



United Nations Convention  
to Combat Desertification

# NATIONAL ACTION PROGRAMME TO COMBAT DESERTIFICATION

**PORTUGAL**

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Agricultura,  
do Desenvolvimento  
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UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION  
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## INTRODUCTION

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*... a very significant part of the efforts to combat the causes of desertification includes intervention to correct people's actions and attitudes which have become rooted in everyday life; and intervention aimed at convincing institutions of the importance of phenomena leading to desertification and the importance of bearing these phenomena in mind in drawing up policies and the way they are implemented.*

Desertification is a global process with serious local consequences, and it concerns everyone. Some because they actively or passively cause it or aggravate it, others because, directly or indirectly, they suffer its consequences.

The international community has long recognised that desertification is one of the most serious problems facing the planet, since it has clear social, economic and environmental implications.

Insofar as desertification and drought affect around 1/6 of the world population and a total surface area of around 3.6 million hectares (i.e., approximately 30% of the continental zones of the planet), they have become a burning question calling for urgent measures to combat them.

Like humid and sub-humid climates, desert and semi-arid climates are dynamic by their very nature and should be understood in terms of the general circulation of the atmosphere. However, there is another aspect of the climate more closely linked with processes of desertification, and that is the physical climate of the Earth's surface which is connected with the system of exchange and balance linking the atmosphere to other climatic sub-systems. This physical climate of a given location is transformed when humans alter the nature of the surface, and these changes may affect the global climate through processes of internal re-feeding which may work at the level of regions, continents or even the whole planet.

The first impact of incorrect soil use takes place at the level of the local physical climate,

i.e., the micro-climate. An understanding of the processes of desertification therefore depends on the ability to discern the influences that local man-made changes to the micro-climate have on the global climate.

Since desertification as a phenomenon is strongly influenced by human activity, it is up to the human race to take measures to ensure that, especially in high-risk regions, any process leading to desertification is avoided. Once desertification starts, the internal re-feeding mechanism will intensify the phenomenon and it is only with great difficulty that original conditions can be naturally restored.

Desertification is thus a reality that depends on human and natural factors (drought and climate variation).

Man-made factors leading to the phenomenon of desertification are fundamentally the ones that lead to alterations to the micro-climate, such as the destruction of plant cover and dispersed trees, incorrect soil use, over-grazing, unsuitable irrigation techniques, salinization, demographic pressures on risk areas, etc..

This phenomenon has consequences in Portugal, above all in the eastern and southern interior, which have been seriously affected by soil erosion resulting from incorrectly chosen crops and unsuitable farming practices, as well as the occurrence of periods of intense rainfall in short time periods. However, we should also not overlook water and wind erosion as important factors in desertification, since these are relevant questions in some regions of the country.

This is a complex process, in which the causes are sometimes mistaken for the effects, and in which it is not only the nearest agents that intervene, but also many others which are not directly involved and may often escape identification.

The most widespread manifestation of the cause-effect issue in desertification in Portugal is depopulation.

The flight of populations in Portugal cannot be compared with the type of movement seen in regions of the world most seriously affected by drought. However, the constant flow of population to the cities, especially the cities along the coastal strip, causes serious problems both at the source of the moving population and their destination: abandoned land in the country, with its attendant effects on natural resources and the landscape, and overpopulation in the cities, which has direct consequences on ecological balance, biodiversity and the environment.

The policies for agriculture, employment, tourism, education, planning, land use, scientific research, the environment, health, in other words, policies for economic and social development, are important tools in determining the evolution of a given territory and the quality of life of its citizens. This clearly affects the decision to settle or to move elsewhere.

In the Mediterranean conditions that predominate in mainland Portugal, the presence of Man is a factor that determines the precise shape of Nature: when Man is present, he is vigilant and acts as an architect and sculptor of natural resources and the landscape; when he is absent, natural agents are left to act on often fragile soils.

The National Action Programme to Combat Desertification therefore sees Man as its centre of concern and basically envisages both new attitudes and active combat against the degradation of resources and the application of preventive measures.

