Mineral resource research
Geochemical studies
Hydrogeological explorations
Engineering geological activities

**Mineral resource research**

HGI-CGS performs geosciences research related to mineral deposit research, mineral exploration, and mineral exploration. The results of these works are used as reference data, and as a database for land-use planning.

**Resource identification and evaluation:**

The geoscientific expertise is given on all types of mineral occurrences throughout Croatia. The work is financed with funds of the Croatian Ministry of Science, Education and Sport through the project “Mineral resources Map of Croatia to the scale of 1:200 000”.

**Provision of expertise to existing operators:**

The department’s geologists give expert advice to existing industrial minerals stakeholders to aid their exploration programs and to promote mineral exploration.

**Participation in international projects:**

The researchers have participated in many projects contracted with direct clients also. Most researches have been for the elaboration of the sanitary protection zones for drinking water sources, defining of catchment areas for the needs of constructing HPP, defining of sanitary protection zones for the delineation of urban geochemistry (URGE - EGS) projects:

- Participation in international projects:
  - Geothermal Atlas of Europe (FORIGEA)
  - Geochemical Atlas of Agriculture (FAO-UNEP) - GIS

- Geochronological mapping:
  - Soil
  - Alluvial sediments
  - Stream sediments
  - Marine
  - Drainage basins

- Environmental studies:
  - Environmental impact studies
  - GIS project of the Drava aquifer

Future location for hydroelectric power plant Lešće

**Geochemical studies**

HGI-CGS conducts the geochemical investigations in order to determine the concentration of elements in rocks, minerals, and water. The results of these studies are used in mineral exploration, environmental impact assessments, and as a database for land-use planning.

**Geochemical mapping:**

- Soil
- Alluvial sediments
- Stream sediments
- Marine
- Drainage basins

**Environmental studies:**

- Environmental impact studies
- GIS project of the Drava aquifer

**Mineral projects:**

- Soil and rock analysis
- Environmental geochemistry
- Environmental impact assessments
- Environmental impact studies

**Engineering geological activities**

**Engineering geological (EG) activities in the Department of hydrogeology and engineering geology aim:**

- Production of Basic engineering geological map of the Republic of Croatia, scale 1:100 000, then accompanying exploration maps, as well as the geochemical investigations
- Defining of EG properties of terrains, EG rock mass classifications and rating seismic processes needed for the design and execution of infrastructural objects
- Production of EG maps as fundamentals for spatial planning and environmental protection

**Hydrogeological explorations:**

- Hydrogeological explorations in the Croatian Geological Survey have been conducted with the Basic Hydrogeological Map of Croatia (BHM-1) project which is funded by the Ministry of Science, Education and Sports.
- Production of the BHM requires a significant amount of data, the results of exploration and characterization of hydrogeological parameters of aquifers, groundwater flow through the aquifers, groundwater dynamics, artificial and natural contamination of groundwater, and a complex picture of a hydrogeological and geological model of the territory.
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Geological mapping is conducted in the Department of geology, primarily for the purpose of the Basic geological map of Croatia 1:50,000.

Geological maps are in concept a thematic, and in content a lithostratigraphic map respectively.

Methodological procedure includes geological mapping and preliminary works, which consist of recording and laboratory processing of reference sections, as well as defining lithostratigraphic units.

Because of the diversity of geological structure of Croatia (carbonate platform, Dinarides, Pannonian Basin), geological mapping is carried out according to the geological specifics of each region.

Geological mapping results can be compared and integrated into the results of geological research in the wider area of Croatia.

Geological maps are the basis for the engineering-geological and hydrogeological maps, and a necessary prerequisite for the construction of civil engineering and mining facilities, spatial planning, etc.

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