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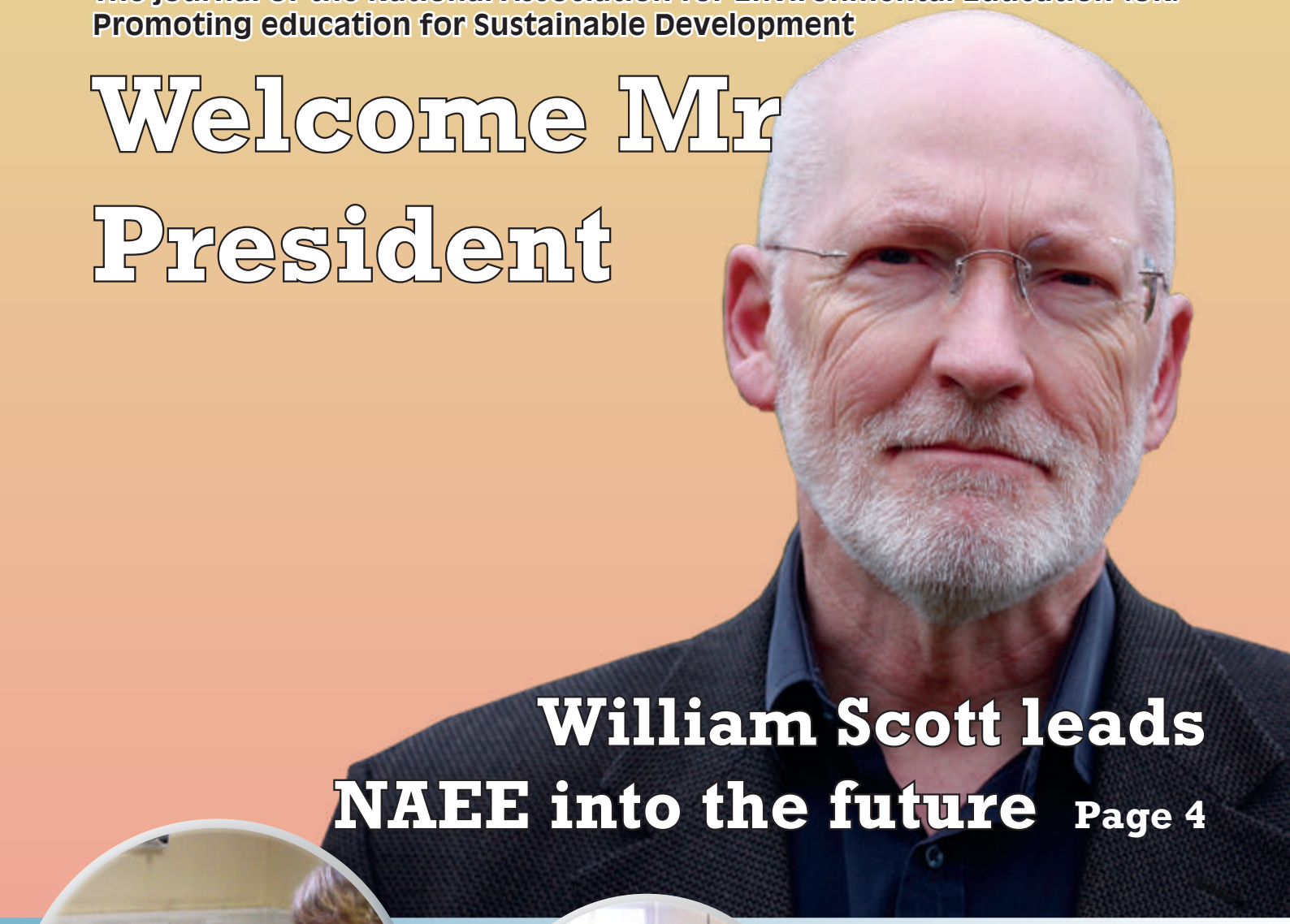
Environmental Education

The journal of the National Association for Environmental Education (UK)
Promoting education for Sustainable Development

Welcome Mr President



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National Association for Environmental Education (UK)

NAEE UK has, for over fifty years, provided support for educators and education professionals to supply and deliver all aspects of environmental education across all levels of the curriculum.

NAEE (UK) is a voluntary organisation, with no state funding, run by experienced teachers from a wide variety of educational institutions. We use funds raised from subscriptions and donations to promote the teaching of environmental education across the curriculum as well as education for sustainable development.

Membership

Membership is open to those directly involved in environmental education or those with a related interest.

There are different categories of membership.

Individual:	**£25**
Institutional:	**£30**
Student at University of Wolverhampton:	**£6**
Student at another HE institution:	**£9**
Corporate (Groups of 6 or more members):	
6-40 members	**£10 each**
Over 40 members	**£9.50 each**
(The Group will receive journals in bulk)	
Overseas (subscriptions payable in GBP)	
Europe:	**£40**
Elsewhere:	**£50**

See our website for further information:

www.naee.org.uk

Or contact the NAEE office:
01922 631200

Free membership leaflets available from the office on request

APPLICATION FOR MEMBERSHIP

I wish to join NAEE (UK)

Name: ..... Institution (if applicable): .....

Address: .....

..... Post Code: .....

Telephone: ..... E-mail: .....

I enclose a cheque for £.....Membership Category (see above): .....

Send to:

NAEE (UK), University of Wolverhampton, Walsall Campus, Gorway Road, Walsall, West Midlands, WS1 3BD
Telephone: 01922 631200 e-mail: info@naee.org.uk Website: www.naee.org.uk

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Contents

Members invited to contribute

The editor welcomes articles and reviews by members who are willing to share their experiences and ideas with colleagues. These may occasionally be reprinted either on their own or with other articles in NAEE publications. Please contact *editor@naeeuk.plus.com* with your submission.

Cover photos: Using the walk4life website; student team at New Mills, Norwich; creating contrails with bubbles

Environmental Education is the termly journal of the National Association for Environmental Education (UK). Issued free to members; £10.00 to non-members. For membership details see opposite page or visit our website ***www.naee.org.uk***

Articles

We welcome articles and items from members and readers. Books, DVDs and other materials for review should be sent direct to: **National Association for Environmental Education (UK), University of Wolverhampton, Walsall Campus, Gorway Road, Walsall, WS1 3BD.**
Tel/Fax: 01922 631200,
e-mail: *info@naee.org.uk*

Please ensure you have permission to use any photographs and send them as separate jpeg files.

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ISSN 0 309-8451

Welcome from the President

Professor William Scott
NAEE President

Can I begin by saying how pleased and honoured I am to be NAEE's new President? I am touched by the kind things that have been said to me, and can only hope I live up to them. I believe that the Association has a crucial role in these times of yet more educational change and financial pressure because, despite all the uncertainty, the need to help young people understand environmental and sustainability issues, develop a sense of hope, and decide to get involved, is undiminished.

Although the sustainable schools initiative has come and gone (having done some good, I think), one bright spot must be the greater freedom of action that English schools are now promised. For all those that know the importance to all our futures of understanding and acting on environmental issues, this will be a green light for further educational innovation and creativity. With this, NAEE's encouragement of the sharing of good practice, and reflection on it, will be needed as never before.

Unlike some, NAEE never forgot that environmental issues are at the heart of the problems we face. In an article for Environmental Education in 2007, I said that it was fortunate that environmental educators were still around to help schools develop the practice of sustainability as the government was putting the environment, and the problems facing us, centre stage. When it set up the sustainable schools initiative, DCSF said:

> "*Sustainable development is a way of thinking about how we organise our lives and work—including our education system—so that we don't destroy our most precious resource, the planet. From over-fishing to global warming, our way of life is placing an increasing burden on the planet, which cannot be sustained. Things which were once taken for granted such as a secure supply of energy or a stable climate, do not look so permanent now. If our prosperity is tied to the health of the planet, then no one's well-being is secure unless the environment is protected. … It must be much more than recycling bottles or giving money to charity. It is about thinking and working in a profoundly different way.*"

The Brundtland Commission, and the World Conservation Strategy before it, were concerned that human socio-economic development was placing such burdens on the biosphere's ability to support life that a different way of development was needed: one that would enable everyone to live well, and within the Earth's ability to support us – now and in the future. Hence, sustainable development, with its ethical commitment to the well-being of future generations and environmental systems.

This is why, if young people are to be helped to understand the connectedness of the issues and see their importance, an educational programme on sustainability has to have the environment at its heart, *and* to focus on social and/or economic issues. Because of this, the challenge is for environmental educators not just to be active themselves, but to work with others both in and out of school. There is much to be done.

Professor Scott can be contacted via the NAEE office, i*nfo@naee.org.uk*

To continue anew

Philip Sainty
Editor

And it's a new start for *Environmental Education*. For over thirty years it has featured resources, case studies and information about the delivery of environmental education for educators. It is sad to see the end of its printed form in a regular fashion, but it begins anew from September as a regular electronic publication.

And it is not the end for printed copies. We will be printing one special edition of *Environmental Education* each year which will feature the best of the articles and resources that have been submitted to our new website (featured on page 6). And it's good timing: the first of these special editions will be the 100th issue.

Letter from the NAEE Co-Chairs

Dear Colleagues,

Welcome to the Summer 2011 edition of *Environmental Education*.

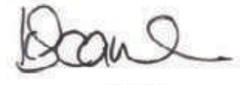
As you will no doubt have noticed from this edition's front cover, it is time for a 'changing of the guard' here at NAEE. We are all delighted to welcome our new president, Professor William Scott, Director of the University of Bath's Centre for Research in Education and the Environment (CREE). We are very excited that Professor Scott has accepted this crucial role and we look forward to gaining his insights into sustainable schools and assisting in guiding the executive board in developing and implementing NAEE's strategic vision.

Professor Scott's depth of knowledge and enthusiasm for environmental education is very apparent, even in China—where Henricus has already been in communication via our new President's blog. The online media community, including websites and associated forums, alongside twitter and facebook, is constantly tapped by educators and having a worthy website is a key component of NAEE's future. We aim to launch our new, updated and much-improved website in time for the next academic year: watch this space!

We are also delighted that our previous president, David Bellamy OBE, has accepted our offer to become the very first 'Distinguished Life Member' of NAEE. David Bellamy has been president of NAEE for many years and we are grateful for his continued support in this new role.

Further news is that this will be the last edition of our paper-based journals, but, as we have mentioned in previous editions (Chair's letter—EE, vol. 95 & 96) we will be continuing with our excellent journals online, in an e-journal format. This new online e-journal is part of our many developments which, alongside regular 'e-updates', will make communication considerably more cost-effective and responsive. In improving how and what we say to you, our members and supporters, we aim to increase our sharing of good practice and resources. We might bolster numbers by inviting you to pass this on—to 'forward' in technical lingo—to others you know might read and value it too.

With best wishes for the Summer term,



Katie Scanlan

Henricus Peters

Joint Chairpersons

info@naee.org.uk
naee.org.uk

NAEE Profile: Website

The new NAEE website

A taste of how our new website, which we aim to launch in September, is developing

We began developing ideas for our new website in 2008. Our voluntary team have since been working on it through consultation with the various organisations and institutions that make up our network of education professionals.
With all those working on it in their free time, it has taken a while to put together, but we hope you'll agree it's been worth it to get it right and to ensure that it is as user-friendly as possible for both practitioners and students.

Home page

When arriving at the site, visitors will be introduced to a number of functions and ways in which to access content. The most apparent facility will be the recent news that has been submitted by users. This will replace the popular **News&Views** section of *Environmental Education*—news will be uploaded regularly, while 'Diary dates'—events—will become part of the site's interactive calender.

