



# Färska geoenerginyheter från Europa

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# Nya Statistikuppgifter från EGC 2016

Geotermi i Europa:

Geotermisk elproduktion:

- 2 050 MW<sub>el</sub>

Geotermisk direktvärme:

- > 9 200 MW<sub>th</sub> varav hälften som fjärrvärme

Geoenergi i Europa (VP+lager+frikyla+frivärme):

- 22 900 MW<sub>th</sub>
- > 1.7 miljoner installerade system

32 rapporterande länder

# Geotermisk trend

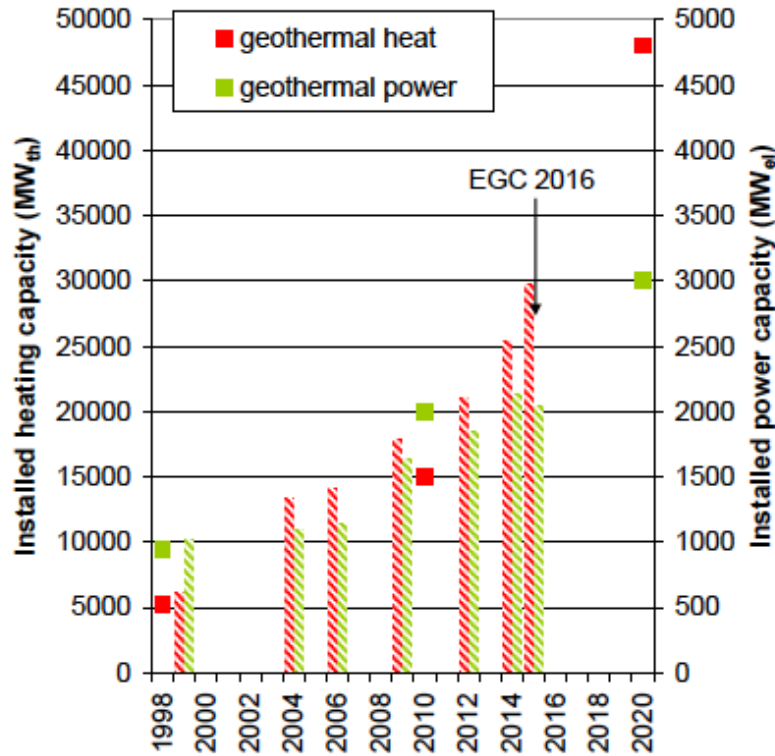


Figure 1: Comparison of installed capacity after Ferrara Declaration of 1998 (squares), and reported values (hashed columns)

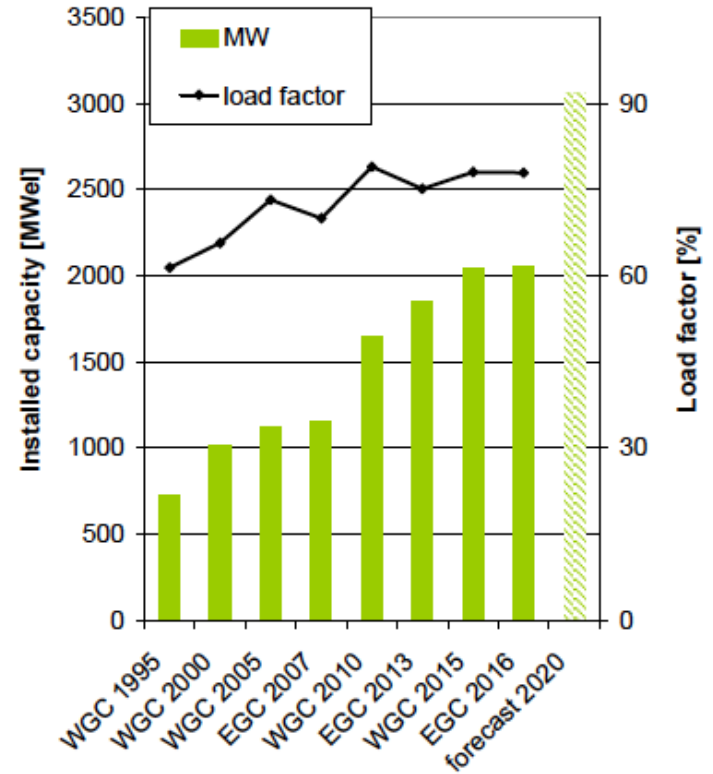


Figure 2: Installed capacity and average load factor for geothermal electricity in Europe as reported at various events, and forecast of installed capacity to 2020.

