WH IRELAND
CAPITAL MARKETS

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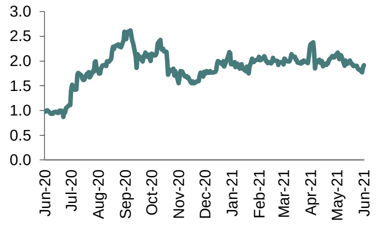
CORPORATE

Share price **1.8p**

Ticker	KEFI
Index	FTSE AIM
Sector	Mining
Market Cap	£39.4m
Shares in Issue	2,152m
NAV	1.0p

Performance	**All-Share**	**Sector**
1 month:	4%	5%
3 months:	5%	(2)%
12 months:	113%	84%
High/Low	2.6p / 0.7p	



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Marketing Communication

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KEFI Copper and Gold

Production-ready KEFI

KEFI Copper and Gold is a project explorer and developer in the Arabian-Nubian Shield (ANS) in both Saudi Arabia and Ethiopia. It is on the cusp of putting together its financing package for the Tulu Kapi gold mine in Ethiopia – a transformational event that, if executed as planned, will lead to minimal shareholder dilution. At the same time, we expect a significant upgrade to the Hawiah copper-gold VMS deposit in Saudi Arabia – a grassroots discovery by KEFI with its Saudi partner. We expect the Hawiah deposit to be large and, in time, it could be a significant producer. We are struck by the exploration potential in all of KEFI's licences and, once Tulu Kapi becomes cash-positive, we expect KEFI to have the discretionary expenditure to expand its known resource base. We initiate with an SOTP fair value of 5.4p/sh. KEFI is only just beginning its journey and is undervalued against its peers and close to a significant rerate, in our opinion.

An investment in KEFI provides investors with:

- **Exposure to a development-ready gold mine in Ethiopia:** Tulu Kapi is a development-ready project awaiting final financing. KEFI has put an experienced team of management and contractors around the project to enable a smooth build up to a base case of 140koz of gold per year (and possibly quickly expanded to 190koz/yr) at low operating costs. Financing looks like it will achieve completion with minimal dilution to existing shareholders – which would be a first for many shareholders in junior mining companies in London and would set a benchmark for others.
- **Significant copper-gold discovery in Saudi Arabia:** The grassroots discovery of the Hawiah VMS project is a currently unrecognised (in our view) component of KEFI's value. This is a large, significant resource, which we expect to increase in size. Drilling results are expected shortly from a current drilling programme, as is the PFS, with much of the capital expected to be debt funded by appropriate Saudi institutions.
- **Upsides are clear:** The exploration potential at depth and in the immediate area around Tulu Kapi are significant, in our opinion. In addition, around Hawiah, VMS deposits almost never occur in isolation. We would expect further lenses of massive sulphide in the area.
- **This is before we consider the low capex Jibal Qutman gold project in Saudi Arabia:** Jibal Qutmun has a large resource of heap leachable gold ore. A low capex project could deliver ~30koz/yr of low-cost gold ounces to the benefit of KEFI and its partner.
- **An experienced management team:** KEFI has an experienced management team with the skills to serve the corporate community and deliver the construction, commissioning and operating of a series of mining operations in remote locations.
- **First-mover advantage:** KEFI is making strides to be at the forefront of a new mining industry in Ethiopia as the government is keen to diversify its underlying economy. The same can be said for Saudi Arabia as the economy tries to wean itself from one reliant on oil. A strong local partner in Saudi and a government paying for an equity stake in Ethiopia reduces the risks of operating in both of these countries, in our opinion.
- **The biggest risk:** …as for all juniors, is continued access to the capital markets.

We see fair value in KEFI at 5.4p/sh based on an SOTP valuation on the cashflow from the principal projects. We think this is conservative and wait for the short-term transformational news from KEFI on its key catalysts: financing at Tulu Kapi and the extension of resources at Hawiah.

Investment case

Shovel-ready project and grassroots discovery of a significant copper-gold deposit in Saudi Arabia look set to transform KEFI

KEFI has the next-off-the-block gold mine development. The Tulu Kapi mine development project is in Ethiopia and is close to final funding with potentially only minor dilution to existing shareholders – a testament to the strength of management. Tulu Kapi (open pit, standard processing) has a low capital intensity with low operating costs, which, against a current high gold price, should deliver substantial returns to shareholders. With excellent extension/expansion opportunities, Tulu Kapi should grow and be a mainstay of KEFI's profits for many years. KEFI also has a significant holding in a Saudi Arabian polymetallic and gold project for which there are development opportunities and obvious value.

Fair value of 5.4p/share

We see fair value in KEFI Copper and Gold at 5.4p/sh.

Undervalued for stage and undervalued against peers

KEFI is undervalued: We believe that KEFI is undervalued against its peers (Tables 2 and 3) and against the evident value we see in its ability to produce cash from its most advanced project, Tulu Kapi (Table 9). Comparable AIM-listed African gold-mining and development peers (Tables 2 and 3) suggest that, once in construction, we could expect a rerate and a dramatic increase in market valuation.

We see our initial fair value as conservative and poised for a short-term rerate

Currently, limited production from UG at Tulu Kapi late in the mine life. KEFI expects to pull this forward and increase gold production scale from 140koz per year to 190koz per year

Our valuation is conservative: Our SOTP valuation (Table 1) is based on conservative parameters and metal prices at our longer-term averages rather than current spot prices. Much of our approach to valuation is based on our arguably conservative cashflow analysis, which, once KEFI is in production, will underplay the valuation that the market puts on cashflow and profits. KEFI is still at the start of its journey.

Perhaps close to an initial rerating: Once the financing has closed and KEFI starts the (18-month) construction process at Tulu Kapi, investors should be able to define the timing of value. If the gold price remains at these current historically high levels, we would expect our valuation approach using cashflow projections to underplay the true value in KEFI. Higher prices (or grades) in the early years of a mine life make a significant difference in payback and overall returns and can set up an operation on a sound footing.

Financing always a difficult stage for a junior, but the proposed structure, if achieved, would be an excellent result for shareholders

Financing almost at an end, dilution at a minimum: We expect financing to be concluded shortly. This long process has almost completed and the structure proposed by KEFI looks like it will keep dilution to a minimum. Any final equity remaining, and KEFI is targeting to avoid any, could be raised in the current markets, in our opinion; the markets are open for funding and discounts are generally low.

A high-quality team has been assembled in Ethiopia: KEFI has put together a strong team for developing the Tulu Kapi project.

Growth. Tulu Kapi UG is set to increase in size with a small amount of drilling

Going forward, we expect additional growth in resources and output in Ethiopia: As Figure 8 shows, there are other potential "Tulu Kapis" in KEFI's licences. Strong surface gold anomalies in trenches and drilling in related structures, further underground potential and other gold deposits in the ANS in wider-Ethiopia. These "Orogenic" gold deposits (Figure 1) are not usually found in isolation, as the great Orogenic gold districts in, for example, West Africa, Canada and Western Australia show. The whole ANS is underexplored and, in our opinion, the "Majors" − e.g. as Barrick (TSX:ABX, Mkt Cap $42bn) has done in Saudi Arabia and Newmont in Ethiopia (TSX:ABX, Mkt Cap $42bn) − will follow KEFI's lead into the ANS to apply modern exploration techniques to these huge underexplored areas.

Small increases in resource size, large increase in fair value

Small increase in resources, large increase in value: Modelling a four-year underground mine after the completion of an open pit raises the NPV_8 at Tulu Kapi by $137m from the base case Tulu Kapi NPV_8 of $153m – an almost doubling of our discounted value. Drill results suggest that significant expansion of this modest underground resource is possible.

KEFI will adopt a more aggressive stance on the underground potential: KEFI currently expects an aggressive drilling campaign on the underground resource and its extensions with the aim of bringing a high-grade underground mine into the mine plan from year 3. This would raise forecast production from 140koz/yr to 190koz/yr within a short timeframe. This is speculative at the moment but, in our opinion, is credible.

The whole of the ANS is prospective and underexplored

First-mover advantage: Demonstration of a successful construction and commissioning in Ethiopia will put KEFI in a strong position for further opportunities in the country.

Potential in Saudi Arabia is, as yet, in our opinion, not included in the market's appreciation of KEFI. This is a high quality, large and economically significant discovery in Saudi Arabia.

This is all before we consider the impact of developments in Saudi Arabia: The recent resource definition and PEA on the Hawiah volcanogenic massive sulphide (VMS) discovery (and the probable resource expansion from the recently completed Phase 3 drilling) has the potential to transform KEFI. Strong base metal prices driven by economic recovery after COVID-19 and the obvious need for future electrification will all require more metals. Copper has been at the forefront of recent price increases with copper hitting historical highs. Continued demonstration of a substantial, high-grade resource at Hawiah should add an additional strong second thread to KEFI's outlook. We expect a significant increase in resource by the end of 2021 and completion of a pre-feasibility study (PFS) in 2022, at the same time as KEFI and its JV partner apply for the mining licence. Several base metal mines have been developed in Saudi Arabia over the past decade, so we don't anticipate any delays once the economic studies are in place.

Hawiah-style VMS deposits NEVER occur in isolation – regional prospectivity is considered to be high

VMS never occur in isolation: Lenses of massive sulphide mineralisation never occur in isolation – they tend to occur in districts and it would be unusual if there were no further VMS in this area. A full understanding of the geology and controls of mineralisation at Hawiah will help target further regional discoveries.

Quick-to-market Jibal Qutman gold project also not included in current market appreciation of KEFI

All this before we add in the value from the Jibal Qutman gold project: One of KEFI's first discoveries is currently waiting for a mining licence, but could be a quick-to-market gold project delivering low-cost production of 30koz/yr from a simple heap leach project.

Commodity markets booming; record, historical highs and confidence in the sector

Commodities look like remaining strong for some time to come: Interest in the commodity markets remains strong. Following years of underinvestment in new capacity and lack of cash for exploration, the outlook for the project pipeline in many commodities is poor. This is led by copper, which acts as a bellwether to the health of the mining industry. We also expect the gold price to remain strong as the COVID-19 pandemic recovery is being helped with the printing of money; this just has to transfer into the value of real assets, in our view.

To summarise the investment case: KEFI is shortly going to become the next gold developer off the block; developing a significant gold mine with outstanding upside at Tulu Kapi mine in Ethiopia. At the same time, it is defining a major new copper-rich, base metal resource at Hawiah in Saudi Arabia. KEFI has a strong management team and excellent links in both Saudi and Ethiopia. In our view, KEFI is a catalyst-rich company on the verge of a major rerating.

Valuation

Our fair value for KEFI Copper and Gold is 5.4p/share

We see fair value in KEFI at 5.4p/sh.