Categories

Visitors will be able to find news, lesson plans and other resources submitted by users according to the category into which they fall. Clicking on these links will take the user straight to all content of that type.

Featured resource

The latest materials submitted by those institutions or organisations (users) in our network will feature here, allowing visitors to the site to click through to the profile of the user.

News section

Features the most recent stories uploded by users.

Calender

This interactive calender replaces the 'Diary dates' section of **News&Views**

The new home for *Environmental Education*

When Environmental Education moves to electronic format, members will be able to download their free version from this section of the site. Non-members will be allowed access to one free issue and after that will be asked for a donation if they want further copies.

We will, of course, be printing one publication a year which will be free for members.

Resources

Users of the site—be they organisations, institutions or individuals—will be able to submit a variety of content. Lesson plans, classroom resources, news stories and case studies will be organised according to categories, allowing visitors to find the kind of information they are looking for with ease.

Additionally, each user will have their own profile with which to organise their material and identify to visitors what their role is in the field of environmental education.

Supporting us

Visitors will be given a variety of ways in which they can support our work, such as by donating to our projects.
But the most usual way will by becoming members—completing an online application.

There will also be links to NAEE's presence on social media sites—why not join us there?

Join the Network

If you would like to have a profile area on NAEE's new website, please get in touch with Tom, our National Co-ordinator, at our head office:

t: *01922 631 200*
info@naee.org.uk

Urban ponds make a splash

Ecologists at the University of Reading are launching the first project of its scale to find out how ponds support wildlife in towns and cities. The project—known as the Reading Urban Pond Project—will explore the impact urban areas have on species biodiversity.

Adam Freeman-Pask
Reading Urban Pond Project
University of Reading


Matching data to findings

The effects of urbanisation on biodiversity are already evident in the UK, and with continued development are expected to increase. The Reading team is hoping to create new habitats that will reduce the impact our towns and cities have on biodiversity.

What is the Reading Urban Pond Project (RUPP)?
For over a century pond habitats in the UK have been declining. Making new ponds is a simple and effective way of protecting freshwater wildlife and boosting biodiversity.

RUPP is planning to establish a network of urban ponds around Berkshire. It will be the first urban 'pondscape' of its kind to be created from scratch. The aim is to provide a clean and safe aquatic habitat that can act as stepping-stones - or a wildlife corridor - across the urban landscape.

The ponds are being sited in volunteers' gardens. The contribution gardens make to the total green space of an urban landscape is often overlooked, when in fact gardens make up a large portion of many UK cities - ranging from 35% in Edinburgh to 47% in Leicester. But there is another benefit to building ponds in people's gardens. Creating a pond for someone opens up a diverse habitat that they can explore and learn from. Encouraging people to interact with their immediate surroundings generates a sense of ownership and environmental responsibility. By involving volunteers in this way, RUPP are hoping not only to create new habitats but new environmental stewards as well.

As part of ongoing research RUPP will carry out regular biodiversity monitoring of each pond. This will double up as valuable public engagement time. Engaging the volunteers and their families in pond-dipping will help expand their knowledge and understanding of the different species that are interacting in their backyard. And providing biodiversity data for their area will give a broader perspective on the state of the local environment. This relaxed style of education will help preserve the habitat integrity of each urban pond as well as the success of the 'pondscape' as a whole.

What is the Research team trying to find out?
Well they are trying to unravel the complex mystery of how urbanization affects animal biodiversity. Could it be that some species are affected more than others? Or some species thrive on being surrounded by humans and built-up areas? Previous research in the field of urban biodiversity suggests that a wildlife pond is one of the simplest procedures the public can take to boost the biodiversity of their gardens. The RUPP research team will be looking to provide scientific evidence to support this, communicating their findings to help inspire the creation of much-needed habitats in urban landscapes.

More information—
www.reading.ac.uk

Walk4Life

A new walking website offers the chance for children to draw their own walking routes onto Ordnance Survey base maps

Nicky Rowbottom
Walk England

What would you say if you found a website offering your students the facility to whizz around very detailed, accurate maps of their local area; draw their own walk routes and save them; to keep a record of their personal walking miles and even as a group set challenges for themselves or compete with other classes or other schools? And what if it was all very easy to use and totally free?

This is what the Department for Health-funded website Walk4Life has aimed to produce and the verdict from schools who are trying it out is very positive.

The site has thousands of short, local walks already plotted and is very straightforward. Within minutes the Year 5 children at Corton Primary were finding their own homes and plotting their walking routes to school. They were delighted to see the details of their area revealed by the accuracy of the site's Ordnance Survey maps.

Recent new features on the site include the ability to create or join a group, and to take a challenge.

Pride in personal achievement
There are now dedicated pages for groups where a teacher can set up a class as a group and keep it as a private space. Students can then draw their own routes onto the detailed local maps, record their fitness, and keep a log of their walking miles. Their personal walking total can be shown as a graph on the screen and they can see their individual achievement.

Working together
The class can also add their miles together as an added incentive to everyone to walk further and more often. This can include walks at weekends and in the holidays, not just the walk to school. Once children get into the habit of adding their miles, the total rises impressively quickly. When the class knows what they can achieve that's the time to challenge another class to a race: first class to reach 1000 miles – or which class can walk furthest in a month?


Discovering a local walk

Aiming high and higher...
It's fun for groups to set themselves targets and challenges – some classes have pledged to walk as far as the distance from their school to London; some have set their sights on reaching Athens, home of the Olympic Games; while others are going cosmic and reaching for the moon!

What do children think?
When the inquisitive and adventurous Year 5 students at Corton Primary school in Lowestoft tried out the site with teacher Julia Farthing their verdict was enthusiastic:

- "I think the site's brilliant because it shows where a good walk is."
- "It was very easy to find my house."
- "Drawing the line of my walk was really fun."
- "This site is a good way to do a different walk every time."
- "It's a great opportunity for us to make walks and share them with other people - it's inspiring."

More information—
www.walk4life.info

Blow a bubble and spot a contrail in the name of climate

Help out with a new kind of survey and find out more about the natural world

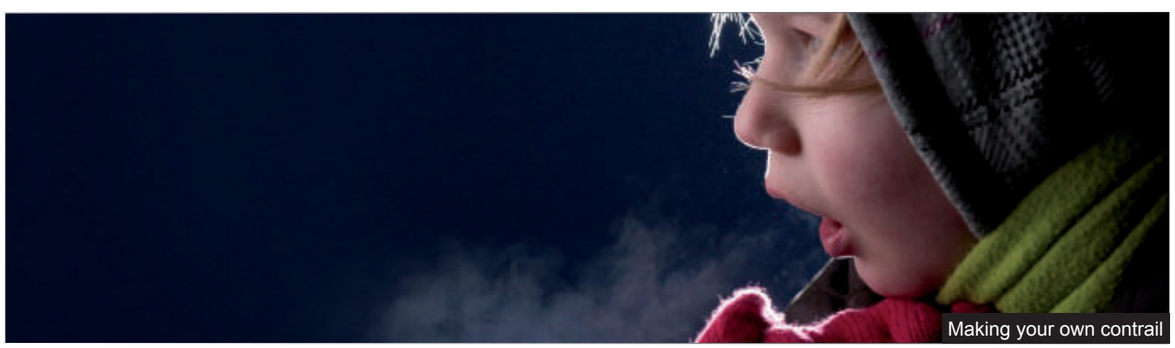
Sarah Baldwin
OPAL Communications Officer
Natural History Museum

What impact can we have on the climate and how good are we at adapting to climate change? Take part in the OPAL Climate Survey and contribute to a nationwide survey investigating these issues. Dr Geoff Jenkins of the Royal Meteorological Society explains, "We're asking people to go outside and observe and measure the weather. What they see and record will be useful in checking the models we use for forecasting weather and predicting climate".

Scientists at the Met Office are asking everyone in England to take part. So what are you being asked to do? Well you don't need any hi-tech equipment…and some of it will seem like child's play: spotting plane trails to measure air temperature and humidity, watching cloud movement to record wind direction at cloud level, blowing bubbles to measure wind speed and noting down the clothes you wear to get a better understanding of thermal comfort. But the data which will come out of it is important to key meteorological research.

Looking for plane trails in the sky

Contrails form when the temperature is cold enough (below about -40°C) but the air is humid—in a similar way to when you breathe out on a cold day and can see your breath. When fuel is burned in an aircraft's engine, the water vapour formed mixes with the very cold air and condenses, forming a trail of ice crystals. These contrails can warm the climate because they stop heat radiation leaving our atmosphere, in a similar (but smaller) way to greenhouse gases. The Met Office wants to have a better idea of where contrails form across England, and your results will help it do this.



Making your own contrail

Geoff explains, "We know these contrails can have a warming effect on climate, but how much is very uncertain. Getting as many reports as possible from across the country will help us make better estimates."

Mirror, mirror on the ground…..

By simply reflecting the sky in a mirror pane on the ground and adding a North, South, East and West, you can watch as clouds move across the sky, and track their path. Why are we interested though? Winds are a major player in our weather systems. The line on the mirror tells us the direction the wind is blowing at cloud level, another piece of data which goes into unravelling the climate puzzle.

Riding the wind

Who doesn't love blowing bubbles? In this fun third activity, blow a bubble, watch where it travels to and run after it. Then blow another bubble and time how long it takes to travel 10 metres. It sounds incredibly simple, and it is, but the scientific data collected from this experiment will help meteorologists in their research into the effect of our local environment, including trees and buildings, on wind speed and direction near the ground. The data will also contribute to validating computer models which forecast weather.

Something as simple as blowing a bubble can provide valuable data

Feeling hot, hot, hot…

It's a cloudy day, you're waiting for the train and you're freezing cold. Your friend looks surprised, and complains she's boiling hot. Why? The last activity in the survey will help uncover, for example, how climate affects how hot or cold we feel and whether people in the north of England really feel more comfortable at lower temperatures than southerners. Scientists are looking for patterns across ages, gender and regions, to see if there really are any differences in people's tolerance of weather conditions. By recording your clothes, noting the temperature and indicating how warm or cold you feel, you can help them do just that.

Global climate change is predicted to result in milder winters and hotter summers across the UK, with more frequent heatwaves. This exercise will illustrate our ability to cope with these changes. Dr Mark McCarthy, Climate Research Scientist at the Met Office, says, "Climate change poses many challenges for both the natural environment and human populations worldwide. These new insights will complement and build on our existing research looking at the potential impacts of climate change through the twenty-first century."

Get involved —

Anyone can take part. Download your free survey pack from *www.opalexplorenature.org/climatesurvey*. Publish your results on the OPAL website, where you can see how your findings compare to others across the country.

NAEE Profile: Workshops

Positive Action workshops

Here we profile the workshops the association offers to schools and other educational organisations

Each workshop lasts one hour and is suitable for up to 30 participants

Climate Change Challenge

This workshop addresses issues of climate change. It looks at the meaning of climate change and investigates its aspects such as the greenhouse effect. It explores issues through the eyes of children. Participants will engage in a series of circus activities including a quiz; a poem; an exercise on energy use and transport; newspaper headline discussions and exercises; alternative energy exploration and some creative activities. The areas of the curriculum covered by this workshop include Science, Geography, Literacy, Art, PSHE and Maths.

