

“Changes in Design, Manufacturing & Procurement for Social, Environmental & Economic Profit”

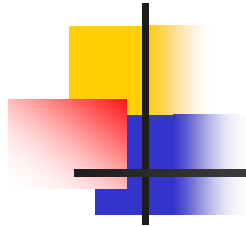
a presentation to

CCFRA Food Service Panel – 20th June 2006

David Clarke & Kerry Burnett

CDIS-KARM

Design Consultants & Project Managers in Catering &
Associated Services



As an industry do we need to
change?



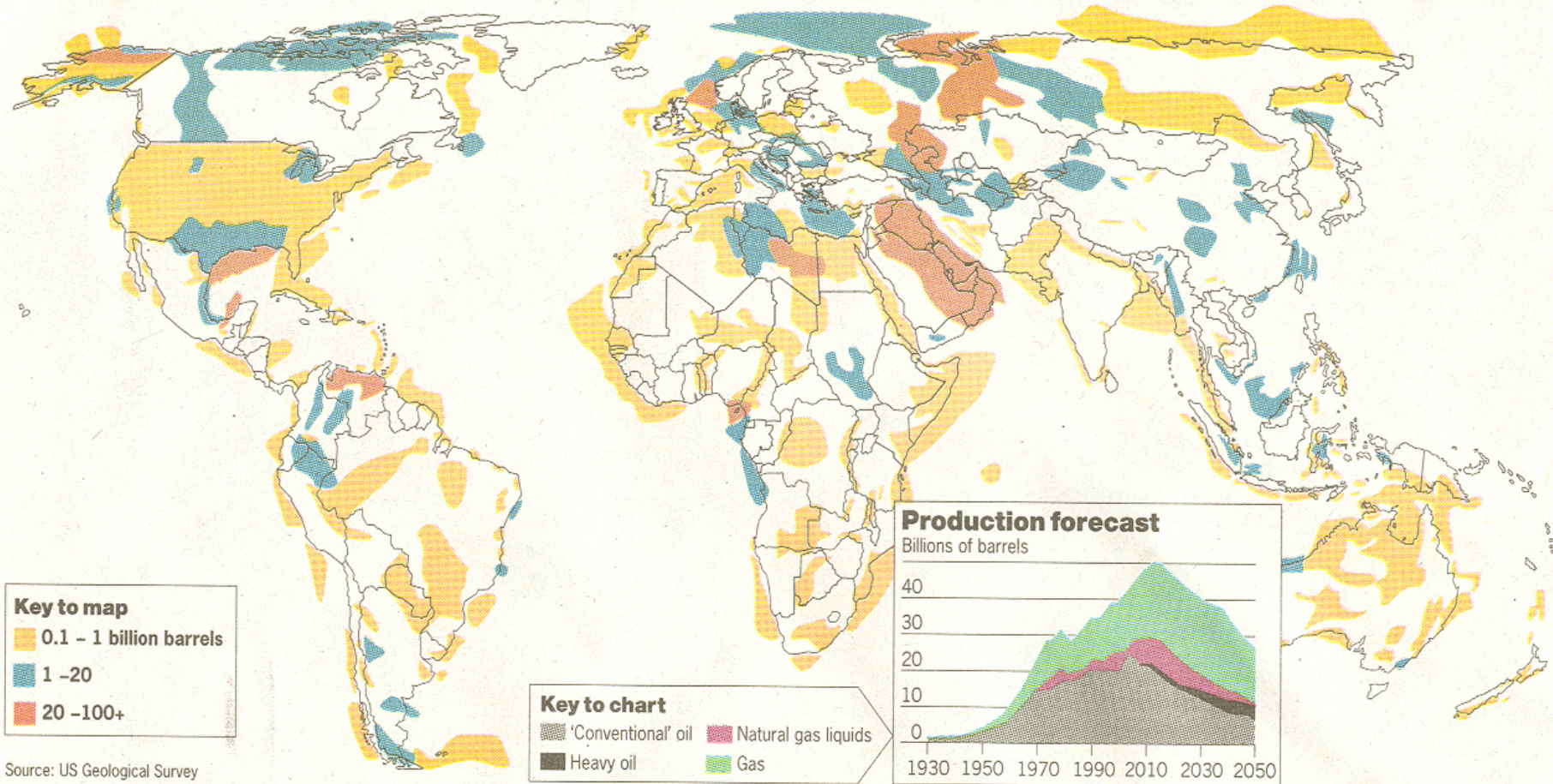
Design for efficiency

“If the catering industry does not start to make changes in its energy efficiency and CO₂ discharge levels, it runs the risk that decisions will be made by those who don’t understand the operational requirements and constraints of the industry.”

'Peak oil' at 2007?

