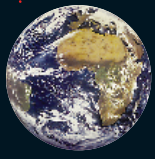
A new approach to land use planning and management

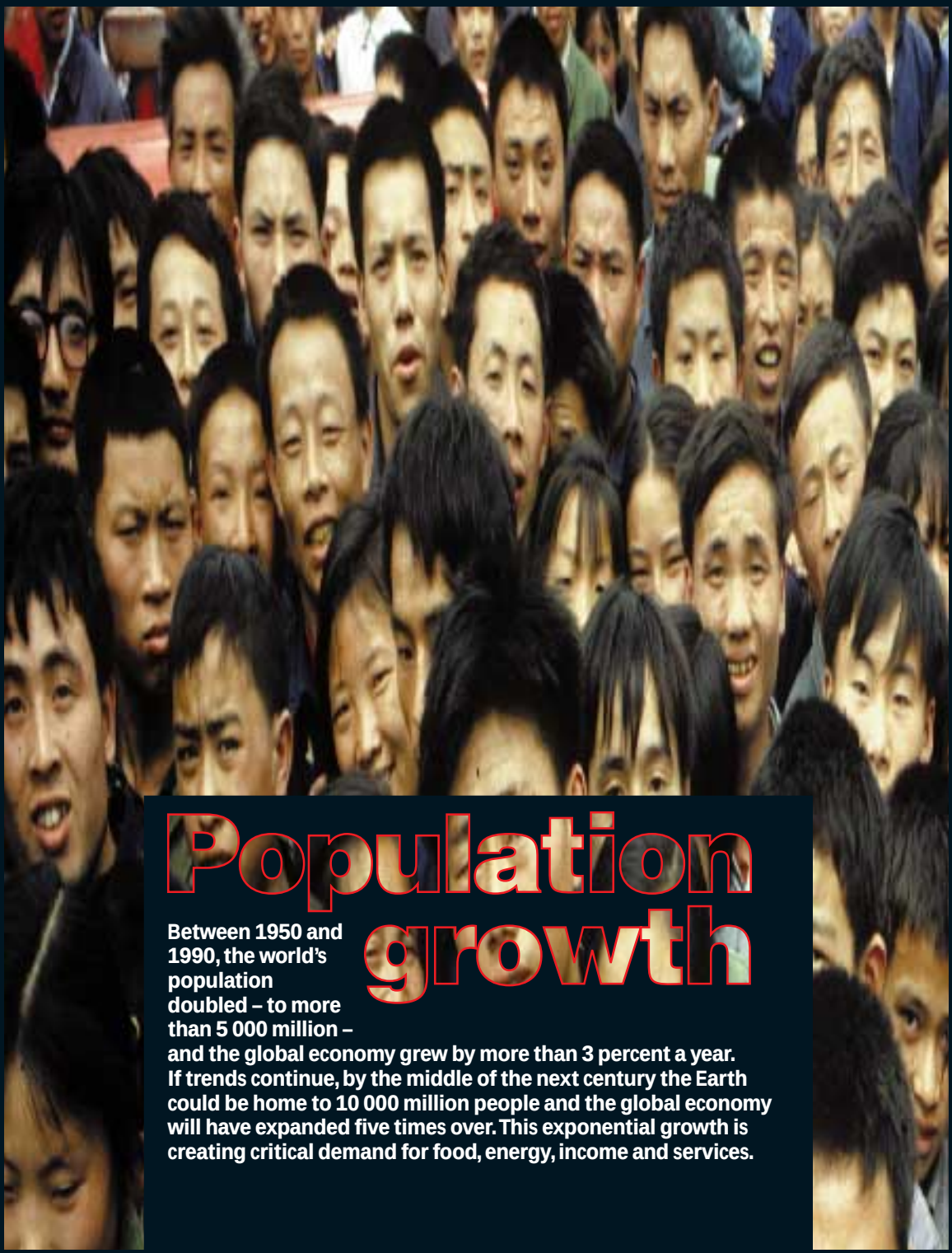
OUR LAND OUR FUTURE

OUR LAND OUR FUTURE • A new approach to land use planning and management

You are here...

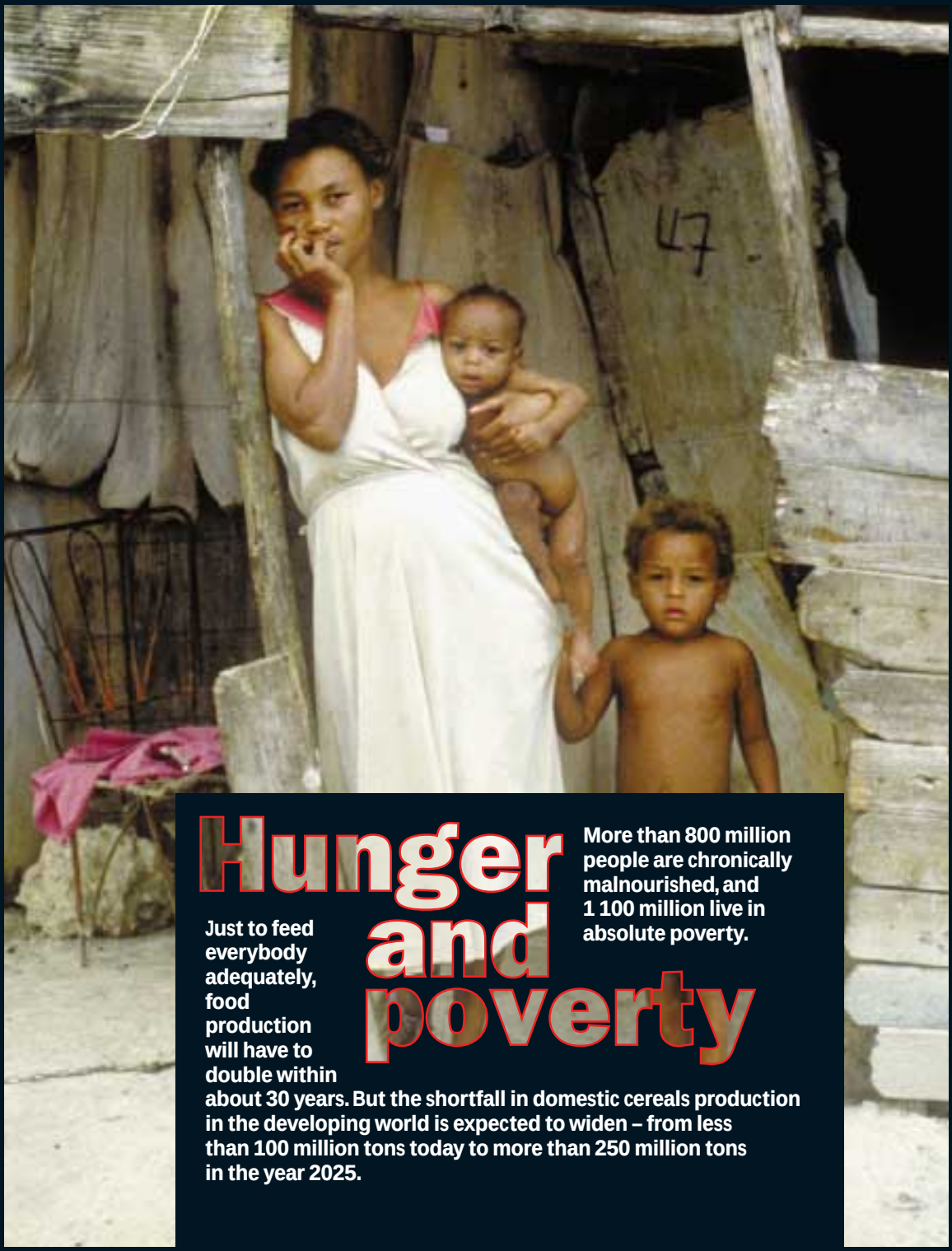
Planet Earth is a beautiful place. But it also has serious problems, and sooner or later we will have to face them...





