

Is combating desertification an environmental global public good?

Elements of an answer...





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The French Scientific Committee on Desertification

The creation in 1997 of the French Scientific Committee on Desertification (CSFD) has met two concerns of the Ministries in charge of the United Nations Convention to Combat Desertification. First, CSFD materialises the will to involve the French scientific community versed in desertification, land degradation, and development of arid, semi-arid and sub-humid areas, in generating knowledge as well as guiding and advising the policy makers and actors associated in this combat. Its other aim is to strengthen the position of this French community within the international context. In order to meet such expectations, CSFD is meant to be a driving force regarding analysis and assessment, prediction and monitoring, information and promotion. Within French delegations, CSFD also takes part in the various statutory meetings of the organs of the United Nations Convention to Combat Desertification: Conference of the Parties (CoP), Committee on Science and Technology (CST), Committee for the Review of the Implementation of the Convention. It also participates in meetings of European and international scope.

CSFD includes a score of members and a President, who are appointed *intuitu personae* by the Minister for Research, and come from various specialities of the main relevant institutions and universities. CSFD is managed and hosted by the Agropolis Association that gathers, in the French town of Montpellier and Languedoc-Roussillon region, a large scientific community specialised in agriculture, food and environment of tropical and Mediterranean countries. The Committee acts as an independent advisory organ; it has neither decision-making powers nor legal status. Its operating budget is financed by subsidies from the French Ministries of Foreign Affairs and for Ecology and Sustainable Development. CSFD members participate voluntarily to its activities, as a contribution from the Ministry for Research

More about CSFD:

www.csf-desertification.org

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Man-**M**ankind is facing a world-wide concern, i.e., desertification, which is both a natural phenomenon and a process induced by human activities. Our planet and natural ecosystems have never been so much degraded by our presence. Long considered as a local problem, desertification now belongs to global issues that affect us all, whether a scientist, a decision-maker, a citizen from the South or from the North. Within such a context, it is urgent to mobilise the civil society and induce it to get involved. To start with, people must be given the elements necessary to understand better the desertification phenomenon and its stakes. Scientific knowledge must be brought within everyone's reach, in a language understood by the great majority. Within this scope, the French Scientific Committee on Desertification has decided to launch a new series entitled "*Les dossiers thématiques du CSFD*", whose purpose is to provide appropriate scientific information on desertification, its implications and stakes. This series is intended for policy makers and their advisers, whether from the North or from the South, but also for the general public and for the scientific journalists involved in development and environment. It also aims at providing teachers, trainers and trainees with additional information on various fields. Lastly, it endeavours to help spreading knowledge to the actors part of the combat against desertification, land degradation, and poverty, such as representatives of professional, non-governmental, and international solidarity organisations.

A dozen reports are devoted to different themes such as biodiversity, climate change, pastoralism, remote sensing, etc, in order to take stock of the current knowledge on these various subjects. The goal is also to set out ideological and new concept debates, including controversial issues; to expound widely used methodologies and results derived from a number of projects; and lastly, to supply operational and intellectual references, addresses and useful websites.

These reports are to be broadly circulated, especially within the countries most affected by desertification, by e-mail (upon request), through our website, and in print. Your feedback and suggestions will be much appreciated! Redaction, production and distribution of "*Les dossiers thématiques du CSFD*" are fully supported by this Committee thanks to the backing of relevant French Ministries. The opinions expressed in these reports are endorsed by the Committee.

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The tenth anniversary of the United Nations Convention to Combat Desertification was celebrated in 2004. Derived from the Agenda 21 adopted in Rio, this convention has succeeded in involving all the countries affected by desertification processes as well as northern countries that cooperate to this combat.

Today, it appears necessary to take stock of the desertification process: What is its extent? What consequences does it entail? How vulnerable are the societies affected? Does desertification worsening increase poverty and weaken available natural resources?

The new current international context has generated the notion of "global public good". According to a "classification" by the United Nations Development Programme (UNDP), national programmes regarding poverty eradication, biodiversity and wildlife, water resources, and quotas for reducing atmospheric pollution are characterised as being private goods of national States, which are exclusive and rival. Freedom from extreme poverty, basic education and health care for all, and atmosphere-related programmes are listed as global public goods, non-exclusive but rival, whereas environmental sustainability belongs to pure, i.e. non-rival and non-exclusive, global public goods.

This first CSFD thematic report intends to investigate such topics in order to give new impulse to the combat against desertification. This challenge would then no longer be a mere collection of several technical actions led at the local scale to limit sand invasion and erosion, but would take a wider dimension, both local and global, integrating developmental and environmental issues.

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From the notion of desertification to the concept of global public good

The term “**desertification**” emerged at the international scale during the big Sahelian **droughts** of the 70'. It has been long connected with a given area and a terrible and exceptional drought situation, i.e. with the pastoral regions bordering the Sahara and the situation of transhumant Sahelian breeders. At that time, both the disruption of local societies and the degradation of their environment were highlighted.

Afterwards, desertification was often wrongly assimilated by the medias to desert advance. In reality, it is a multi-dimensional (climatic, biophysical and social) complex process, which leads to both decreasing natural environment fertility and expanding poverty. Besides, desertification is not limited to **drylands**, but also affects the semi-arid and sub-humid regions of the Earth.

From the 70', many development programmes were implemented to limit desertification effects: in the Sahelian Africa, they were mainly local projects for pastoral waterworks and support to spread anti-erosive techniques for agricultural sustainability. The scientific community and international cooperation then considered desertification as a local development problem, requiring local solutions.

The terms of this debate have changed since the 90', ensuing international meetings on the future of global resources. Desertification is now considered to be an issue of **sustainable development** and **global environment**. Thus, present programmes against desertification resort to world-wide financing mechanisms. This awareness regarding the importance of environmental issues and the will to act at the international scale have led many institutions to take an interest in the notion of **global public good** (GPG). It is the case with the United Nations Development Programme (UNDP), which, since 1999, has been analysing the part played by several environmental goods in the development of our planet and the sustainability of the processes involved.

The concept of global public good as set forth in this report is currently worked out by international organisations and several developed countries; it is used in the arenas of international negotiations.

This notion attempts to compensate for what could be called "a global public evil". Let us consider that



Over-grazed area.
Leopold Downs, Australia.
Bernard Moizo © IRD

desertification is such an ill and let us see whether it is necessary to combat it at the global scale. Indeed, declaring a global public good is not self-evident. Beyond controversies and debates connected with the use and numerous concepts of the expression "global public good", such an acknowledgement implies and leads to implement institutional and financial schemes that allow to deal with it as such.

The present report, based on examples and illustrations bearing on the techniques to combat desertification and on the socio-economic aspects of this phenomenon, is meant to clarify the debate and to produce relevant arguments and pleas. It shows how desertification materialises, has impacts and is combated not only at the local scale, but also, following interwoven processes, at the national, international and global scales. The report attempts to identify the links between the complex phenomena involved in desertification - whether local, national or international - to analyse afterwards the ins and outs of acknowledging this combat as a global public good.

May combating desertification belong to the notion of global public good, and if so, in which ways?

Glossary

Desertification, aridity, drought: significant differences

Aridity reflects a permanent rainfall deficit, but is also connected with other specific climatic data: enduring sunshine, high temperatures, low air humidity and intense evapotranspiration.

Drought results from a temporary rainfall deficit, whereas the amount of rainfall may be sufficient. In Africa, Sahelian and Sudanian ecosystems are the most affected by droughts. Drought may be considered as catalysing desertification since it affects soil structures and entails vegetation changes. The contrasting alternation of drought episodes and torrential rains weakens the soil structure, thus accelerating erosion and desertification processes, which in turn may lead to crises, extreme poverty and starvation.

The notions of aridity and drought refer to sporadic or steady climatic factors, while **desertification** stems from an anthropogenic process and is particularly related to economic production and consumption activities.

The United Nations Convention to Combat Desertification, adopted in Paris in 1994 and ratified ten years later by 190 countries, is a Convention concerning both environment and development. It defines the desertification process at the local and regional scales as *“land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities”*.

Desertification consequently describes an irreversible decline or destruction affecting the biological potential of lands and their capacity to sustain or feed the populations. This process highlights the need to improve the standard of living of the most vulnerable societies by long-term supporting their activities, preserving land fertility or finding other activities that should alleviate pressure on lands. Desertification is an integral part of the issue

of sustainable development in drylands. As evidenced by the Annexes to the Convention, this notion applies to every continent, mainly to dry areas where aridity and drought are two common climatic data.

Sustainable development

According to Mrs Brundtland, quoted from the United Nations Conference on Environment and Development (1987): *“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”*.

It is the first principle of the Declaration adopted during the Rio UN Conference on Environment and Development (1992): *“Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature”*.

Global environment

It is:

- First, the combination of physical and biogeochemical conditions in which human societies live (air, fresh water, ocean, land, vegetation, ecosystem);
- Second, the combination of economic and social conditions in which we live. This notion is complementary to the concept of local environment, similarly defined at the village, town or regional scale.

Global Public Good (GPG)

It is a good available to all. Its consumption by one person does not prevent consumption by others. An example of GPG is the air we breathe.

Land degradation and desertification: figures speak for themselves

Diversely affected continents

Most continents are concerned by desertification processes. Arid* areas threatened by desertification cover 40% of available lands, i.e. 5.2 billion hectares out of 13 billion hectares. Africa owns 37% of the world's drylands, Asia 33% and Australia 14%. America and southern regions of Europe possess arid areas of a lesser extent.

