IMPaCT

Integrated Modular Plant and Containerised Tools for Selective, Low-impact Mining of Small High-grade Deposits

Deliverable D2.1

Baseline database for switch on – switch off extraction

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Summary

This report documents how the baseline database of small complex deposits for SO-SO extraction was constructed. It describes the source data, the way it has been queried and improved and the resulting datasets.

Keywords:	Database, deposits, ProMine, extraction

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Disclaimer

Data presented in the present document originate from databases that have a continental scale coverage (scales in the order of 1/1,000,000). The degree of precision of points and polygons may lead to erroneous localizations or associations at higher (i.e. national, regional, local) scales that do not reflect the reality. The information provided here are meant to assist identifying pertinent deposits for a SO-SO approach, but should anyway be carefully checked before engaging any further costly works.

Abbreviations

AC – Anthropogenic concentration

CDDA – Common Database on Designated Areas (database)

CLC – CORINE Land Cover (database)

CRM – Critical raw materials

EEA – European Environment Agency

EU – European Union

GIS – Geographic information system

ID - Identifier

MD – Mineral deposits

MVT – Mississippi Valley Type (deposit type)

SO-SO – Switch on-switch off

T – Task

VMS – Volcanogenic Massive Sulphide (deposit type)

WGS84 – World Geodetic System, revision 1984

WP – Work package

Note also that chemical elements are named using either their full name (e.g., antimony) or their symbol in the Mendeleev's periodic table (e.g., Sb).

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1- Introduction

According to the "Description of Work" of the IMP@CT project, the actions in task 2.1 are 1) to identify appropriate criteria to define small complex deposits, 2) to properly query existing raw materials databases in order to extract relevant small complex deposits and their attributes, and 3) to benchmark and arrange deposits into clusters, according to expectations expressed by stakeholders and other work packages. In the present document, which addresses the first two points above, we describe the IMP@CT baseline database of small scale complex high-grade deposits for switch on-switch off extraction and how it was constructed during the first year of the project.

In the second section, after this introduction, we present the ProMine Mineral Deposit (MD) database that was used as the main source of data for this work. Then we describe how this database was queried, using different approaches, and what were the final extraction criteria. We then explain how the extraction was "augmented" with other sources of data. Finally, we describe the resulting dataset, and how it can be used for a SO-SO approach.

2- The ProMine Mineral Deposit database

ProMine was a European Union (EU) co-funded project[1], which had as its main objective the stimulation of the extractive industry to deliver new products to manufacturing industry. The project lasted 4 years, starting in 2010 and ending in 2013. The purpose of the geological element of the project was to deliver interactive GIS tools and databases of deposits and extraction/processing wastes. These would in turn contribute to exploration for new resources of minerals – especially on strategic ones within the European Union.

Later on, from 2013 to 2015, the Minerals4EU EU co-funded project[2] brought significant technical improvements to the ProMine infrastructure, by developing a "harvesting system", the role of which is to regularly (weekly) harvest national MD databases of member states via web services set up by national data providers (geological surveys, in most cases), then merge them in a central diffusion database. This was a great step forward in terms of updating the data. However, as the setting up and maintenance of web services is a voluntary "in kind" contribution from member states, it appeared quickly that some were either missing or collapsing due to insufficient resources. As a result, the Minerals4EU infrastructure is technically far more advanced than ProMine, but its diffusion database is missing data from several countries, which results in an incomplete and heterogeneous data coverage. For these reasons, we have decided to work with the

[1] See http://promine.gtk.fi/
[2] See http://www.minerals4eu.eu/

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ProMine database, which remains the most homogeneous and exhaustive data source on mineral deposits, occurrences and showing over the whole European Union.

The ProMine Mineral Deposit (MD) database stores information related to mineral deposits in Europe (see Cassard et al., 2015, for detailed description of the database content). Each deposit is described in about 40 fields distributed in 8 folders:

1. General information, including status, owner, location.
2. Deposit information, including deposit type and morphology.
3. Information on mineralization and host rocks, including age of mineralization and host rock, mineralogy of the ore, gangue, and hydrothermal alteration, host rock formation name and lithology.
4. Economic information, including the exploitation type, ore type, former production, reserves and resources; automatic assessment of potential[3], per commodity.
5. High-tech metals, characterization of high-tech metal host (mineralogy, grade) and link with the Anthropogenic Concentration (AC) database.
6. Comments (free text).
7. Iconography, including photographs, sketch maps, cross-sections, etc.
8. Bibliography, i.e. main geological and economic references related to the deposit.

Most fields that contain text values (i.e. non numerical) are lexicon guided, in order to improve the efficiency of data processing. Lexicons are either simple (list of values), dynamic (list to which new values can be added) or hierarchical (tree-like list with parent/daughter relationships allowing storage of information according to its level of accuracy).

The total number of records in the MD database is over approximately 13 000. Records are showing occurrences and mineral or ore deposits. The geographic distribution of records is, to a certain degree, heterogeneous as it reflects the availability and quality of knowledge of primary resources within EU Member States.

3- Querying of the ProMine database

The ProMine MD database is relational, which means that it is structured with a large number of tables interconnected via unique ID fields (see annex 1). Such a complex structure is impossible to export in a single 2D table (lines and columns). Therefore, choices have to be made on the information to export. The data fields that are most relevant for the IMP@CT project were chosen, in order to extract the most pertinent and complete information. These fields were:

[3] Tonnage of commodity (metric tons of metal) in the ore body, based on its grade and the tonnage of ore.

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- ID
- Name of deposit (first, if several)
- Country
- Longitude (decimal degrees, WGS84)
- Latitude (decimal degrees, WGS84)
- Main commodity
- Deposit type (code)
- Deposit type (text)
- Status of deposit (code)
- Status of deposit (text)
- Morphology of mineralization (code)
- Morphology of mineralization (text)
- Type of exploitation (code)
- Type of exploitation (text)
- Targeted commodity (code)
- Targeted commodity (text)
- Past production value
- Past production average grade
- Reserve value
- Reserve average grade
- Resource value
- Resource average grade
- Grade unit
- All contained commodities

Additional fields have been added, to homogenize grade units, which are:

- Reserve average grade in percent
- Resource average grade in percent

These two additional fields were calculated based on reserve average grades, resource average grades and grade units, in order to homogenize the information.

3.1 - First approach: bulk extraction

A first step was to define how to extract relevant data from the ProMine MD database. The need was to extract "small complex high-grade deposits" of interest for the IMP@CT project. A first tentative "bulk" extraction from the ProMine database was done, as a test. For that, query criteria (in the form of values from related ProMine code lists) were selected based on 1) the status of deposits, 2) the morphology of mineralization, and 3) the type of deposits.

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Selecting the proper criteria to query small scale high-grade complex deposits was a difficult task. Based on metallogenic expertise available at BRGM, the following criteria were selected:

Status of deposit is:

- A20 (Dormant district) + descendants
- OR B20 (Deposit under development – project) + descendants
- OR B30 (Dormant deposit) + descendants
- OR C10 (Subeconomic deposit) + descendants
- OR C20 (Prospect) + descendants
- OR D11 (Old mine workings)

AND Morphology is:

- A (Concordant to subconcordant primary orebody) + descendants, except A60 (Travertine and geyserite (sinter))
- OR B10 (Discordant mass or lens of massive to submassive ore) + descendants
- OR B20 (Discordant envelope of disseminated ore) + descendants
- OR B30 (Breccia-pipe, funnel, chimney, column, brecciated dyke) + descendants
- OR B40 (Discordant lode or vein (thickness > 50 cm), in clusters or isolated) + descendants
- OR D20 (Secondary cavity- or fracture-filling orebody) + descendants
- OR D30 (Present-day or recent placers) + descendants

AND Deposit type is:

- A10 (Fault-related syn- to late-orogenic deposit) + descendants
- OR A20 (Atypical syn- to late-orogenic deposit) + descendants
- OR B10 (Fault-related deposit in a magmatic context) + descendants
- OR B51 (Podiform chromite deposit)
- OR C21 (Rare metal and/or uranium deposit related to peralkaline complexes)
- OR C41 (Gold and sulphide-rich intra- and peri-intrusive quartz veins)
- OR C42 (Polymetallic peribatholitic veins) + descendants
- OR C43 (Granitic and peri-granitic veins and stockworks (greisen)) + descendants
- OR C46 (Evolved rare metals granite, aplite, rhyolite (Li, Ta, Nb, Be…))
- OR C57 (Evolved rare metals granite, aplite, rhyolite (Li, Ta, Nb, Be…))
- OR C60 (Pegmatites) + descendants
- OR C70 (Replacement deposit (skarn, manto)) + descendants
- OR D24 (Vein and disseminated Sb deposit)
- OR F10 (Modified paleoplacer)
- OR F41 (Carbonate-hosted stratabound and vein Pb-Zn deposit (Mississippi Valley, MVT)) + descendants
- OR F42 (Carbonate-hosted stratabound and vein Ba or F deposit (MVT))
- OR F711 (Ge (and/or Ga) coal and lignite deposit (Ge > 50 g/t))
- OR H10 (Modern placers, deposits associated with tillites, etc.) + descendants
- OR H23 (Gossan-hosted deposit (VMS, MVT, veins, etc.))

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The codes above (e.g., B30 or C21) refer to the ProMine code lists. Their text signification is given in brackets. "Descendants" are all values of hierarchical code lists that belong to the value they are linked to. For instance, "Pegmatite" is a descendant of "Deposit in an acid and alkaline plutonic context" in the "Deposit type" code list.

The objective of this query was to extract, as much as possible, complex small scale high-grade deposits containing rare or critical commodities. It was rather complex, combining many criteria, amongst which none was unequivocal and truly discriminant. The resulting extraction yielded more than 3000 occurrences and deposits, amongst which many were of no interest for the project and many interesting ones were certainly missing. It became clear that no discriminant criterion was available to accurately extract complex small scale high-grade deposits. The conclusion of this first extraction was negative and this type of query was not satisfying.

3.2 - Second approach: simplified extraction

The main problem in identifying complex small scale high-grade deposits was to define what a complex deposit is. It is nearly impossible to identify simple binary criteria to define complex deposits as this notion itself depends on many interconnected criteria (targeted commodity, type of deposit, metallogenic context, morphology, etc.), of which some are not available in the ProMine MD database (e.g., appropriate ore processing). In addition, complexity of a deposit is not a prerequisite. The base principle of the SO-SO approach is to be applicable "also" (and not "only") to complex deposits. On the other hand, high grades are necessary to ensure the economic viability (all the more if deposits are complex) of the SO-SO approach. It was therefore decided to focus the search on the notion of "high-grade", which is often linked to "small scale" (a smaller scale deposit requires higher grade to remain economic) and; to a certain point, complexity (high grade deposits are often complex).

We then decided to query the database on the grade for a limited number of commodities. The application was not straightforward, though, as units of grades are not the same between different commodities (or even for a same commodity) throughout the ProMine database. That required then 1) to harmonize grade units and 2) identify the targeted commodities and grade thresholds for each of them.

A test was done on 4 commodities, 3 of them critical (according to the 2014 EU list) – Sb, Cr and Co – plus Au. The purpose was to extract the deposits or occurrences with the highest values of resource grades for these commodities. The extraction was exported in a Microsoft Excel file (one tab per commodity) and yielded the following results:

- For antimony, 9 distinct deposits with resource grade over 1% of Sb (metal);
- For chromium oxide, 15 distinct deposits with resource grade over 20% of Cr_2O_3;
- For cobalt, 16 distinct deposits with resource grade over 0,1% of Co (metal);
- For gold, 83 distinct deposits with resource grade over 3 g/t of Au (metal).

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The main advantages of this second "targeted" extraction method is that it is rather simple to apply (querying is done only on "contained commodity" and "resource grade") and it ensures to collect all deposits with high documented resource grade (grades values are not systematically documented in the database, so it's important to make sure existing ones are not missed). For instance, for antimony, the second method ("targeted") yielded 9 deposits with resource grade over 1%. Out of these 9, 4 were missed by the first ("bulk") method. Another advantage is that processing, for each commodity, is relatively fast, so the number of targeted commodities is not necessarily an issue.

3.3 - Improving the "targeted" extraction approach

Following the success of these first tests of "targeted" extraction, we decided to improve the method in order to better query deposits and occurrences in the ProMine MD database, for the IMP@CT project. We decided to proceed with the following improvements:

- Query on grade values should not be done on resource grade only, but on the highest between resource grade and reserve grade values; this would ensures that deposits without resource grade value are not left aside;
- Remove all districts and provinces (in the "Status of deposit" field), as they are out of the scope of the project;
- Remove deposits that are presently under production, as they are of no interest for a SO-SO approach.

