

Re-inventing Traditional Technologies for Sustainable Innovation

Sustainable Technologies Initiative

7 emergent themes:

- ◆ Biopolymers
- ◆ Towards zero emissions processes
- ◆ Improved coloration and preservation
- ◆ Durability through surface modification
- ◆ Design management
- ◆ Decision support tools
- ◆ **Re-inventing traditional technologies**

Project Characteristics

- ◆ A technology or material that has been previously significant
- ◆ A new application or technological addition/adaptation
- ◆ Lower environmental impact

STI Projects

- ◆ Vegetable oil-based metal working fluids
- ◆ Hydraulic lime mortars
- ◆ Packaging materials from straw
- ◆ Natural fibre reinforcement of pipes
- ◆ Natural fibres in brake pads
- ◆ Hair coloration using plant extracts
- ◆ New applications for nettle fibre
- ◆ Novel spring-based energy storage applications

Exploring three propositions...

- ◆ New business opportunities exist in re-visiting abandoned older technologies
- ◆ These technologies may require new scientific input or a new application
- ◆ They offer a route to products and processes with lower environmental impact

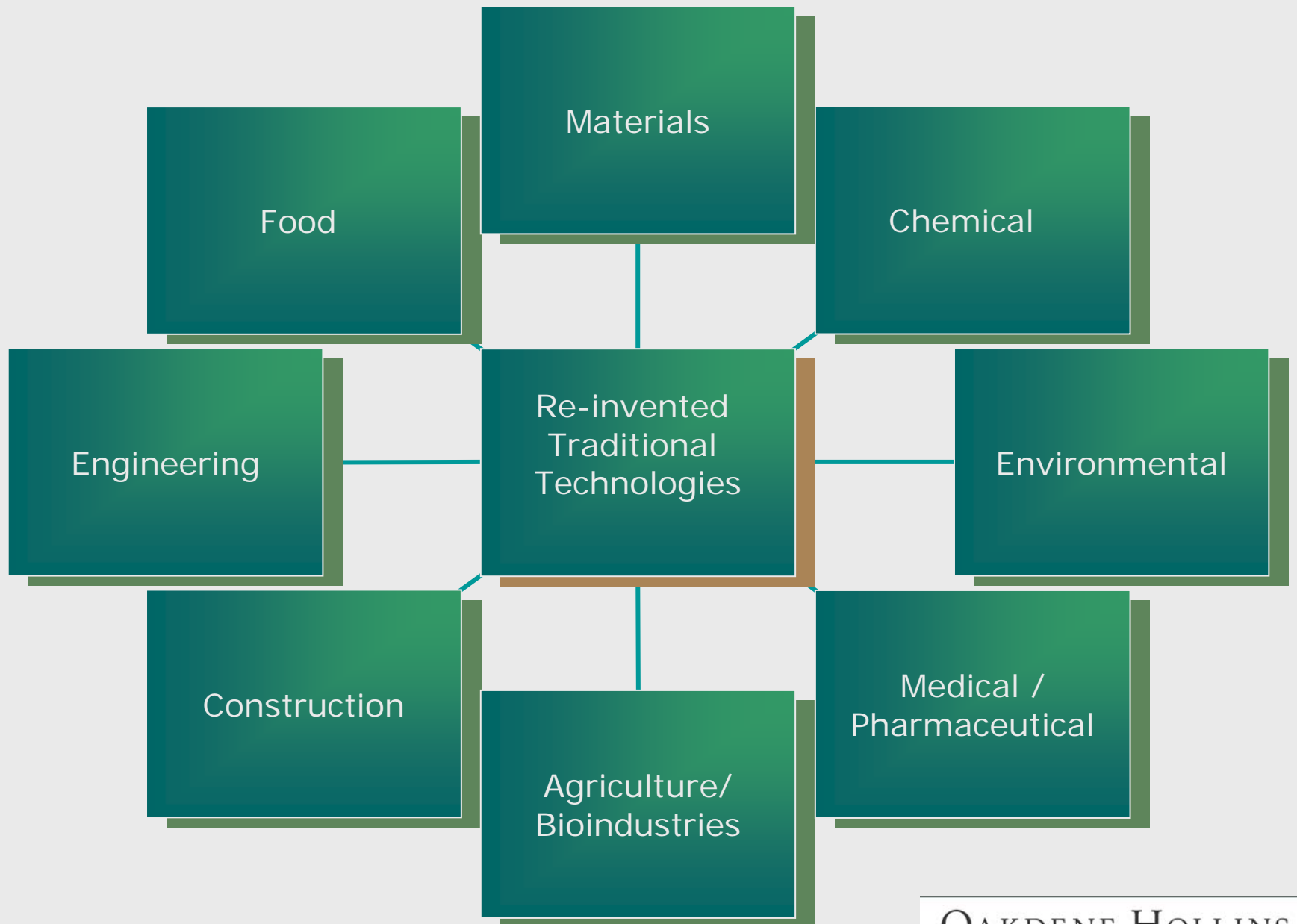
Four Questions

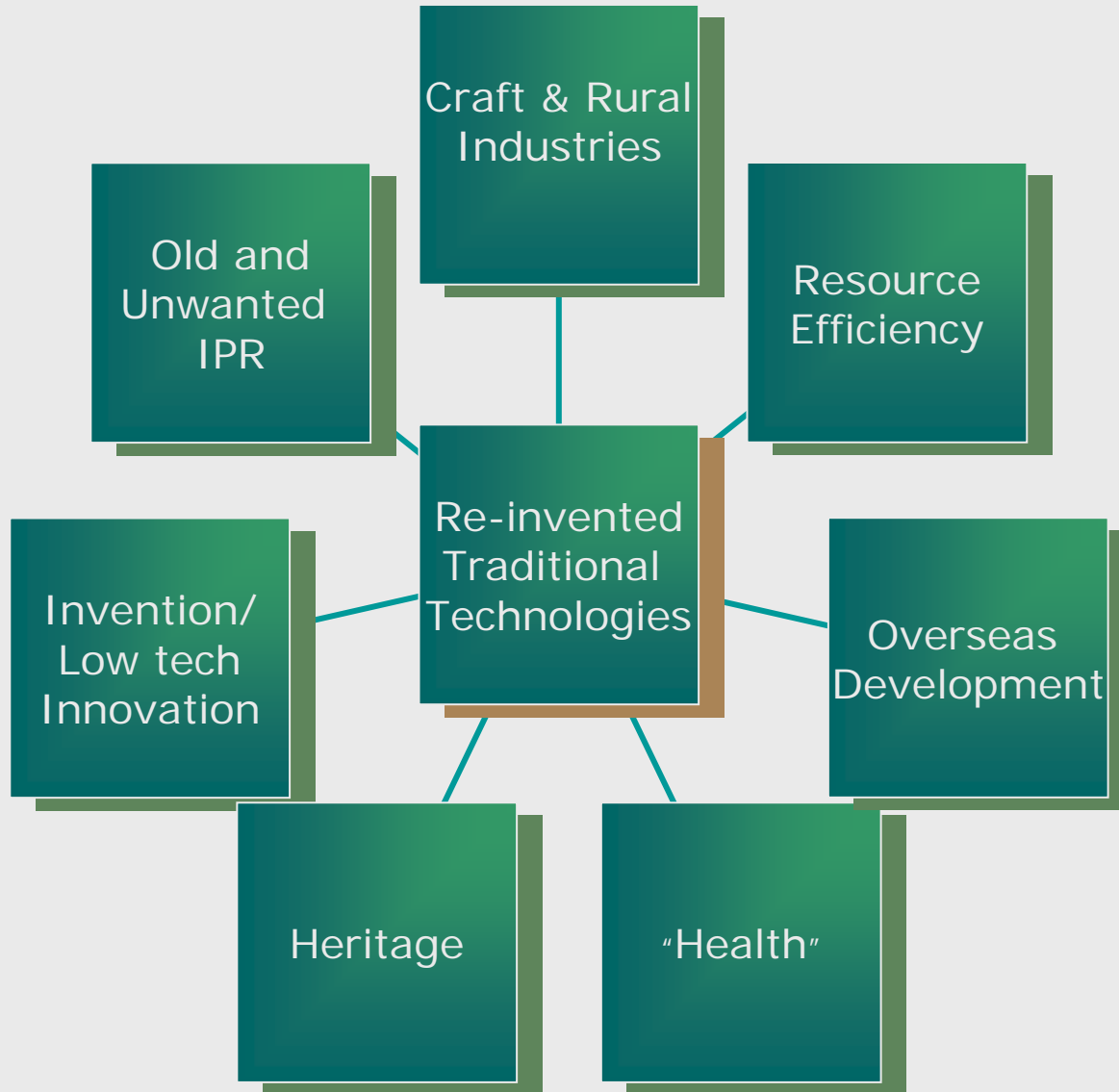
- ◆ Is this a substantial commercial opportunity or a tiny niche market?
- ◆ Does the emphasis on the pursuit of what is new make it difficult to revisit the old?
- ◆ How great is the sustainability advantage?
- ◆ How can this approach be encouraged?

