

Green **Growth** PLATFORM



University of Brighton

Arora Hotel, Crawley

June 2014

Welcome

Professor Julian Crampton, University of Brighton

Low Carbon Business Opportunities

- A Billion Years in the Making

Professor David Nash, University of Brighton

Case Study – Developing a Low-Carbon Technology

Hanna Ylitalo, Envirolinds

Case Study – Energy Efficiency Best Practice

Keith Manger, Royal Botanical Garden's Kew

Green Growth Platform: Unlocking Business Potential

Zoe Osmond, University of Brighton

Low carbon business opportunities: A billion years in the making

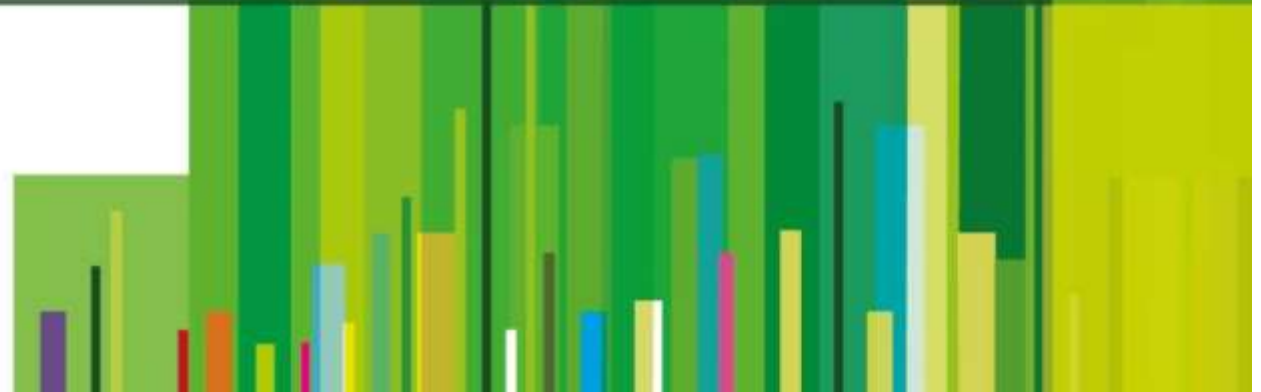
Professor David Nash
School of Environment & Technology
University of Brighton



GreenGrowth
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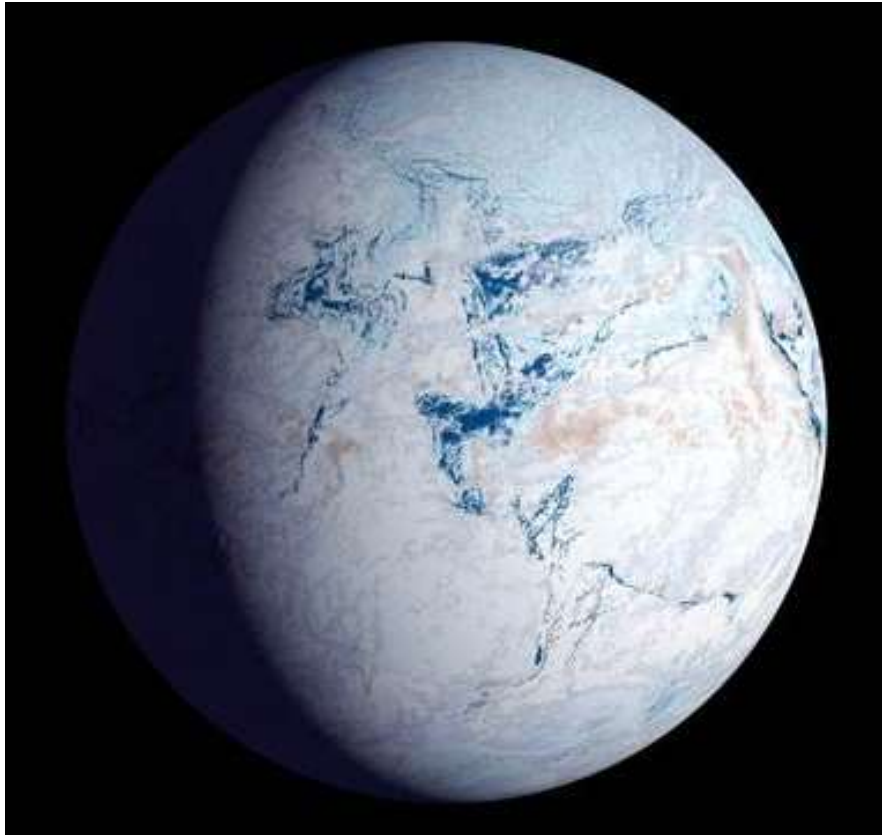


University of Brighton

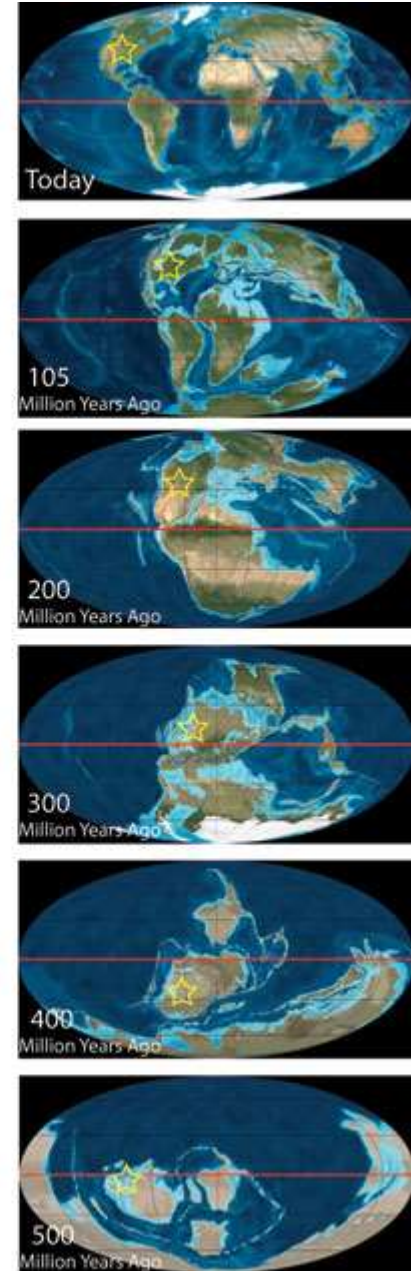
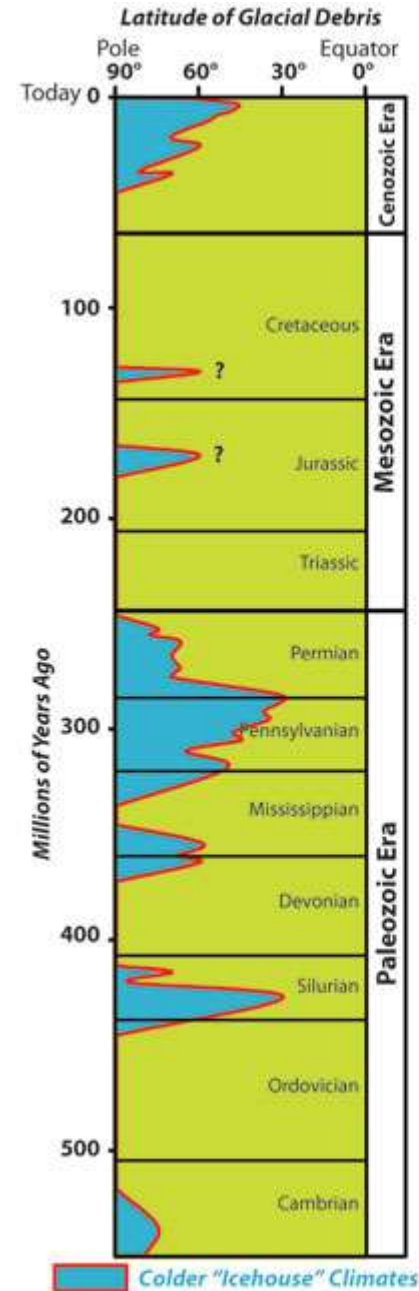


A varying climate: Geological perspectives

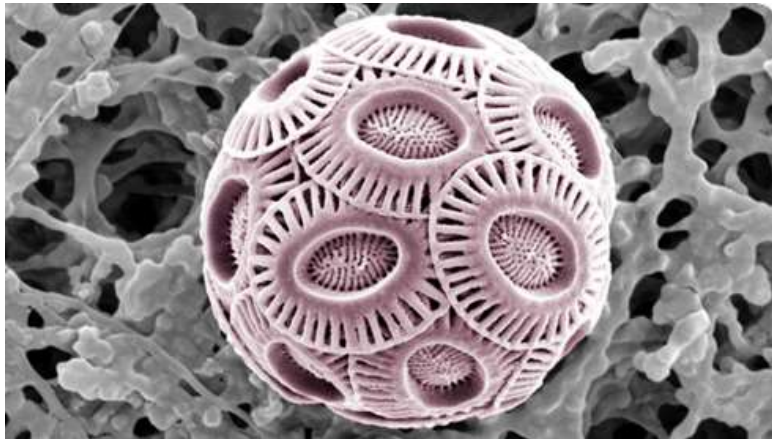
Snowball Earth (650 Ma)