Different causes, but invariably anthropogenic factors

In 2000, about 70% of these arid lands were already subject to desertification, i.e. 3.6 billion hectares. Out of these 3.6 billion hectares, 93% were covered by rangelands, 6% by rain-fed crops and 1% by irrigated crops.

Drylands concerned by desertification have been classified in relation to their use by man.

Desertification stages may be categorised as reversible, severe and irreversible. 76% of degraded lands are considered to be reversibly altered.

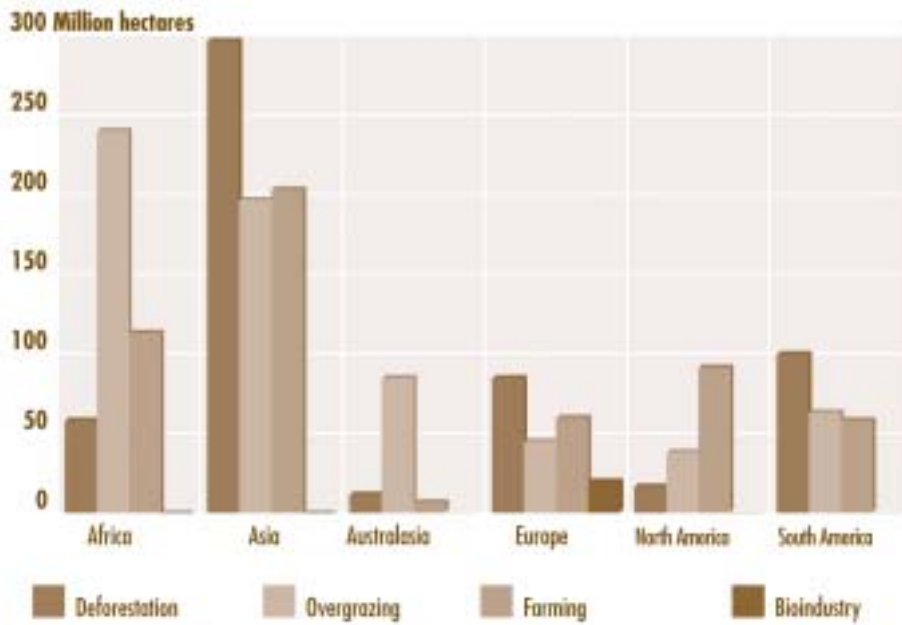
The causes of dryland degradation show different ratios according to geographic location: deforestation, over-grazing, overexploitation of arable lands, bio-industries (all industrial sectors using biotechnologies). Africa and Asia are the continents most concerned by land degradation. However, appreciations and assessments of surfaces affected by desertification vary according to the many sources. In fact, these data differ in relation to the criteria used for assessment. For instance, data regarding areas subject to desertification in arid regions range from 19.5% (if taking into account land degradation alone) to 69.5% (if taking into account land and vegetation degradation).

* For an easier reading of this report, and according to common use, "drylands" include all the areas subject to desertification, i.e. arid, semi-arid, and dry sub-humid regions.

Drylands affected by desertification in relation to their use (in million hectares Mha)

From Katyal and Vlek, 2000.

Land use category	Dryland area (Mha)	Area affected by desertification (Mha)	Including irreversible desertification	Including severe degradation	Including reversible degradation	Main causes
Rangelands	4,556	3,333	72	757	2,504	Vegetation degradation due to over-grazing and fire-wood collection
Rain-fed areas	457	216	4	29	183	Soil instability or even compaction connected with erosion and loss of organic matter
Irrigated crop lands	145	43	2	-	41	Soil salinity and bad water drainage
Total	5,158	3,592	78	786	2,728	



Main causes of dryland degradation as per geographic region in 1999.

Source: FAO (Food and Agriculture Organization of the United Nations) website, consulted on November 19, 2004.

www.fao.org/NOUVELLE/FACTFILE/IMG/FF9710-f.pdf



Carrying firewood collected in the bush. At dawn on the dike of Sologo dam lake, Ivory Coast. Christian Lévêque © IRD

Combating desertification: different means of action for varied situations

According to the region, but also to the various ways man uses land and vegetation, desertification materialises differently, and its causes and processes vary. Combating desertification must then rely on a number of different techniques, means and actions. This chapter illustrates such diversity with two examples.

Combating desertification at the local scale: an African example of techniques for land development in rain-fed areas

Three important observations:

- Desertification problems differ whether they concern the degradation of rangelands, rain-fed areas in dry regions or irrigated areas. They require accordingly diverse techniques to maintain and regenerate the environment.
- To be actually effective, these techniques to combat desertification should integrate into and contribute to local collective patterns of social organisation, or even become the foundation for new organisational modes.
- Investing in preventing desertification risks is often deemed more cost-effective than rehabilitating already desertified lands: combating desertification then concerns all drylands likely to be affected by this phenomenon.



El Guettar oasis, Tunisia. The limestone range located uphill from the oasis is used as a catchment area for meteoric water that feeds deep aquifers. On the piedmont slope, anti-erosion works have been implemented to curb surface runoff.
Jean-Pierre Montoroi © IRD

Methods to combat desertification incorporate local corrective techniques, to improve the exploitation and productivity of natural resources or of the whole systems of agriculture and breeding. They also include the implementation of local and national institutional mechanisms to enhance social and economic development. For instance, in order to preserve lands used for rain-fed crops, development projects have been involving techniques to combat desertification for some thirty years. These techniques are either developed locally or imported. Fallow, **zai holes**, **bunds**, **contour stone bunds**, revegetation of stone lines, *boulis* (artificial pools), half-moon ditches, compost pits, grass strips and tree fences are some of the main techniques used to maintain cultivated lands in Africa. These techniques and their applications have been tested and enhanced so that their results on the natural environment are quite well known by experts.

Focus

Time and money required to regenerate degraded soils in Senegal

In Senegal, the carbon stock in the soil and biomass of a Sahelian ecosystem in good condition is about 16 tons per hectare. Carbon, nitrogen and potassium constitute the soil organic matter. The degradation of this ecosystem, its gradual alteration to a crusted-type soil for instance, may occur within a few years and entails a significant carbon deficit, i.e. a loss higher than 10 tons per hectare (for even degraded soils keep a residual carbon stock).

On an average, carbon sequestration in soils, after revegetation (restoration of vegetation cover) amounts to 0.4 ton per hectare and per year in tropical soils.

Using carbon rate as an indicator, more than 25 years are necessary to restore some potentialities to this soil, a time interval longer than one generation.

Such a degradation, whose rehabilitation period exceeds a generation, is defined as irreversible. Its cost may be estimated from the loss of income due to the impossibility to economically exploit this soil.

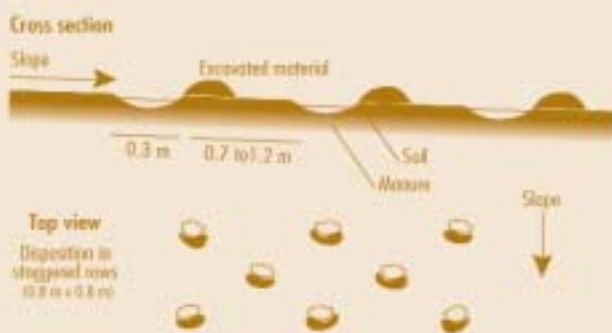
Restoration, i.e. making this soil productive again, can be performed with appropriate techniques that require specific investments, which consequently entails a huge economic cost. Finally, reckoning the total economic cost of such a soil degradation corresponds to adding up income loss (degradation) with recovery investments (restoration).

From Bille, 1977; Cornet, 1998.

Focus

Soil regenerating techniques in Burkina Faso: methods and costs

Zai holes: This cultivating technique for degraded soils consists in digging a 15 to 20 cm deep hole of about 15 to 20 cm of diameter during a dry period, in order to harvest rain water. *Zai* holes only suit the Sahelian areas of Africa (they are not convenient to Saharian territories northwards, nor to Sudanian regions southwards). They cost about 5 CFA francs* per hole, i.e. 79,380 CFA francs* per hectare.

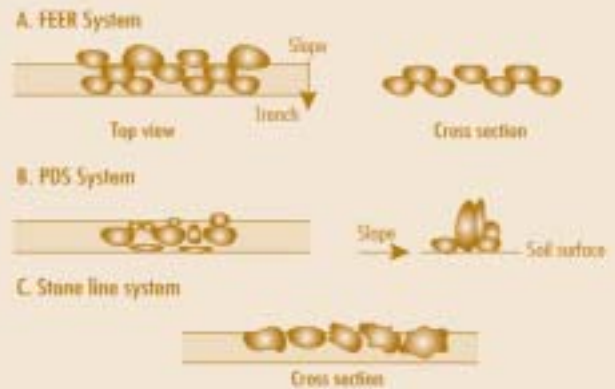


Zai holes

From Somé et al., 2000. *Sécheresse*. 11(4)

Stone bunds: Built on gentle slopes, they allow to prevent runoff and soil loss. There are several techniques. Stone lines are the simplest system of contour stone bunds: they require minimum rubble stones, but allow maximum runoff leaks. The system of erected stones and subsoiling is the most effective; it prevents significant water runoff between rubble stones, downhill rill erosion and earth deposits that reduce infiltration and entail stagnation uphill from the contour bund. In addition to the making of contour lines, the costs of these techniques vary according to which means of transportation are used and how manpower is organised. If rubble stones are available, and leaving aside the cost of outside assistance:

- for a group work, from 80 to 160 workers are needed to achieve enough bunds for one hectare, which corresponds to 248 CFA francs* per meter of contour bund, if we reckon 300 meters of control works per hectare.
- for management works made in the field by the farmer himself, 10 CFA francs* per meter of contour bund will do.



