The UNEP Magazine for Youth

TUNZA

UNEP

for young people · by young people · about young people

Your planet needs YOU!

Copenhagen countdown

Save Jaws!

Diverse harmony

Trash to treasure

Growing together

TUNZA
the UNEP magazine for youth. To view current and past issues of this publication online, please visit www.unep.org

United Nations Environment Programme (UNEP)
PO Box 30552, Nairobi, Kenya
Tel (254 20) 7621 234
Fax (254 20) 7623 927
Telex 22068 UNEP KE
E-mail uneppub@unep.org
www.unep.org

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Director of Publication Satinder Bindra
Editor Geoffrey Lean
Special Contributor Wondwosen Asnake
Youth Editors Karen Eng, Joseph Lacey
Nairobi Coordinator Naomi Poulton
Head, UNEP's Children and Youth Unit Theodore Oben
Circulation Manager Manyahleshal Kebede

Design Edward Cooper, Ecuador
Production Banson
Front cover photo Robert vanWaarden

Youth Contributors Eugina Capalbo, Argentina; Chan Sze Meun, Malaysia; Claire Hastings, Canada; Paulina Monforte Herrero, Mexico; Ruchi Jain, India; HyunJin Jeon, Republic of Korea; Nelson Kamau, Kenya; Ely Katembo, Democratic Republic of Congo; Carlos Bartesaghi Koc, Peru; Sinead McNamara, Ireland; Rose Maria Laden Nielsen, Denmark; Maurice Odera, Kenya; Elizabeth Akinyi Odhiambo, Kenya; Rohit Pansare, India; Samuel Lim Yong Peng, Singapore; Jason Rozumalski, United States of America; Hodei Rubio-Lacey, Ireland; Lívia Maria dos Santos, Brazil; Sara Svensson, Sweden; Ramanathan Thurairajoo (NYAA GAHA Exco), Singapore.

Other Contributors Jane Bowbrick; Duncan Bridgeman; Jamie Catto; Pooran Desai, BioRegional; Mark Eng; Elizabeth Girmaye, Timret Le Hiwot; Richard Harvey; Joseph Jagero, MYSA; Liza Malm; Sara Oldfield, BGCI; Mike Rutzen; Rosey Simonds and David Woollcombe, Peace Child International.

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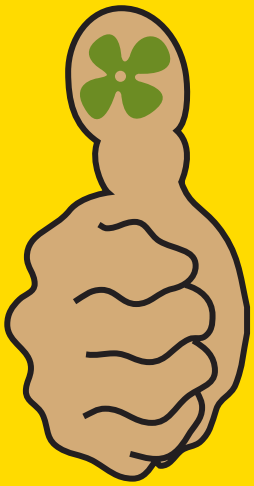


COOL & COOLER

COOL: It takes more energy to bring a pan of water to 100°C – i.e. boiling – than it does to heat a small room from freezing to 21°C. So it saves energy to cook one-pot meals – like stews, soups and stir-fries with chopped ingredients, which take less time to cook. And it saves on the washing up, and the energy used to heat the water for it.

COOLER: Even more energy can be saved by just boiling food briefly, removing it from the heat and letting the hot water do the rest. And it enhances flavour too. A recipe? Here's whole poached Chinese-style chicken. Cover the chicken with water, put the lid on, bring to the boil and simmer for 15 minutes. Turn off the heat and leave the chicken to poach in the water for one hour, keeping the lid on to prevent heat loss. When the chicken's juices run clear when pricked, drain off the cooking broth and save it for soup. Chop and serve on rice with a dressing of minced spring onion, ginger and oil.

COOLEST: Many foods – like vegetables, seeds, fruits, nuts and cereals – are great eaten raw. Nutritionists say they are often healthier that way too. And eating raw foods can have a big impact on a family's energy consumption.

COOL: Starting a no-plastic-bags campaign in local shops.

COOLER: 'Carrotmobbing'. What? It's a new idea for getting lots of people (the 'mob') to reward good commercial behaviour (the 'carrot' as opposed to the stick) – for example when a shop promises to devote part of its proceeds to environmental improvement and is rewarded by customers spending to support it. The first 'carrotmob event' took place in San Francisco in 2008 when environmentalist Brent Schulkin arranged for consumers to flock to a grocery store that promised to invest 22 per cent of the day's sales in energy-efficiency improvements.

EDITORIAL

Tackling climate change presents a curious paradox. It seems so big and overwhelming a task that it is hard to see how anything we do, as individuals, can possibly have any effect on bringing it under control. And yet the truth is that unless we, in our hundreds of millions, take simple actions to reduce our carbon footprints, there is no chance of being able to save the climate in which human civilization has grown and flourished. The trouble is that – since such a vast collective effort is needed – it is all too easy to do nothing until everyone else acts. But that would be a recipe for disaster. As UN Secretary General Ban Ki Moon puts it: 'We are on a dangerous path. Our planet is warming. We must change our ways.'

Of course governments must introduce the measures that make it easier for us to do the right thing, and remove the perverse ones – like subsidizing energy or energy-intensive practices – that keep us in bad habits. They must reform tax systems and other financial incentives to make it more profitable not to pollute. They must introduce regulations, where necessary, to curb destructive practices and products and establish binding targets to ensure that global emissions of greenhouse gases are rapidly and permanently reduced. And, above all, they must reach a comprehensive new agreement at December's crucial climate change negotiations in Copenhagen to avert the dangerous heating up of our planet.

But, in the end it is down to us. Never before has it been so imperative that we observe the old maxim that we should 'be the change we want to see'. It starts with reducing our own impact on the planet, not least by eliminating wasteful use of energy. It may go on to mobilizing others to take action or mount campaigns. This issue of TUNZA contains examples of both. We must all – and not just our leaders – UNite to combat climate change.

Countdown to **Copenhagen**

Negotiations for a new treaty to combat climate change culminate in Copenhagen, Denmark, in December 2009. We asked TUNZA readers what they are doing to prepare for it.

Rose Maria Laden Nielsen, Denmark, says:
'Being the host country of the meeting – which could change human activity – places a large responsibility on the Danish people. But we are ready, and there's excitement in the air. The world will see our efficient heating and waste-to-energy systems, our energy-conserving households and industry, some of the world's highest fuel taxes and – not least – our iconic wind turbines. But our coal-based energy generation, diesel-powered public transport, and increasing private car ownership and meat production and consumption will also be exposed.

Copenhagen is already preparing for a huge influx of young people from around the world. So far, four Danish ministries have coordinated meetings in preparation for the youth events and statements on action, trying to get an overview of what young people are planning and to make sure they have opportunities to network and a forum for discussion. Forty-eight representatives from youth climate-change initiatives, most of them Danish or European-based, have attended.

Many groups across Europe are well organized, whether in preparing statements for politicians, in planning informative events or simply in building networks. Youth Climate Conferences, for example, is holding 50 workshops across Europe, involving 20,000 young people. Nature & Youth is engaging pupils in schools and establishing a structure for the international youth climate movement's participation. All this is likely to culminate in a meeting in Copenhagen to coordinate youth statements and events during the weekend before the conference opens.

My hope is not just for an agreement strong enough to cut greenhouse gas emissions, but for one that does not neglect biodiversity and human rights. Sustainability and ecological justice are both important if any accord is to succeed in the long term. But I do have faith that my country will do its very best to ensure that an ambitious climate agreement is reached.'

Ely Katembo, Democratic Republic of Congo, says:
'As a youth delegate at last year's negotiating conference in Poznan, Poland, I was often asked what I thought were the most important things to consider in achieving a new agreement. My answer is that climate change disproportionately affects poor countries, yet African people who are directly affected by it do not even know why and how it is happening. Instead, they blame God for severe drought, hunger and civil conflict.

How do we explain to the Buduma people why Lake Chad is drying up? How do we console Batwa who are forced to leave their homes in the Congo forest? What do we tell Masaai in Tanzania about repeated droughts? What do we report to Lake Tanganyika fishermen about falling catches? Developed nations must immediately help developing ones with such education, by transferring clean technologies, and by taking measures to mitigate climate change and help people adapt to it.