Valuation approach

Valuation on SOTP basis, using DCFs for the underlying assets

We value KEFI on an SOTP valuation. Our SOTP comprises:

- DCF (NPV_8) for the **Tulu Kapi gold mine** development (Table 9). Eight-year mine life open pit. Assuming KEFI keeps 75% of the project post financing, including 70% of the NPV_8 as a proxy for funding and construction risk.
- Additional upside from four years of **underground resources at Tulu Kapi**. Risked at 40% of the upside in NPV_8 from four years of underground production for exploration and resource definition risk.
- DCF (NPV_8) for **Hawiah polymetallic project** in Saudi Arabia (Table 11). Data from the announced PEA (September 2020) with a mine life doubled to 14 years on the back of the doubling of the strike length drilled and the doubling of the depth of the massive sulphide horizon defined. Risked at 30% of the NPV_8 as a proxy for the early stage of this exceptional project.
- DCF (NPV_8) for **Jibal Qutman gold project** in Saudi Arabia (Table 14). Data from the 2015 PFS modified by WHI estimates.
- An amount for Ethiopian exploration upside given the extension of mineralised structures identified in the Tulu Kapi licence.
- With an allowance for cash and corporate overheads over the next three years.

Table 1: KEFI valuation ($m*)

Valuation approach		Valuation $m	Valuation £m**	Owned	Risk	Valuation GBPp/sh
Tulu Kapi project	NPV_8	152.5	113.0	80%	70%	2.9
Tulu Kapi UG project	NPV_8	137.2	101.6	80%	40%	1.5
Hawiah project	NPV_8	234.0	173.4	34%	30%	0.8
Jibal Qutman project	NPV_8	41.9	31.1	34%	30%	0.1
Ethiopia exploration upside	Peer	8.0	5.9	34%	30%	0.0
Net cash***	WHIe	2.0	1.5			0.1
Corporate	NPV_8	(2.8)	(2.1)			(0.1)
						5.4

Source: WH Ireland research.
** Subjective risk* ** WH Ireland estimate FX $:£ = 1.35:1. *** WH Ireland estimates, May 2021

KEFI appears materially undervalued against its underlying assets and by reference to peers

Risked, we estimate fair value at 5.4p/share (Mkt Cap £117m) and, assuming all risks removed, we see a fair value of 11.2p/sh (Mkt Cap of £241m) – this is set against a current Mkt Cap of ~£40m.

Obviously, with a gold mine in production at Tulu Kapi and continued exploration success at Hawiah, the value in KEFI would be higher, as it will be valued on a multiple basis. We discuss this below in our section on Peers.

KEFI valuation catalysts

Two very high-impact catalysts

We see 2021 as an important year in the development of KEFI, with several key catalysts that could lead to a rerating – both of which we rate as highly likely:

- finalisation of the Tulu Kapi financing and beginning of construction; and
- resource expansion and demonstration of value at Hawiah.

KEFI peers

KEFI is a project developer in Africa and Saudi Arabia and we believe the bulk of the perceived market value is currently in Tulu Kapi in Ethiopia. We place KEFI against a peer group of African gold developers and gold producers to see where it is currently valued and where it could be valued as it turns its potential into cashflow. That said, the development of Hawiah into a major base metal discovery is in its infancy – the results from the most recent (and current drilling) programmes and the addition to resources, we expect, could be transformational for KEFI.

Table 2. KEFI gold peers: producers ($m)

	EV $m	Mkt Cap $m	EV/EBITDA FY	PE FY	EV/EBITDA FY + 1	PE FY + 1
London-listed						
Centamin plc	1,502.5	1,803.7	3.4	11.2	4.2	13.3
Pan African Resources plc	619.5	552.6	5.1	8.5	4.0	6.7
Anglo Asian Mining plc	195.0	233.4	3.6	9.7	-	8.4
Shanta Gold Limited	215.9	238.2	3.3	10.9	3.3	9.1
Hummingbird Resources	162.9	116.7	2.1	5.7	3.9	15.0
Caledonia Mining	175.0	170.5	4.0	-	-	-
Trans-Siberian Gold plc	135.9	142.7	3.0	7.0	3.0	6.3
Serabi Gold plc	60.5	70.0	2.7	6.0	3.4	6.5
			3.4	**7.4**		
Australia/Canada-listed						
Endeavour Mining	6,672.3	6,033.4	6.8	21.9	4.6	9.7
Perseus Mining Limited	1,350.6	1,299.2	6.9	-	7.4	-
West African Resources	798.6	679.5	5.5	9.5	2.7	4.4
Resolute Mining Limited	666.7	452.4	3.7	NM	3.4	89.2
Golden Star Resources Ltd.	483.2	383.8	3.6	75.5	3.6	7.7
Galiano Gold Inc.	215.3	278.5	5.0	5.5	4.9	7.3
			5.3	**7.5**		

Source: WH Ireland research, S&P Capital IQ, Company reports

KEFI is undervalued on an EV/oz basis against its peer developers

Current producers have an average EV/EBITDA of 3.4-5.3 and a PE of 7.4-7.5 (Table 2). On pure ratio metrics, this would indicate that, upon successful construction and commissioning at Tulu Kapi and an EBITDA of the mine at ~$100m (Table 9), KEFI could expect to have a market cap of at least $350m – an uplift of 5-6x its current market capitalisation.

Looking at how its peers are valued on resources (Table 3), we can see that development projects have an EV/Total Resource Moz of between 10x and 86x (ignoring Thor Resources as it is in construction) with resource grade and funding position dictating value, in our opinion. KEFI is currently valued at an EV/Total Resource of 20x and we would argue that, given the completion of the DFS and its stage of funding, value should be viewed at the very least on this metric closer to the upper end of our range: a market cap of more than $200m.

Once in production, the peer average valuation roughly doubles to 113x (Table 3). That the average doesn't increase further is due, in our view, to operating miners having the cash resources to properly drill the extensions of their orebodies – and have additional projects in their project portfolio. Once in production, we expect KEFI to be in a position to drill the depth extensions at Tulu Kapi and to investigate the other gold-bearing structures in its Tulu Kapi licence.

Table 3. KEFI gold peers: developers and producers

	Project*	EV $m	Mkt Cap $m	Prod. koz	M + I Res Moz	Total Res Moz	EV/TotalRes	EV/prod
KEFI Gold and Copper plc	Tulu Kapi (Eth)	57	58	140	2.1	2.8	20	409
Orezone Gold	Bombore (BF)	371	443	120	5.1	6.2	60	3,088
Thor Explorations Ltd.	Segilola (Ng)	203	195	85	0.5	0.5	379	2,389
Orca Gold Inc.	Block 14 (Sd)	112	144	200	4.4	5.1	22	560
Tietto Minerals Limited	Abujar (IC)	74	118	170	1.2	3.0	25	435
Newcore Gold Ltd.	Enchi (Gh)	52	59	NA		1.2	43	
African Gold Group, Inc.	Kobada (Ml)	23	25	100	1.2	2.3	10	231
Cora Gold Limited	Sanankoro (Ml)	26	30	45		0.3	86	571
							81	**1,098**

	Mines*	EV $m	Mkt Cap $m	Yr Prod koz	M + I Res Moz	Total Res Moz	EV/TotalRes	EV/prod
Endeavour Mining Corporation	Sabadola-Massawa (Sen), Ity (IC), Wahgnion + Hounde + Mana + Karma (BF)	6,672	6,033	900	28.5	36.9	181	7,414
Centamin plc	Sukari (Eg)	1,502	1,804	450	14.3	18.0	83	3,339
Perseus Mining Limited	Edikan (Gh), Sissingue + Yaoure (IC)	1,351	1,299	260	2.1	4.2	322	5,195
West African Resources	Sanbrado (BF)	799	679	250	2.4	5.2	154	3,194
Resolute Mining Limited	Syama (Ml), Mako (Sen), Bibiani (Gh)	667	452	400	8.2	11.0	61	1,667
Golden Star Resources	Wassa (Gh)	483	384	170	3.5	11.7	41	2,843
Galiano Gold Inc.	Assanko (Gh)	215	278	250	3.5	3.9	55	861
Shanta Gold Limited	New Luika + Singida (Tz), West Kenya (Ken)	216	238	80	1.3	3.3	65	2,698
Caledonia Mining	Blanket (Zw)	175	171	53	0.8	1.8	99	3,302
Hummingbird Resources	Yanfolila (Ml), Kouroussa (Gi)	163	117	110	0.5	2.4	69	1,481
							113	**3,199**

Source: WH Ireland research, S&P Capital IQ (18.05.2021), Company reports. Note: Eth = Ethiopia, BF = Burkina Faso, Ng = Nigeria, Sd = Sudan, IC = Ivory Coast, Gh = Ghana, Ml = Mali, Eg = Egypt, Sen = Senegal, Tz = Tanzania, Ken = Kenya, Zw = Zimbabwe

KEFI upside to our valuation

We see many upsides to our valuation and the potential we see in KEFI

Specifically on our inputs, there are upsides to our understanding of the potential of KEFI:

- **Increase in resource size transfers through to longer mine lives:** We currently only forecast eight years of production life from Tulu Kapi plus four years from a potential underground mine. The Tulu Kapi orebody has a number of features that indicate significant upside to its reported resource and reserves: the company assumed a gold price of $1,098/oz for setting cut-off grades both open pit and underground (which is obviously conservative), the vertical feeder structures in the open pit have yet to be drilled as the focus to date has been on the sub-horizontal lodes and the orebody is open at depth and we expect the underground resource to grow significantly once there is the cash available to drill it properly (Figure 7).
- **Higher commodity prices, for longer:** Our commodity prices forecasts (see below) are based on our understanding of the cost structure of the industry married to our views on supply-demand balances going forward. Additional demand as the pace of electrification and decarbonisation increases set against a poor project pipeline could keep commodity prices higher for longer.
- **Derisking** as further studies (technical and economic) refine the understanding of the projects.

Key risks and other considerations

Investing in KEFI does carry certain risks – many in common with other similar companies – and we highlight the most significant risks, as we see them, below.

Commodity risk is low

Commodity risk: in our opinion, is low. The outlook for the commodities under exploration by KEFI is robust.

- Copper – increasing amounts of supply required for electrification. Strong demand and a poor project pipeline.
- Gold – falls from recent highs, but the printing of money must trickle through the value of real assets eventually.

Sovereign risk is low

Sovereign risk: Operating in Ethiopia is seen as a low-moderate risk as KEFI is getting support from the government, which is very focused on kick starting the domestic mining industry and has an equity interest in the mine. We see Saudi as a low-risk operating jurisdiction as KEFI is a minority partner (and operator) but with a Saudi partner.

Market risk is low

Product market risk: is a low risk, in our opinion. KEFI will produce intermediate concentrates and metals for which we identify a ready market globally.

Exploration risks are low-moderate

Exploration risk: is ever-present. However, at Tulu Kapi, KEFI has defined a significant resource with several very exciting follow-up prospects around Tulu Kapi and in the wider greenstone belt. The new resource at Hawiah obviously offsets some of the resource risk there with the deposit still open at depth and along strike.

Project execution risk is low

Project execution risk: again is always a risk. The strong executive and management team that has been put together offsets the risk, in our view.

