

Danakali Limited

Salt for the Earth – World Class Potash in Eritrea

We resume coverage of Danakali Limited with a GBp 80 price target implying 194% upside from the current share price.

World class SOP project nearing production

Danakali is developing the Colluli Potash Project in Eritrea, East Africa, which it operates through a 50/50 JV with the Eritrean National Mining Corporation (“ENAMCO”). Colluli is a fully permitted, high-grade Sulphate of Potash (SOP) project with a reserve of over one billion tonnes, sufficient for a mine life of over 200 years. The Company aims for first production in 2022, producing 472ktpa of premium SOP product from a single open pit, doubling production to 944ktpa in 2027. The SOP product offtake is covered with a take-or-pay offtake agreement with fertilizer industry giant Eurochem.

Favourable project characteristics resulting in low capital intensity

Colluli is a shallow resource, suitable for open pit mining via a single pit. The orebody contains an appropriate combination of sylvinitic, carnallite and kainite salts for simple and high yield conversion to SOP at ambient temperature conditions using a proven, conventional processing technology. Key infrastructure for Colluli is already in place, namely an existing 230km road to the modern port of Massawa on the Red Sea coast. Shallow open pit mining, relatively simple processing and proximity to the coast, result in operating costs competitive with the SOP brine producers as well as the lowest capital intensity SOP projects currently in development.

Strong SOP market fundamentals

SOP is a speciality potash fertiliser representing ~7% of global potash usage. Crops linked to more affluent lifestyles such as tea, fruit and nuts rely on SOP. This has driven increased SOP demand in line with the emergence of middle-class consumers in developing economies, with China accounting for roughly 60% of global SOP use. We expect an ongoing tightening in global SOP markets unless new projects are discovered, funded and built. While our analysis suggests current SOP prices may be high enough to incentivise several as yet uncommitted projects, the feasibility, financing and construction of these operations will take time. As such, we believe Colluli stands out as one of very few viable near-term projects able to take advantage of SOP’s remarkably stable pricing dynamics.

US\$250m funding package covers majority of US\$302m upfront capital costs

The debt funding portion of the upfront US\$302m capex requirement will be covered by a US\$200m funding package from the Africa Finance Corporation (AFC) and Afreximbank. In addition, the AFC has provided US\$21.5m of equity financing via a tranche 1 private placement with a further US\$28.5 expected in November 2020. Consequently, a funding gap of only US\$70m remains (including upfront working capital requirements) which Danakali plans to raise via a private placement from a mixture of existing and new shareholders before the end of 2020. The tranche 1 facility has allowed Danakali to continue its EPCM work, with a focus now on phase 3, which involves detailed final design work.

Our valuation shows strong Colluli economics

We have valued Danakali using a life-of-mine cash flow model. We arrive at an NPV of US\$416m for Danakali’s share of Colluli, and apply a discount rate of 12%. We calculate Danakali’s IRR to be 28.7%, with steady state cash flows of US\$87.5m (attributable to Danakali) following the Phase II expansion of Colluli.

Valuation & Catalysts

Using a 0.8x NPV multiple and a \$550/t SOP price forecast, we arrive at a valuation for Danakali of US\$340.9m, or GBp 80 per share. A key catalyst expect by year end is the completion of project funding for Colluli, which should lead to commencement of construction in H1 2020.

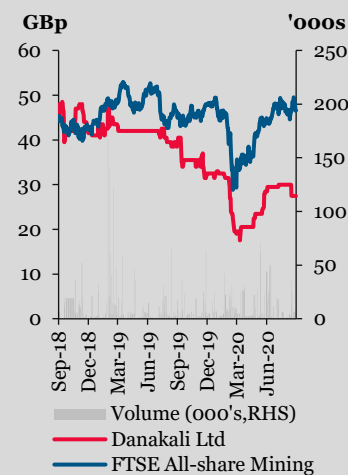
GICS Sector	Materials
Ticker	DNK:LSE
Market cap 21-Sep-20 (£m)	80.8
Share price 21-Sep-20 (GBp)	27.5
Target price 31-Dec-20 (GBp)	80

+194%

Upside from current share price to 80p/share risked NPV

28.7%

Post-tax IRR for the DNK portion of Colluli project



H&P Advisory Ltd is a Retained Advisor to Danakali Limited. The cost of producing this material has been covered by Danakali Limited as part of a contractual engagement with H&P; this report should therefore be considered an “acceptable minor non-monetary benefit” under the MiFID II Directive.

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World Class SOP project in East Africa

Danakali's only asset is the Colluli potash project in Eritrea, East Africa, which is operated via a 50/50 JV with the Eritrean state mining company ENAMCO. In recent years, the global investment community has become more aware of the sulphate of potash (SOP) market due to the increasing profile of several SOP-focused juniors. These include Salt Lake Potash (SO4) and Kalium Lakes (KLL), both with projects located in Western Australia and currently in construction, expecting to commence production in 2021.

These juniors expect to produce SOP from salt brines which require several stages of evaporation; in contrast Danakali's Colluli project will produce SOP from solid salts, thus making it a unique project offering significant advantages over its peers.

Colluli has an exceptional 1.1bn tonne reserve that is suitable for low cost, shallow, open cut mining, which results in Colluli's operating costs being in the lowest quartile of SOP producers globally, in line or marginally above the global brine SOP producers. The project also has the lowest capital intensity amongst global development SOP projects due to its low waste stripping requirements, a relatively simple processing plant design and limited infrastructure requirements compared to peers.

Colluli project location and infrastructure

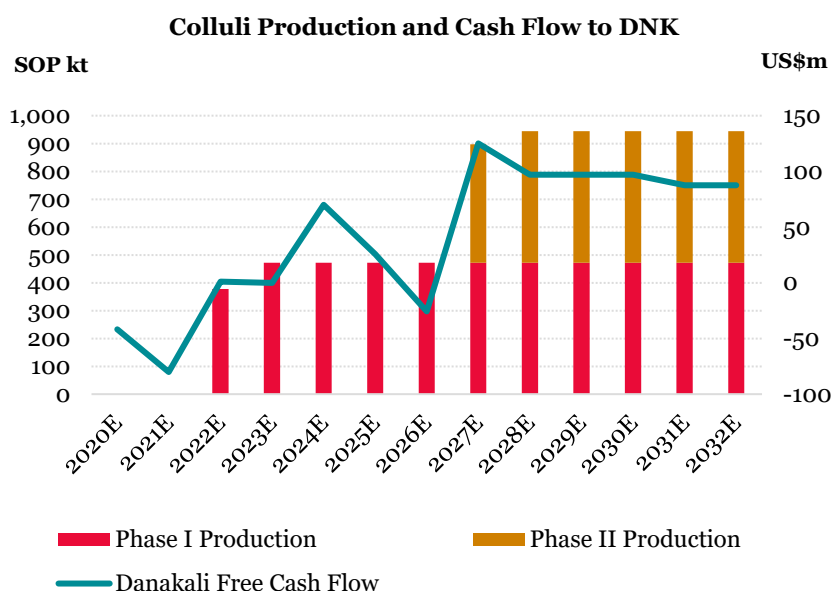


Source: Danakali

When we last wrote on DNK in H1 2018, the company had recently completed front-end engineering and design (FEED) for Colluli and signed a take-or-pay offtake agreement with EuroChem for up to 100% of the project's SOP output. Since then, the company has made significant progress in securing debt and equity funding for the construction of Colluli, while the expected economics of the project are largely unchanged. Following the post FEED update to our valuation,

we forecast that Colluli is set to generate just under US\$175m of free cash flow per year (\$87.5m attributable to Danakali) once operating at steady state after the Phase II expansion.

Danakali production and Free Cash Flow 2020-2026



Source: H&P estimates.

Danakali's strategy is simple – to fund and bring into production the Colluli project in 2022, and subsequently double production in 2027. There is no interest in expansion through M&A at this stage, with the focus firmly on delivering Colluli, paying off debt and subsequently delivering strong cash flow.

Further upside comes from the ability of the primary SOP modules to be leveraged to create a much larger project, utilising the high-volume, multi-product orebody to commercialise by-products such as rock salt which can also be mined and sold. In our view, the economics of exporting the rock salt product only work if it is exported through nearby Antille Bay, where a port has yet to be built, with no firm construction plans in place at this stage.

