

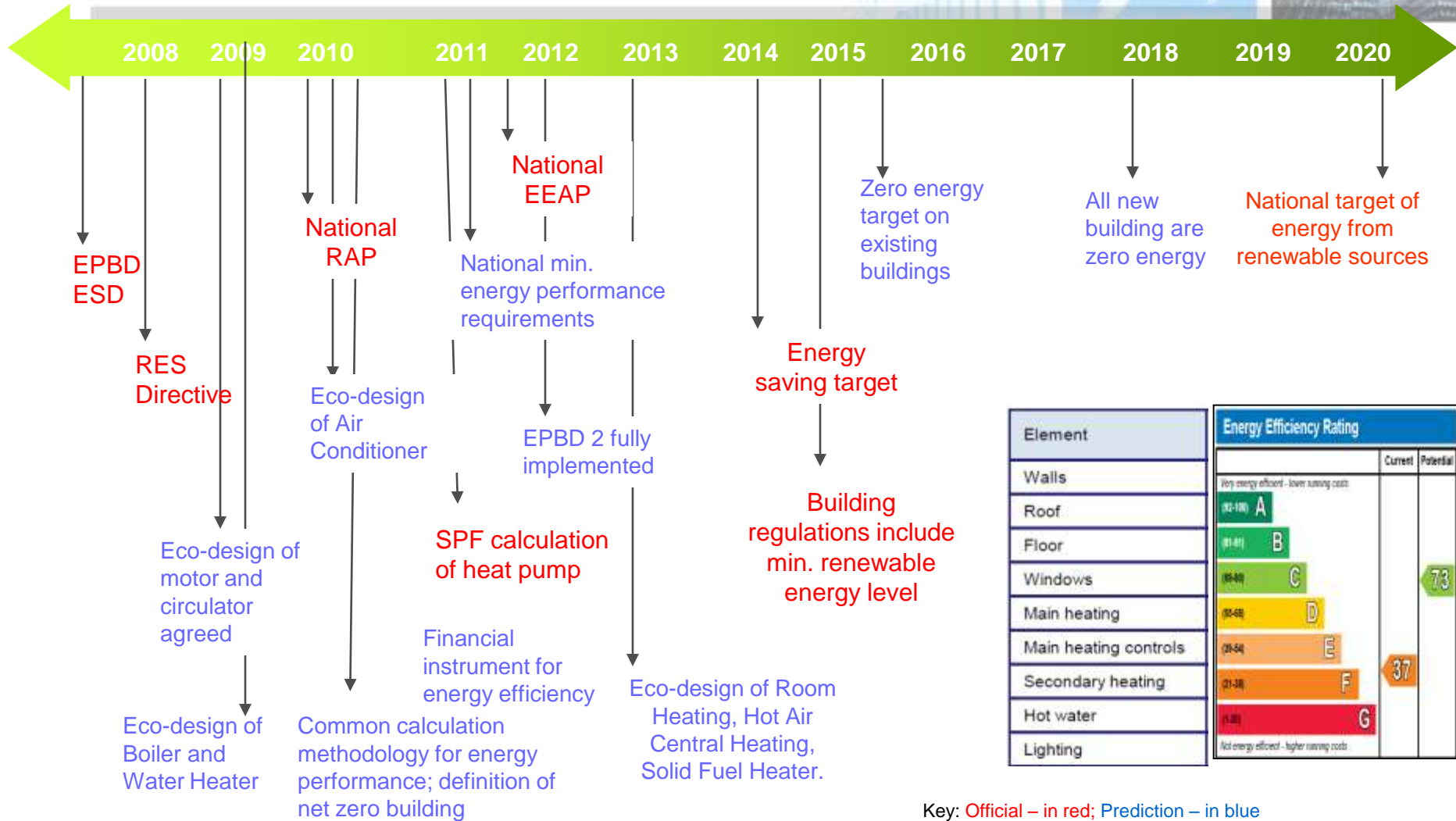


# UK Market Update



By Abdel Eljidi

# EU Legislation Timeline



Element	Energy Efficiency Rating	
	Current	Potential
Walls		
Roof		
Floor		
Windows		73
Main heating		
Main heating controls		
Secondary heating		
Hot water		37
Lighting		

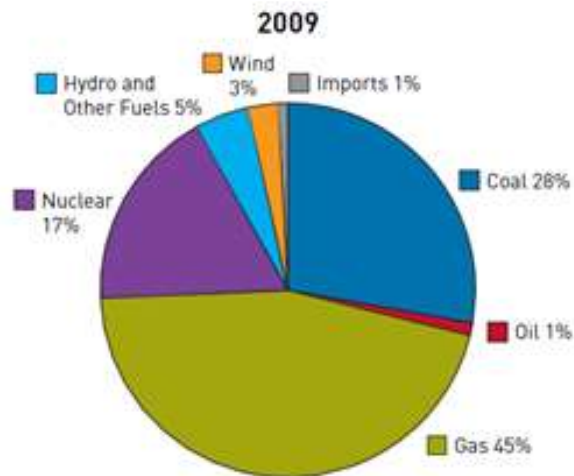
Very energy efficient - lower running costs: A, B, C, D, E, F, G

Not energy efficient - higher running costs: G

Key: Official – in red; Prediction – in blue

# Energy Market

- Gas is the main fuel for electricity generation
- Gasification accounts for over 90%
- Energy is the most deregulated market in Europe



Source: DECC



British Energy

EDF ENERGY

Southern Electric

npower

e.on

SSE

British Gas

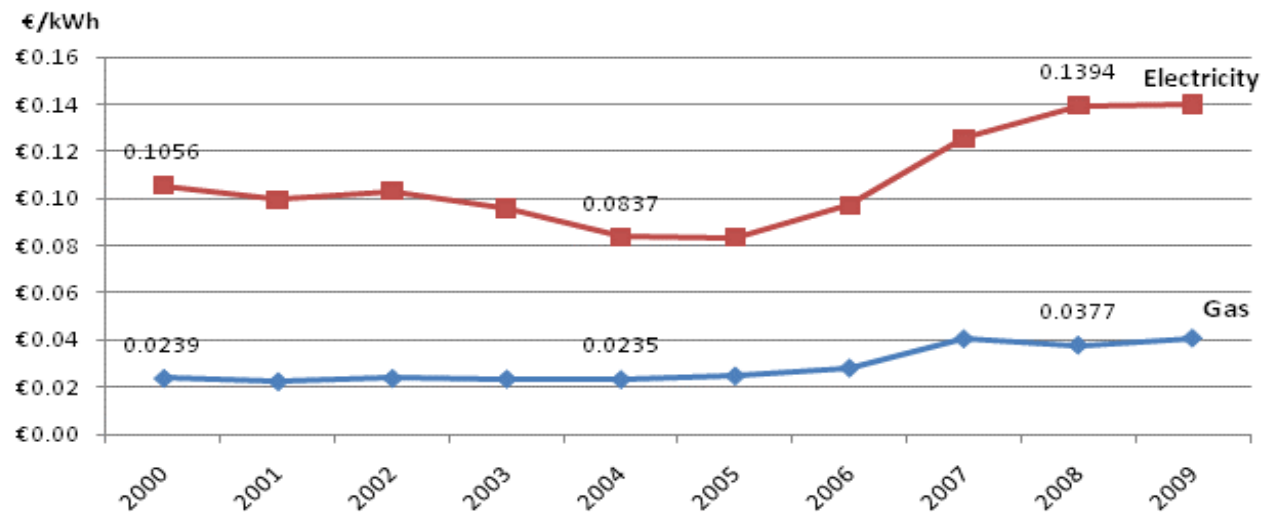
SCOTTISHPOWER

# Energy Prices

Evolution of domestic energy prices in € per kWh, between 2000 and 2009

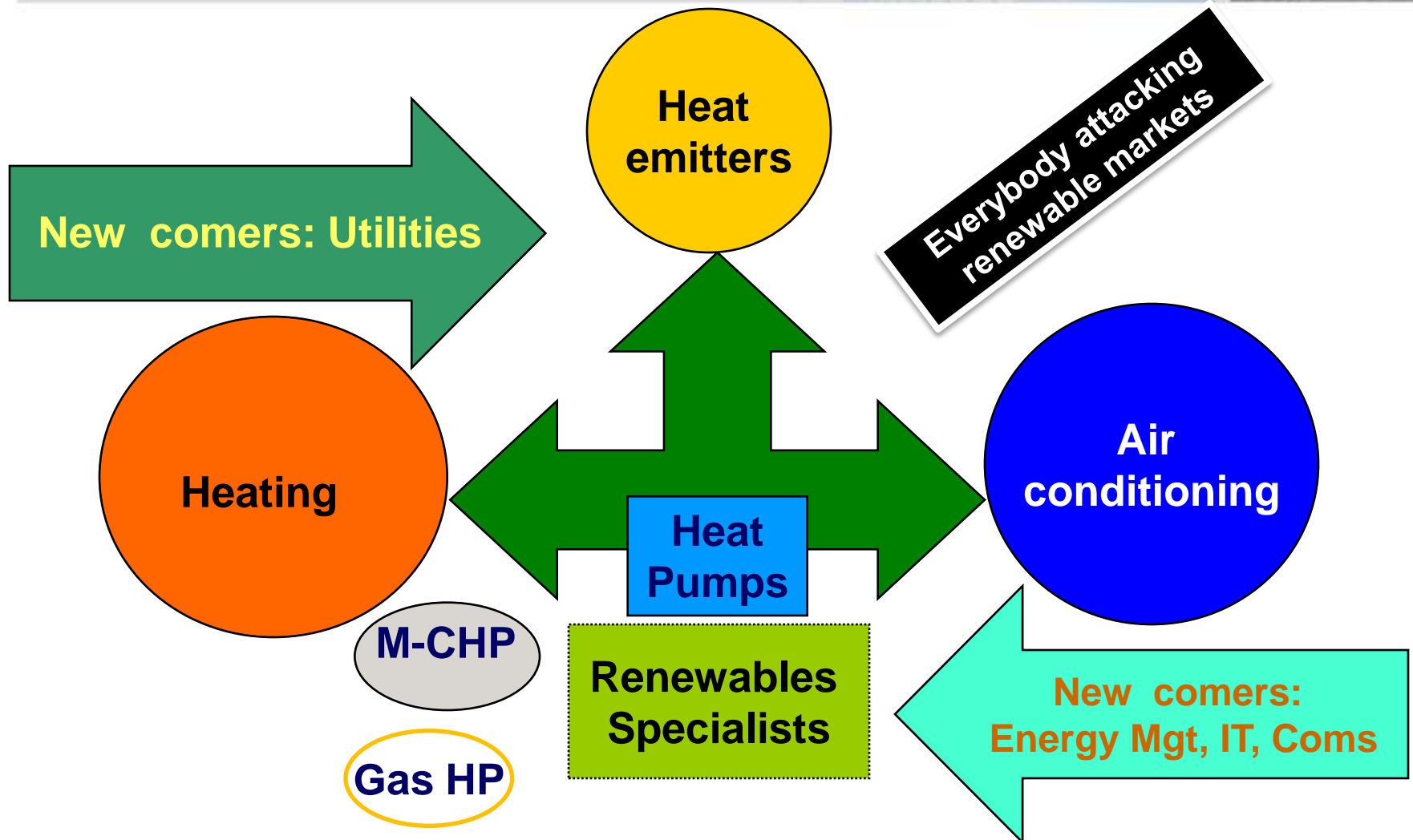
€/kwh	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	GAGR 2000-09
Gas	0.0239	0.0226	0.0239	0.0236	0.0235	0.0249	0.0282	0.0403	0.0377	0.0406	6.1%
Electricity	0.1056	0.0996	0.1031	0.0959	0.0837	0.0836	0.0971	0.1254	0.1394	0.1399	3.2%

