

Addressing Desertification

A review of EC policies, programmes,
financial instruments and projects



EUROPEAN COMMISSION



May 97

Cover photographs:

1. Millet growth around a village near Niamey, Niger reflects the underlying soil fertility gradient - Joost Brouwer / Wageningen Agricultural University
2. Goats, sheep and cattle being taken to pasture in Burkina Faso - Mark Edwards / Still Pictures
3. Wheat growing in the Rambla Albufera, South East Spain - John Thornes / Kings College London
4. Training in budding and grafting techniques, Haryana, India - Aravalli Hills Project

Back Cover photograph:

1. Children planting a seedling as part of the Regional Training and Information Programme for the Environment (PFIE) in the Sahel - CILSS / INSAH

A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (<http://europa.eu.int>)

Cataloguing data can be found at the end of this publication

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Addressing Desertification

**A review of EC policies, programmes,
financial instruments and projects**

**Report prepared for
the first Conference of the Parties
to the International Convention to Combat Desertification
in those countries experiencing serious drought
and/or desertification, particularly in Africa.**

European Commission

28
May 97

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Chris Reij

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Abbreviations used in this report

ACP	African, Caribbean and Pacific States of the Lomé Conventions
ALA	Asian and Latin American States having signed EU Cooperation Agreements
CAP	Common Agricultural Policy
CCD	Convention to Combat Desertification
CILSS	Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel
CSF	Community Support Frameworks re Structural Funds
EAGGF	European Agricultural Guarantee and Guidance Funds
EC	European Community
ECU	European Currency Unit
EDF	European Development Fund
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ERDF	European Regional Development Fund
ESDP	European Spatial Development Perspective
EU	European Union
INCD	International Negotiating Committee for the elaboration of a CCD
LIFE	Financial Instrument for the Environment
Lomé IV	Fourth ACP-EC Convention signed in Lomé, Togo
mECU	Million ECU
NGO	Non-Governmental Organisation
NIP	National Indicative Programme
RIOD	International Network of NGOs on Desertification
RIP	Regional Indicative Programme

“The Community” The European Community
“The Commission” The European Commission

Executive Summary

This report provides a descriptive review of the policies, programmes, projects and financial instruments of the European Community aimed at combating desertification. It is prepared for presentation at the First Conference of the Parties to the International Convention to Combat Desertification to be held in Rome, September 1997.

Convention to Combat Desertification (CCD)

The Community has reaffirmed its commitment to addressing dryland degradation in developing countries and within its own Member States through signature of the CCD in October 1994. In 1997, the EU's ratification of the Convention and the occasion of the First Conference of the Parties provide opportunities for the Community to take stock of its past activities in this field and examine ways in which its policy and financial instruments may be used in future to fulfill the obligations laid down in the Convention.

Desertification is defined as :

Land degradation in arid, semi-arid and dry sub-humid areas resulting from climatic variations and human activities.

In summary, land degradation comprises a range of processes, such as erosion and declining soil fertility, leading to the reduced capacity of dryland areas to produce useful outputs or sustain wildlife and other organisms. It affects the livelihoods of millions of farmers, herders and their families, across the globe.

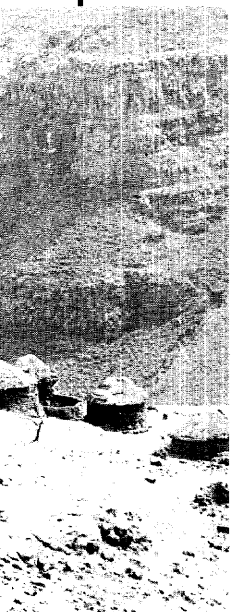
Geographical Extent The processes of desertification were first recognised in the Sahelian region of West Africa. However dryland degradation is now accepted as a worldwide problem. All regions of Africa have been affected by drought conditions and pressures on land as well as parts of Asia and Latin America. The CCD also acknowledges that economically dis-

advantaged rural areas in the Northern Mediterranean region including areas within EU Member States have experienced the degradation of soils, vegetation and water resources.

Developing Countries The Community has built upon its long standing commitment to addressing desertification in developing countries, particularly in Africa - most prominently manifested in 1986 by the EC Action Plan for the Protection of Natural Resources and Combating Desertification in Africa. Under this plan, 1.7 billion ECU was committed to projects from 1986-1989. Over the period 1990-1995, a further contribution of over 524 mECU has been committed to approx 210 development projects in dryland areas of Africa, Asia and Latin America. This includes actions supported under the 7th EDF, the funds for Asia and Latin America, the Mediterranean Protocols and various thematic budget lines.

By adopting an integrated approach, most of these projects strongly focus on addressing the socio-economic factors which can contribute to desertification by aiming at improved practices for agricultural land use and water management. Many projects stimulate the income generating capabilities of rural communities, reducing pressures to abandon land. The promotion of alternative energies and fuel-efficient stoves amongst communities which traditionally relied on woodfuels in combination with afforestation projects has also been instrumental in preventing over-exploitation of diminishing vegetation cover. Other actions concern raising awareness of environmental and land use problems amongst local populations, institutions and authorities as well as within central government.

Various research programmes have supported 57 projects since 1991 with a total EC contri-



bution of approximately 28 mECU. These projects have included investigation of desertification processes, soil conservation and regeneration methods, water resource management techniques, genetic improvement of tropical dryland crops and the potential for their diversification, and use of remote sensing technologies to assess land degradation etc.

Within the EU Member States, the European Community has financed many programmes aimed at understanding and addressing the problems experienced in the dryland regions of the Northern Mediterranean.

EC environmental policy contributes to action in this field by promoting a variety of actions such as legislation, spatial planning and the use of environmental impact assessments. Combating desertification was chosen as a priority area within the LIFE programme in 1995 and 7 pilot projects were cofinanced in that year for just under 2.5 mECU.

The Fourth Framework Research Programme and its predecessors have also identified desertification in the Mediterranean area as a priority and 45 multi-disciplinary research projects have been cofinanced from 1991-1996 at a cost of over 55 mECU. These projects have been aimed at a thorough understanding of the complex genesis and evolution of desertification in order to provide guidelines for rational management of desertification prone areas and protection or possible rehabilitation of threatened zones.

The Community also fosters agricultural and rural development measures implemented by the national administrations and regional authorities through programmes for funding throughout the Member States. The Structural Funds, agricultural policy measures under the EAGGF and the Cohesion Fund can all play a role in guiding land use in the rural areas of the southern European Member States. This

report looks into the relevant measures supported in recent years including the Agri-environment Programme, the Agro-forestry Programme, the activities within the Community Support Framework Programmes, spatial planning initiatives and pilot projects as well as the afforestation and erosion control measures supported under the environmental aims of the Cohesion Fund. Assessment of the total financial commitment to these actions is difficult due to the fact they are classified with various other activities within larger programmes dealing with water management, afforestation etc.

Conclusions Most of the policies and programmes promoted by the Community described here have been devised in terms which correspond to the principles and recommendations put forward by the CCD, which is held to represent international consensus on best practice in this field. In the period examined, Community policies and programmes have contributed in various ways to addressing desertification in different regions of the world.

There is scope, however, for improving the environmental sensitivity of other Community policies and programmes which may be implemented in the same areas. Improvements in the coordination and integration of relevant policies as well as increasing the involvement of affected communities can yet be made.

Finally research programmes in both developing countries and in the European Union have implemented a substantial number of projects aiming to understand the causes of land degradation as well as developing integrated methods and proposals for resolving the problems involved. It is important to continue these efforts and to ensure that the results of research are fully taken account of in land management policies, programmes and projects.

Foreword

This report provides a review of the policies, programmes, financial instruments and projects of the European Community aimed at combating desertification. The purpose is to inform other parties to the Convention to Combat Desertification (CCD) about the experience gained by the EC in this field. It is intended that this report be presented by the EC at the first meeting of the Conference of the Parties to the Convention due to be held in Rome, September 1997.

The material reviewed here covers both the extensive programmes of development cooperation with countries in sub-Saharan Africa, the Mediterranean, Asia and Latin America which have been supported since 1990, as well as the substantial body of work supported to address problems faced by dryland regions in southern Europe. This broad geographical coverage, involving both Europe and developing countries provides an innovative aspect to the report and demonstrates the strong potential for building on areas of strength across the range of activities supported by the European Community.

Introduction to the Convention to Combat Desertification

The commitment to negotiate a Convention to Combat Desertification was taken at the 1992 Earth Summit at Rio. A series of five negotiating sessions led to the final text being agreed in June 1994, which was then opened for signature. Since this time, the International Negotiating Committee for the Convention on Desertification (INCD) has been continuing to meet to clarify the meaning and implications of articles within the Convention, and to prepare for the first Conference of the Parties by identifying possible candidate organisations to take forward the mandate for following up the Convention. One hundred and fifteen governments have signed the Convention and, after

the submission of the fiftieth ratification instrument to the United Nations in New York, the Convention entered into force in December 1996.

The Convention contains a total of 40 articles, covering six main sections - Introduction and definitions; General obligations of the different parties; Action programmes, scientific and technical cooperation; Financial provisions, institutions for implementing the Convention and procedures for implementation; Settlement of disputes and voting rights; and Final provisions concerning signature, ratification and entry into force. There are, in addition, four regional annexes covering Africa, Asia, Latin America, and the Northern Mediterranean Region



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Desertification is defined in Art 1 of the Convention as *“land degradation in arid, semi-arid and dry sub-humid areas resulting from climatic variations and human activities”*.

This definition makes clear the current understanding regarding desertification and related processes, as the term itself had led, in the past, to a certain degree of confusion. Desertification is taken by the Convention as comprising a range of processes leading to the reduced capacity of dryland areas to produce useful outputs - crops, fodder for grazing livestock, bush and tree cover, wildlife and other organ-

isms. In this report the terms "desertification" and "dryland degradation" will be used interchangeably.

Desertification has often been associated in people's minds with the idea of desert advance, rather than a more widespread process of degradation in areas which may be hundreds of kilometres distant from the desert margin. While dune mobility and encroachment by sand on fertile land, roads and settlements do constitute a problem in certain localities on the edge of desert areas, 'desertification' of dryland farming and pastoral areas represents a more substantial threat to the livelihoods of millions of farmers and herders across the globe.

Degradation of dryland areas involves a range of processes, which include: the erosion of soils through water and wind erosion, falling levels of soil fertility and damage to its structure, loss of vegetation cover and a change in its species composition, reduced availability and decline in the quality of water supplies, loss of wildlife and a fall in the biological diversity of plant and animal life. Such processes reduce the productivity of crop and livestock systems in dryland areas, and increase the vulnerability to food crisis of populations depending on these resources.

While these processes provide the most evident signs of the problems that occur within dryland systems, the underlying factors which cause such adverse effects are many and various, and operate at different levels. At the plot level, for example, particular patterns of soil tillage may accelerate rates of erosion, especially on sloping land. At national level, a lack of clarification regarding land tenure and processes for resolving conflicts over access to land may provide insufficient security for

farmers to invest their time and effort in constructing soil conservation measures, such as terraces and bunds. At international levels, the price of commodities produced by dryland peoples, such as cotton, groundnuts or beef, will affect the economic incentives faced by land users. Rising prices provide encouragement to farmers to produce more and, at the same time, raise revenues which can be invested to increase capacity.

Approach of the Convention towards enabling/enforcing action.