Following a question I asked in a Poznan side event, environment ministers from the European Union and African nations launched a project on 'School action for sustainable development' ('l'Ecole agit pour le développement durable')

Environmental fiesta

By Paulina Monforte Herrero
Tunza Youth Advisor for Latin America and the Caribbean

S Rocker/Still Pictures

Only 12 of the world's 192 countries are home to between 60 and 70 per cent of the planet's total biodiversity. Mexico – who is hosting World Environment Day celebrations on 5 June – is high up the list. It enjoys first place in reptile diversity, second in mammals, fourth in amphibians and vascular plants, and tenth in birds. Scientists estimate that more than 10 per cent of all the world's species live in this country. Its unique topography, variety of climates and geological, biological and


RML Nielsen

Ely Katembo


IYCN Climate Solutions Project

to prepare young people to negotiate in high-level global meetings. Senegal's Ministry of Education, Energy and Environment will launch the pilot project in its country and is willing to help find a way to expand it throughout the continent.

This is an example of how the International Youth Delegation is empowering young people from Africa and other developing countries and preparing them for Copenhagen in what I call a youth-youth partnership.'

Ruchi Jain, India, says:

'This January, young people in India launched a long Climate Solutions Road Tour – a five-week, 3,500 kilometre low-carbon journey in solar-integrated electric cars and other vehicles powered by alternative fuels. We travelled through 15 cities, launching a movement for action and making films about groundbreaking climate solutions we found along the way – including biogas, rainwater harvesting and dry waste recycling. We conducted leadership training, motivating young people to take action locally and lobby for global decisions.

This is just a tiny part of what is happening among Indian youth. There's a wake-up call in every city – many small pockets of people conducting climate leadership programmes, bicycle rallies, green concerts, eco-art festivals, green careers awareness workshops and a '350 awareness campaign' (350 parts per million being the level of atmospheric carbon dioxide some leading scientists say is the safe upper limit). The aim is to make everyone in India aware of climate problems and solutions as the clock ticks towards Copenhagen.

There are 700 million young people in India. We need to take matters into our own hands and stand for the change we want in the world.'

K Thomas/Still Pictures

cultural history have enabled such rich diversity to evolve.

Nonetheless, Mexico has many challenges ahead on the road to sustainable development. For example, while it has one of the world's best systems of environmental legislation, better implementation is still an issue. Less than a tenth of its national territory is protected by local or federal legislation, resulting in loss of biodiversity. There is serious air and water pollution in its big cities, as well as widespread land degradation and poverty.

I am happy that Mexico will host this year's international celebrations of World Environment Day. They will be important for Mexico as it stands in the spotlight, helping to focus attention on the problems yet to be solved in my country, as well as highlighting its riches.

The Natural Resources and Environment Secretary has announced that children and young people will have a prominent platform to express themselves and be heard. This opportunity is yours, too. Please share with me (kaayuj@yahoo.com.mx) any ideas or experiences about how to contribute to the celebration. We want to achieve strong and meaningful child and youth participation, not only to mark World Environment Day, but as the first step towards our presence at the Copenhagen conference. Thank you … and if you are nearby, come and join us. *Serás bienvenido!*

Trash to **treasure**

Bee hotel

Bees provide invaluable service, pollinating trees, plants and flowers. But bees are under threat. There are many theories why, including mobile phone waves, pesticides, fewer wild flowers, predators and disease. Many of the crops and fruit we rely on depend on pollination by bees, and their loss would cause massive disturbances to global food supplies.

The good news is that we can help by providing extra habitat. It's easy to encourage bumblebees, which breed in long grass: simply leave tufts of uncut grass in isolated areas of the garden. To encourage mason bees, build them a nest where they can lay eggs.

1. Find some hollow sticks or twigs or use bamboo.
2. Cut both ends off a plastic drinks bottle.
3. Loop some string through the sides of the bottle to form a handle.
4. Pack the cut stems tightly inside the bottle.
5. Hang in a sheltered south-facing area near a food source, like a flower or vegetable patch. Bees will fill the hollow sticks with eggs, which hatch in spring.
6. Wild mason bees rarely breed in the same place twice, so move the nest around and replace the sticks every couple of years.

Karen Eng

Hip sack

Don't throw out those old jeans! Try making this durable bag with ready-made pockets instead.

1. Making sure that the jeans are laid flat and all the edges are even, cut off the legs about 6 cm below the crotch. Put the legs to one side.
2. Take the remaining "shorts" and turn them inside out.
3. Measure 3 cm from the lower edge of the leg openings to turn up a hem, and iron in place.
4. Holding the front and back of the leg openings together, sew the lower edges tightly.
5. For the straps, take the discarded legs of the jeans, and cut along each side of the side seam from the lower hem to the top of the leg. Do this with both legs.
6. Sew the ends of the two seam strips to the waist of the jeans, two on each side.
7. Customize your bag by adding belts or badges.

Karen Eng

One **Planet** Living

Marcus Lyon

ONE PLANET LIVING®

Buildings contribute more than anything else to global warming worldwide. They are responsible for just under half of all Britain's emissions of carbon dioxide, for example. The proportion in the car-bound United States may be a little lower, at 37 per cent, but this still accounts for 10 per cent of the world's carbon dioxide emissions.

Now governments are insisting that new buildings must be eco-friendly. All new homes in Britain, for instance, must be zero carbon by 2016; other new buildings shortly afterwards. But some pioneering organizations got there first.

One is BioRegional, which concentrates on building 'One Planet Communities'. The concept comes from the fact that, as co-founder Pooran Desai puts it, 'to live healthy, happy lives, we have the resources of one planet, not the three we'd need if everyone consumed like the average European'.

BioRegional started with building BedZED, a community of 100 homes – together with workplaces and community facilities – in south London. Completed in 2002, it is still Britain's largest eco-village, with energy-efficient buildings, renewable energy generation, water recycling, sustainable transport – including London's first car club for sharing

This World Environment Day, why not try your hand at making something useful out of what others don't value? Here are a few ideas to get you started. Email us your favourite ideas with instructions and a photo. We'll pick the best to feature in future issues of TUNZA.

Bike park

Tired of bikes falling over? Try this tidy solution. One small pallet (pictured) holds four bikes – two on each side. Good for home, club or school.

1. Find a pallet. Local shops throw them out, as do some warehouses.
2. Find old shelf brackets.
3. With screws, attach the shelf brackets to keep the pallet upright. Two on one side and one on the other gives good stability.
4. If necessary, saw a little way into the frame to make slats long enough to fit your bike wheels.
5. You can now park your bikes by pushing the front wheel through the slats.

Karen Eng

Jar shelf

Make more efficient use of storage space with old glass jars.

1. Using two screws per lid, attach as many lids as you want to the underside of a shelf.
2. Fill the jars and screw them into the lids.

Karen Eng

vehicles – and deliveries of local organic food. Its homes use 90 per cent less heat and half as much water as the country's average.

Desai, who lives in BedZED, admits that not everything has gone right: its wood-fired heat-and-power plant, for example, hasn't worked. But, he adds, 'the lessons learned from BedZED will inform One Planet Community projects across the world – from South Africa to China and from Portugal to the United States.'

One Planet Living is now an international initiative based on 10 principles of sustainability developed by WWF and BioRegional. 'The aim,' says Desai 'is to make it easy for people to make green choices and increase quality of life.' Other projects have helped the home improvement chain B&Q launch almost 2,000 sustainable products, and developers and construction companies buy greener construction materials, products and services.

'Green homes are becoming more affordable,' says Desai. 'For the first time, property development companies are building a community – One Brighton in the United Kingdom, which will include rooftop vegetable gardens – within normal construction costs.

'But you don't have to wait for a spot in BedZED to start living sustainably,' he concludes. 'After meeting basic needs like food and shelter we need to consider what really makes us happier: trusting our neighbours, or competing for the latest gadget or pair of shoes?'

www.oneplanetliving.org

BioRegional

Growing together

J Rozumalski

J Rozumalski

N Kamau

They are two young men – half a world apart geographically, culturally and economically – who share the same passion, and have put it into practice. Both have created community organic vegetable gardens in public spaces. Jason Rozumalski, while a student at King's College, Cambridge, got many enthusiastic graduates growing vegetables in a plot on the edge of the Fellows' Garden, for 150 years a secluded retreat. Nelson Kamau, chairman of the Nairobi South Youth Group, cultivates small parcels of donated land to help meet the need for affordable food in the slums of the Kenyan capital. Both believe in the benefits of gardening as a community, and of and growing and eating your own food.

Tell us about your community vegetable garden project. How did it start?