Permitting risk is low-moderate

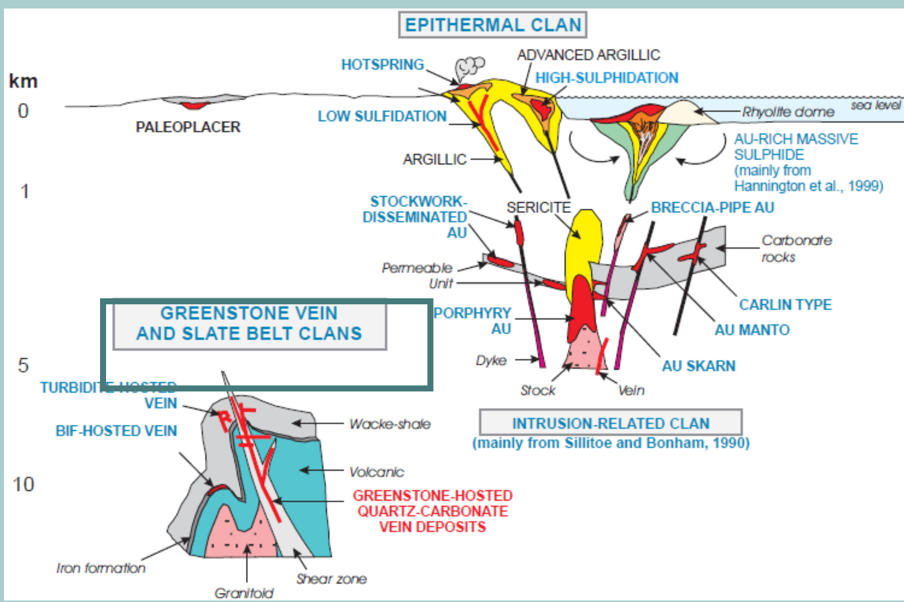
Permitting risk: is low-moderate as Tulu Kapi is permitted. In Saudi Arabia, licences can be obtained, but the whole process can also be slow.

Capital market risk low-moderate in the case of KEFI but perhaps the biggest risk to the ongoing ambitions of the company at this stage

Capital market risk: is ever-present for junior explorers and developers and perhaps the biggest risk we see in the company; that said, risk capital is returning to the sector and equity funding is available. It is also notable that KEFI is showing an ability for financing at project levels. Capital market risk will be ongoing and ever-present until KEFI begins to generate its own cash.

Figure 1: Orogenic gold deposits (also known as greenstone, lode, mesothermal and shear-zone gold deposits)

These deposits are an important source of global gold mine production, accounting for ~15% of annual gold production.
They are structurally controlled epigenetic (formed later than the surrounding rocks) deposits, associated with regional metamorphic belts of all ages but, particularly, Archaean and Birimian greenstone belts. Typically, deposits are associated with major crustal shears either tensional or compressional, which mark major lithological boundaries usually between volcano-plutonic and sedimentary domains. Larger deposits are found in dilational jogs along the major compressional shear zones. Deposits are generally hosted in mafic/ultra-mafic rocks in the greenschist to amphibolite metamorphic facies and were formed when low-salinity, CO_2–rich metamorphic hydrothermal fluids at a temperature between 300 ºC and400ºC were focused into the shears at depths in excess of 5km, as the figure opposite shows. Pressure changes and fluid mixing led to the precipitation of quartz, carbonate, gold and associated sulphides into veins with some disseminated into the wall rocks close to the shear. The deposits generally show evidence of formation in multiple stages.
This type of mineral deposit is found over large areas, and contains many deposits. Examples include the Western Australian Yilgarn craton, Archaean deposits of the Slave and Superior Provinces in Canada and the West African Birimian greenstone belts, among others. Deposits can vary considerably in terms of tonnage and grade. They often have complicated structural controls and vein geometry with anastomosing shears and conjugate arrays with some breccias and stockworks in highly competent hosts (e.g. ironstones). Sulphides are usually in low volume and mainly pyrite, pyrrhotite and arsenopyrite. Zoning is usually absent and deposits are usually low in silver.



Dubé and Gosselin 2007. Geological Association of Canada, Mineral Deposits Division, Special Publication No. 5.

Source: WH Ireland research

KEFI Copper and Gold

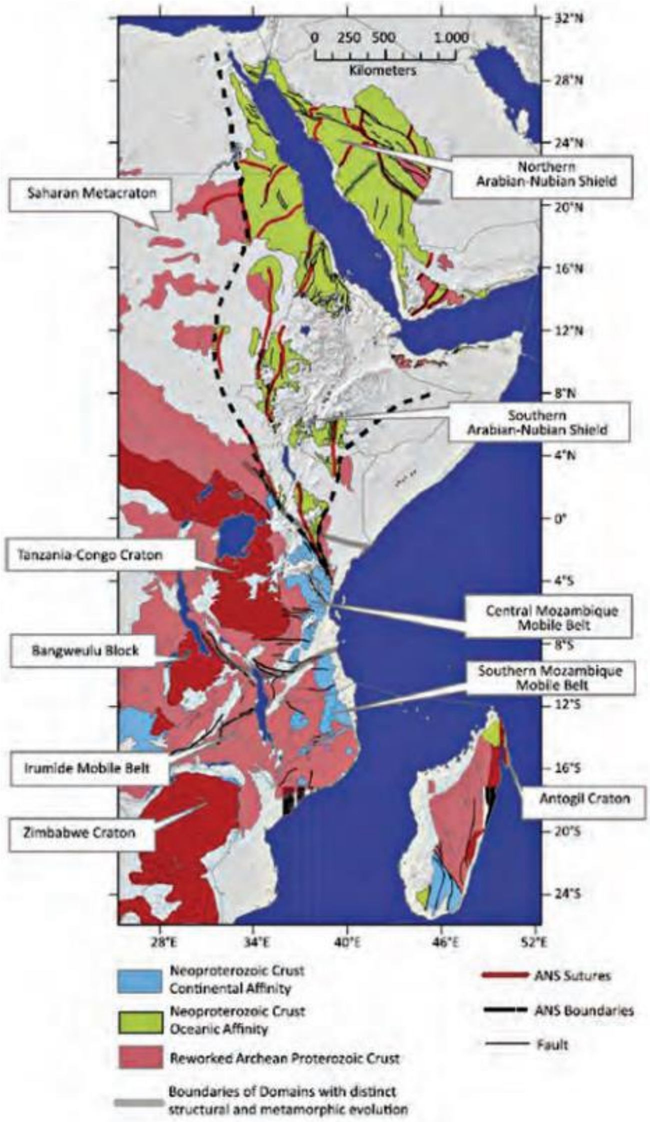
Exploration and development in Ethiopia and Saudi Arabia

In Ethiopia, 100%-owned exploration assets and a mining licence held in JV with the government

In Saudi, 34% owner (and operator) of the JV

KEFI Copper and Gold is listed in London (AIM:KEFI). It explores for base and precious metals in Saudi Arabia and Ethiopia. In Ethiopia, it operates a JV with the government (owning 20%) of the Tulu Kapi project through the Tulu Kapi Gold Mines Share Company (TKGM). In Saudi Arabia, it is the operator of a JV called Gold and Minerals Co Limited (G&M) with KEFI owning a 34% stake with the rest owned by a local Saudi partner Abdul Rahman Saad Al Rashid and Sons Company Limited (ARTAR), a leading local industrial group owned by Sheikh Al Rashid and his family.

Figure 2. Arabian-Nubian Shield



Source: WH Ireland research, KEFI Copper and Gold after Johnson P.R., Zoheir B.A., Ghebreab W., Stern R.J., Barrie C.T., Hamer R.D., 2017: Gold-bearing volcanogenic massive sulfides and orogenic-gold deposits in the Nubian Shield. Article in *South African Journal of Geology,* March 2017

Exploration and development by KEFI is in the ANS, which lies in Saudi Arabia across to the Red Sea into Egypt and down to Mozambique through Eritrea, Ethiopia and Kenya.

Many rich deposits have been outlined in this, as yet, underexplored area; many of which are operated by major mining companies. We highlight Centamin's giant Sukari Gold Mine (LSE:CEY, Mkt Cap £1.2bn) in Egypt, the Bisha copper mine in Eritrea (owned by Zijin Mining, Mkt Cap HKD 331bn) and the various large gold and copper mines in Saudi Arabia – e.g. Jabal Al Sayid copper mine (Barrick Gold and Ma'aden, $49bn and SAR69bn, respectively).

In Ethiopia, Megado Gold (ASX:MEG, Mkt Cap A$5.1m) is beginning its journey with exploration in the greenstones in the Tulu Kapi and Lega Dembe areas.

The whole ANS is prospective and the subject of exploration campaigns by majors and juniors alike.

Mining as an industry is poorly developed in Ethiopia despite the operation of the Lega Dembe mine in country for many years and which provided, historically, the main stay of Ethiopian mineral exports (~3.5t gold – 110koz per year) until it closed two years ago.

The Arabian-Nubian Shield (ANS)

The ANS is a collage of Neoproterozoic juvenile arcs, younger sedimentary and volcanic basins, voluminous granitoid intrusions, and enclaves of pre-Neoproterozoic crust that crop out in the western Arabian Plate and the north-eastern African Plate at the northern end of the Eastern African orogeny (Johnson et al. 2011).

Many deposit styles: The gold deposit styles range across a number of varying tectonic settings:

- In the Arabian Shield in Saudi Arabia, there are **epithermal gold deposits** (Madh Ad Dhahab and Al Amar);
- **Volcanogenic massive sulfides (VMS)** base metal-gold deposits (Jabal Sayed, Al Masane and Hawiah);
- **Intrusive related gold deposits** (Ar Rjum and Ad Duwayah); and
- **"Listweanite"** deposits (Mansourah and Mansarrah).

- In the Nubian Shield, there are **orogenic gold deposits,** e.g. Sukari and Hamash (Egypt), Qbgbih and Kamoeb (Sudan), Koka (Eritrea), and Lega Dembi and Sakaro (Ethiopia), with mining due to start at Gupo (Eritrea) and of course Tulu Kapi (Ethiopia) in the near future.
- **Gold** associated with **VMS** deposits (Bisha).

Spectacular prospectivity: The Hawiah VMS deposit is a surface outcropping discovery and VMS deposits usually occur in clusters. The specific horizon marked by the cherts, ironstones and massive sulphides is evidence of a major mineralising event in the succession – if, as we expect, this VMS district is similar to others in the world (e.g. the Iberian Pyrite Belt, Canadian Abitibi Belt), there will be more VMS deposits waiting to be discovered.

Underexplored: For a variety of reasons, the ANS is underexplored. With Saudi Arabia putting more efforts into its non-oil economy through Ma'aden (SASE:1211, Mkt Cap $18.2bn) and the exploration and economic success of the Bisha mine in Eritrea, the whole ANS is on the explorers' radar. KEFI has a head start in both Ethiopia and Saudi Arabia and we anticipate further discoveries in this fertile belt.

Tulu Kapi (Ethiopia) – KEFI 80% (expectation post-financing)

The Tulu Kapi deposit is an advanced, development-ready project in the final throws of financing. At full production, it is expected to produce up to 190koz/yr

Location

Tulu Kapi is located approximately 360km due west of Ethiopia's capital, Addis Ababa. A main road to Addis Ababa is within 12km of Tulu Kapi and power lines on the main electricity grid are within 40km of the project. The whole Exploration Licence Application covers an area of approximately 1,100km^2.

