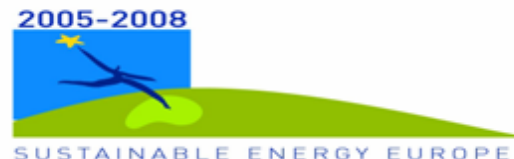


Successful Biomass Projects in Yorkshire

Dick Bradford C.Eng., FCIBSE.

Principal Designer (Building Services) and Energy Engineer

Barnsley Metropolitan Borough Council



Barnsley MBC's track record in conservation

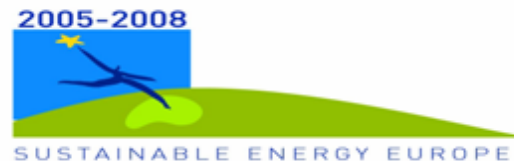
- In 1986 the Council adopted an 'Energy Efficiency and Conservation Policy' with a target of reducing consumption by 15% in five years.
- Achieved 20% in four years.
- So by 1990 (base year for future Government savings targets) BMBC had already made significant headway.
- Would the task to make further significant savings now be harder?

Barnsley MBC's track record in conservation

- No! not using a structured approach.
- By adopting emerging technologies - BMES Controls, radiant heating solutions instead of convective, heat exchangers in ventilation systems etc.
- 20% target for 2010 was achieved during 2001.
- 40% target for 2020 was achieved during 2005.
- Now only the 60% target for 2050 remains.
- **And that is achievable within this decade !**

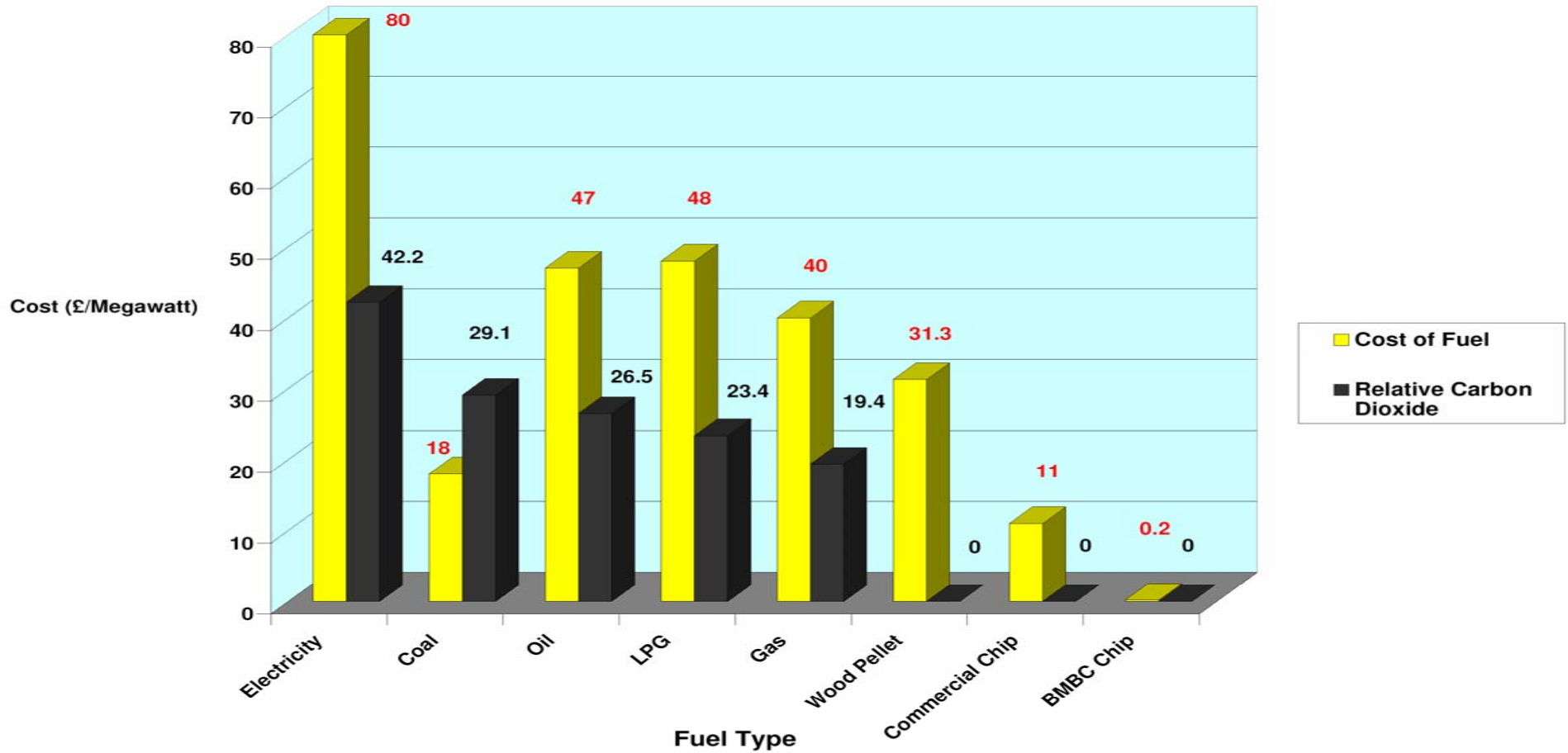
HOW ?