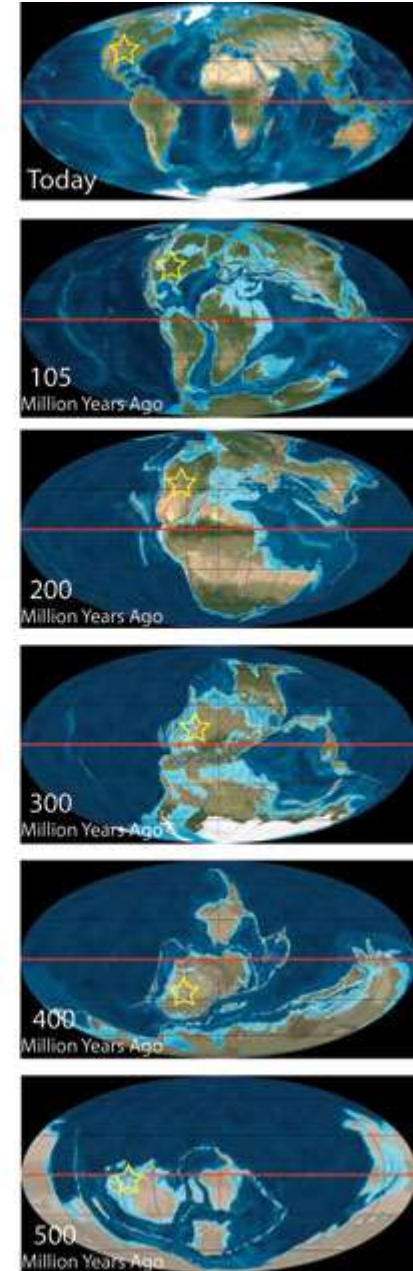
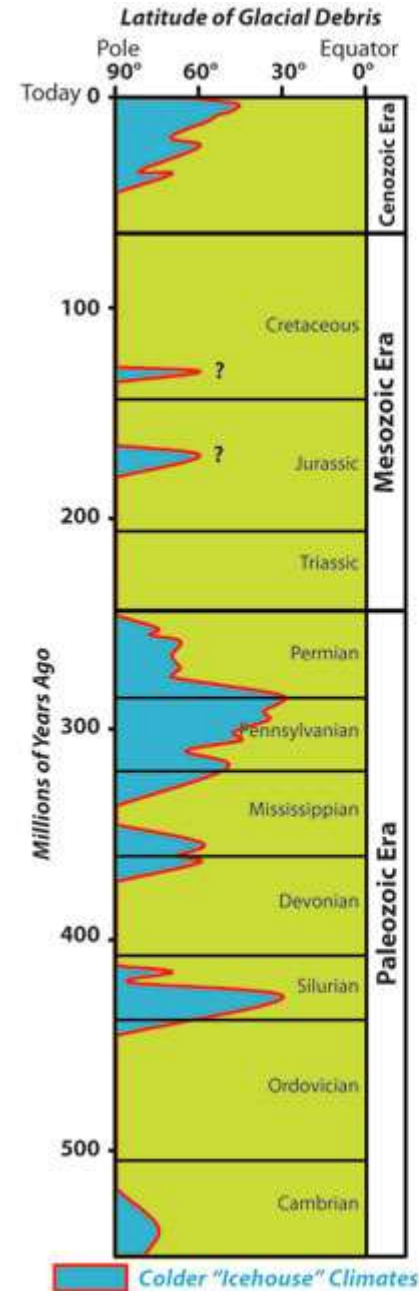
Earth 800 million years ago



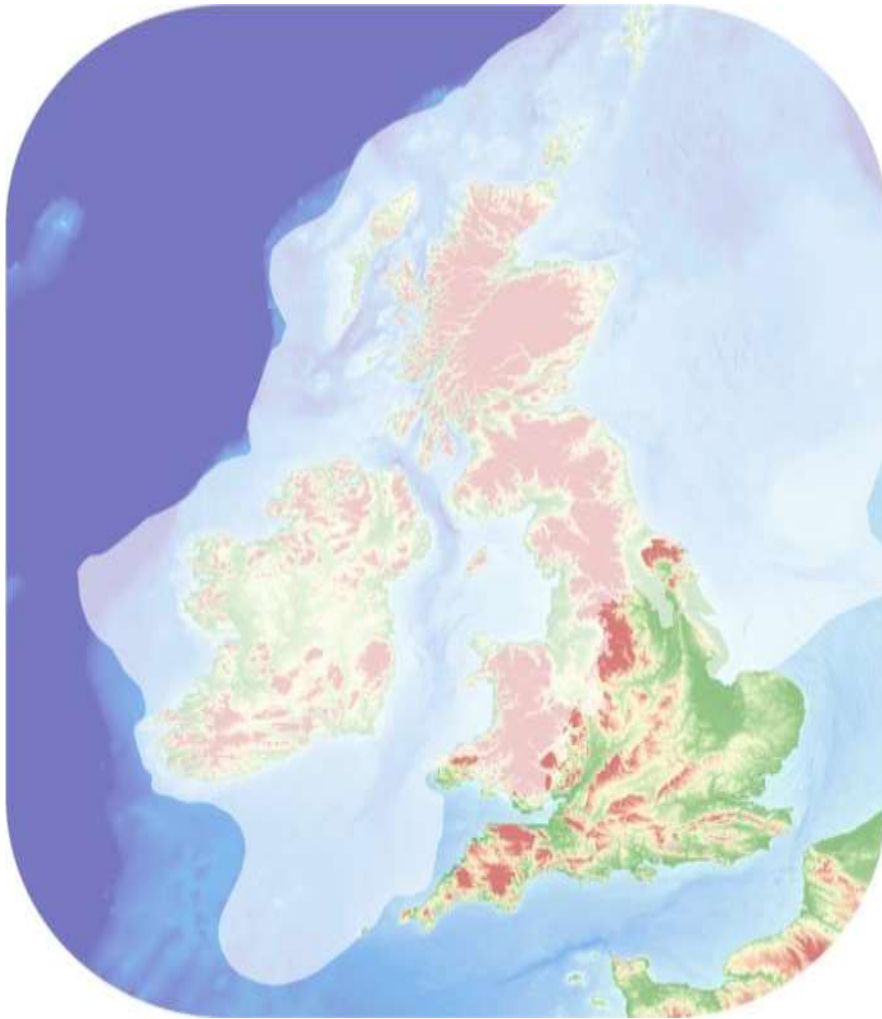
Greenhouse Earth (80 Ma)



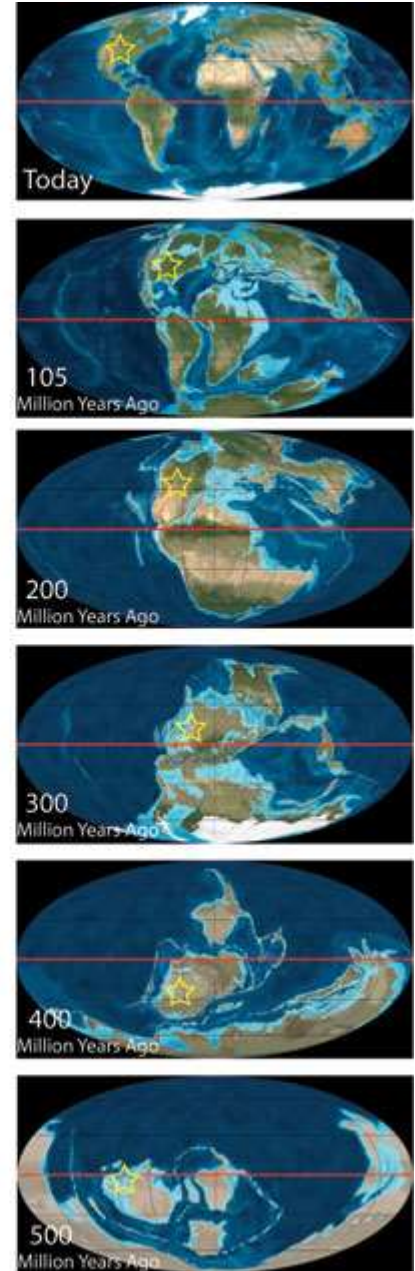
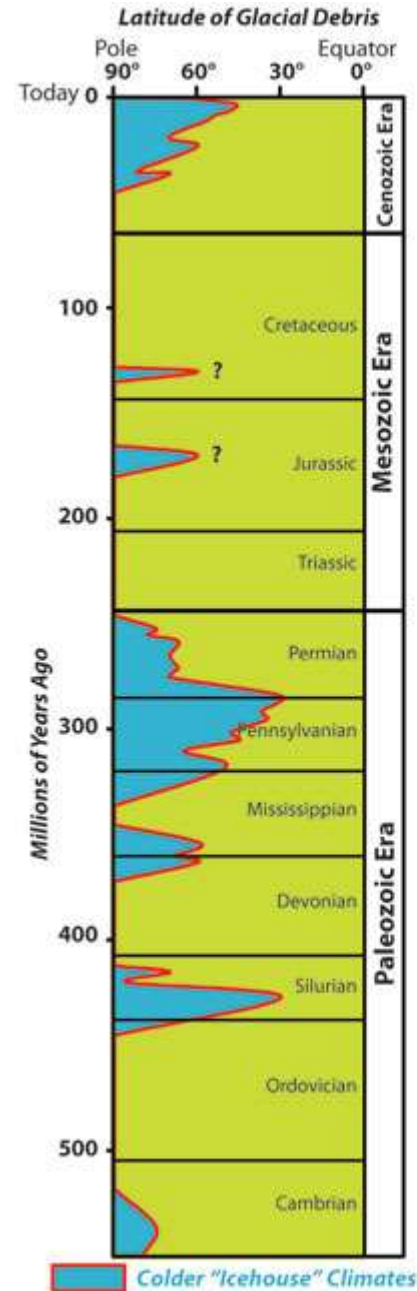
Coccolith within Cretaceous Chalk