Jason: Long hours in the library were giving me a Vitamin D deficiency, so I wanted time outdoors. But mainly I wanted to create a space where students could enjoy each other's company outside of academia or pubs. I petitioned the King's College Garden Committee, who provided space in the elegant Fellows' Garden, and the King's College Graduate Society offered £200 ($300) for seeds and tools. From there, it took some organizing, some trips to the garden centre, and long days digging. Now our garden of just under 30 square metres is cultivated and harvested collectively by graduate students. I have since finished my time at King's, but the plot still provides sustainably grown, organic vegetables for any student who wishes to root about.

Nelson: The Nairobi South Youth Group had been collecting, sorting and composting organic waste. We realized we could use the compost to grow organic produce that could be sold inexpensively, creating wealth and health from garbage. After members attended a meeting with the agriculture and health officers in our district, we also realized that the most vulnerable people in our community – orphans and people living with HIV/AIDS – need fresh vegetables. I talked to some of our parents, who donated land, and we held car washes to raise money for seeds and tools. In the bigger picture, we are trying to change the mentality of how people view garbage, showing its positive aspects by using it to produce food and income while cleaning up the environment. We are mostly growing kale, which is a fast-growing, staple vegetable in Nairobi.

What kinds of challenges or obstacles did you encounter?

Nelson: Large pieces of land are not readily available in Nairobi. So our project grows vegetables in whatever small spaces we can find, convincing people to donate unused land – front yards, and so on. Lack of running water is a problem too. We are also legally required to get a licence to farm in the city, which takes time and money.

Jason: Our biggest problem is continuity. No student can stay long-term to garner knowledge about what works in that particular space. And those involved are often working at desks or in labs, leaving little time for the garden, which needs nurturing.

Were the people around you surprised? Supportive?

Nelson: In the beginning it was difficult. The people in our community didn't want to give up the space that they were using for other activities. After we explained the concept and benefits to them, however, their attitude soon changed, and they began to support us.

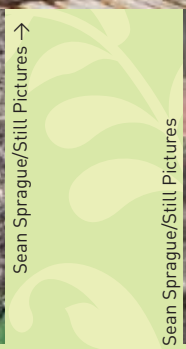
Jason: England has a vibrant and long-lived culture of so-called 'alternative agriculture', from 16th-century saffron cultivation in Saffron Walden to mid-20th-century Victory Gardens, or from 19th-century mushroom caves in London to the founding of the Willing Workers on Organic Farms programme in the 1970s. So, not surprisingly, our vegetable garden was warmly supported.

What needs were you trying to fulfil in the community? Have they been – or will they be – met?

Nelson: We are very much focused on fulfilling the need to feed the orphans and people living with HIV/AIDS by providing them with the vegetables we grow. This has not yet been fulfilled but we are still focused and determined to make it happen.

Jason: Only one thing consistently makes people happy: just being with others and a feeling of belonging. The vegetable garden provides a space where people can learn from, talk and play with each other, and provide each other with food. As a social project, a community vegetable garden helps people invest in one another. I don't think that participants necessarily think this way, but the social bonds are there.

J Rozumalski



Sean Sprague/Still Pictures →

Sean Sprague/Still Pictures

Why do you think it's important for people to grow their own food?

Nelson: Growing your own food gives you confidence about what you are eating without worrying how that food was cultivated – what kind of manure was used or whether the irrigation water was good, for example. These are issues in Nairobi because some urban farmers use sewer water for their vegetables.

Jason: Growing one's own food is great, but it is more important for consumers to move the market toward supporting local farms that provide a spectrum of high-quality produce, including heirloom and regional varieties, with minimal use of synthetic chemicals or genetic modification, and minimal transportation. When people get to know the farms and the farmers that provide their food, social, economic, environmental and personal benefits all follow.

Why is it important for you to grow organically?

Jason: When farmers use organic practices, foods have more flavour and nutrition, soils are richer and more complex, water runoff from fields is cleaner – and all of this means that people and the environment are healthier. But 'organic' farming doesn't solve all environmental problems related to food production. It does not, for example, account for the release of carbon gases in food cultivation and transport. And it makes little environmental sense – although it can make economic and political sense – to buy organic foods that have travelled across the world.

Nelson: We encourage organic farming because of its health benefits. Our vegetables are primarily for feeding sick and vulnerable people who need healthy food more than anything else.

In what ways do your vegetable gardens help the local environment and reduce pressure on the planet as a whole?

Jason: The positive environmental impacts begin with creating a healthier soil structure – via the root systems of our vegetables, composting and nitrogen-fixing winter crops – which in turn promotes soil nutrition, helpful microorganisms and worm populations. Synthetic fertilizers had been used on the land when it was a lawn, so we have improved the cleanliness of the runoff that goes into groundwater. We have also reduced demand for transport, fuel consumption and packaging.

Nelson: Our vegetable gardens help our community environment by reducing and reusing local garbage. We have created a site for composting both the organic waste we collect and the organic waste left from the agriculture project.

Is it easy to grow your own vegetables? Do you have any tips?

Jason: There's much to learn about how to care for plants: diseases and pests, when and how to plant, pH levels, how much water, sunlight and space you need. But plants just want to grow! The best thing is to learn from gardeners and farmers around you, and read about different cultivation techniques – then start your own plot and experiment.

Nelson: Growing vegetables is not difficult if you are focused and prepared. Anybody can do this kind of project.

What's your next step?

Nelson: Our next step is to overcome the challenges that face us: land and water availability, skilled labour and so on. We are committed to developing our gardens, so we must continue the work. Our plans are to start even more gardens once the pilot project gets off the ground.

Jason: My next step is to grow organic vegetables for an artists' residency centre in the Adirondack Mountains of New York during the 2009 growing season. I'll be responsible for providing produce for a community of around 20 artists. The vegetable garden at King's College remains in capable hands, and I am very happy to say that its future looks bright and bountiful!

Q & A

Q Should the environment take second place to economic concerns until the recession is over?

A Absolutely not. The coming climate crisis – which will have far greater effects than the present economic one – means we have no time to lose: we have to increase our efforts, not reduce them. Just as important, the recession can be turned into something positive: the creation of the clean and green economy of the future. Now is the time to shift from unsustainable forms of consumption and development, and start investing in sustainable natural resource use, conservation and clean technologies. This is the best way to create new growth, as green technologies and practices employ more people than polluting ones and offer the best chance of sparking a new cycle of innovation. That is why UNEP has been calling for a global Green New Deal, a concept that is increasingly being taken up by governments worldwide.

Q How will people suffer from the global climate crisis?

A This is going to be a long list touching every aspect of our lives and the very means to sustain our survival on the planet. The most commonly agreed impacts include sea level rise; extreme weather events, floods, droughts and forest fires; reduced harvests; the spread and resurgence of diseases; disruption of water supplies; internal and cross-border conflicts, migration and displacement of communities, to name just a few. But while human activity is responsible for the crisis it can also offer solutions, from reducing energy use to using our human ingenuity to advance renewable technologies.

Q Do we need to lower our quality-of-life expectations to combat climate change?

A Not at all. The challenge is to address our unsustainable life-styles – tackling the conflict between healthy living and material overconsumption. And this often improves the quality of life. Take the choice between increasing driving and using alternatives such as public transport, cycling or walking. Besides emitting carbon dioxide, cars cause unhealthy air pollution. But cycling and walking increase personal fitness and energy, resulting in greater productivity in the work place, better performance in schools, and healthier and happier citizens.

Q What is the priority in combating climate change – adaptation or mitigation?

A Adaptation and mitigation serve two different but equally important and complementary purposes. Adaptation focuses on adjusting and responding to the effects of the change that is already inevitable, and mitigation on trying to stop it getting worse. The agreement to be forged in international negotiations in Copenhagen in December has to provide strong and equitable packages for both approaches.

Q How does a cap-and-trade policy for carbon credits benefit poorer companies or individuals?

A Cap and trade's main objective is to limit carbon emissions by providing companies with fixed allowances that they can trade. Those that reduce their emissions below their allowance can sell what they do not use to companies who go over the limit. So companies that clean up make money, while those that choose to go on polluting are penalized. A similar system of personal allowances, which would work in much the same way, has been proposed for individuals, though it would be much more complicated to administer. In both cases the benefits go to those who emit less rather than those who earn less. As the poor usually pollute less than the rich, the personal scheme would tend to help them.

Q How can I apply to participate in Tunza events, UNEP events and World Environment Day activities and campaigns?