Figure 3. Location of Tulu Kapi

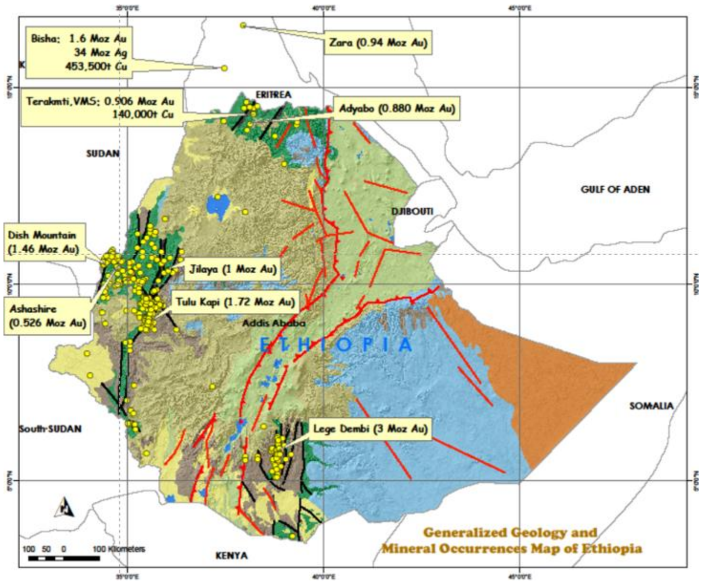
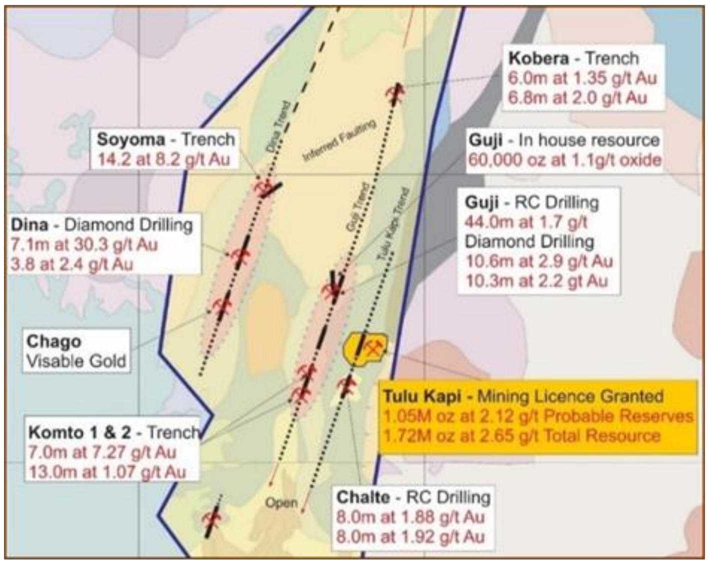


Figure 4: Tulu Kapi licence with exploration potential



Source: WH Ireland research, KEFI Copper and Gold

History and ownership

Tulu Kapi was discovered and mined in a small way by an Italian consortium in the 1930s. Nyota Minerals Limited acquired the licences in 2009 and after three years published a definitive feasibility study (DFS) in December 2012 (2.0Mtpa plant and $290m capex). Since this time, KEFI has optimised this feasibility study – resulting in its current expectation of an eight-year mine life (initial) processing 1.9-2.9Mt/yr of open pit ore.

KEFI Minerals acquired 75% of Tulu Kapi for £4.5m in December 2013 – valuing the asset at $10/oz resource and gaining access to information of over $50m of exploration expenditure. 100% ownership was secured in September 2014, with KEFI paying £0.75m and 50m shares for the remaining 25%.

The Ethiopian government became entitled to a 5% free-carry interest in Tulu Kapi upon granting of the mining licence in April 2015.

Geology

The Tulu Kapi area is characterised by prominent hills of intrusive rocks and deeply incised valleys containing metasediments and metavolcanic rocks. Gold at the Tulu Kapi deposit is hosted in quartz-albite alteration zones in stacked sub-horizontal lenses in a syenite pluton into which a swarm of dolerite dykes and sills have been intruded. Gold mineralisation extends over a 1,500m by 400m zone and is open at depth (+400m).

The mineralisation is characterised by a simple mineralogy comprising gold, silver, pyrite and minor sphalerite and galena and white coloured albite altered rocks.

Metallurgical recoveries of gold average more than 93% for oxide and sulphide ore in the planned open pit with the gold being non-refractory.

Resources

The resources at Tulu Kapi (Table 4) are split above and below the 1,400m level to reasonably reflect the portions of the resource that may be mined via open pit and underground mining methods; the majority of the resource lies in the open pit area and forms part of the high-grade ore identified in the Probable ore (Table 5). This is a function of exploration, in our view, and we expect the underground resource, in particular, to grow further.

Table 4. Tulu Kapi resources

Area	Resource category	Mt	g/t	Contained
> 1,400m	Indicated	17.7	2.5	1.4
> 1,400m	Inferred	1.3	2.1	0.1
> 1,400m	**Total**	**19.0**	**2.5**	**1.5**
< 1,400m	Indicated	1.1	5.6	0.2
< 1,400m	Inferred	0.1	6.3	0.0
< 1,400m	**Total**	**1.2**	**5.7**	**0.2**
	Indicated	**18.8**	**2.7**	**1.6**
	Inferred	**1.4**	**2.4**	**0.1**
	Total	**20.2**	**2.7**	**1.7**

Source: WH Ireland research, KEFI Copper and Gold
Note: Resources estimated using cut-off grades of 0.45g/t gold above 1,400m and 2.50g/t gold below 1,400m. Mineral Resources were split above and below the 1,400m to reasonably reflect the portions of the resource that may be mined via open pit and underground mining methods.

Table 5. Tulu Kapi reserves

Area	Resource category	Mt	g/t	Contained
High grade *	Probable	12.0	2.5	1.0
Low grade **	Probable	3.3	0.7	0.1
Total	**Probable**	**15.3**	**2.1**	**1.1**

Source: WH Ireland research, KEFI Copper and Gold
* Cut off 0.9g/t gold. ** Cut-off 0.5-0.9g/t gold

Proposed mining plan

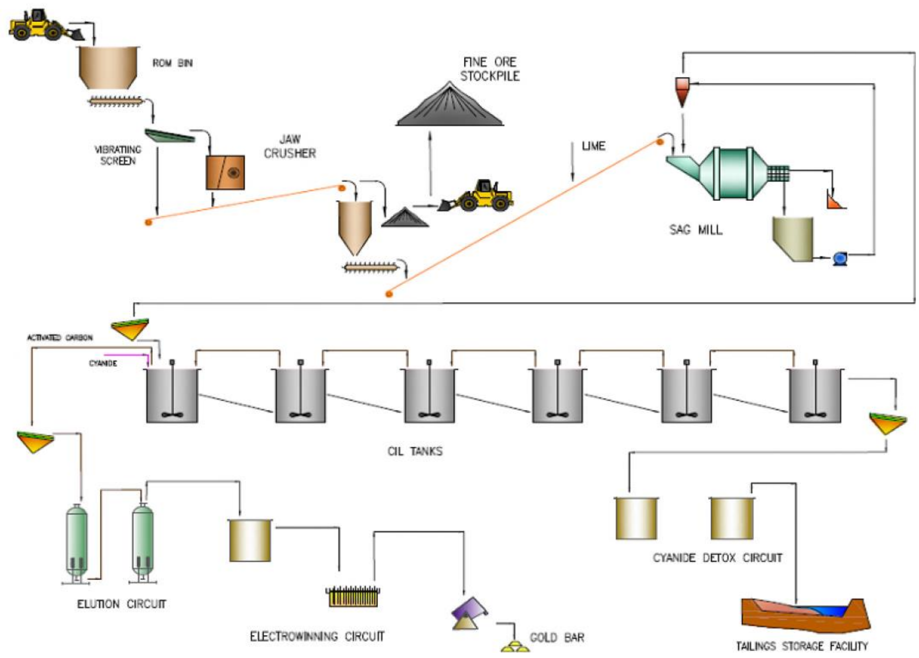
The DFS expects mining to be conventional truck-and-shovel, open-pit mining carried out by a mining contractor under the control of a KEFI technical team. The method envisages a combination of bulk mining and selective mining approaches on some of the ore-waste boundaries (5% of total material moved and 21% of ore will be selectively mined).

Ore is visual, the albite altered ore is white in colour and the waste is green in colour, this allows for visual control during grade control and selective mining.

ROM ore will be dumped in stockpiles from where it will be crushed to 600mm with a P_{80} of 150mm for the SAG mill. The single stage SAG mill will operate in closed circuit with hydrocyclones at a rate of 300tph at the start, reducing to 270tph later in the mine life, as oxide ore is replaced by harder, fresher ore.

Gold will be recovered by a standard carbon-in-leach (CIL) circuit with elution and electrowinning before smelting into a doré bar for export (Figure 5).

Figure 5. Tulu Kapi – proposed flow sheet



Source: WH Ireland research, KEFI Copper and Gold

Infrastructure: Tulu Kapi requires investment in basic infrastructure, which will be funded by $20m Ethiopian government funds. This includes connecting Tulu Kapi to the nearby town of Keley from which there is a good sealed road for access to the project. A new 15km road will be built to site, along with additional by-passes built around Keley.

Water: Sufficient water will be available for the plant by the collection and storage of water during the rainy season (average rainfall is 1.8m in the area), with extra water possible from the local Birbir river.

Tailings: The Tailings storage facility (TSF) will be constructed and operated as a downstream impoundment facility. The impoundment wall will be constructed in phases using selected borrow and mining waste. The base of the TSF is to be ripped and compacted to take advantage of the low permeability soils. The deposition of tailings is expected to occur predominantly from the front wall of the TSF.

Power: Grid power will be used from Ethiopian Electric Power Corporation's substation in Gimbi town, which is 47km along an agreed route from Gimbi to Keley to Tulu Kapi and which will be supplied by a new HT 132kV Overhead Power line. The maximum demand for the Tulu Kapi plant is estimated to be 15MW and there is confirmed capacity to supply additional power if there is further need in future. A 2MW emergency diesel power plant will also be installed to provide emergency backup power to critical process equipment in the event of a grid power failure.

Project finance

KEFI has so far detailed a strong approach to financing with the minimum of dilution to shareholders expected. It has taken time and management perseverance, but final funding solutions seem to be ready for signing. To date, KEFI expects to have commitments for ~$309m required (inc. working capital), which would leave KEFI owning 75-80% of the project.