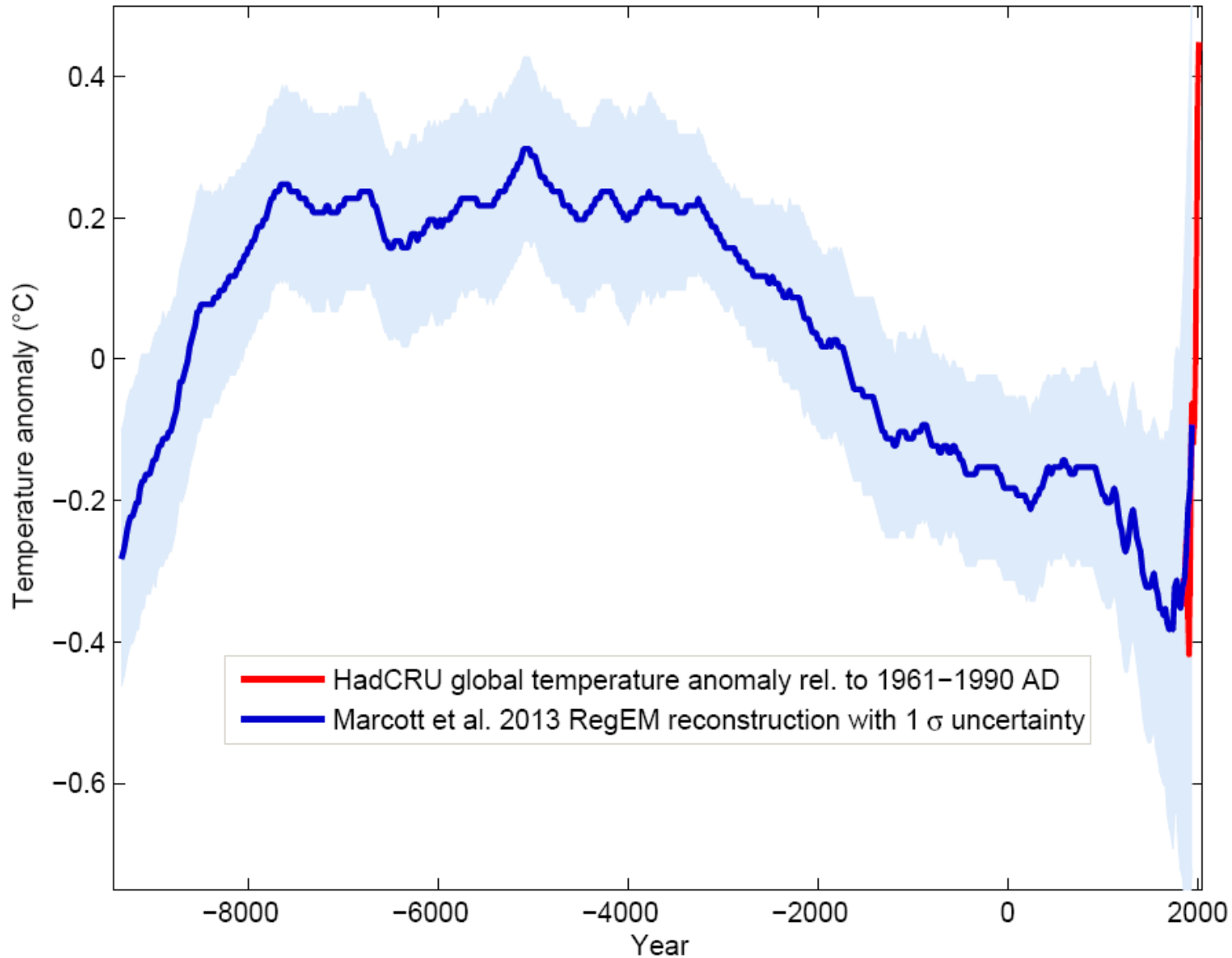
Glacial Earth (24 ka)



