

The UNEP Magazine for Youth



TUNZA



for young people • by young people • about young people

The green economy



Down to business

The mobile revolution

TUNZA

the UNEP magazine
for youth. To view current
and past issues of this
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**Partners for Youth
and the Environment**

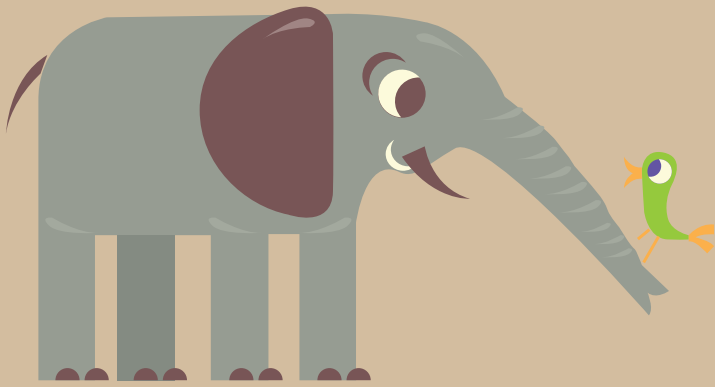


UNEP and Bayer, the German-based multinational involved in health care, crop protection and high-tech materials, are working together to strengthen young people's environmental awareness and engage children and youth in environmental issues worldwide.

A partnership agreement, originally signed in 2004 and renewed in 2007 and 2010, runs through 2013. It lays down the basis for UNEP and Bayer to implement the projects under the partnership. These include: TUNZA Magazine, the International Children's

Painting Competition on the Environment, the UNEP Tunza International Youth and Children's Conferences, youth environmental networks in Africa, Asia Pacific, Europe, Latin America and the Caribbean, North America and West Asia, the Bayer Young Environmental Envoy Program and a photo competition, 'Ecology in Focus', in Eastern Europe.

The long-standing partnership between UNEP and Bayer has become a public-private partnership that serves as a model for both organizations.



numbers

- Nearly 40 per cent of the world's 211 million unemployed people – more than 80 million – are aged 15-24.
- In developed countries, one in four of the long-term unemployed are youths.
- The world economy has quadrupled over the last 25 years, but 60 per cent of the world's major ecosystem goods and services have been degraded or used unsustainably.
- In 2006, more than 2.3 million people worldwide were working in the renewable energy sector.
- Emerging economies' share of global investment in renewables rose from 29 per cent in 2007 to 40 per cent in 2008 – primarily in Brazil, China and India.
- The recycling industry in Brazil, China and the USA alone employs at least 12 million people.
- Processing recyclable materials sustains 10 times more jobs than landfill or incineration (on a per tonne basis).
- Only 25 per cent of the world's waste is recovered or recycled. The world market for waste is worth around \$410 billion a year.
- In Brazil, 95 per cent of all aluminum cans and 55 per cent of all polyethylene bottles are recycled, and half of all paper and glass is recovered. This generates a value of almost \$2 billion and avoids 10 million tonnes of greenhouse gas emissions a year. Waste management and recycling employ more than 500,000 people in Brazil.
- Ecotourism has a 20 per cent annual growth rate, about six times the rate for the rest of the sector. Travel and tourism employ 230 million people – 8 per cent of the total global workforce.

EDITORIAL

The world's media bombard us with news of a stalling world economy. A visit to the market reminds us of rising food prices. Jobs are difficult to find, especially if you are young. Then there's the price of fuel and the increasing scarcity of those earth metals essential to your laptop, tablet and mobile.

At the same time, we are told the world must 'get back to growth' – and many of us are assailed with demands to buy yet more stuff. But with ever more people in the world, doesn't there seem to be a disconnect somewhere? The Ecological Footprint already suggests that we are using the resources of 1.5 planets to maintain current lifestyles – and for the majority, those lifestyles aren't too great anyway.

UNEP is suggesting a different way – a transition to a green economy. What does that actually mean? Well, UNEP defines it as: 'Improving human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive'. Does that sound fairer?

We must develop ways of accurately measuring our impacts on the environment, then include the costs, like the cost of pollution, in the price we pay for what we use. Facing these real costs will encourage us to reduce the environmental impact of production and consumption. A lot of people are already working on that, whether WWF's work on sustainable production or Marks & Spencer's determination to introduce sustainability throughout its supply chain (pages 8-9).

Then there's the need to reduce our dependence on fossil fuels. Switching to renewables will involve major new infrastructure, creating jobs and requiring new skills. But there are also smaller, locally appropriate possibilities that encourage job creation at a level that enables us all to get involved.

New technologies will help, too. These are introducing less polluting, less resource-dependent ways of doing things – from bringing products to market, transferring money and receiving payments, to raising money to finance your own new green project.

UNEP believes that moving to a green economy will enhance our efforts to achieve sustainability by improving human well-being and social equity, whilst reducing environmental risks and ecological scarcities. Green growth is an opportunity to correct that disconnect in 'business-as-usual'. It involves all of us, and it is too important just to leave to governments. We all have a part to play in our everyday lives, how we choose to spend our hard-earned money, what we discuss with family and friends, and the messages we send, ahead of Rio+20, to the world's politicians. Make your voice heard.

Welcoming the green economy



WHAT is meant by 'green economy'?

You can look at it in two ways, either as an economy that respects green principles and is concerned with fairness and inclusiveness, or as one which increasingly invests in environmental technologies such as renewable energy, and natural capital such as productive soil, forests and water resources. Either way, consumer preferences for environmentally friendly, socially responsible goods and services will help drive investment decisions.

YOUTH unemployment is high – will the green economy create more jobs or is the focus on new technologies?

According to UNEP's 2011 *Green Economy* report, investing 2 per cent of global GDP – about \$1.3 trillion currently – each year until 2050 in the greening of 10 economic sectors would provide more jobs in the medium and long term than 'business-as-usual'.

In some sectors – public transport and renewable energy for example – there's likely to be an increase in jobs, but in others, such as fisheries, there may be initial job losses if we are to prevent a total collapse of the industry. The key is to ensure that those affected are given training and opportunities for re-employment.

Where youth unemployment is exceptionally high, state-sponsored large-scale employment programmes may be needed. A 'green army' could, for example, engage in research and development, the restoration of damaged ecosystems and the 'greening' of urban areas.

IS the green economy 'good for growth'? If so, how?

Economic growth is the increase in the production of goods and services, and the income associated with that. Without

growth, there will be no new jobs, and governments won't have additional revenue to spend on essential health services, education and social safety nets.

Growth is generated by investment. Traditionally, this has focused on highways, automobiles, oil and gas, buildings, manufacturing, logging, fishing etc. A green economy promotes different sorts of investment – in public transport, low-carbon vehicles, renewable energy, green buildings, clean technologies, sustainable forestry and the restoration of fishery stocks.

WITH natural resources already under pressure, how can we sustain that growth? Do we have to think differently?

Technological development could address some resource constraints, while changes to the way society organizes itself could also reduce such constraints. For example, the development of renewable energy is picking up, with the cost of solar technology declining by around 7 per cent a year, making it increasingly competitive. Then there are new technologies that could reclaim desert areas as agricultural land, as has happened in Kabuqi, China.

Growth can be sustained, at least for a time, through investment in green technologies and ecosystem restoration. In China again, a ban on converting natural forests, and a policy of returning farmland to forests, has resulted in a net increase in forest cover, although the new forests host less biodiversity.

As to changes in social organization, people in developed countries will have to reduce their personal resource consumption – though they could increase their service-intensive consumption, for example by hiring a car when they

INVESTMENTS IN GREEN ENERGY



CHINA is the world's leading investor in renewable energy, spending \$49 billion on it in 2010, and overall the country is committed to spending \$468 billion during the next five years on key industries including renewable energy, clean technologies and waste management. If you exclude the emerging economies of Brazil, China and India, countries in Africa have posted the highest percentage increase of all developing regions in renewable energy investments. In Kenya, for example, investment climbed from virtually zero in 2009 to \$1.3 billion in 2010 across wind, geothermal, small-scale hydro and biofuel technologies.

Infrastructure is a good transformation entry point. The current energy and transport systems contribute significantly to greenhouse gas emissions and health-damaging pollut-

When consumers shift to environmentally friendly and socially responsible goods and services, they send a signal to corporations and consequently influence investment decisions. As consumers, we also have to distinguish between needs and wants. In societies where most of our needs are met, we must control our wants – as these can be unlimited, while resources are not. Satisfying wants reduces the availability of resources required to meet the basic needs of the poor in many developing countries.

A decorative graphic at the bottom of the page. It features a central row of five human silhouettes in various poses, flanked by stylized flame or leaf motifs on both sides. The entire graphic is rendered in a light blue color.

