City of Helsinki

Green Affordable Housing Development
Case Eco-Viikki, Finland

Heikki Rinne
Project Manager

June 25, 2009, Washington D.C.

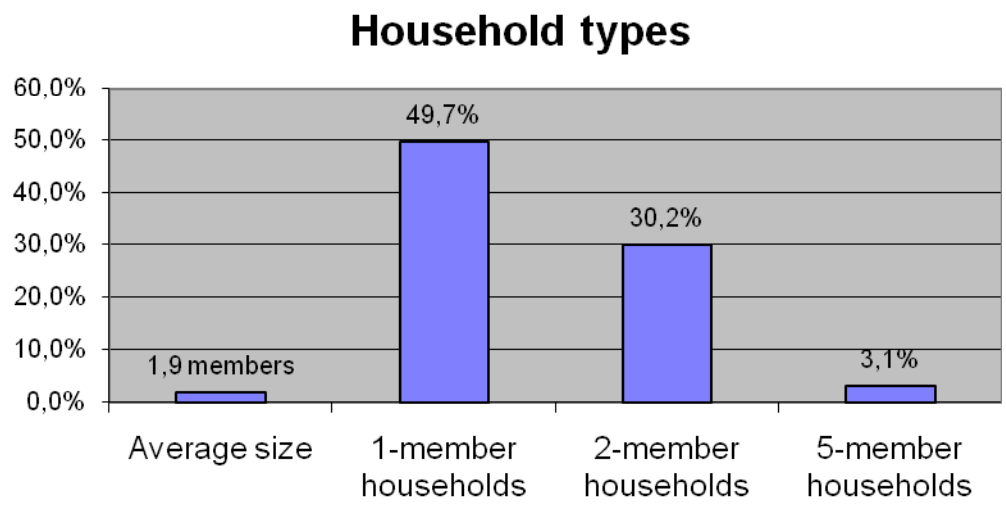


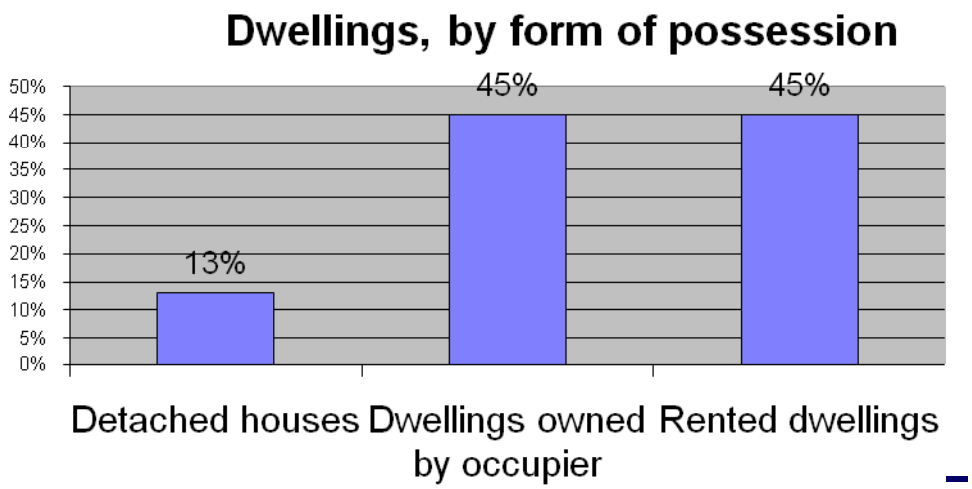
City of Helsinki

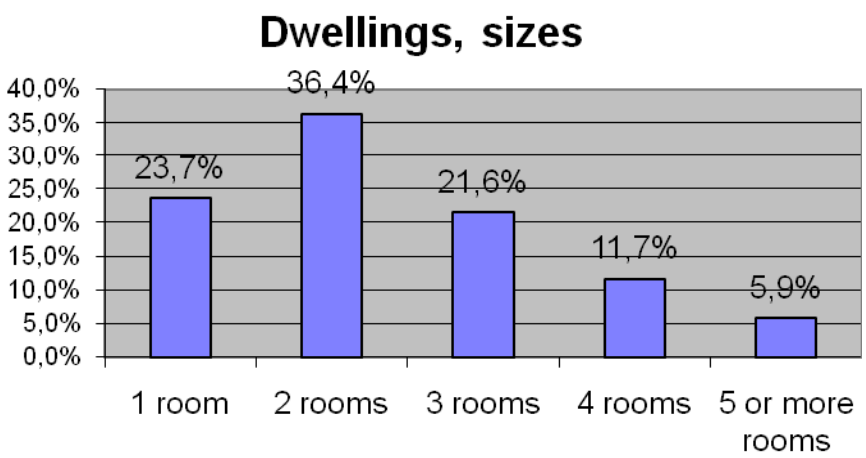
Information on Helsinki

Population

- Total 576,600
- Men 47 %
- Women 53 %







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Features of housing production in Helsinki

