


GRESHAM COLLEGE

Educationally 'Green': Environmental Research, University Teaching and Campus Greening

Carolyn Roberts

Frank Jackson Foundation Professor of Environment



The Knowledge Transfer Network

Visiting Researcher, University of Oxford



Image Landsat
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Google earth





Dr Jahir Haque

Deputy Vice Chancellor

University of Liberal Arts, Dhaka,
Bangladesh







Borsetshire's longstanding interest

- 1997, Forum for the Future identified Borsetshire University as a 'Trailblazer'
- 2006 onwards, Winner, 'Highly Commended' and regularly shortlisted in 'Green Gown' awards
- 2006, Times Higher Education award for 'Outstanding Contribution to Sustainable Development'
- 2006, Fairtrade University status



Borsetshire University Vision, *circa 2006*

‘Is to be a high quality university with global reach which is passionate about:

- The creation and transmission of knowledge
- Its students and staff working in partnership for mutual benefit
- Providing accessible opportunities for learning at all ages and levels
- **Diversity, sustainability and social justice**
- Building on its foundation’



Borsetshire's Mission, *circa 2006*

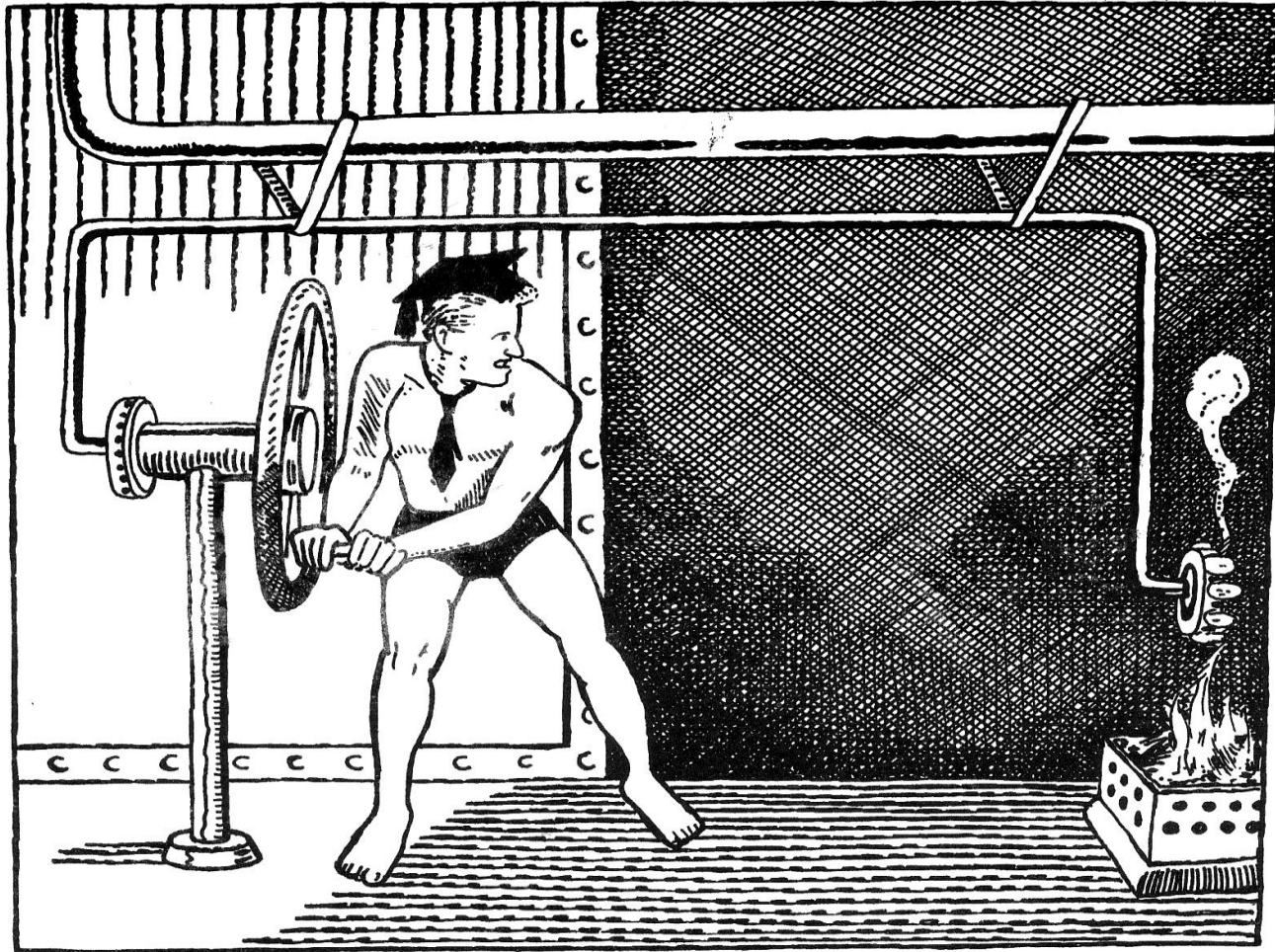
‘is to create a dynamic and sustainable portfolio of learning opportunities for the communities it serves. Within this overarching mission, the University will contribute fully to the economic, social and cultural life of Borsetshire and its region, while fostering national and international links. It will also develop an approach to social responsibility which reflects its commitment to sustainability and social justice.’



