

Lancashire Best Practice Club

Solaris Centre

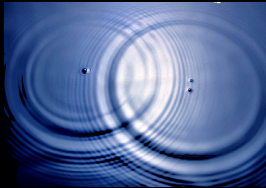
Blackpool

12 February 2008

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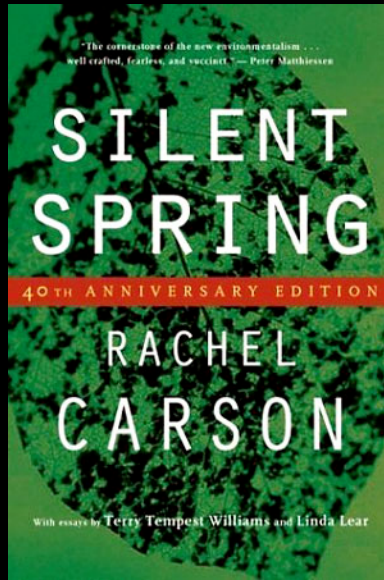


Sustainability

Changing Industry

Carbon

Waste



Rachel Carson sent tremors through American society with the publication of her 1962 book "Silent Spring."



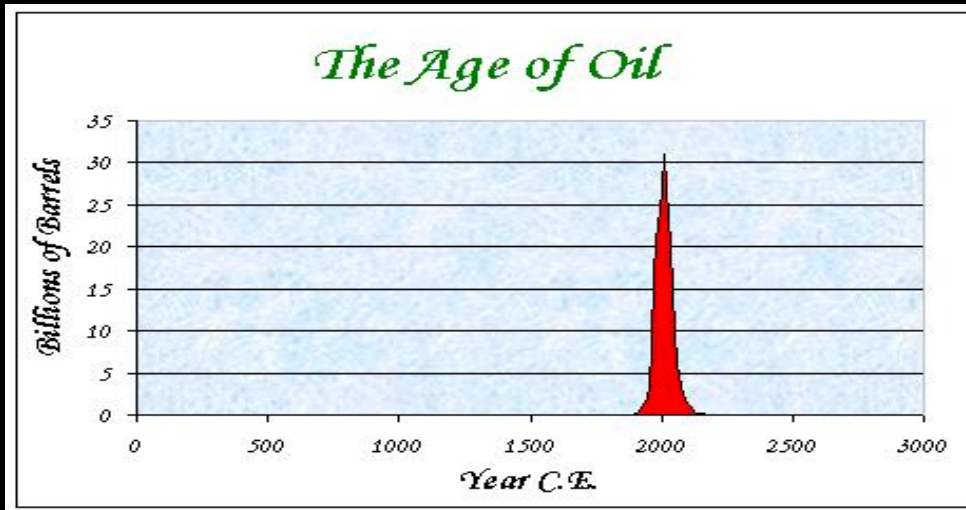
"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." 1987

What has changed – why the urgency now?

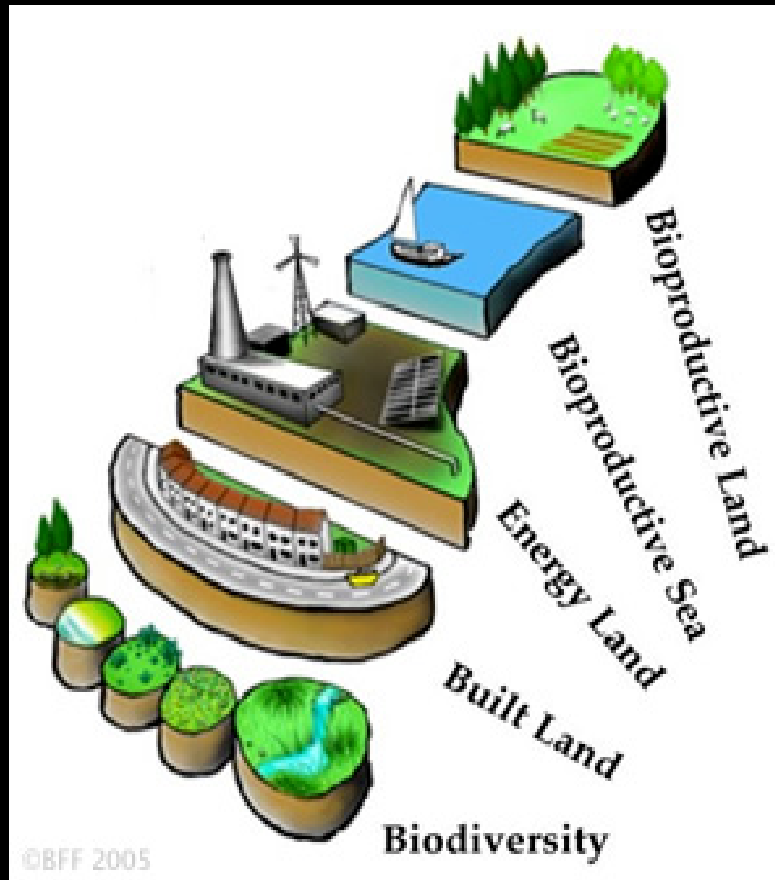
Challenges we face:

- Peak oil
- Exceeding our ecological footprint
- Global warming
- Global In-balance