- Yearly production varies from 3,000 to 5,000 dwellings
- 70 % of production is on land owned by the city
- Land is generally leased with yearly 4 % rent of the site value
- The city controls the price and quality of the dwellings, competitions are used
- The city itself is the biggest developer, about 30 % of yearly production, mainly for social housing

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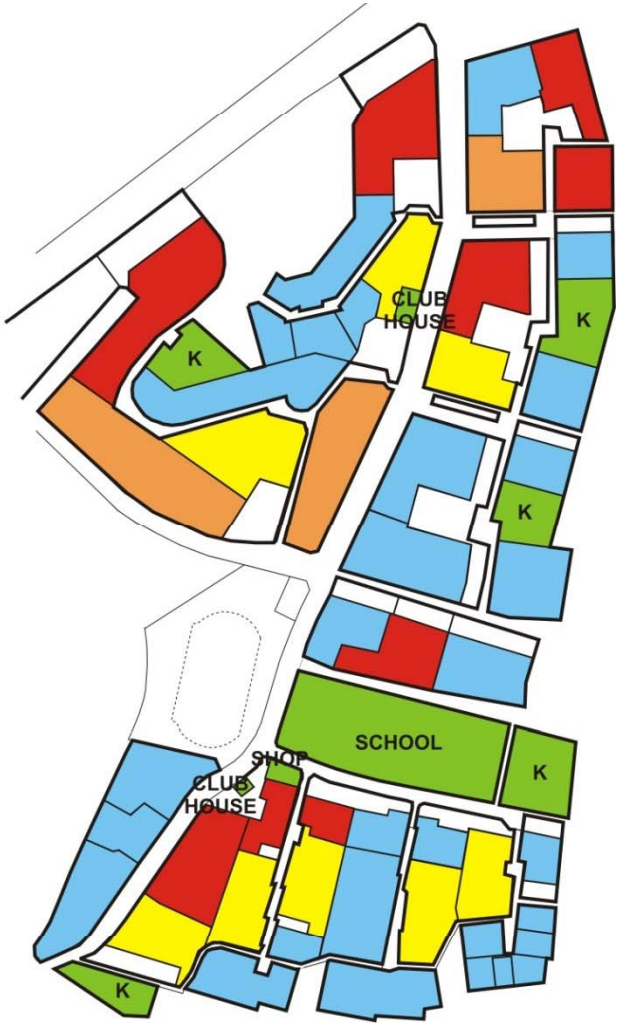
Social Mix Principles in Viikki

SOCIAL MIX OF HOUSING IN VIIKKI

31%		Social rental housing
11%		Rental housing for students
16%		Right- of- occupancy housing
42%		Private housing
		Service
	K	Kindergarten



Viikki, Location

Viikki is situated close to the City Centre – distance is only 8 km
Total project area is 1 130 ha - blocks and traffic 290 ha,
recreation and nature conservation 840 ha

Viikki, Illustration

The planning of the new housing areas and Science Park started in 1989.

