

# ENERGY EFFICIENCY IN THE BUILT ENVIRONMENT

8<sup>th</sup> JUNE 2011

MATRIX

# IMPORTANT NOTICE

This document is issued by Matrix Corporate Capital LLP (“Matrix”) which is authorised and regulated by the Financial Services Authority and is a member of the London Stock Exchange. The contents are based upon sources of information believed to be reliable but no warranty or representation, expressed or implied, is given as to their accuracy or completeness.

Matrix provides a number of services including Corporate Finance, Broking, Research, Trading and Market Making. All services are provided only to Professional clients and Eligible counterparties (i.e. market professionals). Matrix does not provide services to Retail clients.

Any opinion expressed in these documents reflects our judgement at the date of publication and neither Matrix, nor any its affiliated or associated companies, nor any of their partners, directors or employees accepts any responsibility in respect of the information or recommendations contained herein which are subject to change without notice.

This is not an offer, nor solicitation, to buy or sell any investment referred to in this document. The material is general information intended for recipients who understand the risks associated with investment. It does not take into account of whether an investment, course of action, or associated risks are suitable for the recipient.

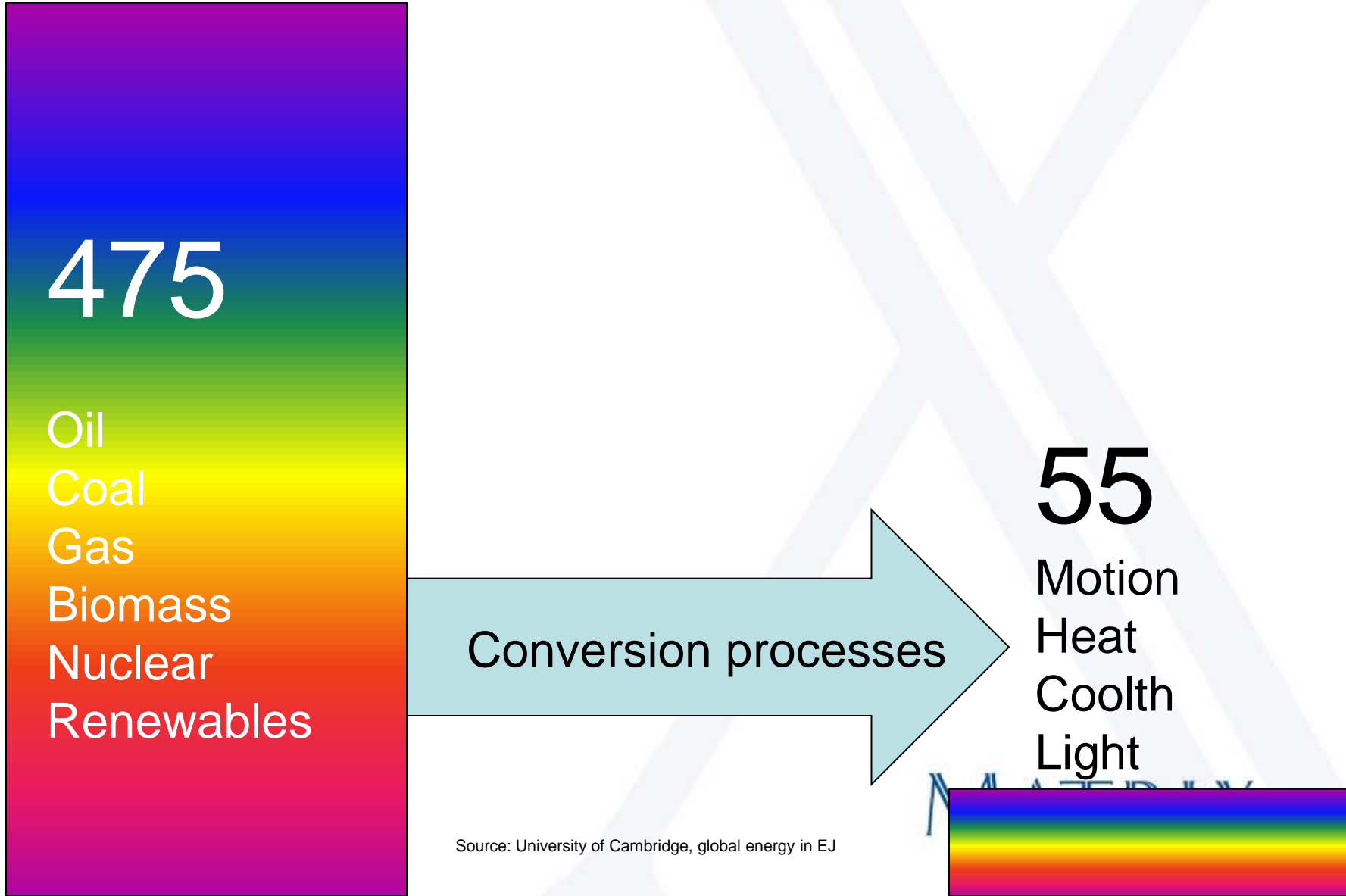
Matrix or its affiliated or associated companies and their partners, directors or employees may, as principal or as agent, make purchases, sales and offers to purchase or sell in the open market or otherwise and may have positions in or options on any such investment(s). Matrix may provide services (including corporate finance advice) where the flow of information is restricted by a Chinese Wall. Accordingly, information may be available to Matrix that is not reflected in this document. Matrix or its affiliated or associated companies may have acted upon or used research recommendations before they have been published.

