





MINISTARSTVO GOSPODARSTVA
RAĐA I PODUZETNIŠTVA
Ministry of Economy, Labour
and Entrepreneurship

Mineral resource management in Croatia

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Dragan Krasić**

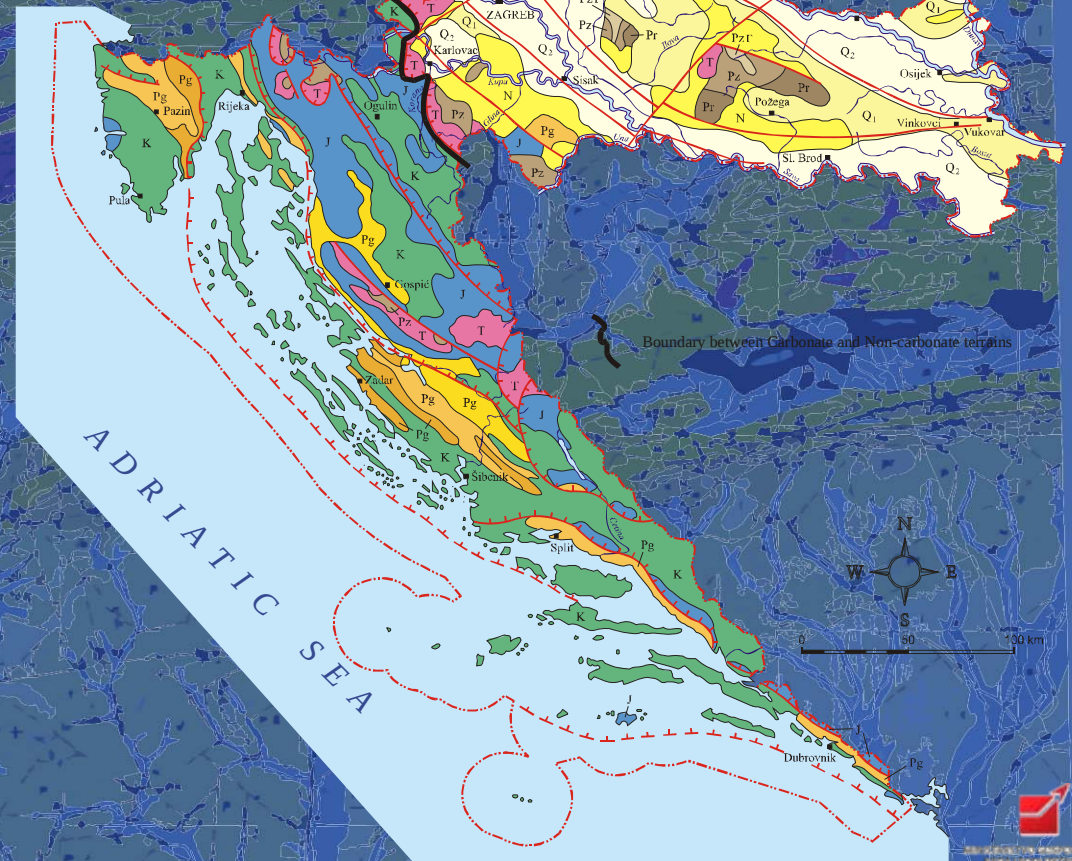
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Geology of Croatia

- >50% carbonate rock
(limestone and dolomite mainly Mesozoic Adriatic Carbonate Platform)
- 40 % thick unconsolidated Quaternary sedimentary deposits (Pannonian basin)
- <5% eruptive and metamorphic rocks



