

margins of hope

by Lois Sweet

the challenge of desertification

That dirt which blew off my hand, that wasn't dirt... That was my land, and it was going south into Montana or north up towards Regina, or east or west and it was never coming back. The land just blew away.

— Canadian survivor of the 1930s drought
From *The Great Depression: 1929-1939*
Pierre Berton (McClelland & Stewart, 1990)

In the spring of 1998, when clouds of dust descended on the western United States from Washington to Texas, weather experts were mystified. They could not figure out where all the pollution – extensive enough and heavy enough to settle like a blanket over the countryside – was coming from.

Eventually, they concluded it must have originated in China. A three-day dust storm, responsible for wreaking death and destruction in that country's interior, seemed to have been pushed east by tradewinds all the way across the Pacific.

This was by no means the first time that soil had taken a trans-oceanic journey. Astronauts circling the Earth in 1994 watched in amazement as plumes of reddish-brown dust arose out of North Africa heading straight for Florida and the Caribbean. Hundreds of kilometres wide and thousands of kilometres long, this dust represented but a small proportion of the billion tonnes of African dust that can blow across the Atlantic yearly.

The consequences of this transference are alarming. Wind erosion is suspected of contributing to the formation of more frequent and more intense hurricanes in the eastern Atlantic, the stress on the world's food-producing capacity, air pollution, a global loss of biodiversity, and, of course, massive suffering for those robbed of their means of survival.

"I remember thinking when I was young that the East was very black, since the wind and the rain came from that direction," says Mbare Ndiaye of Bakel, Senegal. "When winter began, the temperature dropped as the hot earth soaked up the water. Today the sky turns red from the colour of dust and sand. There is no rain."

Ndiaye lives in the Sahel, a band of land that spans northern Africa, sandwiched between the Sahara's vast expanse and the tropics to the South. It is best known today for the harshness of its living conditions. The Sahel has been hit hard by "desertification" – a process whereby productive land becomes so seriously eroded that any remaining soil loses nutrients essential to plant growth. The result is desert-like conditions.

The natural causes are manifold; drought, higher temperatures, lower water tables and deforested land. Erosion – especially wind erosion – does the rest.



Photo: IDRC

And who knows how much, if any, industry contributes to global warming with the discharge of CO₂ and other pollutants? It is possible, though, that higher temperatures will increase evaporation from the oceans, glaciers and fresh water. This will result in more water in the atmosphere which may lead to less aridity.

People also play a considerable role in degrading their own land. The stresses of poverty and over-population push them to over-graze and over-cultivate. In a desperate struggle to survive, they are driven to destroy forest belts, practice poor irrigation, and use inappropriate agricultural methods (slash and burn, shorter fallow periods, and soil nutrient mining).

International trade patterns, which encourage the short-term exploitation of local resources for export, contribute to this process as well. World commodity prices have been falling, while the cost of what producers must buy has been rising. Communities are left with little, if any, profit to manage or restore exploited land. Trade and cash economies also raise people's expectations about the standard of living to which they aspire, and this can lead to an increased demand for products and consumption.

"The combined effect of all these factors," says Ola Smith, a Senior Program Specialist at IDRC, "is the removal of soil vegetative cover, the impoverishment of soil both physically and chemically, and a reduction in productivity. Soil then becomes exposed to the action of the wind and this results in extreme degradation of the land."

Although the term "desertification" has been around since the 1920s, it wasn't until the 1992 Earth Summit in Rio de Janeiro, that world leaders finally agreed on a definition. By then, scientific advances had exploded the popular myth that deserts are steadily advancing.

Instead, it was recognized that desertification is caused by both climate change and the actions of people.

The official definition, as adopted by the UN Convention to Combat Desertification acknowledges the shared responsibility.

"Desertification is land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors including climatic variations and human activities."

Behind the technical language lies a grim reality. Land degradation is increasing at an alarming rate. The United Nations Environment Programme estimates that 250 million people are directly

affected by land degradation in dryland regions, and a total of one billion are at risk.

