

TRANSFORM

Environment ●
Economy ●
Society ●

FOR ENVIRONMENT AND SUSTAINABILITY PROFESSIONALS

June 2018
www.iema-transform.net



How the application of unmanned
vehicle technology is transforming
business and the environment

POWER BEHIND THE DRONE

PLUS

Reap what you sow Jeanne Frith on a food project transforming lives

Crypto constructs Using blockchain in the built environment

Demonising data The potential for ethical applications

IEMA

Transforming the world
to sustainability

TAKE YOUR CAREER TO THE NEXT LEVEL

STAND OUT WITH AN IEMA DIPLOMA

With an IEMA diploma you are equipped with the strategic sustainability knowledge and skills to drive your business's agenda. And, by gaining the knowledge needed for full membership of IEMA, (MIEMA) and Chartered Environmentalist status (CEnv) you're a step closer to being recognised as an elite of the profession.

“I have thoroughly enjoyed the course. It has been a great opportunity to expand my knowledge on a variety of sustainability topics outside those that I encounter on a daily basis and to engage with others working in the sector. I have taken a lot away that I will use throughout my career.”

Kimberley Lasi, Environment Officer | IEMA Diploma

At EEF, we don't just deliver training we are setting the benchmark and are the only provider for the **IEMA Diploma in Sustainable Business Practice**.

JUNE

Upfront

- 04 Comment**
Tim Balcon on pledges and promises, and exciting times ahead
- 05 Industry news roundup**
- 08 IEMA news**
#PledgeLessPlastic for World Environment day; members vote YES for Chartership

Regulars

- 10 Legal brief**
Regulations, consultations and court news
- 12 In focus**
A 'supercolony' of penguins raises hopes for species
- 24 The big question**
Would universal basic income bring an end to poverty and inequality?
- 31 Quickfire quiz**
Peter Bosshard from Unfriend Coal on insurers' progress in cutting ties with coal

Connect

- 32 Member news**
Events; Quote unquote; Network news; Member news
- 33 Member profile**
Muhammad Ali MIEMA, environmental manager, Transport for London
- 34 Book review**
Factfulness by Hans Rosling
- 34 Member success**
All the latest IEMA upgrades



FEATURES



- 14 Interview: Jeanne Frith**
Huw Morris speaks to the founding member of Grow Dat Youth Farm, a sustainable food project designed to mentor and develop young leaders
- 18 COVER STORY**
Technology
Chris Seekings on how drones are at the forefront of tackling environmental threats
- 21 Satellite observation**
Richard Tipper explains how earth-observing technologies could rewrite the future of farming
- 22 Decarbonisation**
As Manchester pursues its zero-carbon goals, Catherine Early looks at the science-based tool that has a promising future
- 26 Big data**
Consumer data breaches may have hit the headlines, but David Burrows says data still has potential for more ethical applications
- 28 Blockchain**
Shamir Ghumra and Harriet Cooper examine distributed ledger technologies and their feasibility in the built environment

TIM BALCON, CEO OF IEMA

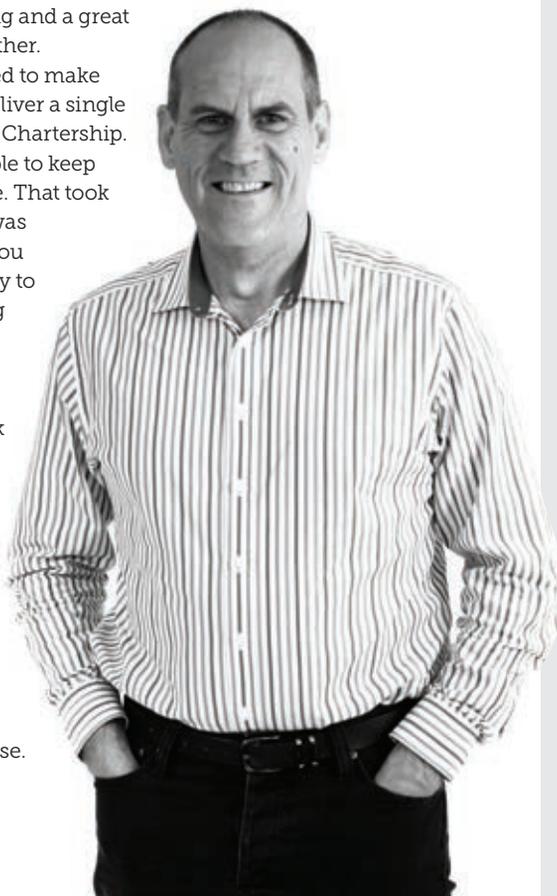
Pledges and promises

So much of what we deal with in our everyday work involves broken promises. Missed governmental targets, delayed consultations, nations withdrawing from agreements, dealing with clients' non-conformance; it's just what we have to face so we can either adapt or mitigate to get on. But it's not what drives us. Focusing on the positive, the achievements and the possibility – that's the motivator.

Over the past few months, I've been delighted to see so much evidence of members backing each other and giving congratulations when others achieve their career goals – the promises we make to ourselves. When members have delivered new guidance documents or written articles for TRANSFORM, I see message after message of "great read" on Twitter and LinkedIn, and it never fails to remind me of this alliance's unique and positive force. Further proof, if needed, is your energetic response to our campaign to support World Environment Day on 5 June. In early May, we launched our #PledgeLessPlastic movement, and to say members have got involved is an understatement. We're seeing many pledges to tackle plastic pollution from members – and through them, their colleagues, family and friends. It's massively exciting and a great demonstration of what we achieve together.

And, just two weeks ago, we assembled to make something very exciting happen and deliver a single mutual goal – to catalyse our journey to Chartership. Following five years of work, we were able to keep our promise to hold a Royal Charter vote. That took place on 15 May, and your enthusiasm was beyond what we could have expected. You kept your promise to support the journey to Chartership with a very definite backing for our ambitions. I'm delighted to say that we've now been able to confidently submit our application.

I would like to say an enormous thank you for your support throughout this journey, which extends back across the membership level review, rebrand and governance changes. We could not have got to this point without your inspiration and dedication. Also, congratulations, as your professional body is all set to become Chartered in the near future. This is a true validation for all we've done, and I'm excited about all we've yet to achieve together. I promise.



IEMA Transforming the world to sustainability

IEMA is the worldwide alliance of environment and sustainability professionals, working to make our businesses and organisations future-proof. Belonging gives us the knowledge, connections and authority to lead collective change, with IEMA's global sustainability standards as our benchmark. By mobilising our expertise, we will continue to challenge norms, drive new kinds of enterprise and make measurable progress towards our bold vision: transforming the world to sustainability.

IEMA

City Office Park, Tritton Road,
Lincoln, Lincolnshire, LN6 7AS
tel: +44 (0) 1522 540069
fax: +44 (0) 1522 540090
info@iema.net | www.iema.net

Editor

Sharon Maguire
sharon.maguire@redactive.co.uk

IEMA head of PR and communications

Katrina Pierce
k.pierce@iema.net

News reporting

iema@redactive.co.uk
christopher.seekings@redactive.co.uk

Sub-editors

Caroline Taylor
Kathryn Manning

Business development manager

Daniel Goodwin
tel: +44 (0) 20 7880 6206
daniel.goodwin@redactive.co.uk

Recruitment sales executive

Ashley Martung
tel: +44 (0) 20 7880 7555
ashley.martung@redactive.co.uk

Designer

Callum Tomsett

Picture editor

Claire Echavarry

Publishing director

Joanna Marsh

Subscriptions

Kate Hampshire
tel: +44 (0) 20 7324 2733
subscriptions@iema-transform.net
The 2018 annual subscription rate is £142.

Production manager

Aysha Miah-Edwards

Printer

Warners Midlands PLC, Lincolnshire

Published by

Redactive Publishing Ltd
Level 5, 78 Chamber Street, London, E1 8BL
tel: +44 (0) 20 7880 6200
www.redactive.co.uk



© IEMA 2018

This magazine aims to include a broad range of opinion and articles that do not necessarily reflect the views of IEMA; nor should such opinions be relied upon as statements of fact.

All rights reserved. No part of this publication may be reproduced, transmitted in any form or by any means, electronic, mechanical or otherwise, without the prior written consent of the publisher and editor.

ISSN 14727625



The paper used to print *Transform* comes from sustainable sources. The polywrap used is of food grade standard and recyclable by any reprocessing plant. Visit: transform.iema.net/think-green. Information on the recycling of polythene can be found at www.polyprint.co.uk/recycling

ROUNDUP

ENVIRONMENT &
SUSTAINABILITY
NEWS AND VIEWS

SUSTAINABILITY DEVELOPMENT GOALS

One billion people still without electricity

The world will not meet the seventh sustainability development goal (SDG7) to deliver modern energy for all by 2030 if current trends continue, with one billion people worldwide still living without electricity.

That is according to a report from the International Renewable Energy Agency (IRENA), which shows that Sub-Saharan Africa and South Asia remain the areas with the largest access deficit.

Based on official national-level data, the findings show that 87% of those without electricity live in rural areas, with the report predicting that 674 million people will be without access by 2030 under a business-as-usual approach.

"We must be more ambitious in harnessing the power of renewable energy to meet sustainable development and climate goals, and take more deliberate action to achieve a sustainable energy future," said IRENA director-general Adnan Z. Amin.

Despite still being far off delivering SDG7, it was found that the number of people gaining access to power has been accelerating since 2010, with some of the strongest increases made in Bangladesh, Ethiopia, Kenya and Tanzania.

All of these countries increased their electricity access rate by 3% or more annually between 2010 and 2016, while India has provided power to 30 million people each year during that time – more than any other country.

Tens of millions of people now have access to electricity through solar home systems, or are connected to mini-grids, although this remains concentrated in around a dozen pioneering countries.

It was also found that rapidly falling costs have allowed solar and wind to compete with conventional

power generation in multiple regions, driving growth in the share of renewables in electricity to 22.8% in 2015.

Between 2010 and 2015, China accounted for nearly 30% of absolute growth in renewable energy consumption, while the UK's share of green power uptake grew by 1% annually during that time – more than five times the global average.

However, based on current policies, the worldwide renewable share is expected to reach just 21% by 2030, falling short of the substantial increase demanded by the SDG7 target.

"There is an urgent need for action, especially on renewables and energy efficiency, which are key for delivering on energy access, climate mitigation and lower air pollution," commented Dr Fatih Birol, executive director of the International Energy Agency.

➤ [Download the full report on SDG7 at bit.ly/2rAOnU6](https://bit.ly/2rAOnU6)



PHOTOGRAPHY: GETTY IMAGES



SHORTCUTS



Mandatory solar panels for homes in California

California has become the first US state to require all new homes built after 1 January 2020 to feature solar panels, as part of a series of energy efficiency standards. The California Energy Commission said this would cut energy use by more than 50%, applying to both apartments and houses. Other measures include lighting and ventilation improvements, with updated thermal envelope standards – cutting emissions equivalent to 115,000 fossil fuel cars. bit.ly/2KipBjq



London to be carbon-free by 2050

London mayor Sadiq Khan has outlined ambitious proposals to make the capital a zero-carbon city by 2050 through energy efficient buildings, clean transport and increased recycling. His Environment Strategy also sets the target of ensuring at least half of the city is green by mid-century, and includes new measures to tackle air pollution and climate change: "By continuing to invest in our environment... we can improve the health and wellbeing of everyone living in London," Khan said. bit.ly/2KkeuGt



Quarter of EU budget for climate action

The European Commission plans to increase its climate change spend by 5% to €320bn between 2021-2027, with a quarter of the EU's budget dedicated to climate action. It said funding levels need to be increased to support the proposals, but savings could be made from the Common Agricultural Policy following the UK's departure from the bloc. Jean-Claude Juncker said: "The new budget is an opportunity to shape our future as a new, ambitious union of 27." bit.ly/2lhMFC0

RENEWABLE ENERGY

Tidal stream energy could boost UK economy by £1.4bn

The UK's nascent tidal stream industry could generate a net benefit to the UK economy of £1.4bn and support 4,000 jobs by 2030, new research has found.

