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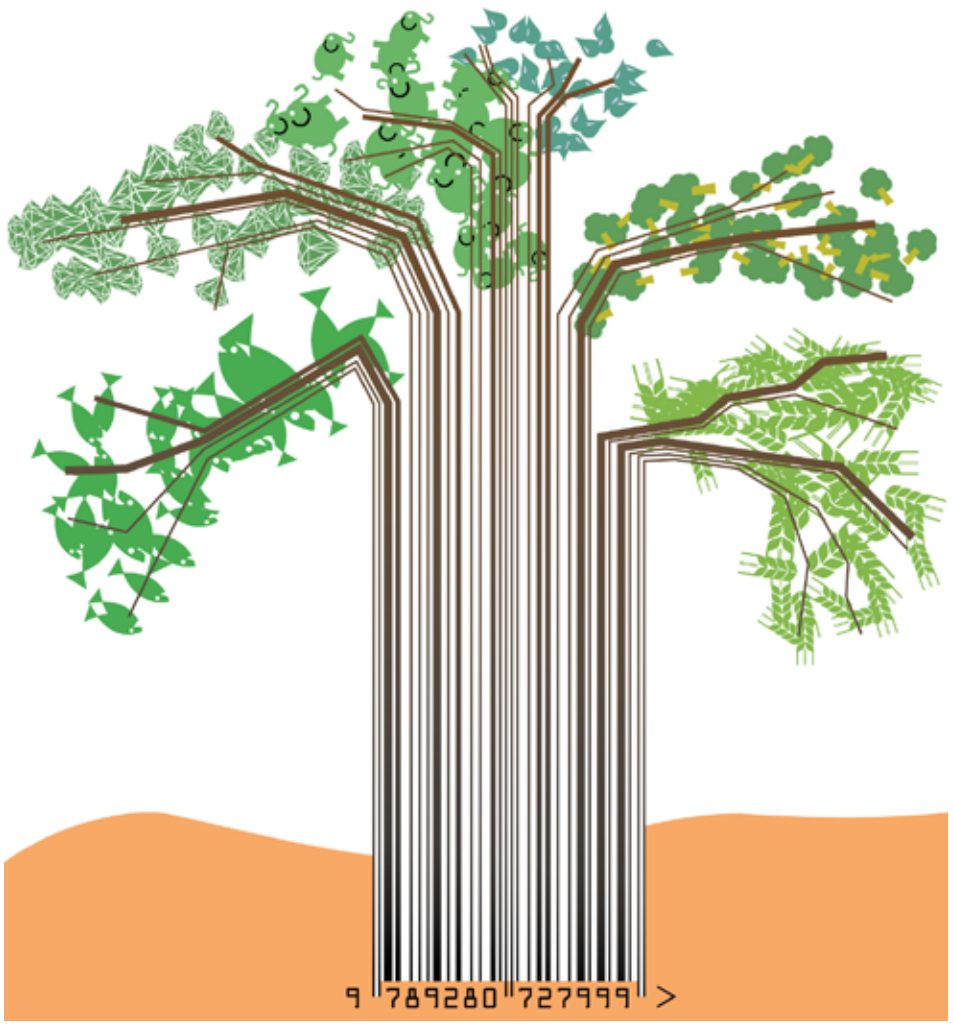
Contents

Africa's natural resources key to powering prosperity



*By **Achim Steiner**, Under Secretary General of the United Nations and Executive Director of the United Nations Environment Programme headquartered in Nairobi, Kenya*

Africa's leaders looking to economic priorities for the continent should be putting the environment high on the list. Report after report is now demonstrating that sustainable management of Africa's natural resources is one of the keys for overcoming poverty. Sensitively, creatively and sustainably harvested and fairly shared, these resources can assist in meeting – and going far beyond – the internationally agreed development goals.

The 20th century was an industrial age – the 21st century is becoming increasingly a biological one. Africa, with its natural wealth or "nature capital" residing in its ecosystems – from forests to coral reefs – can be a leading player on this multi-billion dollar stage. Africa's wealth of natural resources has always been an asset and has sustained its people during good and hard times. But their true value, the sheer scale of the wealth from Africa's freshwaters and landscapes to its minerals and marine resources, has been invisible in economic terms. Only now are we getting glimpses, only now are the real economic figures coming to the fore.

Take the wetlands of the Zambezi River Basin. According to estimates outlined in the Africa Environment Outlook-2 (AEO-2), the economic value in terms of crops and agriculture alone of these wetlands is close to USD 50 million a year. The wetlands also have other economic importance. In terms of fisheries, nearly USD 80 million a year and in terms of maintenance of grasslands for livestock production, over USD 70 million annually. Wetland-dependent ecotourism is valued at more than USD 800,000 annually and natural products and medicines associated with wetlands on the Zambezi are worth over USD 2.5 million a year.

And it is not just wetlands. Take biodiversity for example, and the gorillas of the Great Lakes Region. It is estimated that tourism linked with gorilla watching now brings in around USD 20 million a year. It is a point echoed across the continent. South Africa's coastal waters and unique wildlife are generating roughly USD 30 billion a year in economic and tourist-based activities. It can be a virtuous circle. In Madagascar, where nature-based tourism is the second largest foreign exchange earner, over 40 new protected areas covering about two per cent of its land area have recently been established.

Many of Africa's ecosystems are not just serving the region, but the whole world. Joseph Stiglitz, the Nobel prize-winning economist, estimates that the carbon sequestration or "carbon-soaking" value of tropical forests – such as those in the Congo River Basin – probably equals or exceeds the current level of international aid being provided to developing countries. In other words, it is the developing world, and some of the poorest countries, that are helping the global community by freely removing large levels of the gases causing climate change. Some developed countries are recognizing that debt. They are turning to creative market instruments to repay this debt in a way that balances the need to fight poverty with a need to sustainably manage these income-generating natural resources.

France has signed a debt-for-nature swap with Cameroon under which USD 25 million will be invested in people and nature in the Congo River Basin. This is part of the wider Congo River Basin Partnership Initiative, born at the World Summit on Sustainable Development in 2002, involving the Basin's six countries and a range of other governmental and non-governmental actors.

Many countries in Africa, like Gambia, are now mainstreaming environment into their Poverty Reduction Strategy Papers. They are also starting to turn to market instruments to balance economic concerns with environmental ones. Tanzania recently announced in its budget VAT exemptions for liquefied petroleum gas in order to reduce energy production from charcoal and wood. Kenya has announced that solar panels and related equipment will be zero-rated.

Countries in Africa are also becoming increasingly aware of the costs of inaction – of the price economies pay for lax environmental management and ecological degradation. A recent study in Egypt has found that pollution and environmental damage is costing that country alone over five per cent of its GDP.

There is also an urgent need for countries in Africa to maximize the opportunities under the carbon markets of the Kyoto Protocol and to fully engage in the Bali Road Map – the negotiations that need to lead to a deal at the climate convention meeting in Copenhagen in 2009 in order to deliver a climate change agreement to commence around 2012. Africa has a lot to lose and a lot to gain as a result of climate change. For example, one third of the continent's coastal infrastructure is threatened by sea-level rise. Equally, hundreds of billions of dollars of investment is starting to flow from the North to the South under instruments such as the Protocol's Clean Development Mechanism which can be invested in cleaner and renewable energy systems. Developed country governments also need to step up investments in adaptation and climate proofing economies in Africa.

The AEO-2 was compiled by the United Nations Environment Programme (UNEP) and researchers and scientists across Africa for the African Ministerial Conference on the Environment. But I sincerely believe it is essential reading for Africa's health, planning and transport ministers up to Africa's finance ministers and heads of state. For while the report is on one level a state of the environment report, it is also a pre-investment document. Why? Because it underlines how little of Africa's natural wealth is actually being sustainably harvested.

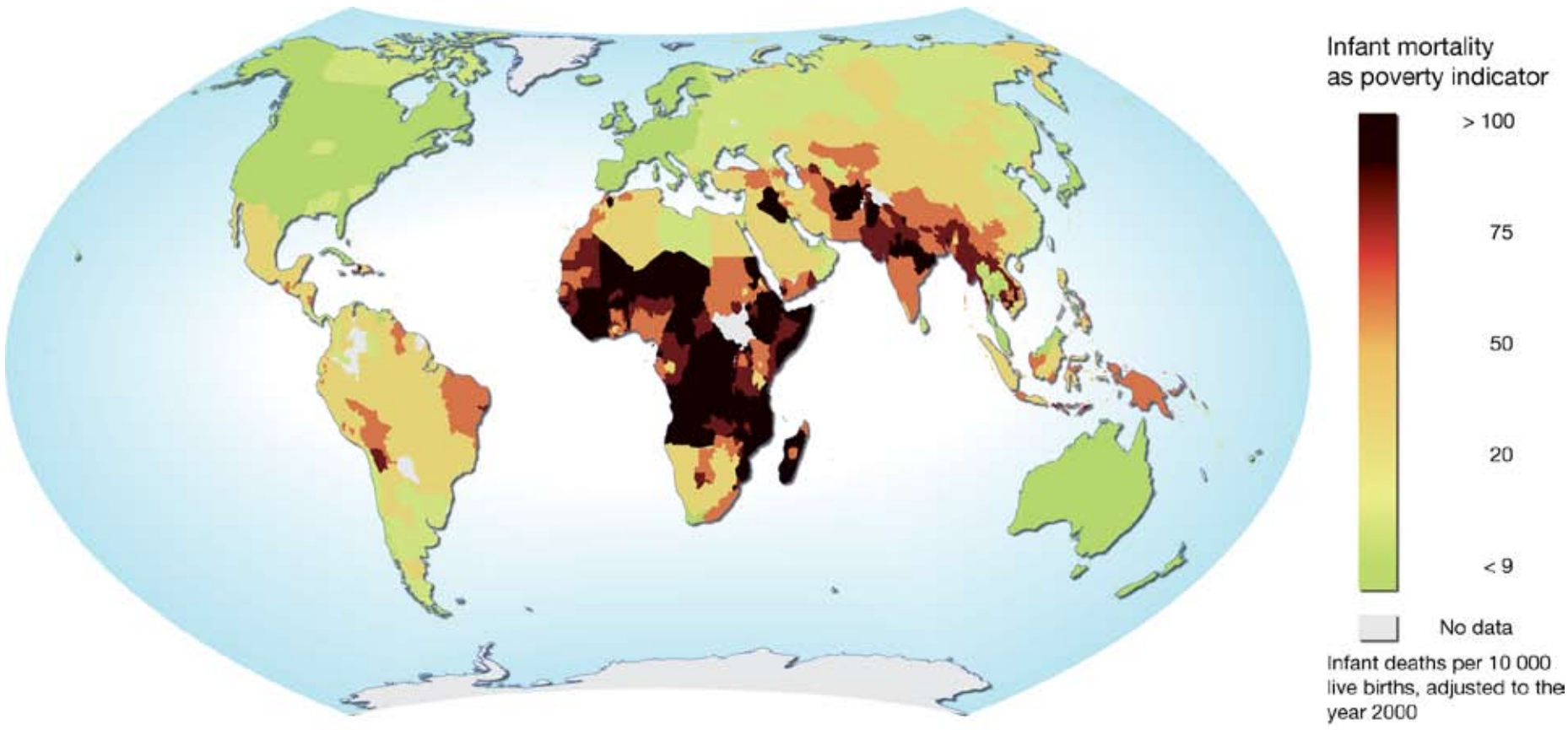
One figure: Africa has numerous tourist attractions, yet it contributes only four per cent annually to the multi-billion dollar global tourism industry. And another: Africa's renewable freshwater resource is, at close to 4,000 cubic km per year, about 10 per cent of the global freshwater resource and closely matches Africa's share of the world population. Yet in 2005, only about five per cent of the development potential is being used for "industry, tourism and hydropower", notes the report.

AEO-2 is also a kind of shareholders prospectus for a promising new enterprise, for it sets out choices as to how Africa's leaders, through the New Partnership for Africa's Development (NEPAD), might wish to develop this natural wealth in a sustainable way.

Africa urgently needs investment in hard infrastructure from roads and railways to ports, airports, schools and hospitals. But it equally needs investment in its soft infrastructure – in the ecosystem goods and services provided by nature. Investment to maintain and manage these natural resources well: Investment to unleash their huge economic and development potential for the benefit of the 800 million people in Africa today and for the generations to come.

Rich map, poor map

Natural capital constitutes one quarter of total wealth in low-income countries. Seas and soils are major food factories, forests provide wood for constructing houses, ores and minerals, like gravel, are used for paving roads. These are just a few examples of the wealth of developing nations.



Source: CIESIN 2005

World poverty distribution

Three quarters of all poor people still live in rural areas. They are heavily reliant on natural resources for their livelihoods – soil, water, forests and fisheries underpin commercial and subsistence activities and often provide a safety net to the poor in times of crisis. These natural resources are abundant in many developing countries and represent an important asset and potential wealth for poor people and their communities. As many of these natural resources are renewable, if properly managed, this wealth can be long-term.

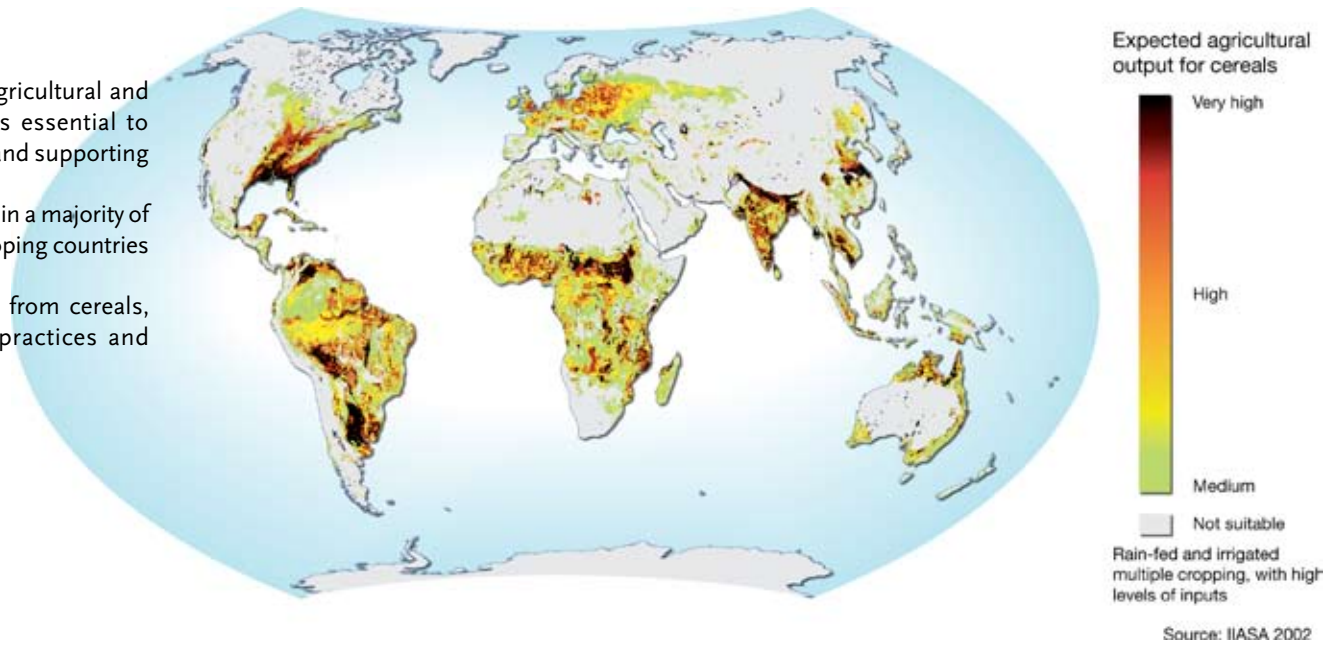
Improved natural resource management can support long-term economic growth, from which poor people, in rural areas and elsewhere, can benefit to achieve and sustain social progress and development.

Agricultural potential

Soils underpin the production of a wide range of agricultural and industrial goods and services. Soil productivity is essential to agricultural activities for food security, cash income and supporting the livelihoods of the poor.

Agriculture is the major engine of economic growth in a majority of developing countries, for instance low-income developing countries have a high share of agriculture in their GDP.

This map presents potential agricultural output from cereals, provided proper support in equipment, seeds, practices and irrigation.

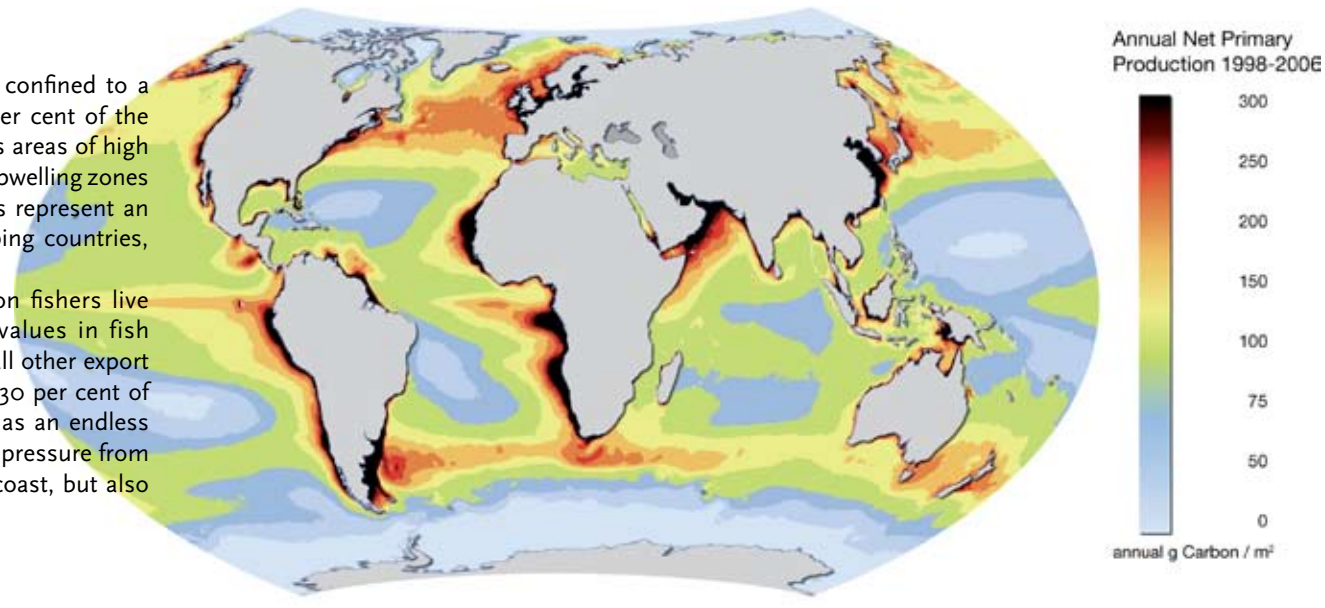


Source: IIASA 2002

Marine productivity

The world's most productive fishing grounds are confined to a number of hot spots, representing less than 10 per cent of the world's oceans. These areas – shown in the map as areas of high productivity – are primarily concentrated along the upwelling zones of the coasts. Fisheries and other marine products represent an important resource for coastal and island developing countries, providing nutrients and economic development.

More than 95 per cent of the world's 41 million fishers live in developing countries. Internationally traded values in fish products from developing countries are far above all other export commodities, and some countries generate up to 30 per cent of their fiscal revenues through fisheries. Once seen as an endless resource, fish stocks are today dwindling under the pressure from trawls and nets – coming not only from the near coast, but also from fishing boats from countries far away.