The Convention text represents the combined experience and consensus view regarding how best to support more sustainable drylands development. Certain key principles underlie the recommendations and commitments outlined in the Convention which include:

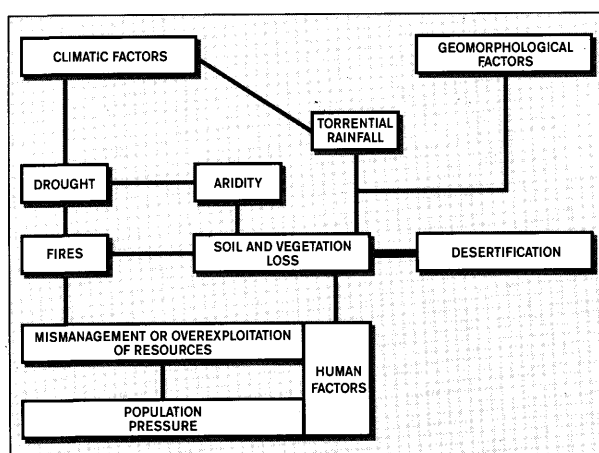
Building on local knowledge and skills: the text recognises that local people have much relevant knowledge about their environment, from which interventions and technical improvements can be developed. Indigenous technologies of peoples around the world are often well suited to local conditions, although they may need adaptation as circumstances change. Agencies need to work more closely with local people to identify ways of improving the performance of existing technologies.

Promoting participation: The Convention argues strongly in favour of a participatory approach to dryland development, whether in the process of elaborating a National Action Programme, the design of local development plans, or the improvement of existing farming technologies. Participation of local populations is valued for several reasons: as a means to build on local knowledge and priorities, ensuring that programmes and interventions are well-designed for local circumstances and providing some chance of longer term interest and sustainability.

Decision-making needs to be decentralised: It is now recognised that governments have tried to do too much, and intervene in many fields where it is not appropriate. Instead, they need to devolve much power and responsibility to lower levels, to build on the initiatives of farmers and herders, and strengthen local organisations. For too long, governments have tried to plan how land should be managed and used,



Factors which contribute to desertification



taking little account of how farmers (and herders) were actually using land. There is a strong commitment within the Convention towards shifting power from central government to local land users, which needs to be built upon.

The problems of dryland areas cannot be taken in isolation: While the main focus of the Convention is on management of resources in rural areas, this cannot be separated from opportunities to develop and diversify economic activities in other sectors. Hence, the text acknowledges the links between pressures on land and soils, and growth of employment and incomes elsewhere in the economy. For example, many farmers in developing countries rely on off-farm activities, while those in the urban sector often maintain strong links and interests in rural areas. Opportunities for farmers to earn cash by sale of animals or crops often depend on the operation of very distant markets and prices, while the sums available for farmers to invest in land improvement may stem from migrants' earnings gained thousands of miles away in European capitals. In southern Europe, current pressures on available resources are clearly very strongly linked to other sectors of the economy, particularly tourism.



Camilla Toulmin

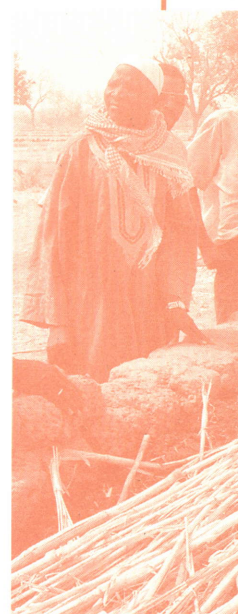
Partnership and collaboration: All interested parties - NGOs, community based organisations, governments, donor agencies, and researchers - are urged to work together, to avoid competition and help build longer term programmes. Governments of affected countries are committed to set up a coordinating unit within the central administration to try and get the relevant ministries working together. Relevant donor institutions are encouraged to appoint a 'chef de file' who acts as catalyst and helps harmonise donor support for drylands work.

Avoiding the duplication of plans: Parties to the Convention are committed to develop a National Action Programme (NAP) to Combat Desertification. However, rather than instituting a new plan, with new organisation, staff etc., parties to the Convention must take account of existing environmental initiatives, and build on these where feasible. Where a country is already half way through preparation of a National Environment Action Plan or a National Conservation Strategy, the NAP can be added to such a process to ensure that drylands issues are tackled within the existing framework.

More money alone is not the answer: The Convention text recognises that the amount of money devoted to drylands development is much less important than how it is used. Existing sources of funding could be used more effectively and a greater share allocated and used at grassroots level. While the funding of development projects remains an important element within the text of the Convention, of greater importance is the attention paid to getting the policy framework right at the national level. Within this framework land users need to have a stronger incentive and capacity to invest in improvement of their land.

Legally binding commitments: In this Convention, affected country governments and donors admit the need for a legally binding text. In the past each side has recognised the need for changes in practices but has not been willing to follow these through. The Convention provides a means to check whether the parties are taking their commitments seriously. The governments of affected countries and donor organisations must report on a regular basis on progress made with meeting their promises. While no formal legal sanctions exist, such as to fine an errant party to the Convention, it is hoped that strong moral pressure will encourage governments to abide by the rules they have agreed.

Subsidiarity is important: Linked to the question of decentralisation and building on local skills, is the emphasis explicitly given to the importance of subsidiarity as a principle underlying commitments under the Convention. Consequently, the actions proposed at sub-regional and regional level are those which can only be usefully carried out at this higher



level. The stress is on support to local planning, within a national framework.

Resolution on Urgent Action for Africa

Throughout the international negotiation sessions in the elaboration of the CCD (INCD), particular attention has been placed on Africa. Annex I to the Convention which concerns Africa is the longest and most detailed.

A Resolution on Urgent Action for Africa was also agreed at the time of the adoption of the Convention text in June 1994, encouraging governments of affected African countries to take forward pilot measures to implement the Convention during the interim period before the Convention entered legally into force. Hence, many governments in Africa, and also elsewhere, with the support of multi- and bilateral agencies, have started work on National Programmes of Action to Combat Desertification (NAPs) as outlined within the text.

Role of the EC in establishment/negotiations/ratification of the Convention

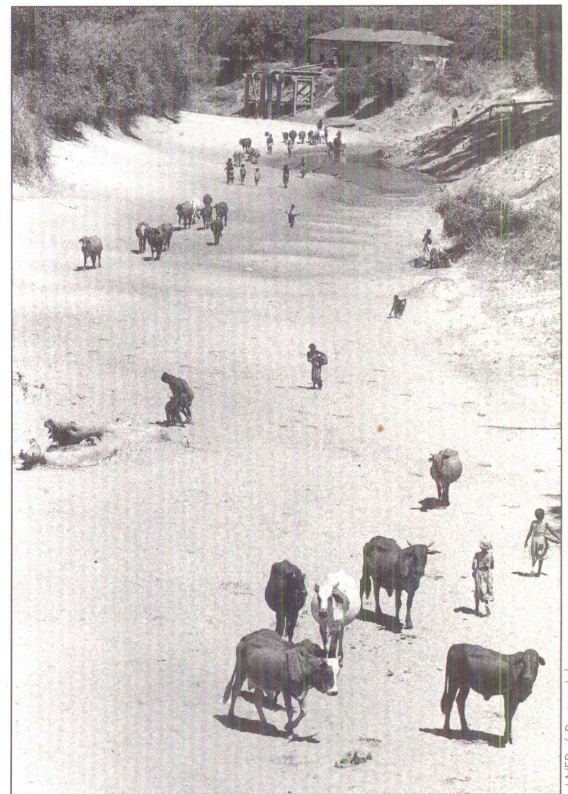
The EC has confirmed its commitment to combating desertification most recently with the signature of the UN Convention to Combat Desertification. The Community has been present and involved in each of the Negotiating Committee (INCD) sessions and the ratification instrument is likely to be presented to the Council of the European Union for adoption during the term of the Dutch Presidency (January-June 1997).

Extent of desertification around the world

Data on the incidence and degree of desertification in the world's dryland areas stem from a variety of sources, all of which are subject to certain drawbacks. At a global level, certain surveys have been carried out over the last decade to assess the extent of soil degradation by region, such as the GLASOD survey (global assessment of soil degradation) commissioned by the FAO. This survey showed that 19.5 % of drylands worldwide were suffering from desertification.

A second survey carried out by the ICASALS group in Texas came up with a much higher figure of 69.5% of drylands worldwide suffering from desertification, due to their inclusion not

only of areas affected by soil erosion, but also where a change in vegetation had occurred. Where perennial grasses had been replaced by annuals, the shift in species composition was considered to be negative, whether or not such changes were accompanied by soil erosion. The figures usually quoted by UNEP are based on the ICASALS data, and estimate 70% of the world's drylands areas as suffering from some degree of desertification with an estimated 900 million people worldwide at risk from problems of degradation.



Nomads drive their cattle towards the market along a dry river bed

Such large estimates have been disputed by other scientists who have argued that the nature of the data on which they are based is far too poor to arrive at an aggregate figure of any accuracy. Other surveys provide estimates of soil related degradation on a continent wide basis, such as those on soil nutrient losses in sub-Saharan Africa (Stoorvolgel & Smaling, 1990) from which overall trends in soil quality can be gauged. While an improvement over the broader global surveys, these regional assessments also suffer from the paucity of data and the problems associated with scaling up data derived at plot level to higher levels.

In contrast to these surveys estimating levels of degradation at continental or global scales, there is a growing body of research which presents a

rather different picture of what is happening in dryland areas. This picture shows that in some places soils are being improved, conservation is being undertaken effectively, and farmers are intensifying their agricultural system in a seemingly sustainable manner (Tiffen et al., 1994, Reij, Scoones & Toulmin, 1996).

Such studies provide some important clues regarding significant elements underlying sustainable farming practices which include: the need for farmers to gain economic benefits from improvements to their land, the great potential for adapting traditional techniques for managing soils and the importance of providing an overall policy framework within which farmers feel their rights to control access to land will be properly assured. These micro-level studies challenge the more gloomy predictions for African agriculture generated by global surveys, and show the importance of adopting a locally tailored approach to dryland development. Measures which are appropriate in one setting may not be relevant elsewhere.

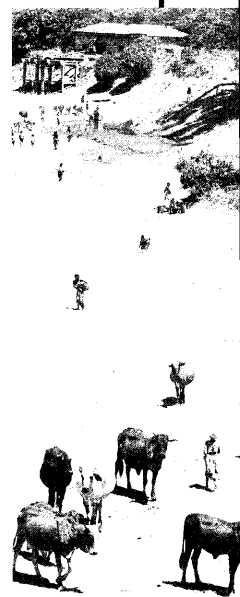
Desertification in the European Context

The Convention to Combat Desertification recognises that dryland regions of the Northern Mediterranean are suffering desertification on a wide scale. In this region, land degradation is the result of the effects of changing patterns of land use combined with harsh climatic events. Over the centuries, human communities whether hunters, herders or farmers have structured and re-structured the physical environment creating the current familiar images associated with the Mediterranean landscape - terraces and orchards, pasture and scrub on dry hillsides, etc.

In recent years however, several factors have combined to increase the risk of land degradation. Greatly intensified agricultural production, has often involved unsustainable exploitation of limited sources of water, overgrazing of pastoral land or inappropriate tilling practices, etc. Conversely, abandonment of land can also lead to desertification through increased risk of damage caused by fires and loss of vegetation cover. Urban and tourist development along the coastlines have shifted population densities causing the exodus of people from rural areas. In addition, new urban centres bring new pressures on patterns of land management and competition for limited water supplies.

These anthropogenic factors in combination with prevalent climatic conditions - fiercely dry periods followed by short intensive rainfall events - lead to serious problems of soil erosion. In Spain alone, data from 1993 suggest that almost 1 million hectares of land are already considered as desert lands and another 7 million have been identified as being at high risk of desertification.

There is a clear need therefore for the development of conservation measures for sensitive soils which will help control or alleviate the worst excesses of land degradation. However it is vitally important that these be more explicitly linked to the economic forces which affect it and must therefore be coordinated within integrated policies at the Community level. The evolving framework of prices and policies have influenced the incentives for the different actors to use land in various ways, providing a challenge for achieving more sustainable patterns of resource use.



