



Further Education SUSTAINABILITY SUMMIT

24 March
University of Leeds

**Keynote speaker: Environmental
sustainability – business response and
challenges**

*Nigel Marsh, Global Head of Environment,
Rolls-Royce plc*





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‘Environmental sustainability’ – business response and challenges



Nigel Marsh
Global Head of Environment, Rolls-Royce plc



What I'm covering

- **Context of Rolls-Royce**
- **What is sustainability?**
- **Our approach to sustainability**
- **The challenge of skills & capability**



Rolls-Royce

Group profile

Rolls-Royce is a global company, providing integrated power solutions for customers in civil and defence aerospace, marine and energy and power markets.

We support our customers through a worldwide network of offices, manufacturing and service facilities.

Trusted to deliver excellence



Rolls-Royce

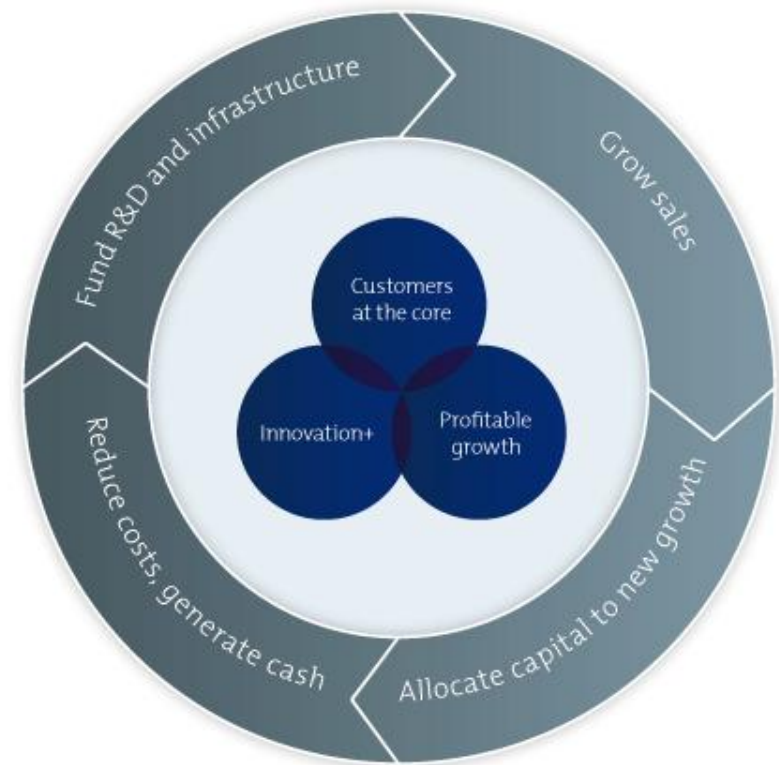
Our business model

Built around our core strategic themes of:

- **customer**
- **innovation**
- **profitable growth**

We are a power systems company based on two technology platforms:

- **gas turbines**
- **reciprocating engines**

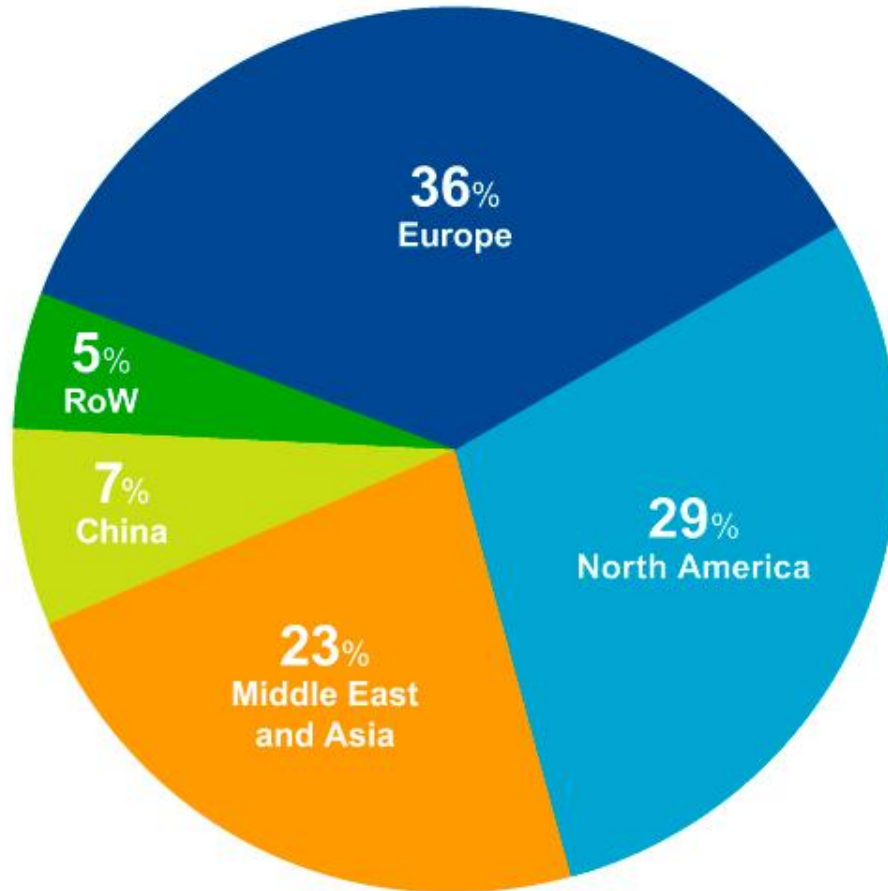


Continuous investment in innovation delivers better products and services on behalf of customers. This allows us to meet their needs and grow profitably to the benefit of our shareholders.



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A global business



2013 revenue by geography



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So, what is sustainability?



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Sustainability

- The UN defines corporate sustainability as:
“a company’s effort to drive profitable growth while achieving a positive economic, social and environmental impact”
- A sustainable business is one that works to manage its impact – not just the environment but also community, society and economy
- It’s about how a company leads and responds to the bigger global issues in order to survive and be competitive for the future.



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Challenges

Key challenges that will increasingly impact our business and markets:

- the world's population is increasing
- there is a growing demand for natural resources making them more expensive and scarcer
- externalities, such as carbon taxes, are increasingly being priced into the cost of doing business
- customers, investors, NGO's and wider society are scrutinising businesses and demanding greater transparency
- skills gap.



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BUT, Sustainability will help to:

- improve reputation
- generate new revenues
- reduce costs and risks
- deliver competitive advantage and long-term value in financial, social, environmental and ethical terms
- for E move up the waste hierarchy.



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Sustainability

Better power

helping our customers do more, using less

Better future

we are committed to innovation: powering better, cleaner, economic growth that creates value for customers, employees, investors, suppliers and wider society

Better business

we invest in technology, people and ideas to improve all aspects of our performance and to drive profitable growth. Building on today's achievements to meet the business challenges of the future



