



# Wales Low/Zero Carbon Hub

## Workstream Workshop

9<sup>th</sup> September 2011



Chris Jofeh  
Chair  
Wales Low/Zero Carbon Hub

# **Low/Zero Carbon Hub Wales**

## **Action Planning and Road Testing**

**George Martin**

**Director, Willmott Dixon**

**9<sup>th</sup> September 2011**



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**Major Contractor of the Year**



# Wales Low/Zero Carbon Hub Strategy 2010 - 2013

## Introduction

- How we live
- How we work



# One Planet Living

OPI principle	Aim
<b>Zero Carbon</b>	Reduce and ultimately eliminate carbon emissions caused by fossil fuel use in heating, cooling and providing power and heat to buildings
<b>Zero Waste</b>	All materials should be valued as potential resources, through reusing, reprocessing or energy from waste.
<b>Sustainable Transport</b>	Reduce carbon emissions relating to travel
<b>Local and Sustainable Materials</b>	Choose materials to deliver high performance in use with minimised impact in manufacture and delivery
<b>Local and Sustainable Food</b>	Promote local, seasonal and organic produce resulting in reduced emissions from food production, packaging and transport
<b>Sustainable Water Use</b>	Reduce energy used in water supply and waste water management; reduce local flooding risks
<b>Natural Habitats and Wildlife</b>	Conserve and enhance biodiversity
<b>Culture and Heritage</b>	Engender a sense of community through enhancing or reviving valuable aspects of local culture and heritage
<b>Equity and Fair Trade</b>	Promote social justice through local economic development and fair trade internationally
<b>Health and Happiness</b>	Increase health and overall well being of all involved in the project through design, facilities and operation



# WWF Living Planet Report



## LIVING PLANET REPORT 2002

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# WWF Living Planet Report






**LIVING PLANET REPORT 2002**



*for a living planet\**

**LIVING PLANET REPORT 2008**



# One Planet Living

Resources



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# One Planet Living

Resources



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# One Planet Living

Resources



Population

1950 → 3 billion

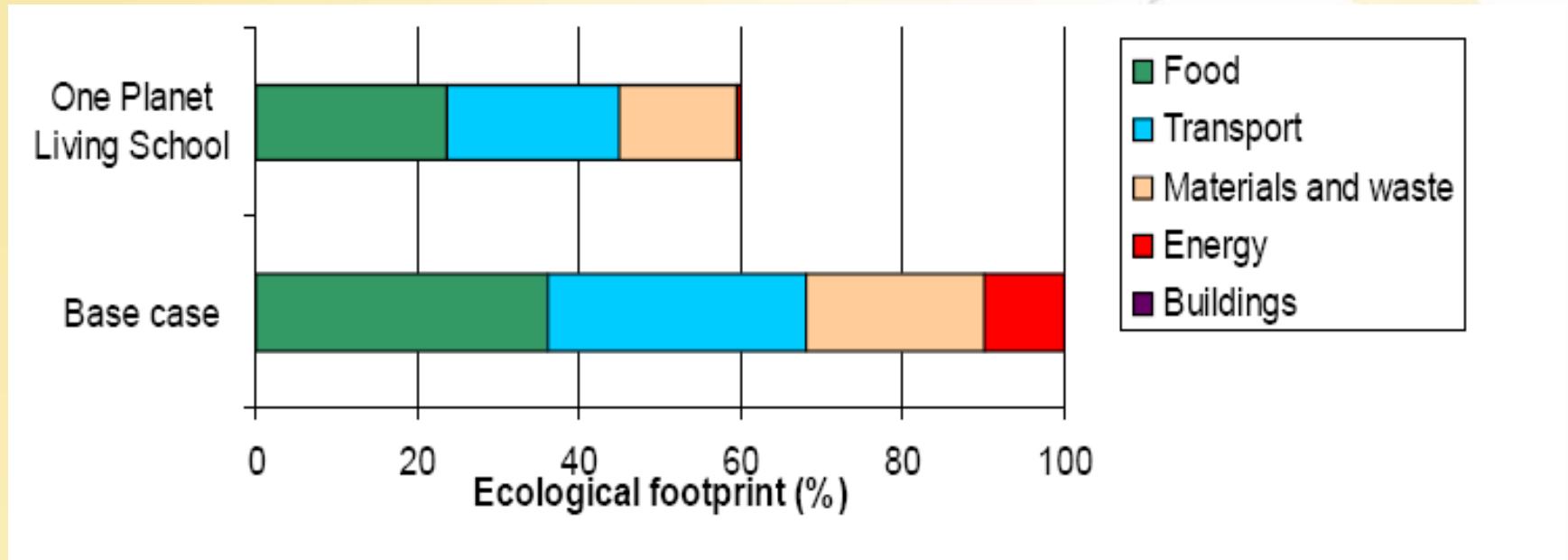
2000 → 6 billion

2050 → 9 billion



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# One Planet Living School



**Note:** – Buildings = building materials.

**There are many sustainable development challenges.....**



**There are many sustainable development challenges.....**

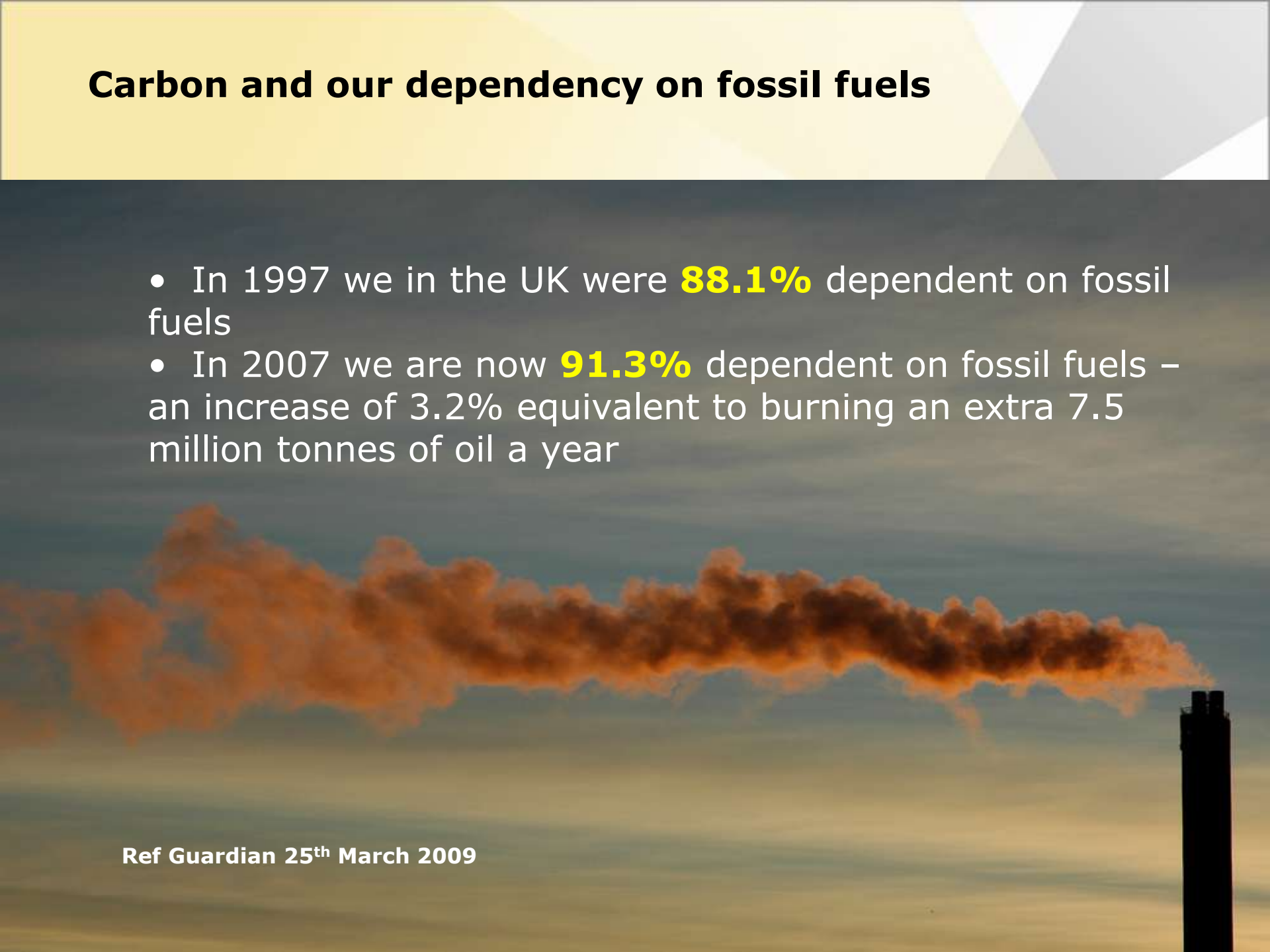
One of our greatest is linked to our use of fossil fuels



# Carbon and our dependency on fossil fuels

- In 1997 we in the UK were **88.1%** dependent on fossil fuels
- In 2007 we are now **91.3%** dependent on fossil fuels – an increase of 3.2% equivalent to burning an extra 7.5 million tonnes of oil a year