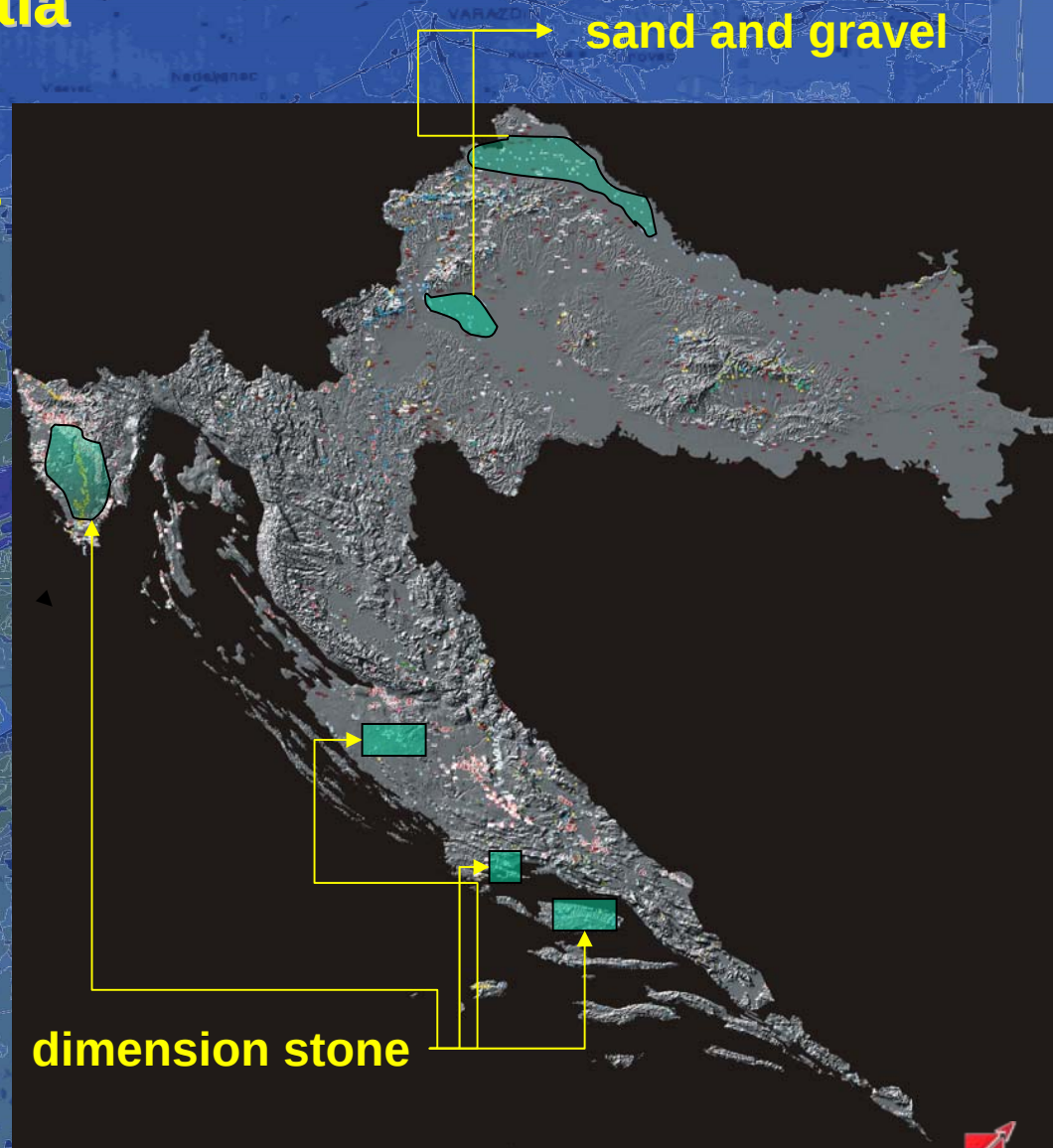
Mineral resources of Croatia

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)

