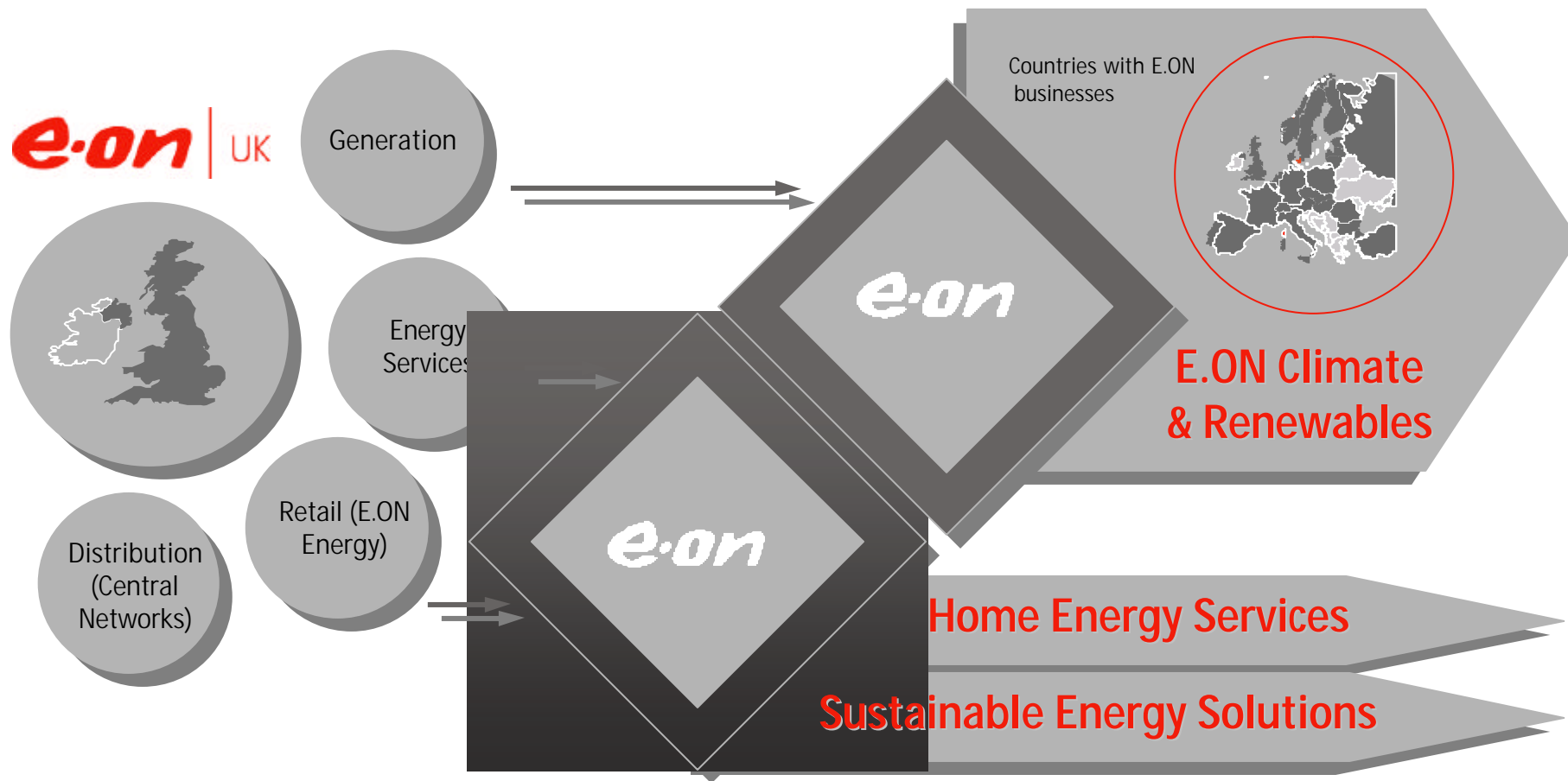




# What we need to be able to deliver zero carbon homes

Charles Bradshaw-Smith  
Head of Innovation, E.ON Engineering  
21 May 2008

E.ON UK operates as an integrated energy company with a clear pan-European focus on **'Changing Energy'**



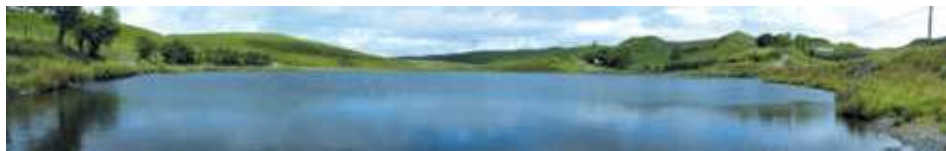
# Moving to a new paradigm – Energy is changing



UK – 15%  
Renewables  
by 2020

“It’s all hands to the pump”

Accept that we all have a role to play in meeting the UK’s target. E.ON is happy to take a lead



Centralised Renewable Energy Generation



Distributed Energy Generation

# ZCH Challenge: The effect of 240,000 new homes a year?

## ZCH Concern: Is it achievable as currently stated in policy?

“Let it all be off-site and the problem of the energy companies?”



The Debate

“Make on-site a rigid rule regardless of cost and practicality”



=



Vs.