Population growth

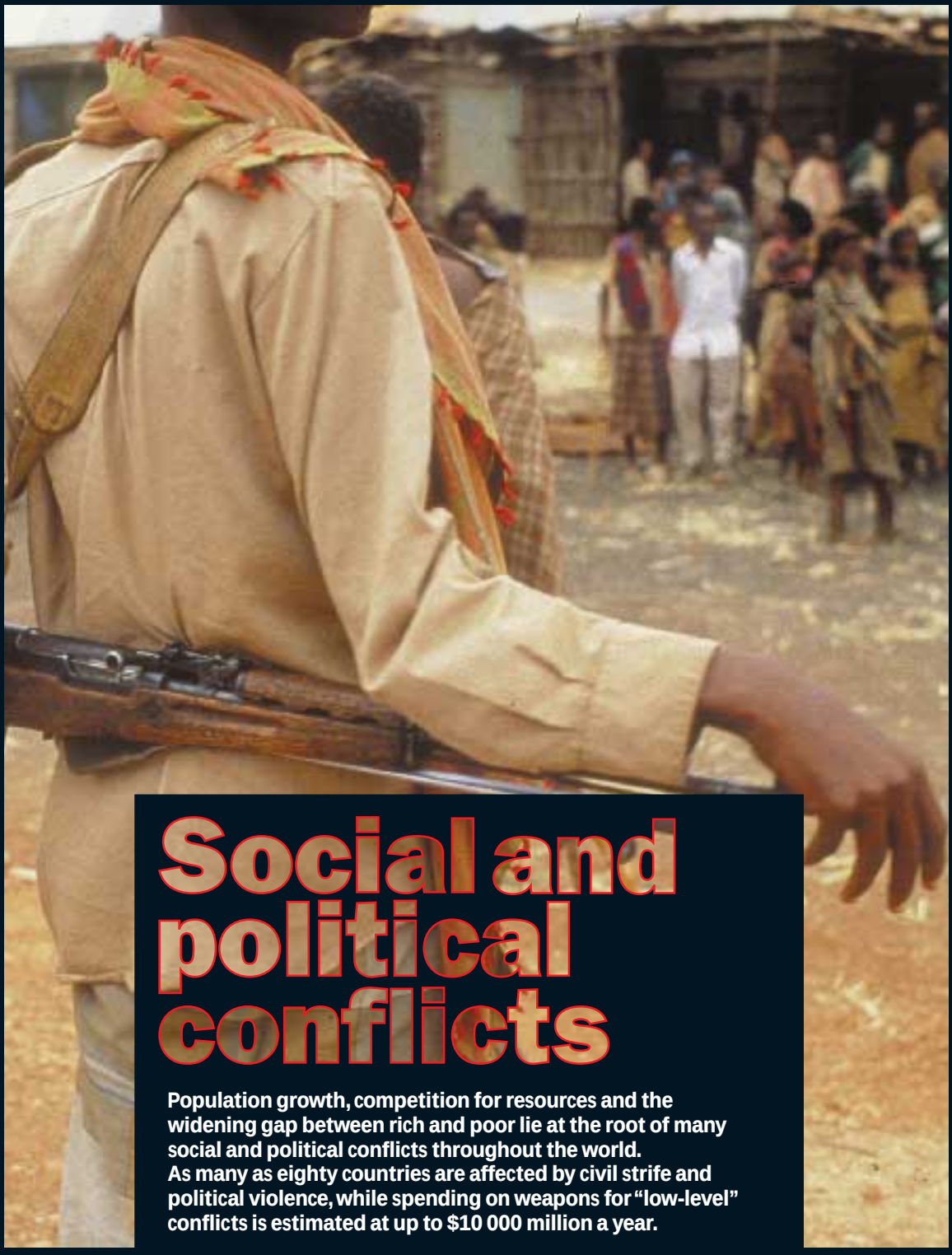
Between 1950 and 1990, the world's population doubled – to more than 5 000 million – and the global economy grew by more than 3 percent a year. If trends continue, by the middle of the next century the Earth could be home to 10 000 million people and the global economy will have expanded five times over. This exponential growth is creating critical demand for food, energy, income and services.



Hunger and poverty

More than 800 million people are chronically malnourished, and 1 100 million live in absolute poverty.

Just to feed everybody adequately, food production will have to double within about 30 years. But the shortfall in domestic cereals production in the developing world is expected to widen – from less than 100 million tons today to more than 250 million tons in the year 2025.