What did Borsetshire University do?

- 1991, High level cross-institutional Environmental Management Committee developed policies
- 1993, First 'State of the Environment Report' by staff and students
- Many initiatives such as recycling drives, energy and paper awareness, ecological art exhibitions, mass bicycle rally, 'environment week', bus service, staff development for teachers, publications, investment in environmental research, water and energy audits, newbuild at BREAM excellence standard

I MUST CONFESS THAT SOME OF THE
ACTIVITIES OF THE MEMBERS OF
STAFF LEFT ME FEELING SLIGHTLY
UNEASY....





A risk and an opportunity?

- Borsetshire was the first English university to apply for and gain British Standard ISO14001 Environmental Management System for the whole institution, including the curriculum, in 2005
- ISO14001 provided a framework for targets, responsibility and accountability, plus a driver for continuous improvement
- In top 5 of 'Green League' ever since

Taking risks and dealing with the unexpected?





A Mission 'in the DNA'?

- 'underpins each of the University's strategic priorities and informs all elements of University life. The University promotes sustainable development, locally and globally, through teaching, research, knowledge transfer and the general conduct of its business.'



Modelling Institutional Change – Simple model

1. Initiation

Structure, clarity, advocacy,
champions, understanding

2. Implementation

Responsibility, empowerment,
pressure, Faculty development

3. Institutionalisation

Embedding, organisational,
strength, spread, facilitation

in Hopkins, 2002



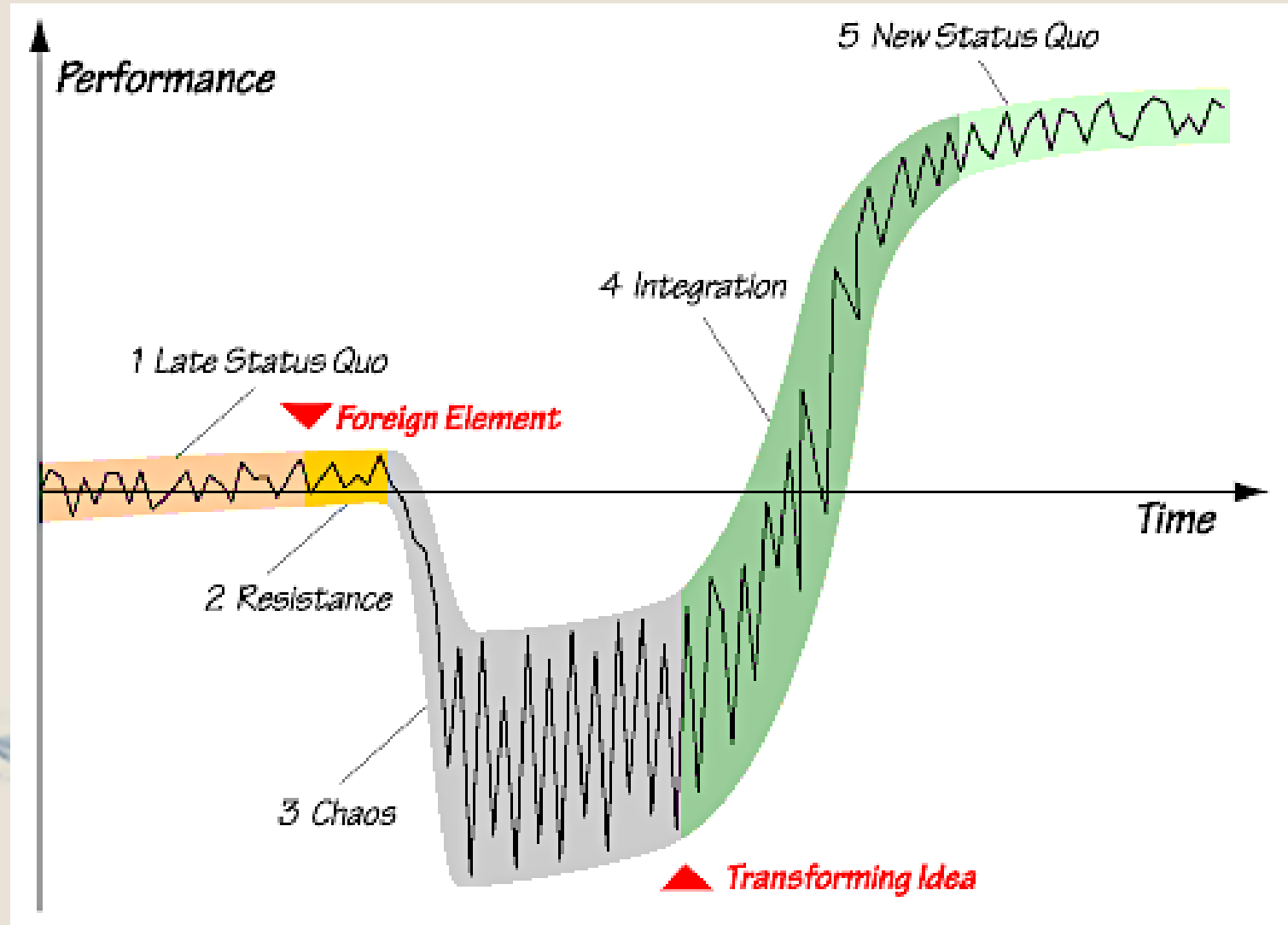
Modelling Institutional Change

– Simple model

- Staff
- Style
- Systems
- Strategy
- Structure
- Skills
- Super-ordinate goals

McKinsey, 2002

Another simple model





Modelling Institutional Change – Simple model

Appreciative Enquiry Approach

1. Appreciating and valuing the best of 'what is'
2. Envisioning 'what might be'
3. Dialoguing 'what should be'
4. Innovating 'what will be'

Hammond, 1998

Models of change in Higher Education

- Technical-rational
- Resource allocation
- Diffusionist:epidemiological
- Kai Zen or continuous quality improvement
- Models using complexity