Peak oil



ecological footprint



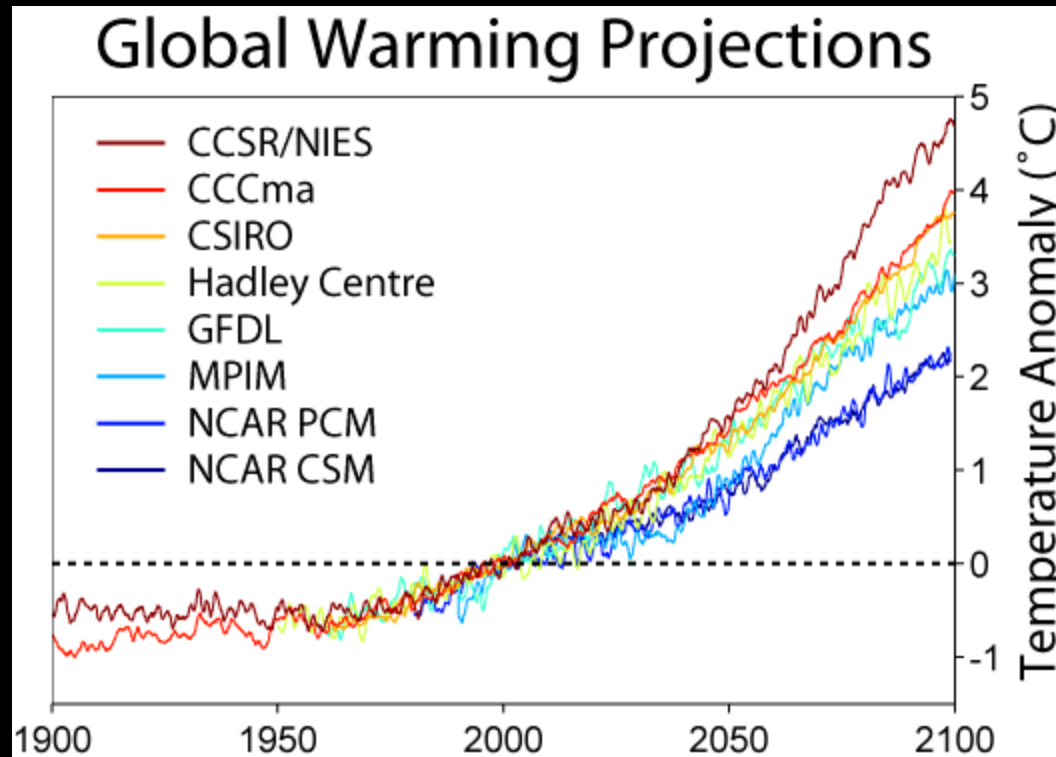
We **exceed** our ecological footprint:

In 2001, the South West residents' ecological footprint was 27.4 million gha (global hectares) or 5.56 gha per person.

The earth-share is 1.9 gha per person.

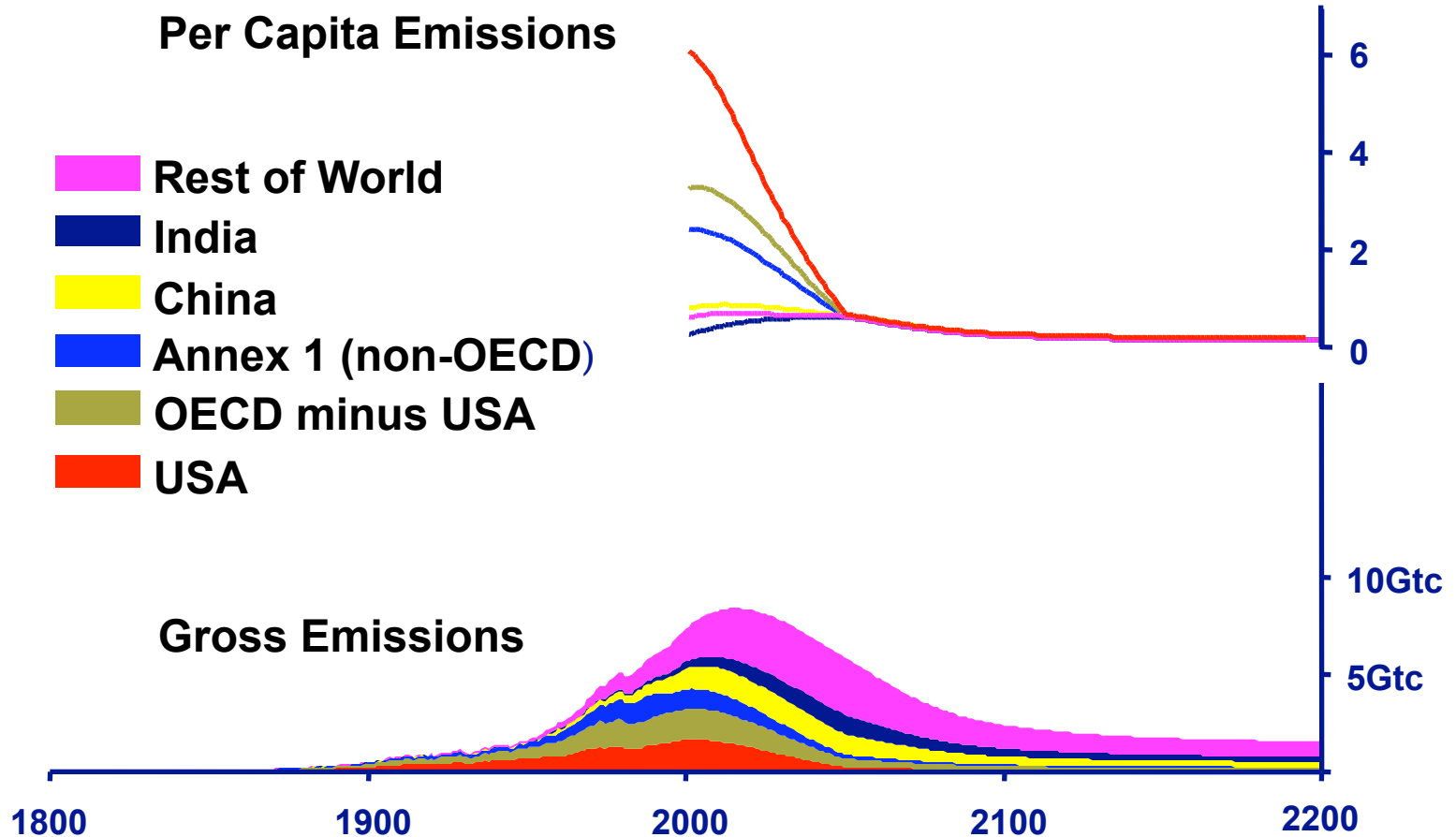
If everyone on the planet consumed as much as an average South West resident, we would need three Earths to support global resource consumption sustainably.

