

ABOUT MINING IN NAVARRRE



PRIMARY
EDUCATION



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



professions

MINERÉTICA

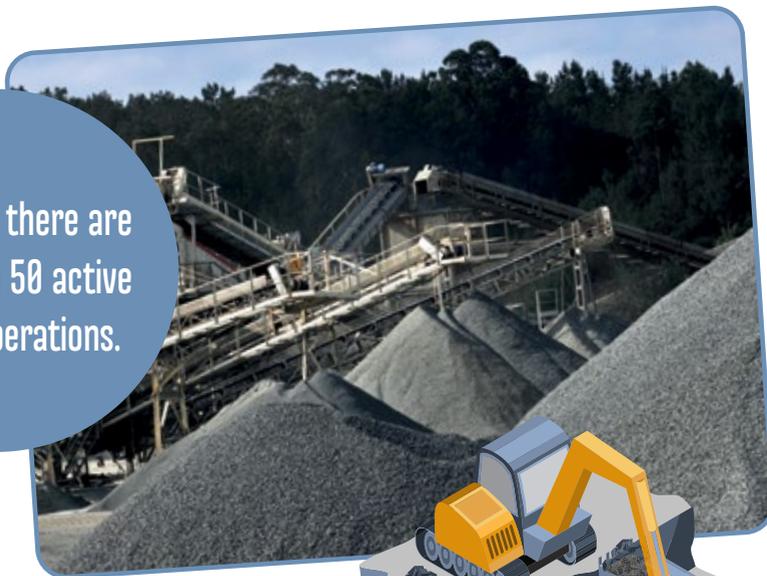
WHAT IS MINING?



Mining is the process of extraction and transformation of geological resources. These minerals are the raw materials that we use in **INDUSTRY, ENERGY GENERATION** and **CONSTRUCTION**.



In Navarra there are more than 50 active mining operations.



THE MINING CYCLE



Geological resources are natural resources that are extracted directly from the earth. When a geological resource is very abundant in a certain area, this is called a deposit.

Mining is one of the oldest activities of mankind, and it is responsible for researching and making geological resources available to society.

THE MINING CYCLE HAS THREE PHASES:



EXPLORATION PHASE

We identify and value the mining resource, and also the technical and economic viability of its use.



DEVELOPMENT PHASE

It values the geological resources, extracts them from the earth and transforms them into raw materials so that they can be used in construction, power generation or in industry.



RESTORATION PHASE

This phase is the moment of rehabilitation of the natural space affected by the exploitation. Those responsible for the exploitation have the obligation to give the land a value equal to or greater than what it was.

HOW ARE MINERALS EXTRACTED?



Minerals accumulate in the earth in different ways, and therefore, to extract them we use different methods:

Sometimes, the minerals are found inside the earth, in deep deposits, and are extracted from underground mines through shafts and galleries. Horizontal galleries provide access to the ore, while vertical shafts allow the miners to access the galleries.



Other times, the minerals are in shallow deposits and are mined in open mine pits. The surface rock is broken with controlled blasts or by mechanical methods such as saws

or excavators, and they are taken to the treatment plants to extract or transform the mineral and use it.

IN NAVARRA, MOST OF THE MINES ARE OPEN MINE PITS:

We obtain aggregates, clay, plaster, sandstone, minerals for industry ... We also obtain water, minerals for bottling and medicinal and thermal, which we enjoy in spas..



WHY IS MINING IMPORTANT?



MINING IS IMPORTANT FOR PEOPLE:

Minerals are essential for us, with them we manufacture most of the products we use every day, and without them, our lives would be very different.

MINING IS AN IMPORTANT SECTOR FOR NAVARRA,

like the pharmaceutical or forestry industry, for example, which is part of our social and cultural heritage: it creates wealth and employment in rural areas and it is compatible with agricultural and livestock activity since it occupies different spaces.

MINING IS IMPORTANT FOR OUR ECONOMY

The mining sector has a strategic role in Europe, because it supplies raw materials to our industries. Did you know that 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.

MINING IS IMPORTANT FOR RURAL COMMUNITIES

Many areas of rural Navarra are increasingly depopulated. Since the mining operations are in rural communities, they help fix population in these areas and allow their social and demographic development, since they generate employment and wealth.



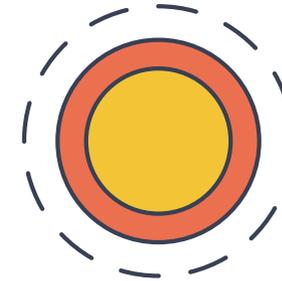
The Eugi open pit mine is one of the most important magnesite deposits in Europe.



MINING PRODUCTS

NOTEBOOKS, PENCILS, SOAPS, CUTLERY, GLASSES, COSMETICS AND MANY OF THE PRODUCTS WE USE DAILY IN OUR LIVES WOULD NOT EXIST WITHOUT MINERALS.