Unique orebody allows solid salt conversion to SOP

The key advantage of the Colluli project is the presence of the right combination of carnallite and kainite salts for simple and high yield conversion to SOP at ambient temperature conditions. The process to allow this conversion is commercially proven, currently successfully used at the Luobupo operation in China and by Compass Minerals in USA. One key differentiator of Colluli is that the salts are already in solid form, thus eliminating the need to harvest salt from brines via evaporation ponds. This, combined with a lack of communities or other economic activity near the site area, provides a unique advantage over SOP peers.

SOP market fundamentals strong

The global fertiliser industry is built upon three key macronutrients essential for plant growth: nitrogen (N), phosphorous (P) and potassium (K), commonly known as potash.

As the global population grows and diets change, the world's arable land will be put under ever more strain to fulfil the demand for food. The International Fertiliser Association estimates that over the next 50 years, farmers will have to

produce as much food as they produced in the last 10,000 years. As such, the long-term demand outlook for fertilisers – and, in turn, natural sources of N, P and K – remains strong, in our view.

Potash has many roles within plants, the most important of which is to support nitrogen and water uptake, improving the quality, taste and feel of crops. Potash is most commonly used in the form of potassium chloride (KCl), also known as Muriate of Potash. “MOP” accounts for ~90% of global potash use, with demand of around ~67Mt in 2018 according to CRU data.

Potassium Sulphate (K_2SO_4), or Sulphate of Potash (SOP), is a speciality potash fertiliser representing ~7% of global K usage. The key advantage of SOP over MOP is its use in the cultivation of chloride-intolerant crops, such as tea, fruit and nuts. Many crops suffer chloride toxicity, rendering MOP sub-optimal for growth, while in other crops, MOP can negatively affect the taste or visual attractiveness of the product.

Many of the crops reliant on SOP, such as fruit, are linked to more affluent lifestyles. Demand has therefore grown strongly in recent years in line with the emergence of middle-class consumers in developing economies such as China, and to a lesser degree, India. Indeed, China accounts for roughly 60% of global SOP demand and supply. Market commentators estimate global demand expanded at a CAGR of ~6% in the five years to 2018. Looking forward, there remains enormous potential for demand growth in India, which has a similar acreage of chloride-intolerant crop farming to China – each ~17-18% of the global total according to CRU – but with significantly lower SOP usage.

We therefore expect an ongoing tightening in global SOP markets, with rising SOP capacity utilisation, unless new projects such as Colluli are discovered, funded and built. As shown below, on our analysis, current SOP prices could be high enough to incentivise the development of many as yet uncommitted projects, based on a 20% ROI hurdle rate. However, the feasibility of these projects will take time to be fully understood, finance will take time to be sourced, and construction several years. Furthermore, a 10-15% drop in SOP prices would render many projects uneconomic. It is therefore unlikely that we will see a flood of new supply at these prices in our view.

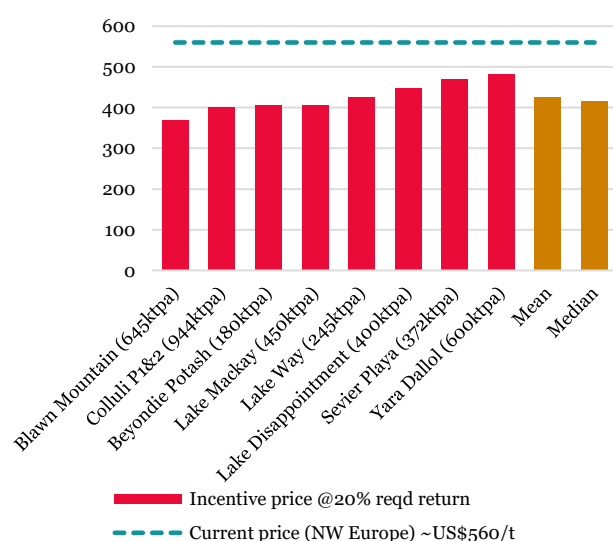
SOP prices proving resilient in challenging times

As we explain in more detail below, the price outlook for MOP prices is also of indirect relevance to SOP. This is due to the top end of SOP cost curve consisting of “secondary” producers, which use the Mannheim process to convert MOP into SOP.

The ~18% fall in MOP year-to-date should, therefore, have had a negative impact on SOP prices. Furthermore, the removal of Chinese export tariffs on SOP at the beginning of 2019 exposed global markets to relatively competitive Chinese domestic producers. The Covid-19 pandemic also put some temporary downward pressure on global crop prices (although orange juice futures were a notable outperformer).

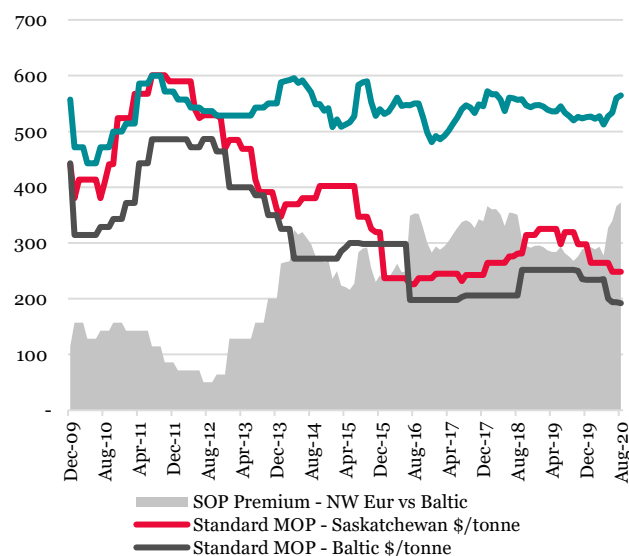
Despite these headwinds, SOP prices have continued their remarkably stable trend, rising by ~5% YTD in USD terms to ~US\$560/t. As shown below, SOP pricing has remained in a relatively tight range of ~US\$500-600/t for almost ten years, reflecting the product’s defensive characteristics.

Incentive price analysis – estimated price required to give ROCE of >20% on project capex



Source: Company reports, H&P estimates. Note: incentive price is calculated as the SOP price (FOB) required to generate a 20% ROCE, (assuming 15-year straight-line depreciation schedule)

SOP and MOP price development since 2010 – premium for SOP on a rising trend since 2012



Source: Bloomberg

All infrastructure in place

The majority of infrastructure for Colluli is already in place with a 230km road to a modern port of Masawa on the Red Sea coast. This provides Colluli with another key advantage over other development SOP projects and significantly reduces up front capital cost requirements. Whilst the haul road is already used for heavy loads, upgrades are needed to a 130km stretch in order to improve average speeds along the road, with the Eritrean government recently commencing this work. The DFS logistics costs take the current road condition into consideration. On the other hand, no upgrades are needed to the port of Masawa, which has sufficient capacity to handle the 850 ktpa of product from Colluli, as per Phase II requirements.

Colluli's electricity supply will be provided by an 11kV heavy fuel oil on-site power plant, with distribution via both underground and overhead power lines. The plant will be developed under a build, own, operate and transfer model. The funding Afreximbank has also provided a loan of \$US42m to the power contractor Inglett and Stubbs.

Processing plant water is planned to be pumped along an 87km pipeline from an abstraction and desalination facility on the Red Sea coast, and will be supplemented by a small number of water bores at the Colluli site.