Ref Guardian 25<sup>th</sup> March 2009



# Climate Change Act 26<sup>th</sup> November 2008

## Climate Change Act

- » Targets:
  - **34% cut by 2020;**
  - **80% by 2050**
- » Department of Energy and Climate Change (DECC) established in November 2008
- » Extensive enabling powers
- » 5 year budgets; annual reports to Parliament from the independent *Committee on Climate Change*



### Climate Change Act

November 2008



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# Committee on Climate Change

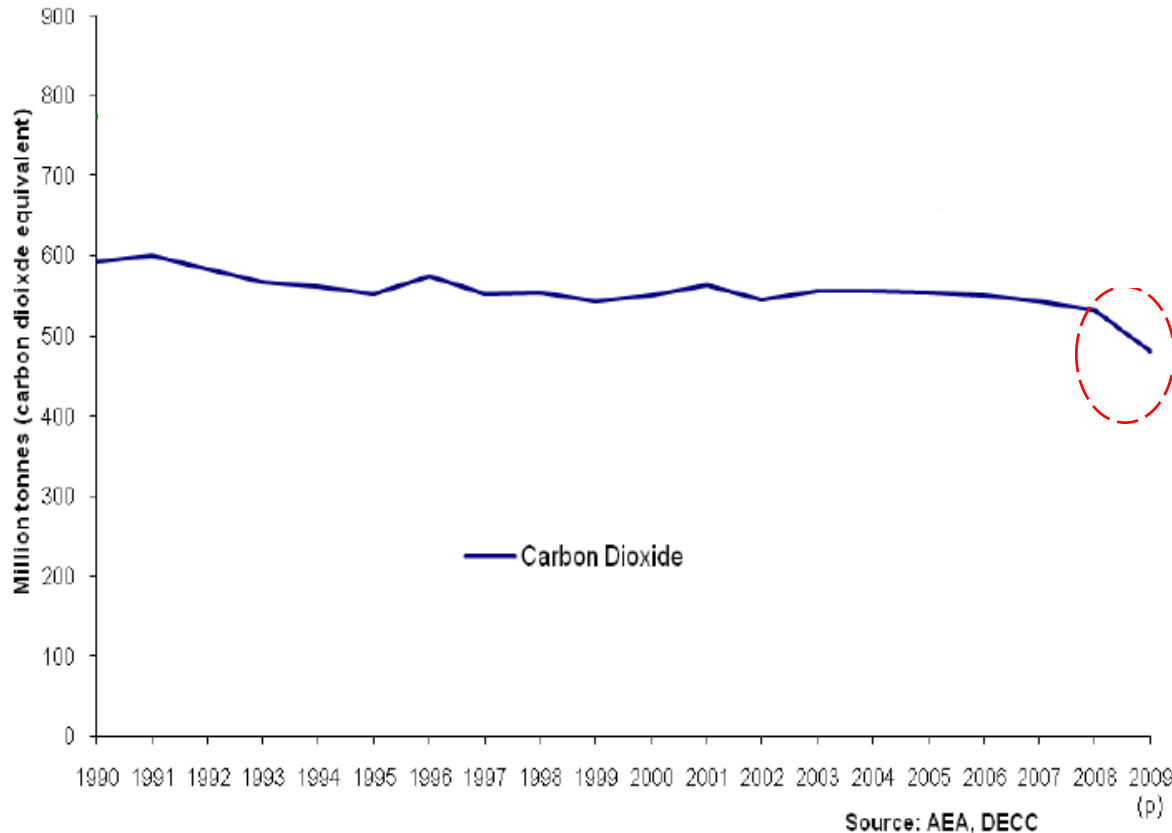


## The second report June 2010

- UK emissions fell by 1.9% in 2008 and 8.6% in 2009 mainly due to the recession
- Concluded: "There is no evidence of out performance on implementation of measures in 2009, and therefore a step change is still required."

# The second report June 2010

**Figure 1: Emissions of greenhouse gases, 1990-2009 (provisional)**

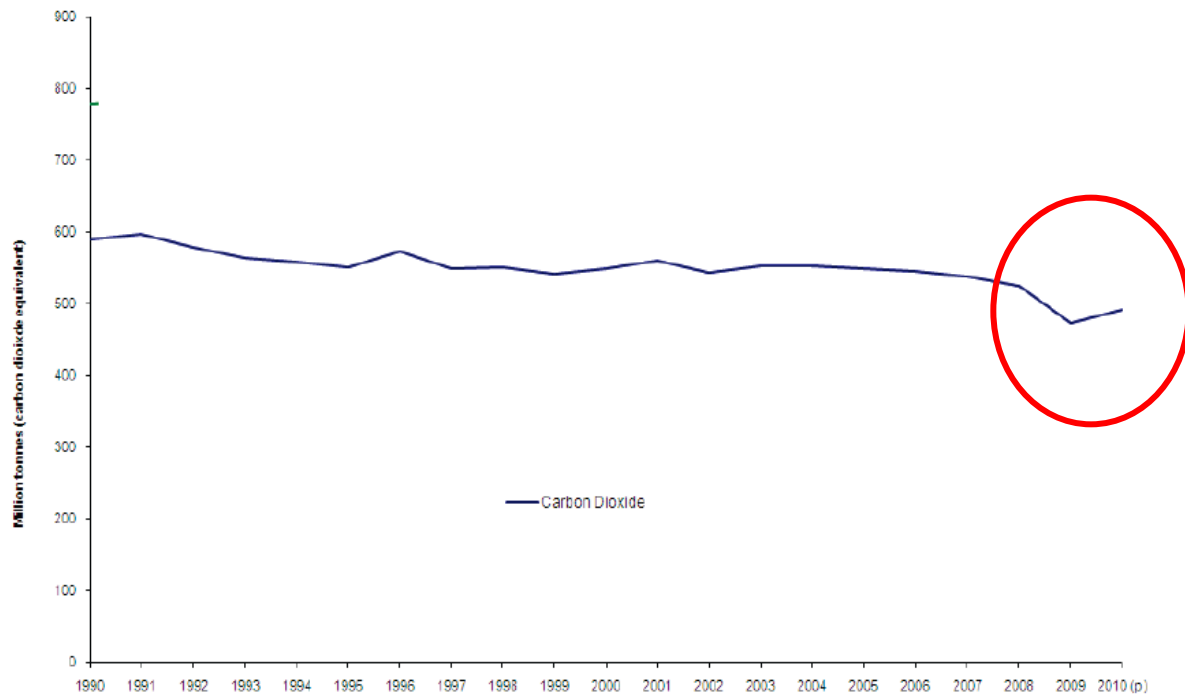


**2008 to**

- **GHG down 8.6%**
- **CO2 down 9.7%**

31<sup>st</sup> March 2011

**Figure 1: Emissions of greenhouse gases, 1990-2010 (provisional)**



Source: AEA, DECC

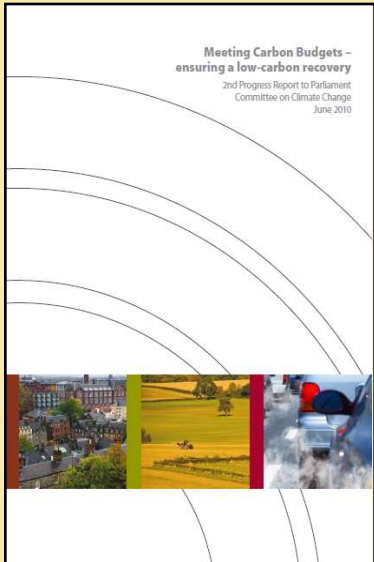
**2009 to  
2010**

**- CO2 up 3.8 %**

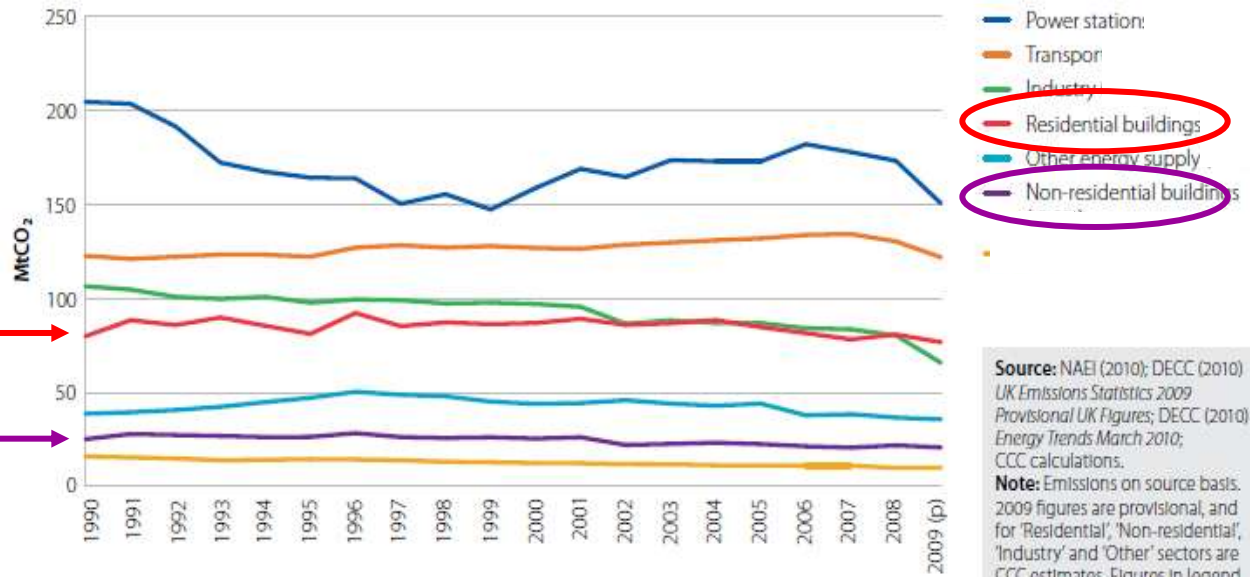


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# CO2 emissions by sector 1990 to 2009



