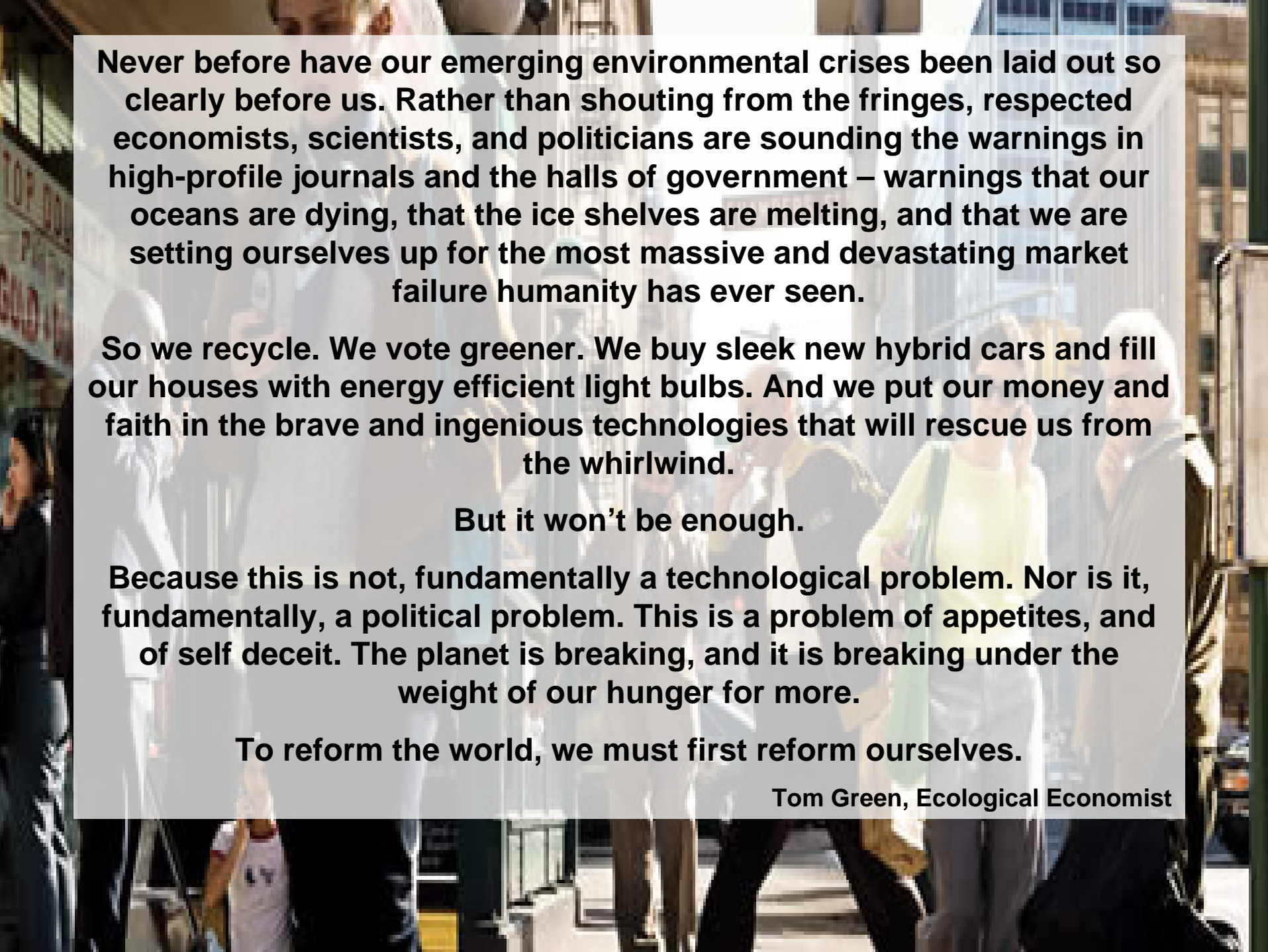




NI 186 Per Capita Carbon Dioxide Reduction: The New Carbon Challenge



Richard Davies
Director



Never before have our emerging environmental crises been laid out so clearly before us. Rather than shouting from the fringes, respected economists, scientists, and politicians are sounding the warnings in high-profile journals and the halls of government – warnings that our oceans are dying, that the ice shelves are melting, and that we are setting ourselves up for the most massive and devastating market failure humanity has ever seen.

So we recycle. We vote greener. We buy sleek new hybrid cars and fill our houses with energy efficient light bulbs. And we put our money and faith in the brave and ingenious technologies that will rescue us from the whirlwind.

But it won't be enough.

Because this is not, fundamentally a technological problem. Nor is it, fundamentally, a political problem. This is a problem of appetites, and of self deceit. The planet is breaking, and it is breaking under the weight of our hunger for more.

To reform the world, we must first reform ourselves.

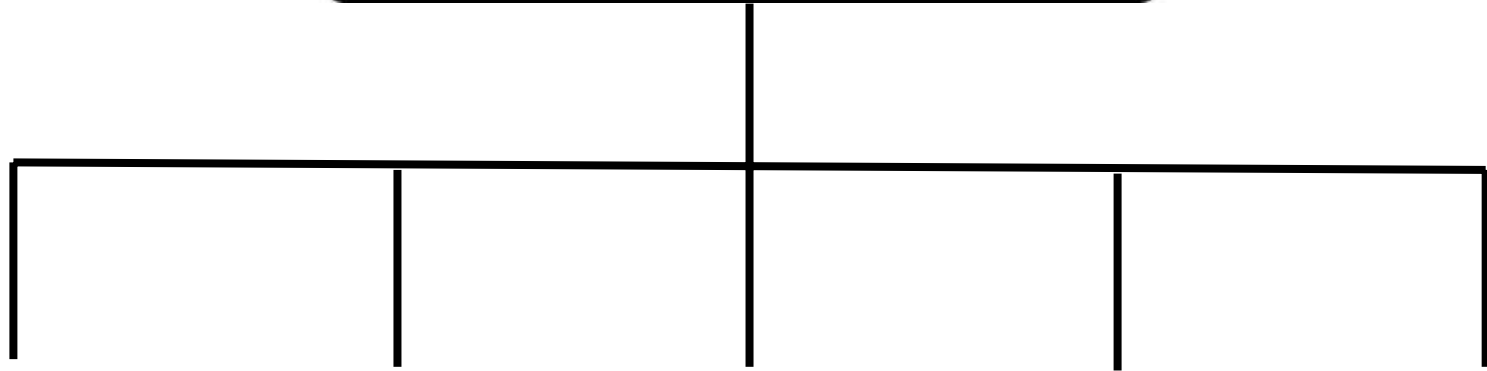
Tom Green, Ecological Economist

“[Climate change] is not another priority amongst the many that compete for local government leaders’ attention. It is now clear from the scientific evidence that it is the single priority which overrides all others, now and for the foreseeable future.”

