

**Non-domestic
building energy certification
and the EU Directive:
AN INTRODUCTION**

Bill Bordass

WILLIAM BORDASS ASSOCIATES

and the

Usable Buildings Trust

www.usablebuildings.co.uk

WHAT IS EU ENERGY CERTIFICATION FOR?

- **BETTER STANDARDS**

Not all EU countries have a coherent set of regulations which cover all the requirements.

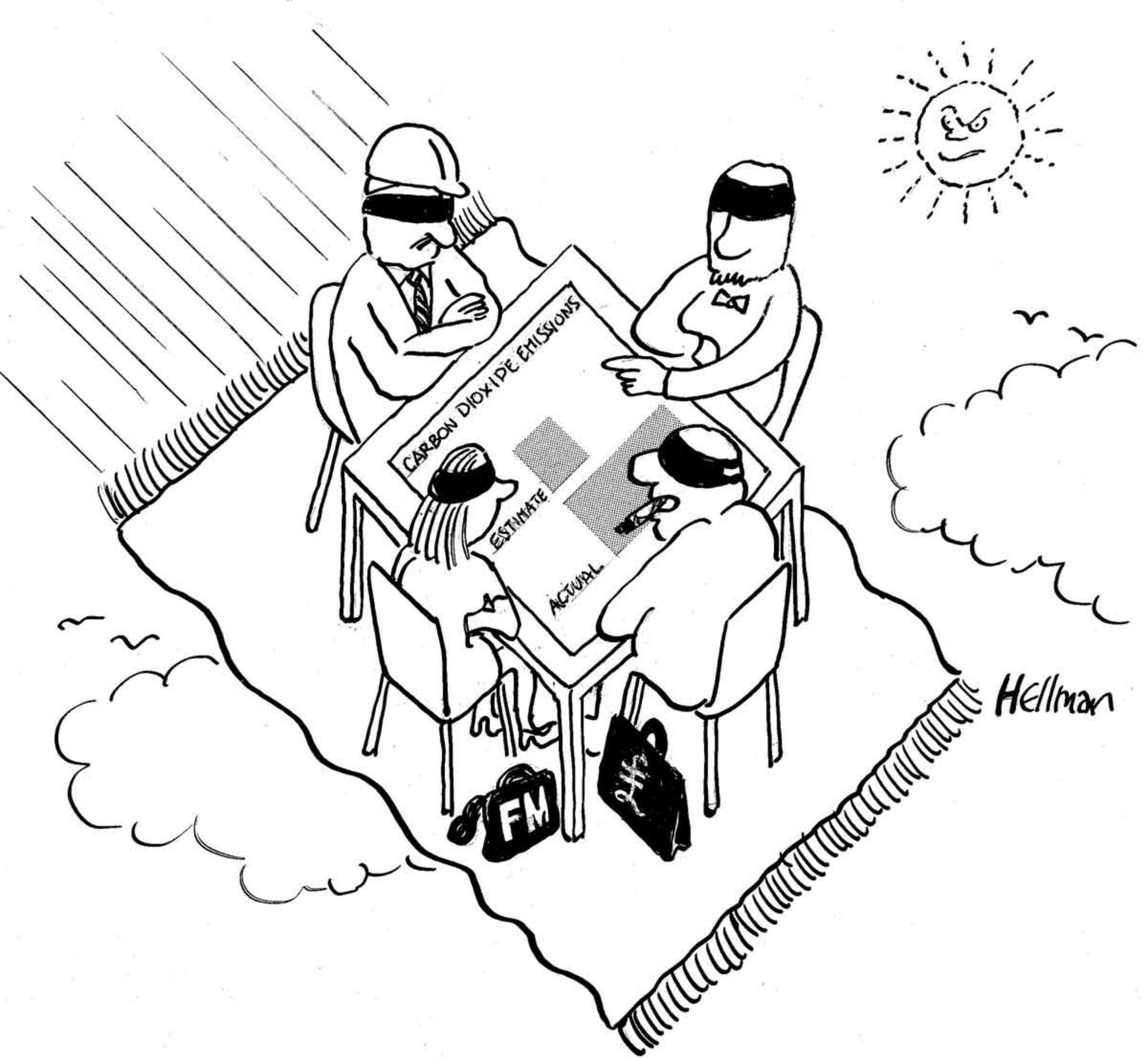
- **A MARKET DRIVER**

Energy certificates to be available at the point of sale or rental to influence customer choice.

- **PUBLIC DISPLAY (in some buildings)**

Everybody can see what the performance is.

BUT ultimately the main purpose is to get measures identified and done!



CARBON DIOXIDE EMISSIONS

ESTIMATE

ACTUAL

Hellman

The EU Energy Performance of Buildings Directive (EPBD)

CERTIFICATES ARE NEEDED

- **When buildings are completed or renovated**
ODPM proposes integration into Building Regulations
ODPM suggests a national calculation tool (NCT) for simpler nondomestic buildings and accreditation of commercial simulation packages for complex ones.
- **When buildings are sold or let**
ODPM proposals are being developed
- **For prominent display in public buildings**
Starting with display in public authority buildings frequently visited by public. May use EPLabel method.