Creative fun with trees

This workshop offers simple creative activities using trees. Trees can offer many opportunities for curricular and imaginative work and this workshop provides varying activities with trees and leaves such as estimating the age of a tree using girth growth rate and patterns; taking bark rubbings in colours and creating pictures; collecting leaves and making print collages; using twigs to make sculptures and many more.
Curriculum areas covered: Science, Art, Craft, CDT, Maths.

Turning waste to art

This workshop looks at recycling and sifts through the variety of household materials that can be used to create practical and beautiful objects instead of throwing them away. It provides examples, hints and tips on reusing waste paper, plastic, glass etc.. Participants will create their own mini collages from materials and the collages will go towards constructing a large artwork. Areas of the curriculum covered by this workshop include English, PSHE, Art & Craft, Technology.

Magic Apples

This workshop focuses on apples as a theme, exploring the variety and origin of apples. It offers a plan for running a successful apple day and engages participants in some very inspiring, creative, and fun activities.
It is an ideal way to involve pupils, schools and the community.

Environmental games across the curriculum

This very creative workshop explores a compendium of simple environmental games and how they can be integrated into subjects and the whole school curriculum. Ideas of simple environmental games will be provided and tried. Key words will be explored and participants will be involved in making their own energy snakes and ladders game as well as creating ideas for other environmental board games. The activities fit into the following areas of curricular subjects: Science, Literacy, Art, Technology, Geography, PE and Maths.

Environmental Education in the curriculum

The workshop focuses on the opportunities for environmental education offered within the curriculum and across the curriculum. It addresses each subject specifically and provides curriculum activities to engage each participant in some practical work. Subjects within the curriculum covered by this workshop include Science, Art, Music, PE, RE, Geography, History, Maths, English, Technology.

Environmental art workshops

Gabrielle Back is an environmental artist in schools. She works with natural and environmental materials on ecothemes. She has worked with thousands of children of all ages, community groups, and teachers to explore creativity and art. Through her inspirational workshops, activities and projects can be tailor-made to fit in with the curriculum and needs of participants. Gabrielle's fantastic footprint collages from the Life Styles education project are stunning and have collected several national awards.

Energy and water management in schools

This workshop focusses on developing a whole school approach and a waste energy and water policy. It deals with producing a School Action Plan, addressing educational and management issues, looking at communication and encouraging participants to try out some creative curriculum activities such as producing an energy game or an energy information house. An energy management matrix will also be given to each participant. Curriculum subjects covered: include Science, English, Maths, Business Studies and Geography.

Minibeast Magic

This workshop addresses issues of climate change. It looks at the meaning of climate change and investigates its aspects such as the greenhouse effect. It explores issues through the eyes of children. Participants will engage in a series of circus activities including a quiz; a poem; an exercise on energy use and transport; newspaper headline discussions and exercises; alternative energy exploration and some creative activities.
The areas of the curriculum covered by this workshop include Science, Geography, Literacy, Art, PSHE and Maths.

Contact the office for more information:

t: *01922 631 200*
info@naee.org.uk

A Green Oasis in an Urban Sprawl

Sarah Hill-Daniel
Martineau Gardens

"Martineau Gardens – where people, plants and wildlife meet." The slogan can be seen hanging on t-shirts swaying in the wind of small wooden potting shed, known as the 'Sales Shed' and it's an apt description of the Gardens' purpose. Martineau Gardens, Edgbaston, Birmingham, is a beautiful organically-maintained landscape that's just two miles from the centre of the UK's second city. Often described as a 'green oasis', it provides a precious haven for wildlife and people alike in the heart of the city.

The Community Garden is an incredible resource for outdoor learning providers. It is wild and natural in a safe environment. Within its two-and-a-half acres can be found a range of habitats and features ideal for providing learning opportunities through outdoor play. Winding paths lead you through a woodland (with Site of Local Importance for Nature Conservation (SLINC) status and much-loved by Forest Schools), past bee hives, spring and summer wildflower meadows and an outdoor cooking area before emerging into a formal garden (with trees, shrubs and unusual plants from around the world plus native species).

Contrasting habitats include an alpine area, a hot house, ponds, a bog garden and a bird feeding area. Food is grown using sustainable and organic principles and can be seen in the orchard, vegetable and herb beds. Pupils can see food growing, harvest the produce and taste their pickings.

Seasonal activities that pupils can experience include: picking apples and pears and turning them into juice using a traditional press; tasting honey made by the bees of Martineau Gardens and sampling jams made from the fruit grown on site, including: currants, mulberries, figs and even kiwis. The Gardens are also able to offer an outdoor cooking experience: children can pick tomatoes, peppers, courgettes and herbs and decorate pizza dough before cooking it in the Martineau Gardens' Earth Oven.

The Garden is a Community Garden, a social enterprise and a charity. A team of volunteers tend the Gardens, any profits made from sales of produce and events are ploughed straight back into the running costs. The gardens are reliant on statutory funding and donations from charitable trusts and individuals. Patron of the Gardens, writer and journalist Alys Fowler, has fronted a new DVD for the Gardens which introduces the Gardens to new audiences (and is suitable for use in assemblies). An increasingly significant income is raised through the hiring of the Gardens for celebrations and educational visits.

In this era of savings and cutbacks, Martineau Gardens is weathering the storm, continuing to do what it does best, but to ensure the survival of this precious landscape, the Gardens need schools to use it.

Outdoor Learning Providers

Are you a Forest School Educator or Outdoor Learning Practitioner? Martineau Gardens wants to hear from individuals and organisations who have expertise in environmentally-focused activities (bushcraft, foraging, bug hunts, pond dipping, greenwoodwork, environmental art etc), are CRB certified and have experience in working with children who would like to apply to be added to a list of providers.

More information—
Martineau Gardens, 27 Priory Road, Edgbaston, Birmingham, West Midlands, B5 7UG
Open: Monday – Saturday, 10am – 4pm (except Bank holidays)
t: *0121 440 7430*
info@martineau-gardens.org.uk
www.martineau-gardens.org.uk
Twitter: *martineau27*

The Future of Environmental Education in Birmingham: *Bringing it all together*

Lickey Hills Visitor Centre, 19th February 2011

Juliette Green
NAEE Executive

This was a mini-conference organised by the Birmingham Forest Education Initiative (FEI) cluster group and hosted by the Birmingham Ranger Service. It focussed on how environmental (specifically, outdoor) education in Birmingham could be continued and developed, although the issues discussed and the action points agreed could be applied to any education authority.

The conference was opened by Jan Tomlinson (Birmingham FEI Chair & Ranger for Hall Green and Selly Oak Ranger Service), who gave a passionate speech about the need for a co-ordinated and sustainable approach to outdoor education.

There followed an informative presentation by NAEE's Sue Fenoughty, a retired teacher and former Birmingham Environmental Education Advisor. Sue's talk (which can be downloaded from *www.naee.org.uk*) gave a detailed background to the teaching of environmental education in schools—past and present (and future!). She highlighted the fact that it is down to environmental educators to enthuse and inform teachers and children—due to environmental education's current lack of status in the curriculum, the dropping of the 'Sustainable Schools' strategy, etc.

There followed a variety of workshops, including an arts and crafts session 'Trash to Treasure' (run by NAEE's Gabrielle Back), green wood spoon carving with Tony Tohill (an experienced Forest School leader), and 'Conversation Café – chatting our way to change' (a discussion about the future of environmental education).

I found the event to be a useful networking opportunity and it was refreshing to meet like-minded people. One of the main outcomes was greater networking between the organisations who attended (FEI, NAEE, Martineau Environmental Gardens, etc.) and the proposal of drawing up a directory of groups and individuals to be sent to schools.

Science Fair award

Lisa Conrad
British Science Association

Paige Roadley, Maxwell Bradbury, Luke Turton, Jessica Bates, Wesleigh Lawson and Samantha Farmer, from Eastwood Comprehensive School in Nottingham, have won the British Science Association CREST experience prize. Their project investigated environmental efficiency in their school at The Big Bang Fair in London and they have won a trip to a science centre of their choice for a unique experience that members of the public rarely get to do or see.

The talented youngsters' project was an action plan called 'Operation Generation' that aims to reduce the school's carbon footprint by:-

- building a wind turbine to provide lighting and irrigation for the school's organic garden
- reducing the school's electricity consumption
- working towards the installation of a commercial wind turbine to generate electricity for the school.

Supported by the Department for Education, two projects at CREST Bronze and Silver levels are awarded this prize, which consists of a bespoke visit to a science centre or organization in the UK. This year's prizes are being provided by the Natural History Museum and the National Space Centre, and the winners will enjoy a day of exploration and creativity, while getting to experience something unique at the venue that ordinary members of the public rarely get to do or see.

Despite the students of Eastwood Comprehensive already flying the flag for science in the East Midlands, the next crop of talented youngsters have their first shot at becoming science superstars and taking the pride of Nottingham to the national finals in 2012 by taking part in The Big Bang East Midlands on 28th June.

At the National Awards Ceremony in London attended by hundreds including the Chief Scientific Advisor Professor Sir John Beddington, Kate Bellingham and Brian Cox, there was a vast array of experiments and ideas, ranging from robotic spiders and devices to stop children watching too much television, to studies of animal behaviour and the development of targeted therapeutics for cancer.

This year there were 156 projects exhibiting at the Fair and anyone inspired by the students from Eastwood Comprehensive's success can win a place at The Big Bang Fair 2012 by taking part in The Big Bang regional fairs.

Professor Sir John Beddington says: "The next generation of scientists and engineers will play a fundamental role in tackling the global challenges we face in the 21st century. These include the issues of climate change and the management of essential natural resources, and dealing with the threats to our world from diseases, floods, volcanoes and earthquakes. That's why this competition is so important—it inspires the scientists and engineers of tomorrow and is a great example of the exceptional young talent we have in the UK."

Roland Jackson, Chief Executive of the British Science Association, commented: "We have seen a range of stunning projects and submissions to the finals of the CREST Awards this year, a tribute to the creativity of our young people in the UK, and their abilities in science and technology. This is one way in which we'll ensure that the UK remains competitive in science and engineering.

There was such an array of projects this year that we didn't envy the judges their task. However, we hope that everyone who took part got something out of the experience and won't hesitate to take part next year, starting with the next round of Regional Fairs across the UK this summer."
For what happens next along the journey towards 2012's The Big Bang: UK Young Scientists' and Engineers' Fair, go to *www.thebigbangfair.co.uk*.