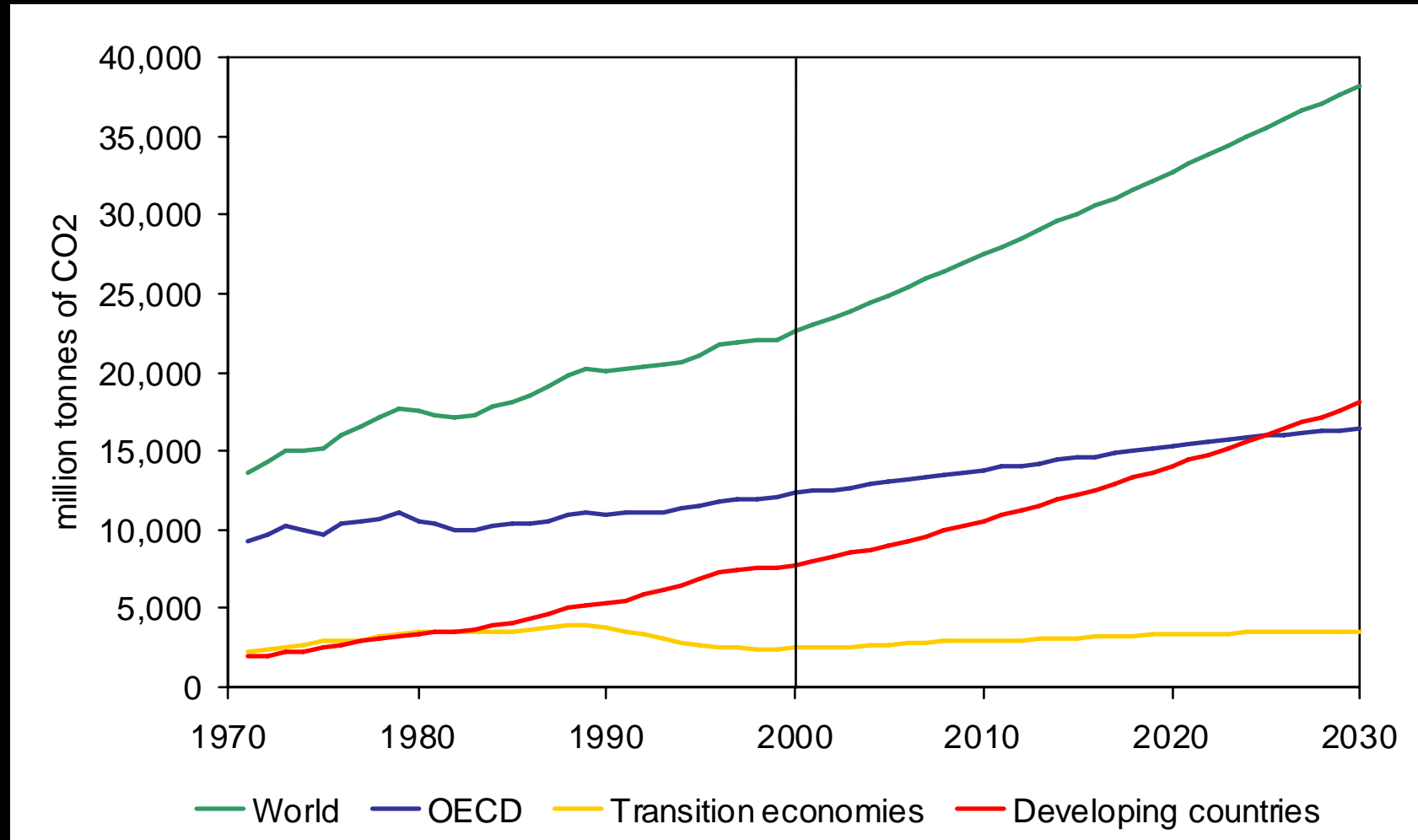
Crude oil resources

Petroleum basins showing estimated quantities of crude oil future resources



Source: The beginning of the end, John Vidal, The Guardian, 21 April 2005

Energy-Related CO₂ Emissions



Source: IEA WEO 2002

Source: Jonathan Pershing, World Resources Institute
Transitioning to Renewable Energy: A Developed Country Perspective

Washington, DC, Wednesday, April 21, 2004



Need to act ~ but how?



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- Research – A lot of Companies doing good things ~ but in isolation.



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- Created a working group ~ bringing together organisations to form a cohesive approach



Need to act ~ but how?

- Research – A lot of Companies doing good things ~ but in isolation.
- Created a working group ~ bringing together organisations to form a cohesive approach
- Many approaches from within the industry



Back to Basics

- Traditional approach
 - No change to design
 - No change to equipment
 - No change in energy consumption or CO₂ emissions



Back to Basics

- Take a step back
 - Change design
 - Change equipment
 - Reduce energy consumption & CO₂ emissions