The three systems of stone bunds

FEER: three-stone system

PDS: system of erected stones and subsoiling

From Somé et al., 2000. *Sécheresse*. 11(4)

Combining *zai* holes with contour stone bunds: Let us take as an example sorghum crops in two villages of northern Burkina Faso (with a rainfall ranging from 400 to 500 mm per year). The yield of 166 kg per hectare obtained without control works reaches, with these combined works, 750 kg per hectare or even sometimes 1,050 kg.

Permeable rock dams: This is a technique aimed at stopping gully erosion, in order to allow to cultivate a bottomland. The rock dam slows up water runoff and causes the earth carried along to sediment. Such a management work requires to equip the whole watershed.

A permeable rock dam is completed by stone bunds on both sides of the bottomland bed. Building such bunds amounts to a partial cost of 240,000 CFA francs*, leaving aside labour costs (manpower being supplied by the beneficiary populations). This amount includes seven journeys of tipper trucks, the daily rental of a tipper truck costing 80,000 CFA francs.

* 1 Euro = 655.96 CFA francs

From Somé et al., 2000; Hien, 2004.

The effects of these techniques are well known by their users, who prefer to use simultaneously various technologies that interact favourably. For instance, in Burkina Faso, they associate on the one hand, contour stone bunds vegetated with *Adropogon Gayanus* (a perennial fodder grass), and on the other hand, *zai* holes dug in the gaps between two stone lines. Organic matter (compost) is then put into the *zai* holes.

To be effective, soil conservation techniques such as bunds often request a concerted action beyond a mere plot or group of plots, i.e. at the scale of an area used and developed by a number of actors: the village land, community territory, or whole watershed where these management works are built, etc. Specific forms of organisation and collective action are then called for at such scales, and should be implemented if lacking.

At the international scale, scientific research serves the combat against desertification: example of the ROSELT regional programme

The ROSELT (Long-Term Ecological Monitoring Observatories Network) is a programme implemented the Sahara and Sahel Observatory (OSS, an international organisation headquartered in Tunisia).

It includes a number of observatories networking at the regional scale of the OSS geographic area, in Africa, and covers three sub-regions: North Africa, West Africa, and East Africa. At the regional scale, ROSELT relies on the commitment of African countries to acquire together a cross-border monitoring tool covering the whole area, by agreeing on national, sub-regional and regional interests.

This network aims at organising a scientific environmental monitoring with two objectives: first, characterising the causes and effects of land degradation, and second, understanding better the mechanisms that lead to desertification. In addition, it is designed to supply reliable data on land degradation in arid areas as well as relevant biophysical and socio-economic desertification indicators.

In order to meet these various goals, the general approach undertaken rests on the following points:

- Using and valorising assets in order to make an initial diagnosis of the territory;
- Implementing a harmonised system for the environmental monitoring of ecosystems and agrosystems (minimum data kit, methodological guidelines for data collection and processing);
- Ensuring the durability of the monitoring scheme with low costs, an institutional rooting in national policies, and by strengthening the technical and scientific capabilities of these countries;
- Making the knowledge gained available to development stakeholders by designing processing and circulation information tools (modelling with a Local Environmental Information System, website, metadata management tool [MdWeb]).

Focus

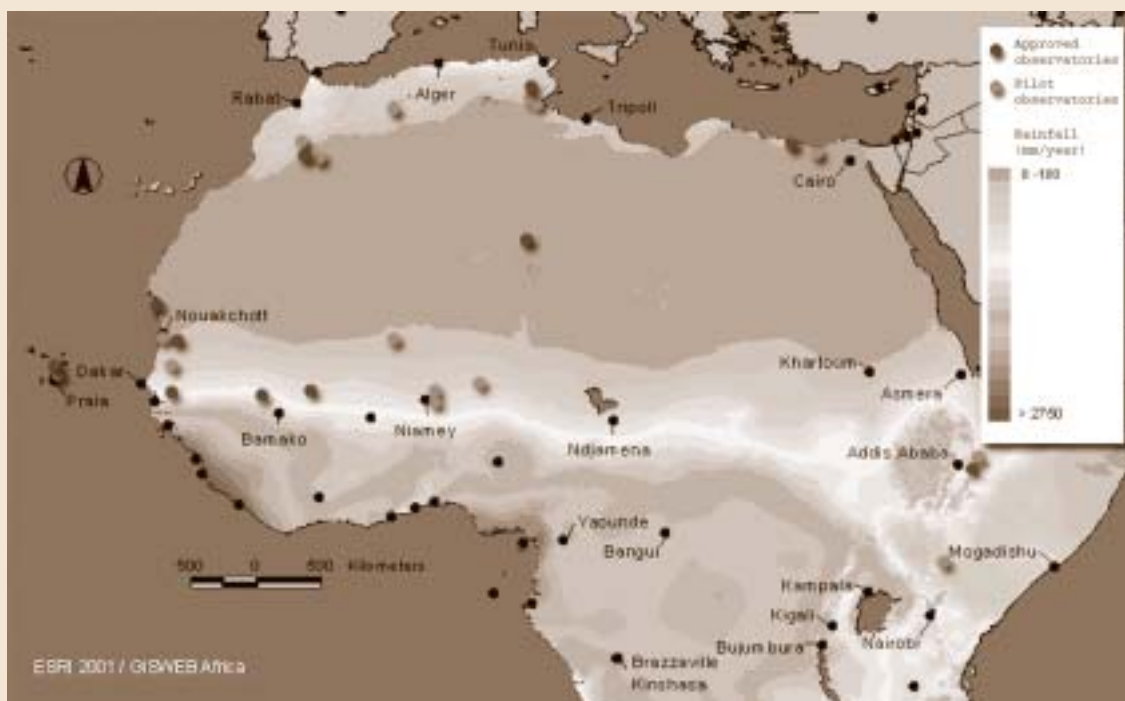
ROSELT in a few key dates

The first stage of this programme began with the Rabat workshop held in Morocco in April 1994; then a founding document on the "design, organisation and implementation of ROSELT" was drawn up in August 1995. During this starting period, 25 observatories or groups of observatories were approved, and 14 pilot observatories were selected to assess financial needs.

The pilot operational phase that began in 1998 was intended to test in a coordinated way data collection, processing and distribution protocols. In 2000, the first stage that mainly addressed design and organisation development progressively shifted to a more operational phase aimed at improving the structure and consolidating the assets of the network.

Location of ROSELT observatories in 2001
©ROSELT/OSS

Source: ROSELT/OSS website,
consulted on November 19, 2004.
www.roselt-oss.org





*Alluvial valley of the watershed of El Gouazine hill reservoir;
Tunisia: an area of pastoralism and rain-fed agriculture.
Control works with tabias (anti-erosion banks).
Scrubland; settlement scattered on slopes.
Jean-Pierre Montoroi © IRD*

A range of actions adapted to various situations and spatial scales

According to the region, desertification materialises differently and its causes and processes vary. The origins of desertification in the pioneer fronts of the Sudanian region in Africa differ for instance from those affecting Sahelian areas south of the Sahara. In the former case, desertification is connected with deforestation and burn and slash farming rather than with lack of water. In the latter case, desertification stems from the combined actions of climate and over-grazing that contribute to land erosion. Such differences are also related to distinct ways of using land and vegetation cover.

Hence, combating desertification - like desertification itself - is characterised by the many scientific and thematic domains concerned: natural resource management, environmental preservation, herding and farming development, security of access to resources and income, poverty eradication policies, etc.

The fields and means of action, ranging from local implementation of cultivation techniques by individuals or groups, to knowledge production regarding regional scale processes, are interdependent. So are the stake holders involved (farmers, herdsmen, decision-makers, research institutions, etc.). Desertification and policies to combat it should indeed be considered at different spatial scales. Only such approaches allow to take current evolutions into account and to design a set of actions adapted to the problems to be solved. Of course, these many spatial scales correspond to a number of organisational and institutional forms that should be identified, assessed, promoted and encouraged.

Desertification and rural societies: complex links

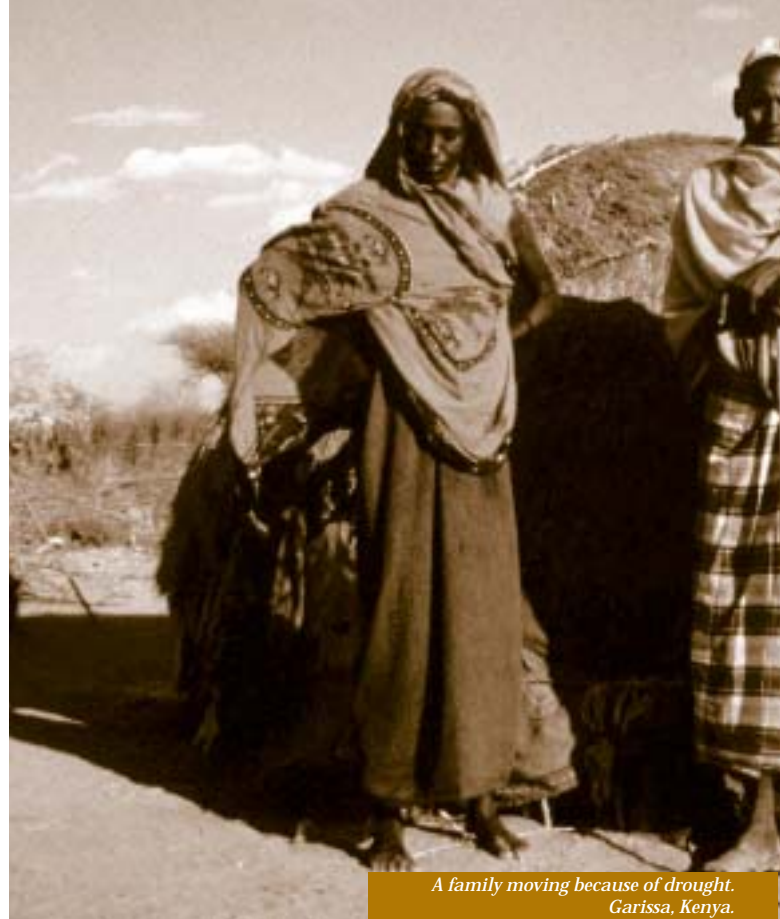
Desertification was first dealt with as a bio-physical issue. Nowadays, it is considered as a complex problem that involves many human-induced factors.