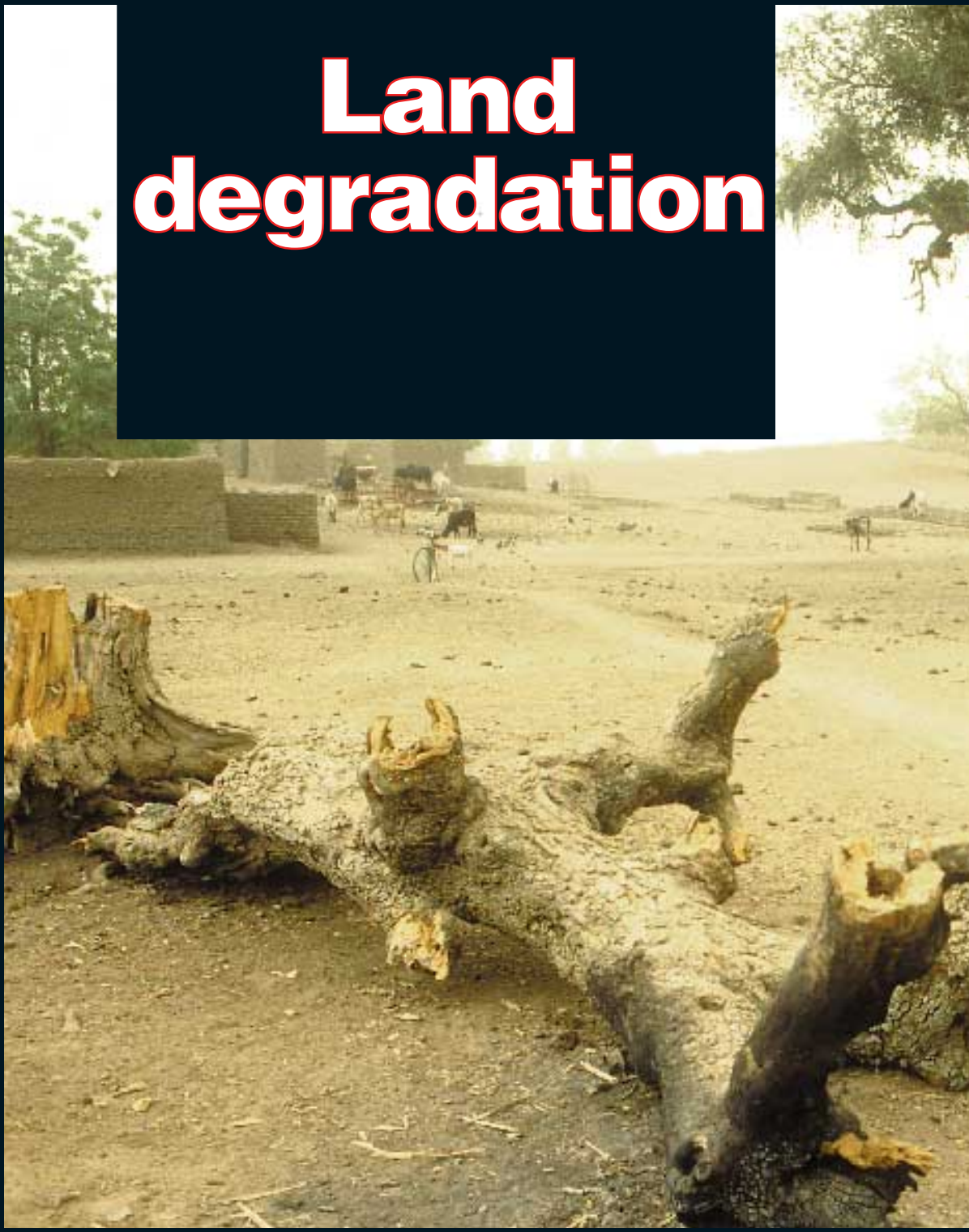
Social and political conflicts

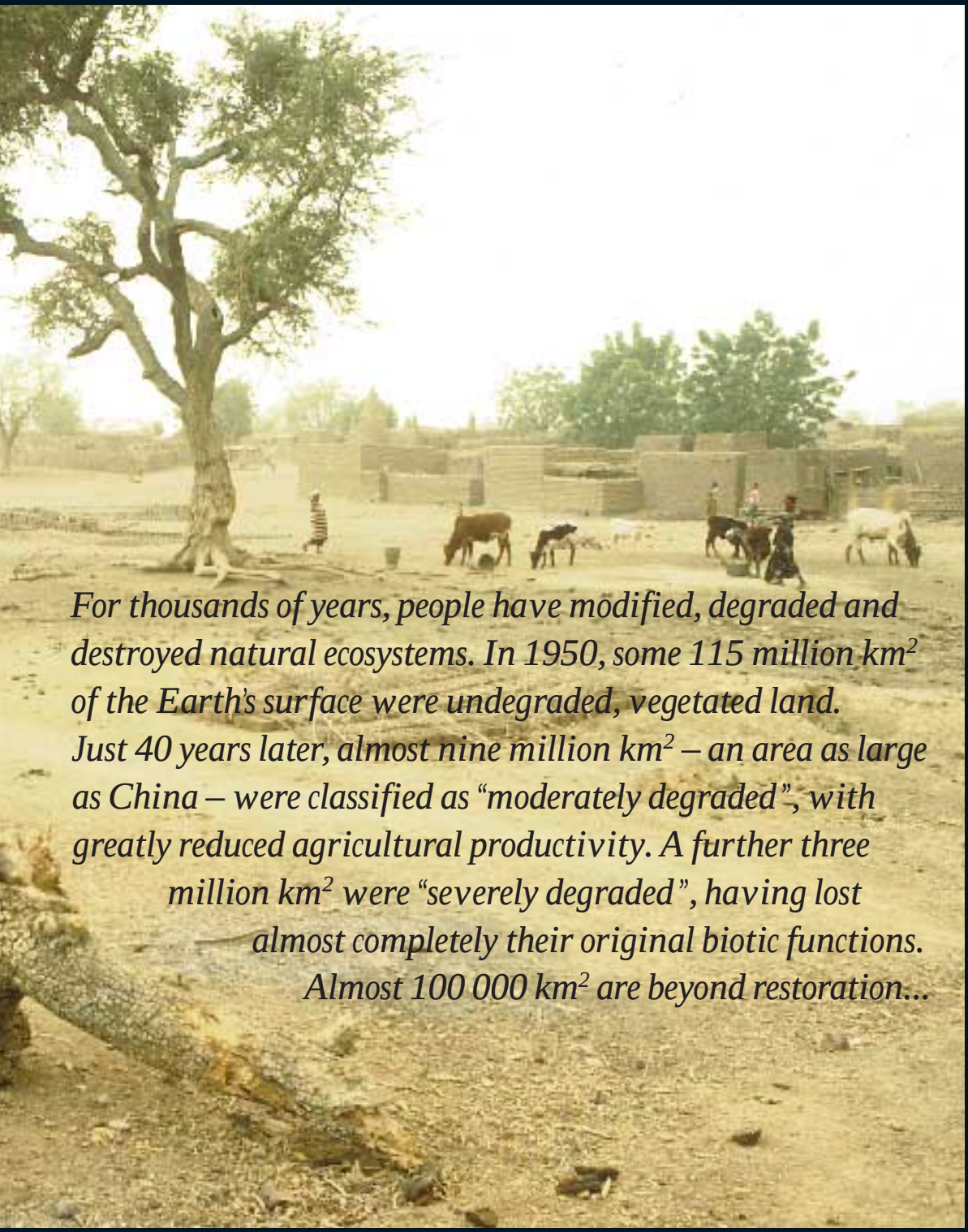
Population growth, competition for resources and the widening gap between rich and poor lie at the root of many social and political conflicts throughout the world.
As many as eighty countries are affected by civil strife and political violence, while spending on weapons for "low-level" conflicts is estimated at up to $10 000 million a year.

Poverty and unemployment have spurred a mass movement of people from rural to urban areas – and from developing to developed countries – in search of a better life. More than 80 million people now live in foreign lands and an estimated two million emigrate permanently each year. Since 1970, the number of refugees has grown from 2.5 million to 20 million people.

Mass migration

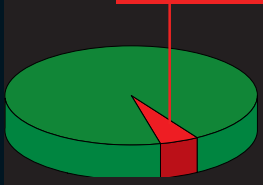
Land degradation





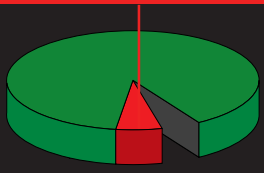
For thousands of years, people have modified, degraded and destroyed natural ecosystems. In 1950, some 115 million km^2 of the Earth's surface were undegraded, vegetated land. Just 40 years later, almost nine million km^2 – an area as large as China – were classified as "moderately degraded", with greatly reduced agricultural productivity. A further three million km^2 were "severely degraded", having lost almost completely their original biotic functions. Almost 100 000 km^2 are beyond restoration...

5 800 000 km² degraded by deforestation



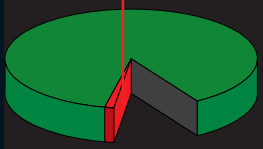
Vast reserves of forest have been degraded by large-scale logging and clearing for farm and urban use. Between 1975 and 1990, more than 2.2 million km² of tropical forest were destroyed, mainly to provide new land for food production. Worldwide, tropical forests are being cleared at a rate of about one percent each year, with annual losses of as high as two percent in West Africa.

6 800 000 km² degraded by overgrazing



Overgrazing has damaged 20 percent of the world's pasture and range lands. Recent losses have been most severe in Africa and Asia. Typically, animal herds compact soil around waterholes and strip the land of vegetation, reducing its capacity to retain moisture and exposing soil to wind and water erosion. As rangeland productivity declines in developing countries, more forests and farm land are being converted to grazing.

1 370 000 km² degraded for fuel wood



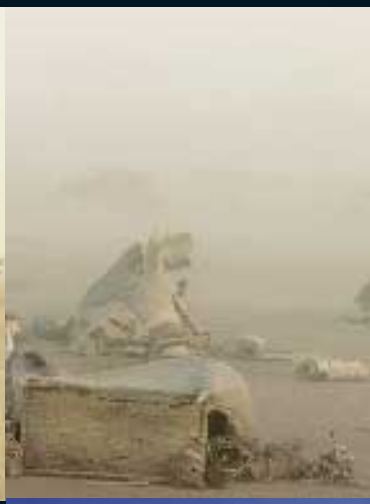
Fuelwood and charcoal are the primary sources of energy in many parts of the world. Each year an estimated 1 730 million m³ of fuelwood are taken from forests and plantations. As population pressure mounts, rural people are removing vegetation from higher and steeper areas, exposing more and more land to erosion.



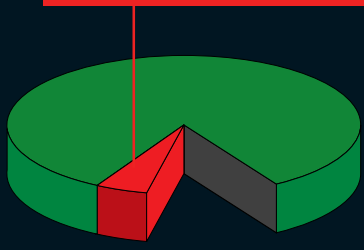






5 500 000 km² degraded by agricultural mismanagement

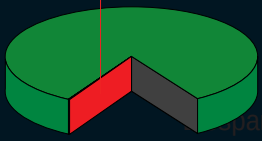


Wind erosion degrades land left bare of vegetation. It affects more than a third of land in the Near East and almost a quarter of Africa north of the equator.
Water erosion affects mainly steep land or unprotected sloping areas. It causes soil losses estimated at 25 000 million tonnes every year.

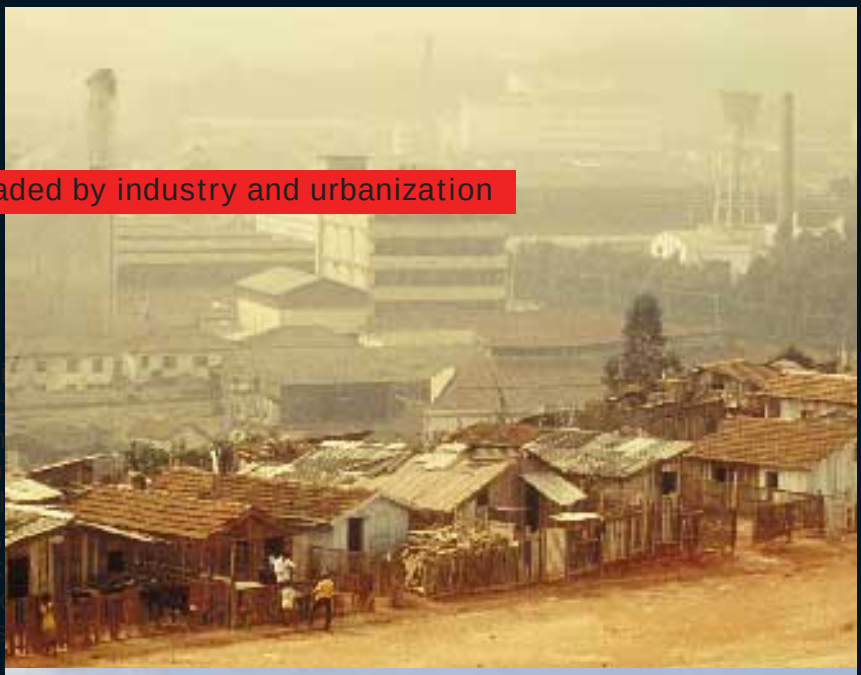
Soil salinization and waterlogging are caused by poor drainage of irrigated land. Globally, about 400 000 km^2 of land are affected.