A UNEP is at the forefront of engaging young people in environmental activities; fostering the next generation of environmentally conscious people 'to treat the planet with care'. Log on to www.unep.org/tunza to discover exciting projects, activities and campaigns for, by and about young people. To participate in WED events, log on to www.unep.org/wed for a wealth of information on how you can get involved.

Garden shelters

Botanic gardens may seem to be quiet places, but there is more going on than you might think, as Sara Oldfield, Secretary General of Botanic Garden Conservation International, explains.

G Bril/UNEP/Topham

BGCI

All life on Earth depends on plants, but around a third of all plant species are threatened and climate change is adding to the danger. Though it's difficult to pinpoint a single reason for any extinction, we do know that climate change is happening so quickly that plants won't have time to adapt or move. Hawaii, for example, has a fantastic diversity of plants specially adapted to its low-lying terrain. Where will they go as sea levels rise?

Even plants that now appear to have no ecological use or benefit to people – for medicine, food or shelter – might become incredibly important with big shifts in climate, or as our needs and knowledge evolve. Foresters in the Pacific Northwest used to fell the Pacific yew, thinking it was a weed, until it was discovered to contain an important anti-cancer medicine. Preserving diversity is a kind of insurance policy for the future.

ANCIENT LINEAGE

Botanic gardens have been in the biodiversity business for almost 500 years. They started, as we know them today, for the study and cultivation of medicinal plants back in the 16th century. Then they were mainly places to try new crop species and introduce them to different parts of the world: Singapore's Botanic Garden, for example, played a big part in introducing rubber to Malaysia from Brazil in the late 1800s. Magnificent glasshouses were built to house cacti, orchids and palms brought to Europe by 19th century explorers. Now there are around 2,500 botanic gardens – half of them developed within the last 50 years – with about 800 directly related to conservation and environmental education.

Their scientists continue to collect plants and catalogue the world's diversity. And they also collect the seeds of wild plants for seed banks, which are mostly based in botanic gardens. Meanwhile, their fieldwork also teaches us about plant habitats and distribution. So, as plants become endangered or extinct in the wild, we have enough information and specimens to re-establish them. Helping to repair the Earth is potentially the most exciting thing botanic gardens can do.

The gardens are also studying ways to bring plants back from the brink even when their original genetic material is scarce. About 10 years ago, scientists from Kings Park and Botanic Garden in Australia found a single male specimen of *Symonanthus bancroftii*, a native shrub thought extinct for 40 years. Years later they found a single female plant. Taking a bit of stem tissue, scientists grew clones of these plants, artificially pollinated them and generated seeds – greatly increasing the genetic diversity of the population. Back in the wild, native insects pollinated the new plants, and there is now a thriving population once again.

CULTIVATING CARE

Of course not everyone will be worried about a single Australian shrub, but people do care about plants. Small children love growing things from seed, like mustard and cress, and in urban areas, guerrilla gardening – greening neglected public spaces – has become hip. Lots of people who end up studying and working with plants started out with a childhood interest, whether cultivating cacti, exploring their local woods or growing their own food; keeping a vegetable garden is one of the greenest things you can do. It's really important to sustain and build on this interest because plant survival will need the efforts of as many of us as possible. And that's something that botanic gardens can do.

Find out more, and locate your local botanic garden from www.bgci.org

With World Environment Day on 5 June, TUNZA invited scientists, thinkers and environmental activists from around the world to express their wish for youth in 2009. This is what we received:

Recent generations of leaders, including the present one, have let you down by largely failing to protect your environment. You must now seize the opportunities to be your own guardians of the natural heritage by monitoring and managing what really matters. Carpe diem!

Jacqueline McGlade, Executive Director, European Environment Agency

EEA

UN.org

We, the people, are pushing, if not pushing past, Earth's limits. Our planet desperately needs us. My wish for the world's youth is for you to demonstrate your courage, commitment, leadership and ingenuity as an antidote to complacency in the face of all the real and urgent environmental emergencies we face. Make your voices heard and ensure your actions make a difference.

Achim Steiner, Executive Director, UNEP

GFN

Humanity's resource hunger and ecosystem exploitation now exceed what planet Earth can sustain. Our greatest challenge – to live within our ecological means – is also our greatest opportunity. Learning to live within the means of one Earth will require the best in human spirit and engineering and promises a far more stable and peaceful global community. I wish we all succeed, because we must win, or everyone will lose.

Mathis Wackernagel, Executive Director, Global Footprint Network

WWF-Canon/E Okic

2009 can be the year in which we set the world on to a new path. As countries rebuild their economies, and as they hammer out a global climate deal in Copenhagen, they have the chance to lay the foundation for a global economy that offers prosperity for generations to come: a low-carbon economy that the Earth can sustain. My wish is that we will have the wisdom to see the opportunity, and the courage to seize it.

James P Leape, Director General, WWF International

WFC/C Kaiser

My wish to the young – of all ages – is that you make every day an Environment Day; that you help all of us to learn from the order and harmony of nature, to reconnect with the wisdom of traditional cultures, to act with commitment and courage in all we do, and to adopt low-carbon lifestyles and green, highly fulfilling livelihoods so as to prevent any further global warming, species loss, ecosystem failure and social injustice.

Ashok Khosla, President, International Union for Conservation of Nature (IUCN) and Chairman, Development Alternatives, India

Yale

The new generation in our world is going to have to lead a revolution for social justice, environmental protection and true democracy. Otherwise, the future may not be worth having. I hate to put it in such stark terms, but after four decades of work on these issues, that is my conclusion.

Gus Speth, Dean, School of Forestry and Environmental Studies, Yale University

A Hoffmann

I wish that humanity will soon wake up to the stark reality of rapid environmental loss. Leaders must get out of denial mode and address the challenges ahead decisively and with the utmost dedication. The evidence is no longer questionable. Humanity cannot flourish in a non-functioning natural world, and we do not have the time to wait for the next generation; we must act now.

André Hoffmann, environmental philanthropist

R Hume/Experience Life

My wish for 2009: that the United States becomes a world leader in solutions rather than in pollution. We can do it by creating green-collar jobs for the millions of people hungry for meaningful, family-supporting work. By creating jobs installing solar panels, retrofitting buildings to waste less energy and constructing wind farms, we can address our two biggest problems: economic downturn and ecological devastation.

Van Jones, President, Green for All

H Wirz/WWF Canon

At the World Economic Forum this year, when world leaders discussed the economic crisis, Premier Wen Jiabao cited a Chinese proverb: 'It is when you fall from a tree that you learn walking'. Right, I thought, unless you break a leg when you hit the ground! Unless we, across all age groups and cultures, engage in a rapid de-carbonization of the world's societies, we will risk just that. This is my hope and wish: a massive mobilization for a world without fossil fuels – a revolution that does not allow our politicians to waver any longer.

Claude Martin, International Sustainability Innovation Council of Switzerland

We have an unseen enemy, one that is destroying our environment, taking away our topsoil and our waters, destroying our forests and the air we breathe. This is the unseen enemy that cannot be fought with a gun, but it can be fought with a tree. So my wish is for every young person to regard him or herself as a soldier for the planet – holding a tree seedling and ready to plant it, ready to fight the environmental enemy that is more dangerous than any other.

Wangari Maathai, Nobel Peace Prize Laureate

myhero.com

JGI

Destruction of forests, especially tropical forests, creates nearly 20 per cent of the greenhouse gases that cause climate change. And it is driving many forest species to the brink of extinction. Youth have so much at stake in the climate change debate. As world leaders craft a new climate change agreement, I hope that youth around the globe will speak out for an agreement with strong provisions to slow tropical forest destruction once and for all.

Jane Goodall, UN Messenger of Peace and founder of the Jane Goodall Institute

I wish that youth will help change the political climate. On 24 October, those of us at www.350.org will be working with young people on every continent to spread the word that our leaders need to act on global warming now. We'll be rallying from high in the Himalayas to underwater on the Great Barrier Reef – and you can help in your city, town or village. Join us to help young people work for change that's big enough to matter!

Bill McKibben, www.350.org

W McKibben

DSF

Most of humanity, especially in the industrialized nations, now live in large cities where it is easy to think economics and politics are our highest priorities. We forget that nature, the web of diverse species, is the source of our most vital needs – clean air, water, food and energy. Earth is truly our Mother.

David Suzuki, environmentalist and academic

2009 offers some hope on the environmental front. In Copenhagen, world leaders will have a chance to show some courage, some determination and some vision. Their decisions on climate change will have to reflect the needed solidarity between rich and poor and between generations. Let's make sure, 150 years after the publication of* On the Origin of Species*, that we finally act like beings who are part of nature rather than mindless exploiters of nature.