With drylands covering up to one-quarter of the Earth's surface, more than 110 countries are potentially at risk. (Today, 70 per cent of the 5.2 billion hectares of drylands used for agriculture are already degraded.)

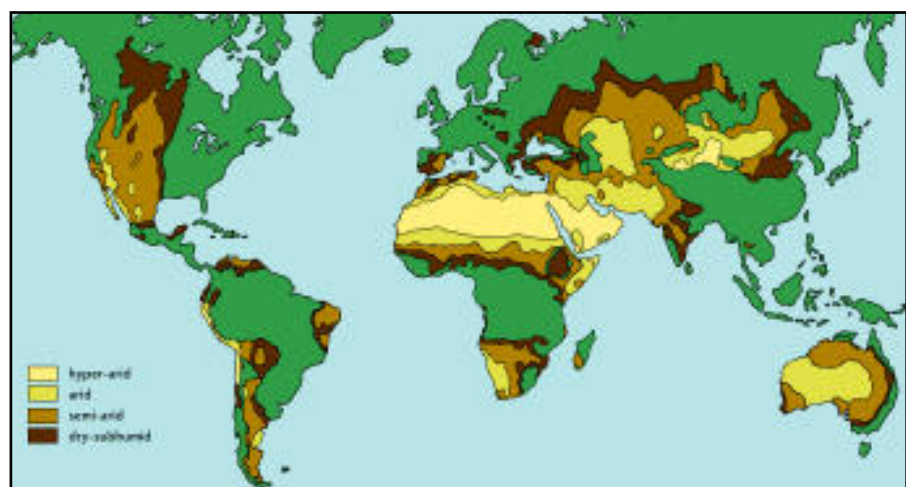
While drylands may conjure up images of unproductive land, the reality is quite the opposite. They are, in fact, a vital source of biological diversity. Medicines, resins, waxes, oils and other commercial products originate in dryland species. (In fact, these species supply one-third of all the plant-derived drugs in the U.S.)

Many of the world's most important food grains – including wheat, barley, millet and sorghum – originated in the drylands. And wildlife, including large mammals and migratory birds, depend on them for their habitat.

While the UN estimates that desertification costs \$45 billion (US) a year, the human cost is probably not only much higher, but is impossible to estimate. Consider this:

- Desertification exacerbates poverty and political instability;
- Children are killed by falling down gullies created by soil erosion;
- Entire communities suffer from water scarcity and famine;
- Children (especially girls) cannot attend school because they are forced to walk long distances to get firewood;
- Millions of people are displaced from their homes, creating severe pressures in the places in which they re-settle;
- "Environmental refugees" endure extremely difficult living conditions, suffer a loss of cultural identity,

Photo: IDRC



source: Desertification: Exploding The Myth, D.S.G. Thomas – N.J. Middleton (John Wiley-Sons, 1994)

and experience an undermining of their social stability;

- Conflicts between neighbouring countries, even armed conflict, can result.

Timm Hoffman of the National Botanical Institute in Cape Town – co-authored an IDRC – supported study on desertification. He says that land degradation has hidden health implications as well.

“The way people cook their food is compromised,” he says. “Deforestation forces them to cook in bulk, but because they have no way of storing the food, they get diarrhea and other gastro-diseases.

Or, they eat uncooked or partially cooked food which is also a health hazard.”

Such images may be difficult to transpose to the prosperity of North America, but Saskatchewan ecologist Stan Rowe warns against complacency. “Our society is uninformed and naïve,” he says. “It does not believe that civilizations are rooted in productive soils. It does not believe that in 50 years Saskatchewan could be a desert, and deserted.”

Yet only five to seven per cent of Canada’s land is suitable for agriculture, and nearly three-quarters of it sits in the breadbasket of the western Prairies. More than 32 million hectares of the Prairies are technically “dryland,” mostly in southern parts of Alberta and Saskatchewan.

In fact, virtually no country in the world can afford to be complacent. The Earth is small, its resources

finite; land degradation in one part of the world has profound repercussions in other parts.

