

# The Geothermal Implementation Roadmap

## It's role, evolution and new perspectives to improve geothermal R&D

Graz, ISEC Conference, 4th October 2018

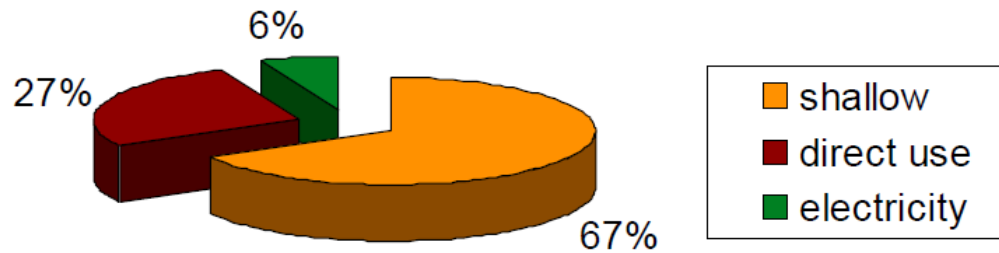
Luc Pockelé, RED SRL



# Market update: 2010 – 2016 SGE

## Shallow Geothermal Market 2015

Shallow geothermal is the largest geothermal sector by far, covering 2/3 of the total installed capacity in Europe



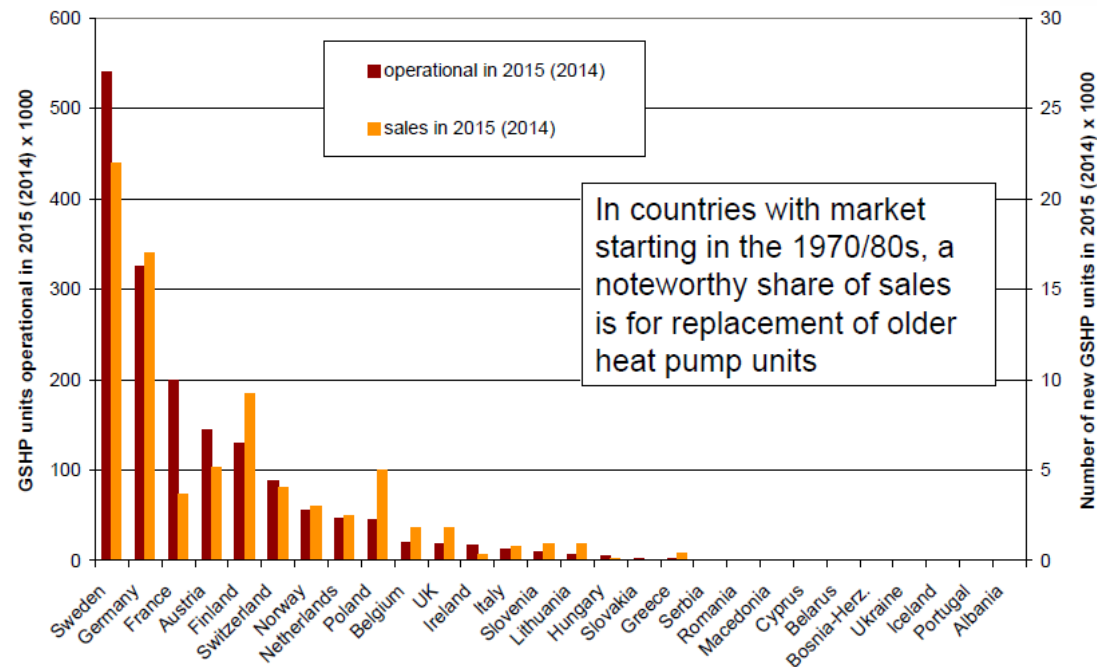
Share of installed capacity in the three geothermal sub-sectors in Europe as of 2015 (from EGC 2016 country update reports)