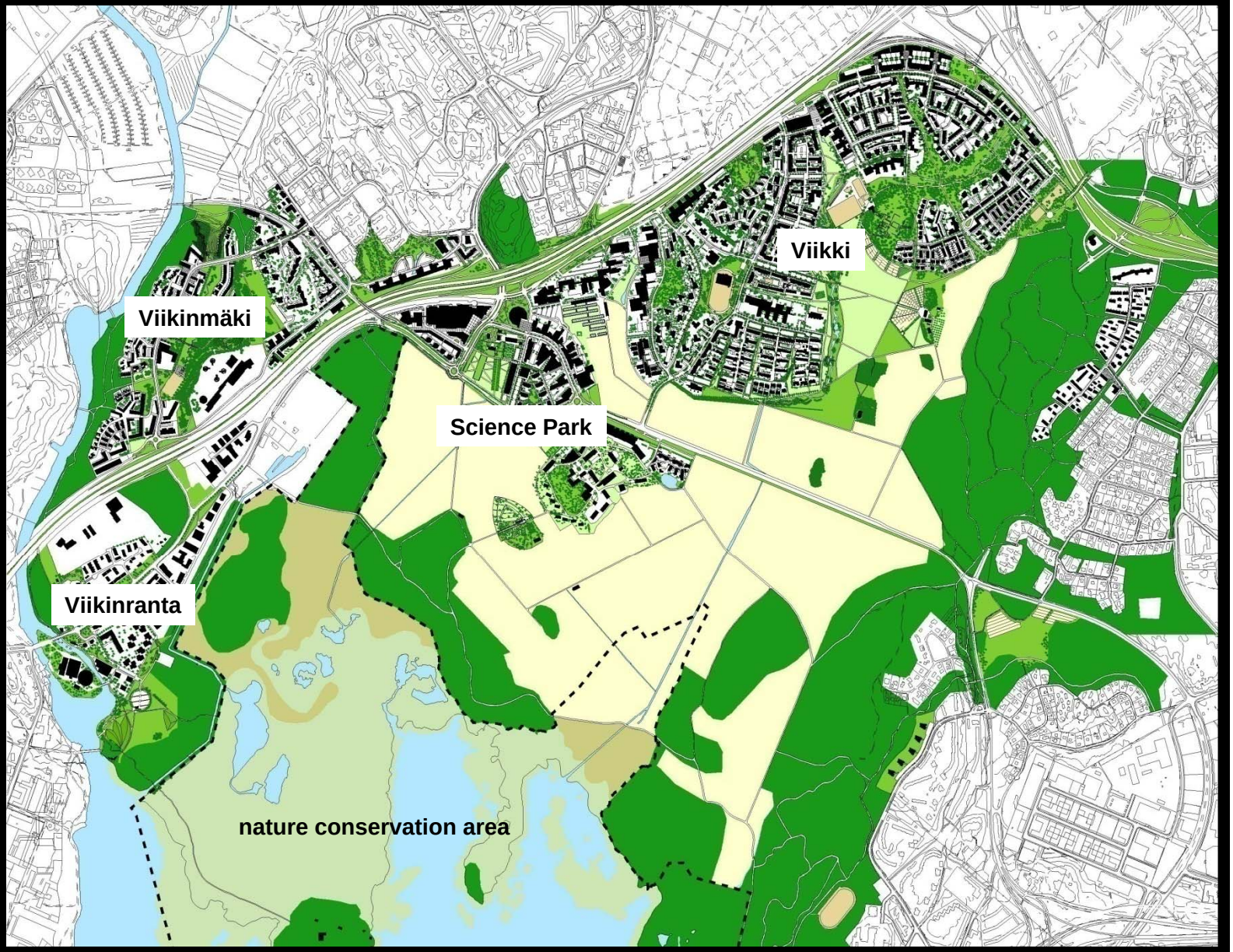
Environmental impact assessment was completed in 1990.

Densely built sections are situated along the main motorway

The large recreational areas joint to the north-eastern central park of Helsinki.

Fields and nature conservation areas retain the present boundaries

By 2015:
17 000 inhabitants
6 000 jobs
6 000 students



Helsinki, Viikki Project 2009

Eco-Viikki

- ”green fingers” with gardening plots are between the quarters
- ecological surface water management
- most of the houses face to the south to exploit solar energy

Helsinki , Viikki Project 2009

Ecological Building Themes in Eco-Viikki

- saving energy and water

- utilization of solar energy passively and actively

- healthy indoor climate

- building flexibility

- healthy materials – timber

- quality of immediate surroundings

Ecological Building Criteria

Weight			Min	(- conv.)	1 p	2 p
10	**Pollution**					
	CO_2	kg / brm^2	**3 200**	(-20 %)	2 700	2 200
	Clean water consumption	l / resident / day	**125**	(-22 %)	105	85
	Construction site waste	kg / brm^2	**18**	(-10 %)	15	10
	Household waste	kg / person / year	**160**	(-20 %)	140	120
	Eco labels	products	**none**		2	many
8	**Natural resources**					
	Heating energy	kWh / brm^2	**105**	(-34 %)	85	65
	Electrical energy	kWh / brm^2	**45**	(-0 %)	40	35
	Primary energy	GJ / brm^2	**30**	(-19 %)	25	20
	Flexibility, multi-use of space		**normal**		15%	better
6	**Health**					
	Indoor climate		**good**			excellent
	Moisture risks		**norm**		better	innovative
	Noise		**norm**		new norm	better
	Wind protection, solar impact		**plan**			excellent
	Alternative floor plans		**normal**		15%	30%
4	**Biodiversity**					
	Plant selection		**plan**		better	excellent
	Storm-water management		**plan**		better	innovative
2	**Food production**					
	Cultivation of useful plants		**normal**		1/3 useful	cultivation
	Topsoil reuse		**normal**		on site	
PIMWAG-points total			**0**			**MAX 30**