Source: Oregon State University 2007

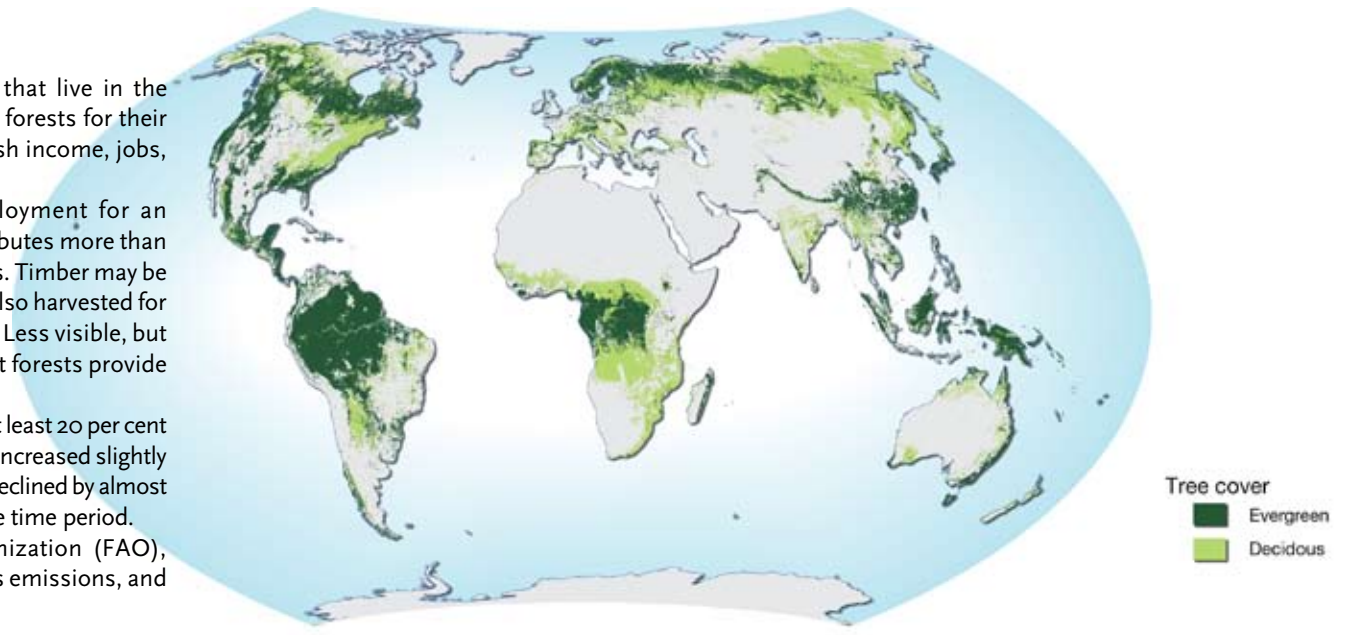
Forest cover distribution

Approximately 240 million of the world's poor that live in the forested areas of developing countries depend on forests for their livelihoods. Forests and their products provide cash income, jobs, and consumption goods for poor families.

Forestry provides formal and informal employment for an estimated 40–60 million people. The sector contributes more than eight per cent to GDP in some developing countries. Timber may be the most important forest product, but forests are also harvested for fruits, herbs and honey, as well as for wild animals. Less visible, but no less important, are the ecosystems services that forests provide such as for the hydrological cycle.

Nevertheless, global forest cover has dropped by at least 20 per cent since pre-agricultural times. While forest areas have increased slightly in the past 30 years in industrial countries, they have declined by almost 10 per cent in developing countries during the same time period.

According to the Food and Agriculture Organization (FAO), deforestation causes 25 per cent of greenhouse gas emissions, and reducing it is a high priority on the global agenda.

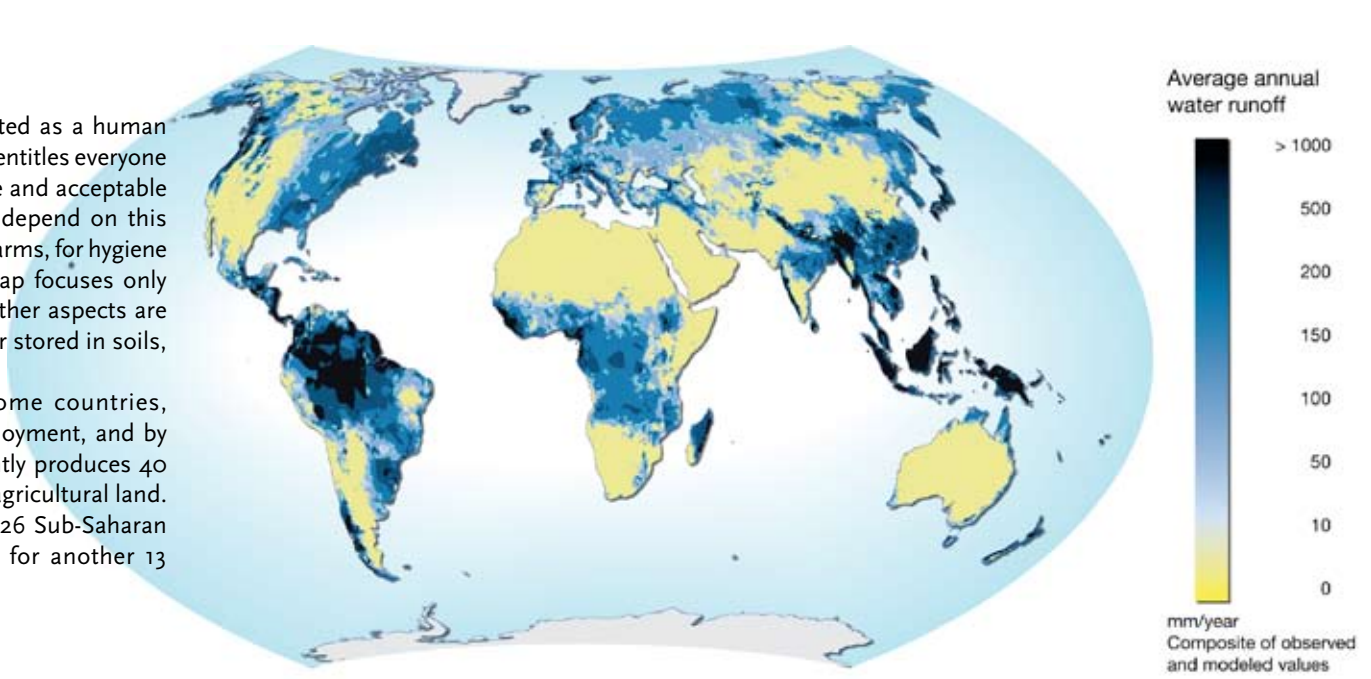


Source: EC Joint Research Centre 2003

Freshwater run-off

Freshwater – a natural resource which was adopted as a human right by the UN in 2002: "the human right to water entitles everyone to sufficient; affordable; physically accessible; safe and acceptable water for personal and domestic uses". People depend on this resource for drinking and cooking, for irrigation of farms, for hygiene and sanitation and for power generation. The map focuses only on one aspect of the geography of freshwater – other aspects are groundwater (including fossil water) and the water stored in soils, ice sheets and glaciers.

For the 2.5 billion people living in low-income countries, agriculture is the most important sector by employment, and by far the largest user of water. Irrigated land currently produces 40 per cent of the world's food on 17 per cent of the agricultural land. Hydro-electricity is the primary power source for 26 Sub-Saharan countries, and the second main power source for another 13 countries in this region.

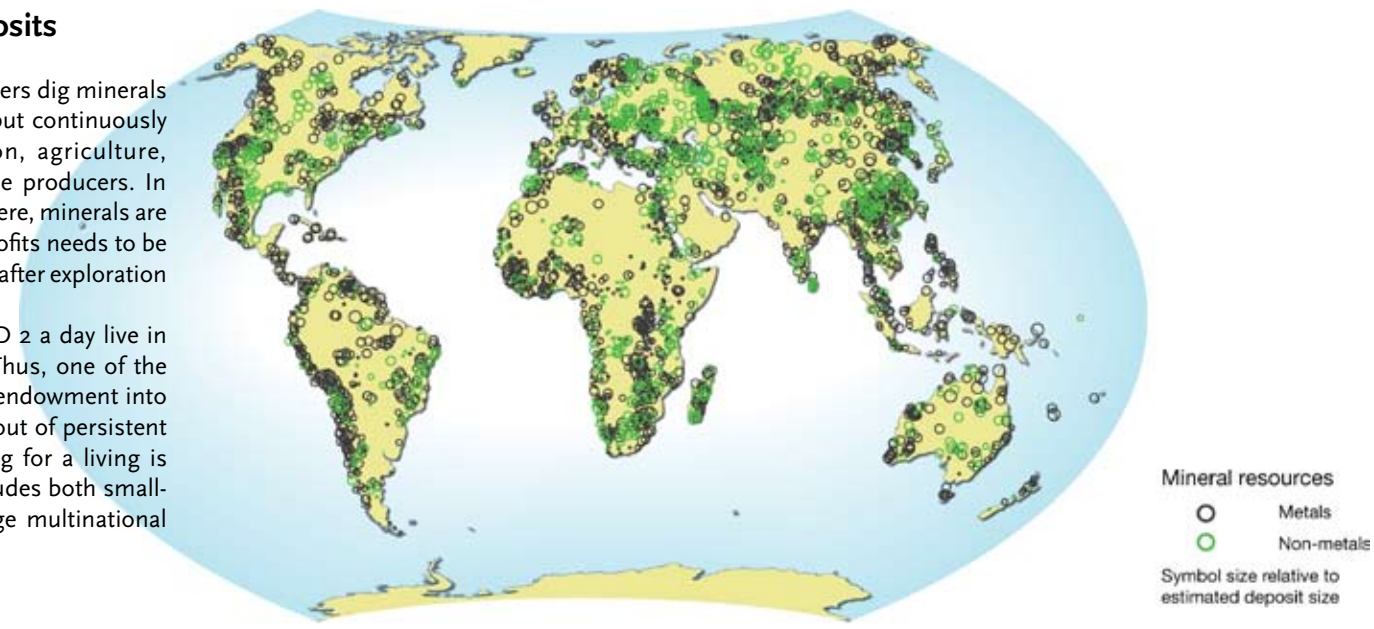


Source: UNH/GRDC 2000

Estimated mineral resources and deposits

In more than 100 countries around the world, miners dig minerals and metals out of the ground, satisfying a slow but continuously increasing demand from industrial production, agriculture, construction, high-tech sectors, and merchandise producers. In contrast to the other natural resources presented here, minerals are a finite resource, and so this resource and their profits needs to be managed carefully to ensure sustained livelihoods after exploration has ceased and mines have losed.

About 1.5 billion people living on less than USD 2 a day live in countries which have potential mineral wealth. Thus, one of the key questions for them is how they can turn this endowment into an economic asset that will help them find ways out of persistent poverty. The number of people relying on mining for a living is likely to be over 200 million worldwide – this includes both small-scale artisanal mining and employees under large multinational corporations.

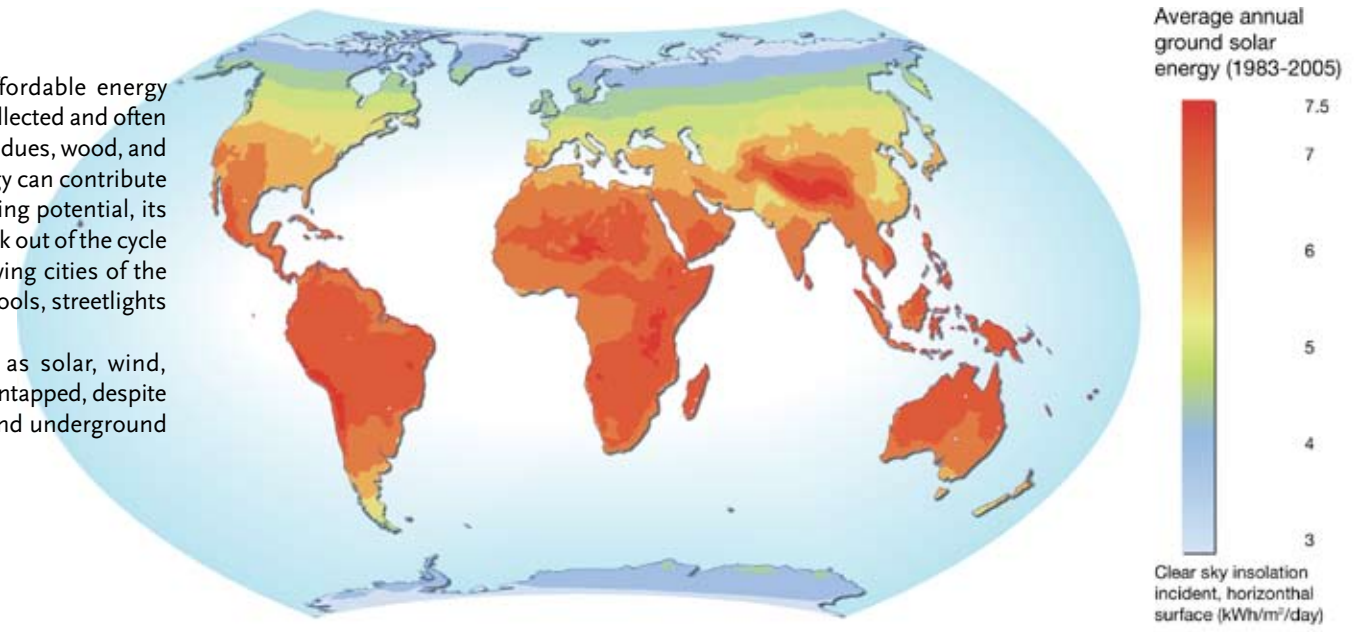


Source: ESRI and Data+ 1996

Solar power potential

More than two billion people cannot access affordable energy services today. They depend on inefficient locally collected and often unprocessed biomass-based fuels, such as crop residues, wood, and animal dung. Because convenient affordable energy can contribute to a household's productivity and income generating potential, its availability can help families and communities break out of the cycle of poverty. At the same time it also provides growing cities of the world with the life source that powers factories, schools, streetlights and Internet cafés.

Modern renewable energy technologies such as solar, wind, micro-hydro and geothermal power remain largely untapped, despite the relative abundance of sunshine, wind, water and underground thermal heat.



Source: NASA 2008

Three quarters of the poor live in rural areas. They depend largely on natural resources for their livelihoods. They are farmers, fishermen and small-scale miners. Each day they make decisions on how to use their environment. In reality, these people are stewards of the environment.

Fishing for the future in Fiji

*By **Philip Angell**, World Resources Institute*

The development of the Fiji Locally-Managed Marine Areas Network (FLMMA) emerged against a backdrop of continuing depletion of Fiji's inshore fisheries. That depletion accelerated in the 1990s, mainly due to increased commercial fishing, as well as larger harvests by subsistence fishers. The decline in marine resources has had a significant impact on the livelihoods of rural Fijians, most of whom depend on local fish and shellfish catches for some or all of their income – and for their daily protein. With fish stocks on the decline, some 30 to 35 per cent of the households in Fiji's coastal villages fell below the poverty line.

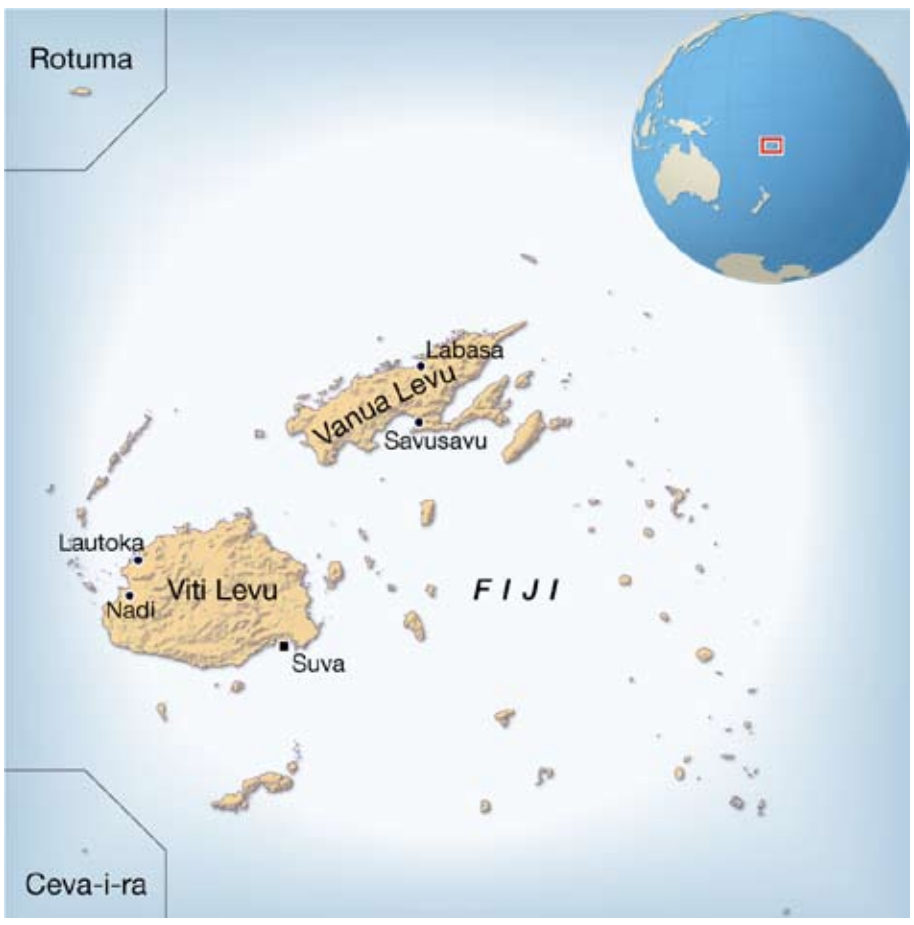
The use of Locally Managed Marine Areas (LMMAs) to restore inshore fisheries is based on customary systems of community marine tenure supported by modern methods of biological monitoring and assessment. Key to the LMMA approach is community involvement in designing simple management structures. Experts from FLMMA partner organizations, such as the University of the South Pacific, the Peace Corps and the Fijian Fisheries Ministry, provide technical information and advice to support community decision making.

LMMA communities set aside a portion of their traditional fishing grounds as restricted areas to allow marine resources to recover. The location and size of these tabu areas are determined by the communities themselves. As fish and shellfish species recover in tabu areas, stocks also gradually increase in nearby parts of the LMMA where fishing is allowed. This "spillover effect" offers substantial benefits to communities.

Since the creation of Fiji's first LMMA in 1997 – covering 24 hectares near the village of Ucunivanua on the east coast of Fiji's largest island – the use of LMMAs has spread rapidly throughout Fiji and the broader Asia-Pacific region. By 2007, the size of the network in Fiji had expanded to include some 213 LMMAs, involving 279 villages and covering almost 8,500 square km of coastal fisheries, or about 25 per cent of the inshore area. The programme has been so successful that Fiji's national government has formally adopted the LMMA approach.

The economic and environmental benefits are clear: in Ucunivanua itself, average household income rose from just over FJD 430 per month in 2002 to about FJD 990 in 2006. The community of Daku in Kadavu province saw average incomes rise by more than 30 per cent in one year. In addition, there has been increased consumption of fish in LMMA villages. Some 75 per cent of surveyed households in the Navakavu community reported eating more fish than five years ago: in non-LMMA villages an equivalent drop in fish consumption was reported. These changes were the result of increased fish catches in restored areas.

Communities engaged in LMMA work tend to retain high levels of commitment to the programme, indicating their sense of ownership and economic stake in these enterprises. For example, a survey of the Navakavu community showed it considered its LMMA to be crucial to its well being and to that of future generations.



Yet challenges remain. In some remote communities, poachers are a problem and enforcement efforts have been mixed. Remote villages also lack sufficient infrastructure to access markets and so find it hard to improve living standards. Another problem is that not everyone in LMMA villages can depend for their livelihoods on the managed fisheries: alternative means of income have to be found to support fast expanding populations. The same problem exists in more remote villages.

These challenges are not minor ones – but since the formation of the LMMAs they are being faced in a far more confident, resilient and capable way.

The Equator Initiative

The Equator Prize is an international award that recognizes local efforts to reduce poverty through the conservation and sustainable use of biodiversity. The biennial prize is awarded by United Nations Development Programme's Equator Initiative. Over the past five years, the Equator initiative has attracted more than 1000 nominations for its Equator Prize. Of these, 75 community initiatives stand out as exemplary cases. Research shows that these initiatives are most successful under conditions of collective understanding of the value of ecosystem-derived resources, secure property rights to these resources, low-barriers to market participation, multiple beneficial partnerships and strong effective leadership. They can be a powerful tool in international efforts to protect the environment and promote human development.

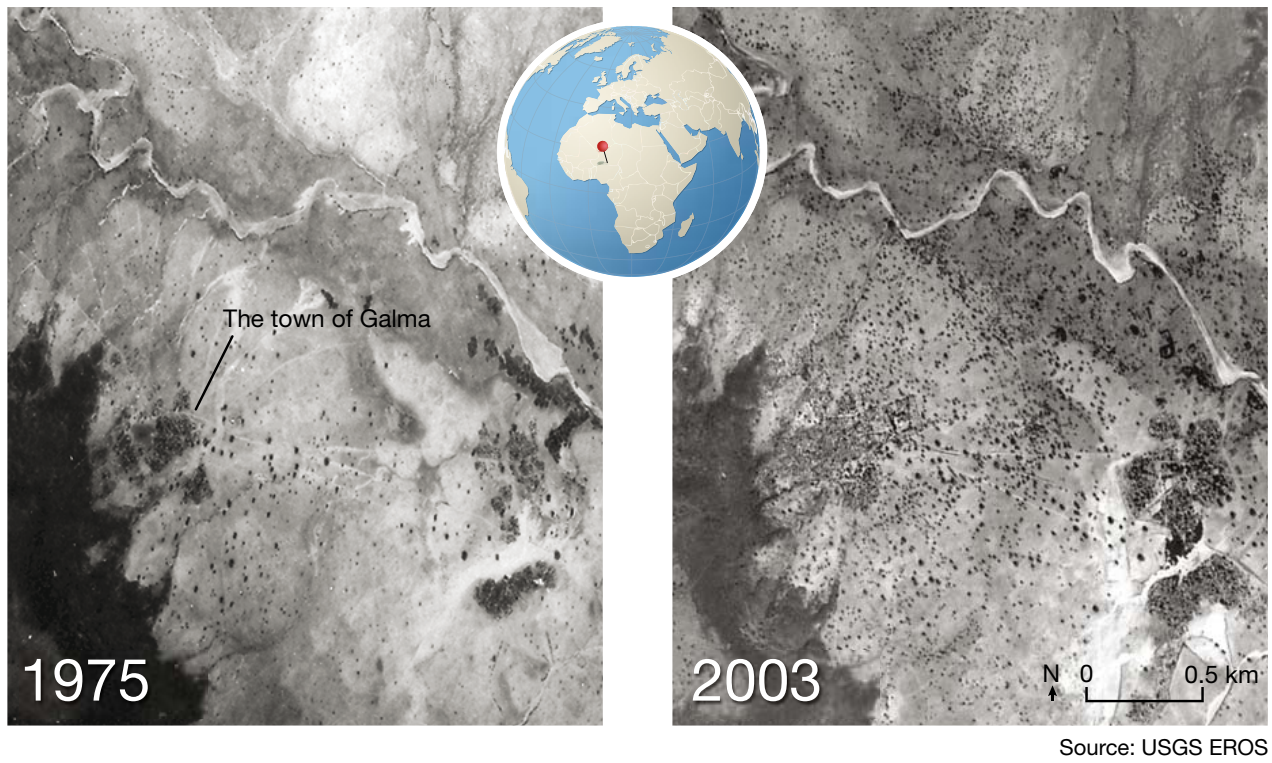
More information at www.equatorinitiative.net.