global warming



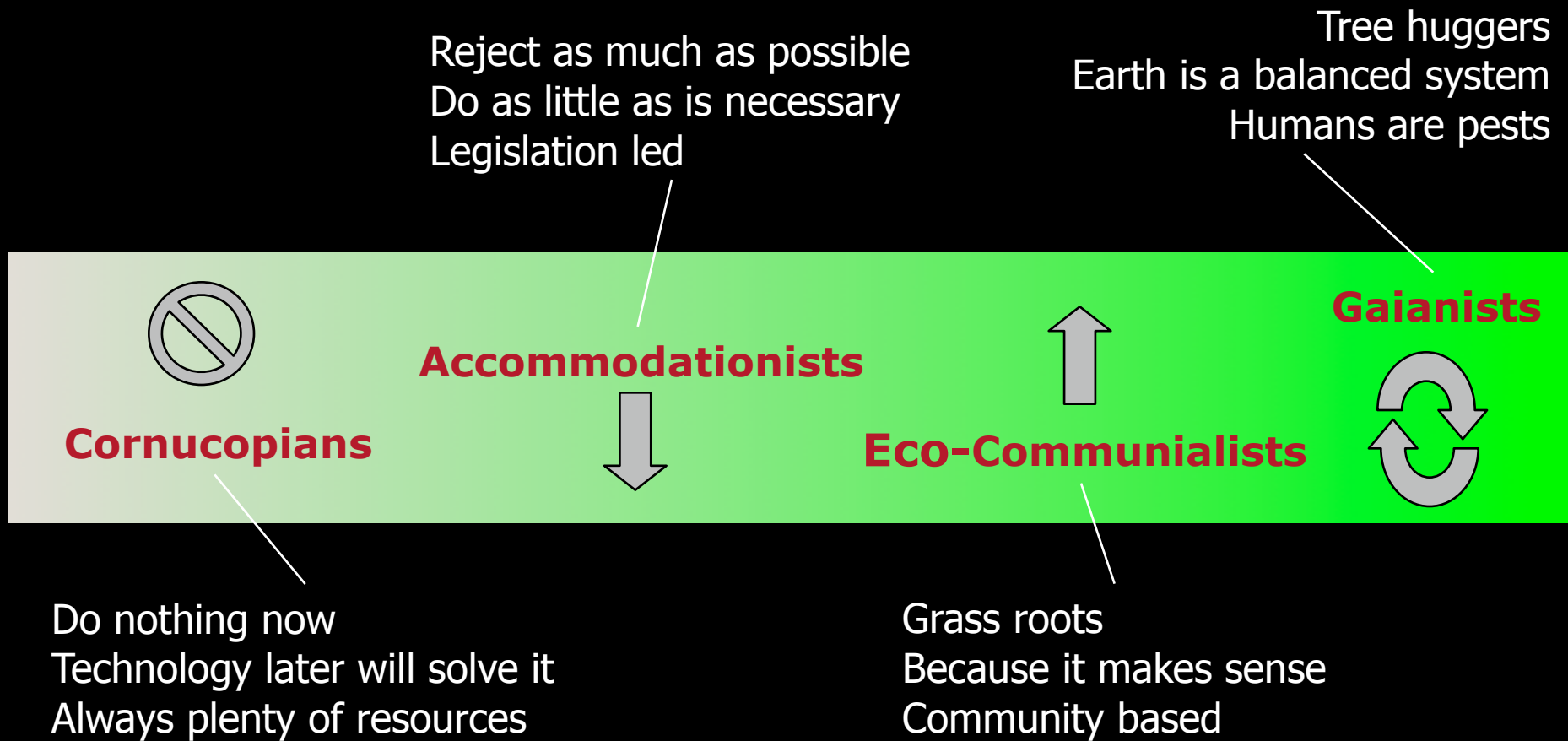
Enough said

contraction & convergence 2050





from grey to bright green



built environment impact

70% world population live in cities

Cities require 70% global energy

Cities responsible for 80% ecological footprint, and some 45% carbon footprint

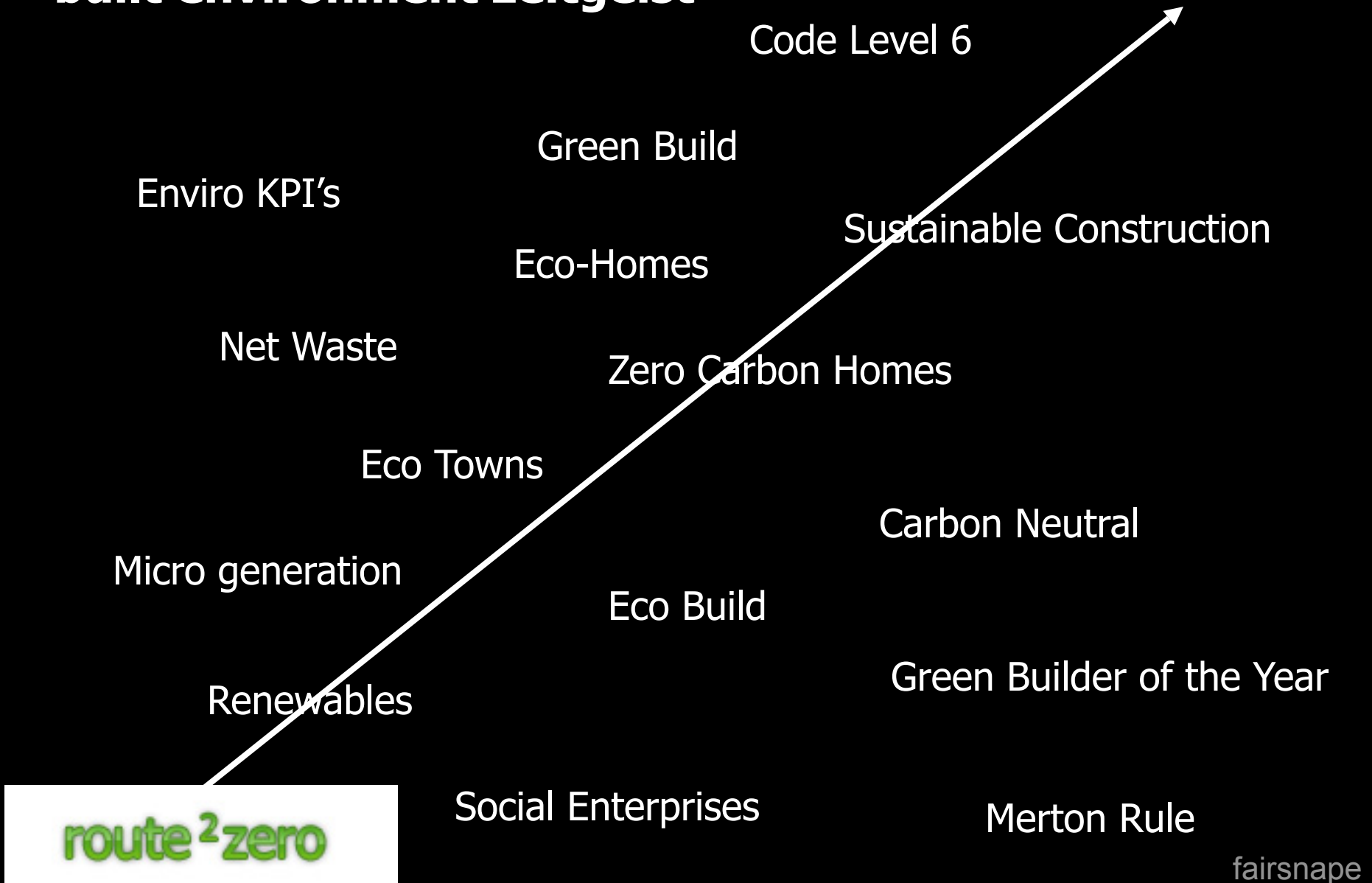
70% buildings in 2050 are already built or in construction



Two thousand seven may go down as the year that green buildings became cornerstone of global strategies to address global warming