In Portugal, as in all developed countries of the European Union and the World, two opposing yet equally serious situations can be identified: at one extreme, that of certain areas strongly affected by depopulation, where there remain hardly any potential target populations for any policies or actions aimed at the recovery

or conservation of resources; at the other extreme, we have overpopulated territories subject on a daily basis to a physical and chemical degradation that jeopardises the principles of balanced and sustained economic and social balance, and therefore the well-being of future generations.

The National Action Programme to Combat Desertification is the result of widespread participation by agents involved and interested in the question of desertification, above all from the regions most affected, in strict compliance with the spirit of the Convention to Combat Desertification.

The main conclusion of the work that gave rise to it is that a very significant part of the efforts to combat the causes of desertification includes intervention to correct people's actions and attitudes which have become rooted in everyday life; and intervention aimed at convincing institutions of the importance of phenomena leading to desertification and the importance of bearing these phenomena in mind in drawing up policies and the way they are implemented.

From another perspective, proposals come up that lead to the recovery of grave situations and to the launching of far-reaching measures, namely in matters of scientific research or the development of essential support mechanisms.

The result of all this is a clear need for integrated interdepartmental and multi-disciplinary action, from the drafting of policies to the implementation of specific actions.

It is in this context that the National Action Programme to Combat Desertification should be understood as a tool offering guidance for action, especially bearing in mind its objectives when formulating measures and policy instruments for sustainable economic and social development.



## DESERTIFICATION IN PORTUGAL – DIAGNOSIS OF THE CURRENT SITUATION

Desertification is a process of environmental degradation that has its roots in a multiplicity of factors, and may lead to situations of irreversible environmental damage.

Its most obvious manifestations include rapid soil erosion, increased salinity of soils, an increase of surface run-off due to the reduction of soil water retention, a reduction in the diversity of species and a reduction in productivity, leading to impoverishment of the human communities dependent on these ecosystems.

The climate has great influence on the processes of desertification due to its impact on vegetation, the water cycle and land use. On the other hand, soil characteristics are factors that determine its degradation, influencing the extent of resistance to the removal of particles by erosive agents.

In a first attempt to identify the areas which display the conditions most likely to encourage desertification, and then to territorialise the question of the susceptibility of Portuguese soils, three indices were defined, each one of them reflecting different forms of action of different factors in the process of desertification.

The indices used were as follows:

### a) **Climate index:**

defined by the relationship between the average yearly precipitation and the average yearly potential evapo-transpiration calculated using the Penman method, as proposed by the United Nations Environmental Program (UNEP).

### b) **Soil loss index:**

this basically combines four factors which determine the erosive process: the erosivity of precipitation, soil type, plant cover and the slope.

### c) **Drought index:**

this introduces the drought component whenever necessary, based on the number of years (expressed as a percentage) in which the amount of yearly precipitation is lower than the threshold represented by the quantile 0.01 of log-normal distribution.

By combining the three indices, it has been possible to construct an index of susceptibility to desertification which shows the spatial distribution of the phenomenon throughout the Portuguese mainland.

The index of susceptibility to desertification was obtained using the climate, soil loss and drought indices, using Geographic Information Systems (GIS). The results obtained using this method allowed for a territorial distribution of the degree of susceptibility to desertification, highlighting the regions which, due to their climatic, edaphic and physiographic features and their plant cover, had already stood out in the component indices. Comparison of the various socio-economic indicators with the results obtained and with the identification of the regions of the country more susceptible to desertification validated overall the methodology applied.

The areas most susceptible to desertification correspond to some parts of the interior of Alentejo and some parts of the North of the country (about 11%). This is a moderate risk of desertification in 60% of Portuguese territory.

Despite the fact that, nationally speaking, the methodology shows the areas with greater susceptibility to desertification, it still needs to be validated at regional level.

On the other hand, it is acknowledged that the use of the climate index (as defined by UNEP) in characterising desertification processes, is a limitation on the methodology developed, since it does not reproduce the vulnerability of soils to climatic "stress".

