Aggregate Research Challenges in Finland

Akseli Torppa

Geological Survey of Finland (GTK)
Geological Survey of Finland (GTK)

Key figures

Staff, 592 (person yrs 2013)
Staff with academic degrees, % 53.0
Four main offices:
  – Espoo, Kuopio, Kokkola, Rovaniemi
    • Mineral processing lab. (Mintek, East Finland)
    • Drill-core archive (South Finland)

Expenditures, € million 52.5
Revenues, € million 11.9
Income from contract services, € million 7.3
The main impact areas and research programs @ GTK

• Mineral resources and exploration

• Energy supply and environment

• Land use and construction
  – Urban geology and land use planning
  – Construction aggregates and ground water supplies
Construction Aggregate Research in Finland

1980’s

Quality characteristics:
• Quality requirements and standardization at national levels
• National and Nordic test methods

Deposit inventorying:
• Nation-wide deposit inventories, with systematic mapping of aggregate resources throughout the country
Construction Aggregate Research in Finland

1990’s

Quality characteristics:
• Rise of EU standardization and legislation
• Increasing environmental regulation

Deposit inventorying:
• Regional deposit inventories associated, with conservation of environment and quaternary deposits with the groundwater supply security
Construction Aggregate Research in Finland

2000’s

Quality characteristics:
• Harmonized EU standardization, with national specifications
  – CE-markings for aggregates

Deposit inventorying:
• Focusing on consumption areas and urban growth centers
• Energy and material efficiency
  – Recycling and secondary materials play an increasing role
Current Research Projects @ GTK

Selected topics from the Research Program: Land use and construction

- **Aggregates and Natural Stones** – Material characteristics, novel product applications, and development of deposit inventories

- **Use It All Project** – Utilization of leftover stone from mines and quarries for infrastructural construction purposes

- **Accounting and deposit inventory for construction aggregates and natural stones** – development of data services for stakeholders

- **Human impact on ground water deposits** – impact of extractive industry, infrastructural construction, and other human activities on quality and amount of ground water and associated ecosystems in quaternary formations
Kaikki Käyttöön
Use It All Project 2013-2014
Enhanced utilization of left over stone from mines and quarries in East Finland

• ERDF-funded pilot-project in eastern Finland
  – c. 100 K€ / 18 months

• Integration of waste rocks and stone-based extractive waste of the mines and quarries into a part of
  – regional construction aggregates accounting, land-use planning and stone raw materials trading

• The results and operating models of the project can be applied to mining areas of the Finland and Europe
Kaikki Käyttöön 2013-2014
Use It All Project
Enhanced utilization of left over stone from mines and quarries in East Finland

• The project consists of three functional moduli

  ▪ Waste rock inventory and product applications
  ▪ Logistics and end use possibilities of waste rock
  ▪ Marketing, communication, and training
Kasvukeskusten Geotieto
Geoinformation for Urban Growth Areas
Management of aggregate resources in urban areas
Geology-based land-use and town planning

• A pilot project planned for Kuopio city 2015

• Holistic approach to implementation of geoknowledge in land-use and town planning

• Beneficiaries: land-use planners, authorities, construction and development enterprises, citizens
Kasvukeskusten Geotieto
Geoinformation for Urban Growth Areas
Management of aggregate resources in urban areas
Geology-based land-use and town planning

• Construction aggregates

• Constructability

• Land use and environment

• Logistics

• Information systems
Thank you!