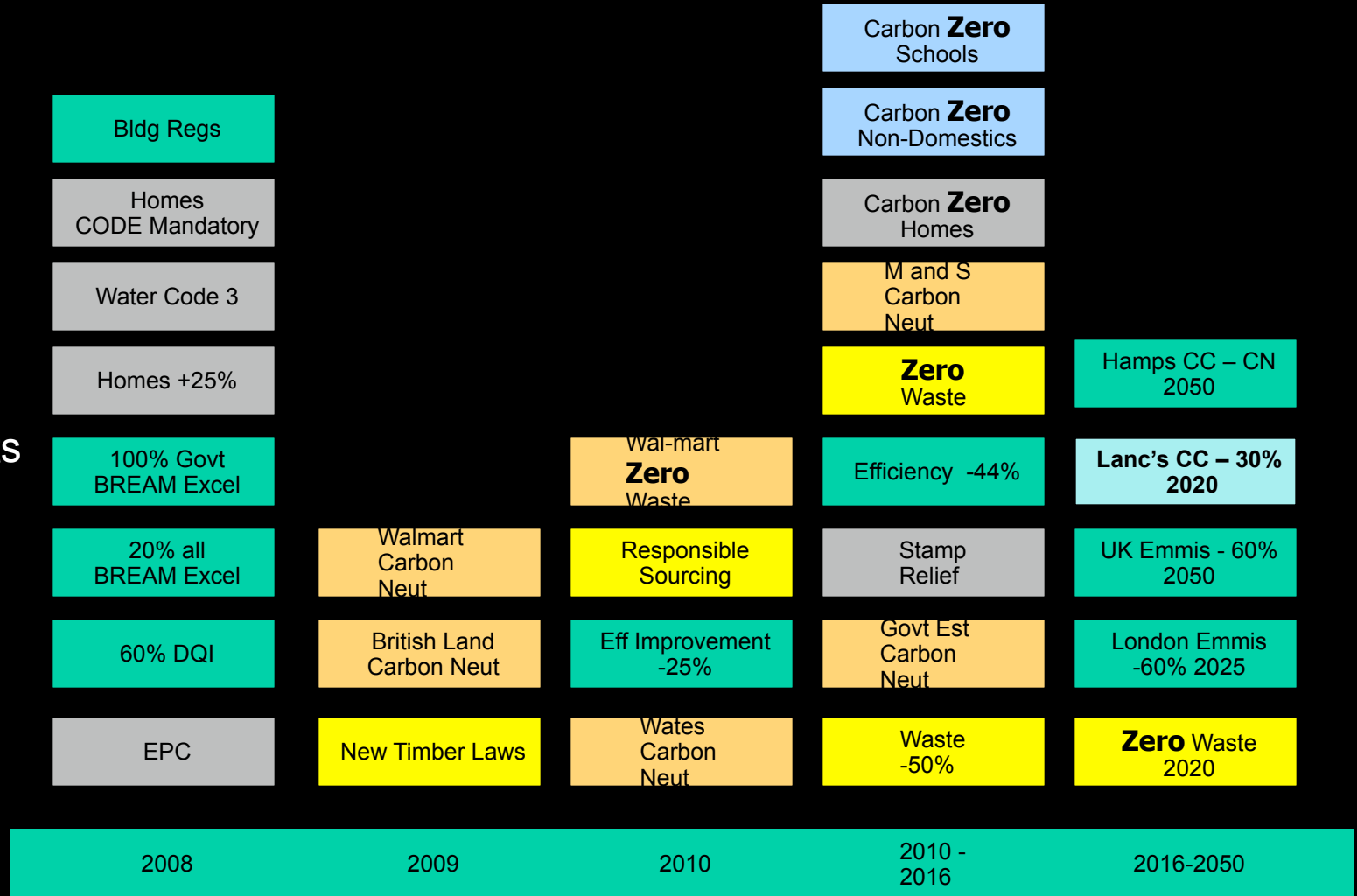
State of Green Business 2008

built environment zeitgeist




route 2 zero

Industry Targets Milestones Requirements 2008 - 2050

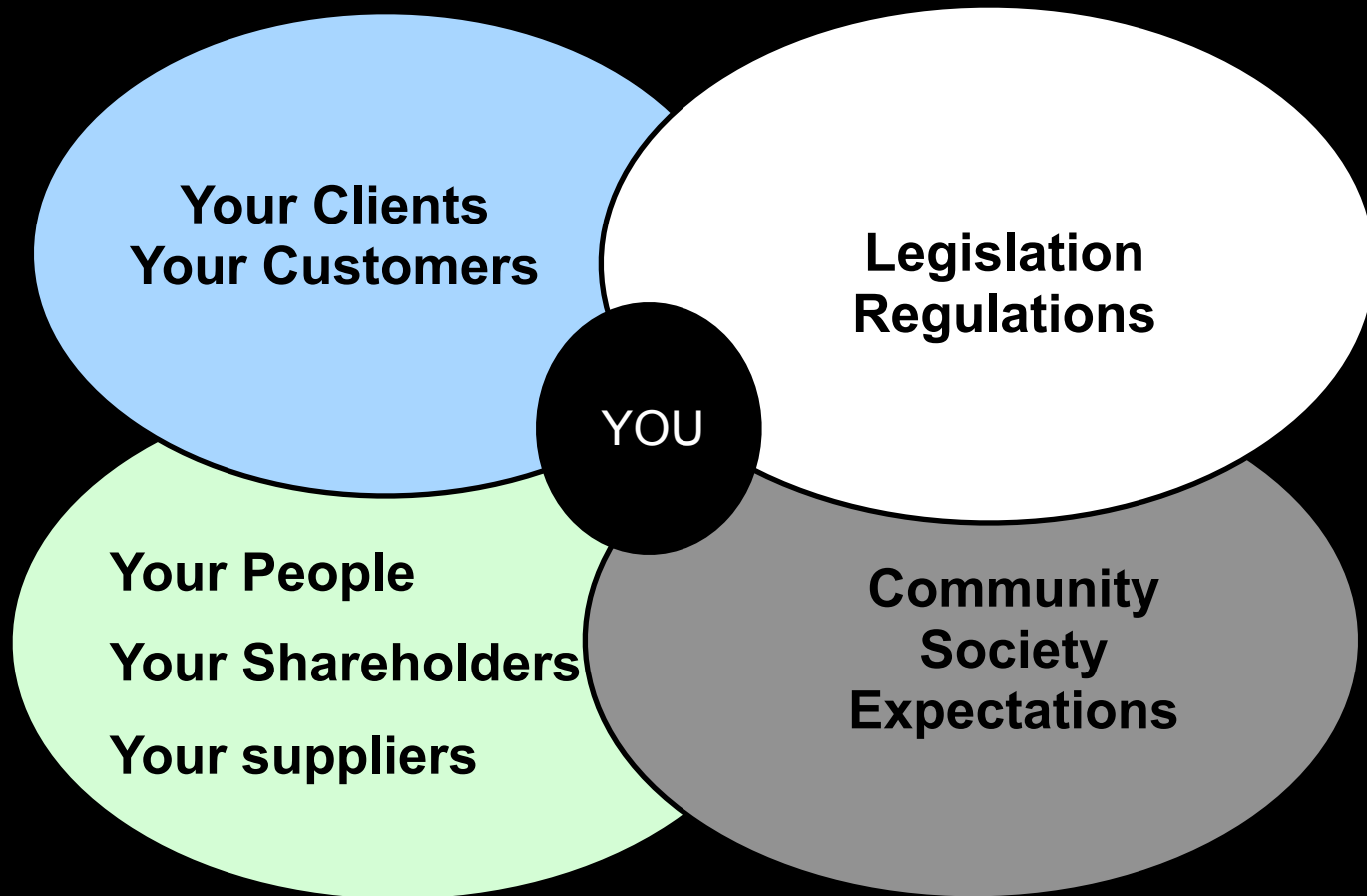


route²zero

Your Targets ? 

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route 2 zero



route²zero

Two out of three employees see it important to work for an organisation that reduces emissions.

