Draft Policy Statement for Mineral Exploration and Mining in Ireland

Summary

Successful Climate Action is not possible without the production of raw materials to implement it. However, production of such raw materials requires in the first instance their discovery and development to achieve it. Ireland is particularly well-placed to assist the EU in the sourcing of many of these raw materials.

Without exploration, there will be no mine, without mining there will be no processing. Without exploration there will be no materials for innovators to experiment with and despite the positive efforts to recycle and re-circulate metals, there will remain for the foreseeable future an increased demand for primary raw materials to make up the losses, generate new materials for the expanding economies of the Developing World and Third World Countries and to produce the metals which have hitherto not been in demand. Exploration is the cornerstone upon which everything else is built as illustrated in Figure 1.

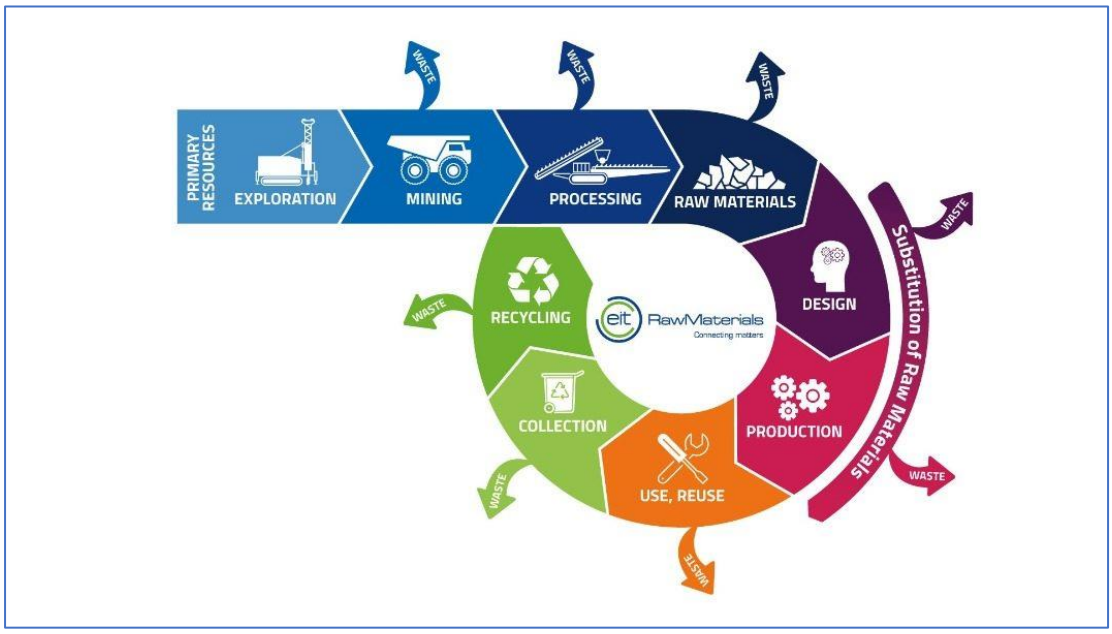

Figure 1.

None of the specialty metals required for the Just Transition and Climate Action have been produced before now in the quantities presently being required and forecasted, thus they must be found before they can be used and recirculated, no one has put forward an alternative way of doing so, hence exploration is the key.

Not alone are the specialty metals required for the Just Transition, but the 'traditional' metals such as copper, lead, zinc and silver will be required in even greater quantities for the transmission and storage of electricity and in the production of EVs, social media devices, computing storage facilities and the many other forms of modern-day electrical and electronic equipment.

Ireland produces more zinc per km^2 than any other country in the world. All of the mines are within in the broader midlands area, thus the potential for more discoveries is quite high and most

importantly unlike most other industries, mineral deposits can't be moved to another location, hence minerals exploration and mining can play a significant role in the Just Transition within the midlands. With our rigorous planning and environmental controls and good labour laws, metals from Ireland would be an ethical source for metals for the future.