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PROFITABLE GROWTH



BETTER BUSINESS

Reduce energy use

by 30%

normalised by revenue by 2020



Reduce greenhouse gas emissions by

50%

absolute
by 2025



Reduce total solid and liquid waste by

25%

normalised by
revenue by 2020



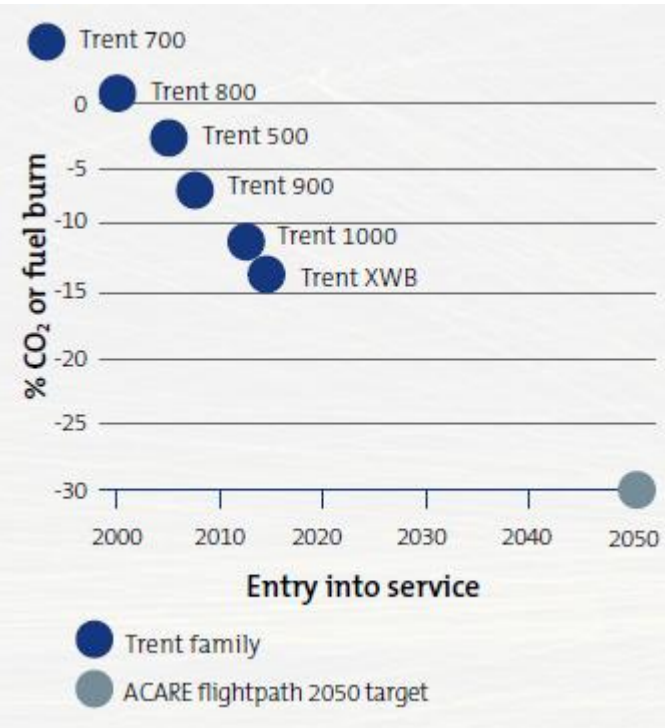
Reduce **total reportable injury (TRI) rate to 0.3 per 100 employees by 2020**, to achieve first quartile performance

Zero waste to landfill** by 2020

CUSTOMER



BETTER POWER

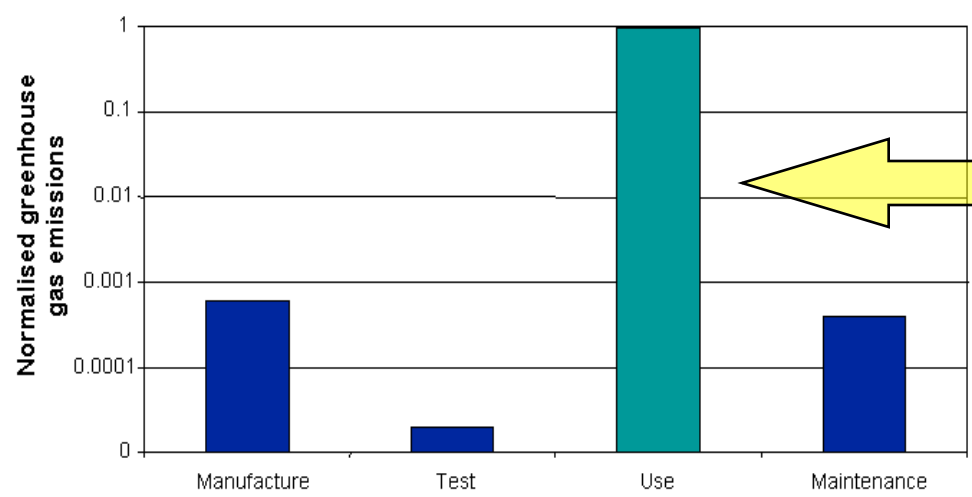


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Scale of Environmental Impact



99.9% of the greenhouse gas emissions associated with an aero engine occur during the 'in service' life cycle phase



Product Use

Supply Chain

Operations



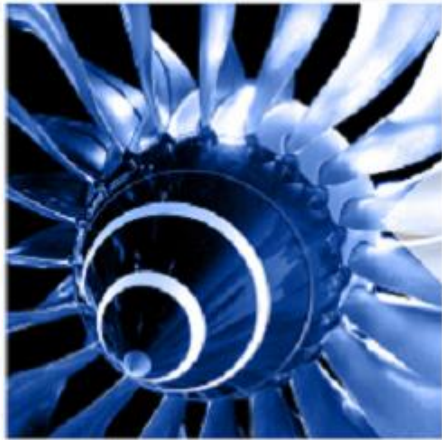
Where is the focus?