LGA’s Climate Change Commission

Good Morning!

marches
energy agency







mea...

- > home
- > about us
- > what we do
- > case studies
- > get involved
- > projects
- > annual review
- > news

some other sites you
may like...

- > Low Carbon Communities
- > Carbon Forum
- > eco n'home
- > efficient light
- > green energy
- > Keep Shropshire Warm
- > Project Carbon

Syndicate



Search

Search

welcome

Marches Energy Agency (MEA) is one of the UK's leading sustainable energy and climate change social enterprises and a registered charity. Created in 1995 MEA strives in all of its work to "create the climate for change" and has a wealth of experience in delivering local, regional, and European projects.

Our aim is to encourage three D's - Demand reduction (using less), Decarbonisation (low carbon sources of energy) and Decentralisation (more local energy production and supply). This will help deliver on the UK's commitment to the climate change challenge, whilst helping to ensure that there is a sustainable, secure and affordable supply of energy for everyone. We aim to contribute to these goals in ways that strengthen the economic capability of the areas in which we work.

MEA has a highly qualified, creative and vibrant workforce that is focused on solutions. We seek to inspire, educate and offer practical help to individuals, private and public sector organisations to help them to firstly understand climate change and our wider energy challenges, and then to become part of the solution.

Our director, Richard Davies, is in great demand for his inspiring speeches and workshops, delivered to universities, public sector organisations and businesses, which move hearts and minds from "Why should we?" to "How can we?"



news

25/04/08

Eco Vehicles Top Trumps @ Arrive N'Drive, Rockingham Raceway, May 8th

23/04/08

Another new vacancy!

23/04/08

Families removed from 'fuel poverty' despite soaring energy prices - success of KSW project

22/04/08

Fund to re-energise community buildings.

22/04/08

Climate Change Cartoon Exhibition Comes to Shrewsbury

15/04/08

New vacancy at MEA

03/04/08

'Eco Technology Fairs' come to Ellesmere and Cleobury Mortimer

01/04/08

Shropshire shows our energy future



people still don't know nearly enough
about human induced climate change

> [what is carbon forum?](#) > [news & events](#) > [inspiration](#) > [reviews](#) > [downloads](#) > [shop](#) > [contact us](#)

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We do make a difference – one way or the other. We are responsible for the impact of our lives.
Whatever we do with whatever we have, we leave behind us a legacy for those who follow.

Stephen Covey



news

story : [Drive the Eco Vehicles Top Trumps!](#)



HOME



FUEL POVERTY



ABOUT/AIMS



DIY



ENERGY/TARIFF



ENERGY EFFICIENCY & YOU



PARTNERS



CONTACT



REFERRALS

Keep Shropshire Warm

Over 20,000 households throughout Shropshire live in "fuel poverty". Keep Shropshire Warm can help provide a way out of fuel poverty, making affordable warmth a reality for thousands of households across Shropshire.



Keep Shropshire
Warm

- Nearly 4 million households in the UK struggle to heat homes adequately
- 4 in 5 households in fuel poverty live in poorly heated and uninsulated homes
- 1 in 10 households in fuel poverty have children aged 16 or under
- Older people account for half of those in fuel poverty
- 2 in 5 households in fuel poverty have someone who has a disability or long term illness
- 1 in 4 households in fuel poverty uses a pre-payment meter because it helps them budget but they often pay more than people who pay quarterly or by direct debit

An illustration of a rural landscape. In the foreground, several white chickens with red combs are standing in a field of tall green grass. In the background, a grey silhouette of an industrial factory with several smokestacks is visible against a light blue sky with a few white clouds. The overall scene suggests a contrast between nature and industry.

Don't be a chicken sh*t... change your energy values.

Making a decision to switch to an environmentally friendly source of energy can be intimidating, but why should you even begin to reassess your energy consumption without knowing all the facts?

Renewable Energy sources take on many forms and you would be surprised to find that even chicken litter can be used as a source of fuel - costing less than conventional energy sources and for the environment long term.

www.rethinkenergy.org

Call Now: 0800 123 456

RE:think
Renewable Energy



Hold Regular Stakeholder Events?
offset the emissions and minimise the impact

- home
- reduce your own carbon emissions...
- projects
- case studies
- contact
- view cart
- Offset now!

Username: *

Password: *

Log in

- Create new account
- Request new password



Welcome to ProjectCarbon.org

ProjectCarbon.org is a carbon reduction service with a difference! We can help you reduce your own emissions of carbon dioxide and compensate for your non-reducible emissions via our unique and locally based offset scheme.

Helping you reduce your emissions - we offer tips, links and advice on reducing your own emissions.

Helping you to calculate your footprint - once you have reduced your own emissions as much as possible, you can use our unique offset service to compensate for your remaining carbon footprint (your non-reducible carbon).

Our offset scheme is unique in that the money we receive from you is spent on local climate change projects throughout the West Midlands - typically via the installation of energy efficiency measures in community buildings. All of our projects are listed on the website to ensure transparency. Your money also helps to ensure the continued success of a leading sustainable energy charity - Marches Energy Agency.

