Building stock in Helsinki

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Our tasks

- **Table 1. Effective floor area of buildings by building type.**
  - Residential,   Public,   Industrial and   Other

- **Table 2. Existing situation of important energy parametres in the building stock.**
  - Wall insulation,   High efficient glazing,   Efficient lighting in baseline,
    Demand oriented lighting,   Building Efficiency Monitoring,
    Building Remote Monitoring,   Building Performance Optimization,
    Demand controlled ventilation,   Heat and Cold Recovery in ventilation,
    Efficient Motors,   Building Automation BACS Class C,
    Building Automation BACS Class B,   Building Automation BACS Class A,
    Room Automation HVAC ,   Room Automation HVAC + lighting   and
    Building Automation HVAC + lighting + blinds

Table 1. Effective floor area of buildings

	Baseline 2014	2020	2025	2050
Buildings	Floor area m2	Floor area m2	Floor area m2	Floor area m2
Residential				
Public				
Industry				
Other				

Baseline floor areas were calculated from Building block of Helsinki area, 2014

Table 1. Effective floor area of buildings

- **Residential:**

- Different types of residences

- Helsinki master plan for 2050: 860 000 citizens living in Helsinki (ref. www.yleiskaava.fi, visio2050)

- Prediction of citizen number in Helsinki in 2020, 2030, 2040 and 2050 was used for calculations (ref. Helsingin 30% päästövähennysselvitys).

- Residental buildings => fast growth

Table 1. Effective floor area of buildings

➡ Residential:

Number of citizens

ASUKASLUKU	1990	2010	2020	2030	2040	2050
Nopea kasvu *(Fast growth)*			664 048	739 959	806 625	874 070
Perusvaihtoehto *(Basic option)*	**492 400**	**588 695**	**654 646**	**705 657**	**730 240**	**750 388**
Hidastuva kasvu *(Decelerated growth)*			642 447	681 450	694 672	703 240

ref. Helsingin 30% päästövähennysselvitys

Table 1. Effective floor area of buildings

- Public include:
  - Health care buildings, education buildings, common room

- Industry include:
  - Different industrial buildings, power stations

- Other buildings include:
 - Business, traffic, office and storage buildings

Table 1. Effective floor area of buildings

- Public, Industry and Other:

  - Helsinki's climate policy: 30% reduction in emissions :

  in 2010 the proportion of jobs in services and public sectors was 94%, and in industry 6%. In 2020 the proportion of jobs in services and public sectors is estimated to be 96%, and in industry 4%.

Age distribution in Helsinki area in 1990 and 2011
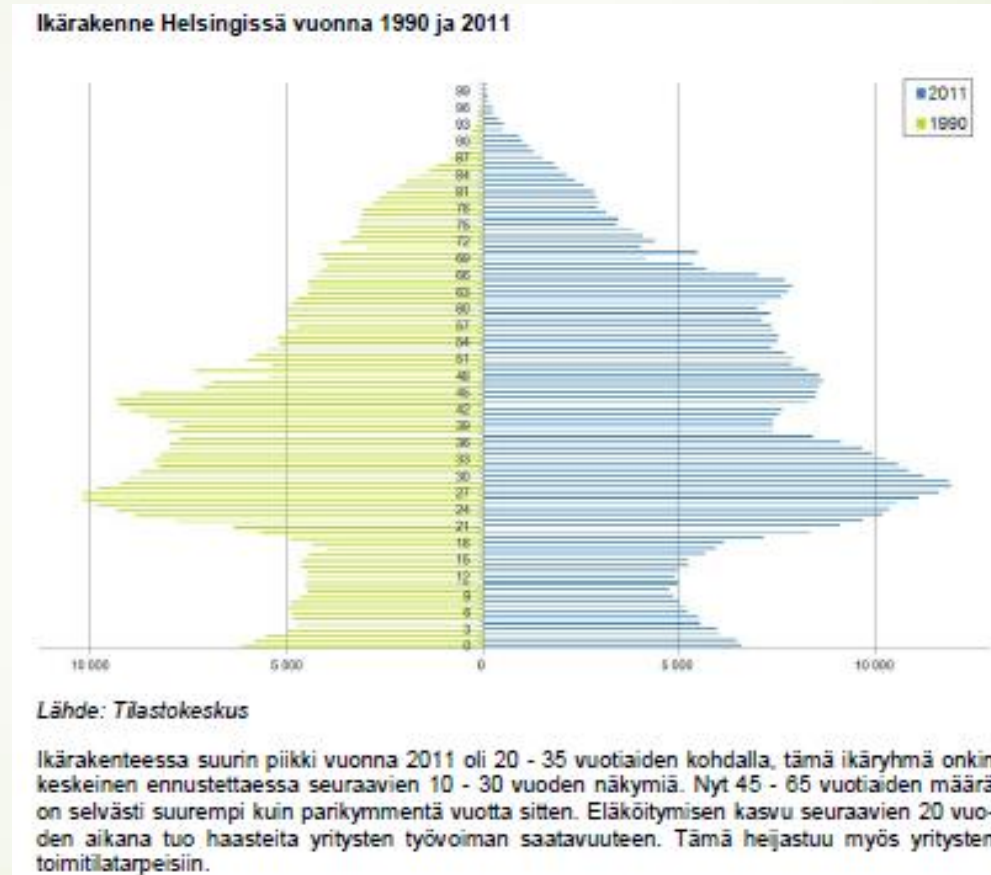
Ref. Helsingin yritysalueiden markkinalähtöinen tulevaisuus, Helsingin kaupunki, Kiinteistövirasto ja kaupunkisuunnitteluvirasto, 17.12.2012

