

## Deserts & Drylands

Gaining ground

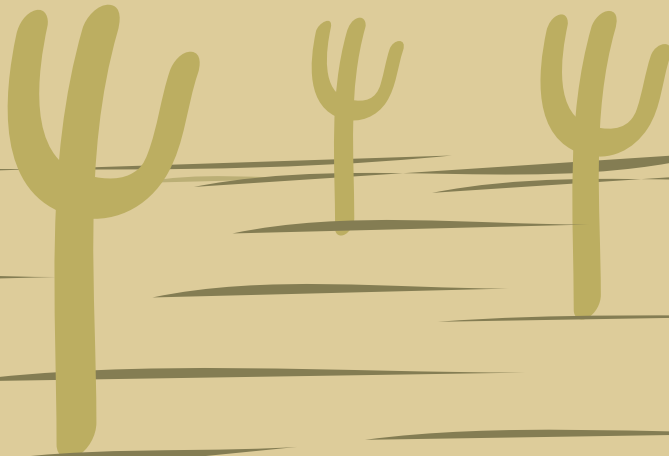
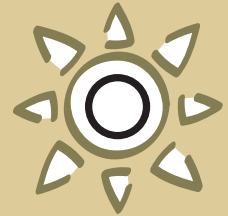


Tree of life

Virtual water

Save our soil

Mali's music stars





## TUNZA

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## Partners for Youth and the Environment



**UNEP and Bayer, the German-based international enterprise involved in health care, crop science and materials science, are working together to strengthen young people's environmental awareness and engage children and youth in environmental issues worldwide.**

A partnership agreement lays down a basis for UNEP and Bayer, who have collaborated on projects in the Asia and Pacific region for nearly 10 years, to step

up current projects, transfer successful initiatives to other countries and develop new youth programmes. Projects include: TUNZA Magazine, the International Children's Painting Competition on the Environment, the Bayer Young Environmental Envoy in Partnership with UNEP, the UNEP TUNZA International Youth Conference, youth environmental networks in Asia Pacific, the Asia-Pacific Eco-Minds Forum and a photo competition, 'Ecology in Focus', in Eastern Europe.

Hispaniola is a marvel: hills and mountains; plains and meadows; land beautiful and fertile for cultivation and harvest, for all manner of livestock, and for dwellings and townships. ʹ

**Christopher Columbus**

*in a letter of 1492 describing the island now comprising Haiti and the Dominican Republic. Haiti, its hillsides stripped bare, has become the poorest country in the Americas.*



Topfoto

**Congratulations to Lau Tsun Ming from Hong Kong (China), global winner of the 15th International Children’s Painting Competition on the Environment. The competition has been held every year since 1990 and has received more than 170,000 entries from children in over 100 countries.**



## Editorial

‘Forests precede civilization,’ it is said, ‘deserts follow’. It has been so since humanity first settled down from a nomadic life. More than 3,000 years ago, *Gilgamesh* – the world’s first ever written story – warned against the cutting down of the cedar forests of Mesopotamia. It went unheeded and the region is now desert, with Uruk – the great city where it was written – no more than a bump in the sand. Plato lamented how ancient Greece had been stripped of trees and soil, while the Mayan civilization of Latin America also partly owed its demise to desertification.

Now the same process threatens much of the world. Land degradation affects one third of the Earth’s land surface and endangers the health and livelihoods of over a billion people, more than one in every seven people on the planet. Over 100 countries – rich and poor – are affected. So is every continent apart from Antarctica. It is probably the world’s most widespread environmental crisis.

For the first time, however, the

world is at least recognizing the problem. An international treaty – the United Nations Convention to Combat Desertification – came into force 10 years ago. And 2006 has been designated by the United Nations as the International Year of Deserts and Desertification to try to call attention to the issue. This is also the theme of the worldwide celebrations of this year’s World Environment Day.

Sadly, progress in tackling the problem over the last decade has been painfully slow. Perhaps because it mainly affects marginalized and poor peoples – often from ethnic minorities – it has rarely been a top priority of most governments or of the international community. And yet the longer it is ignored, the worse it gets, putting all our futures at risk. It is a tall order to reverse the trend of thousands of years, to turn back the desertifying blight that has both doomed successive civilizations and been their legacy. But it has to be done – and done within the lifetime of our generation. We must seize the challenge.