*NB. Average prices excluding taxes*

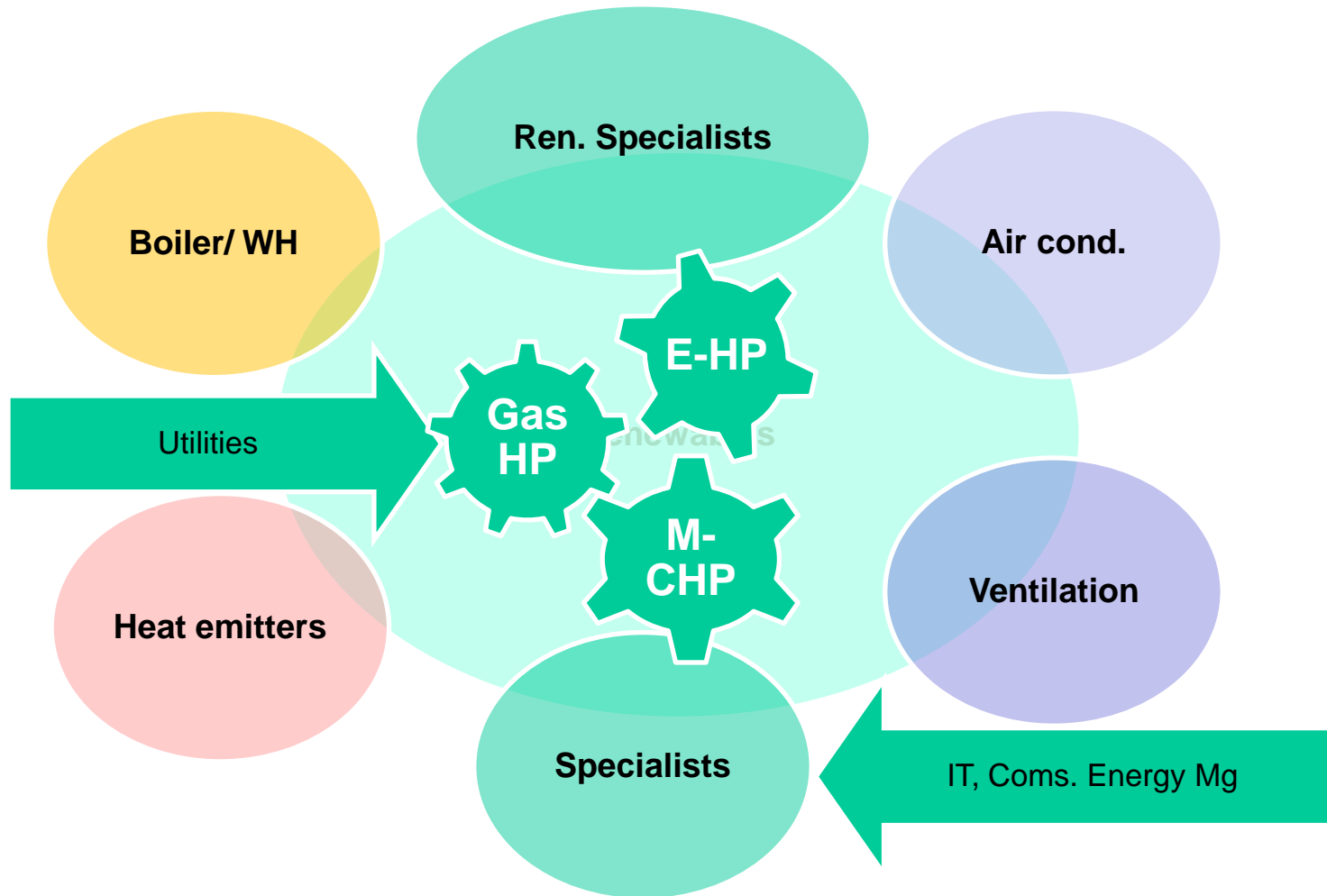


Source : Eurostat

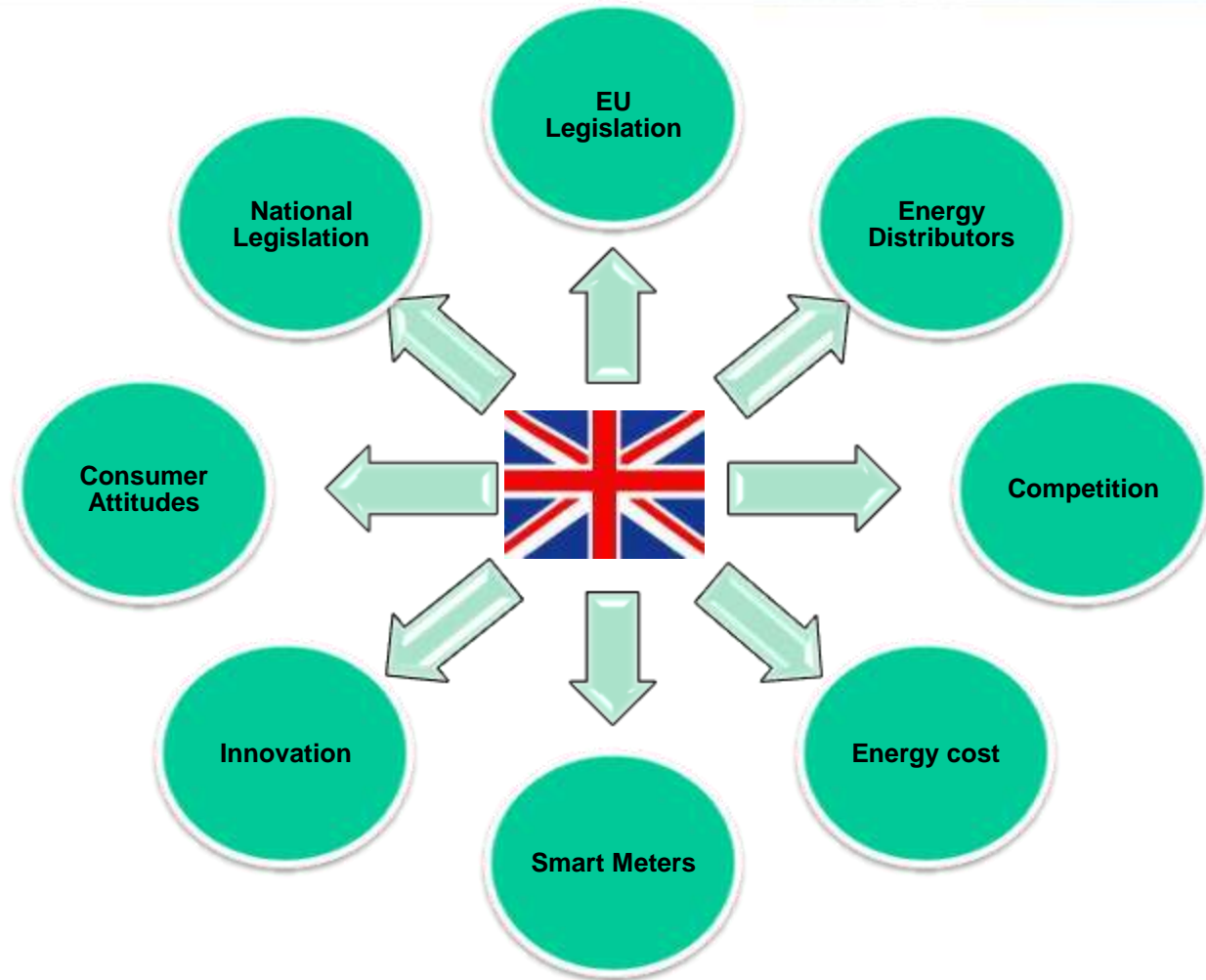
# Diversified Market



# Diversified Market



# Market at Cross Roads

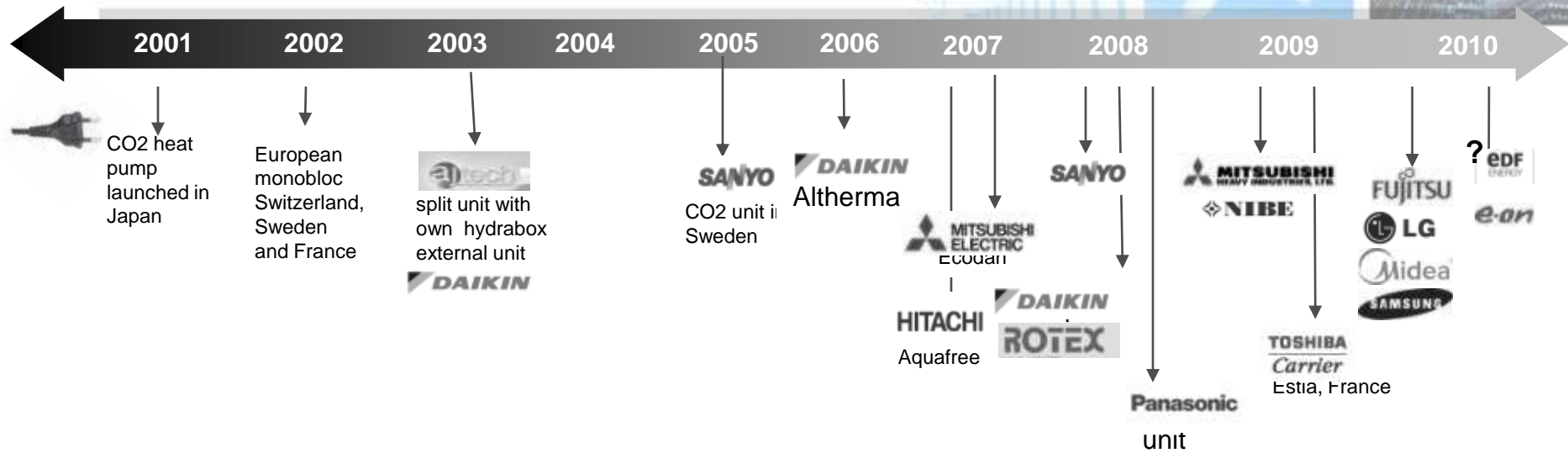


# From Incentives to Legislation

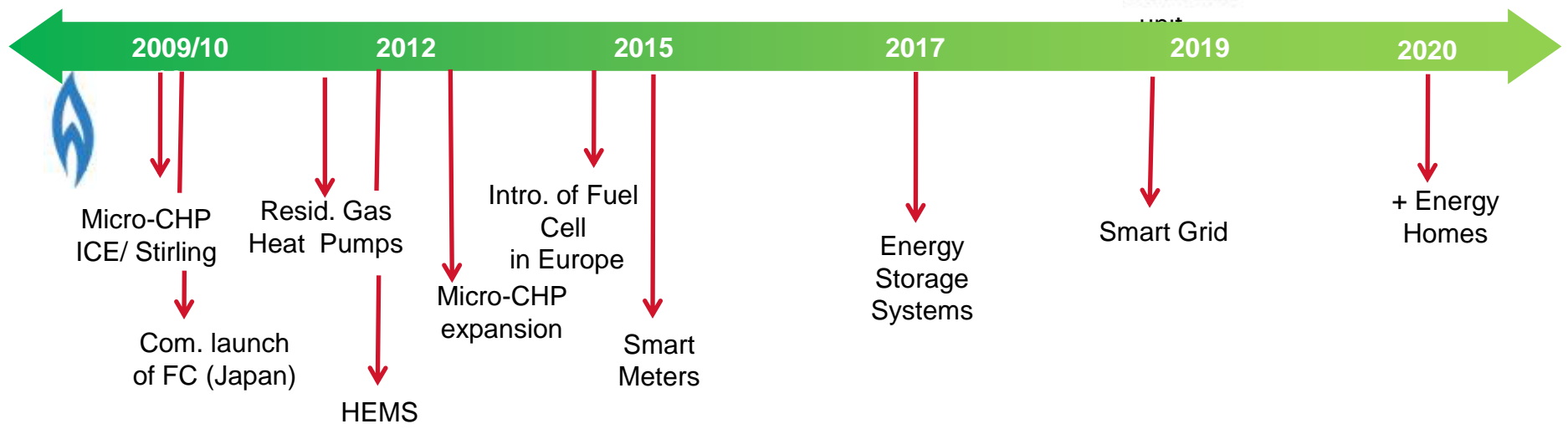
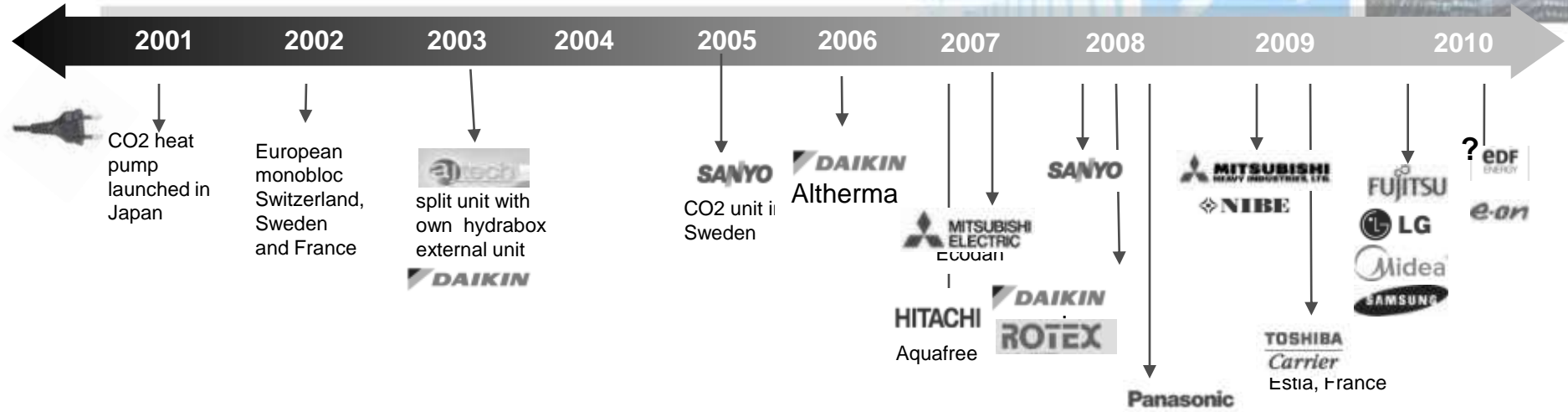
- Switch to condensing boilers has been swift
- Incentives favour solar PV
- Renewable Heat Incentive – a catalyst for growth?