=



December 2007 - UK-Green Build Council set up a task force to understand how the practical concerns could be remedied through policy

May 2008 - report published with conclusions and recommendations

# Clarifying Rules - Achieving carbon reduction equitably



**“ZCH a good start but can’t be treated as the sole contributor to achieving the UK’s carbon targets”**



Existing Housing Stock



Transport



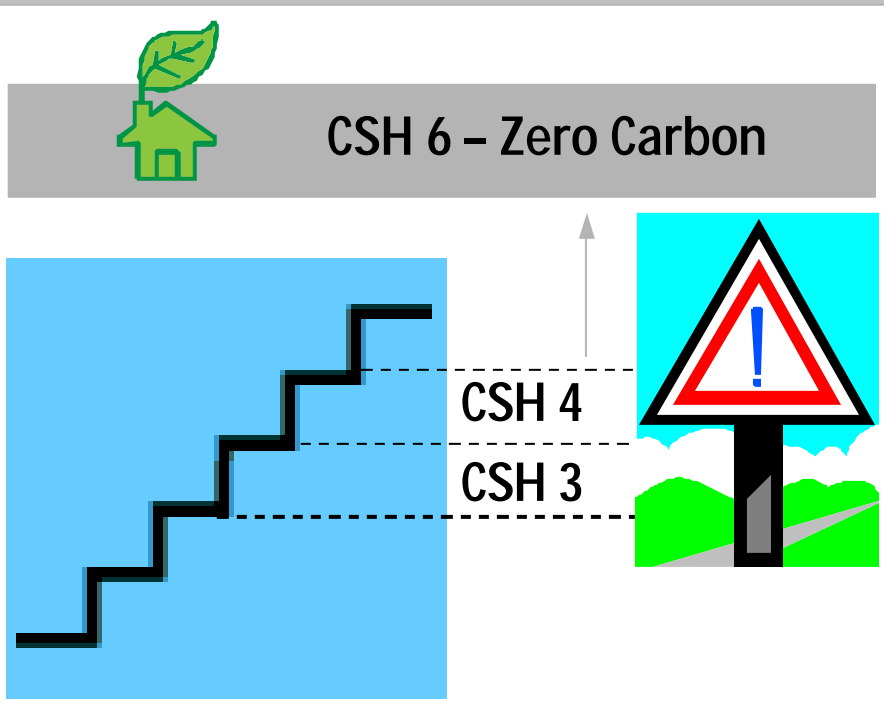
**Other areas must contribute in similar measure**



## Key Insights:

- Only joined up policy allows all sectors to share and interact optimally
- Government departments must talk with a single voice
- Bangs for buck must be considered – avoid law of diminishing returns

# Clarifying Rules – The start to begin building capability



CSH 3 & 4 do not lead to CSH 6!

## Key Insights:

- Clear definition across sectors required to start building capability
- Investment across sectors help economies of scale
- Recognise technology differences too
- CSH does not incentivise electrical demand reductions sufficiently



## Understanding customer choice...



Let's test it. what do you value? Lifestyle choices on...

WATER

I value...

Self-sufficiency

1. I drink water from my own well

Premium attributes

2. I drink bottled water

Lowest-cost option

3. I drink tap water

## Understanding customer choice...



Let's test it: what do you value? Lifestyle choices on...

### ENERGY

I value...

Self-sufficiency

1. I generate my own energy

Premium attributes

2. I'm on a green tariff

Lowest-cost option

3. I'm on a standard tariff

### Key Insights:

- Customer choice is not yet fully understood - but will be a factor
- Industry has over-promised in the past - must recognise value and reliability
- No need to hype DE and MG anymore - their potential is understood
- We now need practical delivery – that is customer led

# The Need for Diversity & Best Practice



Findings from UK-GBC's Zero Carbon Task Group suggest that...



"Our proposed definition recognises off-site renewables could play a part, and also gives a big boost to community-scale technologies " Paul King, UK-GBC

## Scenario Modelling Insights

- On-site generation only will bias the number & types of dwellings that get built
- Off-site only misses the best opportunity the built environment has to contribute
- On-site/off-site hybrids are required
- ZCH target cannot be met without a buyout mechanism or off-site generation

## Case Study Insights

- Larger developments are able to achieve Zero Carbon on-site cost effectively
- Smaller devs can meet ZC heat, but have limited electricity generation potential
- Microgeneration technologies still immature and costly

## Key Insight:

- Adjustment to policy required else homes do not get built or zero carbon not achieved

# On-Site/Off-Site Hybrid Solution – How a buyout might work



Where neither on-site nor off-site solutions work a “buy-out” scheme can create a fund

Modelling estimates the value of the buyout fund for 2016 could be **£330m**

## Principles of a “Buyout Fund”

### Where could the fund be deployed?

Support the construction of district heat networks in the retro-fit market

Link new and retrofit load balancing projects in mixed use developments

Support delivery of local community “energy plans”

## Key Insight:

- A buyout fund allows both ZCHs to be built & financially primes a holistic approach to local energy needs to achieve ‘additional’ carbon reductions in the retro-fit environment

# Achieving Diversity & Best Practice requires Pragmatism

What we need to be able to deliver low carbon homes



## Achieving Diversity

- Don't over regulate
- Local needs, resources, ideas and experience encourages innovation
- Innovation leads to best practice
- Utilise continental experience

## Applying Best Practice

- Plan the energy system early in the process
- Use common sense to check solutions
- Beware the Ground Source Heat Pump anomaly

## The Right Environment

### Key Insight:

- A flexible definition can create a policy & regulatory environment whereby diversity & best practice can flourish simultaneously
- Apply the customer test:
  - Less costly?
  - More CO2 saving?
  - More reliable?