Julia Marton-Lefèvre, Director General, International Union for Conservation of Nature (IUCN)

IUCN

My wish is for governments and the private sector to show leadership by urgently tackling global issues such as climate change and loss of biodiversity that threaten economic growth, poverty alleviation, livelihoods of the poor, and energy, water and food security. We need to empower action by civil society and in particular the youth of today who will be the leaders of tomorrow – youth must play their role in shaping the future.

Robert Watson, Chief Scientific Adviser, Department of the Environment, Food and Rural Affairs, UK

IISD

BAS

I wish for a world where all people are recognized for what they are: treasured and equal in every way – irrespective of race, colour, creed or ability. And for us all to realize that we live on an Earth that deserves similar respect.

Nick Owens, Director, British Antarctic Survey

Diverse harmony

It started with a simple, but harmonious, idea: London musicians Jamie Catto and Duncan Bridgeman decided to weave together the music of the world – marrying unity with diversity.

They spent seven years travelling to 50 locations across five continents, often outdoors in stunning landscapes, with just a laptop studio and a digital video camera. They recorded some of the world's most celebrated artistes – like Baaba Maal, Lila Downs, Asha Bhosle, Michael Stipe, Oumou Sangare and the Mahotella Queens – and many lesser-known and folk musicians such as Tuvan throat singers, Chinese rappers and Gabonese pygmies. All of the musicians listened to those who had performed before them, and improvised over several original tracks. The pair also sought out thinkers and writers – including Noam Chomsky, Ram Dass, Deepak Chopra, Anita Roddick and Kurt Vonnegut – weaving into the music their insights on universal themes like greed, love and death.

The result was two films: *1 Giant Leap*, nominated for two Grammy awards in 2003, and *What About Me?*, which won Best Documentary at the 2008 Red Rock Film Festival. These tapestries of music, imagery and ideas – which leave viewers with a sense of the harmonious potential of the human family – are thought-provoking demonstrations of how all people are plagued by the same fears, but share the same hopes.

TUNZA caught up with Jamie and Duncan on *What About Me?*'s global tour of screenings, and asked them to reflect on encountering new landscapes, making music in nature, and the power of art to make a difference.

Photos: 1 Giant Leap

What amazed you most about the natural world?

Duncan: I'd never been to a desert before, and I'd never been deep inside a rainforest and heard the orchestra of insects and birdsong right the way across the whole tropical band of the world every night.

Jamie: What blew me away everywhere, especially in Africa, was the ability to see the Earth's horizon. Experiencing nature is healing. We don't just need Earth for clean water or fertile soil. We need it because we ARE it – we are 70 per cent water. I see environmental destruction as a symptom of a deeper problem: we don't respect nature because we don't respect ourselves.

What about the power of music to transmit ideas and bring people to greater understanding?

Jamie: Music connects people. At a gig you'll have people from all walks of life sharing an experience – and connectivity is the key to contentment.

Duncan: It's the only common language. No matter how different we think our musical forms are, it's just rhythm and harmony. Once you get in time or in tune with someone, you reach a level beyond words. That's why, all over the world, we listen to each other's music. Music transforms attitudes and relationships organically, between individuals.

You collaborated artistically with many who had nothing. Did this change your perspective? Has it made you want to 'make do' with less?

Information on *What About Me?*, including a preview, is at www.whataboutme.tv

Jamie: I have never been a Ferrari guy anyway. It's a paradox: truly poor people are not plagued by the anxiety of aspiration and so have a quality of generosity which is humbling. At the same time, they have no clean water, which isn't OK.
Duncan: In Lake Lugu, China, people have nothing. But I've never seen anyone so happy. In Los Angeles, everyone is anxious and confused by the number of options. The problem is the extreme distance between the 'haves' and 'have nots'. But I saw that most of what I think I need to be a success isn't really important to my fundamental happiness.

How were you able to record without plugging in? Did you use solar power?

Duncan: We used 12-volt rechargeable batteries, which run our mini-studio for around five hours. It's a matter of keeping the screen turned down, being conscious of the energy used. This allowed us to record everywhere – in forests, in the desert – making a huge difference to the character of the music. You'll hear a lot of birds, crickets and cars. It'd be great to use solar panels someday, but right now we'd need too many.

What have you learned from your encounters with people about human nature, and our capacity to get through global crises like climate change?

Duncan: I learned that the world's problems are not about huge numbers of people 'out there', but about you and me. We all have to take responsibility for ourselves first.
Jamie: By nature people love to join up, cooperate, build and be victorious together. They just sometimes need reminding that they could actually change things tomorrow if they stood up to be counted.

What would you say to young people who want to try something creative, or those who'd rather plant a tree than make art?

Duncan: Just do it! The job is to make people aware that you can make a difference, however small. Make a film about planting the tree. Or write a song. Even if you only reach two people, you've made a difference.
Jamie: Don't try to persuade by using bad news. Entertain, inspire, amuse. Pleasure is transformative.

MYSA

A SPORTING CHANCE

By Maurice Odera

Just 22 short years after it began as a way of teaching young people about the environment, the Mathare Youth Sports Association provides five members of Kenya's national soccer squad, which is vying to qualify for the 2010 FIFA World Cup. And it has given birth to one of Kenya's current Premier League teams, Mathare Youth.

It all began in 1987 when Canadian Bob Munroe saw young kids playing football in Nairobi's sprawling Mathare slum, with no equipment or structure. He founded MYSA with five boys' teams, which he personally equipped with proper soccer kit.

But for him, it was always more than a sports club. The slum, which has a river running through it, is one of the most polluted and environmentally degraded areas of the Kenyan capital. It serves as a gigantic dumpsite, and the council provides no rubbish collection and disposal. Munroe set out to empower young people by teaching them the importance of environmental conservation.

In the MYSA Soccer League, points are awarded to teams and individuals not just for winning games, but also for dedication to community activities. Teams that complete clean-ups are awarded 6 points in the league standings and individual players get 2 points for each one, increasing their chances of winning a leadership award and enabling them to qualify for the league playoffs. A leadership training programme turns the young sportsmen into community leaders who encourage their fellow youth to look after their environment.

MYSA – which has both boys' and girls' teams – is also involved in HIV awareness campaigns and in re-uniting lost children with their families, and it recently started a Kids with Disabilities Project. All programmes are youth led, owned by the community and designed to build the capacity of young people in the slum. It gives outstanding soccer prospects – like 15-year-old Muindi Musembi and 13-year-old Julita Awuor – structure, discipline, motivation and even a small income.

Joseph Jagero, 33, one of those who rose through the MYSA ranks, is now its Environmental Project manager. 'I remember clearing a dumpsite and turning it into a pitch in 2000,' he says. 'It's still in use today, giving me a rush every time I see a game being played there.' He adds: 'My career path would for sure have been different if it hadn't been for the training I received as a young boy in MYSA.'

He goes on: 'The "beautiful game" has the ability to bring people together, creating bonds that know no bounds. We hope we can empower our members to face the challenges that life throws at us all. MYSA has been, and continues to be, the source of hope to many, many young people.'

Action stations

Four young people from around the world describe their grassroots work to make a difference.

Chan Sze Meun, **Malaysia**

We all know the mantra of the 3Rs – Reduce, Reuse and Recycle. But what if this isn't enough? When I was at university, a waste-management professor introduced me to a new concept: the 5Rs, which adds Rethink and Refuse to the traditional three. These two extra Rs actually deal with the root cause of most environmental problems: the human mindset. Instead of finding more solutions to manage wastes, why don't we look at how we can stop generating them in the first place?

Our generation is obsessed with consumerism; our wants have become greater than our needs. Things are produced to meet our insatiable demands, only to become waste. It may be recycled, in producing something of lower quality, but eventually, it always turns into waste. Our decisions to buy stuff determine the amount of waste generated.

The 5R concept can change behaviour where the problem starts. If we rethink before buying something, we ask ourselves: 'Is this a want or a need? Will I use it frequently? Do I have other means of getting it? Can I borrow from a friend or rent it?' Flooding ourselves with such questions helps us to refuse things we do not need.