Soil nutrient loss occurs when land is farmed beyond its capacity. This is increasingly the case in areas of shifting (or "slash-and-burn") cultivation, where population pressure has reduced fallow periods to virtually zero.

195 000 km² degraded by industry and urbanization



Urban growth, road building, mining and industry are degrading land worldwide. Often, valuable agricultural land is lost – during 1967-75, almost 30 000 km² of good crop land disappeared under concrete in the United States alone. Associated problems include pollution of soil by industrial and urban wastes, acid rain, overuse of inputs in feedlots, and oil and chemical spills.



Desertification

"The death of land"

If degradation is the sickness of land, desertification is its death. In arid areas of Africa and Asia, overgrazing and the relentless search for fuelwood have reduced large tracts of once productive land to desert. More than half a million square kilometres on the southern edge of the Sahara have become desert over the past half century. Desertification affects the livelihoods of some 850 million people worldwide.

It seems as though human development can only lead to ever greater degradation of the land all of us depend on.

We urgently need a strategy

that will permit both

development and conservation.

The starting point of

that strategy is the land itself

Factors that determine

the use of land...

People determine how land is used. At one extreme, the objectives of the individual farmer and many other types of land user are to produce income by exploiting natural resources. As the population increases, there is a corresponding increase in the amount and intensity of exploitation, leading to modification – and frequently degradation – of the environment.

At the other extreme, the community as a whole seeks to conserve natural resources and the environment, including the range of natural species, for a wide variety of reasons.

Each individual or group has particular needs, objectives and points of view. The resulting use of land is controlled by an interplay of many social and economic factors, and is ultimately driven by the objectives of innumerable "stakeholders" – people or groups who either directly exploit or in some way control the use of land resources.

...and how much land they have*

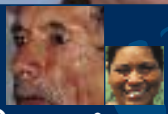
Food production must increase dramatically to feed the world's rapidly growing population. But most land suitable for cultivation is already in use, and by 2010 per caput availability of arable land in developing countries will have shrunk from the present 0.85 hectares to about 0.4 hectares. Current rates of land degradation suggest that a further 2.5 million km² of farm land could become unproductive by 2050. And there is another ominous trend: in the period 1988-93, per caput food output fell in 99 countries, heightening fears about the capacity of available land resources to meet demand.

*** hectares of cultivated land per head of agricultural labour force**

= 1 hectare

Canada

USA

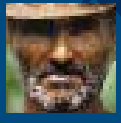


Mexico

Guatemala

Australia

Fiji



Brazil

Bolivia

We all have a stake in sustainable land use. But the aims and activities of stakeholders are often in conflict

Worldwide, conflict over land is intensifying: among individual land users vying for local resources, between individuals and their communities, among competing nations and – at global level – between North and South.

Stakeholders in conflict: men and women

Two hundred women in a village in Mali "declared war" on their menfolk over ownership of a community market garden. The women provided all the labour needed to establish the garden. But the local village development association – made up entirely of men – took control, claiming the garden belonged to the "entire community".

Stakeholders in conflict: community and state

Over centuries, nomadic Bedouin tribes in the Near East developed a system of mutually agreed laws, regulations and customs – known as *hema* – to control grazing on their rangelands.

In the mid-20th century, the decision of some governments to abolish the *hema* regime led to the breakdown of winter/summer grazing rotation and to widespread land degradation.

Stakeholders in conflict: upstream countries, downstream countries

Thirteen of the world's major rivers and lakes are shared by a total of 96 countries. The water supplies of millions of people who live in these areas depend on continuing cooperation among their governments. But disputes are common in every region, particularly in the Near East and densely populated countries of South Asia.

Stakeholders in conflict: North and South

Who should take responsibility for increasingly erratic changes in the world's climate? The immediate cause is believed to be the build-up of atmospheric "greenhouse gases", produced mainly by the North's heavy industries and motor vehicles. But a significant proportion may also come from tropical deforestation and land use practices such as range land burning.

The root cause of conflict –

and of land degradation itself –

is people's inability to develop

effective institutional frameworks

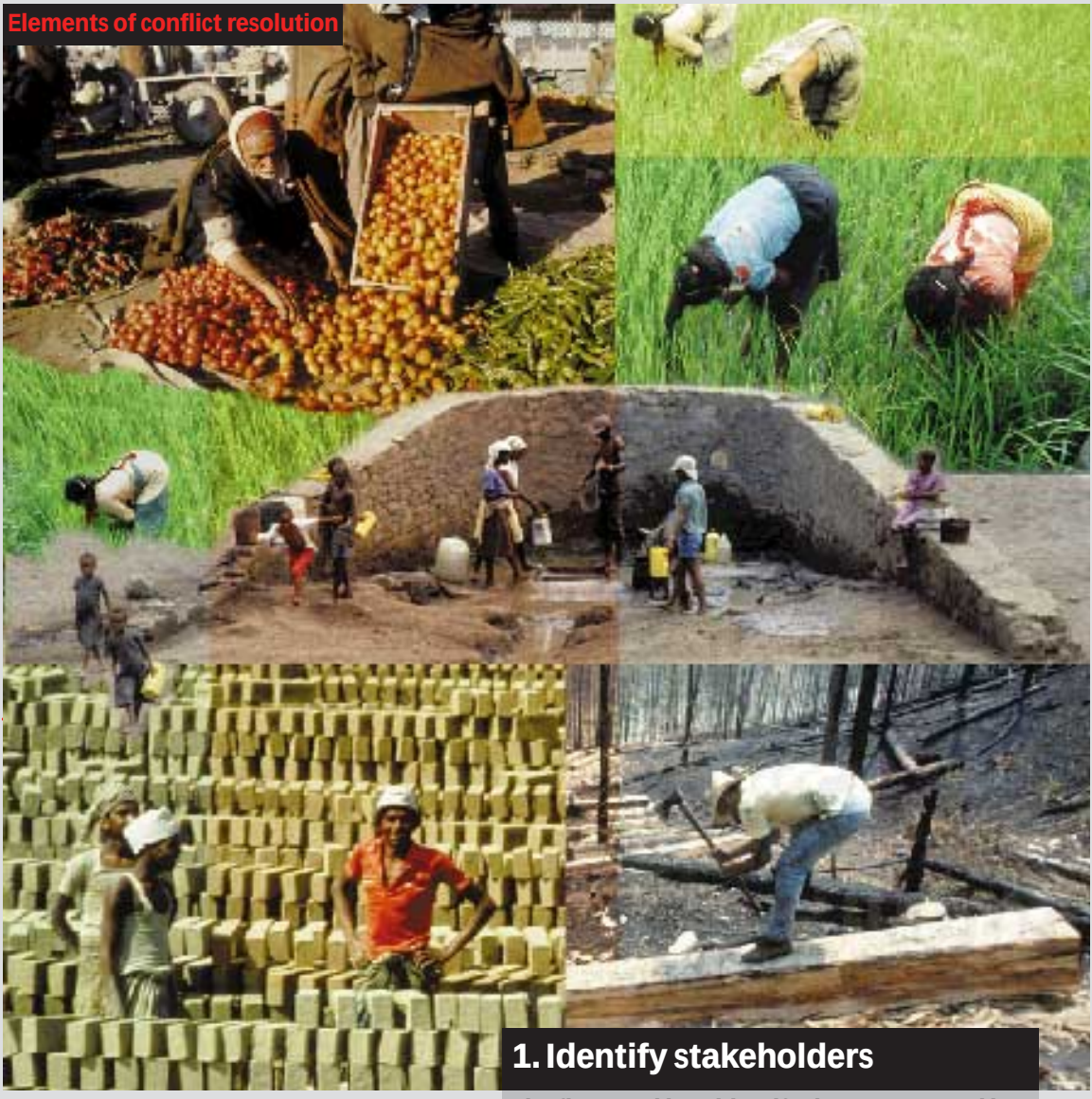
for conflict resolution and for

efficient and sustainable land use

The conflicting goals of individuals, groups and nations can easily and rapidly affect the environment of their neighbours, other peoples and the international community.