Introduction

1.0

EC involvement in programmes to combat desertification

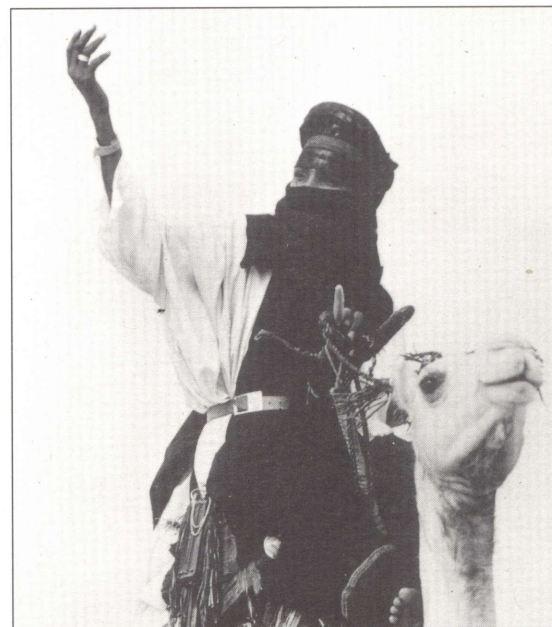
This report provides a review of the policies, programmes, projects and financial instruments of the European Community aimed at combating desertification.

The following chapter gives an overview of how desertification is addressed within development cooperation. Taking each geographical area in turn, the first section will look at the different programmes and funding instruments within the European Community's development cooperation policy and will provide a general summary of the types of intervention supported. In order to provide a clearer illustration of the type of programme financed, six projects have been selected as examples and are presented within the narrative. The financial commitment to projects in developing countries are identified for each region - the overall total amounts to approximately 524 mECU for the period 1990-1995.

Emphasis is given in this section to the programmes in sub-saharan Africa given the particular severity of desertification in these regions and the EC's long standing commitment to this area. As described further in chapter 2, the EC's involvement in combating desertification in ACP countries was boosted with the adoption of the EC Action Plan for Africa in 1986. The present report will serve as an update to the 1989 Progress Report on the Action Plan. Projects in the Mediterranean, Asia and Latin America are also examined.

In addition to the implementation of long term development projects throughout the world, the European Community supports an extensive programme for scientific and technological research in developing countries. The second section of chapter 2 will describe the various instruments which promote

research in the field of tropical and subtropical agriculture through institutions in the developing world in collaboration with those in the European Union. The total financial commitment in the period 1991- 1996 amounts to just over 28 mECU.



In chapter 3, the Report examines the many interlinked policy instruments which have supported action to combat desertification in the dryland southern EU Member States. With the ratification of the Maastricht Treaty, the EU has adopted a horizontal approach in the implementation of its environmental objectives. The chapter therefore starts with a brief introduction to the Environmental Policy context and thereafter looks in turn at the relevant sectoral policies, broadly following the division of responsibilities between the different DGs involved (see schema below). The main financial instrument of the EC's environment policy is named LIFE which has co-financed desertification pilot projects to the extent of 2.37 mECU in 1995.

The first section of chapter 3 concerns the many important research programmes which

have been supported by the European Community leading to detailed knowledge of the physical processes of land degradation as well as the multiple socio-economic factors which can cause desertification or exacerbate its effects. Just over 55 mECU has been contributed over 1991-1996. Projects are generally 50% co-financed which means that a substantial additional sum has been released by other bodies through the approval of EC financing.

Following this, the report looks at the agricultural and forestry aid schemes that have been set up with the reform of the Common Agricultural Policy. It is clear that these measures have had a positive impact towards maintaining or improving the vegetation cover of southern rural landscapes, however it has not been possible to establish a quantitative assessment of the contribution to desertifica-

tion control under this heading. Forestry measures to prevent fires and programmes to improve the knowledge of the effect of fire damage on Mediterranean ecosystems are also examined here.

Chapter 3 then turns to the regional development objectives of the Structural funds which target measures for improving the rural environment. As explained further in chapter 3, a quantitative assessment of the financial contribution made to anti-desertification measures under these Funds is not possible as relevant projects are usually classified within larger programmes dealing with water management, afforestation, etc. Secondly, other regional policy measures which promote land use planning are outlined, particularly those Community Initiatives recently launched to address drought and desertification. Finally, the contri-



Distribution of administrative responsibilities within the Commission

Given the diverse contexts for addressing desertification, policies and programmes are dealt with by various arms of the European Commission. Seven Directorates General of the European Commission have the main responsibilities in this field and the division of their responsibilities is included in the schema below.

DG	Title	Main Policy Instruments	Main Financial Instruments	Other official bodies of the Community	
VIII	Development (Bilateral and development cooperation relations with the African, Caribbean and Pacific States of the Lomé Convention and South Africa)	Lomé Convention	EDF - European Development Fund Budget lines	Delegations	Delegations of the European Community in developing countries
IB	External Relations (Southern Mediterranean, Middle and Near East, Latin America, Southern Mediterranean, South East Asia and North - South Relations)	ALA Agreements MEDA Programme	ALA Funds MEDA Funds Budget lines		
VI	Agriculture	Common Agricultural Policy Rural Development	EAGGF-European Agricultural Guidance and Guarantee Fund Budget lines		
XI	Environment, Nuclear Safety, and Civil Protection	Fifth Environmental Action Programme	LIFE Other Budget Lines	EEA	European Environment Agency
XII	Science, Research and Development	Fourth Framework Research Programme	Environment and Climate Programme INCO Programme		
JRC	Joint Research Centre	Fourth Framework Research Programme	Environment and Climate Programme Actions in support of Commission		
XVI	Regional Policy and Cohesion	Regional Policy Cohesion Policy	ERDF-European Regional Development Fund Cohesion Fund		

1.0

bution of the environmental section of the Cohesion Fund is described. Projects committed over 1993-1995 to the control of erosion and reforestation actions have been cofinanced to the extent of over 286 mECU.

Coordinating the Commission's approach to addressing desertification

The wide geographical scope and cross sectoral nature of the programmes concerning desertification necessitates effective coordination between the relevant Directorates General. One formal mechanism for achieving this is a regular meeting of core Commission officials at the operational level from each relevant DG. In 1996, an Inter-Service group was appointed to coordinate policy on combating desertification. The members of this group have been the principal preliminary source of information for the preparation of this report. DG VIII, which is responsible for questions of development policy and for relations with the ACP states, has been appointed to the role of "chef-de-file" within the Commission as a whole to coordinate this Report and the response to the challenges and obligations of the International Convention to Combat Desertification.

Several other formal and informal coordination mechanisms exist within and amongst each of the various DGs. In regard to Development policy initiatives, coordination of activities is undertaken by the Sustainable Development and Natural Resources Unit of DG VIII which oversees all environmental policy issues relevant to ACP countries. In regard to environmental policy within the European Union, various services of DG XI take a coordinating role.

Coordination however extends further than Commission itself. Complementarity of EC development projects with the policies of the Member States is continually maintained through monthly EDF and ALA management committees. In the case of policies applying within the European Union the principle of subsidiarity applies to all Community programmes such that the Member States have an integral role to play in their implementation. As explained in chapter 3, in the case of the Structural Funds the additional principle of partnership enshrines the participation of national administrations and regional authorities in the preparation and implementation of the development plans and operational programmes.



WFP / T. Fincher

1.0

Addressing Desertification in Developing Countries

2.0

Brief introduction to EC Development Cooperation

The European Community's Development Cooperation is based on Title XVII of the Treaty on European Union and is governed within three main policy frameworks which correspond to different geographical regions, each of which supports the funding of relevant projects to address the problem of dryland degradation. Actions to combat desertification are described in the next section, after a brief description of the different policy and financial frameworks involved.

Lomé Convention and the European Development Fund

The main policy instrument of the Community's development cooperation remains the Lomé Convention. It is currently in its fourth term and now benefits 70 nations in sub-Saharan Africa, the Caribbean and the Pacific collectively known as the ACP states. Several financial instruments exist to implement the aims of the Lomé Convention of which the most important is the European Development Fund (EDF). In the seventh EDF, (1990-1995), the total amount available for 68 ACP states was 10,800 mECU not including loan capital.

Indicative plans setting out the development priorities of each country are drawn up and proposed to the Commission by each ACP state every five years. These are then negotiated and adopted with an indicative five year budget. The extent to which any sector is addressed within these National Indicative Programmes (NIPs) will depend largely on the priorities identified by the governments of the ACP states themselves and on the overall financial envelope decided by the Commission for each country. On this basis detailed projects are later proposed for financing. In a sim-

ilar way, regional indicative programmes are also drawn up with the governments of West, East and Southern Africa, the Caribbean etc. to support cross border cooperation and regional integration.

ALA Agreements and Funds

Thirty countries in Asia and Latin America (ALA) have signed Cooperation Agreements with the European Union, some at the bilateral level and others at regional level. Funds are made available for these countries under Regulation 443/92. During the period 1991-1995, 4,000 mECU was available of which 750 mECU were in the form of loans from the European Investment Bank (EIB). Implementation of these Agreements is made on the basis of financial and technical assistance projects, proposed by or through governments of the beneficiary states.

Whether a particular sector is supported for financing under these Funds depends mainly on the projects proposed and the extent to which they correspond to the priorities identified by the Commission.

In 1992, a Council Decision adopted in direct response to the Rio Earth Summit required that 10% of ALA funds be committed to projects concerning the protection of the environment and natural resources over the period 1991-1995. A recent external evaluation of environmental performance of EC programmes in developing countries concluded that this target has been reached (ERM, 1996).

Mediterranean Agreements and MEDA

Until recently, funding for the Mediterranean region was programmed on the basis of bilateral agreements financed under consecutive five yearly Financial Protocols on a similar footing to the ALA Agreements. In 1992, cooperation with the region was stepped up to pro-



vide the basis for an intensified Euro-Mediterranean partnership and several new 'MED' Programmes were established. One of these was MED-Campus which promotes cooperation between institutions on both sides of the Mediterranean in order to provide training of higher education staff, training of public and private sector managers and post graduate education in the fields of environment and other social and economic issues.

Over the period 1991-1996, 2,375 mECU, was available under the Financial Protocols for eleven countries of which 55% comprised loans from the EIB. The Mediterranean Agreements have now been succeeded by the new MEDA Programme adopted in July 1996. Eligible countries are Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, the Occupied Territories, Syria, Tunisia, and Turkey. Cooperation will continue to be programmed on a bilateral basis although a facility for regional cooperation has also now been set up.

Thematic Budget Lines

In addition to the three main funding sources described above, a diverse collection of thematic budget lines has been introduced at the instigation of the European Parliament from the annual budget of the European Community. These characteristically have lower budgets and tend to promote pilot projects, small-scale NGO projects or research studies. They are generally focused on particular sectors rather than geographical areas. A description of those budget lines which have financed action in the field of desertification is presented below.

Environment in developing countries (Reg 722/97)

- Applies to all developing countries.
- Total annual budget: 15 mECU
- Amount committed to desertification related projects 1990-95: 15.3 mECU
- No. of relevant projects financed: 21
- Jointly managed by DG VIII and DG IB

The budget line has existed since the beginning of 1980s and was relaunched with increased budget in 1988. One of the five priority topics concerns improving practices for the conservation of soils and farmland, management and

protection of forests and the fight against desertification.

Other priority areas include the preservation of biological diversity through the conservation of ecosystems, the improvement of the urban environment and policies of land use management and the use of environmentally sensible technologies in the field of energy. The budget line may finance EU policy analyses and environmental impact assessments as well as pilot environmental projects. Two examples of projects supported under this source of funds are included on pages 22 and 28 below.

Operations to promote tropical forests (Reg 3062/95)

- Applies to all developing countries
- Total annual budget in 1995 was 50 mECU
- Amount committed to desertification related projects 1990-95: 5.3 mECU
- No. of relevant projects financed: 6
- Jointly managed by DG VIII and DG IB

This budget line was initiated in 1992 in the framework of commitments to Agenda 21 taken at the Rio Earth Summit and is aimed at supporting the efforts of developing countries to conserve and sustainably manage their tropical and subtropical forests in both dry and humid areas. Special consideration is given to forest conservation operations which are considered to play an important role locally in the prevention of soil erosion and the restoration of degraded areas and globally in relation to climate change and loss of biological diversity.

