Mineral resource management in Croatia

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Geology of Croatia

• >50% carbonate rock
  (limestone and dolomite mainly Mesozoic Adriatic Carbonate Platform)

• 40% thick unconsolidated Quarternary sedimentary deposits (Pannonian basin)

• <5% eruptive and metamorphic rocks
Mineral resources of Croatia

Mineral commodity:
- crushed stone aggregate; 253 sites
- dimension stone; 103 sites
- sand and gravel; 82 sites
- clay; 49 sites
- bauxite; 15 sites
- gypsum; 9 sites
- other non metal deposits
- coal in the past

• 626 EXPLOATION SITES (378 km²)

• 4000 SITES WITH DEPOSITS OR MINERAL OCCURANCES
Non-metallic industry in Croatia (2006)

- 8% of total industrial output
- 700 companies
- 17,000 employees

- Glass industry
- Cement
- Bricks and tiles
- Dimension stone
- Stone aggregates

Approx. 50% of top manufacturers are internationally owned companies (Cemex, Holcim, Knauf, Tondach)

Total revenues

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>500</td>
<td>600</td>
<td>700</td>
<td>800</td>
<td>1000</td>
<td>1200</td>
<td>1500</td>
</tr>
</tbody>
</table>

In (million) USD
Mineral commodities with highest production growth:
- crushed stone aggregate
- dimension stone (limestone)
- sand and gravel

Has high potential which is not utilized:
- limestone and dolomite as industrial minerals

Production of sand and gravel in (000) m³

Croatia
Varaždinska county
Crushed stone aggregate production
Reserves 30-40 years
The European Aggregates Industry and Croatia
Production per person (t) (population data and production for 2005)

Source: UEPG
Mineral resource and data management in Croatia

Ministry of Economy, Labour and Entrepreneurship [www.mingorp.hr](http://www.mingorp.hr)

(Energy and Mining Directorate)
- Mining legislation
- Mining permits
- Register of mineral exploration areas and extraction fields
- Records mineral raw materials reserves
- Annual balances of mineral resource reserves

**Mineral raw materials management strategy for Croatia**

Croatian Chamber of Economy [www.hgk.hr](http://www.hgk.hr)

- Annual revenues and statistics for the non-metal and mining industries

Croatian Extractive Industries Association [www.promins.hr](http://www.promins.hr)

Croatian Environmental Agency [www.azo.hr](http://www.azo.hr)

- Mineral extraction areas as potential sources of pollution (web site with locations and limited data base for 620 extraction sites)

Faculty of Mining Geology and Petroleum Engineering [www.rgn.hr](http://www.rgn.hr)

- Education

Croatian geological survey [www.hgi-cgs.hr](http://www.hgi-cgs.hr)

- Mineral resource maps of Croatia (data base for 4000 sites and reports)
- Maps of mineral resource potential

Strategy on sustainable use of natural (mineral) resources in Croatia

Government:

Local administration (21 Counties):
County Mineral Resources Development Plans
- Geological mineral resource potential maps (scale 1:100000)
- Data bases of mineral resource sites
- Exploitation areas
- Production and reserves data
- Environmental protection conditions and restrictions
- Market and development needs
- Restoration recommendations
- Delimited areas most favorable for extraction sites (areas with mineral commodities not in conflict with other land uses)

TAIEX event: INFRA 25708:
Raw Materials Initiative: Thematic strategy on sustainable use of natural resources.
Strategy on sustainable use of mineral resources in Croatia

Regional administrations through their Departments for Spatial planning together with HGI-CGS or RGN

County Mineral Resources Development Plans have been finished for 9 counties from 2005 to 2007

Local administrations:
Restrict gravel and sand production as well as crushed stone production and favor dimension stone and brick clay production
County Mineral Resource Development Plans

GIS of mineral resources for spatial planning and management
A part of the future: GIS modeling and favorable areas for aggregate extraction

Arc SDM WofE favorability map for aggregate stone extraction:

Šibensko-kninska county - Dalmatia

- road infrastructure
- protected areas
- valuable land
- 1 km distance from the coast
- tourist resorts
- settlements (1000 m distance buffer)
Thank you!