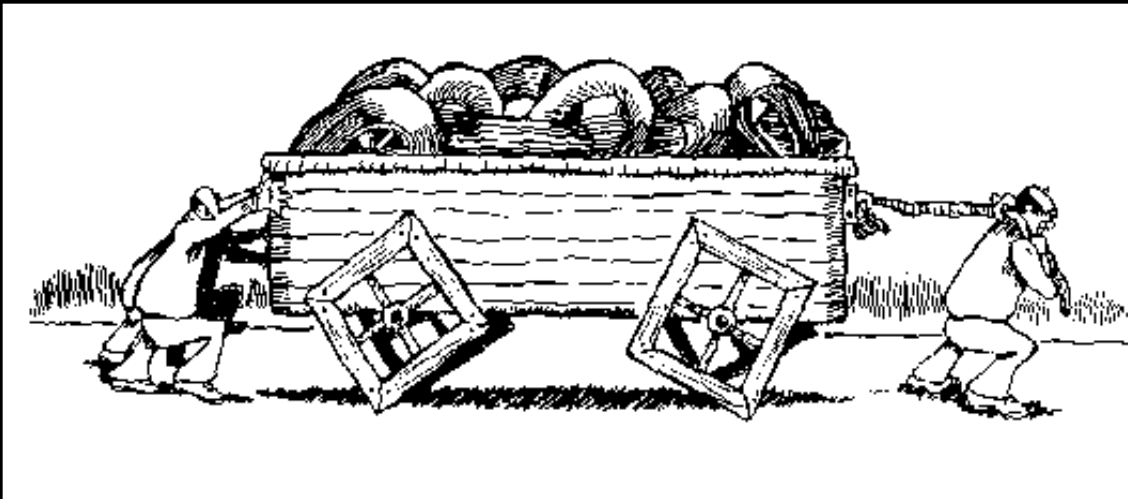
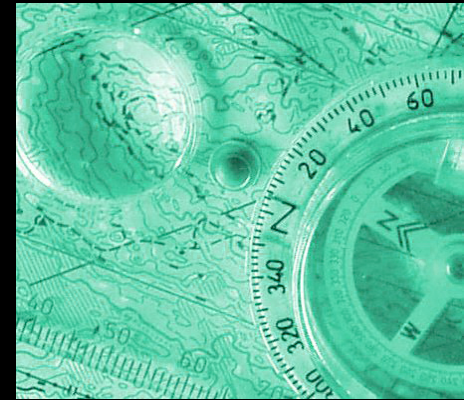
Carbon Trust survey 2007

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route 2 zero

zero is the new black

Do you have a route you can follow with confidence?



Do you have the right tools – and if so, are you using them?

route²zero

focus on waste and carbon

why waste management?

1/3 materials not used for purpose

10% construction gdp

Road traffic - 1/3 heavy haulage carries 'waste'

420 million tonnes of material used in UK construction, 75million tonnes 'waste'

30% of UK waste related to construction and demolition

why carbon management?

Cement and raw material products high in emissions

50% emissions from buildings

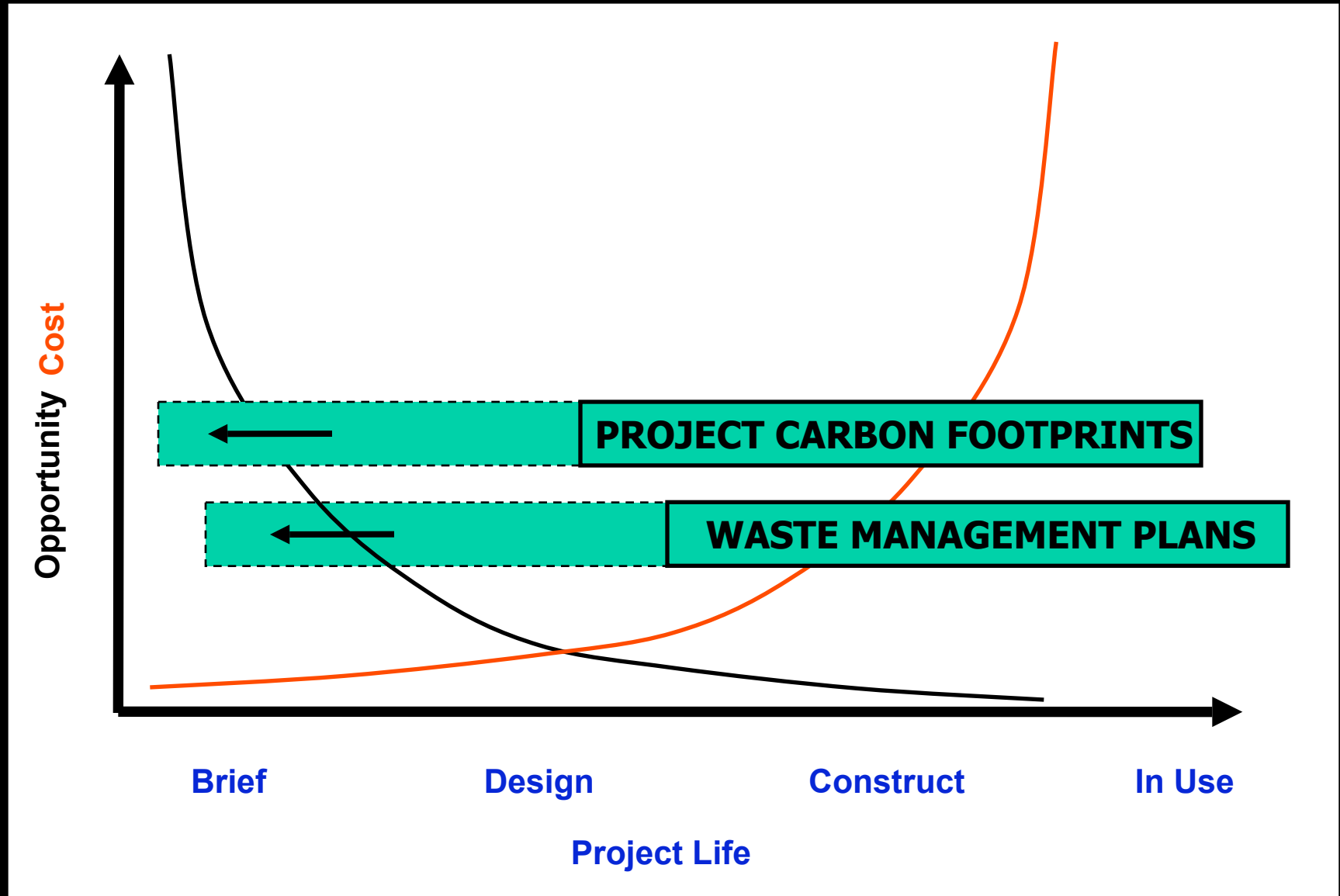
50% energy in use – secondary

Biggest demand for fossil fuel energy – primary emissions

We waste so much

- material in construction
- heat and energy in 'poor' buildings

waste and carbon – an integrated approach



carbon definitions

Carbon Footprint – a measure of the exclusive total amount of carbon dioxide emissions that is **directly and indirectly** caused by an activity or is accumulated over the life stages of a product.