In addition, internal discussion in WP2 led to the basic concept that historical mines could be deposits of interest for SO-SO approach. They were often small, with relatively high-grade values and are usually inappropriate for present day large industrial mining projects. We then decided to also extract, from the ProMine database, deposits with positive values of past production, regardless of their grades of resource or reserve.

The WP2 team of the IMP@CT project decided to focus the extraction of data from the ProMine database to two commodities that were identified as bearing great interest and potential: antimony and zinc. It must be noted here that zinc, in the ProMine "commodity" code list is described by two values that are either "Zn" (zinc metal alone) or "PbZn" (mix of zinc and lead metals). Both values were then to be queried in the database.

The threshold values for grades were set to:

- 1% for Sb metal;
- 5% for Zn metal;
- 10% for PbZn metal.

As a result, we ended up with the following queries:

A. For antimony

The query for high-grade Sb deposits is:

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(CONTAINED_COMMODITY = 'Sb' AND (RESERVE_GRADE >= 1% OR RESOURCE_GRADE >= 1%)) NOT (STATUS = 'Province/District' OR STATUS = 'Producing deposit')

The query for Sb deposits with past production is:

(CONTAINED_COMMODITY = 'Sb' AND PAST_PRODUCTION > 0) NOT (STATUS = 'Province/District' OR STATUS = 'Producing deposit')

B. For zinc

The query for high grade Zn deposits is:

((CONTAINED_COMMODITY = 'Zn' AND (RESERVE_GRADE >= 5% OR RESOURCE_GRADE >= 5%)) OR (CONTAINED_COMMODITY = 'PbZn' AND (RESERVE_GRADE >= 10% OR RESOURCE_GRADE >= 10%))) NOT (STATUS = 'Province/District' OR STATUS = 'Producing deposit')

The query for Zn deposits with past production is:

((CONTAINED_COMMODITY = 'Zn' OR CONTAINED_COMMODITY = 'PbZn') AND PAST_PRODUCTION > 0) NOT (STATUS = 'Province/District' OR STATUS = 'Producing deposit')

Four extractions of the ProMine MD database were completed, using these four queries.

3.4 – Using the ProMine "public" database

The work presented above has been done using the original full ProMine MD database in Microsoft Access format. This version of the database is not distributed. Instead, a simplified (i.e., "2D") version of the ProMine MD database can be downloaded from the ProMine web portal[4] (Figure 1). It is available as a Microsoft Excel file that contains a compilation of the main data fields for most records in the database. This file can be used and processed with Microsoft Excel (or equivalent compatible software) to perform queries and filtering as described above.

[4] See http://ptrarc.gtk.fi/ProMine/default.aspx

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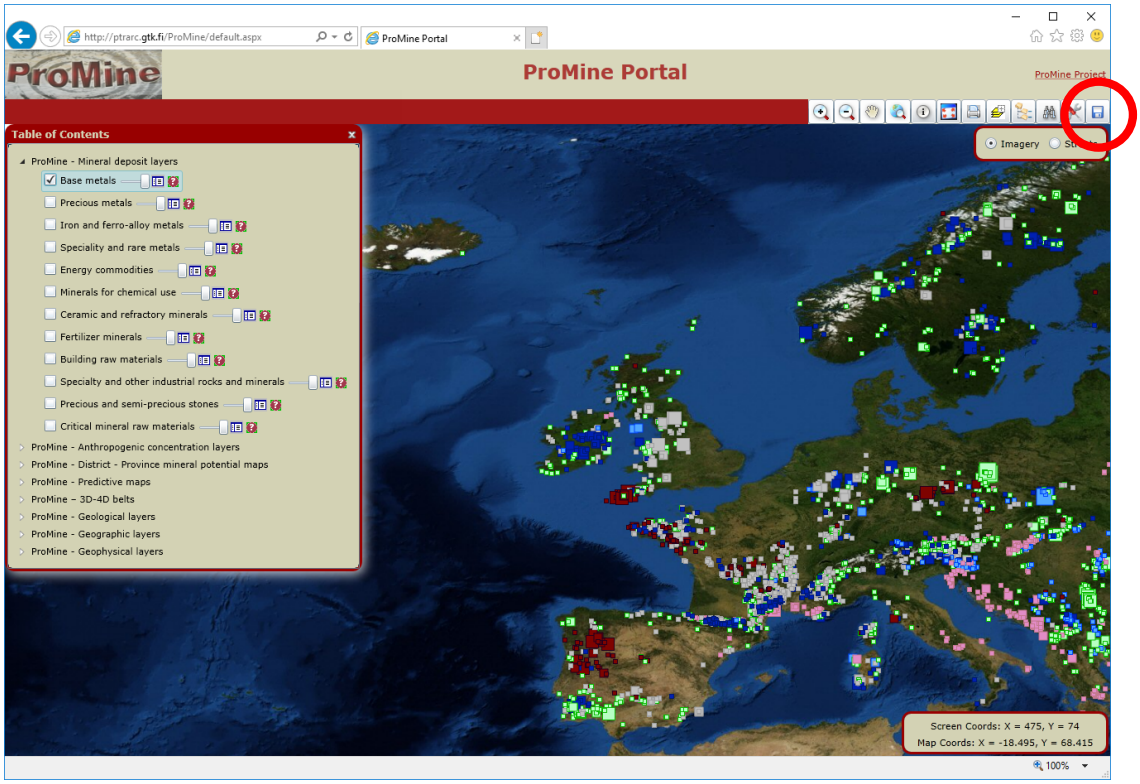

Figure 1 – View of the ProMine web portal and "download" button (red circle) that allows downloading the ProMine MD database as an excel file.

4- Augmentation of the extracted datasets

The data contained in (and extracted from) the ProMine database is the most exhaustive and homogeneous, at European scale, in terms of geology and metallogeny. However, other domains are potentially linked with the SO-SO approach developed by the IMP@CT project, such as socio-economics, land-use planning, social acceptance, etc. For this reason, it appeared appropriate to "augment" the datasets extracted from the ProMine database with additional pertinent information. We therefore added the following information:

- Criticality of the targeted commodity, based on the 2017 list of CRM (critical raw materials) from the EU Commission;
- Land coverage, at the location of each deposit, based on the CORINE Land Cover[5] (CLC) pan European database from the European Environment Agency (EEA);

[5] See https://www.eea.europa.eu/publications/COR0-landcover

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- Intersection with a nationally designated area, for each deposit, based on the Common Database of Designated Areas[6] (CDDA) from the EEA;

Note that data from the extracted datasets, CLC and CDDA databases were spatially joined using ESRI's ArcGIS software. As these databases have a continental scale coverage (scales in the order of 1/1,000,000), the degree of precision of points and polygons may lead to erroneous associations that do not reflect the reality "on the field".

5- Resulting dataset

The dataset obtained from the procedure detailed above is organised in four separate tables:

- Deposits with high grade in Sb (≥ 1%);
- Deposits with positive values of past production of Sb;
- Deposit with high grade of Zn or PbZn (≥ 5% and 10%, respectively);
- Deposits with positive values of past production of Zn or PbZn.

The table of deposits with high grade in Sb contains 15 individual deposits (Figure 2 and Annexe 1).

The table of deposits with positive values of past production of Sb contains 90 individual deposits (Figure 3 and Annexe 2).

The table of deposit with high grade of Zn or PbZn contains 78 individual deposits (Figure 4 and Annexe 3).

The table of deposits with positive values of past production of Zn or PbZn contains 380 individual deposits (Figure 5 and Annexe 4).

Note that a deposit may be listed in two tables, if it has both high grade and past production values.

[6] See https://www.eea.europa.eu/data-and-maps/data/nationally-designated-areas-national-cdda-12

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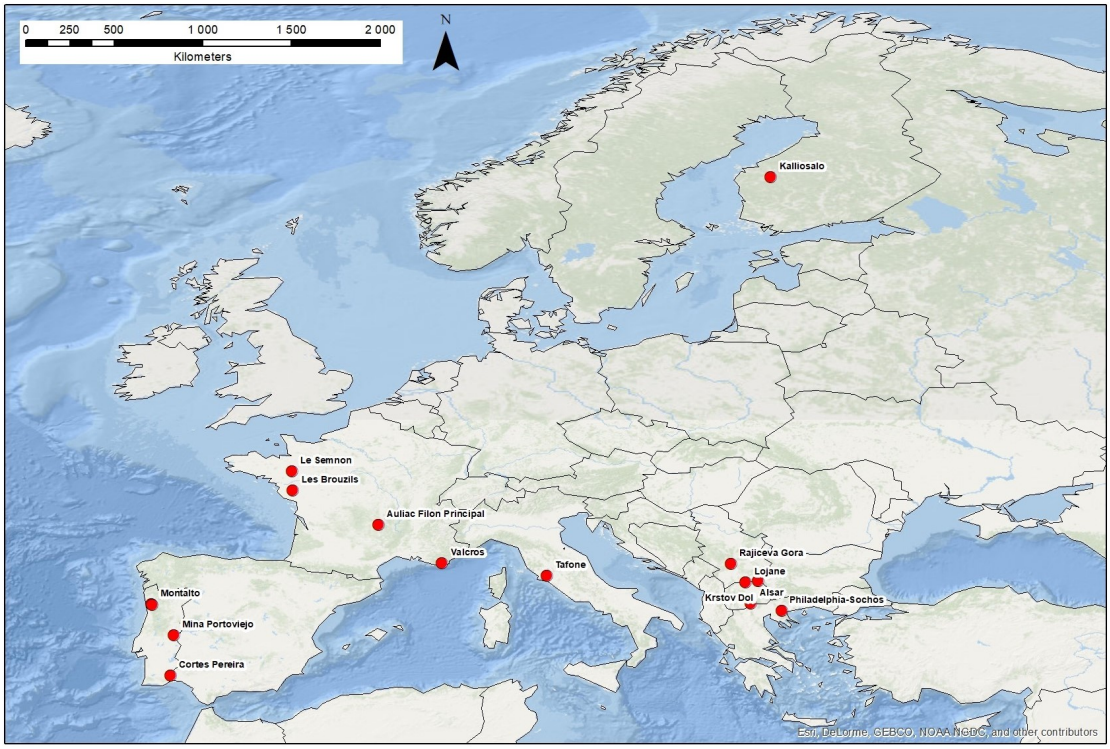

Figure 2 – Map of deposits in Europe with Sb grade ≥ 1%.

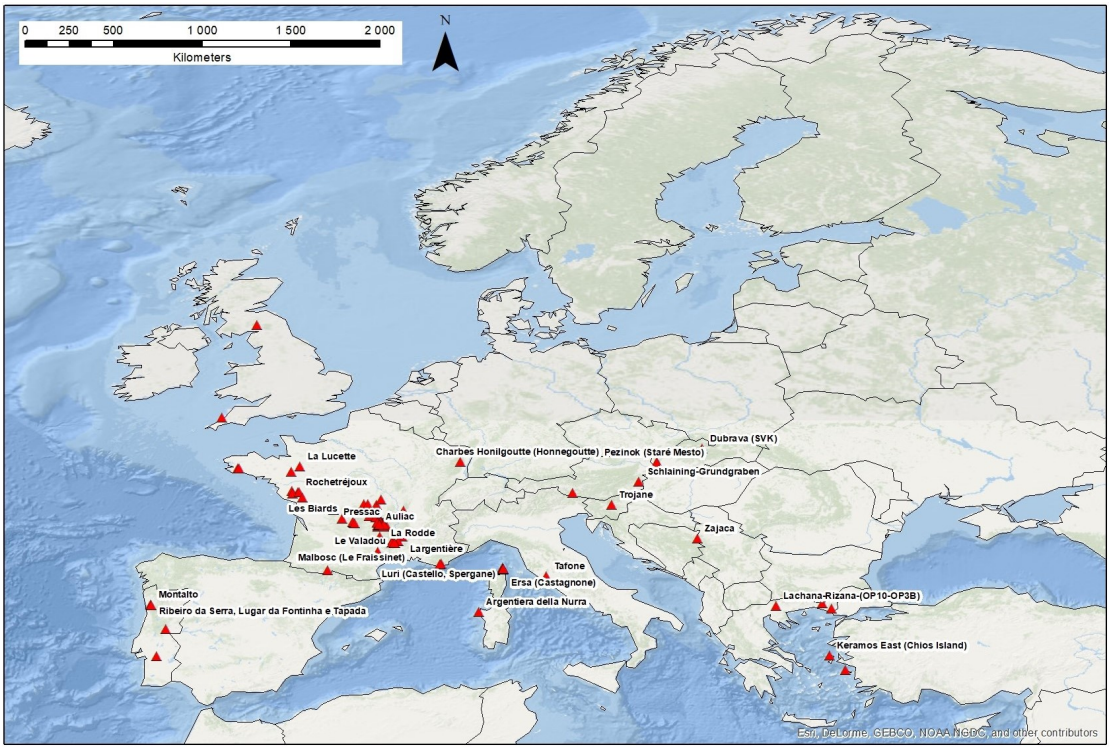

Figure 3 – Map of deposits in Europe with past production of Sb (deposits with past production of 1000 t Sb metal or more are labelled).