# Save Our Soil

**Desertification – an ugly word for an ugly process, which is stripping away the very flesh of our planet.**

All land-based life depends on the fragile crust of soil that coats the continents. Without it, there would be no crops, no plants, no forests, no animals – and no people. It is agonizingly slow to form, but can be destroyed frighteningly fast. Building up just a few centimetres of soil can take centuries. But misuse it, and it can be gone in a few seasons.

Once it is lost it is effectively gone forever. Air and water pollution can be cleaned up. Oxygen is replenished by natural processes. Water comes back with the rain. But soil that has been eroded away will not be restored in anything less than many generations.

And yet this is happening across a third of the entire landmass of the planet. Every year it makes 12 million hectares of land – an area about the same size as Liberia or the state of Mississippi – totally useless for cultivation, and much more is so impoverished that it is no longer economically worth farming or grazing. Every year, together with drought, it costs the world a massive estimated \$42 billion in lost production.

It blights most of the world's drylands, which make up two fifths of the Earth's land surface and contain roughly the same proportion of its cultivated land. And it threatens the health and livelihoods of more than half their people. 'Given the size of the population in drylands, the number of people affected by desertification is likely larger than for any other contemporary environmental problem,' says a report by the Millennium Ecosystem Assessment, a four-year global study by 1,300 experts from 95 countries.

Over 135 million people – equivalent to the populations of France, Italy, Switzerland and the Netherlands combined – face being driven from their homes and becoming environmental refugees. Desertification plays a part in political instability, social breakdown and the eruption of armed conflicts.

Africa, where nearly three quarters of the drylands are already seriously affected, is the worst hit: over half the land in 10 northern states of Nigeria is affected, as is four fifths of Kenya. Asia, which could lose a third of its arable land, has the most people at risk: desertification threatens the livelihoods of millions in China, for example, and costs the country a staggering \$6.5 billion a year. Much of Latin America is also badly hit.

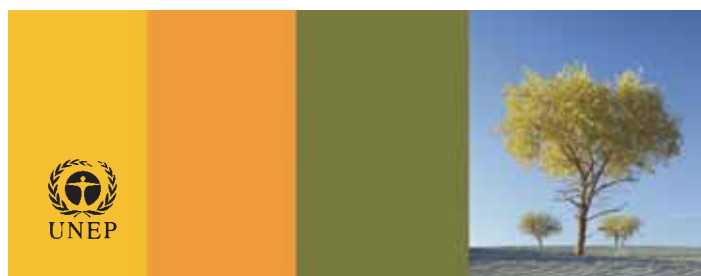
But this crisis affects rich countries as well as developing ones. Some 100 million hectares of Europe's farmland have been degraded, with Spain among the most affected countries. Australia has one of the world's worst land degradation problems, and the prairies of North America – which export food to over 100 countries – are also at risk. In all, some 110 countries, most of the nations on Earth, are affected by desertification to some degree.



J. Pintassilgo/UNEP/Topham



Carole Hodgson



## DON'T DESERT DRYLANDS!

Sometimes the problem is one of expanding deserts. More often it erupts like a skin disease, with patches of severely degraded land developing sometimes thousands of kilometres away from the nearest desert: gradually these patches spread and merge, creating desert-like conditions.

There are four main causes. Overcultivation drains the soil of nutrients, starving crops. Overgrazing – by some 3 billion cattle, sheep and goats – strips the soil of its vegetation, and leaves it exposed to the winds and rain that erode it. Deforestation robs land of the trees whose roots hold the soil together and which channel rainwater down to the soil, again exposing it to erosion. And poor irrigation can cause soil to waterlog and grow too salty to use.

Ten years ago, the world started implementing a global agreement to tackle the problem – the United Nations Convention to Combat Desertification, the only internationally recognized, legally binding treaty addressing land degradation in the drylands. No fewer than 191 countries have joined it.

It obliges countries to adopt action plans, and – unusually – embraces a grassroots approach, insisting that local people should be fully involved in working out what to do. In the past they have often been ignored, or blamed for causing the crisis. But they have had little say in determining their fate; they have been among the most powerless people on the planet, often marginalized in their own countries, often from ethnic minorities, almost always with little political influence. And poverty usually gives them no choice but to try to get as much out of the land as they can to feed their families in the short term, even at the cost of their long-term futures.