These anthropogenic influences are connected with the ways farmers and herdsman exploit natural resources and the techniques they use. These factors also include the general evolution of societies and their relationships with nature, which conditions how societies appropriate resources, such as for instance, migrations and evolutions of land tenure systems. Lastly, links between the desertification process itself and societal transformation are directly involved: migration and development, poverty and development, etc. Taking into account these interactions leads to reconsider the combat against desertification, its principles, means of action, and the institutional levels of intervention to be promoted or preferred.

As examples to illustrate these intricate links, aspects regarding international migrations and poverty, as well as land tenure issues, are developed hereunder.

Migrations expand desertification...

Desertification brings about immediate consequences often described as the vicious circle: "Land impoverishment - Agricultural production insufficient to feed all the resident population - Increased social tensions". Resulting migrations may be seasonal or definitive. Part of seasonal migrations materialise a temporary adaptation of families to the lack of resources. Such migrations are a transient response to the socio-economic impacts of desertification. Some family members leave to hire their workforce in more prosperous areas or in town, which allows to compensate for the decrease in income caused by desertification. When the situation gets worse in the former place, or when it proves better in the latter, these seasonal migrations may become a definitive resettling in towns or pioneer fronts. Last and consequently, desertification induces part of the migratory fluxes that are likely to result in or add to national and international conflicts.



*A family moving because of drought.
Garissa, Kenya.
Marc-Antoine Pérouse de Monclos © IRD*

Conversely, the influx of new immigrants in a given place is often denounced as a factor of land degradation and desertification. In towns, an aggravation of desertification in surrounding areas is sometimes observed because of an increased pressure on the land. This also applies to densely populated rural areas or to pioneer fronts. Impacts are all the more important that customary and statutory land tenure systems are harmed by migration processes. But the most terrible consequences actually concern the physically and socially underprivileged populations, above all when they cannot anticipate their migration. Physical precariousness is due to unhealthy housing and more generally living conditions, especially due to a lack of access to drinking water. Social precariousness highlights the difficult integration of populations into a new social fabric: this requires time and investments all the more important that migrants who do not belong to diasporas have a low **social capital**.

Besides, in regions surrounding those directly affected by desertification, migrations entail a rapid concentration of populations in areas little exploited until then. Land use conditions are usually defined by ancestral practices.

In such places where heterogeneous groups gather, there is no unique and traditional rule likely to serve as a reference for land, forest and rangeland management. In addition, migrants do not know well the new environment they exploit. Under such conditions, the risks of degradation in such areas appear to be higher than in regions traditionally subject to desertification.



Focus

About social capital and its different conceptions

Coleman, Bourdieu and Putnam are among the founding fathers of the notion of social capital.

In his interview to the "Sciences Humaines" magazine, Putnam describes social capital as "norms and networks that facilitate social trust, coordination and cooperation for mutual benefit". In this interview, he states his conception and counters both Coleman and Bourdieu. In opposition to Coleman, he modulates the effects to be expected from social capital: "During my research in Italy, I have been using for a decade the notion of social capital as defined by James Coleman. But I have diverged, because for Coleman, networks and norms can only entail positive effects. However, some networks such as the Ku Klux Klan or the Nazi party had appalling effects. For ten years, I have consequently diverged from this definition". He also disagrees with Bourdieu in whom he paradoxically senses an individualist conception of social capital. "Pierre Bourdieu was also interested in social capital, but more for the benefits that individuals can gain for themselves. E.g., if you are looking for a job, you use your networks. I think that social capital can have external consequences, i.e. it can also benefit persons who have none".

These two oppositions show how diversely social capital is understood. Even though the concept of social capital may be highly relevant, it is still quite changing.

From Ballet and Guillon, 2003.

... and increase migrants' vulnerability and risk of poverty

Migration and desertification are closely interwoven, whether in specific areas, in neighbouring regions or at a far and even very far distance.

History showed that populations of drylands are able to regulate societal or environmental economic crises by migrating and saving, under the form of cattle for instance. In fact, migrations help create and maintain social fabrics in geographic space. They can be understood as risk-minimising strategies. Families scattered in different places, especially in terms of rainfall, soil and vegetation, protect themselves against drought and famine hazards. High migratory frequencies, for example "stopover" migrations, may also evidence that an environment is impoverished or saturated and unable to shelter durably migrating populations or to meet the needs of its residents.

The lack of roots in a given area entails important social repercussions, since it increases migrants' vulnerability. Moreover, it induces families who are "just passing" to be little interested in renewable resource management. In fact, handing down local beliefs and knowledge on the environment contributes to social cohesion. Similarly, a decline in traditional beliefs and social organisation may lead to decrease cultural and social capital and to increase poverty. Knowledge of and acquaintance with the environment may be lost, thus causing a breach between societies and their environment, whereas growing competition regarding land may induce a break in the social fabric connected with resource exploitation. Tensions resulting from being deprived of ones' rights (in particular, of resources and especially of water and land), i.e. from increased poverty, can also be detrimental to social peace.

There are different kinds of poverty: poverty of access (or immediate poverty) differs from poverty of power, that indicates a future vulnerability. Links between desertification and these various forms of poverty are always specific.



Children collecting water with their calabashes, in one of the many wells dug into the bed of a dried-up river, in the area of Dierma, Burkina Faso.
Marc Bournof © IRD

Forms of poverty and welfare

From Dubois *et al.*, 2001.

Type of welfare	Form of poverty: poverty of access	Form of poverty: poverty of power
Economic	<ul style="list-style-type: none"> • Lack of access to work and lack of income • Impossibility to buy basic products necessary to productive activities and daily consumption • No access to credit 	<ul style="list-style-type: none"> • No physical capital (housing, land, property) • No financial capital
Environmental	<ul style="list-style-type: none"> • No access to natural resources • No access to water • No access to seeds 	<ul style="list-style-type: none"> • No natural capital (farming lands, cattle) available • Scarce rain and surface water
Social	<ul style="list-style-type: none"> • No access to healthcare, education and housing • Social exclusion • Break of social links, especially between age groups • Gender issues 	<ul style="list-style-type: none"> • Marginalisation, lack of social fabric • No social cohesion
Cultural	<ul style="list-style-type: none"> • Lack of identity connected with uprooting • No access to cultural capital 	<ul style="list-style-type: none"> • Insufficient cultural capital • Illiteracy • No common cultural background
Political	<ul style="list-style-type: none"> • Lack of dialogue conditions and democratic process • Exclusion from decision-making 	<ul style="list-style-type: none"> • No powers, means of expression and information
Ethical	<ul style="list-style-type: none"> • No norms • Corruption • No common values 	<ul style="list-style-type: none"> • Lack of shared norms • No shared values

Changes in land tenure practices

In arid and semi-arid areas, population settlements and rural activity ways are usually adapted to climatic vagaries. Populations have developed techniques to preserve their environment, and the feasibility of these techniques is often conditioned by statutory land tenure:

In agricultural environment: Crop rotation and fallowing land are among the best-known techniques. These so-called traditional techniques are nowadays jeopardised by the socio-economic changes that have occurred during the past thirty years. Increasing population, new production techniques and cash-crops, extended cultivated areas, opened-up markets, and the weight of agricultural policies, have modified producers' priorities and constraints.

In pastoral environment: The seasonal transhumance of herds is a mean to regulate the stocking rate of rangelands and to prevent their degradation. This practice is declining among herdsmen, because:

- In western, eastern, sub-Saharan and northern Africa, the droughts of the 70's and 80's led transhumant herdsmen to transfer their cattle to farmers, who became mixed crop and livestock farmers: nomadic breeders often became the shepherds of sedentary owners' flocks.
- Newly cultivated areas are in the way of transhumant animals.
- Some richer breeders sometimes accumulate too big herds that threaten pastoral resources and may be a cause of degradation.

These modifications have occasioned the loss of part of the pastoral knowledge regarding the natural environment.

Policies to combat desertification must take into account land tenure issues

Evolutions of land allocation systems have been extensively investigated for the past thirty years. These studies generally showed that ancestral flexible systems of land-use rights and land development have been wiped out by migratory impacts, increased scarcity of resources, the extension of farming lands and the duplicating of unsuitable institutional frameworks. Unofficial arrangements have developed, above all in host regions, so as to grant a land tenure advantage to native families settled for several generations. These arrangements or agreements such as tenant farming or sharecropping are varied. However, farmers who are bound by them have often no security regarding the durability of their setting up.