# Regional market structure in the EU

## Shallow Geothermal Market 2015



Sales of ground-source heat pumps in Europe

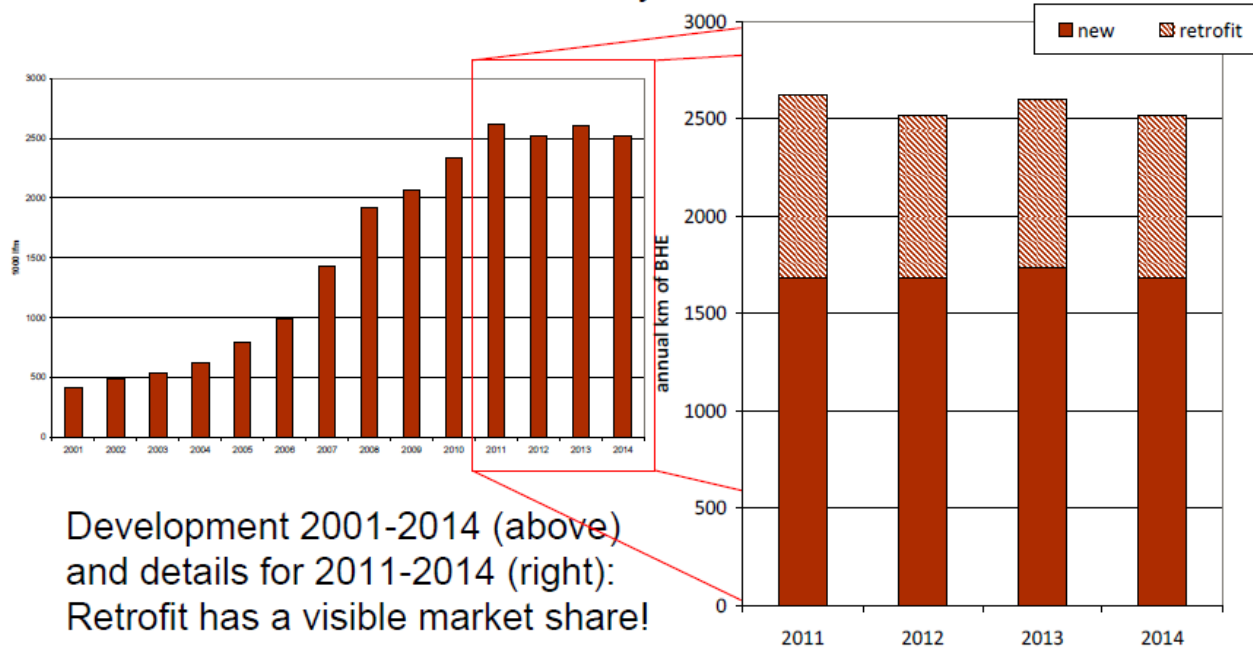


Total number of GSHP and sales in 2014/2015 from EGC 2016 country updates

# Retrofit market and the role of incentives



A good example: drilling for BHE in Switzerland  
Kilometres of BHE installed annually

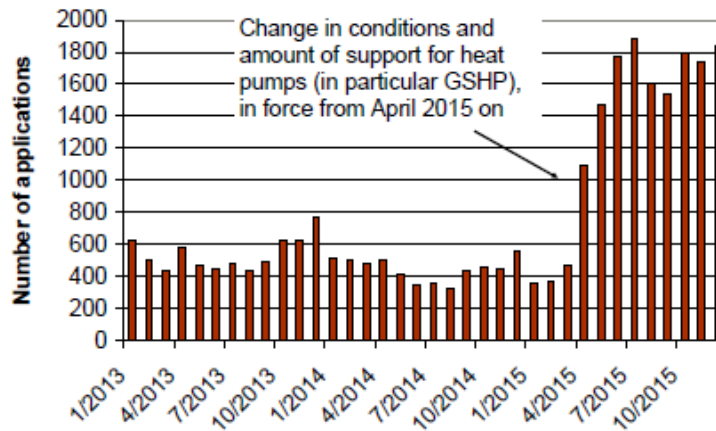


Development 2001-2014 (above)  
and details for 2011-2014 (right):  
Retrofit has a visible market share!