By Adopting Biomass Technology !



Fossil Fuels – The Legacy

RELATIONSHIP BETWEEN FUEL, COSTS AND CARBON CONTENTS



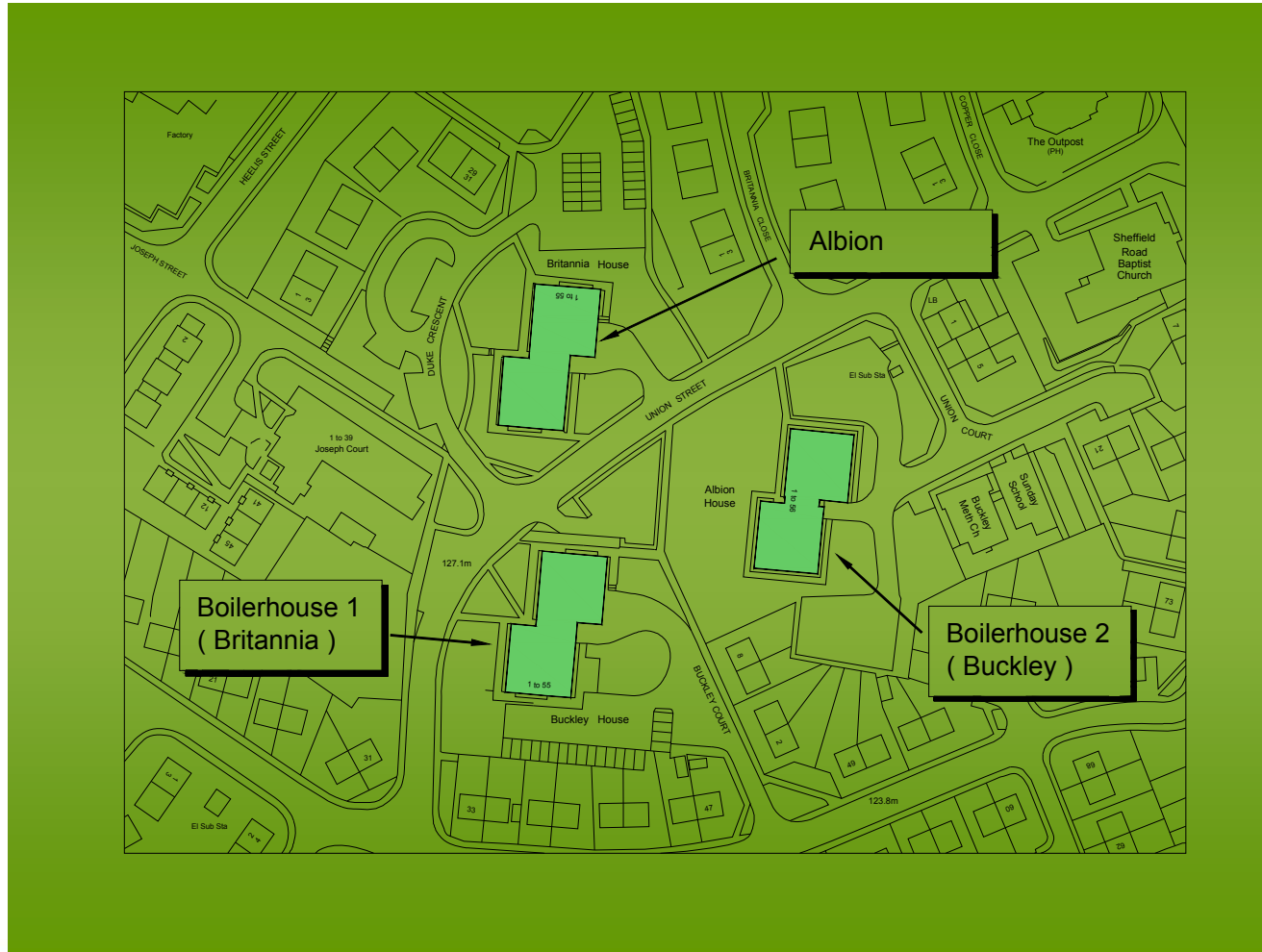
Barnsley's approach to the new technology