DELIVERING CARBON REDUCTIONS





About LOW CARBON COMMUNITY

Low Carbon HOMES

Low Carbon BUSINESSES

Low Carbon COMMUNITIES

Getting INVOLVED

Low Carbon NEWS

Latest News

23/04/08
Reducing 'Fuel Poverty' in
Shropshire

17/04/08
Climate Change Cartoon Exhibition
in Shrewsbury

07/04/08
New 'Green' home for Marches
Energy Agency

Low Carbon Communities

The Low Carbon Communities project is one of the most exciting low carbon schemes in the UK, acting as a pilot project for similar ventures throughout the country.

The project aims to reduce carbon dioxide emissions by 5.88% or 3820tonnes within three communities in Shropshire by April 2009, incorporating all sectors of those communities.

The project is based in Ellesmere, Cleobury Mortimer and the "Floodplain Community" – a collection of small villages and farmsteads near to Oswestry.

Marches Energy Agency in partnership with Shropshire County Council will be guiding community members through tailored energy saving plans, drawn up on an individual basis for households, businesses and community buildings. Plans involve the installation of energy efficiency measures and small scale renewable technology.

The Low Carbon Communities project has recently been put forward as a finalist in the 'Creating the Future Awards 2008'.

This is the Government's national awards scheme for the sustainable communities sector.

www.ascskills.org.uk/p




League Table

				CO ₂
Cleobury Mortimer	51	15	7	6694
Ellesmere	63	18	8	44194
Floodplain Community	39	6	8	17081

- Domestic Audits
- Business Audits
- Community Building Audits
- CO₂ - CO₂ Saving (KG)





*'We see nothing truly
till we understand it'*

John Constable 1836

Positive proof of global warming.



**18th
Century**

1900

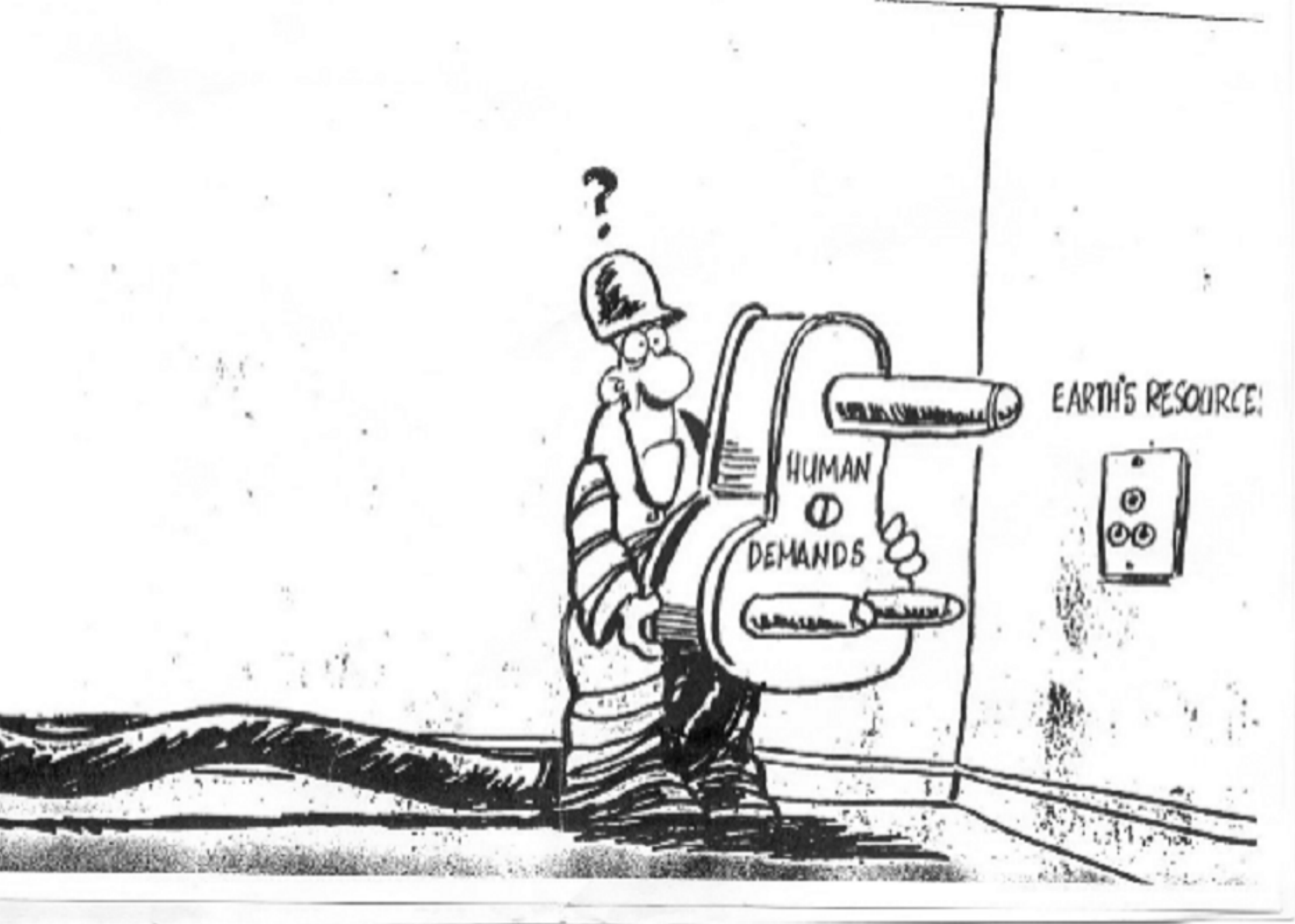
1950

1970

1980

1990

2006



"Regardless of which route we choose, the world's current predicament limits our maneuvering room. We are experiencing a step-change in the growth rate of energy demand due to population growth and economic development, and Shell estimates that after 2015 supplies of easy-to-access oil and gas will no longer keep up with demand."

Jeroen van der Veer, CEO Shell
28th January 2008







Six steps to low carbon heaven

There are 6 key steps to take in the journey to a low carbon community. This workbook is your guide through each of these steps. Tick them off here as you complete each one.