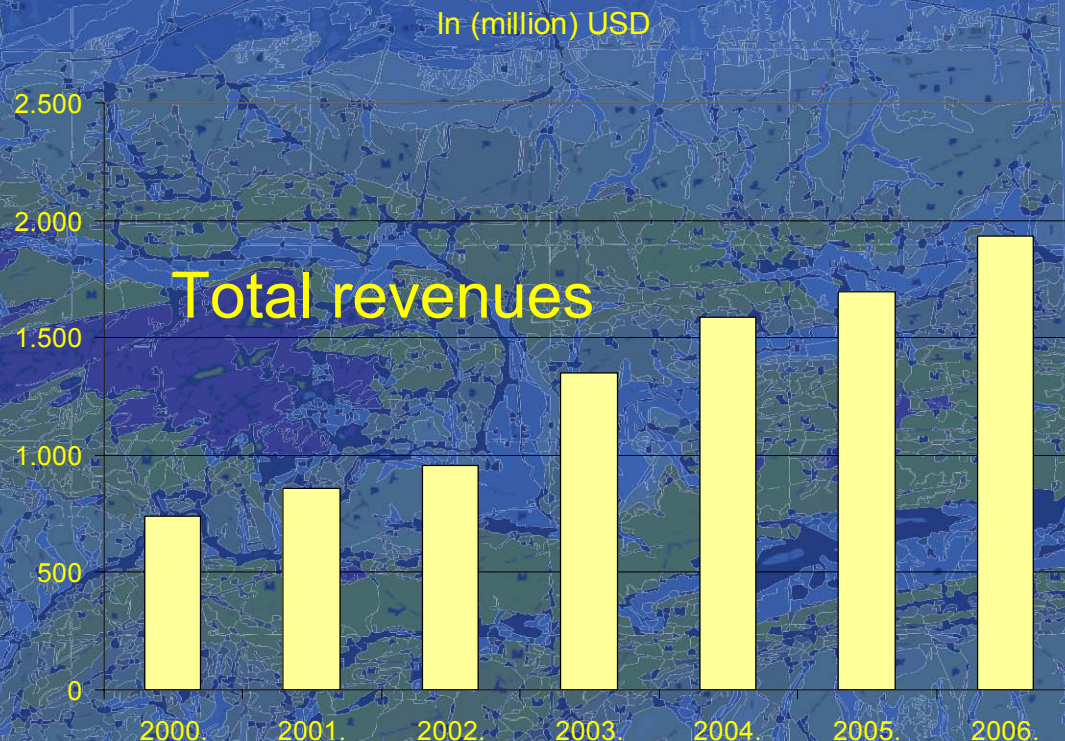
• **4000 SITES WITH DEPOSITS**
OR MINERAL OCCURANCES



Non-metallic industry in Croatia(2006)

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

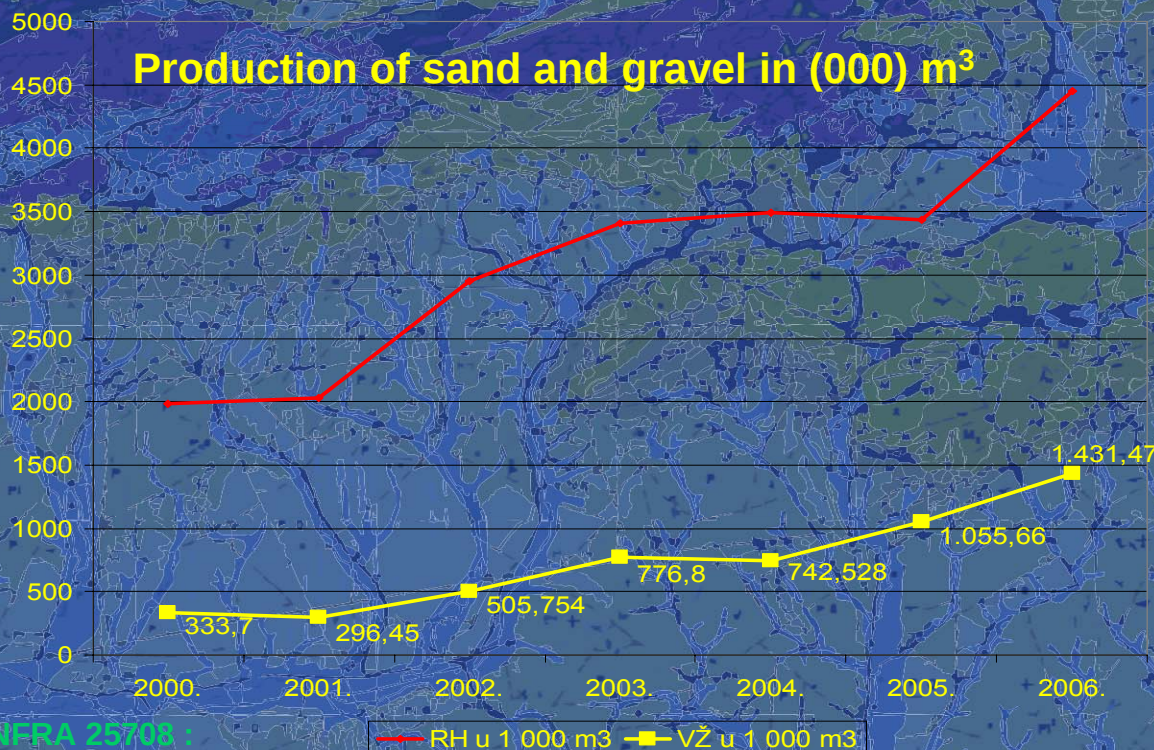
glass industry
cement
bricks and tiles
dimension stone
stone aggregates