'Two pronged attack'

- New-build Installations and major refurbishments - wood-chip using boilers designed to burn it.
- Also targeted existing solid fuel plant – trial conversion to wood pellet.
- **BMBC became the first local authority in the country to adopt a biomass fuel heating policy.**

First wood-chip firing installation

Sheffield Road Flats



Britannia House – before



Britannia House – after



Britannia House – 320 kW boiler



Britannia House – 150 kW boiler



Britannia House – new wood store



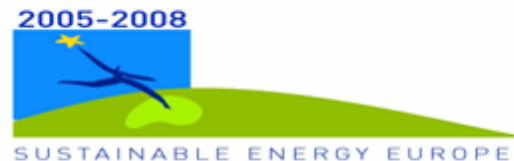
Britannia House – new wood store



Tenant Controls & Heat Meter



Other Installations Being Undertaken

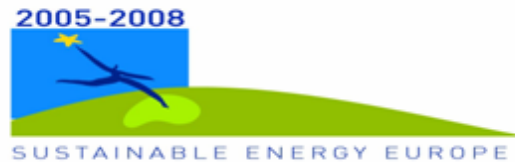
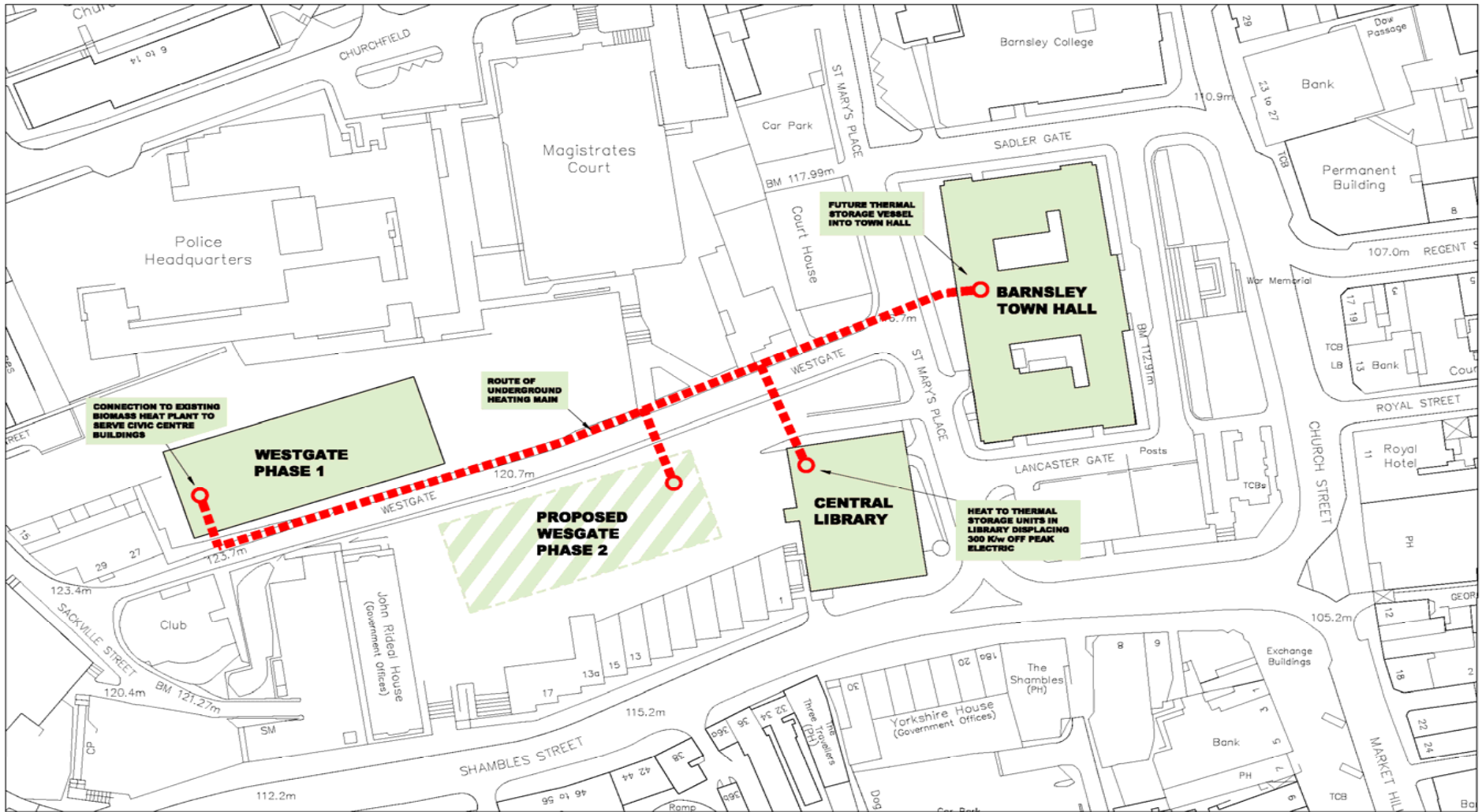