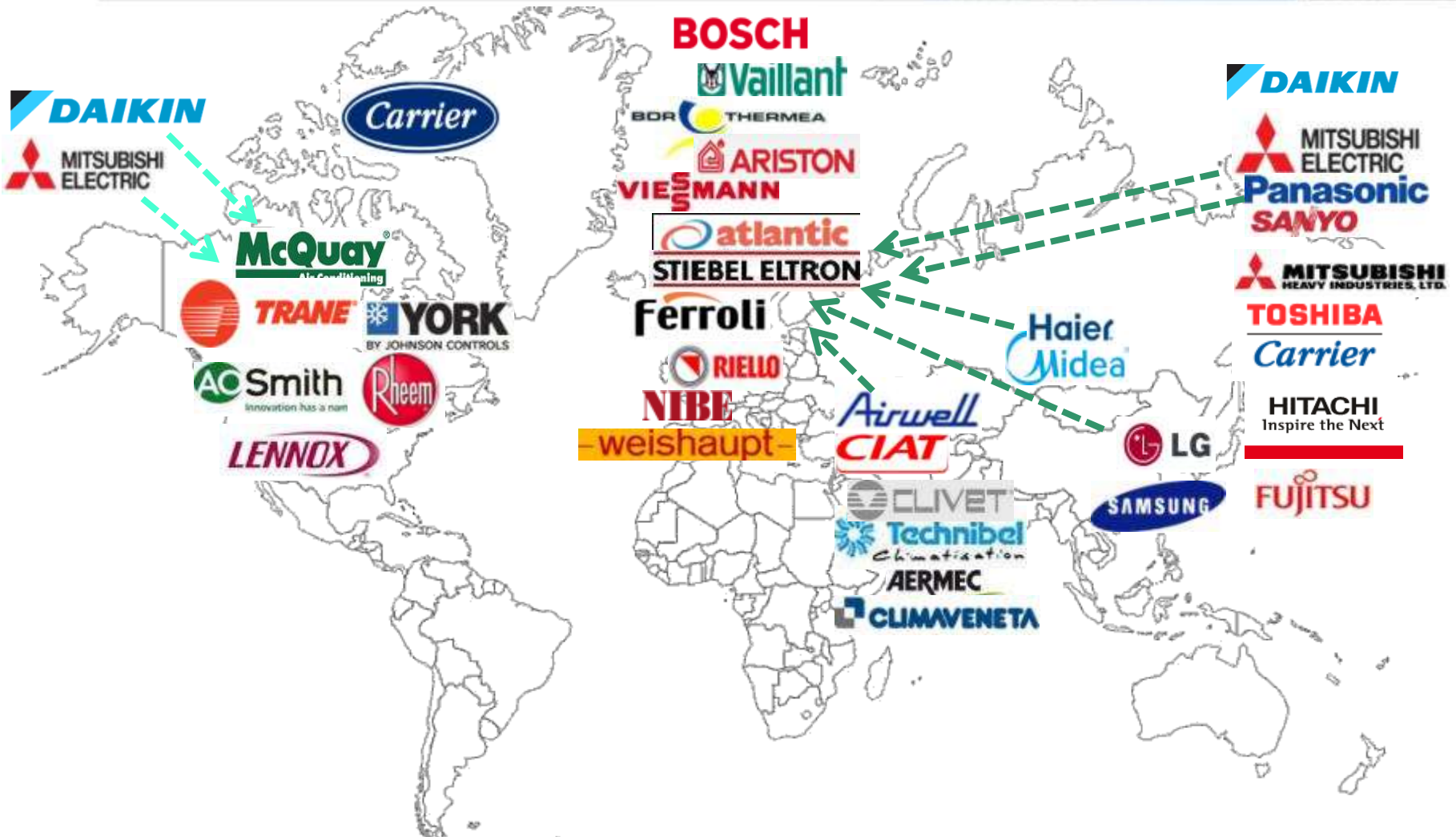
# Phase 1: Growth of Asia heat pumps



# Phase 2: Invasion of gas solutions – also from Asia



# Growing presence of Asian companies



# UK: Open Market



The image displays a map of the United Kingdom, with numerous logos for HVAC and boiler manufacturers overlaid on it. The logos include:

- Carrier
- McQuay Air Conditioning
- YORK BY JOHNSON CONTROLS
- LENNOX
- Dimplex INNOVATIVE HEATING AND COOLING
- ENERTECH
- kensa heatpumps
- calorex
- MHS BOILERS
- BAXI
- Vaillant
- VIESMANN
- AC Smith Innovation has a name.
- Kingspan
- Hamworthy
- STIEBEL ELTRON
- Keston
- Danfoss
- IHS
- WORCESTER Bosch Group
- Ferrol
- IMMERGAS
- Hoval
- BIASI
- NIBE
- MITSUBISHI ELECTRIC
- MITSUBISHI HEAVY INDUSTRIES, LTD.
- ARISTON
- CIAT
- ideal
- halstead GLEN DIMPLEX
- RIELLO
- Alpha
- RAVENHEAT MANUFACTURING LIMITED
- DAIKIN
- Panasonic SANYO
- TOSHIBA Carrier
- HITACHI Inspire the Next
- LG
- FUJITSU
- SAMSUNG
- Technibel Climatization
- CLIMAVENETA
- Kingspan Group plc

# UK System evolution projections

## High rise buildings - Existing housing stock

Base scenario  
RHI introduced in 09.2011  
and reduced in 2014  
Zero Carbon building 2018

### Individual / Communal heating systems

2010  
(2.8 million dwellings)



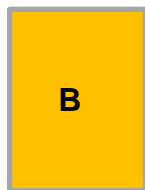
165,480 units sold

Individual combi boiler

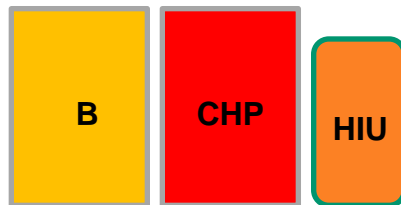
Market penetration: 92%

2020  
(3.1 million dwellings)

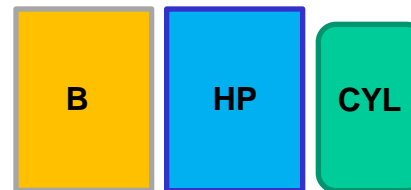
232,750 units sold



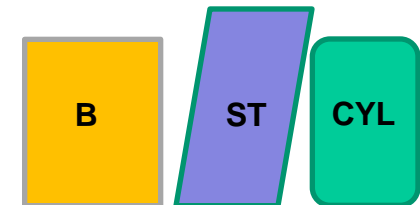
Individual combi boiler  
78%



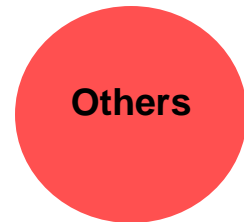
Central gas + CHP boiler  
+ Heat Interface Units  
11%