A report from the Offshore Renewable Energy (ORE) Catapult reveals the industry can also meet the government's 'triple test' for determining subsidies for new technologies. In addition, it predicts that the cost of tidal stream power could fall from £300/MWh to £90 within 1GW of deployment, significantly offsetting CO₂ emissions from natural gas generation.

Because of the technology's early maturity levels, the report argues that tidal stream requires an immediate route to market via revenue support to enable volume deployment.

This will also be necessary to enable standardisation and the application of existing innovation, as well as ongoing research and development to further enhance the technology solutions available. It is thought that the sector could provide an economic benefit of between 50% and 60% in coastal areas with a greater need for economic regeneration, resulting in considerable exports.

Dr Stephen Wyatt, ORE Catapult's research and innovation director, said: "We will now continue our work with the relevant government departments to establish the best way to capture such advantage, in terms of growing our economy, creating jobs and exporting goods and services all over the world."

AIR POLLUTION

Tourism responsible for 8% of global greenhouse gas emissions

The trillion-dollar global tourism industry is responsible for almost one-tenth of greenhouse gas emissions worldwide, according to an Australian study, which urges travellers to "fly less and pay more".

The world-first study led by researchers at the University of Sydney found that the US is responsible for the majority of tourism-generated emissions overall.

Air travel was the key contributor to the industry's carbon footprint, which is four times greater than previous estimates, growing faster than that of

international trade, and is responsible for 8% of total emissions. This is expected to get worse as growing affluence and technological developments make luxury travel more affordable, with top holiday destinations like the Maldives particularly vulnerable to the resulting climate risks.

The researchers recommend financial and technical assistance to help share the burdens of global warming on winter sports, sea-level rise on low-lying islands, and pollution impacts on exotic and vulnerable destinations.



EMERGING ECONOMIES

New phase of globalisation undermining emission reductions in industry



Regions such as Bangladesh and Vietnam have heavy reliance on coal

Carbon-intensive industries moving from China to less-developed regions like Vietnam and Bangladesh could be undermining global CO₂ emission reduction efforts.

That is according to a new study by the University of East Anglia, which reveals that 'South-South' trade between developing nations more than doubled between 2004-2011.

CO₂ emissions from Chinese exports have slowed or even reversed during that time, while those from other developing countries have surged, many

of which rely heavily on high-carbon inputs like coal for production.

The study authors warn that this could seriously undermine international efforts to limit global warming, which increasingly rely on smaller nations cutting their emissions.

"The success of international climate mitigation efforts may depend on curtailing growth of coal-based energy and emissions in now-industrialising and urbanising countries," said the study's co-author, professor Dabo Guan.

WHEN IT COMES TO DISCLOSING TO CDP YOU CAN ALWAYS RELY ON OUR ACCURACY TO IMPROVE YOUR SCORE

At Lucideon, we understand the importance of complete and accurate data, and through independent verification, you can be sure that this is what you'll get. Third party assurance gives your reporting data credibility, helping to distinguish you from your competitors.

Independent verification:

- Gives you confidence in publicising your numbers
- Improves your CDP score.

REVISED REPORTING DEADLINES
 CLIMATE CHANGE PROGRAM — 15TH AUGUST 2018
 SUPPLY CHAIN PROGRAM — 29TH AUGUST 2018

Tony Summers,
 GHG Lead Auditor,
 Assurance

Find out more at
www.lucideon.com/cdp

LUCIDEON
 insight creating advantage

PLASTIC POLLUTION

Join the move to #PledgeLessPlastic for World Environment Day

World Environment Day takes place on Tuesday 5 June, with the topical theme of 'Beat Plastic Pollution'. IEMA is supporting the day – organised and promoted by the United Nations – and members can get involved in a number of ways, thanks to a range of resources and the opportunity to #PledgeLessPlastic.

The range of resources, from inspiring case studies to toolkits, event inspiration and pledge cards, was launched in May to support members, their family, friends and organisations to tackle the scourge of single-use plastics. IEMA is encouraging all members to use

and share the resource kit on, before and after World Environment Day. Members are especially urged to make their own pledges on social media with the easy-to-use pledge cards and the #PledgeLessPlastic hashtag.

In further support of the day, a number of the Regional Networks are holding World Environment Day events on 5 June. Members can book onto a free webinar – 'Beat Plastic Pollution, If You Can't Re-use It, Refuse It' – on Tuesday 5 June 2018, 12:30-13:30 GMT.

IEMA will make pledges on Twitter over the next month, including welcome news on the oxo-degradable plastic used to deliver your monthly copy of TRANSFORM.

The #PledgeLessPlastic campaign and range of resources has been created in partnership with corporate members and partners.

➔ [Go to iema.net/wed18](http://iema.net/wed18) to find out more and download the #PledgeLessPlastic kit



ALL JOBS GREENER

Refreshed workplace upskilling courses launched

Transforming the world to sustainability means everyone in every job needs the right knowledge, skills and opportunity to make a difference. To support this, IEMA has offered targeted workforce development training for several years – the All Jobs Greener suite, which was launched in 2011. The world has changed significantly since then, so the group of courses has been reviewed, refreshed and most recently, relaunched.

The Environmental Sustainability Skills for the Workplace suite went live on 14 May. It has been specifically designed for non-specialists, providing them with a practical introduction to environmental sustainability and

new knowledge, understanding and motivation to make a positive difference within their organisation.

The two courses – Environmental Sustainability Skills for the Workforce and Environmental Sustainability Skills for Managers – have already been run by several approved training providers since the launch, with many more dates scheduled. A third accompanying course – Leading with Environmental Sustainability – is a powerful half-day session that will change the way senior leaders do business.

➔ [Go to iema.net/training](http://iema.net/training) to find out more, and look out for the the July issue of TRANSFORM, which will feature further insight on the courses' learning outcomes



QUOTE
UNQUOTE

IEMA VOTE

Members vote to go for Chartership

On 15 May, over 150 members gathered in London for the most historic moment in IEMA's history so far – the vote to secure members' approval to petition for a Royal Charter.

Members voted overwhelmingly in favour of the special resolution to officially apply for a Royal Charter – a move to boost member value, recognition for the profession and global profile for the institute. 99.29% of all 704 votes received from proxy votes and those cast in the room at the extraordinary general meeting voted in favour of the resolution – far exceeding the 75% required for IEMA to proceed.

IEMA CEO Tim Balcon said immediately after the vote: "This is a real milestone for IEMA. It is a recognition and validation of everything our worldwide alliance has achieved, and everything we'll go on to accomplish together in the future. I'd like to thank all members for their support, enthusiasm and contribution for making such a pivotal and definite decision. I'm enormously excited about what happens next – this year and beyond."

Chair of the IEMA board Diana Montgomery said: "This is a huge step towards the recognition of our profession."

As this issue of TRANSFORM went to press, IEMA was executing the official Charter documents required by the Privy Council and preparing to post notice of our Charter application in the *London Gazette* – an obligatory public step in the process.

Members will be updated regularly on our progress as we reach further milestones in this exciting, once-in-a-generation move.



GDPR

Check out your choices

The new General Data Protection Regulations came into force on 25 May, placing new requirements on organisations to change the way they obtain, record, use and destroy personal data. In response, IEMA has been contacting all members to give everyone the fresh opportunity to review and confirm subscription preferences for all marketing and communication purposes.

It is vitally important you check and confirm the choices we have recorded or makes changes where necessary to ensure we can keep you informed and connected. To check your choices, log in to **MyIEMA**, select Manage Your Membership and then select the green Preferences button. It's quick, easy and essential to do. Head to **iema.net** now to ensure we stay in touch.

The votes are in!!! 699 members (votes in the room and proxy votes) have VOTED FOR CHARTERSHIP! That far exceeds the 75% of votes needed
#BecomingCIEMA @IEMANET



Woke up feeling #inspired this morning by all the passionate members of @iemanet and fantastic talks by @planamikebarry Jane Davidson from @universitywales and Paul Leinster from @CranfieldUni The event was part of #BecomingCIEMA fingers crossed #QueenElizabeth gives permission!
@ABIBRADY



Beautiful day for a train ride to London for my first two events as an @iemanet Fellow, and they couldn't be more important! First we're talking about Brexit and then the EGM and the vote on our chartership. Historic day for us, debrief at the Sussex and Surrey Social tomorrow
@CATALICITY

IEMA Landmark moment in the history of @iemanet Proud to have been in the room and voting #BecomingCIEMA
@BLUEDOTAUG

Attended my 1st @iemanet meeting to join in a resounding "yes" vote towards gaining a Royal Charter. Onwards and upwards
@GREENLABGUY



Excellent news – very exciting times for such an important integrity strong professional institute – very proud to be a member and NE Chair. Thank you @iemanet #BecomingCIEMA
@SHARONENV1



NEW REGULATIONS

THE LATEST

■ GUIDANCE ■ CONSULTATIONS ■ LEGISLATION



15 APRIL 2018

Renewable fuel

The Renewable Transport Fuels and Greenhouse Gas Emissions Regulations 2018 aim to reduce greenhouse gas emissions from fuels supplied in transport, and will require fuel companies to more than double the amount of renewable fuel they supply by 2020.

➤ cedr.ec/567



2 MAY 2018

Environmental permitting

The Environmental Permitting (England and Wales) (Amendment) (No. 2) Regulations 2018 amend the Environmental Permitting Regulations 2016, in order to implement EU requirements on basic safety standards for protection against exposure to ionising radiation.

➤ cedr.ec/55y



7 MAY 2018

Waste management

The Waste (Fees and Charges) (Amendment) Regulations (Northern Ireland) 2018 increase the fees and charges for waste management licences and registering as a carrier of controlled waste.

➤ cedr.ec/55t



9 MAY 2018

REACH

Various EU legislation has been published relating to Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). This sees methanol and 1-methyl-2-pyrrolidone added to Annex 17 restricted substances, and dicyclohexyl phthalate (DCHP) identified as a substance of very high concern.

➤ cedr.ec/560

➤ cedr.ec/561

➤ cedr.ec/55z



1 APRIL 2018

Water management

The Scottish Environment Protection Agency has developed a guide to help support the reservoir industry under the Reservoirs (Scotland) Act 2011. It is part of a series of documents that offer advice and good practice on how to fulfil the requirements of legislation.

➤ cedr.ec/565



11 APRIL 2018

Environmental permitting

The Department for Environment, Food and Rural Affairs has launched a consultation on proposals to make changes to some of the flood risk exemptions and exclusions in the Environmental Permitting (England and Wales) Regulations 2016.

➤ cedr.ec/55s



18 APRIL 2018

Marine management

The Department of Agriculture, Environment and Rural Affairs seeks views on the Draft Marine Plan for Northern Ireland. The plan has the vision to develop a "healthy marine area, which is managed sustainably for the economic, environmental and social prosperity of present and future generations".

➤ cedr.ec/563



23 APRIL 2018

Environmental assessment

The European Commission is consulting the public on the evaluation of Directive 2001/42/EC. This assesses the effects of certain public plans and programmes on the environment (the so-called Strategic Environmental Assessment or SEA Directive).

➤ cedr.ec/566

INCOURT

POLLUTION

Severn Trent fined £350,000 for chemical leak

Utilities giant Severn Trent has been fined £350,000 for a pollution incident in the River Amber, Derbyshire. The fine is in addition to a £68,003 payment to the Environment Agency and a £120 victim surcharge.

The Environment Agency received reports of "several hundred dead fish" along the River Amber, back in November 2015. After an investigation, which saw an estimated 30,000 dead fish and 5km of damaged ecology along the river, the source of the pollution was deemed to be sodium hydroxide from the Ogston water treatment works.