More information—
www.britishscienceassociation.org/crest

NATIONAL ASSOCIATION FOR ENVIRONMENTAL EDUCATION (UK)

News&Views

SUMMER 2011 Volume 97

Compiled by Katie Scanlan, NAEE Co-Chair

Diary dates for Spring 2011

Don't forget 2011 is...
International Year of Forests
(see Diary Follow Up)

International Year of Chemistry –
For info and ideas visit
www.rsc.org.uk

JUNE

1-7 National Volunteers Week
www.volunteersweek.org.uk

5 World Environment Day.
www.unep.org

8 World Oceans Day
www.mcsuk.org
(See Water and Climate)

UK ITE Network on Education for Sustainable Development and Global Citizenship, Annual Conference.
London South Bank University
(See Diary Follow Up)

13-17 National School Grounds Week
www.ltl.org.uk

17 -26 Green Transport Week
(See Diary Follow up)

18-26 Bike to School Week
www.bikeweek.org.uk

14 World Blood Donor Day
www.wbdd.org

22 Eco-Schools Show, Bolton
(See Diary Follow Up)

29 Change Your World
www.changeyourworld.org.uk

JULY

11 World Population Day
www.unfpa.org/wpd

15 World Youth Day
www.wyd2008.org

16-31 Big Butterfly Count
(See Diary Follow Up)

16-17 Festival of History
(See Diary Follow Up)

25-30 National Parks Week
www.loveparksweek.org.uk

AUGUST

3 National Playday
www.playday.org.uk

19-21 BirdFair 2011—British Birdwatching Fair
www.birdfair.org.uk

27-28 European Bat Weekend
www.bats.org.uk

SEPTEMBER

Organic September
(See Diary Follow Up)

1 National Zoo Awareness Day

16 International Day for Preservation of the Ozone Layer
www.tes.co.uk/resources

17-2 British Food Fortnight

www.britishfoodfortnight.co.uk
(See Diary Follow Up)

22 World Car-Free Day
www.worldcarfree.net/wcfd/

25 World Rivers Day—a celebration of the World's waterways
www.commons.bcit.ca/worldriversday/

OCTOBER

Walk to School Month
(See Diary Follow Up)

3 World Habitat Day
The Global Observance of World Habitat Day this year will be held in Mexico under the theme of Cities and Climate Change.
www.unhabitat.org

4-10 World Animal Week

17-23 Energy Saving Week
www.energysavingtrust.org.uk

21 Apple Day
www.commonground.org.uk

30 RSPB Feed the Birds Day
www.rspb.org/feedthebirds/

NOVEMBER

1 World Vegan Day
www.vegansociety.com

2-3 Communicate 2011—Bristol Natural History Consortium's Annual Conference for Environmental Communicators
www.bnhc.org.uk

21-27 Road Safety Week
(See Diary Follow Up)

26-4 Jan National Tree Week
(See Diary Follow Up)

DECEMBER

3-4 Tree Dressing Weekend
www.commonground.org.uk

5 International Volunteer Day
www.worldvolunteerweb.org

DIARY FOLLOW-UP INFORMATION

2011 INTERNATIONAL YEAR OF FORESTS
At the 63rd meeting of the UN General Assembly, 2011 was proclaimed as the International Year of Forests. The UN has requested the private sector, governments and NGOs to raise public awareness of progressive forest management as a key element in building a sustainable global society. A year-long series of events will build partnerships, showcase success stories and share innovative programmes to generate public participation in forest-related activities. More information is available on the UN Forum on Forest website at:
www.un.org./esa/forests

UK ITE NETWORK ON EDUCATION FOR SUSTAINABLE DEVELOPMENT, ANNUAL CONFERENCE (June)
This year's keynote speakers will be Hilary Benn MP and Professor Charles Hopkins, UNESCO Chair in Reorienting Teacher Education towards Sustainability. For booking details:
www.lsbu.ac.uk/ccci/uk.shtml

GREEN TRANSPORT WEEK (June)
The aim of Green Transport Week 2011(17th -26th June) is to raise awareness of the impact travel has on the environment, to make people stop and think about the way they travel on every journey and to send a message to the government that the people of Great Britain care about green transportation issues.

This year, GTW is focusing on: cycling to work, green driving, walking to school, green holidays and using public transport
www.eta.co.uk/green_transport_week

ECO-SCHOOLS SHOW (June)
This year's show, 'Healthy Schools Active Kids', will be held at the Bolton Arena, Greater Manchester, featuring a packed programme of exciting activities aiming to highlight the fantastic work schools are doing across the country. *www.eco-schools.org.uk*

CHANGE YOUR WORLD (June)
An annual campaign run by Sustrans which invites people across the UK to swap just one car trip during the first week of June and to walk, cycle, take public transport or car-share instead. If we all take this one small action together we'll cut car traffic by 10%, giving us healthier journeys, cleaner air and quieter streets. *www.changeyourworld.org.uk*

NATIONAL INSECT WEEK (June 2012)
This event is held every other year; the next dates are 25th June - 1st July 2012.

Visit *www.nationalinsectweek.co.uk* for information on events and resources

BIG BUTTERFLY COUNT (July)
The big butterfly count is a nationwide survey aimed at helping assess the health of our environment. It was launched in 2010 and an impressive 10,000 people took part, counting 210,000 butterflies and day-flying moths across the nation. To get involved visit *www.bigbutterflycount.org*

FESTIVAL OF HISTORY (July)
Experience over 2,000 years of history and watch as over 1,000 re-enactors march out of history and into the heart of England. Hear the thud of Roman soldiers as they march in unison, the thunder of charging horses, swords clash as Knights engage in battle and the roar of vintage fighter planes as they soar overhead. Kelmarsh Hall, Northamptonshire.
www.english-heritage.org.uk

ORGANIC SEPTEMBER
The Soil Association's 'Organic Fortnight' has been extended to a whole month offering 30 days for retailers and brands to influence new and lapsed consumers into purchasing more organic products, more often. This year's theme "Discover Organic" promotes the many reasons to love organic and encourages shoppers to discover their own. For resources and ideas visit *www.soilassociation.org*

BRITISH FOOD FORTNIGHT (Sept)
Schools will again be invited to teach children how to prepare simple meals using the best of Britain's in-season produce and to enter British Food Fortnight competition to find the school that incorporates food and cookery within the National Curriculum in the most imaginative and innovative way.
www.britishfoodfortnight.co.uk

AUTUMN WALK TO SCHOOL MONTH (Oct)
Walk to School Month is for pupils, parents, schools and local authorities, to come together and promote walking to school and all the health, safety, social and environmental benefits it brings. The number of children travelling to school by car has doubled over the last 20 years. Getting children back in the habit of walking to school has obvious environmental benefits, and it helps with the fight against childhood obesity too. *www.walktoschool.org.uk*

ROAD SAFETY WEEK (Nov)
This year's chosen theme for Road Safety Week 2011 is "Too young to die". The message behind the theme is that road deaths are sudden, violent events that rip apart families by taking lives too soon and dreadfully.

Road deaths are the biggest 'accidental' cause of death of children and young people. All kids and young people use roads and have experienced road danger; so it's the perfect topic for a project that can really engage them as well as save their lives, while also meeting curriculum goals.
www.roadsafetyweek.org.uk

NATIONAL TREE WEEK (November)
National Tree Week is UK's largest tree celebration annually launching the start of the winter tree planting season. A great chance for communities (and schools) to do something positive for their local treescape. Each year, voluntary bodies and local authorities, up to 200 schools, community groups and many others, support the initiative by setting up fun, worthwhile and accessible events, inspiring upward of a quarter of a million people to get their hands dirty and together plant around a million trees. *www.treecouncil.org.uk*

RESOURCES
(including *Awards* and *Funding*)

TES CALENDAR RESOURCES
Visit the Times Educational Supplement (TES) website for resources, ideas and worksheets to complement many of the 'News and Views' diary dates, as well as discovering other dates of interest for your school and class.
www.tes.co.uk/resourcecalendar.aspx

'KIDS CLOSER TO NATURE' SCHEME
Arla Foods is launching a scheme to offer individuals, schools and communities the chance to apply for grants to create spaces that encourage nature. The Future Foundation study for Arla Foods questioned 1,000 parents and 500 children on how connected they were with nature. The results showed 71 per cent of parents agree that their children are happier when they play outdoors, yet the study found a quarter of youngsters spend all their spare time slumped in front of the TV or staring at a computer screen. The average member of the "Indoor Generation" spends twice as much leisure time indoors than outside, according to parents. For details of the grants available go to
www.kidsclosertonature.co.uk

MONEY TO SCHOOLS
Money to Schools is a fundraising and recycling scheme for schools, clubs and societies in the UK. By recycling empty printer cartridges and old mobile phones you can raise important funds for your school and help the environment. Every printer cartridge if recycled could conserve a litre of oil, but only around 10% of all inkjet cartridges are actually recycled. To register your school for free, go to
www.moneytoschools.com

GREEN DAY
Green Day is an initiative run by CABE (now Design Council – see 'Buildings, Industrialisation and Waste')

that helps to make schools sustainable. It will inspire pupils and colleagues in your school to learn about climate change and how it relates to the buildings and spaces around them. Your School's 'Green Day' can take place during June; for curriculum-linked resources and ideas
www.cabe.org.uk/education/green-day/
(Nb. The newly formed Design Council will still be supporting Green Day in schools.)

WATER

WORLD OCEANS DAY
Oceans cover over 70% of the Earth's surface, but less than 1% is protected. Just 2 sites in UK waters are protected, compared to 4,000 land-based sites. Our oceans support an estimated ten million species, only three percent of which have been identified. Top tips to save our oceans:

1. Choose sustainable seafood and let our seas recover from overfishing
2. Think before you flush. All drains lead to the sea: don't flush any sanitary items—including cotton buds—they may just end up on a beach
3. Say no to plastic bags and avoid plastic packaging.

www.mcsuk.org

PEOPLE AND COMMUNITIES

ENVIRONMENT LESSONS CRUCIAL, SAYS ATTENBOROUGH
Classes on the environment are just as important as lessons in maths and English for today's children, says veteran natural history presenter Sir David Attenborough. Most children now grow up with "very little" direct contact with the natural world and were "estranged" from non-human forms of life said the 84-year-old naturalist, who thinks learning about nature should be "on a par" with lessons in maths and English in schools. "As our children's world is changing, our planet is also in increasing peril" he said. "Climate change and habitat destruction are problems facing our generation and those of our children. In order to equip the next generation to face these problems, it is crucial that children grow up with an understanding and respect for our planet."
The Guardian, 9.1.11

BUILDINGS, INDUSTRIALISATION & WASTE

CABE TO MERGE WITH THE DESIGN COUNCIL
CABE (Commission for Architecture and the Built Environment) ceased to function at the start of 2011, but has now merged with the Design Council to become the government's advisor on design in business innovation and the built environment. For CABE archive material visit ***www.cabe.org.uk***

ENERGY

ASHLEY C of E SCHOOL – A MODEL ECO-SCHOOL
Ashley School in Walton-on-Thames has proved that being energy efficient can work, by halving their annual electricity use. The head teacher returned from an Antarctic trip determined to reduce his school's carbon footprint after witnessing climate change at first hand. Since then the whole school community has worked together to bring the climate change motive into everything they do. Targets are set to cut energy consumption in the school and home and energy learning is integrated into every subject including art and maths. The school has a biomass boiler, solar heating and PV array and energy efficient lighting is used throughout.

For info, inspiration and an excellent video clip
www.ashleyschool.org.uk

PLANTS AND ANIMALS (BIODIVERSITY)

FORESTS SAVED
Following high profile public campaigns, the government's consultation on the future management of the Public Forest Estate was halted on 17th February, and Caroline Spelman confirmed that all forestry clauses in the Public Bodies Bill would be removed. At the same time she announced her intention to establish an independent panel to advise her on forestry policy: "Our forests are a great part of our heritage and essential for our way of life, providing clean air and water, homes for wildlife and a natural way of countering the effects of climate change."
CMA Members News March 2011 Vol. 3; Issue 1

SOIL, ROCKS & MINERALS (LAND)

CHRISTCHURCH EARTHQUAKE – What can we learn?
…'Resilient citizenship' according to Dr Bronwyn Hayward, senior political science lecturer at the University of Canterbury, in New Zealand. During a talk at a Resilience conference Dr Hayward uses the example of the 24,000-strong student group which emerged to clean up after the recent earthquake in Christchurch, to demonstrate the importance of citizenship.
www.youtube.com/watch?v=ateZ2_z0Ekw

Young Naturalists Celebrate

In The Wildlife Trusts' Watch Group of the Year awards

Rachel Shaw
Lincolnshire Wildlife Trust


© Lincolnshire Wildlife Trust

Whether camping out in the wild, coppicing to improve habitat, or heading out on a beach clean, members of Wildlife Watch groups - run by The Wildlife Trusts for young nature lovers - are passionate about enjoying, and protecting, wildlife. The Watch Group of the Year Award recognises and rewards this passion.