WHAT DOES A CERTIFICATE NEED TO SHOW?

- **Indicator of energy performance**
Which may include a CO₂ emissions indicator
This needs suitable methodologies to calculate
- **Comparison with standards or benchmarks**
ODPM propose imposing standards for new+alteration work via Building Regs. Otherwise for info only.
- **Recommendations for energy-saving measures**
which are cost-effective and don't compromise quality of the indoor environment (e.g. IAQ and overheating risk).
- **Valid for a maximum of ten years**
But the market may start to want more up-to-date ones.

THREE MAIN ROUTES TO CERTIFICATION

- **CALCULATION AND MODELLING**

*Best where good design data is available
e.g. for Building Regulations*

- **ACTUAL ENERGY USE**

*Best for occupied buildings
Potential to normalise for standard use.*

- **FEATURES LISTS**

*Best where neither design nor actual is known
Can be used directly, or to calibrate models*

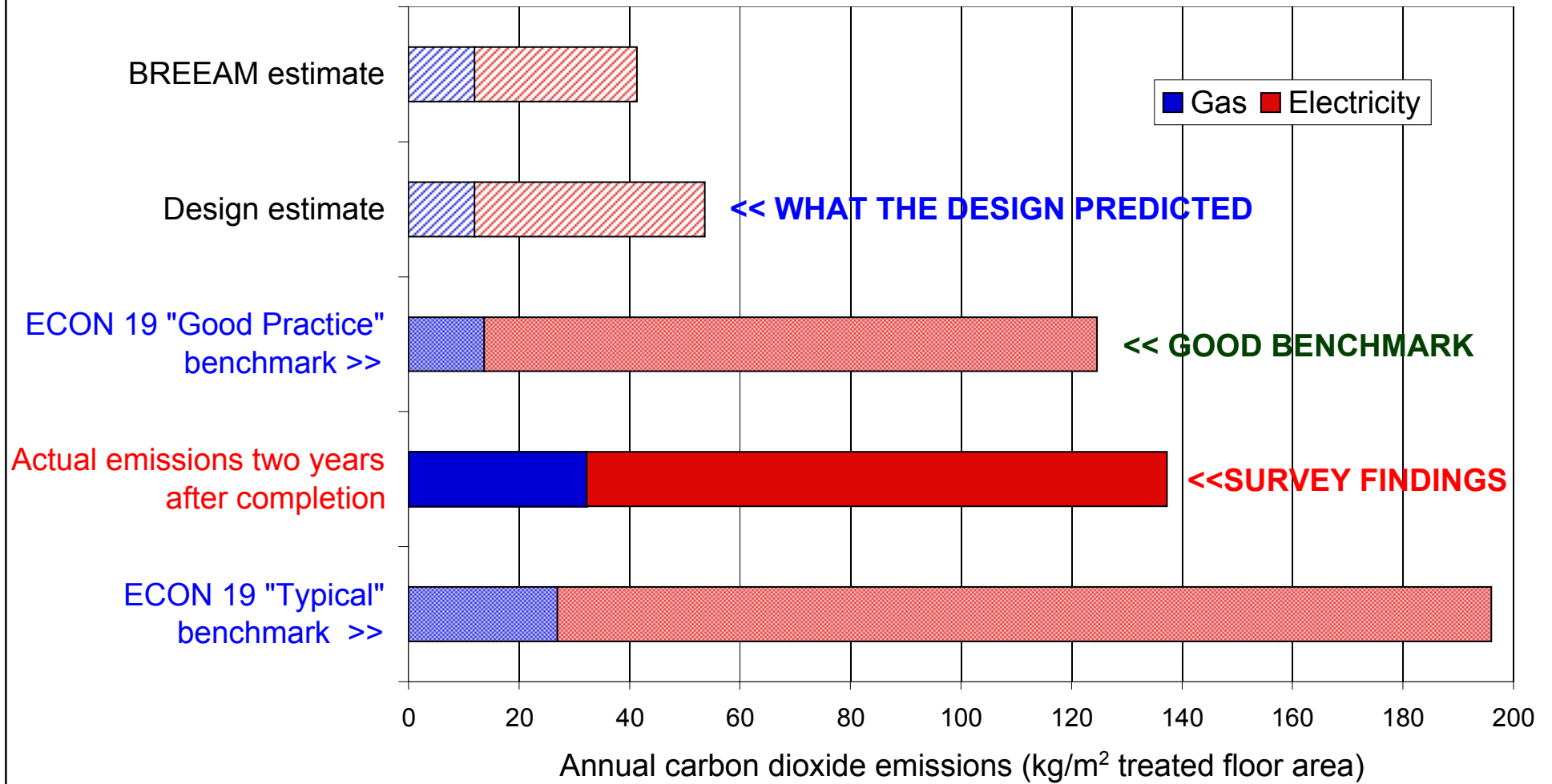
Need compatibility between all three

TWO TYPES OF RATING BEING CONSIDERED

- **ASSET RATING** for market transparency
*Usually based on calculation for standard occupancy.
Best for use at the point of completion, sale or rental of
space. Takes account of what is actually built.
[until then it is a provisional “Design Rating”].
Fully integrated with Building Regulations requirements.*
- **OPERATIONAL RATING** for display
*Based on actual energy use for actual occupancy.
For buildings in use. Takes account of occupancy etc.
Can include assessment of management effectiveness.
ODPM may also require 3 years after practical completion.*

CAN WE JOIN THEM UP?