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

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

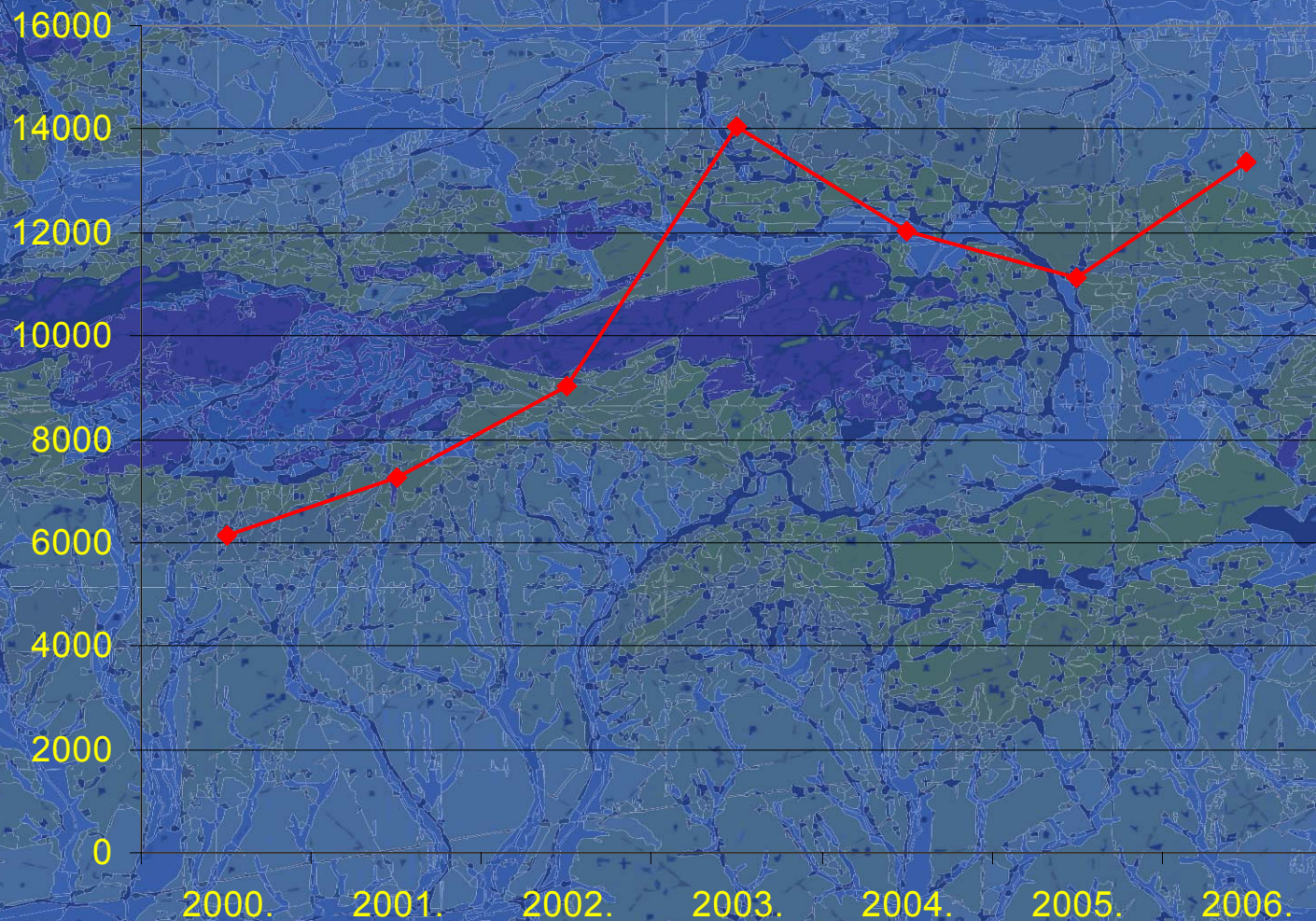


Croatia

Varaždinska county

Crushed stone aggregate production

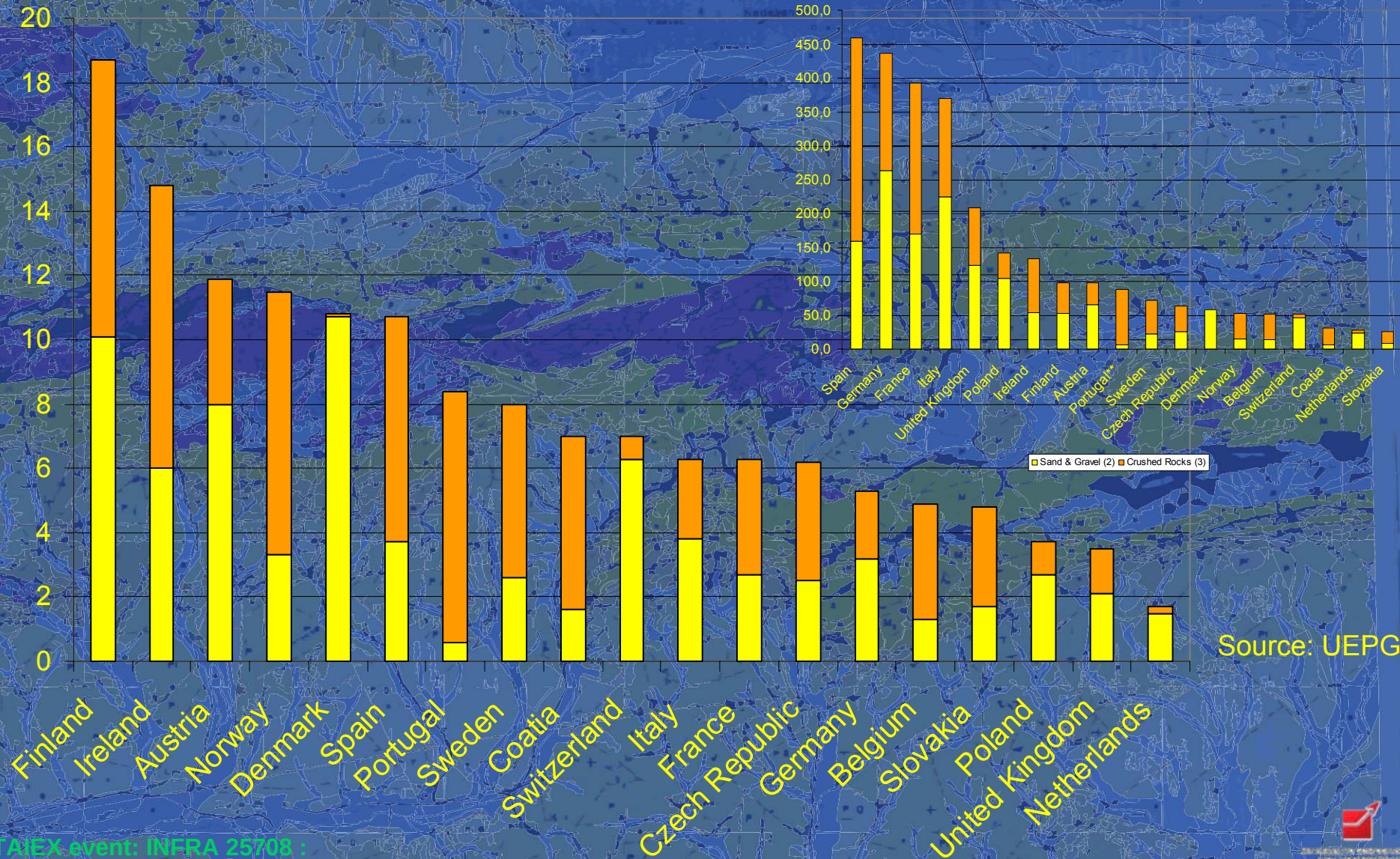
Reserves 30-40 years



—◆— production in 1 000 m³

The European Aggregates Industry and Croatia

Production per person (t) (population data and production for 2005)



Source: UEPG

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Raw Materials Initiative- Thematic strategy on sustainable use of natural resources..