Members of Whisby Wildlife Watch group, some as young as five, demonstrated their sense of adventure by getting involved with woodland navigation armed with map and compass, and developed their eco-credentials through crafting with recycled materials.

The Whisby Wildlife Watch 2010 programme was based on the International Year of Biodiversity. In each meeting they aimed to do some outdoor observation and make something either to improve the grounds or to take home. Included in this were:

1. Willow coppicing. We have a wet willow carr on the Nature Reserve. Members rotationally coppice this, which creates a varied habitat for wildlife, and the cut wands are used for weaving fences at the Education Centre, making tissue lanterns, and as a craft material for stickmen, hedgehog models etc.
2. We reinforce the fact that there are only finite resources on the Earth by encouraging recycling. We made paper from paper and searched out "little rotters" active in making compost.
3. Our bee day ended by all making bee motels. (Cut down plastic bottle filled with hollow twigs).
4. Natural Navigation included use of compass, orienteering and making a sun dial to take home (slice of wood with a twig gnomon).
5. Tree day included members collecting and planting tree seeds and proudly taking them home.

"We went pond dipping and had a fab time," said Zoe Camplin (9), describing one of the group activities, "First, Alison showed us how to use a net and catch something like a water boatman, snail, caddis fly larvae and more. I had fun! I went home thinking how good pond dipping was."

> "We saw blackness, dark, stars and the moon."
> **Emily**, after the evening lantern walk

Hardwick Wildlife Watch group, from Derbyshire, and Blashford Lakes Wildlife Watch group, from Hampshire, closely followed winners Whisby, snapping up second and third places respectively.

When informed that Hardwick Wildlife Watch group had come second, member Tilly (5) said: "It's wicked because we do a really good job of helping wildlife." And Blashford Lakes member, Alex Sampson (14), reflected on a beach clean: "We left the beach with heaving bags full nearly to »

© Lincolnshire Wildlife Trust

the brim with litter. Although we had only cleared the tiniest proportion of coastline, we knew that we had done our bit, and that if everyone followed our example, the coastline of Britain would be clean and allow wildlife that struggles today to flourish tomorrow in a natural habitat."

> "Warning: the secateurs could crop your finger off if you are not careful."
> **Lucy, 6**

Stephanie Hilborne OBE, Chief Executive of The Wildlife Trusts, said: "We live in a time where the disconnection of young people from the natural world is well documented. So it's hugely reassuring to hear about the experiences of Wildlife Watch groups, full of young people who love spending their spare time enjoying the sights and sounds of the wild world.

"Wildlife Watch encourages an interest in the natural world by inspiring personal participation. It creates learning opportunities too and we were delighted to see that Whisby's young members help put their yearbook together. Everyone is given the opportunity to decide on the future programme and to shape activity. This approach encourages loyalty which makes engagement so effective and enjoyable, both for leaders and young members. Their sense of pride and achievement shone through."

The winning group were presented with a special trophy and £75 in gardening vouchers, with £50 and £25 going to second and third places respectively. All winners will receive a certificate signed by TV presenter, wildlife expert and The Wildlife Trusts' Vice President, Chris Packham.

"This is brilliant news" said Wildlife Watch Organiser for Lincolnshire, Mary Porter. "The Whisby Wildlife Watch group have a fantastic time at their meetings, enjoying a huge variety of activities and investigations. It's also a tribute to their adult leaders who organise such a wonderful experience for them, with such enthusiasm."

More information—
Wildlife Watch is The Wildlife Trusts' branch for its junior members, who receive four copies of Wildlife Watch magazine every year, a membership pack, and access to events and activities with their local Wildlife Trust. To find out more about Wildlife Watch and how to join, visit *wildlifewatch.org.uk*. Wildlife Watch groups are run across the UK by local Wildlife Trusts. To find your local group visit: *wildlifewatch.org.uk/Where-you-live*.

A Christmas visit to Cuba

Alona Sheridan
NAEE Executive

Alona helps to hoe a field after the cassava crop had been harvested

This article begins with mention of the Transition Towns (TT) movement in the UK. Transition Towns are grass-roots local groups finding local ways of dealing with the threats of peak oil and climate change. Transition activists believe we should be taking action now to reduce our dependency on fossil fuel-based energy sources, reduce our carbon footprint and live more sustainably.

A film often shown in TT groups is called 'The Power of Community: How Cuba Survived Peak Oil'. In its 51 minutes it explains peak oil and the crisis that hit Cuba. It has a focus on Cuban agriculture, health, education and transport. The film was a major motivator for me to see the country for myself.

Cuba's peak oil crisis, known as the Special Period, began around 20 years ago with the collapse of the Soviet Union and withdrawal of huge amounts of Russian aid, including oil, food items, medicines and agricultural aid. The people began to starve and there was an urgency to grow their own food using traditional methods, including the use of oxen for ploughing. They developed urban gardens and small-scale rural farm co-operatives. The austerity was increased due to the economic blockade by the USA.

Children at the early years centre sing to the European visitors

With images from the film in my mind, I travelled to Cuba with the Cuba Solidarity Campaign in December 2010, staying at an international camp in Havana Province.

Agriculture
Our stay included some agricultural work in fields adjacent to the camp. On two days I was part of a team working in a cassava field. Cassava is a root crop grown locally and by the time we arrived it had mainly been harvested, but we helped clear away the stems and hoe the ground. The farmer explained that he intended to use oxen to plough as they help to dig the soil rather than compact it and they also add manure to the field. The area we were in is a centre for orange growing and some of our brigade helped to pot up new orange trees—planning ahead for the future. Another day some of us picked papaya fruit and were able to taste these fruits.

There was no opportunity in our busy schedule to visit some of the community organic gardens I had heard about but we passed some on our coach excursions to Havana.

>>

Schools
The country has limited access to the sorts of teaching resources we are used to in the UK, so teachers produce much of their own. On National Teachers Day, 22nd December, (yes they celebrate teachers!) we visited a secondary school for 14-19 year olds, a teacher training establishment for nursery and primary teachers. Here students make teaching resources from recycled items such as plastic and cardboard to use in their teaching practice.


A horse-drawn taxi

We also visited an Early Years Centre for children aged 2 to 6 and saw some of the resources made by staff. In UK nurseries we find plastic toy kitchen appliances such as cookers and cupboards; we saw similar resources but made from recycled cardboard boxes covered with papier mâché and then painted. There was also a garden where children learned to grow vegetables, watched over by a scarecrow made of recycled fabrics.

We were told that there is a rolling programme to provide rural schools with solar electricity and to teach pupils about energy conservation.

Transport

Old cars
If you like old American cars from the 1950s, Cuba has them in quantity. Unfortunately many are not well tuned and polluting smoke from these vehicles is common. They are kept on the road by recycling parts from other cars. The vehicle smoke was a disappointment to me with my high expectations of Cuba's move towards sustainable living.

Local travel
Horse drawn vehicles make a lot of sense as a means of local transport in a country with limited access to oil. Examples include taxis and family transport. Cycles are also common and cycle taxis are available within Havana.

Overview
Cuba's goal to be as self-sufficient as possible is something that we, in the rich countries, can learn from them. Cuba HAD to go along this route because Soviet aid ceased. School children are taught about the environment and about reducing their use of energy while teachers make resources using recycled items. The use of solar electricity is spreading, particularly in rural areas. When I returned to my UK school I gave an assembly presentation of my impressions of the country to Key Stage 2 pupils. My visit was only a snap-shot and I would like to go back to visit more schools and small-scale agriculture projects, see examples of solar electricity and find out to what extent the children understand the necessity to move towards greater self-sufficiency.

More information —
www.transitionnetwork.org
www.cuba-solidarity.org.uk


Teacher in the early years centre's food-growing garden space and scarecrow


The interior of the New Mills

New Mills

Business students at the University of East Anglia breathe low carbon life into an historic Norwich mill using an ancient engineering solution

Stephen Young
MBA graduate
Norwich Business School, University of East Anglia

The MBA in Strategic Carbon Management differs from conventional MBAs in that there is no requirement to complete a dissertation; instead Norwich Business School requires that candidates complete two lengthy consultancies in teams of four and one large consultancy in a team of ten where all proceeds are given to charity. The four-person consultancies run from February to July and July to December.

As well as myself, the New Mills Consultancy team consisted of the following team members:

- Vinay Rao
- Erica Hsu
- Ana Goni

This consultancy was our first of two.

Background
The site takes its name from the fact that a pair of corn mills existed on the site and during the continuum had probably been rebuilt twice before the current structure was built.

In 1893 the then-existent New Mills was demolished and a new building was erected to house air compressors which were to feed the series of Shone Ejectors that were to be eventually installed throughout the city. There were many other Shone Ejector systems in use at this time but the uniqueness of this site lay in the fact that the prime mover mechanism for the generation of compressed air were two Stilwell and Bierce "Victor" Francis Turbines of 48-inch diameter. These were made in Dayton, Ohio in approximately 1898.

The Shone Ejector system was useful because at the time of its invention, there being very little distributed electricity available, compressed air was being widely recognised as a useful source of power that could be stored. The principle of the Shone Ejector system was that sewerage ran into a low-level chamber until it was almost full, triggering the activation of a ball valve which allowed compressed air to be admitted above the level of the sewerage in the tank. This injection of compressed air forced the sewerage up a pipe from the bottom of the tank into a similar tank at a higher elevation, with a non-return valve preventing any from returning. The sewerage could then be allowed to flow downhill to another tank where the process was repeated to allow the movement of the sewerage to its final destination. In the case of Norwich, this was Trowse where the sewerage treatment plant was to be located. Thus the sewerage was transferred in a 'saw-tooth' manner but the real elegance of this system lay in the fact that there were no moving mechanical parts required to move the product; the simple injection of air under pressure was sufficient to "nudge the sludge".

The New Mills Compressed Air station began

operation in 1897, the compressed air produced being distributed via underground pipework to a total of seven underground tanks scattered around the city in which two Shone Ejectors were installed, to points as far way as Bishop Bridge and Carrow. Each site had a pair of tanks that were used alternately. The lifting capacity of one of the Shone Ejectors connected to New Mills was, according to David Durst, 1500 gallons per minute through 15 feet.

The site had provision for an alternative power source for the operation of the reciprocating compressors. Upstream of New Mills was located an incinerator plant fed by the refuse of Norwich; steam was raised by the use of a Babcock and Wilcox boiler which was then fed to New Mills via a 5-inch steam main pipe. The steam was used to power only the original Hughes and Lancaster horizontal compressors. Separate high- and low-pressure cylinders for the steam engine were mounted, one in tandem with each reciprocating compressor. The boilers were outside the New Mills building; the household rubbish was brought to site by cart and a short rail track transferred it to the boiler house

The compressors could therefore be operated by either steam raised as a biomass-based thermal process when there was fuel to burn, or from potential energy derived from the river. Clearly the engineers of the time valued diversification in energy supplies by the use of biomass technology and hydropower to operate the facility.

As the electricity distribution system in Norwich matured and the steam-driven cylinder input to the original compressors became increasingly uneconomic (quality of fuel etc.) the City of Norwich began to electrify the system.