(after data from FWS)

# MAP scheme and SGE applications....

Subsidies and grants can help further under such circumstances  
(MAP in Germany, 4500 € for residential BHE installation)



Monthly number of applications for MAP-support for heat pumps (all heat pumps considered), after data from BAFA

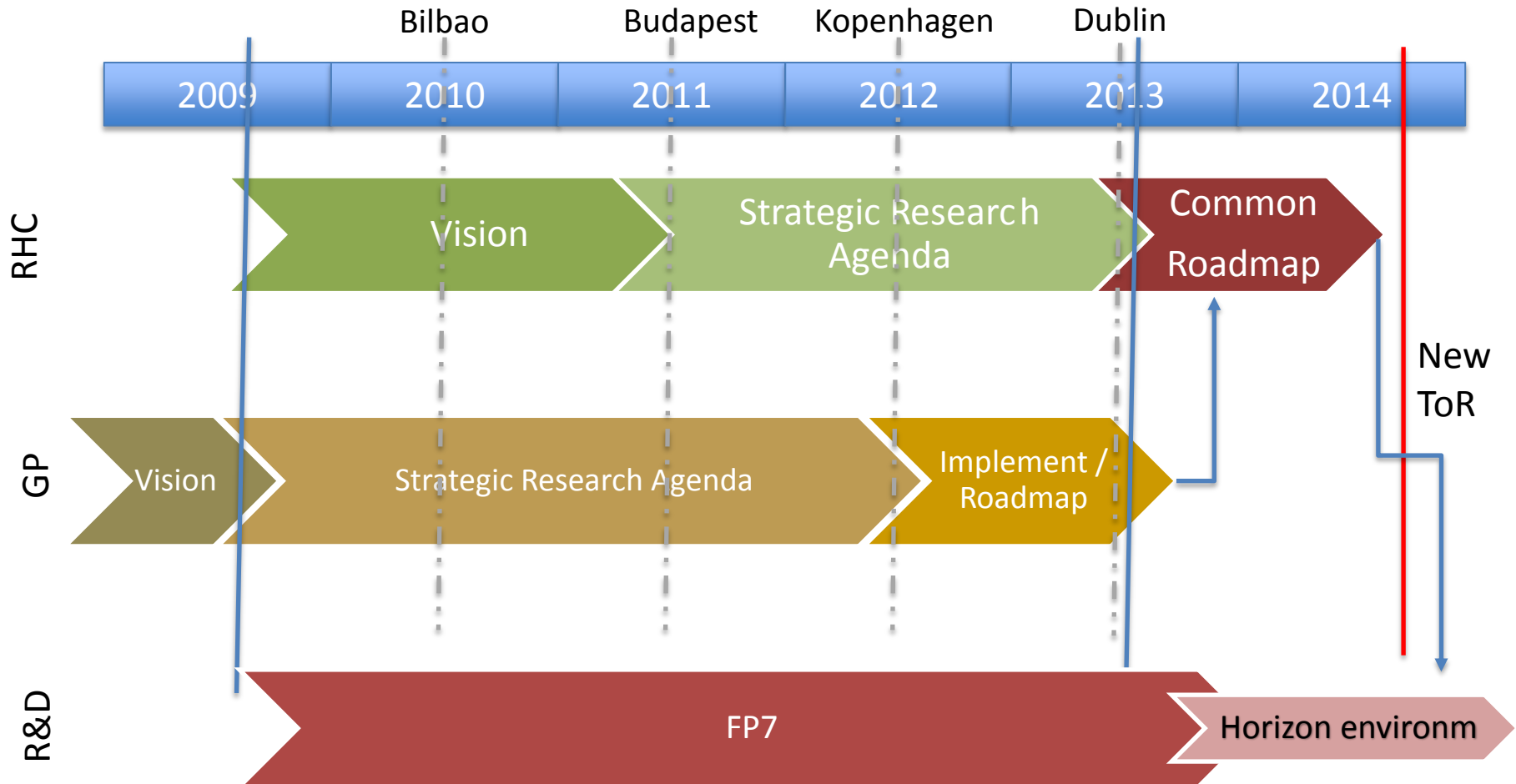
## In conclusion...