Now that I've graduated, I am working to promote this concept at my office, an environmental consultancy in Kuala Lumpur. Malaysian office workers typically buy meals from food stalls, coffee shops or cafeterias, packaged in polystyrene food containers and plastic bags which are thrown out after just one use. Inspired by a few colleagues who bring their own reusable containers, I am launching a campaign to encourage everyone at work to do the same. Even if just my office followed this practice – rethinking our behaviour and refusing to use polystyrene containers – it would cause a big reduction in the daily waste of polystyrene.

And this is only one example of 5Rs thinking. Just one person can make a big difference by embracing it, and do a lot to help the environment by simply thinking twice.

Lívia Maria dos Santos, **Brazil**

My background is in business and management but, at university, I focused my final research project on a financial tool that helps to preserve Brazilian forests – the Eco-ICMS, a law that gives part of a state's tax revenues to communities encompassing large areas of native rainforest.

It was first introduced in 1991 in the state of Paraná to support small farmers and give them an incentive not to fell rainforest for agriculture, thus protecting the forest without hurting rural people. More than 15 states have since established similar law, but there was no research that proved it really worked.

So I studied three states: two with the Eco-ICMS, and a third without it. I concluded that the states with the law increased their official preservation areas and decreased the rate of deforestation, while in some areas the native forest area actually increased: the law was not the only cause of such success, but it helped a lot. Meanwhile, the state without it experienced rising deforestation.

My next step is to present my findings to governments in states that have not yet established Eco-ICMS. The mechanism can be applied to other problems such as polluted rivers, and I believe that economic instruments like Eco-ICMS will become important ways of encouraging environmental protection. The economy and environment will play on the same team.

Luis Pinto/UNEP/Topham

McPhoto/Still Pictures

www.shaolinphoto.com

Jatesh Bhalla/Flickr

Rohit Pansare, **India**

Small actions lead to big changes. Back in 2003, a friend and I used to hang out by the butterfly-rich Lake Yeoor, near Mumbai. Seeing a lot of rubbish, we began cleaning up the area, and gathered about 10 more friends to form the Teen Nature Club. Eventually, we all grew out of our teens so we had to change the name.

Now, as Mission Enviro, we continue to raise local awareness of environmental protection. We make bookmarks out of discarded greetings cards, cereal boxes and cartons, and distribute them to show that reuse is better than energy-intensive recycling. We also make and distribute candle stands made out of old paint containers and encourage people to use the blank side of printed paper. It has made a difference: many people now think twice before throwing stuff out.

We call one of our biggest campaigns Project Eco-Ganesha after the elephant-headed Hindu god. People celebrating India's many festivals often forget what's left behind after they end. As part of Maharashtra's immensely popular Ganpati festival, for example, people immerse plaster-of-Paris idols in lakes and the sea. The plaster of Paris does not degenerate in the water, and so waste builds up preventing algae and plants from growing. Mission Enviro campaigns for revellers to submerge clay idols – which dissolve – instead, and use decorations made of recycled cardboard rather than Styrofoam.

HyunJin Jeon, **Republic of Korea**

Five of Seoul's 10 biggest carbon emission spots are university campuses. Shocked by this startling fact, Korean delegates to the Tunza North East Asia Youth Environment Network Conference – which took place in Mongolia in September 2008 – decided to hold CO_2 Zero Eco Campus competitions at universities across the country. We formed an organizing committee and went to the Korean Ministry of Environment, who gave us support and offered prizes. We launched a competition, and more than 100 teams from 50 universities applied.

The 10 best teams were awarded seed money for their projects, including car-pool promotions, a paper-recycling campaign, ideas for reducing food waste through meal coupons, and tree-planting plans. The issues in the universities differed, but most of the solutions were based on locally available resources.

The top prize went to the team from Hoseo University who got their university administration office to support a full campus eco-campaign, encouraging such practices as turning off computer monitors and car pooling. The competition was so successful that we plan to hold it every year, and share what we've learned with other youth around the world.

Charlotte Thege/Das Fotoarchiv/Still Pictures

Safety first

By Elizabeth Girmaye

GOOD HEALTH and a healthy environment go together in many ways and in Ethiopia we have been making the point in our campaign against sexually transmitted diseases. Under the slogan 'safer sex, safer environment', Timret Le Hiwot – the NGO that addresses HIV/AIDS for which I work – ran an environmental campaign in December. More than 500 volunteers – including young people – helped peel advertisements from poles and walls, collected rubbish and planted trees, complete with details of the species, in parks and along the streets. We believe that everyone should be an environmental activist and work for sustainable environmental development as well as for success against HIV/AIDS.

Save Jaws!

They are the stuff of nightmares: villains of the surf and the silver screen. Great white sharks certainly look like the terrifying and malicious man-eaters of their reputation. They are the world's largest predatory fish, weighing up to 3 tonnes, growing up to 6 metres long and sporting 300 teeth in those infamous jaws.

But the truth is that people do much more harm to great white sharks than they do to us. They are hunted for food and trophies: teeth, bones and fins. They die in anti-shark nets. They also suffer because their food supply is being overfished. And though they do attack and kill people, this happens less often than one might imagine: deaths average fewer than two a year.

SEA CHANGE

Mike Rutzen at least is on their side. A former fisherman, his life changed after South Africa made the shark a protected species in 1991. His village Gansbaai – near the very tip of South Africa, and close to a stretch of sea known as 'shark alley' – enjoyed an ecotourism boom. Swapping professions, he became the skipper of a shark safari boat, taking tourists out to see the sharks and attracting them to the vessel with bait. Spending his days observing great whites, he became fascinated, and even learned to swim with them. He has now spent more time swimming freely with the much-feared creatures than any other human and has become an expert on them, as well as being the only instructor in the world who can certify you as a Great White Shark Speciality Diver.

There was much to learn because people's inclination to shun the sharks had limited human knowledge about them. Mike's first cliché-busting observation was that great whites are picky eaters. When he experimented by dumping 180 litres of blood from farm animals into the water he observed that the sharks did not go into hunting mode and, indeed, showed virtually no interest in it. He concluded that they do not simply eat any flesh but select their prey, and the rarity of attacks on people suggests to him that they have little interest in feeding on humans.

Then, when swimming to study crayfish in the mid-1990s, he had a series of unintentional encounters with white sharks that caused him to question what he calls our

Photos: Mike Rutzen/Shark Diving Unlimited

'unfounded fear' of them. He discovered that they showed no aggression, and even seemed to get a fright from meeting him. This – and his several years of experience in watching them from his boat and from an underwater cage – gave him confidence to try swimming with them unprotected. From his first such free dives, he realized that the sharks not only noticed his presence and distinguished him from prey, but – crucially – responded intelligently to his body movements and position, communicating their intentions. He learned they showed curiosity by making a cautious approach, while adopting attack positions or flashing teeth unsurprisingly signalled hostility. Over time he realized that swimming with sharks meant that he had to think like one. 'When I go in the water,' he told TUNZA, 'I want the sharks to believe that I'm just another predator.'

PLAYTIME

His favourite strategy is to curl himself into a ball, as if inviting play. If a shark's curiosity leads to investigation, Mike extends his body, declaring his territory before the shark gets too bold. 'These animals are extremely inquisitive,' he says. 'You must not make them cross, but just keep their curiosity.' With this kind of playful dance, Mike has defused the natural caution of many great white sharks, established himself as acceptable, and gained unprecedented proximity to the animals. They even allow him to rub their noses and to ride them by hanging on to their dorsal fins.

In 2008, Mike felt confident enough to take his investigations further by free-diving with great whites at their most dangerous – during their hunting time. He knew enough not to approach the sharks directly but to watch as they chased the blubber-rich seals at 40 to 55 kilometres per hour. He was awed not just by their speed and strength, but by their precision in catching the elusive seals – while at the same time recognizing that Mike himself was not their prey.

FILLING GAPS

Mike now runs his own shark diving company, which he uses to promote shark conservation and to contribute to scientific research. He has volunteered to tag white sharks with trackers so that their migration patterns can be followed by satellite. He has also extracted DNA samples from them, helping fill many gaps in knowledge – such as how they differ from one another. Yet much remains unknown, from how many there are in the oceans to where they travel and breed and how long they live.

'I am fully aware of the risks, but I firmly believe that the opportunity to support shark conservation is worth it,' he says. He reckons that no more than 300 of the predators remain off the coast of South Africa – the world's most densely populated area of white sharks in the world.