Background to this Public Consultation

This Public Consultation process is very much welcomed because it allows the fundamental contribution of mineral exploration to the economy to be examined and presented. In addition, the esteem with which Irish minerals explorationists are held throughout the world and the many other nationalities who have 'learned their trade here' or who are contributing in a major way to the Irish economy are being encouraged to have their say.

Whilst mineral exploration and mining are regularly conflated, in Ireland and in many countries elsewhere in Europe and throughout the resource producing world, they are seen as two separate industries, in the same way as the hardware and the software of phones and computers are seen as two separate industries or as pharmaceutical companies and pharmacies, though dependent on each other are nevertheless seen as separate industries and services.

Mineral exploration and fundamental research have one thing in common and which distinguishes them from all other industries, one does not know if the solution even exists, that is, in the case of mineral exploration one does not know if the deposit exists, never mind where it might be found. That is the risk that no other industry shares.

Despite evidence to the contrary, prior to the mid-1950s Ireland was thought to be bereft of mineral resources. Following the seminal paper in 1958 by Murrough (The) OBrien (then Director of the Geological Survey of Ireland), in which he postulated the hypothesis that Ireland has the 'right geology' and good metal potential especially in respect of base metals, such as copper, lead and zinc, and also gold and silver, it led to an increase in mineral exploration which culminated in the discovery of the Tynagh (County Galway) deposit in 1961, to be followed shortly thereafter by the discovery of the massive sulphide lead-zinc deposit at Silvermines and the copper-silver-mercury deposit at Gortdrum, both in County Tipperary. These discoveries created an exploration boom in Ireland which culminated in the discovery of the Navan (County Meath) zinc-lead deposit in 1970. These initial modern mines have been estimated to have contributed as much as 5% of GDP at that time and were in fact the first examples of native Irish industry, employing hundreds of workers in rural areas and accelerating the development of local economies.

The Navan orebody is the largest zinc orebody in Europe and is within the top five largest zinc orebodies worldwide. 50 years later it is still an active mine, employing, directly and indirectly over 1,000 people. Also, in the mid-1950s a large barite (aka barytes) deposit was discovered at Ballynoe, near Silvermines. This mine operated for over 30 years and elevated Ireland into one of the world's Top 10 barite (Barium sulphate) producers. These discoveries in the 1950s, 1960s and 1970s were followed by two more discoveries at Galmoy (County Kilkenny) and Lisheen (County Tipperary) in the 1980s and '90s. **What is most noteworthy about all of these discoveries, with just one exception, is that they were all made by Irish owned and operated SMEs.**

As the Report correctly notes, Ireland's zinc-lead production accounts for approximately 11% of European zinc mine output (16.6% of EU27 production) and 3% of European lead mine output (6.4% of EU27 production). These figures equate to 1.0% of world mine production for zinc and 0.3% for lead. According to data published by the International Lead and Zinc Study Group, in 2020, Ireland

ranked 17th and 27th in the world in relation to zinc and lead mine output respectively. Ireland currently places fourth in terms of European mine production for zinc, behind the Russian Federation, Sweden and Portugal (Industry News, May 2021), all of which is founded on successful mineral exploration.

In addition, amongst other metals there has been some preliminary work on the possibilities and potential of mineral deposits in Ireland containing important trace metals such as cobalt, gallium, germanium, indium and lithium. "Trace" in this instance means that the metals, though important and highly priced, and excepting lithium, have never been and are unlikely to be economically extractable on their own.

If we, in Ireland and Europe generally, continue along the present path of complete reliance on the importation of primary raw materials, we are effectively 'exporting our waste and our environmental impact' to other countries. We are therefore increasing our carbon footprint, through large importations of raw materials, be it via long-haul marine transportation or air-borne transport, and we will be accepting raw materials from countries with low or non-existent environmental standards. By discovering and developing our own mines to our own high standards, we will not be creating any waste in third countries and we will be significantly reducing the carbon footprint associated with round-the-world transportation systems.

Mineral Exploration and Renewable Energy

"There is a huge risk that we in Europe end up replacing our import dependency on fossil fuels by one on (non-energy) raw materials", (Šefčovič, 2019). This has been substantiated by the World Bank (2017) who using **wind, solar and energy storage batteries** as examples, 'forecast a growing demand for the following metals: aluminium, cadmium, cobalt, copper, indium, iron, lead, lithium, manganese, molybdenum, nickel, platinum group elements, rare earth elements (particularly neodymium), silver, titanium and zinc'.

