CLUSTER PORTUGAL MINERAL RESOURCES

Opportunities and risks for mining business in the Iberian Pyrite Belt, Portuguese territory

INTMET Clustering Conference, Sevilla
23th January 2019
BACKGROUND

Cluster of Natural Stone
Partnership Portugal Mineral Resources

- Cluster of Natural Stone recognized by the Portuguese Government
- Valorpedra Association

2008-2013

- Partnership Portugal Mineral Resources

2014

- Cluster of Mineral Resources
- Recognized by the Portuguese Government

2016/17
RESULTS

Investment = (5 years) = 54 M€
More than 100 projects
CLUSTER PORTUGAL MINERAL RESOURCES

Promote knowledge and sustainable economic value for mineral resources, boosting the export capacity and the added value.

Deepening knowledge of the economic potential of resources, promoting R & D + I, improving productive investment conditions and access to markets, as well as increase skills (technical, technological, management) and stimulate inter-company and inter-institutional cooperation.
45 SMEs
2 SECTORIAL ASSOCIATIONS
10 UNIVERSITIES
2 I&D INSTITUTES
1 REGIONAL PUBLIC INSTITUTION
Objectives - 2020

- Turnover +10%
- Gross added value +10%
- Volume of exports +25%
- Employment +1%
- R&DI +5%
The importance of R&I in the IPB: Portuguese examples
### TABLE I

<table>
<thead>
<tr>
<th>Period</th>
<th>Portugal</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nº deposits</td>
<td>M. tons</td>
</tr>
<tr>
<td>1950/60</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>1960/70</td>
<td>4</td>
<td>150</td>
</tr>
<tr>
<td>1970/80</td>
<td>4</td>
<td>&gt;300</td>
</tr>
<tr>
<td>1980/90</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1990/98</td>
<td>1</td>
<td>10 (?)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11</strong></td>
<td><strong>&gt;520</strong></td>
</tr>
</tbody>
</table>


### TABLE II

**EXPLORATION PERFORMANCE IN THE IPB**


<table>
<thead>
<tr>
<th>1950 - 1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>VMS</td>
</tr>
<tr>
<td>30</td>
</tr>
</tbody>
</table>

**AVERAGE: 1.2 VMS/2 YEARS**
**THE NEVES CORVO MINE**
(1977 discovery)

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Copper (000's tonnes)</th>
<th>Cu(%)</th>
<th>Zn(%)</th>
<th>Pb(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured</td>
<td>9,931</td>
<td>3.4</td>
<td>1.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Indicated</td>
<td>52,046</td>
<td>2.2</td>
<td>0.8</td>
<td>0.3</td>
</tr>
<tr>
<td>Inferred</td>
<td>10,463</td>
<td>1.9</td>
<td>1.0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Zinc (000's tonnes)</th>
<th>Cu(%)</th>
<th>Zn(%)</th>
<th>Pb(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured</td>
<td>15,302</td>
<td>0.3</td>
<td>7.1</td>
<td>1.6</td>
</tr>
<tr>
<td>Indicated</td>
<td>88,214</td>
<td>0.4</td>
<td>5.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Inferred</td>
<td>14,083</td>
<td>0.4</td>
<td>4.3</td>
<td>0.9</td>
</tr>
</tbody>
</table>
THE LAGOA SALGADA DEPOSIT

First discovery of a VMS deposit under Tertiary cover (1992)
SWOT ANALYSIS
STRENGTHS

- Mineral Potential

- High attractiveness for investments in the mining sector, due to the legal framework, institutional support and excellent infrastructure

- Important know how in VMS deposits exploration, mining and processing in public institutions and private companies, including data/information
WEAKNESSES

- Insufficient/inappropriate financing of I&D activities through national and European programs

- Increasing weaknesses in the human and financial resources of Governmental institutions related to the mining sector

- Lack of incentives to companies in the sector, without any tax benefit and/or related to the reduction of energy costs, in a risky activity that needs large investments, but generating jobs and wealth
OPPORTUNITIES/CHALLENGES

- Application of the concept of Cluster and Circular Economy, which encompasses the entire value chain (and of the respective added value) of the primary resources and recycling, also taking into account the possibility of introducing secondary resources in the process.

- More and better R&I in mineral exploration and processing, including bio-techniques.
RISKS/THREATS

- Sterilization of important mineral resources due to erroneous decisions in land use planning and policies

- Environmental legislation that does not take into account the specificities of the non-renewable nature of mineral resources, which are indispensable for the social welfare and unadjusted and uninformed social contestation, which ignores environmental impact studies that allow to mitigate the effects of mining, following the best international practices, sometimes provoking incoherent and unfair political decisions
Civilization exists by geological consent, subject to change without motive

Will Durant
(American writer, historian and philosopher, Pulitzer Price in 1968)

THANK YOU!

MUITO OBRIGADO!

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