**Figure 2** UK CO<sub>2</sub> emissions by sector (1990-2009)

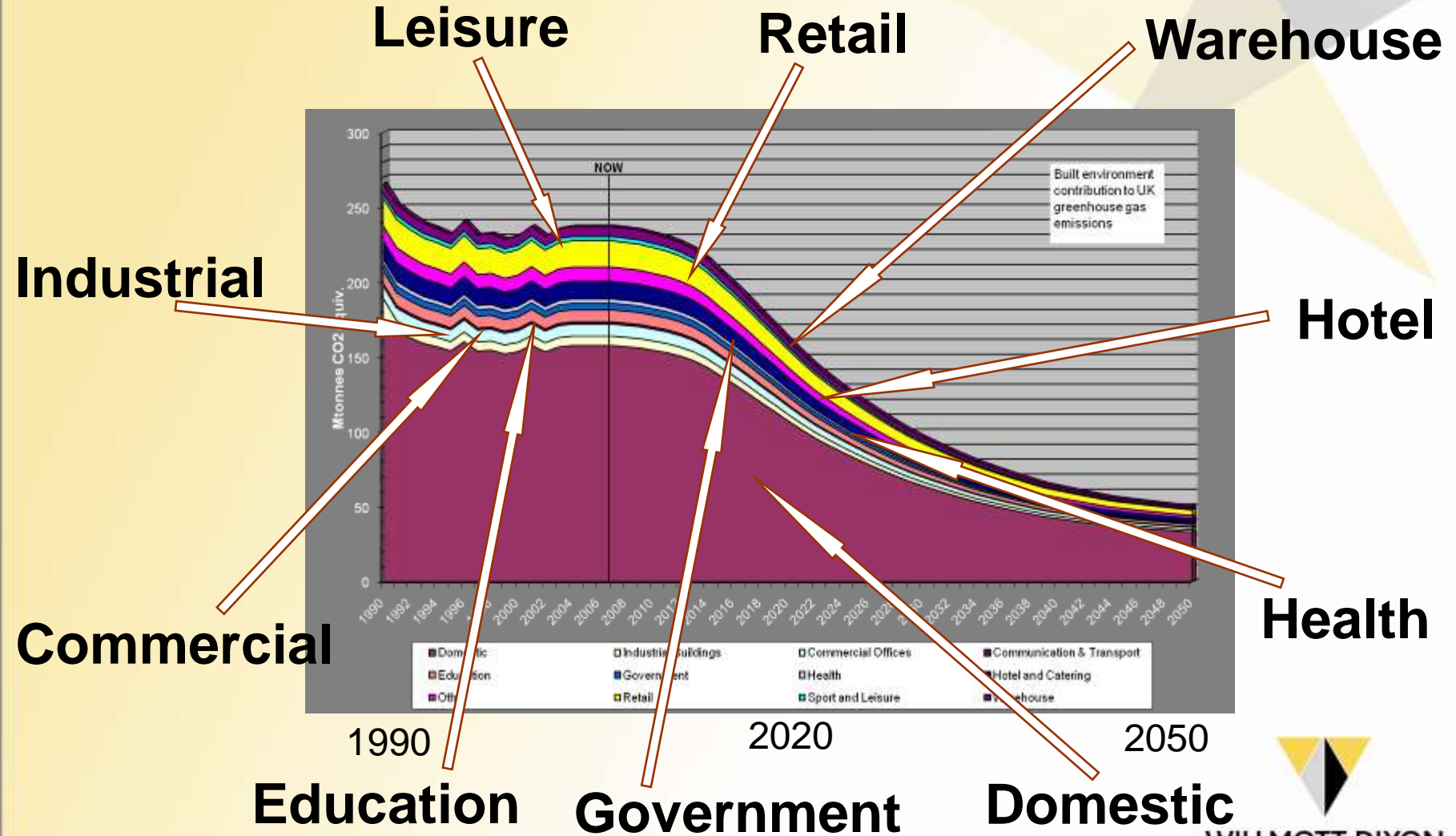


Residential buildings

Non residential buildings

**Source:** NAEI (2010); DECC (2010) UK Emissions Statistics 2009 Provisional UK Figures; DECC (2010) Energy Trends March 2010; CCC calculations.  
**Note:** Emissions on source basis. 2009 figures are provisional, and for 'Residential', 'Non-residential', 'Industry' and 'Other' sectors are CCC estimates. Figures in legend show change in emissions in 2009.

# The Challenge of the Existing Stock



# Preparation for Workshops

**Consider the following with respect to the carbon agenda:**

- **Constraints: please identify the obstacles you face working in your part of industry**
- **Opportunities; please identify areas where we could collaborate or work better in an integrated way**
- **Key projects/studies and research; please list those which you are aware of**



# **Constraints: please identify the obstacles you face working in your part of industry**

- **The Elephant in the room**
- **Procurement**
- **Performance Gap**
- **Evidence**



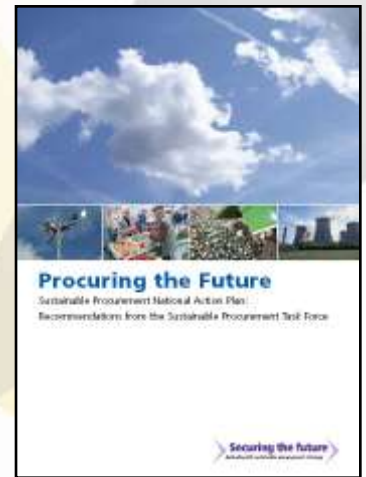
# The elephant in the Boardroom !



There's something  
business needs  
to talk about

# CARBON

# Procuring the Future



“Sustainable Procurement is a process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves **value for money on a whole life basis** in terms of generating benefits to society and the economy, whilst minimising damage to the environment”.

Definition from the Sustainable Procurement Task Force



**Sustainable**  
Development Commission

*People • Planet • Prosperity*

“Without Whole Life Costing being embedded at the heart of all capital programmes, applied universally not episodically, Ministers should give up on their carbon targets, however worthy, and forget any notion of a sustainable government estate.”

(Jonathon Porritt, October 2004)



HM TREASURY

## THE GREEN BOOK

Appraisal and Evaluation in Central Government

### Valuing Design Quality

34 Design quality is an important element of all public sector building projects and should be assessed during appraisal. Limiting property valuation to traditional methods without consideration of the costs and benefits of design investment can distort the decision making process. Good design will not always result in the lowest initial capital cost. However, over the period of the contract a higher initial investment can, when expressed as a discount value, result in the lower whole life costs.

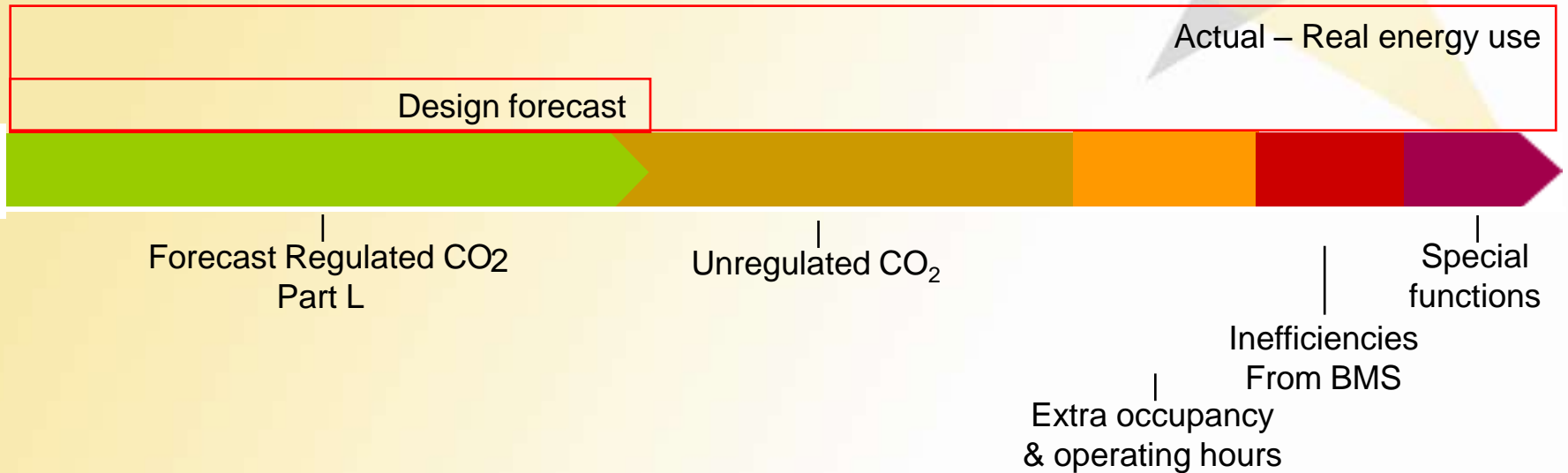
Treasury Guidance




LONDON:TSO



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# The 'Performance Gap'