- SGE is steadily increasing in Europe, more or less within expectations, but below its potential in the framework of the increase of heat pumps
- There are three main forces that determine the market equilibrium in each country:
  - Awareness and reputation
  - Cost and incentives
  - Regulation...and they act as drivers or barrier given the case!

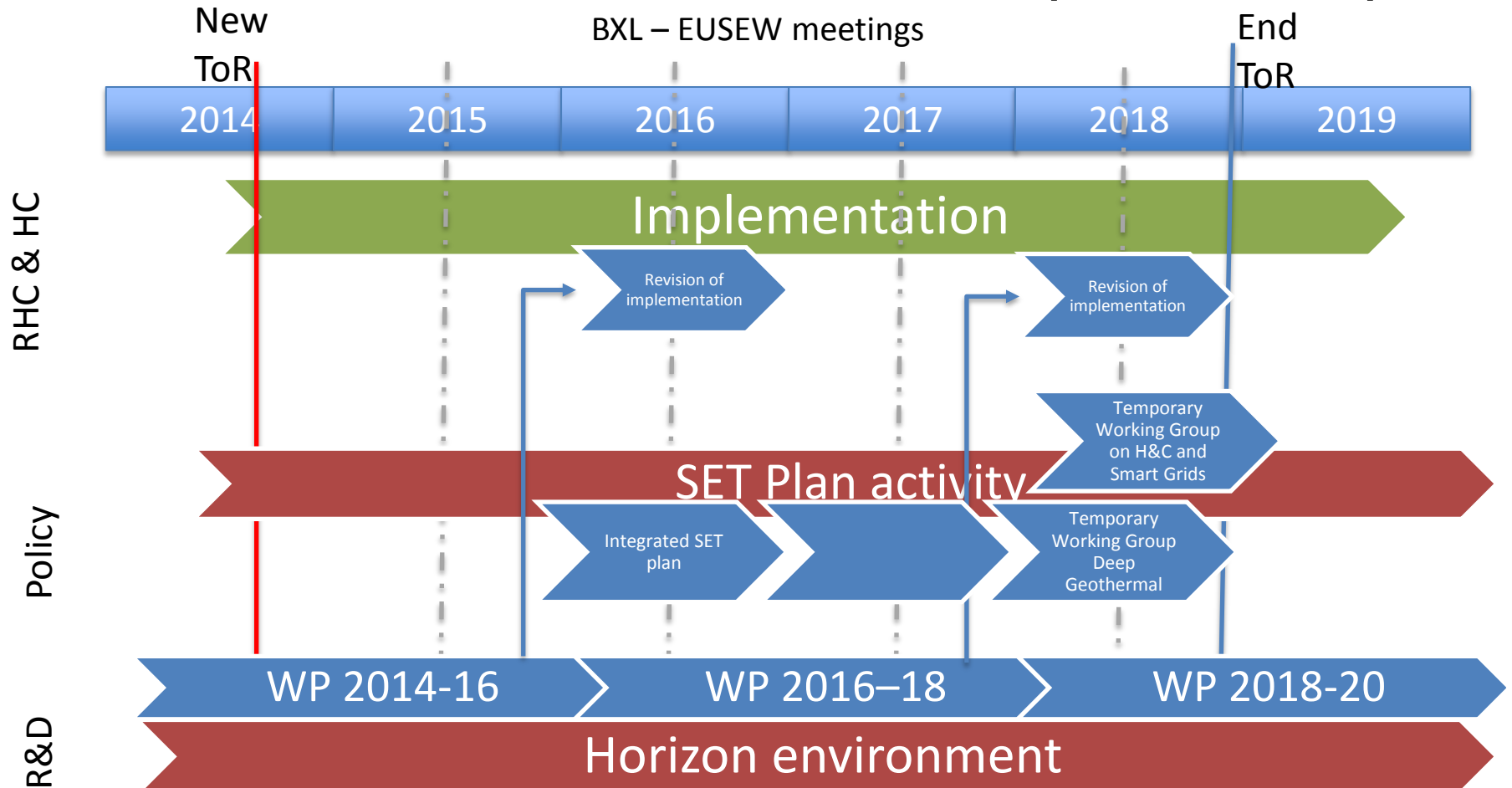


# The role of R&I

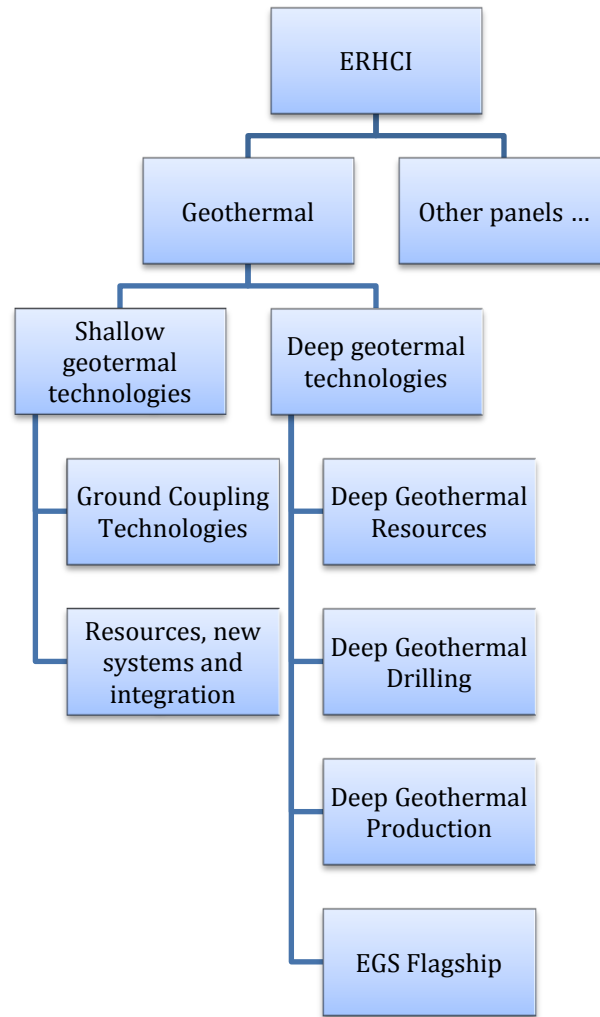
# Main Deliverables of the RHC and GP (First ToR)