In this context, and without prejudice to the general validity of the results already obtained,

work is being developed to make the index discrete using the number of months in which precipitation and water content in the soil do not compensate for the evaporating power of the atmosphere. This new approach requires identification of the sites where the water deficit is not set right artificially by man-made means.

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## STRATEGIC OBJECTIVES OF THE NATIONAL ACTION PROGRAMME TO COMBAT DESERTIFICATION

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### ▪ Strategic Objectives

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The **first strategic objective** of the National Action Programme to Combat Desertification derives from the Convention to Combat Desertification: **soil and water conservation**.

The expression "human desertification" has been used as a synonym for depopulation, but this should not be confused with the term "desertification" as used in the Convention, in other words, degradation of the land in climates with a certain degree of dryness, resulting from natural or man-made factors. However, in Portugal, the two concepts run side by side.

Depopulation is both a cause and an effect of degradation of the land. It occurs in many situations due to the fact that the land has become incapable of producing the means of satisfying the population's needs, as a consequence of the degradation to which Man has subjected it over time, or due to the fact that the poverty of the land has not aroused the necessary and adequate interest of economic and social agents. But, when it happens, it leaves these areas totally abandoned, deprived of the conditions that might mitigate the problem by encouraging replacement of plant cover and, as a consequence, infiltration of water into the soil and sub-soil.

This is what is happening in vast areas of Portugal, where the land has been allowed to fall into extreme degradation, and is now abandoned and often subject to such destructive phenomena as fire or landslides. The rapid and intense depopulation experienced means that

nowadays the population in such areas is reduced in number and ageing fast. This fact discourages decision-makers from applying measures in those regions, accentuating the tendency towards increasingly seriously depopulation.

At the other extreme, the people who abandon these areas move into the cities, especially on the coastal strip, creating enormous pressure on this area in both demographic and environmental terms. Managing the larger cities thus becomes extremely difficult and costly, calling for increasing resources; there are increasingly serious phenomena of degradation of the landscape and natural resources (e.g., pollution, impermeabilisation of the soil, degradation of plant-life, transformation of rural areas, etc.).

It is essential to put a stop to this marked trend towards depopulation and ageing in vast areas of Portugal and, if at all possible, to invert it. This would be to everyone's benefit: those who still live in these depopulated areas and are entitled to suitable living conditions; those who live in the towns, especially along the coastal strip, to defend their own quality of life; to the benefit of national cohesion, which is impossible to maintain with the existence of one increasingly developed part of the country as opposed to another largely abandoned one.

This feeling came out in all public discussion of the National Action Programme to Combat Desertification, which means that the **second**



**strategic objective** has to be **to ensure that the population stays in the more depopulated areas.**

The combination of these two objectives leads directly to the **third strategic objective: the recovery of degraded areas.**

Since desertification is decisively caused by human activity and since one of the determining factors in the combat against the degradation of natural resources, the landscape and the environment is the widespread active involvement

of all economic and social agents, whether individually or through organisations and associations, the **fourth strategic objective** of the National Action Programme to Combat Desertification has to be **to increase public awareness of the question of desertification.**

Finally, since the degree of success of the combat against the risks of desertification unquestionably depends on existing knowledge and resources, and since it is absolutely essential to ensure that the question of desertification is adequately considered in the formulation and application of policy measures and instruments, whether sectorial or general in nature, we must inevitably consider a **fifth strategic objective: making the fight against desertification an integral part of policies for economic and social development.**

The National Action Programme to Combat Desertification envisages the following **five strategic objectives:**

- ↳ **Soil and water conservation.**
- ↳ **To fix working-age population in rural areas.**
- ↳ **Recovery of affected areas.**
- ↳ **Campaigns to raise public awareness of the issue of desertification.**
- ↳ **Making the fight against desertification an integral part of general and sectorial policy.**



## ▪ Specific Objectives

Bearing in mind the general direction of the strategic objectives established in the National

Action Programme to Combat Desertification, the following specific objectives have been defined:

↳ **Regional, rural and local development**, as a determining factor in fixing the population in regions more susceptible to desertification and drought, and in reducing human pressure on more densely populated areas.