Under such conditions, policies to combat desertification should integrate from the start adapted land tenure regulation frameworks and institutions, and should as well involve land owners and the various parties concerned. Every measure is likely to entail an impact on farmers' income or on the possible renewal of their land development contract.

Focus

Land tenure and desertification

Land tenure systems materialise human regulations to organise lands and exploit them, to manage resources and shape the landscape. Their practices and representations rule at various scales, characterised by spatial and temporal dynamics. Land tenure represents a part played by stakeholders, in which relationships between societies and nature are an essential stake. The way land tenure is organised is likely to condition the future of the environment since it may be a factor inducing degradation or on the contrary, become a means to combat desertification.

It is interesting to connect environmental conditions with land tenure systems because it allows to go beyond the technical framework of land degradation management and desertification analysis to take into account the fact that the decisions and behaviours involved in this management are the causes of such degradation. The social representation that stakeholders have of their own environment, conditions their involvement in the future of this environment. The status and kind of value stakeholders attach to environmental resources have consequences on the way they use these resources.

From Barrière, 2003.

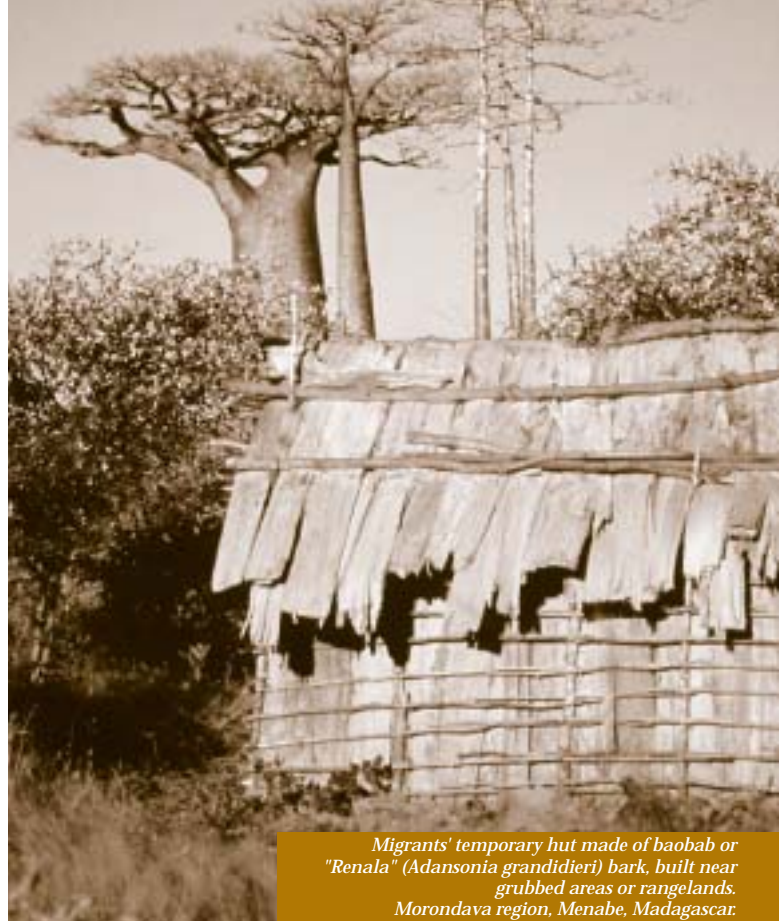
Actions in favour of land tenure in arid areas are part of the combat against desertification. In fact, securing access to resources is a key element for the sustainability and durability of farming and breeding systems.

The decentralisation of natural resource management, promoted at the international scale, is being implemented in Sahelian countries affected by desertification. Such a policy that prioritises the local governance of natural resources should allow to regulate land use tenure, in particular by adopting local environmental conventions.

Is desertification a global scale issue?

In our world that is undergoing massive transformations, farmers and breeders' behaviours have moved on as well. In addition to climatic variations, environmental impacts and local market data, they also have to adapt to changes affecting national economic policies and pressures linked to the evolution of the world-wide commodity market. Only those who have a wide insight of these phenomena and how they link together can anticipate, design new production strategies and take into account environmental issues.

Besides, if we consider the opening up of markets and the impact of economic decisions on agricultural practices in many developing countries (crop selection, land development, cultivation techniques, etc.), especially in drylands, desertification may be considered as one of the plausible consequences of globalisation. For instance, commercial or even military decisions made at a regional or global scale, may entail local impacts in terms of desertification: in the latter case, farmers and breeders faced with too much insecurity are likely to leave their land. Desertification is then materialised by land abandonment, exodus and refuge-seeking.



Migrants' temporary hut made of baobab or "Renala" (Adansonia grandidieri) bark, built near grubbed areas or rangelands. Morondava region, Menabe, Madagascar. Bernard Moizo © IRD

Desertification is not limited to arid areas. In fact, migrations to neighbouring regions lead to expand desertification even to humid areas or faraway coasts. Long-distance migrations generate tensions and conflicts. The increased poverty and inequalities in rural dryland environment, but also the national and international consequences of this evolution, make desertification a global concern: the areas subject to desertification gather the poorest populations of our planet. These people are regularly facing food insecurity. Paradoxically, such areas used to be historical centres of cultural and economic influence and often have a rich biodiversity.

Focus

The populations most affected by desertification are among the poorest in the world

Among the 50 countries whose Gross National Product (GNP) per capita is lower than 500 US dollars, 26 are directly subject to desertification. They are, in decreasing order of GNP: Senegal, Zimbabwe, India, Pakistan, Comoro Islands, Mauritania, Yemen, Uzbekistan, Kenya, Gambia,

Sudan, Uganda, Zambia, Central African Republic, Kirghizia, United Republic of Tanzania, Mali, Burkina Faso, Chad, Niger, Tajikistan, Afghanistan, Eritrea, Malawi, Somalia, and Ethiopia, i.e. the population affected represents about one billion and 750 million people.

From the World Bank, 2000.



*Preparing the soil to sow post-rainy season sorghum. Donaye, Senegal.
Jean-Luc Maeght © IRD*

Desertification, global environment and public goods

Is desertification a world-wide scourge that justifies a concerted action at the international and global scales? Should the combat against desertification be considered as a public good, a good that is worthwhile because its "production" benefits the whole community as well as future generations? This rationale relies on the following assumption: reversing land degradation processes and alleviating poverty would allow to improve living conditions, the settling of populations in areas affected by desertification, as well as social peace. Is this an environmental public good? And at which scale: local, national, international or global? What are the institutional schemes that enable to implement equitably the public good defined as "combating desertification"?

Is desertification a secondary issue at the international scale?

Since the 1992 Rio Conference that positively acknowledged the need for international action regarding the environment, desertification is a theme increasingly tackled in international debates on global environment. The ensuing ratification of environmental international conventions and the creation of international institutions specialised in environmental management, in particular the Global Environment Facility (GEF) and the French Global Environment Facility (FFEM – Fonds Français pour l'Environnement Mondial) are a relevant framework to deal with such matters.

Climate change, biodiversity and international waters are acknowledged as topics belonging to global environment. Desertification and forest conservation were at first included in these themes since they interact with the three former domains. Interactions between desertification, climate change and biodiversity are therefore the focus of special attention, as confirmed by international conventions on the environment.



Bella women drawing water from the pond of Ganadawri. On the other side of the pond, a flock of goats is waiting to drink. Oudalan, Oursi region, Ganadawri, Burkina Faso. François Sodter © IRD

Stakes are considerable. Till the end of 2003, desertification-related issues were only indirectly dealt with and supported at the global scale. Since the last Conference of Parties to the United Nations Convention to Combat Desertification held in Havana in August 2003, the GEF has created a specific funding window on land degradation, that includes all desertification processes.

In France, the French Scientific Committee on Desertification (CSFD) created in 1997 allows to mobilise research and expertise within the scope of operations aimed at combating desertification. As an advisory body, the Committee is thus an interface between research and action.

Focus

International conventions on the environment

The three major United Nations Conventions on the Environment adopted during the Rio conference or afterwards are:

- The United Nations Framework Convention on Climate Change (UNFCCC);

- The United Nations Convention on Biological Diversity (UNCBD);
- The United Nations Convention to Combat Desertification (UNCCD).



Is the economic development of the environment a solution to conserve it?

According to some decision-makers, environmental protection goes together with the valorisation in economic terms of available or new resources. Although this is an avenue worth exploring, it seems that environmental conservation and valorisation often do not allow sufficient remuneration in relation to the efforts undertaken or required to manage the area, nor guarantee a fair distribution of the earnings generated by this development. To suppose and advocate a market-driven development and regulation of the environment leads to cross-examine the links between two potentially divergent and contradictory objectives, i.e. environmental conservation by combating desertification and poverty alleviation policies. At the local scale, for instance, the economic valorisation of an endangered species may become a factor of social inequality when collective goods become privately and competitively appropriated because of commodification.

Desertification, biodiversity and climate change: ill-known complex interactions

Interactions between desertification, biodiversity and climate change still largely remain to be investigated and assessed. At the global scale, scientists define them as trends or often assumptions. Experts agree that desertification increases biodiversity loss and climate change-related risks. How can such interactions be estimated? Which scales should be preferred?

Interactions between desertification and climate change are ill-known: obviously, successive droughts and rainy episodes entail land erosion and subsequent carbon depletion which then increases the carbon content in the atmosphere. It is thus assessed that combating desertification, especially with anti-erosion techniques and soil protection measures, reduces climate change-related risks. Anyway, compared with polluting industries, desertification contributes certainly very little to greenhouse gas-induced climate change.