Carbon offset - the act of mitigating ("offsetting") emissions

Carbon zero - A zero carbon home is one with 'zero net emissions of CO2 from all energy use in the home'

Carbon neutral - individuals, businesses, or organizations whose practices contribute zero carbon dioxide emissions to the atmosphere

Carbon positive – addressing carbon emissions from construction / manufacture through life of a building

Green-wash – we harmed no giraffes this month...

carbon footprint

Why do we need to know and improve our footprint?

BREEAM Very Good or Excellent
Code level 6 (or should it be level 7)?

Clients (looking at both primary and secondary impact)

Construction emissions equates to 11% life of a buildings emissions
or 2-3 years house in use

Travel and transport are of significant impact

JCT – commitment to carbon a contract clause?

Bidding - Winning Work

People will choose employers ...
Society will allow you to trade ...



Sustainability items that might be covered in contract documents

Carbon emissions associated with construction process

Carbon emissions associated with the end use of the 'project'

Commercial vehicle movements

Consumption of energy during construction process

Consumption of energy associated with the end use of the 'project'

Consumption of water during construction process

Consumption of water associated with the end use of the 'project'

Economic sustainability in construction supply chain

Maintenance or optimisation of biodiversity

Origin of construction materials

Waste management in construction process

Waste management associated with the end use of the 'project'

carbon footprint calculators

Cant move for them....

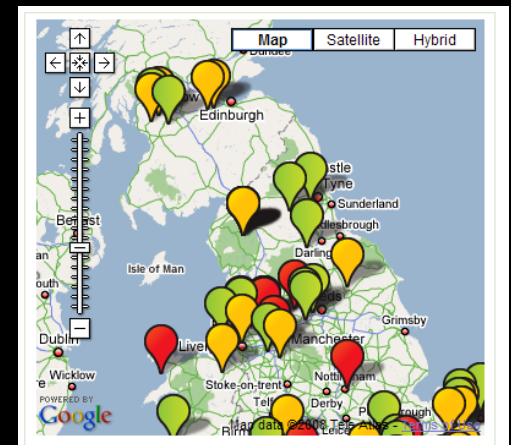
Most linked to carbon offsetting ...

Avoid

However – take a look at Google ...

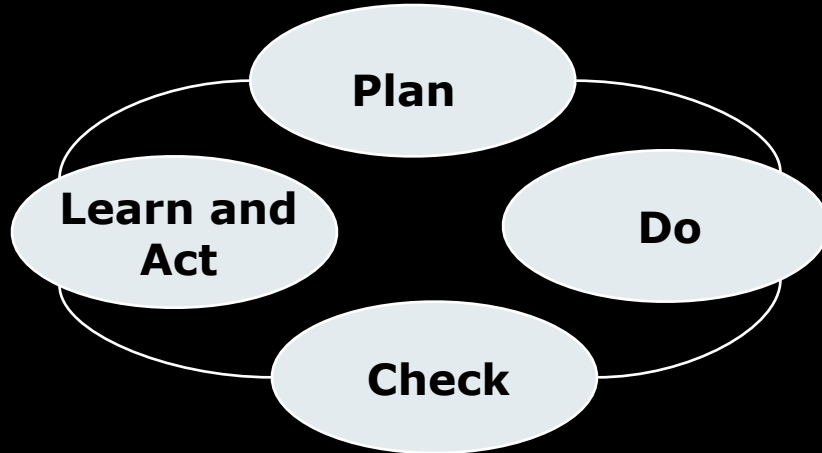


<http://www.google.co.uk/carbonfootprint>



carbon footprint - an improvement tool

Plan do check act



Plan and procure for reduced / low / zero carbon activity or project

Project Manage to reduce emissions

Check carbon emissions / footprint through calculator

Learn from best practice. Learn from your results

Act – improve the way you plan, procure, manage and do things

Plan – better starting point on next project

Environment Agency carbon footprint calculator

A tool for planning and improvement – not offsetting

Written by industry client for industry

Spreadsheet format – easy to use

Hour with a schedule

Flexible – add your own materials and calculations

Basis for planning and benchmarking

Open source – for industry use

Contains guidance and references

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The screenshot shows a Microsoft Excel spreadsheet titled "carbon_calculator_1883909-1.xls". The interface includes a title field, construction cost input, and a total carbon footprint calculation showing 46 tonnes fossil CO₂. A conversion table for miles to kilometers is provided. The main section is a table for material quantities, with columns for Category, Construction material, Unit, Conversion or Density, Embodied CO₂ per tonne of material, Quantity (tonnes), Distance (km), Mode of transport, and a calculated footprint. Materials are grouped into sections: Geosocial Material, Timber, and Metals. A summary table at the bottom right shows the total footprint for each category and a grand total of 46.0 tonnes fossil CO₂. The footer includes navigation tabs: User Guide, Construction Input, Personnel Travel Input, Data, Report, References, User Calculations, Further Guidance, and Revision Log.