↳ **Water resources management policy** designed to ensure its territorial integration, combining different water uses with the protection of the environment and the conservation of natural resources.

↳ **Organisation of the agents for economic and social development** around their professional, economic, cultural, sporting and environmental interests, as a way forward to active participation in decisions affecting the local population and in enhancing and improving the territory.

↳ **Concerted research** into phenomena which lead to desertification and how to fight them, experimentation and practical application of results.

↳ The creation of **centres and demonstration fields** to illustrate good techniques for soil and water conservation.

↳ Improvement of the conditions for an environment-friendly **agricultural activity**.

↳ **Permanent information and public awareness** campaigns aimed at different sections of the population, inhabitants and decision-makers, on the question of the fight against desertification and drought, and the contribution they make to the defence of Life on Earth.

↳ Expansion and improvement of forests and their management, in order to reinforce the role of **forestry** in conserving soil and water.

↳ Identification of the areas most affected and allocation of the resources necessary to **recover degraded areas**.




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## AXES OF INTERVENTION AND OPERATIONAL GUIDELINES

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Considering the strategic objectives defined for the National Action Programme to Combat Desertification as a guiding framework, and bearing in mind the specific

objectives mentioned above, the following lines for intervention and action have been defined for the fight against desertification and drought:

### ▪ **AXIS 1 – Soil and Water Conservation**

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- ↳ Draft and ensure application of codes of good practice for farming and forestry.
- ↳ Support investment in small-scale irrigation schemes.
- ↳ Broaden support for the continuation of traditional agricultural systems which generate positive environmental externalities.
- ↳ Reinforce support for the continuation of farmland areas within forests.
- ↳ Encourage and support rural extension services.
- ↳ Reinforce support for family and part-time farming.
- ↳ Create a Centre for Irrigated Crops and to undertake the re-conversion associated with the Alqueva project.
- ↳ Consolidate the Vale Formoso Experimental Centre as a centre for research in soil erosion.
- ↳ Take measures to structure land ownership patterns.
- ↳ Expand support for biological farming and the certification of quality products.
- ↳ Expand aid for forest grazing.
- ↳ Reinforce fire detection and prevention systems.
- ↳ Adapt aid to drought conditions.
- ↳ Expand aid for the continuation of thickets of native species.
- ↳ Ensure that the issue of desertification is taken into account in the Regional Forest Plans and in the Management Plans.
- ↳ Foster the land consolidation in burnt areas.
- ↳ Ensure the contribution of the Watershed Plans to the fight against desertification.
- ↳ Condition activities aiming to defend water courses.
- ↳ Expand stream training work.
- ↳ Expand work to clean and preserve water courses.
- ↳ Ensure that the National Plan for the Rehabilitation of the Hydrographic Network is properly applied.

- ↳ Monitor urban/industrial pollution.
- ↳ Manage water resources in an integrated way.
- ↳ Reinforce the defence of reservoirs.
- ↳ Support the recycling of waste water.
- ↳ Draft emergency plans for drought situations.
- ↳ Ensure that rural infrastructures can deal adequately with maximum stream flows.

## ▪ **AXIS 2 – Keeping the Working Population in Rural Areas**

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- ↳ Ensure land use planning and management.
- ↳ Improve basic infrastructures and accessibility.
- ↳ Implement a decentralised administrative structure.
- ↳ Promote modernisation and renovation of farming and encourage agriculture to perform a variety of functions.
- ↳ Encourage the continuation of traditional modes of production which have positive effects in environmental terms.
- ↳ Support forestry and encourage and ensure the sustainable management of forests.
- ↳ Guarantee the development and consolidation of towns, villages and other small and medium sized settlements.
- ↳ Encourage and support the diversification of the economic structure of rural areas.
- ↳ Support renovation of real estate and the recuperation of heritage and built space.