The green economy 5



Yes we can!

‘What should be done about the area YOU live in?’ That’s the question Kingswood Parks Development Company Ltd and Hull City Council recently put to young people aged 13-14 living in the Bransholme and Kingswood areas of Hull, UK. They thought young people should have a voice in the development of their community. And as the youth themselves put it: ‘It’s really important to have our input because we’ll inherit this community when we become adults!’

Thirty keen young people, pupils at the Kingswood College of Arts, responded to the call to represent the younger generation in one of the largest housing estates in the UK. It was built in the 1960s and 1970s for a population of 26,000, which has now grown to 30,000. Cut off from services and opportunities by main roads and fields, the estate is quite run down as well as overpopulated.

The kids took their job seriously. Working as a team, they developed and sent out a survey to 800 of their peers. No one thought they’d get much feedback, but an amazing 25 per cent of young people answered. This was a stunning response – adults had only managed to return 300 questionnaires out of the thousands distributed! From the results, the group created an Area Action Plan to be presented to the City Council.

So – what’s the younger generation’s grand vision of its future community? To everyone’s surprise, not pizza joints and video arcades, but carefully considered, community-enhancing improvements: youth recreation facilities and parks, open spaces for wildlife, cycle paths, small neighbourhood shops, and healthier family restaurants to replace fast-food joints. Most of all, the kids amazed grown-ups with their desire to see a grocer selling healthy vegetables – as well as an allotment for growing their own!

Security was a main theme, too. The kids made it clear that the estate’s reputation for antisocial behaviour such as vandalism and drug dealing was exaggerated and mainly caused by a small handful of people, but they nevertheless came up with ideas to change both the reality and other people’s unfair perceptions. ‘More open space will go a long way towards transforming how the area looks and how Hull is branded,’ they said. Their suggestions included spruced-up parks and street furniture, more facilities to give young people fun places to go – as well as CCTV and police patrols.

Most remarkably, the young people considered the needs of generations to come. They asked for housing to be affordable, for adult recreation facilities as well as youth facilities, and for retail space to provide a local source of employment. ‘We would like to help make it possible for people to look after their houses more easily,’ they said. ‘It’s not only us that will benefit, but also the people who will live here in the future.’

The team took their plan to the City Council and spent a morning presenting and debating their ideas and solutions. Of course, councillors and planners will have to take all community opinions into account, but having asked for youth feedback and received such a well-considered and comprehensive reply, Kingswood College youth voices will be impossible to ignore. As one councillor said: ‘Brilliant; very impressive!’

Some of the group are already invited to meetings on the next stage of development. They’ll join in the conversation equipped with their own results, informed about planning, and with all the skills to discuss with adults what they need – now and in the future.

Wayne Talbot facilitated the Kingswood Consultation, helping young people tell adults what they need.



Hull City Council



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Hull City Council

Going viral

STORY OF **STUFF**.COM

In December 2007, **ANNIE LEONARD**'s 20-minute animated documentary called *The Story of Stuff* – which looks at how consumer society affects us and the planet – hit the internet. It instantly went viral, generating 50,000 views on day one. Today, it's had 15 million views across the planet, and interest seems to be gaining momentum. There's a *Story of Stuff* book, seven more free films at storyofstuff.org, and more films in the making. TUNZA spoke to Annie, who told us the secrets of her runaway success.



People responded so well to *The Story of Stuff* for several reasons. One was timing: the economy was collapsing, and there was increasing awareness of species loss and climate change. It tapped into a growing sense of unease, telling the truth while mainstream media kept saying: 'There's no problem. Go shopping!'

But it was also the simplicity of the cartoons, an antidote to the seriousness of the information. Images of belching smokestacks and starving children shut people down, and we needed audiences to remain open. And 'SoS' provided people an easy vocabulary to talk about these issues. One student said typical discourse around environment was like 'a speeding train'. She didn't know how to board.

We must meet people where they are. When first developing the SoS talk, I used the biggest words I could to make myself sound smart. But I discovered that, faced with words or concepts they didn't know, people felt dumb, so they didn't want to participate. I was also told I wasn't funny, didn't smile... No wonder no one had listened to me for 20 years!

Our next films will be about solutions. *The Story of Making Change* will be a call for collective citizen

engagement. I ask people, 'What do you think you can do?' I always get the reply: 'Recycle, ride my bike, compost'... all wonderful, but that's being a responsible citizen, NOT how we make change. A lot of environmental groups reinforce this with lists of 10 simple things you can do to save the planet. There ARE no 10 simple things! It's a big, complex problem!

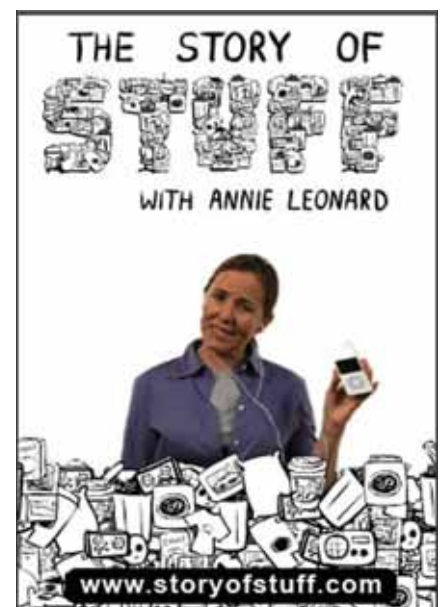
Nagging is 'individualization of the problem', and of course we have individual responsibility, but the broader system rewards environmentally destructive behaviour. We need to change the system so that doing the right thing becomes the default. People should have to go out of their way to trash the planet, instead of vice versa.

What I see missing is people's sense of collective, systemic change. Instead of incremental things like turning off the light, how about if we collectively ban toxic chemicals?



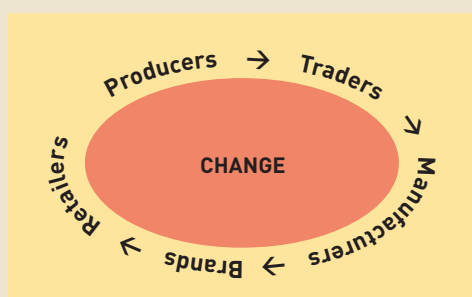
Make a different metric than GDP by which we can measure success? Share stuff – a key to the real green economy – so we can use fewer resources. And sharing helps build community.

What gives me hope? One: it's technically possible. There's a plethora of solutions available. Two: change is inevitable. We are up against the limits of sustainability. Three: people already want to be part of the solution and are taking action. And the kinds of solutions we need in order to keep living on this planet – sharing, making healthy products, getting involved in civic activities – all make life more fun! So why not?





Once you have the interest of a major company it becomes easier to get other people in the supply chain to sit at the same table, as no-one wants to risk losing their place in the market. Of course it takes some negotiation, but before long you have a roundtable where producers, traders, manufacturers, brands and retailers come together to agree on standards that can force change in entire



beef	cocoa	coffee	palm oil	sugar	soy	cotton	shrimp	white fish

industries – all under the guidance of the environmental non-governmental organizations and researchers who are working on conserving our world.

There are now a dozen or so such roundtables, and they are having an effect. Once a standard has been set – for example for palm oil – the companies at the table put pressure on others, even on governments, to adopt policies of sustainability. So it doesn't matter so much if you are too busy to read the label on your biscuit, or whether the biscuit manufacturer

has even decided to be sustainable or not, because the palm oil the biscuit manufacturer buys is ever more likely to be sustainably produced.

WWF has signed agreements with 40 of the 100 companies originally identified as pivotal to changing the way the 15 key commodities are produced. But this is just a start. There are more agreements on the way.

The information in the corporate panels is for illustrative purposes only and cannot be considered accurate.

beef	cocoa	coffee	palm oil	sugar	soy	cotton	shrimp	white fish
				<				

'We are not the only ones pursuing across-the-board sustainability – Unilever, Coca Cola, Nike, Walmart and Mars are too – but none of us can do it alone. The World Economic Forum has established a platform for chief executives to work together, and the Sustainability Consortium is developing scientific solutions so that businesses can take more standard approaches to carbon and water footprints and waste management, rather than doing different things and spreading confusion and inefficiency.'

'We are also taking consumers on the journey. Ten per cent of consumers around the world are environmentally self-motivated, but 65 per cent share many of their concerns but don't know where to start. They recycle and don't waste food, but don't want to get involved with complex decisions about climate change or factories in China. They want us to do the hard work for them on most of our 180 commitments. However, where they can collectively, in their millions, make a difference (e.g. recycling used clothing or packaging), they will join the journey if we make it simple and rewarding for them to do so.