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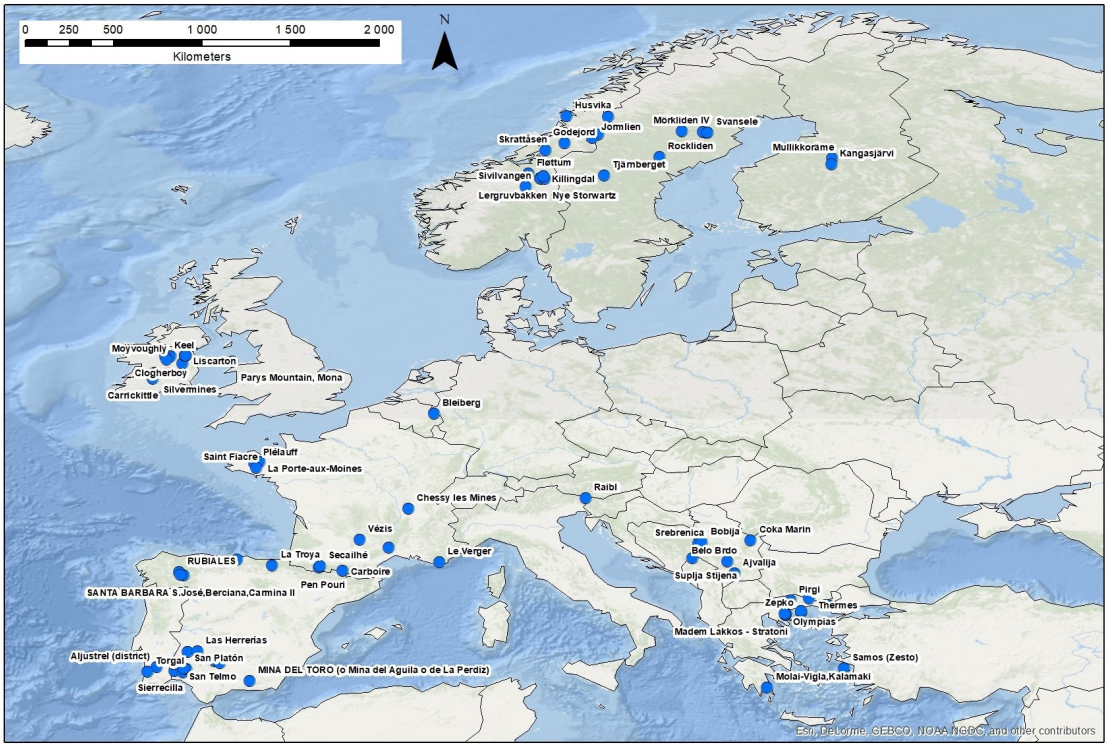

Figure 4 – Map of deposits in Europe with Zn grade ≥ 5% or PbZn grade ≥ 10%.

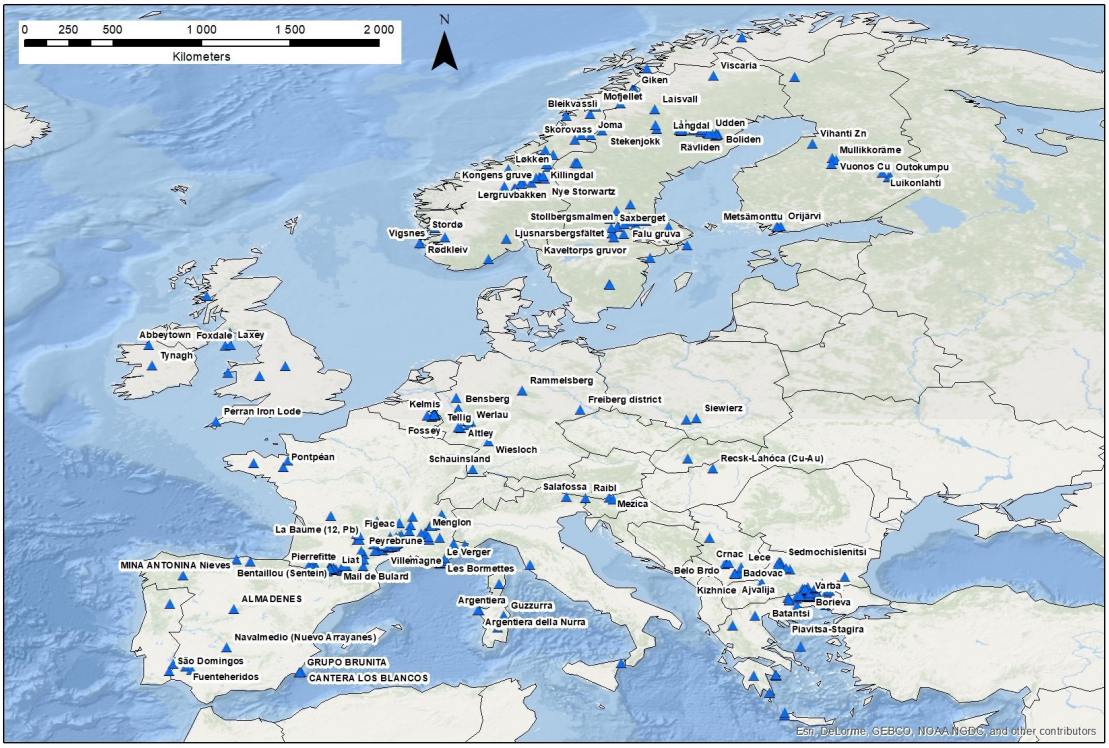

Figure 5 – Map of deposits in Europe with past production of Zn or PbZn (deposits with past production of 20 000 t Zn or PbZn metal or more are labelled).

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The annexes 1 to 4 present a limited portion of the data. The full dataset is provided as a Microsoft Excel file, containing four tabs. Note that, in the Excel file, a deposit may be repeated on several lines, as ProMine is a relational database (some fields may contain several values). The number n of lines over which a deposit is replicated is:

n = number of reported deposit types × number of reported status × number of reported morphologies × number of reported exploitation types

All four tables in the Excel file contain the following fields:

- ID
- Name of deposit (first, if several)
- Country
- Longitude (decimal degrees, WGS84)
- Latitude (decimal degrees, WGS84)
- Main commodity
- Deposit type (code)
- Deposit type (text)
- Status of deposit (code)
- Status of deposit (text)
- Morphology of mineralization (code)
- Morphology of mineralization (text)
- Type of exploitation (code)
- Type of exploitation (text)
- Targeted commodity (code)
- Targeted commodity (text)
- Past production value
- Past production average grade
- Reserve value
- Reserve average grade
- Resource value
- Resource average grade
- Grade unit
- Reserve average grade in percent
- Resource average grade in percent
- Highest of resource or reserve grade in percent
- All contained commodities
- Criticality of targeted commodity (Based on 2017 EU CRM list)
- CLC code
- Type of land cover (text)
- Designated area (no or type)

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6- Switch on-switch off approach

The purpose of the dataset produced by the IMP@CT T2.1 team and presented above is to facilitate the identification of deposits possibly appropriate for a SO-SO approach. As for any mining project, the approach must be adapted on a case by case basis and each project has to be carefully analysed in its own particular context (in terms of geology, metallogeny, ore processing, land use, socio-economy, etc.). However, the information provided in the presented dataset allows a preliminary screening of appropriate deposits. We suggest below possible criteria to guide the selection of deposits that each end user will have to adapt according to its own objectives:

- Country: this field allows to select countries were the legal framework and/or social acceptance is more favorable to mining projects;
- Latitude and longitude: These fields allow location of the deposit with respect to networks and logistic constrains (energy, transportation, qualified workforce, etc.);
- Deposit type: this field provides insights on mineralogy and type of ore processing that might be required;
- Morphology of mineralization: this field provides insights on the method of extraction that could be most appropriate;
- Type of exploitation: this fields brings information that might be useful in terms of social acceptance, i.e. we believe that underground mining might be better accepted as it usually generates lower environmental impacts than open cast mining;
- Status of deposit: this field provides information on the level of development of the project; we think for instance that a “brownfield” status (e.g., “old industrial mine”) might be more viable than “greenfield” ones (e.g., “mineral occurrence”) because more data is available and/or projects are more advanced and it might be cheaper to start operation;
- Value of past production: this value is a proxy for the size of mineralization and past activity; even though the reserve may have been fully extracted during the past activity of the mine, some resources may become reserves in the Present-Day economic context and new extensions might be discovered;
- Values of reserves, resources and grades: These fields allow selection of the “richest” deposits;
- All contained commodities: this field allows identification of accompanying commodities (by/co-products) that could be either penalizing (As, Hg, Cd, Tl, …) or favoring (Ge, In, Ag, Au, …);
- Criticality of commodity: criticality of the targeted commodity might be a favorable criteria in terms of socio-economic aspects;
- Type of land cover: this field provides useful information in terms of land use and/or social acceptance (e.g., very low probability to develop a project in an urbanized area);
- Designated area: this field also provides useful information in terms of land use and/or social acceptance (e.g., low probability to develop a project in the core zone of a national park);

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Possible combinations of these fields are infinite and should allow identification of the most suitable projects, based on the objectives of each end-user. As mentioned before, the information will then have to be refined and/or confirmed on a case by case basis for each project.

7- Conclusion

The datasets extracted from the ProMine MD database and augmented with the CLC and CDDA databases contain pertinent candidates for SO-SO and appropriate information to evaluate their relevancy on a case by case basis. These datasets will feed other WPs of the IMP@CT project. Based on their feedbacks, the querying and augmentation processes will be improved to better select most relevant deposits and their associated information.

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Annex 1 – List of deposits with grade of Sb resource or reserve greater or equal to 1%

Deposits are sorted in alphabetical order of ID. This table does not contain all data fields presented in this report (the full dataset is available in the provided Excel file).

ID	NAME	COUNTRY	LONGITUDE (WGS84)	LATITUDE (WGS84)	MAIN COMMODITY	Sb PAST PRODUCTION (tons)	Sb RESERVE (tons)	Sb RESERVE AVG GRADE (percent)	Sb RESOURCE (tons)	Sb RESOURCE AVG GRADE (percent)	COMMENTS
ESP-00442	Mina Portoviejo	SPAIN (Kingdom of Spain)	-7.3457	39.5267	Au	0	202.5	45	0	0	Reserve average grade is disproportionately high and may reflect the grade of a concentrate (if any past production, not documented here).
FIN-00795	Kalliosalo	FINLAND (Republic of Finland)	22.9484	62.7303	Au	0	0	0	3300	1.1	
FRA-00031	Le Semnon	FRANCE (French Republic)	-1.3505	47.8418	Sb	500	0	0	5000	2	
FRA-00082	Valcros		6.2760	43.1922	Sb	192	0	0	4300	1.6	
FRA-00286	Les Brouzils		-1.3062	46.8680	Sb	895	4800	7.5	4450	6.7	
FRA-01529	Auliac Filon Principal		3.0524	45.1462	Sb	1100	0	0	400	8.5	
GRC-00778	Philadelphia-Sochos	GREECE (Hellenic republic)	23.4931	40.7645	Sb	0	10.08	3.36	0	0	
ITA-00340	Tafone	ITALY (Italian Republic)	11.5717	42.5550	Sb	1165	0	0	17500	2.5	
MKD-00002	Lojane	FORMER YUGOSLAV REPUBLIC OF MACEDONIA	21.6606	42.2297	Sb	0	11200	3.5	0	0	
MKD-00023	Alsar		21.9461	41.1531	Au	0	6000	2	0	0	
MKD-00034	Krstov Dol		22.3000	42.3000	Sb	0	70000	2.2	0	0	
PRT-00075	Cortes Pereira	PORTUGAL (Portuguese Republic)	-7.5122	37.4963	Sb	0.118	0	0	2508.8	50.176	Resource average grade is disproportionately high and equal to the past production average grade; it probably reflects the grade of concentrate.
PRT-00134	Montalto		-8.4748	41.1091	Sb	7200	0	0	731.5	2.66	
PRT-00172	Ribeiro da Serra, Lugar da Fontinha e Tapada		-8.4437	41.0790	Sb	7200	0	0	14400	4	
YUG-00110	Rajiceva Gora	YUGOSLAVIA (Federal Republic of Yugoslavia)	20.9292	43.1558	Sb	0	33600	1.12	0	0	Federal Republic of Yugoslavia does not exist anymore; deposit ID and country should be updated in the ProMine MD database

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Annex 2 – List of deposits with past production of Sb

Deposits are sorted in alphabetical order of ID. This table does not contain all data fields presented in this report (the full dataset is available in the provided Excel file).