Calculate your carbon footprint



Set CO₂ reduction targets



Choose specific actions



Create a community vision



Plan out how to achieve this vision



Tell people about it and how they can help



Solihull – How big are your feet?

- Total Emissions 2005 (tonnes CO₂)

- Industry & Commercial

731,000

- Domestic

512,000

- Road Transport

684,000

- **TOTAL**

1,927,000

- Solihull per capita emissions (pop. 199,517): 9.7 tonnes

- Average UK Emissions: 7.9 tonnes

- Worse than average?

- Why?

Tonnes of carbon dioxide per capita

Local Authority	Industry & Commerce	Domestic	Transport
Solihull	3.6	2.6	3.4
South Shropshire	2.6	2.7	4.7
Woking	2.6	2.5	1.6

Source: DEFRA/AEA Technology. Local & Regional estimates by end user, summary 2005.



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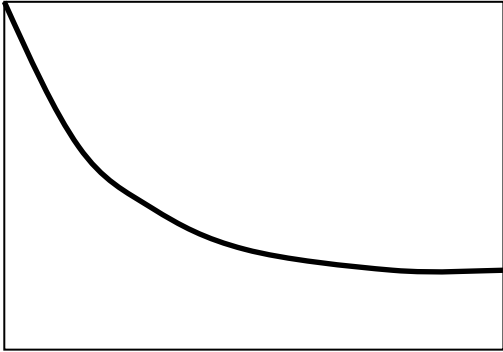
Plan out how to achieve this vision



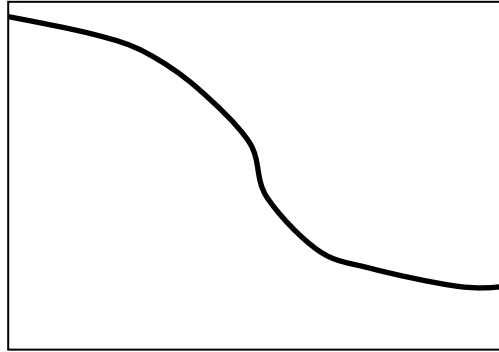
Tell people about it and how they can help



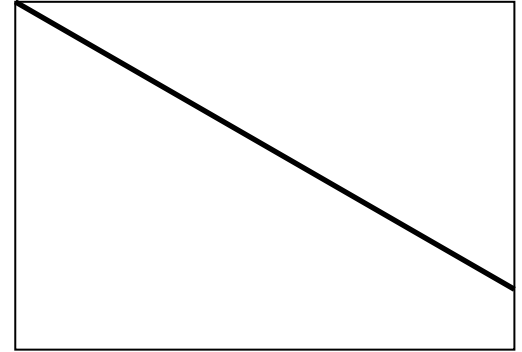
Reduction Curve?