'All of this helps the environment, bit by bit. But it's not enough to deal with the planetary scale of the crisis. Many business leaders recognize that whatever your morals or ethics, without the planet, we have no business. So we need true innovation to come up with radical new business models. Not tomorrow, but by 2020, we need the ground rules of a very different economic system to be put into place: one that is a closed loop, ensuring no product ever

MARKS & SPENCER



becomes a waste, where only sustainable raw materials are used and where human life is improved wherever business touches it.

‘Many of the solutions required to make business significantly more sustainable already exist. What we need now though is a commitment to go from piloting these solutions to scaling them up rapidly. At an intergovernmental level, perhaps if 100 business leaders stood at Rio+20 committed to forests, water and social issues, it could galvanize change. Business can make a difference, and prove within a decade that there can be a radically different business model – better for the planet and its people. Business may be part of the problem, but it’s now got a road map to make a big contribution to developing a sustainable future.’

Starting a new venture?

Of course the first step is making a business plan, working through financial viability and technical feasibility. But what does creating a sustainable enterprise mean? **GEORGINA GUILLÉN**, a consultant for the UNEP/Wuppertal Institute Collaborating Center on Sustainable Consumption and Production and PhD researcher in sustainable innovation, offers a few crucial questions to ask yourself as you develop your business.

A sustainable enterprise is economically sound and environmentally friendly, and has a positive impact on society. It also considers its impacts on tomorrow's societies and ways of helping them meet their needs.

Sustainability is an ideal, but the emergence of standards and certifications to inform consumers and support them in their decision making is a sign that more individuals are becoming aware of sustainability. Economic performance is normally measured by profitability, while an enterprise's environmental performance can be measured by its use of natural resources and the impact of its activities on the environment. The social aspect of sustainability is harder to quantify, but thinking about ways your business could contribute to the Millennium Development Goals (MDGs) is a start.

With that in mind, ask the following questions:

What are my consumers expecting?

Understanding the consumer's perspective provides valuable insights. Most sustainable businesses started as creative solutions to consumers' needs. William Kamkwamba started building windmills using scrap materials to provide light to homes in his village in Malawi. Mohammed Yunus' micro-credit scheme enabled poor people to borrow small amounts to start their own businesses.

What impact will my business have? Will society benefit?

Besides consulting the MDGs, ask such questions around social equity as: What will this community look like in ... years (you set the period), and what will my business do to contribute to this vision? To understand whom your business is likely to benefit, you may also want to

ask: Who could help me to make this vision happen, and why?

What impact will my business have on the environment?

What does your product's life cycle look like? InterfaceFlor, a pioneer of sustainability, realized it's possible to use fabric from old carpets to create new ones. Their take-back programme not only saves on raw materials through recycling, but also reduces pollution and landfill. Such initiatives can help generate other types of businesses, like carpet collecting services.

Does offering sustainable products imply higher production costs?

No matter what some consumers currently think, the answer is 'no'. If your value chain is sustainable from the start, operating costs could be lower. And as both national and international regulations tighten and consumer demand grows, being unsustainable will be the biggest risk for any business.

How do I avoid accusations of green-washing and insincerity?

Transparency and accountability are vital, but more than a glossy report, consumers want tangible results. But communications are still crucial – talk to your customers and understand their views on sustainability, listen to what their needs are, and you'll know how to engage with them.



CSCP



Quetsol



Qloov



Proyecto Memoria

Green enterprise in Africa

‘One of the greatest challenges of the green economy is the need for regionally appropriate solutions. There are many excellent, potentially world-changing, locally grown and sustainable business ideas in Africa, especially coming from young people, but too often they are dropped for lack of financial backing when the young people graduate and face the reality of having to earn a living.

‘That’s why an IT team and I are creating an online platform to attract investment and promote access to markets for starter businesses and projects in the green economy. Our aim is to connect young African entrepreneurs with resources through an open online call for support – or crowdsourcing – not only in terms of suggestions for improving projects, links with similar projects and feedback from professionals and experts, but also in terms of funding.

‘Crowdfunding – the practice of asking for small sums of money from large numbers of people to fund projects – has become extremely popular in recent years, and makes a lot of sense, as literally anyone can invest. There are millions of people who can contribute \$50 to a project, and vote on the best project with their dollars. Sites like Kickstarter.com focus on funding art projects. But while art is great, the world really is crying out for green ideas! On our site, these ideas can be uploaded, carefully and continuously documented to moderate progress, voted on and contributed to. Youth-led green enterprise will be mapped across Africa, making it easy to find projects geographically.

‘Our main users will be young social entrepreneurs and project leaders and their networks of friends (starters), small-scale philanthropists and global investors (backers), and general visitors. Starters will be able to upload project documents, photos and videos to a home page, with a space to gather ideas and opinions from site visitors, linked to Facebook and Twitter. There will also be a funding status bar to indicate the amount of money raised, and a project status-report function. Backers will have access to updates, project news and information, and a rating system where they can see how site users are responding to projects, helping to gauge project viability and credibility. They’ll also have a way to create a support community around the projects they back.

‘We’re focused on projects that can really take off as self-sustaining businesses because self-sustaining social entrepreneurship is the future of the green economy. The site is still in its early stages: we’ve finished the design and will soon begin coding. My great hope is that Greenstarter inspires action among African youth and an investment community to promote locally generated solutions to pressing socioeconomic and environmental challenges.

‘Once this takes off, I hope to expand this idea beyond Africa. We are, after all, a global community in need of solutions that accommodate each other. Africa cannot do it alone.’

KEVIN OCHIENG – former Tunza Youth Advisory Council member – is hard at work on **Greenstarter.net**, an innovative online platform that will provide young African innovators with the resources to launch environmentally and economically sustainable projects. He tells **TUNZA** all about how he hopes Greenstarter will contribute to the green economy in Africa – and beyond.

YOUR projects

Manuel Aguilar, Guatemala

Quetsol provides micro-scale solar power systems to rural villagers in Guatemala to power lights and charge mobiles and laptops at less expense than the long-term cost of candles. Customers pay around \$240 – but can take out microfinance loans through partner organizations. People tend to take care of what they own and we need profits to reach more people – more than 1.5 billion around the world are without electricity. Quetsol is also making its knowledge open source, so others can join us. www.quetsol.com

Zhan Hong Low, Singapore

Qloov makes t-shirts from 100 per cent recycled PET bottles. One shirt uses up to 12 bottles, and our production process uses up to 70 per cent less energy with 30 per cent lower carbon emissions than making cotton t-shirts. All Qloov shirts carry an environmental message: designs come from fans online, and people vote for their favourites. Wearing one says there’s a cool alternative to cotton. Profits are donated to support ECOSingapore and other environmental organizations. www.qloov.com

Patricio Mora, Chile

Proyecto Memoria reuses and recycles rubble created by natural and manmade disasters to build parks, pedestrian areas, playgrounds, street furniture and other public structures, saving money and energy on building materials, reducing landfill, and rehabilitating and beautifying damaged spaces, but most importantly preserving a community’s memories and identity. We’re currently developing our pilot project – an open-air chapel in Arauco built with the remains of a local church destroyed in the earthquake of 27 February 2010. www.proyectamemoria.cl

The mobile revolution



MOBILE PHONES have emerged as an important economic tool for millions living in less developed, rural or remote areas, with little or no access to traditional bank infrastructure or the internet. This is a prime example of technological 'leapfrogging' allowing rapid change. In developing economies, mobiles are most famously being used as an alternative to traditional banking, enabling people to send and receive money. They're also used to buy and sell goods, disseminate information and help people find work. TUNZA spoke to Kamal Quadir and Su Kahumbu, two entrepreneurs who are using mobile phones in innovative ways, improving lives and helping the environment.

MARKETS AND MONEY



KAMAL QUADIR, the World Economic Forum's 2009 Young Global Leader, has engaged millions of people in Bangladesh through CellBazaar, a mobile-commerce site that allows people to buy and sell goods, look for jobs and check commodity prices by phone. He is now working on bKash, a mobile-banking platform.

'Bangladesh has a population of 160 million people, most of whom do not have access to the internet or regular media, and 60 per cent of whom don't have electricity. At the same time, Bangladesh is one of the best-networked countries in the world: nearly all Bangladeshis have mobile phones. Yet fewer than 10 per cent of people have access to conventional banks! So how can we help bring all these people into the 21st century economy? With bKash (in Bengali, *bikash* means blooming or prosperity), which I've been developing since 2008 in partnership with BRAC Bank, we are bridging the gap by creating financial services for the other 90 per cent.

