The Colluli project
A template for sustainable resource development in Africa

by Niels Wage, CEO, Danakali, The Netherlands

With a fast-expanding population, increasing pressures on agricultural land and changing dietary habits, farmers are looking to Sulphate of Potash (SOP) as one of the leading solutions to the impending global food challenge. SOP is the premium potash product, which sells at a significant price premium to Murate of Potash (MOP) and is primarily used for the higher value vegetables, fruits and nuts, in big demand from growing middle class populations in developing countries.

The Colluli mine in the Danakil region of Eritrea in East Africa is set to be one of the biggest international producers of SOP when it comes into production in 2021. Its development is being based around sustainable principles and a recent report sponsored by the United Nations Development Programme (UNDP) has identified its potential to substantially boost the Eritrean economy, provide significant employment and enhance the country’s agricultural productivity and food security.

"From a global perspective, the project can be considered a significant step ahead in terms of the relationship between the resource industry and the development agenda of the host country, and how to understand mining contributions beyond the traditional direct economic effects." Cristian Parra, UNDP report author and economist

SOP: a premium fertilizer product

The importance of SOP is fundamentally underpinned by the expected population growth over the next thirty years. The world’s population is set to increase by almost a third by 2050, growing from 7bn to 9bn. As the world population increases, so too will the challenge of ensuring a stable food supply, due to the anticipated decrease in arable land per person from 4,500m² in 1950 to an expected 1,800m² by 2050. The majority of this population increase is expected to come from developing countries, where growing middle classes are increasingly seeking the premium fresh produce that SOP is designed to support – unlike MOP, SOP can be used on sensitive salt intolerant crops, and it is this dynamic that is growing the global demand for SOP.

The major potash deposits around the world have traditionally been concentrated in the US and China. However, Colluli, jointly owned by the Eritrean National Mining Company (ENAMCO) and Danakali, the Australian and London listed mining company, represents one of the largest global reserves of SOP, with a huge 200 year mine life, and offers the potential to have a significant impact on the SOP market over the coming years.

Colluli: unique shallow resource with highly efficient economics

The Colluli Potash Project is located in Eritrea’s Danakil Depression and is home to an ore reserve estimated to hold 203 million tonnes of SOP equivalent, enough to supply global SOP demand by itself for about 29 years, with the current forecasted annual production rate. The resource consists of sylvite, carnallite and kainite rock, which will be extracted from a single open pit.

Colluli is an advanced primary production project with the potential to produce other potash products, MOP and SOP-M, together with Kieserite, Magnesium Chloride, Rock Salt and Gypsum. One London broker described Colluli as “the best mine in the world” based on its shallow depth (just 16m below ground) and its highly efficient operating economics and export logistics.

Colluli’s favourable resource characteristics allow simple, low cost, open-cut mining

• Proven and safer than underground mining
• Superior resource to serve conversion (~85%)
• Low risk and complexity
• Potassium salts extracted in solid form
• Potential monetisation of other salts extracted as waste
• Expansion potential
• Low incremental growth capital
One of Colluli's unique advantages is that it is the only known SOP resource allowing solid-salt extraction, avoiding the need for time consuming and costly solar evaporation. All other current projects scheduled for development are based on either deep extraction of brine or evaporation or the Mannheim Process which involves the expensive thermal conversion of MOP to SOP through the addition of sulphuric acid, a procedure that produces substantial quantities of hydrochloric acid as a by-product with significant associated challenges of disposal.

**A template for sustainable resource development in Africa**

Colluli is expected to play a significant part in the economic development of Eritrea with the potential to drive improvements in agricultural efficiency and food security, and to extend these impacts more widely across Africa. The project can serve as a model for other projects across the continent by encouraging the formation of a vibrant domestic fertilizer industry in the region, through enhancing domestic production, developing transportation and distribution logistics, and helping explore innovative nutrient applications to grow productivity. SOP is typically used on high-value crops to improve nutrient uptake, water retention, growth rates, crop yield and efficiency. Global demand is inelastic, as SOP is difficult to substitute, especially in developing geographies where more sophisticated applications of fertilizer are less available. At the same time, according to the World Bank, crop yield losses in Africa could result in a 12% food price hike by 2030 and result in increases in malnutrition, if local agriculture systems are not made more resilient and sustainable. Moreover, with 70% of Africans dependent on agriculture for livelihoods, the sector is critical to the economies of all African countries. Agriculture is truly Africa’s next frontier, with 65% of local labour forces engaged in the sector, and accounting for about 32% of the region’s GDP. Africa’s food imports are currently much faster than food exports - the annual food import bill of USD55 bn is estimated to rise to USD110 bn by 2025.