Trowler *et al*, 2003

Kotter's Eight Stages of Change

1. Establishing a sense of urgency
2. Creating a guiding coalition
3. Developing a vision and strategy
4. Communicating the change vision
5. Empowering broad-based action
6. Generating short term wins
7. Consolidating gains and producing more change
8. Anchoring new approaches in the culture

Kotter, 1995

8. Anchoring new approaches in the culture

7. Consolidating gains and producing more change

6. Generating short term wins

5. Empowering broad-based action

4. Communicating the change vision

3. Developing a vision and strategy

2. Creating a guiding coalition

1. Establishing a sense of urgency



Empowering broad-based action

- Challenged obstacles, including maverick ideas (“well, of course this doesn’t apply to me/our course/my research/my area of responsibility”)
- Pushed the boundaries on University regulations, and questioned received wisdom
- Circumvented immovable objects
- Drew in student activity e.g. in community programmes and in reviewing the University’s operations

Consolidating gains and producing more change

- Identified ISO14001 as the vehicle for maintaining progress
- Highlighted areas for improvement, including limited progress on estates, water management, some areas of the curriculum
- Involved the Students 'Union
- Attempted more high profile initiatives - School of Environment was identified as a national 'Centre of Excellence in Teaching and Learning, and won £5M, in 2005. New 'Centre for Active Learning in Geography and Environment' established
- Sustainability Institute started up

Similar examples

In 2002, Cardiff University negotiated with the local public transport providers to lay on more trains and buses for a growing student population, and reduced on site car parking (by building over spaces). Car use fell, and the strategy reduced complaints by local residents.



Green history of a 'reluctant' HEI (Loughborough)

- Intense lobbying from students about green credentials – postcard campaigns, meetings with the Vice Chancellor
- In 2013 switched to 100% green energy sources,. cutting out 13000 tonnes CO₂ pa, equivalent to 7,600 houses
- Not yet tackled energy consumption..... attempting a 1.5% cut per year....