'The bKash scheme is all about empowering people with money. I always say that the beginning of saving is the ending of poverty. When you save a dollar, you are making provision for your future, rather than living hand-to-mouth, which is mere survival. A service like bKash is especially empowering for Bangladeshi women. When they earn money from working at, say, a textile factory, they typically give it to their husbands, brothers or fathers because they don't have a place to save. With their mobile phones and bKash, such women are given control over their own money, and therefore their own lives.

'Giving people control was also my aim with CellBazaar, a mobile virtual marketplace. Using various platforms, from simple SMS through 3G wireless to web browsers and voice, users may log into the system to buy and sell all manner of goods, from appliances and vehicles to IT and photography services, clothing and real estate – and jobs are advertised here, too. Farmers, even those in remote areas, can use the site to sell their produce.

'Services like bKash and CellBazaar serve people at different income levels, and it's important to remember that not all of Bangladesh is in dire poverty. In fact it boasts a fairly large middle class, particularly among the developing countries. So the level of poverty bKash addresses is a level above starvation, a level at which, if you apply technology, people can be helped to rise to higher prosperity.

'Sustainability should be the key for any socially motivated initiative. Even small-value creations, when accumulated, can generate a meaningful impact. One of our strategies is employing thousands of people to go door to door, teaching millions of others how to use mobile banking. There's a two-fold benefit here: we create employment, and offer people hands-on experience of the technology, the fastest way of teaching and learning.

In Bangladesh, one initiative may engage millions of people. Though it may only generate one dollar per person, it generates a million dollars of value, which is deeply satisfying.'



Probably the best-known mobile banking phenomenon is Kenya's M-PESA, operated by Safaricom, an affiliate of Vodaphone. Users visit corner shops – far more common than banks – to purchase a card with cash and enter a code into their mobiles, and can then transfer the money to any other mobile user, who can withdraw the cash at a bank, ATM or their local shop. M-PESA accounts are also used to pay bills, purchase airtime and buy goods at participating merchants. M-PESA has been rolled out in Tanzania, South Africa and Afghanistan, a large country with challenging



terrain and far-flung settlements, where its operator, Roshan, additionally used the system to transfer wages of government employees. Now Vodaphone plans to launch the platform in India and Egypt. In the Philippines, similar m-banking solutions include Smart Communications' Smart Money, which through a tie-up with MasterCard doubles as a debit card, and Globe Telecom's Gcash. A Kenyan service called Pesapal, which emerged after M-PESA, allows Kenyans to accept Visa payments from abroad, further expanding opportunities for selling goods and services.



Shoeb Faruquee/Photo Bangla/Specialist Stock

LIVESTOCK SKILLS



Farmer, agriculturalist and social entrepreneur SU KAHUMBU works in Kenya. Her iCow text- and voice-based mobile app helps livestock farmers care for their cows, reminding small-scale dairy farmers of important points in their cows' gestation – information they used to have to get by contacting specialists. iCow supplies this information to registered farmers, prompting them on what to do and when. But, as Su explains, its potential is more far-reaching.

'As farmers continue telling us what their needs are, we've developed more features, such as a livestock and produce market. Farmers may post details of animals for sale on iCow, and the platform also helps small farmers who have small amounts of produce – such as goats' milk – aggregate their goods for sale to bulk buyers. It also acts as a search service for vets and artificial-insemination providers, and offers tips and information on feeding practices, disease control and so on.

'iCow doesn't just serve farmers, but gives many stakeholders in the agricultural sector access to farmers. The app is being used to gather and pass on crucial information about disease outbreaks, for example, so that local officials and farmers can react quickly. iCow also offers other information to farmers, such as vaccination availability or details of financial services, agricultural field days and exhibition events.

'I originally got the idea of putting agricultural information on mobiles as a way to get information to young people interested in farming. The average age of farmers all over the world is high – in Kenya, it's 48 – and it's crucial that we nurture a new generation of farmers. There is rising interest in agriculture among the young, many of whom are not born into farming, and so don't have the knowledge. Mobile phones are an excellent education platform, as it's a widely used technology.

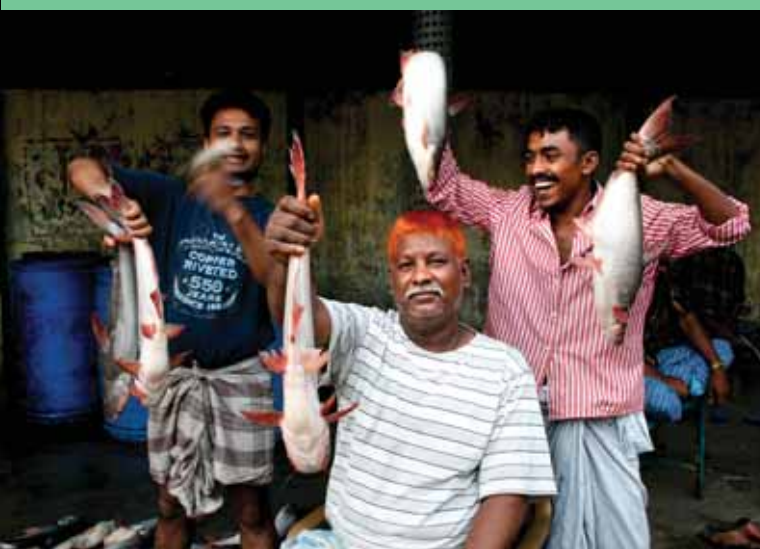
'Right now iCow has about 5,000 users across Kenya, but we're reaching out to more, planning a mass roll-out across mobile networks. We hope to have more than a million farmers on the platform within the next two years. iCow, which won first prize in the 2010 Apps4Africa competition, is actually a small part of a much larger original idea – mKulima, a voice-based agricultural encyclopædia accessible via mobile. This is still in development but will now be launched under the iCow brand. A million farmers may seem a lot, but remember Kenya is a nation of 14 million people, of whom 70 per cent are involved in agriculture. So it's a target that should be easily surpassed.'



Ton Koene/Linear/Still Pictures

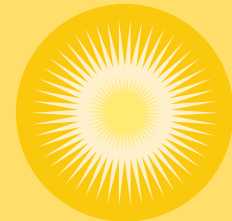


Su Kahumbu/iCow



K.M. Asad/Majority World/Still Pictures

Power to the people



There's bad news and good news. The bad news is that we still rely primarily on fossil fuels for energy – which accounts for around 60 per cent of all greenhouse gas emissions. The good news is that the world is making real and increasingly rapid progress in transitioning towards renewable low-carbon alternatives from sun, wind, water and biomass. Separating economic growth from inexorably rising emissions will go a long way towards making development truly sustainable – and raising living standards for all.

It is already technically possible because we have the know-how. And it is inevitable because the cost of fossil fuels is rising while stocks are limited and increasing numbers of people need energy – almost 40 per cent of us still rely on traditional biomass for cooking and

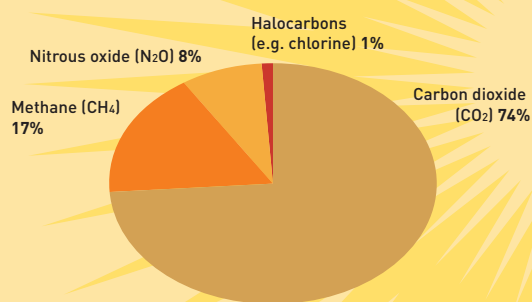
25 per cent do not have access to a reliable supply of electricity – yet the potential for renewable technology is unlimited. According to a May 2011 report released by the Intergovernmental Panel on Climate Change, 2010 saw 17.5 gigawatts of solar energy installed – a 130 per cent increase over one year – and photovoltaic installations are projected to rise to 50GW around the globe, generating the equivalent power of 15 nuclear reactors. Interestingly, more than 50 per cent of renewable energy technologies are being installed in developing countries, a phenomenon known as leapfrogging, where developing economies move straight to advanced technologies, skipping less efficient and more polluting ones.

Accidents like the post-earthquake Fukushima meltdown have recently reminded people of the dangers of nuclear power. Nonetheless 440 nuclear power stations are working around the world, 60 new plants are under construction, 155 are planned and 339 are proposed. However, a nuclear power plant takes up to 15 years to build and a coal-fired power plant five years, while a mid-sized solar plant can now take just three months, so where there is immediate need, renewables can win out over traditional energy systems despite their lower capacity.