But despite the Convention's universal support and revolutionary approach, not nearly enough has been done to put it into practice. Hama Arba Diallo, the Convention's Executive Secretary, says: 'The issue still fails to receive the recognition it deserves.'

So the United Nations has designated 2006 as the International Year of Deserts and Desertification to remind the world of the problem. UNEP is devoting its worldwide World Environment Day celebrations to the same cause. Conferences and summits are being held. A five-day film festival – called Desert Nights – is to take place in Rome. There will even be special football matches organized by Hristo Stoitchkov, the legendary Bulgarian football player, who is one of the official spokespeople for the Year.

It is a timely wake-up call. And it needs to work, for it is high time the world got serious about the loss of its soil, perhaps its most precious resource.



C. Uthairapanumas/UNEP/Topham



S. Baker/UNEP/Topham

# Gaining ground

Desertification is being tackled all over the globe. We are finally learning from the mistakes of the past – and from its successes, like the United States' response to the Dust Bowl crisis of the 1930s (see box). Here are just a few of the solutions now being applied.

## Capturing moisture

**Problem:** Loss of moisture from the soil is the primary challenge. It arises from the disappearance of vegetation, whether through drought, deforestation, overcultivation or overgrazing.

**Solutions:** The ancient practice of terracing – planting in steps cut into slopes – allows water to soak into fields as it flows downhill, and prevents erosion. Variations on this theme



Dani-Jeske/Still Pictures

help farmers to retain moisture in degraded lands. Contour bunding – embankments built into the earth along the contours of a slope – holds onto rainwater in Niger. In Burkino Faso, the embankments – known as *diguettes* – are reinforced



Mark Edwards/Still Pictures

with lines of stones. And in the Philippines and Thailand, farmers strengthen bunds by planting them with deep-rooted vetiver grass.

Rangeland can be set aside to let it recover. Shepherds in Morocco, for example, were encouraged to form cooperatives and then compensated for allowing parcels of land to recuperate. The vegetation recovered very quickly, and is now grazed in controlled rotation.

## Coping with salinization

**Problem:** Overirrigation causes salts to build up in the soil, reducing its fertility.

**Solutions:** Drip irrigation – where water is fed through perforated tubing drop by drop, directly to the roots of the plants – is highly effective. Less evaporation greatly reduces the build-up of salt and the waste of water. It can wash salt away from plant roots and can even be done with



Carole Hodgson

saline water, as the method prevents salt from touching the leaves of plants. The technique is used in the United States, Mexico and Australia, and is being encouraged in Egypt, Eritrea, Jordan and elsewhere.



Dan Porges/Still Pictures

In Pakistan, farmers are adapting to saline land by growing salt-resistant plants such as pistachio trees and barley. Researchers in the region are also investigating salt-resistant plants which can bind the soil and provide cattle forage, and are also a source of cooking oil.

Israel is taking a high-tech approach, developing genetically modified melons, grapes and tomatoes that tolerate saline conditions.

## Deserts and Drylands • How MUCH do YOU know?

1. What do all deserts have in common?  
a. hot weather  
b. sand  
c. little rainfall  
d. camels

2. Which continent is affected by desertification?  
a. Asia  
b. Africa  
c. North America  
d. all of them

3. What is the single largest cause worldwide of desertification?  
a. wind  
b. overgrazing  
c. drought  
d. farming

4. What is a camel's hump made of?  
a. fat  
b. water  
c. bone  
d. hair

## Halting shifting sands

**Problem:** Topsoil and sand loosened by the loss of vegetation blow into arable areas and encroach on cities. This is particularly problematic when degradation on the fringes of deserts destroys the green belts that had held down the soil and sand and provided a buffer zone.

**Solutions:** One approach is to stabilize the sand – such as by using straw grids to hold it down, planting drought-tolerant shrubs in dunes, or even spraying with petroleum. Another is to slow the wind: trees make excellent windbreaks, which shield young plants, anchor soil and help to retain moisture.

China calls its blowing sands – the world’s worst – ‘yellow dragon’, and is fighting them with the Green Great Wall,



Mark Lynas/Still Pictures  
J.P. Delobelle/Still Pictures

planting more than 3.5 million hectares of forest in a 4,500-kilometre network of belts stretching from Beijing to Inner Mongolia. The project is now in its fifth year but is expected to take decades to complete.