Danakali site layout design

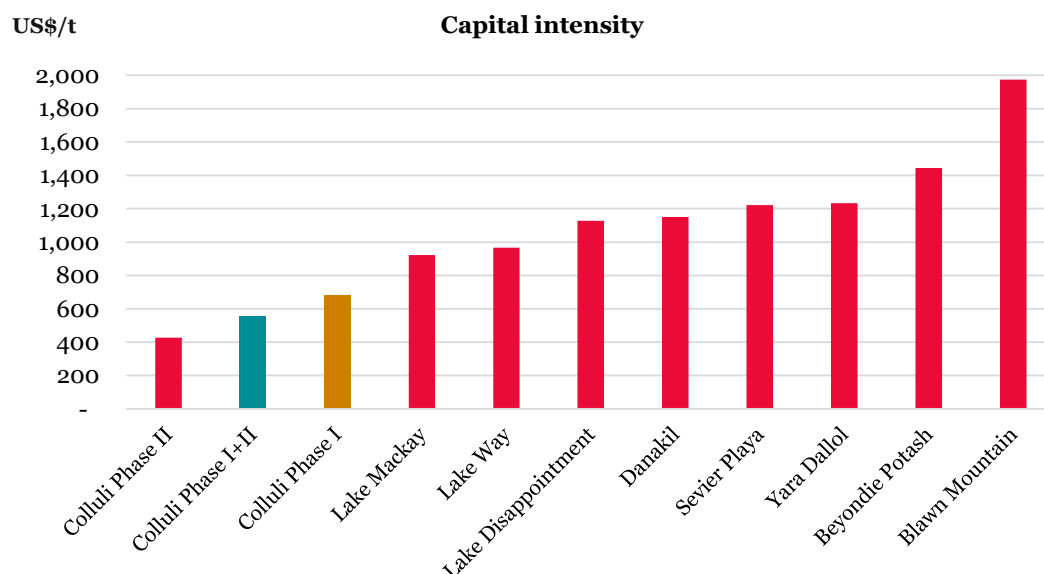


Source: Danakali Limited

Low capital intensity

The aforementioned favourable characteristics of Colluli mean it compares positively versus other SOP projects in terms of capital costs. Colluli is the lowest capital intensity development project in the world, mainly due to its shallow mineralisation and extraction of salts in solid form, without the requirement to build large and expensive evaporation ponds which are required for brines SOP production.

Colluli vs other SOP development projects



Source: Danakali Ltd; SNL Financial; H&P estimates.

AFC investment significantly narrowed the funding gap

Danakali's agreement with ENAMCO stipulates that all of the upfront costs will be funded by Danakali, with ENAMCO foregoing all free cash flow payments until its share of the capital costs is fully repaid to Danakali, once Colluli up and running. A funding package of US\$250m from AFC and Afreximbank announced on the 23rd December 2019 has proven to be a very significant milestone in the history of Danakali. In our previous reports on Danakali, we outlined that securing full

construction funding remains a key risk for the Company, however this risk, in our view, has been almost entirely mitigated, with the majority of the US\$302m upfront capital requirement now covered. The core details of the funding package are summarised below:

- **Debt:** US\$200m joint loan agreement with Africa Finance Corporation (AFC) and an international trade institution, Afreximbank, with US\$100m from each party. The debt repayment period is seven years and repayments are scheduled quarterly, with interest at 8.5% plus Libor per annum.
- **Equity:** A \$50m equity investment from AFC in two tranches. The first tranche of US\$21.5m was received by Danakali in December 2019 upon the signing of the overall funding package. The second Tranche 2 of US\$28.5m is due before November 21st subject to several conditions-precedent. The original deadline was June 1st 2020, but this was pushed back due to Covid-19 and market volatility related delays. In our view, the risk of the second tranche not being completed is very low, as AFC appears to be “all in” on its investment in DNK, including two AFC appointees to the Danakali board.

Danakali remains well funded to continue its planned development activities and the project is on track for production to start in 2022. A funding gap of around US\$70m remains including the remainder of the capital expenditure and working capital requirements. In our view, with such a small funding gap, relative to the amount already raised and with a number of high-quality shareholders already on the Company’s register, there is little risk of the required additional equity not being raised.

Offtake arranged with the industry giant EuroChem

Danakali has a binding take-or-pay offtake agreement for up to 100% or a minimum of 87% of Colluli’s SOP production with EuroChem, a major global producer and trader. The current agreement lasts for a term of 10 years, with a 3-year extension option. Around 100-150 ktpa Colluli’s SOP purchased by EuroChem will be used as a raw material for their BASF plant in Antwerp. The majority of the remaining product will go to end users Europe and Americas with a smaller amount to the African market. These are the markets where Danakali has a competitive advantage over Australia-based producers, who will sell the majority of their SOP output into Asian markets.

Danakali also has the option to sell up to 13% of production (60ktpa) via their own channels, primarily as a price discovery method, to maximise their revenues. This offtake agreement has been crucial in helping to secure the US\$200m debt facility discussed previously in this report. We note that an offtake partner for the 472 ktpa Phase II expansion is still to be confirmed.

Eritrea – an improving investment destination

Eritrea’s standing as an investment destination has been steadily improving in recent years, as discussed in detail in our previous reports on Danakali. The government has set parameters for mining projects and has aggressively pursued foreign investment under these parameters. The Eritrean mining code is based on Western Australia’s long-established code, and as a result is easy to follow, without the hurdles which often cause delays in less established mining jurisdictions. To date, the Eritrean Government has been strongly supportive of all the mining projects in the country with no issues in permitting or license tenure. There are currently two operational mines in Eritrea, the Bisha copper-

gold-zinc mine and the Zara gold mine, both 60% owned and operated by Chinese groups.

Eritrea has had a lot of negative publicity in the press, particularly with respect to its human rights record. Whilst some of that coverage is justified, a lot of it is driven by poor relations with the USA, which has a key African ally in Ethiopia. Ethiopia and Eritrea fought a brutal independence war that ended in Eritrea's sovereignty more than 20 years ago. However, the last few years has seen an improvement in relations between the two countries with peace officially declared in July 2018. This triggered a softening of some of the tough conscription policies that were widely publicised and were seen as the key driver behind a significant number of asylum seekers leaving the country. Conscription has now been limited to 18 months and all mining companies in Eritrea are subject to the Labour Proclamation No. 118/2001 (No forced labour) Article 9(6), which states that any employer who engages in forced labour shall be punishable under the Penal Code.

In addition, we also note that we have had a number of conversations with businesspeople operating in Eritrea. The overwhelming feedback has been that Eritrea is a stable country with low corruption and strong rule of law, a good education system and health care.

Strong ESG Focus

The junior mining sector is increasingly exposed to ESG risks, including concerns around community and employee relations, emissions, water rights etc. Having a good ESG strategy in place is increasingly critical from an investor marketing perspective, as the amount of money allocated to sustainable investments increases year by year. Danakali's ESG strategy is highly detailed and aims to positively impact Eritrea through its commitment to responsible business and strong alignment with 13 of the 17 UN Sustainable Development Goals (SDGs). The operational management systems under development will align with Equator Principles, IFC standards for Environmental and Social Performance, and World Bank Group Environment, Health and Safety Guidelines.

Any non-compliance with ESG regulations and best practices carries risk for mining companies, with a number of global mining companies being subject to activist shareholder protests and class action litigation.

The example of the shareholder class action against Nevsun Resources, the former owners of Bisha mine in Eritrea, is of most relevance to Danakali. In 2014, three Eritreans filed suit against Nevsun Resources in Canada alleging the company was complicit in the use of forced labour by their sub-contractor at the Bisha mine in Eritrea. Nevsun executives have denied direct knowledge of human rights violations at their Bisha mine site; however, the lawsuit is ongoing. In our view this lawsuit has affected investor sentiment towards Eritrea and to a lesser extent mining in Africa in general.

In order to mitigate the risk of something similar happening at Colluli, Danakali has commenced human rights assessment scoping work with a Canadian human rights lawyer. This contrasts with Nevsun, who did not undertake this assessment. Eritrean law prohibits anyone conscripted under national service from working in a mining operation. Danakali is also currently developing a system of mine worker spot checks, badges and declaration forms, which ensure that any workers on the mine are not conscripted under national service. This is crucial to prevent the kind of controversy that engulfed Nevsun, which was acquired by a Chinese company, Zijin Mining, in December 2018.

Valuation – DCF approach implies significant upside

We have produced a financial model for Danakali Limited leaning heavily on publicly available information from Danakali's BFS and FEED studies, taking a view on the studies as guidance for production, costs and capital expenditures as well as forming our own view on the future SOP sales price. Our Danakali valuation is based on a cash flow model for Danakali's 50% holding in the Colluli project.

Our model also reflects the agreed funding structure between Danakali and the Eritrean National Mining Company ("ENAMCO"). The shareholder agreement with ENAMCO states that the Colluli Mining Share Company ("CMSC") is to fund construction of Colluli using US\$200m of debt and US\$122m of equity. The shareholder contribution is Danakali's obligation, where 50% is contributed as equity in CMSC and 50% through an interest free loan receivable from CMSC. After CMSC's debt is serviced, 50% of the funds available for distribution are preferentially repaid to Danakali to settle the interest free loan.