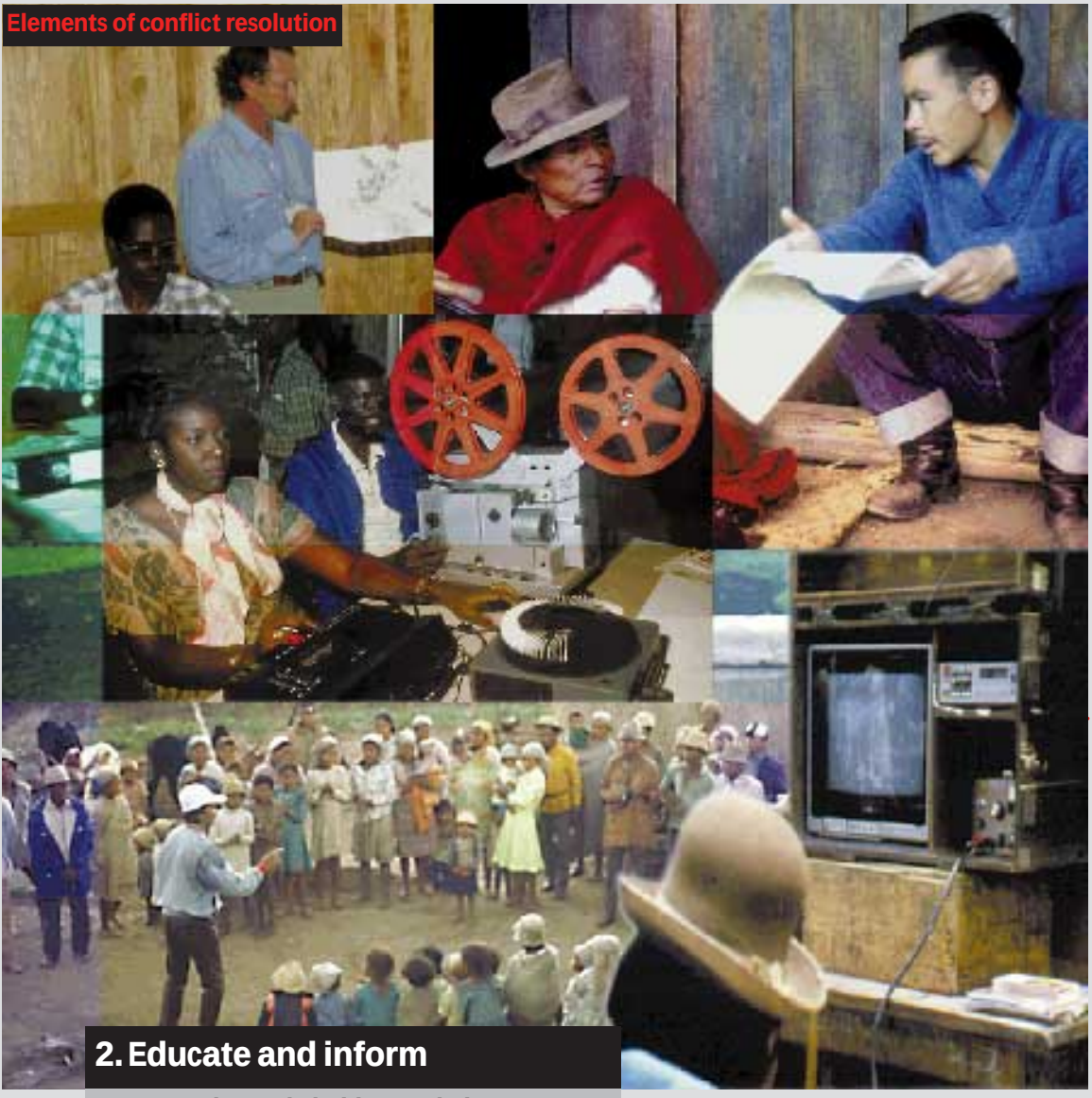
Conflict resolution means negotiated agreement using mechanisms and institutions that accurately reflect the views of all stakeholders.

Elements of conflict resolution



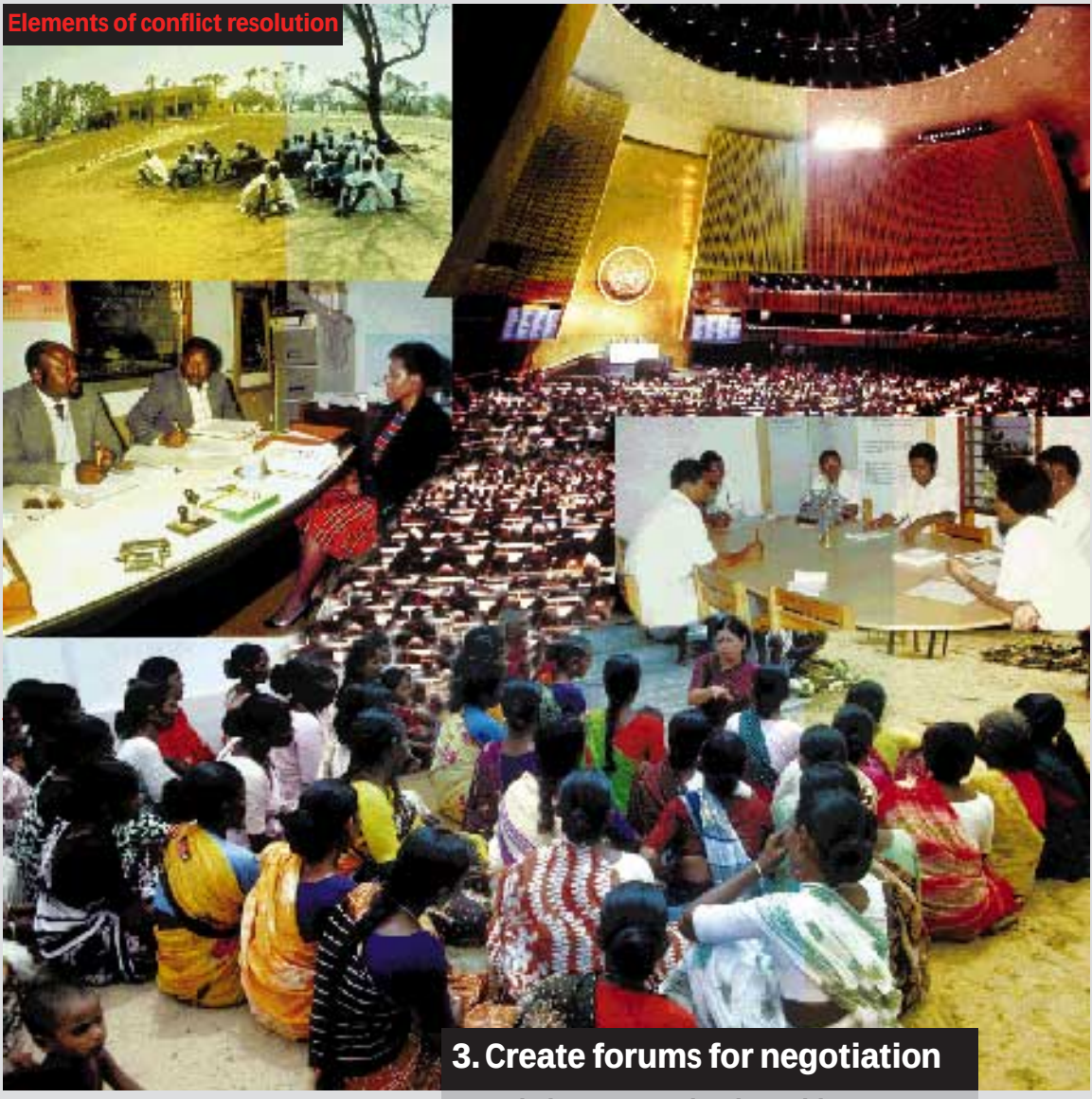
1. Identify stakeholders

The first need is to identify those concerned in the use of a resource – such as a spring or a well, land suitable for grazing or cultivation, a fishing or hunting area, or natural vegetation. Stakeholders include immediate users (those who have a right to exploit the resource) and those who are directly affected by such exploitation. Stakeholders should also include all those who have any kind of interest in how the resource is used, including conservationists or special interest groups. All these people have a natural right to participate in negotiation.



