

# ABOUT MINING IN NAVARRE



SECONDARY  
EDUCATION



Committed to the dissemination and promotion of  
(science, technology, engineering and mathematics)



professions

# MINERÉTICA



# MINING AND ITS RELATIONSHIP WITH NAVARRA

Mining is one of the oldest activities developed by mankind. In Navarra it has always existed, and our symbols are engraved and sculpted on mining products: **MARBLE**, **ARENISCA** and **CLAY** with which cathedrals, farmhouses and streets are built.



Most of the mining companies in Navarra are SMEs and family businesses. The sector generates more than 350 direct and qualified jobs.



Mining in Navarra promotes anti-speculative and sustainable development in rural areas.

Mining concessions last for decades and the necessary investments have a very long return on investment period. For this reason, mining companies have very strong roots in their territories.

Navarra mining operates with the highest standards of environmental quality and occupational safety. The accident rate is lower than that of other similar activities such as construction or industry. It is a typical activity of developed countries.



# PHASES OF MINING



## EXPLORATION PHASE

The first phase of a mining project always consists of gathering information and expanding the geological knowledge of the area, in order to identify and assess the geological resources. In addition to analysing the technical and economic viability of its use.

## DEVELOPMENT PHASE

The development of a mine encompasses the set of activities aimed at the extraction, preparation, concentration, and benefit of a mineral resource. The use of a natural public resource distinguishes mining from other economic activities.

This gives value to a geological resource, by extracting a mineral from the earth which is later transformed into a raw material by using concentration techniques or shape modification.



## RESTORATION PHASE

It consists of the rehabilitation of the space affected by both extractive activities and the facilities associated with them, including mining waste. It is carried out at the end of the mining activity, or whenever possible, as it progresses.

In the restoration of mining areas, you must give the land a value equal to or greater than that it had before the mining activity began. In some cases the old use can be renewed, and other times the land is given a new use. The holders of mining concessions or mining authorisations have the obligation to ensure full restoration of the affected natural space. This obligation is backed up by financial guarantees in the form of insurance or bank deposit, as a mandatory requirement from the Administration before starting the development phase.



Sustainable development is “development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.”  
 World Commission for Environment and Development.

# WHY IS MINING IMPORTANT?



## IMPORTANCE FOR THE RURAL COMMUNITIES

The mining operations are located in rural communities, which helps fix population in these areas and allows their social and demographic development.



## SOCIAL IMPORTANCE

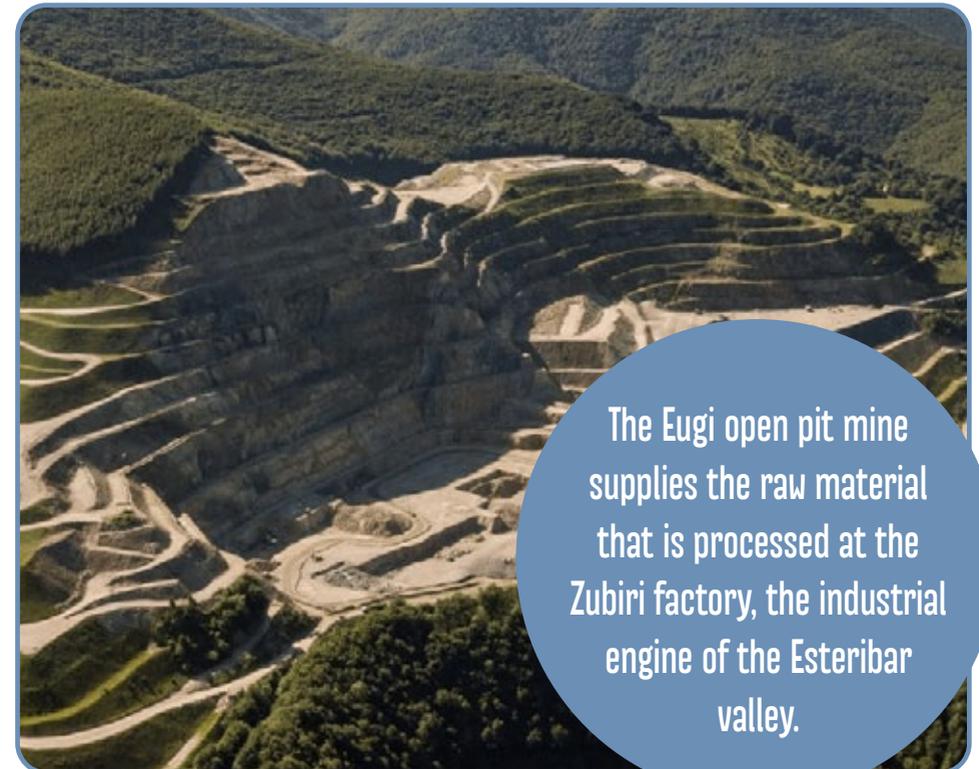
Geological resources are present in most of the things we use, and without them, our lives would be very different. Minerals are basically involved in every important sector, such as construction, and have other lesser known, but also very significant applications, such as the use of borates in cancer treatment, and of silica in photovoltaic panels or telescopes.