Key assumptions are summarised below:

Key Colluli Input Parameters	
Phase I Production Start (yr)	2022
Phase I Production (SOP ktpa)	472
Phase II Production Start (yr)	2027
Phase I Production (SOP ktpa)	944
Discount Rate (%)	10%
Debt Funding (\$m)	200
Total Equity Funding (\$m)	120
Forecast SOP price - FOB Massawa (\$/t)	550
Upfront Working Capital (\$m)	20
Phase I Development Capital (US\$m)	302
Phase II Development Capital (US\$m)	202

Source: H&P estimates, Danakali

Our valuation generates an **NPV for Danakali's share of Colluli of US\$416m at an IRR of 28.7%**. In our view, these are attractive metrics, especially considering the low upfront capital commitment of circa US\$300m (excluding working capital and fees).

GBp 80 target based on risked NPV, 194% above current share price

Explorers/developers frequently trade at a discount to NPV to compensate for the risks associated with pre-production projects. On this basis, we use a matrix of multiples which we apply to our DCF valuations.

We apply a 0.8x multiple to the Colluli project. We typically apply a 1.0x multiple to a post-BFS, fully permitted and fully financed project. For Colluli, we use a more conservative multiple due to project not being fully funded at this stage. The table below summarises our sum of the parts valuation for Danakali. All the figures are shown on an attributable basis.

Valuation - Dec'20E					
	US\$m	P/NPV	US\$m	GBPm	GBP/sh
Colluli - inc. work capital (50%)	416.0	0.8	332.9	249.7	0.78
Net Cash	8.0	1.0	8.0	10.0	0.02
Total NPV (10%)	424.2		340.9	255.7	0.80

Source: H&P estimates

Our un-risked sum of the parts valuation for Danakali's is US\$424.2m. Applying our 0.8x NPV multiple to the Company's operations **we generate a risked valuation of GBP80/sh, implying a 194% upside to the current price.**

Near term milestones all about finalising funding

The year to date has seen the completion of the EPCM Phase 2 (FEED Update) completed with all vendor and contractor packages received from DRA Global, allowing the completion of the tender evaluation process. The key milestone for Danakali to reach over H2 2020 is to plug the funding gap, to have Colluli fully funded into production. The US\$50m tranche 2 equity funding from AFC is a near certainty, with another US\$70m expected to be raised via a private placement from a combination of new and existing shareholders. Our expectation is for this money to be raised before the end of 2020.

Project development wise, the focus now is on desk-based activities to allow continued progress on the development of the Project and EPCM workstreams, including more test work and optimisation studies in support of EPCM Phase 3, which involves detailed design work. Assuming the funding gap gets plugged in H2 2020, we expect Danakali to be in construction in 2021 with first SOP production in 2022. We note Colluli's capability to rapidly generate final SOP product and revenue post commissioning, which shortens the time between the beginning of construction to first revenue versus the brine SOP projects, which face a significant lag between commissioning and first revenue. Danakali expects upon completion of construction for the first SOP product to be shipped within about two to three weeks from the commencement of mining. This compares favourably to the SOP brine producers where the equivalent lag is measured in months.

Danakali Milestones	
Q3 2020	Commencement of EPCM Phase 3 (detailed design)
Q4 2020	Receiving Tranche 2 US\$28.5m equity investment from AFC
Q4 2020	Finalisation of project funding requirements
H1 2021	Commencement of construction
H1 2022	First production from Colluli

Source: Company reports

Project comparison to peers

Colluli is one of the three most advanced SOP projects globally with Salt Lake Potash's Lake Way and Kalium Lakes' Beyondie project, both currently in construction in Western Australia. The Lake Way and Beyondie projects are set to produce SOP from Salt Lake brines, whilst Colluli is unique in producing SOP from open pit mining and consequent processing of salts in solid form.

In our view, all three projects are likely to be successful, profitable SOP producers. The key advantage that Colluli enjoys over its main peers are the significant

capital cost savings arising out of its orebody being in solid salt form. Production of SOP from brines requires capital intensive construction of evaporation ponds, which produce solid state harvest salts as a product to be fed into the processing plant. In addition, it is technically more challenging to scale up production at brines projects such as Lake Way and Beyondie. Colluli has a massive resource and solid-state mineralization which lends itself easily to higher production, as it is technically simpler and cheaper to increase the open pit production from solid salts via an increase in the open pit size versus increasing production in evaporation ponds, which requires a significant increase in evaporation pond area, which requires significantly more land and water. In our previous conversations with Danakali management, they stated that Colluli has potential to produce up to 2 Mtpa of SOP (circa 28% of the total SOP market), conditional on the transportation infrastructure allowing these kinds of volumes.

Some of the key parameters for the three projects drawn from their technical studies are summarised in the table below:

Lake Way and Peers key parameters			
	Lake Way	Beyondie	Colluli
Economic interest by TopCo	100%	100%	50%
Production levels -stage 1 (SOP ktpa)	200	90	472
Mine life (years)	20	30	200
Operating Cost (A\$/t)	263	256	344
Capital Intensity (A\$/t)	1,185	2,400	854
Distance to port (km)	788	862	230
Unsealed Road Haulage	No	Yes	No
Transportation Cost (A\$/t)	80	67	97

Source: Company presentations

Risks

Key risks to our valuation include:

- Operational risk – construction:** Danakali faces risks common to most resource companies moving its project into full production with construction and production ramp up risks. The technologies to be used to mine and process solid salts at Colluli are conventional and well understood, following extensive feasibility and FEED work by the Company, and we have confidence in Colluli producing a premium SOP product.
- SOP price assumptions:** The market for SOP lacks transparency with only small number of distributors in the global market selling the product on long-term contracts, whose terms are not frequently disclosed. As a result, future pricing for SOP produced at Colluli carries higher risks than for a base metals project for example. SO4 does have a take-of-pay offtake contract signed with the industry giant Eurochem, which mitigates these risks somewhat.
- Geopolitical risk:** Whilst Eritrea is politically a stable jurisdiction with a well understood and followed set of laws and regulations and low corruption, it is still seen in some parts as a high-risk jurisdiction for mining companies. With the relationship with Ethiopia improving following the declaration of peace between the two countries in 2018, the

risk for Eritrea of the military conflict with its neighbour is lower than what it has been for a long time.

- **Social/Community risks:** The accusations of the use of conscripted labour at the Bisha mine in Eritrea have led to a lawsuit against the previous owners of the mine; TSX listed Nevsun Resources. The risk for Danakali is that any repeat of such allegations against the Company may lead to unwelcome controversy and potential NGO lawsuits. As we previously mentioned in this report, Danakali are very focused on putting into place processes and procedures to prevent such a scenario from ever unfolding. With Colluli being located in a sparsely populated area, any other community related risks are very limited.

Colluli Sulphate of Potash Project

Project Geology

The Danakil Salt Basin hosts an emerging potash province and one of the largest unexploited potash basins globally, with over 6Bt of potassium salts suitable for potash production identified to date.

The Colluli resource sits in an area of Quaternary volcanics and sediments with deposits being generally poorly-consolidated. The resource is a geologically-young marine evaporite deposit which formed through fractional crystallisation containing a suite of potash products including SOP, Sulphate of Potash-Magnesia (SOP-M) and muriate of potash (MOP). Fractional crystallisation separates out different mineral assemblages based on their thermal properties of crystallisation and kinetic settling.

The figure below shows the typical sequence at Colluli. The potash bearing mineralisation is typically overlain by 10-70m of clastic overburden and 10-20m of Upper Rock. The average depth of mineralisation is 78m, making Colluli the shallowest Potash deposit globally. Potash mineralisation begins with the sylvinite (KCl) material, which is up to 10m thick. Below the sylvinite lies the carnallitites and bischofite (which is considered waste) material, varying from 3 to 25m thick with the bischofite mineralisation horizons constrained above and below by Upper and Lower Carnallitite. Further below is the Kainitite sequence approximately 5-15m thick.

Stratification of the Colluli Resource



Source: Danakali Limited

Huge Reserve and Resource Base

The Colluli deposit has three types of potassium bearing salts; sylvinite, carnallitite and kainitite. The total resource and reserve is over 1bt, which is sufficient for a mine life of over 200 years.