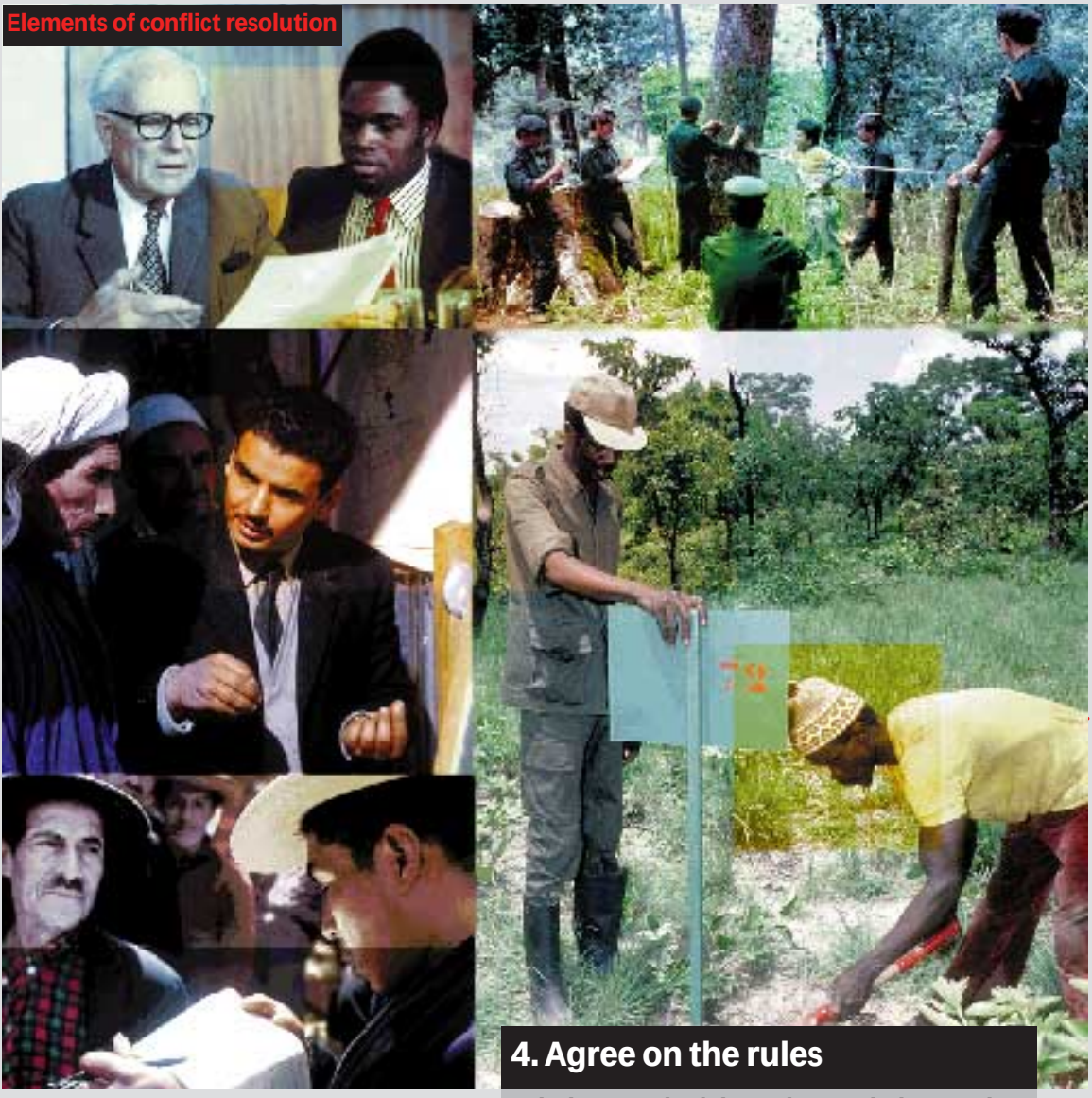
2. Educate and inform

To ensure that stakeholders or their representatives partake equally in negotiations, they need to be fully informed about all aspects of the resource and its sustainable use, and on relevant economic, organizational and legal matters. All stakeholders should have access to standards of education which ensure that they are not placed at a disadvantage *vis-à-vis* other groups.



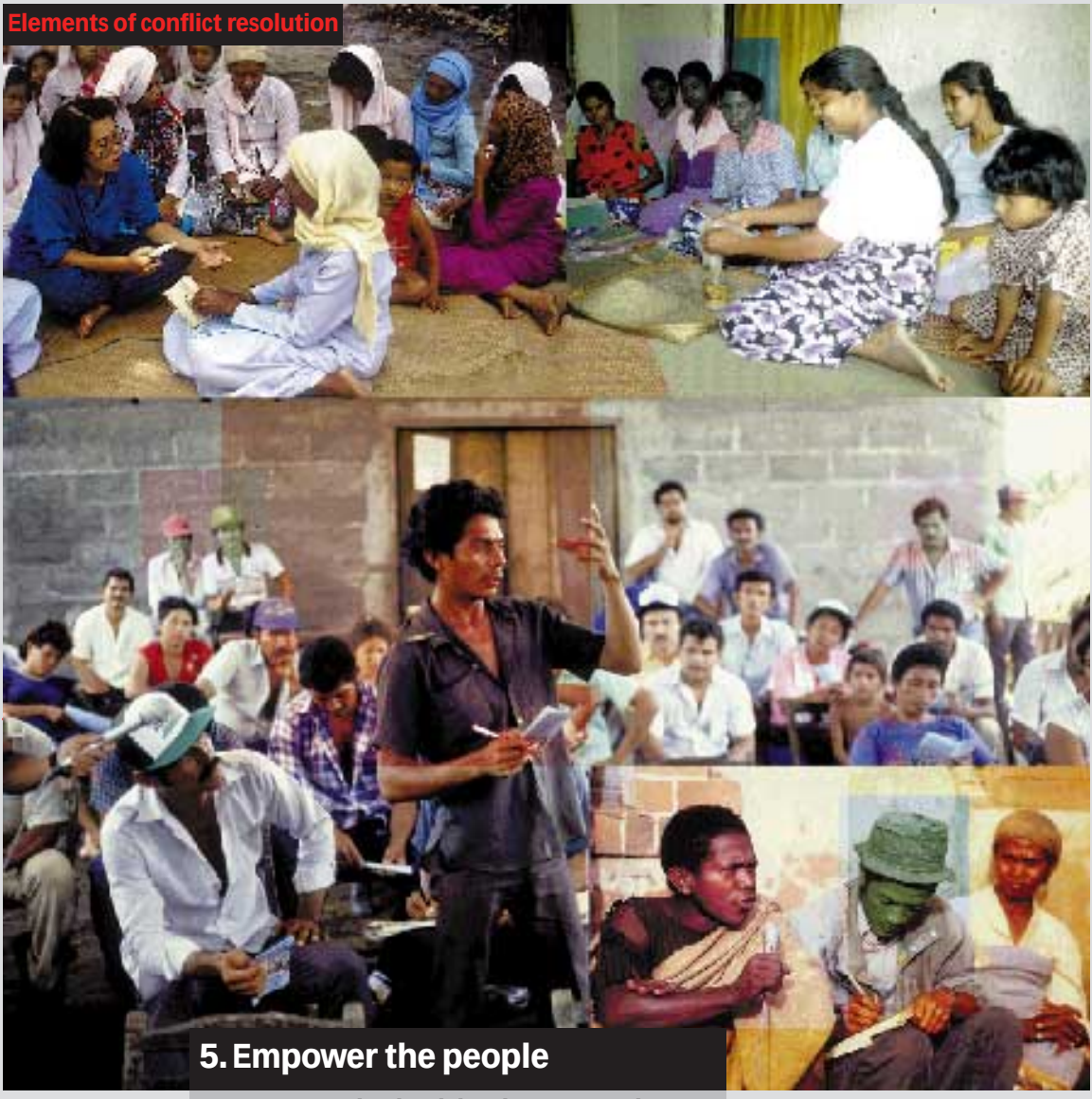
3. Create forums for negotiation

Negotiation cannot take place without adequate arrangements for discussion and exchange of views. At local level, this may consist of a physical meeting place, but in many cases it will be necessary to establish links with stakeholders who are not physically present. Modern communications technology may have an important role to play. The result of negotiation should be an agreement on resource use that optimizes benefits for all interested parties.



4. Agree on the rules

Solutions reached through negotiation need to be embodied in an agreed resource utilization plan. This may be a set of rules or by-laws, a treaty or a similar instrument to which all parties agree.



5. Empower the people

In most countries, land development and conservation are seen as a government responsibility. Individuals and communities often have no power to intervene, contribute or make their opinions known. In order to tap the knowledge, enthusiasm and energy of local communities, they must be empowered to make and implement decisions.