# Geotermisk värme - användning

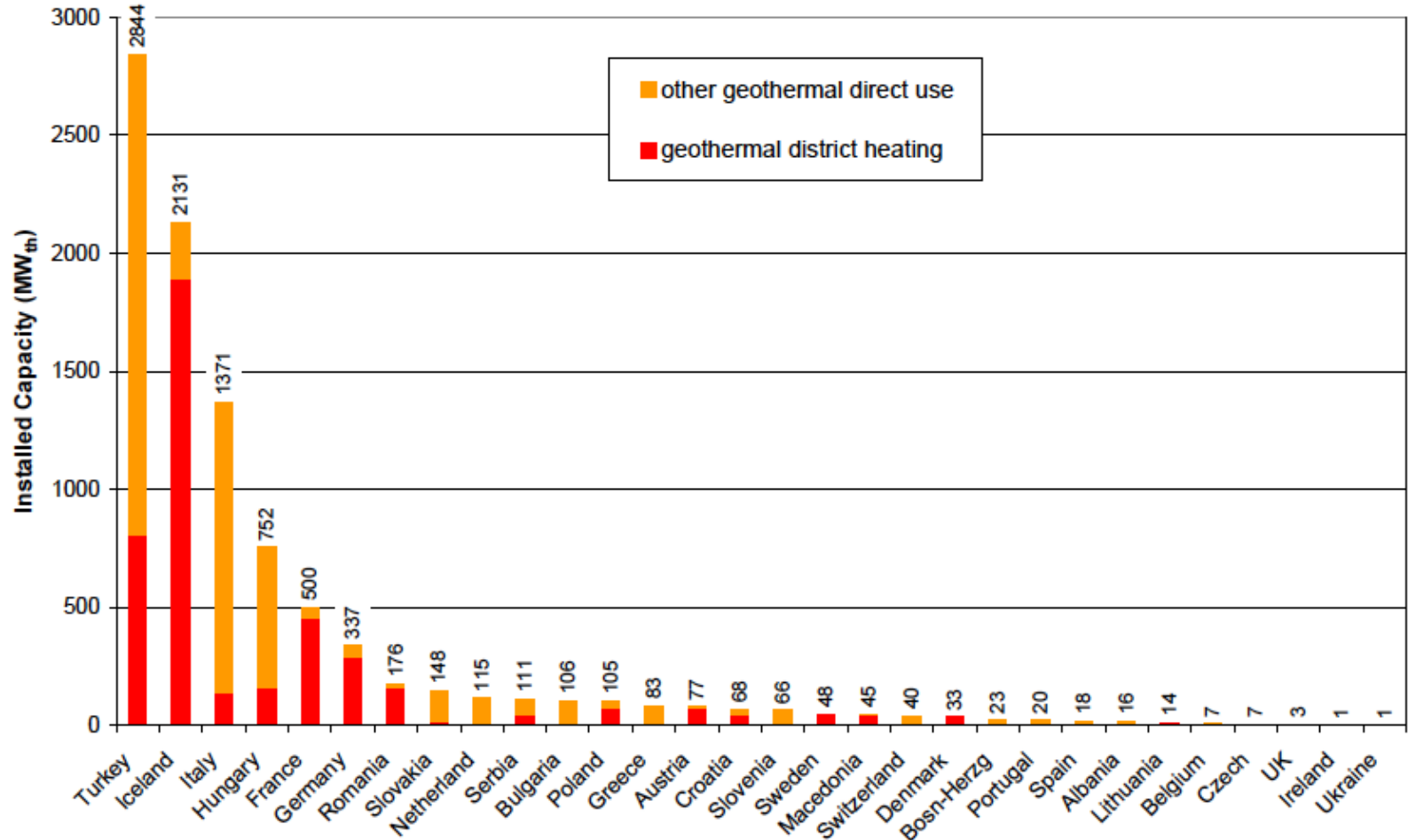
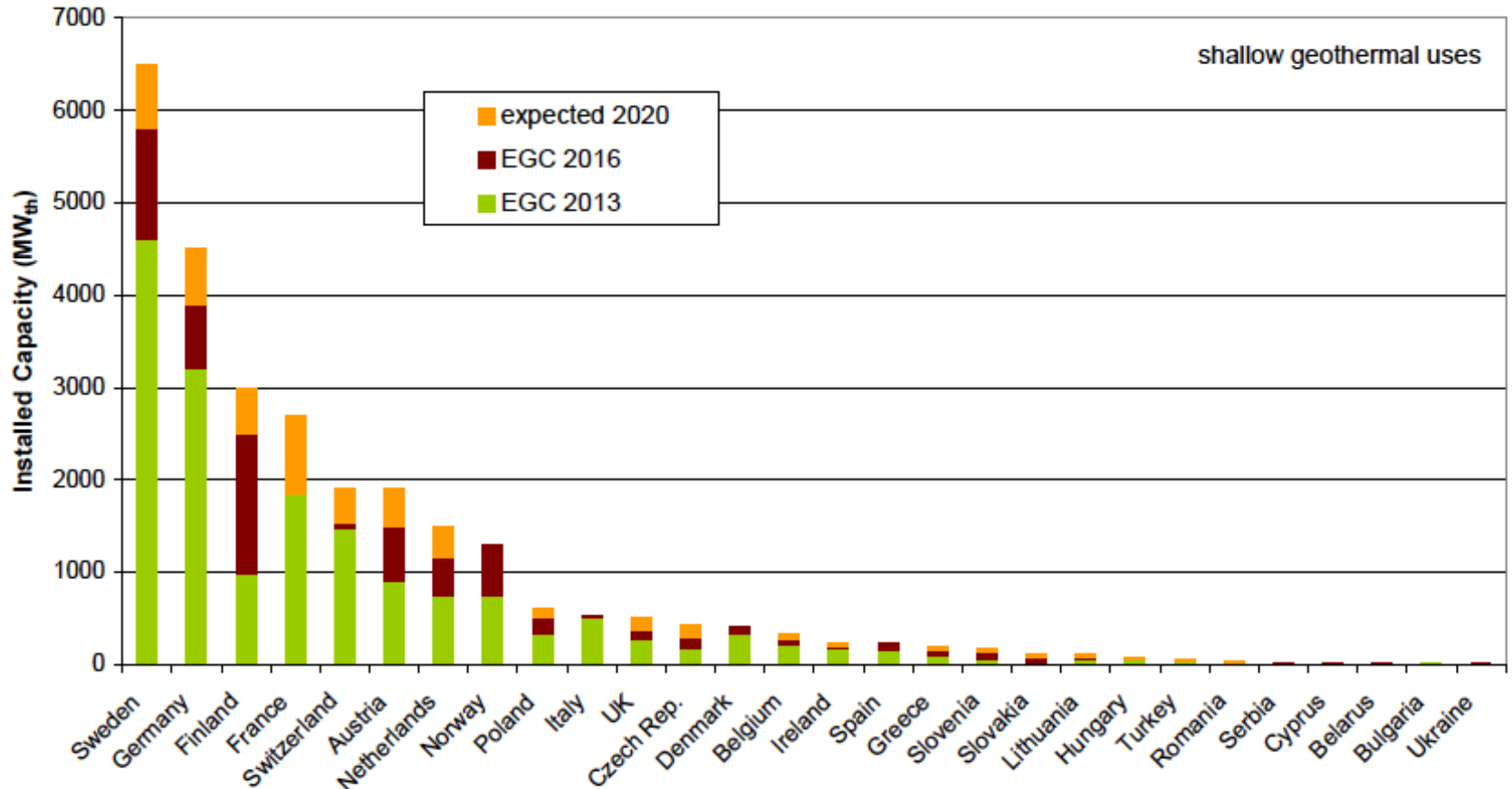


Figure 8: Installed capacity in geothermal direct use in Europe 2015, showing the share of district heating in the total direct geothermal use