# CONTENT

- Potential
- Drivers
- Barriers
- Needs
- Market
- Policies

# POTENTIAL

# JUST HOW INEFFICIENT ARE WE?



Source: University of Cambridge, global energy in EJ

# INEFFICIENCY EVERYWHERE

## Central power stations

- Typically 30-40% efficient
- Combined Heat and Power 70-80% efficient

## Power amplifiers

- Typically 15% efficient – 85% goes to heat
- New designs from Nujira can reach 45%+ efficiency

## Data centres

- Useful computing uses 2.5% of energy input

## Buildings

- Range of normalised energy performance for any type of building is 2 to 1
- US building stock consumes 2.5 x energy European building stock after correcting for climate
- Improved controls can reduce energy use by 10-30%

# GLOBAL POTENTIAL

- \$170bn a year investment would halve the projected growth in energy demand (reducing demand by ~ 64 million barrels a day)
- up to half the emissions abatement required to keep atmospheric CO<sub>2</sub> at 450ppm
- average IRR of all projects 17% (at \$50/barrel oil)
- \$83bn a year invested by 2020 would allow industrial sector to abate ~25 million barrels a day
- Since 1990 improvements in efficiency have met 52% of new energy service demand

Source: McKinsey, Lovins

# ECONOMIC POTENTIAL

- Many studies over 30 years suggest that **economic** potential for energy efficiency in UK is **20-30%** of total energy use
- Total expenditure by final consumers in **2009** was estimated at **£112,970 million**

