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## MKANGO ANNOUNCES HYPROMAG EXPANSION INTO GERMANY

### Highlights

- **HyProMag Limited (“HyProMag”) subsidiary established in Germany to rollout commercialisation of HPMS (Hydrogen Processing of Magnet Scrap) technology into Germany and Europe, and to further support Government initiatives to strengthen European rare earth supply chains and accelerate the green transition**
- **New German subsidiary, HyProMag GmbH, is 80% owned by HyProMag Limited and 20% owned by Professor Carlo Burkhardt of Pforzheim University in Germany, co-ordinator of the €14m EU funded SusMagPro project ([www.susmagpro.eu](http://www.susmagpro.eu)) focused on rare earth magnet recycling with 19 partners across the European supply chain**
- **Both Mkango and HyProMag now have strong and complementary platforms for growth in both the UK and EU, and are well positioned to capitalise on accelerating demand for rare earths and increased focus on the circular economy**

**London / Vancouver: November 15, 2021** - Mkango Resources Ltd. (AIM/TSX-V: MKA) (the "Company" or "Mkango") is pleased to announce that HyProMag Limited (“HyProMag”) has established an 80% owned German subsidiary, HyProMag GmbH. HyProMag GmbH is 20% held by Professor Carlo Burkhardt of Pforzheim University in Germany, who has also been appointed to the board of Directors of HyProMag GmbH.

Germany is a major producer and market for rare earth magnets in Europe, and the establishment of HyProMag GmbH provides a strong platform to grow the business in the region. Germany has no domestic sources of primary rare earths. Development of domestic sources of recycled rare earths via the patented HPMS is a significant opportunity to diversify and strengthen development of a more resilient rare earths supply chain in Europe.

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. As an affiliated company, HyProMag GmbH is covered by the exclusive license of HyProMag and the companies will share new developments. 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.

Mkango’s wholly owned subsidiary, Maginito Limited (“Maginito”), holds a 42% equity interest in HyProMag, with an option to increase its interest 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:** *“This is an exciting milestone for HyProMag, positioning the company for further growth in Europe and internationally. The establishment of HyProMag GmbH also complements Mkango’s strategy to develop a rare earths processing hub in neighbouring Poland, working with Grupa Azoty Pulawy. Mkango looks forward to supporting HyProMag’s development in UK, EU and international markets, as it scales up to commercial production.”*

**Professor Carlo Burkhardt, Director of HyProMag GmbH stated:** *“I am very pleased to be a founding shareholder and to join the Board of HyProMag GmbH, which provides an excellent platform to grow the business in Germany and Europe. It’s tremendously exciting to see the huge strides we all collectively have made in developing technologies to identify, separate and reprocess magnets from waste streams, which are now nearing commercial application and which will, hopefully, play their part in making European supply chains more resilient to external influences.”*

**David Kennedy, Director of HyProMag stated:** *“The collaborative research and development undertaken by the The Magnetic Materials Group at the University of Birmingham encourages exploitation of Intellectual Property and establishment of new industry. HyProMag, as the exclusive licensee, is pleased to establish a new company in the EU for the purpose of rolling out the short loop recycling of Rare Earth Permanent Magnet materials, which are expected to have a low environmental impact. Due to our extensive and successful work to date with Prof. Burkhardt, we expect that our joint efforts through HyProMag GmbH will fulfill HyProMag’s objectives to extend the technology into Europe and to exploit the extensive magnet scrap potential of the European Union. This supports HyProMag’s plan to establish manufacturing centres in both the UK and in the EU, accessing RE magnet waste streams throughout Europe.”*

### **SusMagPro**

The SusMagPro project is focused on establishing a sustainable magnet supply chain in the EU through recovery and recycling of REEs from magnetic waste materials. By introducing a reliable source of raw materials at scale, it is expected that SusMagPro will contribute to the future growth of the magnet recycling industry. This will be enabled by SusMagPro’s current strategic partnership with 19 companies and institutes, allowing for synergies and collaboration between different points of the magnet life cycle. The SusMagPro project covers a wide spectrum of potential products, underpinned by supply of recycled NdFeB powder from HPMS pilot plant production, which will result in significant further demonstration and derisking of the HPMS technology. Apart from production of sintered magnets (in common with the “Rare-Earth Recycling for E-Machines” (“RaRE”) and Rare-Earth Extraction from Audio Products (“REAP”) projects), the project will also produce HDDR (hydrogen decrepitation deabsorption recombination) powder for bonded magnets.

### **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 Magnetic Materials Group (“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 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 holds a 42% 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, HyProMag GmbH, 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 and HyProMag GmbH 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), whether HyProMag and HyProMag GmbH are able to successfully establish recycling facilities for NdFeB magnets at Tyseley in Birmingham in Germany and in other locations to provide a sustainable solution for the supply of NdFeB magnets and alloy powder, whether the establishment of HyProMag GmbH will fulfill HyProMag objectives to extend the technology into Europe and to exploit the extensive magnet scrap potential of the European Union and whether HyPrMag and HyProMag GmbH are able to access to RE magnet waste streams throughout Europe. 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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