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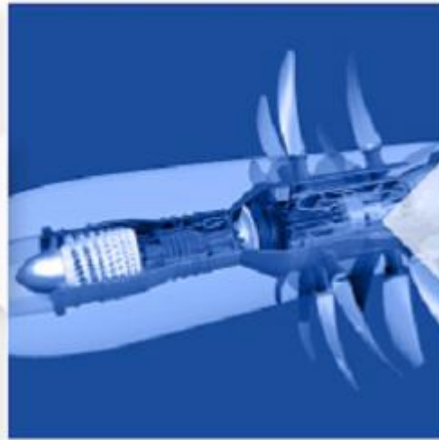
Long-term consistent technology

VISION



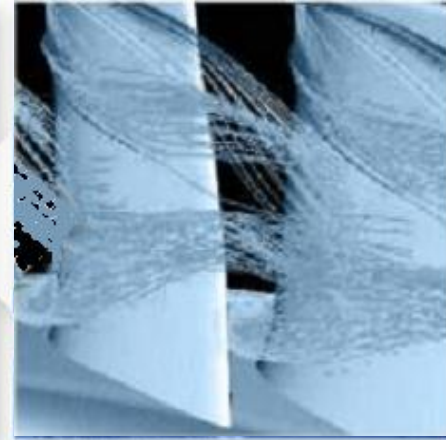
Vision 5

Near term upgrades
Off the shelf
technologies



Vision 10

Next generation
Technology
demonstration



Vision 20

Future generation
Emerging
technologies

£~1bn spent on research & development each year



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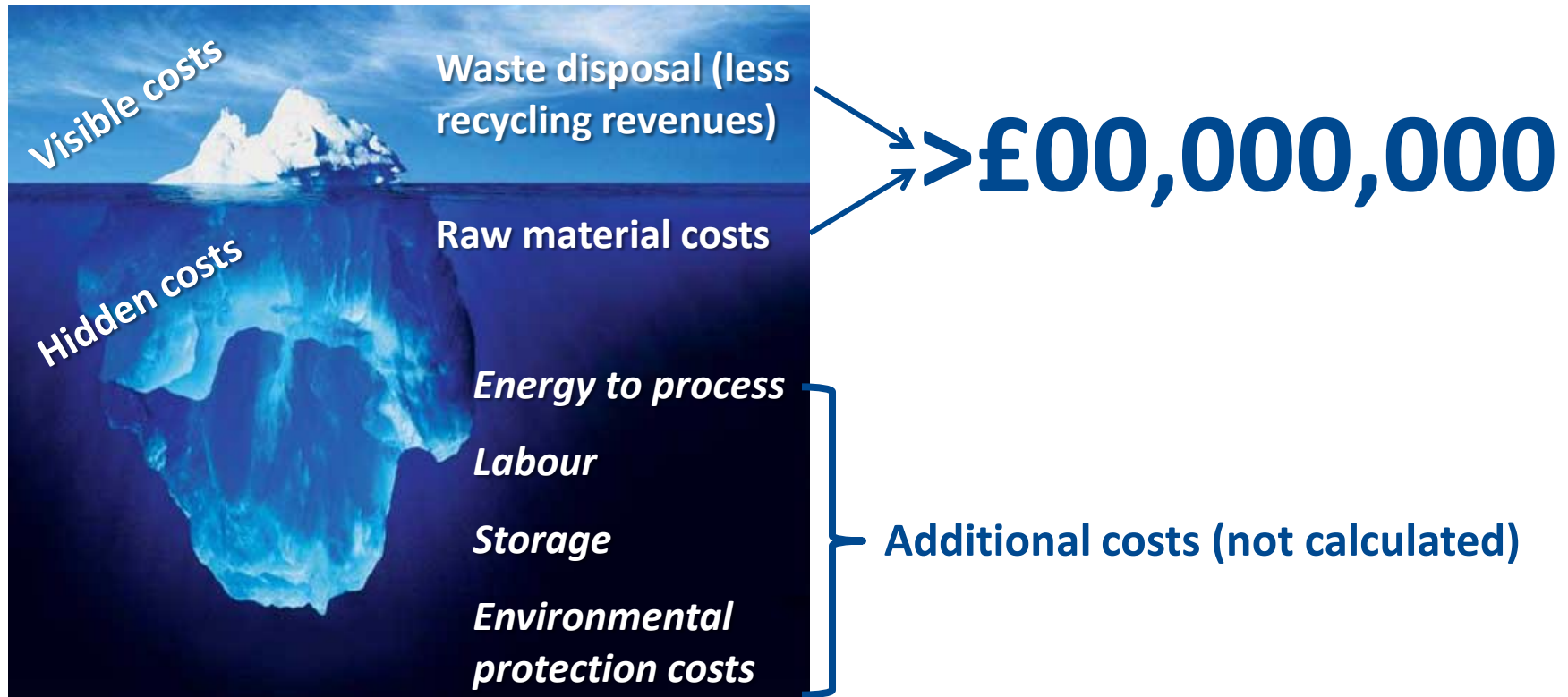
So what about Operations?