Colluli SOP Mineral Resource								
Rock Unit	Measured		Indicated		Inferred		Total	
	Mt	K₂O Eq.	Mt	K₂O Eq.	Mt	K₂O Eq.	Mt	K₂O Eq.
Sylvinite	90	13.0%	160	13.0%	15	9.0%	265	12.0%
Carnallite	80	7.0%	303	7.0%	15	11.0%	398	8.0%
Kainitite	133	12.0%	488	12.0%	5	12.0%	626	12.0%
Total	303	11.0%	951	10.6%	35	10.3%	1,289	10.8%

Source: Danakali Limited Website

The Colluli SOP Mineral Resource also contains 87Mt Kieserite @ 7%.

The Colluli SOP Ore Reserve was updated as part of FEED. Over 85% of the Measured and Indicated SOP Mineral Resources are included in the SOP Ore Reserve.

Colluli SOP Ore Reserve							
Occurrence	Proved		Probable		Mt	Total	
	Mt	K₂O Eq.	Mt	K₂O Eq.		K₂O Eq.	K₂SO₄ Eq Mt
Sylvinite (KCl.NaCl)	77	15.0%	173	12.1%	250	13.0%	
Carnallite (KCl.MgCl ₂ .H ₂ O)	77	6.9%	279	7.8%	356	7.6%	
Kainitite (KCl.MgSO ₄ .H ₂ O)	131	11.8%	363	11.2%	494	11.4%	
Total	285	11.3%	815	10.3%	1,100	10.5%	203

Source: Danakali Limited Website

Colluli also has a JORC Code 2012 compliant Measured, Indicated and Inferred Rock Salt Mineral Resource.

Colluli Rock Salt Mineral Resource						
Classification	Mt	NaCl	K	NaCl	CaSO₄	Insolubles
Measured	28	97.2%	0.05%	0.05%	2.2%	0.23%
Indicated	180	96.6%	0.07%	0.06%	2.3%	0.24%
Inferred	139	97.2%	0.05%	0.05%	1.8%	0.25%
Total	347	96.9%	0.06%	0.05%	2.1%	0.24%

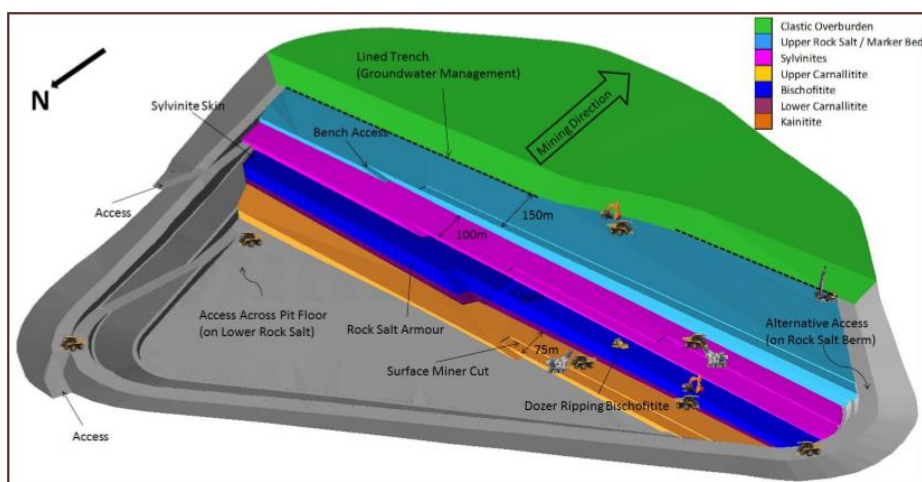
Source: Danakali Limited Website

Open-Cut Mining

The Colluli ore body lends itself to very simple mining via a single open pit. For the potash orebody 110t class surface miners will be used to load the material into 90t rear dump trucks. Overburden and bischofitite material will be removed using 110t excavators loading the material into the 90t trucks. Clastic overburden will be pushed down to excavators by 50t track bulldozers. The level of complexity of such a mining operation is relatively low and is well understood. The average strip ratio over the life of mine is a low 1.93.

Furthermore, DNK propose that the overlying Rock Salt has commercial potential which could offset some of the mining costs in the future (this is not reflected in the FEED results). The estimated extraction rate of this Rock Salt is in excess of 1.8Mtpa.

Colluli Open-cut Mine Plan



Source: Danakali Limited

Processing

The Colluli flowsheet integrates secondary crushing, ore storage and reclaim facilities, ore flotation and deslime units, sylvinite, carnallite and kainite processing units, SOP production facilities incorporating, drying, sizing and compaction units, and product load and haulage facilities.

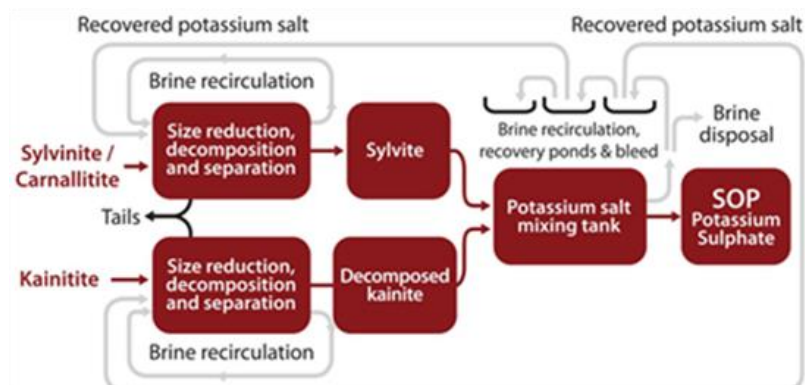
Three of the salts mined at Colluli are used to produce the final SOP product. The ore containing sylvinite and carnallite is to be decomposed, and then recombined with decomposed kainite. The decomposed salts are then mixed together in a large mixing tank where a chemical reaction occurs under ambient conditions producing the premium SOP product.

The key advantage of the Colluli project is the right combination of sylvinite and kainite salts for simple and high yield conversion to SOP at ambient temperature conditions. This is similar to the Xingjiang Luobupo operation in China, which successfully utilises the same processing technology that is planned to be used at Colluli. Ambient temperature processing has a positive impact on process yield, reduces pond size requirements significantly and allows lower energy inputs in comparison to Kainite brine conversion. Furthermore, the solid state of these salts means that no pre-evaporation ponds are required, thus further reducing capital requirements and time to revenue.

The potassium yields are further improved during the process by using recovery ponds which collect brine as it exits the processing plant. The climate in the Danakil Depression provides high evaporation rates which significantly reduces pond size requirements and allows rapid recovery of remnant potassium that is recirculated to the processing plant.

The process requires significant amounts of water with around 200m³ per hour needed during Phase I with those requirements doubling during Phase II. Processing plant and site water requirements will initially be supplied via mine dewatering and ground water for the saline requirements and via a single 87km pipeline from a reverse osmosis desalination plant located at Anfile Bay on the Red Sea coast.

Colluli processing plant flowsheet



Source: Danakali

Premium Product

Pilot test studies completed to date demonstrate that the Colluli product will be at the top of the quality spectrum versus its peers. Typical sulphate of potash contains approximately 94% potassium sulphate, in contrast, the Colluli process is expected to generate product with purity of 98%.