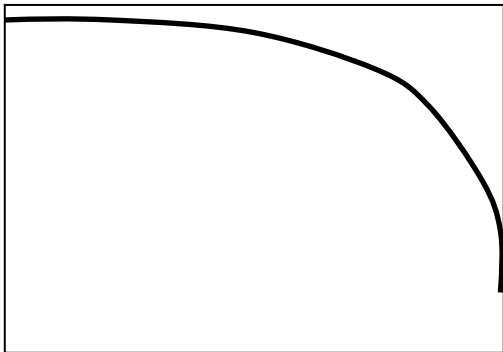
Low hanging fruit



Political space



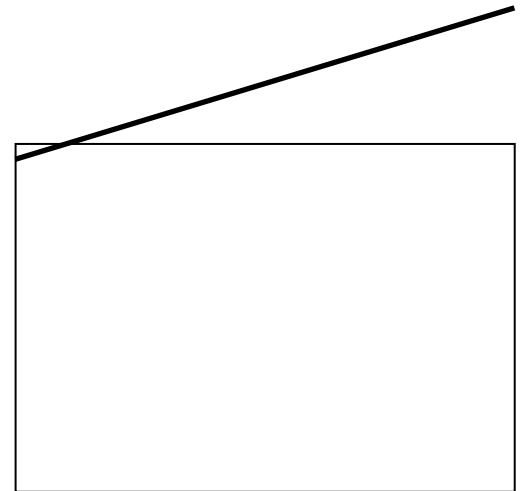
Fair share



Future Techno

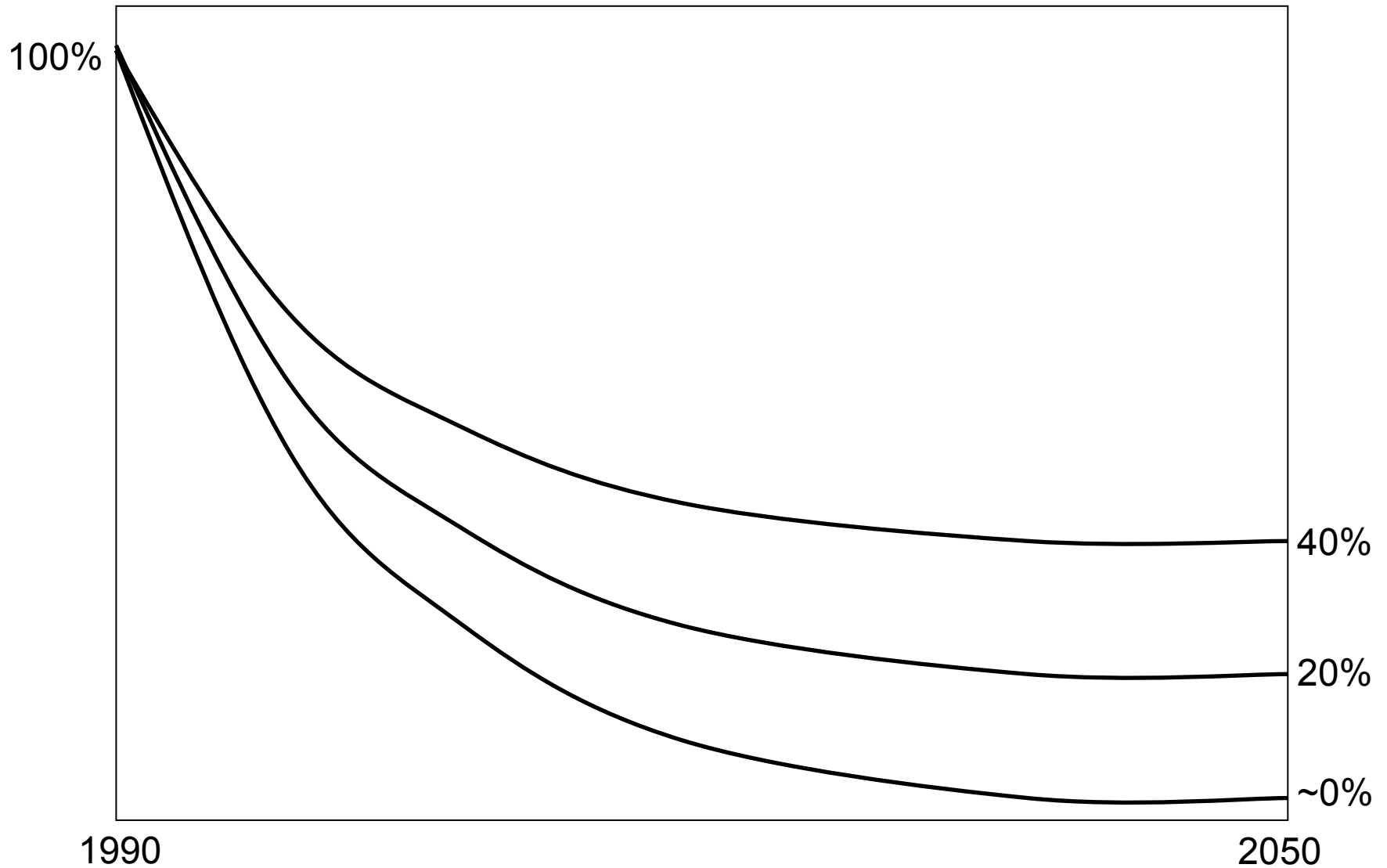


Collapse



Oops! Too much shopping.....

Low Hanging Fruit? 2, 4 or 6%



Solihull's first year target

- To reduce CO₂ emissions by 2% per annum

= 38,540 t CO₂



Estimated savings for Solihull??

Year	2010	2020
Business savings	4%	7%
Road Transport savings (all measures)	4%	5%
Domestic savings (all measures)	4%	9%
Savings in 2010 from all measures	12%	22%
National measures	7%	9%
National measures with LA influence	4%	11%
Local measures	1%	1%
Uncertainty range +/-% for all measures	2%	3%



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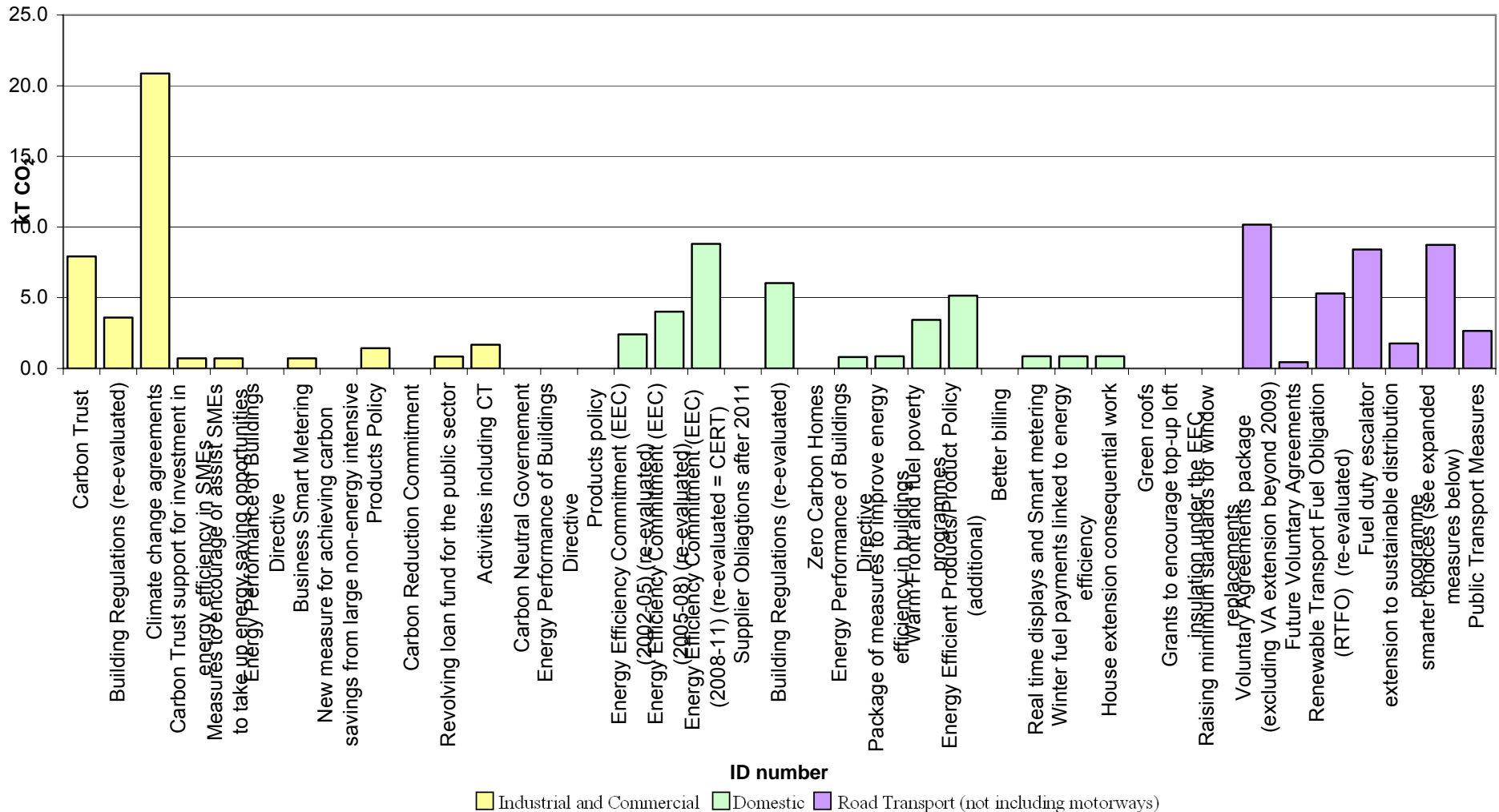
Plan out how to achieve this vision



Tell people about it and how they can help



Which might be the most effective measures in Solihull?

