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## **MKANGO INCREASES INTEREST IN RARE EARTH MAGNET RECYCLER HYPROMAG TO 42%**

### **Highlights**

- **Mkango increases its interest in HyProMag from 25.0% to 41.6% following the exercise by HyProMag of its right to convert into shares of HyProMag the £200,000 convertible loan which formed part of the £500,000 financing package completed in January 2020**
- **Cash retained by HyProMag will be used to support the scale up of the patented Hydrogen Processing of Magnet Scrap (HPMS) technology at University of Birmingham and Tyseley Energy Park, centres of excellence for magnetic materials, green technology and clean energy innovation**
- **HyProMag is set to become the UK's first producer of recycled, sintered NdFeB rare earth magnets and materials, as used in electric vehicles, wind turbines and consumer electronics, further benefiting from an estimated 88% lower energy usage and close to zero human toxicity versus primary mining to separation to metal alloy to magnet production**
- **Mkango is evaluating further complementary opportunities to expand its position in rare earth recycling, benefiting from its increased strategic interest in HyProMag with associated offtake and supply rights, and HyProMag's early-mover competitive advantage in a sector with high technological barriers to entry**

**London / Vancouver: November 3, 2021** - Mkango Resources Ltd. (AIM/TSX-V: MKA) (the "Company" or "Mkango") is pleased to announce that it has increased its interest in HyProMag from 25% to 41.6% following the exercise by HyProMag of its right to convert into shares of HyProMag the £200,000 convertible loan which formed part of the £500,000 financing package completed in January 2020. HyProMag is pioneering commercialisation of short loop magnet recycling via the patented Hydrogen Processing of Magnet Scrap (HPMS) technology. The HPMS process for extracting and demagnetising neodymium iron boron ("NdFeB") alloy powders from magnets embedded in scrap and redundant equipment, was originally developed within the Magnetic Materials Group at the University of Birmingham and subsequently licenced to HyProMag.

Rare earth magnets play a key role in clean energy technologies including electric vehicles and wind turbine generators, and they are also a key component in electronic devices including mobile phones, hard disk drives and loudspeakers.

The UK has no domestic source of primary rare earths. The development of domestic sources of recycled rare earths via HPMS, a homegrown technology, is a significant opportunity for the UK to fast-track the development of sustainable and competitive rare earth magnet production. The short loop recycling processes which are being scaled up by HyProMag will have a significant environmental benefit, requiring 88% less energy compared to conventional production of magnets from primary sources and generating an estimated 98% saving in human toxicity.

Mkango has established a new UK subsidiary, Mkango Rare Earths UK Limited, to develop complementary opportunities in rare earth recycling and green technologies in the UK, and the Company is working closely with HyProMag and University of Birmingham to capitalise on growth opportunities.

Mkango's 41.6% interest in HyProMag is held via 100% owned subsidiary, Maginito Limited ("Maginito"), which has an option to increase its interest in HyProMag up to 49%. Maginito has the first right to supply primary production, if required for blending with recycled production from HyProMag, as well as product offtake and marketing rights.

**William Dawes, Chief Executive of Mkango stated:** *"We are very pleased to increase our interest in HyProMag, which has the technology, team and network of partnerships to unlock the supply chain for rare earth magnet recycling. We look forward to supporting its future growth as it scales up to commercial production and developing new opportunities for collaboration in the recycling sector. Recycling is a key component of Mkango's "mine, refine, recycle" strategy and will become an increasingly important part of the rare earth supply chain in the UK, Europe and elsewhere."*

### **About HyProMag**

The Magnetic Materials Group within the School of Metallurgy and Materials at the University of Birmingham has been active in the field of rare earth alloys and processing of permanent magnets using hydrogen for over 40 years. Originated by Professor Rex Harris, the hydrogen decrepitation method, which is used to reduce NdFeB alloys to a powder, is now ubiquitously employed in worldwide magnet processing.

In a further development, the MMG patented a process for extracting and demagnetising NdFeB powders from magnets embedded in redundant equipment using hydrogen in a process called HPMS (Hydrogen Processing of Magnet Scrap). This patent and related intellectual property is at the core of HyProMag's business. The MMG continues to develop new research and development opportunities, cooperates widely in Europe, including a major EU project, SusMagPro, which is also focused on recycling of magnets. The directors of HyProMag all provide their expertise to the MMG and there is potential for HyProMag to gain possible future access to new intellectual property.

HyProMag, European Metal Recycling Limited ("EMR") and University of Birmingham recently completed the REAP project (Rare-Earth Extraction from Audio Products). EMR, is a global leader in metal recycling, operating at 150 locations around the world, and the largest automotive recycler in the UK. EMR pre-processed automotive and flat screen TV loudspeaker scrap to provide a feed of scrap components containing NdFeB magnets to HyProMag. HyProMag used the HPMS process in conjunction with the University of Birmingham to extract the magnets as a demagnetised alloy powder, which was then successfully used in the remanufacture of magnets.

HyProMag also leads the Innovate UK grant funded project, "Rare-Earth Recycling for E-Machines" ("RaRE") with partners University of Birmingham, Advanced Electric Machines Research Limited, Bentley Motors Limited, Intelligent Lifecycle Solutions Limited and Unipart Powertrain Applications Limited.

RaRE will for the first time establish an end-to-end supply chain to incorporate recycled rare earth magnets into electric vehicles, whereby recycled magnets will be built into an ancillary electric motor to ultimately support the development of a commercial ancillary motor suite.