Regarding biodiversity, combating desertification first involves to manage areas that secure ecosystem resilience and protect species and landscapes. The current studies on the diverse ways to domesticate the environment and their impacts are fundamental in this respect.

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Desertification, biodiversity and access to land in Niger

In the central region of Niger, higher levels of biodiversity, landscapes and ecosystems have been subject to erosion since the big droughts of the 70'. However, there is generally no real extinction of species, but rather, species have become scarcer and have moved southwards according to rainfall. To counter this evolution, populations create enclosure areas or cultivate these species in favourable environments such as bottomlands, by selecting and conserving spontaneous tree shoots. Farmers also plant trees in their fields, or create copses or hedges. They also introduce new species. Vegetation appropriation increasingly corresponds to land appropriation. Modifications in ecological and social farming conditions contribute to changing the rights and behaviours of farmers towards resources. The financial value of land is being established, and a commodification of property rights (market-based transfer of land) is taking place. Inequalities regarding access to land and economic disparities are increasing in rural environments. Some people use mining practices whereas others integrate conservation: their attitude vary in relation to their status, their wealth, their relational background, and their material and social constraints. The erosion of spontaneous biodiversity goes together with an increase in cultivated biodiversity: in fact, the erosion of common biodiversity is accompanied by an increase in private biodiversity.

From Luxereau and Roussel, 1998.



A Fulani herdsman driving his cattle over Farch bridge in N'Djamena, Chad.
Christian Lévêque © IRD

A delicate implementation of the three environmental conventions

The relations between the actions undertaken to implement the several environmental conventions are complex; they may be sometimes synergetic, sometimes antagonistic. Besides, they may be synergetic at a given scale, while antagonistic at another one, and may globally bring – or not – social justice.

In addition, the simultaneous local-scale enforcement of the various conventions raises the critical question of how the many organisations and institutions responsible for their implementation hinge together, and how they interact with pre-existing collective organisations. The efficiency and durability of such actions are related to their support by local organisations and to their capacity to trigger off virtuous circles regarding poverty. Whether they concern climate change, biodiversity, land and water protection, desertification, or else actions promoted and backed by donors such as poverty eradication policies, they all entail social transformations that interfere with each other.

Global public goods and the combat against desertification

A necessary concept in the globalisation context

In 1999, UNDP proposed the notion of global public goods (GPGs) in order to take into account the evolutions connected with globalisation. In its first book entitled: “*Global public goods: international cooperation in the 21st century*” (1999), UNDP suggests to resort to the concept of public good to design a new form of international cooperation that should be fairer, more effective, and adapted to globalisation impacts. GPGs are defined as goods that exclude no individuals, regions and countries and extend to both current and future

generations. The authors proposed four categories of global public goods: peace and security, environment, health, knowledge and information. In France, the Ministry of Foreign Affairs and the French Development Agency (AFD) also developed this notion, in particular under the aegis of the High Council for International Cooperation (HCCI).

As defined by economists, public goods have two characteristics:

- Nobody can be denied their use;
- Consumption of these goods by one person does not reduce consumption by others.

Public goods exist under more or less pure, mixed forms. They may be supplied by the private sector or the State.

Public goods and their supply methods are also defined by two other criteria, i.e. the size of the users' group and the divisibility of this good. Such criteria lead to think up and decide the type of funding to be promoted and implemented so as to create, manage and preserve such good. In the case of a very large users' group and low divisibility of the good, the State may for instance decide to finance the corresponding public good. If the users' group is small, allocation of the good may be undertaken by associations. Nature reserves or national forests are state-managed environmental public goods when the State owns them. Biodiversity, determined forests or remarkable sites may also belong to private stakeholders who thus contribute to producing environmental public goods.

Production, management and distribution of global public goods

There are two conceptions of GPGs:

- According to the first approach, GPGs are goods that suffer from underprovision by the markets. Such goods must then be supplied outside market mechanisms, by international or even supranational bodies.
- In the second theory, GPG production is related to global political economics. It goes beyond the conception of markets as faulty to promote the idea of a participatory international democracy in charge of producing and managing global public goods through an appropriate transnational tax system.

The global characteristic of such goods should then be understood as a social construction. Acknowledging public goods is thus a political process that recognises and relies upon relevant institutions aimed at setting up international cooperation. The supply of these goods must be organised, regulated and controlled at the international scale in order to guarantee their fair sharing: funding, production and distribution conditions must be defined. All stakeholders, whether public, private, local, national or international, should be involved in providing countries and regions with GPGs.

Within the scope of its research, UNDP has published a second book entitled “*Providing global public goods*” (2003). Its authors contribute further information: they reconsider the definition of public goods in the global context and suggest more detailed definitions for GPGs, as well as more concrete ways for producing and distributing them:

- National poverty alleviation programmes, national biodiversity and wildlife, water resources and targets for reducing atmospheric pollution are rival and exclusive national (State) private goods.
- Freedom from extreme poverty, basic education and health care for all, as well as the atmosphere, are classified as non-exclusive but rival GPGs, and are consequently common-pool goods.
- Lastly, environmental sustainability belongs to pure global public goods, i.e. non-rival and non-exclusive goods.

Focus

Private goods and public or collective goods as defined by economists

	Exclusive	Exclusive
Rival in consumption	Private goods	Common-pool goods, mixed goods
Non-rival	Mixed goods, club goods, toll goods	Pure public goods

Few goods (justice, police) qualify as purely public. Most of them have in fact mixed properties of private and public goods.

Common resources or common-pool goods are goods whose access cannot be denied. They are often defined as such because of their physical features (e.g. open spaces). Such resources are rival in consumption: each unit of resource taken is made unavailable to the other users of such resource.

Bush areas in Africa are local common-pool goods: various activities, either seasonal or regular, take place there: farming, breeding, picking, firewood collecting, etc. Cross-border groundwater is a regional common-pool good, that interests simultaneously several countries. An excessive use of such goods leads to their disappearance, as described by Hardin's article entitled the “*Tragedy of the Commons*” (1977), which is a reference point of

the scientific debate on common resources. Indeed, other scientists as those who belong to the International Association for the Study of Common Property (IASCP) show that local scale norm and regulation systems are able to regulate the withdrawal of common resources and ensure their renewal.

Contrary to common-pool goods, **club goods** have non-rival properties but are exclusive. Club access usually requires entrance fees, but there are other forms of discriminatory entrance.

A woodland managed by an association is a club good if, except from association members, nobody is allowed to collect derived resources (picking, firewood...).

Toll goods are theoretically accessible to all, but when used simultaneously by a number of people, they become rival in consumption: this is the so-called “glut effect”. This applies for instance to public education. Rivalry among users leads to degrade the public good supplied to populations. Exercising access conditions allows to maintain a collective use without decreasing its quality and generates de facto an exclusion among users. In the case of education, requiring a specific diploma is for instance an element that induces to exclude part of the potential users.

From Jarret and Mahieu, 1998.

Towards acknowledging the combat against desertification as a global public good?

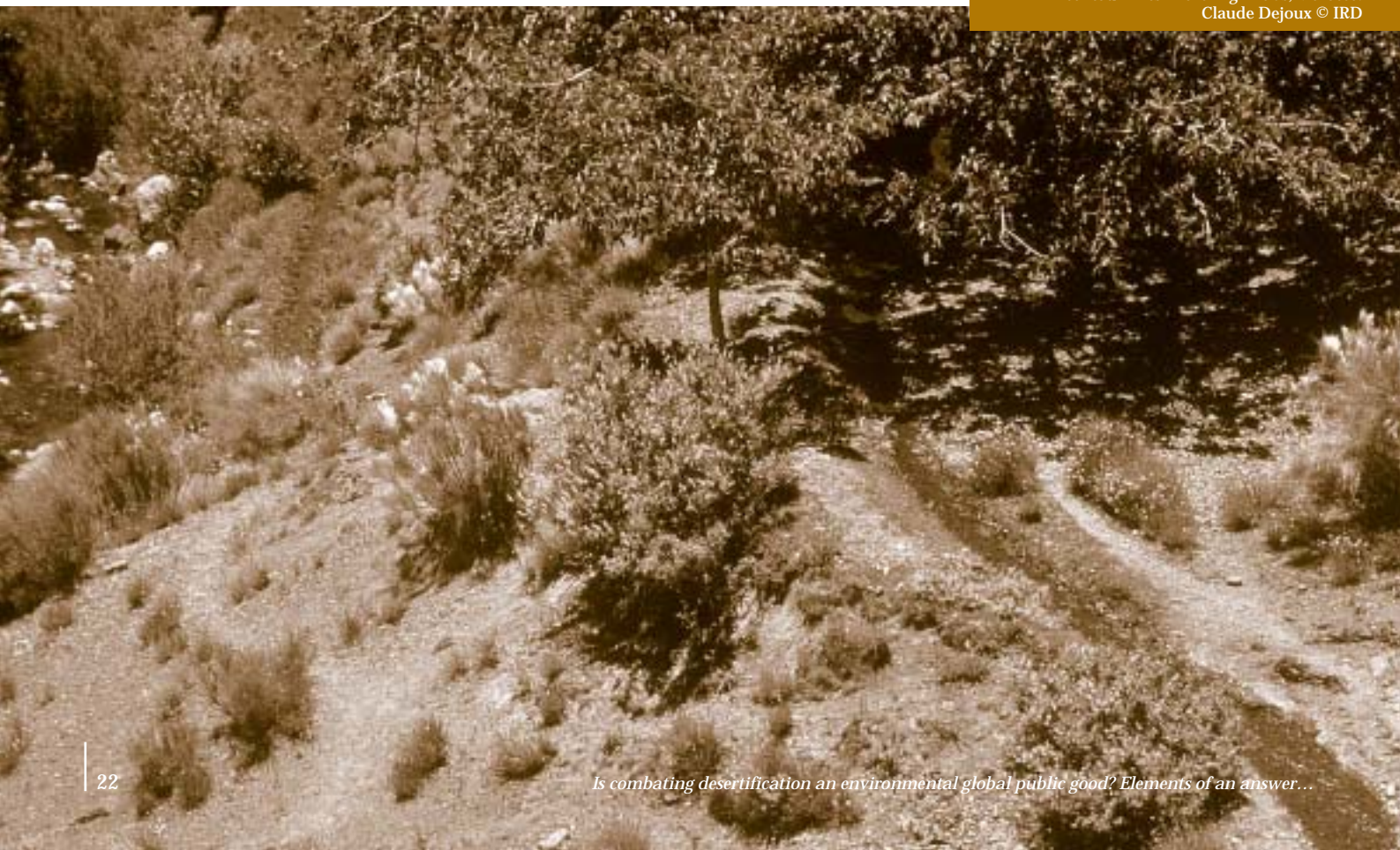
In this context, to which category does the combat against desertification belong? If it is regarded as a public good, what is the good produced? Information, inputs, production techniques, scientific knowledge, training, what are the links between these different elements and which should be prioritised? If combating desertification is accepted as a global public good, this good would include all the various techniques used to combat land degradation. It would also encompass incentives for the collective implementation of anti-desertification measures and the support to the most underprivileged populations. In addition, food security, education (knowledge and information), health or even market-induced impacts on development could even be integrated.