The Group case for action



- Over 50,000 tonnes waste/year from our own internal operations
- Represents significant, mainly hidden cost of waste to the business



- New Group 2020 targets include: - 25% reduction in solid and liquid waste
- zero waste to landfill



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Waste Action Programme has 4 workstreams

How we manage waste

Improve

- Waste management mind-set
- Compliance
- Competency
- Data quality

Success

- Implementation of company standards
- Accountability & Responsibility for waste
- No compliance issues
- Range of validated tools

Innovation

Implement

- Solutions to difficult wastes
- New ways of preventing or reducing at source

Success

- Scalable, cost effective solutions available

Cross-cutting solutions

Implement

- Deployment of standard solutions across applicable businesses/sites

Success (at scale)

- Tangible cost savings
- Waste reduction and/or increased recycling
- Local ideas adopted/ recognised globally

Site based improvements

Implement

- Opportunities identified from Waste Mapping
- Delivered packages in priority of payback/ business case

Success (locally)

- Tangible cost savings
- Waste reduction and/ or increased recycling



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WAP Toolkit – 4 specific elements to help identify and prioritise opportunities

a) Material	c) Waste material (tonnes)	d) Total purchase cost of quantity (c)	e) Disposal cost	f) Recycling revenue	g) Net total cost
Irons/Steels	7331	£82,250,431	£0	£225,000	£82,025,431
Nickel and Cobalt Alloy	933	£36,759,545	£0	£3,563,000	£33,196,545
Titanium	999	£29,610,311	£0	£2,238,000	£27,372,311
Aluminium	97	£1,197,488	£0	£48,695	£1,148,793
Bronze	500	£2,780,500	£0	£2,075,000	£705,500
Cardboard	1253	£3	£246,879	£10,356	£236,523
Wood	3617	£2,134,030	£884,212	£0	£3,018,242
Paper	1401	£186,333	£332,079	£17	£516,395
Plastic	168	£127,480	£0	£3,442	£124,038
Blasting Grit	1158	£949,404	£366,882	£0	£1,316,286
Zircon (sand)	1517	£4,238,673	£522,426	£0	£4,761,099
Pascagoula Foundry Sa	3829	£179,317	£140,088	£0	£319,405
Solvents	334	£7,523,256	£924,400	£0	£8,147,656
Oil	2993	£28,099,751	£1,853,707	£87,624	£29,865,833
Rinse water, process of	2467	£2,442	£1,181,760	£0	£1,184,202
Acids	2930	£3,771,562	£2,293,391	£0	£5,064,953
Alkalis	5367	£21,149,000	£4,715,870	£0	£25,864,870
Cleaning Agents	394	£22	£0	£0	£22
Paints	129	£92	£0	£0	£92
Absorbent Media	607	£44	£0	£0	£44
Vibro Polishing Media	180,95	£2	£0	£0	£2