8. Anchoring new approaches in the culture

7. Consolidating gains and producing more change

6. Generating short term wins

5. Empowering broad-based action

4. Communicating the change vision

3. Developing a vision and strategy

2. Creating a guiding coalition

1. Establishing a sense of urgency





Jamie Agombar

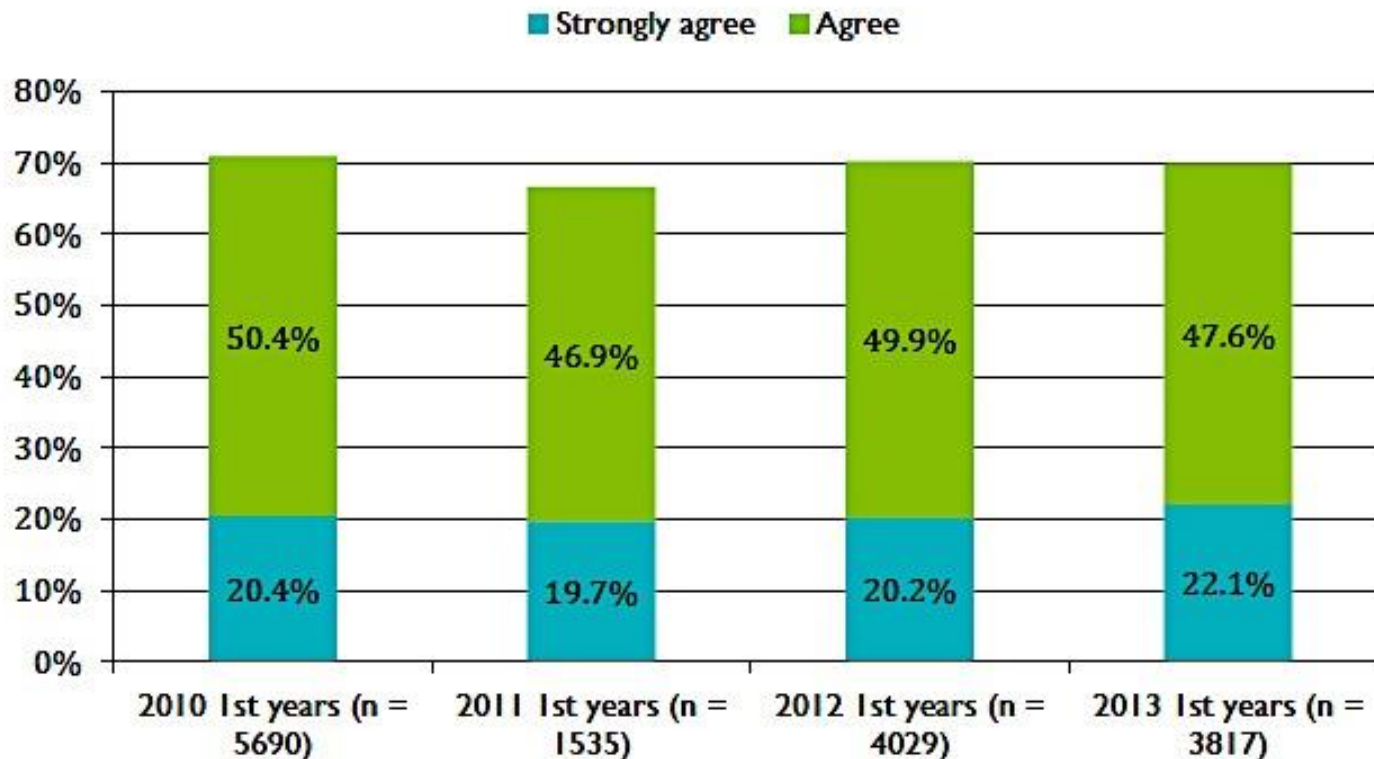
Head of Sustainability

National Union of Students



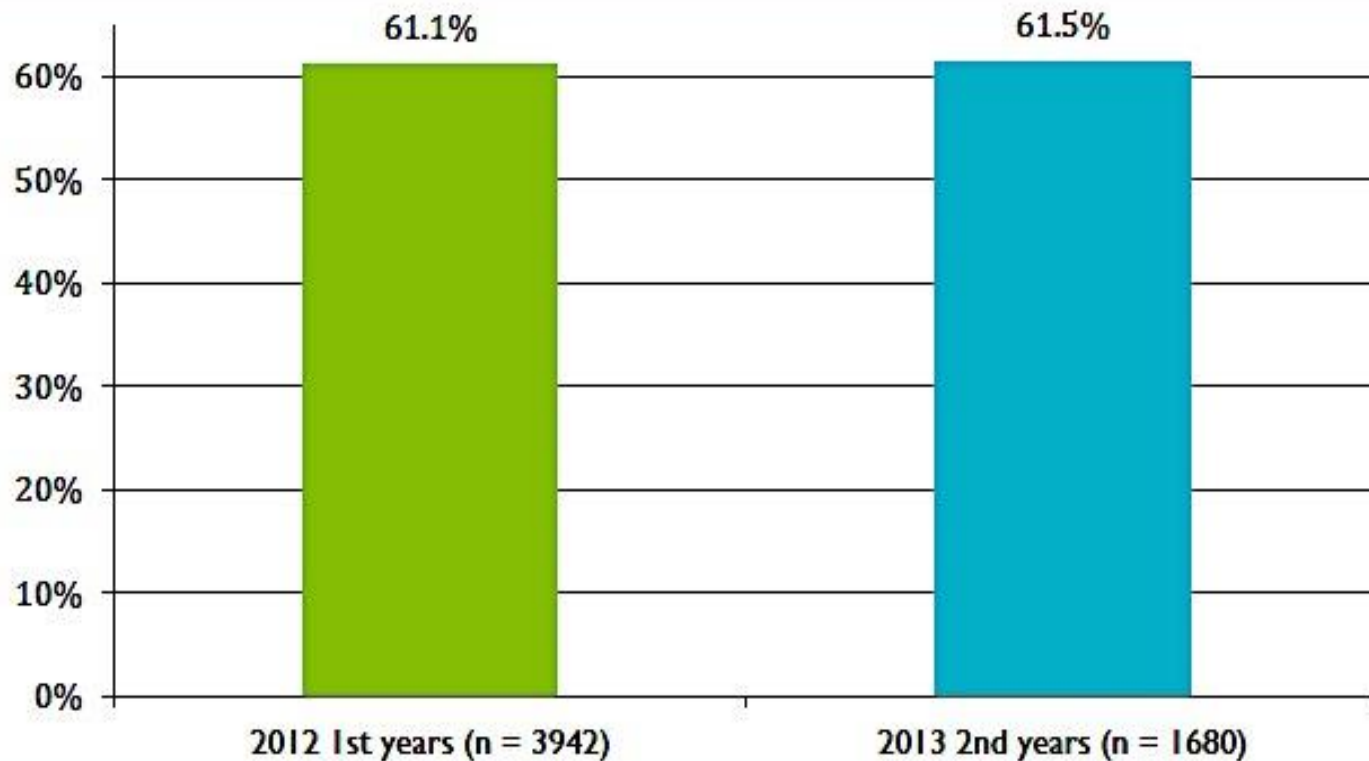
The National Union of Students Survey, 2014