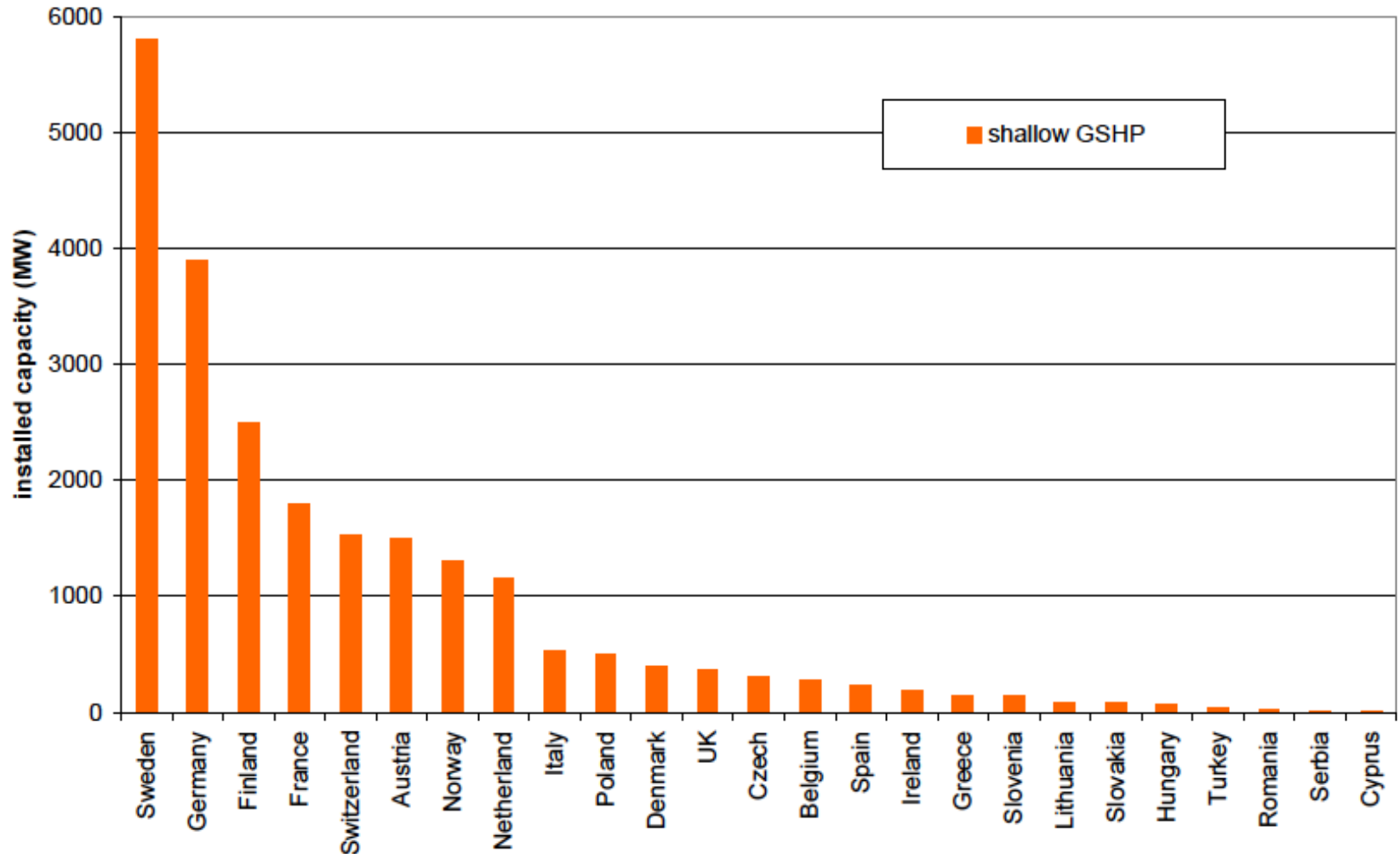
Källa: Antics et al., EGC 2016.