Mineral resources are essential for numerous activities: construction, automotive, aeronautical, space or shipbuilding, electronics, computers, glass and ceramic manufacturing, food, pharmacy, agriculture ...



HELMET

Petrochemicals, iron

STEERING WHEEL

Iron, aluminum, titanium and other alloys

BRAKES

Aluminum, iron and magnesium

CHAIN

Iron, zinc and others



Did you know that thermal and mineral waters are also mining products? In Navarra we have several spas. In the north of Navarra, the Elgorriaga Spa has the most salty mineral water spring in Europe.

WITH THE MINERAL EXTRACTED FROM THE MINES, WE GET THE PRODUCTS WE NEED:



DRAW THINGS YOU USE EVERYDAY AND MADE WITH PRODUCTS THAT COME OUT OF A MINE:



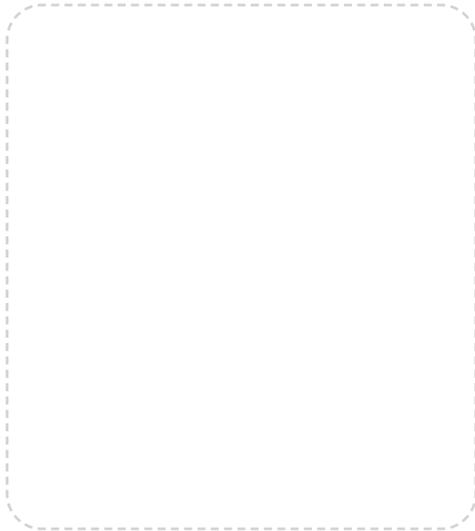
MATERIAL TO BUILD CARS



SOLAR PANELS



CONSTRUCTION MATERIALS



FOOD FOR LIVESTOCK



MATERIAL TO BUILD COMPUTER COMPONENTS

MINING AND THE ENVIRONMENT

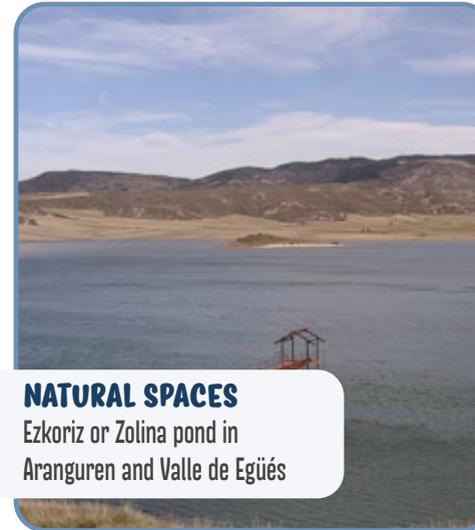


Mining, like all human activity, produces alterations in the environment, but it does not produce more pollution than other activities such as traffic, urban waste, industry or agriculture.

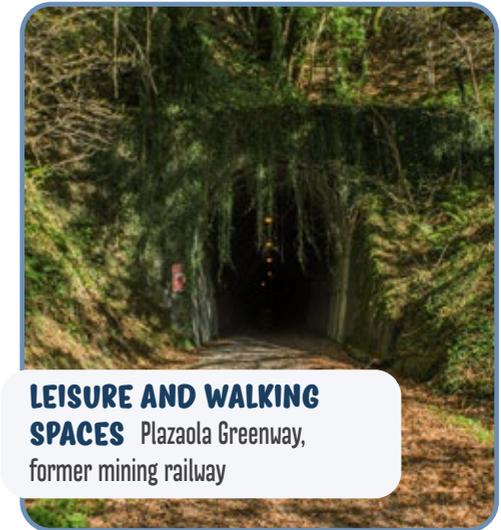
Once the mining activity is finished, we rehabilitate the area to return it to its previous use or to give it a new use.



IN NAVARRA WE HAVE GOOD 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

AUTHORITIES ARE ATTENTIVE IN ORDER TO AVOID IRREPARABLE DAMAGE TO NATURE, THERE ARE SPECIFIC REGULATIONS AND LAWS, AND MINE'S DEVELOPMENT IS ALWAYS SUBJECT TO PRE-APPROVAL BY ADMINISTRATION.

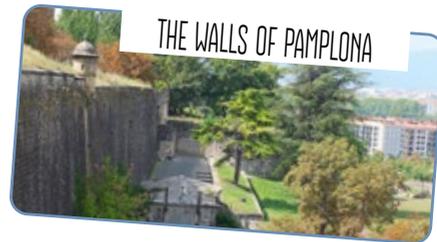
ACTIVITIES



Search the Internet for the materials used to make the following constructions:



THE FENCE OF ARTAJONA



THE WALLS OF PAMPLONA



THE CATHEDRAL OF SANTA MARÍA DE TUDELA

TO DISCUSS IN CLASS:

What problems would our society have if minerals were depleted?

Search for the mineral origin of products such as:



Fork



Mobile phone



Classroom furniture

MINERÉTICA

An initiative to disseminate knowledge about mining
and minerals.

More information about mining in Navarra at
mineria.navarra.es

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