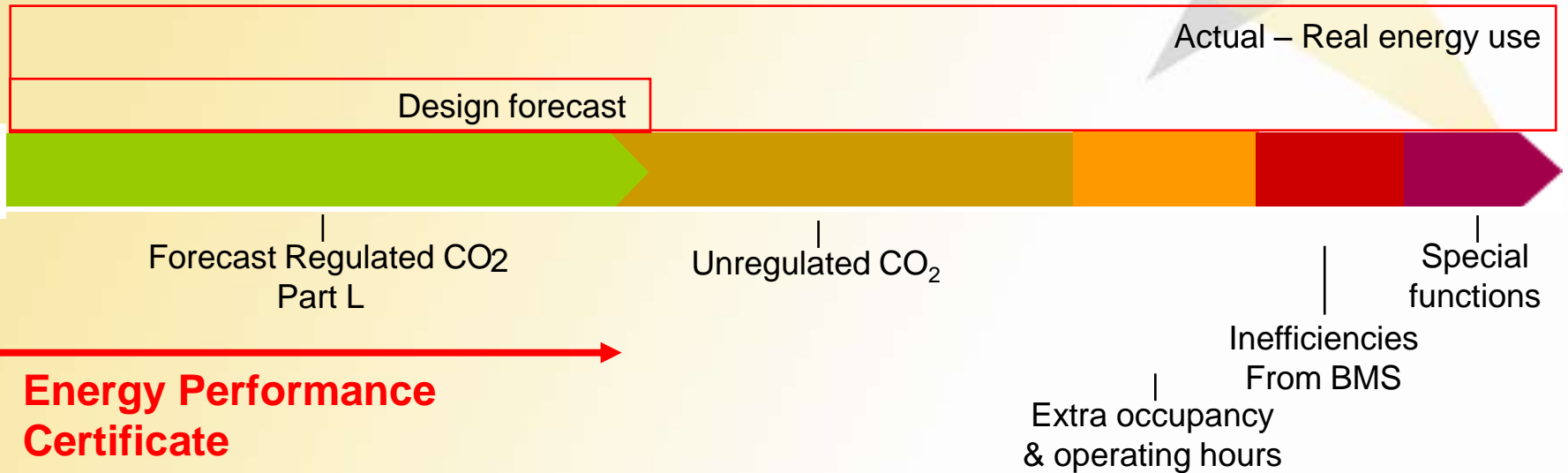





-  Regulated Energy Use includes: fixed building services, heating, hot water, cooling, ventilation, lighting
-  Unregulated Energy Use includes: plugload, server rooms, security, external lighting, lifts etc.
-  Special Functions include: trading floors, server rooms, cafeteria etc.

Reference: Aedas Architects 2010

# The 'Performance Gap'

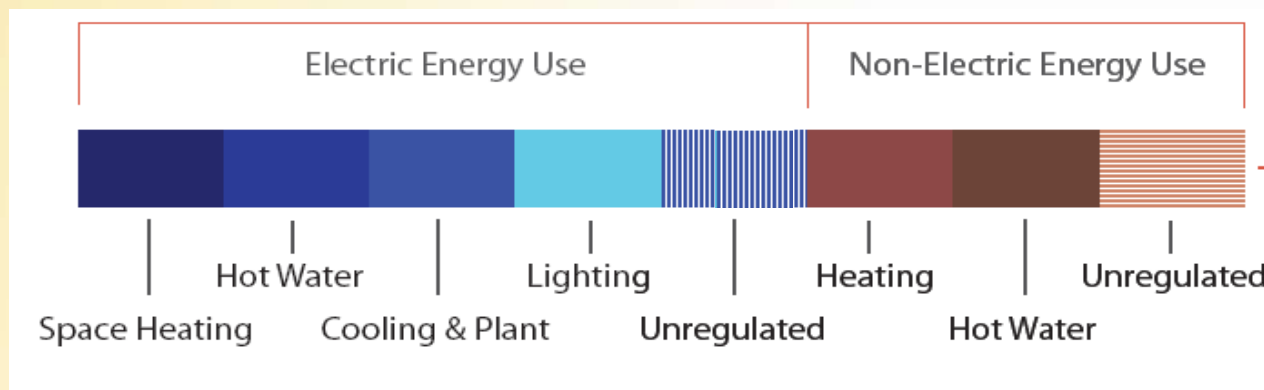
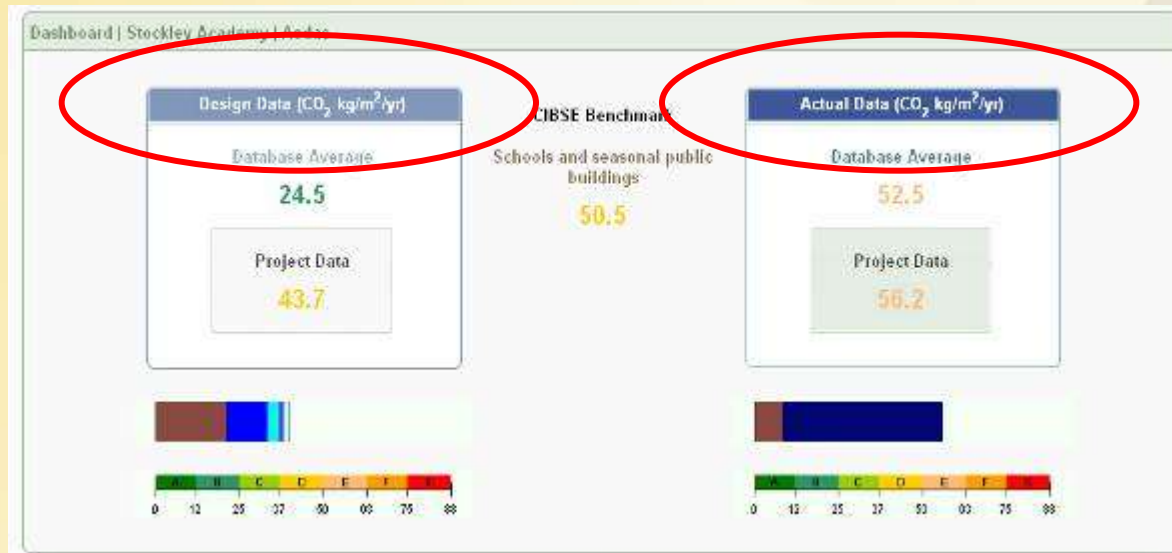
## Display Energy Certificate



-  Regulated Energy Use includes: fixed building services, heating, hot water, cooling, ventilation, lighting
-  Unregulated Energy Use includes: plugload, server rooms, security, external lighting, lifts etc.
-  Special Functions include: trading floors, server rooms, cafeteria etc.