# Geoenergi i olika länder inkl. förväntningar



**Figure 12: Installed capacity in geothermal heat pumps in Europe 2012-2015, after EGC 2013 and EGEC 2016, and reported expectations towards 2020 (EGC-2016-values for Turkey and Denmark from WGC 2015)**

# Geoenergi i Europas länder 2015





 540 000 anläggningar

 5.8 GW<sub>th</sub>

 20 100 GWh<sub>th</sub>

# ATES & BTES



ATES 160 st



300 MW<sub>th</sub> / 1050 MWh<sub>th</sub> värme



320 MW<sub>th</sub> / 600 MWh<sub>th</sub> kyla



BTES 650 st



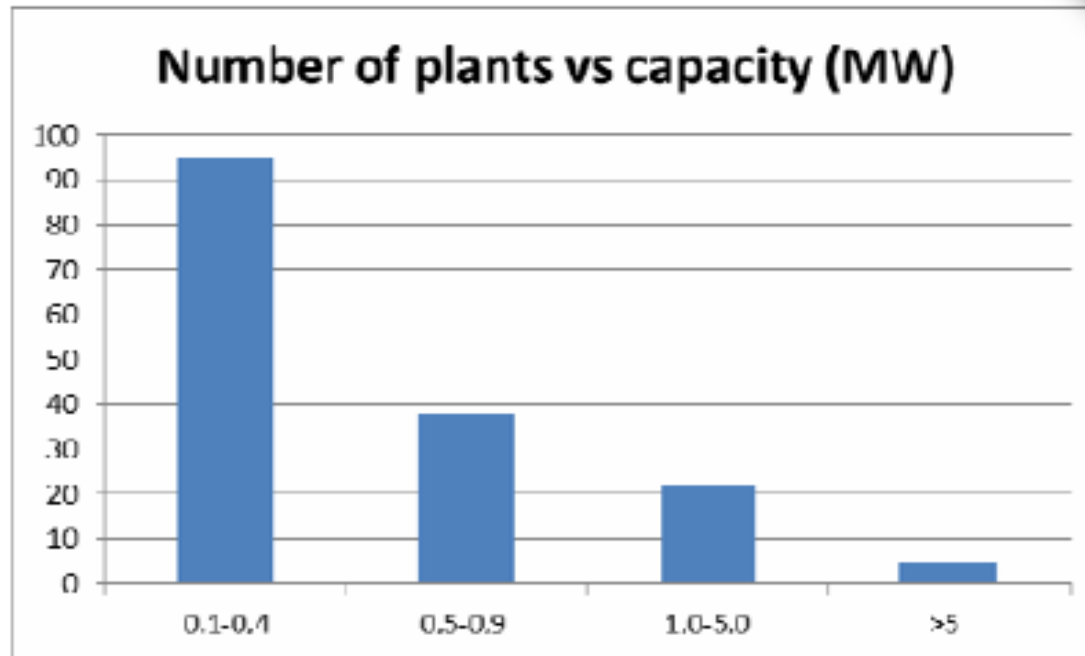
195 MW<sub>th</sub> / 680 MWh<sub>th</sub> värme



