Summary note

A. Mapping the Synthetic Diamond Landscape

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Synthetic diamonds have been around for decades, with small quantities of synthetics being available as early as the 1940s. These stones were primarily of industrial quality. In the late 1900s, production of gem and jewelry quality synthetic diamonds became more refined, but was still very expensive and therefore not economically viable. This has changed dramatically over the last decade, as scientists fine-tuned the techniques of CVD as well as HPHT production. It is now possible to grow commercially viable synthetic diamonds of gem and jewelry quality.

Gem and jewelry synthetic diamonds are a relatively new category. Producers and wholesalers of this product continue to be in disagreement about various critical issues; for instance, there is no consensus on nomenclature, pricing or how to take it to market.

Reports of illicit mixing across the diamond value chain, where diamonds have been replaced by synthetic diamonds to turn a quick profit, are concerning for players in both categories.

Moreover, most producers and wholesalers of synthetic diamonds continue to be secretive to maintain a competitive edge.

It is imperative to maintain separate pipelines for both products so that consumer confidence is not impacted. Understanding and mapping the synthetic diamond value chain plays a key role for this.

This work also helps the diamond value chain make critical decisions regarding its future.

This research aims to provide a perspective on the synthetic diamond landscape, including:

- Definition and production methods of synthetic diamonds
- Major producers, wholesalers and retailers
- Production volume
- Consumer demand for synthetic diamonds
- Industry-led initiatives to promote synthetic diamonds
- Detection instruments

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B. Quantifying the Potential Impact of Synthetic Gem-Quality Diamonds on African Economies

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Currently, many African economies are strongly dependent on the exploitation of diamonds of natural origin. Whether it is in terms of contribution to their GDP or in terms of share of national exports, the diamond industry is important to the countries' economies. "Gem-quality" diamonds are often, in this respect, large contributors of value: with high prices paid making up for low volumes mined, the value of exploitation and trade of "gem-quality" diamonds often contributes significantly to many African economies.

However, these countries currently seem to find themselves at a tipping point. As production techniques develop, the market potential of synthetic diamonds as "gem-quality" jewellery products becomes increasingly viable from a producer's perspective. Produced in technological facilities rather than mined at natural sites, synthetic "gem-quality" products might hollow out the competitive advantage of African miners quite significantly. If consumers in turn accept synthetics as a "gem-quality" jewellery product, the future might not look as brilliant as it once did. As such, in this study we focus on the following key question: what could be the potential economic impact of synthetic "gem-quality" products for countries of the African continent?

This research provides a quantitative notion of what the economic consequences of synthetic "gem-quality" products might be for African nations. After quantifying this impact, we run a number of simulations to determine which market behavior might be needed to offset the rise of synthetics in the jewellery industry. Based on a Monte Carlo-analysis of 5,000 different simulations, we estimate the potential impact of synthetic "gem-quality" products on the GDP and export value of the following African countries: Botswana, Namibia, Lesotho, Angola, DR Congo, South Africa, Zimbabwe, Sierra Leone, Tanzania, Liberia, Guinea, Ghana, Republic of Congo, Cameroon and Ivory Coast.

This leads to the following key insights:

- The rise of synthetic "gem-quality" diamonds cannot be ignored by the diamond industry in general and the African diamond countries in particular. Whether conceived of as an alternative product to diamonds or a substitute product to diamonds, the potential economic impact on the diamond industries of many African countries is clear. Whether or not synthetics really succeed in disrupting the market, the (negative) economic impact will nonetheless be felt by diamond producing countries.

- The epicenter of the potentially negative impact of synthetic "gem-quality" diamonds on the African

continent is located primarily in four countries (Botswana, Lesotho, Namibia and Sierra Leone) due to the importance of natural diamonds to their economies.

- Stepping up marketing efforts to promote real diamonds can help buffer the economic impact for the African countries studied.
- Proactivity is key. If the diamond industry is complacent and only counters reactively, the buffering capacity of different market behavior will diminish significantly.
- Increasing pro-active market behavior (i.e. effective marketing spending on the promotion of diamonds) is a starting point – but it is probably not sufficient. All ongoing initiatives related to for instance detection, KP certification methods, the role of financing in the natural diamond value chain, transparency and compliance issues should be maintained.

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