



# South Africa and the Global Hydrogen Economy:

## The Strategic Role of Platinum Group Metals

Mapungubwe Institute for Strategic Reflection (MISTRA)

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The Spaniards first encountered *platina* (little silver) in their South American conquests, regarding it as an unwanted impurity in the silver they were mining. Centuries later, platinum – now worth more than gold – is recognised as a metal that is capable of revolutionising economies and turning the SADC region into an industrial hub. Unfortunately, the exploitation of platinum group metals (PGMs) in regards to the hydrogen economy “remains a largely unrealised ambition”, even though South Africa has over two-thirds of the world’s proven platinum reserves. This situation is at the heart of *South Africa and the Global Hydrogen Economy* by the Mapungubwe Institute for Strategic Relations.

The book explores the strategic opportunities available for South Africa and their impact for supporting growth. As its title suggests, it specifically explores the hydrogen economy: that is, the role of platinum in fuel cells for the production of hydrogen. This innovation would both lessen our dependence on fossil-fuel energy and position South Africa and the region as a significant site for downstream PGM-based industries and services. As the hydrogen economy grows, the demand for PGMs and fuel cells will take off, and so will the demand for capabilities to recycle the largely non-perishable minerals.

The South African government intends to supply approximately 25 percent of global platinum-based fuel cells by 2020. While the target seems ambitious, given that the figure currently stands at 14 percent, the book provides a variety of interventions required to plan appropriately to ride the crest of the wave.

The book also explores political power dynamics, exploring South Africa’s relationship with the second-largest producer of platinum, Russia, and other world powers like India and China. The chapters analyse the potent mix of geopolitical issues relating to global security of supply, PGM trading arrangements that minimise disruptive price volatility, and social stability within the mining communities and South Africa at large. The last two chapters are dedicated solely to fostering sustainability and sustainable development via the forging of mutual strategic interests of the mining corporations, government, workers and communities. Sustainable development is believed to be the mechanism by which economic sustainability is achieved. Extremely detailed, the chapters ask tackle difficult questions, such as what happens to mineworkers and communities when PGM mines close.

The research covers explorations, assessments, interrogations and investigations of vital aspects of PGM and the hydrogen economy. Various strategies are provided for South Africa

to effect a migration from fossil fuels to hydrogen. However, there is a lack of criticism of the project. The current volatile situation of the mining industry is overlooked, and it is important to note that the hydrogen economy is not necessarily the “miracle” the region is waiting for.

South Africa is already suffering from ongoing electricity and water crises, which further compounds the misery of an industry that heavily relies on these two factors. Furthermore, there is a recurring assumption of heavy market demand for PGMs. But in 2014, the five-month strike reduced platinum prices by 80 percent. Also, what is to say that mechanised mining will take over from human labour?

A hydrogen-based economy could mitigate greenhouse gases, but other topics are left wanting. More analysis could have been given to the environmental repercussions of extensive platinum mining and of hydrogen production.

In view of the opportunity provided by rising costs of energy, and the need to enhance the capacity of the country’s energy system, experimenting with platinum-based fuel cells could lead to surprising outcomes in terms of meeting the country’s energy policy objectives and support economic growth while reducing environmental emissions. *South Africa and the Global Hydrogen Economy* offers an essential discussion of the new emerging trends for platinum. [NA](#)