Reference: Aedas Architects 2010

# CarbonBuzz - energy profiling from design to operation



Courtesy Aedas - Stockley Academy Built in 2005

# **Opportunities; please identify areas where we could collaborate or work better in an integrated way**

- **IGT Report**
- **Partnering Frameworks**

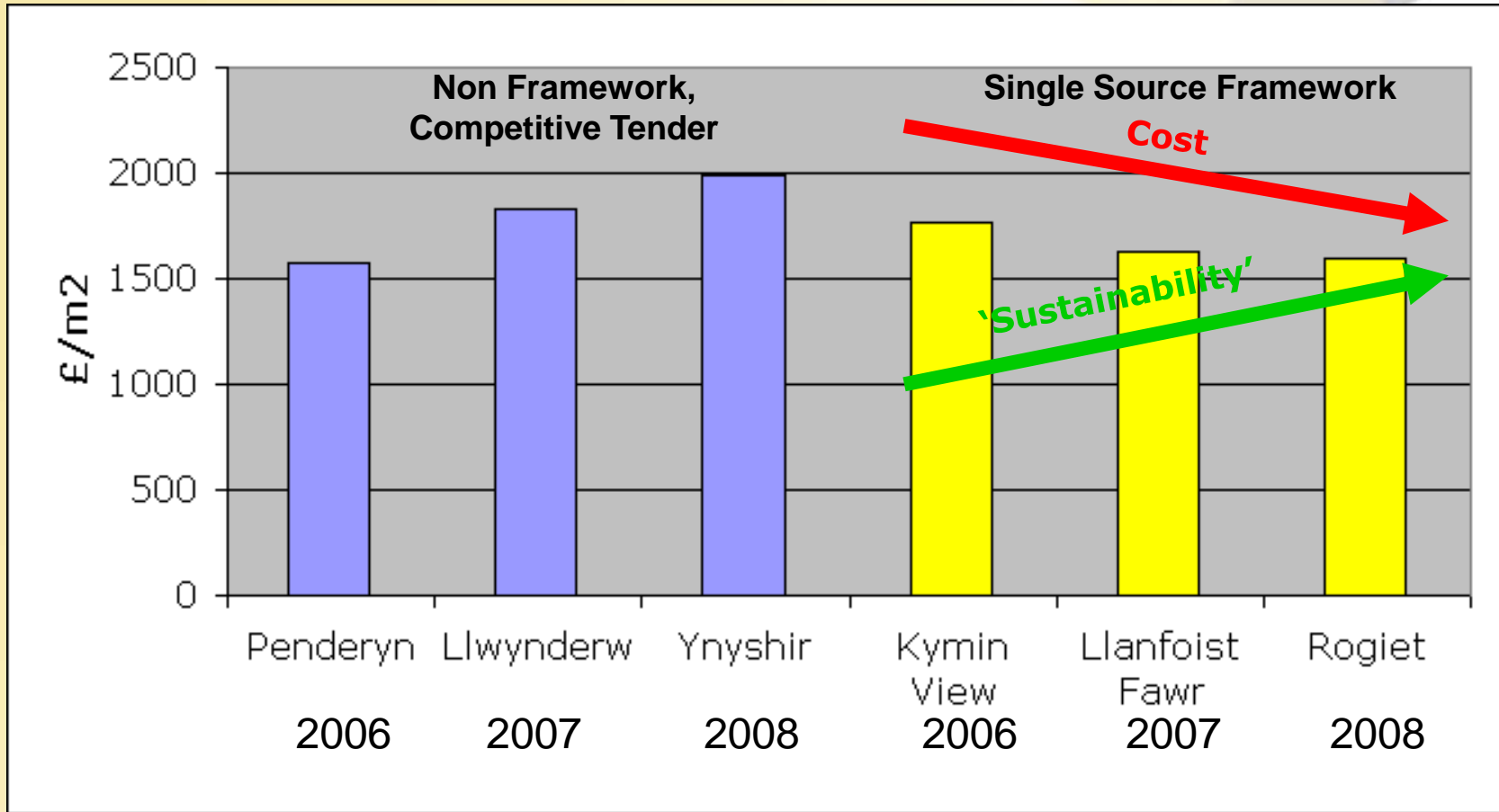


# Barriers to progress



- Plethora of policies, reports and initiatives
- **Lack of collaborative integration of the supply chain**
- Need for general upskilling of all parts of the supply chain
- Evidential gap between design and performance in use
- Preoccupation with initial capital cost instead of appraising projects on a whole life basis

# Better Value Against Non-Framework Projects – BCIS Cost Analysis

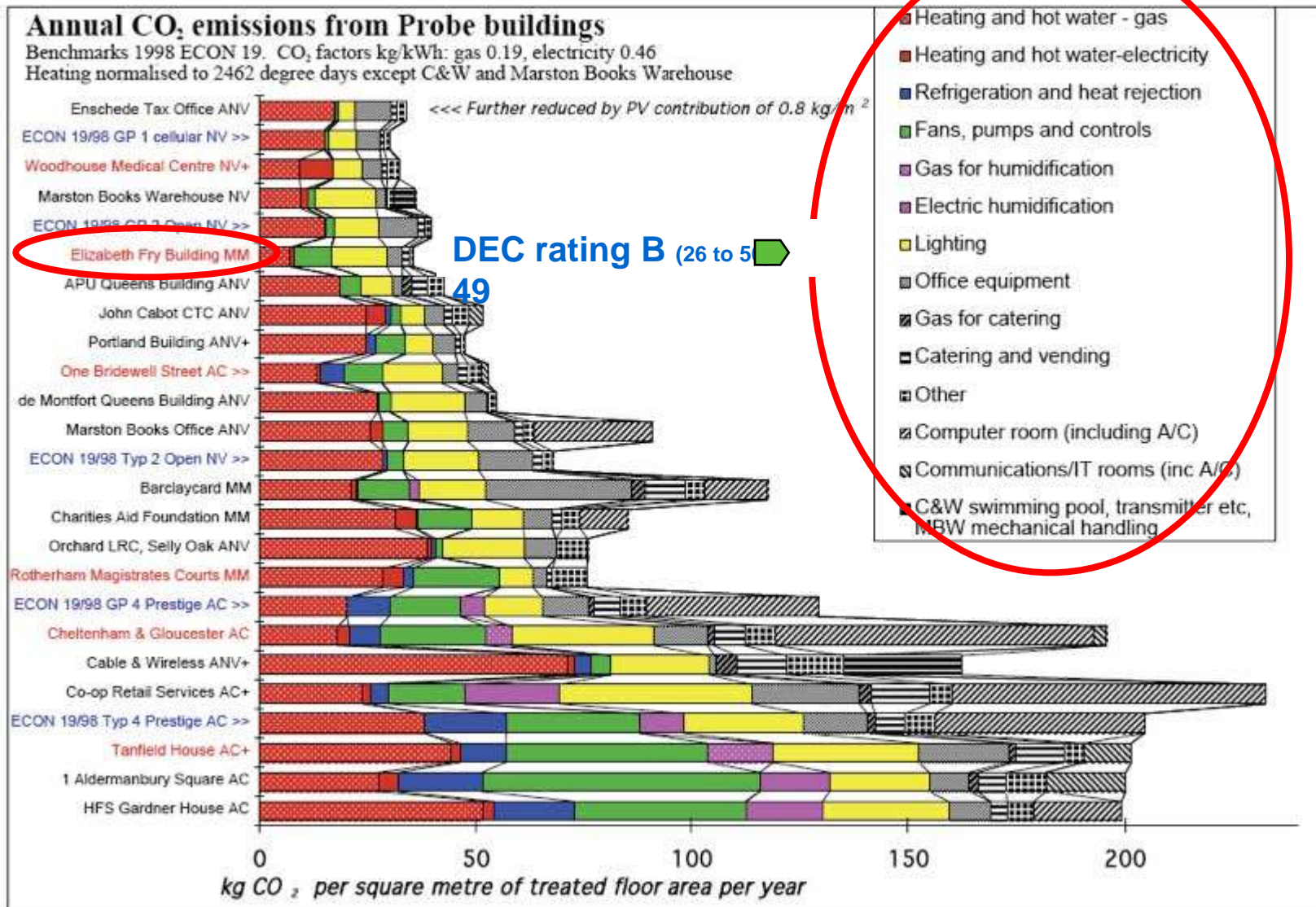


## **Key projects/studies and research; please list those of which you are aware"**

- **Usable Building Trust**
- **DCSF Zero Carbon Task Force**
- **Carbon Trust**
- **Better Buildings Partnership**
- **Co-Star**
- **Clinton Climate Foundation**



# Report CO2 emissions like this ...

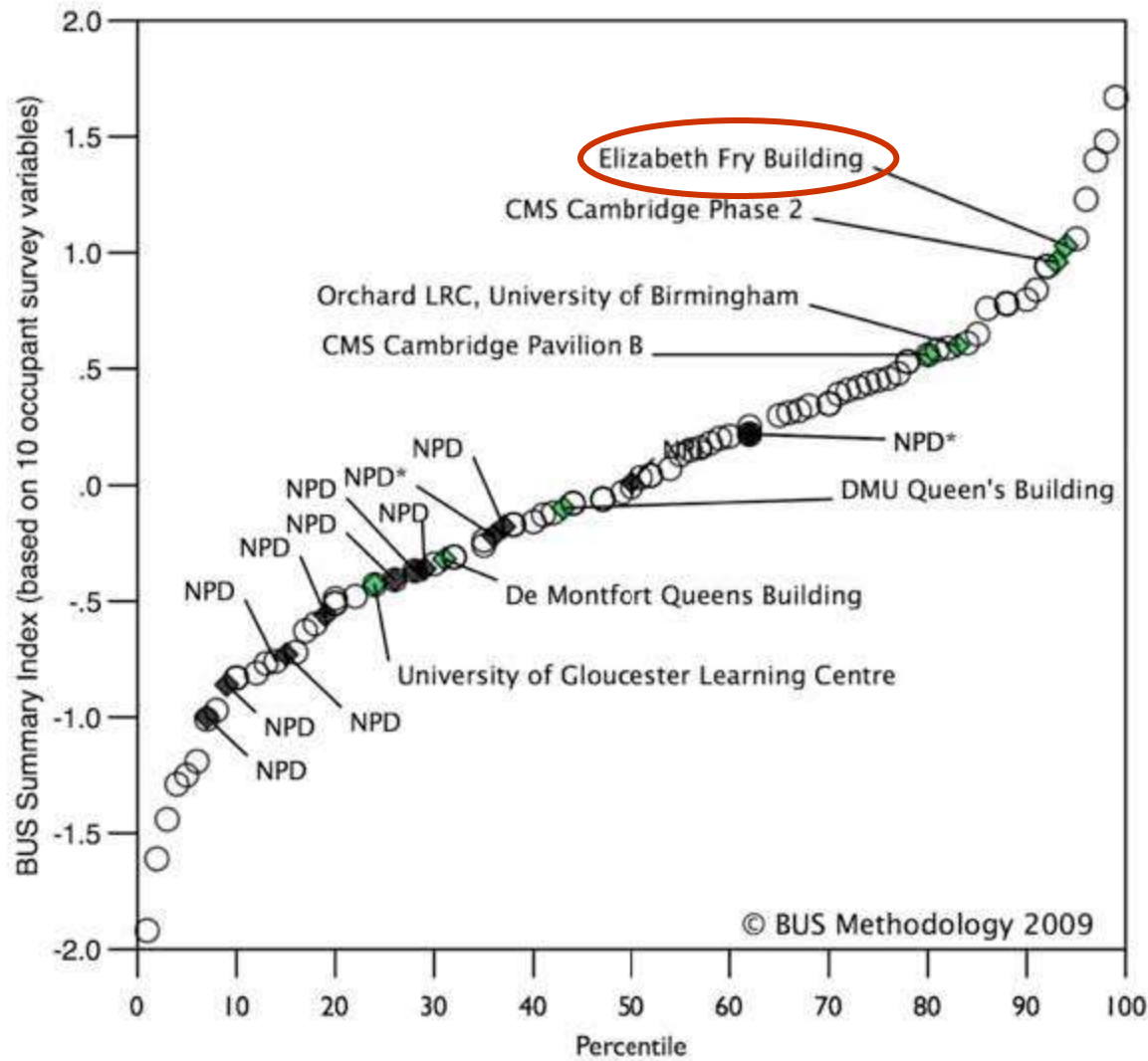


Source: Probe team [www.usablebuilding.co.uk](http://www.usablebuilding.co.uk)