Financial Summary

Price assumptions		2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
SOP	US\$/t	550.0	550.0	550.0	550.0	550.0	550.0	550.0	550.0
Production volumes		2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
SOP - Phase I	kt	-	-	377.6	472.0	472.0	472.0	472.0	472.0
SOP - Phase II	kt	-	-	-	-	-	-	-	424.8
Total SOP Produced	kt	-	-	377.6	472.0	472.0	472.0	472.0	896.8
Colluli Mining Share Company (CMSC) Income Statement									
Year end December		2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Revenue	US\$m	-	-	207.7	259.6	259.6	259.6	259.6	493.2
Mining Royalty	US\$m	-	-	(7.3)	(9.1)	(9.1)	(9.1)	(9.1)	(17.3)
Operating Costs	US\$m	-	-	(88.8)	(110.9)	(110.9)	(110.9)	(110.9)	(185.9)
EBITDA	US\$m	-	-	111.7	139.6	139.6	139.6	139.6	290.1
Interest Expense	US\$m	-	-	(11.9)	(4.8)	(0.4)	-	-	-
Tax @38%	US\$m	-	-	(9.2)	(22.5)	(24.2)	(24.3)	(53.0)	(91.1)
Net Income	US\$m	-	-	15.1	36.8	39.5	39.7	86.5	148.6
Colluli Mining Share Company (CMSC) Cash Flow Statement									
Year end December		2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Cash Flow from Operations	US\$m	-	-	92.6	114.3	117.0	117.2	88.5	199.1
Sustaining Capex	US\$m	-	-	(7.1)	(8.9)	(8.9)	(8.9)	(8.9)	(13.7)
Expansion Capex	US\$m	(110.6)	(211.4)	-	-	-	(70.7)	(131.3)	-
Cash flow from Investing	US\$m	(110.6)	(211.4)	(7.1)	(8.9)	(8.9)	(79.6)	(140.2)	(13.7)
Debt Financing / Repayment	US\$m	68.7	131.3	(83.4)	(105.3)	(11.2)	-	-	-
Shareholder Loan / Repayment	US\$m	41.9	80.1	-	-	(43.4)	(13.8)	-	(64.8)
Opening Cash Position	US\$m	8.0	8.0	8.0	10.0	10.0	63.4	87.2	35.5
Net Change in Cash	US\$m	-	-	2.0	-	53.4	23.8	(51.7)	120.6
Closing Cash Position	US\$m	8.0	8.0	10.0	10.0	63.4	87.2	35.5	156.1
Colluli Capital and Operating Costs									
Year end December		2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Capital Expenditure	US\$m	110.6	211.4	7.1	8.9	8.9	79.6	140.2	13.7
Mine Gate Cash Cost	US\$/t SOP	-	-	168.1	168.1	168.1	168.1	168.1	141.0
Total Cash Cost	US\$/t SOP	-	-	235.1	235.1	235.1	235.1	235.1	207.3
Danakali Key Metrics									
Year end December		2020E	2021E	2022E	2023E	2024E	2020E	2021E	2022E
Cash Flow from Project	US\$m	-	-	1.0	-	26.7	11.9	(25.8)	60.3
Cash Flow from Shareholder Loan	US\$m	(41.9)	(80.1)	-	-	43.4	13.8	-	64.8
Free Cash Flow from Project	US\$m	(41.9)	(80.1)	1.0	-	70.1	25.7	(25.8)	125.1
Colluli NAV	US\$m	911.5							
Danakali NAV	US\$m	416.2							
Colluli IRR	%	29.7%							
Danakali IRR post-debt	%	28.7%							
Estimated Net Asset Value (NAV) / Share									
Year end December	% Ownership	US\$m	P/NPV	US\$m	GBm	GBp/sh			
Colluli (inc. Working Capital)	50%	416.2	0.8	332.9	249.7	0.78			
Net Cash		\$8.0	1.0	8.0	6.0	0.02			
Total NPV (10%)		\$424.2		\$340.9	\$255.7	0.80			
Current P/NAV				0.44x					

Appendices

Directors and Management

As Danakali has moved Colluli towards construction, the management and board has also changed accordingly to reflect this shift in the company's life cycle. Niels Wage was appointed as the company CEO in March 2019. In our view, his appointment reflected a strengthening of Danakali's leadership team with a focus on industry and infrastructure development expertise. The board now also includes two AFC appointees as a result of the AFC's investment into the firm, underlining their commitment to the project.

Key Management and Board of Directors

Name	Title	Profile
Niels Wage	CEO	Mr Wage is a recognised world class potash professional. He has extensive experience working at BHP, including vice president of potash as well as being responsible for marketing, sales and supply chain for the large Jansen Potash Project in Canada. VP of freight and VP of diamonds. Prior to this Wage also held trading and logistics positions at Cargill and Vopak.
Seamus Cornelius	Non-executive Chairman	Mr Cornelius is an experienced mining executive and corporate lawyer with over 20 years experience in the resources sector. He is based in China and specialises in China cross-border resource transactions.
Tony Harrington	Project Director – Technical	Mr Harrington has over 35 years' experience managing the delivery of EPC and EPCM projects across a diverse range of commodities and jurisdictions. Selected previous experience includes being a Project Manager for the construction of the circa US\$300m Kwale Mineral Sands Project in Kenya, owned by Base Resources as well as the US\$330m Chimimiwango expansion at the Lumwana Copper Mine in Zambia, owned by Equinox/Barrick,
Robert Connochie	Non-executive Director	Mr. Connochie brings extensive potash industry experience to the Danakali board. His previous roles include Chairman of Canpotex (a world leading potash exporter), Chairman and CEO of Potash Company of America, Director, Athabasca Potash, CEO Asia Pacific Potash, Chairman of Phosphate and Potash Institute, Director of the Fertiliser Institute, and Director of the Saskatchewan Potash Producers Association. Mr. Connochie is a civil engineer by training.
Paul Donaldson	Non-executive Director	Mr Donaldson is a former CEO of Danakali, who since moved back to a non-executive role with the company. He is currently a Chief Technology and Transformation Officer at Pacific National - one of Australia's largest rail freight businesses. Prior to Danakali, Mr Donaldson had extensive operational, technical, marketing and supply chain management experience with a series of senior management roles with BHP Billiton.

Source: Company reports, LinkedIn, Reuters

Potash Market

Agricultural sector sees continued demand

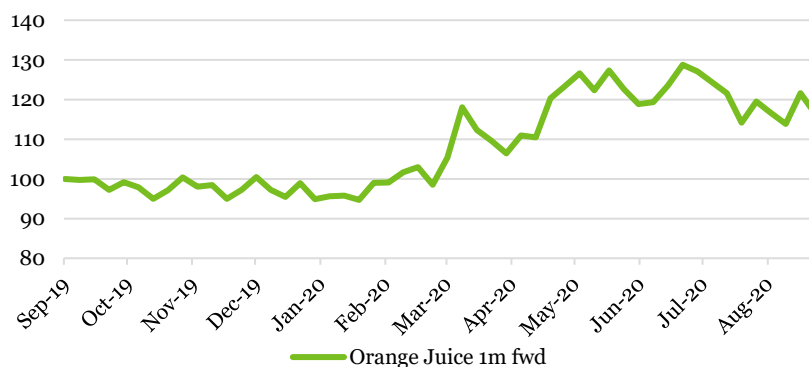
The FAO's (the United Nations' Food & Agriculture Organisation) most recent press release (03-Sep-20) showed that the FAO Food Price Index has recovered strongly since May after a steep decline in the first five months of the year. However, this price drop and subsequent rise is likely a result of the fall and recovery in oil prices, as well as recent USD weakness, as opposed to fluctuating demand for foodstuffs. Commodities such as sugar, cocoa and vegetable oils are the hardest hit within the agricultural sector as they have links to biofuels and the oil industry.

As ~90% of potash consumption is for fertilizers, comfort can be taken in the knowledge that demand for agricultural commodities remains and has even strengthened due to stockpiling for some products. Therefore, the demand from growers for fertilizer is expected to be relatively constant. SOP's specialist use for chloride sensitive crops means that, despite its price being approximately double that of MOP, demand will likely remain even in a global health or economic crisis.

Pandemic outperformers prove fruitful for SOP...

Many commodity prices were – at least temporarily - negatively impacted by Covid-19 but there have been several winners too. Orange juice futures soared in Q1'20 as a surprise outperformer, up 25% in March alone. Increased demand is caused by people seeking vitamin C to strengthen their immune systems as well as lockdowns meaning people have more substantial breakfasts at home. Even though futures have since dropped from their peak, prices remain above Jan/Feb values.