Figure 16: To what extent, if at all, do you agree that universities should be obliged to develop students' social and environmental skills as part of their courses?



The National Union of Students Survey, 2014

Figure 19: To what extent, if at all, would you say that you personally agree with the following statements: Sustainable development is something I would like to learn more about



People & Planet Green League 2007

<http://peopleandplanet.org/gogreen/greenleague2007/>

people & planet

student action on world poverty and the environment

*The Green League
for Environmental Performance
the following universities are awarded:*



2007 'First Class' performance...

Rank	University	Publicly available environmental policy	Full time environmental staff	Comprehensive environmental audit	Green travel plan	Fairtrade University status	% total energy from renewables		% waste recycled		Carbon emissions per head (Kg CO2e)		Final Score (max. 50)	
1	Leeds Metropolitan	★	★	★	★	★	★	85%	★	36%	☆	636	48	<div><div></div></div>
2	Plymouth	★	★	★	★	★	☆	7%	★	40%	★	501	46	<div><div></div></div>
3	Hertfordshire	★	★	☆	★	★	☆	16%	★	31%	★	553	44	<div><div></div></div>
4	Glamorgan	★	☆	★	★		★	64%	★	32%	★	579	43	<div><div></div></div>
5	Gloucestershire	★	★	★	★	★	☆	36%		6%	★	242	42	<div><div></div></div>
5	Oxford Brookes	★	★	★	★	★	☆	34%	—		★	376	42	<div><div></div></div>
5	Queen's, Belfast	★	★	★	★	★	☆	17%	☆	17%	☆	1,091	42	<div><div></div></div>
8	Anglia Ruskin	★	★	☆	★	★	☆	6%	☆	14%	★	460	40	<div><div></div></div>
8	Cambridge	★	★	★	★		☆	22%	★	29%		2,349	40	<div><div></div></div>
8	Edinburgh	★	★	★	★	★	☆	25%	☆	26%		1,868	40	<div><div></div></div>
8	Leeds	★	★	★	★	★		0%	★	33%	☆	1,252	40	<div><div></div></div>
8	Portsmouth	★	★	★	★	★		0%	☆	27%	☆	722	40	<div><div></div></div>
8	Sheffield Hallam	★	★	★	★		☆	2%	☆	10%	★	476	40	<div><div></div></div>
8	St Andrews	★	★	★	★	★	☆	30%	☆	22%		1,896	40	<div><div></div></div>
8	University of the West of England, Bristol	★	★	☆	★	★	—		★	29%	★	522	40	<div><div></div></div>