## ▪ **AXIS 3 – Recovery of Areas most Threatened by Desertification**

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- ↳ Support the recovery of farming records.
- ↳ Promote the drainage and conservation of soils.
- ↳ Foster and support environmental re-qualification.
- ↳ Reinforce support for afforestation and forest protection.
- ↳ Widen and adapt agro-environmental measures to the objectives of the fight against desertification.
- ↳ Modulate the type and level of support to agriculture and forestry in view of the degree of susceptibility to desertification.
- ↳ Improve and valorise land.



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## ▪ **AXIS 4 – Research, Experimentation and Diffusion**

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- ↳ Research the causes of drought and desertification.
- ↳ Research and apply means of fighting drought.
- ↳ Produce soil and interpretative charts in a larger scale.
- ↳ Harmonise Portuguese and EU soil charts.
- ↳ Prepare pilot projects on the protection and enhancement of cork oak stands.
- ↳ Create demonstration fields.
- ↳ Enrich school and university syllabuses.
- ↳ Ensure training and refresher courses for technical staff.
- ↳ Promote and implement environmental education.
- ↳ Organise public awareness campaigns on desertification.
- ↳ Support Farmers' Organisations (visits, diffusion of results, etc.).
- ↳ Publicise hydrological, hydro-meteorological and agricultural forecasts.
- ↳ Publicise the National Action Programme to Combat Desertification.

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## ▪ **AXIS 5 – Ensuring that Desertification is Included in Development Policy**

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- ↳ Include the issue of desertification in the national and regional objectives of research programmes.
- ↳ Take account of the issue of desertification in the activity plans of public bodies.
- ↳ Weigh up the needs related to the fight against desertification and drought in the ambit of work to plan and manage land use and in defining national strategies for nature conservation and the planning and management of water resources.
- ↳ Take the strategic and specific objectives of the National Action Programme to Combat Desertification into account in policy measures and instruments for economic and social development."
- ↳ Reflect the objectives of the National Action Programme to Combat Desertification in all activity related to the programming of EU support, especially in the areas of environment, agriculture and rural and infrastructure development.

## IMPLEMENTATION, MONITORING AND ASSESSMENT

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The guidelines for the implementation of the National Action Programme to Combat Desertification derive from the strategic objectives adopted, and also from their being part of a framework which is being applied world-wide by the United Nations Convention to Combat Desertification and Drought

At the national level, the strategy for action necessarily includes the development of partnerships among government bodies, and between government bodies and NGOs, with the aim of involving people directly in discussion of the question of desertification and the solutions to be adopted in each concrete situation.

In the wider framework of application of the Convention to Combat Desertification, experience of drafting the National Action Programme to Combat Desertification and its application and practical results will be a major contribution to the Portuguese participation in the Regional Action Programme for the Northern Mediterranean (Annex IV) of the Convention to Combat Desertification. Also within this framework, there are important relations to develop with the southern Mediterranean countries (the MAGREB countries) and with Portuguese-speaking countries, especially Portuguese-speaking African countries.

The inter-relation between procedures for the application of the Convention to Combat Desertification and those of the Conventions for the Conservation of Biodiversity and on Climate

Change should also be borne in mind, together with the process of the Community Space Development Scheme.

The nature of the National Action Programme to Combat Desertification thus makes it essential that there should be an ad-hoc structure to ensure co-ordination and monitoring of the implementation of the Programme, together with articulation and integration of the programme in the spirit and procedures linked with application of the UN Convention to Combat Desertification. A National Committee to Co-ordinate the Fight against Desertification should be set up to perform this task.

Assessment of the progress and difficulties in applying and developing the National Action Programme to Combat Desertification is absolutely essential to its success. In this context, monitoring and assessment of the policy measures and instruments which are part of the aim of combating desertification, and monitoring of the impact of action on the environment, natural resources and the territory require the definition and application of suitable procedures, both regarding compilation and systematisation of relevant information and concerning the production of quantitative and qualitative indicators which will make it possible to analyse how the situation has evolved. A National Desertification Observatory working closely with the National Committee to Co-ordinate the Combat against Desertification will make it possible to ensure monitoring and assessment of the programme's implementation.

## Desertification Sensitive Areas Index



Source: INAG / DSRH