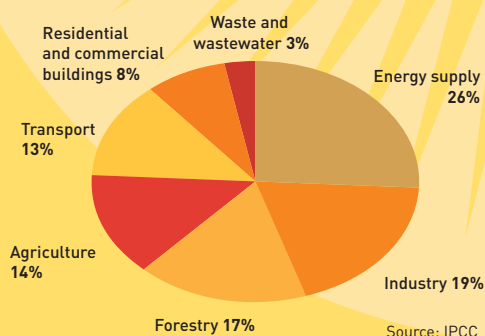
So if we must and we can, what's the problem? The main obstacles are political will and fossil fuel subsidies, and – like it or not – change takes time. Still, at the rate we're going, renewables could, if backed by public policy, provide 80 per cent of the world's energy supply by 2050. Under the right circumstances and with enough government support, it's possible for the world to get on the road to substantial savings in greenhouse gas emissions – up to more than a third – by 2050.

But as ever, it's up to all of us. The best thing ordinary citizens can do is invest in renewable energy whenever possible – whether it's buying power from a company that offers it or installing systems of our own, or encouraging our schools or workplaces to do so – and getting behind local, national and international initiatives and leaders who can push for change at a higher level.

The most important greenhouse gases...



...and where they come from



Source: IPCC

A SLICE OF SUN TO POWER TWO CONTINENTS

If there's one thing Africa has plenty of, it's sun. The Sahara desert – which measures 9 million square kilometres – receives as much energy from the sun in six hours as the entire world uses in a year. Why not harness this power? Desertec, first announced in 2009, is an ambitious plan to build an international network of solar thermal power systems across the desert, creating enough green electricity not only to meet North African and Middle Eastern needs, but

to export it to Europe via high-voltage direct current power lines. The hope is to provide at least 15 per cent of Europe's electricity by 2050.

Desertec won't be based on photovoltaic solar energy, which directly creates electrical current. Instead, the technology uses parabolic mirrors to concentrate heat, which turns turbines to generate power. In 2012, the first solar farm of the network is beginning

construction in Morocco, near the city of Ouarzazate. Algeria has also signed on to participate.

Desertec





Barefoot College

BAREFOOT COLLEGE SOLAR ENGINEERS

Across 751 villages in India, more than 14,800 fixed solar energy units have been created, installed, repaired and maintained, lighting thousands of households and schools and benefiting hundreds of thousands of people. Who does all this work? Foreign volunteers shipped in by a powerful non-governmental organization? No, it's the Barefoot Solar Engineers – people from poor rural communities, mostly illiterate, often women and unemployed youth, who are trained in solar energy installation by community-development project Barefoot College.

Founded in 1972, Barefoot College offers rural communities a chance to meet their basic needs such as energy, health care and water by training experts from among their people, giving them ownership and empowering even the poorest individuals and communities to be self-sufficient.

Inaccessible, remote and off-grid villages are selected and introduced to the concept of solar lighting. If the village agrees to participate, a committee is formed to help identify households that want solar lighting. These households pay a small monthly fee, to give a sense of ownership, and the village donates a building to serve as a Rural Electronic Workshop, where components can be stored. The College selects village members to be Barefoot Solar Engineers – responsible for installation, repair and maintenance – who travel to the Barefoot College campus in Tilonia, Rajasthan, to be trained. They then return to serve the village, earning extra income – usually for a period of at least five years – on top of their normal occupation, whether it's farming, animal husbandry or craft. This helps to keep skills within communities and prevents urban migration. Engineers also help replicate the programme in other communities.

Small IS beautiful

No power? No problem! Here are a few green solutions that people have implemented as alternatives to a standard grid infrastructure.

Solar salt-to-freshwater

In the Maldives and other off-grid island communities, brackish water can be a health hazard. Now solar-driven pumping systems, powered by a single 100-watt solar panel measuring just 1 square metre, can daily draw 500 litres of water up and through a



alte Store, Inc

Micro-hydro could be the answer to your problem. In the Philippines, for example, over 10,000 villages cannot be reached by the power grid. The solution is micro-hydro installations. With a capacity of up to 35 kilowatts, they typically straddle small rivers and can be owned and operated by local communities.

Sun lights

Bus stops, streetlights and parking meters: all small, but all necessary and



S. Lessard, Renewable Rochester

requiring energy. European cities are trying out solar-powered replacements as a step towards a greener infrastructure. In South Holland, a province of the Netherlands, bus stops are now being fitted with solar-powered digital information signs, making assembly and replacement easy because of the lack of cables.

Native winds

In the United States, Native American tribes are increasingly turning to wind power as a source of energy and a route to economic development. Many of the country's 700 tribes and Native Alaskan villages are located on lands with excellent wind resources and development potential.

Some tribes, such as the Rosebud Sioux in South Dakota, have already taken the plunge. They erected a 750-kilowatt turbine that powers a casino and the excess clean energy goes to an electric company for local use. A 30-megawatt wind farm is now under development.



US Dept of Energy



MIT

reverse osmosis process to remove contaminants, using a fifth of the energy required by standard equipment powered by diesel.

Mini-hydro

Don't have power, but have a river or creek running by your property?

From metropolis to megalopolis

Centres of cultural activity, engines of wealth and technological innovation, but also of poverty and environmental degradation, cities embody both the world's greatest hope and its greatest challenge to sustainable living.

Why? Cities consume 75 per cent of the Earth's natural resources while occupying just 2 per cent of the planet's terrestrial surface. And in an astonishingly short period, we've become a world of city dwellers: in 1950, a third of the world's population lived in cities; by 2000, the proportion had grown to half; and by 2008 the majority of us had become urban citizens. This trend is projected to continue: two-thirds, or 6 billion people, will be living in cities by 2050.

Cities are getting bigger, too: the number of cities with more than 1 million people went from 11 in 1900 to 378 in 2000. By 2025, experts expect the number to increase to around 600, of which almost 500 will be in developing countries.

So greener cities will become an ever more important focal point for human and environmental well-being and development. The good news is that emerging cities have the opportunity to develop more efficient buildings, systems and infrastructures than the older ones – essentially learning from past experience, whether positive or negative. Meanwhile, our older cities are not standing still. They, too, are seeking ways to green themselves. Here are a few creative examples addressing some of the many possible qualities that might help make a city more sustainable.

Bringing life to abandoned buildings



Richard J. Andersen, www.luximages.co.uk

When members of the Invisible Circus – a performing arts group in Bristol, UK, that specializes in staging wild and colourful shows in abandoned buildings – began squatting in a disused car showroom, they took it upon themselves to transform this neglected, run-down space into a showcase of local art and a publicly accessible venue for film nights, workshops, talks, rehearsals and, of course, jaw-dropping live performances. The community responded with enthusiasm and, in partnership with Bristol City Council and others, the team formed Artspace/Lifespace, an artist-led organization that transforms underused and problem properties into vibrant, self-supporting creative centres.

Better biking



Kris Ablan

In 1999, Marikina, one of the 17 cities that make up the Manila metropolitan area in the Philippines, began developing a bike network along riverbanks as well as roadways to provide an alternative to motorized public transport. With the help of a grant from the World Bank, 52 kilometres of cycle paths have been built so far, connecting residential communities with schools, markets and workplaces. With the help of a government-sponsored education and bike-loan programme, the network has had the effect of more than doubling the number of bicycles in Manila traffic. Half of all households now own at least one bike, and cycling has become accepted and popular as journey times are cut.

Ancient building techniques



Peru Brujo

The beautiful mud-brick buildings of Djenné, in Mali, demonstrate how building with earth – including adobe, rammed earth and so on – remains a tried and true, eco-friendly way to create shelter in arid regions. The bricks, called *ferrey*, are made of sand, clay and organic materials such as rice husks, then baked in the sun. Coated with mud plaster, they create thick walls that naturally provide insulation from heat during the day and keep interiors warm at night. The city of Djenné, with its spectacular mud-brick Great Mosque, is protected as a UNESCO World Heritage site.

YOUTH AND THE CITY

Young people make up nearly 40 per cent of the world's unemployed, but if the collective energy and creativity of youth could be harnessed, think how much could be accomplished! Around 85 per cent of young people live in developing countries, and many from rural areas migrate to cities seeking opportunities. Once there, they find fewer job openings than job-seekers, so many are forced to work informally at whatever they can find, and live in slums, particularly in countries such as Benin, Burkina Faso, Central African Republic, Chad and Ethiopia. If these large numbers of unemployed youth go unaided, they are likely to become trapped in poverty, are at risk of being exploited, and have little access to education and health

care – all of which can fuel political unrest. Policy makers are trying to help, and the need to create employment opportunities for young people is specifically addressed in the Millennium Development Goals (MDG 1, Target 1b). The Youth Employment Network (YEN) – a partnership between the UN, the International Labour Organization and the World Bank – advocates prioritizing youth employment on development agendas, works with young people to pilot entrepreneurial projects, and supports such strategies as microcredit schemes, vocational and entrepreneurship training, and information and communication technology skills training. With perseverance, such efforts will help make cities hubs of hope for young people.