# Performance of Higher Education Buildings

**Key**

- Named: HE buildings with information in the public domain
- Green: Buildings with elements of 'green design intent'
- NPD: Not public domain
- NDP\* Charity
- Other data points: Other buildings in UK data set



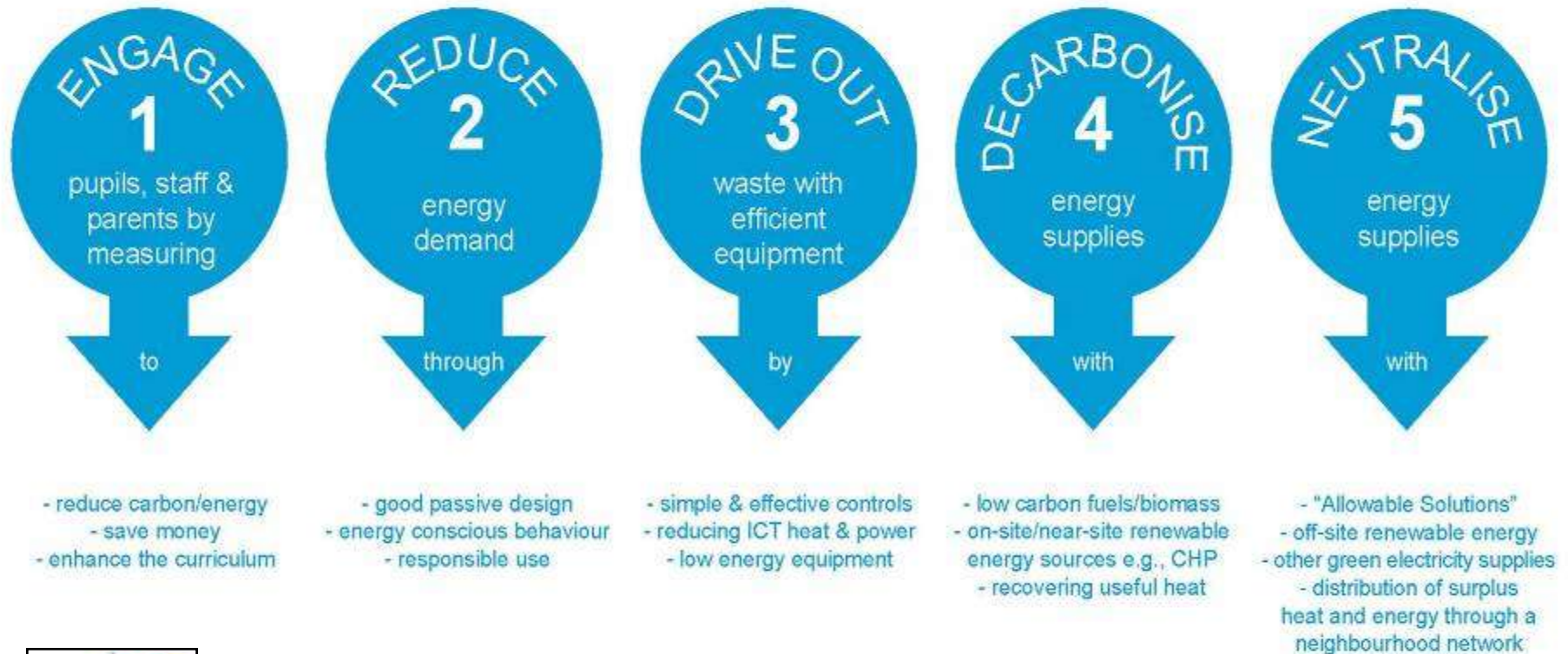


## **Elizabeth Fry Building**

Constructed by Willmott Dixon 1993/4 and occupied in January 1995

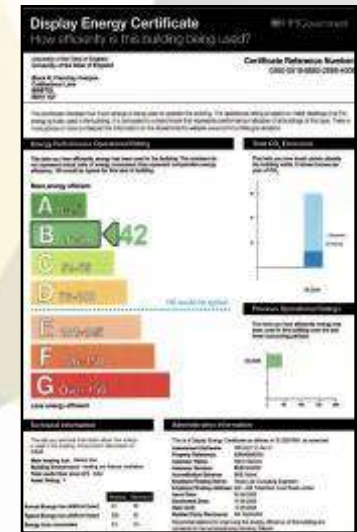
# THE ENERGY > CARBON 'HIERARCHY'

*"Halve the demand, double the efficiency, and halve the carbon in the supplies, and you are down to one-eighth of the emissions"*  
Task Force Member Bill Bordass



# DEC Facts

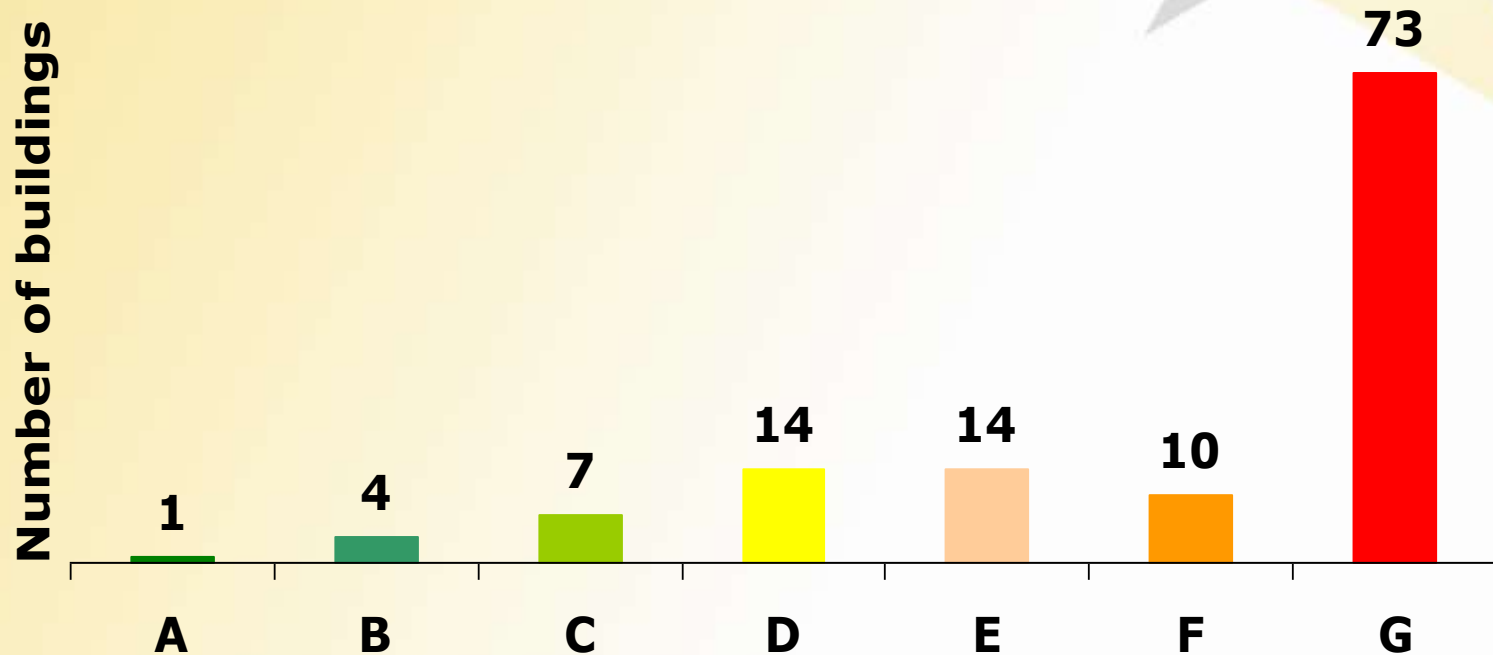
- 1.8 million non-dwellings in the UK
- 18% of the total CO2 output
- Average DEC is 'E'
- For UK to hit the 34% reduction by 2020 average needs to be 'C'
- By 2050, ALL buildings need to be 'A'



Source – Carbon Trust 2010

# BBP Survey June 2011

## Chart 3 - Distribution of DEC bands across the BBP London portfolio 2009



Better Buildings Partnership survey using 2009 energy data covering 123 London Offices.