OAKDENE HOLLINS

Re-inventing for Sustainability

Nicholas Morley





Re-invented technologies

- ◆ A technology or material that has been previously significant
- ◆ A new application or technological addition/adaptation
- ◆ Lower environmental impact

Resource Efficiency Technologies

Traditional technologies based on scarcity of materials or of energy

“...Your petitioner humbly conceives that the inhabitants of the United Kingdom are not sufficiently careful to preserve their rags...”

Letter from a paper mill in the Methodist Magazine, June 1808

Resource Efficiency Technologies

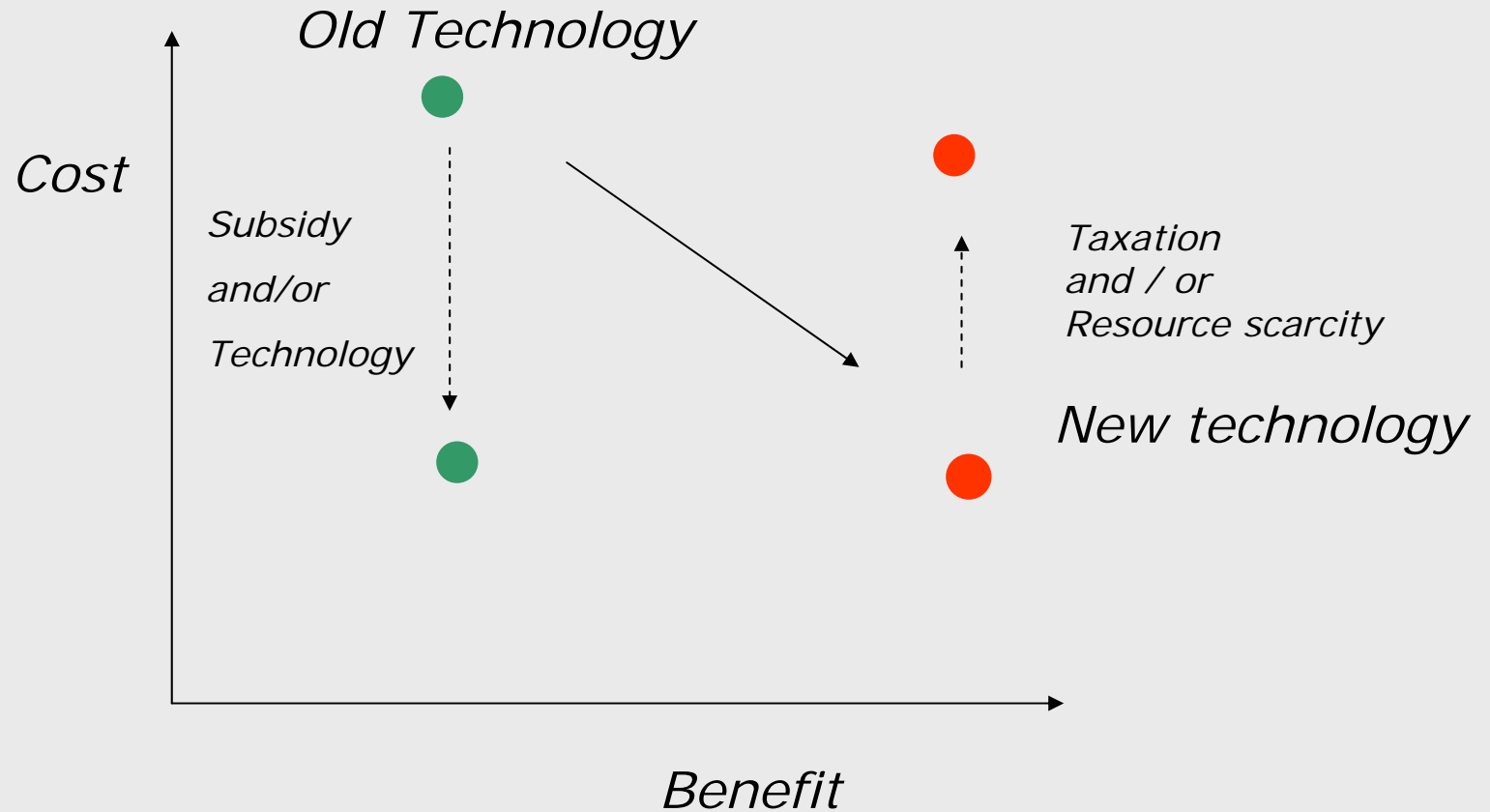
- ◆ Traditional technologies dealt with low energy, diffuse systems with low energy or material yields