The cost effect of the basic requirements of the eco-criteria is 5%
The additional investments will be compensated over the life span.

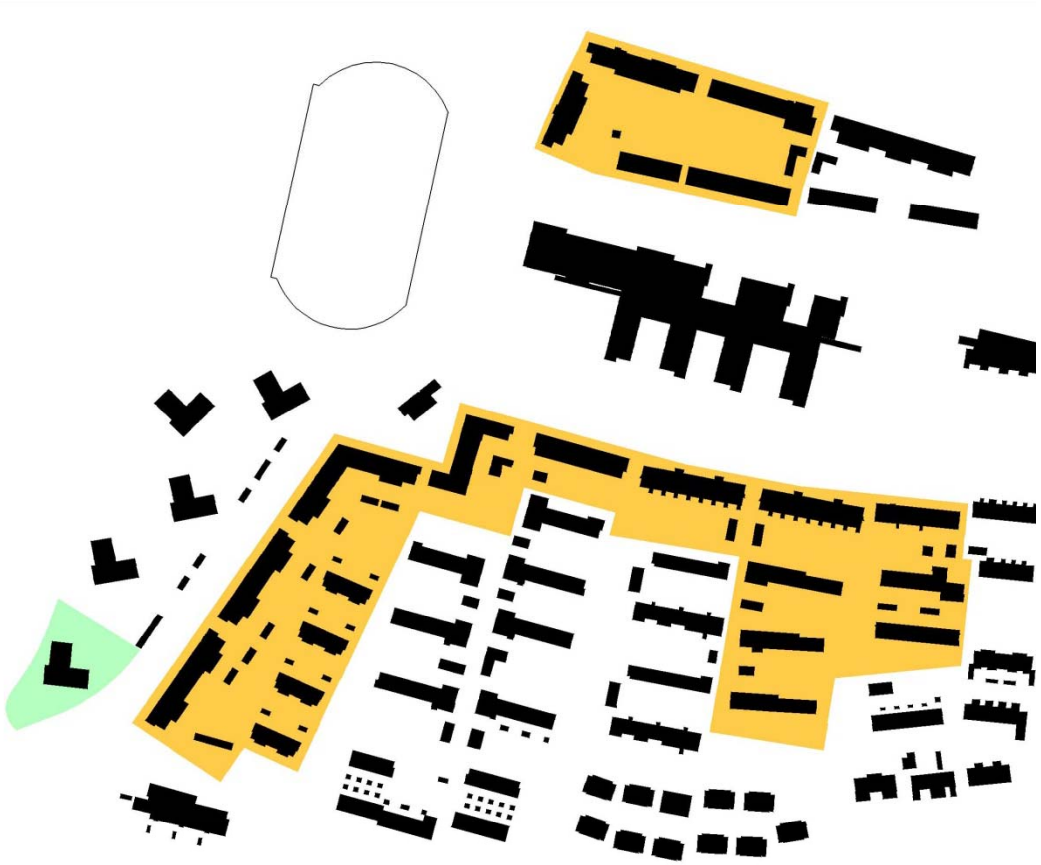
Helsinki, Viikki Project 2009

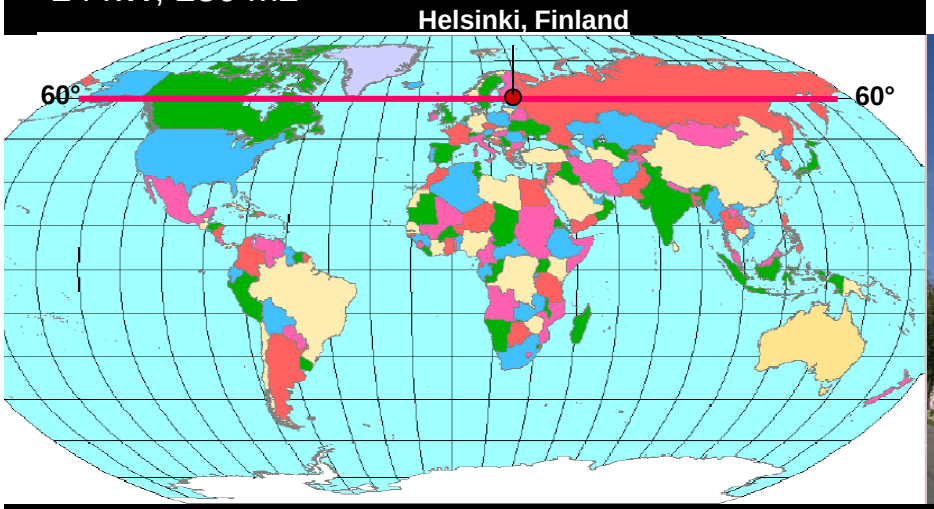
SOLAR HEATING

- Largest solar heating project in Finland
- Supported by EU
- 9 solar heating systems for 412 dwellings
- Total area of the collectors is 1400 m^2
- About 30 % of the energy needed for heating the domestic hot water
- About 10 % of the annual heating requirements
- The solar collectors are integrated within the roof structure