Now several of these domains may also be contemplated as GPGs in their own rights. Conversely, if it is not explicitly recognised as a GPG, the combat against desertification may be tied up with many existing public goods, and therefore benefit by efforts undertaken within such scopes. According to UNDP classification, this concerns freedom from extreme poverty and access to education. Moreover, if combating desertification belongs to environmental sustainability, then it must have the characteristics of pure public goods. This implies to make choices regarding its production and distribution: supply must be constant and the good must be accessible by all simultaneously. So, if considered from the notion of GPG, combating desertification is a set of goods, practices, conditions, information and knowledge, and its nature is mixed and heterogeneous.

At the time being, regional workshops on desertification and land degradation organised by governmental and regional bodies, development projects, non-governmental organisations (NGOs) and associations are part of the combat against desertification as a public good. These actions are set up at different local, national and regional scales.

Considering the combat against desertification as a public good comes down to recognising both its various scales and diverse situations. How is it possible to define global rules likely to suit distinct contexts? Intermediary stages between the global scale on the one hand, and the regional, national and local scales on the other hand, should be envisaged with this aim. For instance, in Africa, common bush areas have been used for decades by local native populations as well as by seasonal migrants. These communities have designed local rules of use that have operated for a long time. Their legitimacy in terms of decision relies on their historical roots. However, in many cases, such rules can no longer ensure the sustainability of common areas and must be adjusted. These common areas are often state-owned but in a private capacity. They either depend on local supervising authorities when natural resource management is actually decentralised, or are kept under the control of the central government. Consequently, the State is legally concerned by the desertification of these areas. Lastly, desertification and public goods are also connected at levels other than local or national scales: desertification in a given area may entail consequences (whether economic or biophysical) in different regions.

*Irrigation system by water transportation along contour lines in the High Atlas, Morocco.
Claude Dejoux © IRD*





*Once harvested, post-rainy season sorghum fields are left to the cattle, that can freely graze what remains after reaping. Pendao, Senegal.
Xavier Le Roy © IRD*

Regarding the combat against desertification at national and regional scales, governments, regional and international bodies, as well as bilateral and multilateral international cooperation institutions would take part in its supply. Rural funds for the prevention and management of desertification may for instance become preferred instruments to provide this good. How and by whom (regional, international organisations?) can money be put into these funds?

If considered locally, the so-called “combat against desertification” public good would be supplied at the decentralised scale of rural districts, associations and NGOs. In such context, how would local populations be involved in adopting and maintaining anti-desertification practices defined at the global scale? How much room for adaptation would they be left? NGOs engaged in combating desertification could be backed more largely and jointly by governments, international organisations, banks or private foundations.

Production conditions for global public goods: by whom, how, and at which scale?

Defining GPGs implies the emergence of an autonomous international sovereignty and the implementation of governance mechanisms: as soon as a public good is recognised, the interests of countries as well as of civil organisations, companies and individuals must be represented. Some experts think that opinions of developing countries should be granted more consideration when it comes to the major issues affecting our planet.

In order to discuss GPGs and organise their production, UNDP advocates to create a G29 including the member countries of the United Nations General Assembly Committee. The G29 would be entrusted with deciding the actions to be carried out. How could this G29 take into account all the interests at stake? In this framework, would not GPGs appear as club goods, restricted to a limited number of recipients? Still according to UNDP, making determined goods public instead of national would allow to valorise comparative and mutual advantages. If a country or a group of countries is comparatively more profitable as to the production of a definite GPG, it could be required to provide it. Organising GPG supply could thus rely on cost and profitability studies.

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The United Nations Convention to Combat Desertification in a few words...

This Convention, whose principle is stated in Agenda 21, was adopted in Paris in 1994 and has been ratified by 190 countries up to now. It is an international treaty by which Party Countries commit themselves to take concrete steps. Namely, affected countries must adopt National Action Programmes to combat desertification and integrate them into their national development strategies and poverty alleviation policies. They also bind themselves to involve the civil society in defining objectives and implementing actions. Signatory countries that are not subject to desertification engage to support the efforts of affected countries. If combating desertification is sometime acknowledged as a GPG, governments, regional and international organisations, and bilateral cooperation bodies should then contribute to its supply. An international authority should act as a regulator. Could the UNCCD play this role? The debate is open...

The notion of global public good and its input to the ongoing reflection on public services

Major conventions and international cooperation institutions have led to talk about global public goods and to establish what could fall within their scope. In this global institutional environment, it is important to know where the combat against desertification stands and on what funding and implementation mechanisms it can be based. At the time being, this notion opens lots of possibilities but raises as many questions; and defining a GPG remains a political choice.

As regards the combat against desertification, the stake of the last ten years consisted first in adopting National Action Programmes and second in setting up decentralised structures for natural resource management in order to enhance people's participation and to ensure the respect for the great majority's interests. This decentralisation shows that the local scale is essential to promote new practices, to allow talks and debates, and to improve the understanding of economic and social dynamics. However, it is today obvious that this scale is not sufficient to cope, and the harsh withdrawal of state funding intensifies this fact. Indeed, for local operations to be effective, it is necessary to upscale (to national but also regional and global levels) other efforts regarding coordination, regulation and support to local dynamics, as well as different kind of actions (for instance concerning town and country planning or tax systems). Will the transition to a global architecture of GPG production modify the part played by states in public services? I.e., within this framework, will states be categorised as private organisations

and appealed to by the international authorities in charge of managing GPGs?

The notion of global public good remains to be worked out. Analysing the combat against desertification in relation to public goods leads to develop (again) the notion of public services. Public service is a field of activities where public intervention is acknowledged as necessary by the State, either to compensate for a deficient private sector, or to produce a good at quantity and quality levels required by the community. These services contribute to binding society together and to protecting citizens. They stem from political choices: based on the principle of non-exclusion, they are mainly financed by tax yield. In western societies, public services have historically played a role in organising the power: police, justice, security, education and health are the main public goods. In France, the government has kept the monopoly of supplying most of these services, but this exclusive control is being called into question by EU membership and in particular by the opening to market and competition. At the European scale, channels providing public services may be transnational: before long, they may resort to states, companies, civil organisations and individuals. Regarding the combat against desertification in developing countries, what should the international community consider as a public service, and how can the goods deemed necessary at the political level be supplied? It is essential that all these questions should be answered.