Table 6. Tulu Kapi financing – proposed

Funding $m	Notes
140m	Senior debt (repaid from free cash)
70m	Contract miner (repaid out of mining costs)
25m	$20m Government equity (for 20% of TKGM). $5m local institutions
74m	Equity-risk capital
	$14m – Mining contractor charges (convertible loan in KEFI at year 2 prevailing share price)
	$15m – offtake (initial term sheet signed)
	$45m – local investment (convertible loan in KEFI at year 3 prevailing share price)
$309m	**Total**

Source: WH Ireland research, KEFI Copper and Gold

Table 7. Tulu Kapi capex (June 2020 update)

$m	Notes
110	Processing infrastructure
27	Mining infrastructure
20	Off-site infrastructure
45	Owner's costs (community, working capital, project management)
33	Interest during construction and other finance effects
$235m	**Total funding requirement**
70	Contract miner – purchase of mobile equipment, etc.
15	Contingencies (inc. KEFI exploration and corporate funding)
$320m	**Total capex for Tulu Kapi**

Source: WH Ireland research, KEFI Copper and Gold

Overall, the current finance plan (Table 6) caters for all planned development expenditure at TKGM in addition to all exploration and corporate funding requirements (Table 7), estimated at c. $320 million ($310-330 million, depending upon final procurement price confirmations)

WHI forecast cashflow

Table 8. Tulu Kapi economics (100% of project) – KEFI and WHIe

	KEFI DFS (June 2020)*	WHIe OP	WHIe OP + UG
Throughput	2Mt/yr	2Mt/yr	+ 3.9Mt UG ore
LOM	8 years	8 years	12 years
Operating costs per year	$48/t	$48/t	+$50/t UG costs
Gold price	$1,600/oz	$1,550/oz	$1,550/oz
AISC	~$870/oz	$856/oz (wt av.)	$780/oz (wt av.)
After tax NPV_8	$363m	$153m	$291m
After tax IRR	45%	25%	29%
Pre-production capex	$221m	$220m	+$75m UG mine

Source: WH Ireland research, KEFI Copper and Gold
* from the RNS 19.6.2020, "*Tulu Kapi Gold Project Plans Updated with Reduced Capex*"

Table 9: Tulu Kapi DCF ($m) – 100%

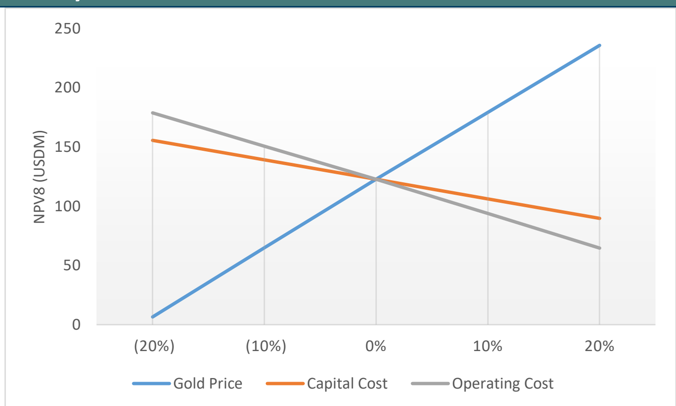
		Yr-2	Yr-1	Yr 1	Yr 2	Yr 3	Yr 5	Yr 8
Ore treated	kt			1,500	2,000	2,000	2,000	2,000
Gold	g/t			2.4	2.3	2.4	2.4	1.6
Gold recovery	%			93.5%	93.5%	93.5%	93.5%	93.5%
Gold recovered	kg			3296	4338	4395	4395	2992
Gold recovered	koz			106	139	141	141	96
Gold price	$/oz			1,650	1,550	1,550	1,550	1,550
Net revenue	**$m**			**174.8**	**216.2**	**219.0**	**219.0**	**149.1**
Mine site cost	$m			(71.3)	(95.0)	(95.0)	(95.0)	(95.0)
Royalty	$m			(12.2)	(15.1)	(15.3)	(15.3)	(10.4)
EBITDA	**$m**			**91.3**	**106.0**	**108.6**	**108.6**	**43.6**
depreciation	$m			(23.3)	(33.4)	(33.4)	(33.4)	(29.4)
EBIT	**$m**			**68.0**	**72.6**	**75.2**	**75.2**	**14.2**
interest	$m			(11.2)	(8.4)	(5.6)	-	-
Tax	$m			(13.5)	(15.8)	(17.4)	(19.1)	(0.8)
Operating profit	**$m**			**43.3**	**48.4**	**52.2**	**56.2**	**13.5**
Add back depreciation	$m			23.3	33.4	33.4	33.4	29.4
Sustaining capex	$m			(2.0)	(5.0)	(5.0)	(5.0)	(1.0)
Expansion capex	$m	(100.0)	(100.0)	(20.0)	-	-	-	-
Cashflow	**$m**	**(100.0)**	**(100.0)**	**44.5**	**76.8**	**80.6**	**84.6**	**41.9**
AISC	*$/oz*			(807)	(826)	(817)	(817)	(1107)
IRR (%)		25						
NPV_5 ($m)		207						
NPV_8 ($m)		153						
NPV_{10} ($m)		124						
NPV_{15} ($m)		66						

Source: WH Ireland research. NOTE GAP IN YEARS

DCF sensitivity

We use a constant long-term gold price of $1,550/oz in our DCF model. With prices well in excess of this, now is the perfect time to be a gold miner. We maintain a forward price of $1,500/oz in our model but recognise that gold prices could be higher than this, for longer. Using a 20% uplift in our price to $1,860-/oz (still lower than recent highs), the NPV_8 would rise to $236m (from $123m). The DCF is not so sensitive to capital cost.

Figure 6: Sensitivity of the ISR DCF



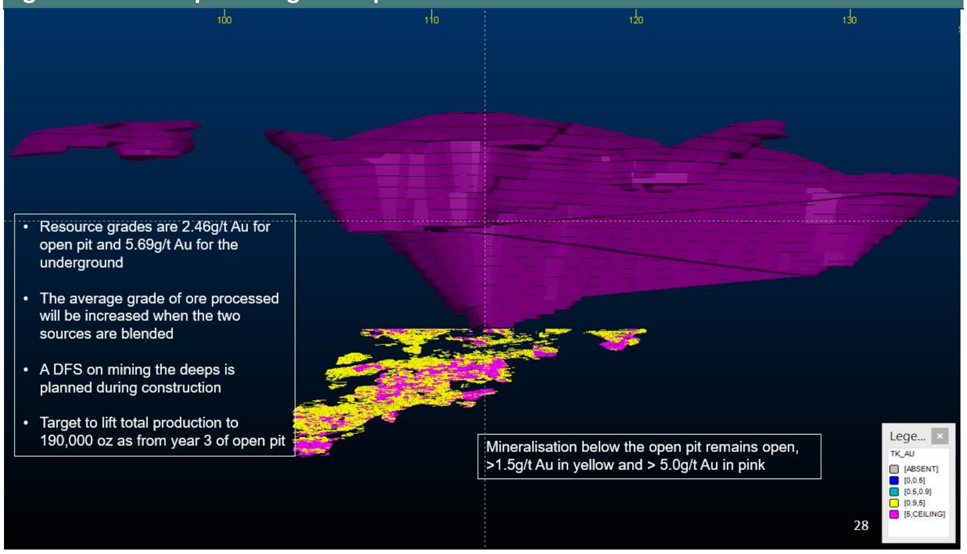
Source: WH Ireland research

Future potential of the Tulu Kapi area

The Tulu Kapi orebody has a number of features that indicate significant upside to its reported resource and reserves: the company assumed a gold price of $1,098/oz for setting cut-off grades both open pit and underground (which is obviously conservative), the vertical feeder structures in the open pit have yet to be drilled as the focus to date has been on the sub-horizontal lodes and the orebody is open at depth and we expect the underground resource to grow significantly once there is the cash available to drill it properly.

The underground resource grade is roughly double that of the open pit and would be considered high grade compared with other global underground projects. KEFI expects to drill the underground potential aggressively with the aim of bringing an underground mine into the production schedule from into the start of the project. KEFI's plan (if successful) will raise production at Tulu Kapi from 140koz to 190koz over an unspecified mine life. This is a speculative plan now but, given our understanding of this type of mineralisation in other mines around the world (depth extensions over several kms, long-strike lengths, increasing grade with depth), it is entirely plausible, in our opinion. We include four years of underground production towards the end of the mine life at Tulu Kapi but are of the opinion that this downplays the extent of the resource potential, and bringing the higher-grade ore forward into the mine plan would increase both the valuation and scale of KEFI.

Figure 7: Tulu Kapi underground potential



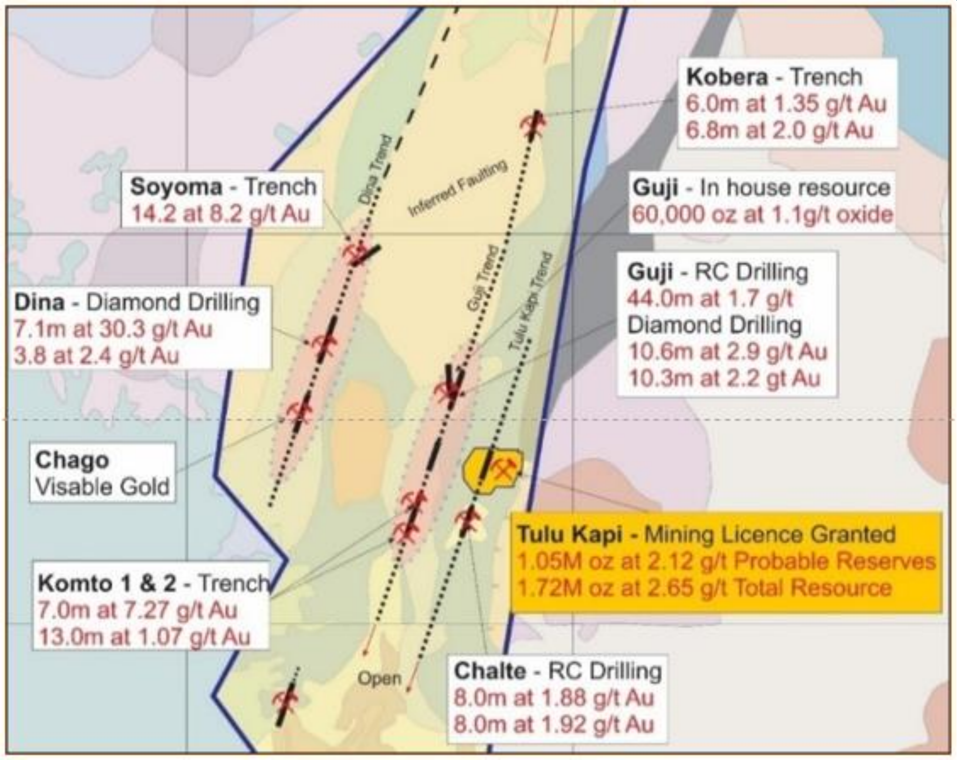
Source: WH Ireland research, KEFI Gold + Copper

It is important not to forget the wider district potential (Figure 8). Tulu Kapi has been the main focus of recent attention, but KEFI's geologists have defined several walk-up drill targets in the Tulu Kapi district exploration licence application area. These lie on defined structural trends and have been validated with drilling (diamond and RC), trenching and rock sampling. Crucially:

- KEFI owns 100% of these prospects. The mining licence is 20%-owned by the government, but the remaining licence is all in KEFI's hands.
- The prospects are all within a trucking radius of the Tulu Kapi plant – any satellite deposit discovered could have a lower hurdle to bring into production.
- This is just the beginning as KEFI develops the "Tulu Kapi" district.