## ECONOMIC IMPORTANCE

Research and use of geological resources is, in most cases, declared of public utility due to its strategic nature and its impact on the economy and employment.



Navarra represents 1.3% of the value of Spain's mining production. We have more than 50 mining operations that employ more than 350 people.



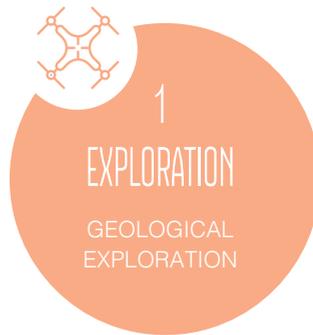
The Eugi open pit mine supplies the raw material that is processed at the Zubiri factory, the industrial engine of the Esteribar valley.

# MINING PRODUCTS

Mining is a beneficial activity for our daily life, and, without it, it would be impossible to lead the life we lead.

Mineral resources are essential for many activities:

With metals we build boats, bridges, buildings or machines, solar panels, wind farms, electric cars. We make jewelry with precious metals like gold, but they are also used in the electronic industry. We use aggregates to make concrete, slate, clay, and granite as construction materials.



## CONSTRUCTION



### AGGREGATES

- CONCRETE AND MORTAR
- ROAD
- RAILWAY
- DAMS



### ORNAMENTAL STONE

- FACADES
- COVERTS
- PAVEMENTS
- STONEWORK



### LIME AND PLASTER

- LIME FOR VARIOUS USES
- PLASTERBOARD
- PROJECTION PLASTERS



### CLAY

- BRICKS
- ROOF TILES
- REFRACTORIES

## LEISURE AND FOOD



### THERMAL WATER

- DRINK
- SPAS
- COSMETICS



### INDUSTRIAL ROCKS

- FERTILISERS
- FOOD COMPLEMENTS
- ELECTRONICS
- MEDICAL PROSTHETICS

## AGRICULTURAL AND INDUSTRY



### METALLIC MINERALS

- ELECTRONICS
- CAR
- TOOLS
- AERONAUTICS



### ENERGY PRODUCTS

- DOMESTIC HOT WATER HEATING



### REST AREAS



### WATER MANAGEMENT



### AGRICULTURAL, LIVESTOCK OR FOREST PRODUCTION



### RECOVERY OF PROTECTED HABITATS



### INDUSTRIAL OR RESIDENTIAL FLOOR



# MINING AND THE ENVIRONMENT



Mining, like all human activity, produces alterations in the environment, but it does not cause more pollution than other activities such as traffic, urban waste, industry or agriculture.

To guarantee good environmental practices and avoid irreparable damage to nature, mining is a highly regulated sector, with specific preventive laws and regulations:

for example, the opening of a mine must always be authorized by the administration.

In addition, it is mandatory to carry out environmental impact assessments in order to specify each of the conditions that mining activity may produce in the territory, the corrective measures that will be applied and the rehabilitation plan for when the works are completed.

The United Nations says that sustainable development is “development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.”



## IN NAVARRA WE HAVE MANY EXAMPLES OF REHABILITATION OF MINING SPACES:



### NATURAL SPACES

Ezkoriz or Zolina pond in Aranguren and Valle de Egüés



### LEISURE AND WALKING SPACES

Plazaola Greenway, former mining railway



### FARMLAND

Olive plantation in Falces



### FOREST LAND

Restoration of native species in Eugi

# MINING AND RENEWABLE ENERGY

In the same way that the metals extracted from mines are fundamental to construct buildings and means of transport, they are also necessary in new technologies that allow us to reduce greenhouse gas emissions.

Wind and solar power generation, batteries and electric vehicles require large amounts of resources that we extract from mines: copper for wires and electric motors, lithium and cobalt for batteries, rare metals such as indium or gallium, and silicon (which comes from quartz) for solar panels or photovoltaic cells...

- Cu  
copper
- Fe  
iron
- C  
carbon
- Nd  
neodymium
- Dy  
dysprosium
- Tb  
terbium



Renewable energy is one of the great challenges of our generation and in that challenge the supply of minerals will be very important.



# MINERÉTICA

An initiative to disseminate knowledge about mining  
and minerals.

More information about mining in Navarra at  
**[mineria.navarra.es](http://mineria.navarra.es)**

This learning unit is based on materials created by the Mining Chamber of Galicia  
(Cámara Oficial Mineira de Galicia)