Central boiler + HP +  
storage cylinder(s)  
6%



Central boiler + central  
ST + storage cylinder(s)  
2%

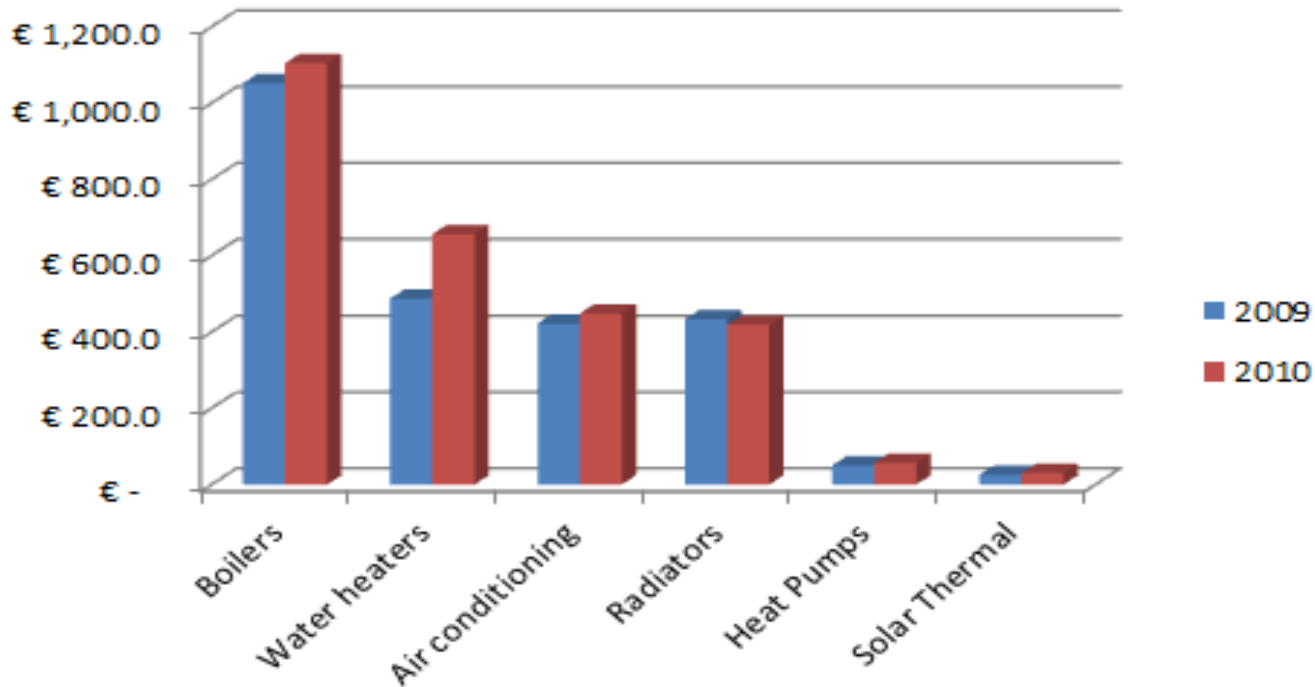


3%

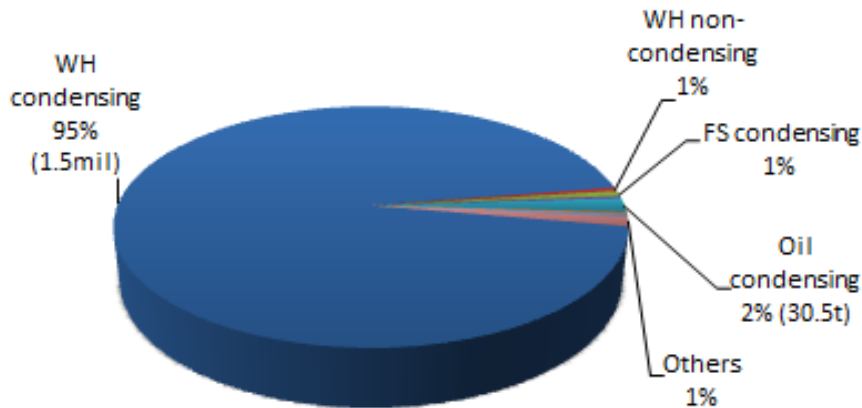
Existing housing stock

# The UK Heating Market

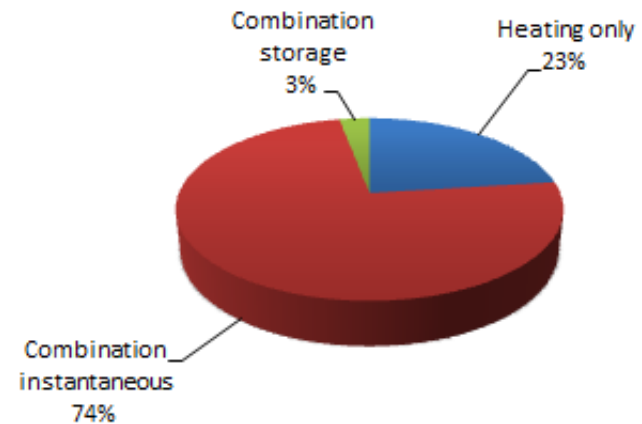
- The boiler market is the largest in Europe by value, with 1.6 million units sold in 2010, or over €1.1 billion value or £1.3 billion)
- Air conditioning around €450 million)
- Share of renewable (solar thermal and heat pumps is below €100million)



# Boilers by Type, 2010

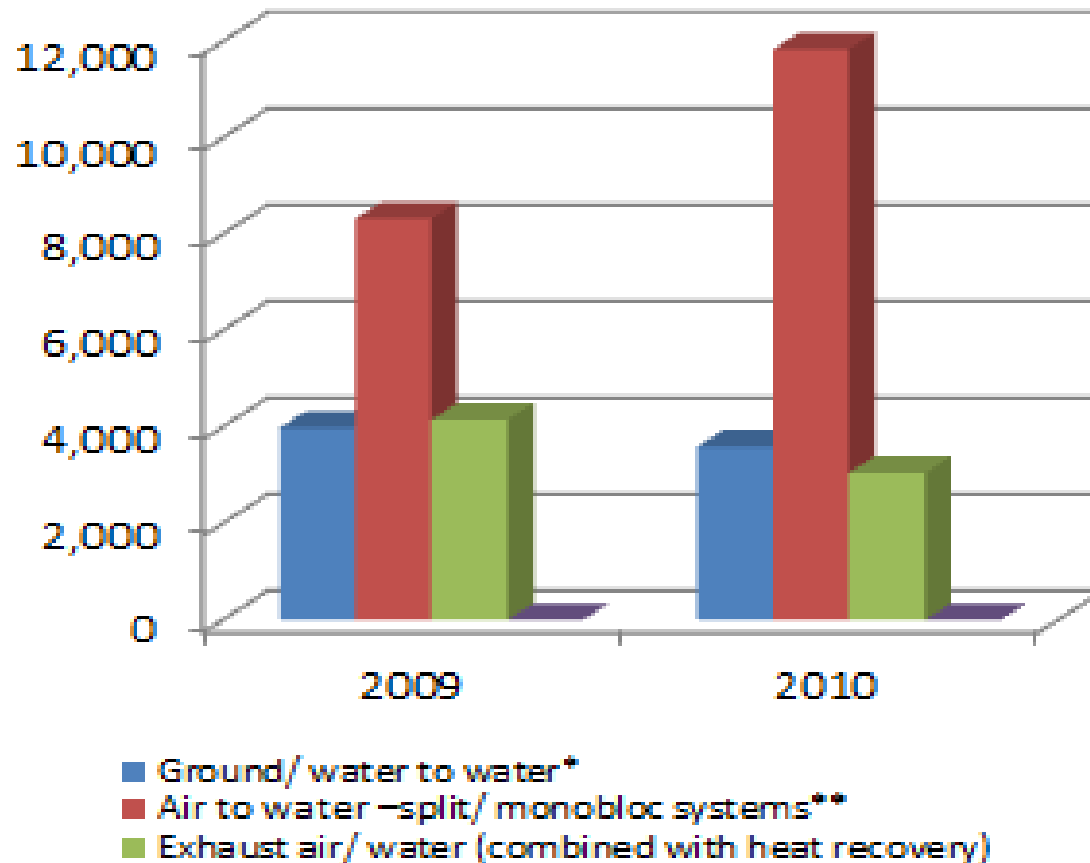


- Wall hung boilers dominate the market
- Sales of oil boilers very small
- Combi boilers account for about 74%



# The UK heat pump market, by volume, 2009 and 2010

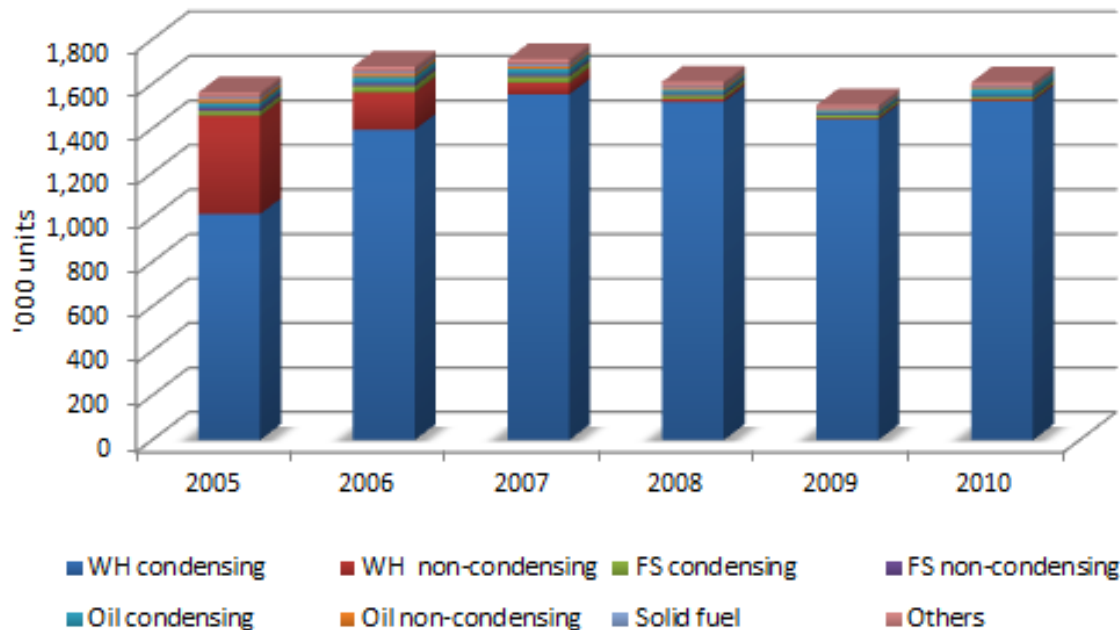
- Rapid growth of air to water



# Market Trends

## Domestic Boilers, 2005-2010

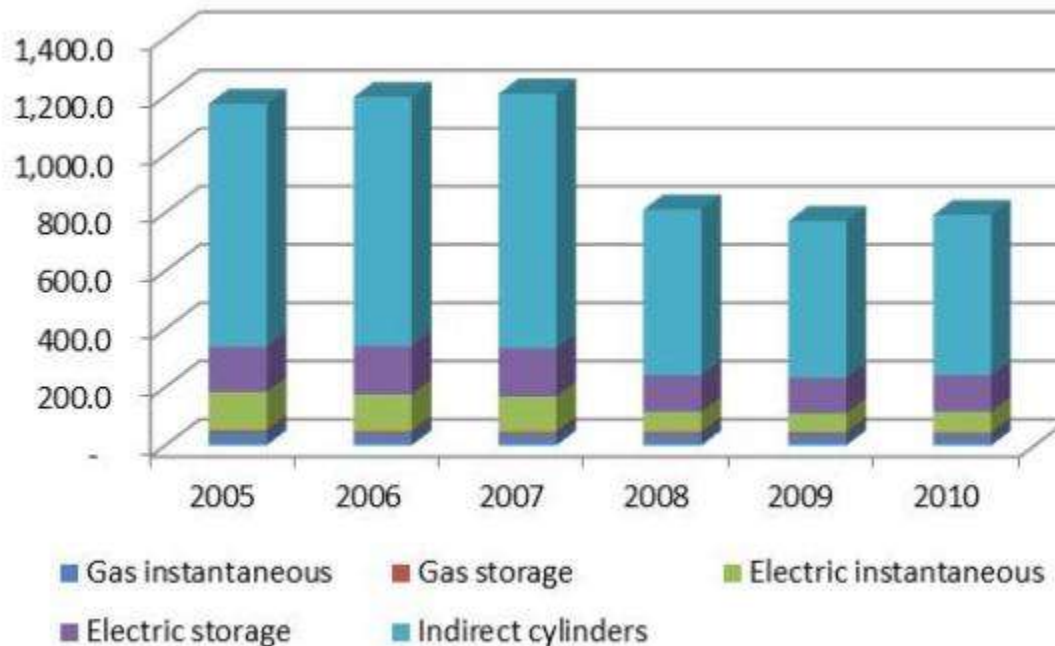
- Market recovered in 2010 but still below 2007
- Non-condensing boilers almost disappeared



# Market Trends

## Water Heaters, 2005-2010

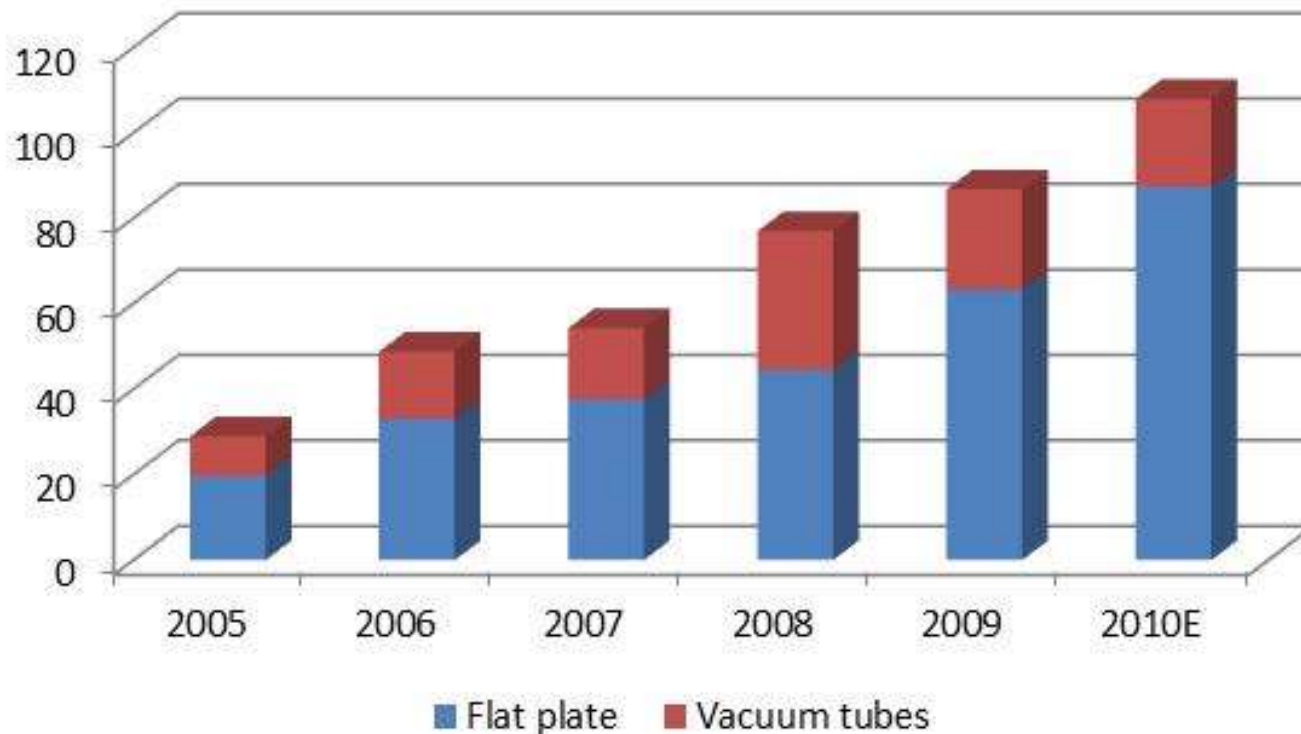
- Sales of indirect cylinders in declined for 3 years