Severn Trent Water identified that a leak within a chamber at the works had led to the contents becoming contaminated with sodium hydroxide, which was then released into the River Amber from its discharge pipes.

The Environment Agency has been monitoring the recovery of the ecology for two years. It estimates that the river will not

be considered fully recovered until at least the summer of 2018.

During sentencing, it was also stated that Severn Trent had "no policy whatsoever" with regard to potential incidents occurring from the dosing chamber that was the source of the leak, or from that type of chamber in any other treatment centre in the UK.

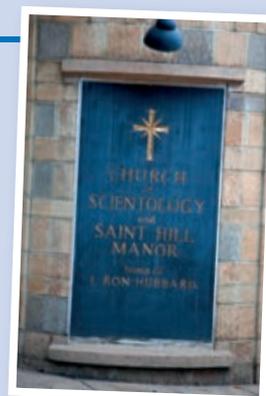
In a statement from the sentencing judge, it was made clear that "to have no policy whatsoever when dangerous chemicals could have leaked out in any number of ways is highly negligent. The size and success of Severn Trent makes it even more astonishing."

In addition to the fine, costs and surcharge, Severn Trent made a donation of £228,000 to Derbyshire Wildlife Trust to fund sustainable improvements to the River Amber.



Some 30,000 fish died as a result of the leak

▶ The Church of Scientology Religious Education College was fined £14,000



OTHER NEWS

Sewage leak lands church with penalty

A branch of the Church of Scientology has been fined £14,000 for leaking raw sewage into the River Medway in West Sussex.

The leak saw damage to the river's natural ecology, with fungus and dead wildlife found more than 350 metres from the source of the leak.

"Volumes of sewage were 10 times over the permitted level."

Residents complained about leakage only a few weeks after the branch replaced the sewage treatment plant in August 2015.

Inspectors found the new plant was pumping out waste water containing volumes of sewage 10 times over the permitted limit. Samples were taken on 19 occasions, and 10 failed to meet environmental standards.

The court heard that the Church of Scientology Religious Education College had been aware of the longstanding problem and was therefore negligent, but has since spent a lot of money to get the treatment plant operating properly.

In addition to the fine, the defendant was also ordered to pay £2,566 in costs.

CASE LAW

Waste disposal firm's appeal dismissed as judge decides lining material is liable to landfill tax

The case of Biffa Waste Services Ltd v The Commissioners for Her Majesty's Revenue and Customs, a tribunal appeal, has been dismissed.

The appeal followed an earlier appeal by the appellant and three other waste disposal companies, which dealt with the liability for landfill tax on 'fluff' – mainly domestic black bag waste that had been deposited at the base, sides and top of landfill cells.

The argument was that this fluff was being used to protect the engineered parts of the landfill cells

from damage by the general body of waste deposited in the cell, and was therefore not waste, excluding it from landfill tax.

The appeals were dismissed on the basis that in spite of the submitted 'use' of the materials in question, the appellants intended to discard them.

The current appeal concerned a claim relating to a different material deposited at the top of landfill cells

operated by the appellant, called EVP or 'engineered into the void permanently', similar to the 'fluff' referred to in the earlier appeals.

Judge Kevin Poole considered the intent of the person making the disposal to be to discard the material. He also stated that "all the material was destined for landfill in any event, in the main body of landfilled waste if not as EVP". This considered, the appeal was dismissed.





NATURAL WORLD

A legion of... Happy Feet

Satellite imagery has uncovered a 'supercolony' of more than 1.5 million Adélie penguins nesting among a chain of remote Antarctic islands, raising hope for a species that was thought to have been in decline for decades.

The birds had previously gone undetected due to the remoteness of the Danger Islands, which are surrounded by treacherous waters and thick sea ice, making it difficult to access.

However, after being tipped off by NASA, researchers at Stony Brook University used a modified drone to take images of the entire area before tallying up the penguins one by one.

The discovery increases the region's known Adélie penguin population by 70%, and will allow conservations to better design marine protected areas for the animals.

It remains unclear, however, why the penguins have been able to thrive in the region, with climate change causing their population to decline steadily over the past 40 years.

"Is it linked to the extended sea ice condition over there? Food availability? That's something we don't know," commented Stephanie Jenouvier, seabird ecologist at Wood Hole Oceanographic Institute. 

PHOTOGRAPHY: GETTY IMAGES





Reap what you SOW

A sustainable food project's mission to nourish a diverse group of young leaders is harvesting it a wide-reaching reputation. Huw Morris speaks to project founding member **Jeanne Frith**

Think of New Orleans and three things spring to mind: jazz, food and Hurricane Katrina. On the latter two, Jeanne Frith talks with considerable authority.

A founding member of Grow Dat Youth Farm, a sustainable food project in the heart of New Orleans that employs around 60 teenagers each year, she has lost count of the young people who have transformed their lives simply through growing food. But a couple of names crop up.

Yasmin Davis is a Grow Dat graduate, who went on to study political science and Latin American studies and won a scholarship with the Posse Foundation – a programme that trains public high school students with outstanding academic and leadership potential. She held almost every position possible at Grow Dat – from crew member, assistance area leader and intern – before joining the staff as a crew leader.

Another is Tim Dubuclet, who was living on fast food and sugary drinks



and weighed more than 21 stone when he joined the project. He worked the soil, learnt about vegetables and how to cook them, lost more than 5 stone and gained a lifelong habit of gardening and preparing food.

Founded in 2011, Grow Dat is based on a seven-acre site of a former golf course in the city's park, which in 2005 was destroyed by Hurricane Katrina – one of the most cataclysmic storms in US history. That catastrophe still reverberates.

"When I first moved to New Orleans, I noticed people spoke in the shorthand of 'before' or 'after' to signify before or after Katrina," says Frith. "The hurricane and levee [dyke] failure had so radically affected people's lives. It's a huge context."

The concept for the farm grew out of a partnership between the Tulane City Center, the New Orleans Food and Farm Network (NOFFN) and New Orleans City Park. A big challenge was immediately apparent. Most of Grow Dat's students lived unhealthy lifestyles – a snap survey showed that just 12% had eaten vegetables in the previous 24 hours. Many lived more than three miles from a supermarket.

The long-term problem of poor access to fresh food was exacerbated by Katrina. Three years after the hurricane, there were almost 18,000 residents per supermarket – well above the national average of 8,000.

Since then, the Grow Dat farm has gained momentum and a reputation. Each year, the farm provides more than 20,000lb – over 9,000kg – of sustainably grown food for New Orleans. Around 70% of its produce is sold through farmers' markets run by its students, through a community-supported agriculture box scheme, or wholesale to restaurants across the city. The other 30%, called Shared Harvest, is donated to the people

"Farming is challenging, and serves as a conduit to stimulate the development of youth leadership skills"

and community organisations who need it most.

Need is great, says Frith. Louisiana has the third highest rate of food insecurity in the US. In New Orleans, the racial disparities in access to food that existed before Hurricane Katrina considerably worsened and became more deeply entrenched after the storm and levee failure. African American residents are not only more likely to be food insecure but are also 33% more likely to die of heart disease and three times as likely to die of diabetes than white residents.

Overall, life expectancy can vary as much as 25 years by postcode in this segregated city. "That's 25 years' difference just neighbourhood by neighbourhood," she says.

One of Grow Dat's founding principles is that the toughest social problems will not be solved by individuals or by one group of people alone. "This is one of the lasting lessons of Hurricane Katrina, a dozen years later," she says. The project hires young people from partner schools across New Orleans for its five-month leadership programme. Starting at age 15, they come from across the spectrum – elite private

Catholic schools, alternative schools and Louisiana's Center for Juvenile Offenders. "We intentionally hire young people from a dozen different high schools across the city," she says. "They are young people who work together but might never normally meet."

The young people work as interns, assistant crew leaders and crew leaders, who help select and train the next group while running the farm. The project's graduates are now hired by a network of partners, comprising sustainable food co-operatives, retailers and urban landscapers.

Much of the work at Grow Dat is carried out by hand. Students spend half their time learning about sustainable agriculture and getting their hands dirty planting, weeding, cultivating, compost building and harvesting.

"We use cover cropping, composting, companion planting, farmscaping and crop rotation to stimulate microbiological activity and soil health," says Frith. "It's all about chemical-free farming methods to build a resilient, sustainable agricultural system. We do not use chemical-based pesticides or fertilisers. We produce food by supporting natural ecological systems."

This approach has implications for human growth as well as crop growth. "That means stewarding natural and human resources for the future. Farming is challenging, and serves as a conduit to stimulate the development of youth leadership skills," she says.

The farm features an Eco Campus, comprising seven retrofitted shipping containers that house the project's offices, a teaching kitchen, youth locker rooms, composting toilets, cold storage, a post-harvest handling area and a tool storage area. The campus was built and donated by students and staff at the Tulane City Center, part of Tulane University's School of Architecture, and has won



Interview

several regional awards for its design and sustainability. This is where students spend the other half of their time: in workshops complemented by skill-building activities on site, at the project's partner organisations, or on field trips.

"They learn why we do what we are doing – why we are growing food sustainably, why we are weeding instead of spraying herbicide, why we plant red clover near beds of vegetables to attract bees and wasps for pollination," says Frith.

"If you have grown something, there is more personal investment and care," she adds. "It's an honour to see something grow and take on a life." Grow Dat, she says, is "meaningful, important work of growing food for our city with one another".

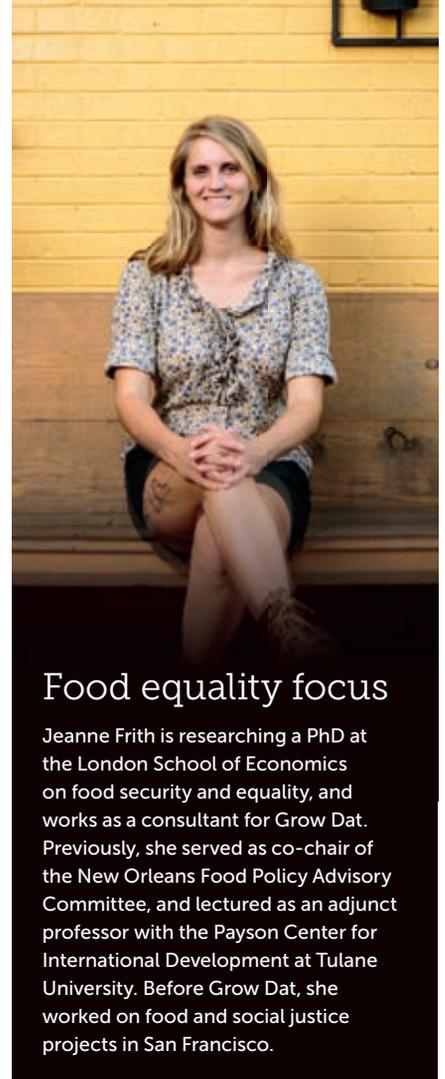
Frith is of Swedish ancestry, with many of her close relatives having farmed the Kansas prairies for generations. "When my grandfather visited Grow Dat, he said it seems like an old-fashioned, more traditional farm." She likes to quote the farmer poet Wendell Berry: "When going back makes sense, you are going ahead."

One attraction for visitors is the farm's location next to a birding corridor. Hundreds of species of birds perch in the bald cypress trees near its Eco Campus. Visitors can also see an alligator or two gliding along the bayou that flanks the farm's rows of vegetables.

"Coastal Louisiana is at the frontline of climate instability, and many think we are experiencing the fastest land loss on the planet – at the rate of an American football field every hour," says Frith. Indeed, the farm's bayou links to Lake Pontchartrain, which intersects with the Mississippi River, which in turn flows into the Gulf of Mexico. This is another reason for not using "synthetic chemical fertilisers that will drain and circulate in these vital water systems".