Westgate Plaza 1- new HQ building

- 500 kW Wood Chip boiler capable of dealing with both phases of the development + service Town Hall and Central Library via accumulator vessels at night.



PROPOSED CIVIC CENTRE BIOMASS HEATING SCHEME



2007 YORKSHIRE & HUMBER
MICROGENERATION
AWARDS

Westgate Plaza 1- new HQ building



Westgate Plaza 1- new HQ building



First Fuel Delivery



Financial Case – Westgate Plaza One

Fuel	Capital Cost
Wood	£150,000
Natural Gas	£18,000

FINANCIAL CASE - WESTGATE PLAZA ONE

FUEL	CAPITAL COST	ANNUAL FUEL USE	UNIT COST	ANNUAL FUEL COST	ANNUAL CCL	25 YEAR COST
WOOD	£ 150,000	350 TONNES	35 £/TONNE	£ 12,000	NIL	£ 450,000
NATURAL GAS	£ 18,000	1,400 MWh	3.25 p/KWh	£ 45,000	£ 2,100	£ 1,208,000

↑
**USUAL INVESTMENT
DECISION MAKING POINT**

↑
**'LIFETIME COST' REVERSES
INITIAL DECISION**

Digital Media Centre

- 150 kW wood pellet boiler supplying heat to almost 100 separate 'high-tech' units plus communal areas, toilets etc.



Smithies Lane Depot



Smithies Lane Depot

- 500 kW wood chip boiler now being installed with oil fired back-up.



Looking inward – fuel supply issues

- This site is also the receiving station for arboreal material gathered from around the Borough which previously had little or no material worth.
- Now it will be processed into wood-chip fuel to burn on various installations current and planned.