This has been further strengthened by O'Sullivan (2021), who using data from the International Energy Agency report, highlighted the fact that "a shortage in critical minerals could delay, and make more expensive, transitions to low carbon emission energy and transport systems, (especially in regard to) the supply and demand for minerals such as lithium, cobalt and rare earth elements. **The (Energy) Agency says an electric car needs six times more mineral inputs than its conventional equivalent and an offshore wind turbine plant requires nine times more mineral resources than a gas plant".**

I'll leave the last word on this relationship to **Commissioner Šefčovič (2019), "I am convinced we in Europe can lead this 'just transition' (i.e. leaving no one behind) to build a 'new sustainable economy for all' ".**

1. Based on the plans, policies and programmes outlined in the SEA Scoping Report, are there any other key relevant international, national or regional plans, policies or programmes that should be considered in the SEA Environmental Report on the Policy Statement on Mineral Exploration and Mining?

EU Thinking and Considerations

Shortly after the commencement of this millennium, the European Commission (EC) became increasingly concerned at the growing dependence of the European Union (EU) on the importation

of inorganic raw materials, effectively metals and minerals, which underpin its industrial base. Since then, it has published a List of "Critical Raw Materials" (CRMs) on a regular basis, 2010, 2014, 2017 and 2020. The 2020 List identifies 30 raw materials as being CRMs, this is an increase of over 100% in just 10 years. It also identified the growing dependence of the EU on imports of these materials from just one country, China. In addition, it has created a sub-set of specialty or trace metals, under the term "Energy Critical Elements" (ECEs) and has set-up a funding mechanism for finding and developing the relevant deposits.

Not alone did the EC produce the CRM reports, but it became very concerned about supplies and in response to the drive to ensure the delivery of EVs (Electric Vehicles) it became the driving force (pun not intended) in the formation of the European Battery Alliance. Amongst the many positive effects that this has had on procuring a secure and sustainable supply of metals such as lithium, it has also demonstrated that **"If the European Battery Alliance has taught us one thing it is that top-down approach does not work. We need to understand from the industry, the innovators, the financiers, the people on the ground, what is needed to accelerate this transition, and mitigate its impact", (Šefčovič, 2019).**

The failure of the top-down approach has been proven time and again, it is people on-the-ground that makes it work and in the context of raw materials it is the exploration geologists, their allied geoscientists and the exploration companies that are paramount, they are the people on-the-ground. The exploration industry basically consists of a combination of and collaboration between two types of people, geologists and risk-taking financiers who have achieved success at home and abroad. This role is identical to that required in the development of new computer software and drug research and testing.

Commissioner Šefčovič (2019) went on to say that, "Raw Materials are in fact part of carbon-neutral renewable energy technologies (wind, photovoltaic). They are an indispensable part of sustainable mobility, for example in electric vehicles batteries and energy storage (industrial batteries), as well as in digital technologies (especially for rare earths) such as electrical and electronic equipment".

The Commission (2020) itself expanded upon this when it noted that "For electric vehicle batteries and energy storage, the EU would need up to 18 times more lithium and 5 times more cobalt in 2030, and almost 60 times more lithium and 15 times more cobalt in 2050, compared to the current supply to the whole EU economy. If not addressed, this increase in demand may lead to supply issues. Demand for rare earths used in permanent magnets, e.g. for electric vehicles, digital technologies or wind generators, could increase tenfold by 2050". It should be stressed that this is solely in respect of the EU and within that context it should be noted that Ireland has produced or has the potential to produce, over one-third of the metals on the ECs CRM (2020) list.

<u>Recirculation</u>

As the Report correctly points-out Recirculation can never be 100%, there will be losses within circulation, depending on the metal, some of it will be lost to the environment or 'tied-up' for a long time, and the adverse financial, energy and environmental costs of recirculation will in many instances render recirculation uneconomic. Recirculation also fails to take into account the fact that many of the specialty metals now in common use have never been widely used before on a large commercial level, thus they must initially be found and developed *ab initio*. Increasing demand for raw materials will also mean that even if materials are reused the fact that more are required means

that additional primary sources will be required, i.e. there will be a need for new mines. It is estimated that annual demand for copper will increase by 5% and lithium demand by >10%.