Besides funding from grants, donors and market sales, the project raises money through holding seasonal farm dinners, at which it invites local celebrity chefs to cook up locally focused, family-style meals. Tickets sell out fast. The events also reinforce the farm's reputation across New Orleans and beyond.

"In New Orleans, the racial disparities in access to food that existed before Hurricane Katrina considerably worsened... life expectancy can vary as much as 25 years by postcode"



Food equality focus

Jeanne Frith is researching a PhD at the London School of Economics on food security and equality, and works as a consultant for Grow Dat. Previously, she served as co-chair of the New Orleans Food Policy Advisory Committee, and lectured as an adjunct professor with the Payson Center for International Development at Tulane University. Before Grow Dat, she worked on food and social justice projects in San Francisco.

Frith, who is researching a doctorate at the London School of Economics, works as a consultant for Grow Dat, spreading its message. She admits that when she is giving presentations or speaking at conferences, there is "a tension of me being an adult but knowing that the true voice of our work comes from young people".

The project's message is much in demand, she says. "There is no way we can meet the demand for our produce or for information from organisations about what we do. There are limitless possibilities and support for the work."

However, her enthusiasm does not extend to the Trump administration. "I have no confidence that sustainability is being emphasised," she says. "The executive leadership of the US seeks to further divide people. But we believe that coming together – across race, class, gender, sexuality, young people who are great at school, young people who are struggling in school – is essential to creating lasting social change." 

HUW MORRIS is a freelance journalist

READY TO ENHANCE YOUR SUSTAINABILITY SKILLS?

Complete an MSc Sustainability and Environmental Management degree and pursue your career aspirations

Our part-time, 100% online MSc Sustainability and Environmental Management has been designed specifically for environmental professionals giving you the key accreditation and sustainability knowledge needed to get ahead in your career. You'll cover core areas in Sustainability and Environmental Management to learn new skills that can be applied immediately within the workplace. Benefits include student membership with IEMA and exemptions for IEMA practitioners.

Accredited by IEMA



Whether you're starting out, moving up or starting again

WE'RE READY WHEN YOU ARE

Starting September 2018

Call 01332 594000

www.derby.ac.uk/IEMA

 EssentialPlanning

Increase your community engagement skills and impact

Foundations Program in Public Participation

Planning

16-18 October 2018

London, UK

Techniques

23-24 October 2018

London, UK

This course will:

- Give you a globally recognised certificate (IAP2)
- Help you to use state-of-the-art communications and engagement tools and techniques
- Enable you to develop engagement and communications strategies that respond to rapid economic, political and technological change, and
- Use real case studies for insights



Find out more or register online on the training page of:
www.essentialplanning.eu or call +44 (0) 78 5901 0218



Drone technology



Drones are at the forefront of tackling some of the greatest environmental threats of our time, rapidly transforming scientific research across the world. **Chris Seekings reports...**

THE SHAPE OF THINGS TO COME

From flying taxis to parcel delivery services, there appears no limit to the potential applications of drone technology as we stand on the brink of a digital revolution.

But you don't have to look far into the future to witness the transformational impact of drones, which have evolved rapidly since being considered little more than a novelty just a decade ago.

Increasingly able to think for themselves through the use of sensors, drones can now enter environments beyond the reach of humans, whether on land, underwater, in the air or in space. This has had dramatic knock-on effects for scientific research around the world, with sustainability experts taking advantage of the technology for environmental protection use.

Robert Garbett, chief executive of Drone Major Group, explains how this technology covers a vast array of areas, from monitoring wildlife and pollution levels, to replanting trees and mitigating wildfires.

"That is just the tip of the iceberg," he says. "The applications for drones around environmental protection and monitoring are huge, it just goes on and on."

Indeed, after just a little digging, I unearth thousands of environmental uses that the scientific community is just beginning to develop (*see right*).

"Whatever the environmental issue that you can think of, a drone can probably be used to help solve it," Garbett adds. "The evolution of unmanned vehicle technology (UVT) is moving very quickly."

Wildlife defenders

One of the most cutting-edge applications of drone technology is the ability to identify different species on the ground by using infrared cameras to generate unique thermal profiles based on the different ways animals radiate heat from their bodies. This has allowed researchers at Liverpool John Moores University (LJMU) to keep tabs on different species across large game reserves, and, crucially, detect and reveal poachers in a way that

would have previously been impossible. "Drones can be designed to be incredibly quiet and flown at hundreds of feet above the ground so they are almost undetectable," Dr Owen McAree, LJMU senior research officer, tells me.

"A manned aircraft would give the game away, but these drones can monitor vast areas of land in relative silence, and send a text message to a game warden alerting them to poachers in a particular area."

The technology is also being used as a new way of monitoring the activities of animals, with LJMU researchers recently flying over large nature reserves in Malaysia to observe the nesting behaviour of orangutans. McAree explains how this would have previously been done from the ground, providing an incomplete picture of their behavioural patterns, owing to the height of the nests in the trees. A manned aircraft would have been "prohibitively expensive" to use and ineffective as they would have had to be flown so high as to not disturb the orangutans.

"The technology is also being used as a new way of monitoring the activities of animals"

"With drones, you can fly them a few hundred feet above the trees and the animals don't seem to mind," McAree continues. "We can now get a lot of really great data on how their nesting behaviour changes over time that we wouldn't have been able to before."

Into the deep

Another application involves using marine drones to monitor the state of the ocean by sampling its chemical composition and keeping track of fish stocks. However, there has been an explosion in the number tackling

ENVIRONMENTAL USES FOR DRONES

Some of the applications for remotely piloted vehicles in the scientific community



WIND TURBINE INSPECTION



MONITORING OCEAN POLLUTION



CROP PROTECTION



REFORESTATION



CLIMATE CHANGE MONITORING



COMBATING DISEASE AND ILLNESS



SPECIES PROTECTION



WATER SAMPLING AND TESTING



NUCLEAR DISASTER CLEANUP



PLASTIC POLLUTION REMOVAL

Drone technology

plastic pollution in recent years. This coincides with a mass public awakening around the impact of plastic entering the marine system, with litter recently found to have settled an astonishing 36,000ft below the surface of the Pacific Ocean.

Designer Elie Ahovi's answer to this is his 'Marine Drone', which travels underwater and sucks up plastic bags, bottles and other debris into a net-like trap at the back end of the device. It is equipped with an infrasound system and a special sensor that keeps fish and other aquatic animals away, while high-powered batteries allow it to stay in the water for more than two weeks at a time.

The RanMarine project in the Netherlands is another initiative that aims to cut down on ocean plastic waste. Inspired by the natural way that whale sharks catch prey, the company has developed a drone that can filter up to 500kg of plastic waste at any given time.

The idea came after the project's chief executive officer, Richard Hardiman, grew frustrated at the ineffective methods available for removing plastic from ports and harbours.

He hopes his company's solar-powered 'Waste Shark' drone will eventually help "clean up the mass of 'plastic soup' suspended in the world's oceans".

"It may sound strange to say for an entrepreneur, but my mission will only truly be accomplished when I am out of business," he adds.

Blurred lines

The most striking way drones have evolved in recent years concerns their ability to operate in multiple environments. Engineers at Imperial College London (ICL) have developed a drone that can dive from the air into the ocean like a gannet bird, before using compressed gas to propel itself back out of the water, where it can then fly away using retractable wings.

AquaMAV is designed to monitor water quality in reservoirs and changes in ocean salinity to gauge the effects of climate change,

providing a game-changing solution for scientists looking to carry out research in harsh environments.

"During an emergency scenario such as a major oil leak, an AquaMav could fly and dive into isolated patch of water, where it could collect samples and record environmental data," says ICL's Aerial Robotics Lab director, Dr Mirko Kovac.

"The vehicle could then perform a short take-off and return to its launch site to submit samples for analysis. This would enable a fast, targeted response that could not be matched by current methods."

This is one of the most exciting areas for the future of drone technology, with Garbett suggesting that the barriers limiting the reach of UVT are increasingly falling away. He describes how there are now 56ft drone catamarans that can travel across the world's roughest seas for 100 miles carrying air drones, providing an integrated system to cope with various environments.

"That blurring of the lines between environments is the most exciting thing," Garbett says. "These are not underwater drones, land drones or air drones – they are hybrids, and that is what we are going to see more and more of in the future."

"You have to remember that a drone is any vehicle or aircraft that is autonomous or remote controlled, so that goes across the entire environment – the things that are possible are astonishing."



Big brother

The environmental applications for drones appear endless, with their low-carbon emissions also enabling them to monitor pollution

levels in a way that other devices can't. Meanwhile, the relatively cheap price tag justifies the risk of them becoming damaged or destroyed in dangerous scenarios.

McAfee points out that we are very likely to see drones operating across a vast spectrum of services, including delivering life-saving medicine to remote areas, or even defibrillators for when emergency services are stretched.

The technology is expected to transform our society in many ways, from disrupting the job market to ensuring all travel is autonomous and smooth, with traffic jams potentially a thing of the past.

But at what price? "We may witness thousands of Amazon drones or advertising devices flying around in the sky, and that could seriously infringe on people's quality of life," McAfee says.

He believes that an unmanned traffic management system – a type of air traffic control – could be needed to deal with the increased traffic of drones, with trials already taking place in the US and the United Arab Emirates.

There is also the possibility of CCTV drones entering the skies, further encroaching on people's privacy, with the population increasingly unable to evade the watchful eye of the state.

"From a technological point of view, these are all possible, but do we want all this stuff? I am happy to see drones used for scientific study, conservation, and emergency services, among others, but I would never endorse the principle of anyone being able to put a camera in the sky.

"Drones have opened up a whole area of discovery, but, on the flip side, there are ethical questions that society will ultimately have to answer." 



Recent advances in the deployment of earth-observing satellite (EO) systems by space agencies and commercial players have massively increased the available data on terrestrial and aquatic ecosystems.

Governments and businesses have invested billions of dollars constructing, launching and operating constellations on the premise that society or paying customers will obtain sufficient benefit to justify the continued operation and development of these technologies. As a result, the frequency, quality, resolution and diversity of free or affordable data now available is unprecedented.

The potential applications of EO technologies are broad – from monitoring environmental change at various scales, response to natural disasters and measurement of economic and social change; to improved management of forests, water resources, coasts and fisheries. One major sector set to benefit from the adoption of EO is agriculture.

Including pasture, agriculture is the main human land use, comprising almost 40% of the global land surface. The base for a large part of the global economy, it is, of course, vital for food security. Global demand for calories is expected to double by 2050 before stabilising, while large areas of prime agricultural land are expected to decline in productivity as a result of climate change, soil degradation and water resource depletion.

Within the agricultural sector as a whole, there are a number of potential segments for EO applications, including:

- (i) Broad-scale monitoring of changes** to agricultural production and land use. This is mainly of interest to government departments concerned with food security and the rural economy.



Agricultural awakening

Richard Tipper examines how earth-observing technologies could rewrite the future of farming

- (ii) Information about the interface between agriculture and natural ecosystems**, which can be used to monitor natural capital. More specific data can check compliance of farms with environmental regulations, or inform on payment for services such as maintenance of landscape features, erosion prevention and carbon sequestration.

- (iii) Commercial data about crops** and varieties, leading to production estimations useful to aggregators, suppliers, traders and insurers.

- (iv) Risk, suitability and change information.** This will be particularly valuable for investors in agricultural holdings and could help stabilise markets.

- (v) Precise information for farmers.** EO data can inform on water and

agrochemical requirements, and the optimal timing of operations, for example.

Each of these will require a careful combination of contextual information, subject matter expertise and end-user requirements to generate valuable information from EO-derived data.

Ecometrica's strategy is to unlock the value in EO data by combining it with contextual information held by businesses, governments and researchers.

The potential value of EO applications to agriculture is immense. A 5% improvement in global agricultural productivity from the application of EO technologies would deliver a return of approximately \$250bn per year.