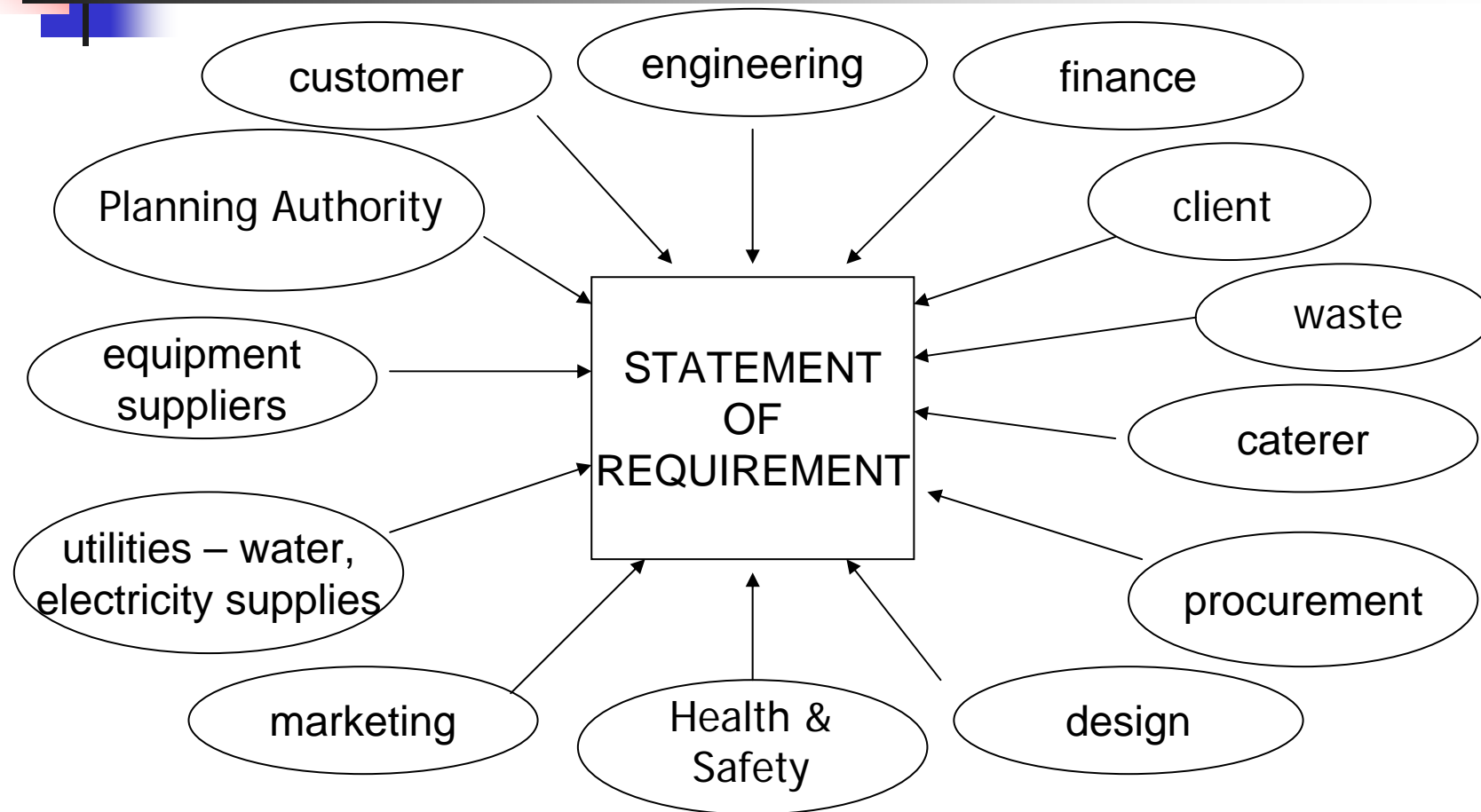
Stakeholders

Explore who has an involvement or an interest in the facility,

What are the key issues to them,

How can these needs be used to improve efficiency?