Cofinancing of NGO projects in developing countries

- Applies to all developing countries.
- Total annual budget in 1995: 174 mECU
- Amount committed to desertification related projects 1990-95: 11.4 mECU
- No of relevant projects financed 1990-1995: 82
- Managed by DG VIII

This budget line has the overall aim of addressing directly the fundamental needs of the most disadvantaged people in developing countries. Actions are implemented through partnerships between European and local NGOs and mainly concern local rural and urban development, human resource development and insti-

tutional support to local partners. Actions of raising awareness of the European public towards development issues are also supported by the budget line to the extent of 10% of the total annual amount. Projects aimed at addressing desertification have involved improving agricultural techniques in dryland areas, local reforestation actions, and support to local community groups in the implementation of agro-ecological activities.

Food Aid and Food Security (Reg 1292/96)

- Applies to all developing countries though interventions are targeted to priority countries
- Total budget in 1995: 591.1 mECU

Community operations in support of food security consist of either supplying food products, in every sense or financing development projects relating to structural food security. A new single Regulation covering food aid and

operations to support food security was adopted in June 1996 and an increasing emphasis has been placed on actions which promote long term food security.

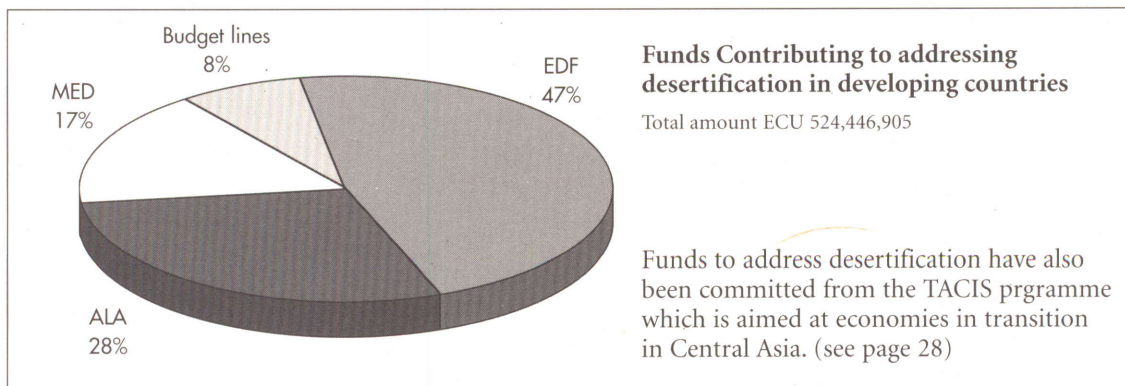
In some cases, direct food aid may be “monetised” or sold on the domestic market to alleviate chronic food shortages, thus increasing the available food supply, stabilising prices, encouraging local market activity, helping to combat monopolies, while providing precious support for the trade balance of the country concerned. Funds generated from these sales are known as counterpart funds and are used to finance integrated development programmes aimed at improving food security for the affected population groups. Projects relevant to the aims of the CCD include soil conservation actions and forestry measures as well as the improvement of food stocking and distribution systems and other measures to mitigate the effects of drought.



2.0

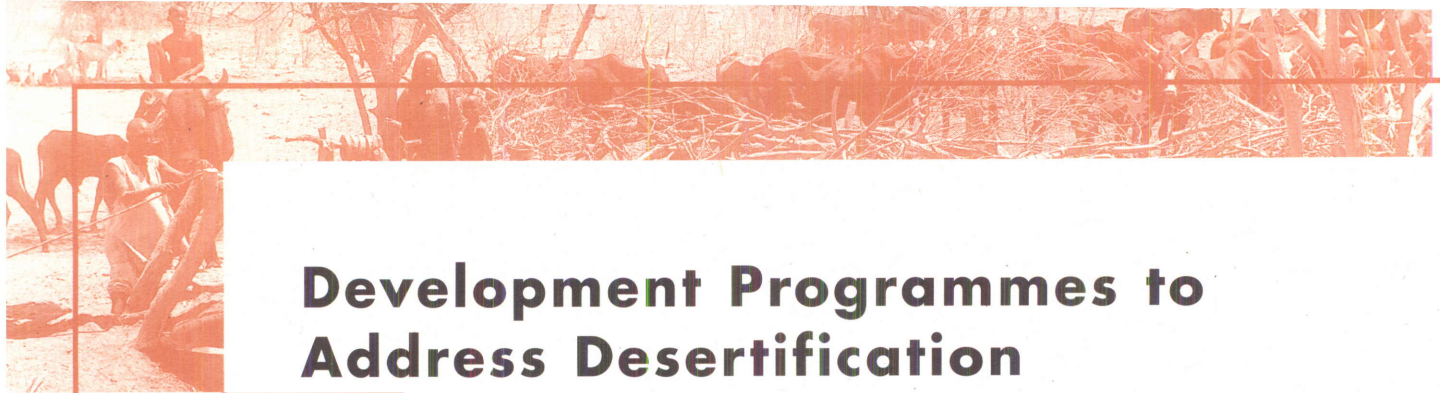
A summary table of the budgetary situation and a diagram representing the proportion of funds committed to desertification from each source are presented below.

Source of Funding	Period covered	Total funds available in mECU	Amount contributed to desertification in mECU (approx.)	No of projects financed relating to desertification
EDF	1990-1995	10,800	250	102 projects
ALA	1991-1995	4,000*	147	12 projects
Mediterranean	1991-1996	2,375*	89	20 projects
Relevant Budget Lines**	1990-1995	2,500 (approx)	42	123 projects



* Including loans from the EIB.

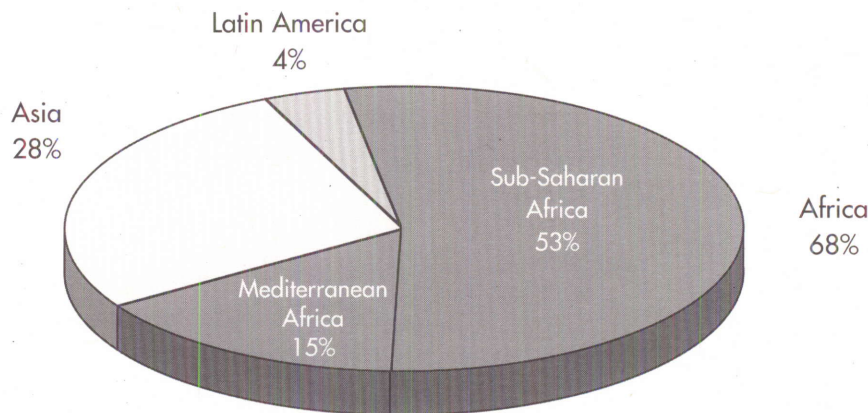
** Budget Lines B7-6000, B7-6200, B7-6201 and B7-202. Budget lines B7-200 and 201 are not included in total.



Development Programmes to Address Desertification

2.1

Having briefly described the three main political and financial frameworks of the European Community's development cooperation. This section will describe and give examples of the types of project funded under these programmes which can contribute to addressing desertification in developing countries, taking each geographical area in turn. The comparative amounts committed to desertification projects from 1990 to 1995 in the different regions are shown in the diagram below.



Total amount approx. ECU 524 million

Sub-Saharan Africa

During the early seventies and again in the mid-eighties, a series of extreme droughts struck Africa forcing the world's attention onto problems of crop failure, livestock losses and the vulnerability of human populations throughout dryland Africa. Fears of widespread land degradation markedly influenced the elaboration of the Third Lomé Convention with the ACP states in 1985. A strong emphasis was placed on food security and food self sufficiency with Drought and Desertification Control specifically addressed in a separate chapter within the agricultural policy provisions of the Convention.

In 1986, to further underline its commitment to addressing the degradation of natural resources, the Community launched the EC Action Plan for Africa Concerning the Protection of Natural Resources and Combating Desertification (see box overleaf)

This high profile policy statement emphasised the priority towards participatory projects in this field, recognising the importance of direct and indirect action, and refers to many of the principles later enshrined in the CCD.

The Action Plan was swiftly taken up within the formulation of the Indicative Programmes of many of the ACP States under the Third Lomé Convention and resulted in the development of several major national and regional programmes and projects addressing natural resource management towards the late 1980s. According to a Progress Report in 1989, 230 programmes were initiated during the period 1986-1989 representing a total financial commitment of approximately 1.7 bn ECU.

In 1990, the fourth Lomé Convention was brought into force with the significant addition of several articles within a new "Title" on

EC Action Plan for the Protection of Natural Resources and Combating Desertification in Africa, 1986

Summarised from Council Resolution of 17 April 1986

1. The European Community and its Member States shall accord priority in their respective cooperation programmes towards action to combat the degradation of natural resources.
2. The campaign will involve both direct action (involving reforestation, anti-erosion measures etc.) and indirect action (appropriate training and research, improvement of modes of production considering the effect on soil fertility, promotion of a better balance amongst people and resources, rational use of energy resources including firewood).
3. In this context, a strategy should be sought which draws largely on the affected people i.e. those men and women who in their daily fight to feed their families contribute to creating the deserts but by the same token are the most important agents in halting this process. Without their active participation, measures do not have a chance of success.
4. Drawing from lessons of the past, the importance of achieving a minimum level of intervention is emphasised. There are three criteria for effective intervention: the approach must be global and comprise interdependent measures; there must be a certain geographical concentration; and finally there should be continuity of actions in dealing with desertification, which is long lasting in nature, in order to achieve long term results. Quantitative objectives must be fixed within the programmes of the various donors.
5. A series of measures should be put in place by both the Community and recipient states such that the idea of protection of the environment becomes an automatic response within development activities. Efforts should be made by government authorities to associate local authorities more closely in their activities. These authorities should be encouraged to improve dialogue with the local populations and to work together to conserve and rationally manage natural resources. This also requires greater administrative decentralisation. Particular importance should be given to the participation of local and international NGOs as well as action at a regional level.
6. The Council underlines the importance of sustained coordination between the beneficiary states, donors, and regional organisations active in the field in order to ensure maximum consistency and complementarity in existing and future programmes. This coordination involves increasing the consistency of the aid programming of the Community and the Member States and prevailing upon them to give preference to rural sector aid, particularly environmental protection. This should be matched by a similar effort by the recipient countries.



2.1



the Environment. This confirmed within the text of the Convention that the protection of the environment and natural resources and halting the deterioration of land and forests were basic objectives of the ACP-EU partnership. These principles were recently reconfirmed in the negotiations of the mid-term review of the Convention, agreed in Mauritius in 1995.

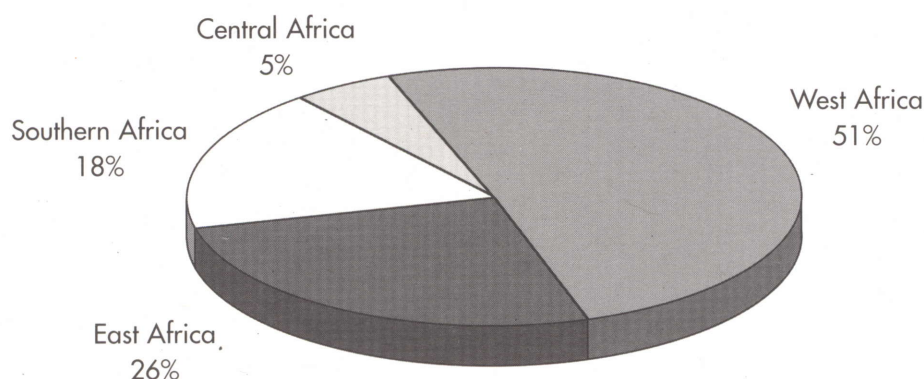


During the period 1990-1995, 84 projects at the national level and 18 programmes at the regional level which directly or indirectly address desertification have been financed under the EDF and the four budget lines applicable to sub-Saharan Africa described above. The total cost of these projects is approximately 280 mECU with 51% dedicated to West Africa (see diagram below). Just over 36% of total funds were committed to projects at the regional level.

ity of those identified aim specifically at improving agricultural methods and pastoral practices or at reforestation to improve vegetative cover or replenish woodlands which have been over-exploited for fuel. However, soil conservation efforts are commonly included in a number of projects primarily aimed at managing resources in wildlife and natural parks which otherwise become vulnerable to environmental degradation (in many affected countries these extensive parks act as barriers

Funds committed to EC desertification projects in sub-Saharan Africa by region 1990-1995

Total funds approx. 280 mECU



The total financial contribution it may be noticed is lower than the amount committed within the period of the Third Lomé Convention. However, it should be noted that the severity of the droughts in the mid-eighties led to a massive response in terms of EC cooperation assistance, and many of the projects approved in the final years of Lomé III (which were counted in the 1989 survey) have remained/become operational through the period covered by this report.