The landmark UN Convention on Desertification recognizes this. The Convention is the first

continent	% of agricultural land degraded
Australia	16
Europe	25
North America	26
Asia	38
South America	45
Africa	65
Central America	74

source: International Soil Reference & Information Centre

international treaty of its kind to emphasize the importance of joining traditional, local knowledge of dryland management with modern science in the search for answers to land degradation.

Don Peden, a Senior Program Specialist at IDRC, says the Convention represents a global recognition that the world’s resources are the property of the world’s people and that a global, collective action is required to address this issue.

“The Convention will work,” says Peden, “if a significant number of people accept the fact that the world is collectively ours – that the dustbowls of Africa belong to us here in Canada every bit as much as they belong to the people of the Sahel.”

getting there

The Road to the UN Convention on Desertification

When delegates converged in Rio de Janeiro for the 1992 United Nations Conference on Environment and Development, they knew that desertification would be on the agenda. Worldwide, the economic, social and environmental consequences of desertification were exacting a devastating toll.

This was not the first time the issue was debated internationally. In 1977, the United Nations Conference on Desertification adopted a Plan of Action to Combat Desertification. Despite this – and other efforts – the United Nations Environment Programme reluctantly acknowledged in 1991 that the problem of land degradation in arid, semi-arid, and dry sub-humid areas had intensified.

In Rio, world leaders decided to move in a new direction. In particular, they stressed the need for action that would promote sustainable development at the community level.

They also called on the United Nations General Assembly to establish an Intergovernmental Negotiating Committee to prepare a Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa.

The deadline was tight: June 1994. Yet the Committee completed its negotiations in five sessions with Canada providing strong support throughout. (The Canadian International Development Agency (CIDA) was Canada’s lead agency in the negotiations.)

The Convention was adopted in Paris on June 17, 1994 and opened for signature on October 14, 1994. Canada ratified it on December 1, 1995.

On December 26, 1996, the Convention came into force, 90 days after the 50th ratification was received.

myths & realities

myth Expanding deserts are the cause of desertification.
reality Desert borders expand and recede through time. Desertification largely occurs because of climate change and unsustainable land use practices.

myth Desertification is exclusively a southern problem.
reality Dryland in every part of the world is susceptible to desertification. In the developed world, 18 countries (including Canada and the United States) suffer from desertification. Many developed countries are indirectly affected as environmental refugees migrate to them.

myth Desertified land cannot be regenerated.
reality With a combination of better land management, significant changes in local and international behavior, and the passage of time, desertification can be reversed.

myth Too much money has already been spent trying to combat desertification.

reality While much money has been spent on the problem, not enough of it has reached affected areas. Instead, it has gone to experts, consultants, and top-down, poorly-conceived projects. Under the UN Convention, resources should more directly address the issue.

convention highlights

Countries affected by desertification will be implementing the Convention. They will do this by developing and carrying out national, sub-regional, and regional programs that emphasize public participation. "National Action Programs" will address the socio-economic and environmental causes of desertification. Particular emphasis will be placed on involving local people in projects – especially women and indigenous peoples.

Programs will be created through partnerships among local communities, non-governmental organizations (NGOs), governments from both developed and developing countries, and international organizations.



vox populi

The soil in our fields is red and sandy. It is no longer as rich as it used to be, and so the harvest has diminished...what is more, the soil is cut by deep ravines. These have appeared since the trees died, when the land became exposed.

– Zouma Coulibaly, Mali

We remember when, to find firewood, we only had to look behind our houses; today we have to walk up to 8 or 9 kilometres.

– Kabre Gontemga, Burkina Faso

When I was young, the bush seemed so vast that we never believed our fields would exhaust it.

– El Haj Chaibou Bagouma, Niger

The water supply is one of our biggest worries. We dig holes in the dried-up river bed, managing to get just enough muddy water to meet our needs. I don't know if this contributes to the diseases we suffer from. Many of us, young and old, are plagued by health problems.

– Mariam Madra, Chad

A place without a tree is like an ugly person without clothes.

– Mohamed Salih, Sudan

When we arrived ...the river was clean and full of crocodiles and fish. People did not have to worry about gathering wood because the river was like a train or cargo truck transporting large trees and branches to our door. Now it just brings dead bodies.