The original D.C. based system is thought to have been distributed at 450 Volts supplied from an engine driven by generators located at St. Andrews Hall. These generators supplied the lighting and power supply for Norwich; the D.C. supply for the Norwich tram network was supplied separately. As part of the city-wide changeover to A.C. and in part due to the need in retaining the D.C.; systems at New Mills, the city of Norwich was required to install mercury arc rectifiers to convert the A.C. to D.C., these rectifiers were located at Coslany Street and replaced the engine-driven D.C. generators.

One of the original compressor units was fitted with a Lawrence Scott D.C. motor as an alternative to the potential energy of the river driving the compressor; and with the advent of single unit air compressors a single Wilson compressor unit was installed complete with another Lawrence Scott D.C. motor as the prime mover.

In 1937 the electricity distribution system in Norwich was completely transferred from a D.C. to A.C.; as the city expanded and, in consequence, its sewerage demands increased, then two further stand-alone compressor sets were fitted; first a Reavell unit and then a Hughes and Lancaster 3-cylinder set, both units being powered by A.C..

Norwich city sewerage and New Mills

At this point, a brief summary of the sewerage requirements of Norwich is useful as these demands were the primary reason for the building currently situated at New Mills. Most of the information described here is gratefully taken from the New Mills Archive—Part 2, titled *Building the Sewers of Norwich* compiled by Barre Funnell from the work of R.J. Britt.

The first acts of Parliament related to Public Health were as a result of increasing mortality rates from Cholera, Typhoid and Smallpox. In 1845 and 1850 inspections were conducted of the sanitary conditions in Norwich. The report of 1845 suggests an unpleasant odour must have surrounded the centre of Norwich due to the presence of open channels running down all of the city centre streets and eventually discharging into the River Wensum.

In 1850 a government inspector came to Norwich to hold an enquiry over the city's refusal to comply with the new Public Health acts. As a result of his report the first public sewer design for Norwich was mandated. At that time there were 138 open sewers discharging into the Wensum. The new sewer was to run from Tombland to Trowse via King Street with a separate system to drain the higher elevations of the city also running to Trowse.

In 1856 the first proposals to build the new sewer system as outlined by the Government Inspector William Lee were turned down due to the cost: £7,893; however the same proposal was agreed to in 1858 but work did not start. The Engineer Sir Joseph Bazalgette who had designed parts of the London sewer system was asked to prepare a design. His design provided for two intercepting sewer systems, a high level one which joined a low level system. The estimated cost of this system was £80,000 and it was never started. In 1866 the city had plans drawn up for two intercepting sewers, similar to Bazalgette's plan with the exception that the low level system ran down to a pumping station. The plan was very similar to the 1851 plan and required the low level sewerage to be pumped up to Crown Point at Whitlingham, a rise of 140-150 feet from Trowse.

There were objections to the construction of the sewer system from groups such as the Memorialists, but in 1868 contracts were signed and work started. By 1871 the works were complete and the sewerage delivery began. It soon became evident that there was a problem. The design flow of Bazalgette was estimated to be 2,500,000 gallons/day but the actual flows were as high as

Case Study: Renewable Energy Development

The original New Millls building

7,000,000 gallons/day. The problem was diagnosed as hydrostatic leakage through the nine-inch-thick tunnel walls where they ran below the river level. It took until 1877 for the tunnels to be fully lined but the leaks continued and the low level sewer system was not used. In 1889 a petition was made to Parliament to:

- Separate the storm water from the foul water
- build a new sewer on the same line as the existing low level but at a higher elevation
- build a new sewer on the north side of the river
- retain the existing works at Trowse and Whitlingham
- utilise Shone's Ejectors to raise sewerage into the new sewers.

In 1893 the city councillors visited Southampton, Eastbourne and the Houses of Parliament to see Shone Ejectors in operation; this was almost seventeen years after the council had been made aware of the technology.

The city of Norwich had at this time a population of 104,000 residing in 23,111 houses but of these only 4,100 were connected to the sewer system by water closets; the remainder still dumped sewerage as and when they pleased into the river or into middens that the city emptied at their expense. This was illegal at the time as the law promulgated by the Sewerage and Irrigation Committee of 1870 stated that "all owners and occupiers of houses or buildings now draining into the public river or cesspools forthwith disconnect same and construct a proper connection with the common sewer". 39,000 tons of sewerage were being disposed of by the City at a cost of £3,118 per year.

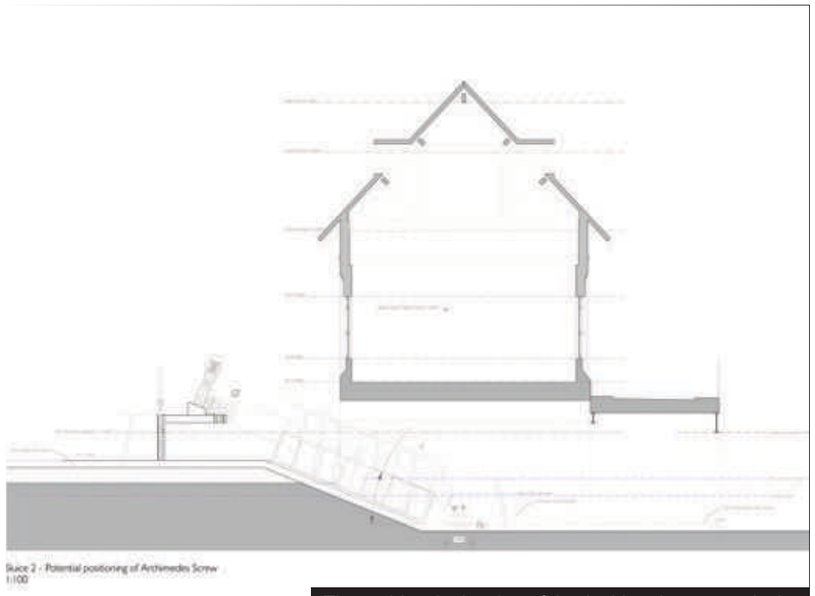
The locations for the new Shone Ejector stations were agreed and the chambers were to be installed close to and under the level of the river and built out of steel to prevent leaks as had been the case with the brick sewers. The quote for five ejectors from Shone was £16,961 with each station having duplicate ejectors.

The boilers at Trowse had little spare capacity to provide steam to operate the compressed air generation plants for the new Shone system; it was therefore decided that the new pumping station should be located at New Mills and, as had been done at Southampton, power for the compressors would be created by the burning of domestic rubbish in a refuse destructor. (We could now use anaerobic digester technology to create energy to operate the pumps.) The City Engineer at the time, Buchan, suggested that burning of the rubbish alone would not provide sufficient power and that additional boiler power was required or obtain it hydraulically from new 45BHP Francis Turbines.

In 1895 work on the new sewers was progressing but no decision on the site of the new pumping station had been made. The new City Engineer, Collins, argued for and secured permission to build it at New Mills.

In 1905 Collins argued that the biomass boiler destructors were costing too much to

run due to the varying calorific value of the domestic rubbish and that coal had to be added to it. Although the refuse destructor was decommissioned, other boilers were used to supply steam to the original Hughes and Lancaster compressors until at least 1926. In 1936 the steam cylinders used to drive the Hughes and Lancaster compressors were removed. were removed. At this point large D.C. motors were fitted to the original Hughes and Lancaster compressors and they would have been brought into operation during periods of low river flows or high tide when the available head of water was reduced.



© CSA Design Studio

The architect's drawing of the Archimedes screw design

Some new housing constructed in the city meant another ejector system was constructed and required the installation of three ejectors at the Westwick Street depot. These new ejectors were connected to a receiver located in the 1936 extension to the pumping station but had its own air main driven from an independent electrically driven compressor and was not attached to the New Mills air main.

The MBA Solution

Our brief and proposal required us to formulate strategies for the commercial use of the building and to develop innovative ideas to capture the renewable energy potential of the site itself. Specific commercial recommendations were provided complete with models to analyse the financial viability of the proposed building use.

For this article, I will concentrate more on the energy solution that we provided for the site.

The site, as the historical introduction outlines, has used the potential energy capability of the River Wensum since as early as 1492. As part of our research we completed a technical appraisal of the site's capability to produce energy. In order to do this we analysed the original installation criteria and sizing of equipment with flow rates for the River Wensum provided by the Environment Agency. We then compared both data sets for anomalies; fortunately the data agreed, which indicated that there had been no degradation in the River Wensum flow regime.

Once the flow rates had been established, two technologies were chosen for particular suppliers to provide proposals; the first technology was the Kaplan Turbine to be supplied by Spaan-Babcock; but after discussions with the Environment Agency it was decided that the low environmental impact of the Archimedes Screw was the technology of choice.

In conjunction with the client's architectural consultants, the team then set about to design the possible insertion of the Screw in the existing building. The figure above shows the proposed location of the Archimedes Screw in the building.

Financial projections were completed with sensitivity analyses to model all possible flow regimes and any limitations that may be imposed by the Environment Agency.

Update

I have agreed to complete the project in partnership with our 'client'. We have presented Norwich City Council with several business proposals based upon revenue-sharing models taking adavantage of the incentives for the production of renewable energy under the Feed-in Tariffs.

As this article was written, we received word that the project has been agreed with Norwich City Council subject to a lease being accepted by both parties for the use of the site. This should hopefully allow us to have the site up and running, producing approximately 65kW electricity every hour in 2012!

More information —

www.uea.ac.uk

Sustainable Schools by 2020?

Sarah Simmons
MSc Graduate

Since assessing the sustainability of a local primary school as part of my MSc taught course, I became acutely aware that the government wants all schools to be 'sustainable schools' by 2020. With just under 10 years left to meet this target, many schools face a number of obstacles to improving their sustainability and, with the abandonment of the Building Schools for the Future scheme, the need to overcome these challenges has never been more important. As some of you may be aware, energy audits have been advertised by government as mechanisms to identify viable, cost-effective measures to reduce annual emissions and costs. However, it has been reported by local councils and research literature alike that schools, universities and commercial buildings across the UK, Europe and further abroad are failing to implement these recommendations with many complicated barriers being cited. Therefore, as part of my postgraduate thesis, I decided to tackle the reasons why improvement measures presented within government schemes are not being implemented. The results of the thesis are summarised here for you.

Why we need to improve sustainability – the facts.

According to the DCSF (2010):

- UK schools account for a staggering 2% of the UK's greenhouse gas emissions
- they also account for 15% of emissions in the UK's public sector
- 55% of the emissions produced from schools in the UK result from energy use
- the DCSF (2010) expects schools to achieve a reduction in current emissions of 53% by 2020
- the now abolished Building Schools for the Future (BSF) programme was expected to reduce emissions by 44% from 2006 levels—meaning it is unlikely schools will reach the 53% emissions reduction.

But don't despair!

Schools are ***still*** able to reduce costs and emissions as long as the barriers to the implementation of recommendations are reduced and opportunities are seized.

Programmes for improvement

In an attempt to tackle the UK's current greenhouse gas emissions, the government has developed the Climate Change Act (2008) and as part of this the Carbon Reduction Commitment Energy Efficiency Scheme (CRC) which stipulates that any organisation (including local authorities and their schools) that produces over 6,000 MWh of energy per year must take part. As such, local authorities throughout the UK have implemented schemes to encourage schools to reduce their emissions, and energy audits form a large part of these schemes.

The Project

The project took place between May and July 2010 at a series of eight schools - four had previously been audited by the local authority and four by The Carbon Trust. The aim was to assess the challenges facing the implementation of government schemes and incentives for improving energy efficiency in school buildings, the opportunities they offer and their potential impact.