By producing and using SOP, African countries can improve food availability and agricultural production, and provide a means of growing cost-efficient food for both domestic markets and potentially supply global markets as well. Eritrea itself stands to benefit from the long term economic, social and community dividends that Colluli will generate, including through the revenues that will flow to the government given its co-ownership, taxation and royalties. Colluli’s potential contribution to Eritrea’s Sustainable Development Goals (SDGs) has been confirmed in the recent UNDP report. It has been identified as a potential template for future collaboration between the resource industry and developing countries.
16m below surface (compared to typical potash deposits of up to 1km beneath the earth’s surface), which makes it the shallowest known evaporation deposit in the world. The Project operates in a supportive mining jurisdiction with a strong Eritrean government relationship and the backing of several key stakeholder groups. It has also secured a valuable binding offtake agreement with global fertilizer group, EuroChem, to take, market and distribute up to 100% of Colluli’s Module 1 production, which is a major asset as the Company progresses through financing. Subsequently, in December 2018, Danakali has signed a non-binding indicative term sheet and mandate to obtain fully underwritten debt finance facilities of USD200mn to fund the construction and development of the Project. African development financial institutions African Export Import Bank (Afreximbank) and Africa Finance Corporation (AFC) are leading the mandate, bringing extensive experience in providing project financing to African projects across the continent. With the full debt and equity financing approaching completion, the company is looking towards moving into full development in late 2019.

Colluli Project

Danakali’s Colluli potash project is scheduled to go into development in late 2019. It is a USD524mn mine project in the Danakil Depression in Eritrea in East Africa to produce sulphate of potash (SOP) for the global fertilizer market. Colluli has an ore reserve of circa 201 million t of SOP with initial expected production from 2021 of 472,000 t per annum rising to 944,000 t from 2027.

UNDP report: delivering on Eritrea’s sustainable development goals

The UNDP report forecasts that Colluli will produce 5% of Eritrea’s exports by 2030, 3% of Eritrea’s GDP by 2021 and contribute over 10,000 local jobs both directly and indirectly. 

Deepening poverty levels and worrying trends of degradation of natural resources make Africa one of the most vulnerable continents. Countries across Africa are going through unique processes of social, economic and environmental transformation. The 2030 Agenda for Sustainable Development is precisely designed to address this transformation in a constructive and sustainable way.

Colluli’s contribution to Eritrea echoes Africa’s sustainable development agenda, which demands a transition from the historic pattern of natural resource exploitation with little value-addition, causing environmental degradation and natural resource depletion, to projects that bring substantial economic and social benefits whilst minimizing any environmental impacts. The recent release of the UNDP report highlights Colluli’s potential to contribute significantly to 13 of the UN’s SDGs, as well as five areas in which Colluli can have a direct impact. This includes the economic value it will generate, benefits for people and society, its environmental impact, fiscal effects and economic and agricultural proceeds from its production. The report also identifies Colluli’s ability to boost the Eritrean economy through infrastructure development, the creation of over 650 direct operational jobs for Eritrean nationals and strong community engagement.

The United Nations SDGs place environmental protection at the top of the sustainable agenda. Successful mining operations cannot but fail without building resilient and environmentally friendly infrastructure, promoting inclusive and sustainable industrialization and fostering innovation in areas such as water and energy consumption. Danakali is taking a committed approach to minimizing its environmental impacts. Whilst necessarily relying on diesel power generation in the start-up phase the Company is investigating with its EPCM contractor, DRA Global, the potential to integrate renewable generation options into its longer-term energy mix. The Social and Environmental Impact Assessment documents (SEIA) prepared by Eritrean and international specialist environmental and social consultants, demonstrates the low environmental impact nature of the Colluli potash project due to its remote and barren setting. Risks that are identified are mitigated through the management and monitoring plans.

World class potash project

The compelling nature of the Project is underpinned by its project fundamentals. It has a more than 200 year mine life and contains an extremely large deposit at only...