SOLAR ELECTRICITY

- Solar PV-panels are integrated into the balcony constructions
- 24 kW, 280 m2





Helsinki , Viikki Project 2009

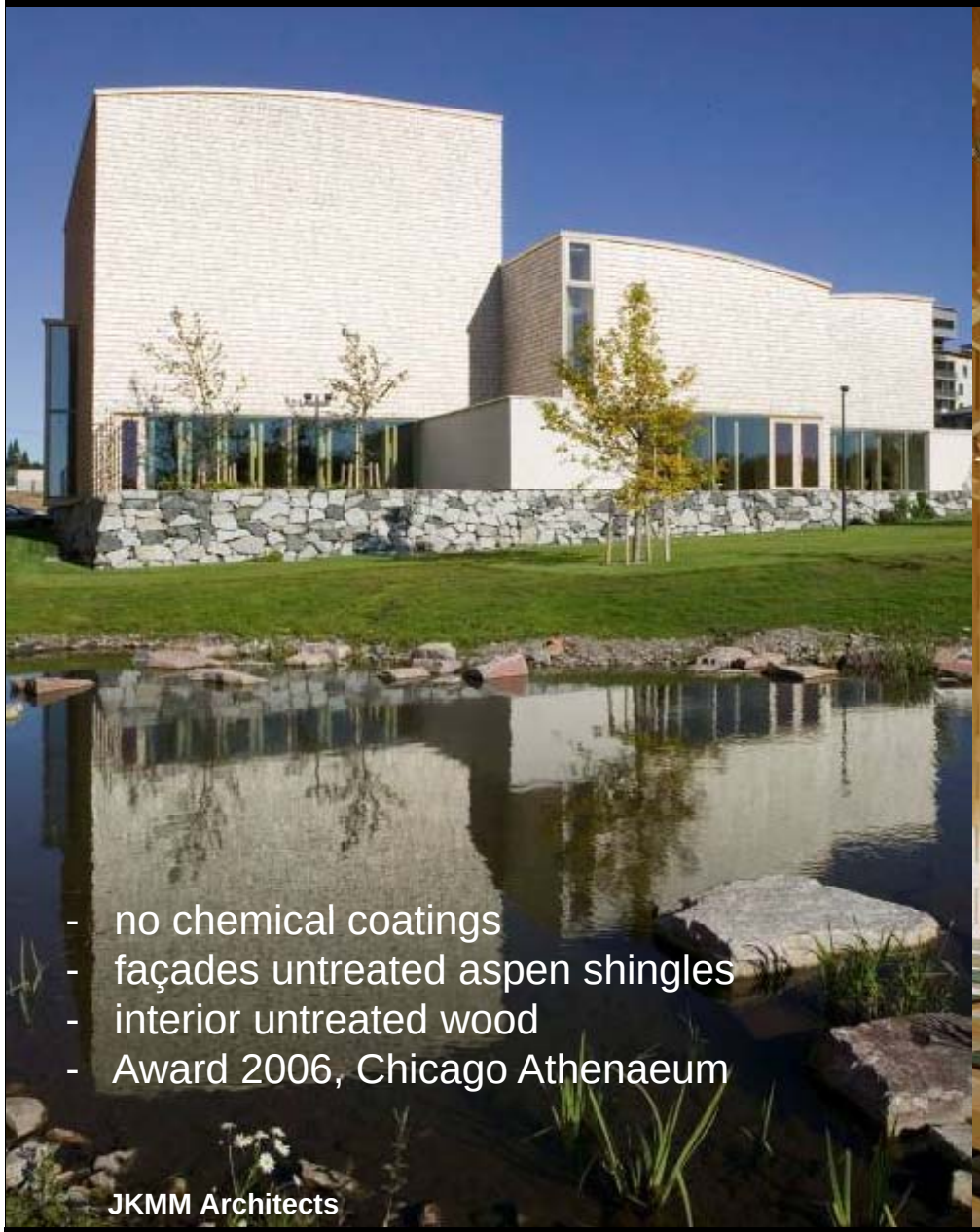
Timber Framed Multi-Storey Houses

- completed in1997
- the first modern timber framed multi-storey apartment houses in Finland
- 65 flats rented to the University staff

Mauri Mäki-Marttunen Architects

Helsinki , Viikki Project 2009

Viikki Church



- no chemical coatings
- façades untreated aspen shingles