Projects have been supported in 26 sub-Saharan African countries: Benin, Botswana, Burkina Faso, Cape Verde, Central African Republic, Chad, Djibouti, Eritrea, Ethiopia, Guinea Bissau, Gambia, Kenya, Lesotho, Malawi, Mali, Mauritania, Mauritius, Mozambique, Niger, Nigeria, Senegal, Sudan, Togo, Tanzania, Zambia and Zimbabwe.

The interventions promoted by the EC throughout Africa cover the very diverse range of measures promoted in the UN Convention. Activities involving soil and water resource conservation are included within many different types of development projects. The major-

to the encroachment of desert lands). Other projects have had an important indirect impact towards addressing desertification such as those which promote the development of alternative energies and raising awareness amongst local populations and officials. The reader is referred to the three case studies highlighted on the following pages giving examples of the type of intervention supported by the EC, while a brief description of each of the projects financed during 1990-1995 can be found in Annex IIA.

Finally, though outwith the timeframe of this report, it is worth mentioning the new additional Protocol to the Lomé Convention covering the period 1995-2000. The Mid Term Review of the Fourth Lomé Convention in 1995 mentioned above saw the introduction of a Protocol on the Sustainable Management of Forest Resources which accords a "special priority to actions which support and encourage the efforts of ACP states and their organisations to preserve, re-establish and use sustainably their forestry resources, including the fight against desertification".

Combating desertification and development of forest resources

North Mali

Total cost: 6,810,000 ECU
EC contribution: 6,810,000 ECU
Source of Funds: EDF National Funds
Date of signature: January 1994
Duration: 4 years

The diverse pressures exerted on the fragile natural environment in the north of Mali threaten an acceleration of degradation of the natural cover and dune advance. The global objective of this project, therefore, is to combat desertification by protecting natural areas from the movement of sands and improving living conditions in these regions, where the population tends still to concentrate around the banks of Niger river.

An earlier phase of this project financed under the 6th EDF was successfully implemented in the areas surrounding Timbuctu through the know-how acquired by the local forestry services and the active participation of local populations.

The second phase will build on this experience and take into account the experience of other donor agencies and other desertified areas. The specific aim is to halt the encroachment of sand in the towns, agricul-

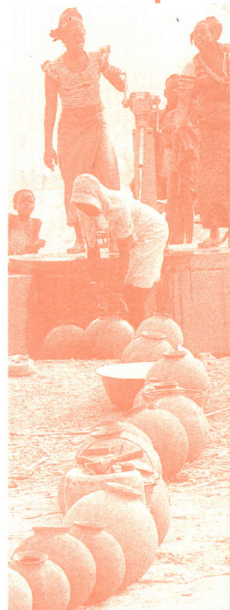
tural lands and communication routes and water ways in the regions of Timbuctu and Gao which are at risk of silting up making navigation difficult.

The implementation of the project will include assistance to groups and individuals for the development of tree nurseries and market gardening, with particular attention paid to the participation of local populations and groups. In particular, some of the dune stabilisation operations and forest development foreseen may be partially entrusted to the active community groups.

Actions foreseen include:

- Dune stabilisation (to protect 2,750 ha. by planting fast growing trees such as Tamaris on the dunes, Prosopis for hedges and wind breaks, and Eucalyptus for firewood etc.)
- Development of forest resources (the rehabilitation of 3,520 ha. of forests etc.).

Importantly, technical aspects of the project are continually adapted to take account of the different ecosystems. Activities are running according to plan and in some cases initial forecasts have even been surpassed. In the light of results obtained so far in the dune fixation activities, a new project has recently been submitted to extend the project to the circle of Bourem, given the serious problems equally present in this area.



2.1



IED

Conservation of Borana Rangeland Eco-systems

Ethiopia

EC contribution: 933,000 ECU
Source of funds: Environment in Developing Countries Budget Line
Project duration: 3 years
Date of signature: September 1994

The primary problem facing the Borana pastoralists is food insecurity brought about by shortages of water and forage, inadequate animal health services, insufficient access to grain and inadequate economic opportunities. The Borana lead a subsistence life style and traditionally make no provision for food shortages beyond increasing their livestock herds as much as possible and selling some cattle when it was necessary to buy other commodities. With an increasing population, decreasing rangelands and an unstable economy, this strategy is no longer adequate to meet their food needs.

Sources of the current problems are both natural and man-made. Erratic and inadequate rainfall lead to poor agricultural land, however inappropriate land use practices have compounded the problem. Traditionally, the Borana had complete control over their grazing lands and managed a sophisticated system to reduce over grazing and ensure a steady forage supply, however lands are now becoming encroached by brush cover.

The project aims to increase food security for 5,000 families through appropriate land use practices to reduce over grazing and interventions and to increase economic opportunities. The current project is based on work initiated in 1981 by the Ethiopian government and carried through various research phases (and re-orientations through the drought conditions of 1990-1991).

Activities of the project include

- forage development, including training in haymaking and the management of hay stocks and the storage and collection of *Acacia tortilis* pods for dry season feeding.
- water development: well improvement, construction of community water cisterns, water tanks, boreholes, cattle troughs etc., training for community masons.
- food supply - grain purchase and storage.
- veterinary programme to improve animal health and management of medicines, establishment of a Community Vet Committee
- women's development programme

The project works closely with the Southern Rangelands Development Unit (SORDU) of the Ministry of Agriculture and the regional office of Relief and Rehabilitation Commission.

The most important aspect of the project is the promotion of community based development, whereby with intensive efforts to train extension staff, the communities take responsibility for their own development. Year by year, the communities take a greater share of the responsibility so that at the end of the project they should have the organisational and managerial means to solve current and future community problems on a continual and sustainable basis with a minimum of outside assistance.



Forciviti

**Programme Regional de Formation
et Information sur l'Environnement
(PFIE) Phases I and II
Sahel Region**

Total Budgets: 10,600,000 + 16,000,000 ECU
EC contribution: 10,600,000 + 16,000,000 ECU
Source of funds: 6th + 7th EDF Regional Funds
Project duration: 5 years + 5 years
Dates of signature: December 89 + 95
Participating countries: Burkina Faso, Cape
Verde, Chad, Gambia, Mali,
Mauritania, Niger, Senegal
(in phase I Guinea Bissau also)

This project aims to contribute to changing attitudes and practices of school-age children vis a vis the environment and through a multiplier effect to raise awareness more widely of the issues concerning desertification. It was proposed by a conference of Education Ministries of the nine Member States of the CILSS (the Inter-State Committee on Combating Drought in the Sahel) in 1988. Based in Bamako, it is managed by a Regional Coordination Cell at the Institute of the Sahel (INSAH) which is also in charge of similar programme funded by UNSO concentrating on secondary school education.

In a break from the traditional teaching methods in Sahelian primary schools, the methodology adopted in the first phase of this Programme involved outings away from classrooms. These enabled the pupils to observe and reflect with their teachers on the causes and effects of environmental problems. Teaching materials were only distributed at a later stage once the children had had the chance to think about the issues

themselves. Drawings and jotters kept by the pupils during the course of these trips were used subsequently to inspire the development of teaching materials for the remainder of the courses. Training of teachers and links with technical support services involving carrying out demonstration projects on activities to combat desertification etc. were other important aspects of the programme.

Over 78,000 children in the fourth and fifth years of primary school and 1800 teachers in 900 community schools were included in the first phase. An external evaluation of the project in 1994 recommended continuation of the project to an operational phase to consolidate the achievements and in particular to develop further interactive teaching methods.

The objective of this second phase is to contribute to the improvement of the quality of basic teaching and to reinforce local capacities for managing natural resources in the Sahel. Environmental Education will be introduced into the curricula of 3,000 schools, representing 23% of the schools in the countries concerned and reaching around 670,000 pupils. Strategies to be adopted in this phase include the promotion of national policies on decentralisation to involve grassroots organisations in interventions in this field.



CILSS/INSAH



2.1

CTA: Technical Centre for Agricultural and Rural Cooperation

In the context of EC development cooperation, the Lomé Convention also provides for a Technical Centre for Agricultural and Rural Cooperation (CTA). Established in 1983 under Lomé II and based in the Netherlands, the Centre was created in order to provide the ACP states with better access to information, research, training and innovations in the spheres of agricultural and rural development and extension. This type of information exchange mechanism is encouraged under the CCD, particularly in the African Annex.

The Centre's current mandate is to provide for development as well as scientific and technical information in order to help assure food security, income generation and the preservation of natural resources, some of the basic factors underlying sustainable development. It also specifically aims to foster development, at the national and regional level, of the ACP states' own capacities for production, purchase and exchange of technical and scientific information on agriculture, rural development and fisheries. The themes outlined below give an indication of the main work of the Centre:

- **Strengthening facilities at information centres:** The CTA promotes effective policies on agricultural and rural development which define information roles and partnerships. Facilities and training in new technologies such as CD-ROM and electronic networks are made available to improve access to agricultural information worldwide. A book donation programme enables libraires and documentation centres to purchase agricultural reference books. Training workshops are organised through agricultural communication media, such as rural radio.
- **Promoting contact and exchange of experience among partners in rural development:** The Centre organises international and regional seminars, in collaboration with other institutions, on topics relevant to priority issues in agricultural development in ACP countries. ACP nationals are also sponsored by the CTA to attend seminars organised by other institutions to enable them to develop their professional

skills and exchange information. In addition, the Centre organises brief study visits for ACP experts to provide first-hand experience of agricultural programmes in specific fields.

- **Promoting information on demand:** The CTA publishes a bi-monthly journal called SPORE in English and French and ESPORO in Portuguese. The proceedings of its seminars, studies and various bibliographies and directories are also published. Through its Publications Programme, the CTA co-publishes with various partners and distributes books on tropical agriculture and rural development. An expert Question and Answer service provides technical information on request and abstracts are made available to research scientists

Texts published or co-published by the CTA which relate to combating desertification are listed in Annex IIE.

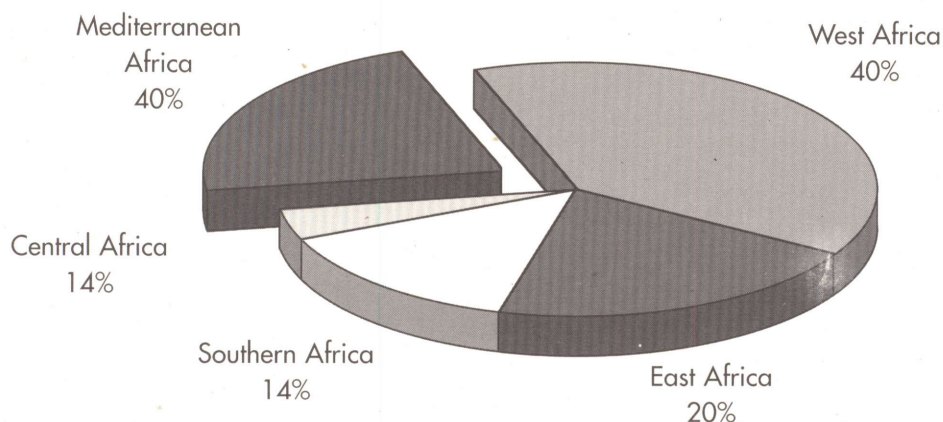
**INFORMATION TO STRENGTHEN
AGRICULTURE AND
RURAL DEVELOPMENT**



*Advancing agricultural and rural development
in African, Caribbean and Pacific (ACP) countries
by promoting the transfer, exchange and
utilisation of information*

Mediterranean Region

As we have seen in the introduction, cooperation with the Mediterranean region is administered under a different policy and financial framework from sub-Saharan Africa. Desertification related projects in the Mediterranean region are described below. The total commitment of funds to desertification projects in Africa as a whole was approx 360 mECU during 1990-1995. The diagram below shows the comparative amounts committed in the five regions



The countries bordering the southern and eastern coast of the Mediterranean are also severely affected by dryland degradation where large areas suffer serious soil erosion. Though the average rainfall of most of the region is below 650 mm per year, one single rain event can reach devastating strengths leading to seri-

ous damage to arable lands and hillslopes.