Britain at the Last Glacial Maximum

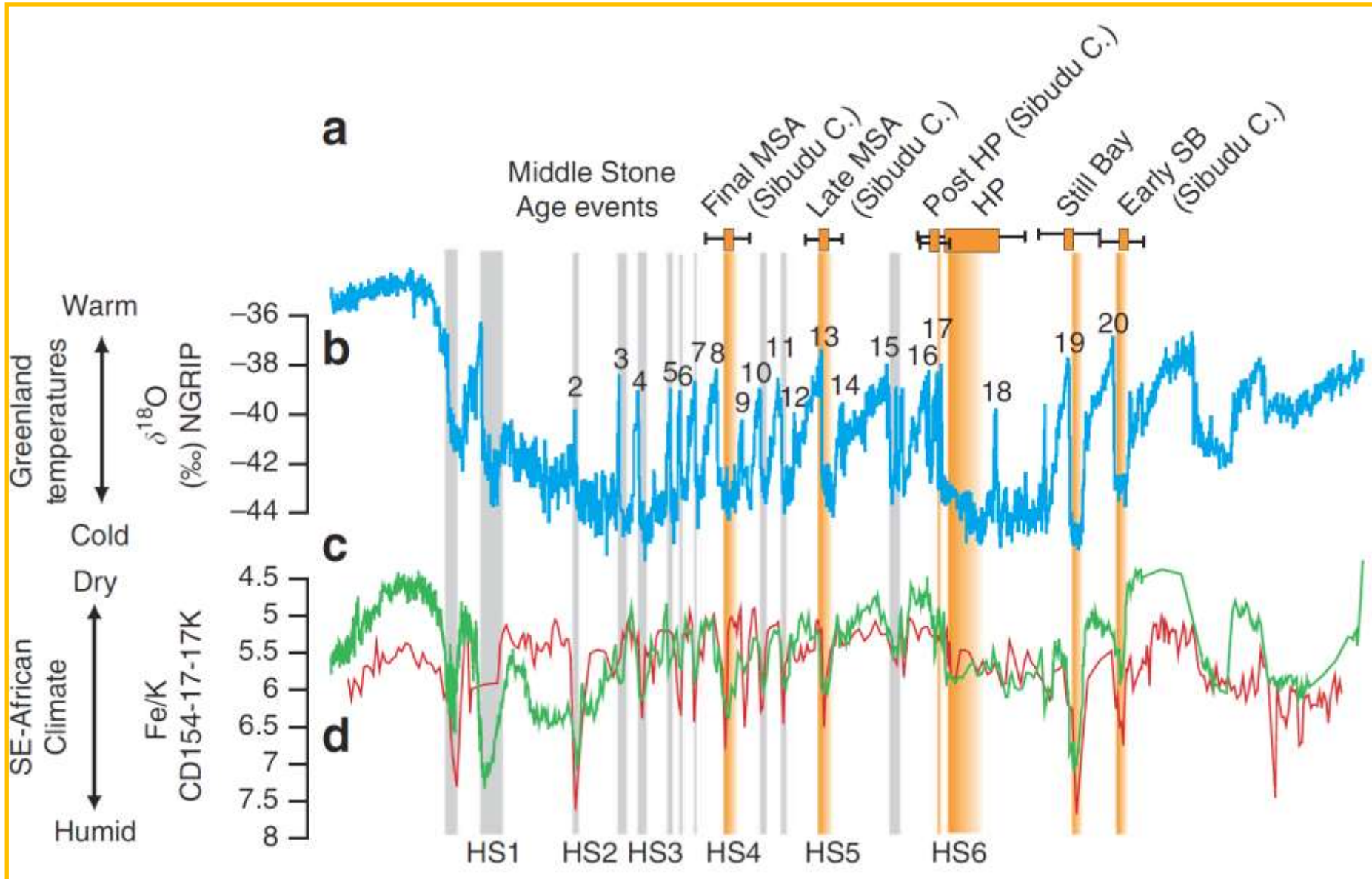


Global temperature anomalies - the last 10,000 years

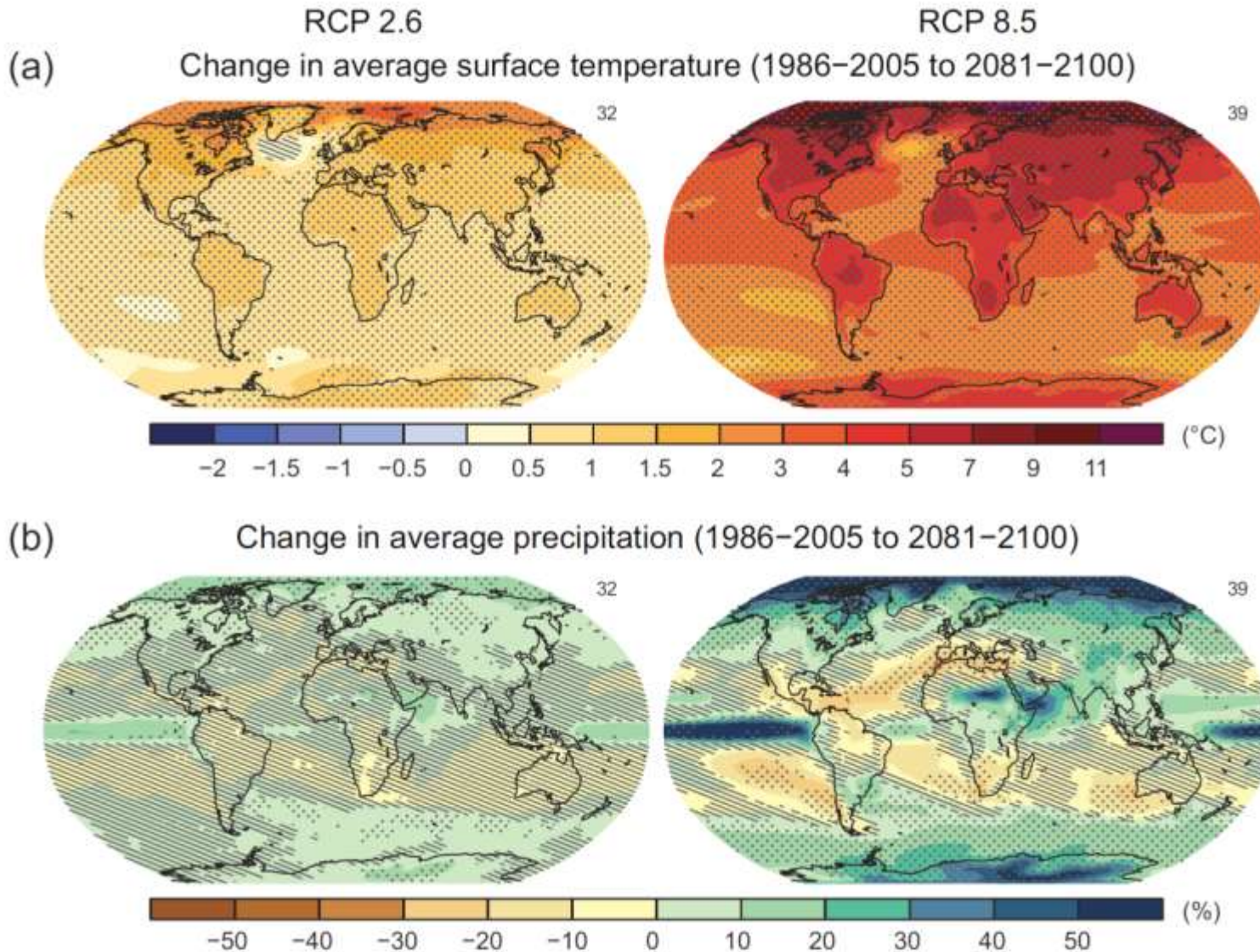


Future climate change: Challenges and opportunities

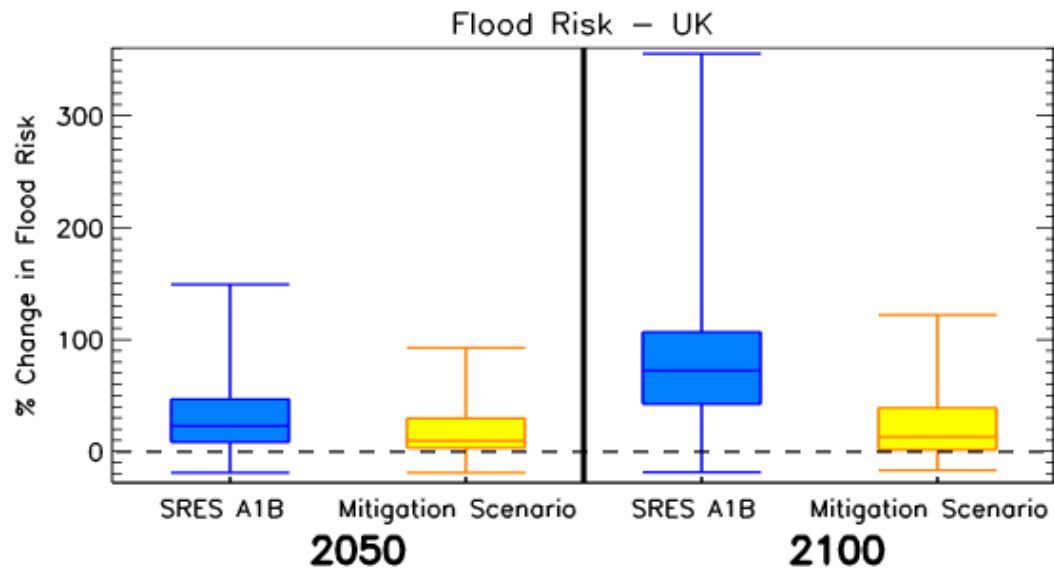
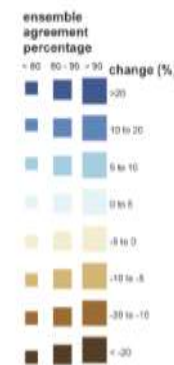
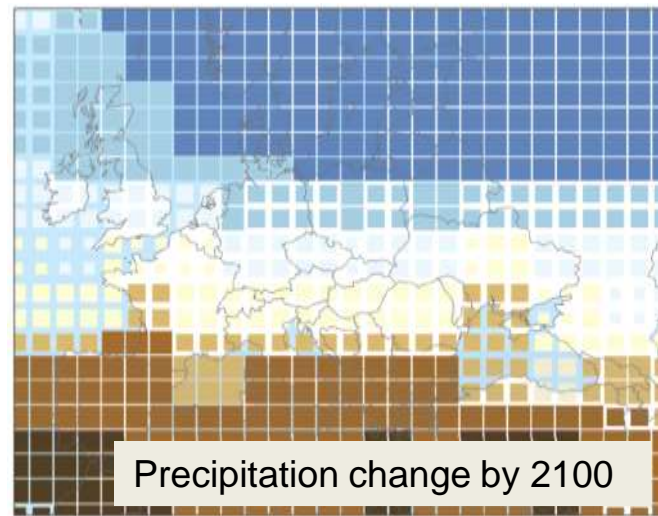
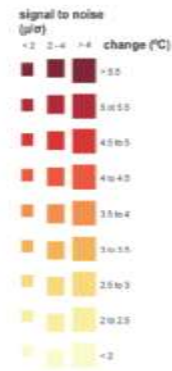
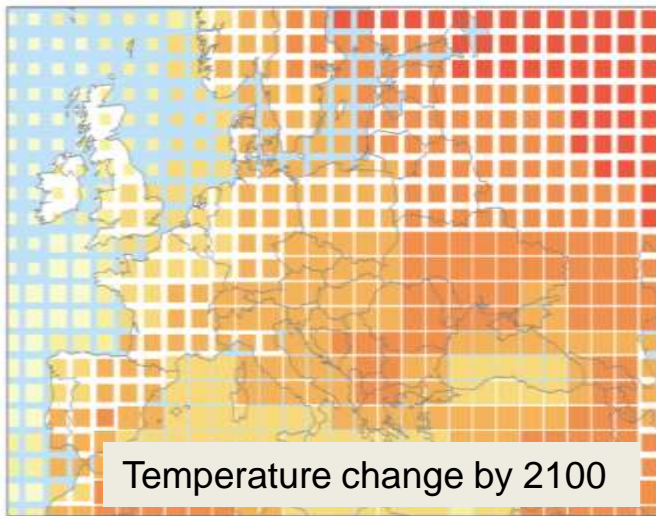
Climate change triggers innovation and adaptation



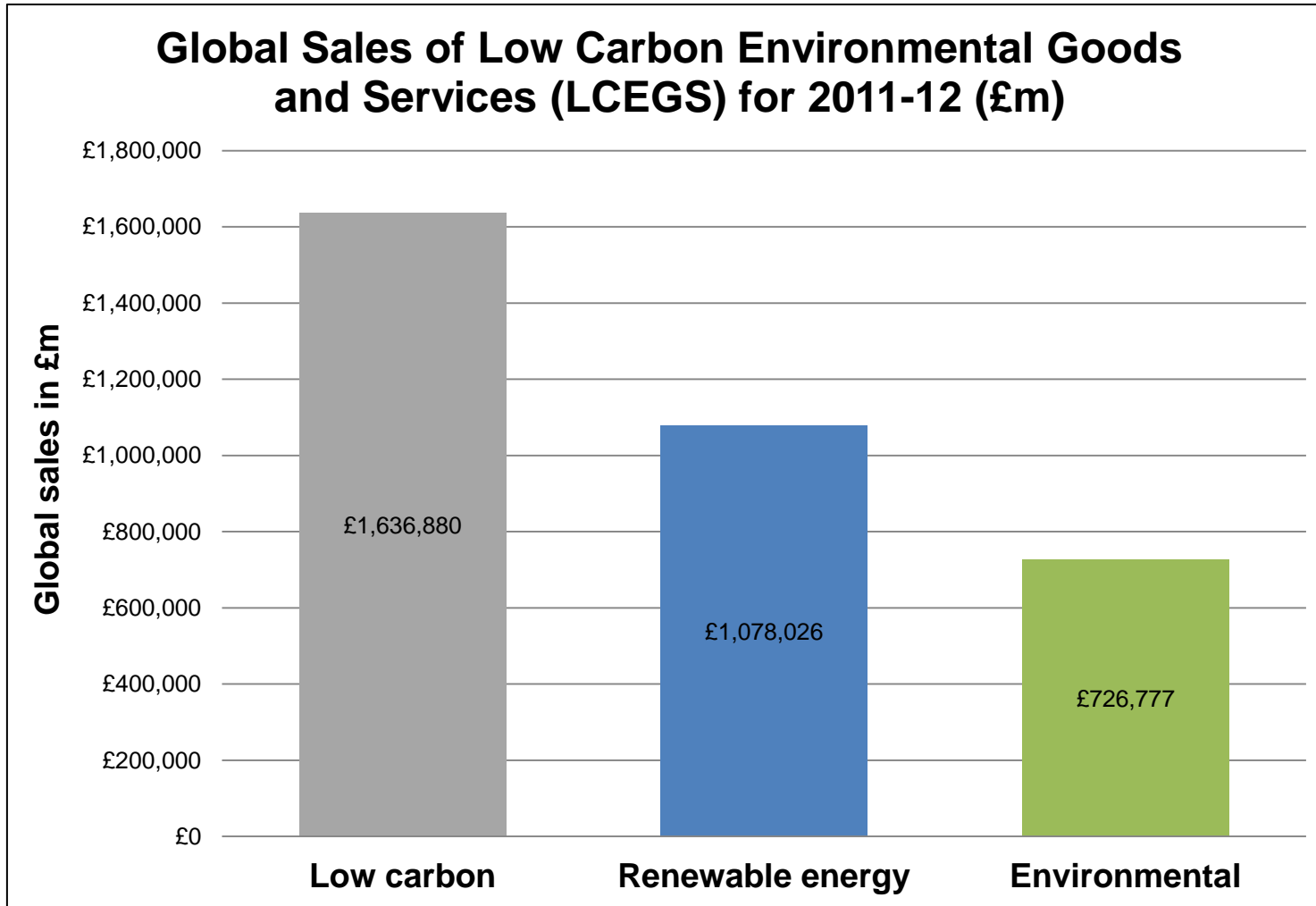
Future climate change will require similar innovation