Did you know?

In 2002, USD 58.2 billion world fish trade was from developing countries, exceeding the value of the combined net exports of rice, coffee, sugar and tea.

In Guinee, one third of the vessels were illegally fishing in a prohibited zone, largely taking catch from the area designated for artisanal fishers – leading to a probable loss of USD 84 million shrimp, fish and octopus.

Sources: FAO. 2007. *The State of World Aquaculture* 2006; MRAG. 2005. *Review of Impacts of Illegal, Unreported and Unregulated Fishing on Developing Countries.*



Source: USGS EROS

Success in the Sahel

In 1970s and 1980s – years of environmental crisis – there were few trees remaining in Niger. Wind-blown sands razed farmers' young crops and they often had to plant crops three times to succeed. Since the middle of the 1980s, in the most densely populated parts of Niger, farmers have begun to protect and manage young trees and bushes regenerating on their cultivated fields. This is natural farmer-managed forest regeneration.

Some trees fix nitrogen from the air on their root system which helps to maintain and improve soil fertility. Improved soil fertility leads to higher crop yields. The trees and bushes protect crops against wind and sand, and farmers now often need to sow only once, which increases the length of the growing season. Women are perhaps the biggest winners. They spend much less time now on the collection of firewood than they did 20 years ago – about 0.5 hours per day now instead of 2.5 hours per day in 1984. They also now own 80 per cent of the goats and sheep which provides them with income. Fodder is much less of a problem now than 20 years ago, as the trees produce seedpods and leaves which are a major source of fodder in the dry season.

The most important incentive for tree regeneration by farmers was a change in perception of ownership of the trees. In 1985, the perception was that trees were owned by the State, but now farmers perceive an exclusive right to the trees on their farm. Farmer-led tree regeneration has happened on at least 5 million hectares – once barren, sandy soils almost devoid of vegetation now have 20–40 or more trees per hectare. This is a spectacular scale, unique for the Sahel and probably even unique for Africa. In this form of forest regeneration is not spread evenly though – it is strongest in the regions with higher population densities.

Right to access

*By **Marianne Fernagut**, UNEP/GRID-Arendal*

Access to land and natural resources is the premise for all ecosystem uses providing livelihoods, shelter and social safety – from farming to fishing, from berry picking to mining.

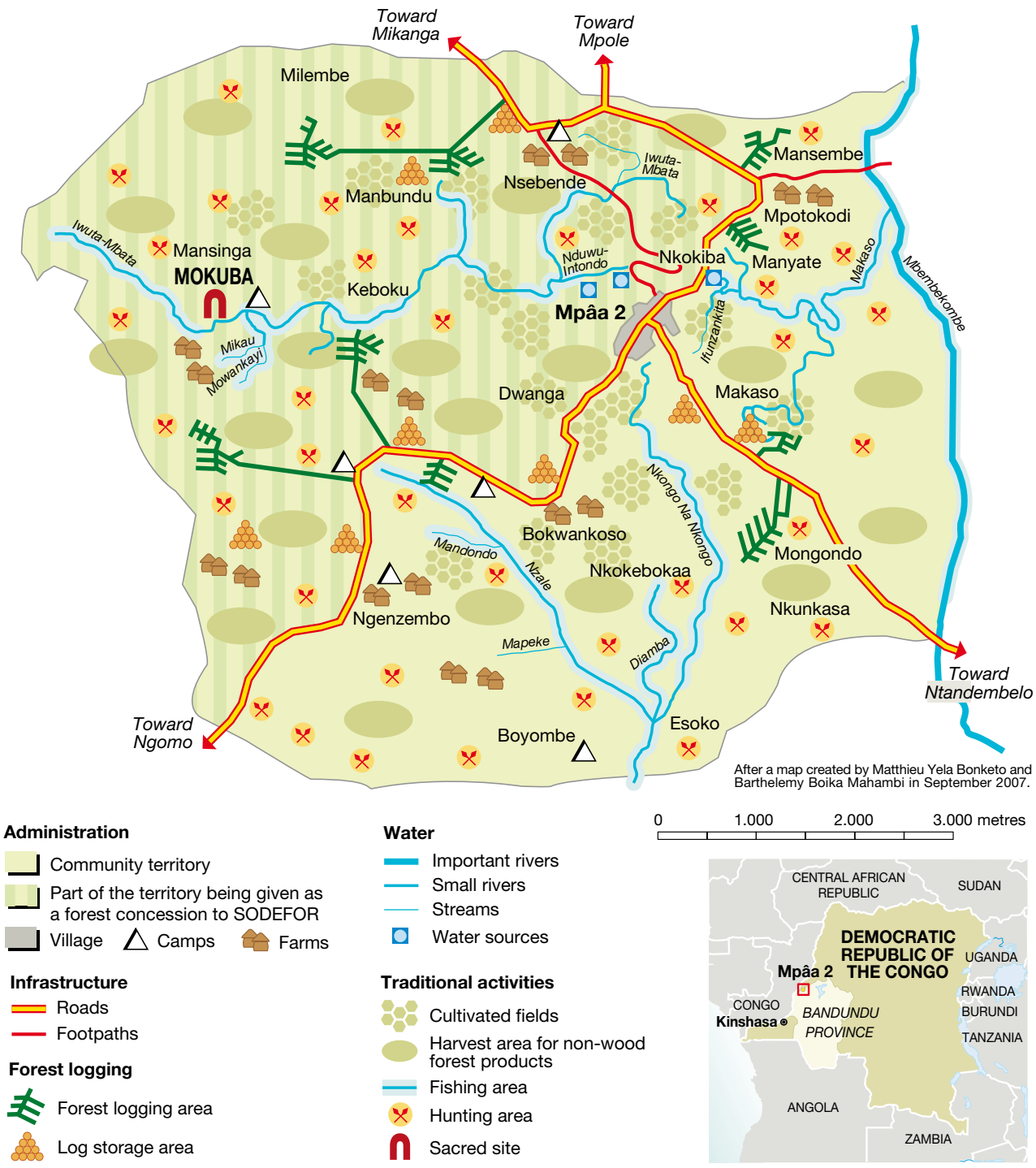
Sustainable use of natural resources requires clear and enforced access or property rights. These rights provide incentives for long-term investments and sound management of the resources. Increased local control of natural resources motivates long-term investments and favours management accountability and performance.

Fallow fields, forests, fishing grounds, pasturelands and wetlands are often common property. *Common pool natural resources* imply open access to virtually anyone and that it is not easy to exclude users. However, common pool natural resources cannot be used endlessly. Non-excludability tends to be an incentive to overuse a resource to improve individual welfare without bearing the costs.

The rural poor, whose lives are intricately linked with local ecosystems, are positioned to be most affected by how access and property rights are defined and realized. For these people, common pool natural resources are an important source of food, fodder, fuel, building materials, medicinal plants, and income. In India, it has been estimated that common property natural resources provide about 12 per cent of household income to poor households. In general, the poorer the household, the more important is the income contribution through common property resources. In addition some natural resources, like water or marine fisheries, are mobile and diffuse so that property rights are difficult, if not impossible to attribute.

Rural poverty is strongly associated with poor access to land either through landlessness or because of insecure and contested land rights. Pressure on land is set to increase over future decades, given the impacts of continued population growth, globalization of markets and activities, trade negotiations and climate change. As a resource becomes scarcer and more valuable, those with weak rights to access this resource will tend to lose out. In the case of land, particular groups tend to be more vulnerable to such dispossession, including the poor and those relying on common property resources.

Secure property rights are important for sustainable economic growth. Protecting and expanding the rights to access natural resources which are of particular importance to the poor is therefore an important way to support growth that benefits the poor.

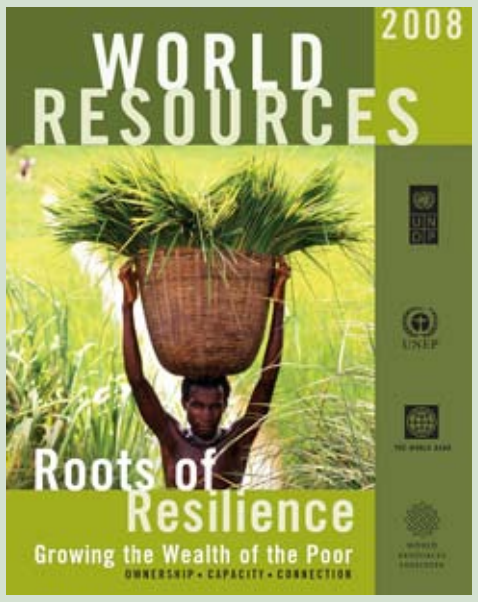


Mapping communities

This map shows a logging concession and an area traditionally used by a community in Bandundu Province, Democratic Republic of Congo (DRC). There is overlap between the logging concession area used by a timber company and the area that villagers use for hunting, fishing, farming and timber exploitation, and also has a sacred site.

A community mapping project in eastern DRC, implemented by the non-governmental organization OCEAN, provides forest communities – including pygmy communities – with the know-how and technology to produce accurate geo-referenced maps of their villages and land and forest use. These maps provide a tool for the communities to negotiate with the government, logging companies and other groups who may be interested in using the community's forest.

Source: www.dfid.gov.uk/countries/africa/congo-Growth.asp



"Roots of Resilience"

World Resources 2008: Roots of Resilience – Growing the Wealth of the Poor (WRR 2008) is the 12th volume in the World Resources Report series published jointly since 1984 by United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP), the World Bank and the World Resources Institute (WRI).

WRR 2008 argues that properly designed enterprises that address the reality of the poor – that almost half the world's population lives on less than USD 2 per day and that some 75 per cent of them, almost 2 billion, live in rural areas largely dependent on natural resources for their livelihoods – can improve those livelihoods and, in the process, create resilience – economic, social, environmental – that can cushion the impacts of climate change, can keep communities rooted, and can help provide needed social stability.

The report builds on *World Resources 2005: The Wealth of the Poor* that showed that ecosystems can become the focus of a powerful model for nature-based enterprise that delivers continuing economic and social benefits to the poor, even as it sustains the natural resource base. Evidence shows that poor rural families empowered with secure resource rights can increase their income stream from nature significantly with prudent ecosystem management.

WRR 2008 explores what is necessary to allow such nature-based enterprises to scale-up so as to have greater impact – geographically, economically, politically. It identifies three critical elements: community ownership and self-interest; the role of intermediate organizations (in providing skills and capacity); and the importance of networks – formal and informal – as support and learning structures. It outlines specific actions that governments at all levels can take to encourage and support such change.

When these three elements are present, communities can begin to unlock the wealth potential of ecosystems in ways that actually reach the poor. In doing so they build a base of competencies that extends beyond nature-based enterprises and supports rural economic growth in general, including the gradual transition beyond reliance on natural resource income alone.

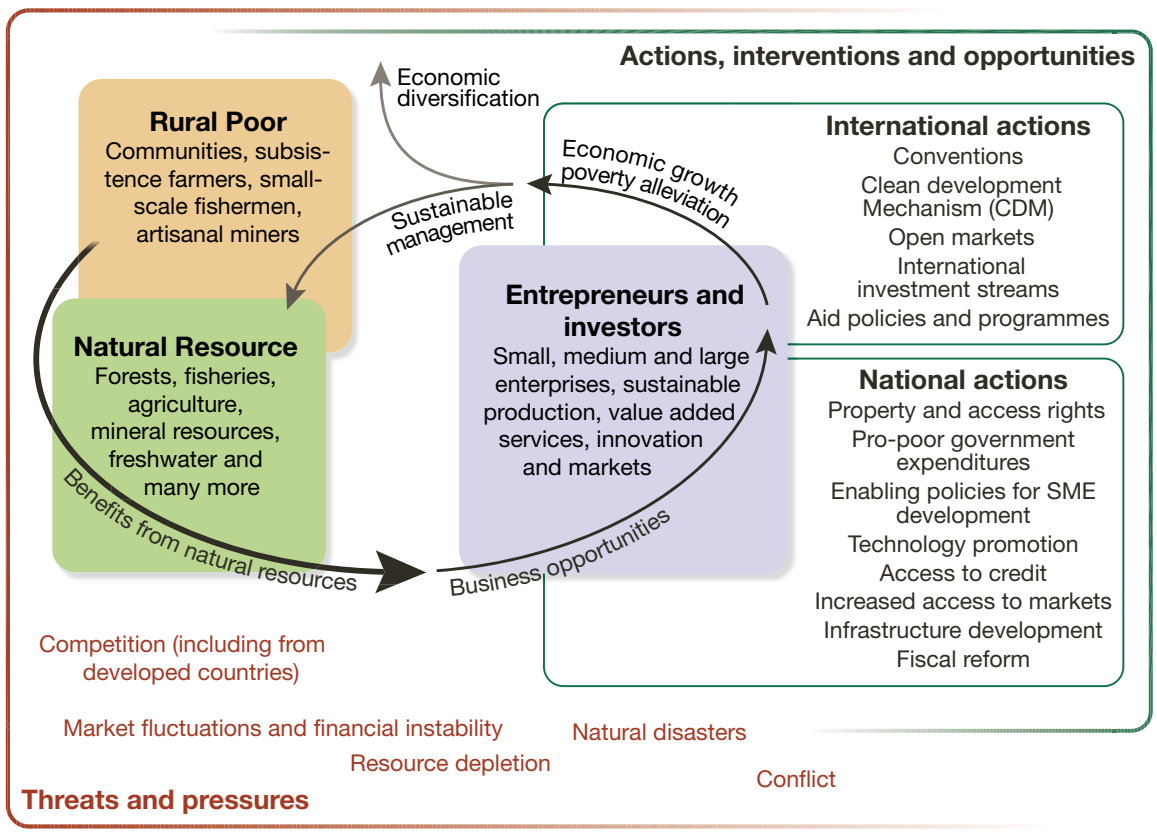
They also acquire greater resilience. It is the new capacities that community members gain – how to conduct a successful business, how to undertake community-based projects, and how to build functional and inclusive institutions – that give rise to greater social and economic resilience. It is the insight that ecosystems are valuable assets that can be owned and managed for sustained benefits that builds the foundation of ecological resilience. Together, these three dimensions of resilience support the kind of rural development whose benefits persist in the face of a wide variety of challenges, environmental and otherwise, that poor communities are sure to face in the future.

WRR 2008 illustrates its thesis with detailed case studies of successful enterprises: The transformation of a desert landscape in Niger; the restoration of freshwater fisheries in Bangladesh; and the role of community-managed forest concessions in Guatemala's Maya Biosphere Reserve.

Energizing entrepreneurs: the Bill Gateses of Africa

People grow out of poverty when they create small businesses that employ their neighbours. Call it passion, enthusiasm or fire in the belly – it's what energizes successful entrepreneurs. Green entrepreneurs can be the champions of a sustainable economy.

The natural resources path to poverty reduction



Do you know?

Q1: Small and Medium Size Enterprises (SMEs) comprise of what per cent of the private sector?

a) 19%
b) 49%
c) 69%
d) 99%

Q2: Why are SMEs important?

a) They represent the backbone of global economic activity.
b) They generate significant employment opportunities.
c) They contribute to local community development and capacity building.
d) They have a significant environmental impact.
e) All of the above.

Source: WBCSD. 2008. *Promoting SMEs for sustainable development.*

Answers:

Q1: *d)*
Bangladesh: 99% of companies have less than 100 employees accounting for 58% of national employment.
Ecuador: 99% of companies have less than 50 employees accounting for 55% of national employment.

Q2: *e)*
The key to poverty alleviation is economic growth that is inclusive and reaches the majority of people .

Open for business

*By **Peter Fries**, United Nations Environment Programme*

In rural Senegal, a disused wind pump stands as a stark reminder of the challenges of sustainable development. Installed as part of an aid project, the wind pump was clearly seen as an advantage over hauling water by hand. But without spare parts and trained people to service it, the wind pump – along with 90 per cent of similar pumps in the country – fell into disuse, unable to provide water needed for cooking, washing and irrigating the vital fruits and vegetables in the village garden.

Mr Michel Tine, a former manager of the aid project, wasn't a businessman but he saw the opportunity to create an enterprise repairing and servicing defunct wind pumps. He found that there was demand for the pumps but quickly realized that in order to succeed, his new company – VEV – needed both to learn business skills and secure start-up capital. Such needs were modest by US or European standards – the capital required was roughly equivalent to the amount of an average US corporation spends on its annual report.

In another part of Africa, Mr Bamba Coulibally was also struggling to put into action his business idea. In Mali, a country short on refrigeration but long on hot days, Mr Coulibally was trying to preserve stocks of local foods using a solar drying technology developed under a previous aid project. Like Mr Tine, he was well aware of the opportunities of his business but realized that without being able to put forward a good plan and having collateral, there was little hope of obtaining capital from local banks.

Enter an unlikely trio: the United Nations Foundation, an organisation called E+Co headed by an innovative banker, and the United Nations Environment Programme (UNEP). This group have combined to form the Rural Energy Enterprise Development Initiative – or REED – which aims to help entrepreneurs like Mr Tine and Mr Coulibally, interested in renewable and efficient driven energy projects, to raise small amounts of start-up capital and increase skill levels. Instead of simply throwing more "appropriate technology" into an area which, in the past, has seen several high-tech fiascoes and failures, the trio embarked on a far more ambitious and difficult task – that of creating new types of enterprises capable of delivering clean energy to the people who actually needed it.

It's an organizational concept that the sustainable development sector has been waiting for.

"Technology is not the problem", says Mr Phil LaRocco, head of E+CO, known as the 'banker wearing the development cap.'

"Business models are not the problem. Demand for the product is not the problem. Ability to pay is not the problem. The problem is a shortage of seed finance that allows entrepreneurs the freedom and flexibility to innovate and take risks", says Mr LaRocco – a man who refuses to be intimidated by the problems associated with ideas of sustainable development.

Mr LaRocco says that though the motives behind the many billions invested in the development of various energy projects and associated water schemes over the past two decades were often well-intentioned, this lavish spending was ultimately unable to break the cycle of poverty. Wind pumps have been left to rust all over Senegal. Mr LaRocco says the poverty cycle has a direct link to the lack of access to modern forms of energy.

"You don't give away – you invest", he says. It's a philosophy Mr LaRocco has applied to investing more than USD 170 million in 173 enterprises operating in 34 developing countries, which in the process has delivered sustainable energy to over four million people.

Mr Mark Radka, the coordinator of UNEP's energy programme, says development agencies and investors have often ignored the potential capacities of local enterprises to innovate in essential energy services. This is because enterprises such as Mr Tine's or Mr Coulibally's were too small; they operated in remote, rural areas and did not practise any formal kind of bookkeeping. Development agencies and governments often clung to the belief that only centralized agencies and programmes could deliver energy services effectively.

REED's first investment stop was Africa – the programme is called "AREED", www.areed.org – where they enlisted the help of a number of local development organizations who were attuned to commercial practices. These 'country partners' are a key part of the AREED programme, delivering enterprise development services in the field to help entrepreneurs create and expand their clean energy businesses.

Dr Abeeku Brew-Hammond, director of Ghana's Kumasi Institute of Technology and Environment (KITE) – AREED's local partner organization in the country – says the term "rural" can have a very different meaning in countries like Ghana. "There are no telecoms, no email and a typical rural person may not have the education to even write a business plan", says Dr Abeeku. But he says people often do have the money to pay for improved energy services, especially if the cost of systems can be financed over extended periods.

