

## Efficient use of natural stone in the Leningrad region and South-East Finland

SOUTH-EAST FINLAND - RUSSIA ENPI CBC PROGRAMME

2007-2013

9.3.2015

Activities 1 and 2



# Efficient use of natural stone in the Leningrad region and South-East Finland

Promotion of the use of local natural stone in building and environmental construction, research on durability of stone in the conditions of city environment...

**Lead partner: Geological Survey of Finland, Eastern Finland Office**

Partners: Saimaa University of Applied Science (Saimaa UAS), Saint-Petersburg State University, Federal State Unitary Enterprise "Petersburg Complex Geological Expedition", Associates (companies): Ylämaa Group Oy, Palin Granit Oy

**Total budget: 947 000 €**

**Project duration: 34 months**



A natural stone quarry at Vozrozhdenie



# Activity 1

Natural stone in city buildings - history and advantages of using local stone

The project aimed also to point out and promote the beauty and cultural relevance of the stone in the studied city environments also with downloadable guides of Kuopio, Helsinki, Kotka, Lappeenranta, Vyborg and St.Petersburg, for which it is illustrating 5 different walking paths.



# Activity 1

## Natural stone in city buildings - history and advantages of using local stone

- Gathering of existing data, collection of historical information and selection of sites to be further investigated

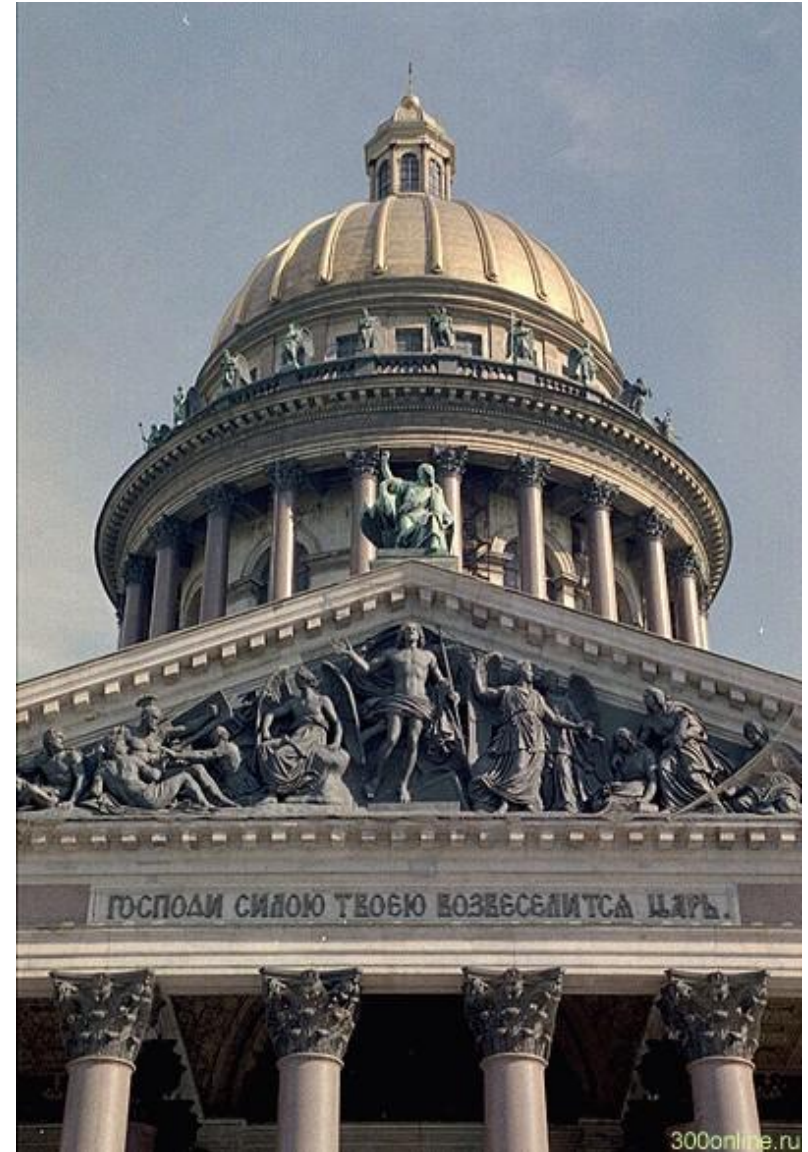
In Finland natural stone has been largely used in the areas studied, even though the traditional constructions involved mainly wood. The first medieval constructions built of stone have been churches and castles, and castles had undergone often important renovations. In Finland had been researched Olavinlinna castle (end of 15th century) and Suomenlinna sea fortress (mid 18th century). In Finland only from the middle of the 18th century it is possible to see stone buildings erected in cities, the peak era in the use of massive natural stone has been 1895-1910, during the National Romantic era, as well as Art Nouveau period. The buildings had been built as massive or as brick wall clad by thinner stone slabs.