Possible impacts in the UK



Business opportunities and the green economy



Working in partnership with the University of Brighton

Areas of environmental research expertise at UoB

Environmental

- Environmental monitoring
- Land and water remediation
- Water management in built and natural environments
- Air pollution monitoring and modelling

Renewable energy

- Energy from waste
- Biomass generation on urban sites
- Geotechnical engineering
- GIS mapping for site suitability (e.g. solar and wind)

Low carbon

- Clean engine technologies
- Alternative fuels
- Sustainable buildings
- Energy assessment
- Low carbon materials

Further info:
www.brighton.ac.uk/business

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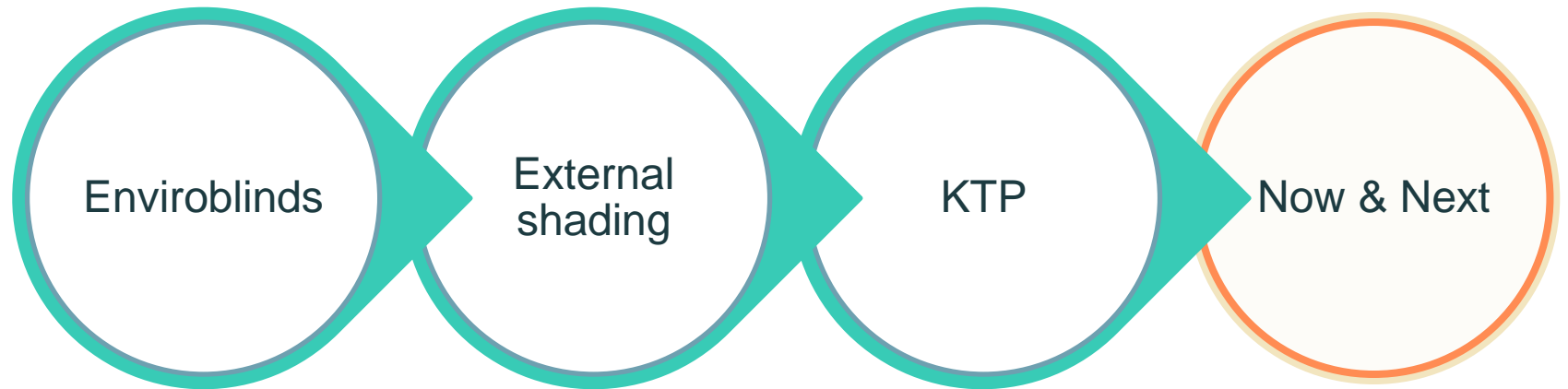
envioblinds®

LOW CARBON TECHNOLOGY

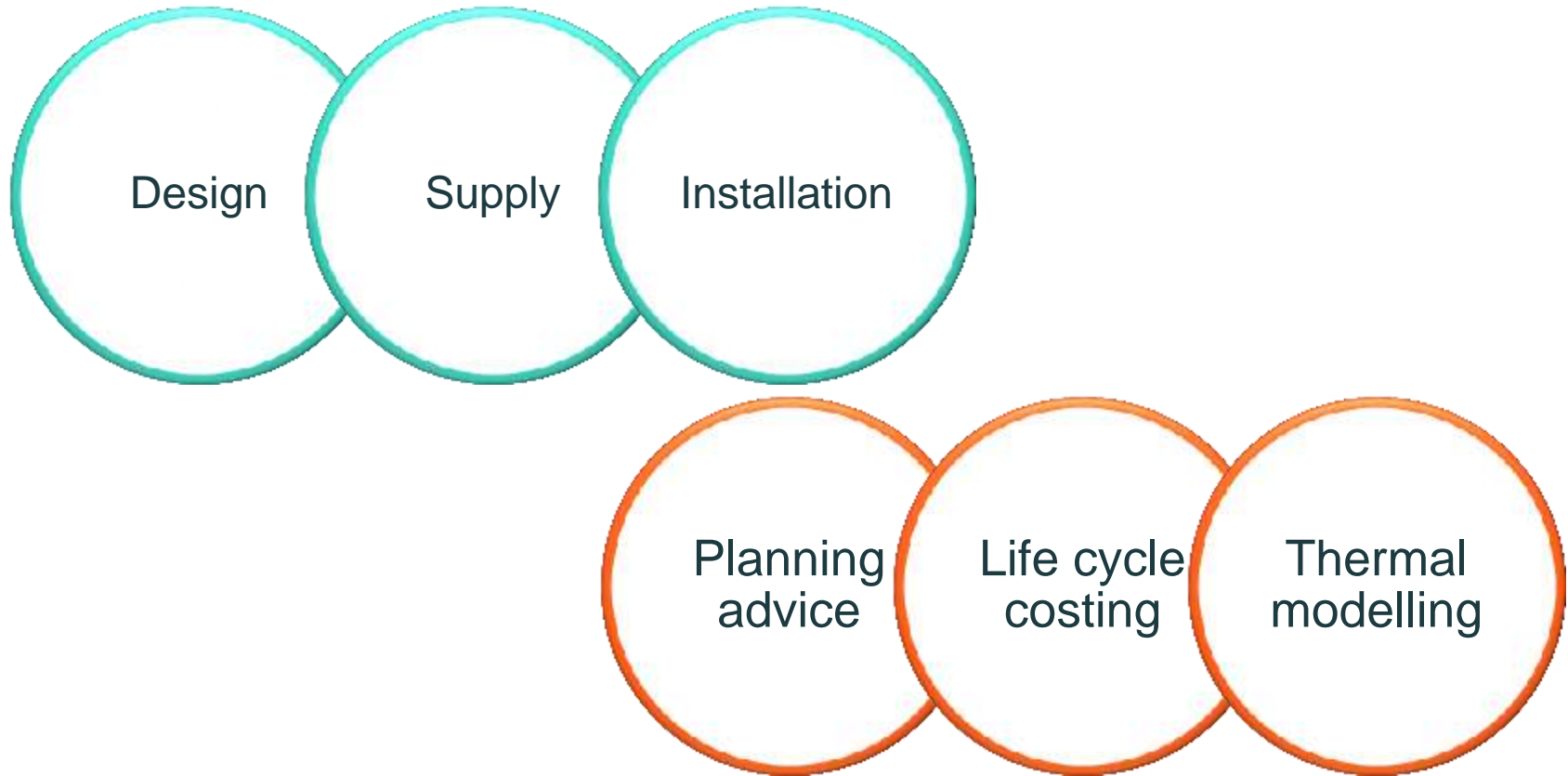
Collaboration with the University of Brighton