Twenty projects focusing on the management of water resources and remote sensing of natural resources have been funded under the 3rd and 4th Mediterranean Protocols from 1990-1995. An example of a large scale project is pre-

2.1

Conservation of Water and Soils

Tunisia

Total Cost: 118,500,000 ECU
 EC Contribution: 45,000,000 ECU
 Source of funds: Mediterranean Financial Protocols
 Project Duration: 3 years
 Date of signature: 2 March 1992

The project was conceived in the framework of Tunisia's National Strategy for development of water resources for the period 1991-2000. Its objective is on the one hand to combat water erosion by controlling water levels and management of river basins and on the other hand to avoid loss of water by improving local agricultural and pastoral practices.

The erosion of soils by water is a very serious problem in Tunisia and is becoming more accentuated each year. The power of the rain storms at certain times of the year gives rise to violent floods which wash away the arable lands. Combating erosion is a priority for the country's agricultural development strategy.

EC financing will go toward anti-erosive works to protect 10,000 ha. of river basins and other works for better management of water resources and the construction of 243 hill lakes. Apart from combating erosion the project also aims to limit rural depopulation and improve living conditions through increasing revenues with small scale irrigation works. The project will be implemented over the whole country with a particular focus on the Centre and North.

sented on page 26. The total financial commitment to relevant projects in the Mediterranean amounts to approximately 88 mECU in this period. This figure includes eight projects under the MED-Campus programme which has supported University networks between several Mediterranean countries in order to undertake research studies or training in environmentally sensible arid zone management. Five are aimed at training University staff in the latest research into either the causes and mechanisms of desertification or soil and water resource management in general. Others are also concerned with 'training the trainers' in areas including renewable energy sources such as solar cell technologies and the improvement of food security. Projects are listed in Annex IIA

Guidelines for the new MEDA Programme underline the importance attached to issues of environmental equilibrium and building up local research and technological capacity in the identification and design of cooperation programmes. In the identification of national priorities environmental protection is highlighted in the cases of both Egypt and Tunisia.

Asia

Land resources in densely populated dryland areas throughout Asia are put under pressure as a result of drought conditions and other natural factors compounded by intense over-exploitation of agricultural lands and natural resources. Since the late 1980s, most of the rural development projects in Asia have incorporated environmental components, particularly reforestation, in order to protect against erosion resulting from unsound land management practices.

Ten projects, have been cofinanced from 1990-1995 with respective governments relating to the protection of forest resources and severely degraded pastoral and agricultural land in dryland areas of Asia covered by the ALA Treaties. The majority of these projects are in northern India, and several have adopted a successful participatory approach and in particular focusing on empowering the role of women in community decision making. (See example below). Total ALA funds committed to relevant projects amount to approximately 130 mECU. A list of these projects can be found in Annex IIA.



2.1



Training in budding and grafting techniques to small groups in the Arovalli Hills

Arovalli Hills Project

Rehabilitation of the Common lands, Aravali Hills

Haryana, India

Total budget: 28,800,000 ECU
EC contribution: 23,200,000 ECU
Source: ALA funds
Other Funds: Government of India
Date of signature: 21 February 1990
Project duration: 8 years

Community lands comprise over 100,000 ha. of the Aravali hills area, which have been degraded into desertified wastelands as a result of demographic pressure and the absence of rational resource management over several decades. This programme therefore seeks to protect village owned common lands by restoring vegetation over 33,000 ha. of semi-arid lands, conserving soil fertility and water resources as well as re-establishing natural hydrological balance and reducing soil erosion. In doing so, the project aims simultaneously to enable the villagers to meet their needs in fuelwood, fodder and timber from the hills in an ecologically sustainable manner.

The field works carried out during the project's implementation have included replanting with fuelwood, fodder and timber species and fruit trees, seeding and planting of grasses and leguminous herbs, treatment of surviving rootstock, contour trenching for soil protection and stonewall fencing. In addition, workshops and training courses for community decision makers, resource managers and technicians and extension workers were carried out.

In order to address more comprehensively the ecological problems, the project sought to establish a change in the system of free access to the common lands towards a regulated and sustainable system controlled by the user community. This involved building up community controlled village level institutions and introducing formal safeguards for equity and the interests of the most deprived groups.

A major challenge throughout the development of the project has been to train and

actively involve women in the management and protection of the rehabilitated lands. This is crucial for the sustainability of the project as women are the primary collectors of fodder firewood and other produce from these lands. An extensive women in development (WID) programme was carried out involving eleven different elements. The success of the WID programme had the result that over one third of the local labour force paid to work in the project areas were women. A few examples of the WID activities are described below.

Training in sustainable pasture management was given to womens groups to change practices of harvesting grasses. In addition, women were given cash incentives not to cut the grasses until they have seeded and the new practices were given a chance to yield benefits. The increased availability of adequate fodder has established good will for the project in the eyes of the villagers enabling subsequent advances to be made.

In another activity, fuel efficient stoves were introduced using waste biomasses like dry leaves, twigs and agricultural waste. A cheaper clay version of the project model was produced on the initiative of the women themselves who now manage this activity themselves. Other activities include setting up village forest committees, encouraging the empowerment of women and their inclusion in technical training on nursery planting and transplanting techniques as well as silage and haymaking etc.



Women making a fuel efficient clay stove

Aravali Hills Project



2.1

Central Asian Economies in Transition

At this point, though outwith the scope of development cooperation policy, mention should be made of the EC's cooperation programme with the economies in transition of Central Asia, named TACIS. The Programme is aimed overall at assisting the process of structural economic reform in the New Independent States of the ex-USSR and Mongolia and supports the provision of technical assistance or "know how" and in its first five years of operation (1991-1995) 2,268 mECU was available.

One regional project has been developed under this Programme to address environmental degradation due to excessive exploitation of water in the five dryland republics surrounding the Aral Sea by providing training in water resource management. Environmental considerations are incorporated into TACIS projects across the range of its priority fields and this year a project has been launched to help all TACIS partner states to develop common environmental policies and an environmental awareness programme has also been launched.

Latin America

Two relevant projects have been funded under the main ALA Funds in Latin America for a total financing cost of 17 mECU. The first is an integrated rural development programme in the two northernmost regions of Chile where the Atacama desert lies and the second is a project aiming at the improvement of rural small-holder agricultural production in the dry northern region of Nicaragua.

Three projects concerning desertification in Latin America were financed under the Environment and Tropical Forest budget lines with a total financing cost of just under 1 mECU. An example of a project supported under the Environment budget line in Latin America is included below.



2.1



Construction of solar ovens to maximise energy efficiency, Chile

CODEFF

Acciones para combatir la desertificación en la IV region, Phases I and II

Chile

Total budget:	168,075 + 380,800 ECU
EC contribution:	168,075 + 330,000 ECU
Source of Funds:	Environment in Developing Countries Budget Line
Project duration:	2 yrs + 3 yrs
Date of signature:	1991 + 1994

The project is aimed at implementing and developing a collection of techniques and capacity building exercises, environmental education and awareness raising to address desertification in the IV Region of Chile through the improved management of goat farming, introduction of alternative technologies and legislation.

The first phase involved a study which estimated that 40.9% of the region's total land surface is in the process of desertification. The study identified the principal causes of desertification which include primarily the unsustainable agropastoral production systems. However this is also due to an inadequate focus on the threat of desertification within the education system and excessive pressures on combustible biomasses. Finally, the report identified the absence of environmental legislation coupled with a lack of political will to confront the issue.

The second phase began in 1994 and sought firstly to bring about consciousness of the problems highlighted in the previous phase and the potential solutions. Awareness raising activities (seminars and workshops) were

targeted to local and regional authorities, professionals, teachers, students, grassroots organisations and other sectors of the community particularly affected by desertification in order to promote a widespread dissemination of knowledge.

Another of the aims of the second phase was to train the regions' goat farmers in more sustainable productive systems and particularly the management of pastoral land (which makes up 94.6% of the project area). Taking a long term view of the viability of local agricultural practices, however, the project also intervened in the improvement of the reproductive health of the goat and its income potential.

Over-exploitation of wood for fuel is a major problem throughout the region as this represents 94.9% of household fuel consumption. Environmental education campaigns are promoted amongst the local population and the regional authorities to raise awareness of desertification control practices. Alternative technologies are being promoted to reduce the pressure on scarce firewood resources by substituting traditional woodstoves with solar powered ovens. A more unusual form of alternative technology is also being developed in the coastal Caleta Hornos community to increase the potential for exploitation of the region's scarce water resources with the development and installation of mist-trapping systems.

Finally, the project intends to promote the implementation of existing environmental laws within the framework of Chile's Action Plan against Desertification and in addition, to participate in the processes of developing an effective land law.

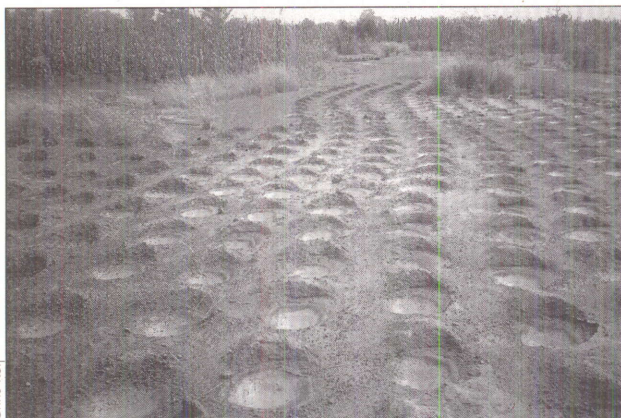


2.1

Research Programmes in Developing Countries

2.2

In response to the call by the United Nations Conference on Science and Technology for Development in 1980, the European Community set up its first multi-annual programme for research in developing countries. In the period 1991-1996 the EC supported 57 research projects which have studied desertification phenomena under the three programmes outlined below, representing a total financial commitment of over 28 mECU.



Improved traditional planting pits to rehabilitate strongly degraded land in the Sahel

Chris Reij

Science and Technology for Development

The Science and Technology for Developing Countries (STD) programmes ran through three consecutive programmes from 1982-1994. Each have served to finance scientific research into the agricultural, environmental and health problems of developing countries, and are moreover recognised as important tools for promoting cooperation through partnerships between North and South. Preference is given to proposals which bring together participants from two or more developing countries. In this way, existing EU research potential is strengthened and researchers in developing countries are given the opportunity to take part in and have access to international research activities.

The response to the calls for proposals during the three STD programmes have clearly demonstrated the potential of research capacities in the field of tropical and subtropical agriculture in developing countries and EU member states alike. Research priorities for the agricultural section of the STD programme have had the overall aim of reducing the food deficit and the development of produce with high economic value. More specifically, selected projects concerned the improvement of agricultural production systems - including improvement of crop varieties and livestock feeds etc., projects primarily aimed at restoration and conservation of the environment, forest improvement, aquaculture and fishing as well as post-harvest technologies.