But considerable effort will be needed to finesse solutions before the wide range of stakeholders in this diverse and complex sector – from governments, civil society and farmers to financiers and suppliers – start reaping the benefits. 

DR RICHARD TIPPER is executive chairman of downstream space and satellite data mapping group Ecometrica

“A 5% improvement in global agricultural productivity from the application of EO technologies would deliver a return of approximately \$250bn per year”

Route map for



"If we're serious about climate change, it's a Marshall-style transition we're talking about." Kevin Anderson, deputy director of the Tyndall Centre for Climate

Change, does not hold back from the scale of the changes needed to enable decarbonisation of the economy, comparing them to the US plan for Europe after the Second World War.

Speaking at Manchester's inaugural Green Summit in March, Anderson outlined analysis undertaken by the centre, which is based in the University of Manchester, to identify the city region's carbon budget. This concluded that it should emit no more than 71m tonnes of carbon dioxide from 2018 onwards – the equivalent of just five to six years' worth of the area's current emissions, he said.

"Full decarbonisation of the Greater Manchester city region is needed by 2035 to 2040. That's a 10-15% reduction in emissions every single year, starting now. If we fail this year, it's more next year," he told delegates.

The Tyndall Centre has been working with consultancy Anthesis Group and the Greater Manchester Combined Authority (GMCA) – which represents the 10 councils in the city region – to develop and trial a city-focused low-carbon model.

Called SCATTER (Setting City Area Targets and Trajectories for Emissions Reduction), the tool can support cities across the UK to set emission reduction targets in line with the Paris Agreement's aims to limit temperature rise to a maximum of 2°C.

SCATTER allows city authorities to standardise their greenhouse gas

M A N C H

A science-based tool being used by the Manchester city region to assess its options in pursuing a zero-carbon goal could prove effective not only for other cities but also big companies, reports **Catherine Early**

(GHG) reporting by aligning it with internationally accepted standards and ensuring consistency with the requirements of the Compact of Mayors – an international alliance of cities and local governments that are voluntarily acting on climate change.

It also allows the city to produce emissions reports that meet the mitigation goal standard, an accounting and reporting standard for national and subnational GHG reduction goals developed by the World Resources Institute (WRI).

The idea for the SCATTER tool came out of a desire to support cities to align their climate mitigation plans with the WRI's standards, says Matt Rooney, principal consultant at Anthesis. Analysis of the many climate-change-related tools on the market revealed a gap. "We didn't see anything that joined up the WRI-compliant inventory with modelling, or with the WRI's goal standard reporting. We felt there was an opportunity to consolidate and simplify some of the tools already out there," he says.

SCATTER allowed the team to take the Tyndall Centre's recommended target date for carbon neutrality and identify various options to achieve it. The tool generates carbon mitigation options according to four levels of ambition, with the lowest based on the results of action being taken only at national level.

The tool enables local authorities and city regions to understand, for the first time, the implications of their long-term climate change commitments, says Mark Atherton, director of environment at the GMCA. "SCATTER provides the user with options for taking action which can be honed to suit their circumstances – it gives clarity on the 'what' but leaves the 'how' for the user to decide," he says.

The team based the options for Manchester only on existing, proven technology. SCATTER allowed them to distinguish between technical solutions that can be applied locally and those that rely on national government action.

Speaking to delegates at the summit, Alex Ganotis, green city region portfolio



SCATTER

lead and Stockport council leader, said the tool had shown it was possible for the city to achieve carbon neutrality ahead of the UK-wide goal of 2050.

However, this would be demanding, he warned, needing “ambitious national assumptions in relation to surplus renewables capacity within the grid, bioenergy availability and displacement of fossil fuels. This is on the boundaries of the application of current technologies, and would require unprecedented transformational change and extraordinary national financial investment.”

Rooney agrees with this assessment of the level of ambition needed. “The consistent theme was that, whatever lever you pull, you have to pull it pretty hard to get where you need to be.”

He gives an example of the most ambitious level of action for generating energy. If 50% of domestic properties in the region were fitted with 16m² of solar photovoltaic (PV) systems, and a further 16.8km² of solar PV was located on commercial roofs, ground-mounted

arrays and floating arrays on reservoirs, that could account for 12% of the city region’s energy demand of six terawatt-hours a year, he says.

At the lowest level of ambition, the same strategy could be followed, but on only 25% of households, with 0.6km² on commercial roofs. This level would generate 2% of the energy demand.

An obvious way of reducing energy demand identified by the team is decarbonising transport. Transforming 100% of cars and buses to be zero-carbon by 2035, and transforming trains by 2025, were together identified as the most ambitious trajectory for transport. At the lowest ambition level, the same target would be met by 2050.

Ultimately, the tool merely identifies options for the user – be it a city authority or a large business. The user would then have to analyse the costs and other social and environmental impacts. “SCATTER means the user can get a more tangible feel for what technology and interventions could be used, which helps with practical application,” says Rooney.

In Manchester’s case, the GMCA is putting together a Green Charter for the

Going beyond carbon: plans into action

- Improved environments for walking and cycling: Greater Manchester appointed former champion cyclist Chris Boardman as walking and cycling commissioner last summer. Up to £50m a year is being provided for three years from 2019/20 to implement Boardman’s recommendations
- All new homes to be zero-carbon: the date will be decided through consultation
- Invest in energy generation and storage: a company has been created to do this and generate revenue to invest in other environmental improvements
- More green infrastructure, including parks, green roofs and sustainable urban drainage: Manchester is one of four areas piloting ideas to boost natural capital for the Department for Environment, Food and Rural Affairs

city region, published for consultation this summer. As well as climate change mitigation, the wide-ranging strategy will aim to improve all aspects of the built and natural environment.

Now that Manchester has piloted the tool, its developers are working on expanding its use. Anthesis is engaging a further four UK cities but sees it applying to other countries as well. It could also be used by companies, the firm believes. “It would need adaptation, but corporates are looking at the same way of evaluating how they can deliver a science-based target in practical terms,” says Rooney.

For example, businesses could use SCATTER to implement the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), which says they should test their exposure to climate risk to give investors better information.

All in all, SCATTER looks likely to have a promising future in supporting environmental transition. “We’re very excited about what this can enable, and what kind of change it can drive,” Rooney says. 

CATHERINE EARLY is a freelance journalist



The date by which 100% of cars and buses would be zero-carbon on the most ambitious transport trajectory. The lowest ambition level would set a later deadline of 2050.

THIS MONTH WE ASK...

Would a
universal basic
income bring an
end to poverty
and inequality?



Let us know at iema-editor@redactive.co.uk if you have any questions you want answering in a future issue.

The big question



DR SIMON DUFFY

Director of the Centre for Welfare Reform

“UBI is part of an answer to poverty and inequality, but only a part”

Shifting the world onto a more sustainable and just footing is less about policy and more about power. If basic income is implemented by elite groups, who seek only to reduce social resistance, it will do very little to make things better. But if basic income is part of a process of democratic and constitutional reform, then it could be transformative.

Since the development of the welfare state, there has been a tendency to think of the problems of social justice as being the domain of policymakers: civil servants, politicians, academics and thinktanks. Ordinary people are seen as recipients of policy, and the good intentions of the political elite have been taken for granted. However, this paternalistic model is breaking down. The system does not serve the interests of the poorest, the marginal or the disenfranchised. Power serves power.

UBI is a helpful and hopeful element in the creation of a new movement for democratic reform for several reasons. First, it is a clear and universal approach to income security – akin to the NHS. It abandons the controlling and technocratic obscurity of the old system and it puts everyone on the same footing. Second, it redistributes free time needed for civic and democratic engagement. Power will not shift to the people until the people are enabled to take on a greater measure of self-rule.



PROFESSOR HENRIETTA MOORE

Director, University College London's Institute for Global Prosperity

“Extending the social safety net we have is far more efficient”

The idea of UBI has been gaining traction, buoyed by a trial in Finland and support from leading tech billionaires.

On the face of it, it has obvious attractions – but how practical is it in reality? Critics point to several intrinsic problems. Any fixed payment made to all, unless regularly updated, would be vulnerable to erosion by inflation, as with existing benefits. It might also tempt neoliberal governments to view this ‘income’ as an replacement for publicly funded services. Perhaps most decisively from a public policy perspective, it’s an extremely expensive way of providing a fixed benefit to the entire population.

By contrast, public services provide economy of scale and fairness of access. These principles lie at the heart of an alternative model proposed by the Institute for Global Prosperity, which we call Universal Basic Services (UBS).

Our inspiration comes from the publicly funded services provided free at the point of need that we already have in the UK, most notably the NHS. We’ve modelled providing free accommodation via a big expansion of public housing, free public transport, provision of broadband and smartphones, and free food to tackle undernourishment.

We believe this could have a transformative effect on society and the economy, by equipping people with the essential building blocks they need as the foundation for a prosperous life.



ANNA COOTE

Principal fellow, New Economics Foundation

“It is an ill-conceived, rickety, audacious little cart put before the seriously big horse of radical political change”

UBI is an alluring idea, but is interpreted in many contradictory ways. It has been promoted as a partial income for all that is far from sufficient to live on; a cash handout to the poor in some communities; and a living income given to a section of the population as a temporary experiment. None of these reflects all the characteristics on which UBI’s popularity seems to depend: a cash payment that is universal, unconditional and sufficient. Trials have consistently failed to test all of these together.

Nevertheless, UBI is presented as a ‘silver bullet’ for shooting at anything from automation and joblessness to stigmatisation and gender inequality – but with barely a scrap of evidence. Even its supporters admit it would be hugely expensive and need endless supplements.

There are far more urgent political causes that could really tackle poverty and inequality. We need more and better income support, with simpler, less punitive conditions; more and better public services, with resources pooled to meet everyone’s basic needs for education, health and care, decent housing and affordable transport and utilities; and more and better workplace bargaining to drive up wages and shift power from capital to labour.

Demonising data



The angels' share

Big data has received a lot of bad press recently but its potential for more ethical applications remains, writes **David Burrows**

Back in 2013, in an essay for *Foreign Affairs* magazine, Kenneth Cukier and Viktor Mayer-Schoenberger predicted that big data was poised to reshape the way we live, work, and think. "Big data will become integral to addressing many of the world's pressing problems," they wrote. But five years on, and the Facebook-Cambridge Analytica scandal has thrown the spotlight on the demons that such data can create. "This is the story we have been waiting for, so people will pay attention not just to Facebook but to the entire surveillance economy," says Siva

Vaidhyanathan, a professor of media studies at the University of Virginia.

It's alleged that the personal data of about 50 million Americans was harvested from the social networking site, "improperly shared" with the political consultancy, and then possibly used to influence the 2016 US presidential election. In the UK, Dominic Cummings, the director of Vote Leave, has also been forced to deny allegations of links between his campaign and Cambridge Analytica. The news brought to mind a retail white paper I wrote in 2015 that began:

"Researchers at the University of Cambridge have just created an algorithm that uses Facebook 'likes' to determine an individual's psychological traits. Apparently, the computer can judge personality more accurately than workmates, friends or family members. In fact, given enough 'likes' to crunch (300), it could even rival a spouse on a range of psychological traits including conscientiousness and neuroticism. This might take us one step closer to *Minority*



Report, but the finding has important social and economic implications – the ability to judge personality is an essential component of social living: who to marry, hire or elect as prime minister.”

Oh.

The more brands know about us, the easier it becomes to persuade us to buy their wares. Facebook has an almost hypnotic power to pull in punters – its adverts increase audience reach, ad memorability, brand linkage and likeability. Junkfood brands, for instance, have fattened their profits, thanks to a platform that costs a fraction of traditional media such as television. The fact that online advertising restrictions are voluntary, and full of loopholes, makes the whole thing even sweeter.