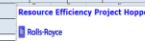
Waste stream costing tool template



WASTE CHECKLIST

Area	Typical activities	Potential wastes																										
Loading (goods in)	Process/area waste mapping template																											
Internal storage materials finished	<table border="1"> <thead> <tr> <th>Stock materials</th> <th>Quantity</th> <th>Frequency of</th> <th>Process/area</th> </tr> </thead> <tbody> <tr> <td>Coilplate</td> <td>1 roll</td> <td>weekly</td> <td></td> </tr> <tr> <td>Hydraulic oil</td> <td>2 litres</td> <td>daily</td> <td></td> </tr> <tr> <td>Waste components</td> <td>2 items</td> <td>daily</td> <td></td> </tr> <tr> <td>Cutting tips</td> <td>2 tools</td> <td>daily</td> <td></td> </tr> </tbody> </table>	Stock materials	Quantity	Frequency of	Process/area	Coilplate	1 roll	weekly		Hydraulic oil	2 litres	daily		Waste components	2 items	daily		Cutting tips	2 tools	daily		<table border="1"> <thead> <tr> <th>Stock materials</th> <th>Quantity</th> <th>Frequency of</th> <th>Process/area</th> <th>Waste</th> <th>Storage</th></tr></thead></table>	Stock materials	Quantity	Frequency of	Process/area	Waste	Storage
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Coilplate	2 rolls	weekly	Out of spec/defect	Waste																								
Spill water	1 bag	daily	Spilling machine	Waste																								
Spill oil	1 tin	daily	Spilling	Waste																								
Cutting tips	2	daily	Worn subscriptions	Waste																								

Waste mapping template & checklists



Business/Function	Site	Project Hopper	Estimated waste saved / year tonnes	Disposal cost saving/year GBP	Material cost saving/year GBP	Development time (months)	Feasibility (likelihood of success)	Cost to treatment per year	Cost reduction per year	Payback time	Total Project Priority
Coil	Site X	Coilplate	10	100	500	12	High	£100,000	£100,000	12 months	High
Coil	Site X	Hydraulic oil	2	20	100	6	Medium	£20,000	£20,000	6 months	Medium
Coil	Site X	Waste components	2	20	100	6	Medium	£20,000	£20,000	6 months	Medium
Coil	Site X	Cutting tips	2	20	100	6	Medium	£20,000	£20,000	6 months	Medium

Project hopper & prioritiser

Resource Efficiency

Simple cost-benefit calculator

Sector/Business: **Sector X**
 Site: **Site X**
 Project/initiative: **Project 2**
 Payback period: **2 years**
 Costs expressed in: **Thousands** Currency: **GBP**

Cost / Benefit Area	Year 1	Year 2	Year 3	Year 4	Year 5
Costs					
Capital Investment	50				
Training	10				
Bi-annual maintenance			10		10
Benefits					
Total cost	60	0	10	0	10
Increase in recycling revenue					
Waste disposal savings	5	10	10	10	10
Operating cost savings					
Raw material savings	30	30	30	30	30
Total benefit	35	40	40	40	40
In year net benefit / cost	-25	40	30		
Cumulative net benefit / cost	-25	15			