Stakeholders





The process

Need 



The process

Need → Statement of Requirement →

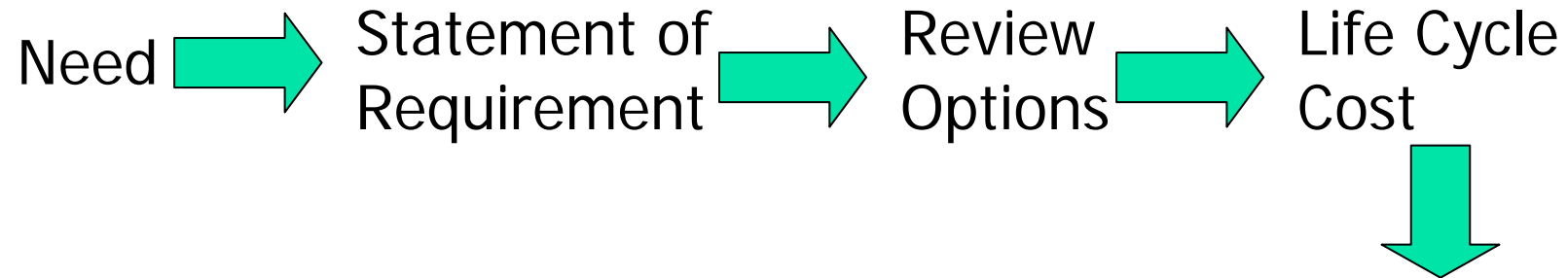


The process



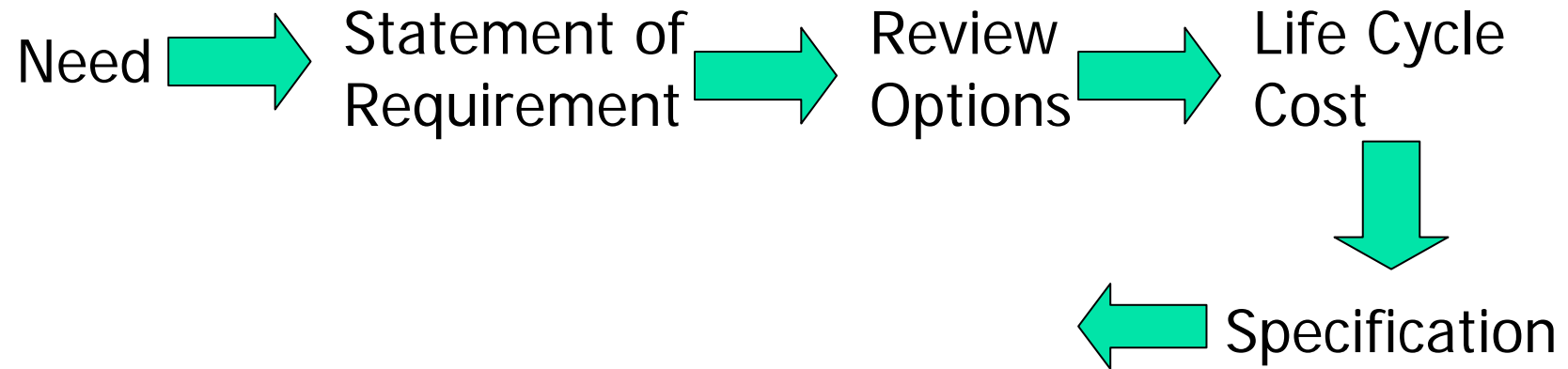


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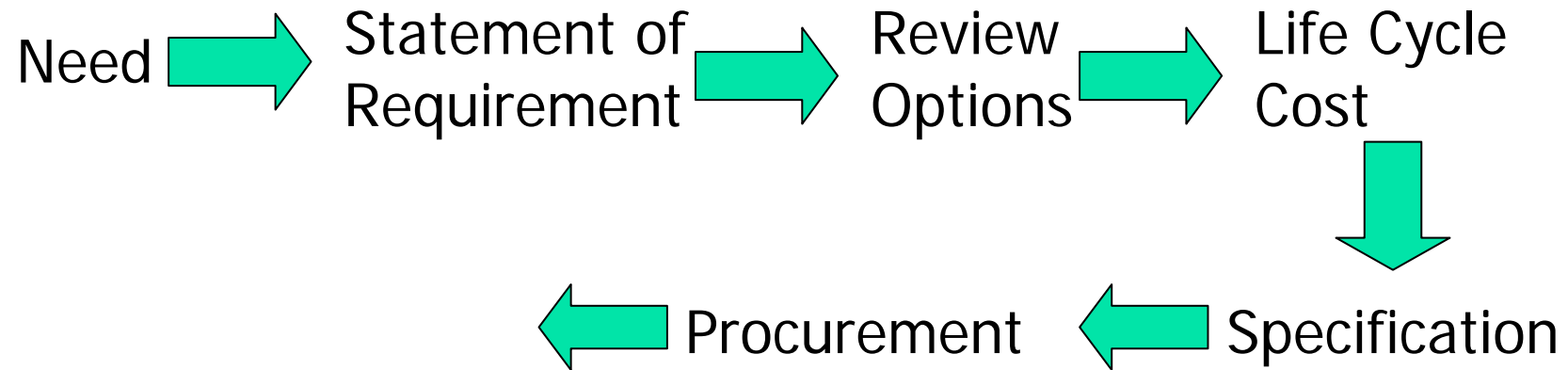


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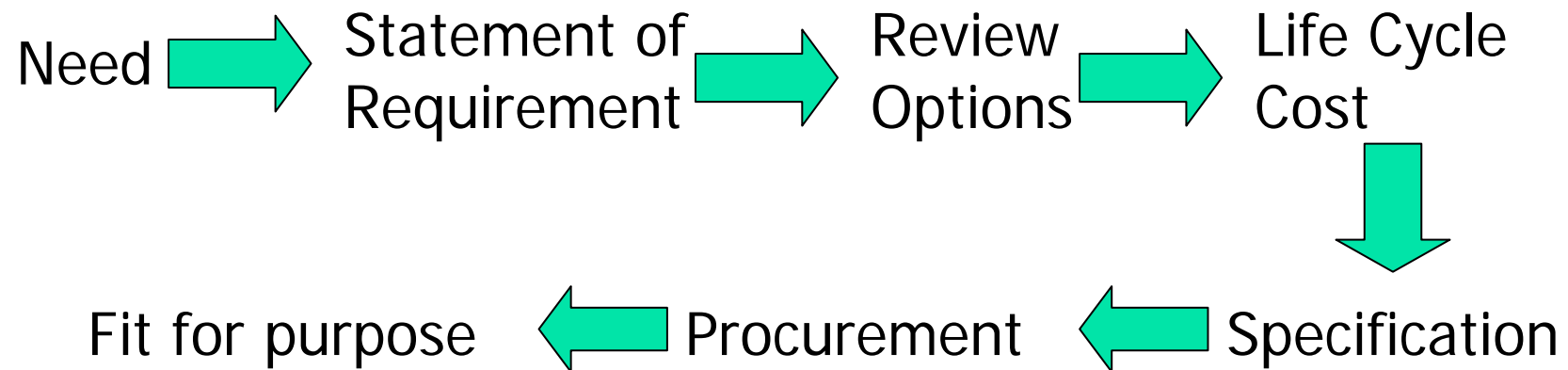


