonds and

a 7.5% share in sales of larger diamonds by 2020.

Miners Need to Ramp Up Marketing

For decades, diamond engagement rings have driven the industry. Relative to other luxury segments, however, the diamond industry spends very little on marketing. At its peak in the 1990s, the marketing budget of the industry's largest player was 5% of revenue; by some estimates, that figure has fallen to 1%. Contrast this to the marketing budgets of leading luxury brands, which spend up to 10% of their revenues on marketing.

In 2015, seven of the world's largest miners formed the Diamond Producers Association. In early 2016, they launched a campaign, "Real is Rare. Rare Is a Diamond." Nevertheless, miners will need to boost their marketing spend to avoid losing share to lab-grown producers.

While diamond miners have joined forces, companies focused on lab-made diamonds haven't organized in a meaningful way. "The lack of coordination among lab-grown diamond producers and retailers provides a varied and sometimes confused message to the end consumer," says Tollardo. Some emphasize the ethics of lab diamonds; others focus on the price

advantage. They are even struggling with consistent nomenclature. “While the mined diamond producers are working hard to tweak the official diamond nomenclature in their favor, there are a variety of names given to lab-grown diamonds, and that does not help,” Tollardo says.

One scenario that everyone might want to avoid is what Tollardo calls “substitution,” in which lab-grown diamonds gain the upper hand in the marketplace through both quality and price, rendering consumers indifferent to provenance. This would be “an existential threat to the mined industry,” he says. It would also involve significant and sustained ramp-up in investments by the lab-diamond companies, with an uncertain payoff. After all, if big, high-quality diamonds can be made in a lab and sold at regularly affordable prices, would they still retain their traditional special value? That’s a question that neither the lab nor mined side of the industry may want to have answered.

For Morgan Stanley [Research](#) on the outlook for the diamond industry, ask your Morgan Stanley representative or [Financial Advisor](#) for the full report, “Global Diamonds: Game of Stones – Lab vs. Pipe” (July 18, 2016). Plus, more [Ideas](#).