- KEFI has an internal exploration estimate of a further 300-500koz grading 1.5g/t at the Guji-Komto Prospect. In our opinion, this is a starting point or minimum.

Figure 8: Wider Tulu Kapi district potential



Source: WH Ireland research, KEFI Gold + Copper

Hawiah (Saudi Arabia) – KEFI 34%

Hawiah is held under a JV between KEFI (34%) and a local Saudi partner called ARTAR (66%); KEFI is the operator. The project is located in the Makkah region in the western part of Saudi Arabia and approximately 150km east of the regional capital of Taif.

Geology

Hawiah occurs in a bimodal mafic and felsic volcaniclastic succession in a broad anticline, Hawiah's silicified and gossanous horizon was first mapped and trenched by the BRGM in the 1980s.

The Hawiah VMS deposit is located in the Wadi Bidah Mineral Belt (WBMB) where it forms a prominent north-south trending ridge over a total strike length of approximately 6km. The rocks along the ridge comprise a typical suite of chert-breccias, banded ironstones, and volcanic breccias as well as gossans.

Resources

The Hawiah deposit is weathered and enriched at the surface: oxide, transitional and then fresh with depth. The oxide domain typically shows supergene gold enrichment with minor secondary copper, while certain parts of the transitional domain show copper enrichment. The fresh mineralised domain appears to be a standard dominantly pyritic stratiform massive sulphide body containing variable amounts of copper, zinc gold and silver.

The resource estimate in Table 10 is based on 12km of diamond drilling from September 2019. At the time of the resource estimate, the Hawiah deposit has only been drill tested to a vertical depth of 350m below surface and it remained open at depth – drilling suggested that copper and gold grades increased with depth and thickness of the VMS might also be increasing. Further drilling (Phase 3 – completed in April 2021) confirmed that the grade and thickness increases and extended the depth to 590m below surface (still open) and to 1.2km along strike (still open) – see Figure 11. A further 27 diamond drill holes (13.4km) was completed in the Phase 3 drilling with an additional 13.5km of diamond drilling under way as part of a Phase 4 programme.

Figure 9. Hawiah Gossan outcrop

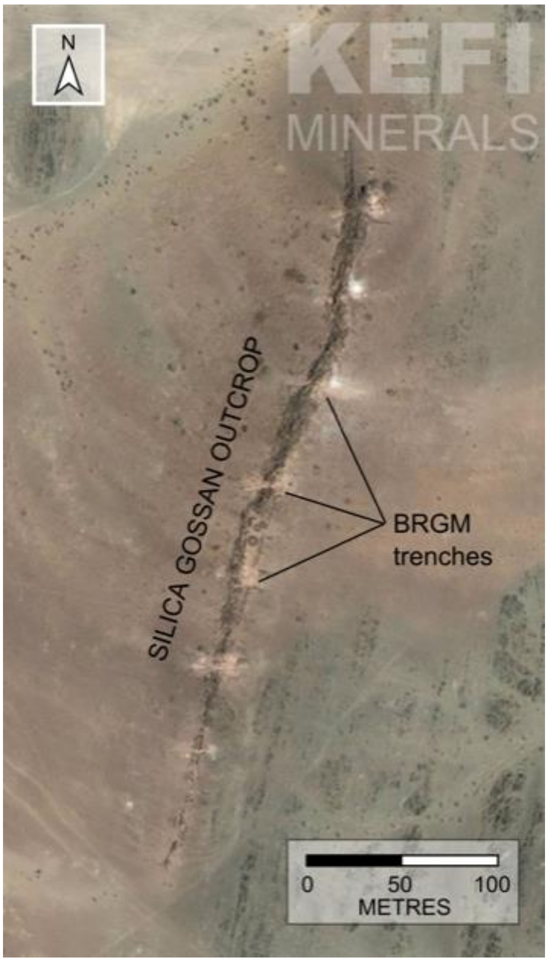


Figure 10: The Hawiah Gossan

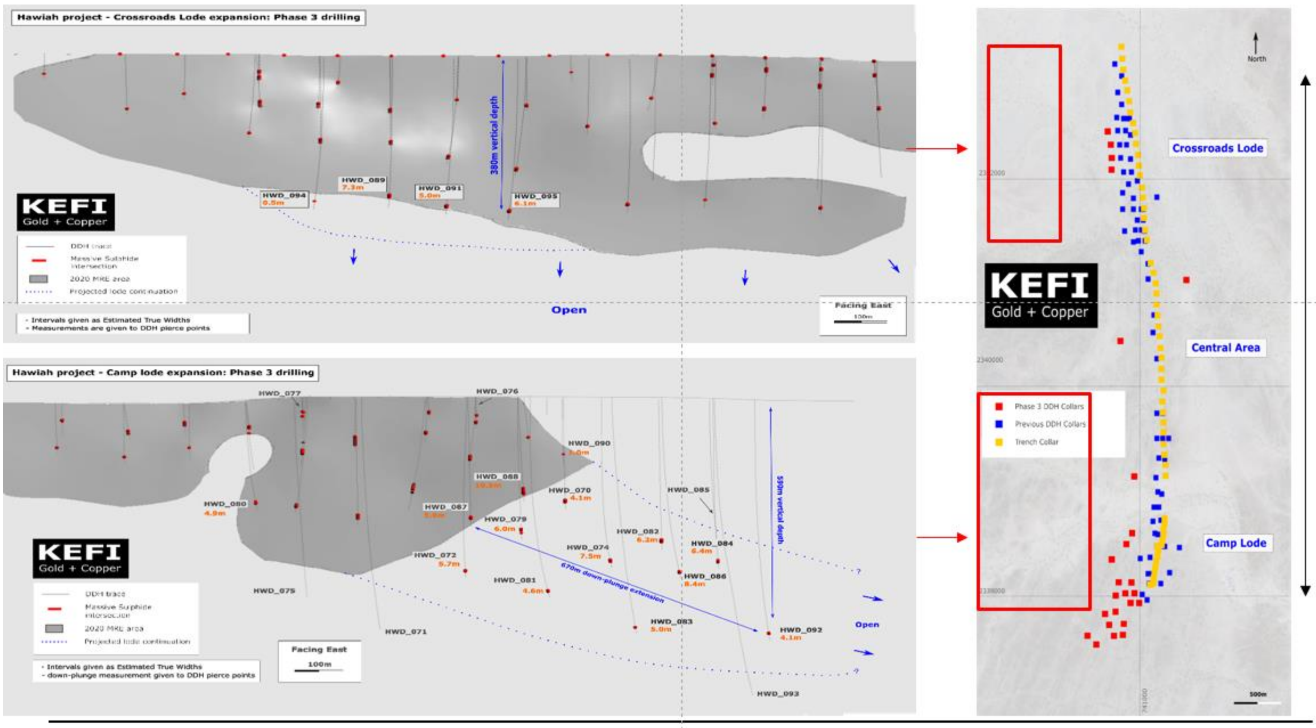
Source: WH Ireland research, KEFI Copper and Gold

Table 10. August 2020 (JORC 2012) resource for Hawiah

		Mt	Cu%	Zn%	Au g/t	Ag g/t	Cu kt	Zn kt	Au koz	Ag koz
Inferred	Oxide OP	0.1	0.1	0.03	1.7	3.9	0.1	0.04	7	16
Inferred	Trans. UG	2.0	1.1	0.8	0.7	12.0	21	16	45	763
Inferred	Fresh UG	17.2	0.9	0.8	0.5	10.1	147	141	295	5,595
Inferred	**Total**	**19.3**	**0.9**	**0.8**	**0.6**	**10.3**	**168**	**157**	**349**	**6,373**

Source: WH Ireland research, KEFI Copper and Gold

Figure 11. Hawiah Camp lode southern extension drilling



Source: WH Ireland research, KEFI Copper and Gold

Preliminary economic assessment (PEA) details

A PEA was completed in September 2020 after completion of the Maiden Resource. It envisages an underground mine (mining by long-hole open stoping) supplying 2Mt/yr for processing through a standard flotation flow sheet (crush, grind, differential flotation to produce two concentrates) followed by cyanide leaching of the tails to produce a gold-silver doré. The ore is likely fine-grained and so might require fine grinding to achieve sufficient liberation. The inputs to the PEA were based on benchmarks for technical (metal recovery and distribution) and operational (capex/opex).

We have modified the high level details published by KEFI (Table 12) in the PEA and used some of our own assumptions.

Perhaps the biggest departure that WHI takes from the PEA is mine life. While the PEA uses a mine life of seven years (14Mt from the 19Mt Inferred resource), we use 14 years (28Mt of resources). With the Phase 3 drilling announced in April 2020 doubling the strike and depth extensions of the deposit, we believe this still underplays the true size of the resource. A new mineral resource estimate incorporating the data from the additional 27km of diamond drilling is expected to materially increase the size of the resource. In this respect, we still believe our DCF to be a conservative forecast.

Pre-feasibility study (PFS)

A PFS is planned for completion in 2022 alongside a Mining Licence application; KEFI is fast tracking this important discovery to the next stage.