Table 1. Effective floor area of buildings

- Public, Industry and Other:

  - Prediction of job number in Helsinki in 2020, 2030, 2040 and 2050 was used for calculations (ref. Helsingin 30% päästövähennysselvitys).

  - Public and other buildings => between fast growth option and basic option

  - Industry=> Basic option

Table 1. Effective floor area of buildings

- Public, Industry and Other:

Number of jobs	TYÖPAIKAT	1990	2010	2020	2030	2040	2050
Fast growth	Nopea kasvu			432 000	482 000	530 000	566 000
Basic option	**Perusvaihtoehto**	**368 400**	**380 600**	**395 000**	**408 000**	**422 000**	**435 000**
Decelerated growth	Hidastuva kasvu			381 000	381 000	381 000	381 000

ref. Helsingin 30% päästövähennysselvitys

Table 1. Effective floor area of buildings

	Baseline 2014	2020	2025	2050
Buildings	Floor area m2	Floor area m2	Floor area m2	Floor area m2
Residential	27884795	30506708	32778199	41402191
Public	4537025	4837699	5021964	5855546
Industry	3277271	3338118	3393049	3676155
Other	10861972	11581809	12022954	14018610

Baseline floor areas were calculated from Building block of Helsinki area, 2014

Effective floor area of buildings(m2)

Effective floor area of buildings(m2)									
Obs	Building	Baseline	2020	2025	2050	Year of baseline	Type of data	Quality	Description
1	Residential	27884795	30506708	32778199	41402191	2014			Building block of Helsinki area, 2014
2	Public	4537025	4837699	5021964	5855546	2014			Building block of Helsinki area, 2014
3	Industrial	3277271	3338118	3393049	3676155	2014			Building block of Helsinki area, 2014
4	Other	10861972	11581809	12022954	14018610	2014			Building block of Helsinki area, 2014

Table 2. Existing situation of important energy parametres in the building stock.

Existing situation of total stock(%)						
Obs	Property	Residential	Public	Industrial	Other	Description
1	Wall insulation	17				Default building data. excel/cyPT data collection
2	High efficient glazing	35				Energy performance class A in building automation/Simens pdf document searched in internet
3	Efficient lighting in baseline	1,4				Default building data. excel
4	Demand oriented lighting	26,9				Default building data. excel
5	Building Efficiency Monitoring					
6	Building Remote Monitoring					
7	Building Performance Optimization					
8	Demand controlled ventilation	16,2or 22,4				Default building data. excel/cyPT data collection

Table 2. Existing situation of important energy parametres in the building stock.

Existing situation of total stock(%)						
Obs	Property	Residential	Public	Industrial	Other	Description
9	Heat and Cold Recovery in ventilation	17,8				
10	Efficient Motors					
11	Building Automation BACS Class C					
12	Building Automation BACS Class B					
13	Building Automation BACS Class A					
14	Room Automation HVAC	30				http://www.buildingtechnologies.siemens.com
15	Room Automation HVAC + lighting					
16	Building Automation HVAC + lighting + blinds	60				www.buildingtechnologies.siemens.com