To get the message out in Africa, local country partners such as KITE together with E+Co literally take the concept to the streets, putting AREED's ideas directly to entrepreneurs through seminars in Ghana, Mali, Senegal, Tanzania and Zambia. Both Mr Coulibally and Mr Tine attended the seminars and subsequently were among the first entrepreneurs to emerge from the AREED "pipeline" – through a process of one-on-one mentoring, refining their business ideas into solid business plans. Only then, when viable business plans had been finalized, were Mr Coulibally and Mr Tine given start-up capital.

For Mr Tine, a USD 17,000 loan from AREED means he can create and expand an inventory of spare parts to provide a better service to more communities. Mr Coulibally is investing his USD 8,000 loan in additional solar dryers in order to expand his business.

A key factor in the REED approach to development is that it treats risk and risk-taking as an integral element in the entrepreneurial approach to projects and sees risk as a tool for leveraging greater returns in the long-term. In a traditional development programme, the same money would be used to buy and install equipment – amounting to a few wind pumps and some solar dryers. By contrast, a REED programme uses funds to launch a business which might eventually be capable of installing and maintaining hundreds of pumps or solar dryers.

"Assisting entrepreneurs to take risks, to innovate in the way they deliver goods and services, and to continuously refine their business models, is an effective way to gain public trust while attracting commercial investment into the sustainable energy sector", says Mr Radka.

REED financial support is typically in the range of USD 20,000–120,000 and sometimes might be used to take up an equity position – in essence, buying part of the company. However, a REED programme usually does not provide all of the finance an enterprise may require and the terms of the financing package are usually designed with a 'second stage' investor in mind – a person or group that will invest once the business model is proven. Once other partners financially commit to a new company, REED's role diminishes.

REED is also not just concerned with seeking financial returns on its investment. The potential benefits of each investment include not just direct financial returns but also indirect returns such as job creation, lower pollution levels and improved rural livelihoods. The VEV investment is a good example. In one village where a wind pump has been repaired, the extra water is now irrigating a village garden which supports 20 families with both extra income and better nutrition.

REED has branched out into Brazil (B-REED, www.b-reed.org) and China (C-REED, www.c-reed.org). The programme has now successfully funded more than 45 enterprises that deliver clean energy to more than 300,000 people.

All the REED partners agree that small energy enterprises – and the enterprise-centered development model – are not a quick fix or a panacea capable of delivering all the sustainable energy that is required to the rural poor. It is, says REED "one more approach that, in many circumstances, can cost effectively deliver energy services – often in ways that complement the more traditional centralized utility model".

For the rural village in Senegal and those associated with Mr Tine's business project, that approach simply means water in the fields and food on the table. And that, says REED, is the right combination for sustainable development.

Gone Rural

*By **Natalie Shriber** and **Liesbet Peeters**, both formerly with the Grassroots Business Initiative of the World Bank/IFC, a long standing partner of Gone Rural*


(Photo: Gone Rural)

As a poor, land-locked country, Swaziland – 70 per cent reliant on subsistence agriculture – is plagued by drought, soil degradation and erosion. As a result of recent droughts, GDP growth remains low at 2.3 per cent while high oil and food prices have led to inflation increasing to 7.5 per cent. It's estimated that 40 per cent of the population is unemployed and nearly 70 per cent live below the poverty line. With these poor economic indicators, coupled with an HIV/AIDS rate of more than 38 per cent of the population, the effects of climate change and environmental degradation on economic development and on the population only add to the country's problems.

In the midst of such tough economic and social circumstances, Gone Rural, a small grassroots social enterprise, is generating much needed income for rural women and, at the same time, promoting the sustainable use of one of Swaziland's more unknown natural resources – Swazi Lutindzi grass.

Gone Rural – set up by the late Jennifer Ann Thorne, an entrepreneur who first went to Swaziland from England as a trainee nurse in the late 1960s – assists local women in producing handicrafts, ranging from tableware to floor mats, gifts and accessories and clay pots. These are then sold to tourists, thereby putting a stop to the flood of handicrafts that are imported into Swaziland from other parts of Africa and marketed as native produce.

For its production, Gone Rural utilizes an outsourcing model through which rural Swazi women are engaged by the business to grow lutindzi grass. Gone Rural purchases the grass from these women, dyes it into a range of rich colours at its workshop and sells it back to them to weave and plait in their homes and create the artistic products as requested by Gone Rural's design and volume specifications.

When the women have finished their products, Gone Rural sells the merchandise through its sales and distribution network. Gone Rural also trains the women in latest fashion trends in handicraft production and only purchases merchandise that meets the highest quality standards. While training is primarily focused on the skills and techniques required to produce specific Gone Rural products, more broadly applicable skills and handicraft techniques are also taught.


(Photo: Gone Rural)


(Photo: Gone Rural)

The employment created through Gone Rural's business operations – which provides vital income and stability to respective production communities – is at the core of its operations. The company is committed to increasing its sales so as to generate employment for more women in Swaziland and thereby encouraging local economic growth and enabling the women to deal with such problems as increasing numbers of orphaned children. The business has grown to the extent where the company employs over 20 people in its workshop at Malkerns in Swaziland and works with more than 770 rural women, 80 per cent of whom rely on Gone Rural as their sole source of income.

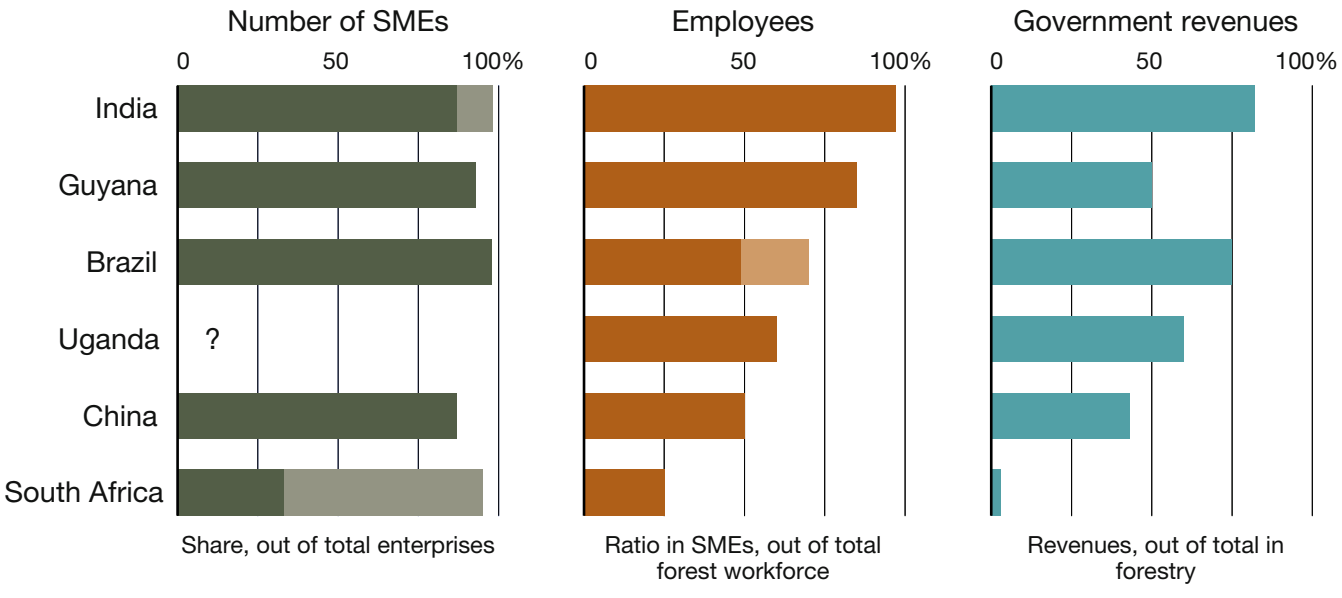
Gone Rural is a highly successful business and now operates at the prestige end of the market in 35 countries. Its products can be found in stores in London, Paris, Tokyo and New York and have been featured in numerous home ware magazines, including Elle Decoration, a top-rated US magazine covering home improvements.

Additionally in Swaziland, Gone Rural has created a not-for-profit organization, Gone Rural BoMake, which provides various social training, literacy, and health programmes designed to improve and enhance the women's lives, thereby achieving three things: profitability, social/development impact and environmental sustainability. It also pursues educational and social initiatives that focus on increasing the life expectancy of women, the primary victims of poverty and HIV in the region.

Through Gone Rural BoMake, the participating Swazi communities receive HIV/AIDS awareness/education programmes as well as basic treatments/products and prevention skills. People also learn various methods of capturing drinkable water, training and support in the development of trench gardens and unemployed young men are given support in trying to find jobs. In addition, 660 AIDS orphans within these communities will receive schooling that would not be possible otherwise – youth and women across these communities will also receive training in entrepreneurship, general literacy, nutrition and women's rights.

Gone Rural is now one of the top five handicraft producers in Swaziland and has received several awards for its products and development impact. Having proven its worth as a social enterprise over the last decade, successfully trading in both the domestic as well as export markets and having made strong advances in product quality and innovation, Gone Rural is now hoping to expand its operations in order to improve revenues and so increase employment and income levels within Swaziland's rural and most disadvantaged communities. Central to Gone Rural's commitment as a social enterprise, is the belief that through a strong and robust business, it can continue to provide sustainable jobs, training and renewed hope to its rural Swazi producers and their communities.

As such, Gone Rural is an excellent example of how creative and innovative grassroots solutions, combined with environmental sustainability, can provide help in promoting economic growth and alleviating poverty, thereby reversing the negative trends of environmental degradation in one of Africa's poorest economies.



Lighter shade signifies range low to high estimate

Source: Mayers and Macqueen 2007

The big significance of small forestry enterprises

It is estimated that exported timber only represents five per cent of the wood cut in tropical forests. Ten per cent of timber used locally and the majority – 85 per cent – of wood is for fuel.

While exports are generally the realm of large-scale enterprises, the domestic market is dominated by small forest enterprises. In many countries, the forest sector constitutes mainly small forest enterprises – employing from 10 to 100 full-time employees. They create more than half of the jobs in the forest sector and are responsible for over 50 per cent of the government revenues. While small and medium enterprises are important for local wealth creation, they can have a strong environmental accountability as their managers belong to the local community and social control is more personal.

Government policies and politics can enable or hamper reasonable natural resources management creating at the same time, directly or indirectly, opportunities for economic growth that bring benefits to the poor.

Environmentally sustainable mining for pro-poor growth

*By **Richard M. Auty**, Emeritus Professor of Economic Geography, Lancaster University*

Mining can limit environmental damage and achieve sustainable growth at both local and national levels. The principal obstacle to this outcome remains the elite's abuse of political contacts to siphon mine revenue to enrich themselves.

Critics of the mining industry have argued that developing countries might be best served if their minerals were left in the ground. They claim mining is not sustainable because it entails a once-for-all depletion of environmental capital. Moreover, most mines are highly capital-intensive so they generate little direct employment per unit of investment and much of the export revenue goes abroad to service foreign capital. In addition, local mining communities claim that while they have to bear the environmental, social and economic costs of mining, the cash benefits flow out of their region.

The mining industry's recent history would seem to support these views in some respects: using rent[1] as a measure of the capital generated by mineral exploitation, World Bank figures available for 1994 only show that mineral economies generated the highest rent as a share of GDP, but achieved the worst economic growth, and the higher the rent the worse the outcome.

In fact, mining can and should substantially benefit developing economies – including the poorest – if host governments effectively deploy mining revenues. On the broader macro-economic front, mineral exports can generate extra revenue for investment, which if efficiently applied can accelerate the national economic growth rate, plus the inflow of foreign exchange increases the capacity to import goods required to build the infrastructure of a modern economy. The depletion of the resource can also sustain increases in per capita welfare if a fraction of the rent is invested in alternative forms of capital like education, infrastructure and production goods.

At a more local level, benefits to local communities in the area are maximised if companies switch their corporate social responsibility policies from supporting or building up social infrastructure – a role which should be fulfilled by national governments – concentrating instead on encouraging the formation of new enterprises, whether linked to mining (supplying goods and services or processing the ore prior to export) or to activities outside the sector. The mine infrastructure facilitates accessibility to national and global markets and the mining firms can assist local people to establish businesses by providing loans, skills training (including business management) and legal assistance. The business expansion will diversify the local economy and build human and private financial capital. It can generate employment, improve local skill levels and harness tax revenues to sustain the mining region long after mineral extraction has ceased.

To date, the main weakness of mineral-driven development has been the inability of host governments to effectively utilize mine revenue. Governments have often been over-optimistic about the duration of price booms and instead of carefully allocating financial resources, have absorbed too much revenue too quickly into the domestic economy. In many cases, such ill-advised moves have been encouraged by elites who seek to use the sudden inflow of funds to their advantage.

This not only means valuable investment funds are not used properly; sudden revenues inflows can also cause serious inflationary pressures and distort the economy – with revenues often being channelled into non-productive sectors such as the bureaucracy or protected industries and services and away from more important sectors like competitive agriculture and manufacturing. Consequently, after perhaps an initial surge in non-productive growth, the economy slows and is increasingly vulnerable to price shocks. However, despite the adverse circumstances, the elite resists economic reform because it shrinks its capacity to capture rent. Therefore governments find it politically expedient to sustain rent entitlements by extracting some of the return on capital from the mine as well as the rent, typically by nationalization. This results in under-investment, inadequate maintenance and eventually a growth collapse from which, as the case of the mining industry in Zambia shows, recovery is difficult.

Such problems can be avoided if mining companies, international financial institutions and donor governments can encourage governments to use mineral revenue to achieve solid economic growth rather than distribute revenues to the elite. This requires strengthened institutional checks and balances, such as the rule of law, stronger civil society, political accountability and budget transparency. A mineral revenue stabilization fund can help boost transparency while also slowing domestic absorption of mineral revenues and maintaining the competitiveness of agriculture and manufacturing. A fund also facilitates adjustment to trade shocks and the conversion of the once-for-all ore depletion into a revenue stream to benefit future, as well as present, generations. The elite remain the biggest obstacle to this outcome and unfortunately the current commodity boom, plus the significant growth and expansion of developing country mining companies weakens the capacity of western agencies to nurture beneficial mineral-driven growth.

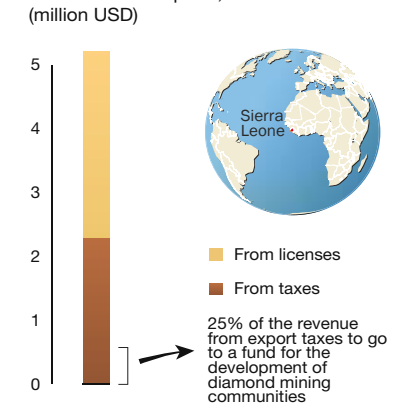
No mining projects should proceed unless they both provide an adequate return on the capital investment but also cover the environmental and social costs of their operations. The latter would include pollution abatement and appropriate restoration of the mined area when production ceases. Most leading mining companies these days embrace such world class environmental standards – if not, shareholder and bank pressures will mean they will not receive capital loans.

1. Rent is defined as the surplus after deducting from the revenue all costs of production including a risk-related return on capital and normal taxation.

The Cullinan mine in South Africa – here the largest uncut diamond ever was found.
(Photo: Marianne Fernagut)

Diamonds working for livelihoods – mining in Sierra Leone

In 2004, the government of Sierra Leone saw a total of USD 5.2 million in revenues from diamond related activities. This comes in the form of mining, dealer and export license fees and from export taxes. To direct some of the revenues back to poor communities, the Diamond Areas Community Development Fund (DACDF) was set up, with an annual commitment of 25 per cent of revenue from export taxes. The intention is that this money will be dedicated to community infrastructure, agricultural improvements and training, but the actual distribution of the funds has been problematic.



Source: Diamonds and Human Security Project 2006

Mining in Botswana

Since its first diamond mine was established in 1967, Botswana experienced strong and sustained growth that led it from being one of the poorest economies in Africa to one of the rare success cases on the continent, avoiding the problems experienced by other resource-rich countries.

The recipe for this success has been a set of policy rules grounded in avoiding fiscal deficits. The government uses a Sustainable Budget Index (SBI) in order to ensure sustainability. This measures the ratio between consumption expenditures and non-resource revenues. As long as the SBI is less than one, the government can be sure that natural-resource capital is not being consumed.

This achievement has not been easy. Public investment has often gone into low-growth sectors, such as defense and agriculture, while it has crowded out private investment slowing economic diversification. However, the overall fiscal strategy has worked. The government has avoided excessive spending in the good times and drastic spending cuts when diamond prices have fallen, as in the early 1980s and 1991.

Source: World Bank 2006. *Environment Matters.*

Did you know?

At the global level, 84 per cent of forest lands and 90 per cent of other wooded lands are publicly owned. The area of forests owned and administered by communities doubled from 1985 to 2000, reaching 22 per cent in developing countries – and that is expected to further increase.

Source: FAO. 2007. *State of the World's Forests 2007.*

Forest or sugar

*By **Moses Masiga**, ENR Africa Associates*

In 2006, the Sugar Corporation of Uganda Limited (SCOUL) asked the Government of Uganda for an allocation of 7,100 hectares of Mabira Central Forest Reserve to expand its sugarcane production operations. The area requested represents about 24 per cent of the total area of the reserve.

SCOUL believes it will be able to increase sugar production and save foreign exchange between USD 20 million and USD 25 million each year. The corporation plans to produce between 1 and 12 MWs of electricity cogenerated from bagasse – the residue of sugar cane after extraction. SCOUL says that in the course of the project 3,500 jobs will be created and a new road network of 300 km will be developed, plus the corporation will be paying additional taxes to the government. The sugar company pledges to preserve the ecology of the remaining part of the Mabira reserve and to participate in tree planting programmes in the areas unsuitable for sugarcane production.[1]

Pro-conservation groups opposed to the SCOUL plan believe the Mabira reserve is an area of unique biodiversity, with bird, plant, primate, butterfly and tree species that need to be conserved. The reserve also contains important medicinal plants. They also feel the forest has great potential as an ecotourism destination and refuge, as the forest is located close to large urban centres. The forest also brings long-term benefits, not only in terms of timber and forest products, but also as a repository for water resources and as a carbon storage facility. The pro-conservation groups say the SCOUL project could endanger the reserve's delicate hydrological cycle and a considerable number of people living around the reserve who are dependent on forest products for their incomes will lose their livelihoods. They say the Ugandan public is opposed to any change in the reserve's status.

While SCOUL has stated the potential benefits of its plan – on which it bases its request for allocation of reserve lands – these benefits have neither been quantified nor clarified. Pro-conservation groups, led by NatureUganda, commissioned this economic evaluation on what to decide. The Sugar corporation SCOUL says the annual stream of net benefits of sugarcane growing represent a better land use option than the conservation of the Mabira reserve as it exists now: it calculates net benefits of USD 3.6 million per year from sugarcane as opposed to USD 1.1 million per year from conservation.

However, such a calculation by SCOUL is based only on a short-term gain as the economic life of a sugarcane stand is at the most five years. The economic life of the natural tropical forest stand can stretch over a 60-year period. When the present value of the standing crop of timber alone (excluding other uses) was compared to the present value of net benefits from sugarcane growing, conservation of the forest yielded a greater long-term benefit than sugarcane of USD 35.5million compared with USD 29.9 million from sugarcane growing. When the value of ecological services was added to that of the standing crop of timber, conserving the forest reserve as it exists registered a far higher net present value of USD 48.8 million.

The National Forestry and Tree Planting Act of Uganda have provisions for compensation if previously reserved lands are degazetted. Also, Uganda's social and environmental policies are clear on compensation. Therefore if the authorities decide to allow SCOUL's project – despite the argument of pro-conservation groups that conservation of the Mabira is a better alternative than sugarcane growing – the developer must grant compensation, estimated at USD 48.8 million. Also, before the change in land use, an Environmental Impact Assessment (EIA) process should take place in order to satisfy legal, social and environmental policies of the government of Uganda.

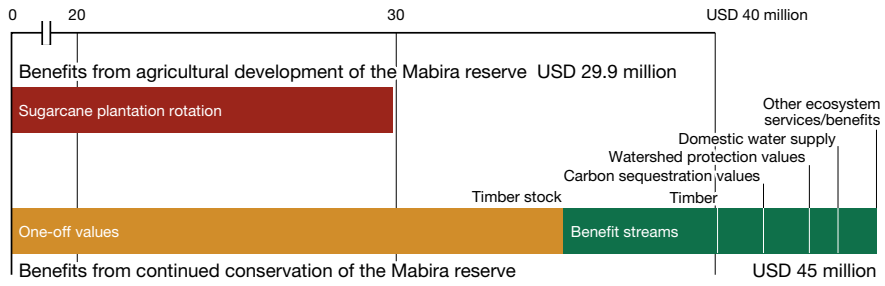
Despite recent pronouncements from the Government of Uganda, it is not entirely clear that the issue of degazetting Mabira Central Forest Reserve has been put to rest. The debate continues to resurface in Uganda.

References:
1. The Monitor Newspaper, 2007; and New Vision news Paper, 2007.