The driving force for production and conservation is people's aspirations

The primary objective of most land users is to meet their immediate needs for food, fuel and income. To do so, they apply their energy, skills and technologies to exploit available resources in the most efficient and cost-effective way. In other words, land users act according to what they think is best for them.

Under the right conditions, the best strategy for achieving their objectives is to increase production and conserve the productive potential of their land.

All they need are the right incentives...

Four incentives to produce

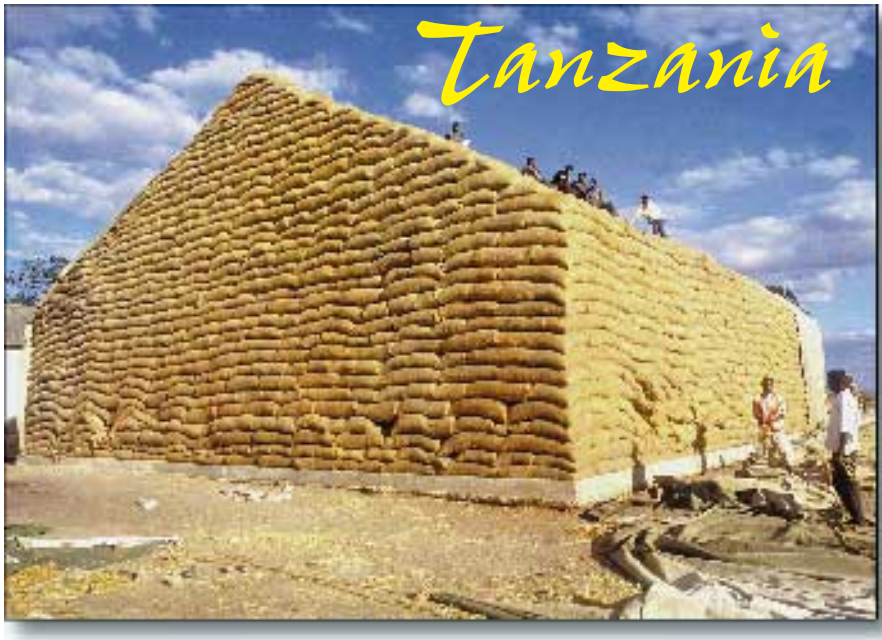
1. Rights to land
Land users have little incentive to build up the productive capacity of land without a guarantee that they will enjoy the benefits. Squatters and tenants exploit – owners conserve.

Legal demarcation of boundaries, efficient mechanisms for settling disputes, registration of ownership and an active land market all have positive effects on production.

Some 500 000 former tenant farmers in the Philippines have received title to small plots of land under the country's Comprehensive Agrarian Reform Programme.

Four incentives to produce

2. Economic incentives **Sufficiently attractive prices for produce – determined by the forces of supply and demand – are *the* key incentive to production. Low producer prices set by marketing boards and other monopolies depress prices creating, in turn, demand pressures that stimulate food imports and disincentives to local production.**



The cost of maintaining parastatal marketing boards in the United Republic of Tanzania was so high that prices they paid for maize were less than a third of what farmers could obtain in illegal parallel markets. Relaxation of state controls opened the way for large-scale private trading and sharp increases in maize production.

Four incentives to produce

3. Access to inputs and services

External production inputs and services – fertilizer, credit and extension advice – also stimulate production. In some countries, the problem of providing inputs and extension to scattered, small-scale producers has been overcome by giving farmers responsibility for this task, through their own organizations.

Cooperatives in Nicaragua worked with agricultural research stations to develop fertilizer recommendations and soil management techniques suited to local crops and conditions. Results of field trials were passed on to other farmers. The programme also set up revolving credit funds to finance the purchase of production inputs.

Four incentives to produce

4. Improved infrastructure
Lack of infrastructure discourages production. Infrastructure improvements include expansion of transport networks, storage facilities, agro-processing industries and markets. Ideally, communities should initiate, manage and maintain a large part of infrastructure from their own resources.

A modern wholesale market built at Nokwane, in Swaziland, has provided a profitable new outlet for the country's small farmers. Since it opened in the late 1980s, the market has doubled its total annual throughput of fresh fruit and vegetables – to almost 22 000 tonnes – and helped local growers triple their tomato exports.

Four incentives to conserve

1. Security of tenure
For most land users, investing in land conservation is worthwhile only if they are able to reap the returns on the time and labour they invest. This implies forms of land tenure that permit undisturbed use, and the right to manage the land over a long period.

The Government of China has given long-term leases on hillside land to farmers who agree to plant trees. Result: for the first time in a millennium, more trees are being planted than cut down...

Four incentives to conserve

2. Productive land conservation techniques
Better farming techniques can improve dramatically both land productivity and land conservation. Tests indicate that ground kept covered after the main harvest (for example, with a grass crop) loses 100 times less soil than plots left bare. Cultivators adopting zero or minimum tillage have maintained yields, cut tractor fuel costs and helped restore soil damaged by overuse of heavy farm machinery.

An FAO project in Niger's Keita district helped reverse a long decline in agricultural productivity caused by drought and land degradation. It introduced new farming techniques – such as the use of micro-catchments – to allow crops to be grown on land that had never been cultivated.

Four incentives to conserve

3. People's participation
Without the active participation of land users, even the best-laid land conservation plans go awry. Users need to be involved from the start in analysing problems and developing practices that reduce land degradation. In this two-way partnership, land users are best represented by their own local organizations.

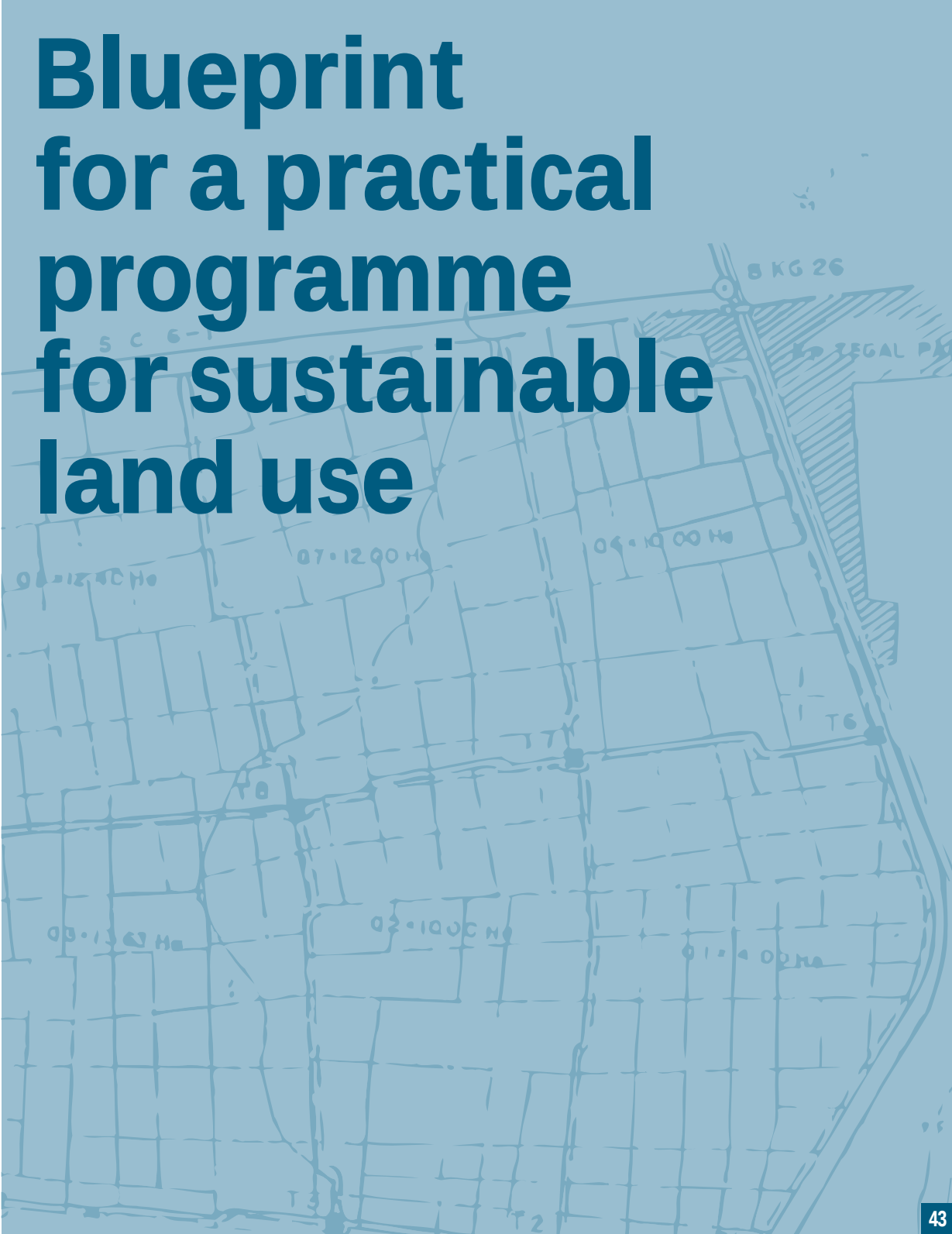
Farmer groups in Sri Lanka's dry zone have formed autonomous village cooperatives that work with government services in organizing extension visits, conducting variety trials and implementing soil and water conservation programmes.