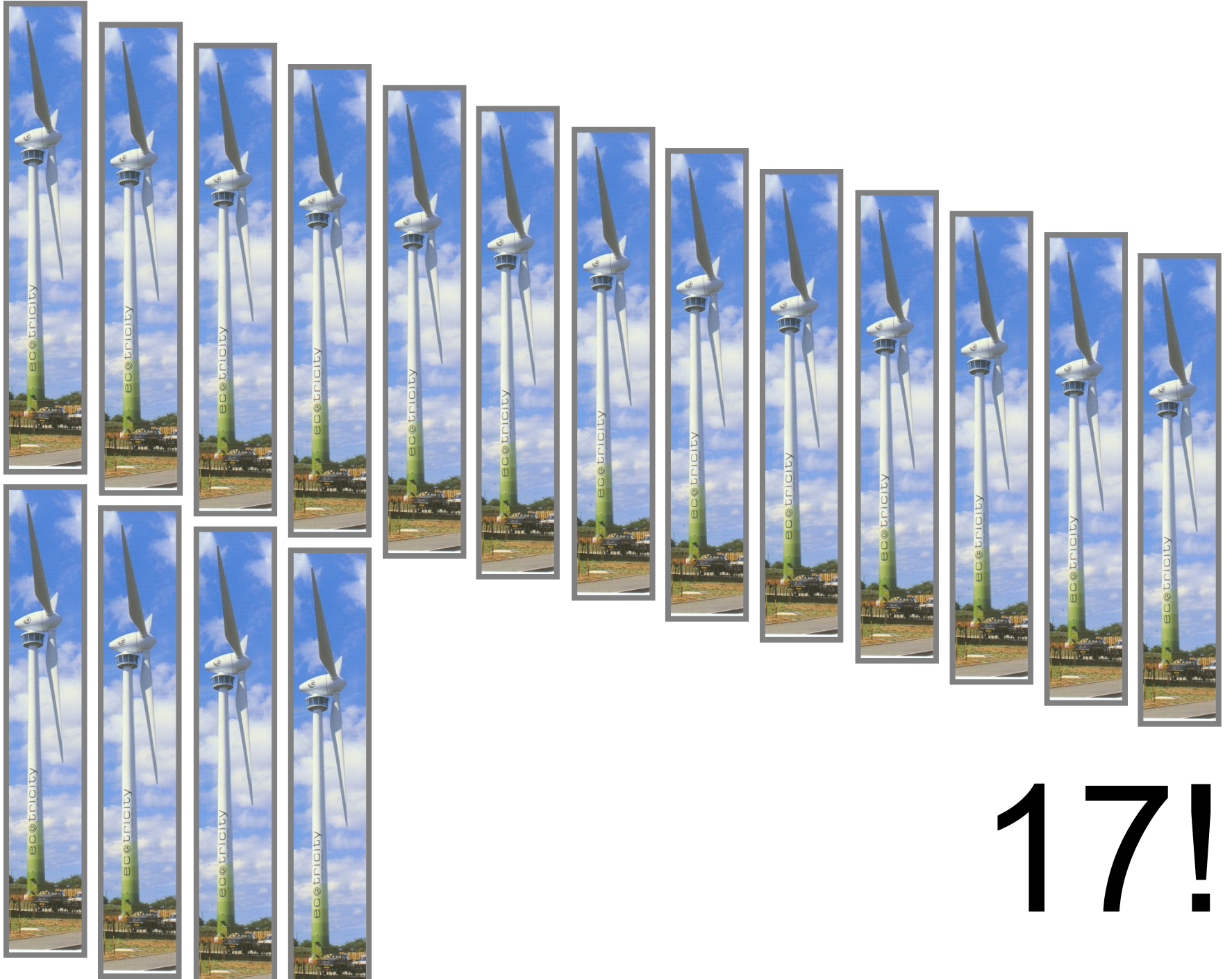


Big Wind

- One 2 MW wind turbine installed in a decent site for wind speed.....
 - $2,000 \text{ kW} \times 8,760 \text{ hours/year} \times 0.00043 \text{ tonnes CO}_2/\text{kWh} \times 0.3 \text{ load factor} =$

**2,260 tonnes
CO₂/year**





17!

Small Wind

- One 6 kW wind turbine installed on a 9m mast.....
 - 6 kW x 8,760 hours/year x 0.00043 tonnes CO₂/kWh x 0.22 load factor =

**5 tonnes
CO₂/year**



7,708 turbines

- 1 in every 10 of houses with a 6kW wind turbine.....!



Solar Hot Water Heating

- A domestic scale solar hot water heating (SHWH) system will save around 1,400 kWh of water heating fuel per year. Let's assume that this is mains gas.....
 - 1,400 kWh x
0.00019 tonnes CO₂/kWh =

**0.27 tonnes
CO₂/year**



143,000! (only 80,930 houses)

Photovoltaics

- A domestic scale (1kW_p) photovoltaic system will generate around 750 kWh of electricity per year.
 - $750 \text{ kWh} \times 0.00043 \text{ tonnes CO}_2/\text{kWh} =$

**0.32 tonnes
CO₂/year**



Help: Not all homes are suitable for PV. Assume that 33% of homes in Mansfield can be fitted with PV

120,000! (still only 80,930 houses)

Cavity Wall Insulation

- Cavity Wall insulation saves (average) **0.634 tonnes CO₂ / year** (Ref: CERT)
- 39.1% of UK homes have an unfilled cavity (Ref: Shorrocks & Utley 2004)



61,000!
**(only c. 15,000 unfilled in
Solihull)**

Domestic Lighting

- The average UK home has 25 lights fittings (Market Transformation Programme (MTP) 2005)
- Assume that this means 25 light bulbs
- The average UK home has 3 low energy bulbs (MTP 2005)
- One low energy bulb will save **0.0081 tonnes CO₂/annum**



216,000 homes worth!