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■ Sand and gravel(t) ■ Crushed rocks (t)

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Mineral resource and data management in Croatia

Ministry of Economy, Labour and Entrepreneurship 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

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

Croatian Extractive Industries Association www.promins.hr

Croatian Environmental Agency 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

Education

Croatian geological survey www.hgi-cgs.hr

Mineral resource maps of Croatia (data base for 4000 sites and reports)

Maps of mineral resource potential

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Geological Survey of Croatia
www.hgi-cgs.hr

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

Government:

Key document “Mineral raw materials management strategy for Croatia” prepared by the **Ministry of Economy, Labour and Entrepreneurship** – first reading in 2005

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)

KARTA GEOLOŠKE POTENCIJALNOSTI MINERALNIH SIROVINA VARAŽDINSKE ŽUPANIJE
SA ZAŠTITNIM ZONAMA ZA CESTOVNE I ŽELJEZNIČKE PRACE OD 100 M
I ZAŠTITNIM ZONAMA ZA GRADSKA I RURALNA NASELJA OD 1000 M ZA TEHNIČKO-GRADJEVNI KAHEN I 200 M ZA SVE OSTALE SIROVINE
I SVIM OSTATIM MJERAMA ZAŠTITE PRIRODNIH RESURSA

MBROJ: 1/100 000

LEGENDA KARTE GEOLOŠKE POTENCIJALNOSTI VARAŽDINSKE ŽUPANIJE

- ANFIBITOLITNO - GRADEVNI KAHEN
- GLJIVARNA GLEJA
- GRADEVNI PESAK I ŠUPJAK
- GRADEVNI PESAK I ŠUPJAK NIŽE POTENCIJALNOSTI
- LABIODOLITNA SIROVINA
- EVAPORITNI PESAK
- EVAPORITNE SIROVINE
- TEŠKOČI - GRADEVNI KAHEN DOLJEHT
- TEŠKOČI - GRADEVNI KAHEN SEDIMENTNA STIEŽKA
- TUFITI