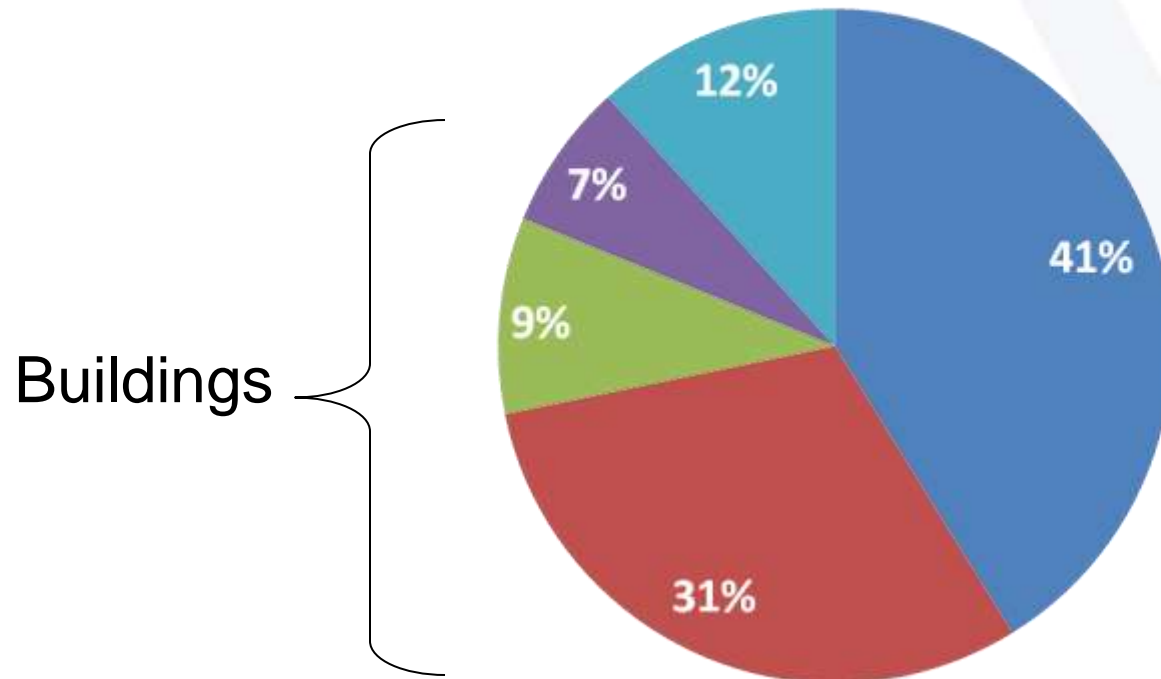
# BUILDINGS IN THE UK

**42%** total energy

**47%** total emissions

# FINAL ENERGY CONSUMPTION

■ Transport ■ Space heating ■ Water heating ■ Lighting/appliances ■ Industrial



Source: DUKES

# DRIVERS

High energy prices

Legislation and Regulation

- EU Emissions Trading Scheme
- Energy Performance of Buildings Directive
- Energy End-Use and Energy Services Directive
- Integrated Pollution Prevention & Control
- EU Emissions Trading Scheme
- Carbon Reduction Commitment

Energy security

Environment

- Carbon
- CSR

# BARRIERS

30 years of research on barriers to energy efficiency:

- Availability of capex
- Hidden costs
- Lack of information
- Risks and uncertainty
- Measurement and Verification
- Poorly aligned incentives
- Supply side bias
- Regulatory
- Organizational
- Psychological

# NEEDS

- A change of view at the top
- Aggregation
- Funding vehicles

# A CHANGE OF VIEW

Need to change thinking

- Opportunity not cost
- Offensive not defensive
- Reliable cost effective resource

Plenty of good examples

# AGGREGATION

- Energy efficiency projects tend to be small in investor terms
- Need to aggregate large portfolios of projects
- Aggregators need to be large, reliable organisations

# FUNDING VEHICLES

- Metrus Partners
- E2 Capital Partners
- Transcend Equity
- Energy RM
- SUSI Energy Efficiency Fund
- VCTs
- Green bonds

# GROWTH OF THE INDUSTRY

- Difficult to define industry
- New investment in energy efficiency in USA
  - 65% CAGR 2004-2007
  - Now totalling \$3.2bn
- US ESCO industry 20% CAGR 1990 – 2000
  - 22% CAGR 2004 – 2008 (Lawrence Berkeley Lab)
- Estimated turnover of UK energy management sector £3-4bn
- Estimated turnover of UK insulation/building measures £5bn

Sources: New Energy Finance, NAESCO, ESTA

# UK ENERGY EFFICIENCY POLICY

# UK ENERGY POLICY?



# PILLARS OF UK ENERGY POLICY



## RISKS

- Over budget
- Delays to programme
- Public acceptance of risk
- Public liability