Rurukina/flickr

Caring construction



Verbraucherportal Hauskauf.de

PassivHaus is a construction standard that produces such well insulated buildings that they don't need air-conditioning in summer or heating during the winter, even in regions with extreme temperatures. Developed in the 1980s in Europe, where the technology is most popular, Passive-Haus designs use 'passive' solar technology such as windows oriented towards the sun, walls that absorb and distribute heat, and roof overhangs designed to shade windows from heat, depending on the needs of the site. Houses are airtight and typically fitted with double- or triple-glazed windows and insulated doors, but are often equipped with a special ventilation system that captures heat from inside the building and uses it to warm fresh air coming in. Buildings certified to PassivHaus standard in the European Union and United States can consume up to 90 times less energy to cool, heat and light than standard new buildings.

Rurbanism



Andy Kaye

What if we were to take the greening of urban spaces even more seriously and bring together urban and rural life, closely interweaving rice paddies, fish ponds and vegetable gardens into high-efficiency, densely packed and ultra-modern urban apartment blocks? It's a plan already in the works for Panjim, the capital of Goa, India. In 2001, a team made up of design, sustainability and development experts undertook a research project to transform an existing city into a sustainable city, settling on Panjim because it already has a high quality of life and a strong enough institutional base to support the transformation. Research into the city's natural resources and its demographic, social and economic structure showed that the transition could be made in 30 years, and that the better-designed city would lead not only to fresh air, locally grown food and the regeneration of surrounding landscapes, but would save its citizens precious time, leaving more for work, childcare, education and leisure activities.

New urbanism



Christine G.H. Franck

One way out of smoke-choked city traffic jams is to live in a neighbourhood packed compactly with everything you need – homes, shops, schools, workplaces, recreation and civic facilities – all ideally within a 10-minute walk. That's what's envisioned by the urban design movement 'new urbanism', which emerged in the 1980s. It proposes mixed-use retail/residential properties, town squares or centres, increased housing density, more green space for wildlife and recreation and, above all, pedestrian-friendly city design. In the new urban vision, parking lots would be turned into parks, bicycles would be easily accessible and foot traffic would help local businesses thrive. There are hundreds of new urban projects being built or planned in the United States. The most famous completed project is Seaside, Florida, featured in the film *The Truman Show*, while examples in Europe – where the corresponding movement is called 'urban village' – include Poundbury, England and Jakriborg, Sweden. Elsewhere in the world, new urbanist developments include Melrose Arch in Johannesburg and Cobourg, Ontario, Canada.

Green feeding



A discussion of green economy wouldn't be complete without considering agriculture, which has massive impacts on our ecosystems: deforestation, pesticides and fertilizers, livestock emissions, to name just a few. The good news is that for the last 20 years, leaders in various agricultural sectors have set up ecolabels – certification standards that help make any agricultural commodity's supply chain – from farmer to consumer – more sustainable. As time goes on, increasing numbers of agricultural certification programmes – as well as those for energy efficiency, sustainable manufacturing and so on – have been launched, covering everything from fair trade through fish to forests and beyond.

It can be overwhelming to stay aware of what these are and the standards they set, but it's worth doing research so that you know what you're buying, as consumers play a key role in the green economy. Meanwhile, here are a few of the major global ecolabels to seek out as you make your choices.



A. Hart/Blickwinkel/Still Pictures

Roundtable on Sustainable Palm Oil (RSPO)

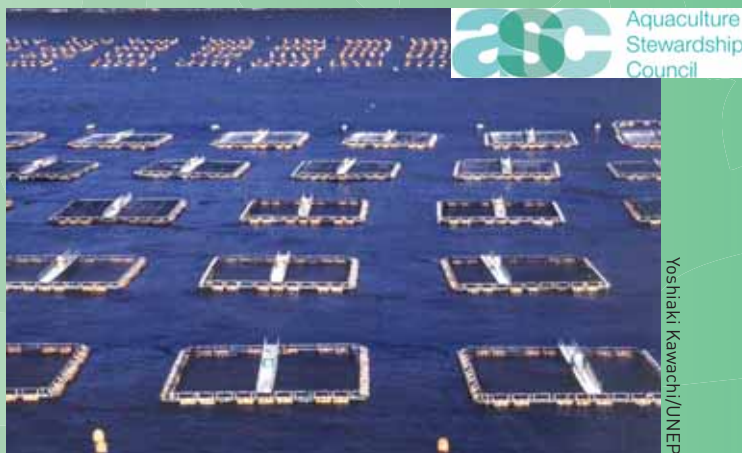
Nutritious, delicious and rich in energy, palm oil, grown primarily in Southeast Asia, is in many everyday products, from crisps to breads, ice cream and cereals – where it's described as 'vegetable oil' – to cosmetics and soaps. It's also in demand as a biofuel. But growing oil palms typically involves clearing rainforest and peatland, which contributes to biodiversity loss and carbon dioxide emissions. WWF established the RSPO in 2004 to promote the growth and use of sustainable palm oil products through credible global standards. It convenes stakeholders from seven sectors of the palm oil industry – producers, processors or traders, consumer goods manufacturers, retailers, banks and investors, environmental or nature conservation organizations and social or developmental ones – to develop and implement global standards for palm oil that ensure the least harm possible to the environment.

www.rspo.org

Aquaculture Stewardship Council (ASC)

Aquaculture is too often demonized as having a negative environmental effect, but carried out responsibly, it can play a major role in providing a sustainable alternative to wild sea-food as human populations grow and fisheries are depleted. Established in 2009 by WWF (the global conservation organization) and IDH (the Netherlands Sustainable Trade Initiative), the ASC is currently still developing its standards – including those for the production of tilapia, salmon, shrimp, bivalves, freshwater trout and abalone. It aims to increase the availability of certified sustainable fish products, while creating a consumer label that will help people enjoy it free of guilt.

www.ascworldwide.org



Yoshiaki Kawachi/UNEP



Scevenels/UNEP

Forest Stewardship Council (FSC)

We rely on forestry not only for ecosystem health, but also for some foodstuffs, and for our supply of wood used to create packaging, building materials, charcoal, paper and many more products. The FSC sets standards for sustainable, economically viable and socially beneficial management of the world's forests. Look for this label to make sure your wood products came from legally logged, sustainably managed forests that have done no harm to old-growth forests or the people who live in them.

www.fsc.org



M.E. Garcia Blanco/UNEP

Marine Stewardship Council (MSC)

Food from the sea is healthy, renewable and an essential food source for billions around the world. But demand is increasing, and more than 70 per cent of fish stocks are already overharvested and depleted, while poor fishing practices such as trawling the seabed damage marine ecosystems. The MSC works with fisheries, seafood companies, scientists, conservation groups and the public to promote the best environmental choice in seafood by rewarding sustainable fishing with its fishery certification programme and seafood ecolabel. Fisheries must operate at a level that permits fishing to continue indefinitely without overexploitation, must be managed to minimize impact on the structure, productivity, function and diversity of the ecosystem, and must meet all local, national and international laws.

www.msc.org



Peter Essick/AuroraSpecialistStock

The Round Table on Responsible Soy (RTRS)

Soy is a very common crop and valuable to humans as a food source, as fodder for livestock including pigs, poultry and cattle, and as an oil widely used in processed foods. Soy oil is also used to produce biofuels. Similar to the RSPO and also established by WWF, the RTRS certifies soy, its derivatives and products, all along the supply chain. Its standards include prohibiting soy cultivation in areas of high conservation value like forests and savannahs, monitoring water pollution and soil erosion, and eliminating the most hazardous pesticides from soy farming. It also seeks to prevent social conflicts over land and labour rights.

www.responsiblesoy.org

An African Green Revolution

Smallholder farmers – the majority of them women – provide most of Africa's food, typically with few resources and little government support. Hoping to help empower smallholder farmers and lift them out of poverty and hunger, the Alliance for a Green Revolution in Africa (AGRA) – an organization chaired by former UN Secretary-General Kofi Annan – works across Africa to support food security and prosperity by transforming smallholder farming into a productive, sustainable and competitive system, all while protecting the environment.

In partnership with African governments, farmers' organizations, research scientists, the private sector, civil society and multilateral organizations, AGRA works with farmers to improve soil, test and improve crop varieties, encourage use of underutilized seeds, and collect and conserve crop biodiversity. It works with communities to involve and train youth in agriculture, and gives farmers access to healthy seeds, soils, markets and education, and advice on climate-change adaptation, financing, storage and transport.