Loft Insulation

- Loft top-up saves (average)
0.313 tonnes CO₂ / year (Ref: CERT)
- 43% of accessible lofts have less than 100mm of insulation (Shorrocks & Utley 2004)



123,000!

(only c. 16,600 sub-standard
lofts in Solihull)



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Calculate your carbon footprint

Set CO₂ reduction targets

Choose specific actions

Create a community vision

Plan out how to achieve this vision

Tell people about it and how they can help





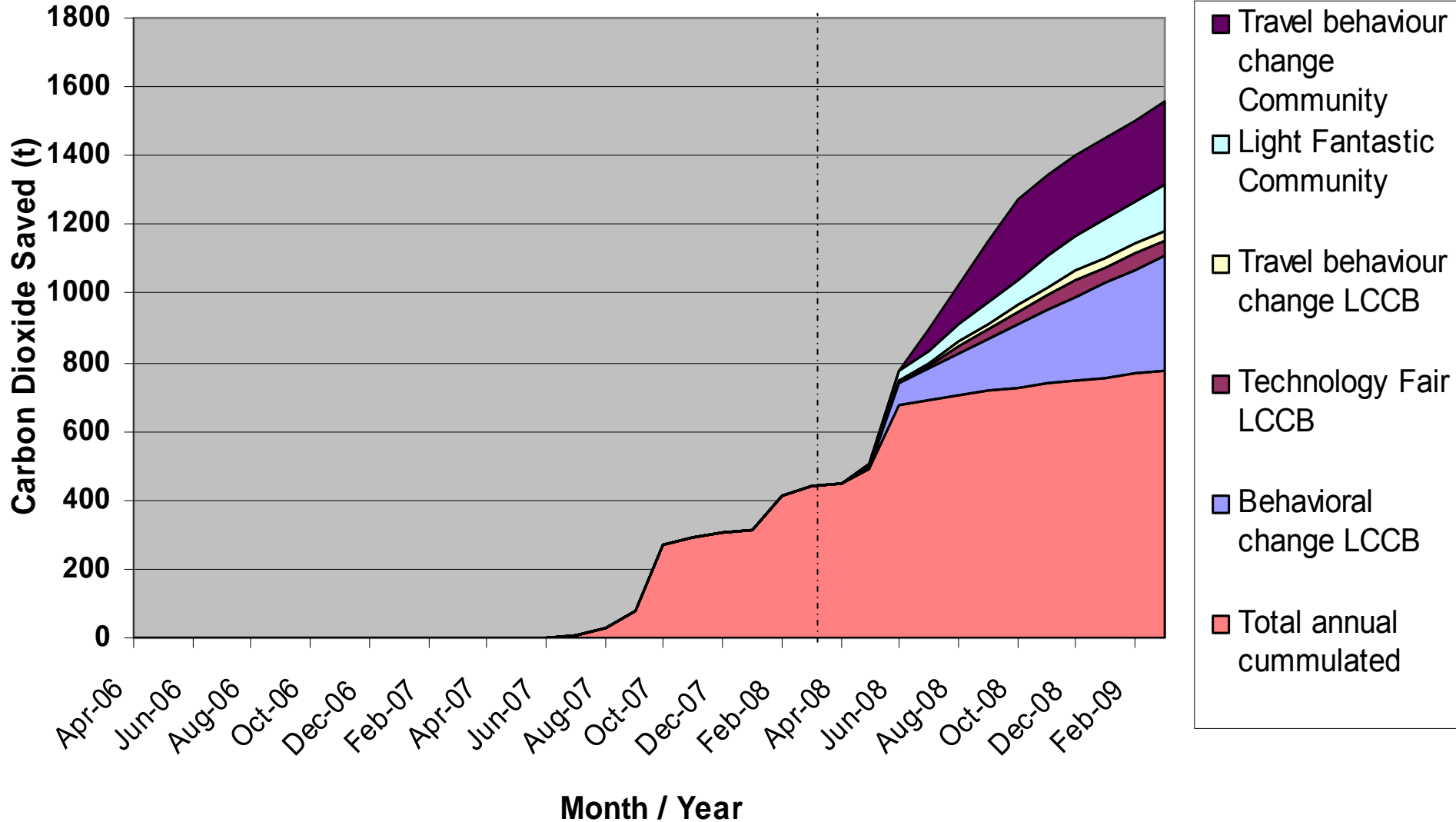
Our target

To reduce CO₂ emissions in three communities
in Shropshire by 5.88% by April 2009

3,820 t CO₂



Total Annual CO₂ Savings



CASE STUDY: Cleobury Mortimer Golf Club, Cleobury Mortimer, Shropshire



Cleobury Mortimer Golf Club have already made yearly savings of 1.5 tonnes of carbon dioxide through fitting out their club buildings with low energy bulbs. They are going to save a further tonne of carbon dioxide each year through installing a solar hot water system. This system will heat water for golfers' showers at the club.

CARBON DIOXIDE SAVINGS

	Annual CO ₂ savings	% of total annual CO ₂	Lifetime CO ₂ savings*
Lighting	1.5t	2%	7.1t
Solar hot water	1t	1.3%	25t

*This assumes an average lifetime of 4.2 years for the lighting and 25 years for the solar hot water.

FINANCIAL SAVINGS

	Annual cost savings	Payback period (approx.)
Lighting	£211	11 months
Solar hot water	£325	11 years

A third of the cost of the solar hot water system is being funded by the Rural Regeneration Zone, with additional funding from the Low Carbon Buildings Programme.



CASE STUDY: Towards Carbon Neutrality, Long Mynd Hotel, Shropshire.