People & Planet Green League 2013

First Class award



Rank	University		Policy										Performance				Total Score
			Env. Policy	Env. Staffing	Env. Auditing	Ethical Investment	Carbon Management	Ethical Procurement and Fairtrade	Sustainable Food	Student and Staff Engagement	Education and Learning	Renewable Energy	Waste and Recycling	Carbon Emissions	Water Reduction		
1+	Manchester Metropolitan University	CASE STUDY	★	★	★	★	★	★	★	★	★	★	★	★	★	★	
2	University of Plymouth	CASE STUDY	★	★	★	!	★	★	★	★	★	!	★	★	★	★	
3+	University of Gloucestershire	CASE STUDY	★	★	★	★	★	★	★	★	★	!	★	★	★	★	
4+	University of Worcester	CASE STUDY	★	★	★	★	★	★	★	★	★	★	!	★	★	★	
5+	University of Brighton	CASE STUDY	★	★	★	★	★	★	★	★	★	★	★	★	★	★	
6+	University of Greenwich		★	★	★	!	★	★	★	★	★	★	★	★	★	★	
7+	Nottingham Trent University	CASE STUDY	★	★	★	★	★	★	★	★	★	★	★	★	★	★	
7+	Oxford Brookes University	CASE STUDY	★	★	★	★	★	★	★	★	★	★	★	!	★	★	
9+	University of Bradford	CASE STUDY	★	★	★	★	★	★	★	!	!	★	★	★	★	★	
9+	University of Central Lancashire	CASE STUDY	★	★	★	★	★	★	★	★	★	★	!	★	★	★	
11+	Bournemouth University	CASE STUDY	★	★	★	★	★	★	★	★	★	★	★	★	★	★	
12+	Aston University	CASE STUDY	★	★	★	★	★	★	★	★	!	★	★	★	★	★	
13+	University of Exeter	CASE STUDY	★	★	★	!	★	★	★	★	!	★	★	!	★	★	
14	Sheffield Hallam University		!	★	★	!	★	★	★	!	★	★	★	★	★	★	



What's the purpose of education?

‘The aim must be the training of independently acting and thinking individuals, who, however, see in the service of the community their highest life problem.’

Albert Einstein (quoted in Lindberg, 2007)



Professor Pauline Kneale

Pro Vice Chancellor Teaching and Learning

Plymouth University





Dr Tom Arnott

Water Innovation Centre

University of Bath





Ian Patton

Chief Executive

Environmental Association of
Universities and Colleges





Professor Stephen Sterling

Head of Education for Sustainable
Development, Centre for
Sustainable Futures

Plymouth University





Dr Elizabeth Wilson

Reader in Environmental Planning

Oxford Brookes University





The role(s) of universities



- Teaching (and learning)
- Research
- Teaching and research together
- Teaching, research and community or business engagement – sustainability
- Teaching, research, community engagement and innovation
- Teaching, research, community engagement, innovation and leadership?





Dr Chris Willmore

Reader in Sustainability and Law

University of Bristol



World-leading UK research examples

Meteorological Office weather and climate modeling, and potential societal responses resting on the science, such as the Stern Report on the economics of global transition

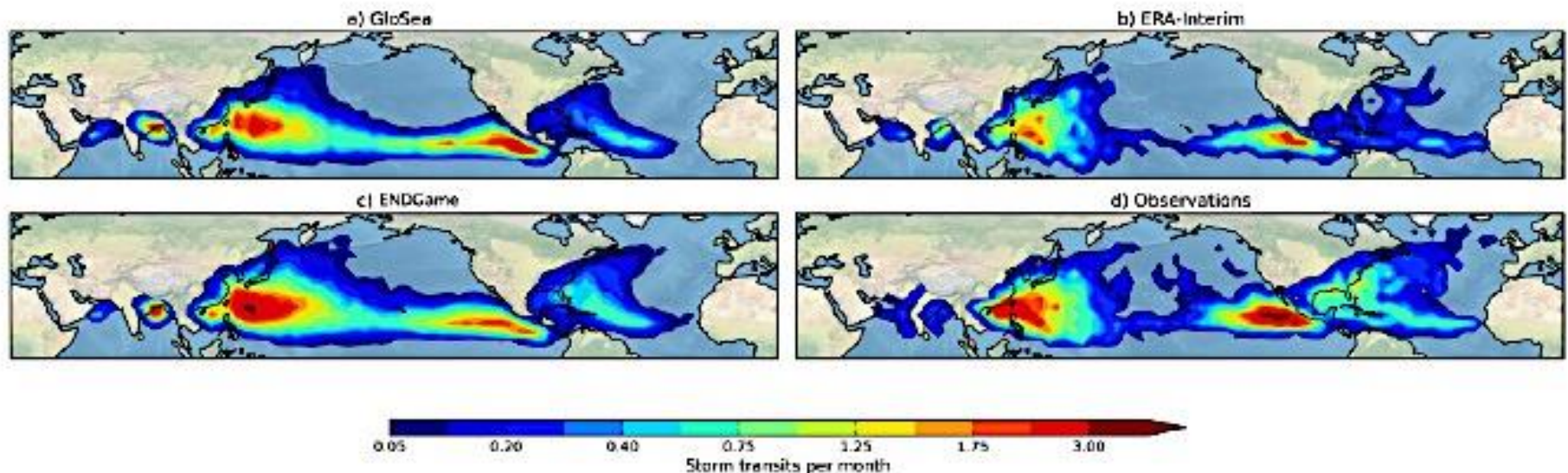


Figure 8: Track density for tropical cyclones in the current GloSea (New Dynamics) and ENDGame hindcasts (left), and in ERA-Interim and observed (right).