The recent scandal leaves a sour taste, but I hope it doesn't persist. Sure, we need to weed out the devils in this sorry tale, but data can still be a powerful tool for social good – and that includes Facebook.

For example, researchers from Boston Children's Hospital, Massachusetts, found that in areas where there were lots of Facebook 'likes' for healthy activities, the obesity rates were lower; where the social media love was for TV shows, people were more likely to be overweight. Online social networks such as Facebook represent a high-value, low-cost datastream for looking at health at a population level, says John Brownstein, one of the team involved in the study. Indeed, the tight correlation between Facebook users' interests and obesity data could help to generate real-

“The tight correlation between Facebook users' interests and obesity data could help to launch more effective, targeted public health campaigns”

time estimates of obesity levels in an area, and to launch more effective, targeted public health campaigns.

It's just one of several examples where data is being massed, mined and manipulated for a purpose. Telefónica Brazil, for instance, is using mobile network data to monitor air pollution in São Paulo, Brazil's largest city. Pollution problems can now be predicted up to two days before they occur, so traffic can be diverted via alternative routes and areas of high pollution can be flagged to residents.

Purpose and profit

Sometimes there is purpose and profit. A project in Spain combined pollution and consumer data to show that people spend €25m-€41 million (£22m-£36m) less on days when ozone pollution is 10% worse than usual. When particulate matter pollution is 10% worse than usual, spending falls by €20m-€30m (£17.6m-£26.4 m). The results provide a timely kick up the backside for governments, including the UK's, to improve air quality.

And these examples are just the tip of the iceberg. In time, data from Uber and taxis could be combined with that from smartphones to better understand how

people get around, and in turn design more attractive and effective public transport systems, reducing pollution and carbon emissions. Drones are already being used to relay information on when crops will be ready for harvest. But there is potential for this to be married with weather forecasts and consumer demand data to balance supplies and cut wastage.

Whether it's climate change or food scarcity, deforestation, poverty or obesity, data will help to show us how dire the situation is, predict how much worse it will get, and – critically – identify where to focus our efforts to turn things around. The data will be both public and private, so dealing with it requires delicacy.

“Corporations have a lot of data that, if unlocked in one way or another, could be used for a variety of public good objectives,” says Stefaan Verhulst, co-founder and chief research and development officer of The Governance Lab. But because not many yet understand how their data can be used for public good, he adds, there is “quite often no imagination of what the value of private data might be”. 📌

DAVID BURROWS is a freelance journalist

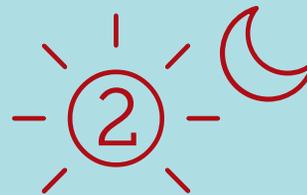
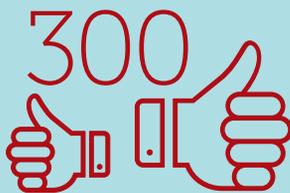
THE DEVIL'S WORK OR HEAVEN-SENT OPPORTUNITY?



50 million

The number of Americans whose personal data was harvested from Facebook, “improperly shared” and possibly used to influence the 2016 US presidential election

The number of Facebook 'likes' needed for a University of Cambridge algorithm to judge psychological traits as effectively as a spouse



The number of days' warning of pollution problems that Telefónica Brazil can give using mobile network data to monitor air quality in São Paulo, allowing traffic to be diverted

€20m-€30m



The amount by which spending in Spain falls by when particulate matter pollution is 10% worse than usual, according to pollution and consumer data

Technological advances in materials and computer sciences are fuelling innovation within the built environment, allowing us to design and create more efficient, intelligent and safer buildings. However, increasing globalisation and interconnectedness brings new challenges – from modern slavery, to counterfeit materials and certifications – so much effort must be focused on addressing these issues.

Among current innovations, 'distributed ledger technologies' (DLTs) are unique. Their principle use is as a means for creating more reliable, trusted and shared data sources, but the scope of their application and potential

Shamir Ghumra and **Harriet Cooper** examine distributed ledger technologies and their feasibility in the built environment

value is still being defined. Currently, many data-driven applications and sectors are based on a centralised system; a single point of information capture, storage and analysis. In contrast, DLTs use a network of connected 'nodes', distributed across various geographies, institutions and countries, with each holding the same record of transactions within a specific database or ledger. Any transaction of value, be that information or monetary, is **verified by consensus** and recorded **chronologically** using the transaction's cryptographic number by every node within that DLT – in doing so, a trusted, transparent record of actions is created.

The concept alone is hugely disruptive. By removing, or at least limiting, the need for intermediaries and allowing a widely distributed real-time means of sharing information, the potential for innovation is amplified. Further to this, there is a particular type of DLT known as 'blockchain'. Blockchains package together a number of unique transactions, identified by their unique cryptographic number,

CONSTRUCTS

Key themes

Need

Do we really need blockchain if we are doing all of these things already – blockchain isn't opening up new commercial areas, it is just bettering what we are already doing. We need to understand fully how exactly blockchain will improve each of these areas.

Cost

The cost of using blockchain would be high, especially at the beginning. A lot of data would require a lot of capital. For example, Ethereum is charging a lease for its open-source blockchain, and there is a cost for every transaction made (needed for validation and creation of the block). This cost could be from running your own private nodes or financial costs to facilitate the transactions.

Governance and legality

Governance is important, both for contributing to trust and to understand what legal implications there are for blockchain (particularly with smart contracts). We need to understand how there can be more assurance for countering human error in blockchain; trust and boundaries are key.

Holistic view

With all of the suggested applications, we must look at the bigger picture. In particular, we need to understand whether blockchain would help or hinder decarbonisation, energy usage, etc, and what cultural and societal issues blockchain would address/create.

Further reading

¹ Visit the UCL Centre for Blockchain Technologies at bit.ly/2Kr2BPV

² Visit the Lloyd's Register Foundation to download the Insight report on distributed ledger technologies at bit.ly/2HvATUe

³ Download the Blakett review of distributed ledger technology from the Government Office for Science at bit.ly/1KoEw50

"Any transaction of value, be that information or monetary, is verified by consensus and recorded chronologically – in doing so, a trusted, transparent record of actions is created"

into a 'block'. This is then chained to the previous block in the sequence using a cryptographic signature or 'hash'. In this way, a blockchain can be used in exactly the same way as a distributed ledger, but it also allows for other elements to be included. For example, the creation of blocks acts as a 'proof-of-work'. This prevents fraudulent addition to the blockchain, as it increases the necessary computational and electrical power required to alter a block (and any superseding it) and to hold more than the 51% of nodes that are required to do this. In removing the requirement for a 'trusted' third party (a single centralised control), blockchains are able to create a decentralised system that does not require trust. Instead, self-executing peer-to-peer transactions are carried out, which are recorded and verified by the whole system, therefore removing the need for one trusted body and it becoming 'trustless'.

Proof-of-work is then rewarded with 'tokens', which can be anything from representing specific assets to a means of tracking things through the blockchain.

In addition, this form of DLT allows for rules to be determined for a transaction, as code can be added into the blockchain. Code can determine conditions for data to be added to the chain, creating a self-automated process.

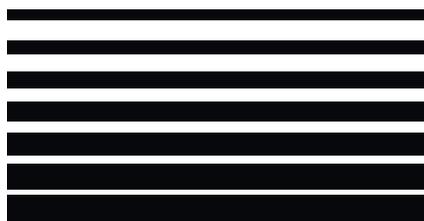
In its basic form, blockchains and DLTs provide the means to create an auditable trail of transactions; however, the scope goes far beyond recording peer-to-peer trading. Being a 'trustless', unchangeable, decentralised record gives potential for the technology to address many societal, environmental and economic issues.

It was within this context that BRE sought to shed some light on the feasibility of such applications in the built environment.

Assessing application

University College London has recently initiated a Centre for Blockchain Technologies¹, while other research-led foundations and governmental bodies such as Lloyd's Register Foundation² and the Government Office for Science³ have released reports outlining the potential impact of these technologies. However, it is still early days in terms of understanding the scope for this technology group.

As with any disruptive new innovation, there is a need to fully understand early on how it functions and how it could be used. BRE, funded by the BRE Trust and



Blockchain

supported by Constructing Excellence, engaged with key stakeholders in the built environment to prepare a landscape review of the potential opportunities and risks associated with blockchain and DLTs.

Two workshops were facilitated through the Constructing Excellence network. The first focused on understanding how blockchain and DLT could be applied, the potential benefits and problems with application, and what specific sector areas these technologies would apply to; while the second investigated specific sector applications and wider issues related to blockchain and DLT application.

Common themes were evident throughout the workshops, with the necessary next steps being both clear yet potentially large in scope.

Summary of findings

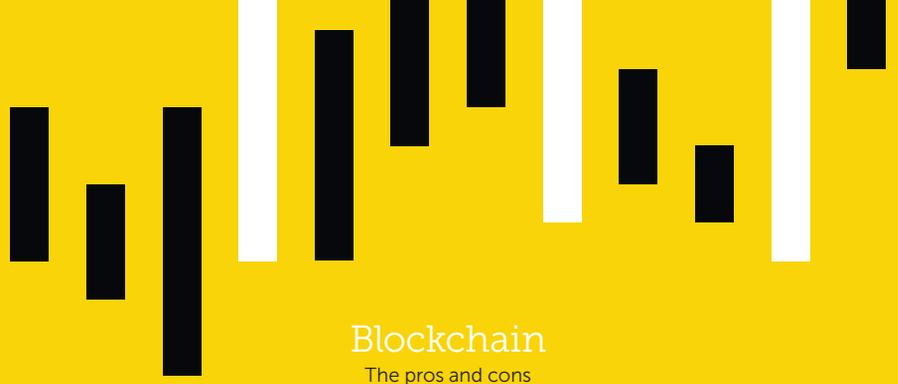
It is evident that DLTs and blockchains are a complex group of technologies that could potentially be applied to a wide selection of built environment sectors in a diverse manner.

Each potential application comes with a further set of questions and implications that warrant further investigation.

Blockchain itself is a relatively new technology that is still evolving and growing; what may not work quite yet for a given application may become a possibility in the very near future.

There is potential to create disruptive applications that could reinvigorate the industry. However, with that comes a whole new world of governance, legal implications and regulation that must be developed alongside any application in order for it to succeed. 📌

SHAMIR GHUMRA is BREEAM director and **HARRIET COOPER** is a graduate consultant at BRE. This article was adapted from the BRE Trust paper, 'Blockchain – Feasibility And Opportunity Assessment', which is available to download at bit.ly/2EVi3UF



Blockchain

The pros and cons

BENEFITS

- Blockchain could address the sector's poor payment record by providing an automated platform.
- Circular economy traceability.
 - Material/building passports would show exactly where a material came from, who supplied it, and who installed it.
 - Proper delivery of tasks, as criteria can be coded into the chain to prevent addition of information/exchanges.
- Being a trusted single source of verification will save time, as different bodies will no longer need to verify things multiple times.
- Better hypothesise developments.
- Save time, allowing better planning.
 - Add value to property with blockchain-verified data.
- Use for nuclear decommissioning.
 - Prove you have built to the necessary standards.
- Address responsible working and modern slavery by verification of labour providers.
 - Create a digital identity verification at an individual level.
- Increased speed of transactions.
 - Address security concerns surrounding increased connectedness of the built environment.

DISADVANTAGES

- Would require large uptake across the sector.
- BIM already provides a lot of these benefits. However, BIM Level 3 could not work without something new – blockchain could solve this.
- You cannot change a coded required/contract. However, you can cancel it and replace it.
- New skills would be required to adopt a new approach, alongside a cultural change.
- Currently, there is value in lack of transparency of building information. You might not be able to get this digital twin – instead the value would come from adding quality to this information.
- Hugely complex area that might fundamentally change.
- Privacy implications (would need to be private data).
- Complexity of interactions/nodes.



