

The new paradigm for the mining industry

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The Chinese invented paper about 2000 years ago. Today, the Chinese reinvented paper. Whereas paper was made for centuries with 1% fibre's floating in 99% water slowly drying out to create this thin film, the new business model proposes crushed stones (80%) blended with polymers (20%) as a binding agent to make a new type of paper. The world market for paper is up for a total reconversion if we believe the experts in the field: crushed stones are expensive if you have to start from a rock. However, if you turn the tailings from mining operations into stone paper then one creates a strategic new industry for South Africa.

The world consumption of paper is expected to rise to 500 million tons per annum by 2020. South Africa has shifted from a major paper producer on the Continent to a large paper importer. The introduction

of stone paper will change the rules of the game since it is not the cheap access to pulp (fast growing trees and vast expanses of land) plus abundant availability of water that determines the competitiveness of paper making. This is the model of the past. The new model will see water scarce and tree poor nations position themselves as leading paper makers converting tailing dams and recycled polymers into an industry that



not only offers more paper at a lower cost, it converts the errors (or should we say the ignorance) of the past into opportunities for the future. And what an opportunity it is for South Africa!

The opportunity is not just the single production of paper. Stone paper can be recycled quasi indefinitely, thus institutionalizing a high material efficiency. Indeed, since stone paper is made from mineral sources, it cannot be destroyed, only reconditioned. However, the opportunity is more than a chance to substitute fibres and water with stones, it is an opportunity to generate more cash flow, and to strengthen the balance sheet by converting provisions to assets. Indeed, tailing dams represent an important investment cost and an operational expense, for which provisions are made so that at the time of the closing of a mine a rehabilitation of the site can be implemented.

More important yet: all tailings still contain small amounts of gold which could not be extracted since the cost of pulverizing ore even finer would be too high. However if now the stones are turned into 3 to 5 micron (μ) size particles then all gold can be extracted while generating the ideal size of mineral material for paper. Apart from the left-over gold, one could also recover uranium (from mines and tailings around Johannesburg) or chrome (as is the case in Limpopo).

The specifications required to produce stone paper permit to generate extra income from gold and other valuable particles as part of the core business of mining. And at the same time this process creates



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an additional value that can be as much as \$300 per ton by supplying an input for stone paper. This means that a gold mine can dramatically increase revenues, reduce investment and operation costs, and (finally) create the thousands of jobs. This is unheard of in the sector.

While the world market for paper will never shift completely to stone paper since there will remain a strong demand for water absorbing paper (like tissue paper), the potential is estimated at the capacity to convert up to 100 million tons of tailings into paper, good for 20% of the world market. Since Africa will evolve to a Continent with 2 billion inhabitants, its growth rates for paper demand is one of the strongest in the world. Would African policy makers and business leaders continue with the old model that reserves millions of hectares for monocultures of trees, and divert billions of tons of water away from agriculture and home use? Or will there be the leadership to consider the millions of tons of legacy of the past and turn

this into an engine for growth, generating multiple benefits including jobs and profits like we have seldom seen in recent history?

South Africa could become the African supplier of paper thanks to its mining yesterday, today and tomorrow provided a consortium of policy makers, entrepreneurs, financiers and development experts combine their interest and commitment to turn a dark page of mining and create a future that the industry deserves. I think this is not only an opportunity, it is a responsibility. ♦