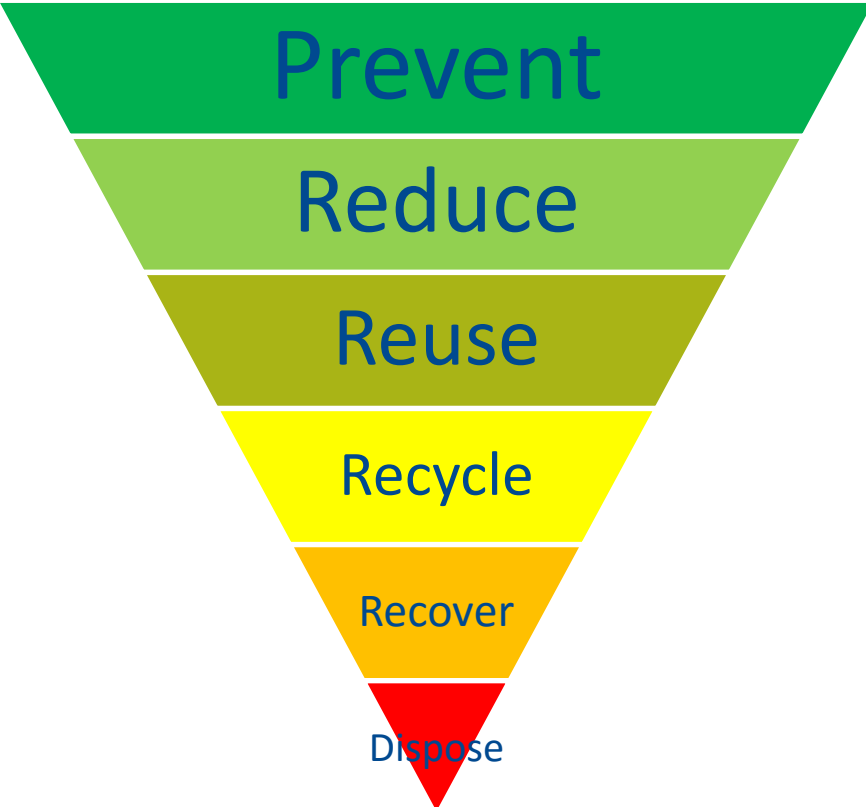
Simple cost/benefit sheet



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Note: Care must be taken to assess...

Bigger cost savings could be achieved by focusing on the top of the Waste Hierarchy



- Try to prevent waste first
- If you can't prevent it then try to reduce it
- If you can't reduce it then aim to reuse it
- If you can't reuse it then segregate for recycling
- If you can't recycle, then look to recover some value e.g. energy from waste
- If there's no alternative available then dispose e.g. to landfill

WE ARE AIMING FOR **ZERO** TO LANDFILL

So where's the problem??



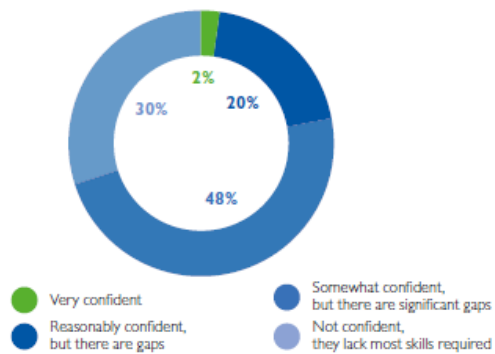
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IEMA Perfect Storm Report

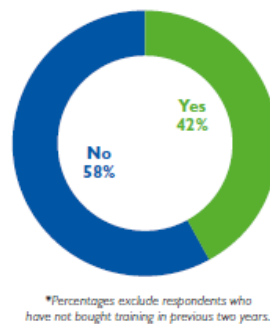
HOW CONFIDENT ARE ORGANISATIONS THEY HAVE THE SKILLS TO COMPETE IN A SUSTAINABLE ECONOMY?



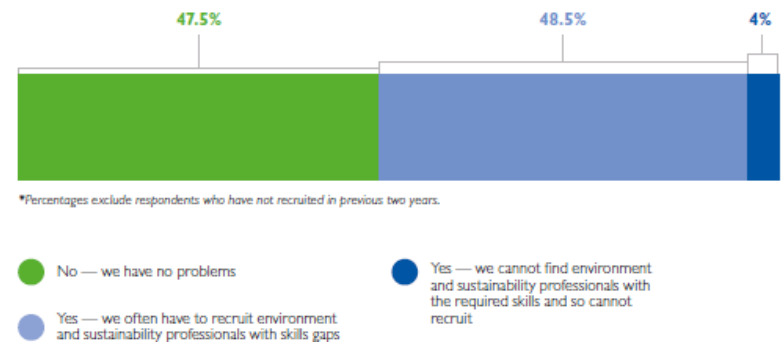
HOW CONFIDENT ARE ORGANISATIONS THEIR SUPPLIERS HAVE THE CAPABILITY TO MAKE THE TRANSITION TO A SUSTAINABLE ECONOMY?