WHI forecast cash low

Table 11: Hawiah DCF ($m) – 100%

		Yr-2	Yr-1	Yr 1	Yr 2	Yr 5	Yr 10	Yr 14
Ore processed	Kt			2,000	2,000	2,000	2,000	2,000
Cu	%			1.0%	0.8%	0.9%	1.2%	1.2%
Zn %	%			0.8%	0.8%	0.9%	1.0%	1.0%
Au g/t	g/t			0.6	0.5	0.5	0.5	0.5
Ag g/t	g/t			10.9	9.8	9.8	9.8	9.8
Cu recovery	%			87	87	87	87	87
Zn recovery	%			90	90	90	90	90
Au recovery	%			69	69	69	69	69
Ag recovery	%			69	69	69	69	69
Au-Ag doré	t conc	-	-	8.1	7.2	7.2	7.2	7.2
Au contained	koz	-	-	16.1	13.3	13.3	13.3	13.3
Ag contained	koz	-	-	217.1	194.6	194.6	194.6	194.6
Cu-Au concentrate	kt conc	-	-	78.6	63.3	71.2	91.0	94.9
Cu	%	-	-	22.0	22.0	22.0	22.0	22.0
Cu contained	kt	-	-	17.3	13.9	15.7	20.0	20.9
Au contained	koz	-	-	11.7	9.7	9.7	9.7	9.7
Ag contained	koz	-	-	266.1	238.5	238.5	238.5	238.5
Zn concentrate	kt conc	-	-	24.2	25.7	27.3	30.5	32.1
Zn	%	-	-	53.0	53.0	53.0	53.0	53.0
Zn contained	kt	-	-	12.8	13.6	14.5	16.2	17.0
Zn price	$/lb	-	-	1.2	1.2	1.2	1.2	1.2
Cu price	$/lb	-	-	3.5	3.5	3.5	3.5	3.5
Pb price	$/lb	-	-	1.0	1.0	1.0	1.0	1.0
Au price	$/oz	-	-	1550	1550	1550	1550	1550
Ag Price	$/oz	-	-	27.0	27.0	27.0	27.0	27.0
Au-Ag doré net rev	$m	-	-	27.9	23.5	23.5	23.5	23.5
CuAu conc. net rev	$m	-	-	134.5	109.3	120.4	148.3	153.8
Zn conc. net rev	$m	-	-	21.6	22.9	24.3	27.2	28.6
Net revenue	**$m**	**-**	**-**	**183.9**	**155.7**	**168.2**	**198.9**	**205.9**
Operating costs	$m	-	-	(90.0)	(90.0)	(90.0)	(90.0)	(90.0)
Royalty	$m	-	-	-	-	-	-	-
EBITDA	**$m**	**-**	**-**	**93.9**	**65.7**	**78.2**	**108.9**	**115.9**
depreciation	$m	-	-	(17.9)	(9.9)	(9.9)	(12.9)	(16.9)
EBIT	**$m**	**-**	**-**	**76.0**	**55.8**	**68.4**	**96.1**	**99.1**
interest		-	-	(12.0)	(8.0)	-	-	-
tax	$m	-	-	(12.8)	(9.6)	(13.7)	(19.2)	(19.8)
Operating profit	**$m**	**-**	**-**	**51.2**	**38.3**	**54.7**	**76.9**	**79.3**
Add back depreciation	$m	-	-	17.9	9.9	9.9	12.9	16.9
Sustaining capex	$m	-	-	-	(8.0)	(8.0)	(5.0)	(1.0)
Expansion capex	$m	(175.0)	(75.0)	-	-	-	-	-
Cashflow		(175.0)	(75.0)	69.1	40.1	56.6	84.7	95.1
IRR (%)		20						
NPV_5 ($m)		365						
NPV_8 ($m)		234						
NPV_{10} ($m)		169						
NPV_{15} ($m)		59						

Source: WH Ireland research. NOTE GAP IN YEARS

Table 12. Hawiah PEA inputs – KEFI and WHI estimates

	KEFI PEA (Sep'20)	WHIe
Throughput	2Mt/yr	2Mt/yr
LOM	7 years	14 years
Operating costs per year	$35/t	$45/t
Revenue per year	$153m/yr	$167m/yr
After tax NPV_8	$96m	$234m
After tax IRR	22%	20%
Pre-production capex	$222m	$250m
Copper price*	$3.0/lb	$3.5/lb
Zinc price*	$1.05/lb	$1.15/lb
Gold price*	$1,956/oz	$1,550/oz
Silver price*	$27.5/oz	$27.0/oz

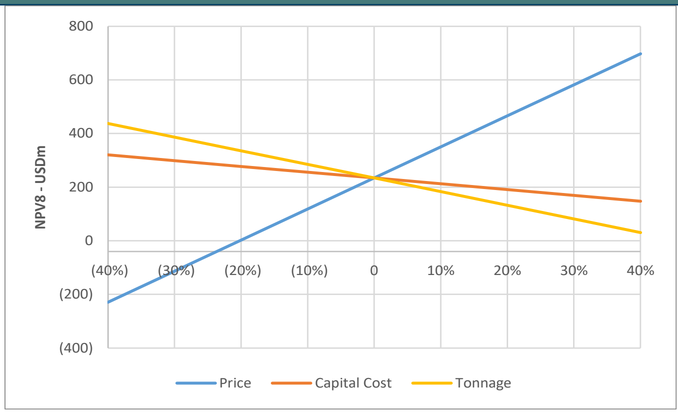
Source: WH Ireland research, KEFI Copper and Gold
* Prices: KEFI PEA were August 2020 average prices. WHIe are WH Ireland long-term forecasts

DCF sensitivity

Most sensitive to metal prices

We use constant long-term prices in our DCF model (copper: $3.5/lb; zinc: $1.1/lb; gold: $1,550/oz; and silver: $27/oz). With prices at record highs, many commentators are linking the future electrification of our lives with the long-term supply picture for copper and seeing the potential for higher prices, for many metals, for longer. Although we don't subscribe to the long-term copper price being $15,000-$20,000/t (for reasons we set out below in our section on the copper market), it is true that the price could be higher than our long-term expectation, particularly over the short-to-medium term. A 20% increase in all prices over the life of mine (Figure 12) would double the NPV_8 to $466m (from $234m). The DCF is not so sensitive to capital cost.

Figure 12: Sensitivity of the Hawiah project DCF



Source: WH Ireland research

Jibal Qutman (Saudi Arabia) – KEFI 34%

The Jibal Qutman licence lies in the central southern region of the ANS and covers an area of 99.9km^2. The licence overlies part of the prospective Nabitah-Tathlith Fault Zone (NTFZ), a 300km-long structure with more than 40 gold occurrences (some with trenching and drilling by the USGS) and ancient gold mines.

Jibal Qutman is a shear zone-hosted, mesothermal gold deposit within the NTFZ, which is a suture between an island arc sequence in the west and the Hajizah Gneiss Belt in the east. Jibal Qutman is not alone and there are more than 40 gold occurrences.

KEFI completed an open-pit PFS on the project in 2015, which demonstrated a CIL operation with all-in costs (including operating costs, capital expenditure and closure costs) of less than $1,000 per ounce.

Exploration drilling has identified additional oxide gold mineralisation that is amenable to heap leach gold processing.

Table 13. Jibal Qutman resources

		Mt	g/t gold	Contained gold (koz)
Oxide	Indicated	8.3	0.86	229
Oxide	Inferred	2.8	0.64	58
Oxide	**Total**	**11.1**	**0.80**	**287**
Sulphide	Indicated	9.7	0.86	269
Sulphide	Inferred	7.6	0.72	176
Sulphide	**Total**	**17.3**	**0.80**	**446**
Oxide + Sulphide	**Indicated**	**18.0**	**0.86**	**498**
Oxide + Sulphide	**Inferred**	**10.4**	**0.70**	**235**
Oxide + Sulphide	**Total**	**28.4**	**0.80**	**733**

Source: WH Ireland research, KEFI Copper and Gold,

The Main Zone orebody is a 900m-long, N-S quartz vein system, with a single high-angle vein up to 4m thick that, along strike, splits into multiple veins. The ore consists of pyrite and minor tetrahedrite, galena and sphalerite with coarse gold.

KEFI drilling undertaken identified gold resources in six areas − Main Zone, West Zone, South Zone, 3K Hill, 4K Hill and Red Hill.

The project remains on hold awaiting Mining Licence tenure confirmation. These applications are still pending after the overhaul of mining and exploration regulations that came into effect in early 2021, and also the review by the Defence Ministry of activities in that area.

WHI Cashflow for Jibal Qutman

Table 14: Jibal Qutman DCF ($m) – 100%

		Yr-2	Yr-1	Yr 1	Yr 2	Yr 3	Yr 5	Yr 8
Ore mined	kt			600	1,500	1,500	1,500	1,000
Waste mined	kt			2,200	3,000	3,000	3,000	3,000
Ore treated	kt			1,100	1,500	1,500	1,500	1,500
Gold	g/t			0.9	0.9	0.9	0.85	0.8
Gold recovery	%			70%	70%	70%	70%	70%
Gold recovered	kg			693	945	945	892.5	840
Gold recovered	koz			22.3	30.4	30.4	28.7	27.0
Gold price	$/oz			1,550	1,550	1,550	1,550	1,550
Net revenue	**$m**			**34.5**	**47.1**	**47.1**	**44.5**	**41.9**
Mine site cost	$m			(16.7)	(22.8)	(22.8)	(21.5)	(20.3)
Royalty	$m			-	-	-	-	-
EBITDA	**$m**			**17.8**	**24.3**	**24.3**	**23.0**	**21.6**
depreciation	$m			(6.7)	(8.5)	(8.5)	(7.5)	(7.5)
EBIT	**$m**			**11.1**	**15.8**	**15.8**	**15.5**	**14.1**
interest	$m			(2.8)	(1.9)	(0.9)	-	-
tax	$m			(1.7)	(2.8)	(3.0)	(3.1)	(2.8)
Operating profit	**$m**			**6.6**	**11.2**	**11.9**	**12.4**	**11.3**
Add back depreciation	$m			6.7	8.5	8.5	7.5	7.5
Sustaining capex	$m			(2.0)	(2.0)	(2.0)	(1.0)	(1.0)
Expansion capex	$m		(50.0)	-	-	-	-	-
Cashflow	$m		(50.0)	11.4	17.6	18.4	18.9	17.8
AISC	*$/oz*			*(840)*	*(816)*	*(816)*	*(783)*	*(783)*
IRR (%)		29						
NPV_5 ($m)		56						
NPV_8 ($m)		42						
NPV_{10} ($m)		34						
NPV_{15} ($m**)**		20						

Source: WH Ireland research. NOTE GAP IN YEARS

Table 15. Jibal Qutman PEA inputs – KEFI and WHI estimates

	KEFI PEA (May 2015)	WHIe
Throughput	1.5Mt/yr	1.5Mt/yr
Production	140koz over 4-5 years	30koz/yr
LOM	4-5 years	8 years
Cash operating costs per year	$600/oz	$750/oz
Pre-production capex	$30m	$50m
Gold price	$1,250/oz	$1,550/oz

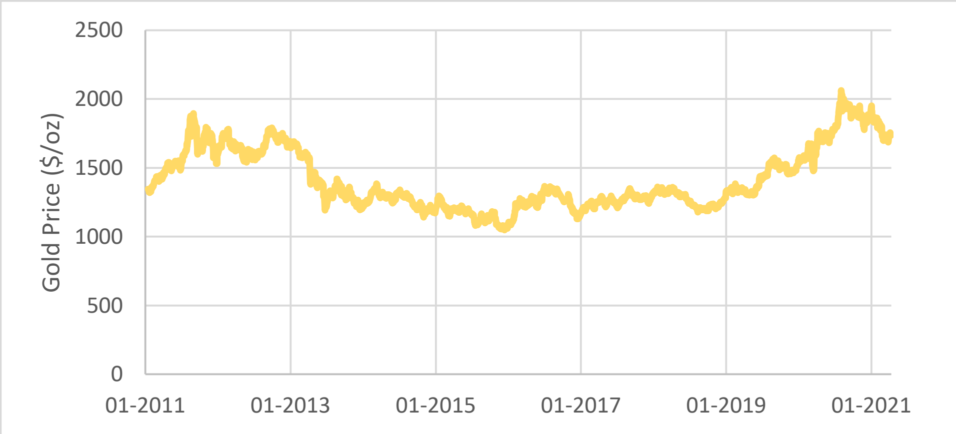
Source: WH Ireland research, KEFI Copper and Gold

Gold market outlook

Gold is a store of wealth. It has applications in electronics, but its principal use is as an investment either in bars held by countries or institutions (commodity funds or sovereign wealth funds) or in jewellery.

In our view, the gold price is set to remain robust for several years following the latest pandemic. It was already undervalued against paper asset classes, but with the extraordinary "printing of money" – either by "quantitative easing" or by new injections of money into the economy – the increase in the amount of "paper" money, by necessity, will push through to the price of gold.