The aim is ambitious: to reduce food insecurity by half in at least 20 countries, double the incomes of 20 million families, and put at least 15 countries on track to attain and sustain a home-grown, African-led African Green Revolution by 2020.

www.agra-alliance.org

Eating for the green economy

Produce doesn't get any fresher or more delicious than out of your own garden. Some say 'try to eat something you've grown yourself every day'. That includes herbs and spices grown on a window ledge or balcony. But for those of us who lack horticultural skills, farmers' markets – if you can find one in your area – are increasingly popular and a great alternative. Your hard-earned cash goes straight to the farmer, you support local food production and you get to meet the person who's feeding you, helping to create vital community links.

If you're an adventurous cook, another option is to sign up for a box scheme – also known as community-supported agriculture – where a local farm or pool of farmers delivers a selection of in-season produce to your door by subscription. This helps guarantee a stable market for – and builds community investment in – local agriculture.

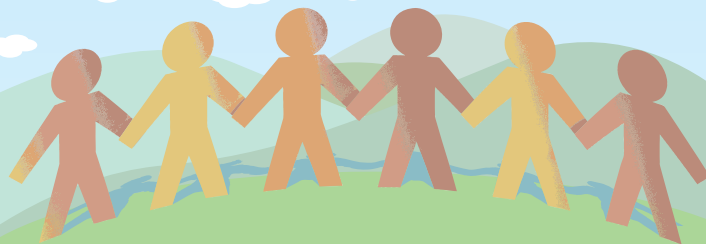
Of course, eating locally might get boring if you don't live in a climate that allows for lush year-round produce, and many of us have come to depend on foods sourced from abroad. In those cases, look for sustainably produced and/or fair-trade products to help ensure these treats are having as positive an impact, both environmentally and socially, as possible.

It's also important to keep in mind that local doesn't always have a lower footprint, as the footprint depends as much on production as on transport. A local strawberry, for example, grown using lots of pesticides and fertilizers in heated greenhouses may have a heavier environmental footprint than an organic strawberry shipped in from a sunny country.



What if more of us spend less time earning conventional wages and more time exchanging some goods and services directly, or sharing things we don't need all the time, bypassing money altogether? After all, it's what everyone's great grandparents used to do, and many communities all over the world still depend on it. Alternative economies can help supply your needs, strengthen the local economy, and give you a chance to get to know your neighbours and the skills they offer. Might it work for you?

Living together



Community currency

A community currency programme, also known as barter currency, works by offering skills or products as an alternative to cash, redeemable in local shops and businesses, thus helping a local economy become self-sufficient. So if you're a house painter, you might do a job for a certain number of points, and use them to get your bike fixed by your local mechanic, who uses them to buy food from a local farmer. There are many such systems in place around the world, some that operate on tokens, some on a system of credited points. Local currency is one of the methods used by the Transition Town movement to build resilience in local communities, reduce food and trade miles, and help people become more self-reliant in the face of dwindling oil supplies and climate change.

www.transitionnetwork.org

Freecycle

Why recycle when you can Freecycle? It's easy. If you have something you no longer need – anything from a pair of jeans through a desk to a pile of leftover bricks from that building project – post it on your local Freecycle network's website. Or if you need something, you can post a wanted notice, and hope someone has what you need. Freecycle sites across Europe, the USA and Australia are helping unwanted items everywhere find good homes.

www.freecycle.net

Tool libraries

Most of us don't need full-time custody of drills, concrete mixers, saws and such. In 1979, the public

library in Berkeley, California, decided it would be a good idea to loan tools as well as books. Today, there are at least 40 tool-lending libraries across the United States and a few in Canada and Australia.

Community Fruit, Christchurch

A New Zealand organization goes around picking unused fruit from people's gardens, and redistributing it by donating to those in need. Saves waste, eases hunger. Problem solved! Isn't it an adaptable idea?

www.facebook.com/pickfruitchristchurch

Couchsurfing

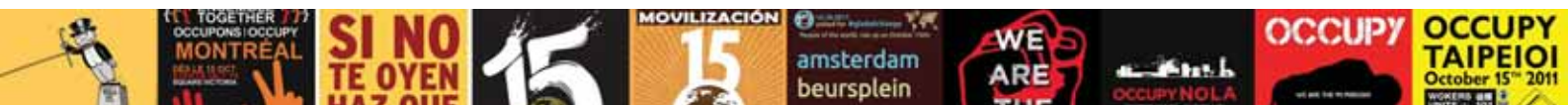
Skip that impersonal, energy-intensive hotel and immerse yourself in real life, wherever you go. Couchsurfing lets you offer your home free to travellers, and in turn you can search for a free place to stay when you travel. It boasts millions of members in more than 230 countries, changing the face of travel.

www.couchsurfing.org

BookCrossing

Do you have a book you'd love to share? Register it on BookCrossing.com, print out a label to identify and track it, and 'release' it anywhere in public – on a bus, in a restaurant or in the park – for someone to find. When the finder has finished reading it, he or she can let it go again. Participants can follow the fate of books on the website if finders report them. So far, more than 850,000 active BookCrossers have registered almost 7 million books travelling around 130 countries!

www.bookcrossing.com



ROBERT VANWAARDEN photographed youth participants at the Occupy COP-17 encampment in Durban during the Climate Conference, and **CAROLINE WAMBUI** spoke to them about why they were there, and what they hoped to achieve.

'I think that the solution for climate change is the people, the union of the people and the mobilization of the people, and that yes, we can make a change.'

Nilza Matavel, Mozambique



'I am here because I recognize my global citizenship and understand that the system that we live in is one of shared problems, shared solutions and shared resources. We, the people, know this and understand this inherently.'

Angus Joseph, South Africa





Create the change you WANT



N. Klein

OCCUPY is a grassroots movement with no obvious leaders, so its demands are difficult to pin down. However, many people appear to be united in their dissatisfaction with the current distribution of wealth and a global economic system that seems to be more concerned with profit than human and environmental well-being.

Its message hit a nerve: in the wake of Occupy Wall Street, New York, 750 or more Occupy movements erupted in cities around the world during the last months of 2011, forming a loosely connected global movement that is still going. Points of discourse vary depending on location, but the movement has encouraged worldwide debate about failures in the financial system, corporate behaviour, environmental degradation and the way we live.

Its overriding message is clear: if you don't like the way things are, it's your own responsibility to create the change you want.

Writer and radical thinker **NAOMI KLEIN** spoke out in support of the Occupy movement.

'Unfettered greed has trashed the global economy. And it is trashing the natural world as well. We are over-fishing our oceans, polluting our water with hydraulic fracturing and deep-water drilling, turning to the dirtiest forms of energy on the planet, like the Alberta tar sands. And the atmosphere cannot absorb the amount of carbon we are putting into it, creating dangerous warming.

'We act as if there is no end to what is actually finite – fossil fuels and the

atmospheric space to absorb their emissions. And we act as if there are strict and immovable limits to what is actually bountiful – the financial resources to build the kind of society we need.

'The task of our time is to turn this around: to challenge this false scarcity. To insist that we can afford to build a decent, inclusive society – while at the same time respecting the real limits to what the Earth can take.

'I'm not talking about regulating the banks and increasing taxes on the rich, though that's important. I am talking about changing the underlying values that govern our society. It's hard to fit that into a single media-friendly demand, and it's also hard to figure out how to do it. But it is no less urgent for being difficult.'

'I am here because I'm a global citizen and I really care about the Earth. One part of me feels I should forget the UNFCCC process. Let's just retreat into our own communities, figure out how we can grow our own food, take care of ourselves and forget about this larger structure because it's not going to change. But every single day emissions and pollution are compromising our ability to produce our own food, to breathe and to be able to live. So I am here because something desperately needs to be done and I will do whatever I can to speak out.'

Tipti, India



'I am here because inside they are talking about my future, and they are talking about issues that affect each and every one of us, but they are doing it without us. They claim to represent the world but they are not listening to what the world has to say. So I am here to raise my voice and try to be heard, but also to listen and learn from everyone who is here today. It is these people that I put my faith in for creating something new and beautiful, something that will change the paradigm and bring about the global shift we so desperately need.'

Anna Collins, UK



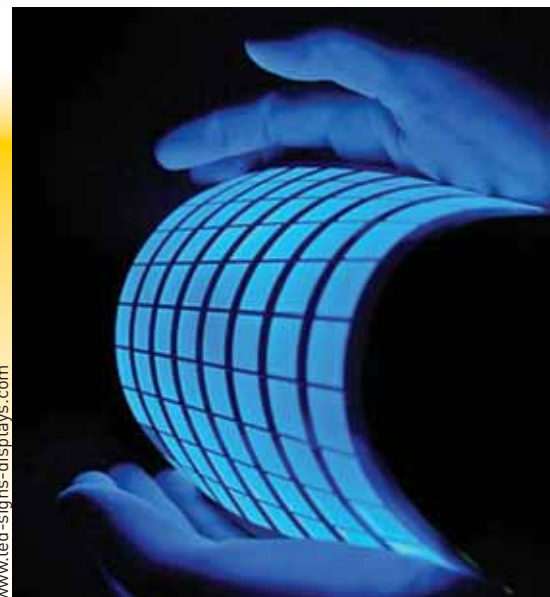
7 innovations

Seven new ideas and technologies that point the way to embed the green economy in everyday life. It is the future...