From Yakobo Moyini, Moses Masiga, Achilles Byaruhanga and Paul Ssegawa (2008) Economic Evaluation of the proposed degazettement of part of Mabira Central Forest Reserve.

Forest versus agriculture – the case of the Mabira forest reserve

The Mabira forest reserve, on the shores of Lake Victoria in Uganda, hosts valuable wildlife, serves as a timber resource, provides ecosystem services for the water balance, and the rainforests represent a tourist destination. Following a proposed plan for clearing one third of the reserve for agricultural use, the values of the forest were calculated by local researchers. This economic evaluation of the forest shows that, from a short-term perspective, growing sugarcane would lead to more economic benefits than maintaining the forest reserve, with a return of USD 3.6 million per year in contrast to USD 1.1 million per year for conservation. However, sugar cane production is only optimal during a short time span of five years. When comparing both land use alternatives over the lifetime of the timber stock, 60 years, the benefits from the forest, and the ecosystem services it provides, exceed those of the sugarcane planting.



Source: Moyini et al 2008

Illegal logging costs millions

*By **Marianne Fernagut**, UNEP/GRID-Arendal*

For countries which own and control forests, revenues from timber and forest products can often be a vital source of income to be used for investment in schools, health care, infrastructure – and the environment. Countries such as Cameroon and Ghana are raising substantial revenues from timber auctions and timber taxes. In Cameroon, forestry now provides as much as 25 per cent of total tax revenues. However, a number of studies indicate that in many countries with considerable forest resources, income from timber and forest products is low.

Low revenue returns from forest resources not only have a negative impact on total government expenditures but also result in the wrong signals being sent to the market concerning the value of forests and wood products. In turn, this is damaging to sustainable forest management: often low prices lead to overexploitation of forest resources – the result is deforestation and forest degradation. In some cases, low revenue collection is a deliberate policy of governments that want to subsidize wood consumption – in the form of wood fuel, for example – for social reasons.

However if taxes and charges on timber resources are set at an appropriate level, this can contribute to sustainable commercial logging. Governments will have a vested interest in sound forest management, ensuring that logging and other activities are carried out sustainably and therefore do not threaten future revenue flows. Once a fair and properly administered tax regime on forest products has been established, the authorities – keen to capture all possible revenues – will want to put a stop to illegal logging activities. Loss of revenues as a result of illegal logging can cost governments and economies millions of dollars each year.

A fair level of tax on forest resources can also lead to improved compliance with various environmental directives and generate revenues which can be used to strengthen environmental monitoring and enforcement. Taxes can also act as a control mechanism on logging activities, reducing over investment in the sector and managing sustainable exploitation of resources.

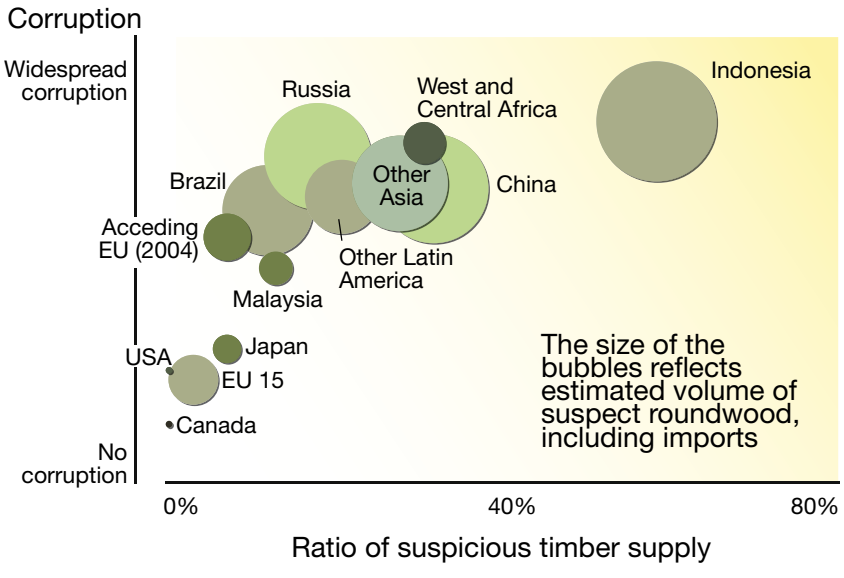
A carefully calibrated tax system plus a long term forest management plan are, in this case, particularly important. If the tax regime and other government policies have the effect of encouraging overexploitation of forest resources, then revenues from forestry are unlikely to be sustained. Yet trying to implement fiscal reforms in relation to forests and the environment is full of challenges. Political and public support must be secured, which often requires strong advocacy.

At present, in countries around the world where the state has control and ownership of the forests, it is generally the private rather than the public sector which benefits from revenues raised from forest resources. Society in general finds it benefits little from the exploitation of the forests. In particular, poorer groups in society often find their access to forests and their resources curtailed as a result of actions by private companies and groups.

If revenues from forest resources are properly monitored and administered, the poor are likely to see that the managed exploitation of forests can result in improvements in living standards, with money spent for example on health and education facilities. In addition, some forest revenues can be allocated directly to local authorities in forested low-income areas. For example, in Bolivia municipal governments keep 25 per cent of revenues raised from the exploitation of forest resources, while in Guatemala the municipalities control 50 per cent of such revenues.

Corruption and illegal forestry

Where government officials are keen to turn a blind eye for a share of the profits, the more the forests suffer. About USD 5 billion per year is estimated to be lost due corruption in uncollected taxes and royalties on legally sanctioned timber harvests. A majority of the illegal timber comes from Asia, with China and Indonesia as the main sources.



Source: Seneca Cree Associates 2004

The importance of ecosystems services doesn't stop at country borders, nor does the interest in exploiting them. International conventions can help to find a balance for sound environmental management and poverty reduction.

Making REDD work for the poor

*By **David Huberman**, International Union for Conservation of Nature, and **Leo Peskett**, Overseas Development Institute*

Deforestation and land degradation are estimated to account for around 20 per cent of global anthropogenic greenhouse gas emissions and are therefore major drivers of global climate change. These factors, combined with growing global concerns about catastrophic climate change, have fuelled international interest in developing financial mechanisms to slow deforestation and degradation rates.

Most proposals for such mechanisms to 'Reduce Emissions for Deforestation and Degradation' (REDD) are still on the drawing board but they are all based on the idea that developed countries would pay developing countries to reduce deforestation rates by implementing policies and projects aimed at preserving the forests. By linking such payments to carbon markets (i.e. putting a value on the carbon storage capacities of forests and the value of halting emissions from such areas) under the United Nations Framework Convention on Climate Change (UNFCCC) regime, substantial amounts of money could be transferred to developing countries: some estimates suggest more than USD 15 billion per year would be available, a figure which dwarfs existing aid flows to the world's forest regions.

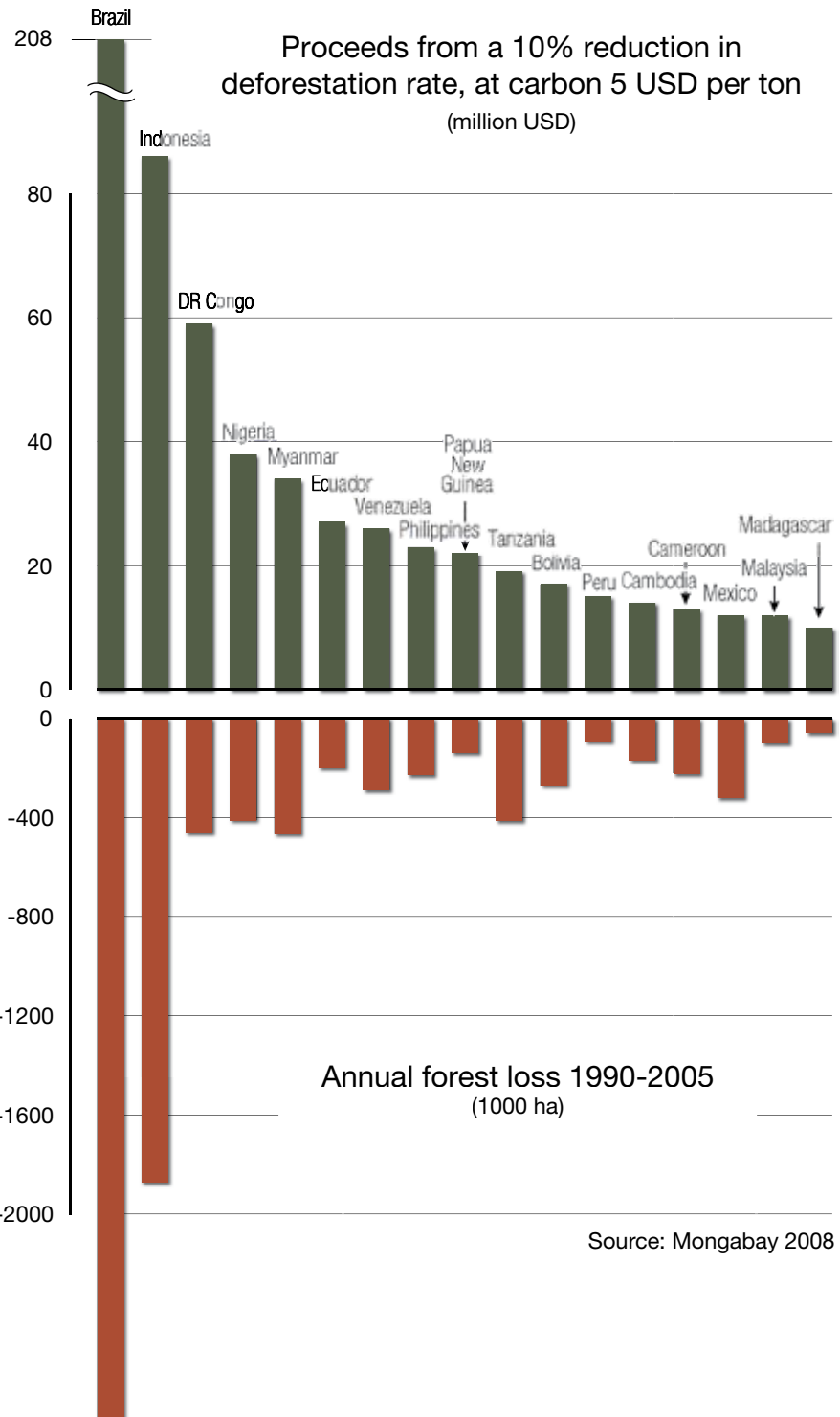
But whilst the theory is relatively simple and the environmental and financial benefits are potentially massive, putting REDD into practice is no easy task. First and foremost in the international debate at present are the technical and political hurdles – how to monitor and measure emissions, how to establish "baselines" against which to assess performance and how to build a system that can be readily adapted to the needs and interests of countries with very different forest sectors. These questions have to be answered in order for REDD to become a reality. But equally important, are questions about the social implications of these financial incentive mechanisms for poor people. The benefits could be large, if they are designed with the interests of the poor in mind. The concern is that these are already being overlooked and that REDD will pose risks for the poor.

The benefits that REDD offer for poor people centre around the potential financial value of carbon stored in tropical forests. Even in areas with modest carbon stocks, the value at current market prices for carbon would often far exceed the value of land for other uses, such as conversion to agriculture. In an ideal world, land owners could therefore stand to gain from direct financial payments for preserving or sustainably managing forests. There may also be indirect benefits – creation of local employment opportunities, improvement in local environmental quality and a strengthening of local institutions.

In reality, the risks may be much greater, given the practical challenges involved in successfully channeling benefits to the poor. Experience with similar incentive mechanisms to do with forest conservation, such as 'payments for ecosystem services' (PES), indicates that difficulties accessing markets due to technical complexities, high implementation costs and insecurity of land tenure, can lead to benefits being inequitably distributed. The poor might not have a say in the negotiation of contracts on implementing REDD type schemes: they also face losing the use of forest resources. Another consequence of implementing REDD might be that political elites, seeking to gain financially from REDD, would put a stop to certain land uses such as shifting cultivation – which could be designated as a form of "degradation" – even though such activities are often vitally important for poor people.

Clearly crucial to the success of REDD is a clear understanding of the context in which the regime is being implemented and of the potential risks that could arise from even the most carefully designed systems. Transparent and accountable governance structures and clear standards will need to be in place to increase participation in the design of REDD. There will also need to be ready access for all parties involved to processes such as dispute resolution mechanisms in the event of problems. At the same time, in order to maximize benefits to the poor, such systems will need to be simple and cost-effective.

It remains to be seen whether all of these requirements can be met, and whether REDD can be made to work in favour of the poor. Keeping the poor at the forefront of the REDD debate, at this crucial phase in the international process, will increase the chances of developing systems which are sustainable in the long run, both in terms of climate and the forests – and also of people.



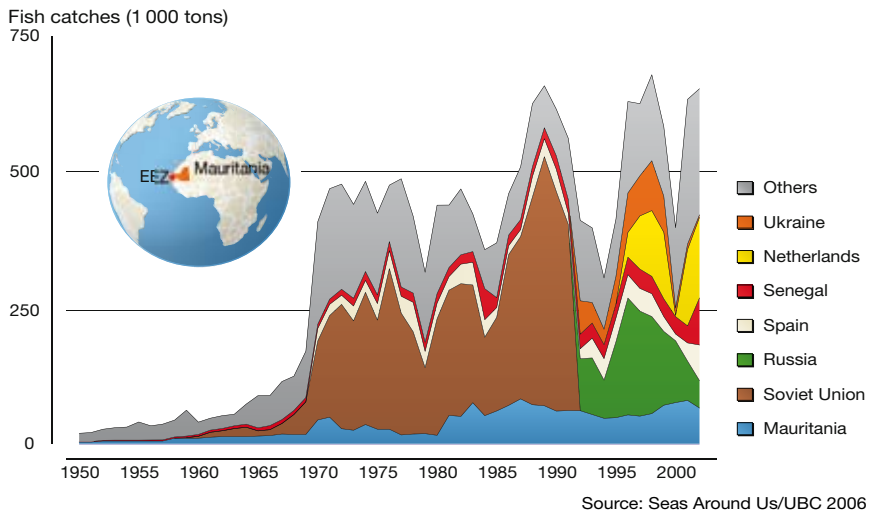
Forests working for the global climate

Carbon trading of credits from avoided deforestation could yield billions of dollars for tropical countries, according to an analysis by Rhett A. Butler, founder and editor from Mongabay.com, a leading tropical forest web site. The proposed mechanism – Reducing Emissions from Deforestation in Developing Countries (REDD) – will enable these countries to maintain their forests as a global resource.

Using conservative estimates on carbon storage in tropical forests for the 17 developing countries in this figure, a reduction in the annual deforestation by 10 per cent would generate more than USD 600 million per year with carbon prices at USD 5 per ton. A higher estimate on the carbon prices, at USD 30 per ton, would generate USD 2500 million in income from the proposed programme. Due to differences in the forest composition and climate, the carbon content can differ greatly – rainforests in French Guiana has an estimate of five times as much carbon content compared to the forests of Indonesia.

Foreign countries fishing for the Mauritanian fish

Marine fisheries represent a significant, but finite, natural resource for coastal countries. The majority of the catches, in some coastal areas, are not primarily done by the coastal country, but rather by other countries. For example in this case, where countries from Europe and Asia (Japan and South Korea are in the "others" group) represent the majority. According to this estimation, Mauritania only landed about 10 per cent of the total catch in 2002, with The Netherlands as the nation with the largest catch (23 per cent) in this zone.



Source: Seas Around Us/UBC 2006

Forthcoming: Natural Resources and Pro-Poor Growth

Natural capital constitutes a quarter of total wealth in low-income countries. For the poorest in these countries – notably those living in rural areas – soil, water, fisheries, forests and minerals are the principal sources of income. Thus, to achieve pro-poor economic growth, low-income countries should build on the natural resource assets of the poor.

Natural Resources and Pro-Poor Growth, forthcoming under the DAC Guidelines and Reference Series, demonstrates that the management of natural resources is critical to poverty reduction and highlights the contributions of natural resources to growth, employment, exports and fiscal revenues.

It is divided into two parts: Part I provides an overview of the economics and politics of natural resources. It describes the unique features of natural resources and resulting management challenges, the role of sustainable natural resource management in supporting pro poor growth, and the politics and governance of natural resources. It then offers recommendations for policy makers on how to support the approaches advocated in the paper. Part II examines these issues with respect to seven specific natural resource sectors: fisheries, forests, wildlife and nature based tourism, soil productivity, water security, minerals, and renewable energy.

Natural Resources and Pro-Poor Growth is of interest to a wide audience and is specifically tailored for policy makers and economic decision-makers from development co-operation agencies and ministries of finance and planning in partner countries. It highlights the importance of policies encouraging the sustainable management of these resources. Moreover, it emphasises the need to address the political challenges of natural resource management for long-term pro-poor economic growth.

Extending the maritime rights of states to battle poverty

*By **Karen Landmark**, UNEP/GRID-Arendal*

Imagine living in – or being leader of – a country with a stagnant economy, coping with severe poverty and general chaos. Yet your country has wealth potential: it has an extended coast line and, under the sea surface, a seabed and a continental shelf. According to international law, it could be possible to extend rights over that area, thus giving your country access to valuable resources like oil, gas and minerals and, if managed in a sustainable way, these could then offer the potential of boosting the economy and lifting hundreds of thousands of people out of poverty. The big problem is that the process involved in gaining these rights is a costly business – also submissions on establishing the outer limits of such continental shelves have to be put forward by May 2009.

Today, this is the reality for many coastal developing states and so-called Small Island Developing States (SIDS). While some countries have already handed in their claims or are in the process of doing so, many will struggle to meet the 2009 deadline and therefore end up with their rights over potential resources undefined, missing the chance of radically changing their economic circumstances.

Extending rights on a continental shelf can have a huge impact on a state. At present the most immediately attractive natural resources for coastal states are oil and gas. With recent developments in offshore exploration and extraction technology, exploitation of deep marine hydrocarbon reserves is becoming economically viable, says Morten Sørensen, Manager of UNEP's Shelf Programme. The Shelf Programme, coordinated by UNEP/GRID-Arendal in Norway, was established specifically to help SIDS complete the various tasks required in order to delineate the outer limits of their continental shelves and meet the 2009 application deadline.

In addition to hydrocarbons, marine minerals and metals including gold, silver and diamonds, as well as industrial minerals, are also becoming an important source of revenue for coastal states, says Sørensen.

Sørensen says science is only just beginning to discover the extent of living resources that exist both on the continental shelf and on the deep ocean floor – resources which can be used to provide considerable economic benefits. Apart from the fisheries potential of shallower waters, the biodiversity present in cold waters of the deep ocean and its hydrothermal systems may also become vital economic resources in the future. Such resources might include valuable ingredients for the pharmaceutical and manufacturing industries. The science and technology for extracting benefits from these resources is now in its infancy but before too long their worth might be proven remarkable.

Working for an environmentally-focused organization, Sørensen points to the importance of sustainable management of any resources found.

Protecting the environment by properly managing sustainable development can lead to economic benefits in its own right. Mitigating and preventing maritime pollution on sensitive ecosystems is also of vital importance. Marine Protected Areas (MPA) are an excellent example of the way in which economic benefits can be gained through protection measures. MPAs are becoming increasingly common around the world and serve to both promote eco-tourism and help lead to productive ecosystem recovery. MPAs that exist on a state's extended continental shelf can influence the health and productivity of fishing grounds within a state's jurisdiction.

The process of delineating the outer limits of a country's continental shelf comes under the jurisdiction of The United Nations Convention on the Law of the Sea (UNCLOS). Article 76 of UNCLOS deals specifically with the rights of coastal nations and island states over the seabed and sub-seabed beyond their 200 nautical mile exclusive economic zones.

Perhaps the most important factor in delineating the outer limits of the continental shelf relates simply to a state's sovereignty. Article 76 has mechanisms that allow states to define the full extent of their maritime jurisdiction and responsibilities. Regardless of the resource potential of the continental shelf, a state has an obligation to ensure all its territorial rights are secured for future generations. The right to actively manage both the environment and natural resources is an inherent component of statehood that extends from land to marine territory.

Sørensen concludes that the Article 76 process of delineating the outer limits of the continental shelf is of profound historical significance: it strives to be inclusive of all coastal and island states, seeking in the process to offer much needed assistance to often poverty-bound and economically stagnant countries.