# Market Trends

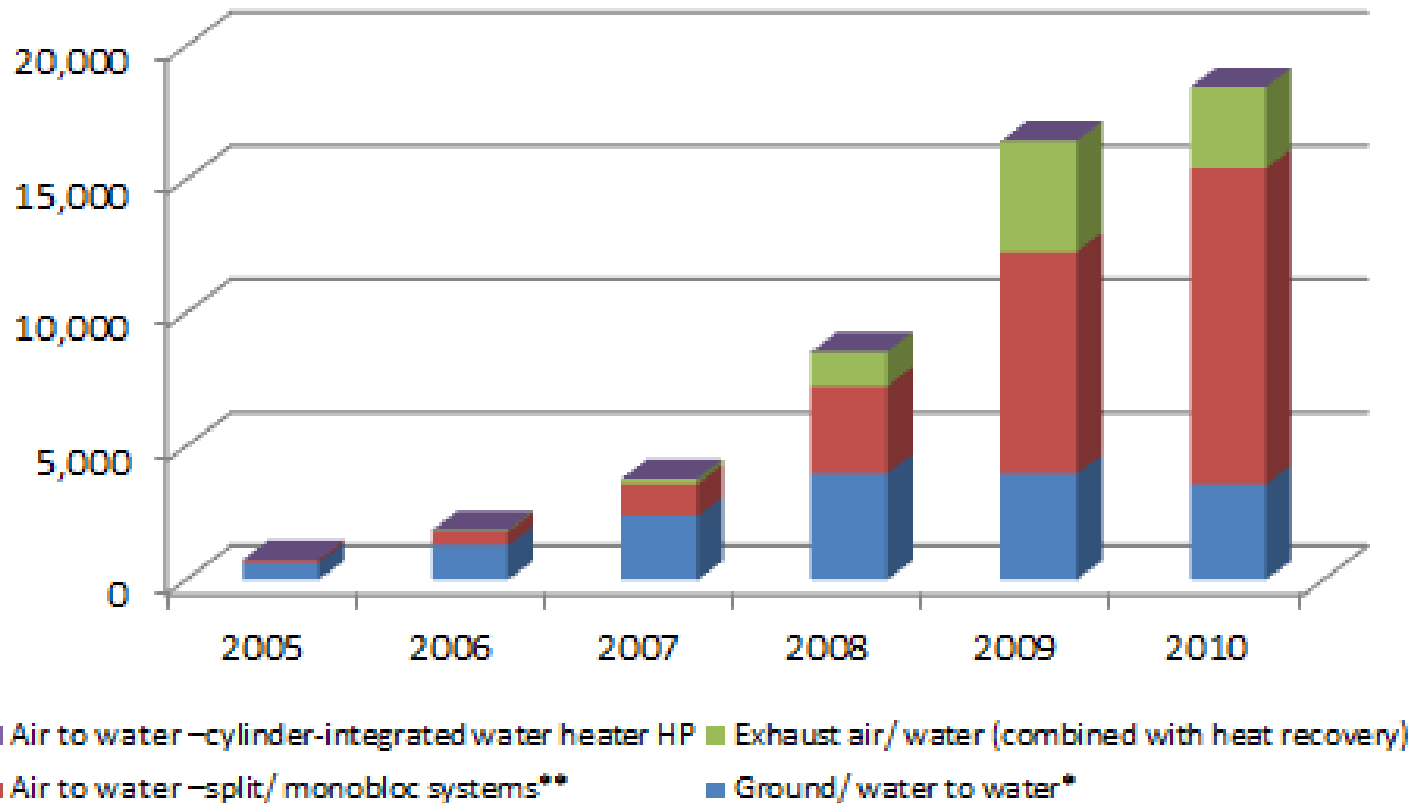
## Solar Thermal, 2005-2010

- Steady growth but likely to decline due to popularity of PV

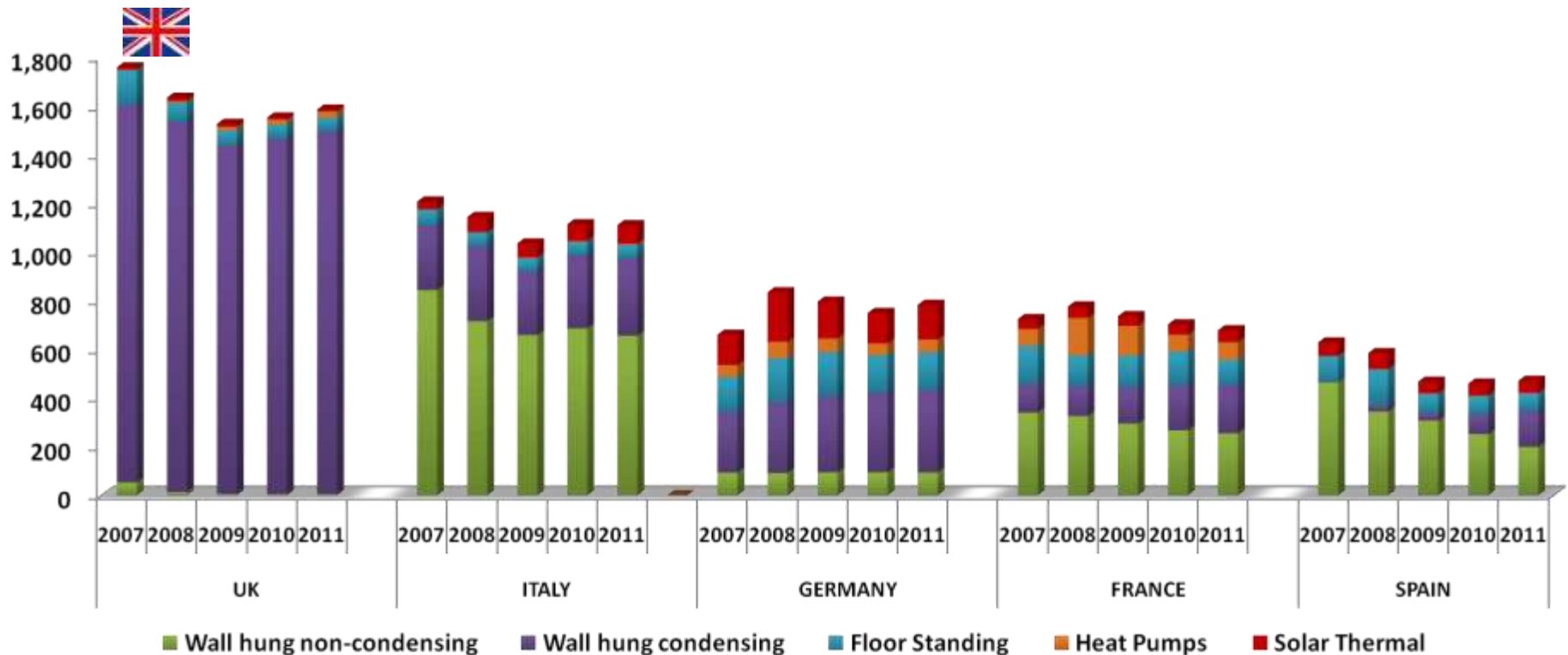


# Market Trends Heat Pumps, 2005-2010

- Steady growth likely to continue

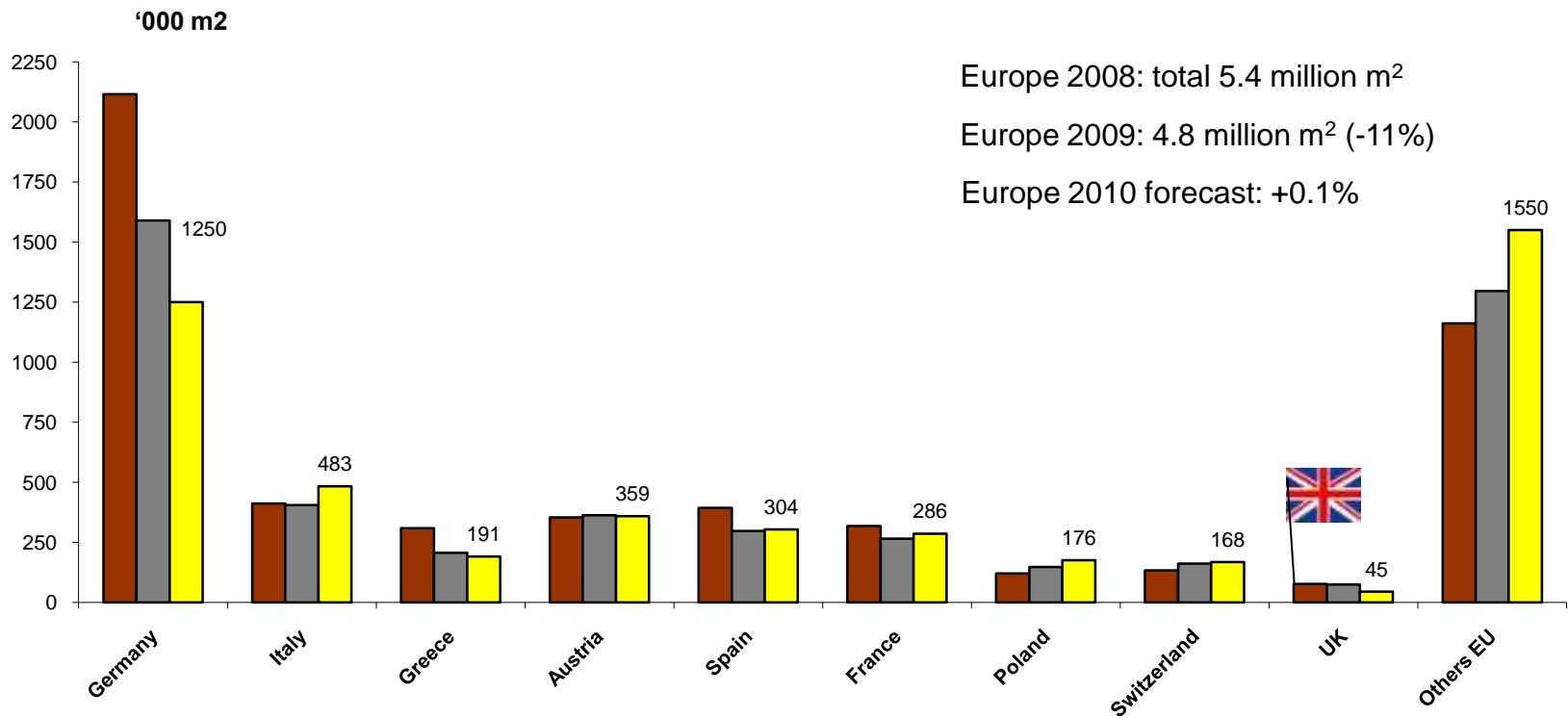


# Residential Heating Markets, Europe, 2007-2011 (I)

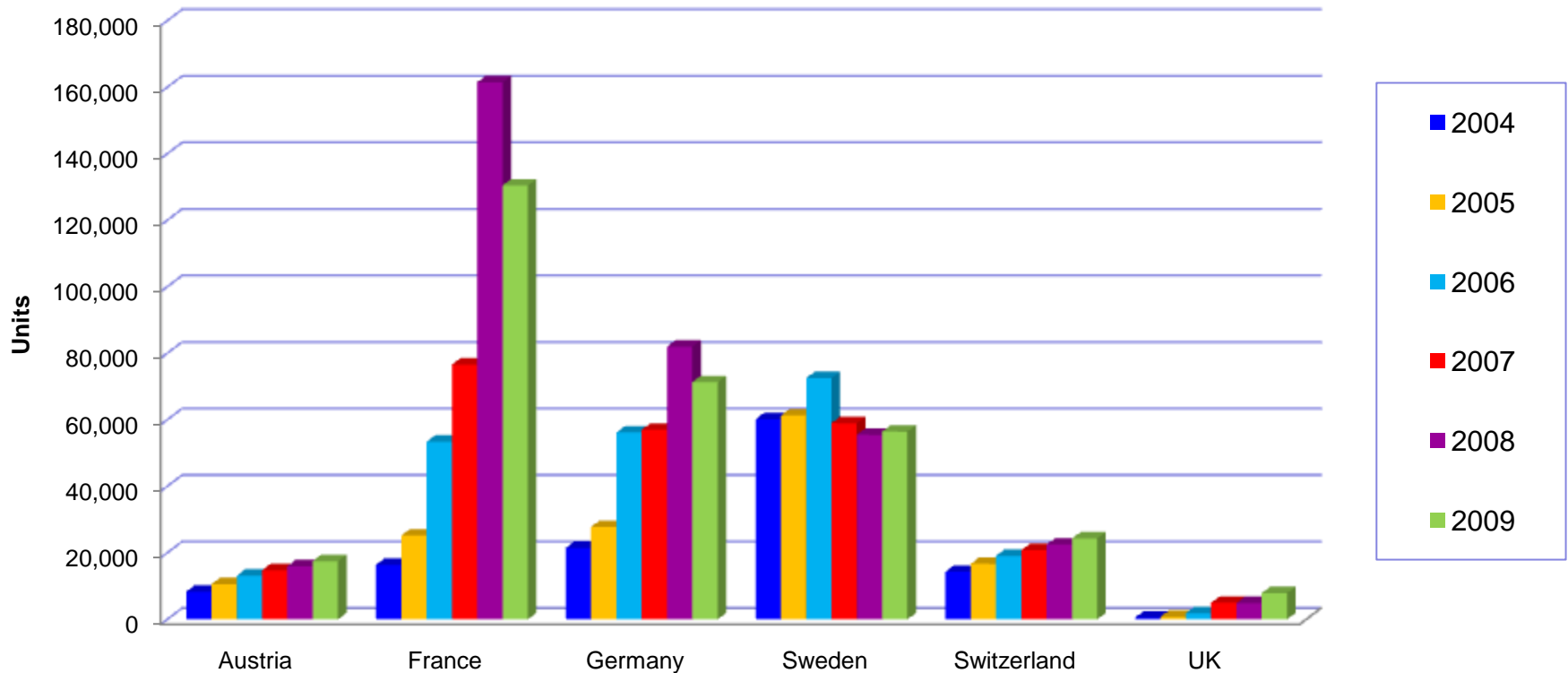


# European Solar Thermal Market 2008 - 2010

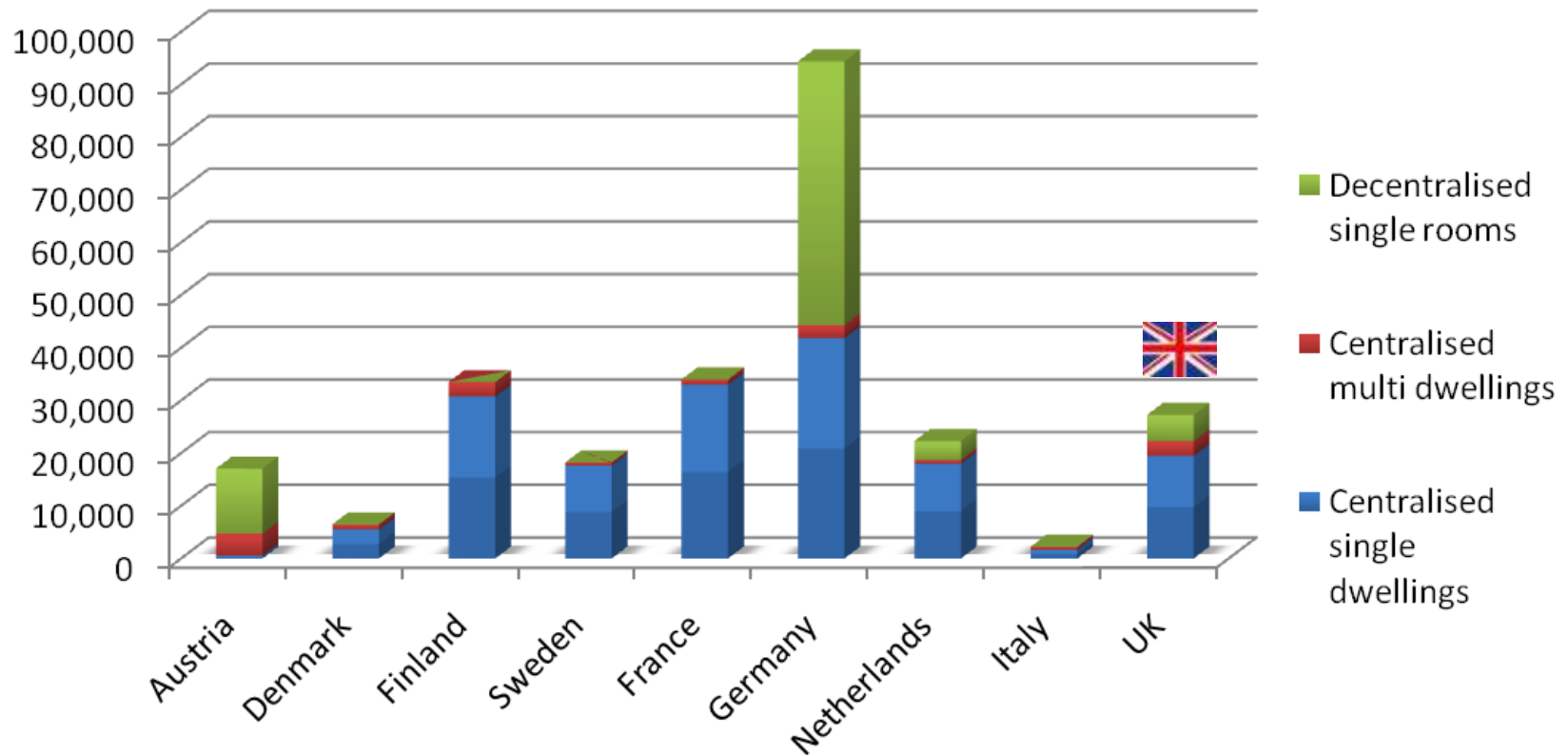
- China: mainly thermosiphon vacuum tubes:47 million m<sup>2</sup> vacuum; 4 million m<sup>2</sup> flat plate
- Turkey: ~1 million m<sup>2</sup> /year, mainly thermosiphon flat plate tubes



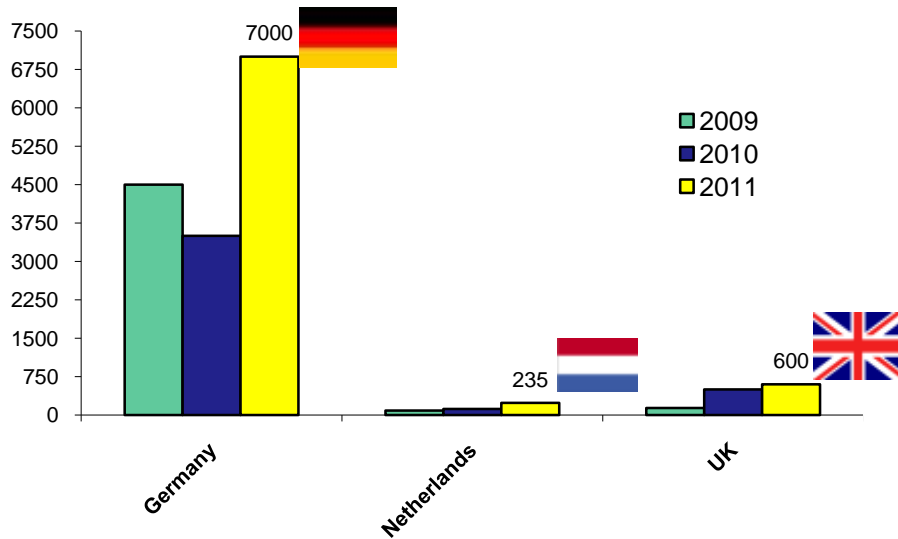
# Key Heat Pump Markets Trends, 2004-2009



# Heat recovery Market Volume, 2010



# Micro CHP Market



- Currently: ICE units (SenerTec, Vaillant Ecopower)