'What is disappearing is our breeding stock,' he says. The average shark spotted off South Africa nowadays, he explains, is around 3 metres long. But males must be at least 3.5 metres, and females 4 metres, before they are mature enough to breed. He fears that they have become 'functionally extinct' worldwide, meaning that they can no longer perform adequately as predators at the top of the marine food chain. Even though they are protected, they can still be legally captured and killed in South African waters in the name of self-defence.

CELEBRITY DAREDEVIL

It is little wonder that Mike has something of a celebrity status as a daredevil diver. He welcomes the publicity as an opportunity to promote the shark as a non-threatening, remarkable creature worth saving. 'What we need is a really balanced ecosystem to conserve these animals,' he says. 'We need to stop killing white sharks, while at the same time preserving their food stock.' And, in the meantime, he urges people not to buy shark souvenirs or eat their meat. 'Only by creating a demand for the living white shark,' he says, 'can we preserve this stunning creature for future generations.'

It's only **natural**

They might seem old fashioned, but the simple skills of our grandparents are becoming more and more relevant. TUNZA talks about them to seven people from four continents.

Claire Hastings, Canada

I'm unravelling my family history at the kitchen table. Not for a school assignment – I just need winter wear. I'm unravelling a sweater my grandmother knitted for my grandfather more than 50 years ago. Its yarn is wool shorn from a long-dead sheep that grazed on a farm near Vancouver, and was spun and carded by hand. It is worn thin in places but the wool is springy and resilient.

I'm a knitter: someone who, with two pointy sticks and some string, makes sweaters and socks, mittens and hats. Knitting has existed for centuries, and knitters are found all over, from Turkey to Argentina and from Scandinavia through China to me, in Toronto, surrounded by an unravelled sweater and half-wound balls of yarn.

Knitting won't save the world, but it can help. Reusing yarn reduces consumption. Buying organic yarn lowers pesticide use in farmlands and factories. And knitters who make gifts

Claire Hastings

for friends and family are their own local, low-carbon industries.

As I pull out my grandmother's careful stitches I think about what I will make with the yarn. Maybe a cabled fisherman's sweater to keep me toasty warm, maybe matching mittens and a scarf, or maybe a blanket to curl up in with a cup of tea.

Ramanathan Thurairajoo, Singapore

My grandparents, father and eldest aunt were born and lived in India before

R Thurairajoo/NYAA GAHA Exco

settling in Singapore. When they arrived, they bought a plot of land next to their apartment, and started a family garden, growing the vegetables and herbs – Indian mint, mango, pandan leaves, henna, tulasi, lemongrass, chilis, and much more – they needed for Indian delicacies and medicines.

They babysat my siblings and me when we were small as both my parents worked. Each of us had our own shovel and boots and we'd raise seedlings and saplings in small pots outside the apartment. Once they had roots strong enough to withstand rain and wind, we'd transplant them to the garden.

My family now lives in the city, where we have limited space, but we still grow vegetables and herbs in pots. My father also grows plants to give others. His favourite is the neem tree. He distributes its leaves for those with chicken pox or diabetes, and taught us to plant it wherever we go, as its presence can protect people from illness.

It's been a blessing to have been taught all this. I feel close to my grandparents whenever I plant something or offer a young plant to a friend. I'll pass this knowledge on to future generations: it brings us back to nature.

Carlos Bartesaghi Koc, Peru

Chuño – a freeze-dried potato product made by Quechua and Aymara communities of Peru and Bolivia – can be stored for years.

Making it, using a centuries-old recipe, takes five days: first, a frost-resistant variety of potato is laid out on the ground, covered with straw, and left to freeze for three nights in the low temperatures of the Andean Altiplano. Then the potatoes are exposed to the intense mountain sunlight to dry, and trampled by foot to squeeze out excess water. Then they are frozen again, becoming *chuño*.

I eat *chuño* – a staple of our national cuisine – at least twice a week. Usually I have it in a soup called *caldo blanco*, which is also made with mutton, quinoa, potatoes, wheat and

C Bartesaghi Koc

rice. Other recipes use boiled or fried chuño, and there's even *chuño* flour. So this ancient skill survives, especially in the highlands, as both a source of employment and a gastronomic delight.

Liza Malm, United States of America

I've been composting for at least 25 years, and enjoy encouraging children to save biodegradable trash to turn into soil. The idea comes from nature. Leaves fall from trees, and rain or snow gets them wet, which helps them

decompose. Their organic material doesn't disappear: it breaks down into soil, which in return feeds the trees, completing the cycle.

There are many ways to compost, and it takes time to learn how to do it. But here's a simple – and ancient – way to start, if you have a garden.

Liza Malm

First, save scraps from vegetables and fruits in a lidded bucket. Dig a cubic-metre hole, and empty your bucket into it. Cover well with soil. Then add more waste. Keep the hole covered with some boards so nobody falls in. Once the hole is full, water it well and let it sit for a few months. Then, anything you plant there will grow really well.

The reward, of course, isn't just the results you'll see in your garden, but in knowing that you are enriching the soil out of something that otherwise would be trucked to landfill, release methane and add to global warming.

Sara Svensson, Sweden

When the summer ends, I don my boots and walk into the chilly forest, basket in hand. My search is rewarded when I spot a golden chanterelle, the tastiest of all mushrooms. Hundreds of these golden spots smile back at me from the ground. I sit and start picking.

PS Giridhar/UNEP/Topham

Mushroom foraging is common in Sweden. In autumn, people enjoy spending weekends outdoors, returning home with a basket of these free delicacies. Now we do it for leisure but, not long ago, collecting wild food like this helped families survive. People knew which mushrooms were edible and which poisonous, and there are lots of recipes for preparing and drying mushrooms to preserve them through the winter.

Sadly, much of this knowledge is being forgotten. Luckily, my parents and grandparents passed it on to me. As we walked in the forest, they showed me which mushrooms to take and which to leave. I learned that they are a gift from Mother Earth, and that we need to protect and preserve nature in return.

Now my friends and I pass on the love of foraging by inviting young people on mushroom walks with us, picking and learning. It's coming back into fashion as people look for ways to eat locally and seasonally – a delicious way to help the planet.

Mark Eng, United States of America

I grew up in an agricultural village in Taishan, Guangdong, China, where – during my grandfather's time – owning a garden was a status symbol: the size of the garden reflected how much land a family could afford to set aside for pleasure. But my grandfather cultivated an orchard so that his younger wife could generate income after he died. He planted more than a hundred fruit trees on 2.5 hectares – including guava, grapefruit, pomegranate, grapes, plums, tangerine and pineapples.

I spent many happy hours in that orchard as a child. So it's not surprising that when I moved to Southern California, the first thing I wanted to plant in my garden – on the site of an old orange grove – was fruit trees. Over the last 35 years, I have planted tangerine, lemon, kumquat, loquat, pomegranate, orange, two varieties of guava, Japanese persimmons, peaches, grapefruit, red dates and three kinds of apple.

Tending fruit trees is simple and fun, and rewards everyone with fresh fruit and air and by absorbing carbon dioxide. And I have yet to experience a smoggy day among my more than 30 trees and shrubs.

Karen Eng

Elizabeth Akinyi Odhiambo, Kenya

My parents have a farm in Kitale, Kenya, where we grow maize, tomatoes, onions, sweet potatoes and other vegetables, and keep cows and chickens for food and for sale.

While growing up, I helped by tending the animals. I'd feed the chickens maize, wheat, ugali, flour and kitchen scraps and learned when a chicken was sick, or ready to mate or lay.

Keeping cows is much harder: you have to ensure they eat daily, and bring them in after grazing. It's also difficult to follow their grazing route, and to find good green grass, especially in the dry season. Sometimes I had to walk 20 kilometres or more. Cows produce more than milk: their dung is a great fertilizer and we use the skins for clothes.

Biosphoto/J-L& F Ziegler/Still Pictures

I plan to continue keeping animals, at least on a small scale; they are rewarding in so many ways, even if it is hard work.

7 energy wonders

Energetic slime

How about putting trust in slimy scum? Algae – that green stuff often spotted coating ponds, lakes and even the sea – promises to be one of the most environmentally friendly sources of biofuel. It grows amazingly quickly, doubling its weight several times a day, and can produce nearly 14,000 litres of biofuel per hectare, more than 70 times as much as oilseed rape. It does not compete for farmland, can clean up polluted water as it grows, and mops up three times its own weight in carbon dioxide. It also packs more power for its weight than other biofuels and so, unlike them, can be used in planes: indeed, Air New Zealand has already successfully tested it mixed with jet fuel.