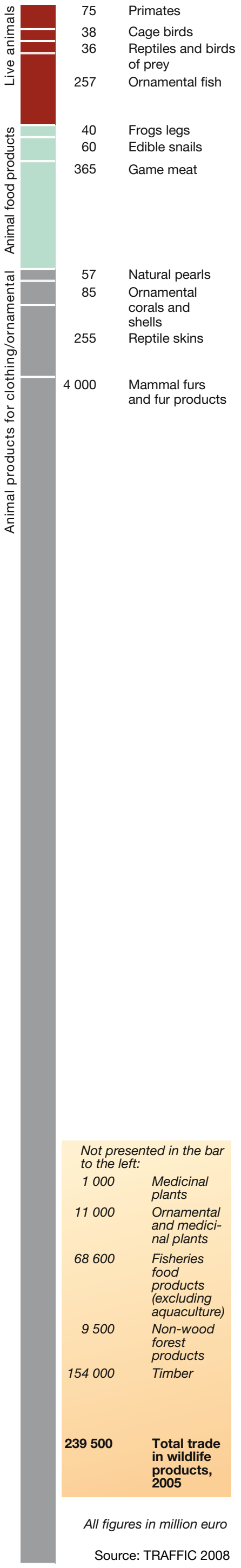
➔ The economy of legal wildlife trade

Managed wildlife trade can be beneficial to species and habitat conservation, as well as contributing towards livelihoods and social development.

While the effect of trade in wild species upon local economies can be substantial and can increase significantly to rural incomes, the high value of wildlife products and derivatives can also provide positive economic incentives to provide an alternative to other land use options for the local people – to protect wild species and their habitats, and to maintain the resource for sustainable and profitable use in the medium and long term.

Legal international wildlife trade, according to one estimate, was worth around EUR 240 billion (USD 300 billion) in 2005, most of it accounted for by timber and fisheries. Illegal trade is big business too. By its nature, the scale of illegal wildlife trade is impossible to know precisely. One guess puts the value of illegal caviar trade at many times that of legal commerce – itself worth EUR 244 million.

International trade restrictions such as CITES – the Convention of International Trade in Endangered Species of Wild Fauna and Flora – seem to be insufficient to address the harmful forms of wildlife trade. A better understanding of the trade dynamics, the incentives for better management of wildlife under threat and the engagement of stakeholders at all levels and places are needed to avoid people, previously dependent on the trade, deciding to trade wildlife illegally in order to maintain their income.



Can developing countries produce and consume sustainably? This means minimizing damage to the natural world and making use of the earth's resources in an efficient way.

Sustainable solutions at a local level

*By **Esther Reilink**, United Nations Environment Programme*

An increasing number of people from all over Africa – decision-makers, entrepreneurs and citizens – recognize that proper management of the environment is an important element in reducing poverty. Many initiatives combining poverty alleviation with safeguarding the environment have been launched. Some striking examples include:

- A project to transform domestic waste into wealth in Kenya by employing techniques which turn waste paper into fuel briquettes and plastic waste into roof tiles[1]. This has not only helped reduce the amount of waste in slum areas, it has also created employment, provided shelter and improved access to energy while at the same time diminished the pressure on trees as a fuel source;
- A business centre in a poor Ghanaian village uses solar panels to augment erratic grid power for telecommunications applications. Now people in the village can charge their mobile phones locally without having to travel about 5 kilometres to the nearest village connected to the electricity grid. In doing so, the centre has improved access to information, a key to development[2];
- The establishment of a biogas plant in Nigeria running on abattoir waste to create a source of domestic energy, lessening pollution and greenhouse gas emissions[3]. The biogas plant will benefit from technological support from Thailand;
- The use of mosquito nets placed in acacia trees, in a semi-arid area of Kenya, to breed silk worms which produce high quality silk for the local market[4]. The silk creates a stable income, often benefiting women, far beyond what the tree would have fetched if it had been reduced to charcoal.

The above examples illustrate how innovative and sometimes surprisingly simple solutions can help to increase poor people's incomes and access to resources throughout Africa, while at the same time reducing environmental damage. Where the initiatives include the introduction of modern technologies, they also offer an opportunity for leapfrogging – the ability for these countries to by-pass inefficient, polluting and ultimately costly phases of development and jump onto a sustainable development path.

The above projects also show the potential of resource efficiency and sustainable consumption and production (SCP). In essence, SCP is aimed at using resources efficiently throughout the different stages of the life cycle of products, while also reducing any adverse environmental impacts involved. A typical life-cycle, for example, includes extraction, production, transport, consumption and waste.

When talking about SCP in the context of developing countries, especially the least-developed countries, it needs to be stressed that 'sustainable consumption' is not equivalent to consuming less. Indeed, it's about consuming more sustainably, particularly for those too poor to even meet their basic needs. More efficient resource use allows poor people to meet more of their needs - or consume more – from the same resource base.

Despite the success of many of these and other such initiatives, relatively few are actually being set up elsewhere or expanded. United Nations Environment Programme (UNEP) is therefore at present implementing a project called "Promoting Sustainable Consumption and Production in Developing Countries for Poverty Alleviation". This aims to increase the efficient use of resources in developing countries and includes showing the benefits of stimulating resource efficiency, identifying obstacles to expanding and copying such projects in general and developing capacity to implement initiatives. The project includes focusing on key aspects of SCP applicable to developing countries, such as cost-benefit analysis, market assessments, indicators, as well as concrete demonstration projects.

The main targets for the project are policy and decision makers as well as entrepreneurs in developing countries; in addition the project will also be focusing on the international donor community. The results of the project will feed into the so-called Marrakech Process, which, by 2012, will have developed a global 10 year Framework of Programmes on Sustainable Consumption and Production, as agreed at the World Summit on Sustainable Development in 2002[5].

1. For more information, see the website of the Kayole Environment Management Association at www.kemakenya.org.
2. See also www.youtube.com/watch?v=GCpwfmi5HWo.
3. The *Cows to Kilowatts* project won the SEED Award in 2005, Supporting Entrepreneurs for Sustainable Development, more information at www.seedinit.org/mainpages2/awards/2005/Cows.pdf.
4. Kitavi Mutua *Earning a living from silk in remote Mwingi*, Sunday Nation, January 14 2007.
5. For more information, see www.unep.fr/pc/sustain/resources/10yfp_project_brief_english_Oct07.pdf.

Marrakech Process: towards a global framework of action on sustainable consumption and production (SCP)

It is common to think of production and consumption as discrete stages in a product's life cycle chain, with production (an industrial activity) preceding consumption (a domestic activity). But production and consumption are inextricably interwoven. All production consumes resources and energy – to produce something requires that something must be consumed.

The Marrakech Process is a global multi-stakeholder process to promote sustainable consumption and production (SCP) and to work towards a "Global Framework for Action on SCP", the so-called 10-Year Framework of Programmes on SCP. Today, more than ever, in the context of climate change, it has become clear that our global community urgently needs to adopt more sustainable lifestyles to both reduce the use of natural resources and CO_2 emissions. This is crucial in order to decouple economic growth from environmental degradation, in both developing and developed countries; as well as to create the "space" for the poor to meet their basic needs.

Human urine and faeces as a fertilizer

*By **Ian Caldwell** and **Arno Rosemarin**, Stockholm Environment Institute*

Global prices for chemical fertilizer have risen dramatically over the last year, contributing to food price increases of 40 per cent according to the FAO Index. The surge in fertilizer prices has also made the practising of conventional agriculture increasingly difficult, especially for smallholder farmers in developing countries.

As a result of the rapid upward movement of prices there has been a growing interest in alternative sources of fertilisers involving recycling and reuse. One readily available replacement or supplement to conventional fertilizers, that has yet to be considered, is human urine and composted faeces.

Through the use of urine-diverting dry toilets, or ecosan toilet, urine and faeces can be collected separately and the end-products can be reused as complete fertilizers. This is a stable local source for households which have their own ecosan toilet. The urine and composted faeces can also be sold, creating local markets for fertilizer.

Humans produce roughly 500 litres of urine and 50 litres of faeces per person per year. These contain about 4 kg of nitrogen, 0.5 kg of phosphorous and 1 kg of potassium, the three basic elements for plant growth. The exact amount varies from region to region depending on food intake. Seventy per cent of the nutrients excreted by humans are in the urine fraction.

In Mauritania, which has a population of about 3 million, the excreta from the entire population is worth annually about EUR 25 million for the equivalent amount of chemical fertilizer. In addition, by producing fertilizer using ecological sanitation approaches, there are considerable savings on transportation, and human health and the environment are protected through proper containment, which is normally not the case for conventional sanitation in poor communities.

The use of urine and composted faeces for agricultural production is a key method of practising sustainable agriculture, improving local food security, and promoting better nutrition through increased food production.

Did you know?

People do not only consume water when they drink it or take a shower. Professor J. A. Allan from King's College London and the School of Oriental and African Studies demonstrated this by introducing the "virtual water" concept. This concept measures how water is embedded into the production and trade of food and consumer products. Behind that morning cup of coffee is a 140 litres of water used to grow, produce, package and ship the beans. That is roughly the same amount of water used by an average person daily in England for drinking and household needs. The ubiquitous hamburger needs an estimated 2,400 liter of water. Per capita, Americans consume around 6,800 litres of virtual water everyday; more than triple that of a Chinese person. Nations such as the US, Argentina and Brazil "export" billions of litres of water each year, while others like Japan, Egypt and Italy "import" billions. The concept of "virtual water" provides a different way of looking at water scarcity at the global level.

Source: www.siwi.org

The potential for a market in urine – sold by the jerry can! (Photo: CREPA, Burkina Faso)

Cooking on ethanol

*By **Fiona Lambe**, Stokes Consulting Group/Gaia Association*

Worldwide, more than three billion people depend on solid fuels – including biomass – in order to meet their everyday cooking needs. Burning these fuels produces extremely high levels of indoor air pollution, exposure to which can lead to chronic respiratory illnesses: it's estimated that such illnesses lead to about 1.6 million deaths around the world each year. The widespread dependence on such solid fuels in many poorer countries means that women and young girls who are usually responsible for cooking and fuel collection have little time for other activities, including education or finding sources of income generation.

In addition, the harvesting of fuel wood for cooking destroys fragile ecosystems, while the burning of traditional fuels releases greenhouse gases which contribute to climate change. Gaia Association, an Ethiopian NGO, is promoting locally produced ethanol as a clean alternative to traditional cooking fuels.

Ethiopia currently produces 8 million litres of ethanol annually from sugar cane molasses; a waste by-product of the state owned and managed sugar industry. Previously such residues were dumped in rivers due to the lack of any viable domestic market for the product. In the near future the Ethiopian government will begin fuel blending for the transport sector and plans are in place to expand national production capacity to nearly 130 million litres of ethanol by 2012. If this target is met, ethanol output will surpass local demand from the transport sector: it's estimated that 128 million litres of ethanol will be produced in 2012 while the demand from the transport sector will only be 30 million litres. Given this supply scenario, the domestic and commercial cooking market will be the only local outlet for surplus ethanol.

A successful pilot test of the ethanol-burning CleanCook (CC) stove was recently carried out in 850 Ethiopian households. The CC stove, manufactured by Domestic AB of Sweden, is a non-pressurised, clean-burning alcohol stove, adapted for use in the developing world. The pilot study demonstrated that the CC stove is an appropriate technology for Ethiopian households in terms not only of health and safety but is also efficient, easy to use and cheap to run.

Woman with her CleanCook stove in a low income neighbourhood, Addis Ababa.
(Photo: Firehiwot Mengesha, Deputy Managing Director, Gaia Association, Addis Ababa, Ethiopia)

Those who used the CC stove reported that instead of spending time, as previously, on gathering wood for fuel and coping with inefficient cooking devices, many women were now able to investigate income generating activities. Local production of the stoves will soon begin, thereby reducing their cost to the average Ethiopian household. Since the stoves are clean burning, their large scale use will mean reduced indoor air pollution and emissions of carbon and greenhouse gases.

The Gaia Association and its partners have shown that in developing countries, such as Ethiopia, sustainably produced ethanol targeted at the household market has the potential to address many of the Millennium Development Goals.

Payout from the biosphere stock exchange

*By **Marianne Fernagut**, UNEP/GRID-Arendal*

A community of Himalayan forest dwellers, after two years of intensive work learning environmental concepts and negotiation skills, succeeded in getting payments of USD 54,000 per year from the local hydropower company for environmental services that the community maintained by adjusting their agricultural practices; thereby, protecting the water supply for the hydropower plant and increasing the company's profits. This activity is known as a "Payment for Ecosystem Services" programme.

Such payments for environmental services can be seen as similar to the "polluter pays principle", but in this case, instead of people being punished for doing harm to the environment, they are rewarded for following good practices. For the rural poor, this could generate additional income and improved food security as well as the protection and enhancement of global, regional or local ecosystems.

Ecosystems provide a vital range of goods and services to humankind including clean drinking water, waste decomposition and the sequestration of carbon. People and companies rely on these goods and services – not just for ensuring climate stability but also for raw materials and a large amount of production processes.

But changes in the world's climate has been brought about to a large extent by humankind's own activities. Furthermore, population growth, rapid economic development and recently, an ever-expanding demand for biofuels, are putting these ecosystem services under increasing pressure throughout the world.

One of the critical factors causing environmental degradation is the widely held idea that many of nature's services are free – no one owns them or is rewarded for them and therefore people have little incentive to protect such ecosystems. In addition, policies and decisions are often based more on short-term gains and immediate financial returns – the primary concern is to market as many goods as possible with little attention being paid to the long-term health of ecosystems and their services.

Land managers could play an important role in improving the environment, but they need incentives to do so. Putting in place a system to ensure payments for environmental services is one way, among many, of encouraging the adoption of improved agricultural and other land use practices.

While payments for ecosystem services programmes have seen explosive growth over the last decade, as both conservation and development experts have promoted their use, they are not a panacea for the all the world's problems. It is an environmental conservation tool in the first place. To benefit the poor, these programmes need to be designed carefully. This requires a regulatory framework to determine who is paid for what, and at what cost, and to maintain which ecosystem service. Payment for Ecosystem Services programmes also need a properly administered monitoring system to ensure delivery of environmental services.

But with the global carbon market alone already trading about EUR 40.5 billion worth of carbon credits in 2007, despite its relative infancy, payments for ecosystem services provide an enormous potential for communities to be paid for maintaining ecosystem services.

Do you know anyone with capital? Africa needs it!

When thinking about sustainable development in Africa, what comes to many people's mind is development aid rather than private sector investments with a desirable output. However, in developing countries both the development and investment potential in natural resources are enormous. What is needed now are good investors.

Profit-seeking capitalists to save rainforests

*By **Rhett A. Butler**, mongabay.com*

At the end of March 2008, London-based Canopy Capital, a private equity firm, announced a historic deal to preserve the rainforest of Iwokrama, a 371,000 hectare reserve in the South American country of Guyana. In exchange for funding a "significant" part of Iwokrama's USD 1.2 million research and conservation program on an ongoing basis, Canopy Capital secured the right to develop value for environmental services provided by the reserve. Essentially the financial firm has bet that the services generated by a living rainforest – including rainfall generation, climate regulation, biodiversity maintenance and carbon storage – will eventually be valuable in international markets.

Hylton Murray-Philipson, director of Canopy Capital, says the agreement – which returns 80 per cent of the proceeds to the people of Guyana – could set the stage for an era where forest conservation is driven by the pursuit of profit rather than overt altruistic concerns.

Mongabay: What was your motivation for the Guyana deal?

Hylton Murray-Philipson: My motivation for doing any deal anywhere comes from my perception of where we are in the world. I feel we are at a crossroads. I think this is the last moment we have, as a species, to take remedial action before we are very soon on a path that is committed to significant climate change.

Looking at rainforests specifically, conservation efforts over the past two decades have basically failed to deliver for the Amazon. I've been reading my entire adult life about the destruction of the Amazon rainforest, yet it's still happening. What's the problem? Frankly, lack of money. Philanthropy is too small, governments are too slow, so it's going to be up to the market. Our firm is bringing capital to the canopy. The only way we are going to turn this thing around is through a profit motive. This is what is needed to harness the power of markets. But it doesn't stop with making a profit – we are also going to have to deliver a better living for local people. We need to start valuing the intrinsic parts of the forest as an intact entity rather than having to convert it for something else.

Mongabay: Why Guyana?

Hylton Murray-Philipson: I originally tried to do something in Brazil. I lived there for 5 years when I setting up an investment bank 20 years ago. I know my way around, speak the language and obviously I know that even if we won the battles in the Guyanas, Colombia, Peru, Ecuador, Bolivia, Venezuela, and we lose Brazil, essentially we lose the war. So I started out in Brazil, but the Brazilian perspective on this is very complicated. Yes, Brazil has come a long way – just two years ago they were vetoing essentially all the international debate about forests and to talk about things about forests was just not on – but even now the country is not embracing market-based solutions. They tried to do government to government payments – which didn't win wide support – before floating their own idea of what market based solutions are, but to be honest, these don't respond to any market that I know. At the end of the day, the lack of some sort of legal definitions at the federal level makes it very difficult.

So when I came across Iwokrama in Guyana I thought, this is the answer to all my prayers – it's really a jewel in the crown. In Guyana we have the head of state, President Bharrat Jagdeo, openly saying, "Hey guys, please come and help me because I'm at a very interesting point in my country's development." Guyana was a complete financial basket-case in terms of spending with 94 per cent of government income on debt service, but now the debt has been written off and the country is wondering where it goes from here. Guyana is also not on the forefront of destruction – it's not like trying to go into Para or Mato Grosso. My feeling is if you can't save the low-hanging fruit, what are you going to be able to do anywhere?

When you engage people in these issues and they say "OK fine, I agree with your perspective, but now what will I invest in?" you quickly find there's nothing you can invest in. Moving in and buying up chunks of land in these countries is the immediate reaction people tend to have but this isn't the answer – there's not enough money and it's politically, socially, and morally very unacceptable.

Iwokrama presents a special opportunity. In 1996 by an act of Parliament the people of Guyana gave 371,000 hectares to be administered on their behalf, and the behalf of the wider world, by the Commonwealth. So we have already had 12 years of governance, which is key to ensuring that money is going to be handled properly. Typically once you do identify a place for investment, you run into the questions like: "What's going to happen to the money if I do invest? Is it going to get recycled to Switzerland? Is it really going to make the difference on the ground that I would really like it to? In other words, am I really going to get what I think I'm going to be paying for?" Maybe I'm a cynic by looking at the precedent from the Pilot Program to Conserve the Brazilian Rain Forest funded by the G7 (PPG7) in Brazil – frankly most of that money never left Brasilia. It's quite easy to come up with inspirational statements saying you are going to this, that, and the other, but to really make a difference on the ground is very difficult.

In Iwokrama you have the head of state who's supportive, you have 12 years international governance, you have the partnership with the Commonwealth, you have the patronage of the Prince of Wales, you have the English language, you have the rule of law, and you've got a country basically half way between Brazil and the United States that has very dense, very rich, and very beautiful forests. If you can't make something work in Guyana, I'm not sure you are going to ever make it work anywhere. So that's a long-winded way of saying why it has to be Guyana.

Mongabay: Where do you see the market going? Do you expect it to move beyond carbon to value other ecosystem services like water?

Hylton Murray-Philipson: There are different ways of looking at ecosystem services. You could, for example, split up the water rights and sell them to Cargill, soy growers in Mato Grosso, residents of Lima (Peru) and whoever else is benefiting from the water generated by the Amazon rainforest. The water company in Sao Paulo or Georgia would be classic examples. Let me explain. There have been very powerful studies that link the Amazon rainforest to precipitation in North America, so the case can be made that the forest of Guyana plays a key economic role in the U.S. Similarly, last year Argentina saw power shortages and drought because rainfall from the Amazon didn't make it as far down as usual. Meanwhile Brazil has USD 58 billion in agricultural exports last year and roughly 70 per cent of the country's electricity generation came from hydroelectric. If you don't have rain, it directly affects power and agricultural production, essential components of the economy. Another way of looking at it is to compare rainforests to a giant utility – if you do not pay your utility bill, your power and water are going to get cut off.

However the real value of ecosystem services is in everything bundled together. It is the sheer complexity and diversity of life that gives forests their value. So yes, I think we are moving beyond carbon. Of course, carbon is not incidental. In Guyana you do lock up upwards of 100 tons of carbon – possibly even double that or more – per hectare.

Mongabay: Your tag line is "driving capital to the canopy" – can you elaborate on your investment philosophy?

Hylton Murray-Philipson: I called the company Canopy Capital because I didn't want to have anything to do with carbon – this is really not about carbon, it is about life. How do you put a price on life?

I personally regret that we have to do this but given that we are like locusts – consuming everything in our paths – we have to start putting a value on forests because otherwise, as President Jagdeo says, "they will get converted for something that will enable me or my successors to deliver the health, education, water, and electricity to the people of Guyana" – which is their right and aspiration. There's no way we can sit in California or London and say to these guys in the developing world "protect your forests" while we enjoy a nice life. It's not equitable and it's not going to happen. So the only way that these forests are going to continue to exist and make a contribution to humanity at large is if we recognize their value through markets. There is a slight feeling of regret in my heart but I think it's the right thing to do and also the best thing to do.

Money is the means to an end, not the end itself. I feel we've lost our way in a world in which over 50 per cent of people live in cities, cut off from nature.