Category	Construction material	Unit	Conversion or Density	Embodied CO ₂ per tonne of material	Quantity (tonnes)	Distance (km)	Mode of transport	Footprint (tonnes fossil CO ₂)
Geosocial Material	Described aggregate	2.0 tonnes/m ³	0.009					
	Recycled aggregate	2.0 tonnes/m ³	0.00365					
	Asphalt	0.7 tonnes/m ³	0.045					
	Bricks	2.4 tonnes/1000	0.2					
	Facing Bricks	2.4 tonnes/1000	0.85					
	Clay	1.5 tonnes/m ³	0.2					
	Verified clay pipe DN 100 & DN 150	2.4 tonnes/m ³	0.41					
	Verified clay pipe DN 200 & DN 300	2.4 tonnes/m ³	0.47					
	Verified clay pipe DN 500	2.4 tonnes/m ³	0.53					
	Flint	1.5 tonnes/m ³	0.0052					
	Gravel	1.7 tonnes/m ³	0.004					
	Stone gravel	2.0 tonnes/m ³	0.021					
	Stone gravel/chippings	2.0 tonnes/m ³	0.016					
	Slabs	2.7 tonnes/m ³	0.0295					
	Sub-total					0		
Timber	Timber general	0.5 tonnes/m ³	0.475					
	WPC	W 190x25mm	0.55					
	Particle Board	6 high/25mm	0.45					
	Plywood	18 high/25mm	0.75					
	Formaldehyde	0.4 tonnes/m ³	0.47					
Metals	Steel general	0.5 tonnes/m ³	0.475					
	Steel bar & rod	1.8 tonnes/m ³	1.72					
	Steel plate	0.8 tonnes/m ³	1.05					
	Steel section	0.8 tonnes/m ³	1.78					
	Steel sheet	0.8 tonnes/m ³	1.64					
	Steel wire	0.8 tonnes/m ³	2.55					
	Steel stainless	0.8 tonnes/m ³	6.95					
	Aluminium general	2.7 tonnes/m ³	8.53					
	Aluminium extruded	2.7 tonnes/m ³	8.49					
	Aluminium rolled	2.7 tonnes/m ³	8.25					
	Reinforced galvanized steel with fittings	0.012 tonnes/m ³	1.80					
	Reinforced stainless steel with fittings	0.012 tonnes/m ³	6.95					
	Reinforced stainless steel welded	0.012 tonnes/m ³	6.95					
	Clay pipe light sec	0.5 tonnes/m ³	1.62					
	Clay pipe medium sec	0.5 tonnes/m ³	1.62					
Sub-total					0			0.0



Environment Agency carbon footprint calculator

Focus on:

materials (focuses on cement and concrete)

transportation of materials (method and distance)

waste (disposal, quantity, transportation)

project personnel travel (method, type of vehicle and distance)

project accommodation

project plant

waste

Environment Agency carbon footprint calculator

Quick and dirty (project type, duration and value)

In depth:

Allows comparison to average - are you above or below

Project Management – encourages planning alternatives

Materials

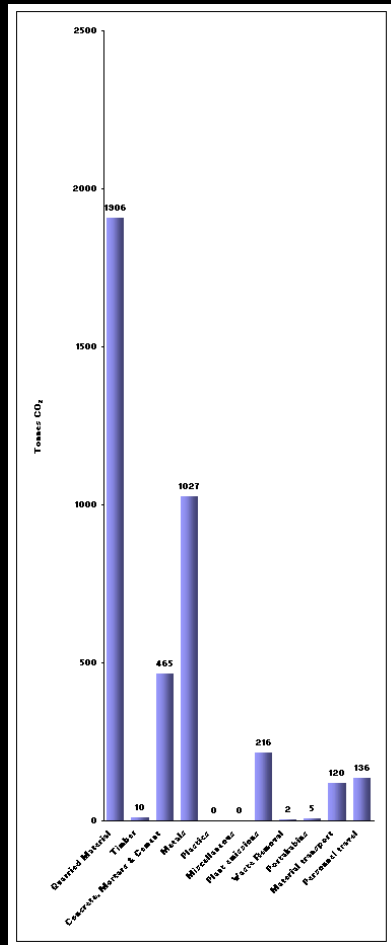
Transportation – materials, suppliers and labour

Waste

Site energy

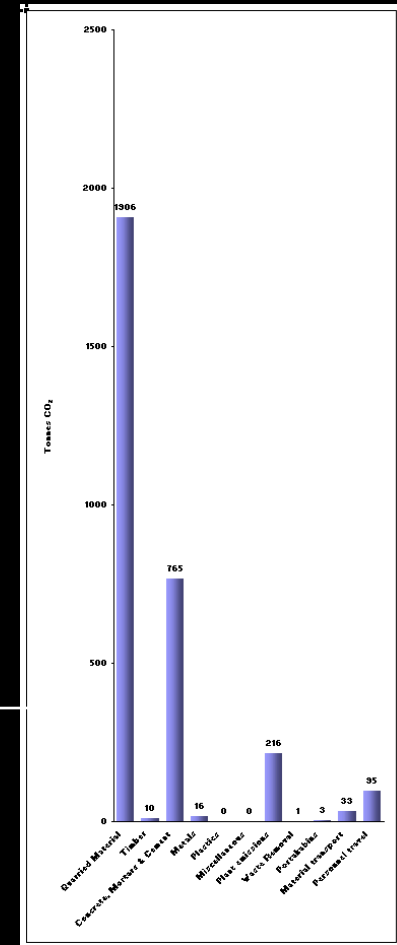
Identifies significant carbon emissions (impact) for action

Environment Agency carbon footprint calculator



Steel Frame, Metal
Clad/Roof
Widely sourced

Concrete Frame,
Brick Clad,
Timber Slate Roof
Local sourced



3887 tonnes fossil CO₂

3045 tonnes fossil CO₂

summary...

Built environment a key factor ...

Be confident with your route to zero ...

Waste and carbon management - a collaborative issue ...

Carbon calculators are improvement tools ...

Plan Do Check and Act to improve your carbon footprint ...

Check out EA tool for your projects, act and improve ...

Be successful

“Every time I have done the right thing for the environment I’ve made a profit”

Yvon Chouinard,
founder and owner of Patagonia and
1% For The Planet member



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All slides and notes from this evening at isite blog
www.fairsnape.wordpress.com

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