Hanna Ylitalo, Technical Manager

Green Growth Platform, 18th June 2014



External shading specialists



Secret to low carbon comfort

Products

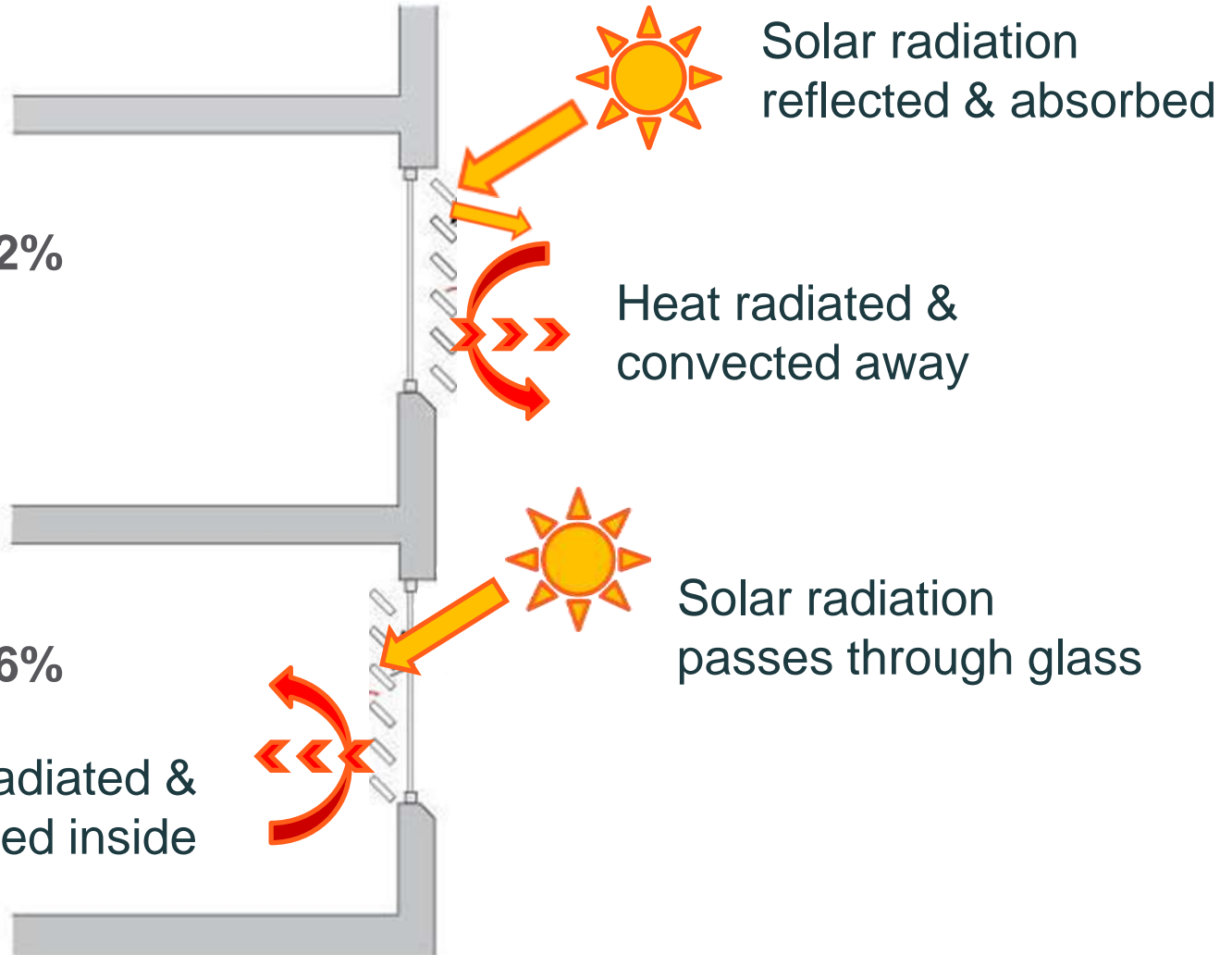
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LOW CARBON TECHNOLOGY



External shading

External shading

Solar gain factor 12%

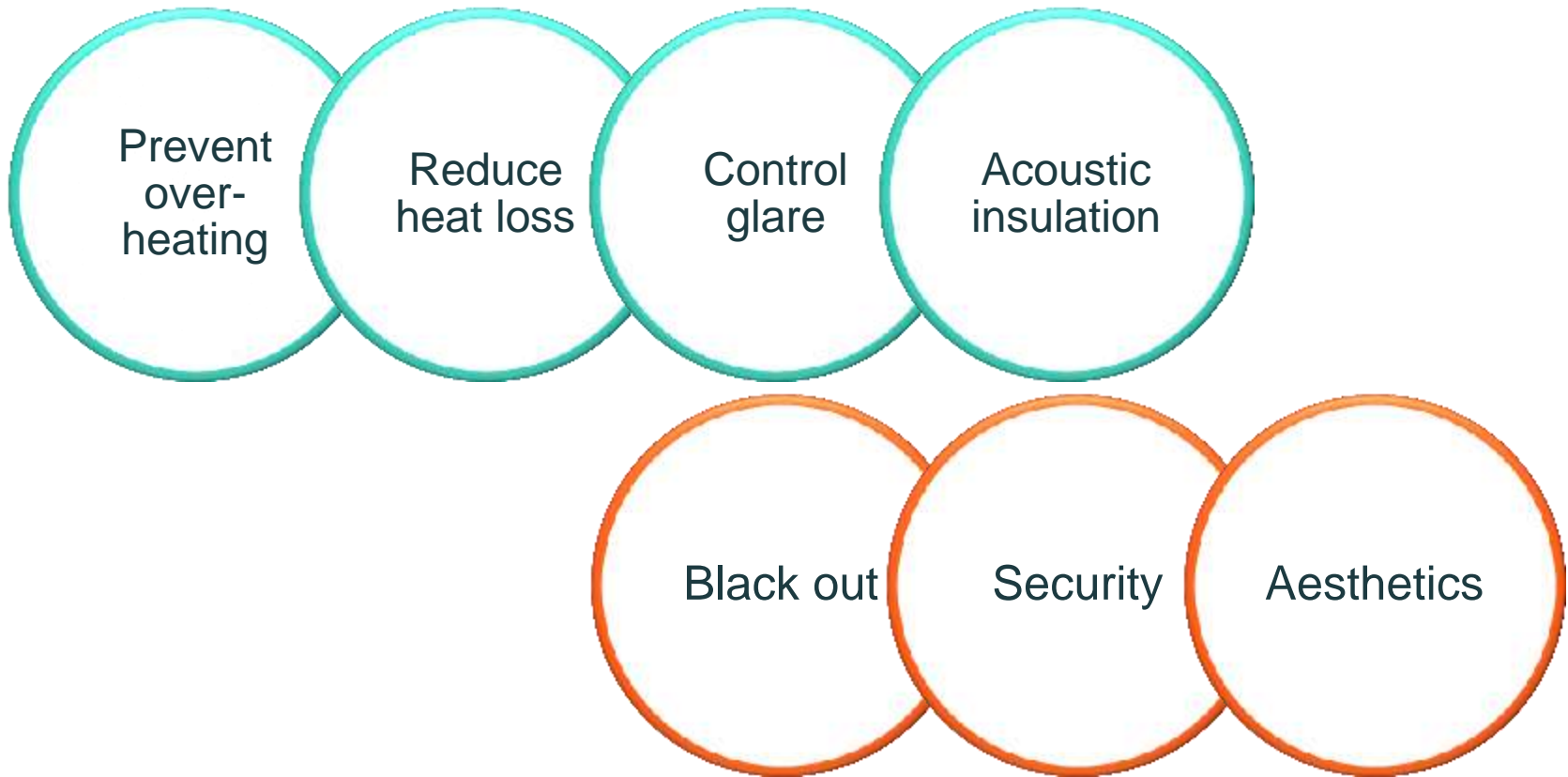


Internal shading

Solar gain factor 46%

Heat radiated & convected inside

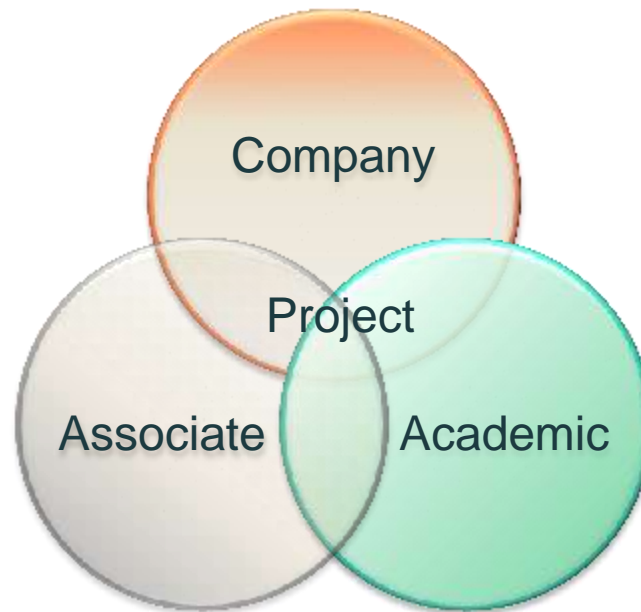
Improve energy performance & comfort



Secret to low carbon comfort

Knowledge Transfer Partnership (KTP)

Partnership between a company, university and a graduate who work together to deliver a project for the business.