Wildlife/D Harms/Still Pictures

Capturing carbon

UNEP/Topham

Oil and gas are approaching peak production, many experts believe, and will soon decline, but the world still has hundreds of years of coal. And because it's there, it's likely to be burned, doing massive damage to the climate; even now, coal-fired power stations are responsible for a quarter of worldwide carbon dioxide emissions. The answer may be carbon capture and storage, which would remove the carbon – either from coal before it is burned – or from the resulting emissions. It would then be stored underground or under the sea, for example in the cavities left by exhausted oil wells. The European Union wants to see at least a dozen full-scale projects under way within the next few years.

Power towers

Mirrors placed in the Sahara and around the Mediterranean could, one day, provide the whole of Europe with the electricity it needs. They would be the key to masses of solar power stations, the first of which is already in operation in Spain's Andalusian desert, just outside Seville. Arrays of mirrors focus the sun's rays in a boiler on top of a tower, generating temperatures of up to 1,000°C, and the resulting steam drives turbines to make power. Several more are being built in Spain. California is to build three major solar towers in the Mojave desert to meet 20 per cent of the state's colossal electricity needs, and projects have also been confirmed in South Africa and Israel.

Solúcar PS10/Solarweb

Grass house

Lime Technology Ltd

Growing your own house can help cool the planet. The secret is in hemp, the world's fastest growing plant after bamboo, ready for harvest in just four months and sucking in carbon from the air as it grows. One hectare provides enough of the plant to build a house, once it is mixed with lime to make hempcrete, a good insulator that can be used instead of concrete to make energy-efficient houses. Growing the hemp for a house, it is calculated, will capture 50 times as much carbon dioxide as is saved by upgrading it to the latest efficiency standards. Making cement, by contrast, releases a tonne of carbon dioxide for every tonne produced, and is alone responsible for 3 per cent of the world's emissions.

Mobile motoring

It sounds too good to be true: slashing the price of motoring while cutting out emissions of carbon dioxide and other pollutants. But Denmark, Israel, Hawaii and San Francisco have all embarked on such a programme based around electric cars, the brainchild of a former dot-com entrepreneur, Shia Agassi, who had the idea of marketing them like mobile phones. The cars are sold at reduced rates or even given away free, like handsets, while their owners take out subscriptions for kilometres rather than minutes. This entitles them to charge their batteries at countless points – in car parks or at the kerbside, for example – or exchange them at filling stations. For best effect, the electricity should come from clean sources.

Ze-0/www.nicecarcompany.co.uk

Rooftop revolution

Martin Bond/Still Pictures

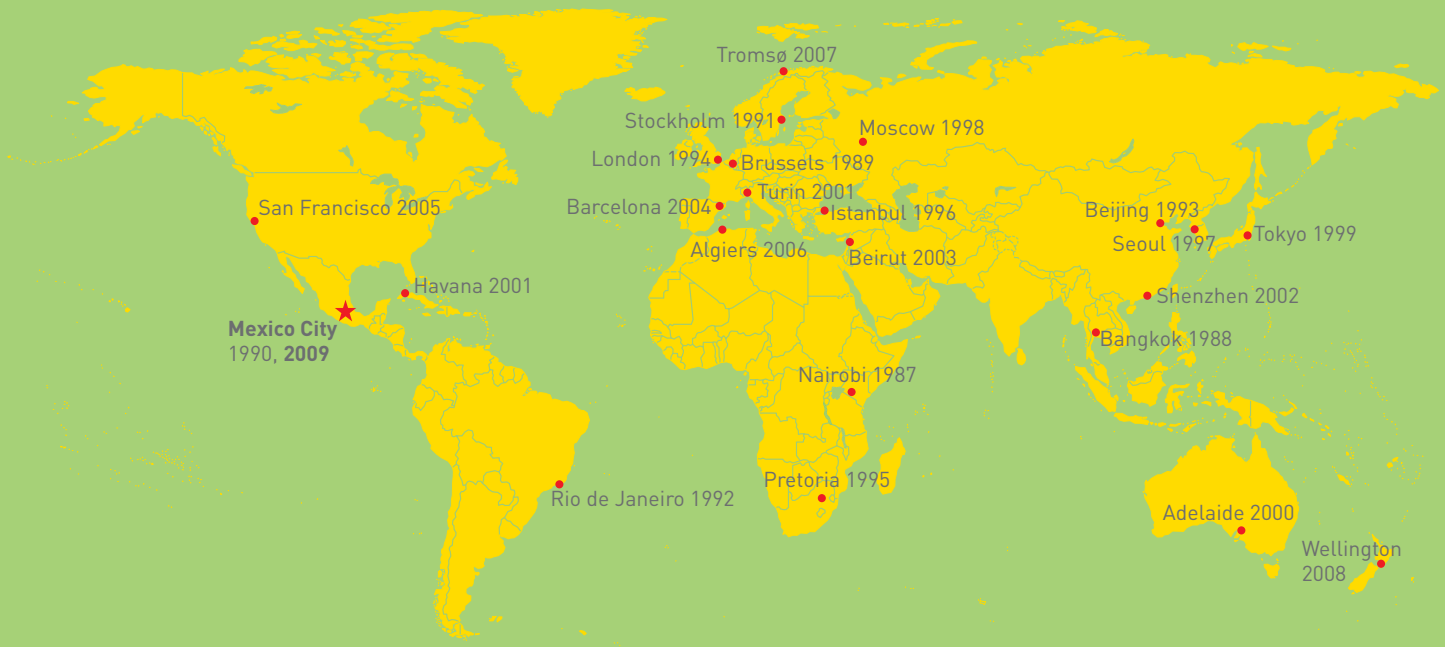
Those futuristic panels of solar photovoltaic cells increasingly adorning rooftops may soon be obsolete technology. Their use may have been doubling every two years for more than a decade, but they risk becoming outdated as even more impressive ways of converting sunlight directly to electricity are being developed. New 'thin film' solar cells are only a seventeenth of the thickness of traditional ones, and much cheaper to produce, and they are expected to account for a fifth of the market by next year. But even more extraordinary developments are on the way – such as plastics, windows and even paint that all generate solar electricity. So, soon, entire buildings are likely to be providing power from the sun, not just those panels on the roof.

Light work

How many generations does it take to change a light bulb? The question may soon be a pertinent one, as light emitting diodes (LEDs) are further developed. Even those already available last for 20 years, and it is thought that LED bulbs with 60-year life spans will be produced. More importantly, LEDs are twice as efficient as present energy-saving bulbs and 10 times more so than traditional incandescent ones, because they are lit by the movement of electrons in a semiconductor material, so most of the energy goes towards generating light, while 98 per cent of the energy in a traditional bulb goes to heating its filament. It's no small deal, as lighting accounts for 19 per cent of world energy consumption.

www.gbl-led.com

Celebrating World Environment Day



International days of awareness and celebration pepper the calendar – the UN alone maintains more than 60 of them – but few are observed worldwide. World Environment Day (WED), however, has grown into a high-profile event, observed by millions all over the globe, and the number of participants increases every year.

It all began in June 1972 in Stockholm, at the United Nations Conference on the Human Environment, which led to the creation of UNEP and laid the groundwork for international cooperation to tackle environmental problems. And 5 June – the anniversary of the start of the Conference – was established as World Environment Day.

The first WED in 1974, themed 'Only One Earth', encouraged the world to work together for sustainable development. Since then, UNEP has highlighted this message on different issues, including the ozone layer (1977), groundwater (1981), desertification (1984), the seas (1998), biodiversity (2001) and cities (2005). Since 1987 its primary events have been hosted by a different city in a different country each year.

This year, the hub of celebrations will return to Mexico City, which hosted them in 1990, in recognition of its strong environmental commitment. Delegates, scientists, entrepreneurs and celebrities will gather in the capital to promote the Day and attend lectures and seminars embracing its theme: 'Your Planet Needs You – UNite to Combat Climate Change'. Governments will be given a chance to sign international environmental conventions and make resolutions: on WED 2005 more than 60 mayors from major cities pledged to work for sustainable urban development.

Millions across the world will celebrate the event in interesting and creative ways, as they have in previous years. In Algeria, in 2006, for example, public celebrations included the launching of a WED hot air balloon, while in 2003, young Bangladeshis from the cities visited rural communities.

Mexico's President, Felipe Calderón, says that he wants the day to be both a time of reflection on the challenges facing humanity – including climate change – and one of action and commitment.