Government Policies and Statements

In 2019, Mr. Seán Canney T.D., Minister of State for Natural Resources, quite correctly declared that "Ireland has a rich geology and a long history of mining with a proven track record in zinc and lead production. It has a very active prospecting sector. In addition to lead and zinc, the country has also been identified as a source of barium, copper, gold, lithium, molybdenum, silver, as well as platinum group metals". Minister Canney went on to say that "In the last number of years, the closure of two mines at Galmoy and Lisheen has been successfully managed under new closure plan requirements. The two sites have improved the biodiversity of the area and have attracted other business onto the site. This is important for employment in these rural areas. Mining and post-mining can contribute positively to a locality while at the same time provide the necessary raw materials for society as a whole. The Galmoy mine was awarded the Green Apple award for their Tailings Management Facility remediation".

In his address to the Dáil in June 2020, Mr Eamon Ryan, T.D., Minister for Environment, Climate and Communications said, "To achieve change, we have to invest in a completely new energy system. That is where the new economic opportunity will lie and where we will be able to invest and create jobs. **It is how we will create a secure economic future, because we will be relying on our own resources. That ambition goes back to the core founding principles of this State of managing our own resources for the benefit of our wealth and security into the future. The energy system we are going to create in this low-carbon world will do exactly that. . . . That is something the next Government will have to set us upon**".

2. Based on the likely significant impacts outlined above, are there any other effects or impacts that should be considered in the SEA Environmental Report on the Policy Statement on Mineral Exploration and Mining?

As the IGI (2021c) has so eloquently pointed-out, Ireland can play a major role and benefit from these demands, "Long-term spin-off industries arising from the exploration and mining sector include geochemical laboratories, drilling companies, design, consultancy and contracting service companies operating in the field of engineering, geology and environment both in Ireland and internationally". And that's just mineral exploration. The many positive legacies of the base-metal mining industry have been well described in a recent government sponsored report, "A social, environmental and economic assessment of Galmoy and Lisheen Mines", AECOM, (2020); in which the financial returns to the State, the long-term employment prospects of the local population and the lasting infrastructure, such as wind farms remain after the mine has closed.

3. Do you have any comments regarding the draft SEA Objectives presented in the Scoping Report?

Ireland's Potential Positive Role

'If you don't look, you can't find'. But, minerals exploration is the high risk end of the metal supply system. Most people are unable to grasp the risk concept and tend to ignore or 'skip' the exploration phase and commence their consideration of the metal supply at the 'mining phase'. This ignores the very basis of a mining venture, one must first discover the deposit.

In addition, what is often forgotten and which should be strongly stressed and recognised is that the 'traditional' metals such as zinc and lead, which are being produced here, as well as metals such as copper, silver and gold which are required for the tech-based and social media devices have been produced in Ireland in the recent past. In noting the potential for industrial minerals, it is regrettable to note that there is no mention of Barite in the Report, despite the fact that we were a leading world producer for over 30 years putting us into 5th place in the world, and also the fact that barite is a well-known associated mineral with base metal mineralisation in Ireland and is also well-recognised for its medical diagnostic and treatment properties.

It is very note-worthy that since the inception of modern exploration in Ireland there has been no on-the-ground opposition to mineral exploration. Yes of course there have been questions, for example, Why here? What are you doing? Will it cause damage? Mineral exploration geologists in Ireland and their associated staff have always adopted a transparent attitude and methodology of what they are doing and what they hope to achieve. **As noted in the SLR Report (2016), "Thus, at the exploration stage, with high levels of person-person engagement among geologists and community stakeholders, trust is high".** Of course, there has been some opposition to access, but invariably it has been resolved to everyone's satisfaction. In fact, it's true to say that it is only non-locals who have maintained any opposition to minerals exploration activities taking place. Once the matter is explained to the local farmers and residents, everything tends to proceed very smoothly. In fact, the question has to be asked whether or not the authors have any evidence that mineral exploration in Ireland as it is currently regulated is not complying with environmental and social guidelines?