# **Sustainable Buildings Show Enhanced Performance**

**April 2008 study of LEED Certified Buildings in the US by CoStar Group found that by comparison with their conventional competitors they:**

- ▼ command rent premiums of \$11.24 per sq ft
- ▼ have a 3.8% higher occupancy rate
- ▼ sell for an average of \$171 more per sq ft



# Clinton Climate Foundation



**38% energy saving**

**Running costs reduced by \$4.4m**

**Calculated on basis of the "net present value midpoint"**



JONES LANG  
LASALLE

*Real value in a changing world*



CLINTON  
CLIMATE  
INITIATIVE





Johnson  
Controls

## A landmark sustainability program for the Empire State Building

*A model for optimizing energy efficiency, sustainable practices,  
operating expenses and long-term value in existing buildings*

Efforts to make buildings more environmentally sustainable have produced hundreds of millions of square feet of greener office space. But tens of billions of square feet remain in office buildings worldwide for which owners have made little or no progress in the areas of energy efficiency and sustainability.

Owners of multi-tenant buildings, which comprise the bulk of office space, are primarily motivated by return on investment. To justify the costs associated with energy efficiency retrofit, owners must be convinced that the investment will be repaid by some combination of reduced operating expenses, higher rental rates and greater occupancy levels. The percentage of tenants willing to pay higher overall occupancy costs for green space is not large, and tenants that greatly value sustainability gravitate towards newer buildings that have been designed and built to higher energy and environmental standards. In general, the incremental cost of retrofitting older buildings to achieve improved energy performance is more expensive than the incremental cost of achieving the same performance in a new building.

This context underscores the extraordinary nature of the commitment that Anthony E. Malkin of Empire State Building Company has made to establish the Empire State Building as one of the most energy efficient buildings in New York City, and arguably the world's most environmentally conscious.

building owners—particularly those with pre-WWII office properties—would have an example to follow in pursuing their own green projects.

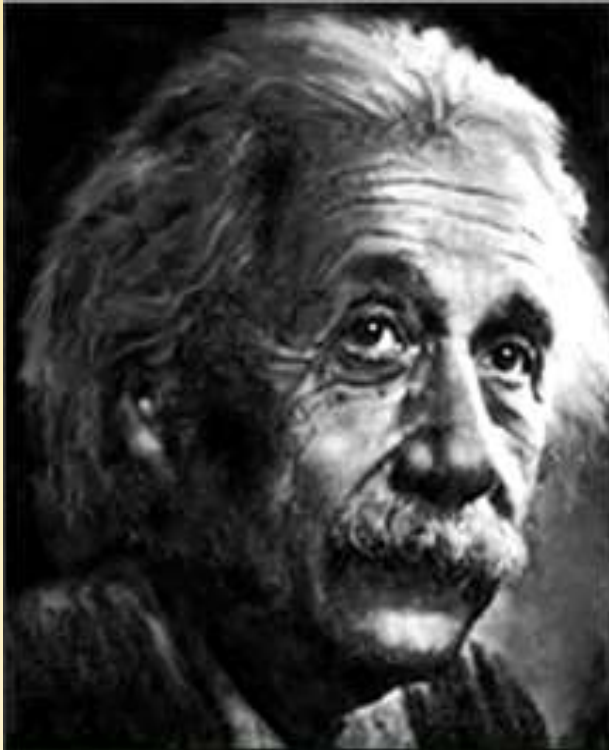


Partner companies	5
Energy-efficiency ideas vetted	60+
Final projects recommended	8
Iterative design process	8 mos.
Annual energy savings	\$4.4M
Energy reduction	38%

**And lastly.....**

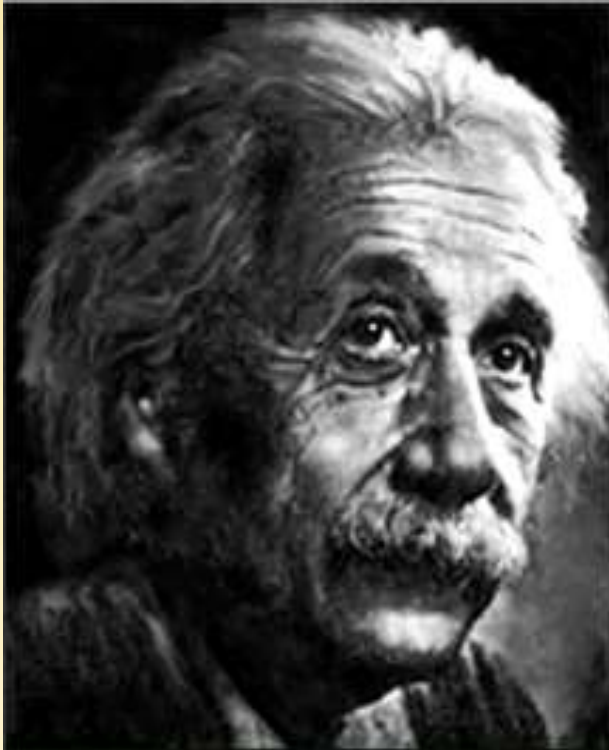


**In conclusion .....**



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# Re-Thinking.....



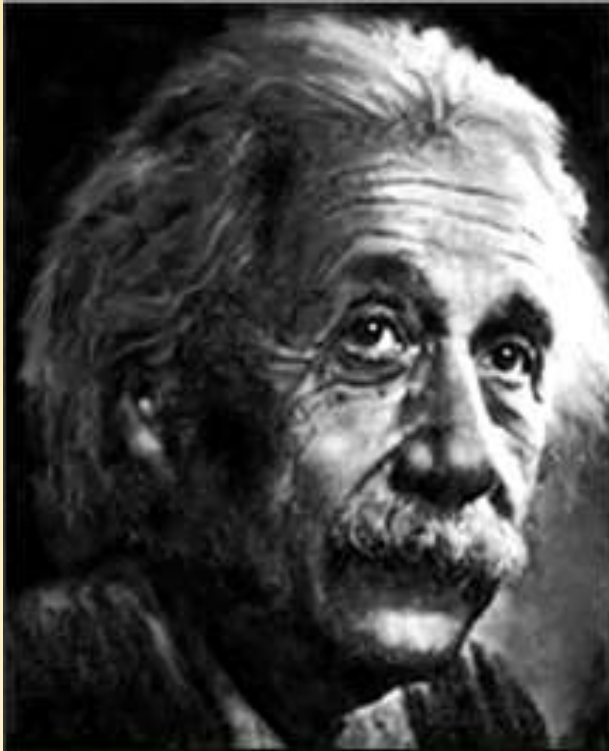
**"We cannot solve our problems with the same thinking we used when we created them."**

**Albert Einstein**



**WILLMOTT DIXON  
GROUP**

# Re-Thinking.....



**"We cannot solve our problems with the same thinking we used when we created them."**

**Albert Einstein**







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# Thank you

[george.martin@willmottdixon.co.uk](mailto:george.martin@willmottdixon.co.uk)



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# Wales Low/Zero Carbon Hub

Workstream Workshop  
Friday 9<sup>th</sup> September 2011

## Session One

Director Sally Sudworth

# CEW



## Sponsored by WG via Grant

- Promote/drive Egan agenda
- Improve efficiency of industry in Wales
- Collaborative working
- Fully integrated delivery teams
- Business case for best value procurement processes
- Inclusive, no-fee, organisation



# Finance



Source	Funds
WG Grant – Core	£260,000
WG Grant – Low/Zero Carbon	£155,000
WG Grant – Waste	£450,000
Events	£30,000

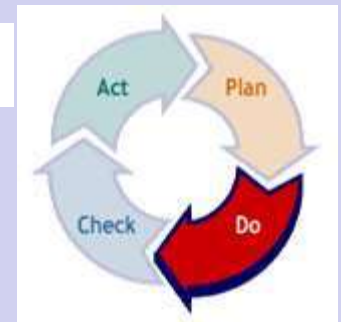
# Core Programme



- Demonstration Projects
- Exemplar Programme
- Construction Waste Minimisation
- Performance measurement
- Task and Finish groups
- Consultative Forum
- Public Sector Client Forum
- Awards
- Events Programme