Methodology

Assessing the impact of energy audits

Previous energy audits from 2008 for all eight schools were examined prior to visiting them. In order to observe the progress schools had made in terms of implementing the recommendations, energy audit reviews were conducted, which explored areas such as heating, lighting, electricity use, building fabric, water usage, waste management, transportation and the potential for renewable technologies. These were conducted in accordance with the British Standard for Quality Auditing (ISO19011/2002).

Semi-structured interviews

Following the onsite audits, separate interviews were conducted with the key staff members involved in the audit process (principally the school bursar and caretaker). The aim of the

questions was to gauge their attitude towards the audit process, determine the barriers they face and their significance, and whether they have ideas for improving the scheme.

Questionnaires

A short questionnaire was sent to all schools (175) who were not being subjected to the energy audit process. It consisted of 18 short questions with the aim of gauging the attitudes of school staff when implementing energy efficient projects. Questions included closed answers where respondents rated their answers (1 = most significant and 9 = least) and open answers where respondents explained their thoughts on the energy audit process, barriers to implementation, how problems could be overcome and opportunities for improvement.

Results

Energy audit reviews

The results from the energy audits have been summarised in table 1. Each of the schools were issued with a score showing the extent to which the recommendations had been carried out (0 = none, 1 = some and 2 = all). To ensure confidentiality, the schools involved have been renamed A – H. The results indicate that recommendations related to electricity usage and IT systems had been implemented the most, whereas larger projects, such as installing cavity wall insulation, were not implemented as readily.

	The Carbon Trust				The Local Authority				
School	A	B	C	D	E	F	G	H	Total
Heating	1	1	2	1	0	0	2	0	7
Lighting	1	1	0	2	0	0	2	0	6
Electricity Usage	2	2	1	2	0	0	2	1	10
Building Fabric	0	1	1	0	0	0	1	0	3
Total	4	5	4	5	0	0	7	1	

Table 1: Level of recommendations carried out.

The following tables and graphs present the results from both the interviews and questionnaires:

Opinions of the energy audit process Barriers towards energy efficiency—including renewable technologies

Categories	Participants' Response
Opinion of the Process	Yes, it was quite useful. The timing of the audit wasn't really that appropriate. I don't have it...I've never seen it. It was extremely useful. Any information to reduce consumption is useful. The quality of payback figures should be questioned. Yes very useful. It was clear, simple and easy to follow. It was 'picked' from a pre-set menu and not very relevant to the school. Audits were helpful in identifying areas where changes could be made but there was not much follow up information available. I don't remember much about it. The pointed out what we already knew...
Changes suggested	More advice as to how to tackle certain jobs. Involve other teachers – teaching staff are very focussed on teaching and learning – it's a behavioural change. A comparison between the appropriate funding available and the things you need would be incredibly useful.

Table 2: Schools' attitude towards the energy audit process

Categories	Barriers	Energy Efficiency: Average Response	Energy Efficiency: Calculated Rank	Renewable Technologies: Average Response	Renewable Technologies: Calculated Rank
Economic	Budgetary constraints	2.08	1	3.63	1
	Hidden costs	4.00	3	3.87	2
Behavioural	Concerns about equipment going wrong	5.41	8	5.38	8
	Lack of information	4.41	4	4.26	4
	Lack of knowledge	3.89	2	3.92	3
	Lack of awareness	5.31	7	5.04	7
Organisational	Schools' reluctance to change	6.30	9	6.30	9
	Age of the school building	4.67	6	4.75	6
	Time constraints	4.45	5	4.83	5

Table 3: Ranked Data – The Barriers

As illustrated by table 3, the most prominent barrier to energy efficiency and sustainability is that of budgetary constraints (the average rated response being 2.08 and ranked 1) and the least significant barrier is the schools' reluctance to change (the average response being 6.30 and ranked as 9).

Opportunity	Average Response	Calculated Rank
Contact with other schools	4.10	5
Advice from energy managers	3.20	2
Advice from professional associations	3.60	4
Advice from engineers	4.29	6
Focussed audits with quick-fix options	3.21	3
List of suitable contractors for larger work	5.29	7
The Carbon Hub	3.09	1

Table 4: Overcoming the hurdles associated with energy audits

The calculated ranks have been presented in graphical form (figure 1) in order to illustrate clearly the most important barriers – budgetary constraints, hidden costs and a lack of knowledge. Furthermore, as illustrated by table 3 and figure 1, for renewable technologies a lack of knowledge was deemed less important than for energy efficient projects but more important for hidden costs.

Opportunities for improving the system and reducing the barriers

In terms of reducing the specific barriers faced, table 4 illustrates the schemes that schools want to be included in the energy audit programme. Further, as illustrated by table 5 and figure 2, advice from energy managers and the Council's Carbon Hub scheme appeared to be the most appropriate opportunity for improvement. The Carbon Hub (http://www.carbon-hub.com) has been piloted by various local authorities around the UK. It is a twofold scheme, raising an awareness of energy consumption within schools as well as providing maintenance staff with a means of communicating with other schools and improving

Categories	Detailed Ideas
Funding improvement	School budgets are not long term enough to invest capital. Workshops targeting funding methods are needed. Sufficient funds must be made available. Allowing schools to access funding by working together rather than independently bidding for resources.
Improving access to knowledge	Project advice, guidance and a list of suitable contractors for larger work would be useful - rather than having to spend time finding our own. Need someone to specifically liaise and advise. More support. Not leaving schools to investigate the technology themselves.
Raising awareness	Corporate awareness sessions provided by local government as well as energy workshops for all members of the school.
Targeting time	More time or one person dedicated to researching these technologies is required.

Table 5: Opportunities for improving sustainability

their energy efficiency. Significantly, no school who participated in the questionnaire cited an additional method for improving energy efficiency and sustainability.

Discussion

The main findings from the results section have shown that there is a variety of barriers which affect a school's ability to implement energy audit recommendations and improve its overall energy efficiency and sustainability through renewable technologies.

Many of the barriers towards energy efficiency identified by both case study schools within the semi-structured interviews and the questionnaire responses complement current research. However, in some cases areas such as the impact of older school buildings have not been identified.

The energy audit process

Many of the schools assessed through the energy audit review had failed to implement high capital recommendations. This is likely to be due to the budgetary constraints cited in the questionnaires and interviews (table 3). Further, as illustrated by table 1, schools which had their audits conducted by The Carbon Trust appeared to be better at implementing the recommendations. The Carbon Trust schools are larger which may mean that they have specific staff able to spend time researching the recommendations. In addition, it could also be argued that the attitudes of schools who integrated key recommendations are more geared towards sustainability. Further, the impact of having an established, professional, external body complete the audits may also add extra clout when proposing recommendations to governors and senior staff. Finally, the effectiveness of energy audits as a whole was also an area of controversy within the results. Some claim that energy audits are extremely helpful for identifying areas which could be improved whilst others argued that the audits failed to tell them anything they did not already know. The level of follow-up communication and support after the audit was also questioned by respondents.

The economic barriers

- A lack of capital
- the bureaucratic nature of applying for funding
- hidden costs (time constraints).

Overcoming the economic barriers

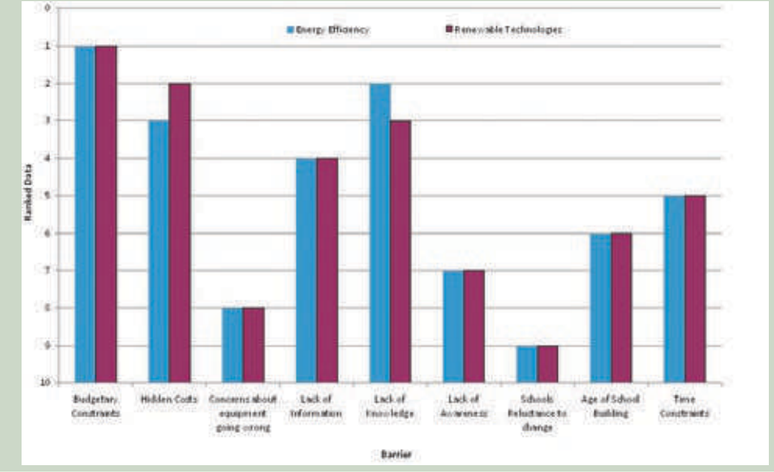
It is infamously difficult to overcome the economic barriers currently faced in schools, particularly in these days of economic crisis, without a complete overhaul of the school's budgetary system. However, there are some things schools can do to reduce their costs. When the merits of the Carbon Hub scheme were presented to the interview and questionnaire participants, most were extremely keen to be involved with suggestions that the cost of energy be displayed to act as a driver for change. Further, participants would also appreciate a series of workshops provided by the local authority explaining the different funding options. In terms of hidden costs, it was suggested that local authorities email or post to schools a list of appropriate cost-effective recommendations, tailor-made for their school, in an attempt to tackle the time constraints faced by school staff.

The behavioural barriers

- Raising awareness is one of the major barriers faced (on behalf of both staff and pupils)
- lack of knowledge due to serious media misconceptions
- not having the basic expertise to confidently implement costly projects.

Overcoming the behavioural barriers

The results suggest that training and workshop



schemes are invaluable for improving awareness and knowledge amongst school communities. In particular, training for staff has been identified as a frequent cost-effective method for improving the energy efficiency of the school. Further, a change in the education system was also a prominent suggestion, which included providing pupils with a much more active role in energy monitoring in science and mathematics lessons. Those schools currently implementing the latter have reportedly experienced a positive response when, by the end of the school term, all lights in the school were turned off when not needed.

The organisational barriers
- Serious lack of time within the organisation.

Overcoming the organisational barriers
The findings reveal that the advice of energy managers is considered to be the second most influential cost-effective opportunity for improvement. In addition, the results indicate that the schools' reluctance to change is the least important barrier suggesting that schools may want to achieve a high level of sustainability but do not have the money or the expertise to do so.

Conclusion—what to do now?
The barriers to energy efficiency and renewable technology implementation in schools can be divided into three interlocking perspectives (economic, behavioural and organisational). In order to combat these barriers:

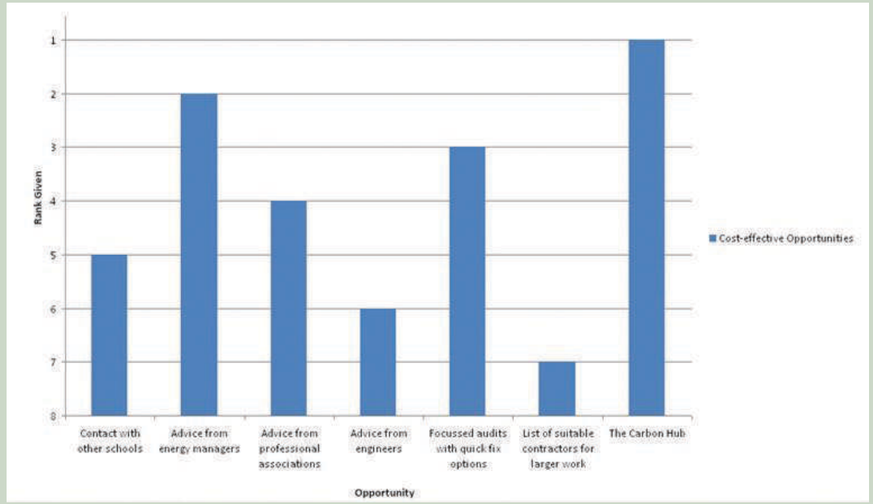
Schools should:
- Involve pupils in the energy audit process through science and mathematics lessons. Information on conducting energy audits can be found at: *http://www.eco-schools.org.uk/nine-topics/energy.aspx*
- research 'Eco-Schools' and create an eco-group for pupils and staff alike
- implement cost-effective measures such as launching a competition to design postcards raising awareness of turning lights and computers off
- consider implementing a server shut down system on all IT equipment
- research The Carbon Hub and persuade your local authority to get involved.