Orange juice futures over last 12m, rebased to 100

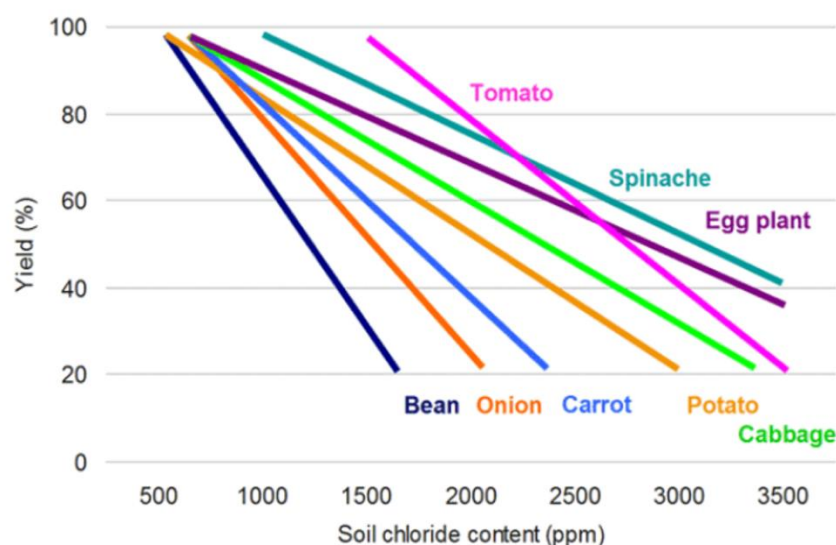


Source: Bloomberg

K₂O is the most sequestered compound during the growth of citrus fruits and thus a potassium-based fertilizer is vital to crop development. This is a positive for SOP producers as orange crops are highly sensitive to elevated chloride concentrations leading to toxicity. Therefore, SOP has a distinct advantage over MOP as a fertilizer for orange production and this leads to inelastic demand for SOP irrespective of price premium compared to MOP.

SOP preference extends beyond just citrus fruit production as nearly all fruits (especially stoned fruits) are intolerant of elevated fertilizer chloride concentrations. Staple foodstuffs, such as potatoes, are chloride tolerant but grow much better in low chloride environments therefore producers tend to use SOP.

Crop yields versus soil chloride concentration



Source: Maas (1986)

Major industries such as tobacco and alcohol are also intensely dependent on SOP supply - hops, grape vines and tobacco plants are all strongly chloride sensitive. Despite the respiratory impacts of COVID-19, UK tobacco product sales jumped around 10% in the week following the announcement of the pandemic. Alcohol sales increased drastically too with the initiation of global lockdowns, therefore strengthening the requirement for SOP even in a time of crisis.

SOP to remain an important Speciality Potash Product

Potash is one of three critical macro nutrients for crop growth, alongside nitrogen and phosphates. Potash has many roles within plants, the most important of which is to support nitrogen and water uptake, improving the quality, taste and feel of crops.

The key advantage of Sulphate of Potash (“SOP”) over Muriate of Potash (“MOP”) is its use in the cultivation of chloride-intolerant crops. Many crops suffer chloride toxicity, rendering MOP (i.e. potassium chloride) sub-optimal.

Chloride intolerance is a spectrum:

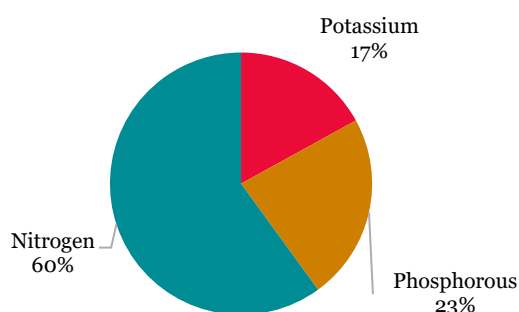
- Crops such as cereals, oilcrops and cotton are tolerant and are therefore unlikely to require SOP;
- Some crops such as tea, coffee and potatoes are only mildly sensitive, meaning farmers can substitute between MOP and SOP depending on relative cost, availability and expected pricing for the end-produce;
- However, many, such as almonds and strawberries are completely intolerant, creating inelastic demand for SOP regardless of the relative cheapness of MOP.

As living standards and disposable incomes rise, consumer preference has led to increased cultivation of fruits, vegetables, tree nuts and tea. These crops are often sensitive or intolerant to the chloride content in ordinary MOP, resulting in faster demand growth for SOP in recent years.

The global market for potash fertilisers amounts to ~74Mt on a total product tonnage basis (as opposed to contained K₂O). The International Fertilizer Association (IFA) forecasts demand growth of ~2.2% pa over the 5 years to 2021, as compared with a long run CAGR of ~2.6% since 1960 and a 2.4% from 2011-16.

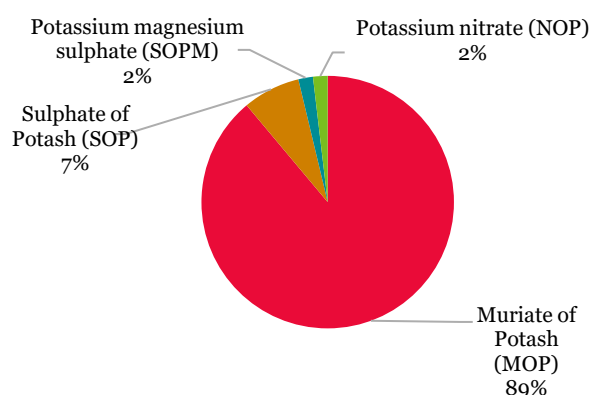
MOP represents ~90% of global potash use, with SOP (~7%) accounting for most of the remainder. Demand for SOP has significantly outpaced the wider potash market, at a CAGR of ~6% over the last five years. Based on the advantages of SOP use outlined above and considerable latent demand in important agricultural regions such as India and Brazil, we believe demand for SOP can continue to grow faster than for MOP, albeit at a more modest pace than in recent years.

Nutrient composition in global fertilizer market in terms of content - 2016



Source: CRU

Potash market breakdown by product on a K₂O nutrient basis - 2016



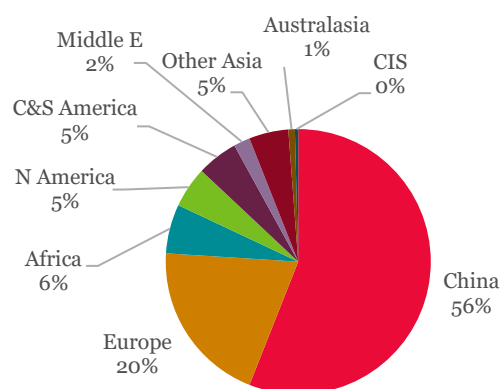
Source: CRU

Removal of export barriers exposed world to Chinese oversupply; but we see a trickle rather than a flood

Chloride-sensitivity can be exacerbated by arid soils, as chloride can build up in the soil over time, facilitating demand growth in the Middle East and North Africa. Intensive crop rotation, such as occurs in China, has a similar effect.

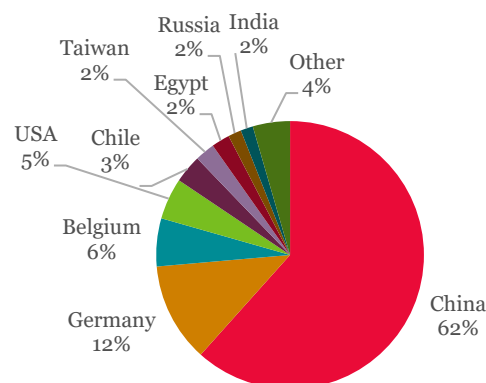
China's agronomic profile, with significant fruit, vegetables and tea also justifies its disproportionate share of global SOP demand. CRU estimates global SOP use at ~3.1Mt on a contained K₂O basis, equivalent to ~6.1Mt of total product; China's share of global demand is estimated at 56%, or ~3.5Mt. Nonetheless, China's SOP production capacity amounts to ~6.2Mt, around 62% of global capacity and outstripping China's demand by almost 2 to 1.

Global SOP use is concentrated in China – justifiably, according to CRU



Source: CRU

Global SOP capacity – China has around 6.2Mt of 10Mt global capacity



Source: CRU

Up until 2019, global markets were insulated from China's over-capacity due to heavy tariffs of RMB 600/t (~US\$87/t) on SOP exports. However, China's Ministry of Finance took an unexpected decision in January 2019 to remove this export disincentive.

Nonetheless, there does not appear to have been a wave of new supply as some in the industry might have feared, due fact that much of China's spare capacity is high cost and marginal.