ID	NAME	COUNTRY	LONGITUDE (WGS84)	LATITUDE (WGS84)	MAIN COMMODITY	Sb PAST PRODUCTION (tons)	Sb RESERVE (tons)	Sb RESERVE AVG GRADE (percent)	Sb RESOURCE (tons)	Sb RESOURCE AVG GRADE (percent)	COMMENTS
AUT-01008	Rabant	AUSTRIA (Republic of Austria)	12.9379	46.7734	Sb	200	0	0	10000	0	
AUT-01127	Schlaining-Grundgraben		16.2879	47.3504	Sb	50000	8000	0	0	0	
FRA-00004	La Lucette		-0.9167	48.0941	Sb	42000	0	0	0	0	
FRA-00005	Largentière		4.2975	44.5477	Pb	3000	0	0	0	0	
FRA-00015	La Licoulne		3.3480	45.1791	Sb	3000	0	0	0	0	
FRA-00016	Le Colombier		2.7888	45.7320	Sb	936	0	0	0	0	
FRA-00017	Osfonds (Conc. La Licoulne)		3.3152	45.1965	Sb	3000	0	0	0	0	
FRA-00018	Marmeissat		3.1813	45.3523	Sb	1000	0	0	0	0	
FRA-00019	La Chassagne		3.3201	45.2604	Sb	2000	0	0	100	0	
FRA-00020	Pressac		3.1461	45.2995	Sb	3200	0	0	0	0	
FRA-00021	Le Fraisse (Fraysse) (43)		3.2812	45.2229	Sb	3000	0	0	100	0	
FRA-00022	La Bessade		3.2756	45.1914	Sb	8500	0	0	0	0	
FRA-00023	Ouche (district de Massiac)		3.1750	45.2687	Sb	8300	0	0	0	0	
FRA-00031	Le Semnon		-1.3505	47.8418	Sb	500	0	0	5000	2	
FRA-00032	Ty Gardien (Les Moulins)		-4.0693	48.0172	Sb	565	0	0	3000	0	
FRA-00035	Ersa (Castagnone)	FRANCE (French Republic)	9.391	42.9768	Sb	2000	0	0	0	0	
FRA-00036	Luri (Castello, Spergane)		9.39553	42.8971	Sb	3400	0	0	2000	0	
FRA-00037	Méria (Vallone, San Martino)		9.42267	42.9198	Sb	5600	0	0	400	0	
FRA-00046	Malbosc (Le Fraissinet)		4.07336	44.3308	Sb	1063	0	0	0	0	
FRA-00059	Les Biards		1.23478	45.45	Sb	1800	0	0	0	0	
FRA-00076	Rochetréjoux		-0.9928	46.7902	Sb	16500	0	0	100	0	
FRA-00082	Valcros		6.27597	43.1922	Sb	192	0	0	4300	1.6	
FRA-00199	Mérinchal (La Peyrouse)		2.48093	45.9245	Sb	900	0	0	0	0	
FRA-00202	Nades		2.96447	46.1576	Sb	735	0	0	0	0	
FRA-00220	Villeranges		2.35468	46.2017	Au	30	0	0	0	0	
FRA-00265	La Planchette, Chanac		1.81169	45.2597	Sb	1000	0	0	0	0	
FRA-00286	Les Brouzils		-1.30618	46.868	Sb	895	4800	7.5	4450	6.7	
FRA-00334	La Veronnière		-1.2644	46.7531	Sb	450	0	0	0	0	
FRA-00337	La Ramée		-0.955675	46.8048	Sb	850	0	0	0	0	
FRA-00390	Kerdévot		-3.97618	48.0034	Sb	325	0	0	0	0	

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ID	NAME	COUNTRY	LONGITUDE (WGS84)	LATITUDE (WGS84)	MAIN COMMODITY	Sb PAST PRODUCTION (tons)	Sb RESERVE (tons)	Sb RESERVE AVG GRADE (percent)	Sb RESOURCE (tons)	Sb RESOURCE AVG GRADE (percent)	COMMENTS
FRA-00450	Spergane		9.38037	42.9097	Sb	400	0	0	0	0	
FRA-00451	San Martino Fossato		9.41545	42.9266	Sb	900	0	0	0	0	
FRA-00495	Les Borels		6.20548	43.1685	Sb	165	0	0	0	0	
FRA-00598	Bournac		3.05487	43.7989	Sb	300	0	0	0	0	
FRA-00851	Lussac		0.807004	45.8953	Sb	200	0	0	0	0	
FRA-00891	Mervent		-0.766413	46.5237	Sb	2	0	0	0	0	
FRA-00942	Charbes Honilgoutte (Honnegoutte)		7.24577	48.3421	Sb	1000	0	0	0	0	
FRA-01163	Poubeau		0.486025	42.8371	Sb	30	0	0	0	0	
FRA-01285	Le Rouve		3.78638	44.2888	Sb	30	0	0	0	0	
FRA-01287	Vieljouve		3.766666667	44.30527778	Sb	30	0	0	0	0	
FRA-01326	La Blatte		3.15751	44.575	Sb	2.5	0	0	0	0	
FRA-01338	Montmalart		3.21991	46.4214	Sb	7	0	0	0	0	
FRA-01347	Montignat		2.53733	46.188	Sb	300	0	0	0	0	
FRA-01412	Violay		4.36225	45.8595	Sb	52	0	0	0	0	
FRA-01432	Angle Bas		2.7758	45.7132	Sb	50	0	0	0	0	
FRA-01435	Chomadoux (Sb)		2.59935	45.6148	Sb	12.5	0	0	0	0	
FRA-01463	Florat		3.18414	45.3748	Sb	2	0	0	0	0	
FRA-01465	Oursière		2.95084	45.5247	Sb	6	0	0	0	0	
FRA-01487	Naves		1.76405	45.3099	Sb	1.5	0	0	0	0	
FRA-01490	Pandrignes		1.85915	45.2194	Sb	4	0	0	0	0	
FRA-01492	Brugeilles		3.20782	45.3368	Sb	15	0	0	0	0	
FRA-01493	Chavignance		3.0977	45.3052	Sb	250	0	0	0	0	
FRA-01495	La Forge		3.03528	45.3101	Sb	150	0	0	0	0	
FRA-01496	Luzer		3.17265	45.1976	Sb	300	0	0	0	0	
FRA-01497	Terret		3.16506	45.2903	Sb	250	0	0	0	0	
FRA-01499	Ceyroux		3.3003	45.2209	Sb	300	0	0	0	0	
FRA-01500	Cistrières		3.25871	45.2474	Sb	800	0	0	0	0	
FRA-01501	La Fage		3.25072	45.2258	Sb	250	0	0	0	0	
FRA-01528	Auliac		3.05129	45.0563	Sb	1100	400	0	0	0	
FRA-01529	Auliac Filon Principal		3.0524	45.1462	Sb	1100	0	0	400	8.5	
FRA-01530	Espezolle		3.12129	45.1638	Sb	600	0	0	0	0	
FRA-01534	Freycenet		3.341388889	45.14916667	Sb	900	0	0	0	0	
FRA-01535	Fromenty		3.51245	45.0714	Sb	10	0	0	0	0	
FRA-01536	Miramont		3.28675	45.1706	Sb	1	0	0	0	0	
FRA-01538	Moulergues		3.32176	45.0597	Sb	20	0	0	0	0	
FRA-01540	La Rodde		3.328055556	45.15277778	Pb	1250	0	0	0	0	
FRA-01541	Le Valadou		3.33643	45.1747	Sb	1000	0	0	0	0	
FRA-01870	Cassagnas		3.747	44.2668	Sb	800	0	0	0	0	
FRA-01875	Conche		3.018	45.2535	Sb	200	0	0	0	0	

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ID	NAME	COUNTRY	LONGITUDE (WGS84)	LATITUDE (WGS84)	MAIN COMMODITY	Sb PAST PRODUCTION (tons)	Sb RESERVE (tons)	Sb RESERVE AVG GRADE (percent)	Sb RESOURCE (tons)	Sb RESOURCE AVG GRADE (percent)	COMMENTS
FRA-01904	Saint-Michel de Dèze (La Felgerette)		3.908055556	44.24	Sb	2500	0	0	0	0	
FRA-01911	Terraillon		3.879166667	44.22027778	Sb	100	0	0	0	0	
FRA-04346	La Coste (15)		3.119722222	45.15972222	Sb	60	0	0	0	0	
GBR-00168	Glendinning	UNITED KINGDOM (U.K. of G.B. and Northern Ireland)	-3.0833	55.2635	Sb	200	0	0	0	0	
GBR-00389	Trewetha		-4.8723	50.6013	Sb	100	0	0	0	0	
GRC-00734	Pefka	GREECE (Hellenic republic)	26.03694444	40.90943	Au	186.9	0	0	0	0	
GRC-00749	Kalindiri		25.59222222	41.1705	Sb	100	0	0	0	0	
GRC-00864	Lachana-Rizana-(OP10-OP3B)		23.22488	41.03119	Sb	2250	0	0	0	0	
GRC-00898	Keramos East (Chios Island)		25.93744	38.5495	Sb	1050	0	0	0	0	
GRC-00967	Samos (Sb)		26.75805556	37.7925	Sb	4.5	0	0	0	0	
ITA-00011	Argentiera della Nurra	ITALY (Italian Republic)	8.1607	40.7364	PbZn	3000	0	0	0	0	
ITA-00340	Tafone		11.57166667	42.555	Sb	1165	0	0	17500	2.5	
PRT-00034	Barroca da Mina ou Barroca da Santa (Sarzedas)	PORTUGAL (Portuguese Republic)	-7.705325556	39.86966722	Sb	182.06	0	0	0	0	
PRT-00110	Herdade da Prata		-8.172065833	38.50357417	Sb	5.35	0	0	0	0	
PRT-00134	Montalto		-8.474811667	41.10907806	Sb	7200	0	0	731.5	2.66	
PRT-00172	Ribeiro da Serra, Lugar da Fontinha e Tapada		-8.443716111	41.07900167	Sb	7200	0	0	14400	4	
SVK-00004	Dubrava (SVK)	SLOVAKIA (Slovak Republic)	19.5	49.03	Sb	15000	0	0	0	0	
SVK-00055	Pezinok 3 - Kolarsky vrch Hill		17.22	48.32	Sb	18000	0	0	0	0	
SVK-00120	Pezinok (Staré Mesto)		17.18	48.32	Au	1000	0	0	5000	0	
SVN-00004	Trojane	SLOVENIA (Republic of Slovenia)	14.8943	46.1813	Sb	4000	0	0	0	0	
YUG-00044	Zajaca	YUGOSLAVIA (Federal Republic of Yugoslavia)	19.2484	44.464	Sb	70000	0	0	0	0	Federal Republic of Yugoslavia does not exist anymore; deposit ID and country should be updated in the ProMine MD database

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Annex 3 – List of deposits with grade of Zn resource or reserve greater or equal to 5%, or grade of PbZn resource or reserve greater or equal to 10%

Deposits are sorted in alphabetical order of ID. This table does not contain all data fields presented in this report (the full dataset is available in the provided Excel file).