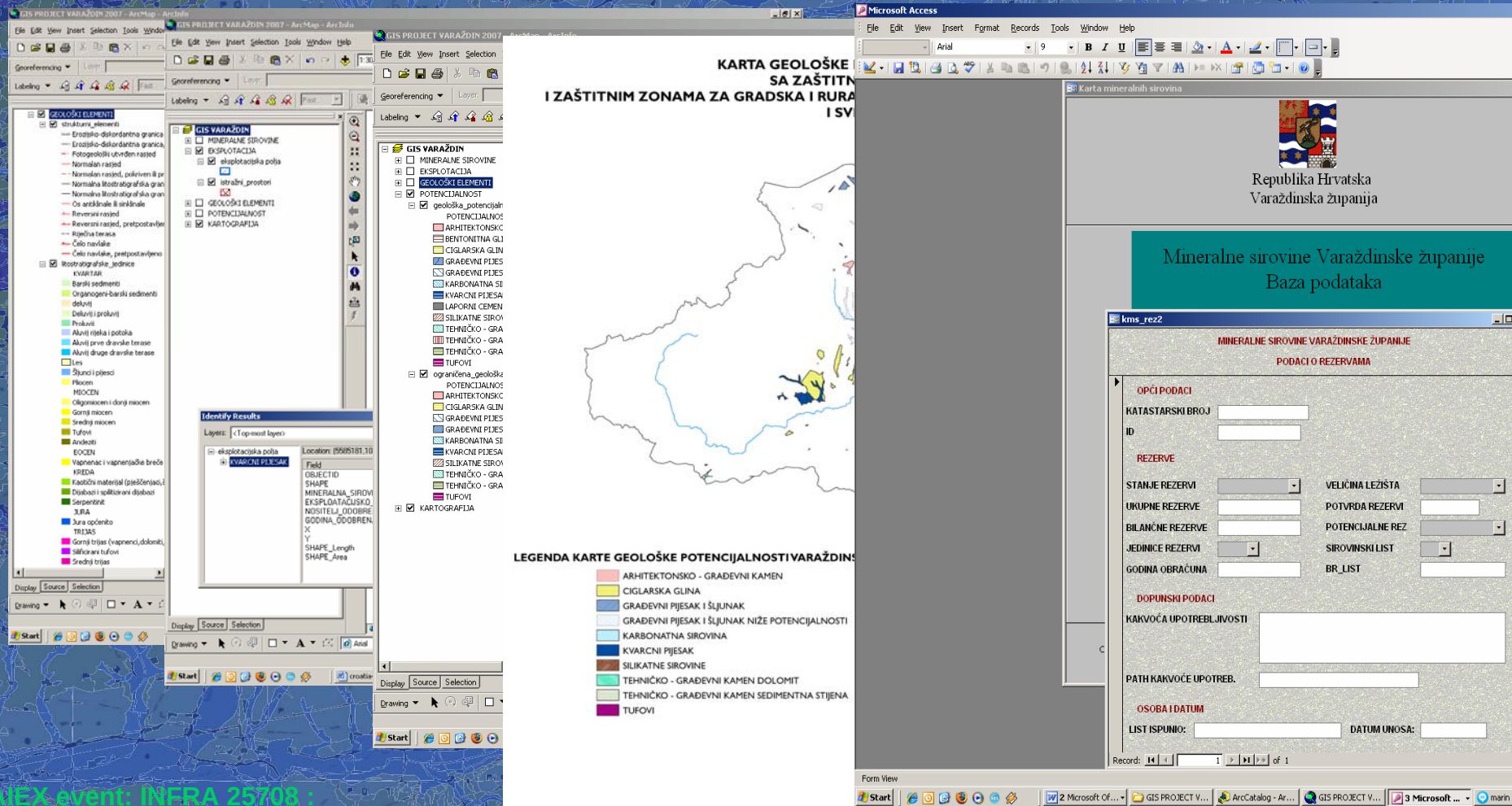
HRVATSKI GEOLOŠKI INSTITUT - ZAVOD ZA MINERALNE SIROVINE
LIPOTNO 1997

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

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



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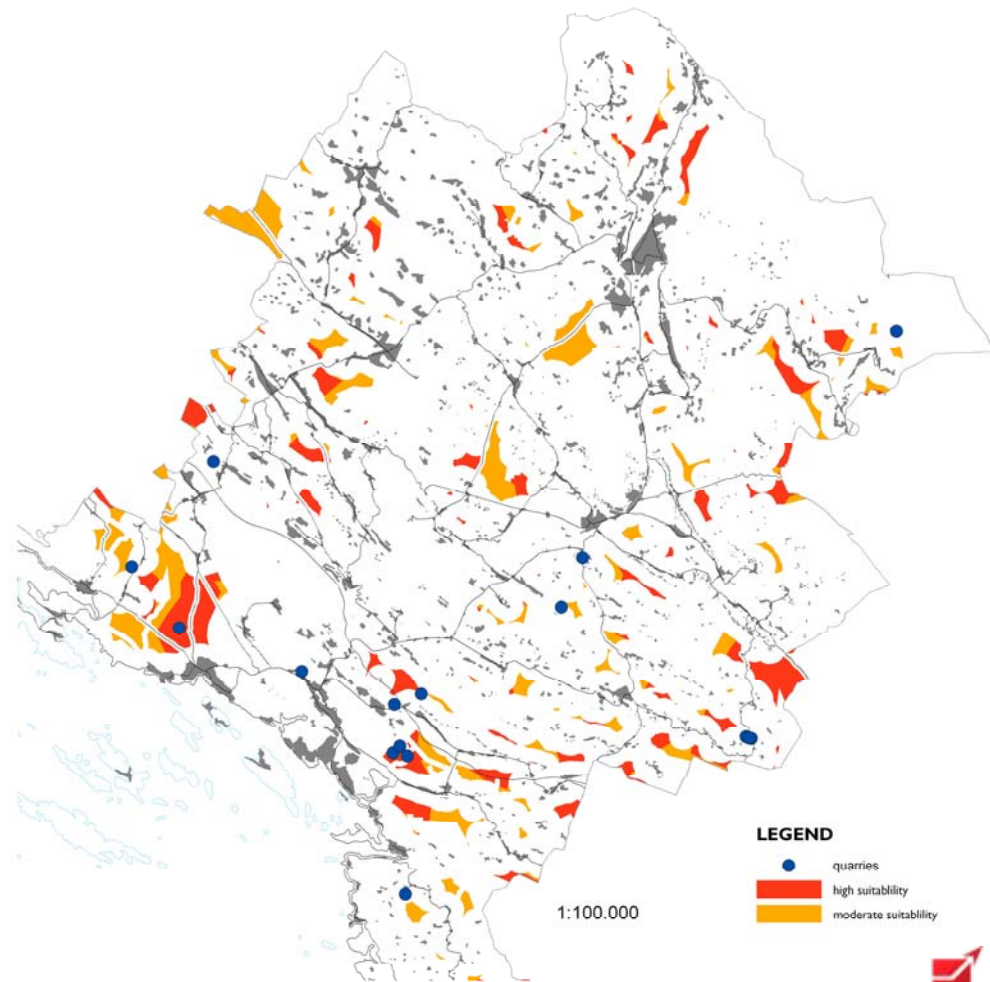
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A part of the future: GIS modeling and favorable areas for aggregate extraction

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)



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Thank you!



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