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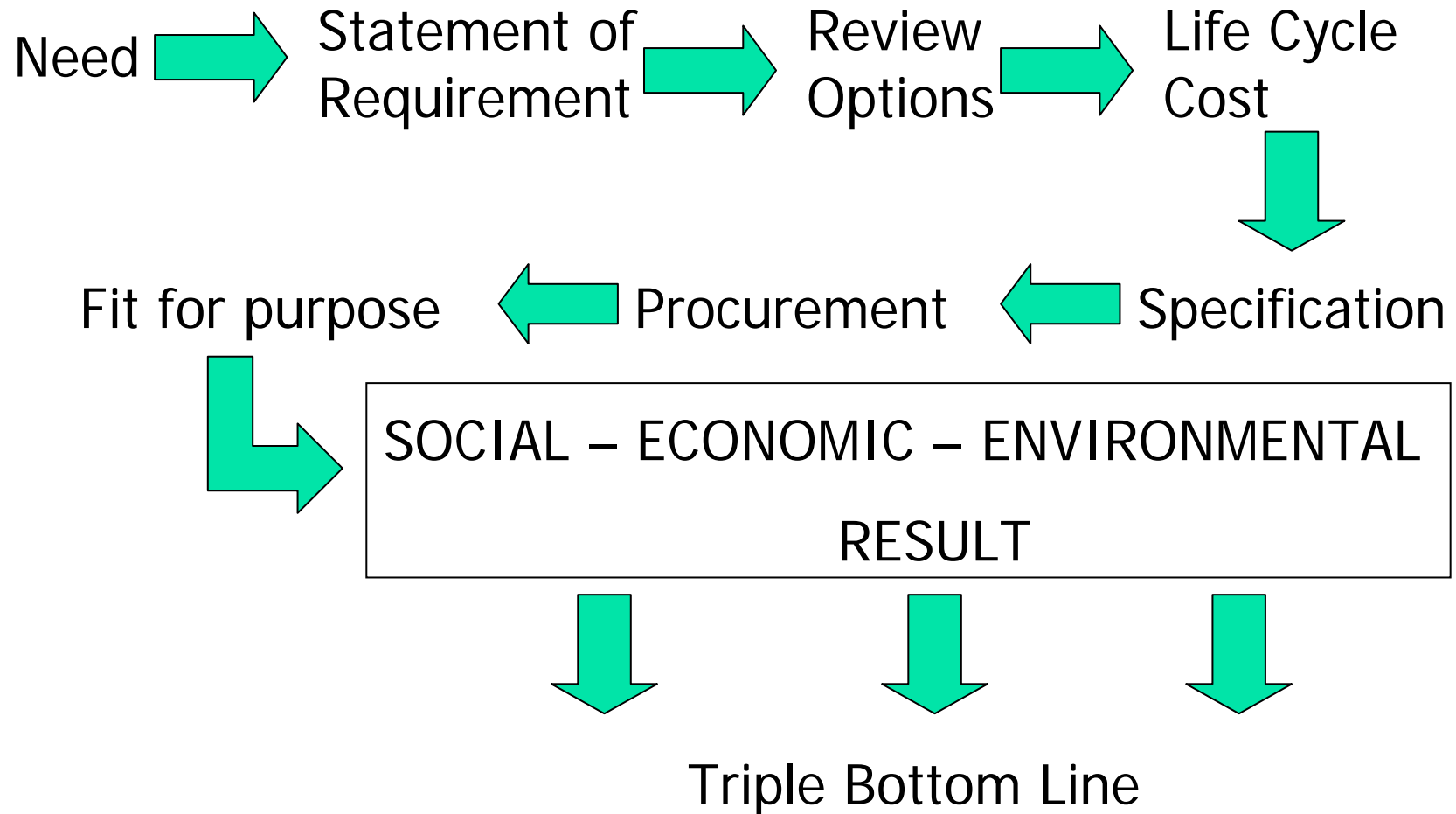


The process





The process





Case Study

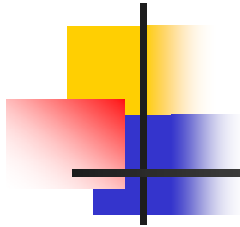
A public sector catering facility providing three meals/day for 200 people:



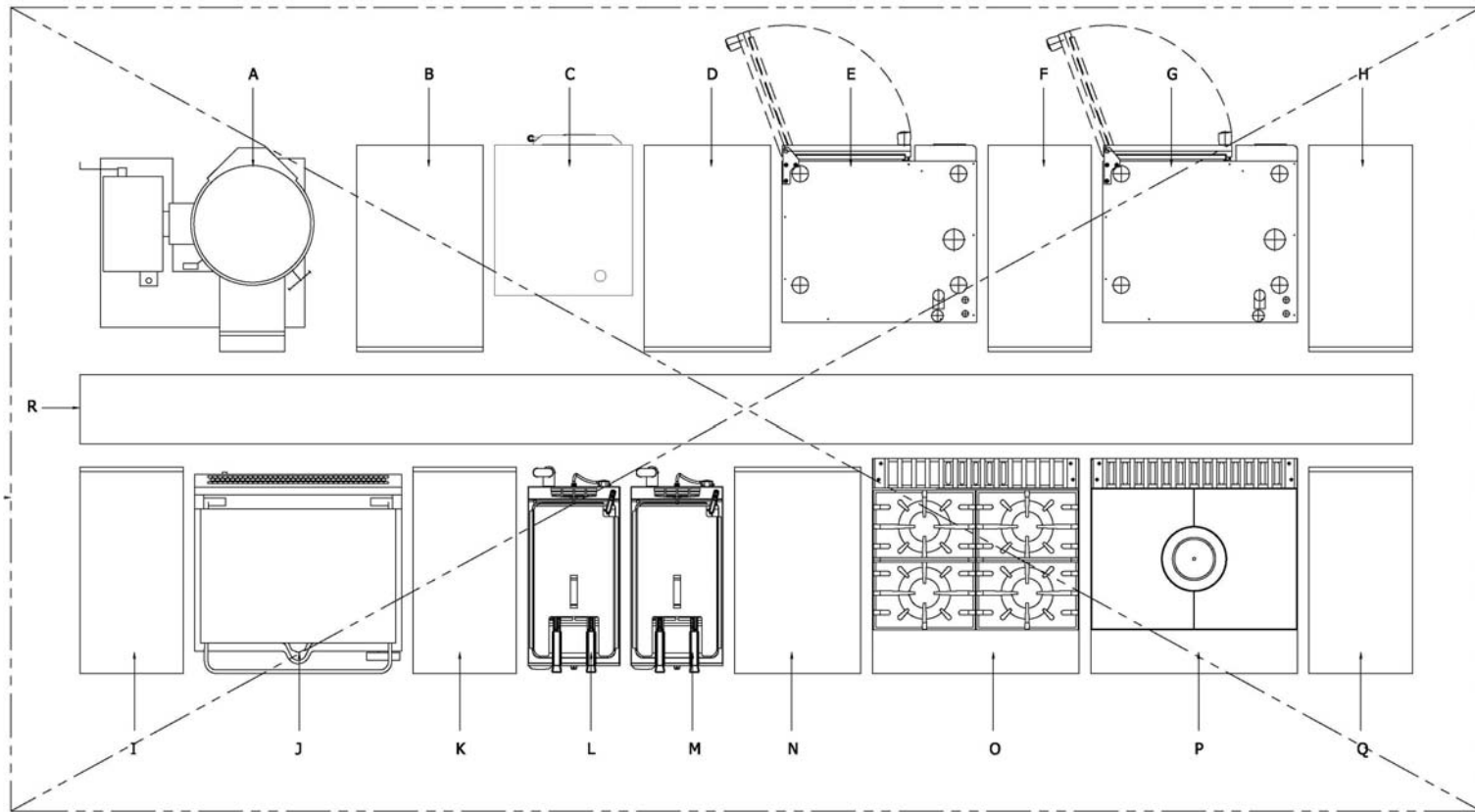
Case Study

A public sector catering facility providing three meals/day for 200 people:

- 1 x bratt pan (Gas)
- 2 x deep fat fryers (Gas)
- 1 x filter unit
- 1 x salamder (Gas)
- 1 x 6 grid combi oven (Electric)
- 1 x 10 grid combi oven (Electric)
- 1 x open top range (Gas)
- 1 x solid top range (Gas)
- 1 x pressure steamer (Electric)
- 1 x tilting kettle (Electric)