In order to promote the role of research within the implementation of the Lomé Convention (primarily in the fields of agriculture and the environment), a post was set up in 1994 within the Sustainable Development and Natural Resources Unit of DG VIII for a scientific research officer funded from DG XII. This has facilitated greater linkage between the work and experience of these two DGs.



Collecting seed samples of primitive varieties of barley

FAO / F. Boits

Dynamics of Soil Fertility Management in Savannah Farming Systems Africa

Total Budget:	478,000 ECU
EC Contribution:	478,000 ECU
Source of Funds:	STD III
Date of signature:	December 1994
Project Duration:	1995-1997

This collaborative research project aims to provide a comparative analysis of soil fertility management practices in contrasting small holder farming systems in savannah Africa through investigation of both farmers' perceptions of change and policy responses to soil fertility management.

The dynamics of technical change and processes of agricultural intensification, the respective influences of population density, wealth, asset holdings and natural resource endowments on local level as incentives for change are also explored. Through a process of on farm participatory research, possible

system improvements are being investigated such as efficiency in nutrient flows and recycling.

To achieve these objectives, the project began with surveys of indigenous soil fertility management practices, soil classification systems and perceptions of environmental change in Ethiopia, Mali and Zimbabwe. In this way a historical and social analysis could be made of the constraints and opportunities to soil fertility management over time.

In addition, a nutrient budgeting study at farm level involving detailed monitoring of inputs and outputs on a stratified selection of farms has been carried out. These studies provide initial data for subsequent on-farm participatory trials aimed at improvement of soil fertility and nutrient use efficiency. The project is also undertaking an analysis of different development intervention scenarios and the impact of policy measures in soil fertility management, such as structural adjustment, reform of land tenure, and currency devaluation.

2.2

Avicenne

In 1992, with the increasing emphasis on the Mediterranean area within the Community's development cooperation policies, a separate research initiative was set up as a pilot programme. The Avicenne initiative was designed to support research into problems common to the whole Mediterranean basin and aimed at intensifying scientific links and networks within the region. Its first year was oriented towards the management of natural water resources.

From 1995, STD, Avicenne and other programmes have been incorporated into a single programme called International Cooperation with Developing Countries (INCO-DC) described below

INCO - DC

The review of policy inspired by the UN Conference on Environment and Development in Rio in 1992 was taken into account in the development of the **Fourth Framework Programme for Research** adopted in 1994. This framework programme which for the first time brought together all scientific research programmes under a uniform structure, included the EC's current programme incorporating international scientific cooperation with all non EU countries (INCO). Within this is a sub-programme applicable to all developing countries (INCO-DC).

As with the earlier STD Programmes, INCO-DC targets three sectors of general importance. The first concerns sustainable management of renewable natural resources whose principal objective is to promote the conservation and sustainable use of natural resources in a way which is compatible with long term economic growth, and the enhancement of pro-

ductive capacity that is both equitable and environmentally sound.

Research funded under the first sector includes examination of how sectoral policies interact with the sustainable use and management of natural resources. The Work Programme also highlights research into soils, water and biotic resources and how they are used within the economy. Attention is paid to research on the risks of desertification within dryland ecosystems and investigation of the interactions between biophysical, socio-economic and cultural factors as a means to promote sustainable management systems. The potential for enhancing productivity in the use of these ecosystems through diversification may be substantial and is another priority area for examination.

Research into desertification control is also eligible for funding under the second sector of general importance, sustainable improvement of agricultural production, including the development of new crop varieties better adapted to dryland conditions and the study of how agricultural production systems can be improved within economic, social and environmental constraints.

Projects funded under the STD, AVICENNE and INCO programmes are listed in Annex IIB. Catalogues outlining the objectives, activities and results of each project under the latest programmes and a summary final report of many of the earlier projects are available from the European Commission or the CTA.

ENRICH

Mention should be made here of a research network set up by the European Community to encourage information sharing in the field of global change. Known as the ENRICH network (European Network for Research into Global Change), it promotes cooperation amongst researchers in Europe and developing countries alike and is described further in chapter 3, p40.

Remote sensing research programme

In addition to the funding of coordinated research projects, the EC has also established a programme for development of satellite remote sensing both in the Mediterranean basin and in the Tropics. Remote sensing can provide vital information on the seriousness of desertification phenomena and the capacity of any affected country to take defensive action through better management of water and biomass.

The Space Applications Institute, of the Commission's Joint Research Centre, carries out various research and development projects that are relevant to desertification issues. These projects focus on environmental monitoring by remote sensing for decision making. Pre-operational and demonstration projects are conducted on land cover mapping, vegetation change monitoring under the MERCATOR (Monitoring Ecosystems with Remote sensing and Cartography in African Tropical Regions) project. This project contributes to the International Geosphere and Biosphere Programme and processes data information for early warning, environmental management and desertification monitoring both at continental and national levels. Also relevant is the FIRE project which researches biomass burning, and analyses amongst other studies the distribution patterns in relation to land cover / land use dynamics with emphasis on the savannah - forest transition zone of the tropical belt.

In addition, the Community has financed just under 46% of the development costs of the VEGETATION remote sensing satellite which is designed to monitor the state of vegetation such as agricultural production, forestry, and land environment around the world (total development cost 110 mECU approx.). The VEGETATION programme, which was initiated by CNES, the French space agency, is carried out within the framework of a partnership between France, Belgium, Sweden, Italy and the European Commission and is expected to be in orbit early in 1998.



2.2

Addressing Desertification in EU Member States

3.0

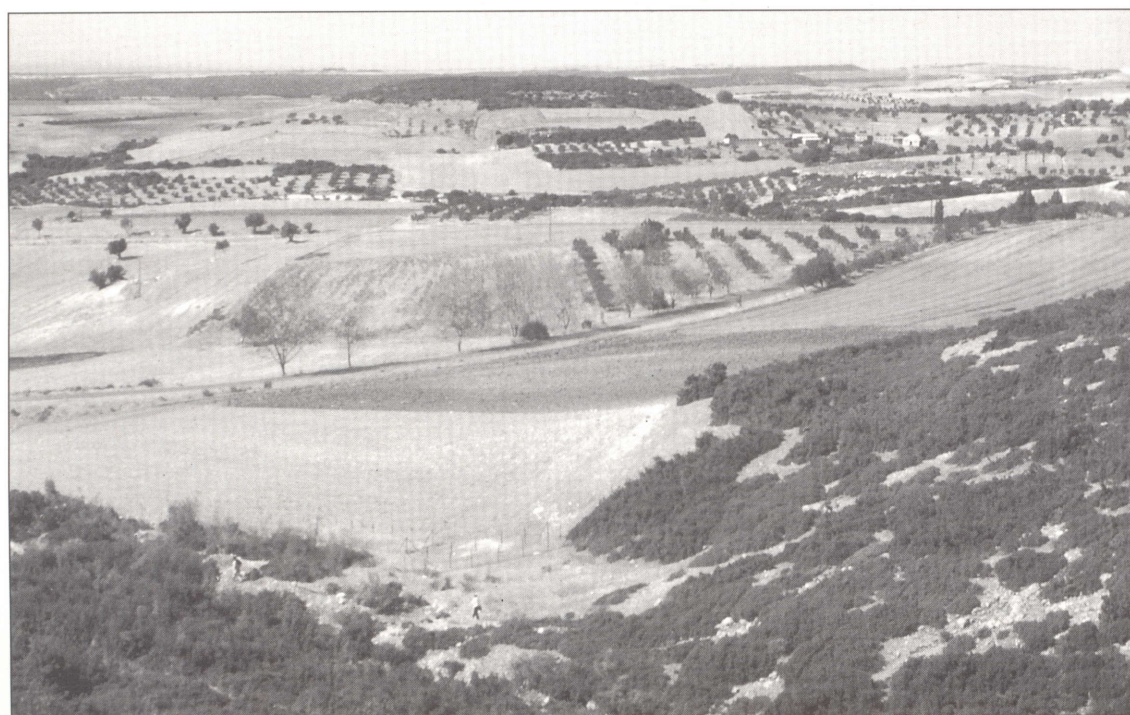
Dryland degradation has become a major problem in certain areas of the northern Mediterranean as a result of bad management of land and water resources and progressive drought under changing climatic conditions. Areas of land considered as “dry semi-arid” or “dry sub-humid” as defined under the Convention include more than two thirds of Spain, the Algarve and Alentejo regions of southern Portugal, the Mezzogiorno regions of Italy, most of mainland and island Greece, as well as the island of Corsica.

This chapter will look at the way in which the European Community’s policies can contribute to combating desertification and better management of natural resources within the European Member States.

The EC’s policy on the environment aims to integrate environmental protection into other

Community policies. Environmental measures have been incorporated into the legal frameworks governing many of the sectoral policies discussed in this chapter. However, in order to set the policy context within which these measures must be understood, this chapter will begin with a brief description of the European Action Programme for the Environment.

Thereafter, the chapter describes the specialised research programmes, which support integrated research projects and co-ordination and information exchange measures. Secondly, agricultural measures which include the Agri-environment Programmes and various forestry activities. Thirdly, structural rural development measures which are the largely domain of the Structural Funds and span agricultural and regional policy. The Cohesion Fund, which funds structural environmental measures is also included in this section



Cultivated drylands in Petralona

European Commission / D. Peter

European Action Programme for the Environment

3.1

Developed as part of the EC's response to Agenda 21 agreed at the Earth Summit at Rio in 1992, the Community's (fifth) environmental action programme (EAP), defines the objectives for a Community strategy towards sustainable development until the end of this century. The fifth EAP entitled "Towards Sustainability" has formed an important element in the policy background upon which other developments described in this chapter have been set such as the Reform of the Common Agricultural Policy (CAP), review of the Structural Funds, the creation of the Cohesion Fund, and the definition of the Fourth Framework Programme for Research. Each of these have a role to play in understanding, preventing or mitigating the effects of desertification.

The Programme proposes a fundamental shift in the approach of policy makers towards environmental issues. It argues that the integration of environmental considerations in the definition and implementation of economic policies in sectors such as agriculture and forestry is fundamental in order to adapt the current economic model towards a more sustainable one. This objective entails both a carefully defined sharing of responsibility amongst administrations as well as dialogue and awareness raising.

To further its aim of integrating the environment into sectoral policies, the Programme has emphasised the importance of policy instruments such as the promotion of spatial planning and strengthening the monitoring and knowledge of the state of the environment and the importance of assessing the environmental impact of programmes and projects applied by national, regional and local authorities. Developments in these fields are described in the relevant sections below.

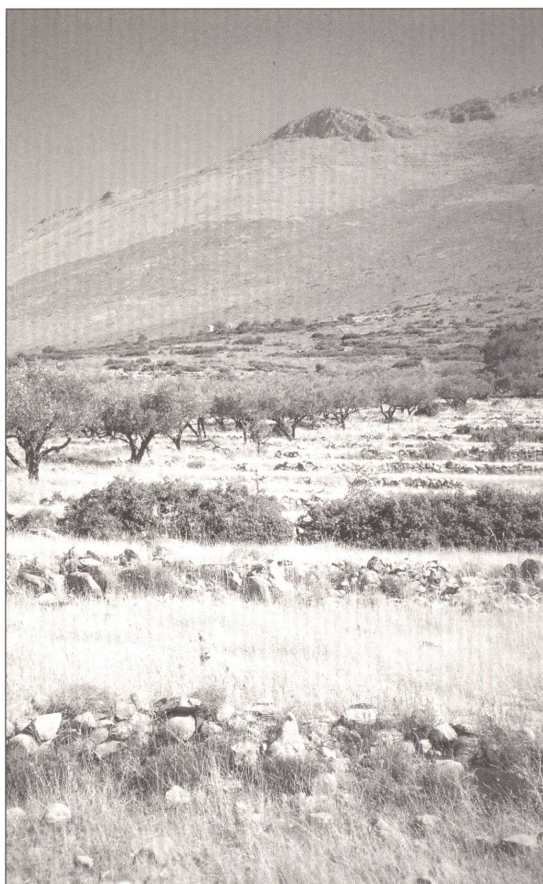
Environmental Impact Assessments

The Commission has been active in promoting legislation concerning environmental impact assessments (EIAs) since the 1970s. In 1985, legislation was adopted requiring that an EIA be carried out before projects are developed for support by governmental authorities in the Member States - this applies whether or not it is funded by the Community - and the Directive was revised in March 1997. In accordance with the precautionary principle introduced in the Maastricht Treaty, a new Directive is currently being proposed which would expand these requirements making EIAs compulsory at the planning stage before concrete projects are designed. Note, the Community does not in this way interfere in how the Member States should use their lands, the provisions of Directive extend only as far as requiring that the environment be taken into consideration while making planning decisions.