World-leading UK research Identifying, measuring and monitoring of change in the quasi-natural environment





Professor Susan Page

Head of Department of
Geography

University of Leicester



Application of environmental research



Azotic Technologies – University of Nottingham spinout, following 20 years of research by Professor Edward Cocking FRS



Nitrogen fixing bacteria provide every cell in a plant with the ability to fix nitrogen, which replaces around 60% of plant's nitrogen needs, reducing the need for nitrogen-based fertiliser. Plants are 'innoculated', through seed coatings.



The technology is environmentally friendly and contains no toxins, and is non GM.



Ian Walker

Head of Innovation

WRc plc





Dr Graham Leeks

Head of Science Co-ordination

Centre for Ecology and Hydrology



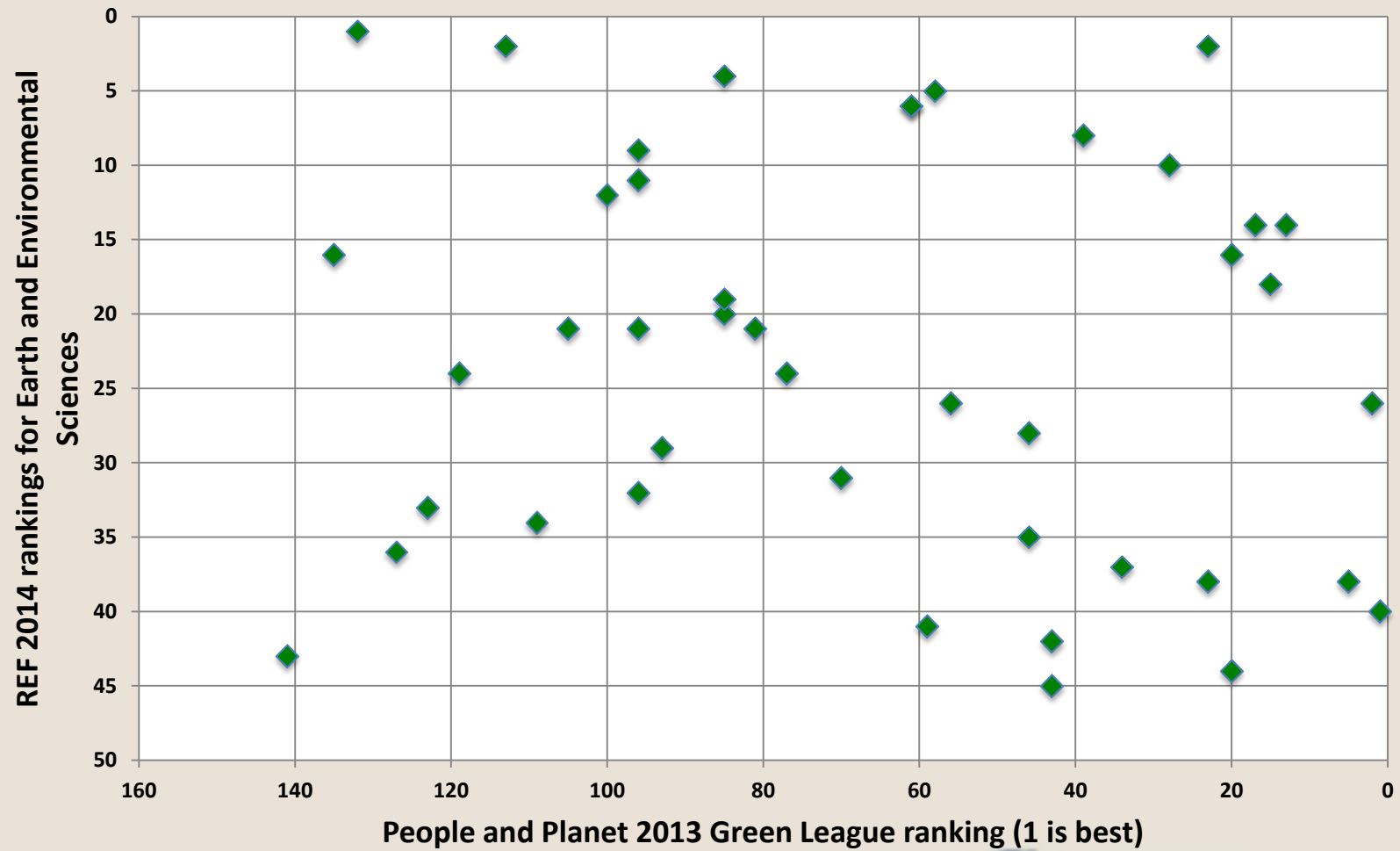