Figure 13: 10-year history of the gold price (monthly prices – LME PM fix)



Source: WH Ireland research, www.indexmundi,com

The gold price did rise to historical highs above $2,000/oz in August 2020 on the back of concerns for the global economy during the COVID-19 global pandemic. The price has since slowly retraced but is still a strong enough price to generate outstanding profits for many producers and to encourage a renewed interest in the sector.

Copper market outlook

Copper is a highly ductile, semi-precious metal with high thermal and electrical conductivity and excellent corrosion resistance, finding extensive use in construction and appliances. By far the most common application is in moving electrons, be it in electricity transmission and distribution or home and appliance wiring.

Supply and demand

Demand growth between 2010 and 2020 averaged 3.9%, and, since 1977, has averaged 2.6%. China accounted for ~50% of global demand in 2020e. Copper supply was ~25.5Mt in 2020e (UBS forecasts) – which includes copper contained in concentrate and copper cathode produced at mine sites. Demand was an estimated 26.1Mt in 2020e with the market moving from surplus to small deficit; this will have a positive influence on price going forward, as new supply capacity was required.

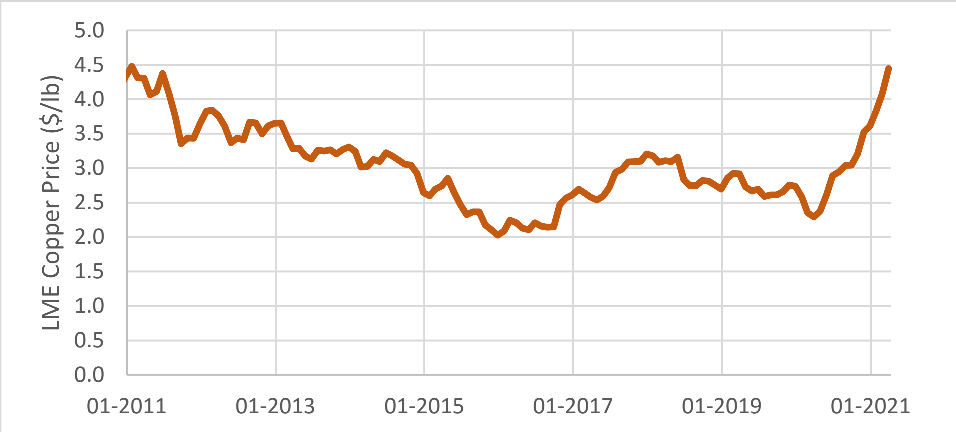
Market and price expectations

The market operates roughly in balance and a global pipeline of projects has always meant that project supply kept pace with anticipated future demand. Recent reports have forecast that the copper price could rise well beyond historical levels – and we are of the opinion that the current bull run will lead to record prices; but to what level?

Prices of $15,000/t (or even $20,000t) copper will be unsustainable, in our opinion, because of either an impact on supply (e.g. encouraging too many projects or making the collection of scrap more economic) or dampening demand (by substitution with e.g. aluminium or "thrifting" – using less copper in applications).

We set our long-term copper price at $3.50/lb, which we think is high enough to encourage enough new supply but not high enough that demand will be damaged by substitution and thrifting.

Figure 14: 10-year history of the copper price (monthly prices – COMEX)



Source: WH Ireland research, www.indexmundi,com

Shareholders

Table 16: KEFI Copper and Gold shareholders (28 February 2020)

	Shares (m)	Percentage holding
RAB Capital	262.7	12.2%
Directors (or others holding managerial responsibility)	86.1	4.0%
	2,153	**100%**

Source: WH Ireland research, KEFI Copper and Gold
Note: 16% of shares are not in Public hands. Directors own 1.6% of the outstanding share capital

Options and Warrants – 145.3m

Country profiles

Ethiopia

Ethiopia is the second-most populous country in Africa (110m (e) people in 2021) and has a nascent democracy after decades of central planning and government instability. It is landlocked after the secession of Eritrea after a civil war with the border was finally settled in 2018; to agree the 2007 demarcated coordinates.

Figure 15: Ethiopia profile

Source: WH Ireland research, CIA Factbook

The economy grew at a fast rate during the past decade with rates of growth in GDP at between 8% and 16%. Government spending on infrastructure sustained this growth with many changes in the agricultural and service sectors. The challenge is to move more people from the agricultural sector, which still accounts for more than 70% of Ethiopia's employment, despite the value of the service sector now being larger in GDP terms.

To support industrialisation, Ethiopia plans to increase installed power generation capacity by 8,320MW, up from a capacity of 2,000MW, by building three more major dams and expanding to other sources of renewable energy. Centrally, the government can help exports by devaluing the currency; e.g. in 2017, the government devalued the birr by 15% to increase exports and alleviate a foreign currency shortage in the country.

KEFI will play right into the heart of Ethiopia's transformation by exporting a valuable dollar-earning commodity and modernising the Ethiopian Mining industry.

Saudi Arabia

Figure 16: Saudi Arabia profile

Source: WH Ireland research, CIA Factbook

Saudi Arabia has an oil-based economy with strong government controls over major economic activities. With ~16% of the world's oil reserves it is the largest exporter of oil and petrol products with the oil sector accounting for roughly 87% of budget revenues, 42% of GDP, and 90% of export earnings. It is trying to diversify and grow the private sector and this is where the opportunity lies in the mineral sector for KEFI for which there are established precedents to bring new mines into production.

KEFI team

Board members

Harry Anagnostaras-Adams, Executive Chairman – Harry Anagnostaras-Adams was founder or co-founder of Citicorp Capital Investors Australia, investment company Pilatus Capital, Australian Gold Council, EMED Mining, KEFI Minerals and Cyprus-based Semarang Enterprises. He has overseen a number of start-ups in those and their related organisations, principally through the roles of Chairman, Deputy Chairman or Managing Director. He qualified as a Chartered Accountant while working with PricewaterhouseCoopers and has a Master of Business Administration from the Australian Graduate School of Management.

John Leach, Finance Director – John Leach has more than 25 years' experience in senior executive positions in the mining industry internationally. He holds a Bachelor of Arts (Economics) degree and a Master of Business Administration. He is a Member of the Institute of Chartered Accountants (Australia), a Member of the Canadian Institute of Chartered Accountants, and is a Fellow of the Australian Institute of Directors.

Norman Ling, Non-Executive Director – Norman Ling was a member of the British diplomatic service for more than 30 years, for the last 10 with the rank of ambassador. He has served in a wide range of countries in the Middle East and Africa. His last post, before retirement, was as Ambassador to Ethiopia, Djibouti and the African Union. For the past two years, he has been actively involved with development of the mining industry in Ethiopia.

Richard Robinson, Non-Executive Director – Richard Robinson has been involved for more than 40 years in the international gold, platinum, base metal and coal industries. He spent more than 20 years at Gold Fields of South Africa Ltd where he had executive responsibility for gold operations, gold exploration, international operations, the base metals and coal operations, and all the group commercial activities. His experience also includes being Managing Director of Normandy LaSource SAS, Non-Executive Chairman of the private Swiss multinational Metalor Technologies International SA and Non-Executive Director of Recylex SA.

Adam Taylor, Non-Executive Director – Adam Taylor is the founder, Chairman and former CEO of FirstWave Group BV, Africa's leading vertically integrated aquaculture group, which he established in 2011. He was previously Managing Director of Oakfield Holdings, an Africa-focused investment company, and prior to that, a Portfolio Manager at Liongate Capital Management, where he was responsible for commodity sector hedge fund investments.

Mark Tyler, Non-Executive Director – Mark Tyler was previously a mining investment banker in London and South Africa, including as co-head of Mining and Resources Finance at Nedbank, a South African bank. He is currently a senior resources advisor to Exotix Capital and the London representative for Auramet International, a precious metal merchant financier.

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Recommendation	Total Stocks	Percentage %	Corporate	Percentage %
Corporate	59	95.2	59	100.0
Buy	2	3.2	0	0.0
Speculative Buy	0	0.0	0	0.0
Outperform	1	1.6	0	0.0
Market Perform	0	0.0	0	0.0
Underperform	0	0.0	0	0.0
Sell	0	0.0	0	0.0
Total	**62.0**	**100.0**	**59.0**	**100.0**

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Company/Issuer Disclosures

Company Name	Table of interest number	12-month recommendation history	Date
KEFI Copper and Gold (KEFI)	4	Corporate	21.06.21

http://research.whirelandplc.com/research/regulatory.asp

Companies Mentioned

Company Name	Recommendation	Price	Price Date/Time
African Gold Group, Inc. (TSXV:AGG)	No Rec	CAD 0.16	18/06/2021 16:30
Anglo Asian Mining PLC (AIM:AAZ)	No Rec	GBP 1.44	18/06/2021 16:30
Caledonia Mining Corporation Plc	Corp	GBP 10.05	18/06/2021 16:30
Centamin plc (LSE:CEY)	No Rec	GBP 1.07	18/06/2021 16:30
Cora Gold Limited (AIM:CORA)	No Rec	GBP 0.08	18/06/2021 16:30
Endeavour Mining plc (TSX:EDV)	No Rec	CAD 29.5	18/06/2021 16:30
Galiano Gold Inc. (TSX:GAU)	No Rec	CAD 1.38	18/06/2021 16:30
Golden Star Resources Ltd. (TSX:GSC)	No Rec	CAD 3.67	18/06/2021 16:30
Hummingbird Resources PLC	No Rec	GBP 0.2	18/06/2021 16:30
Megado Gold Limited (ASX:MEG)	No Rec	AUD 0.13	18/06/2021 16:30
Newcore Gold Ltd. (TSXV:NCAU)	No Rec	AUD 0.64	18/06/2021 16:30
Orca Gold Inc. (TSXV:ORG)	No Rec	CAD 0.62	18/06/2021 16:30
Orezone Gold Corporation (TSXV:ORE)	No Rec	CAD 1.37	18/06/2021 16:30
Pan African Resources PLC (AIM:PAF)	No Rec	GBP 0.18	18/06/2021 16:30
Perseus Mining Limited (TSX:PRU)	No Rec	CAD 1.25	18/06/2021 16:30
Resolute Mining Limited (ASX:RSG)	No Rec	AUD 0.54	18/06/2021 16:30
Serabi Gold plc (AIM:SRB)	No Rec	GBP 0.65	18/06/2021 16:30
Shanta Gold Limited (AIM:SHG)	No Rec	GBP 0.15	18/06/2021 16:30
Thor Explorations Ltd. (TSXV:THX)	No Rec	CAD 0.35	18/06/2021 16:30
Tietto Minerals Limited (ASX:TIE)	No Rec	AUD 0.33	18/06/2021 16:30
Trans-Siberian Gold plc (AIM:TSG)	No Rec	GBP 1.17	18/06/2021 16:30
West African Resources Limited	No Rec	AUD 0.91	18/06/2021 16:30

Headline	Date
Production ready KEFI	21.06.21

Recommendation	From	To	Analyst
Corporate	21.06.21	present	CA

Current Analyst (CA), Previous Analyst (PA)

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