- interior untreated wood
- Award 2006, Chicago Athenaeum

JKMM Architects

Glazed Balconies or Terraces

- “buffer zone” saves heating energy
- increases living comfort

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“Green Fingers”

- for gardening
- to collect rainwater
- to compost gardening waste
- for outdoor activities

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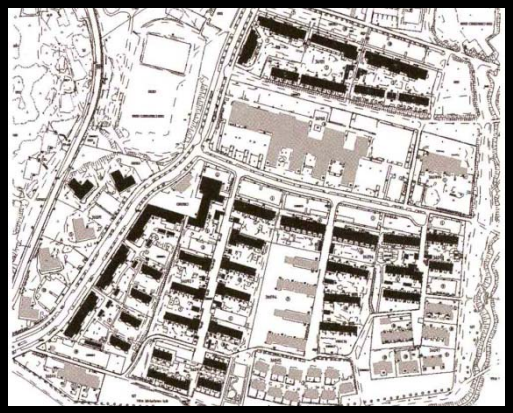
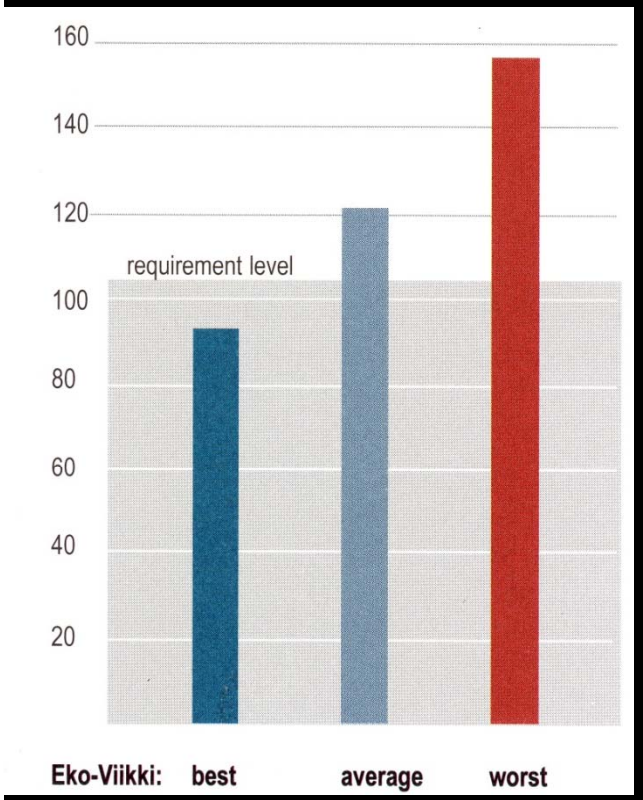
Monitoring Project