Four incentives to conserve

4. Charges and sanctions
When positive incentives fail to halt land mismanagement, some governments set limits and quotas backed up by sanctions. In many countries, however, the legal system is often too weak to enforce the rules. A more practical option is to use market-based mechanisms and fiscal measures, such as charges and taxes, and remove subsidies on inputs that harm the land.

In Indonesia, generous pesticide subsidies created artificially low prices and encouraged their widespread misuse. Faced with increasing pollution and rising pesticide resistance among ravenous rice hoppers, the Government eliminated subsidies and introduced integrated pest management to farmers. Within three seasons, pesticide use fell 90 percent – and yields increased.

Blueprint for a practical programme for sustainable land use



Blueprint for a practical programme for sustainable land use

1 National task force

The first thing to do is establish a task force on land use planning or natural resources management at national level. The task force should consist of experienced technical experts from government departments concerned with food production, rural development, forestry, wildlife, public works and planning. In some countries, it would be helpful to include traditional representatives or representatives of non-governmental organizations.

2 Publicity and sensitization

The second step is to create a climate of interest through media and information campaigns dealing with the need to increase production while conserving natural resources, such as water, soil, grazing lands, wildlife and forests. The aim should be to generate debate on these issues and to convey the message that government cannot be expected to resolve every local conflict. The participation of the people is required.

3 Local resource management groups in pilot areas

Many local resource management groups may arise spontaneously as a result of the information campaign. But it may also be advisable to select a pilot region and to hold discussions with the population at grass roots level on the best way to establish groups and on what issues they should cover. In many cases, traditional social structures will indicate the most effective way to proceed.

4 Identification of needs and constraints

Once established, local resource management groups should become a source of information on the constraints to production and conservation faced by the local community. They should also provide essential information on priority actions to be taken, either by the group or by government.

5 Provision of information

In order to make decisions and develop resource management plans, local people will need information on the extent and type of local resources, such as soils, forests and wildlife. They will also need to have information on improved varieties, markets and prices, and laws that affect them and the resources in their area. They will need training to equip them, as stakeholders, to play a useful part in planning and negotiation. For those reasons, government will need to develop or improve information services to local people.

6 Development of land management plans through negotiation

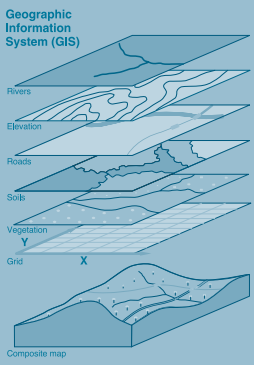
Stakeholders have many objectives and points of view. The local natural resource management group needs to ensure that all stakeholders are represented in the discussions and negotiations that lead to an agreed management plan. The final plan will outline of a series of actions to be undertaken, or a number of rules to be obeyed, by stakeholders. Follow-up action consists of monitoring the application of the plan, so as to ensure that the rules are obeyed and to assess whether the plan requires modification.

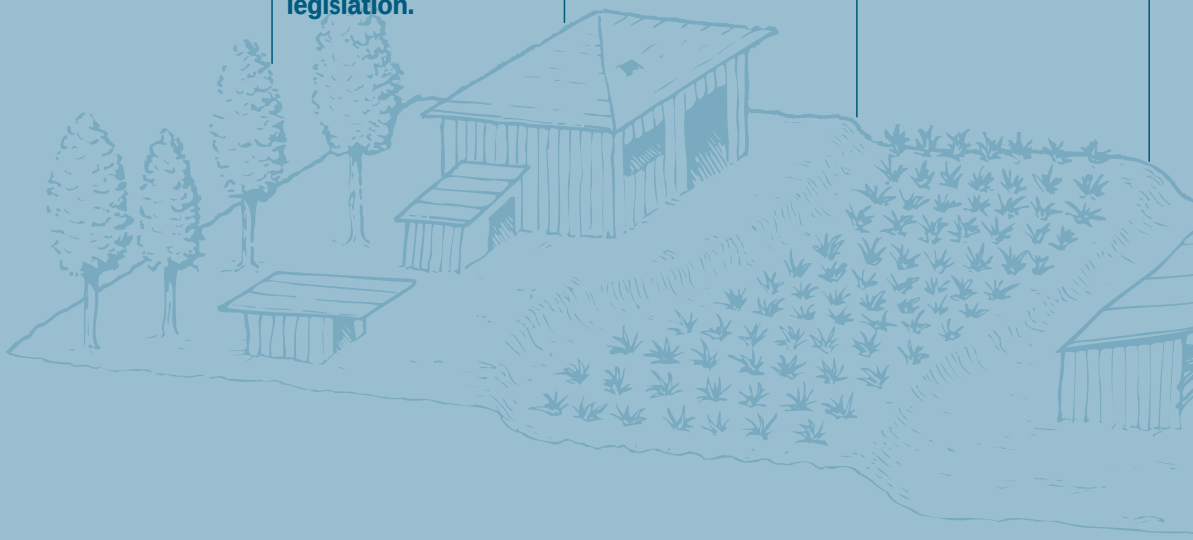
7 Enactment of enabling legislation

Clearly, the actions of a local resources management group must be sanctioned by government. In establishing the group – or sanctioning its establishment – and providing services to it, the government is actually giving the group certain responsibilities. These responsibilities need to be defined, in terms of geographical jurisdiction and subject-matter. Enforcement of management plans or rules may be achieved through social sanctions, but may be given legal weight through national legislation.

8 Improvement of government support services

Land use planning through stakeholder interaction results in rapid identification of priorities requiring government action. Government needs to respond flexibly in allocating resources, in assigning responsibilities and, above all, in exchange of information and creation of linkages among institutions. Government will also need to improve its information services and provide training at grass roots level.





Advantages of interactive land use management

Maximization of stakeholder objectives
The new approach to sustainable land resources planning and management stresses three things above all: information, involvement and joint decisionmaking by all stakeholders. When people are informed and involved, they are half-way to being satisfied. When they participate in decisionmaking they are three quarters of the way to being satisfied. When they understand that they have negotiated the best result possible, they are almost always satisfied. When they are part of a development partnership, they are usually enthusiastic and more than satisfied.

Increased production
Interactive land resources management means that priority is placed on removal of production constraints and provision of incentives to produce, within an overall framework that maximizes the benefits to all those stakeholders making use of land and water resources. Since the programme is people-based, and developed in consultation with all those concerned, these constraints and priorities are identified clearly and rapidly.

Maximum conservation
Decision making must be based on adequate information on the amount and condition of the resources available, including the status of plant and animal populations, natural habitats and the environment. Information for decision making must also include the likely impact on the environment of the range of possible-use options, both in the short and long term. Institutional structures for discussion and negotiation must ensure representation of all stakeholders. In this way, the results will ensure the greatest good for the greatest number of people.

Maximum use of local knowledge, enthusiasm and resources
Government resources are limited, even in the wealthiest countries. In least-developed countries, they are often very limited. When the people themselves are empowered to initiate and manage their own local development programmes – within an overall framework that caters for the needs of society as a whole – then far greater resources are mobilized than are normally available to government. The role of government is then to facilitate, provide information, advise and ensure that the interests of all stakeholders are taken into account.

More rapid development through automatic integration of actions, inputs and objectives
At present, almost all development initiatives are "top-down" in character. Apart from other disadvantages, this means that they represent what officials think the people want. Thus technology is frequently developed but not utilized. When the starting point for development is the needs of the people, a demand-driven situation is created that automatically identifies priorities and integrates requirements.

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OUR FUTURE

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Environment Programme
(UNEP)

"It seems that
human development can
only lead to ever greater
degradation of the land all of us depend on.
We urgently need a strategy that will permit
both development and conservation.
The starting point of that strategy
is the land itself..."

FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

UNITED NATIONS
ENVIRONMENT PROGRAMME