Traditional Layout





Daily current energy and CO₂ emissions



Daily current energy and CO₂ emissions

358Kw ~ Electricity



Daily current energy and CO₂ emissions

358Kw ~ Electricity

1,001Kw ~ Gas



Daily current energy and CO₂ emissions

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3.72m³/sec ~ Extraction



Daily current energy and CO₂ emissions

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£42.30 - £51.93



Daily current energy and CO₂ emissions

358Kw ~ Electricity

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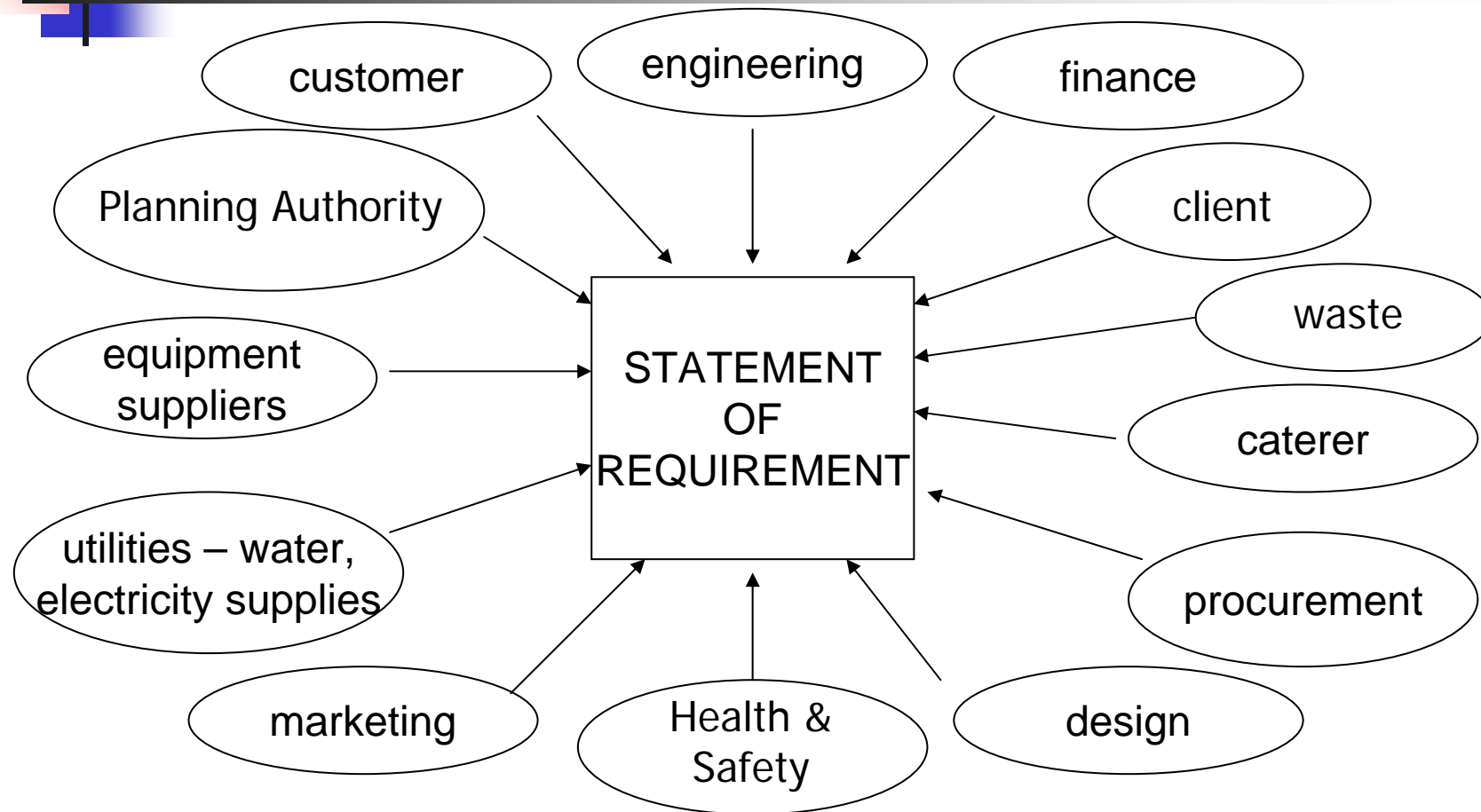
3.72m³/sec ~ Extraction

£42.30 - £51.93

2.27Kw/meal served

0.592Kg/CO₂ per meal served

Stakeholders





Statement of Requirements derived from stakeholders:

- “fit for purpose and capable of meeting service requirement for a minimum of 10 years”
- “the equipment must be reliable”
- “the facility and equipment must be capable of batch cooking fresh foods in both large and small quantities”
- “the equipment must be easy to clean”
- “the food produced must be of a consistent high quality and suitable for a healthy eating diet”
- “the food produced must represent good value for money; therefore the equipment should include any features that would reduce operating cost”



Statement of Requirements derived from stakeholders:

- “the facility should be fitted with sub meters to the key areas so that energy usage can be monitored and challenged”
- “the equipment must be easy to use”
- “incorporate within the facility a fat, oil and grease management system that protects the drainage system without interfering with the operation of the facility”
- “Reduce the amount of waste food generated”
- “provide adequate training to both operating and maintenance staff to enable the facility to operate to its economic and efficient criteria”
- “ensure that all waste when possible is reused or recycled”