HAVE ORGANISATIONS MET BARRIERS IN SECURING ENVIRONMENT/SUSTAINABILITY TRAINING IN THE PAST TWO YEARS?



DO ORGANISATIONS HAVE PROBLEMS RECRUITING ENVIRONMENT AND SUSTAINABILITY PROFESSIONALS WITH THE SKILLS THEY NEED?



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iema
Institute of Environmental
Management & Assessment

Power systems company Rolls-Royce has a turnover of £15 billion and employs 55,000 staff. All of its businesses are certified to the ISO 14001 environmental management standard, and its three-pronged environment strategy focuses on: supporting customers to reduce their environmental impacts; developing low-emission products; and reducing the company's own impacts.

Nigel Marsh, Global Head of Environment, says meeting the company's environmental objectives needs a suitably skilled and knowledgeable workforce. "It's vital we have access to the right sort of capabilities in our environment practitioners, and indeed much of the rest of our workforce," he says.

Marsh uses Rolls-Royce's closed loop recycling initiative to illustrate the sort of benefits that can come from improving employees' skills and awareness. Called Revert, the programme aims to recover, recycle and reuse waste metals in manufacturing and turn them into new aerospace grade alloys.

Every one of its aero manufacturing facilities around the world is part of the programme. It saves Rolls-Royce 20,000 MWh of energy each year — enough to power 1.8 million homes for a day. Revert also saves 9000 tonnes of CO2 a year.

"To do more using less, we need to raise both skills and awareness among our employees," says Marsh. "We believe we can make significant savings by educating our workforce in techniques like waste mapping. That will make us both more competitive and more resilient as a business."

Rolls-Royce is increasingly looking to IEMA to help provide environment and sustainability skills. "IEMA enjoys a unique position in the environment arena, and it is continually developing things that interest us. The institute is in a position to be both a global driver for and provider of environmental skills," says Marsh. IEMA is helping Rolls-Royce pilot the "managing with environmental sustainability" course in one of the company's businesses, for example.



Recycling metal saves Rolls-Royce

20,000 MWh

of energy each year
— enough to power

1.8 MILLION

homes for a day



Rolls-Royce

IEMA Skills Map

IEMA calls for ‘enhanced collaboration between business, universities and training providers to ensure courses deliver a workforce with the fundamental knowledge, practical skills and core behaviours needed to contribute to the delivery of sustainable outcomes’




Sustainable practice		
Implement sustainable thinking	Deliver environmental improvement	Managing business resilience
Embed sustainable thinking across organisational value chain	Ensure strategic policies and decisions include sustainability and consider whole life-cycle costing	Identify and manage strategic opportunities and risks to improve business resilience
Develop and encourage innovative ideas that implement whole life-cycle thinking	Manage projects to deliver environmental performance improvement, making a business case	Identify strategic opportunities and risks to improve business resilience
Use sustainable thinking to lead research, develop or promote new methodologies or policies	Lead projects to deliver environmental performance improvement, making a business case	Explain how a changing environment affects work or study area
Implement environmental management and/or assessment tools	Develop programmes to deliver environmental performance improvement	Understand how a changing environment creates opportunities and risks for organisations
Support the implementation of environmental management and/or assessment tools	Propose ways to improve environmental performance	Aware of how a changing environment creates opportunities and risks for organisations



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Behavioural Change





It's smarter to avoid printing – share and work digitally whenever possible!

More than half of all pages printed are never used.



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Questions & Answers



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