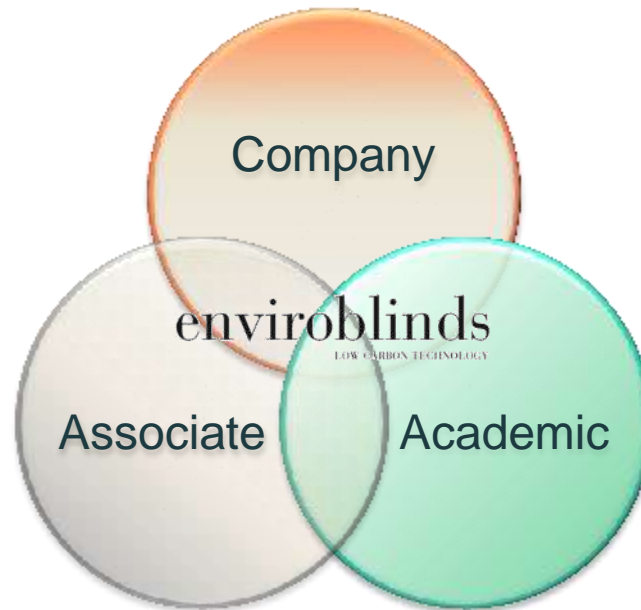
KTP partners



MEP+B engineering services

Building energy efficiency

Passive building design



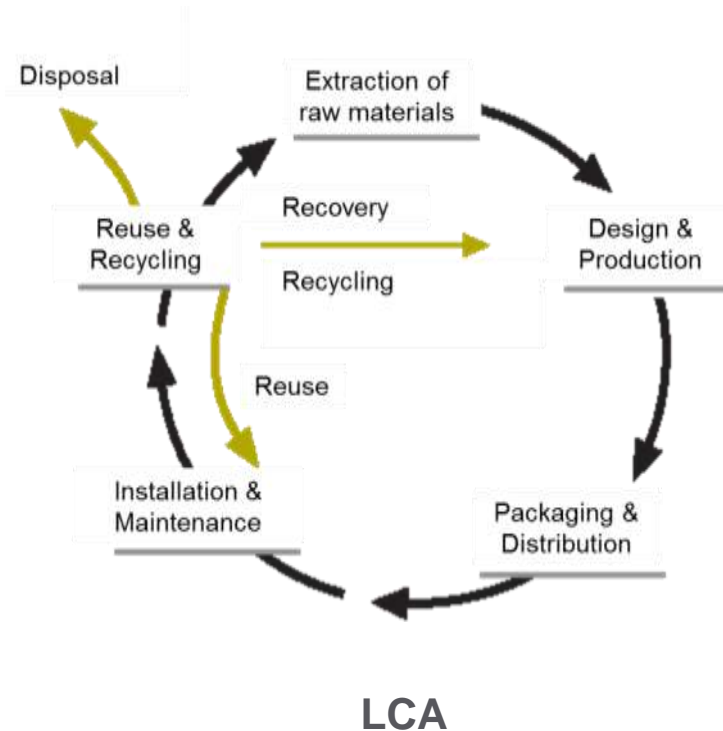
*
University of Brighton

School of Environment and Technology

Thermodynamic modelling expertise

Centre for Collaboration and Partnership

“Scientifically evaluate external blinds”



Existing device

Well established technology

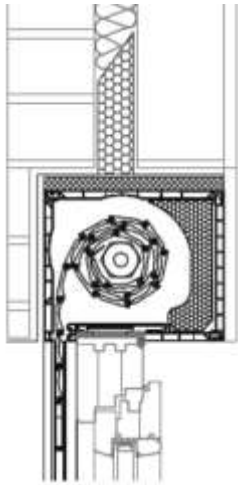
Commonly used in other countries

Performance in the UK climate?

- Indoor temperature : 3.5°C lower
- Energy utilisation : 15% reduction
- Life Cycle Assessment : 1 – 3 years

Product to market

KTP challenges



Manufacturer

Technical guidance & detail
Marketing material

Time!

Extended trials & pilot study

Dynamic shading coefficients

Perception

Resistance to change



Credibility

UoB association

Applied research project

Nomination for *Energy saving product of the year*

Product confidence

Thermal performance

Product knowledge

Focus

Time keeping & deadlines



Now & next

envioblinds®
LOW CARBON TECHNOLOGY



New products

Refine business plan

Marketing

Installations

Business to Business sales

CPD for Specifiers



Thank you!

Hanna Ylitalo hanna@envioblinds.co.uk

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Delivering Environmental Sustainability at Wakehurst Place

Keith Manger – Laboratory Manager for the Millennium Seed Bank, Royal Botanic Gardens Kew



What reasons motivate us to be environmentally sustainable?



Elm tree

(*Ulmus minor*)

- ▣ Economic
- ▣ Legal
- ▣ Moral

Environmental Accreditation

ISO 14001

- ▣ RBG Kew is ISO 14001 accredited and relies on the discipline required to maintain this standard to maintain legal compliance and continual improvement.
- ▣ 5 primary management objectives: Pollution Control, Energy, Water, Waste, Procurement
- ▣ Where appropriate, we use the requirement for ISO 14001 as selection criteria in tendering.



People Make Success

- ▣ Management buy-in imperative.
- ▣ Sustainability team need to be motivated.
- ▣ Celebrate and communicate successes.



Understand Your Utilities

- ▣ Critical to controlling your utility costs is thoroughly understanding and monitoring your electricity, gas, oil, water and sewage.
- ▣ Automatic monitoring is useful but can be expensive, we rely on monthly manual reading of meters / sub meters and recording on a spreadsheet.
- ▣ It is essential that an abnormal reading is double checked and that prompt corrective action is taken if there is a problem.

Voltage Optimisation



- ▣ Voltis unit reduces incoming supply to 220 Volts saving circa 11% electricity.
- ▣ No issues with equipment post installation.
- ▣ Installation part grant funded.

Solar Photovoltaics



- ▣ 50 kWh output
- ▣ Installed in partnership with an energy company.
- ▣ Delivers ~46,000 kWh per year, equivalent to £3,680 of free electricity.
- ▣ This represents 7.4% of our usage.

MSB Low Energy Incubators



- ▣ The MSB have 37 cyclic incubators for seed germination.
- ▣ Original incubators used ~0.3 kWh.
- ▣ Low energy incubators ~0.07 kWh.
- ▣ Each incubator saves ~ 2,015 kWh or £161 per annum.

New Biomass Chip Boiler

- ▣ Proposed 500 kW wood chip boiler for the Wakehurst Estate.
- ▣ Should be completed this financial year.
- ▣ Replaces eight oil fired boilers and is the single biggest energy project for RBG Kew.
- ▣ To provide 95% of the site's heating and will pay for itself via the RHI in ~5 years.

Architects impression



MSB Lamp Replacement



- ▣ Intention to replace all external and non office lighting with LEDs
- ▣ Working with a companies in the Sustainable Business Network.
- ▣ This meeting room conversion saves £263 per year and pays back in 1.5 years.

Hybrid cars



- ▣ Three diesel pool cars replaced as part of phased replacement, by Toyota hybrids
- ▣ Used Government procurement framework
- ▣ Travel related emissions covered within energy objective

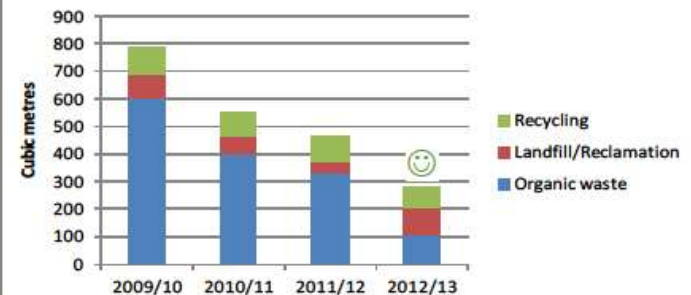
Communication of successes

- Waste

Objectives

- SUSWAK's annual target for waste is to manage waste going to landfill/reclamation and to reduce the total volume of this waste.

Annual comparison of waste streams



	Estimate volume saved (CuM)
Landfill	increased by 6.1
Recycled or correctly disposed	decreased 11.3
Organic waste recycled on site	decreased 495.9
Total	decreased 285



Comments

- Total waste production reduced, although the total volume of waste going to landfill/reclamation increased. Much of this was due to materials left at Home Farm which were segregated and reclaimed.
- Landfill type waste is now being used for reclamation energy.
- Landfill/incineration formed 33% of our waste in 2012/13.
- A new initiative to bale and selling recycled paper, polythene and metal has earned ~£800.
- It is estimated that through our recycling we have prevented 2,978 t CO₂ being produced.

Communication of successes

- Energy

SUSWAK UPDATE - Energy

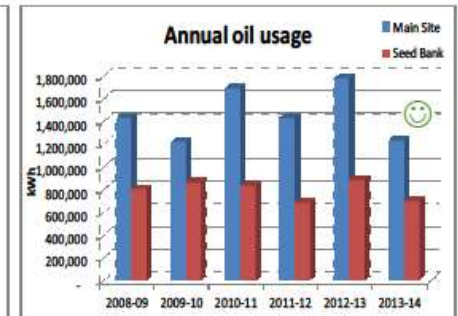
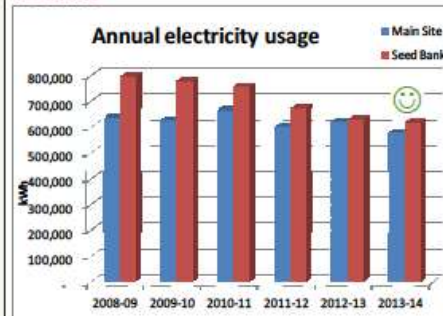
Update from the Wakehurst Sustainability Team

2014

Objectives

- SUSWAK aims to further reduce both oil and electricity consumption by working with RBG Kew's energy team to deliver savings required under the 'Carbon Reduction Commitment (CRC)' and Greening Government targets. This will be achieved by behavioural change, low cost interventions and the commissioning of a woodchip boiler for Wakehurst site heating.
- The current Millennium Seed Bank Partnership business plan states all heating and power uses in the MSB building is from renewable sources by 2020.

Results



	Electricity savings compared with 2012/13			Oil savings compared with 2012/13			
	kWh	£	CO ₂ tonnes	litre	kWh	£	CO ₂ tonnes
Main WP Site	42,620	3,410	23.2	543,098	6,348,813	342,152	1,688
Seed Bank	11,200	894	6.1	189,976	2,185,747	117,795	581
Subtotal	53,820	4,304	29.3	730,074	8,534,560	459,946	2,270
PV Production	46,040	3,683	26				
Total	99,860	7,987	55.3	730,074	8,534,560	459,946	2,270

Comments

- In 13/14 electricity usage has decreased by 4.3% (53,820 kWh) compared to 12/13.
- In 13/14 oil usage has reduced by 27.5% (730,074 litres) compared to 12/13.
- The decrease in oil usage is mostly related to the warmer winter and better heating control.
- The woodchip boiler project is underway and should be completed by the end of 14/15.