- Introduction of Stirling Engine in the market in 2009/10 (Ecogen from Baxi, eVita from Remeha, Whispergen from WhisperTech)
- 2011: Stirling units planned by Bosch, Ariston Thermo Group, Viessmann
- Field Trial: Organic Rankin cycle units (Energetix), commercialisation in 2011
- Most developed markets: Japan – leading; Netherlands, Germany, UK early stage

Internal combustion engine    Stirling engines



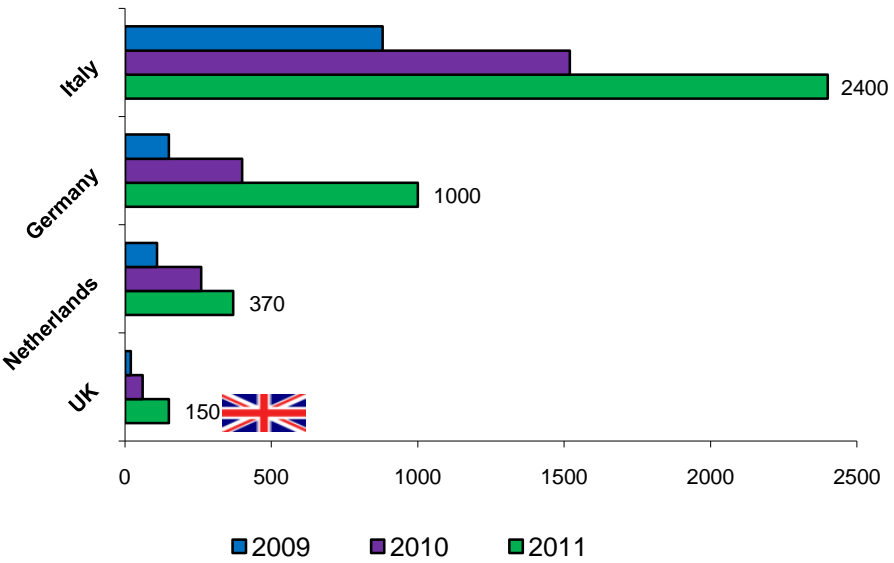
Organic rankine cycle engine

energetix



# Heating Markets

## Gas Heat Pumps



- Gas ab/adsorption heat pumps currently offered by Robur and Vaillant in Europe.
- Sales in Italy, Germany, Netherlands, UK and Poland, mostly for commercial applications
- Since 2010 residential sector is targeted with the introduction of Vaillant's Zeolite heat pump in Germany
- Bosch, Viessmann and Robur are in process of developing their own gas ab/adsorption heat pumps suitable for residential applications.