- ◆ Limitations were often in collection, preparation and separation

Resource Efficiency Technologies

- ◆ Wind power
- ◆ Micro-hydropower
- ◆ Wood as a fuel
- ◆ Shoddy and mungo
- ◆ Reconditioned oil



Resource Efficiency Technologies



Craft Industries

◆ Traditional technologies still maintained as a craft

- Use of natural dyes
- Soap
- Felt



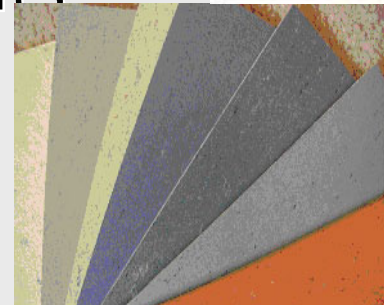
Heritage

◆ Traditional materials

- ◆ Lime mortars and plasters
- ◆ Linoleum
- ◆ Vegetable oil-based paints
- ◆ Wool-based insulation

◆ Traditional techniques

- ◆ Cob
- ◆ Rammed earth
- ◆ Timber frame



“Health”

- ◆ Cosmetic ingredients from natural ingredients
- ◆ Vegetable oil-based lubricants
- ◆ New uses for natural fibres
 - ◆ Hemp
 - ◆ Nettle