Local Authorities must consider:
- Implementing The Carbon Hub in their county
- introducing a Sustainable Newsletter to all schools (via post or email) explaining energy efficient methods that they could implement in their school at a low cost. Suggestions must consider the age of the various schools in question and issues such as asbestos
- begin workshops and classes on funding, improving sustainability, green initiatives and programmes on ***why*** schools must improve sustainability (for all members of the school community—pupils to governors)
- include pupils, teachers, bursars and governors in the energy audit process.

References —

Department for Children, Schools and Families (DCSF) (2010) *Climate Change and Schools: A Carbon Management Plan for the School Sector* [online] *www.sd-commission.org.uk/.../V2Towards_a_schools_carbon_management_ plan.pdf* [Accessed: 23rd June 2010]

Contact —
sarahsimmons99@hotmail.com for more information.



The future of sustainability and learning in the UK

Seminar by NAEE vice-president Prof. Tim O'Riordan OBE Joint seminar organised by Centre for Research in Education and the Environment (CREE) and Institute for Sustainable Energy and the Environment (I-SEE), 29th April 2011, University of Bath

Philip Sainty
Hon. Secretary
NAEE

We at NAEE have long taken the position that the concept of 'sustainability' is at least a confusing concept and at worst an exclusive one—in particular, when it comes to young people and adults' ability to relate to it. Being as it is a cross-disciplinary concept, requiring understanding of a range of related fields, perhaps we should be employing a more approachable and accessible term.

More concerning, however, may be that the vested financial and social interests of science and scientists turns 'sustainability' into a negotiation exercise whereby each faction sets out its stall and then attempts to achieve a conclusion.

To counter all this, Professor Tim O'Riordan offered 'well-being' as a concept that can galvanise our communities.

Having outlined the current state of play in the 'age of austerity', Prof. O'Riordan gave prominence to the global situation, and in particular the emerging economies of China, India and Brazil. The effects of these economies were related to globalisation, where China owns a lot of US dollars and has a not insubstantial investment in Portugal.

Central to all this was the question of how resilient we are, where 'we' refers to our specious systems and infrastructure and also those of our natural and human-made environments. Of those threats to life on the planet, reduction in biodiversity, presence of nitrogen and climate change were cited as the most hostile. But added to these were the oft forgotten and dangerously immeasurable bioaccumulative toxics, which may prove to be major threats to our species and of which, by accident or design, we know little about the long-term effects.

These three or four limits may have passed tipping points. And an estimate of four years was offered for the time left in which we can reverse the worst of these impacts. While this was not contradicted by those in attendance some feeling was expressed that setting time limits is something people do not seem to respond to.

But whether or not this planet is non-resilient to these threats is maybe not as central a question as whether or not humanity's systems are actually too-brittle structures. For example, there's a good deal of evidence to suggest that a solar flare in 2012 may be enough to knock out GPS for hours, or even days. Given that much of the global economy, not to mention defence, is entirely dependent on GPS, this could have catastrophic consequences for humanity.

Could we therefore be heading for GAIA 3—the state in which the planet exists without the presence of humanity; or at least a humanity that exists in much-reduced numbers?

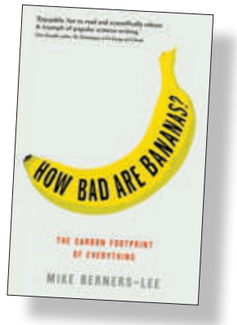
And are our social and economic structures themselves non-resilient, in respect of the fact that they reinvest in what are already fragile structures?

Is so-called 'green growth', in the form of green technologies, and their ability to contribute to sustainable development, good enough? Could they actually produce pressure points—in terms of social cohesion (migratory populations), economics and defence—which we are not able to fully recognise or respond to? Our institutional designs, dictated as they are by a form of global 'group think', may not be robust enough to get us out of the environmental catastrophe that almost certainly awaits us.

What may be needed is not only a rethink of the way we organise our systems but the way(s) in which we who care begin to communicate our approach to sustainability. It is a holistic concept which crosses many disciplines, and perhaps limiting the discussion is counter-productive. To expand the discussion and move forward, we need to establish a common financial and linguistic language, which focuses on our communities—local, national, global— and allows us to deal with the challenges ahead. That requires a foundational experience of 'the environment' and that is the role of schools, as hubs of their communities and, more specifically, a commitment to the reintroduction of environmental education.

Book Reviews

How Bad are Bananas?
The Carbon Footprint of Everything



Mike Berners-Lee
ISBN 978-1846688911
Profile books
304pp, £8.99

To quote Bill Bryson: "Fascinating, useful and enjoyable all at the same time."

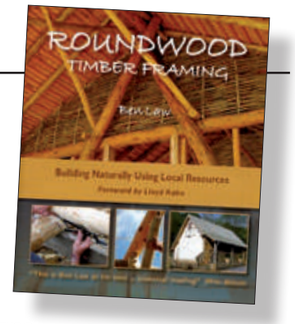
The book is a culmination of a gem of an idea from several years ago when the author was employed by Booth's, our local 'up-market' NW regional supermarket. It's the nearest you probably need to get to the hard facts on the global footprints of, if not everything, certainly most things you'll know about, use, or might use, including your own birth and death. Mike points out that our ability to measure Carbon Footprints is as developed as man's ability to map the Earth shortly after the time we'd discovered it wasn't flat. He studies around 100 items in detail to develop our "carbon instinct" so that we can make a reasonable guess at anything and everything.

Starting with trying to define a working definition of a carbon footprint Mike has included the carbon dioxide equivalents of other harmful gasses such as methane and the small but 300 times more potent gas, nitrous oxide. He then tries to put our concerns into perspective. There are many decisions whose implications are so small in comparison to the big issues, for example the difference between using a paper towel or an air drier, that they are hardly worth thinking time. These are set out in ten sections starting with actions and items that have minimal carbon usage of under 10gms, and concluding with one-million-ton ones. Our average person is allocated 10 tons of carbon use per year. Use more and you need to do better, less and you can indulge in a little self satisfaction.

An excellent book for composing pub quiz questions, starting arguments and improving your ability to help the Planet!

David Fellows, *NAEE executive*

Roundwood Timber Framing
Building naturally using local resources



Ben Law
ISBN 978-1856230414
Permanent Publications
168pp £19.95

Like many people, I first heard of Ben Law from a particular episode of Grand Designs on TV in 2003. I was very impressed with the woodland house he built, the timber used and construction methods. This new book, *Roundwood Timber Framing* gives a greater insight into the whole process. As a woodsman, permaculturist and author Ben's approach is very practical. The text is easy to follow, with high quality photography and clear captions explaining the stages from sourcing suitable living wood in nearby woodland, to building a roundwood timber frame house that sits comfortably in its natural surroundings.

Using local wood reduces the carbon footprint of the building and does not use polluting timber preservation. Using roundwood has a further advantage as its strength is greater than that of sawn wood. Using roundwood from coppice means that the tree regrows to produce more wood for future coppicing. The process of managing a coppice is examined in Chapter 2. The strength and specific characteristics of different woods are discussed in Chapter 3; each has a different role within building construction. Chapter 4 explores the use of hand and power tools. In Chapter 5 the author goes into detail about construction with roundwood timber, continuing into Chapter 6 with Chapter 7 showing some of the processes used in specific buildings. Not only can Ben build with roundwood, he can communicate the information clearly and his many years of experience are evident in this book.

For me as a teacher, the book generated ideas for projects with pupils in KS2 (ages 7 to 11). Pupils can look at properties of different woods—which ones have easy-peel bark, flexibility or brittleness, softness and hardness. Pupils can try and construct a model house frame (perhaps 30 cm high) using illustrations from the book as a guide. But first, they will need to go out into woodland to see coppice and standard trees, while collecting wood they can use. Learning outside the classroom can be a valuable experience. This book could inspire youngsters and adults to create sustainable buildings of the future.

Alona Sheridan, *NAEE executive*

Website Reviews

WEB WATCH 17
Climate and Climate Change 2

Compiled by **Henricus Peters**, *NAEE Co-Chair*

Continuing our focus on some recently updated websites on climate change.

National Oceanic and Atmospheric Admininstration (NOAA)

www.research.noaa.gov/education/#climate
A very useful site with many good elements including a Question and Answer page developed in response to an email from a teacher at a school for children with learning disabilities who were studying Antarctica.

Budburst Buddies
www.neoninc.org/budburst/index.php

Activities for kids including meeting plants and observing how plants can 'tell a story' and respond to climate change.

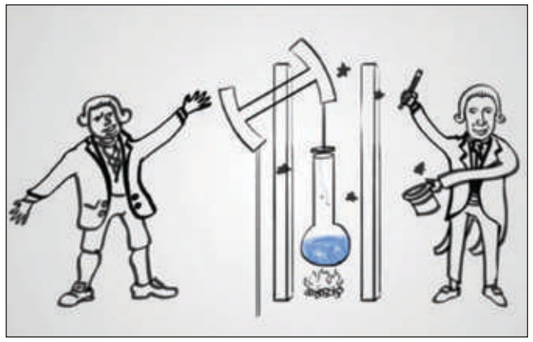
Global Climate Change: NASA's Eyes on the Earth
http://climate.nasa.gov

More from the site produced by the Earth Science Communications Team at NASA's Jet Propulsion Lab. This Portal has links to many great resources sites…

http://climate.nasa.gov/kids
http://climate.nasa.gov/kids/educatorResources

A wide range of useful resources, including images and activities and an 'educators' bridge from the National Centre for Atmospheric Research

300 years of fossil fuels in 300 seconds
www.youtube.com/watch?v=cJ-J91SwP8w&feature=player_embedded



A quick and simple, yet fun, resource to quickly relate to young people and adults how we came to be in the situation we're in.

Environmental Protection Agency Climate Change Kids Page
www.epa.gov/climatechange/kids/index.html

The page focuses on the science and impacts of global warming or climate change, and on actions that help address climate.

Readers Responses:
To share top websites for this page, contact *henricus.peters@gmail.com* or "*LearnFromNature*" on twitter.

National Association for Environmental Education (UK)

University of Wolverhampton, Walsall Campus, Gorway Road, Walsall, WS1 3BD
Tel/Fax: 01922 631200 • e-mail: info@naee.org.uk • Website: www.naee.org.uk

NAEE's new international partner

The Jane Goodall Institute-Shanghai Roots & Shoots was founded as a volunteer organisation in November, 1999. Five years later, in November, 2004, Shanghai Roots & Shoots was granted Non-Profit Organisation status by the Shanghai City Government.

Shanghai Roots & Shoots believes that the future is in the hands of the world's young people. The program is committed to the understanding and preservation of wildlife and our living world through the education and empowerment of our youth. It aims to foster respect and compassion for all living things, to promote understanding of all cultures and beliefs, and to empower and inspire individuals to take action to make a positive difference in our world.

Roots & Shoots activities focus on the three areas of the program:

1. care and concern for the environment
2. care and concern for animals, and
3. care and concern for your community.

For more details about Shanghai Roots and Shoots, contact our Co-Chair in China:
henricus.peters@gmail.com