## Recovering degraded land

**Problem:** Land impoverished by overcultivation, erosion and drought needs to have its nutrients restored.

**Solutions:** The Zai technique of pit planting – which originated in Mali and has been adopted by farmers in Burkina Faso, captures rain and run-off, keeps seeds and mulch from being washed away, concentrates nutrients and helps improve depleted soil. Pits 20 to 40 centimetres wide and 10 to 20 centimetres deep are dug at 1-metre intervals during the dry season, and organic matter is gradually built up inside. After the first rain’s fall, they are covered with a layer of soil, into which seeds are sown.

Legumes like pigeonpea – grown in India and Africa – add valuable nitrogen to soil. Agroforestry – planting trees



among crops and herds – can have many benefits. Trees drop nitrogen-rich leaves and so boost soil fertility, prevent erosion and provide shade, fuelwood, fruit, fodder and timber.

## It can be done

The best example of the devastating effects of desertification is also the greatest lesson in how it can be defeated. For decades, farmers in the Great Plains of the United States ploughed up native grasses to plant wheat. In the 1930s, a prolonged drought killed the crops and exposed the topsoil. Windstorms swept it away in massive dust clouds, destroying 40.5 million hectares of land across five states, displacing millions of farmers and plunging the country deeper into economic depression.

When Franklin D. Roosevelt was inaugurated as President in 1933, he established the Soil Erosion Service to help rebuild agriculture and to prevent the disaster recurring. It taught farmers techniques still in use today, such as terracing, contour ploughing, strip cropping, leaving crop residue on land to increase nutrients, and planting trees surrounded by shrubs to create windbreaks.



Alex S. MacLean/Still Pictures

5. How many plants species are estimated to grow in the Sahara?  
a. 80  
b. 450  
c. 750  
d. 1,200

6. How long has the Atacama desert in Chile gone without rain?  
a. 10 months  
b. 14 years  
c. 40 years  
d. 90 years

7. How much of the Earth’s land area is covered by deserts and drylands?  
a. 5 per cent  
b. 13 per cent  
c. 20 per cent  
d. 40 per cent

8. Can it snow in a desert?  
a. yes  
b. no

# Year of change

**2006** is a special year for deserts and their peoples.

At UNEP's suggestion, the United Nations agreed to make it the International Year of Deserts and Desertification (IYDD).

The year sets out to celebrate the beauty and uniqueness of the world's drylands, which have been home to some of the world's oldest civilizations and provide vast and irreplaceable habitats for wildlife.

Public understanding of desertification – and its widespread, devastating effects – lags well behind the urgency of the issue, so the Year also sets out to change this, and to get across the need to protect the biodiversity and communities of deserts and drylands.

The year's events include the launch of a book, *365 Pictures for the IYDD*, photography exhibitions in France and Germany, and a National Conference on Wind Erosion in Iran. Commemorative stamps are being issued and a photography competition held.

UNEP's World Environment Day, 5 June 2006, is dedicated to desertification. An international film festival in Rome – including documentaries on dryland communities, fictional films and awards – will be held on the World Day to Combat Desertification on 17 June, 12 days later.

'Land – next to water and air – is the very base of all life,' said Klaus Toepfer, UNEP's retiring Executive Director.

'But unlike air and water, which can be cleaned up and rehabilitated, once soils are lost it can take millennia for nature to recreate them. Human-induced land degradation now affects all continents, and needs to be addressed urgently.'

It's not too late to get in on the action. Anyone can participate, and the IYDD encourages people to come up with local events and activities, from publishing editorials in the local paper to producing plays and organizing round-table discussions and art exhibitions.

There are also activities online. One group, for example, is posting images on the theme of deserts and desertification on the free photo-sharing website [www.flickr.com](http://www.flickr.com), which is also serving as a forum for discussion.

**For a list of events worldwide visit the IYDD website ([www.iydd.org](http://www.iydd.org)).**

预览已结束，完整报告链接和二维码如下：

[https://www.yunbaogao.cn/report/index/report?reportId=5\\_11179](https://www.yunbaogao.cn/report/index/report?reportId=5_11179)