Annual carbon dioxide emissions from operational energy use in an environmental award-winning head office building complex in England



GETTING OPERATIONAL RATINGS TO WORK

- **A GRADUATED RESPONSE**

Don't do more work than is necessary!

- **IMPROVE DATA AVAILABILITY**

*Pull in quality assured data where possible.
Make data quickly accessible (especially building type, area and energy use by fuel).
Use professional sign-off for uncertainties.*

- **HAVE USER-FRIENDLY SOFTWARE**

Possibly with web-based certification.

Should OFGEM require utility suppliers to make 365-day energy use figures available to assessors?

WHAT MIGHT A CERTIFICATE LOOK LIKE?

1 HEADLINE INFORMATION

Letter grade (like white goods), plus critical supplementary details.

2 LIST OF RECOMMENDED MEASURES


Both investment and management measures.

3 SUPPORTING INFORMATION

Both for Asset and Operational Ratings.

***AS A SPECULATION, HOW ABOUT
THE FOLLOWING IDEA ... ?***

Energy Certificate

Building Energy Performance >		As built:	In use:		
Certificate type	FULL	Asset Rating	Operational Rating		
Building Type	Office				
Whole or part of building	Whole building				
Very energy efficient		B	D		
A					
B					
C					
D					
E					
F					
G		Calculated	Actual		
Not energy efficient					
Asset rating method:	UK National Standard 2004				
Operational rating method:	UK Office Tailored Benchmarks 2002				
Units used:	kg CO ₂ per sq m of net area per annum >			48	83
Occupancy level	Square metres net lettable area per person			14	12
Equipment heat gain level	Watts per square metre net			12	12
Weekly occupancy hours	Hours per week			55	58
Heating performance ratings				ABCDEFG	ABCDEFG
HVAC performance ratings (cooling, fans and pumps)				ABCDEFG	ABCDEFG
Lighting performance ratings		ABCDEFG	ABCDEFG		
Management rating (for in-use performance only)			ABCDEF G		
Internal Environmental Quality			Not assessed		
Risk level			Not assessed		
Further information can be found in the Energy Log Book					
GB 2004		 Directive 2002/91/EC			

Certifying organisation Street PO Box City Contact Tel email	Building name Organisation Street City Contact Tel email
--	---

Energy Certificate

Building Energy Performance >		As built:	In use:
Certificate type	FULL	Asset Rating	Operational Rating
Building Type	Office		
Whole or part of building	Whole building		
<i>Very energy efficient</i>			
A			
B			
C			
D			
E			
F			
G			
<i>Not energy efficient</i>			
Asset rating method:	UK National Standard 2004	Calculated	Actual
Operational rating method:	UK Office Tailored Benchmarks 2002	48	83
Units used:	kg CO ₂ per sq m of net area per annum >		

		Calculated	Actual
Asset rating method:	UK National Standard 2004	48	83
Operational rating method:	UK Office Tailored Benchmarks 2002		
Units used:	kg CO₂ per sq m of net area per annum >		
Occupancy level	Square metres net lettable area per person	14	12
Equipment heat gain level	Watts per square metre net	12	12
Weekly occupancy hours	Hours per week	55	58
Heating performance ratings		AB C DEFG	AB C DEFG
HVAC performance ratings (<i>cooling, fans and pumps</i>)		AB C DEFG	AB C DEFG
Lighting performance ratings		A BCDEFG	A BCDEFG
Management rating (<i>for in-use performance only</i>)			ABCDEF G
Internal Environmental Quality			Not assessed
Risk level			Not assessed

Further information can be found in the Energy Log Book

GB 2004



Directive 2002/91/EC

WHAT NEXT?

- ODPM Consultation ends 22 October - *document+response form* www.odpm.gov.uk
- EPBD must be transposed into national law by 4 January 2006 (*Scotland & Northern Ireland may well follow procedures similar to ODPM*).
- The only allowable grounds for an extension of time are not having enough trained assessors.
- CEN is developing draft standards (PrENs) to help underpin calculations by the end of 2004.
- There is a lot of work to do and devil in the detail (e.g. landlord/tenant/manager splits).

SOME QUESTIONS

- Will building energy certification help to bring about the “step change” in energy and carbon efficiency that the Energy White Paper sought?
- Have we got sufficient time to set up an effective certification system; or is it too risky? Should the UK apply for an extension of time and make haste slowly?
- Should we test a voluntary certification and reporting system in commercial buildings so we can debug the methods and develop confidence?
- Will operational ratings wake up occupiers to the potential for better fitout, equipment and management?
- What other measures should we be thinking about?