- Over budget
- Delays to programme
- O&M costs
- Public acceptance of cost

# FILLING THE GAP



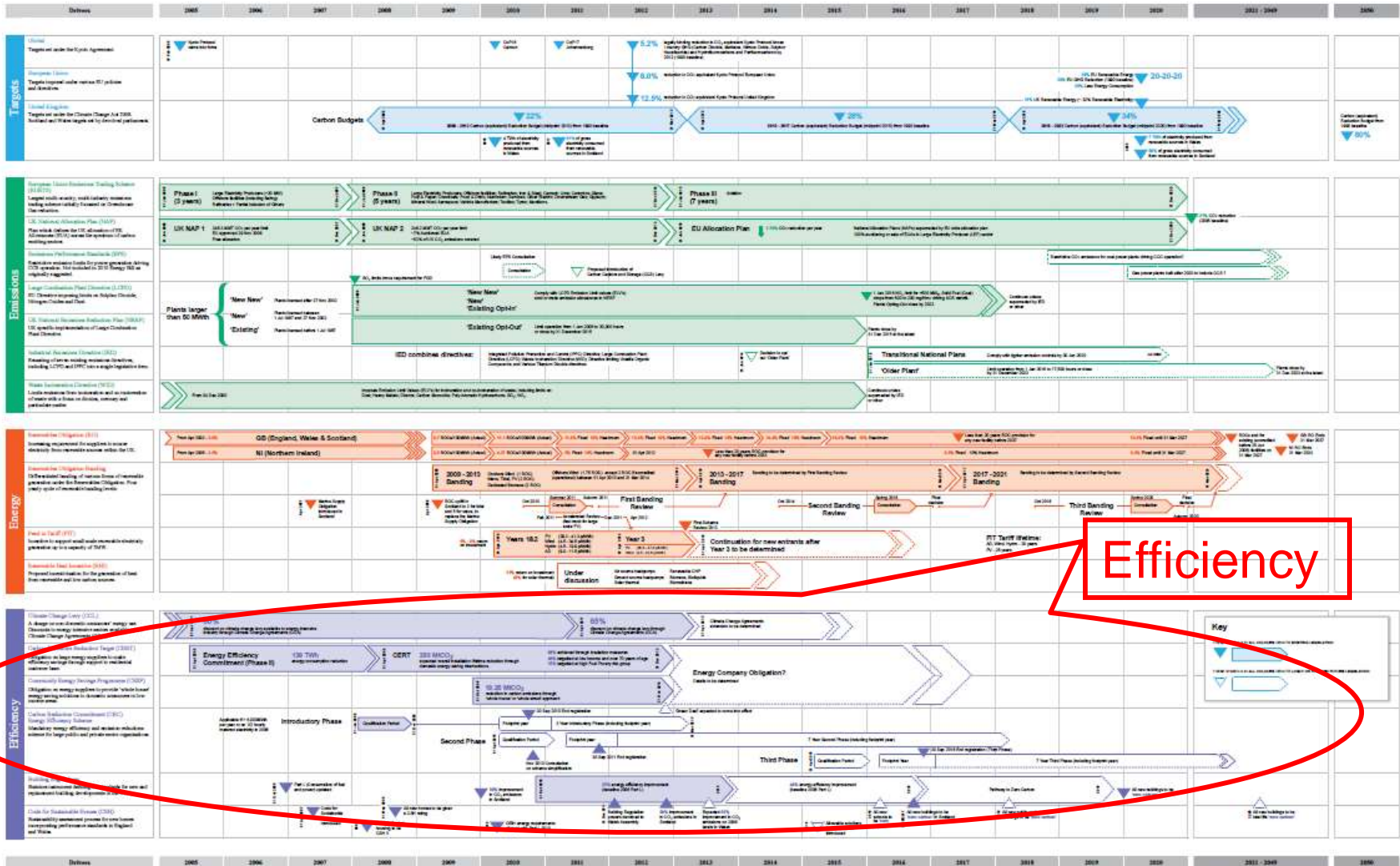
+



# POLICY UNCERTAINTY

UK Legislation Timeline  
Emissions | Energy | Efficiency

ARUP



# RECENT POLICY DEVELOPMENTS

# THE GREEN DEAL

Private companies offer energy efficiency retro-fits

No upfront cost to consumer

Consumers pay through energy bills

Should be net savings on energy bill

Obligation tied to property

Domestic and SMEs

BUT.....

Lots of issues

Energy efficiency is much more than Green Deal

# FIVE PRIORITY ACTIONS

Set a national target for reducing energy intensity (energy/GDP).

Establish an Office of Demand Side Delivery.

Establish a target of 25% reduction in energy use in the government estate over five years and initiate a large, privately financed programme to help achieve that target.

Establish an energy efficiency FIT (E-FIT).

Ensure that EMR legislation supports the growth of demand side (D3) activities.

# FIVE PRIORITY ACTIONS

Set a national target for reducing energy intensity (energy/GDP).

Establish an Office of Demand Side Delivery.

Establish a target of 25% reduction in energy use in the government estate over five years and initiate a large, privately financed programme to help achieve that target.

Establish an energy efficiency FIT (E-FIT).

Ensure that EMR legislation supports the growth of demand side (D3) activities.

# OTHER POLICY ACTIONS

- Role of the Green Investment Bank in energy efficiency
- Resolving off/on balance sheet issue for ESCOs in government estate
- EMR and D3

# EMR AND D3

# D3 DEFINED

**D**emand management

**D**emand response

**D**istributed generation



# D3 AND EMR



Potential to create markets for negawatts and negawatt hours

Evidence from around the world shows that markets draw out a cost-effective reliable resource for the electricity market

**Essential to get equivalence of demand and supply explicitly recognised in EMR legislation**

**Need to design market mechanisms that recognise all value streams of demand side services**

**Not too late to take action**

# CONCLUSIONS

- Massive economic potential to improve energy efficiency
- Energy efficiency contributes to security, environment and energy costs
- Energy efficiency does not require subsidies
- Technology and know-how exists (but needs scale up)
- Significant business and investment opportunities
- Policy still heavily supply side biased
- Policy makers waking up to the opportunity
- Still many barriers

[steven.fawkes@matrixgroup.co.uk](mailto:steven.fawkes@matrixgroup.co.uk)

MATRIX