220 MW<sub>th</sub> / 340 MWh<sub>th</sub> kyla

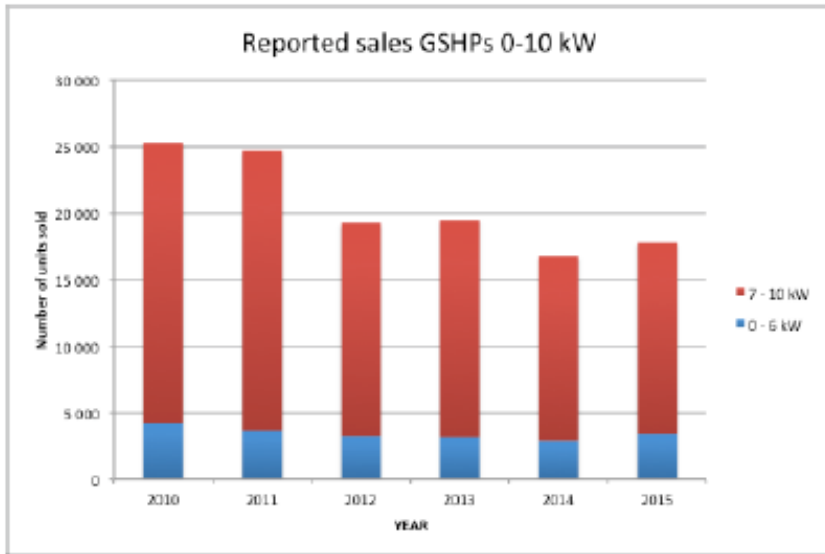


# ATES

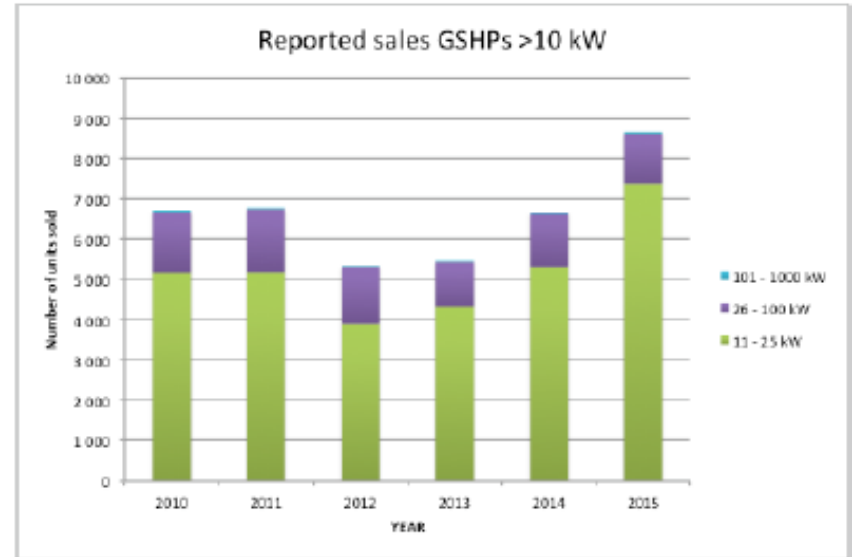


**Figure 6: Estimated number and size distribution of Swedish ATES plants.**

# Markvärmepumpar



**Figure 1: Reported sales of GSHPs up to 10 kW capacity in Sweden.**



**Figure 2: Reported sales of GSHPs >10 kW for large buildings in Sweden.**

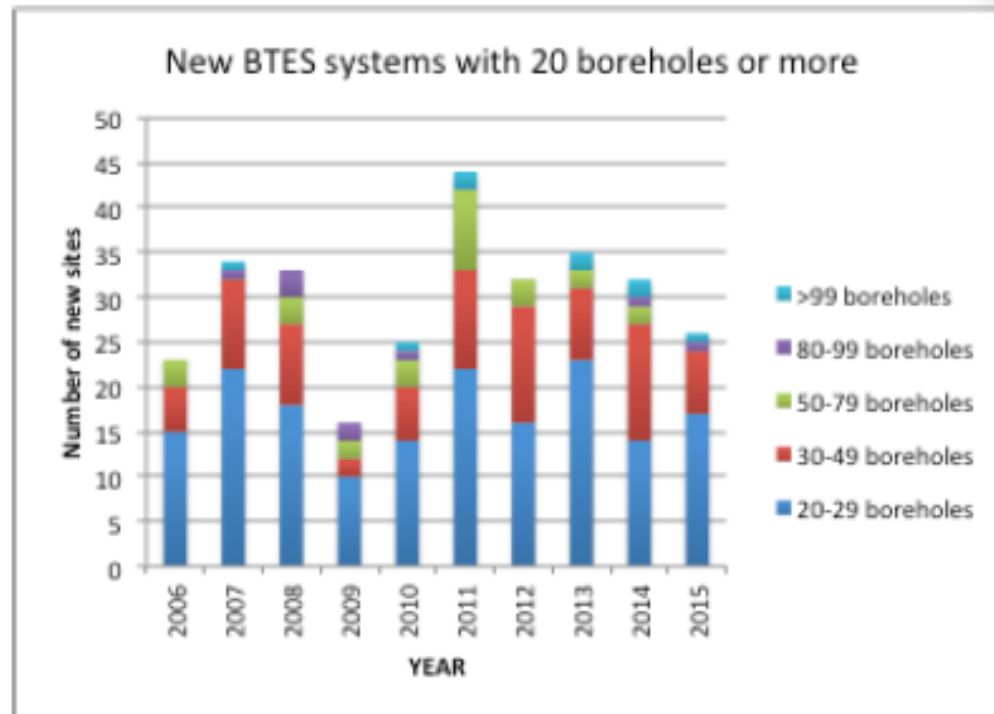
# Sverige



Year	Units 1-2 bh	Units 3-5 bh	Units 6-10 bh	Units 11-19 bh	Units ≥20 bh
2000	5669	134	27	8	4
2001	7860	150	26	6	2
2002	12814	223	41	10	6
2003	14660	294	52	25	4
2004	18034	374	78	21	7
2005	18702	565	139	39	9
2006	20621	596	152	43	23
2007	14124	552	171	50	34
2008	10780	488	146	61	33
2009	13265	389	114	47	16
2010	15025	399	130	38	25
2011	16646	486	176	67	44
2012	12136	420	157	63	32
2013	13012	389	130	45	35
2014	11968	408	169	52	32
2015*	10209	278	115	35	26