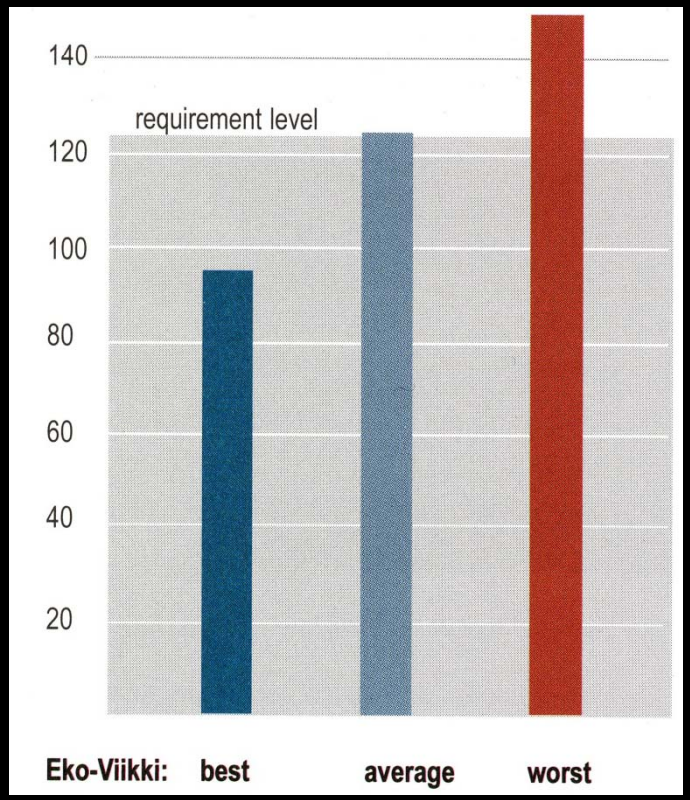
- Pilot projects
- Consumption (CO_2, water, heating, electricity)
- Fulfilling of the Ecological Building Criteria
- Interviews (developers, architects, deputy landlords, inhabitants)
- The technical descriptions of the projects



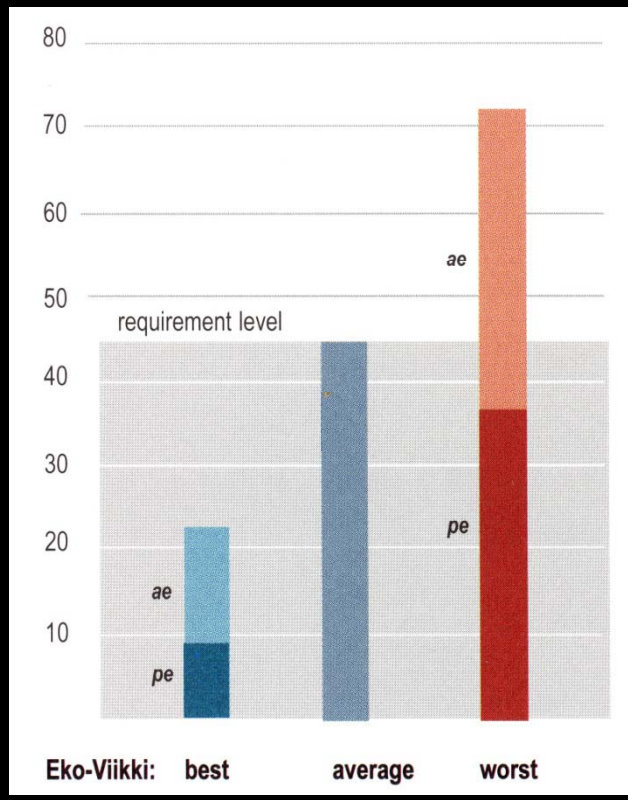
DISTRICT HEATING CONSUMPTION
weather adjusted specific fuel consumption kWh/m2