COMMERCIAL



DIGITAL PASSPORT



SMART CONTRACTS



PLANNING



DIGITAL TWIN



BUILDING REGS



LABOUR AND SKILLS



INTERNET OF THINGS



Peter Bosshard

Unfriend Coal's campaign coordinator, Peter Bosshard, talks exclusively to TRANSFORM about the insurance industry's progress in cutting its ties with coal

Why is it so important for the insurance industry to move away from coal? Climate science tells us we need to stop building new coal power plants and phase out existing coal infrastructure as quickly as possible. There is no silver bullet to achieve that, but insurers are critical actors as underwriters and investors. If they do not provide coverage then projects will have to shut down, and, unlike other actors, insurers are aware of the climate risks facing society because they have warned about them for decades.

How do you rate the industry's progress in shunning fossil fuels? We have seen relatively rapid momentum, firstly on the divestment side, but more importantly with underwriting. Some of the biggest actors – particularly in Europe – are moving away from coal, including AXA and Allianz, and we are expecting similar things from Swiss Re and Zurich. But we still see important laggards in Europe, such as Munich Re and others, and there is no progress in the US. We need to do a lot more work in America and we plan to.

What do you think is driving that shift? When it comes to underwriting, I think it is mainly the reputational costs. It is an unacceptable position to warn about climate risks and keep on insuring coal – customers and staff will not stand for it. Most insurance professionals take pride in being on the right side of climate change and being part of the solution. On the divestment side, it helps that there is a strong argument for the financial risks of supporting coal, as it is in the interests of investors to move away from it.



"It is unacceptable to warn about climate risks and keep insuring coal"

So what can be done to accelerate progress? We need to, of course, keep up public pressure, and there also needs to be a campaign set up in the US. Brokers need to do more, but it is the regulators that can really help spur action. The Prudential Regulation Authority in the UK has played an important role highlighting climate risks to the insurance industry, but other regulators have been slower to recognise them, so they also need to get in on the act.

But if these insurers understand the financial and environmental risks, why are there still so many laggards in the US? Unfortunately, they continue to think in the short-term, and make a business out of that – I think

some do not value their brand enough. In the US, many companies still believe that anything not directly business related is outside their responsibility. Which is really an outdated understanding of the role of business. Responsible companies know they have to do the right thing, and we need strict government regulations to resolve the problem.

Will there be a cut-off point where coal becomes uninsurable and all insurers just stop providing coverage? Well, with the shrinking carbon budget for the planet, hopefully the sooner the better. I am confident that in 2018 we will make progress with the European laggards and will make a dent in the availability of coal insurance, at least in terms of price. If more of the big actors move out and it is just the specialist companies involved, insuring coal will become a lot more expensive. I am also confident that by the end of next year we will get US insurers on board, and reach critical mass, and largely make coal uninsurable.

Is the Unfriend Coal campaign targeting asset managers, banks, pension funds and other institutional investors? Unfriend Coal is focusing on the insurance sector, but other organisations behind the campaign – like Friends of the Earth, Greenpeace and 350 – have been focusing on banks, pension funds, government regulators and utility companies. Insurers think they are being singled out, but they should recognise that they are late to the party. I am really excited about the momentum at the moment and think we will see further progress soon. 🌱

CONNECT

SOCIAL AND COMMUNITY NEWS FROM IEMA

NETWORKS

The Future of ESIA – Enabling Access to Young Professionals

How do you get experience in a field that requires a wealth of experience? This is an issue for young environmental and social consultants looking to work on environmental and social impact assessments (ESIAs) on a global stage.

IEMA's Global Environmental and Social Assessment Group (GESA) established a Young Professionals Working Group to look into solutions to improve access for junior consultants to build the experience and skills necessary to deliver competent environmental and social assessments. The first event – 'The Future Of ESIA – Enabling Access To Young Professionals' – will be held in London on 22 September and will include insights from guest speakers on both the consultancy and lender sides of industry and an open panel discussion aimed at addressing limitations for young professionals accessing international experience and the potential options available to resolve this experience gap.

If you are interested in attending, sign up to IEMA's GESA Young Professionals Working Group on LinkedIn to find out more and book your place for the event.

If you're an experienced professional and believe you can offer insight or are willing to give a presentation on international ESIAs, please contact us at GESAYoungProfessionals@gmail.com



WORLD ENVIRONMENT DAY

WEBINAR 5 JUNE

Beat Plastic Pollution, If You Can't Re-use It, Refuse It

A call to action for us to come together to combat one of the great environmental challenges of our time. This day gives us an opportunity to consider how we can make changes in our everyday lives to reduce the heavy burden of plastic pollution on our natural places, our wildlife – and our own health. Join us and make your own pledge to support sustainability.

➤ To book: bit.ly/WED5June

WEBINAR 21 JUNE

SDG Success: Translating Sustainable Development Goals into Business Opportunities

How do we make sustainable development goals (SDGs) central to our business? That is the question every business should be asking. Join Louise Scott, PwC UK director in global sustainability, who will provide the business case for engaging your organisation in mapping its commitments to sustainability against the SDGs. She will offer practical examples of organisations successfully engaging with this framework, as well as the tools available.

➤ To book: bit.ly/2rtq2Ad

MEMBER NEWS

BRE announces new director of BREEAM

Ethical and sustainable construction champion Dr Shamir Ghumra FIEMA CEnv is to take on a new role at the helm of BREEAM.



Formerly director of sustainable products, Ghumra has a strong background in ethical construction, leading on the development of their global Ethical Labour Standard BES 6002 as a way for organisations to evaluate and eradicate modern slavery from their supply chains.

Ghumra said: "I am very pleased to take on this role. I look forward to meeting and working with our many partners, assessors and international clients as we collectively use BREEAM to build a better world together, benefiting people, businesses and our planet."

IEMA Fellow nominated at British Ex-Forces in Business Awards

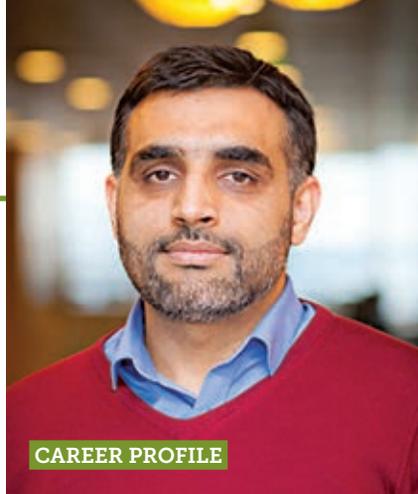
Andrew Whitehorn FIEMA of Workplace Solutions was nominated for a Lifetime Achievement award at the high-profile British Ex-Forces in Business Awards event at the inaugural ceremony held on 17 May in London's De Vere Grand Connaught Rooms.



The event is the largest-ever celebration of the ex-forces in business community, bringing together top business leaders, companies, military personnel, politicians, journalists and other stakeholders to raise awareness of resettlement issues, encourage the development of ex-forces employment schemes and promote the significant value that military-gained skills can provide to the UK economy if better utilised across the workforce.



Visit www.iema-transform.net for the full member profile



CAREER PROFILE

commercially and financially aware environmental professionals can influence key decisions and help raise the profile of the profession.

Where would you like to be in five years' time? Ideally, in a leadership role where I can influence the strategic direction of an organisation to maximise environment and sustainability benefits.

What advice would you give to someone entering the profession? I started my career with a placement and I still think that's the best way to get the required experience and find your first job in the field.

How do you use the IEMA Skills Map? The IEMA Skills Map is a useful tool and I use it to review and understand any gaps in my skills.

If you had to describe yourself in three words, what would they be? Committed, optimistic and professional.

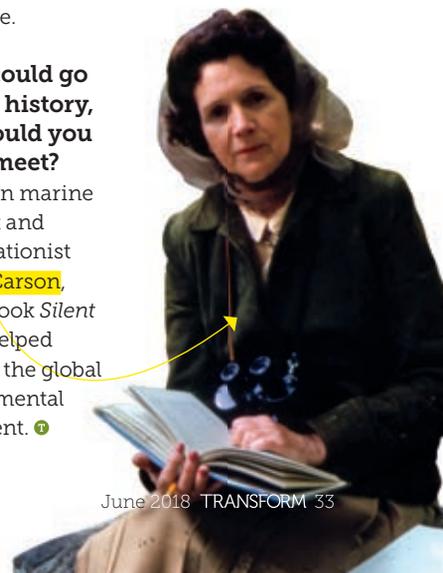
What motivates you? Seeing environmental issues such as air quality and climate change gaining a higher profile over the past two decades.

What would be your personal motto? Believe you can and you are halfway there.

Greatest risk you have ever taken? Rejecting a PhD offer to take up a post as an environment adviser. I can safely say that it was the best decision I've made.

If you could go back in history, who would you like to meet?

American marine biologist and conservationist **Rachel Carson**, whose book *Silent Spring* helped advance the global environmental movement. 🌱



Why did you become an environment and sustainability professional? I have two personal interests; politics and the environment, and I am interested in how effective legislation or policy can influence the environmental agenda. Essentially, this brought me to work on environmental matters in local government.

What was your first job in this field? My first role was as an environment adviser in the food sector in Nottingham. I was responsible for ensuring compliance with environmental permits and improving the environmental performance of two food manufacturing facilities by implementing an ISO14001 environmental management system.

How did you get your first role? After my MSc in environmental management from the University of Nottingham, I did a voluntary placement with a Groundwork Trust and in my third month was offered my first job.



What does your current role involve? I oversee implementation of various environmental improvement projects in line with the Mayor's Transport Strategy. This involves securing funding, writing business cases and putting in place robust governance and benefits realisation plans. I am currently working on implementation of the Ultra Low Emission Zone in central London to reduce air pollution. Other projects include installation of **rapid charge points** across London to increase uptake of electric vehicles, and implementing a variety of schemes under the Mayor's Air Quality Fund.

How has your role changed/ progressed over the past few years? Early on in my role at TfL, I was mainly responsible for providing environmental support to business then gradually moved into environmental impact assessment of infrastructure projects.

Muhammad Ali

MIEMA

Environmental manager/portfolio sponsor for environment and air quality, Transport for London

What's the best part of your work? Working on a unique set of projects to improve air quality and reduce the health impact of air pollution across London.

What's the hardest part of your job? In the current financial climate, explaining the benefits of incorporating green infrastructure and biodiversity within civil engineering projects.

What was the last development event you attended? An event about integrating green spaces into linear infrastructure like cycle superhighway, rail and road schemes.

What did you bring back to your job? It was very useful to hear about challenges faced and solutions offered by other organisations, as well as tools to monetise the benefits of green infrastructure.

What are the most important skills for your job? I believe effective communication and stakeholder engagement are vital skills for my job, owing to the nature of our organisation and type of projects that I work on.

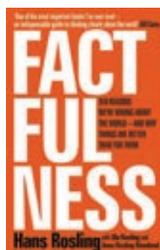
Where do you see the profession going? Consideration of environment risks and opportunities are an increasing priority at board level. I believe that



LATEST MEMBER UPGRADES

Challenged by a chimp? Take the *Factfulness* test

By **Hans Rosling, Ola Rosling** and **Anna Rosling Rönnlund**
£12.99 by Sceptre



“Is the world a better place to live in than it was 30 years ago?” That’s exactly the type of question thrown at you by public educator and statistics guru Hans Rosling in *Factfulness*.

Sadly, Rosling, who was listed in *The Times* as one of 2012’s most influential people, died last year – but not before penning his first book, which begins by testing you on 13 questions about the world.

Those of you who have seen Rosling speak, in person or via one of his numerous TED talks, may be familiar with the material, but this book is about far more than geeky stats. It’s a guide to navigating the barrage of information and scary stories thrown at us on a daily basis.