# Activity 1

## Natural stone in city buildings - history and advantages of using local stone

- St.Petersburg was built from the 18th century showing influence of European architecture. The town had used extensively natural stones on its monuments and constructions, first choosing those from nearby areas, then importing more exotic materials, crafting 30s kinds of materials. It has enlarged during the years from baroque and classical styles to eclectic and modern styles. The town has been reconstructed after the heavy damages caused by the wars, latest by World War II.



# Activity 1

## Natural stone in city buildings - history and advantages of using local stone

- Publication on the historical use of natural stone (Saimaa UAS)-  
Construction book (ancient and modern techniques are described)



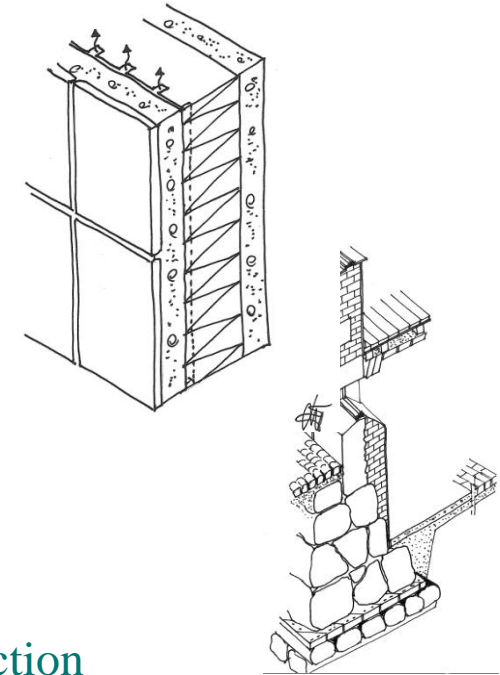
<http://newprojects.gtk.fi/ENPI/results/>

### **Publications of the project**

[Use of natural stone and stone construction](#)

[The current situation and future outlook of the use of natural stone](#)

[Historical use of natural stone in the Southern Finland and St Petersburg area](#)



## Activity 2



Use of natural stone on construction- current situation and future outlooks

- Data collection in chosen cities
- Analytical work
- Definition of existing and possible new environmental building products



Stone structures and uses of stone in construction can be roughly divided in two main groups: solid stone structures and curtain or layered structures.

The stone is showing different weathering effects and in renovation and restoration, the causes of the damages must be determined in order to be able to select right repairing methods. Stone average physical mechanical properties are important for the determination of durability according to the construction methodology adopted



## Activity 2

Climate change : average temperature in Finland will be 2– 6 °C warmer in the last decades of the current century compared to 1971–2000. Rain volume will increase in autumn and winter season affecting the operation of the damp-proofing of the outer envelope of the building in a season that is already the most problematic one. Based on the greenhouse scenarios, the future climate type of Finland will resemble the current conditions in Central Europe.

This means that in the future structures will face great climate stress deviating from the current situation. Already now **renovation construction** has accounted for half of the work done and it is forecasted to grow. It is estimated that house construction will increase even though a rapid change in the construction volume is not expected.

Relatively to **layered structures**, wood and concrete are the most commonly used facade materials, stone facade are nowadays mainly used for industrial and public buildings but new material is needed for private housing restoration activity.

**Infrastructure construction** is significant but has been decreasing while the use of stone is most common in landscape and park construction, for which it is forecasted growth.





# Dissemination

Project webpages: <http://newprojects.gtk.fi/ENPI/index.html>

Publications and participations to seminars

Press release

# Main outputs

- Report on the future needs of the natural stone in southern Finland and St Petersburg regions accessible through the web pages and available as a printed report
- Printed publication on the historical use of natural stone in the project area
- Definition of existing and possible new environmental building products (1-2), especially those using leftover-stone
- Guidance list of durable stones from the project area
- Guidelines for selection of materials for restoration and reconstruction as published report
- Articles in magazines and newspapers, booklets
- Database on the natural stone resources of the project area to be utilized by the companies and authorities
- Document of best practices on natural stone evaluation and research published as a report
- Report on the needed trade certificates translated from essential parts to both languages
- Suggestions for harmonizing the regulations to facilitate easier trade of natural stone