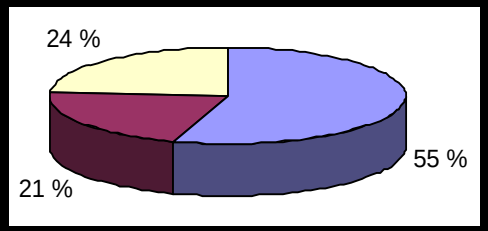
WATER CONSUMPTION
Litres /person /day



ELECTRICAL CONSUMPTION
kWh/m2,, ae = apartment, pe = property

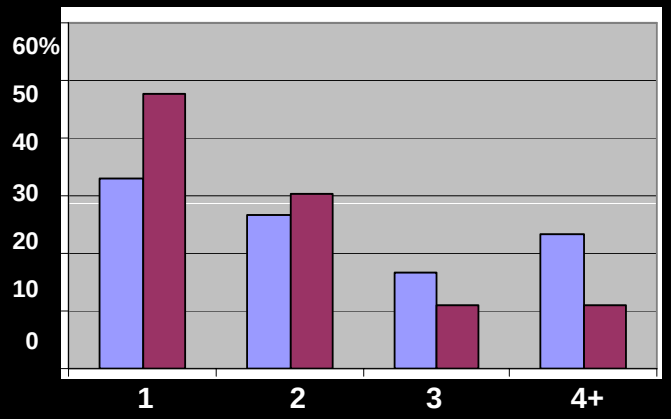


Inhabitant Survey



Owner occupied flats
Right of occupancy flats
Rental flats

Ownership of apartments



Eco-Viikki
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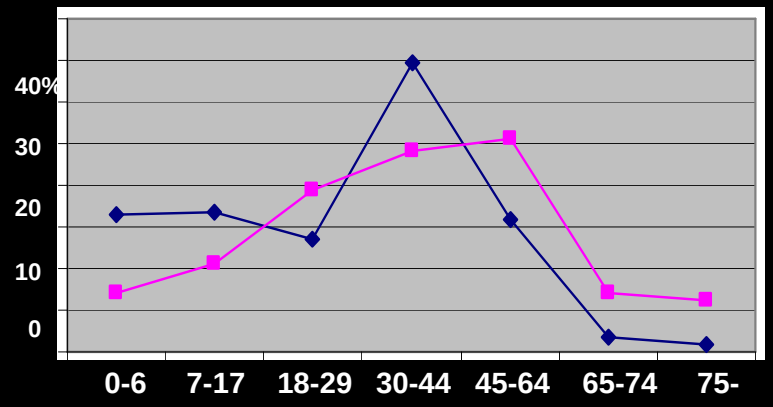
Inhabitants / flat



Eco-Viikki
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Age distribution

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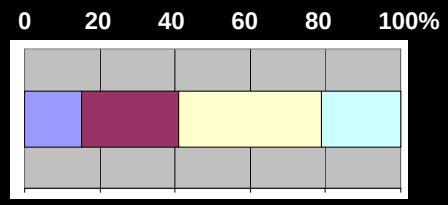
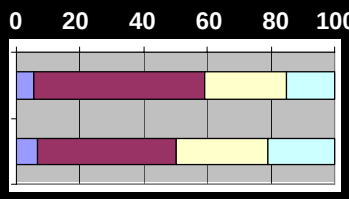
Inhabitant Survey



Influence of ecological targets of construction on the choice of dwelling place

- Very strong
- Strong
- Some
- None

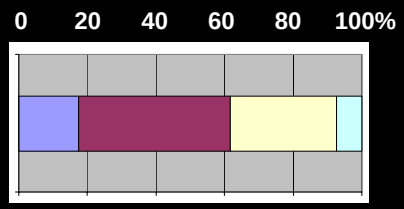


Increased knowledge about ecological construction

Changed ways of life to more ecological direction

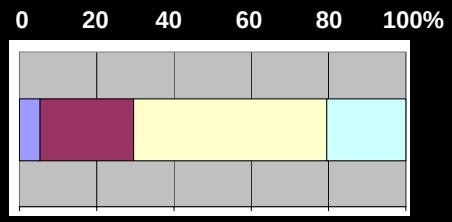
Effect of the area´s ecology on environmental consciousness and behavior

- Very much
- Some
- Little
- None



Amount of information about ecological solutions of own flat

- Very sufficient
- Fairly sufficient
- Small
- None



Estimate of the degree of personal ecological knowledge

- Excellent
- Good
- Fair
- Bad

Helsinki, Viikki Project 2009

http://www.hel.fi/static/ksv/julkaisut/eco-viikki_en.pdf

Eco-Viikki

Aims, Implementation and Results

"A bit too child-oriented... but still quite OK."

"This is really a wonderful home for someone such as me."

"A nice place, badly built"

City of Helsinki
Ministry of the Environment

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Helsinki, Viikki Project 2009

The sustainability of a residential area depends first of all on the lifestyle of its inhabitants

Helsinki , Viikki Project 2009

Viikki has offered an opportunity to implement, research and development as well as to test ecological solutions.

Eco-Viikki is well known in Finland and abroad.
Visiting groups come from around the world.

Awards :
Paris, Eco-building Grand Prix
Malmö, Sustainable City Award

City of Helsinki

Eco-Viikki – Pilot Project in Helsinki