**Figure 8: Number of new BTES systems of various size reported in SGU Database. (\*Data for 2015 is incomplete due to delay in reporting.)**

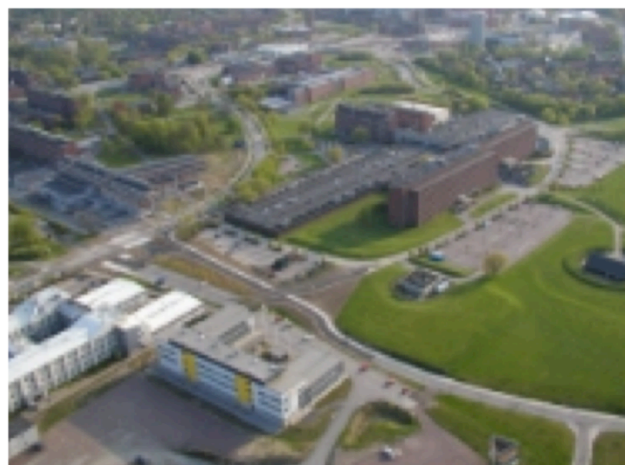
# Sverige



Karlstad Campus  
203 x 240-250 m  
Borrrat 48 240 m



Kemicentrum, Lund  
165 x 230 m  
Borrrat 37 950 m



Ljuskärnsberget  
156 x 230 m  
Borrrat 35 880 m



# Europa: Störst



Karlstad: 2015  
203 borrhål á 240-250 m

Under konstruktion 2015-2016, Zürich, Schweiz:

- FGZ Wohnquartier Friesenberg, totalt 500 bh á 250 m
- ETH-Campus Hönggerberg, totalt 425 bh á 200 m

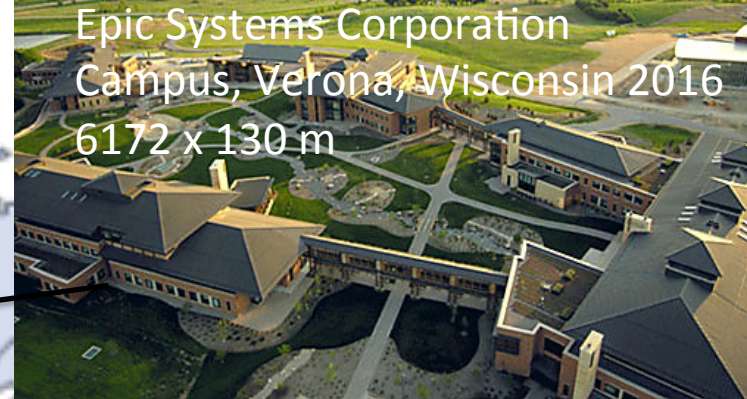
Richti-Areal, Walliselen, 2012  
220 borrhål á 225 m



ELI, Bukarest, Rumänien: 2015  
1080 x 125 m



# Världens största anläggningar



# Höjdpunkter från EGC 2016

- Djupare borrhål än 300 m
- Markvärmeväxlare
- Systemidéer, uppföljningar och termiska nät
- Markens termiska egenskaper
- Policies i olika länder





Tack för uppmärksamheten!