Farming in arid areas, Tunisia.
Michel Picoet © IRD

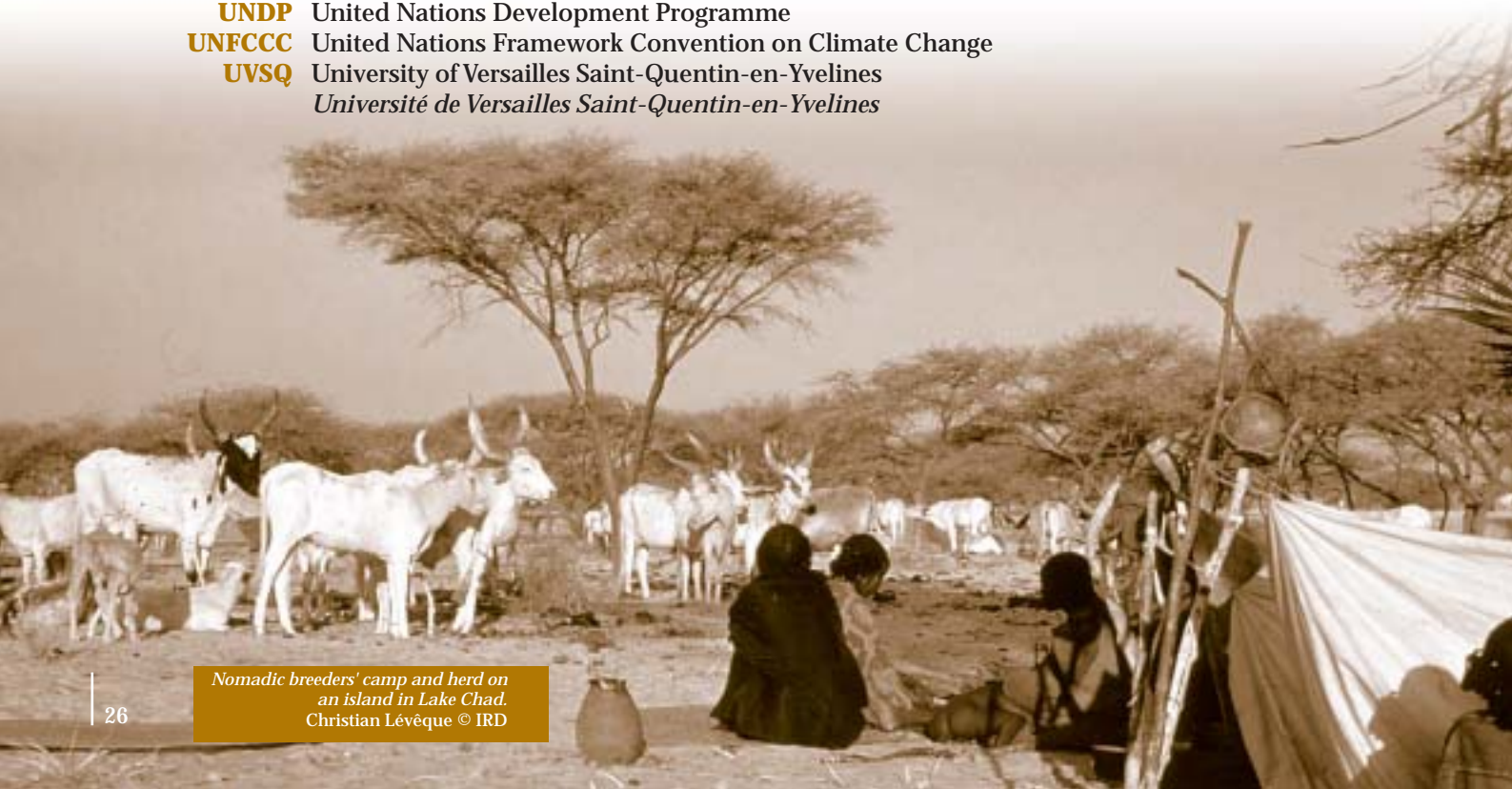




A Fulani herdsman with his cattle during the dry season. Le Ferlo, Tatki bore-well, Senegal.
Antoine Cornet © IRD

List of acronyms and abbreviations

- AFD** French Development Agency
Agence Française de Développement
- C3ED** Centre of Economics and Ethics for Environment and Development
Centre d'Économie et d'Éthique pour l'Environnement et le Développement
- Cirad** Agricultural Research Centre for International Development
Centre de Coopération Internationale en Recherche Agronomique pour le Développement
- CSFD** French Scientific Committee on Desertification
Comité Scientifique Français de la Désertification
- FAO** Food and Agriculture Organization of the United Nations
- FEER** Three-stone system (bund)
- FFEM** French Global Environment Facility
Fonds Français pour l'Environnement Mondial
- GEF** Global Environment Facility
- GNP** Gross National Product
- GPG** Global Public Good
- HCCI** High Council for International Cooperation
Haut Conseil de la Coopération Internationale
- IASCP** International Association for the Study of Common Property
- IRD** *Institut de Recherche pour le Développement*
- NGO** Non-Governmental Organisation
- OSS** Sahara and Sahel Observatory
Observatoire du Sahara et du Sahel
- PDS** System of erected stones and subsoiling
- ROSELT** Long-Term Ecological Monitoring Observatories Network
Réseau d'Observatoires de Surveillance Écologique à Long Terme
- UMR** Joint Research Unit
Unité Mixte de Recherche
- UNCBD** United Nations Convention on Biological Diversity
- UNCCD** United Nations Convention to Combat Desertification
- UNDP** United Nations Development Programme
- UNFCCC** United Nations Framework Convention on Climate Change
- UVSQ** University of Versailles Saint-Quentin-en-Yvelines
Université de Versailles Saint-Quentin-en-Yvelines



Nomadic breeders' camp and herd on an island in Lake Chad.
Christian Lévêque © IRD

Websites

French official agencies

- **Agropolis**
www.agropolis.fr
- **Agricultural Research Centre for International Development (Cirad)**
www.cirad.fr
- **French Development Agency (AFD)**
www.afd.fr
- **French Global Environment Facility (FFEM)**
www.ffmpeg.fr
- **French Scientific Committee on Desertification (CSFD)**
www.csf-desertification.org
- **Institut de recherche pour le développement (IRD)**
www.ird.fr
- **French Ministry for Ecology and Sustainable Development**
www.environnement.gouv.fr
- **French Ministry for Research**
www.recherche.gouv.fr
- **French Ministry of Foreign Affairs**
www.diplomatie.gouv.fr

NGOs

- **Centre d'Actions et de Réalisations Internationales (CARI)**
cari.asso.free.fr
- **Centre de Recherche et d'Information pour le Développement (CRID)**
www.globenet.org/crid
- **Eau-vive**
www.eau-vive.org
- **ENDA Third World (Environmental Development Actions in the Third World)**
www.enda.sn
- **European Network Initiative on Desertification (ENID)**
See CARI website
- **Institut de Formation et d'Appui aux Initiatives de Développement (IFAID)**
www.ifaid.org
- **International Federation of Agricultural Producers (IFAP)**
www.ifap.org
- **International NGO Network on Desertification (RIOD)**
www.riodccd.org
- **Sahel Solidarité**
www.sahelsolidarite.bf

European and international organisations

- **European Union**
www.europa.org
- **Global Environment Facility (GEF)**
www.gefweb.org
- **International Fund for Agricultural Development (IFAD)**
www.ifad.org
- **International Institute for Environment and Development (IIED)**
www.iied.org
- **Long-Term Ecological Monitoring Observatories Network (ROSELT)**
www.roselt-oss.teledetection.fr
- **New Partnership for Africa's Development (NEPAD)**
www.nepadsn.org
- **Permanent Interstate Committee for Drought Control in the Sahel (CILSS)**
www.cilssnet.org
- **Sahara and Sahel Observatory (OSS)**
www.unesco.org/oss
- **Sahel Club**
www.oecd.org/sah
- **Technical Centre for Agricultural and Rural Cooperation (CTA)**
www.cta.nl
- **United Nations Convention on Biological Diversity**
www.biodiv.org
- **United Nations Convention to Combat Desertification**
www.unccd.int
- **United Nations Development Programme (UNDP)**
www.undp.org
- **United Nations Educational, Scientific and Cultural Organisation (UNESCO)**
www.unesco.org
- **United Nations Environment Programme (UNEP)**
www.unep.org
- **Food and Agriculture Organization of the United Nations (FAO)**
www.fao.org
- **United Nations Framework Convention on Climate Change**
www.ec.gc.ca/international/multilat/ccnucc_f.htm
- **United Nations Secretariat**
www.un.org
- **World bank**
www.worldbank.org

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Abstract

Originally considered as a local development problem, combating desertification is viewed more and more as a global environmental issue at the international level. May combating desertification be considered a global public good? The document shortly describes the desertification problem, its extent and examples of available solutions for stopping it. However, the analysis of the links between desertification and social changes - particularly the ones that relate to migration, poverty and land tenure -, demonstrates the interest of broadening the traditional approach of combating desertification. Such a focus highlights the need for implementing a consistent set of interdependent actions to solve desertification problems. These actions should be designed in each situation at various levels, from local to global, and supported by as many specific institutional arrangements. The discussion brings into debate elements for deciding whether combating desertification should or should not be recognized as being a global public good and for identifying which new fighting mechanisms should be implemented at international levels.

Key words: Land degradation, combating desertification, global environment, global public good, poverty, natural resources management, sustainable development

Résumé

À l'origine considérée comme un problème de développement local, la lutte contre la désertification apparaît peu à peu sur la scène internationale comme un phénomène d'environnement mondial. La lutte contre la désertification peut-elle être envisagée comme un bien public mondial ? Le dossier présente tout d'abord de manière succincte et illustrée l'ampleur du problème et, à titre d'exemples, des moyens disponibles pour l'enrayer. Mais en s'appuyant sur l'analyse des relations entre désertification et transformations des sociétés, et en particulier des aspects liés aux migrations, à la pauvreté et à la régulation foncière, l'élargissement du champ traditionnel de la lutte contre la désertification apparaît nécessaire. La résolution des problèmes de désertification passe en effet par la mise en œuvre d'un ensemble cohérent et interdépendant d'actions conçues à différents niveaux d'organisation, du local au global, et adossées à autant de formes institutionnelles spécifiques. Ces éléments alimentent un débat permettant de décider si la lutte contre la désertification constitue ou non un bien public, en quoi il interpelle ou non la dimension et la communauté internationales et s'il y a lieu ou non de mettre en œuvre de nouveaux mécanismes de lutte.

Mots clés : Dégradation des terres, lutte contre la désertification, environnement mondial, bien public mondial, pauvreté, gestion des ressources naturelles, développement durable

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