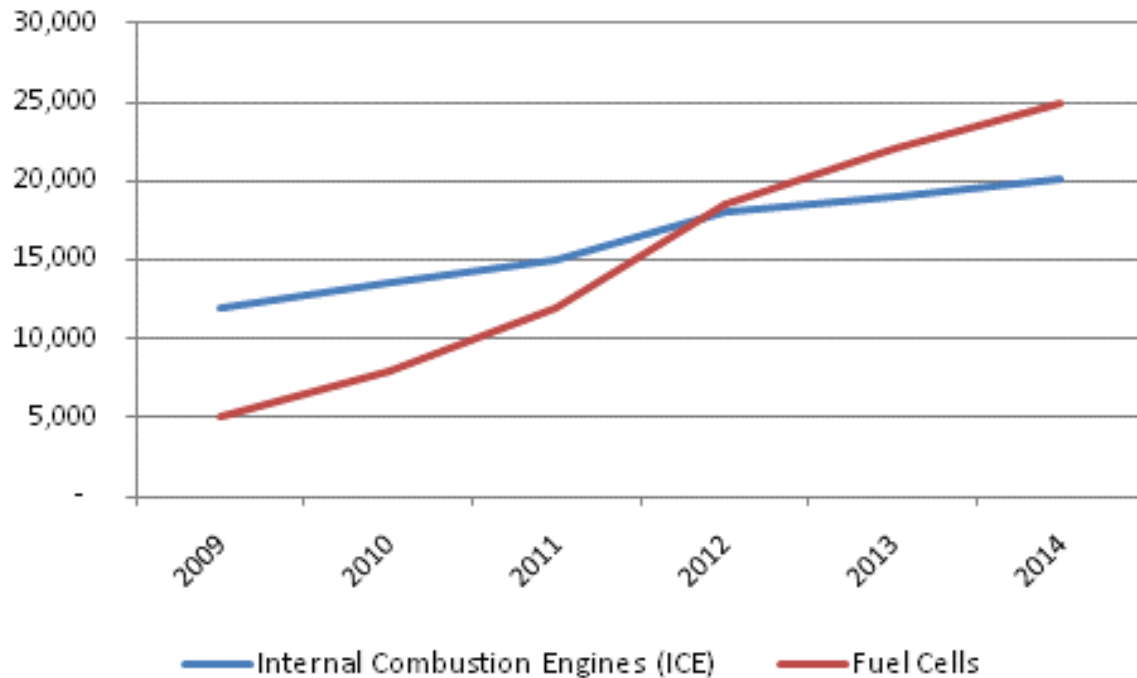


Robur gas absorption heat pump  
(35.2kW thermal capacity)



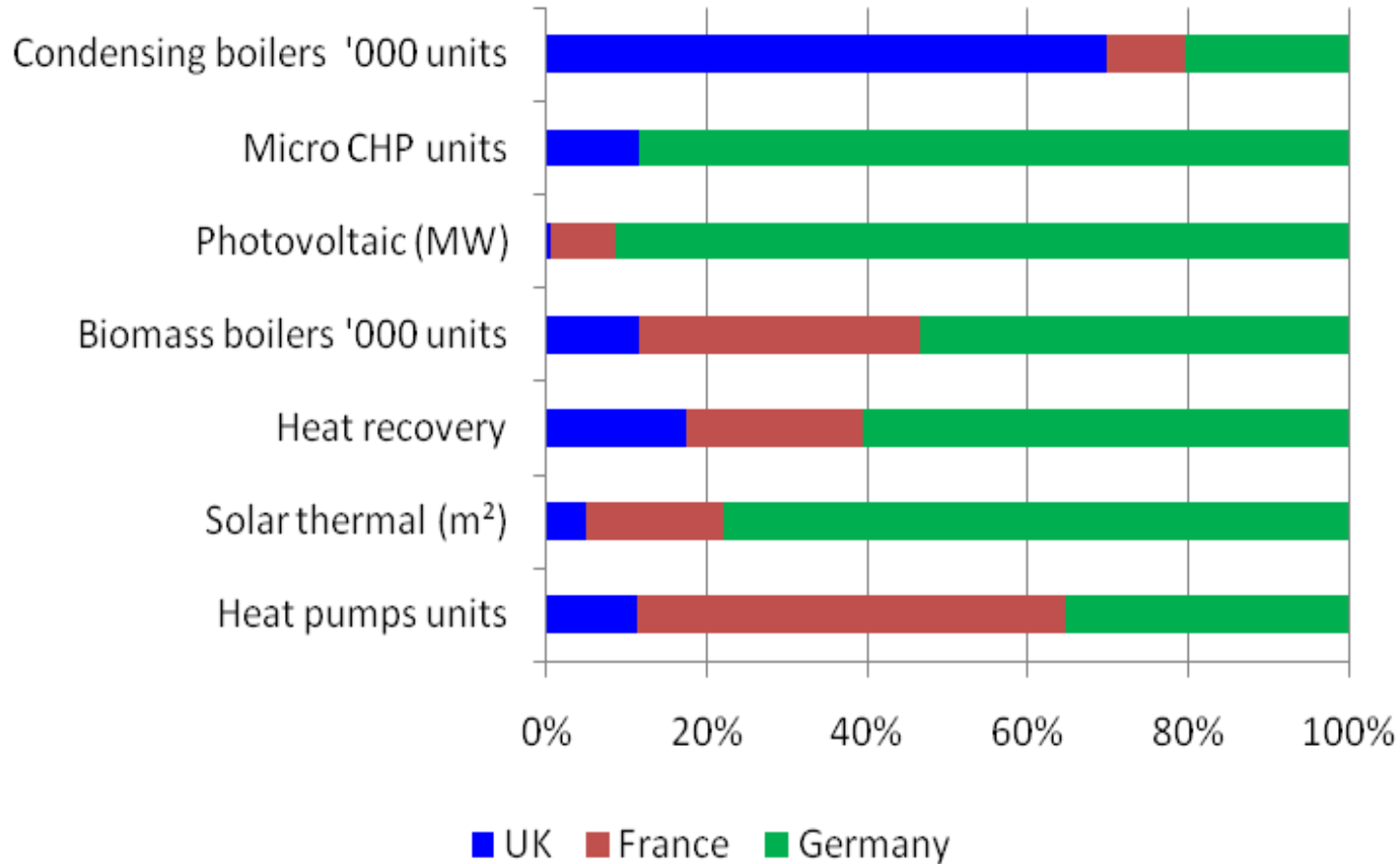
Zeolite gas heat pump  
from Vaillant  
(10kW thermal capacity)

# Japan: Largest FC Market



Driven by gas distributors

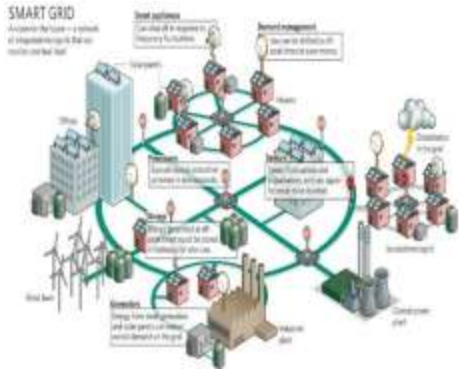
# Market comparison UK, France, Germany, 2010



# 2020 Vision

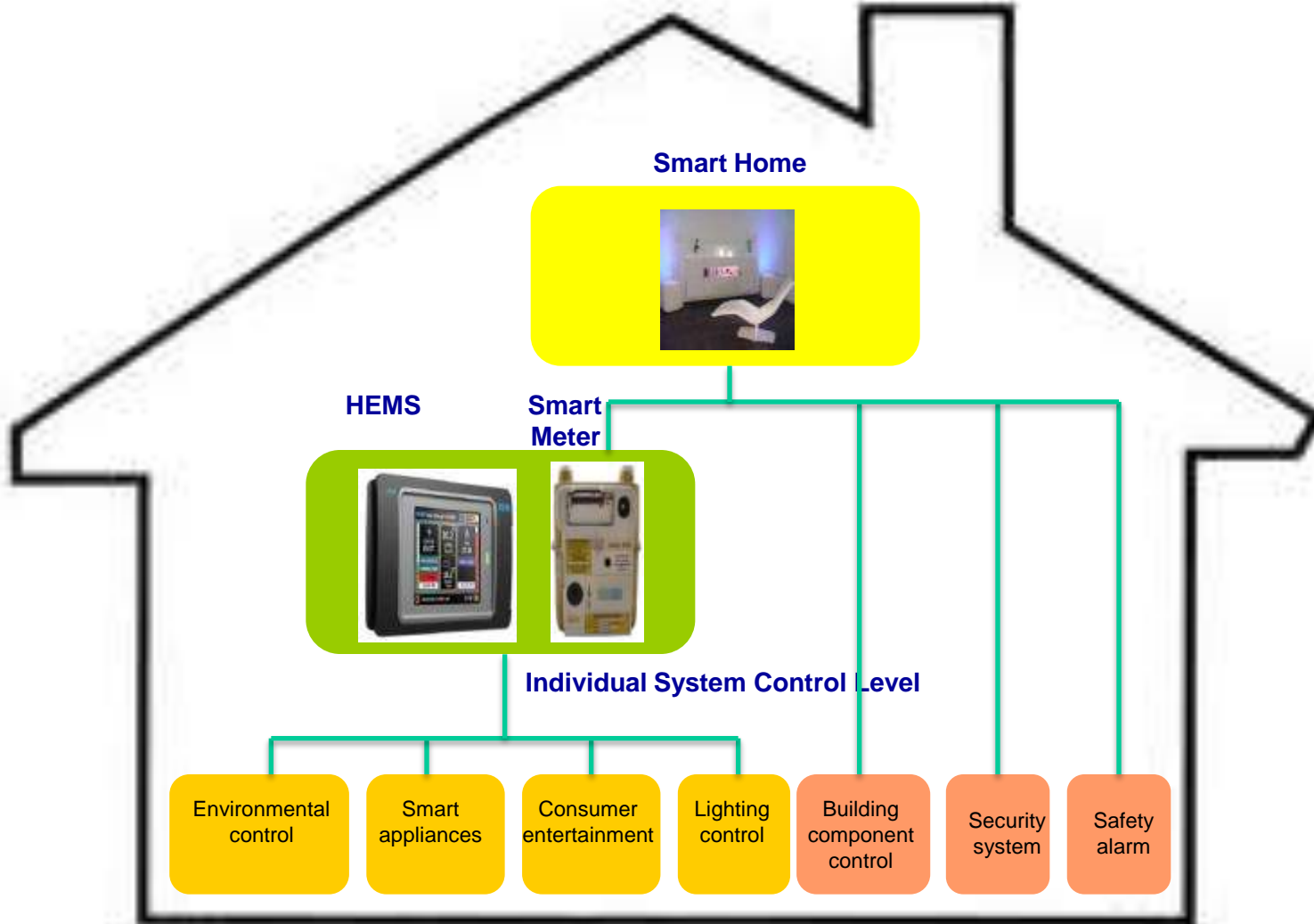
Future products/ technologies

H2 Fuel Cells  
 H2 Infrastructure.....  
 H2 time age.....  
 Smart-Grids  
 Micro Generation Networks  
 Plus Energy Houses