HyProMag's strategy is to establish recycling facilities for NdFeB magnets at Tyseley in Birmingham and other locations to provide a sustainable solution for the supply of NdFeB magnets and alloy powders for a wide range of markets including, for example, automotive and electronics. A number of product options are being evaluated including hydrogen decrepitated (HD) demagnetised powders suitable for magnet producers, alloy ingot remelted from HD powders suitable for alloy feed or magnet production, anisotropic alloy powders (HDDR) for bonded magnets and sintered NdFeB magnets as required by the RaRE project for automotive applications.

The founding directors of HyProMag, comprising Professor Emeritus Rex Harris, former Head of the MMG, Professor Allan Walton, current Head of the MMG, and two Honorary Fellows, Dr John Speight and Mr David

Kennedy, are leading world experts in the field of rare earth magnetic materials, alloys and hydrogen technology, and have significant industry experience. Following the investment by Maginito, HyProMag appointed William Dawes, a Director of Maginito and Chief Executive Officer of Mkango, to the Board of HyProMag.

For more information, please visit <https://hypromag.com/>

### **Market Abuse Regulation (MAR) Disclosure**

The information contained within this announcement is deemed by the Company to constitute inside information as stipulated under the Market Abuse Regulations (EU) No. 596/2014 ('MAR') which has been incorporated into UK law by the European Union (Withdrawal) Act 2018. Upon the publication of this announcement via Regulatory Information Service ('RIS'), this inside information is now considered to be in the public domain.

### **About Mkango Resources Limited**

Mkango's corporate strategy is to develop new sustainable primary and secondary sources of neodymium, praseodymium, dysprosium and terbium to supply accelerating demand from electric vehicles, wind turbines and other clean technologies. This integrated Mine, Refine, Recycle strategy differentiates Mkango from its peers, uniquely positioning the Company in the rare earths sector.

Mkango is developing Songwe Hill in Malawi with a Feasibility Study targeted for completion in Q1 2022. Malawi is known as "The Warm Heart of Africa", a stable democracy with existing road, rail and power infrastructure, and new infrastructure developments underway.

In parallel, Mkango recently announced that Mkango and Grupa Azoty PULAWY, Poland's leading chemical company and the second largest manufacturer of nitrogen and compound fertilizers in the European Union, have agreed to work together towards development of a rare earth Separation Plant at Pulawy in Poland. The Separation Plant will process the purified mixed rare earth carbonate produced at Songwe.

Through its ownership of Maginito ([www.maginito.com](http://www.maginito.com)), Mkango is also developing green technology opportunities in the rare earths supply chain, encompassing neodymium (NdFeB) magnet recycling as well as innovative rare earth alloy, magnet, and separation technologies. Maginito now holds a 41.6% interest in UK rare earth (NdFeB) magnet recycler, HyProMag ([www.hypromag.com](http://www.hypromag.com)) with an option to increase its interest to 49%.

Mkango also has an extensive exploration portfolio in Malawi, including the Mchinji rutile discovery, for which assay results are pending, in addition to the Thambani uranium-tantalum-niobium-zircon project and Chimimbe nickel-cobalt project.

For more information, please visit [www.mkango.ca](http://www.mkango.ca).

### **Cautionary Note Regarding Forward-Looking Statements**

This news release contains forward-looking statements (within the meaning of that term under applicable securities laws) with respect to Mkango, its business, HyProMag, the Separation Plant and Songwe. Generally, forward looking statements can be identified by the use of words such as "plans", "expects" or "is expected to", "scheduled", "estimates" "intends", "anticipates", "believes", or variations of such words and phrases, or statements that certain actions, events or results "can", "may", "could", "would", "should", "might" or "will", occur or be achieved, or the negative connotations thereof. Readers are cautioned not to place undue reliance on forward-looking statements, as there can be no assurance that the plans, intentions or expectations upon which they are based will occur. By their nature, forward-looking statements involve numerous assumptions, known and unknown risks and uncertainties, both general and specific, that contribute to the possibility that the predictions, forecasts, projections and other forward-looking statements will not occur, which may cause actual performance and results in future periods to differ materially from any estimates or projections of future performance or results expressed or implied by such forward-looking statements. Such factors and risks include, without limiting the foregoing, governmental action relating to COVID-19, COVID-19 and other market effects on global demand and pricing for the metals and associated downstream products for which Mkango is exploring,

researching and developing, factors relating the development of the Separation Plant, including the outcome and timing of the completion of the feasibility studies, cost overruns, complexities in building and operating the Separation Plant, changes in economics and government regulation, the positive results of a feasibility study on Songwe Hill and delays in obtaining financing or governmental approvals for, and the impact of environmental and other regulations relating to, Songwe Hill and the Separation Plant as well as HyProMag being able to commercialise its HPMS and other technologies, MMG being successful in developing new research and other opportunities (and whether these opportunities will be available to HyProMag), and whether HyPrMag is able to successfully establish recycling facilities for NdFeB magnets at Tyseley in Birmingham and other locations to provide a sustainable solution for the supply of NdFeB magnets and alloy powders. The forward-looking statements contained in this news release are made as of the date of this news release. Except as required by law, the Company disclaims any intention and assumes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by applicable law. Additionally, the Company undertakes no obligation to comment on the expectations of, or statements made by, third parties in respect of the matters discussed above.

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