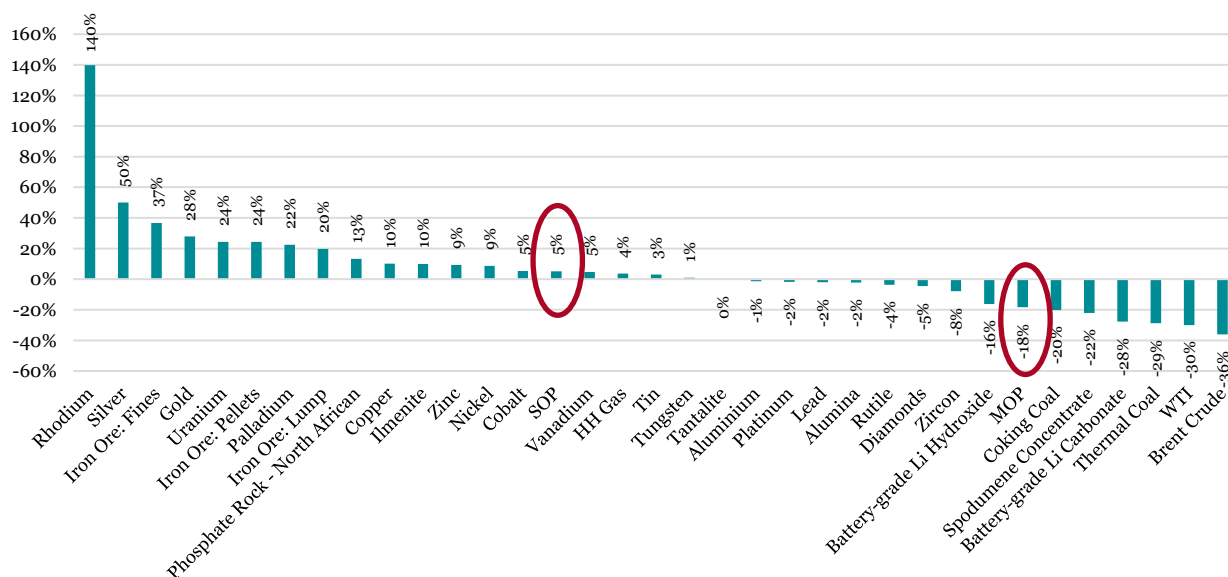
Furthermore, around half of China's capacity is secondary production (i.e. conversion of MOP to SOP using the Mannheim process). Some secondary producers in China currently have difficulty disposing of hydrochloric acid, which is a by-product of the process. As such, we believe that low utilisation rates in recent years appear to have been driven more by logistical constraints than low prices, and that this will continue to hold back secondary SOP production in China, even if global prices are high enough for plants to export profitably. China's primary capacity – low cost natural brines located in remote inland provinces – would be more competitive on the global stage, but logistical challenges and brand loyalty amongst consumers should somewhat slow down the establishment of overseas sales channels.

Weaker MOP prices ease costs for "secondary" SOP producers

The relationship between the price of MOP and SOP is complex. To certain degrees, MOP is both a substitute for, and an input cost in, the production of SOP. Global SOP supply is roughly evenly split between "primary" mined SOP and "secondary" production which converts MOP to SOP by the addition of sulphuric acid via the Mannheim process.

Since January, MOP prices have fallen ~18% amid the COVID-19 outbreak (based on Standard MOP – Saskatchewan US\$/tonne). Although this may only be a short term fall it has the potential to provide "secondary" producers with lower costs of production moving towards H2'20. Cuts to costs and a strengthened balance sheet will provide a valuable buffer for companies whilst global markets recover.

Performance of major commodities YTD – SOP has been remarkably stable



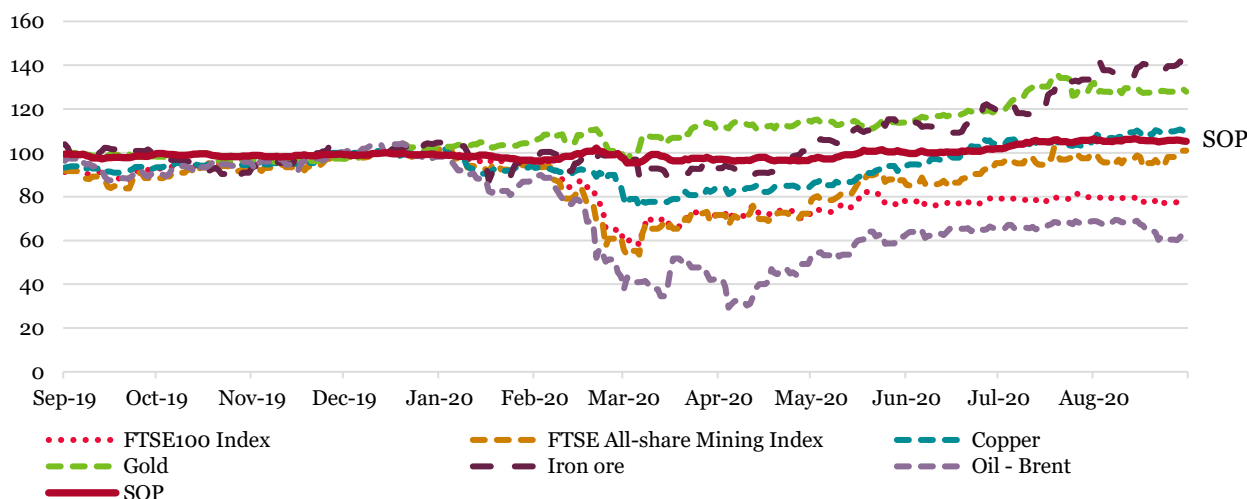
Source: Bloomberg

Demonstrable resilience – a good defensive commodity?

Q1'20 saw an unprecedented downturn in global markets with most major indices falling over 20% as COVID-19 swept the globe from February into March. As a result, many investors fled towards traditional safe havens such as gold in March whilst futures for mined products such as copper and nickel slumped. Since then, prices of many commodities have rebounded strongly on loose monetary policy, the promise of fiscal stimulus, supply constraints due to Covid (in some cases), and to a certain extent a real recovery in economic activity.

Throughout this period of unprecedented market volatility, SOP prices have showed remarkable stability in the face of adversity to remain within their long-term range of ~US\$500-600/t. This is evidenced in the chart below which shows various commodities and indices, rebased to 100 at the start of this year. Most commodity prices fell in-line with market collapse and have subsequently, However SOP prices have barely moved.

% Price change of major commodities / indices versus SOP in last 12m, rebased to 100 at 31st Dec 2019



Source: Bloomberg

Deal flow suggests positivity

Despite the global market upset, the potash market seems to have retained some optimism. This is evidenced by the continued deal flow and capital raises since the WHO announced COVID-19 as a pandemic.

Potash market deal flow		
Date	Company	Transaction Announcement
5-Aug-20	Salt Lake Potash	Placement of approximately 86.6 million shares at A\$0.50 each to raise A\$43.3 million before costs
21-Jun-20	Kalium Lakes Limited	Equity offering of 126.8m shares at A\$0.15 each to raise A\$19.0 m
01-May-20	Australian Potash Limited	A\$2m placement completed of 40m ordinary shares and A\$3.15m rights issue announced
30-Apr-20	Belarus Potash Company	Signed a US\$220/t supply contract with China
28-Apr-20	Salt Lake Potash	Placement of approximately 58.8 million shares at A\$0.34 each to raise A\$20.0 million before costs
27-Apr-20	Agrimin Limited	Entitlement offer to raise up to approximately \$3.0 million, of which \$2.2 million is committed. Issue of up to 9,822,006 shares
14-Apr-20	Davenport Resources	Placement of 8.4 million shares to raise A\$420,000 before costs
14-Apr-20	Australian Potash Limited	10 year “take-or-pay” off-take deal with Migao International
20-Mar-20	Kazakhstan Potash	Secured A\$10m in funds for development of a site in Kazakhstan
20-Mar-20	Agrimin Limited	Acquired Lake Auld potash in Western Australia

Source: Capital IQ

Glossary of Terms

1. **MOP** Muriate Of Potash, a type of potassium fertilizer
2. **SOP** Sulphate Of Potash, a type of potassium fertilizer
3. **K₂SO₄** Potassium Sulphate
4. **K₂O** Potassium Oxide
5. **KCL** Potassium Chloride
6. **FOB** Freight on Board
7. **SOPM** Potassium Magnesium Sulphate
8. **Polyhalite** It is an evaporite mineral, a hydrated sulfate of potassium, calcium and magnesium
9. **Carnallite** A hydrous chloride of magnesium and potassium
10. **Halite** Mineral form of sodium chloride

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