Triodos Bank Sustainable Trade Fund

At the international organic farming trade fair in Nuerenberg, Germany, Triodos Bank launched the Triodos Sustainable Trade Fund. The fund will provide trade finance to certified organic, Fair organic and Fair Trade products in Europe and the United States, which have shown double-digit growth for many years now. This development offers excellent sales opportunities for small-scale farmers and producers in developing countries. The growth in these sales, however, is being restricted by the limited access to finance. Such finance is particularly essential at harvest time, the first phase of the production cycle, so that farmers can be paid immediately on delivery of their products. If export cooperatives are able to pay farmers immediately, they will be able to benefit from the high prices associated with organic and Fair Trade certification. It will enable cooperatives to build up a healthy, long-term relationship with their farmers, and in addition to organic farming training programs, to offer healthcare and educational services as well.'

Source: OECD DACnews 04-04-2008

Did you know?

The annual investment of a 15-year programme for reducing desertification costs between USD 16 and 36 billion. The annual on-site benefits, in the form of avoided productivity losses, runs up to USD 52.5 billion per year. This yields a benefit cost ratio in the range of 1.5 to 3.3.

In Kenya, there are more than 1.3 million people who own small-scale businesses but who have no access to banks.

Despite robust economic growth in the world economy – around 5 per cent in recent years – the number of people who must survive on less than USD 2 per day still stands at around 3 billion people, or almost half of the world's population.

Sources: Norad. 2007. *The Economic Case for Investing in Environment*; UNEP FI. 2005. *CEO Briefing. Sustainability banking in Africa*; WBCSD. 2008.

Stocks, bonds and ... trees

*By **Piet Klop**, World Resources Institute*

Plenty has been written about the economic rationale of investing in environmental management in order to help reduce poverty. But for the investments to be made at the scale that is needed, the relevant question now is whether there is also a financial rationale for investing in the sustainable management of natural resources?

An interesting answer is provided by the Dutch pension fund giant ABP, which recently took a 60 per cent share in the USD 100 million Global Solidarity Forest Fund (GSFF), a body which aims at the reforestation, restoration and responsible management of a total of about 450,000 hectares of forests in Sub-Saharan Africa.

The Global Solidarity Forest Fund (GSFF) is managed by an international asset management company that is owned by the Diocese of Västerås (Sweden), Lutheran Church of Sweden and the Norwegian Lutheran Church Endowment.

GSFF investments include a project in Mozambique which plans the reforestation and responsible management of 46,000 hectares of land as well as the conservation of another 45,000 hectares in Niassa province in the north of the country. The Mozambique project is a joint venture between the Diocese of Västerås and its twin Diocese of Niassa (Church of the Province of South Africa) which will own 10 per cent of the shares in the enterprise.

The forests being created will include pine, teak and eucalyptus plantations, as well as areas with indigenous hardwood tree species. The project aims to establish manufacturing plants in the area producing finished products such as certified charcoal and high-quality, Forest Stewardship Council (FSC) certified sawn timber. It is expected that these enterprises will employ mainly local labour. Local communities will be allowed to take a certain quantity of wood from the concessions – and will also be invited to help protect the forests from fires and illegal logging.

The venture is expected to help alleviate the local problems of forestry depletion (caused partly by unsustainable charcoal production), provide legitimate supplies of hardwood to satisfy international demand and also to make a good profit for its investors.

But why would a pension fund which has a "fiduciary responsibility" – that is an obligation to act in the best financial interests of its shareholders or participants, in this case Dutch government employees – invest in such a venture in a developing country?

From ABP's point of view, investments in forests and timber are attractive due to the stable and potentially high returns they are capable of generating. According to the pension fund, a total annual return of 13 per cent on investment is realistic and possible. Better still, these returns are not subject to the ups and downs of other investment categories such as bonds or stocks: by spreading its investments in this manner ABP can balance its risks and returns.

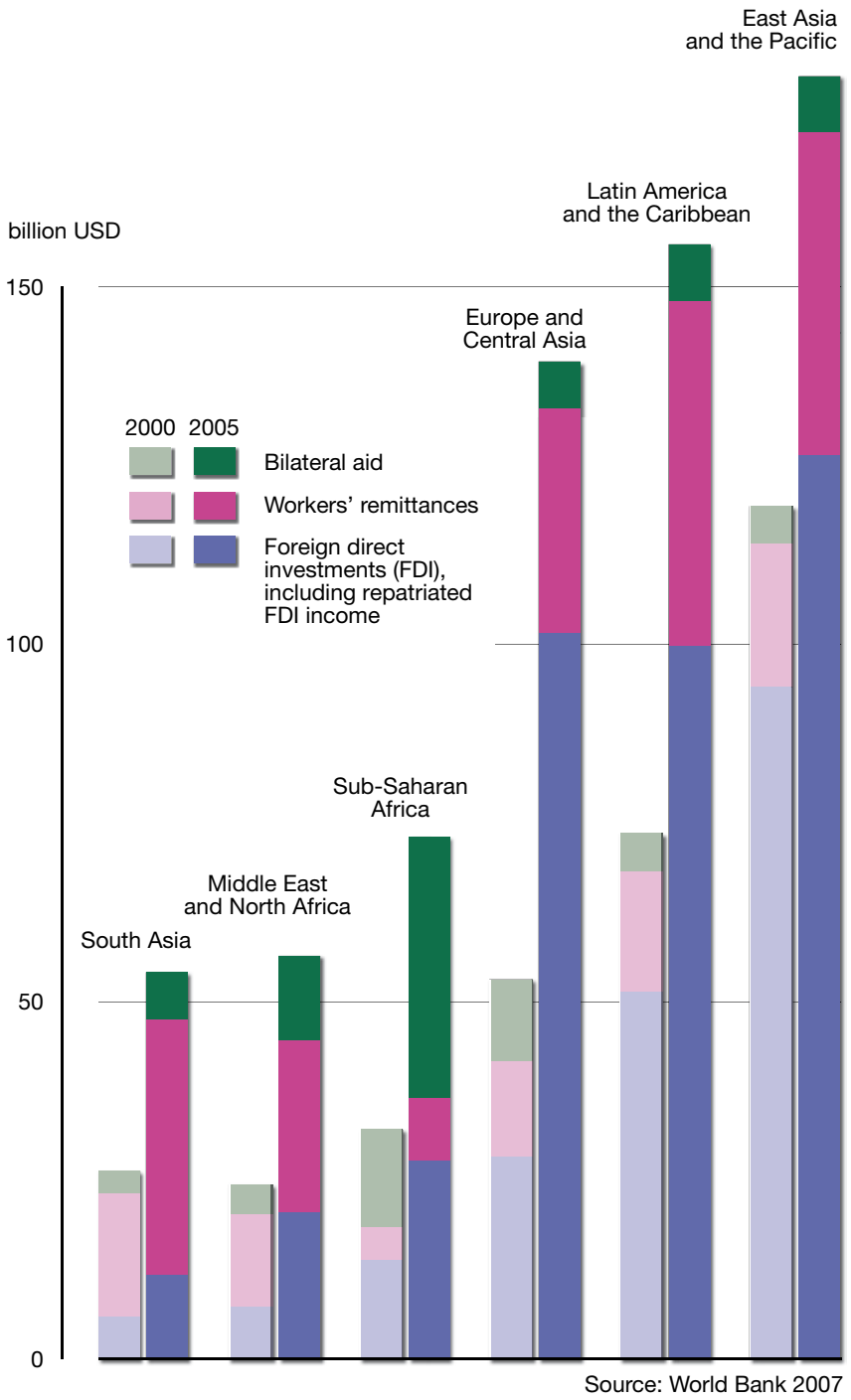
Apart from timber-related returns, pension funds like ABP see sustainable forestry as part of a strategy to combat climate change as trees soak up carbon dioxide, the main greenhouse gas. The production of biomass – wood chips or pellets – is another attraction of investing in forest projects.

ABP and other pension funds are likely to increase the share of such investments in their portfolios as in many ways forests and timber represent a natural fit for the long term investment of pensions.

But why Mozambique? According to Dr Åsa Tham, GSFF's chief executive officer, Mozambique was selected for the ABP investment because the country had demonstrated long-term political stability and has a government committed to the concept of responsible forestry. GSFF has committed itself to the ten universal principles of the United Nations Global Compact. These principles require a responsible policy in the areas of human rights, labour, environment and anti-corruption. Dr Åsa Tham says GSFF welcomed "an opportunity to invest in Sub-Saharan Africa with good returns while at the same time strengthening the economic foundation of local society."

Financial flows for developing countries

With increased globalization and a "smaller world", money flows more easily and the flows have increased. Where aid once represented a majority of the funds from high-income countries to developing countries, this has now been surpassed by investments and worker's remittances, and these flows show no sign of slowing down – maybe only pausing for an occasional downturn in the global economy. The question is: when will this start to show as a decrease in poverty, as indicators show that little of this money directly benefits the poor?



Source: World Bank 2007

"I firmly believe that if investors take a longer range view that incorporates environmental and social factors it will help meet a common goal of the United Nations and the private sector: stronger and sustainable markets."

– Kofi Annan, former UN Secretary General

Energy is at the heart of development. Energy is needed at the household level, for communications and for industrial processes. Developing countries are gearing up to meet their needs for electrification and fuel. At the same time the fight against climate change offers opportunities for low-carbon economies.

Biofuels, land use, and sustainable development in Asia and Africa

*By **Francis X. Johnson**, **Yong Chen**, and **Fiona Zuzarte**, Stockholm Environment Institute*

Agricultural reform, climate change and energy security have been key drivers in renewed enthusiasm for biofuels; the production of biofuels has also been seen as providing stimulus for the economic revitalisation of agriculturally unproductive rural areas both in developing and developed countries. At the same time, the rapidly growing demand for biofuels has raised concerns about food security and environmental impacts. Media coverage has tended to polarise the debate over biofuels, making it more difficult to reach balanced judgements. In order to make sound decisions, policy makers need to have a full grasp of the scientific facts – the direction of policy should not be based on hasty generalisations.

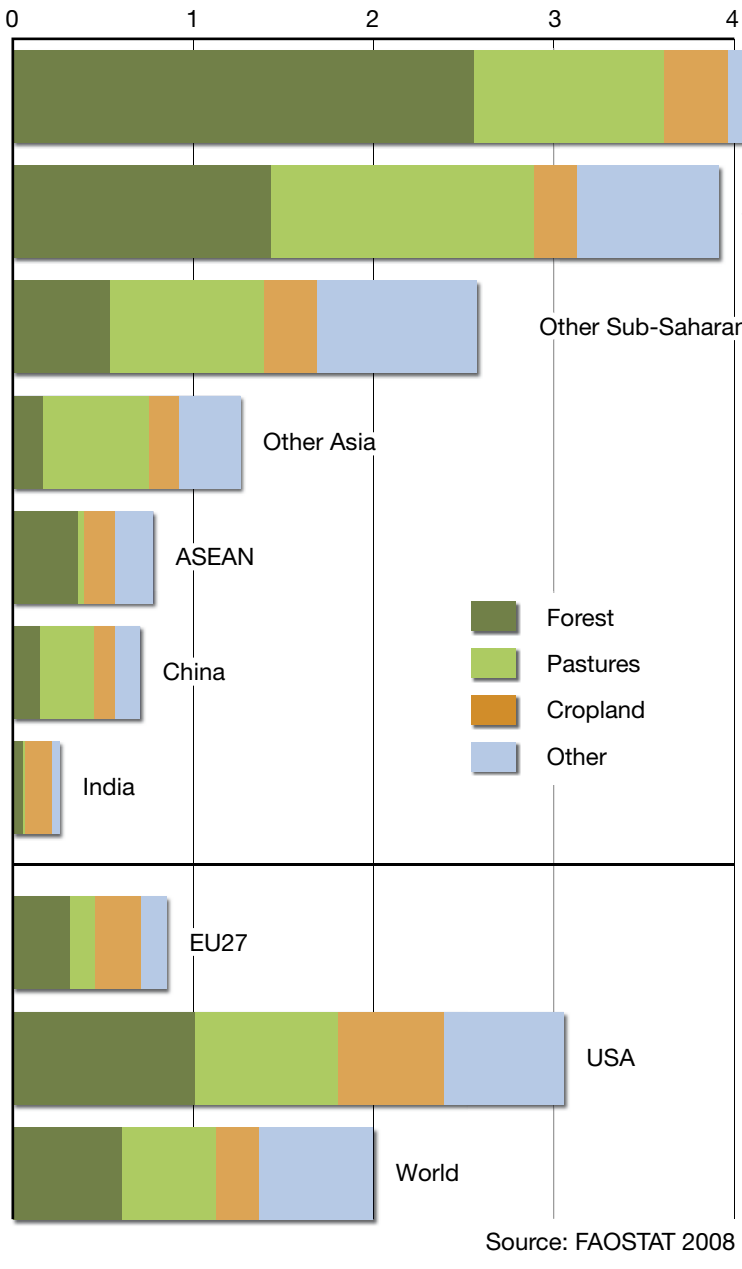
At present, the amount of land devoted to growing biofuels worldwide is less than 25 million hectares, which is about 0.5 per cent of the 5 billion hectares of global agricultural land. Conflicts over land use, in relation to biofuels, have not yet reached significant proportions, though it is important to improve scientific analysis now so that such conflicts do not become widespread in the future. Nor is the production of biofuels a major factor behind global food price increases or land degradation. Yet this does not mean that biofuels will not cause such problems in the future, particularly if production expands into ecologically sensitive regions. Furthermore, the twin pressures of an increasing global population and the rapidly rising cost of fossil fuels will inevitably lead to more land use demand, since renewable resources require more land than the non-renewable fossil fuels they replace.

The global distribution of available agricultural land is rather uneven with respect to population. In general, it's likely there will be more land pressures in Asia in the future – which means the region as a whole will have fewer options available for the production of biofuels. In terms of regions and the potential for the bioenergy trade, it seems likely that only Latin America and areas of sub-Saharan Africa have the potential to become major biofuel exporters. Some sparsely populated regions of Asia also have significant biofuel potential. There are also very large tracts of forests in Canada and Siberia that could serve as feedstocks for biofuels, but these regions tend to be economically remote and environmentally sensitive.

The high productivity of biomass in tropical and sub-tropical regions, in combination with low labour costs, means that developing countries have a comparative advantage in biofuels as well as in agriculture more generally. Many Least Developed Countries (LDCs) in sub-Saharan Africa have especially high potential due to their lower population density. This comparative advantage has been compromised considerably by the lavish agricultural subsidies that have been used in many high income (OECD) countries, which have – until recently – depressed food prices and discouraged investment in agriculture in LDCs.

Levels of cultivated land per capita have been dropping in fast-growing economies like China where the figure is now 0.12 hectare – about half the world average. In a major agricultural exporting country such as the US, the figure is five times this amount, while within the EU it's about twice the amount. In a fairer trade regime, these higher levels of cultivation would be reduced while cultivation would increase in developing countries, both for food and fuel. The resulting increased investment for food and fuel production in LDCs could promote modernisation and reform of the agricultural sector, and act as a spring board for more economic opportunities.

Whether or not such economic development, derived from improved economic competitiveness in the agricultural sector, will bring poverty reduction and sustainable development to the LDCs will nevertheless depend on many other factors, including land tenure, property rights, resource allocation, credit access and transport infrastructure. As with many other economic development issues, there are many different strategies for expanding biofuels production, some being much more sustainable and equitable than others. It is up to researchers and analysts to evaluate the alternatives that are feasible: it is then up to the policy-makers to carefully weigh the advantages and disadvantages of the options.



Source: FAOSTAT 2008

Agricultural potential – as land use per capita, for selected countries and regions

The amount of land area available per capita provides a rough measure of the current carrying capacity for food security and for the development of additional agricultural products for export – such as biofuels. The calculations presented in this figure show that most of Asia is very limited in this respect, especially since populations are expected to increase. Latin America and parts of Sub-Saharan Africa show more potential for the development of biofuels for export.

EarthWire Africa: Daily dose of environmental news

Ever been faced with a situation where you need recent news on the environment in Africa, and time is running out but you do not know where to start? Well, EarthWire Africa might just be the right answer for you.

EarthWire Africa, a service introduced by UNEP/GRID-Arendal in 2001, provides a daily overview of Africa's environment as reported in Africa's media.

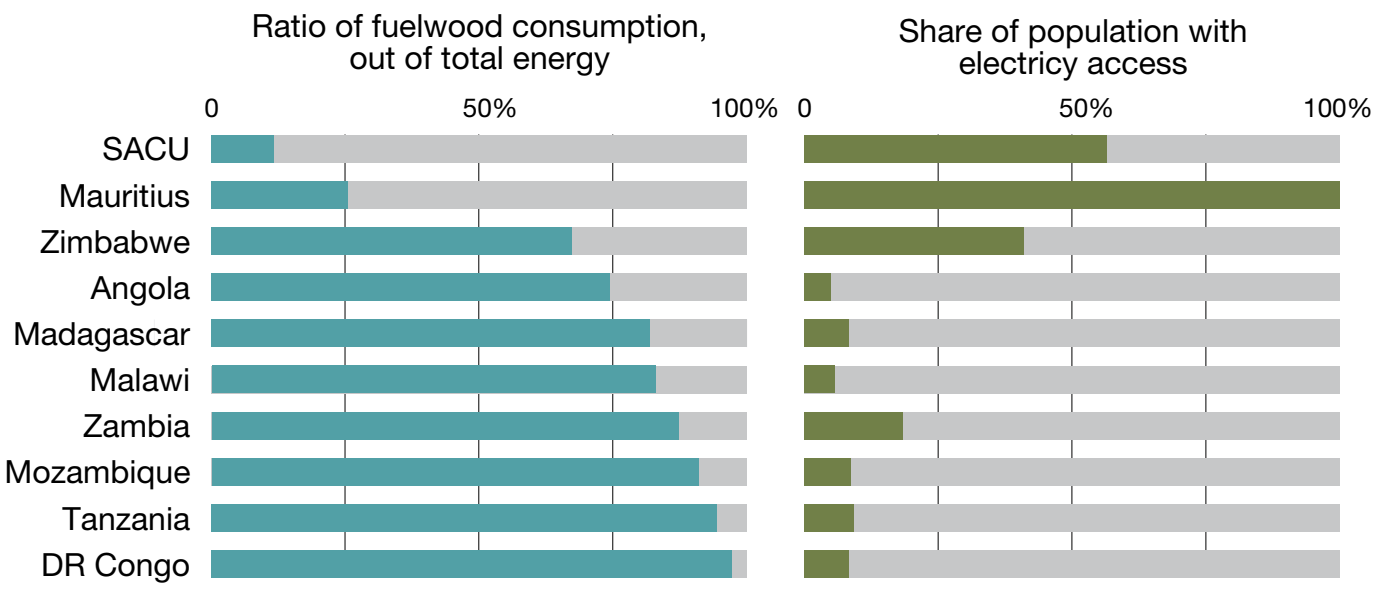
It also collects press releases and news from research organisations, the public sector, and environmental organizations.

EarthWire Africa is used by government officials as a briefing on the day's environmental news, journalists following hot issues, students and researchers looking for current information on the state of the environment, and by anyone with interest in the environment.

To date, the service has in its holdings, over 12,100 news articles, approximately 200 saved media sites, and 10 Really Simple Syndication (RSS) feeds.

EarthWire Africa can be accessed at **www.earthwire.org/africa**.

(Photo: UNEP/Bert Wiklund)



SACU = Southern African Customs Union: Botswana, Lesotho, Namibia, South Africa and Swaziland

Electrification and traditional fuels in Sub-Saharan Africa

The Southern African Development Community (SADC) consists of 15 countries with 233 million total inhabitants. Apart from Mauritius and the countries bordering South Africa in the Southern African Customs Union (SACU), the remaining countries exhibit low rates of electricity access and low use of high quality fuels. Easy access to electricity and power increases the living standard and enables the development of additional services.

The growth of the low-carbon economy: will Asia take the lead?

*By **Paul Steele**, Environment advisor, UNDP Regional Centre in Colombo*

Climate change, typically viewed as a threat, also presents a once in a generation growth opportunity as the world shifts to entirely different methods of production and a low-carbon economy. Just as Britain dominated the world in the 18th century after it established its economic power through the use of fossils fuels and the Industrial Revolution, other countries could become future economic and political powers by leading the shift away from fossil fuels and toward low-carbon emissions.

It is only through such radical moves that the impact of climate change can be reduced. The shift to low-carbon economies will generate demand for new products and technologies, promoting growth and opening up markets. But who will seize the opportunities the future has to offer and benefit from this switch to the low-carbon economy?

Asia is one region that could grasp the opportunity. It is a region with the skills, labour, technology base and entrepreneurship to lead the low-carbon revolution. Yet at present progress in Asia on switching to low-carbon economies in Asia is mixed, varying widely from country to country. Asia needs to move fast if it wants to be a market leader.

Competition for low-carbon technologies is picking up in Europe and some parts of the United States as the private sector and some governments start to make the shift. Moreover, the Global Carbon Exchange in London is well established and growing fast, leaving commodity exchanges in Asia lagging behind. But Asia's private sector can seize the opportunity to lead the decarbonization revolution just as it led the race for globalization. In order for this to happen Asia's dynamic private sector needs governments to provide proper regulatory frameworks and economic incentives.