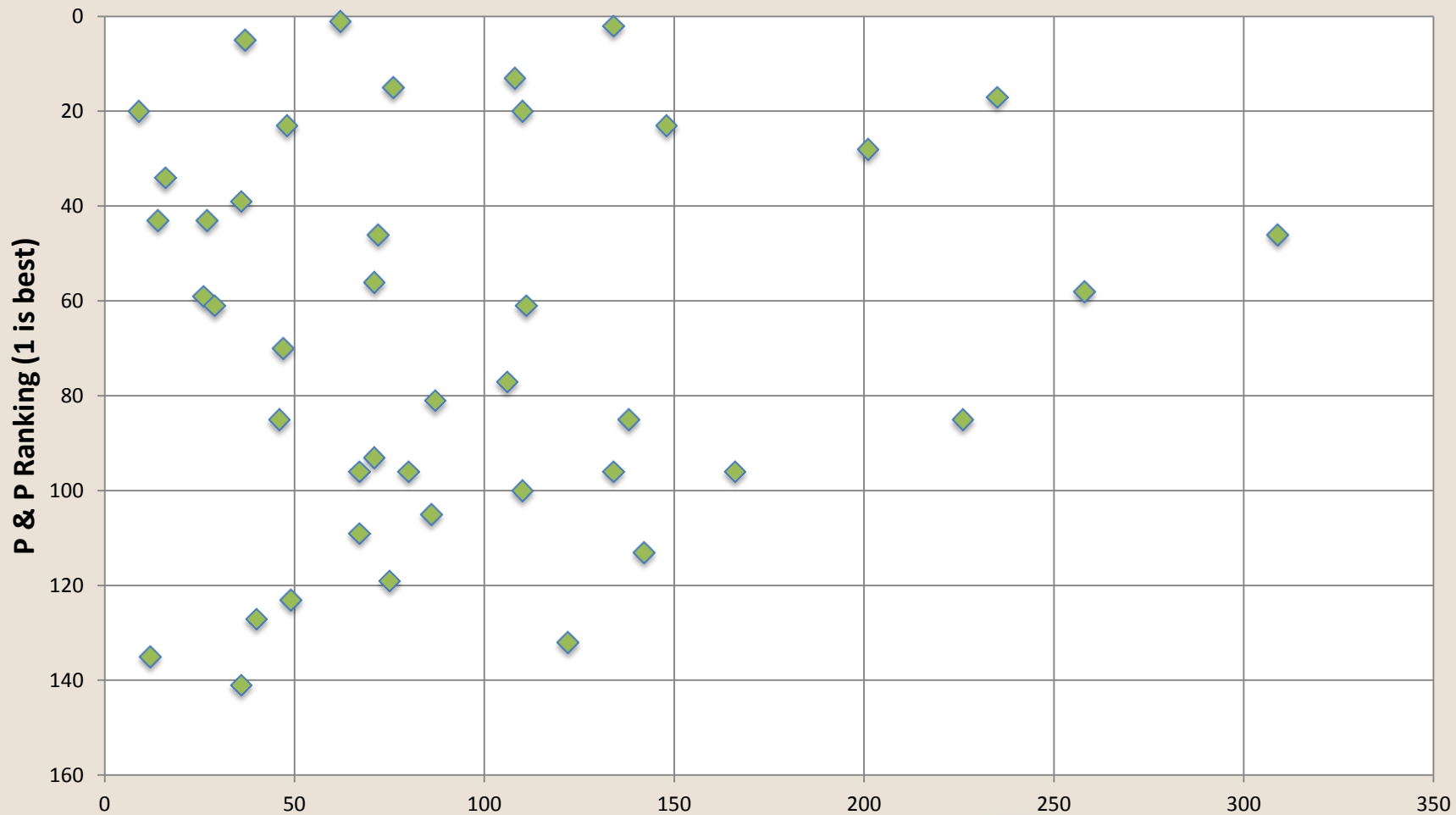
Sir Ron Cooke

Formerly, Vice Chancellor

University of York








REF 2014 Research Power for Earth Science and Environmental Science

Wicked problems

- 
- Are not usually characterised by lack of data, but by excessive amounts of contradictory evidence held by stakeholders with different world views (Professor Steve Rayner)
 - Are not usually resolvable through total consensus, or with an optimal answer, but just need a feasible solution
 - It may be a clumsy solution for a complex world (Steve Rayner, again)



Chris Woods

Chartered Architect and Chief
Executive

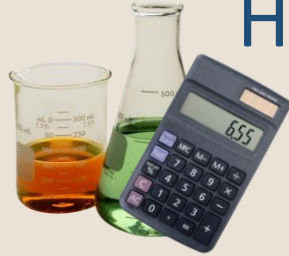
Value Co-Creation Ltd

And Visiting Professor, University
of Salford



Different World Views

Hierarchical



Collaborate
and occupy the
middle ground



Egalitarian



Competitive