ID	NAME	COUNTRY	LONGITUDE (WGS84)	LATITUDE (WGS84)	MAIN COMMODITY	Zn or PbZn PAST PRODUCTION (tons)	Zn or PbZn RESERVE (tons)	Zn or PbZn RESERVE AVG GRADE (percent)	Zn or PbZn RESOURCE (tons)	Zn or PbZn RESOURCE AVG GRADE (percent)	COMMENTS
BEL-00005	Bleiberg	BELGIUM (Kingdom of Belgium)	5.9167	50.7167		73027	0	0	135000	0	
BIH-00020	Srebrenica	BOSNIA AND HERZEGOWINA (Rep. of Bosnia & Herzegovina)	19.3648	44.1239	PbZn	0	550000	5.5	0	0	
ESP-00196	San Telmo	SPAIN (Kingdom of Spain)	-6.9681	37.8002	Ag	0	0	0	480000	12	
ESP-00238	Sierrecilla		-7.2572	37.6768	Ag	0	0	0	120000	12	
ESP-00280	RUBIALES		-7.0401	42.6772	Ag	0	0	0	924000	7.7	
ESP-00386	Minas de las Viñas.		-6.8341	37.6102	Ag	0	0	10.83	0	0	
ESP-00523	La Troya		-2.2997	43.0341	Ag	0	600000	12	0	0	
ESP-00534	LA NAVA-PAREDÓN		-5.2152	38.1678	Ag	0	70655	10.87	0	0	
ESP-00570	Mina de Reocín (Elisa; San Roque y otras).		-4.0925	43.3381	Fe	5400000	212500	8.5	0	0	
ESP-00578	San Platón		-6.6816	37.7639	Ag	0	0	0	13900	12.3	
ESP-00663	SANTA BARBARA S.José,Berciana,Carmina II		-6.7960	42.5215	Au	0	270220	9.16	0	0	
ESP-00816	Mina de Mirabuenos		-4.9448	38.0629	Ag	0	1772.8	22.16	0	0	
ESP-00846	MINA DEL TORO (o Mina del Aguila o de La Perdiz)		-3.4575	37.1440	Fl	0	44890	6.7	0	0	
ESP-00871	Monte Romero		-6.7943	37.7793	Cu	0	0	0	261000	8.7	
ESP-00905	RESIMONDE Permiso Ranger-Bilbao?-Berta Krupp		-6.9675	42.5365	Ag	0	0	5.8	0	0	
ESP-00921	Los Llanos-Constante (San Rafael)		-6.597259502	38.62433741	Ag	0	1200	6	0	0	
ESP-00926	Las Herrerías		-6.0982059	38.65635152	Ag	0	0	18.6	0	0	
FIN-01006	Mullikkoräme	FINLAND (Republic of Finland)	26.15943865	63.69894547	Zn	80385	0	0	196770	6.99	
FIN-01033	Kangasjärvi		26.11217699	63.3868975	Zn	4507	0	0	16290	0	
FRA-00006	Les Malines	FRANCE (French Republic)	3.62306	43.9244	Zn	1000000	0	0	60000	6	
FRA-00027	Plélauff		-3.20227	48.2146	PbZn	3000	0	0	30000	10	
FRA-00068	Carboire		1.27525	42.752	Zn	500	0	0	110000	6.9	
FRA-00086	Le Verger		6.19652	43.1823	Zn	22000	0	0	33000	10	
FRA-00238	Chessy les Mines		4.60966	45.8926	Zn	0	0	0	486000	9	

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ID	NAME	COUNTRY	LONGITUDE (WGS84)	LATITUDE (WGS84)	MAIN COMMODITY	Zn or PbZn PAST PRODUCTION (tons)	Zn or PbZn RESERVE (tons)	Zn or PbZn RESERVE AVG GRADE (percent)	Zn or PbZn RESOURCE (tons)	Zn or PbZn RESOURCE AVG GRADE (percent)	COMMENTS
FRA-00266	La Porte-aux-Moines		-2.93255	48.2925	Zn	0	0	0	145000	7.83	
FRA-00311	Pen Pouri		0.073111	42.9196	Zn	0	0	0	150000	8.3	
FRA-00319	Saint Fiacre		-3.10916	47.9914	PbZn	0	0	0	30000	15	
FRA-01299	Vézis		2.15598	44.3366	Zn	152	8442	9.38	0	0	
FRA-04142	Secailhé		0.1381	42.9857	Zn	0	0	10	0	0	
GBR-00289	Parys Mountain, Mona	UNITED KINGDOM (U.K. of G.B. and Northern Ireland)	-4.33333	53.3833	Zn	0	125632	6.4	0	6.4	
GRC-00741	St Philip (Kirki)	GREECE (Hellenic republic)	25.8195	41.01766	PbZn	13633.2	75740	5.41	0	0	
GRC-00742	Mili (Essimi)-West		25.96722222	41.00913	Zn	0	22410	7.47	0	0	
GRC-00751	Vouves-Thassos		24.59583333	40.63333333	Zn	120000	18000	6	0	0	
GRC-00752	Sotiras-Thassos		24.57222222	40.72222222	Zn	40000	10000	10	0	0	
GRC-00763	Mavres Petres- Stratoni area		23.76527778	40.527	PbZn	0	286000	11.44	0	0	
GRC-00777	Thermes		24.98277778	41.35745	PbZn	0	350880	6.88	250000	10	
GRC-00869	Zepko		23.81905	40.57278	PbZn	0	0	0	0	10.44	
GRC-00870	Madem Lakkos - Stratoni		23.78756	40.52383	PbZn	0	225400	9.8	0	0	
GRC-00875	Olympias		23.75207	40.58821	PbZn	0	695000	5	0	0	
GRC-00885	Molai-Vigla,Kalamaki		22.85222222	36.82861111	Zn	0	495000	11	0	0	
GRC-00904	Pirgi		24.02972222	41.24972222	PbZn	0	0	0	0	5.45	
GRC-00970	Samos (Zesto)		26.75777778	37.80888889	PbZn	0	0	0	30	5	
IRL-00003	Silvermines	IRELAND	-8.263056	52.793717	Zn	0	0	0	1155810	6.43	
IRL-00009	Ballinalack		-7.4772	53.6486	Zn	0	387816	0	0	0	
IRL-00026	Carrickittle		-8.3777	52.5135	Zn	0	9090	6.06	0	0	
IRL-00061	Harberton Bridge		-6.8539	53.277	Zn	0	316710	8.1	0	0	
IRL-00064	Keel		-7.735555556	53.64861111	Zn	0	142635	7.71	0	0	
IRL-00076	Liscarton		-6.738888889	53.65888889	Zn	0	0	0	100800	8.4	
IRL-00085	Moyvoughly		-7.6818	53.4527	Zn	0	8463	7.71	0	0	
IRL-00097	Tatestown-Scallanstown		-6.730148	53.681761	Zn	0	191691	5.31	0	0	
IRL-00111	Clogherboy		-6.701111111	53.65472222	Zn	0	19822	5.83	0	0	
ITA-00269	Raibl	ITALY (Italian Republic)	13.6333	46.45	Zn	600000	0	0	90000	5	
NOR-00604	Husvika	NORWAY (Kingdom of Norway)	12.657165	65.839801	Zn	19200	24000	24	0	0	
NOR-00618	Fløttum		10.720457	62.899739	Zn	0	43610	12.46	0	0	
NOR-00623	Godejord		12.544345	64.454705	Zn	0	0	0	6900	0	
NOR-00630	Kongens gruve		11.302018	62.671001	Zn	120750	86250	6.9	0	0	
NOR-00632	Lergruvbakken		11.336116	62.650143	Zn	37600	50760	9.4	0	0	
NOR-00640	Nye Storwartz		11.53746	62.62859	Zn	181500	9075	12.1	0	0	
NOR-00649	Sivilvangen		10.570711	62.228541	Cu	0	27640	6.91	0	0	
NOR-00651	Skrattåsen		11.578564	64.07251	Zn	350	5600	7	0	0	

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ID	NAME	COUNTRY	LONGITUDE (WGS84)	LATITUDE (WGS84)	MAIN COMMODITY	Zn or PbZn PAST PRODUCTION (tons)	Zn or PbZn RESERVE (tons)	Zn or PbZn RESERVE AVG GRADE (percent)	Zn or PbZn RESOURCE (tons)	Zn or PbZn RESOURCE AVG GRADE (percent)	COMMENTS
NOR-00665	Killingdal		11.473154	62.795424	Zn	174581	0	0	29500	5.9	
PRT-00001	Aljustrel (district)	PORTUGAL (Portuguese Republic)	-8.162627778	37.87115	Zn	0	788000	5.49	1415880	5.7	
PRT-00165	Preguiças (1 e 2)		-7.297499167	38.0425225	Zn	6202.48	0	0	80000	8	
PRT-00207	Torgal		-8.644029167	37.63579306	Pb	0	0	0	589	6.54	
SWE-00374	Rockliden	SWEDEN (Kingdom of Sweden)	17.390063	63.749045	Zn	0	0	0	56000	5.6	
SWE-00392	Snåttermyran		19.767809	64.989637	Zn	0	0	0	6600	6.6	
SWE-00397	Ankarvattnet		14.264426	64.896391	Zn	0	0	0	44000	5.5	
SWE-00401	Mörkliden IV		18.520065	65.045598	Zn	0	0	0	6960	11.6	
SWE-00813	Jormlien		13.978899	64.737402	Zn	0	0	0	1.2	6	
SWE-00816	Storbäcksdalen Västra		14.777461	65.779848	Zn	0	0	0	9450	6.3	
SWE-00869	Norrliden Norra		19.589944	65.019036	Zn	0	0	0	182754	7.8	
SWE-00912	Svansele		19.818803	64.977188	Zn	0	0	0	33800	5.2	
SWE-00916	Tjärnberget		14.57215	62.798949	Zn	0	0	0	20800	5.2	
YUG-00001	Suplja Stijena	YUGOSLAVIA (Federal Republic of Yugoslavia)	19.04333333	43.38333333	PbZn	0	0	0	1519000	7	Federal Republic of Yugoslavia does not exist anymore; deposit ID and country should be updated in the ProMine MD database
YUG-00075	Belo Brdo		20.8426	43.2297	PbZn	152000	76916	5.74	0	0	
YUG-00135	Coka Marin		22.0126	44.2838	Cu	0	0	0	33000	11.7	
YUG-00151	Bobija		19.5329	44.1919	Brt	0	200000	10	0	0	
YUG-00178	Ajvalija		21.20166667	42.62555556	PbZn	191000	0	16.4	225600	18.8	

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Annex 4 – List of deposits with past production of Zn or PbZn

Deposits are sorted in alphabetical order of ID. This table does not contain all data fields presented in this report (the full dataset is available in the provided Excel file).

ID	NAME	COUNTRY	LONGITUDE (WGS84)	LATITUDE (WGS84)	MAIN COMMODITY	Zn or PbZn PAST PRODUCTION (tons)	Zn or PbZn RESERVE (tons)	Zn or PbZn RESERVE AVG GRADE (percent)	Zn or PbZn RESOURCE (tons)	Zn or PbZn RESOURCE AVG GRADE (percent)	COMMENTS
AUT-01527	Metnitz	AUSTRIA (Republic of Austria)	14.2008	46.9714	Zn	6000	0	0	0	0	
BEL-00005	Bleiberg	BELGIUM (Kingdom of Belgium)	5.9167	50.7167		73027	0	0	135000	0	
BEL-00014	Eschbroich		5.9972	50.6903	PbZn	35413	0	0	0	0	
BEL-00015	Fossey		6.0411	50.6981	Zn	50000	0	0	0	0	
BEL-00020	Kelmis		5.9667	50.7000	Zn	600000	0	0	0	0	
BEL-00023	Lontzen		6.0047	50.6822	PbZn	66646	0	0	0	0	
BEL-00034	Rocheux		5.8306	50.5411	PbZn	70000	0	0	0	0	
BEL-00035	Schmalgraf		5.9864	50.6972	PbZn	47182	0	0	0	0	
BEL-00043	Dison		5.8536	50.6103	PbZn	45	0	0	0	0	
BEL-00044	Dickenbusch		5.9703	50.6603	PbZn	10152	0	0	0	0	
BEL-00047	Haute- Saurée		5.8536	50.6103	PbZn	95	0	0	0	0	
BEL-00051	Angleur		5.6033	50.6072	PbZn	1500	0	0	0	0	
BEL-00052	Mutzhagen		5.9764	50.7011	PbZn	34244	0	0	0	0	
BEL-00053	Membach		5.9947	50.6189	PbZn	4691	0	0	0	0	
BEL-00054	Roer		5.9808	50.6653	PbZn	1500	0	0	0	0	
BEL-00055	Saint-Paul		5.955833333	50.66111111	PbZn	25000	0	0	0	0	
BGR-00013	Sedmochislenitsi	BULGARIA (Republic of Bulgaria)	23.5108	43.1877	PbZn	66772	0	0	0	0	
BGR-00014	Plakalnitsa		23.5528	43.1556	PbZn	9272	904.8	0.87	0	0	
BGR-00015	Izdremets		23.4652	42.9978	PbZn	494	0	0	0	0	
BGR-00016	Vatiya		23.7667	42.8167	PbZn	647	0	0	0	0	
BGR-00032	Dolna Kamenitsa		24	42.8167	Au	934.62	0	0	0	0	
BGR-00052	Bakadzhik		26.7968	42.4621	PbZn	4489	0	0	7607	1.19	
BGR-00071	Ardino		25.1394	41.6024	PbZn	17377	27000	0	0	0	
BGR-00072	Enyovche		25.0437	41.5176	PbZn	95619	0	0	0	0	
BGR-00077	Zvezdel-Galenit		25.4994	41.438	PbZn	53666	0	0	0	0	
BGR-00083	Madzharovo		25.8641	41.6358	PbZn	71518	0	0	105421	1.62	
BGR-00084	Lozen		26.0045	41.7551	PbZn	278	0	0	0	0	
BGR-00086	Ustrem		26.4481	42.0286	PbZn	31263	0	0	0	0	
BGR-00184	Ruen (BGR)		25.6576	42.10222222	PbZn	30776	0	0	0	0	
BGR-00185	Lebnitsa		22.5775	42.14388889	PbZn	10004	0	0	0	0	
BGR-00186	Mogilata		24.9136	41.926	PbZn	49170	0	0	0	0	
BGR-00187	Ossikovo		24.9218	41.4882	PbZn	29389	0	0	0	0	