The response of governments in Asia has been mixed. Japan is a world leader in energy conservation and has an automobile industry which is aggressively reducing emissions. Tiger economies like Thailand are also changing fast. But the two key economies that really matter in the whole decarbonization equation are China and India.

Both China and India are weighed down, like the US, by heavy dependence on coal – accounting for more than 70 per cent of their total energy needs. While there is still debate within the governments of China and India about the need and scale of emissions targets, public opinion may be changing and some private companies are beginning to see the market opportunities of a low-carbon world. Renewable energy markets are now booming.

One of the richest men in China is the owner of the solar power manufacturer SunTech – recently valued at USD 5 billion. In India – though the clean technology sector is still considered a niche – investors and venture capitalists believe the country is likely to achieve growth in the renewable sector similar to that attained in its information technology industry. Some of the key factors behind the expected growth in renewables are surging energy demands and increasing pressure on water resources.

The positions of the Chinese and Indian governments appear to be shifting. Near Shanghai, China is building Dongtan, the world's first fully sustainable city which will have a population of 10,000 people by 2010. China has also set tough national targets for energy efficiency, renewables and increased tree cover, though considerable challenges remain in implementing such measures at the provincial level. Meanwhile India has been hit by a series of disasters, including devastating floods, and reports have indicated the country will be among the worst to be affected by climate change. This has had an impact on government policy and India has announced its intention to develop a "Global Warming Road Map".

The next 10 years will show whether Asia – in particular China and India – can rise to the challenge and opportunities of reducing global greenhouse gases and lead the low-carbon revolution.

Southern Africa grapples with energy shortages

*By **Southern African Research and Documentation Centre***

Southern Africa – a region containing some of Africa's fastest growing economies – is at present facing critical energy shortages and has an urgent need to bring on line several energy generation projects.

Over the last year, Namibia, South Africa, Zambia and Zimbabwe have had to resort to load-shedding as a stop-gap measure in order to conserve energy. South Africa, the region's economic powerhouse, has been particularly badly hit by energy shortages with its mining industry – the mainstay of its economy – temporarily shutting down operations in January 2008 while the power supply situation stabilised. South Africa's industrialists say the shortages are costing them billions of South African rand. Mining accounts for about 15 per cent of South Africa's electricity demand.

The mining sector in South Africa employs about 460,000 people but indirectly supports about five million in total, according to 2007 statistics cited by the country's Chamber of Mines. The sector also contributes a significant proportion of South Africa's Gross Domestic Product.

Zambia and Zimbabwe experienced severe blackouts in early 2008. In Zimbabwe, power blackouts have disrupted industry and commerce, and affected the country's telecommunications network.

Other countries in the region such as Botswana, Namibia and Swaziland, which rely on South Africa for their energy supplies, have had to turn elsewhere for energy. Swaziland, which at present imports 80 per cent of its electricity needs from South Africa, has initiated talks with Mozambique; while Namibia and Zimbabwe have put in place a power-sharing deal that involves Namibian investment.

The Southern African Development Community (SADC) is making frantic efforts to ensure energy shortages will not bring to a halt the fast economic growth now being experienced in the region. At a meeting held in Gaborone, Botswana in February 2008 of SADC's Energy Ministerial Task Force (EMTF), energy ministers from the region acknowledged the energy challenges the region faces, recognizing that high electricity demand "has outstripped supply due to, among other factors, the positive economic growth which averaged about five per cent in most of the SADC member states, and rural electrification projects in most member states."

The SADC region plans to spend USD 7.88 billion on short-term projects to boost power supplies over the next two years while a further USD 32 billion is earmarked for longer-term electricity generation projects. It's been calculated that in order for its economies to operate properly, the region needs reserve supplies of 10 per cent in terms of installed energy capacity.

In what's considered to be a major development in the southern African region, Mozambique recently took over ownership of the giant Cahora Bassa Dam and its hydroelectric power company from Portugal, the former colonial power.

Another long-term project is the Western Corridor Power Project (WESTCOR), a giant five-country initiative that will exploit the hydroelectric energy of the Inga Falls site in the Democratic Republic of Congo (DRC).

Energy security in the region is becoming ever more vital as the SADC Free Trade Area, which takes effect this year, is set to spur even more growth in the region. The SADC energy ministers acknowledged in 2007 that although the region will have no surplus capacity by the end of 2007, the problem would likely be overcome by 2010 if planned projects are implemented and commissioned on schedule. The region not only needs energy to fulfil its economic ambitions: in 2010 South Africa is hosting the football World Cup, while Angola is the venue of the African Cup of Nations soccer showcase. Both events will require substantial energy supply inputs.

Whether or not projects and plans are speedily implemented is critical: in the past warnings about energy supplies do not seem to have been treated seriously enough. Nearly 10 years ago the Southern African Power Pool (SAPP) predicted the SADC region would run out of surplus generation capacity by 2007.

Natural resources create new opportunities for people. A job or additional income can bring a positive change into the lives of the unemployed and the poor.

Working for wetlands is fun.
(Photo: Working for Wetlands)

Working for Wetlands

*By **John Dini**, South African National Biodiversity Institute*

The value of protecting wetland ecosystems might easily be overlooked in countries where national priorities are more concerned with reducing poverty and achieving ambitious economic growth targets. Worldwide, wetlands are among the most abused and neglected ecosystems, frequently falling victim to the overwhelming imperative for development. Such an approach is self-defeating because wetlands provide – for free – invaluable ecosystem services that contribute to poverty reduction.

South Africa is one country that has recognized the value of these special ecosystems: eight years ago it launched its Working for Wetlands Programme, which couples wetland rehabilitation with job creation and skills development.

Zoar before.
(Photo: Working for Wetlands)

Zoar after.
(Photo: Working for Wetlands)

Wetlands support human health and well-being and are an important element of life in many rural areas of South Africa, providing food, medicine, grazing and materials for building and crafts, plus vital clean drinking water. In urban areas, the role that wetlands play is less obvious though they are a critical component in natural water management infrastructure, reducing the destructive energy of floods, improving water quality and providing green spaces for recreation and psychological well-being.

Water resource management is a particularly critical issue in South Africa; by 2025, the country will be one of 14 African countries classified as subject to water scarcity (less than 1000 m^3 per person per year). Yet up to 60 per cent of the wetlands in some catchments are classified as degraded or lost, with a corresponding decline in their capacity to provide ecosystem services. Consequently, a key challenge is to maintain and restore these wetlands to ensure the ecosystem service levels they provide keeps pace with an expanding population and its increasing demands for the water, resources and services that wetlands can provide.

Wetland rehabilitation is the core business of the government-led Working for Wetlands Programme. Using a systematic and collaborative approach on a national scale, the programme works through projects that maximize employment creation, create and support small businesses and transfer relevant and marketable skills in the course of carrying out rehabilitation work. Since the programme was launched in 2000, it has grown into one of the most successful environmental programmes of the South African government and now controls an annual budget of ZAR 75 million (USD 9.6 million).

The programme is managed by the South African National Biodiversity Institute on behalf of the departments of Environmental Affairs and Tourism, Agriculture, and Water Affairs and Forestry. It forms part of the government's Expanded Public Works Programme, which seeks to draw unemployed people into the productive sector of the economy.

In the past year, the Working for Wetlands Programme has rehabilitated 83 wetlands through 40 projects, in the process providing temporary employment for more than 2,200 people. Interventions ranged from stabilizing erosion and plugging drainage channels to breaching barriers, such as roads, that impede the flow of water. For every 22 days of employment, workers receive two days of training. In total, workers benefited from 38,000 such training days, involving personal finance and business practises, literacy and HIV/AIDS awareness, as well as learning relevant technical skills such as concrete mixing and horticultural techniques. Thus the programme achieves two goals – it builds the capacity to rehabilitate, manage and conserve wetlands in South Africa and also enables workers to learn marketable skills and enhance their personal development.

Though the immediate beneficiaries of the rehabilitation work are those directly employed, in reality the income earned is vital for a far larger number of people as the worker on the project is often the only breadwinner in the family. Wetland rehabilitation is vital – its indirect benefits reach far into the broader South African community, positively affecting the lives of hundreds of thousands of people, enhancing biodiversity and securing crucial ecosystem services.

Steven Jarona picks his jatropha seeds.
(Photo: Tor Steinar Rafoss)

Fighting poverty and producing environment-friendly energy

By ***Vigdis Francis,*** *Majiwa*

When farmers in our part of west Kenya heard through the mass media about Jatropha curcas – a tree with oil producing seeds capable of earning precious income – they decided to give it a try.

Farmer and local leader Steven Jarona, 33 and blind since he was 24, heard about jatropha farming and decided to experiment.

Steven has now grown a lot of jatropha plants which have given very good yields. Since there is no proper market at the moment, he has been selling the seeds to a local environmental research institute called the Kenya Agro Forestry Research Institute (KEFRI), being paid KES 3500 to KES 4000 per kg of Jatropha seeds sold. Steven, despite his blindness, is now able to earn his own small income, thanks to jatropha seeds.

Interest grew among local farmers and young people in Steven's village and they registered a group called Nam Lolwe Jatropha Farmers with the district social services, Bondo. The group is now made up of more than 100 members and has at 6,000 jatropha plants.

All these activities have been initiated by ARC Kenya – a local development NGO – plus local farmers. Green Asembo finance – a local credit scheme is also an important partner in this project. Together with ARC Kenya they have started the Green ARO community SACCO project, managed by Alex Omino. They provide small loans to farmers interested in jatropha farming, with money advanced to be paid back after a certain period.

The district administration from Bondo and Rarieda districts in Kenya have visited the successful plantations. Nam Lolwe Jatropha Farmer's Group is now an important organization in terms of its skills in jatropha farming.

Some farmers say that since they started growing jatropha plants, interspersed with such crops as maize or beans, they've noticed soils have been enriched with an increase in crop yields.

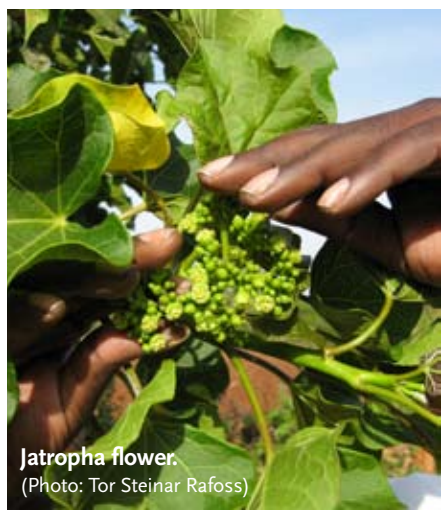
Various experiments on jatropha oil are being carried out by farmers with some using the oil for medicinal purposes. One farmer says his son had a lot of chiggers on his toes but when he applied jatropha oil, the chiggers were reduced. Some farmers have also found that the bark of the jatropha plant can be used as a raw material for dyeing clothes.

Since there is currently no ready market for jatropha oil in Kenya, farmers are accumulating their seeds to increase production further. They are also starting their own oil production and have won an order for 100 litres. If the farmers are successful in their production methods it means they will be able to have a vital source of income.

Meanwhile, a local self-help project in Asembo Bay, Kenya will receive the first tractor with an engine modified specially for jatropha diesel later this year. A Danish farmer's association, after receiving some Jatropha oil for testing, has been working on modifying the tractor engine.

Successful planting of jatropha has been taking place, production is increasing and poverty is being reduced. We are all working hard to cultivate and experiment with this new source of biodiesel, which is both affordable and environmentally friendly.

Jatropha seeds.
(Photo: Tor Steinar Rafoss)



Jatropha flower.
(Photo: Tor Steinar Rafoss)

Jatropha fruits.
(Photo: Tor Steinar Rafoss)

Facts about jatropha

- Jatropha seeds contain 30 per cent oil that can be processed to biodiesel.
- Jatropha plants don't require much water and therefore are most appropriate for arid/semi arid areas.
- The plant is good for intercropping. Therefore, it can be integrated in local agriculture production systems where two or more crops are grown simultaneously in the same field.
- The plant is a nitrogen fixing plant, it has high humus content and prevent high water run off – all this is good for soil conservation. The plant can provide other by-products like glycerine for soap, alternative animal feeds and organic fertilizer.
- Oil can be squeezed from the seeds manually.

Source: Global Facilitation Unit for Underutilized Species. 2006. *Jatropha Curcas L.* in Africa.

Millions of poor people in developing countries are vulnerable to extreme weather events and climate change impacts on water resources, agriculture and ecosystems. While adaptation is crucial for the whole society, it is urgent for people in the Arctic and Small Island Developing States.

Many Strong Voices

*By **John Crump**, UNEP/GRID-Arendal*

Climate change presents the human race with a profound challenge. It is not just an environmental, economic or even social issue. Increasingly, it is being seen as a matter of ethics and human rights. The effects of climate change are regional but solutions must be global. We all have an ethical responsibility for our common future – and we also have a particular responsibility to the world's most vulnerable populations. The ethical position is clear:

"Unless people see that climate change creates ethics and justice concerns, they will not likely be motivated to do what is needed to protect those most vulnerable to climate change who include many of the world's poorest people and future generations."[1]

This ethical dimension to the climate change debate is being put forward by people in the Arctic and Small Island Developing States (SIDS) through a new programme called Many Strong Voices, coordinated by UNEP/GRID-Arendal. The programme involves indigenous peoples, community organizations, policy makers, NGOs and researchers. One of the key goals of the programme is to make sure the voices of two of the world's most vulnerable regions[2] are heard in climate change negotiations.

At first glance the Arctic and SIDS appear to have little in common. Yet both are homelands to a diverse number of indigenous peoples who all have a strong reliance on the environment and its natural resources – animals, fish, and plants. Traditional knowledge continues to play a critical role in decision-making in these societies, with many people retaining a connection to the environment through a body of traditional knowledge built up over the centuries. This close link with the environment is both a strength and, in the face of climate change, a vulnerability.

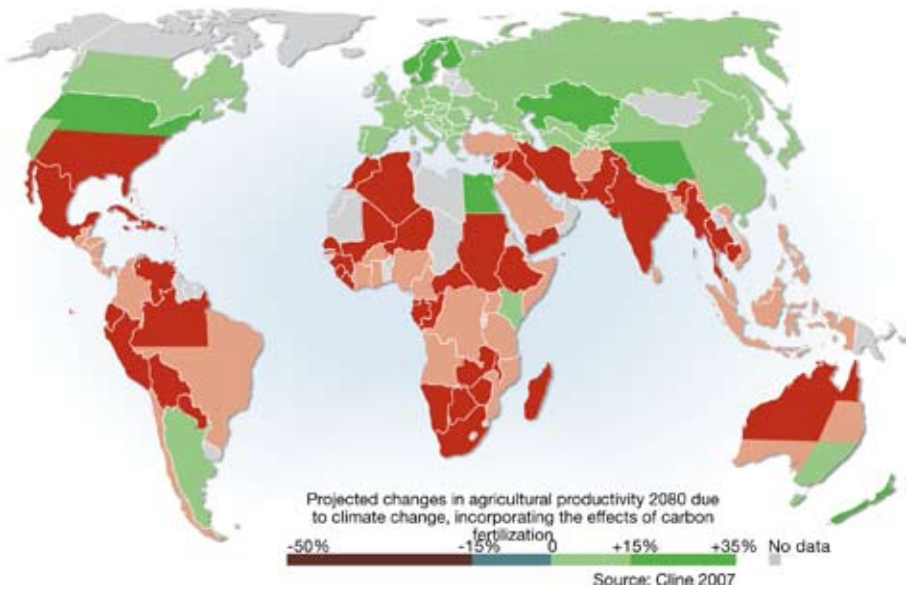
For example, many of the Inuit communities of the Arctic continue to rely on sea ice for hunting marine mammals like seal and walrus. These and other animals, in the region, are important sources of protein and hunting remains important to Inuit culture and identity. Temperatures, in parts of the Arctic, are rising at twice the rate of the rest of planet and this is placing enormous stress on its peoples, their culture and the region's ecosystems.

People in the SIDS face similar challenges to their economic and cultural survival. In Kiribati, in the Pacific, saltwater intrusion affects the panadus trees used to build houses and also plants used for local medicine and food supplies. Other island populations face potential relocation and the loss of not only their homes but also their national identity and rights. Helping people to be resilient and adapt to change and so maintain their livelihoods, cultures and identity is vital.

To build resilience, Many Strong Voices is conducting a SIDS vulnerability assessment, sharing knowledge between regions, building alliances and partnerships, lobbying at climate change negotiations and placing the plight of vulnerable people on the media agenda. Many Strong Voices participants were active at the United Nations Framework Convention on Climate Change (UNFCCC) Bali COP 13 and will make their presence known at, and their voices heard, in negotiations leading to a post-Kyoto climate change agreement.

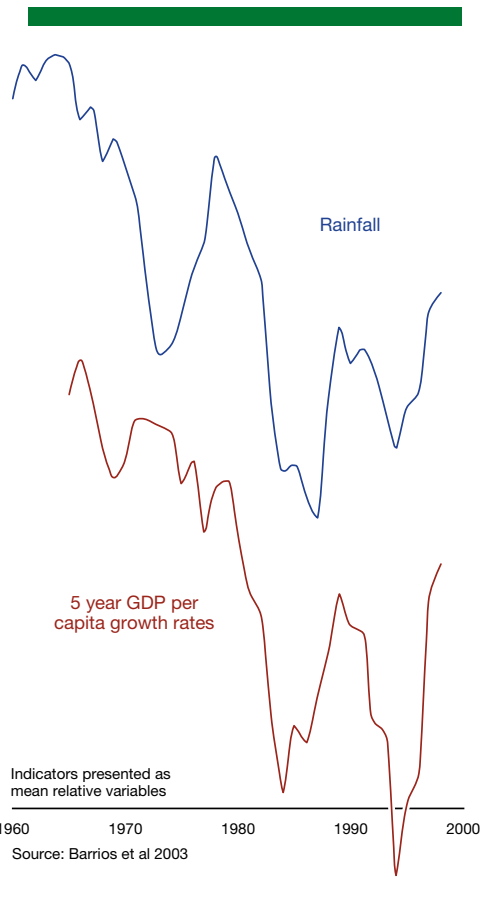
The Arctic and SIDS are considered barometers of global environmental change and, as such, they will be critical testing grounds for processes and programmes aimed at strengthening the adaptive capacities of human societies confronting climate change. Lessons learned through the Many Strong Voices Programme will support policy processes at the local, regional and international levels, and will provide decision-makers both in the Arctic and SIDS with the knowledge to safeguard and strengthen vulnerable regional social, economic and natural systems.

1. *Climate Ethics in Bali – the Urgency of Seeing Climate Change as an Ethical and Justice Concern,* http://climateethics.org/?cat=1
2. *IPCC IV: Summary for Policymakers 2007,* pg. 21, www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf



← Agriculture outputs in 2080 due to climate change

With climate changes, we have to adapt our ways to a new environment – in most cases warmer but possibly wetter and drier. Projections on the climate in the future provide some guidance for us, but how can we create models to show how the human society will react? This map presents a rough idea of changes in agricultural outputs from increased temperatures, precipitation differences and also from carbon fertilization for plants. Projecting climate is one thing, but agriculture adds more multiple dimensions of complexity – extreme events, crop rotations, crop selection, breeds, irrigation, erosion, soils and much more.



➔ Human vulnerability and food insecurity – rainfall and economy in Sub-Saharan Africa

For Sub-Saharan Africa, economic growth patterns follow precipitation patterns closely. As rainfall has decreased over the last 30 years, so has the financial development. Rain-fed agriculture represents a major share of the economy of these countries, as well as for domestic food supply. Improved water resources management and a wider resource base are critical to the stability and security that is required for economic development.

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Dear reader,

Thank you for picking up this new edition of the *Environment and Poverty Times*, an edition that focuses on how natural resources can contribute to economic growth that also benefits the poor. The relationships between these two entities – the poor and natural resources – are complex. More often than not, it is argued that poor people do not have time to address environmental issues as their first concern is to get out of poverty. But in many cases, working with the environment is the way towards increasing livelihoods. Three quarters of the world's poor are close to natural resources and they make decisions about them on a daily basis. They live in rural areas and depend on these resources for their livelihoods as fishermen, forest dwellers, farmers or small-scale miners. It's in their interest to see that natural resources are soundly managed so that they can keep using them in the long-term. The right mixture of entrepreneurship, investments and enabling policies at the national and international levels can create economic opportunities for people to move beyond subsistence levels. This is what this paper is about.

The *Environment and Poverty Times* presents stories on the complex links between environment and poverty reduction. Through short articles, maps, charts and other illustrations – some from unexpected sources such as bank notes – we are showing some of the potential wealth developing countries have and how this wealth can lead to the improvement of the lives of poor people. For more in-depth reading on the subject, please see the references of key publications and initiatives on sustainable development and poverty alleviation. And while you are at it, please stop by www.environmenttimes.net – and bring your friends!

Enjoy reading!