– Ahmed Salih, Sudan

what IDRC is doing

IDRC has been supporting research on combatting desertification since its inception in 1970. For example:

- Scientists worked with Zimbabwe farmers to identify drought-tolerant, fast-growing, multi-purpose tree species and provided guidelines for introducing them to farmers;
- Chilean and Canadian researchers discovered a way to draw water from the coastal mountain fog in the Andes in Chile. The “Fog Catcher” provides a reliable supply of safe drinking water and has the potential to help arid communities in 40 developing countries;
- Research in the Badlands in India is developing a land-use system that combines trees, shrubs and grasses and would ensure fodder for animals;
- Research in the rangelands of Morocco is finding ways to use wild, aromatic desert plants and herbs to fight desertification while boosting local people’s income;
- GlobeSAR (Global Synthetic Aperture Radar) helps developing countries benefit from data it gathers. The data is critical to managing renewable and nonrenewable resources and combatting environmental degradation;
- A research project discovered a way to control Striga, a noxious weed, that infests an estimated two-thirds of the 73 million hectares devoted to cereal crops in Africa;
- The “Casuarina” project in Egypt helped provide fast-growing and drought-resistant trees that will offer better protection to cultivated areas in the desert and generate additional income to small-scale farmers;
- The “Roots and Tubers II” project in Zanzibar identified and improved crops already used by local

people during drought. Better varieties of sweet potato, yam and cocoyam were developed and cropping practices were fine-tuned;

- The “Dryland Agroforestry Project” in Kenya developed low input dryland technology packages for increasing soil fertility and improving grazing lands. It also developed soil conservation techniques and water retention ditches that encourage plant growth;
- A project in the Senegal River Basin assessed wood production in relation to wood supply, developed methods for irrigated forest plantations, and introduced trees into irrigated systems.

IDRC programming directly supports the Convention with activities focussing on research and the sharing of knowledge. This programming includes:

- Support for the process that selected African countries are undergoing as they prepare National Action Plans;
- Fostering local community participation through sponsored workshops, research on coping and adaptive strategies, indigenous knowledge, and social and environmental indicators;
- Research on integrated decision-support systems and information networks.

The Desert Margins Initiative, jointly funded by a consortium of donors including IDRC, is an integrated local, national, sub-regional, and international action research program for developing sustainable natural-resource management options to combat desertification in sub-Saharan Africa. Partners include Niger, Burkina Faso, Mali, Senegal, Botswana, Namibia, Zimbabwe, South Africa and Kenya. Increasing the food security of poor, rural populations and contributing to poverty alleviation by halting or reversing desertification is the key goal.

key facts

- About 30% of the Earth’s total land surface is affected by desertification;
- 250 million people are directly affected by land degradation in dryland regions;
- More than 100 countries have drylands that are at risk potentially jeopardizing the lives of one billion people;
- Income lost due to desertification amounts to approximately \$45 billion (US) globally;
- 70% of the 5.2 billion hectares of drylands used for agriculture are already degraded;
- Land degradation is a growing problem and is primarily a problem of sustainable development;
- Two-thirds of Africa is desert or drylands;
- Up to a billion tonnes of African dust can blow across the Atlantic in a single year;
- Desertification stresses the world’s food-producing capacity; each year 10 million hectares of land are lost at the same time as the world’s population is growing;
- Desertification affects the global loss of biodiversity; 27,000 species (three per hour) are lost each year;
- There were at least 10 million environmental refugees in 1988;
- The UN estimates that the global costs of preventative, corrective and rehabilitative anti-desertification interventions are between \$10 and \$22.4 billion (US) a year (less than half the amount of money lost each year due to desertification).

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what is IDRC

IDRC works with researchers in developing countries to help them find practical, long-term solutions to the social, economic and environmental problems facing them. In particular, support is directed towards developing the indigenous research capacity necessary to sustain policies and technologies that will build healthier, more equitable, more prosperous societies.

IDRC was established in 1970 by an Act of the Parliament of Canada

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