In addition, in regard to our associated industry, mining, it has been noted that "Mining companies operating in Ireland in recent decades have worked responsibly to meet and maintain the high standards of compliance required, and to leave environmentally low risk, safe sites for future use. Companies have, in a planned way, closed mines carefully, restoring these sites to agricultural uses and/or facilitated other potential industrial uses", (IGI, 2021a).

Increased exploration for raw minerals critical for use in all other areas of Climate Action is urgently required. Alternative electricity generation from, for example, 'Offshore and onshore wind' will mean an increase in the use of metals, including Rare Earth elements, and an understanding of the offshore and onshore topography and subsurface. Geologists are best placed to contribute to this knowledge and understanding. We are encouraged by the ongoing government support for the INFOMAR project managed and run by Geological Survey Ireland and the Tellus mapping project. Improved battery technology could play a role in making other methods more efficient. Again, this will require the use of more natural resources and greater investment at either an Irish of EU level in exploration, research and development. This requires exploration, geoscience research and engagement with the people of the area. Mineral explorationists, in particular geologists and samplers are and always have been to the fore-front in interaction with people on-the-ground.

The target for electric vehicles in Ireland is part of an international target, but more natural resources are needed to meet this international target. EVs require 2-3times more copper than ICE vehicles and require cobalt and lithium for the batteries. Ireland can play a part in this worldwide move towards EVs through mineral exploration and battery technology research including zinc-air batteries (Ireland is a leading source of zinc in Europe).

<u>Conflating Mineral Exploration and Mining</u>

It is regrettable to note in Section 2.3 and elsewhere within the document, the conflation of mineral exploration and mining, **when they are two distinct industries.** Question, how many companies mining in Ireland are actively exploring? Just 1. All of the other companies, holding over 90% of the Prospecting Licences, are mineral exploration companies, which are either owned and/or managed by Irish personnel or geological consultancies. The conflation of "sustainable (mineral) exploration and mineral extraction (mining)" misses the point that the financing of the two industries, albeit operating in the same industrial sector, is derived from different sources with two very different objectives.

It is clear from Section 3.1.1, whether by accident or design, that the screening consultation process, which took place prior to the publication of this Report deliberately conflated mineral exploration and mining. I respectfully suggest that in all future policy statements that the distinguishing features of the 2 industries be emphasised.

Funding and Success

Mineral exploration funds are always limited, therefore anything that diverts those funds from their objective will have a severe negative impact on successfully discovering a mineable deposit, to the detriment of the Green Action Plan. A mining policy is of no consequence if there are no mines and unless exploration is positively encouraged and successful, there will be no mines. Hence a poorly thought-out mining policy will negatively affect exploration and lead to the situation where there are no mines. Thus, anything that inhibits mineral exploration is in fact inhibiting the Just Transition and the Climate Action programme, not to mention significant overseas earnings for services and goods.

If there is one thing that policy makers and bureaucrats dislike above all else, it's uncertainty and there is no greater uncertainty than mineral exploration. To divert momentarily, parallels can be drawn with another recent uncertainty, namely the development of an anti-Covid vaccine. The UK and to a lesser extent the USA, Russia and China, gave the research funding, with no strings attached to the relevant companies and organisations and each to a greater or lesser extent delivered. On the other hand, the bureaucratic EU system procrastinated and insisted on manufacturing time-lines which were always going to be impossible to meet and we all know the outcome. The situation in regard to mineral exploration is in many ways comparable, with one additional uncertainty, one doesn't even know if the mineral deposit even exists, nor its size or content. Hence other than in Command Economies, governments do not become directly involved in mineral exploration and even the bigger metal mining companies often engage and finance small exploration companies and geological consultancies to carry-out and/or manage mineral exploration programmes on their behalf. These arrangements have been very successful and Irish companies have been very successful at finding deposits in many countries on behalf of such companies.