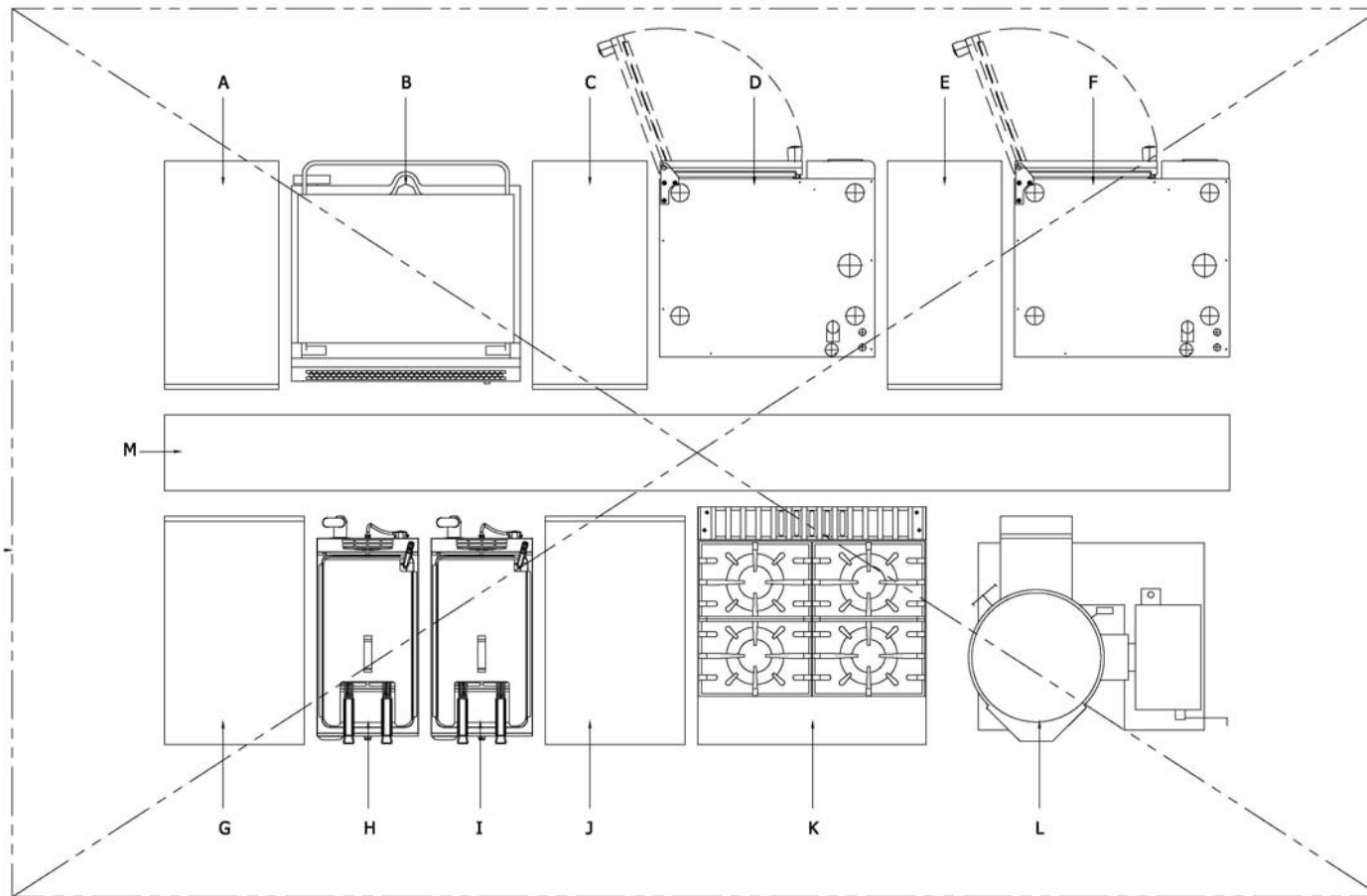


Case Study

A public sector catering facility providing three meals/day for 200 people:

- 1 x bratt pan (Gas)
- 2 x high efficiency deep fat fryers (Gas)
- 2 x 6 grid combi oven (Gas)
- 2 x 10 grid combi oven (Gas)
- 1 x open top range (Gas)
- 1 x tilting kettle (Gas)

Revised Layout





Revised daily energy and CO₂ emissions



Revised daily energy and CO₂ emissions

28.64Kw ~ Electricity



Revised daily energy and CO₂ emissions

28.64Kw ~ Electricity

1,040.55Kw ~ Gas



Revised daily energy and CO₂ emissions

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2.85m³/sec ~ Extraction



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£25.75 - £31.43



Revised daily energy and CO₂ emissions

28.64Kw ~ Electricity

1,040.55Kw ~ Gas

2.85m³/sec ~ Extraction

£25.75 - £31.43

1.78Kw/meal served

0.351Kg/CO₂ per meal served



The comparison

Existing

358Kw ~ Electricity

1,001Kw ~ Gas

3.72m³/sec ~ Extraction

£42.30 - £51.93

2.27Kw/meal served

0.592Kg/CO₂ per meal served

New

28.64Kw ~ Electricity

1,040.55Kw ~ Gas

2.85m³/sec ~ Extraction

£25.75 - £31.43

1.78Kw/meal served

0.351Kg/CO₂ per meal served



The Savings

Existing

358Kw ~ Electricity
1,001Kw ~ Gas
3.72m³/sec ~ Extraction
£42.30 - £51.93

2.27Kw/meal served
0.592Kg/CO₂ per meal served

New

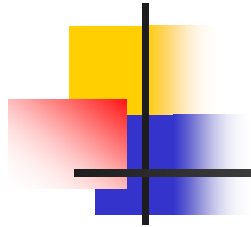
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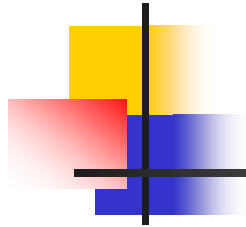
21.3% energy saving ~ 40.6% in CO₂ emissions

£16.55 - £20.50 saving/day

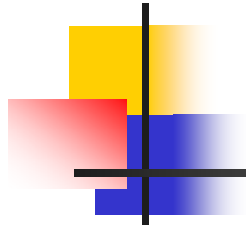
Increase in capital cost 2.5% (£1,302.50) pay back in 79 days!



As an industry do we need to
change?



As an industry can we afford
not to change?



Thank you for your time and the
opportunity to share this with you.