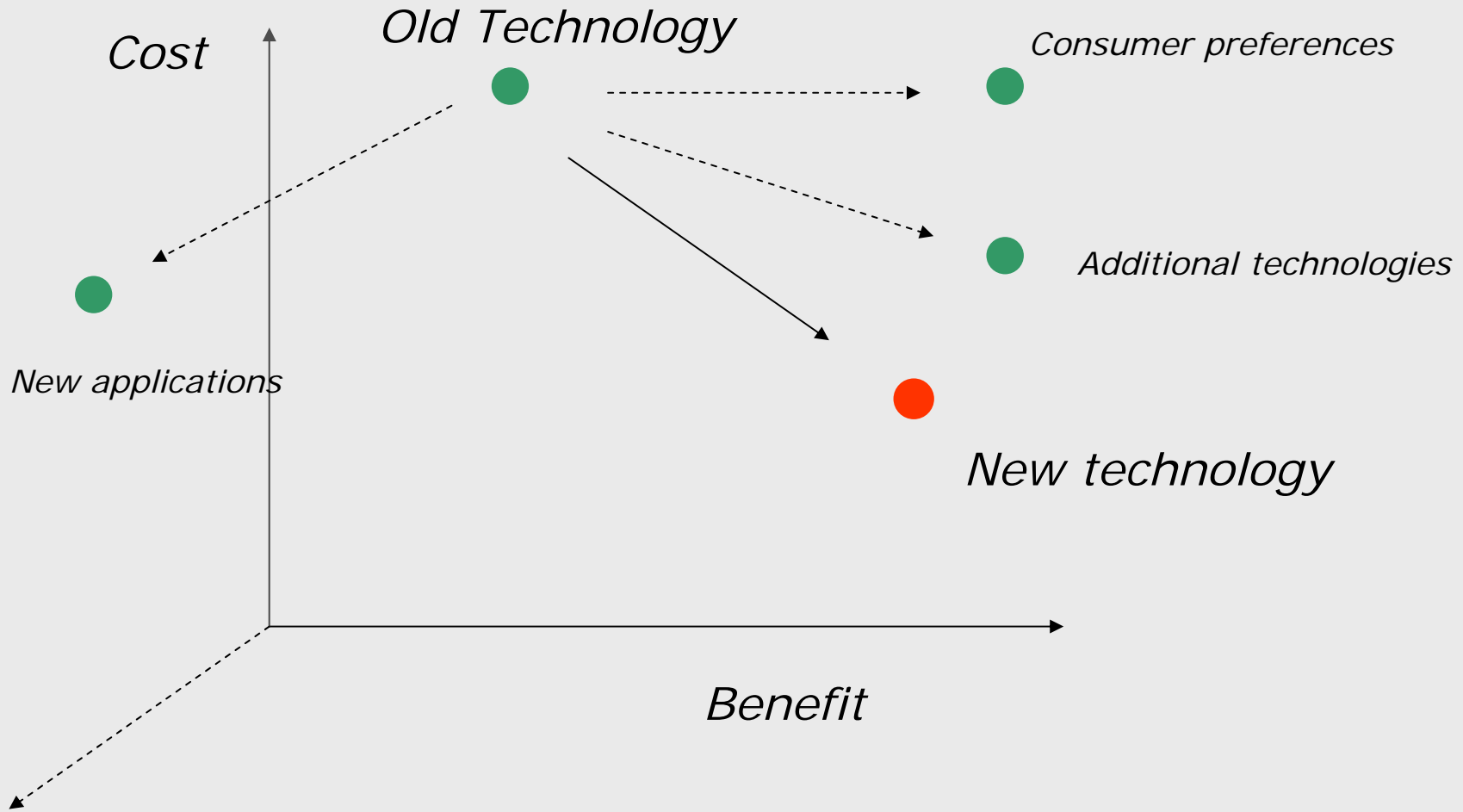
OAKDENE HOLLINS

Methods of Re-invention

- ◆ Consumer preferences
- ◆ Application of new technology
- ◆ Application to new markets



Craft and Traditional Materials Industries



UK Economic Impact

- ◆ Environmental industries £25bn
- ◆ Craft industries £800m
- ◆ Industrial lubricants £100m

Environmental and Social Impact

- ◆ Direct impact of resource efficiency technologies
- ◆ Health and quality of life impacts

Future Considerations

- ◆ Stimulating innovation & invention
- ◆ Revisiting problems and barriers
- ◆ Scope of economic, environmental and social impact