# Main Deliverables of the RHC and GP (Second ToR)



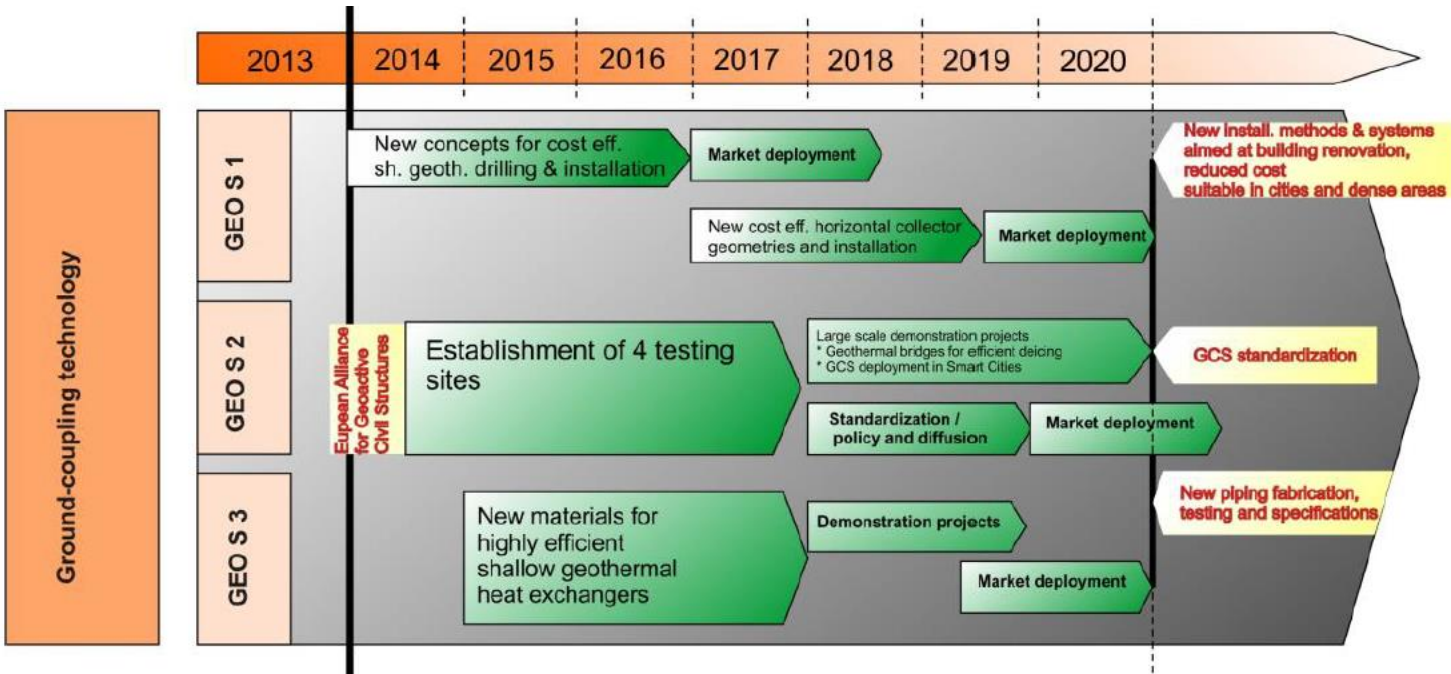
### 3. Implementation plan 2013 - 2020



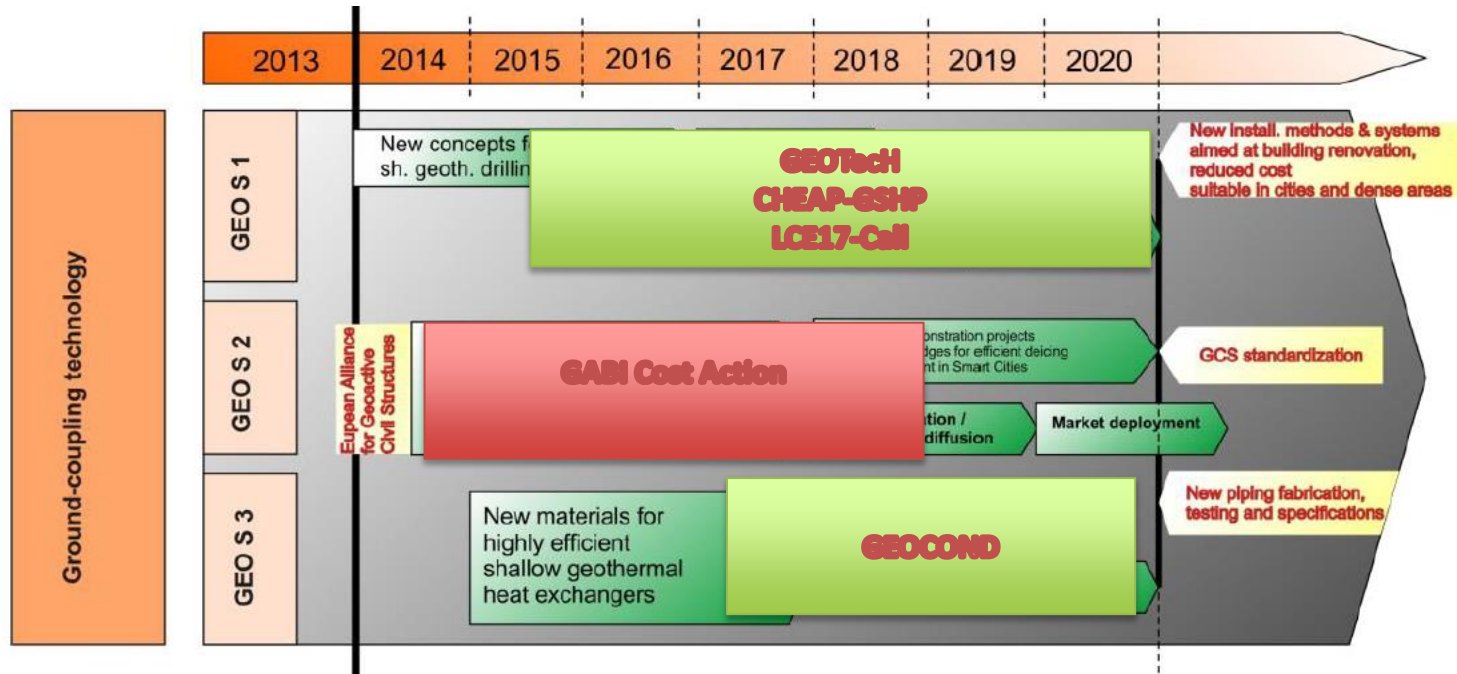
# List of R&D Projects

Sub section	R&D program area acronym	R&D program area title	Indicative budget	Associated KPI's	Classification
Ground coupling technologies subsection	GEO S 1	Improved vertical borehole drilling technologies to enhance safety and reduce cost of BHE installations - Improved installation technologies and geometries for horizontal BHE.	15 mio €		Development
	GEO S 2	European-wide Geoactive Structures Alliance in cooperation with the association of Civil Engineering European Institutions. Development a network of laboratories to create 4 testing sites.	50 mio €		Research & Development
	GEO S 3	Improved pipe materials for borehole heat exchangers (BHE) and horizontal ground loops. New pipes for higher temperatures.	10 mio €		Research
	Total		75 mio €		

GEO S 4	Creation of a new European wide database to map conductivities and potential (to 100 m depth) and feasibility of vertical BHE systems following EU F7 THERMOMAP	6 mio €	Development
GEO S 5	Development of new non-invasive geophysical tools for Shallow reservoir potential estimation – enhanced TRT methods for non-conventional systems.	3 mio €	Research & Development
GEO S 6	Integration of design of the shallow geothermal system and building energy system with regard to optimum thermal use and operational strategy.	6 mio €	Development
GEO S 7	System concepts and applications for geothermal large scale and medium scale cooling in warm climates – hybrid systems, new high temp pipe materials and new short term storage materials and concepts. Campaign to support 50 demonstration plants following GROUNDMEED concept.	15 mio €	Research & Development
GEO S 8	Development of ground coupling technologies and installation techniques for high capacities through hybrid systems and integration with other RES sources. Campaign to support 50 demonstration plants following EU FP6 GROUNDMEED concept.	25 mio €	Development
GEO S 9	Non-technical provisions: harmonization of shallow geo- standards, shallow geothermal installer EU wide training certificate (following GEOTRAINET), shallow geothermal Smart City deployment policy (following REGGEOCITIES)	3 mio €	Development
Total		58 mio €	



# Assesment of the WP 2014-16





**Thank you for your attention !**