Rosling described himself as a ‘possibilist’, and it’s unfair to dismiss him as an optimist. His book is a timely reminder about the importance of reframing analytical thinking – it is almost a practitioner’s guide to being an environmentalist. At the end of each chapter, you will find precautionary tales we should all heed – disastrous examples of people overstepping or misusing their expertise, blaming others or taking too much credit.

Some people find discussing controversial issues such as population growth difficult, but Rosling confronts them head

on. He touches only briefly upon other topics, such as world wars and climate change, with no real mention of biodiversity loss.

But, having been written by a renowned health expert, it’s understandable that there is a firm focus on humans.

Tackling delicate issues is bound to attract detractors, and, sure enough, *Factfulness* had barely hit the shelves before the UK charity Population Matters published its take on the publication.

Under normal circumstances, a critique of the final works of someone recently deceased would seem harsh – as they can’t respond – but I think Rosling

would have approved. After all, being challenged with alternative views and learning from them was the entire point of his life’s work.

This is exactly why you should read this book. Oh, and you’re not alone if you answered ‘no’ to the question at the start of this review – even though you’d be wrong – or if, like me, you fail miserably on Rosling’s quiz. Thousands of people have taken it, but, sadly, humans do get a lower score than chimps! Why not track down a copy today and challenge your pre-conceptions? 🍌

JASON LIGHT is strategy lead (environment) at Eastleigh Borough Council

“This book is about far more than geeky stats”

ASSOCIATE (AIEMA)

Marlene Moreau, RRC International

Luisa Brotas, London Borough of Hackney

Mike Rytwinski, Harron Homes

Guy Dale

Daniel Richardson,

Davy Markham Ltd

Karen Gilbert, Exterion Media

(UK) Ltd

Krzysztof Polak, Freemans of Newent Ltd

Wuraola Aina

Rachel Griffin, Ministry of Defence (Navy)

Richard Smart, DB Cargo UK Ltd

Mark Duggan, Gen2 Property Ltd

Mahmoud Hashish, Jacobs ZATE

Peter Matthews

Jawahir Almatrooshi, Ministry of Education

Nawal AlHayer, Ministry of Education

Najla Alshamsi, Ministry of Education

Joanna Paterson, Ministry Of Defence

Helen Barnes, Network Rail

Anthony Harris, Barrett Steel Ltd

Louise Buckley, Bristol City Council

Nayel Bani Salameh, Ministry of Education

Emi Pavlidis, Concept Controls

Sarah Wright

Rodney Wetton

Ross Mundy, Viewpoint Landscape Assessments

Vincent Ryan, Roadbridge

Jake Gardner, Thyssenkrupp Aerospace

Tracy Taylor, Bellway Homes Ltd

Lee Howard, Harron Homes

Stefan Jones

Patrick Clegg, Siemens Plc

David Pummell, Gatwick Airport Ltd

Gary Malson, DP World Southampton

Chris Shaw, Suez

Katie Wignall

Brian Macro, Muller Milk & Ingredients

David Farrell, The McAvoy Group Ltd

Tracey Turton, University of Lincoln

Megan Brown

Lee Draper, IEMA

Tammy Benson, IEMA

Amanda Jones, Klockner Pemtplast

Keith Kelsey, John F Hunt Demolition Ltd

Remah Ananzeh, Ministry of Education

Sergei Sindiukov

Darren Peck, Mace Group Ltd

Phillip Jameson

Andrew Harrison

James Casewell, CCLA Investment Management Ltd

Gavin Whigham, Zoological Society of London

Maryam Al Mazrooei, Ministry of Education

Shaikha Alkaabi, Ministry of Education

Mahbouba Gaddah, Ministry of Education
Mohamed Yunis, Ministry of Education
Matthew Benson, Carrington Power Station
Kayleigh Richter
Sanjay Choolun, Carbon Credentials
Elizabeth Maccarthy
James Cowell, URENCO UK Ltd
Sasha Bowen, Stonegate Farmers Ltd
Aileen Makin, COWI UK LTD
Philip Goodwin
Alistar McEwan, First ScotRail
Daniel Gallacher, Kier Construction
Cheryl Morris, Barrett Steel Ltd
Elnur Ahmadov, Occupational Training Institute
Richard Knight, Johnstons of Elgin
Lisa Sell, Graphic Packaging
Tanya Neech, Scania GB Ltd
Leila John, GE Oil & Gas
Charlene Murray
Andrew Pickup, Merton London Borough Council
Alan Bell, Ramboll
Andrew Tuffnell, IMI Precision Engineering
Lee Gowing, OCS Group
Clephane Compton, Sustainable Consulting
Scott Milligan, WSP UK Ltd
Amy Grears, Cavendish Nuclear Limited
Moza Abdelaziz Alteneiji, Ministry of Education
Manal Almehrzi, Ministry of Education
Ibrahim Ali, Ministry of Education
Ashisha Amin, Kelly Communications Ltd
Emma Beard
Alexander Thompson, BEIS
Richard Earl, Liberty Speciality Steels
Richard Bone, Euro Car Parts Ltd
Phil Taylor, Euro Car Parts Ltd
Stephen Harrison, Falck Safety Services
Rhiann Cliss-Jones, Hydro components UK Ltd
Fahad Alwareeth
Ian Wallis, The Planning Inspectorate
Ann Guest, IEMA
Tim Davis, Barrett Steel Ltd
Salma Taffal, Ministry of Education
Aoife Feeney, Ministry of Education
Maureen Lynch, Mouchel Group
Neil Penn, Briggs Equipment (UK) Ltd
Laura Grizzell, GAC Shipping
Dominika Ayerst, Harsco
Henry Cawson, Baxterstorey Ltd
Michael Pennman, Hydro components UK Ltd
Colin Griffiths, Eggborough Power Ltd
John Hughes, EDF Energy Plc
Katrina Pierce, IEMA
Sarah Falconer, Environmental Resources Management (ERM)
Gurwinder Singh, QHSE Integrity Services Ltd
Simon Hall, Coal Authority (The)
Chris Laird
Thomas Bick, Jaguar Land Rover Ltd
Clare Middleton, National Grid Plc
Susie Jutsum, Tony Gee and Partners
Jennifer Firth, Keep Northern Ireland Beautiful
Kathryn McKinney, WD Meats

Fadwa AlAkasheh, Ministry of Education
Reem Abdullah, Ministry of Education
David Still, Department for Business, Energy and Industrial Strategy
Massa Athamneh, Ministry of Education
Sam Stephenson, Littlewood Fencing Ltd
Thomas Sturt
Ahmed Almalik, Ministry of Education
Jonathan Mason, Trelleborg Sealing Solutions UK Ltd
Shatha Aldera, Ministry of Education
Maryam Al Marzooqi, Ministry of Education
Stephen Humphries, CPI Card Group UK Ltd
Mohammed Minhajuddin
Alan Hesketh, Engie
Craig Moat, Falck Safety Services
Sharon Anderson, Morton and Jones
Nigel Crinion, Worley Parsons
Jodie Thomas
Naim M S Said, Sharjah National Oil Corporation
David Horrocks, RSK Environment Ltd
Anna Chrysopoulou
Claire Hornby, CLH Services
Babatunde Ladip, Blanc Enviro Consult Ltd
Morgan Davison, AFF Limited
Ruth Broad
Alyson Fairclough, Flexlife Ltd
Jodanna Parsons, Logic SHE Solutions Ltd
Annus Uddin Khan, Safe Systems for Advanced Technologies

PRACTITIONER (PIEMA)

Isabel Simpson, Costain
Elizabeth Murray-Clark, Argyll Environmental Ltd
Kyle MacNeill, Arriva Rail North
Adam Bell, Sellafield Ltd
Jonathan Dawson, WSP UK Limited
Balthnaid McPolin, RPS Group Plc
Teree Scott, Argyll Environmental Ltd
Robert Waiting, Stroma Technology
Daniel Canning, Ricardo UK
Vanessa Lea, Earth Systems
Janis Murphy, Warburtons Ltd
James Livingstone, BAE Systems
Michelle Strohm, Procure Group
Amanda Mottram, Johnson Matthey PLC
Craig Prentice, Amey
Adam Lucas, Balfour Beatty
Hannah Rigby, Nestle (UK) Ltd
Anna Harries, Berkeley Group
Bridgid Taylor, Buro Happold Engineering
Gavin Kelly, IKM Consulting Ltd
Peter Castling
Matthew Newbury, Integrated Doorsets
Andreas Dimou, Joannou and Paraskevaides (Overseas) Ltd
Leah Grint, Arup
Benjamin Gouldman, ERM CVS
Innocent Machakaire, Over Arup & Partners
Hebe Jenner, WSP Parsons Brinckerhoff
Rory Baker, AA Projects Ltd
Russell Hodgson, Hodkinson
Charles Ameh, Chevron

Chloe Patel, WSP Group Plc
Fatima Orr-Deen, Balfour Beatty Group
Edward Maynard, Crown Worldwide Group
Craig Fraser, Akzonobel Packaging Coatings Ltd
James Thornton, Clancy Docwra Ltd
Timothy Shorrocks, Ecometrica
Claire Mitchell, Environment Agency
Fiona Bussell, Network Rail
Seye Otegbayo, Siemens Rail Automation
Stephen Roberts, Suez
Jennifer Hirst, Cummins Turbo Technologies
Robert Irwin, Suez R&R UK LTD

FULL MEMBERSHIP WITH CHARTERED ENVIRONMENTALIST (MIEMA CENV)

Ana Quintas, BRE
Pauric McCloskey, Ove Arup and Partners Ltd
Tony Sheridan, John Sisk and Sons Ltd
Sophie England
Joshua Stroud
Holly Stainer, BP
Amy Isted, Network Rail
David Pivac, HS2 - High Speed Two Ltd
Ben Cragg, Environment Agency
Eddiong Akinyede, Environment Agency
Michael O'Sullivan
Claire Igoe, Central Manchester University Hospitals NHS Foundation Trust
Monika Kiss, London Underground
Cyril Tynan, Verde Consulting
Jeremy Cutler, Travis Perkins Trading Company
Cathy Berry, A Sourcing Edge Ltd

CHARTERED ENVIRONMENTALIST (CENV)

Robert Buttigieg, ISS Facility Services Ltd

FELLOW (FIEMA)

Daan Elffers, EMG
Chris Harrop, Marshalls Plc
Katie Hill, B-Lab UK
Pat Snowden, Forestry Commission
Paul Gerrard, The Co-operative Group
Richard Carter, Adnams
Stuart McLanaghan, Eden 21
Nicola Stopps, Simply Sustainable Ltd
Fiona Nicholls, Gowling WLG
Geraldine Boylan, Mabbett and Associates Ltd
Greg Roberts, Ramboll Environ UK Ltd
Ian Nicolas Heasman, Taylor Wimpey UK Ltd
Juliet Long, Environment Agency
Marek J Bidwell, Bidwell Management Systems
Michael Lachowicz, Panagaea Consulting
Sarah Pratt, Barratt Developments Plc
Warren Percival, RSK Environment Ltd
Kye Gbangbola, Total Eco Management Limited
Neal Barker, WSP UK Limited
Sandra Norval, Catalicity Ltd



YOUR GLOBAL CERTIFICATION BODY.



PROTECT YOUR ENVIRONMENT ISO 14001

Get Certified - Managing your organisation's impact on the environment should be a priority for your business, regardless of your industry.

www.nqa.com/quick-quote

36,000
CERTIFICATES
GLOBALLY



PARTNERED WITH OVER
300+
CONSULTANTS 

1000+
EMPLOYEES
WORLDWIDE 

AVERAGE
CUSTOMER
PARTNERSHIP 

OPERATING
COUNTRIES 

TO DISCUSS YOUR CERTIFICATION & TRAINING NEEDS GET IN TOUCH:

0800 052 2424 | www.nqa.com



*Net Promoter Score accurate at time of print and may have changed since. For latest figure contact NQA directly.