

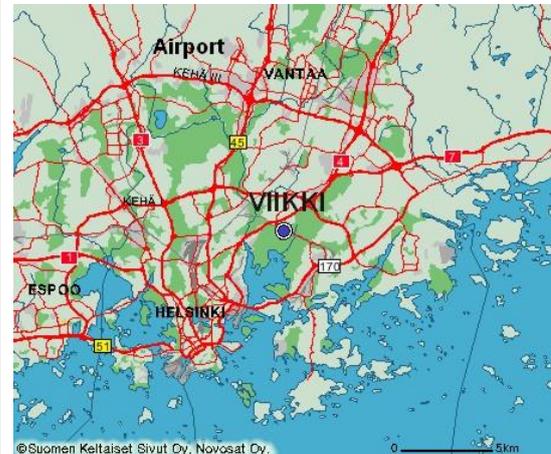


Case 6 Helsinki, Finland: Eco-District Viikki

Summary:

Viikki is a leading area of ecological building in Finland. Many of the ecological building projects in the area have also been recognised internationally. Situated in the southern part of Latokartano, Eco-Viikki is the first ecologically designed neighbourhood in Finland. The idea behind the neighbourhood's design has been a sustainable, healthy and amendable living environment,

where practical solutions save energy and reduce the amount of waste generated. Construction of the 23-hectare residential area Eco-Viikki lasted from 1999 to 2004. For the express purpose of building Eco-Viikki, ecological building criteria were created. All projects must include ecological experimental building. Several environmentally friendly energy and environment solutions have been put into practice in the area. The active and passive utilisation of solar energy has been one of the main themes of ecological experimental building in Viikki. Nine properties with 412 homes are part of the area's solar energy heating system. The first, and only, apartment building to utilise solar electricity in Finland is also located in Eco-Viikki.



Location of Viikki



Secondary Tools

solar energy heating system

- ✓ Nutrients and water to be recycled (composting, allotments, collecting surface water run-off)
- ✓ Pollution control, preservation of natural resources,
- ✓ Domestic recycling of solid waste
- ✓ Healthy living, bio-diversity and urban agriculture.



Background:

The eco-district in Viikki, Finland is the result of long-term work aimed at putting ecological principles into practice in actual buildings. Two design competitions were organised for the area and a number of seminars and debates. The master plan competition was won by a proposal based on a finger-like structure with alternating buildings and green open spaces. The layout permits functions to be combined naturally, nutrients and water to be recycled (composting, allotments, collecting surface water run-off), and the utilisation of solar energy. Another competition was organised for the first blocks. The proposals were evaluated using eco-criteria drawn up by an interdisciplinary working group. The eco-criteria defined levels of five different aspects: pollution, natural resources, health, bio-diversity and urban agriculture. An environment profile was calculated for each competition proposal. In this system, points for those five aspects are added up. A zero-points scheme fulfils the strictest minimum criteria for conventional residential building. A ten-point design represents an ecologically excellent scheme and to exceed twenty points requires exceptional innovations. ⁱⁱ Eco-Viikki is part of the sustainable cities of Europe initiative.

In December 1998, the Government approved a programme of ecologically sustainable development for the construction and property sector, which focuses partly on arriving at models of good practice. In 1998-2000, a special subsidy for pilot projects in line with the principle of sustainability was linked with the Government experimental building programme. During the period 1998 to 2002, an experimental area of ecological building of international importance is being constructed at Viikki, a district to the Northeast of the centre of Helsinki.

Viikki is situated 7 kilometres from the heart of Helsinki. Buses began running between Viikki and the city centre in autumn 1999. In the future the area will also be served by the new orbital 'Jokeri' line, running across the Helsinki Metropolitan area. Since 2010, Viikki residential district is completed, with a Science Park nearby. The Science Park is an international centre of excellence evolving as part of the University of Helsinki situated in Viikki which specialises in biology and biotechnology. Viikki will provide 6,000 jobs, places for 6,000 students and homes for 13,000 people.



Housing. The Viikki eco-neighbourhood blocks are the result of long-term work aimed at putting ecological principles into practice in actual building – like several functions to be combined naturally, nutrients and water to be recycled (composting, allotments, collecting surface water run-off), and the utilisation of solar energy. The design responds to five different key criteria: pollution, natural resources, health, bio-diversity and growing food. Many apartment buildings there have, for instance, experimental solar and wind energysystems installed.

Ecological benchmarks. In the Viikki project, carbon dioxide emissions are expected to be cut at least by 20% in relation to conventional building and consumption of pure water by more than 20%. Waste during construction is 10% less than normal and, when the buildings are in use, the amount of mixed refuse (max. 160 kg/person/year) is aimed to be 20% less than normal. The use of non-renewable fossil fuels and greenhouse gas emissions are prevented by cutting energy consumption. A good 60% of normal heating energy is used (105 kWh/m²/year) and 45 kWh/m²/year of electricity. Consumption of primary energy (energy bound up to materials) also has been reduced by one fifth that of conventional building. Emission targets over a 50 year lifespan are 2,575 kg/gross sqm which is approximately 30% less than in conventional buildings. Water efficiency is calculated at 126 l/person/day, or 22% less than without water-efficient fixtures. Domestic recycling of solid waste reduces the available wastes to 160 kg/resident/year which is about 20% than in conventional settlements.



Low-rise apartment buildings, Eco-District Viikki, Finland^v



Housing with solar heating in Viikki, Finland^{vi}

Some Lessons. There exists a preoccupation concerning the location of Viikki, since the area too far from the existing services. Since there is no investment in public transport as an alternative to private motorised transport, whether continued private car use will eliminated the benefits of residential energy efficiency. This matter needs to be assessed. The solar heating project included in Viikki schemes has been approved for funding under the EU Thermie Programme.



Viikki Church^{vii}



Viikki library^{viii}

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Sources and Further Reading:

ⁱ Source: <http://www.helsinki.fi/science/fragland/Maps/helsinki-viikki.jpg>

ⁱⁱ <http://www.cardiff.ac.uk/archi/programmes/cost8/case/holistic/viikki.html>; see also: The Finnish Association of Architects. 2000. Towards a Sustainable City. The Viikki Eco Neighbourhood Blocks. Eco Community Project. Helsinki; Helsinki City. 1998. Ecological building criteria for Viikki. Helsinki City planning Publications 1998:6; Helsinki City. 1999. Viikki. A Science Park at the Centre of a New University District. City of Helsinki, City Planning Department.

ⁱⁱⁱ Source: http://www.hel.fi/ksv/english/projects/vikki_kivikko/latokartano/#

^{iv} Source:

http://mblogthumb2.phinf.naver.net/MjAxNzA0MTFfMjUxMDAxNDkxOTA1NTM1NjUx.wpuh4em1LoYE6G3dwzC4AhgdmzZPV_TpW6T0oCQoHUIg.yJ5PjAs7SSzbMiNHg970s6eeuA-HOs_ouIrls8rREU0g.JPEG.ktsqe1098/2.jpg?type=w800

^v Source: http://skanska-sustainability-case-studies.com/pdfs/39/39_Eko_v001.pdf

^{vi} Source: <http://www.cardiff.ac.uk/archi/programmes/cost8/case/holistic/viikki.html>

^{vii} Source: https://www.e-architect.co.uk/images/jpgs/finland/viikki_church_jkmm140808_arnodelachapelle4.jpg

^{viii} Source: <https://kirkanta.kirjastot.fi/files/images/medium/viikki-4fd53186.jpg>