Elastic electronics

TV monitors that roll up for storage, wallpaper that lights a room, video displays embedded in clothing. All this may be possible with stretchable, bendable OLEDs – organic light-emitting diodes. OLEDs are made of organic light-emitting molecules, thinly layered between two conductors, which emit light when an electric current is passed through. Paper-thin, more energy-efficient than LCDs and producing higher quality images, OLEDs are already used in high-end TV

screens, billboards, light-generating wallpaper and electronic gadgets. They are more eco-friendly to produce than LEDs or fluorescents as they require less energy-intensive processing and don't need such toxic chemicals as lead or mercury, and they are less expensive to make. If researchers succeed in current efforts to create more flexible OLEDs, the possibilities are endless, including embedded biomedical devices that can move and stretch along with human tissue.



www.led-signs-displays.com

Mushroom death suit

Even after death, we pollute: the embalming process uses toxic chemicals, and cremation requires large amounts of energy. Even buried corpses release toxins accumulated over a lifetime into the environment. MIT-based artist and designer Jae Rhim Lee wants to make corpse disposal greener with mushrooms – famous for their ability to break down everything from organic materials through oil to plastics, pesticides and

other pollutants. She's experimented with various burial suits embedded with mycelium spores, which would accelerate the process of decomposition and help remediate the toxins stored in our bodies. She hasn't yet found the right fungus for the job but, with the help of scientists, she is cultivating certain mushroom species known to break down environmental toxins to adapt to eating human body tissue.

<http://infinityburialproject.com>



Mike Shafran/Jae Rhim Lee

Bricks from bottles

The world has too many plastic bottles and not enough affordable eco-friendly construction materials. No surprise, then, that in the last decade bricks made from plastic bottles have boomed. In Nigeria, sand-packed bottles are stacked on a concrete foundation and bound with mud, while in post-earthquake Haiti, they are filled with rubble and rubbish and used to rebuild homes. Bottles filled with mud or sand are said to be more durable

than brick, they are not brittle and so can absorb shock loads, and they save on the energy and materials required to produce brick and concrete. Perhaps next, bottle makers should design specifically for after-use – as beer brewer Alfred Heineken did in 1963 with his prescient World Bottle, abbreviated to WOBO, a glass beer bottle that acts as an interlocking brick. Only 60,000 were made and they are now a collector's item.



ECO-TEC www.eco-tec-solutions.com

Documents in, loo roll out

We religiously recycle office paper, then buy recycled lavatory paper. A Japanese company skips the middleman with a machine that shreds paper, dissolves it in water and forms it into toilet paper. It takes 40 sheets of office paper to make a roll, and each roll costs about 10 cents – saving money as well as reducing waste and transport costs. With a massive price tag of \$100,000,

the machine – called White Goat – isn't suitable for homes or small offices, but it could prove efficient in such settings as recycling centres and supermarkets, where students could shred a few term papers and go home with practically free loo roll – or at universities or big office buildings, which generate large quantities of waste paper. And if it catches on, it should get cheaper.

Japan Technology Information



Plastic fantastic

What to do about plastic waste? We can certainly produce less, but we can also recycle it as fuel. The process of thermal denaturing converts plastics back into oil, but has been inaccessible to most consumers. Now a Japanese inventor, Akinori Ito, has created a safe, easy-to-use tabletop machine that converts three kinds of common plastic – polyethylene, polystyrene and polypropylene – into oil. The Blest

machine melts plastic into oil without burning it, avoiding CO₂ emissions and toxic fumes. Every kilo of plastic generates a litre of oil, which can be used directly in generators or stoves, or refined into petrol. The machine is portable, so fuel can be generated from plastic waste anywhere. It may prove most useful in countries where plastic litter is a problem, helping people to reclaim pollution as valuable fuel.

www.blest.co.jp



Growing packaging

Sustainable materials company Ecovative is literally growing materials to replace everything from petroleum-based foam packaging to particle or cardboard. It is using mycelium – the thread-like fungal networks that comprise the roots of mushrooms. Low-value agricultural by-products like seed husks and plant stalks are inoculated with mycelium, packed into packaging moulds and left in the dark. In just one week,

the mycelium digests the feedstock and binds it like glue, creating a rigid material that can have various textures and densities, depending on the processes used. Best of all, it can be home-composted at the end of its useful life. Ecovative is also further developing this technique, hoping to pioneer new sustainable materials for clothing, scientific equipment and more.

www.ecovatedesign.com

www.ecovatedesign.com



Pedal power

In Tanzania, smallholder farmers either traditionally shell maize by hand to remove the corn from the husk, or have to pay for mechanical shelling. Seeking a bridge technology, social entrepreneur Jodie Wu developed a bicycle-mounted, bicycle-run maize sheller. Realizing that smallholder farmers wouldn't require a normal maize-shelling machine for long enough per season to warrant investing in one, she designed one that could attach

to a functional bicycle and worked on pedal power. Jodie hopes to pioneer a new economy with bike-mounted gadgets: equipped with a sheller and bike-mounted cell-phone charger, young entrepreneurs have the tools to start a business. In the off-season, they can use the bike as a taxi or courier service, and Jodie's enterprise, Global Cycle Solutions, is developing more mountable gadgets such as a rice-thresher. <http://gcstz.com>

www.carbondescent.org.uk



The green economy



HEAL THE WORLD



Sonali Prasad, IOC YOG Young Reporter

Remember 'Heal the world. Make it a better place. For you and for me and the entire human race'? Michael Jackson's song still plays in minds and thoughts about how we should treat each other with respect and dignity, and live in harmony.

These words deliver a special message to today's youth as the world is confronted by unprecedented environmental challenges and is struggling to cope with the damage and destruction that can be seen everywhere: floods, droughts, landslides, tsunamis.

At the first Winter Youth Olympic Games (YOG), in Innsbruck, Austria, UNEP teamed up with the International Olympic Committee (IOC) to spread the message of environmental sustainability amongst young people: our future, our hope.

UNEP and the IOC have been working together for nearly 20 years to make the world's largest sporting events as green as possible and to educate young people about the importance of sustainable development. In Innsbruck, young athletes thronged to the UNEP booth – part of the Culture and Education Programme – to gather information, participate in activities and post memos on the athletes' wallboard.

The board was flooded with messages, from simple calls to cycle, recycle, plant trees and respect the environment, to action-oriented slogans calling for environmental sustainability: 'The future is ours, embrace it', 'Trees are our friends, respect them', and even 'It's now or never'. These messages and thoughts from the young athletes show that our generation truly cares. And we aren't alone. The President of Hungary Pal Schmitt – double Olympic gold medalist and Chairman of the IOC's Sport and Environment Commission – wrote 'Higher, stronger, swifter and greener!' All these will be shared with youth networks and other partners by the IOC and UNEP to promote a sense of urgency in the lead up to Rio+20 and beyond.

UNEP's Tunza booth was a huge draw, with information on the wonder and fragility of mountain ecosystems, the green economy and youth employment, and the chemicals in our bodies. Visitors also had the chance to calculate their own ecological footprint. But it didn't stop there. The importance of the environment – the third pillar of Olympism – was underlined right across Innsbruck 2012, with even an energy-saving competition in the Youth Olympic Village which allowed young athletes to show how aware they were and see which of the 375 apartments used the least energy during the Games. The spirit of competition fired the young athletes to take shorter showers, recharge mobiles and other gadgets during training sessions, and switch off un-needed lights.

The booths at the Youth Olympic Games are a way of reaching out to young minds and leaving a mark. Activities like these do produce tangible results. In the words of the first man on the moon, Neil Armstrong: 'A small step for man, a giant leap for mankind.'

As world leaders gather in Rio this June, let's rekindle the spirit of Rio 1992 to halt the assault on our only planet, and work as a team to make it a better place for present and future generations. Let's 'heal the world' ... together.

Sonali Prasad is one of 15 young people, aged between 18 and 24 from the five continents, chosen to take part in the Innsbruck 2012 Youth Olympic Games Young Reporter Programme. They were either journalism students or people who had recently started their careers. The initiative provided the budding reporters with a cross-platform journalist training programme and on-the-job experience during the Games.