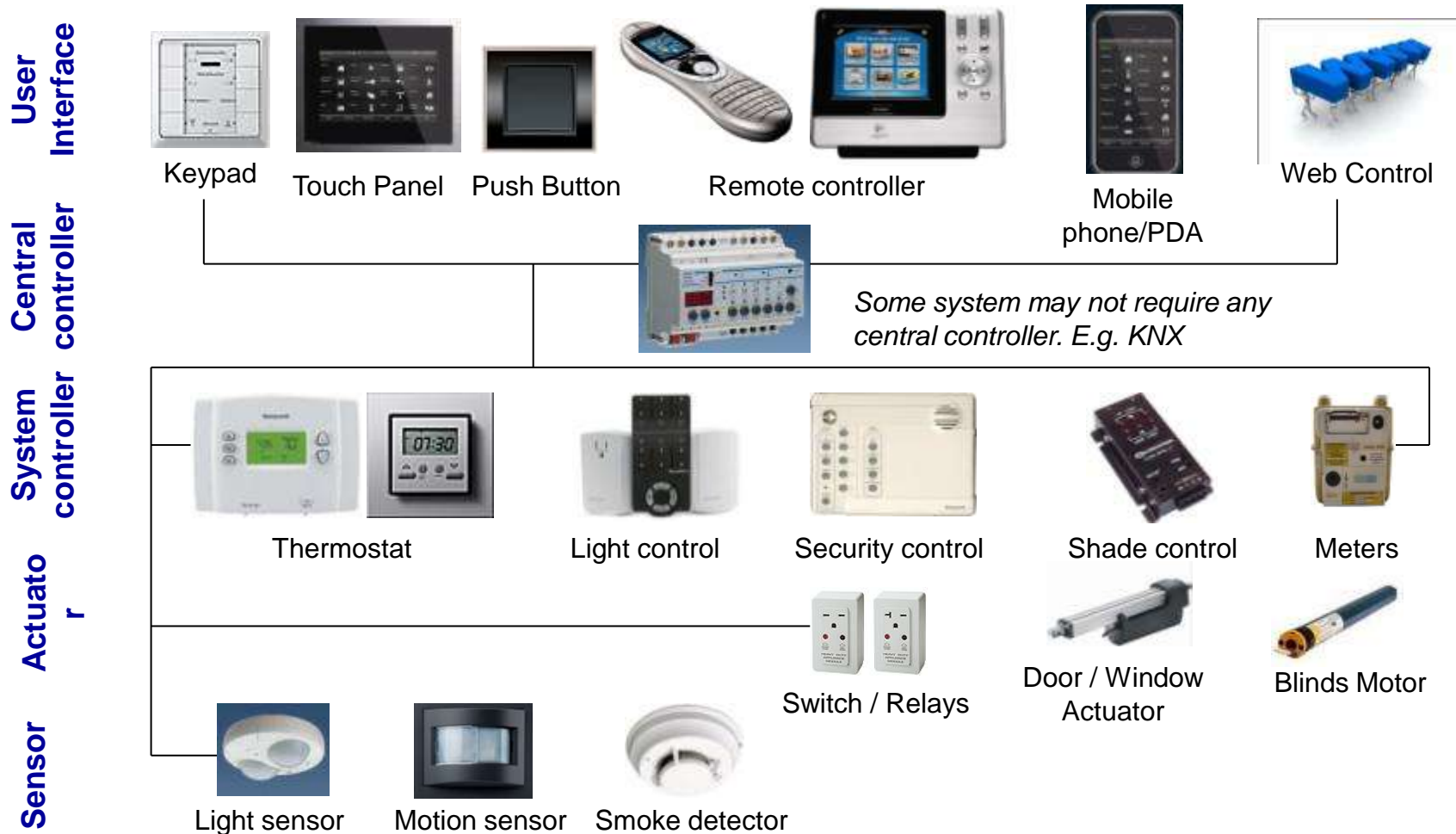
2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

# Smart Home / home automation

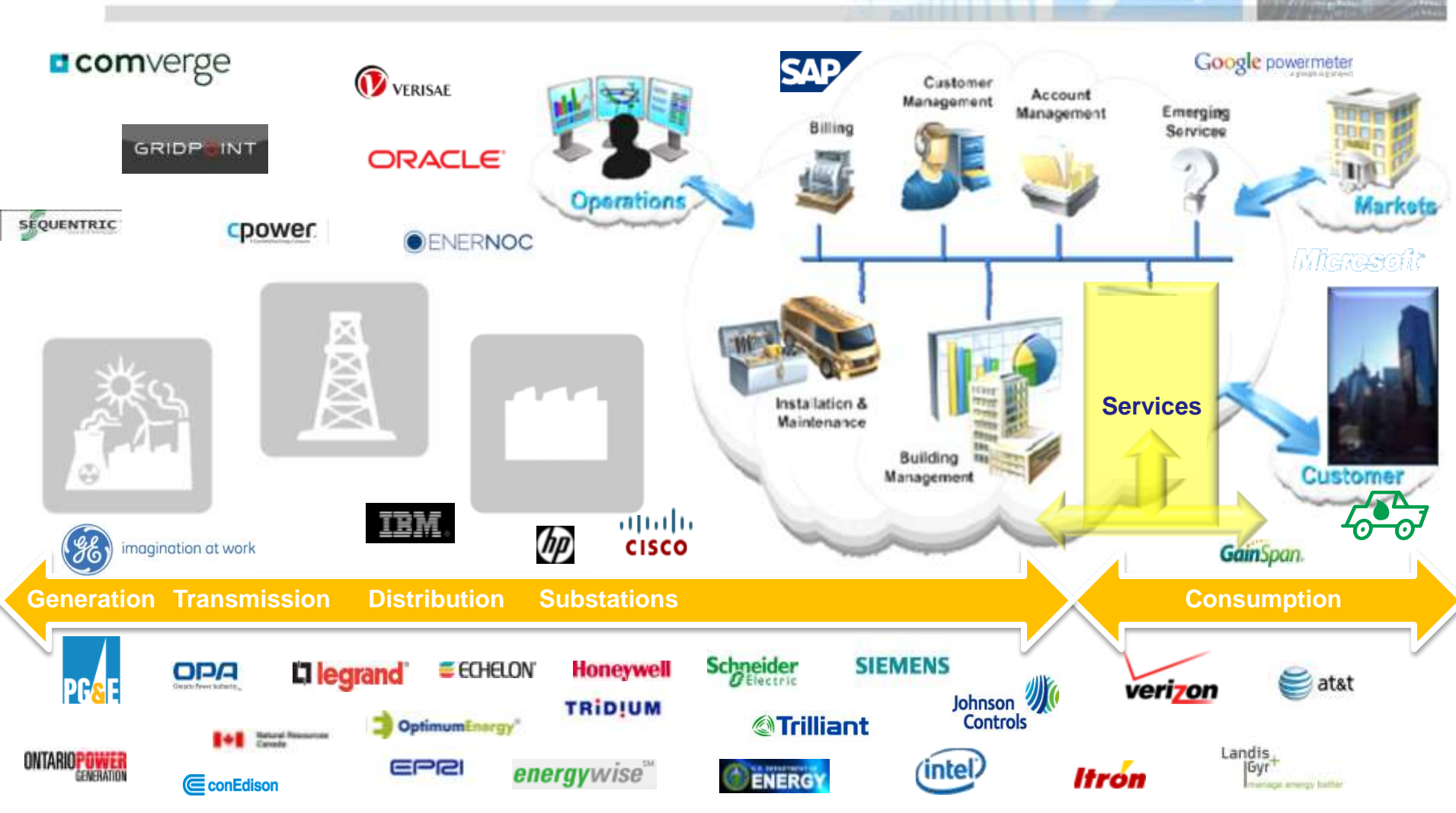


# Smart Home Tools

## The architecture of latest Smart Home System



# Many New Entrants



# System Specification: Current Devices

## Gas Smart Meter



Source: British Gas

## Electricity Smart Meter



Source: British Gas

## In-house Display

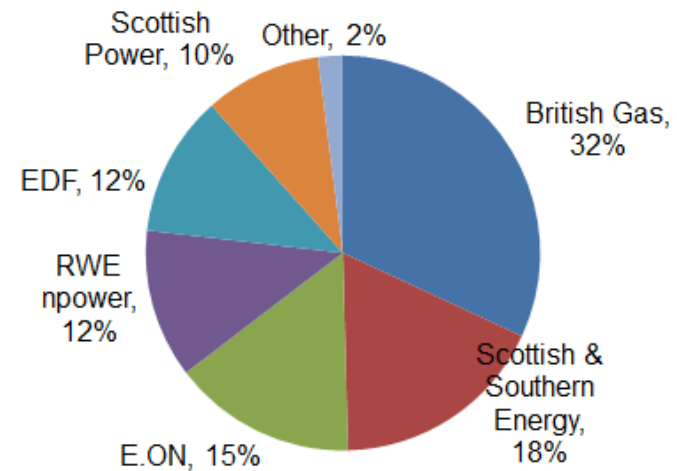


Source: British Gas

- Gas meter measures the volume of gas that passes through it and convert this reading into an energy value. The meter can be ultrasonic or diaphragm.
- Electricity meter supports both import and export measurement, which enables them to support Feed in Tariffs. The meter uses 4 quadrant measurement. Configurable alerts can be used to support DNO requirements for smart grid developments.
- The IHD installed by British Gas (EcoMeter by Landis+Gyr) shows customers their current and previous energy consumption, estimated energy bills, additional information on PAYG, the status of interrupted devices, and outstanding debt (if any). If the electricity meter is exporting energy, the carbon emissions for the property are also displayed.

# Penetration of Smart Meters in the Residential Market

- The government is expecting to cover all households by smart meters by 2019. All in all, **48 million** electricity and gas smart meters should be deployed in **27 million homes**.
- Almost half of all smart meters should be deployed by two largest utilities – British Gas and Scottish & Southern Energy
- Only British Gas has initiated a tangible earlier deployment, being committed to install 2 million smart meters by 2012.
- By March 2011 no less than 230,000 smart meters were installed in households.
- Overall smart meter penetration in the UK still stands at **0.9% of total households** and at only **0.4% of total residential customer accounts**.



# Market Size of Smart Home Market

## Smart home market size in the UK 2008-2010, Euro million

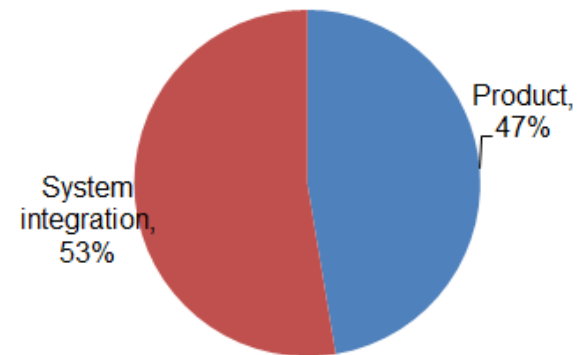
	2008	2009	2010
Smart home product	27.7	26.5	30.4
System Integration	30.2	29.0	33.8
Total	57.9	55.5	64.2
Smart home service market	6.3	6.1	7.2

- UK's smart home market has been demonstrating a continuous growth. Moreover, in 2010 the growth rate (12% in GBP) was even higher than in the previous year (8% in GBP).
- The market is, however, very small, amounting to only GBP 55 million (EUR 64 million).
- System integration segment generates more value than the smart product segment, accounting for 52% of the total market value.
- Product and System Integration segments show almost equal rates of annual growth, 11% and 12% correspondingly (2010).

- UK's smart home market was not affected by soaring economy and shrinking construction due to the following factors:
  - Inelastic high-end demand for smart home solutions
  - Growing demand for residential smart home solutions in HoReCa (hotels, restaurants, cafes) segment (should not be confused with "pure" commercial installations)
  - Noticeable growth in sales to mid-range houses.

Double digit growth is partly a result of a low statistical comparison basis.

## Smart home market size in the UK by major segments, 2010



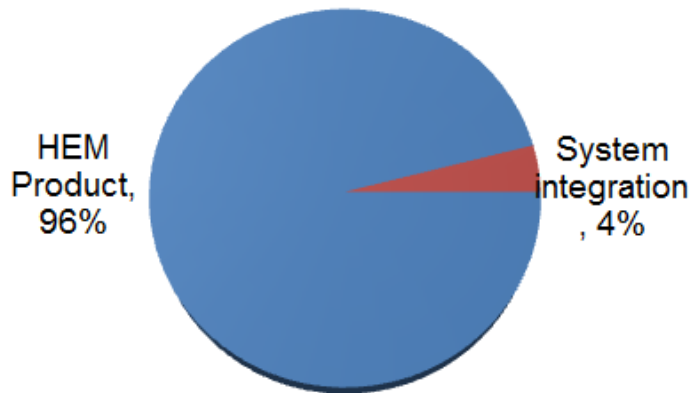
# Market Size of Home Energy Management Market



Market size of the UK home energy management market, 2008-2010, Euro million

	2008	2009	2010
Home energy management product	1.1	3.9	7.5
System Integration	0.0	0.1	0.3
Total	1.2	4.0	7.8

- UK's home energy management market is considered to be one of the most advanced in Europe. However, it is still nascent.
- Between 2008 and 2010 the market value increased by 7 times, reaching GBP 6.5 million (EUR 7.5 million)
- According to BSRIA estimates, in 2010 approximately 250,000 units were sold independently or distributed by utilities.
- Unlike smart home systems, system integration (installation and set-up) does not generate any significant value, as in most cases home energy management products are delivered as packaged solutions.
- The market can be significantly driven in the medium term, with the smart grid and smart meter roll out.





# Thank you very much!

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