MINING & MINERALS FACTSHEET

LIFETIME VALUE OF A MINE

MINERALS & MINING TERMS

Deposit **-** A Mineral Deposit is an accumulation of any single mineral or combination of minerals occurring in a mass, or deposit, of economic interest.

Value of Mineral Exploration & Mining

Ireland is internationally renowned as a major zinc and lead mining country, including the ore deposit at Navan, Co. Meath which has been in operation since 1977 and remains the largest zinc mine in Europe. Other minerals being mined in Ireland include gold in Co. Tyrone, gypsum in Co. Monaghan and rock salt in Co. Antrim.

Economic Impact of the Irish Mineral Exploration and Mining Sector

The development of Irish mineral deposits is an important component of the economy, providing essential minerals for industry while generating employment and Government revenue in the form of taxes and royalties, as well as payments to local authorities and local community contributions. Exploration is continuing for further deposits and the island remains strongly prospective for new mineral discoveries.

The economic value-added contribution of the mineral exploration and mining industry is also considerable and far-reaching, covering employment, wages and salaries, non-labour and capital expenditures.

Direct expenditure on mineral exploration in Ireland for the period 2009-2019 was €234m, while metal mining annually contributes approximately €550m directly to the economy as well as a further €230m in gross added value. This generates over 1,400 regional jobs, most of them highly skilled.

A feature of the industry is the broad regional distribution of the mines and their workforces, with up to 80% of mine employees being locally based. While some manufacturing industries can move their businesses to low cost countries, a mineral deposit cannot be relocated.

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 fields of engineering, geology and environment both in Ireland and internationally.

The Mining Life Cycle

The extraction and processing of minerals leads to the development and depletion of a non-renewable resource over time, so eventual closure of mines is inevitable. Mine planning therefore involves preparation for the development of the mine, its operation through to eventual closure and site aftercare. This is known as the Mining Life Cycle.

In Ireland, the Lisheen Mine in Co. Tipperary is a recent example of a mine that has moved through all phases of the cycle, following its closure in 2015.

Here we look at the stages of the life cycle in more detail, using Lisheen as an example of how value was derived not only to the economy, but also to communities and wider society:

1. Exploration & Feasibility Studies

The Lisheen zinc and lead deposit in Co. Tipperary was discovered through mineral exploration by an Irish-registered resource company in 1990. The deposit consisted of two main ore bodies that lay at a depth of 170 metres. Planning for underground mine development began in the early 1990s - a Feasibility Study was prepared, involving extensive technical, economic, environmental and planning studies, as well as community consultation.

2. Mine Design & Planning

The statutory planning process was initiated in 1995 when an Environmental Impact Statement (EIS) and a planning application was submitted. The development was then approved by North Tipperary County Council in August 1996. An Integrated Pollution Control Licence was issued by the Environmental Protection Agency (EPA) in June 1997 and final planning permission was granted by An Bord Pleanála in June 1997. A State Mining Lease was then issued by the Minister for Marine and Natural Resources in October 1997.

3. Construction & Installation

Construction of the mine began in 1997 and lasted for 2 years, during which time up to to 700 people were employed. The total development cost was approximately €246m which represented one of the biggest ever private investments in Ireland at the time.

4. Extraction & Economic Benefits

Mine production began in October 1999 and ran for 16 years, concluding in 2015, during which time an average of 300,000 tonnes of zinc concentrate were produced annually. This generated €2.8 billion in mine revenue, providing 350 jobs directly (€352 million paid in wages and salaries) and almost 500 additional jobs in the wider economy. During its lifetime in operation, the mine generated €1.3 billion Gross Value-Added to the Irish economy, €5.8 billion in direct, indirect and induced spending and paid €257 million to the State in royalties, taxes and rates. The mine and its local environment were subject to extensive environmental monitoring as part of its licence conditions.

5. Mine Closure and Aftercare

Lisheen was one of the first mines in Ireland to be opened, operated and closed under a new regulatory regime which required a closure plan and financial provisions to support this plan. The mine was required to develop Closure, Rehabilitation and Aftercare Management Plans (CRAMP) during its planning phase outlining the rehabilitation works that would be carried out and the associated cost, and a Closure Fund of €24 million and an Aftercare Fund of €3 million was set aside during operations for that purpose.

Detailed preparations for the closure phase of the mine commenced 10 years before mining operations finished in 2015. Prior to the cessation of mining, Lisheen Mine began progressive rehabilitation of the site and in particular on the tailings facility (storage for ore residue). Lisheen gave a commitment to the local community to have the tailings facility 60% rehabilitated before mining ceased and this was achieved. This progressive rehabilitation allowed Lisheen to provide reassurance to the local community of the robustness of the closure plan. Once mining production ceased, the closure plan was implemented which included backfilling of the underground mine, clearing and removal of buildings and equipment, removal of ground contaminated with lead and zinc and completion of rehabilitation of the tailings facility to farmland. This was accompanied at each stage by a rigorous monitoring and verification programme, overseen by the authorities. A follow-on aftercare phase will continue for at least 30 years.

6. Post-Mining Land Use

Following the closure of Lisheen, most of the site infrastructure was removed. Wetlands were also created to trap excess run-off at discharge points. The buildings and infrastructure that remain on site represent a permanent capital asset that facilitates continued economic activity, enabling other businesses and industries to establish on the site following closure. The site is now being repurposed as the National Bio-economy Campus with support from the EU to promote circular economy projects in the agri-food industry. The electrical infrastructure installed to develop the mine was leveraged by Lisheen and others to develop wind farms, currently comprising 44 turbines which produces enough energy to fully power 70,000 homes.

Other positive community effects included infrastructure improvements, such as roads, telecommunication upgrades, a replacement water supply scheme (providing high quality water for local residents, funded by the company) and investment in local sports facilities and community halls. An extensive outplacement programme that was implemented by Lisheen prior to mine closure to upskill and prepare employees for replacement careers helped to reduce long-term unemployment in the area following the closure of the mine.

LISHEEN: PROGRESSIVE REHABILITATION

of 70ha of Mine Waste Area

Key Effects of Lisheen Mine

1999 — Mine Opens

2015 — Mine Closes

Zinc and lead

4.8 million tonnes of zinc and lead concentrate produced

35% of Irish zinc and lead production

Skills

€500,000 invested in training and skills development each year

Community

Upgrade of **local roads, water, power** and **telecommunications**

Investment in local **sports and community facilities**

Farmland

40ha of farmland changed to industrial use which is now a National Bio-Economy Campus

Energy Use

Equal to **6,650 households and 76,737 tonnes** of CO_2 each year.

Renewable Energy

Development of **100MW** wind farms with enough energy for **70,000 households**

This is equivalent to the entire city of Galway

Key Figures

€2.8 Billion
Revenue of mine

€1.3 Billion
Gross Value-Added to the Irish Economy

€5.8 Billion
Direct, indirect and induced spending

€257 Million
Paid in royalties, taxes and rates

350
Direct jobs created

74%
Workers living within 30km

493
Additional jobs in the wider economy

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