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BGR-00188	Strashimir		24.9723	41.437	PbZn	55579	0	0	0	0	
BGR-00189	Borieva		24.924	41.4886	PbZn	203520	0	0	0	0	
BGR-00190	Gradishte		24.9853	41.4352	PbZn	201967	0	0	0	0	
BGR-00193	Stratiev Kamak		24.9622	41.41	PbZn	81659	0	0	0	0	
BGR-00194	Shumachevski Dol-Androu		24.9673	41.4106	PbZn	51698	0	0	0	0	
BGR-00195	Ribnitsa		24.876	41.465	PbZn	257890	0	0	0	0	
BGR-00198	Golyam Palas-Dimov Dol		24.8559	41.4762	PbZn	96225	0	0	0	0	
BGR-00199	Shahonitsa		24.8884	41.4598	PbZn	53621	0	0	0	0	
BGR-00200	Pechinsko		24.9792	41.4504	PbZn	37945	0	0	0	0	
BGR-00201	Konski Dol		24.9516	41.4578	PbZn	83609	0	0	0	0	
BGR-00202	Buchovitsa		24.9672	41.4496	PbZn	3375	0	0	0	0	
BGR-00203	Kralev Dol		24.9417	41.456	PbZn	59054	0	0	0	0	
BGR-00204	Laikov Chukar		24.9811	41.4455	PbZn	13492	0	0	0	0	
BGR-00205	Metlivko		24.9883	41.4284	PbZn	24962	0	0	0	0	
BGR-00206	Fabrika-Yurukovi Kolibi		24.9967	41.4404	PbZn	13258	0	0	0	0	
BGR-00207	Spoluka		24.9357	41.5046	PbZn	9884	0	0	0	0	
BGR-00208	Garvanov Kamak		23.43	43.2	PbZn	489	0	0	0	0	
BGR-00209	Sharenka		24.92444444	41.4895	PbZn	55002	0	0	0	0	
BGR-00210	Gospodinovo		24.8653	41.5122	PbZn	384	0	0	0	0	
BGR-00211	Baram		24.9202	41.489	PbZn	4640	0	0	0	0	
BGR-00212	Varba		24.9011	41.4772	PbZn	79171	0	0	0	0	
BGR-00213	Rovino		24.9132	41.5313	PbZn	5716	0	0	0	0	
BGR-00214	Batantsi		24.9367	41.4458	PbZn	23214	0	0	0	0	
BGR-00215	Izvorite-Dryanov Dol		24.8644	41.4683	PbZn	20821	0	0	0	0	
BGR-00216	Borski Dol		24.8574	41.4945	PbZn	4842	0	0	0	0	
BGR-00217	Chepintsi		24.8748	41.4288	PbZn	760	0	0	0	0	
BGR-00218	Ostra Chuka		24.8895	41.4707	PbZn	8144	0	0	0	0	
BGR-00219	Kriv Gabar		25.0205	41.4192	PbZn	19649	0	0	0	0	
BGR-00220	Yanovska Mahala		24.9841	41.4385	PbZn	649	0	0	0	0	
BGR-00221	Shadiytsa		24.9684	41.4671	PbZn	5190	0	0	0	0	
BGR-00224	Chetroka		24.661	41.8353	PbZn	22060	0	0	0	0	
BGR-00225	Kenan Dere		24.7794	41.7262	PbZn	40046	0	0	0	0	
BGR-00226	Balkan Mahala		24.8533	41.7469	PbZn	2100	0	0	0	0	
BGR-00227	Persenk		24.7488	41.8055	PbZn	1327	0	0	0	0	
BGR-00228	Lakavitsa		24.85972222	41.7964	PbZn	621	0	0	0	0	
BGR-00229	Pilevo		24.7888	41.8093	PbZn	2970	0	0	0	0	
BGR-00230	Shipchenyovo		25.0108	41.6168	PbZn	104	0	0	0	0	
BGR-00237	Gabrovo		25.2696	41.7996	PbZn	7403	0	0	0	0	

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BGR-00238	Sazhe		25.2896	41.8929	PbZn	5227	0	0	0	0	
BGR-00240	Severen Kontakt		25.3362	41.9075	PbZn	4334	0	0	0	0	
BGR-00243	Pcheloyad		25.458	41.448	PbZn	24202	0	0	0	0	
BGR-00244	Lessovo		26.4959	41.99222222	PbZn	3164	0	0	0	0	
BGR-00245	Golyamata Reka		26.4514	42.0173	PbZn	139	0	0	0	0	
BGR-00246	Barita		26.4191	42.0251	PbZn	3941	0	0	0	0	
BGR-00247	Osenovlak		23.5396	42.9623	PbZn	60	0	0	0	0	
BGR-00248	Hristo Botev (Gara Bov)		23.3607	43.031	PbZn	436	0	0	0	0	
BGR-00249	Kamenitsa		23.816	42.873	PbZn	936	0	0	0	0	
DEU-00077	Rammelsberg		10.41898	51.89875	Zn	4200000	0	0	0	0	
DEU-00079	Freiberg district		13.35	50.9167	Ag	59000	0	0	219150	4.5	
DEU-00090	Altley		7.2833	49.9833	Pb	21600	0	0	0	0	
DEU-00115	Bensberg		7.15227	50.96549	PbZn	140000	0	0	0	0	
DEU-00153	Emser Gangzug		7.7167	50.3333	Pb	609000	0	0	0	0	
DEU-00185	Holzappel		7.790000028	50.32	Pb	374009	0	0	0	0	
DEU-00223	Mühlenbach	GERMANY (Federal Republic of Germany)	7.64	50.36	Pb	140351	0	0	0	0	
DEU-00270	Schauinsland		7.9	47.9167	PbZn	80000	0	0	0	0	
DEU-00301	Tellig		7.17	50.0333	Pb	21744	0	0	0	0	
DEU-00317	Werlau		7.699999988	50.14	Pb	88000	0	0	0	0	
DEU-00320	Wiesloch		8.7	49.3167	PbZn	120000	0	0	0	0	
DEU-00327	Lüderich		7.210000003	50.93	Zn	659766	0	0	0	0	
DEU-00330	Christian Levin mine		7.050000002	51.52	Pb	1900	0	0	0	0	
ESP-00126	Navalmedio (Nuevo Arrayanes)	SPAIN (Kingdom of Spain)	-4.590210645	38.8517931	Pb	203000	0	0	0	0	
ESP-00297	Fuenteheridos		-6.679755835	37.90524287	Ag	2000000	0	0	0	0	
ESP-00309	Liat		0.869798317	42.7963653	Pb	84000	0	0	0	0	

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ESP-00518	Los Angeles.		-6.375602893	37.72719648	Ag	2700	0	0	0	0	
ESP-00528	GRUPO BRUNITA		-0.890643076	37.60513286	Fe	168600	0	0	0	0	
ESP-00547	CANTERA SAN VALENTIN		-0.856536702	37.60947452	Fe	369800	0	0	0	0	
ESP-00570	Mina de Reocín (Elisa; San Roque y otras).		-4.092537815	43.33809255	Fe	5400000	212500	8.5	0	0	
ESP-00576	Matienzo Oeste.Concesiones Francisco José 11971, Esperanza 12075,La Leona 11846.		-3.382560863	43.23650782	Fl	20000	0	0	0	0	
ESP-00601	Cortas GLORIA ESTE y SAN JOSÉ		-0.874985258	37.59809298	Fe	77000	0	0	0	0	
ESP-00645	CANTERA LOS BLANCOS		-0.819807144	37.62592358	Fe	193600	0	0	0	0	
ESP-00659	MINA ANTONINA Nieves		-6.816061965	42.52169532	Ag	106000	0	0	0	0	
ESP-00662	ALMADENES		-4.225987192	40.81184082	Cu	51300	0	0	0	0	
ESP-00672	GLORIA OESTE y CRUZ CHIQUITA		-0.880645459	37.5981948	Fe	89650	0	0	0	0	
FIN-00623	Hammaslahti	FINLAND (Republic of Finland)	30.03020578	62.46222929	Zn	90720	0	0	2016	0	
FIN-01006	Mullikkoräme		26.15943865	63.69894547	Zn	80385	0	0	196770	6.99	
FIN-01010	Vuonos Cu		29.08868	62.756527	Co	94240	0	0	10108	1.33	
FIN-01011	Outokumpu		28.991908	62.724461	Co	304950	0	0	0	0	
FIN-01012	Vihanti Zn		25.14417723	64.40659835	Zn	1430500	0	0	32990	0.36	
FIN-01014	Pahtavuoma Zn		24.25052206	67.79919632	Zn	2010	0	0	141370	0.67	
FIN-01017	Aijala		23.36333895	60.19321122	Cu	5511	0	0	0	0	
FIN-01018	Orijärvi		23.5387743	60.22921166	Zn	30710	0	0	0	0	
FIN-01019	Metsämonttu		23.34285671	60.18979024	Zn	50367	0	0	0	0	
FIN-01023	Luikonlahti		28.701783	62.941654	Co	50050	0	0	0	0	
FIN-01031	Ruostesuo		26.35517873	63.59194185	Zn	4267	0	0	49612	1.79	
FIN-01033	Kangasjärvi		26.11217699	63.3868975	Zn	4507	0	0	16290	0	
FRA-00005	Largentière	FRANCE (French Republic)	4.2975	44.5477	Pb	69000	0	0	0	0	
FRA-00006	Les Malines		3.62306	43.9244	Zn	1000000	0	0	60000	6	
FRA-00008	Saint-Salvy (Noailhac-Saint-Salvy)		2.3663	43.6004	Ge	350000	150000	0	0	0	
FRA-00027	Plélauff		-3.20227	48.2146	PbZn	3000	0	0	30000	10	
FRA-00030	Pontpéan		-1.713888889	48.01777778	Pb	30000	0	0	2500	2	
FRA-00041	Le Soulier		4.07186	44.1516	Py	3600	0	0	0	0	
FRA-00044	La Loubatière		2.25509	43.4051	Pb	7700	0	0	24500	0	
FRA-00045	La Rabasse		3.07945	43.7762	Zn	48000	0	0	0	0	
FRA-00048	Villemagne		3.43989	44.1217	Pb	39600	0	0	68700	0	

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FRA-00049	Le Bleymard		3.73055	44.4723	Zn	45000	0	0	60000	0	
FRA-00050	La Croix de Pallières		3.93893	44.0446	Zn	80000	0	0	0	0	
FRA-00064	Peyrebrune		2.25088	43.7615	Pb	36000	0	0	0	0	
FRA-00068	Carboire		1.27525	42.752	Zn	500	0	0	110000	6.9	
FRA-00069	Figeac		2.01641	44.6369	Zn	60000	0	0	9500	0	
FRA-00070	La Baume (12, Pb)		2.05312	44.3427	Pb	52000	0	0	0	0	
FRA-00071	Bentaillou (Sentein)		0.902777	42.827	Zn	75000	0	0	45000	0	
FRA-00073	Pierrefitte		-0.1422	42.942	Zn	180000	0	0	60000	0	
FRA-00084	Cogolin (Faucon Largentière)		6.51267	43.2485	Zn	3500	0	0	20000	0	
FRA-00085	Valauria (Minière de Valaure)		7.51218	44.071	Zn	25000	0	0	0	0	
FRA-00086	Le Verger		6.19652	43.1823	Zn	22000	0	0	33000	10	
FRA-00087	Les Bormettes		6.26157	43.1224	Zn	162000	0	0	10000	0	
FRA-00092	Bois Feuillet (Le Rocheray)		6.33359	45.2842	Fl	7000	0	0	20000	4.1	
FRA-00093	Menglon		5.47429	44.6793	Zn	22000	0	0	0	0	
FRA-00224	Arrens		-0.2575	42.943	Zn	150	0	0	130000	0	
FRA-00396	La Touche (35)		-1.47571	48.361	Zn	3400	0	0	3200	0	
FRA-00429	La Finosa (Ghisoni)		9.24353	42.0924	Pb	400	0	0	18000	0	
FRA-00454	Velmanya Pixerot		2.54959	42.5489	Brt	120	0	0	0	0	
FRA-00484	Pech Mijé		2.33535	42.9938	Zn	12000	0	0	0	0	
FRA-00492	Mont Coustand 2		1.508333333	42.99666667	Pb	400	0	0	0	0	
FRA-00494	Notre Dame des Maures		6.22607	43.1633	Zn	100	0	0	0	0	
FRA-00498	Vaucron		6.51157	43.3747	Zn	3000	0	0	0	0	
FRA-00521	La Caunette		2.38465	43.3196	Zn	14000	0	0	0	0	
FRA-00592	Soubès		3.34289	43.7805	Zn	150	0	0	0	0	
FRA-00597	Brusque		2.94644	43.7689	Zn	1200	0	0	0	0	
FRA-00613	Cendras		4.06285	44.1428	Zn	300	0	0	0	0	
FRA-00614	Landas		4.12103	44.2067	Zn	4300	0	0	0	0	
FRA-00616	Saint Félix		4.07949	44.156	Zn	2800	0	0	0	0	
FRA-00617	Saint Jean Du Pin		4.04978	44.1232	Zn	1000	0	0	0	0	
FRA-00619	Saint Pierre de Péone		6.93174	44.1175	Zn	50	0	0	0	0	
FRA-00631	Le Minier du Viala (Le Minier du Tarn)		2.88342	44.0753	Zn	5000	0	0	0	0	
FRA-00636	Trèves		3.399	44.0708	Zn	3600	0	0	80000	0	
FRA-00638	Les Valettes (12)		3.34854	44.0406	Zn	700	0	0	0	0	
FRA-00639	Les Avinières		3.66433	43.932	Zn	40000	0	0	0	0	
FRA-00640	La Boissière (30)		3.82973	43.9705	Zn	2000	0	0	0	0	