The Long Mynd Hotel in Church Stretton, Shropshire, has switched over 200 light bulbs to low energy bulbs saving a massive £2,250 a year on electricity bills. Additional savings are being made by the hotel's use of a heat exchanger, maximising the efficiency of its swimming pool and bringing it close to good practice for electricity consumption.

However, plans are underway to move further towards carbon neutrality by installing a wood chip boiler. This will potentially save up to 155 tonnes of carbon dioxide each year (equivalent to over 10 household's carbon footprints).

CARBON DIOXIDE SAVINGS

	Annual CO ₂ savings	% of total annual CO ₂	Lifetime CO ₂ savings*
Lighting	10.8 tonnes	3%	36 tonnes

*This assumes an average lifetime of 3 years for the lighting and years for the solar hot water.

FINANCIAL SAVINGS

	Annual cost savings	Payback period (approx.)
Lighting	£2,250	6 months

The hotel's energy audit service and low energy bulbs were purchased from Project Carbon, with funding for the audit coming from Shropshire Hills AONB's Sustainable Development Fund.

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energy agency



Shropshire Hills
Area of Outstanding Natural Beauty

CASE STUDY: Low Energy Lighting, Cleobury News, Shropshire.



All bulbs were purchased by Cleobury News from Project Carbon.

Cleobury News in Cleobury Mortimer have made the switch to low energy strip lighting. As part of the Low Carbon Communities project in the town, this switch over is helping the community as a whole to reduce its carbon footprint.

Following the switch of 9 strip lights to their low energy equivalent, the newsagents will make savings of around £94 a year from electricity bills, saving over 3 tonnes of carbon dioxide over the lifetime of the bulbs. The switch was achieved using an adaptor to convert the old strip-lights to new 'cool white' lower wattage tubes. These maintain the levels of brightness whilst using only 52% of the energy.

CARBON DIOXIDE SAVINGS

	Annual CO ₂ savings	% of total annual CO ₂	Lifetime CO ₂ savings*
Lighting*	0.67 tonnes	20%	3.34 tonnes

*This assumes an average lifetime of 5 years for the strip lights

FINANCIAL SAVINGS

	Annual cost savings	Payback period (approx.)
Lighting	£94	14 months

CASE STUDY: Washing Well Laundrette Energy efficiency makeover



Washing Well Laundrette in Ellesmere have discovered that they could make significant savings by switching to energy efficient appliances.

Following a 'Low Carbon Communities' presentation to Ellesmere Chamber of Commerce, Washing Well's proprietor began to look at the laundrette's energy consumption with the assistance of MEA's Project Carbon team. He was shocked to discover that this was 40% of the business's turnover and decided to do something about it. MEA found that by simply installing a more efficient hot water boiler and more efficient tumble dryers the business would save around £2,500 in gas costs alone – a saving of over 22 tonnes of CO₂.

CARBON DIOXIDE SAVINGS

	Annual CO ₂ savings	% of total CO ₂	Lifetime CO ₂ savings*
Efficient appliances	22 tonnes	44%	330 tonnes

*This assumes an average lifetime of 15 years for the appliances.

FINANCIAL SAVINGS

	Annual cost savings	Payback period (approx.)
Efficient appliances	£2,500	3 years

Funding for Washing Well's energy audit and to help with installation of recommended energy efficiency measures was provided by the Rural Regeneration Zone.



CASE STUDY: Kings Arms Hotel

Energy efficiency makeover



The thermal image above shows bright yellow-orange patches where heat is escaping from the hotel.

Funding for the Kings Arms Hotel's energy audit and to help with installation of recommended energy efficiency measures was provided by the Rural Regeneration Zone.

MEA's Project Carbon team conducted an energy audit of the Kings Arms Hotel in Cleobury Mortimer and found that switching to low energy lighting would save over £800 and over 4 tonnes of CO₂ each year.

As the letting rooms are being refurbished there was also an opportunity to insulate the roof of the property. Through insulating a large part of the floor of the top storey (which is used only for storage) it has been ensured that only the parts of the building actually in use are being heated as well as less heat escaping the building. It was found that this, in combination with window shutters to reduce night-time heat losses, would save an additional 2 tonnes of CO₂ and £300 in heating oil each year.

CARBON DIOXIDE SAVINGS

	Annual CO ₂ savings	% of total CO ₂	Lifetime CO ₂ savings*
Low energy lighting	4.35 tonnes	14%	13.1 tonnes
Insulation and shutters	2 tonnes	6.4%	40 tonnes

*This assumes an operation time of 3 years for the bulbs and 20 years for the insulation and glazing.

FINANCIAL SAVINGS

	Annual cost savings	Payback period (approx.)
Low energy lighting	£840	6 months
Insulation and shutters	£300	10 years





House of Commons
Communities and Local
Government Committee

Existing Housing and Climate Change

Seventh Report of Session 2007–08

Report, together with formal minutes

*Ordered by The House of Commons
to be printed 17 March 2008*

HC 432-I

Published on 2 April 2008
by authority of the House of Commons
London: The Stationery Office Limited
£0.00

9 Conclusion

Reducing carbon emissions by 60 per cent over the next 42 years requires remarkable change in our habits, our fuel consumption and the technologies we use to build and run our homes. Yet even the most superficial glance back 42 years is enough to remind us that interplanetary space travel, mobile telephones, the internet, and even heart transplants were then yet to be achieved. The question underlying this Report is whether the Government can encourage millions of individuals and families, be they in rented flats or homes of their own, to rise to the challenge; but it is, indeed, unimaginable to say that we cannot make substantial change.

“Make no little plans. They have no magic to stir men's blood... Make big plans; aim high in hope and work.”

Daniel Hudson Burnham
1846-1912

“Search all the parks in all your cities; you'll find no statues of committees.”

David Ogilvy
1911-1999



'If future generations are to remember us more with gratitude than contempt, we must leave them more than the miracles of technology. We must leave them a glimpse of the world as it was in the beginning, not just after we got through with it.'

Lyndon B. Johnson





Don't just stand there, do something!

thank you

marches
energy agency