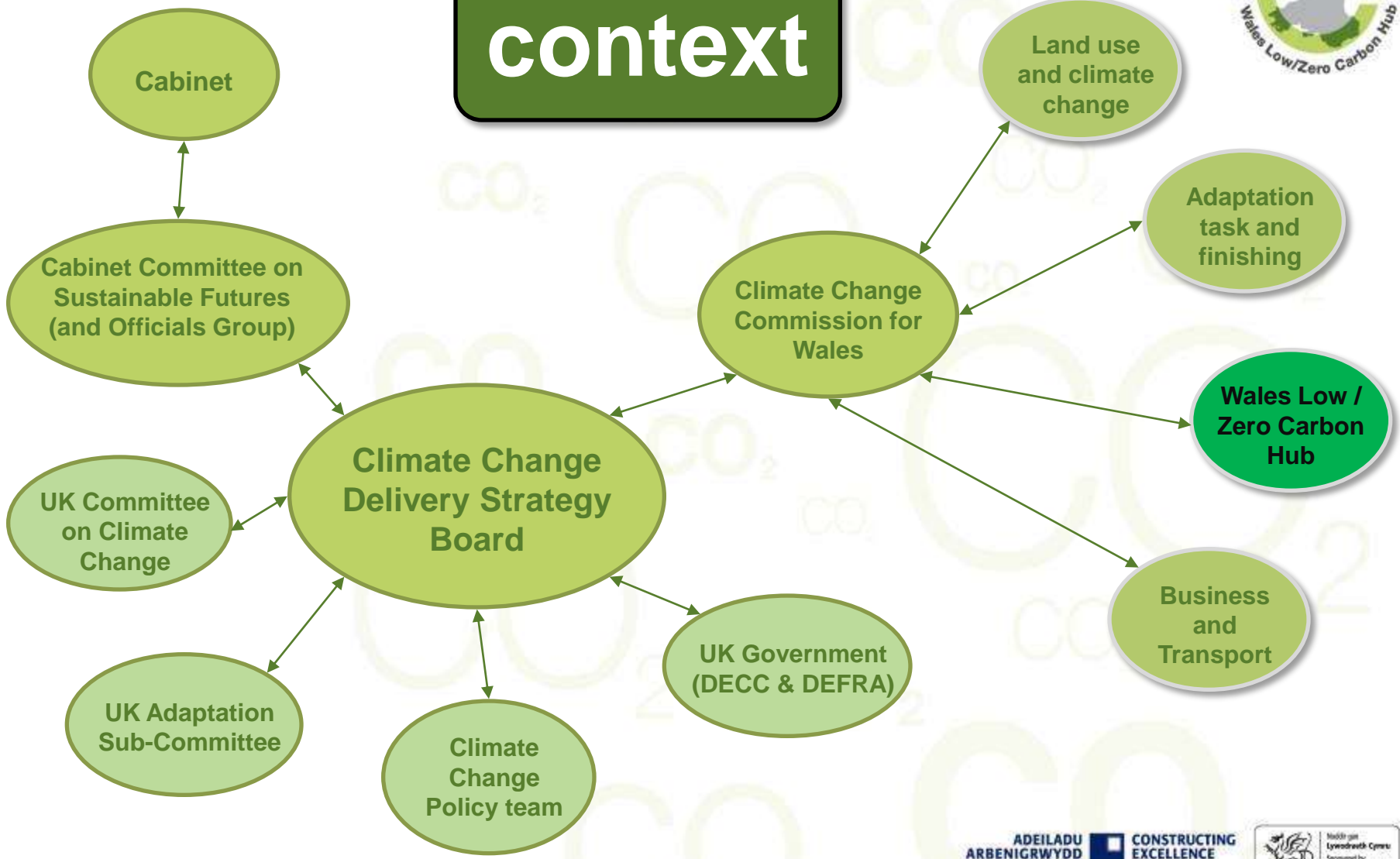


**KPIs**





# context





**The strategic aim** of the hub is to:  
**‘act as a dissemination mechanism to stakeholders and a source of advice to Welsh Ministers over activities and actions needed to achieve the aspiration of zero carbon new build and the contribution to be made by buildings that will help to deliver the 3% annual target to cut greenhouse gas emissions’**

# structure



## Targets

**Zero Carbon Emissions from new buildings from 2011**  
**Reduce Greenhouse Gas emissions by 3% a year from 2011**

### Climate Change Commission in Wales

Land Use and  
Climate Change

Wales Low Zero  
Carbon Hub

The Adaptation Task  
and Finish Group

Business and  
Transport

### Devolved areas of competence

Transport | Residential | Business | Agriculture and Land Use | Waste | Public

# Wales Low Zero Carbon Hub



## Strategic Objectives

- Advise Welsh Ministers
- Raise awareness amongst stakeholders
- Disseminate best practice
- Work with existing knowledge networks and organisations
- Practical actions and policy options
- Identify gaps
- Support implementation of building regs



## Workstreams

1. Residential New Build
2. Residential Existing Buildings
3. Non Domestic Buildings
4. Sustainable Living
5. Skills and Training



**Chris Jofeh, Chairman**

**Sally Sudworth, Director**

**François Samuel, WG Observer**

**Sarah-Jane Davies, WG Observer**

**Milica Kitson, CE Wales**

**Paul Wong, Industry rep**

**Andy Sutton, Industry rep**

**X 5 Workstream Leaders**

**Steering  
group**

# Steering group – workstream leaders



**Colin King**, Residential New Build

**Nick Tune**, Residential Existing Buildings

**Gordon Brown**, Non Domestic Buildings

**Chris Tweed**, Sustainable Living

**Wyn Prichard/ Chris Hughes**, Skills and Training





# Colin King,

## Residential New Build



**Nick Tune**

# Residential Existing Buildings

# Non Domestic Buildings workstream



## Gordon Brown - MCIOB CEnv

- Owner & Director GBSPM Ltd
- 20 years' experience on site as Agent, Chief Engineer & Project Manager
- Cardiff Centre Chair and Sustainability Ambassador for the CIOB

- Looking to provide clear information back to the industry through highlighting elements that work and also what doesn't.
- Returning to some projects and monitoring their actual effectiveness.
- Looking at the “Site carbon manager” initiative from the BRE
- Targeting the other end also with the clients and FM bodies.



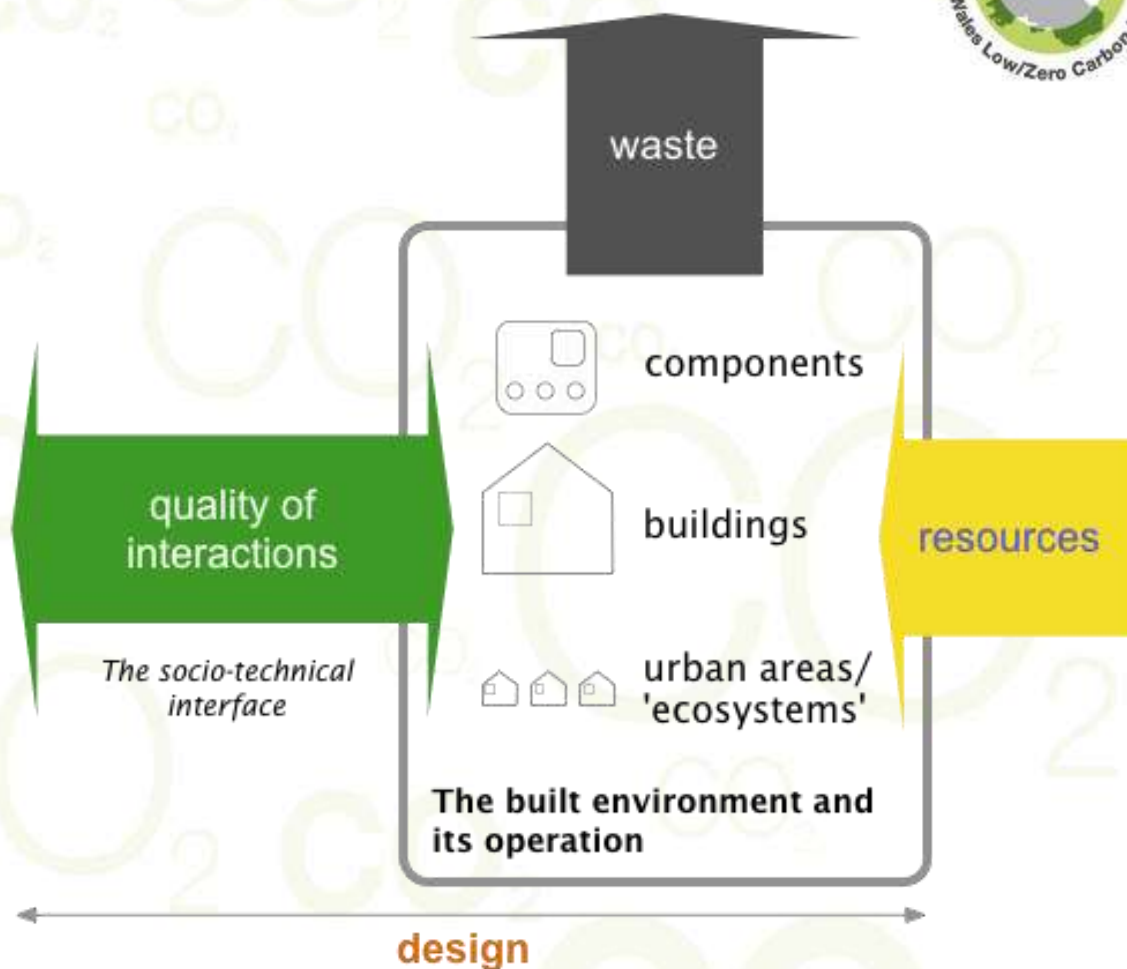
**Chris Tweed**

**Sustainable Living**

# LZCH Wales Sustainable Living



People—their needs and wants





# Wyn Prichard

## Skills and Training