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FRA-00641	Deux Jumeaux		3.70117	43.9631	Zn	5000	0	0	9000	0	
FRA-00642	Durfort		3.95148	44.0013	Zn	15000	0	0	0	0	
FRA-00643	Saint Laurent Le Minier		3.62481	43.9478	Zn	25000	0	0	0	0	
FRA-00832	Nontron		0.7011	45.5158	Pb	50	0	0	0	0	
FRA-01150	Auzat		1.47415	42.7654	Zn	80	0	0	0	0	
FRA-01156	Mail de Bulard		0.961944444	42.80583333	Zn	20000	0	0	0	0	
FRA-01158	Moustajon		0.590812	42.8091	Zn	30	0	0	0	0	
FRA-01175	Crabioules		0.539574	42.7228	Zn	2400	0	0	0	0	
FRA-01208	Les Abères (et La Bédole)		1.2706	42.95	Zn	50	0	0	0	0	
FRA-01216	Argut		0.731784	42.8877	Zn	5000	0	0	0	0	
FRA-01223	Pale Bidau		0.822776	42.8719	Zn	3000	0	0	0	0	
FRA-01224	Pale de Rase		0.833494	42.8837	Zn	2000	0	0	0	0	
FRA-01229	Arraux		0.657409	42.8767	Pb	30	0	0	0	0	
FRA-01230	Baren		0.614688	42.8725	Zn	30	0	0	0	0	
FRA-01232	Contrère		0.668197	42.885	Zn	500	0	0	0	0	
FRA-01235	Mail de la Pic		0.646548	42.8712	Zn	30	0	0	0	0	
FRA-01236	Maratines		0.663079	42.893	Zn	5000	0	0	0	0	
FRA-01237	Picades		0.678432	42.869	Zn	30	0	0	0	0	
FRA-01241	Couledous		-0.110376	42.9427	Zn	300	0	0	0	0	
FRA-01242	La Curadère		-0.141618	42.9573	Zn	600	0	0	0	0	
FRA-01243	Garaoulère		-0.1228	42.9461	Zn	300	0	0	0	0	
FRA-01252	Anglas		-0.3244	42.9306	Zn	3000	0	0	0	0	
FRA-01253	Arre		-0.343534	42.9212	Zn	3000	0	0	0	0	
FRA-01260	Bartèque		-0.450311	42.978	Zn	30	0	0	0	0	
FRA-01270	La Rouvière (07)		4.01163	44.4541	Zn	300	0	0	0	0	
FRA-01279	Orpierre		5.69219	44.3173	Zn	2000	0	0	0	0	
FRA-01281	Bréziers		6.21308	44.4343	Zn	3	0	0	0	0	
FRA-01284	Ramponenche		3.66841	44.3371	Zn	1300	0	0	0	0	
FRA-01289	La Bildoire		4.16832	44.3599	Zn	30	0	0	0	0	
FRA-01298	La Pale		2.1259	44.3311	Zn	1500	0	0	0	0	
FRA-01299	Vézis		2.15598	44.3366	Zn	152	8442	9.38	0	0	
FRA-01301	Saint André Lachamp		4.17615	44.4903	Zn	150	0	0	0	0	
FRA-01305	Brette		5.30398	44.5811	Zn	4300	0	0	0	0	
FRA-01448	Le Longeray		6.34231	45.5866	Zn	1000	0	0	0	0	
FRA-01476	La Poype		4.84786	45.4924	Zn	15000	0	0	0	0	
FRA-01544	Chambonnet-Versilhac		4.18699	45.1562	Brt	5	0	0	0	0	
FRA-01546	Saint Barthélémy le Plain		4.75053	45.064	Zn	1000	0	0	0	0	

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FRA-01553	Laffrey		5.78025	45.0317	Zn	2000	0	0	0	0	
FRA-01556	Montjean		5.79713	45.0807	Zn	2500	0	0	0	0	
FRA-01557	Oulles		5.97619	45.078	Pb	500	0	0	0	0	
FRA-01558	Pierre Rousse		5.78438	45.0586	Zn	2500	0	0	0	0	
FRA-01560	Les Ruines		5.80373	45.0634	Zn	250	0	0	0	0	
FRA-01561	Le Sapey (38)		5.81285	45.046	Zn	2	0	0	0	0	
FRA-01602	Juliette		4.68892	44.7646	Zn	3000	0	0	0	0	
FRA-01609	La Vidale		2.15276	44.5661	Pb	1000	0	0	0	0	
FRA-01675	Heches-Trappes		-0.032096	42.9156	Zn	8000	0	0	0	0	
FRA-01676	Chèze Meyabat		-0.040912	42.9217	Zn	8000	0	0	0	0	
FRA-01696	Fournial		3.0537	45.2515	Zn	400	0	0	0	0	
FRA-01847	Saint Jean du Bruel		3.366666667	44.01666667	Zn	1734	0	0	0	0	
FRA-01879	La Brette		5.27912	44.6226	Zn	4300	0	0	0	0	
FRA-01908	Sigottier		5.6701	44.4603	Zn	2000	0	0	0	0	
FRA-04195	Arrens 2		-0.2551	42.9449	Zn	150	0	0	0	0	
FRA-04323	Les Adams		3.968333333	44.08416667	Py	660	0	0	0	0	
FRA-04344	Fagnou		1.358611111	42.98138889	PbZn	27	0	0	0	0	
GBR-00044	Blackcraig	UNITED KINGDOM (U.K. of G.B. and Northern Ireland)	-4.4375	54.8363	Pb	500	0	0	0	0	
GBR-00152	Foxdale		-4.6436	54.1689	PbZn	150000	0	0	0	0	
GBR-00214	Laxey		-4.38333	54.2167	PbZn	150000	0	0	0	0	
GBR-00222	Llanengan		-4.51667	52.8	Pb	375	0	0	0	0	
GBR-00252	Mill Close Mine		-1.6	53.15	Pb	18000	0	0	0	0	
GBR-00295	Perran Iron Lode		-5.1263	50.3108	Zn	32000	0	0	0	0	
GBR-00349	Snail Beach (D. Shelve), Snailbeach		-2.91667	52.6167	Pb	10000	0	0	0	0	
GBR-00370	Strontian		-5.5999	56.6727	Pb	200	0	0	0	0	
GRC-00741	St Philip (Kirki)	GREECE (Hellenic republic)	25.8195	41.01766	PbZn	13633.2	75740	5.41	0	0	
GRC-00743	Tris Vrises (Boukate)		26.03861111	41.175	PbZn	1044	0	0	0	0	
GRC-00749	Kalindiri		25.59222222	41.1705	Sb	4.7	0	0	0	0	
GRC-00751	Vouves-Thassos		24.59583333	40.63333333	Zn	120000	18000	6	0	0	
GRC-00752	Sotiras-Thassos		24.57222222	40.72222222	Zn	40000	10000	10	0	0	
GRC-00753	Koumaria (East)-Thassos		24.57361111	40.66194444	PbZn	40000	12000	4	0	0	

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GRC-00766	Kouri		23.96587	41.28695	Mn	150	450	3	600	3	
GRC-00767	Karposlouk		23.90611111	41.37148	Mn	3000	0	0	0	0	
GRC-00768	Tartana		23.94638889	41.37192	Mn	2400	0	0	0	0	
GRC-00769	Sikidia		24.35725	41.35616	Mn	40	200	0.4	0	0	
GRC-00770	Finterna		24.34382	41.45424	Mn	225	125	0.5	0	0	
GRC-00771	Farassino		24.53861111	41.4951	PbZn	150	0	0	0	0	
GRC-00774	Mandra Kari		24.39166667	40.97386	Mn	300	1500	0.3	0	0	
GRC-00776	Ikosipente		23.97555556	41.26086	Mn	12000	0	0	0	0	
GRC-00784	Piavitsa-Stagira		23.73194444	40.53049	PbZn	31820	0	0	0	0	
GRC-00878	Ermioni-Karakasi		23.28916667	37.45833333	Cu	4500	0	0	0	0	
GRC-00879	Ermioni-Kapsospiti		23.295	37.43888889	Cu	75	0	0	0	0	
GRC-00880	Ermioni-Roros		22.17638889	37.43527778	Cu	4125	0	0	0	0	
GRC-00881	Ermioni-Aghios Dimitrios		23.30583333	37.44527778	Cu	171	0	0	0	0	
GRC-00883	Neapoli-Agios Elissaios,Sidirospilies		22.95638889	36.565	Fe	22.5	0	0	0	0	
GRC-00884	Neapoli-Agios Elissaios,Kamari		22.96638889	36.57222222	Fe	36	0	0	0	0	
GRC-00996	Kondro Hill (Pindos)		21.10833333	39.97805556	Cu	7300	0	0	0	0	
GRC-01015	Galaktos		22.25166667	40.47944444	Cr	40	0	0	80	0.08	
GRC-01016	Skyros Island		24.53027778	38.90833333	Cr	25	0	0	50	0.05	
GRC-01017	Kakopetros (Crete Island)		23.75861111	35.41916667	Fe	7	0	0	2800	0.07	
GRC-01018	Ravdoucha (Crete Island)		23.74861111	35.53555556	Fe	8	0	0	8	0.02	
HUN-00026	Recsk-Lahóca (Cu-Au)	HUNGARY (Republic of Hungary)	20.08693	47.95497	Au	1817400	0	0	0	0	
IRL-00015	Abbeytown	IRELAND	-8.528139	54.213493	Zn	41800	25000	2.5	0	0	
IRL-00108	Tynagh		-8.383333	53.166667	Zn	612000	300800	3.2	0	0	
ITA-00010	Argentiera	ITALY (Italian Republic)	8.2333	40.7333	Zn	42000	0	0	0	0	
ITA-00011	Argentiera della Nurra		8.1607	40.7364	PbZn	250000	0	0	0	0	
ITA-00104	Fenice Capanne		10.8167	43.05	Zn	5600	0	0	0	0	
ITA-00114	Funtana Raminosa		9.171944444	39.8775	Zn	14850	0	0	8250	0	
ITA-00129	Guzzurra		9.483333333	40.4667	PbZn	350000	0	0	5000	5	
ITA-00269	Raibl		13.6333	46.45	Zn	600000	0	0	90000	5	
ITA-00294	Salafossa		12.6667	46.5167	Zn	217500	0	0	217500	4.35	
ITA-00360	Tripî		15.45	38.0667	Zn	500	0	0	0	0	
NOR-00604	Husvika	NORWAY (Kingdom of Norway)	12.657165	65.839801	Zn	19200	24000	24	0	0	
NOR-00612	Åkervoll		11.997	63.852003	Zn	5000	0	0	0	0	
NOR-00614	Bleikvassli		13.87594	65.92241	Zn	205800	46200	4.2	0	0	