Wood pile awaiting chipping



Looking inward – fuel supply issues



Store operational and holding approx. 200 tonnes of chipped material

First wood pellet firing on coal boilers

Kirk Balk Secondary School



Kirk Balk Secondary School



First wood pellet fired Boiler

Penistone Branch Library – 90 kW



And that's only the start – there are many other sites being identified

PROGRESSIVE BIOMASS INSTALLATIONS WITHIN BMBC

BARNESLEY MARKETS

**BSF
NEW SECONDARY SCHOOLS
'VOLUNTARY ACTION'
BARNESLEY**

ALDHAM FARM

ROYSTON LEARNING CENTRE

KING STREET FLATS

**KENDRAY YOUTH
CENTRE**

**DIGITAL MEDIA
CENTRE**

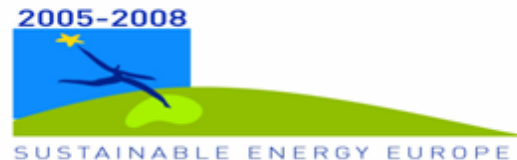
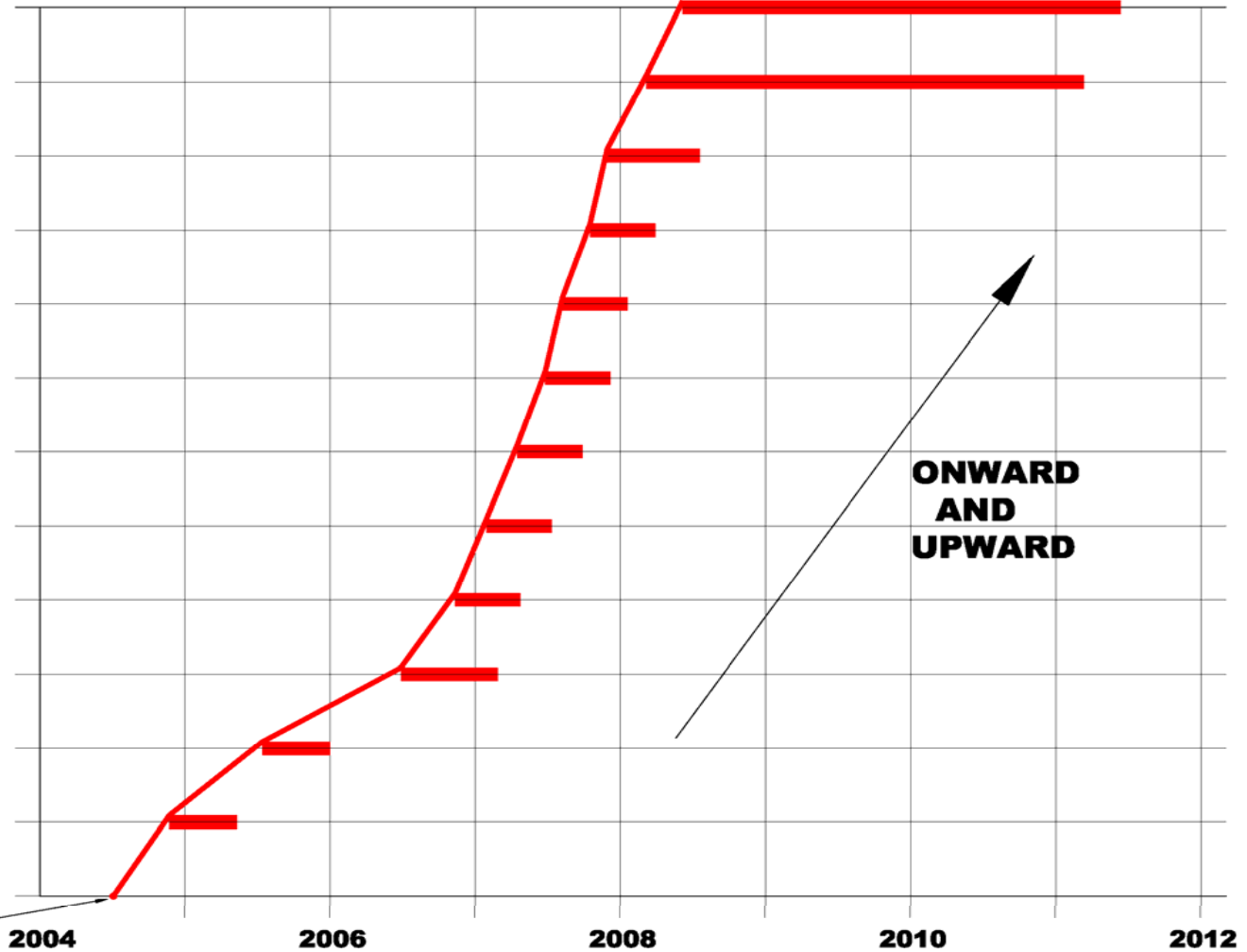
PENISTONE LIBRARY

WESTGATE

SMITHIES LANE

SHEFFIELD RD FLATS

**BIOMASS POLICY
ACCEPTED**



**2007 YORKSHIRE & HUMBER
MICROGENERATION
AWARDS**

- And why not – wood is cheaper than all other fuels.
- And there's no Climate Change Levy
- And there's little ash residue
- And the ash is phosphate which can be put on the garden
- But none of those is the biggest incentive which is...

Carbon savings potential

The Government has set Local Authorities various CO₂ target savings from 1990 levels by the following target dates -

- 20% by 2010 (BMBC achieved this in 2001)
- 40% by 2020 (BMBC achieved this in 2005)
- 60% by 2050