At present elsewhere in the economy e.g. the pyrite and mica problems and prior to that the problems in relation to mining waste, are due primarily to the failure of the authorities to obtain and/or listen to the experienced advice being offered by mineral exploration geologists. Similarly, recently published studies by the EPA on water quality and by the HSE in regard to lead have ignored the experience of mineral exploration geologists, one only hopes that these errors are not repeated during this process.

4. Do you have any suggestions or comments in relation to the overall approach to alternatives?

Final Thoughts

In fact, the failure to allow, inhibit or restrain exploration will have a severe negative effect on the environment, since the very basis of exploration is the measurement of the chemical and physical parameters of the earth and thus enhances our knowledge of the environment, allied to the fact that the state and the public are receiving this information for free. Climate change is causing an increase in extreme weather events, groundwater flooding, and coastal erosion. Understanding of these and the subsurface is critical for the protection of the electricity infrastructure, particularly offshore or international connectors or supply lines. This requires the knowledge and experience of geologists and robust geological data. The vast bulk of this geological data has been provided by the mineral exploration industry.

The emphasis on the negative in 3.1.5 is unfortunate, "mitigation measures to offset negative impacts" fails to recognise the immediate positive impacts, such as investment in rural areas and jobs, and the failure to list some of the other indirect positive impacts of mineral exploration activities on the knowledge base in regard to human and animal health, land and soil characteristics should be rectified.

Section 6 Preliminary (p18), the first line is very confusing, in that it implies that prior to exploration commencing, a baseline study will have to comply with a variety of headings, 8 in all,; but since at the start, there will be no "Material Assets", all of the other topics will require the full budget and there will not be any added knowledge to the Topic of Material Assets, which is supposed to be the primary objective of the P.L., thus if is decided to impose SEA requirements on exploration activities it should be limited to 5-10% of the budget and that it should only be carried-out at the "earliest appropriate stage".

The fundamental nature and objectives of mineral exploration is the discovery of mineral deposits, through which it will "contribute to the delivery of the green economy". The real question which must be answered, is where does this contribution stand in respect of the priorities having regard to the remaining 8 Topics (Section 5.3)?

"Given the high level nature of the Policy Statement, the alternatives to be considered are likely to be predominately at the strategic level and must be realistic, reasonable and relevant" (7.3). In the same way that proponents of exploration are obligated to describe the negatives, so also should the opponents be obligated to give the practical alternatives which are "realistic, reasonable and relevant". By ignoring the fundamental importance of exploration and by starting their thinking at the mining stage, policy makers and those advocating Green Action are in effect opting out.

Literally as this submission was being finalised the following extract from the European Federation of Geologists (EFG) came to hand. "To ensure security of supply the European Commission adopted its raw materials initiative, a tripartite strategy of trade diplomacy, sustainable development of domestic resources, and resource efficiency and recycling. This was followed by the adoption of technical screening criteria within an EU-wide Taxonomy Regulation, which aims to ensure that capital flows are directed to economic activities that are environmentally sustainable. The current EU taxonomy classification is focusing on six main objectives including climate change mitigation; climate change adaptation; the sustainable use and protection of water and marine resources; the transition to a circular economy; pollution prevention and control; and the protection and restoration of biodiversity and ecosystems".

Not to explore for and develop our own deposits for the Green Action plan will in effect mean that we will have to import raw materials which have been mined using standards which are very likely to be less than our own and manufacturing technical equipment devices containing metals which have

been processed using coal and nuclear fuel generated electricity and which is transported to Ireland using carbon fuels.

By operating our own mines, discovered by Irish mineral exploration geologists and by using our own high environmental standards, we are attaining 3 objectives in 1,

1. Provision of secure supplies of critical and essential raw materials for Europe

2. We are not creating any wastes in Third World or Developing Countries, and

3. We are reducing the carbon footprint of sea and airborne transportation and of energy generation during the high-energy processing phase.

It behoves me to compliment the authors on the following, "The Policy Statement is a national policy for mineral exploration and mining in Ireland. As such, the assessment will be primarily focussed at activities occurring at the national to regional scale. It is noted that as a high level policy document, the Policy Statement will not have a spatial element and the policies provided will be at national level" and that it accepts that **'mines are where you find them'**.

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