Communication of successes

- Water

SUSWAK UPDATE - Water

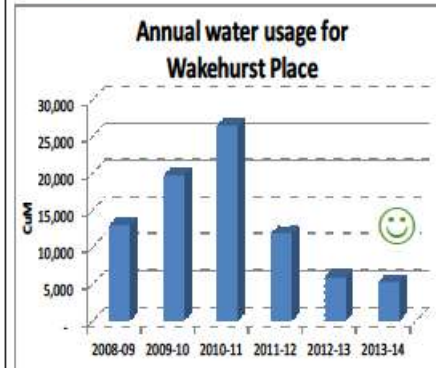
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Objectives

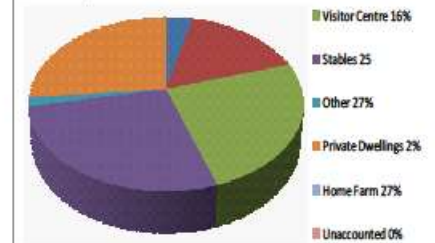
- To reduce both potable water usage and associated waste water production in 2014/15 by 10% compared to 13/14. This will be achieved by behavioural change and low cost interventions. To reduce the percentage of unaccounted water to less than 20%.
- To produce an accurate plan of the potable water distribution system. To increase sub-meters and replace old meters.

Results



Annual water usage by area 2013/14 (CuM)

Total = 5,293 CuM



Estimated water & related waste water saving compared with 2012/13

	CuM	£
Total	661	2,228

Comments

- We have reduced water consumption by 11% in 2013/14 compared to 2012/13 which equates to 661 CuM, despite a major water leak at the MSB.
- The new irrigation system is now up and running.
- A new main meter and MSB meter has been fitted; additional sub-metres would allow us to understand where water is used in more detail.
- We have applied for a 25% reduction in sewage charges on the basis of non return to sewer data.

THANK YOU.

ANY QUESTIONS?

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Zoë Osmond
Director

Unlocking business potential



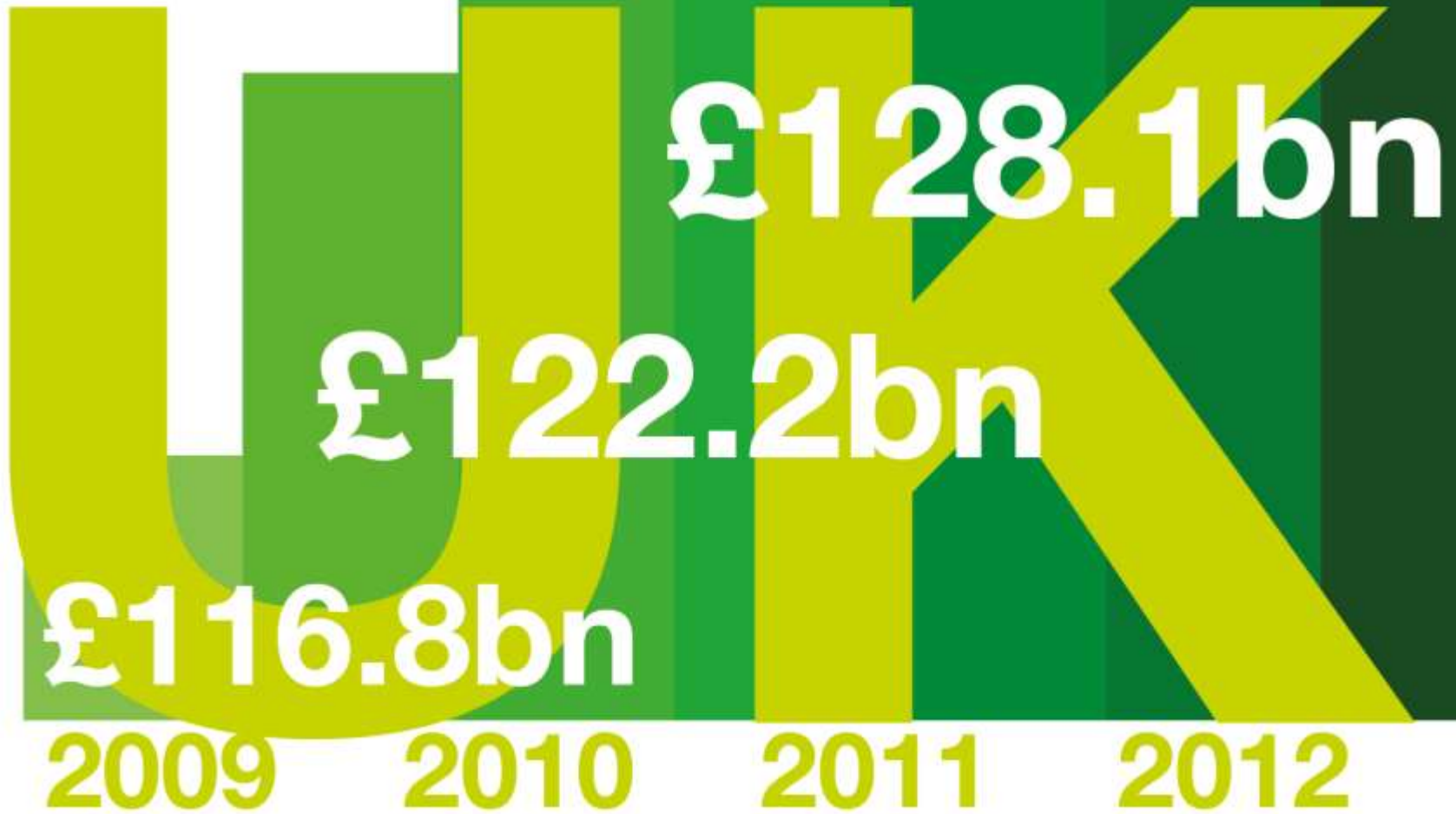
BIG



Oppportunity



**£3.4
trillion**



The image features a background of abstract, overlapping vertical bars in various shades of green and yellow, creating a sense of growth and progress. A prominent white upward-pointing arrow is centered within a yellow-green shape on the right side. A dark green horizontal band spans the width of the image, containing the text 'Unlocking business potential' in white.

Unlocking business potential

GreenGrowth PLATFORM



University of Brighton

Transport

Buildings

Energy
efficiency

Tourism

Design

Marketing

Carbon
finance

1000+

'green' businesses

SUSSEX

Waste
management

Retrofit

Cleantech

Food

Environmental
consultancy

Energy
management

Renewable
energy

Water

Thinking

BIG

£3m 5yrs



New jobs
products
services

services

Growth

skills

connections



e - o g

Power Diverter

powerdiverter
SOLAR ELECTRIC

* 1.5 hr

* 1.0 hr

* 0.5 hr



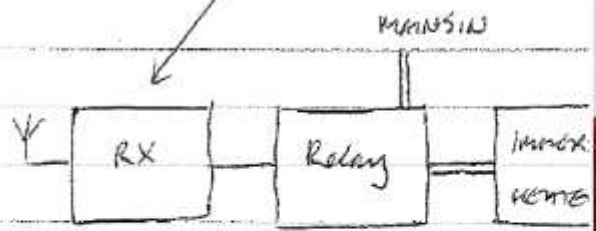
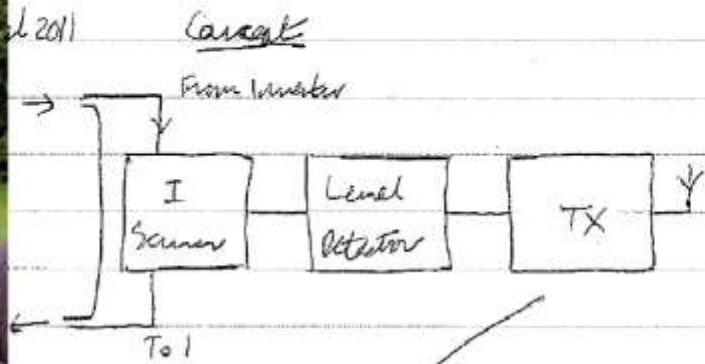




FREE

green

hot water



Dr. Simon Walters

idea + expertise = prototype

300+ sold
huge demand

marketing
intern



e.g.

Green Frog
soap



Himalayan soap nuts



Natural cleaning agent

investment

expand

local production

major retailers

Growth

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service areas

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1-2-1 BUSINESS SUPPORT

**BESPOKE
GROWTH PLANS**

**STRATEGIC
SUPPORT**

**SPECIALIST
COACHING**

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Working with the
**Sustainable
Business
Partnership**

BUSINESS EVENTS AND OPPORTUNITIES

EVENTS AND CONNECTIONS

MEET-THE-BUYER EVENTS

TENDERING SUPPORT

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**INNOVATION, RESEARCH
& DEVELOPMENT**

**INNOVATION
CLINICS**

**SPECIALIST R&D
EXPERTISE**

**FUNDING FOR
INNOVATION AND
R&D**



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SKILLS AND TRAINING

**COURSE
DEVELOPMENT**

**GRADUATE
INTERNS**

TRAINING



BIG



Opportunity

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Unlocking business potential

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Delivered by the

**Sustainable
Business
Partnership**

Upcoming Events

Energy Efficiency Breakfast

- **Eastbourne, 10th July**

Energy Efficiency Breakfast

- **Chichester, 17th July**

Industry Insight Tour

- **Brighton Sewers, 3rd Sept.**

www.sustainablebusiness.org.uk

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