Additional CO₂ savings needed in order to reach 2050 target = 14,000 Tonnes

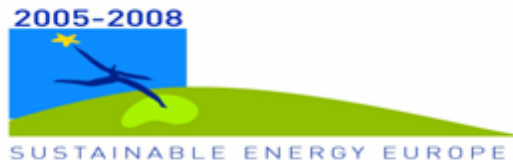
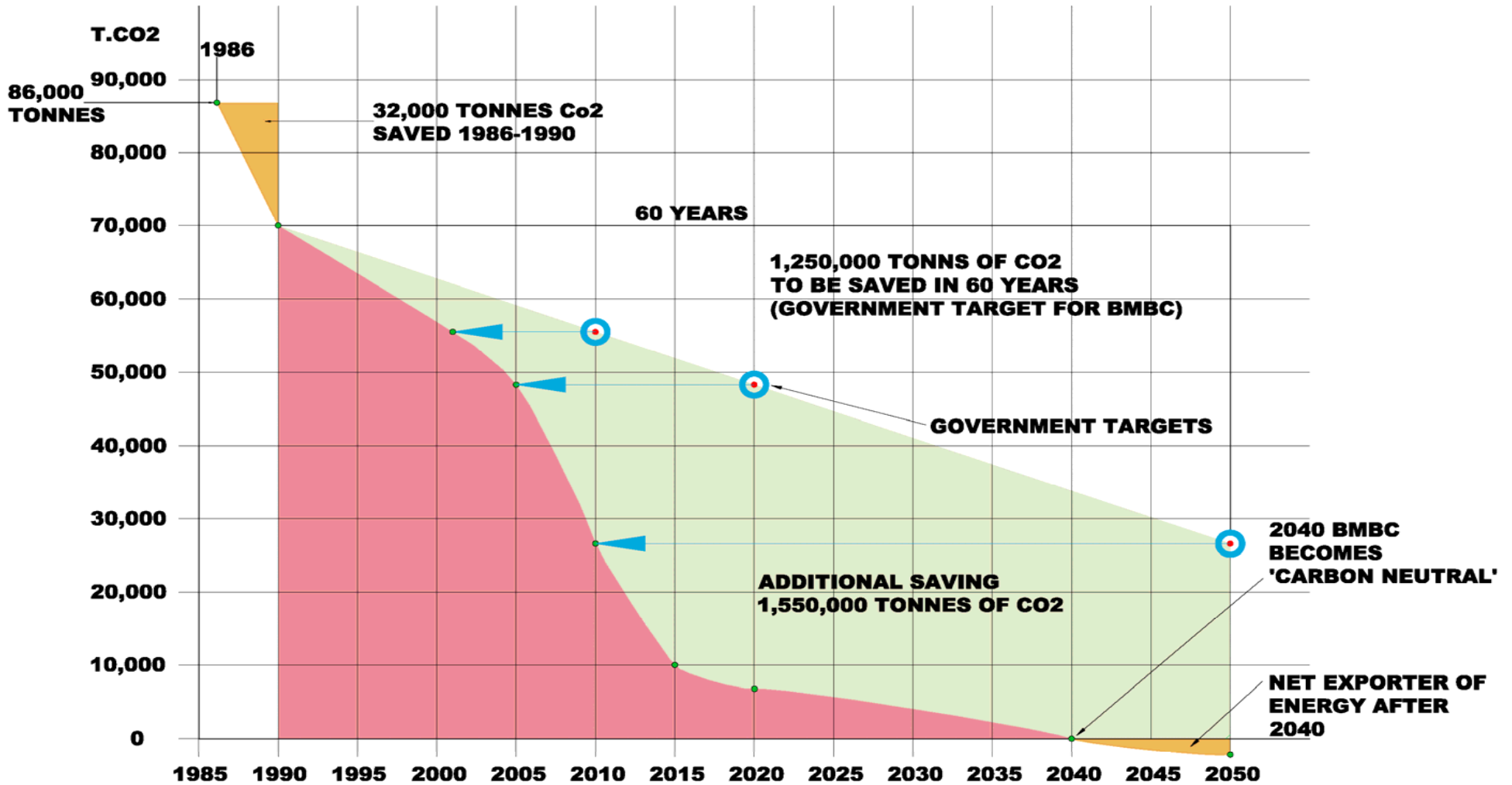
Carbon savings potential

The Council still consumes in excess of 6,500 tonnes of solid fuel in a year in 133 coal fired boilers on 66 sites.

If all that coal was converted to carbon neutral wood fuel the Council would reduce its emissions by a further 15,500 tonnes **by that single measure alone** – thus exceeding the 2050 target by a further 10%.

This means BMBC will have reduced its CO₂ emissions by 66% from 1990 levels or 76% from the 1986 levels.

BMBC'S NATIONAL LEAD IN CARBON REDUCTION STRATEGY



Nobody said Biomass was the
cheapest capital solution
but it doesn't cost the earth!!



Any Questions?