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NOR-00615	Bursi		16.004646	67.149939	Cu	5673	46.5	0.31	0	0	
NOR-00616	Charlotta		16.059489	67.137472	Cu	17400	0	0	0	0	
NOR-00617	Christianus Sextus		11.336947	62.687933	Zn	18400	0	0	0	0	
NOR-00619	Folldal		9.996907	62.143287	Cu	13915	22385	1.21	0	0	
NOR-00621	Giken		16.089266	67.132786	Cu	40600	32900	0.7	0	0	
NOR-00622	Gjersvik		13.434215	64.85622	Cu	2700	9720	0	0	0	
NOR-00627	Hankabakken		16.114855	67.137544	Cu	7960	2000	0.4	0	0	
NOR-00628	Kisgruva		9.609471	59.599117	Cu	375	0	0	4357	0.75	
NOR-00630	Kongens gruve		11.302018	62.671001	Zn	120750	86250	6.9	0	0	
NOR-00631	Kviknegruvene		10.428538	62.549579	Cu	4525	0	0	0	0	
NOR-00632	Lergruvbakken		11.336116	62.650143	Zn	37600	50760	9.4	0	0	
NOR-00633	Lillefjell		11.766999	63.250918	Cu	4815	0	0	0	0	
NOR-00634	Løkken		9.697849	63.12179	Cu	570000	0	0	0	0	
NOR-00635	Mannfjell		11.64313	63.366945	Zn	5300	0	0	0	0	
NOR-00636	Mons Petter		16.034353	67.14302	Cu	12000	0	0	0	0	
NOR-00637	Muggruva		11.293715	62.720165	Cu	1950	0	0	0	0	
NOR-00638	Nordre Geitryggen		10.087722	62.15085	Zn	112750	0	0	0	0	
NOR-00640	Nye Storwartz		11.53746	62.62859	Zn	181500	9075	12.1	0	0	
NOR-00641	Nygruva		5.992893	60.14032	Zn	5780	1020	3.4	0	0	
NOR-00642	Ny-Sulitjelma		16.138064	67.140521	Cu	14245	0	0	0	0	
NOR-00644	Rødkleiv		5.232108	59.349836	Zn	45246.6	0	0	0	0	
NOR-00645	Røstvangen		10.374043	62.38396	Cu	2832.4	730	0.73	0	0	
NOR-00646	Sagmo		16.012537	67.119864	Cu	4370	0	0	0	0	
NOR-00647	Sauda		6.480798	59.648674	Zn	4392	0	0	0	0	
NOR-00651	Skrattåsen		11.578564	64.07251	Zn	350	5600	7	0	0	
NOR-00653	Skyttemyr		8.693594	58.555598	Cu	600	0	0	0	0	
NOR-00654	Stordø		5.422655	59.790441	Zn	2070000	0	0	0	0	
NOR-00655	Tverrfjellet Cu		9.509135	62.22673	Cu	180000	0	0	48000	1.2	
NOR-00656	Undal		10.051677	62.818795	Cu	18600	0	0	0	0	
NOR-00657	Vigsnes		5.222079	59.352961	Cu	20160	0	0	0	0	
NOR-00658	Vingelen gruve		10.86715	62.439094	Zn	1140	0	0	7600	3.8	
NOR-00660	Ytterøya		11.17667	63.79764	Cu	18720	0	0	0	0	
NOR-00661	Skorovass		13.102498	64.626159	Zn	151760	0	0	35230	2.71	
NOR-00663	Hersjøgruva		11.129989	62.682339	Cu	56	0	0	41860	1.4	
NOR-00664	Joma		13.884918	64.853111	Cu	166068.5	0	0	159500	1.45	
NOR-00665	Killingdal		11.473154	62.795424	Zn	174581	0	0	29500	5.9	
NOR-00666	Vaddas		21.581298	69.805605	Cu	70	0	0	71.5	0.01	
NOR-00667	Båsmo		14.085383	66.333629	Cu	2590	0	0	0	0	
NOR-00669	Jakobsbakken		16.001146	67.095265	Cu	108174	0	0	726	2.42	

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NOR-00670	Mofjellet		14.155564	66.302915	Zn	157035	0	0	36100	3.61	
NOR-00675	Melkedalen		16.755475	68.25206	Zn	330	0	0	13200	2.2	
POL-00123	Tarnowskie	POLAND (Republic of Poland)	18.7458	50.4278	Zn	2.4	0	0	0	0	
POL-00252	Siewierz		19.257253	50.474571	PbZn	400000	0	0	0	0	
PRT-00165	Preguiças (1 e 2)	PORTUGAL (Portuguese Republic)	-7.297499167	38.0425225	Zn	6202.48	0	0	80000	8	
PRT-00180	São Domingos		-7.491541389	37.66967333	Py	625000	125000	2.5	0	0	
PRT-00219	Várzea de Trevões		-7.46065	41.09367611	Zn	1313.87	0	0	0	0	
SVK-00036	Hodruña - Rozália vein	SLOVAKIA (Slovak Republic)	18.83	48.45	Cu	5600	0	0	0	0	
SVN-00003	Mezica	SLOVENIA (Republic of Slovenia)	14.8391	46.482	Pb	280000	0	0	0	0	
SVN-00013	Puharje		15.0352	46.376	PbZn	600	0	0	0	0	
SWE-00159	Långdal	SWEDEN (Kingdom of Sweden)	20.228248	64.825592	Zn	255462	0	0	0	0	
SWE-00273	Gruvberget		14.8689	60.600545	Zn	4551	0	0	0	0	
SWE-00349	Viscaria		20.11343	67.867318	Cu	87659.95	0	0	279300	0.7	
SWE-00367	Ryllshyttegruvan		16.16006	60.303146	Fe	16548.88	0	0	0	0	
SWE-00383	Boliden		20.37516	64.872	Au	76816.32	0	0	0	0	
SWE-00384	Näsliden		19.102939	65.09996	Zn	116829.4	0	0	0	0	
SWE-00386	Stekenjokk		14.463252	65.101504	Zn	225351.3458	0	0	325220	3.22	
SWE-00393	Maurliden Västra		19.517903	65.060192	Zn	75407.886	48620	3.4	47940	3.4	
SWE-00399	Granlunda		18.39637	65.108732	Cu	42.432	0	0	0	0	
SWE-00431	Svärtträsk		17.250676	65.168695	W	8074.6	0	0	0	0	
SWE-00442	Grängsbogruvan		15.898859	61.337762	Zn	4.118	0	0	0	0	
SWE-00443	Riddarhytte odalutmål		15.56444	59.829755	Fe	3315.6	0	0	0	0	
SWE-00446	Skytt- och Näverbergsgruvorn		15.538262	60.599612	Zn	34034.35	0	0	0	0	
SWE-00616	Kaptensgruvan		16.759267	60.487801	Fe	3.0566	0	0	0	0	
SWE-00624	Sjöströmsgruvan		16.329964	60.515208	Pb	2.112	0	0	0	0	
SWE-00770	Bunsås koppargruva		16.529548	60.611478	Zn	97.2763	0	0	18336	1.91	
SWE-00803	Dammbergsgruvan		15.27963	60.19598	Zn	9762.4	0	0	0	0	
SWE-00804	Dannemorafältet		17.860221	60.204271	Fe	17943.438	0	0	0	0	
SWE-00805	Stavbergs gruvor		16.94345	60.489823	Cu	0.4784	0	0	0	0	
SWE-00822	Svärdsjö gruva		15.83533	60.713588	Zn	46989.81	0	0	0	0	
SWE-00828	Brattvallen		13.176871	63.448576	Cu	0.06	0	0	0	0	
SWE-00830	Bjelkes gruvfält		13.097097	63.465041	Cu	55.485	0	0	0	0	
SWE-00831	Fröå malmfält		13.210287	63.400713	Cu	820.32	0	0	0	0	
SWE-00836	Laisvall		17.156162	66.146454	Pb	193459.8	0	0	0	0	
SWE-00842	Vassbogruvan		12.517797	61.945948	Pb	14737.614	0	0	0	0	

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SWE-00851	Nasafjäll		15.403572	66.474925	Zn	8.4165	0	0	0	0	
SWE-00858	Sala gruva		16.574151	59.907806	Zn	87944	0	0	0	0	
SWE-00862	Udden		19.837825	64.958439	Zn	285470.4	0	0	0	0	
SWE-00867	Boda		15.21427	61.017872	Pb	1.62	0	0	0	0	
SWE-00881	Adakfältet		18.640438	65.370092	Zn	190376.49	0	0	19695	3	
SWE-00893	Mensträsk		19.361461	65.073274	Zn	16.368	0	0	0	0	
SWE-00894	Kankberg		20.267465	64.922104	Cu	20818.8	0	0	0	0	
SWE-00895	Kedträsk		19.885971	64.951648	Zn	19949.1	0	0	0	0	
SWE-00896	Kimheden		18.595879	65.087826	Cu	355.8762	0	0	0	0	
SWE-00898	Långsele		20.277178	64.847042	Zn	436991.958	0	0	0	0	
SWE-00904	Petiknäs södra		20.042898	64.934777	Zn	264540.514	0	0	0	0	
SWE-00905	Rakkejaur		19.157208	65.141854	Zn	16647.4	0	0	0	0	
SWE-00907	Rudtjebäcken		18.711388	65.380412	Zn	140363.733	0	0	29807.2	2.96	
SWE-00908	Rävliden		18.477494	65.063957	Zn	318527.0808	0	0	0	0	
SWE-00909	Rävlidmyran		18.470257	65.076651	Zn	75240.3	0	0	0	0	
SWE-00921	Högkulla östra		19.496928	65.017197	Zn	14286.636	0	0	0	0	
SWE-00952	Fredriksbergsgruvorna		14.849034	57.293748	Zn	178.9	0	0	0	0	
SWE-00953	Rikagruvan		14.860102	57.250279	Zn	1.6	0	0	0	0	
SWE-00969	Holmtjärn nya		19.574213	65.11084	Au	18356	0	0	0	0	
SWE-00977	Åsen		19.906354	64.929751	Cu	5498	0	0	0	0	
SWE-00979	Blaiken		17.166828	65.364182	Zn	12010.5	0	0	136935	1.5	
SWE-00992	Stollbergsmalmen		15.27804	60.18706	Zn	104440	0	0	0	0	
SWE-00997	Hällefors silvergruva		14.484883	59.850276	Zn	24571	0	0	0	0	
SWE-01001	Ljusnarsbergsfältet		14.987334	59.878595	Zn	26669.895	0	0	0	0	
SWE-01009	Kaveltorps gruvor		14.992953	59.867858	Zn	86761.368	0	0	0	0	
SWE-01029	Kalvbäcksfältet Zn		15.803296	60.48608	Zn	46135.467	0	0	0	0	
SWE-01048	Lövåsfältet		15.90517	60.4717	Pb	6188.84	0	0	0	0	
SWE-01053	Fanthyttefältet		15.085165	59.648476	Fe	347.931	0	0	0	0	
SWE-01107	Silvbergsgruvor		15.587777	60.348582	Zn	614.04	0	0	0	0	
SWE-01108	Söderby gruvor		18.771832	59.257623	Zn	415.803	0	0	0	0	
SWE-01125	Saxberget		14.941226	60.140852	Zn	456749.958	0	0	0	0	
SWE-01140	Falu gruva		15.613462	60.599473	Cu	455631.48	0	0	0	0	
SWE-01158	Börjelstorpsgruvan		16.926929	58.636317	Zn	249.22	0	0	0	0	
YUG-00025	Kizhnice	YUGOSLAVIA (Federal Republic of Yugoslavia)	21.2366	42.5977	PbZn	90000	32000	1.2	0	0	Federal Republic of Yugoslavia does not exist anymore; deposit ID and country should be updated in the ProMine MD database
YUG-00031	Novo Brdo (PbZn)		21.43222222	42.61583333	PbZn	110000	131000	4.9	17100	0.4	
YUG-00048	Avala		19.93055556	44.42	PbZn	5000	0	0	0	0	
YUG-00075	Belo Brdo		20.8426	43.2297	PbZn	152000	76916	5.74	0	0	
YUG-00077	Koporic		20.858	43.1441	PbZn	19000	0	0	0	0	
YUG-00083	Lece		21.5354	42.9279	Au	58000	0	0	0	0	

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ID	NAME	COUNTRY	LONGITUDE (WGS84)	LATITUDE (WGS84)	MAIN COMMODITY	Zn or PbZn PAST PRODUCTION (tons)	Zn or PbZn RESERVE (tons)	Zn or PbZn RESERVE AVG GRADE (percent)	Zn or PbZn RESOURCE (tons)	Zn or PbZn RESOURCE AVG GRADE (percent)	COMMENTS
YUG-00112	Crnac		20.693	43.08333333	PbZn	44000	0	3.2	49000	3.5	
YUG-00113	Zuta Prlina		20.8889	43.1505	PbZn	18000	0	0	0	0	
YUG-00178	Ajvalija		21.20166667	42.62555556	PbZn	191000	0	16.4	225600	18.8	
YUG-00188	Badovac		21.22222222	42.6	PbZn	38000	0	0	96000	3.6	

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