LIFE Programme

LIFE, the EC financial instrument exclusively dedicated to the environment was created in 1992 to support the objectives of Community environment policy. Its main efforts are focused on the implementation of innovative, replicable, concrete actions to integrate environmental issues in different fields related socio-economic development. Within this overall objective, priorities are set each year in a call for proposals. In 1995, the heading "Promotion of sustainable development and the quality of the environment" included priority towards actions aimed at protecting **soils threatened or damaged by fire, desertification or the disappearance of the dune belt**. Details of the variety of actions funded are included in Annex IIC and an example is provided in the box opposite.

From 1996, the LIFE Programme has been split into LIFE Environment and LIFE Nature with a combined budget of 450 mECU over 1996-1999. The areas of activity outlined in the LIFE Environment Programme include the support of measures by local authorities in sectoral and integrated aspects of land use. Priority areas are mainly in the field of water quality and waste management though integration of environmental considerations in the coordination and evaluation of local policies is also highlighted.



European Commission / D. Peter



3.1

Protection against desertification and hillslope soil erosion

Greece

Total Budget:	1,058,839 ECU
EU Contribution:	496,053 ECU
Source:	LIFE
Other Funds:	Public
Date of Signature:	1995
Project Duration:	3 years

The project is located in the islands of the Cyclades (Tinos) and the Epirus (Zagori Ioannina). Soil erosion through run off has been one of the main factors involving degradation in these areas since antiquity. Agricultural production to support rural populations through history has led to the development of techniques for the maximum exploitation of available land resources along with the development of measures for protecting against degradation. However, terraces, which were the principle tool serving both these purposes, were largely abandoned with the mechanisation of agriculture and many of these hillslopes have been since

been converted to pasture, encouraged by the Common Agricultural Policy, both of which factors are threatening the traditional systems of land preservation.

Within this context, the project aims to protect soils against erosion, to conserve cultural heritage, to maintain rural populations within the focus areas, researching their methods and expectations for agricultural development.

The project supports the different aspects of rural development on the principles of sustainable development promoted within the EC's Fifth Action Programme. It must produce and multiply results at the local level which will be important as a demonstration and which could further the economic interests of the local areas. It uses innovative means and methods to disseminate results such as university field workshops, creation of audio-visual material, computer imaging of the landscape and its evolution through time and other teaching tools. The project will also establish trans-regional cooperation through links between the Cyclades, Epirus and Provence.

Research Programmes in EU Member States

The complex physical and socio-economic factors causing desertification, the processes involved and the rate of degradation in the northern Mediterranean region are not yet adequately known. Although desertification phenomena have been studied for years, research has mostly been undertaken outside Europe. Research is therefore needed to better understand and quantify the processes involved and to provide the scientific basis for addressing problems of dryland degradation.

This section will look first at the different research programmes included in the current Fourth Framework Programme for Research which are active in supporting scientific investigation into desertification. The recently created task force promoting research in the field of "Water - Environment" is also outlined. Finally the section describes the Community programme for the collection and coordination of environmental data.

Environment and Climate Programme

European Community research into desertification was initiated under the European Programme on Climatology and Natural Hazards (EPOCH) 1989-1992. Certain important projects were launched under EPOCH such as the ongoing MEDALUS (Mediterranean Desertification and Land Use) project which is described in the box on page 38 and the EFEDA project (Echival Field Experiment in a Desertification threatened Area). The latter undertook pilot studies of the interactions between climate vegetation and water resources within the processes of erosion and

desertification. Another contemporary Programme called Science and Technology for Environmental Protection (STEP) supported environmental research into the risks from agricultural technologies and land use practices for soil, surface and ground water quality. Both EPOCH and STEP were later incorporated into the Environment Programme 1991-1994.

These programmes have now been succeeded within the EC's Fourth Framework Programme for Research under the single heading of the Environment and Climate Programme 1994-1998. Under this latest programme, 247 mECU has been devoted to the first of its four themes: "**Research into the natural environment, environmental quality and global change**". Desertification is identified as a priority area within this theme (described opposite).



Hill slope erosion
from heavy rain

Land resources, the threat of degradation and desertification in Europe - a priority area within the first theme of the Environment and Climate Programme

Objectives

- To provide an integrated approach to understanding the complexity of processes and interdependent factors which lead to land degradation and desertification in Europe.
- To develop the scientific foundations for rational and sustainable management of land resources in specific parts of Europe which are threatened or affected by desertification and in particular to support the implementation of the fourth regional annex of the International Convention to Combat Desertification (CCD) concerning the Northern Mediterranean.

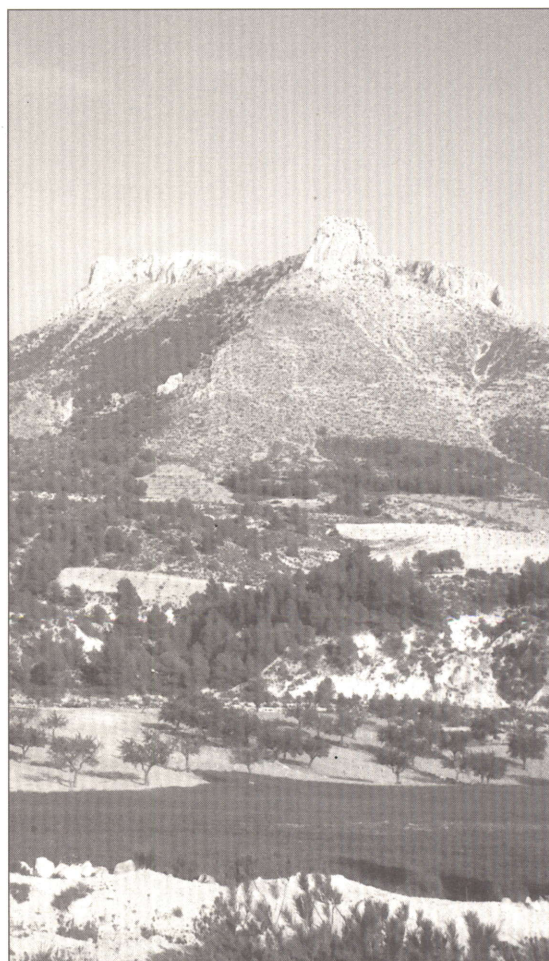
Research tasks in this field include integrated qualitative and quantitative research into the processes described above as well as modelling of the dynamics of desertification and the establishment of datasets and indicators. Also emphasised are the assessment of the state of desertification and its socio-economic consequences and the evaluation, development and improvement of current mitigation actions and strategies.

Since 1991, 45 projects have been launched under the different environmental research programmes aimed at deepening knowledge of the evolution of desertification within the European context and to provide the scientific basis for developing mitigation strategies. The financial contribution of the Community to these projects amounts to more than 38 mECU over 1991-1996.

In order to present illustrative examples of the type of work financed under this priority area, two projects have been highlighted in the boxes overleaf. A full listing of projects supported by the EC is included in Annex IIC.

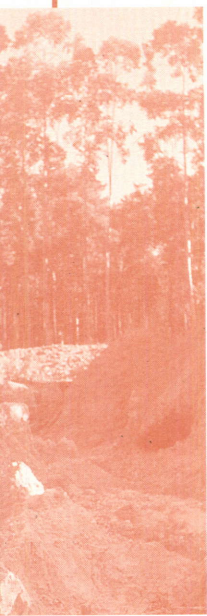
Natural hazards - Wildfires

The Environment and subsequent Environment and Climate Programme have both supported research studies into wild fires. These examine management techniques for prevention and minimising subsequent effects of fire damage. Research also addresses socio-economic determinants to assess the impact of land use patterns on fire occurrence and relevant projects are included in Annex IIC. The Programme of the Space Applications Institute of the Commission's Joint Research Centre also includes pilot projects on the use of space techniques for natural hazard management in Europe, such as forest fire, floods and drought. Research is also carried out on mapping and modelling of land degradation in the Mediterranean Basin.



Corinna Hawkes / Kings College London

3.2



MEDALUS - Mediterranean Desertification and Land Use

MEDALUS I	January 91 - December 92 3,000,000 ECU 17 partners
MEDALUS II	January 93 - September 95 9,055,700 ECU 44 partners
MEDALUS III	October 95 - December 98 8,000,000 ECU 29 partners
Source of Funds	Environment + Climate Programme

The MEDALUS project has brought together groups, in all three of its phases, to research Mediterranean climate change, water supply, semi-arid landscape processes, vegetation growth, socio-economic changes as well as methods of linking all these by numerical modelling. As the project has evolved, it has focused increasingly on desertification as a problem in specific areas and on integrating the various strands of research to assess the sensitivity of these areas to causes of desertification such as changing climate and land use.

At field sites in Portugal, Spain, Italy and Greece a programme has been set up to monitor rainfall, soil moisture, vegetation growth and soil erosion (among other parameters and processes), contributing to basic research into the effects of land abandonment, the adaptation of vegetation species to drought, long term soil loss and changing agricultural practices. The same field programme has also fed data into two numerical models simulating firstly all the processes operating on a semi-arid hillslope and secondly a complete river basin.

Research into climate change has taken historical trends into account as well as the output from large scale general circulation models, forecasting rainfall and temperatures for the next thirty years. Currently, MEDALUS is

also investigating changes in weather types which may occur with increasing levels of greenhouse gases.

The problem of how to scale up work on monitoring processes which operate at a hill-slope scale in order to model those at a river basin or even regional level is being addressed in the latest phase. The purpose of this is to match the scale of the research to the scale at which management decisions are made. Regional physical indicators of desertification are being identified together with regional economic and social processes and management practices. From another angle, the project also addresses how sections of the landscape would respond to different desertification processes. This idea has been developed from the concept of desertification response units in MEDALUS I and II to the production of maps of environmentally sensitive areas in MEDALUS III. In parallel with this, regionally based studies in the Guadalentin and Agri basins and Abruzzo region in phase II have been expanded to include the Alentejo and Lesvos in phase III.

Phase III has also seen the initiation of a new strand of research examining ephemeral channels and gullies which are a major feature of the Mediterranean landscape.

Some policy relevant results: Research has confirmed that the climate has become more variable since 1940 and that water resources are at crisis point. The main environmental problems in rural areas are related to land abandonment and this confirms the need for spatial planning. Existing policies for land use should be adapted to long term needs. A range of mitigation actions will be required to respond to the enormous diversity of land patterns of use and their histories. Plans are best developed working upwards from local authorities to central government.

An Atlas of Desertification in the North Mediterranean is being produced which describes the work of MEDALUS II and also provides the results of other research projects. Publication is expected mid-1997.

Archaeomedes



1st Phase	July 92 - September 94 1,500,000 ECU
2nd Phase:	March 96 - March 97 2,000,000 ECU
Source of Funds:	Environment + Climate Programme

The Archaeomedes Project is aimed at understanding the natural and anthropogenic causes of land degradation and desertification in the Mediterranean. It aims at a better understanding of the complex dynamics of land degradation in the vulnerable circum-Mediterranean environments. It focuses notably on the long term relationship between the natural processes involved and the socio-economic dynamics underlying human interaction with the environment.

Case studies were undertaken to examine temporal rhythms of land degradation in four sites. Greece: Epirus (30,000 BC to 8,000 BC and 1940 to present) and the Argolid (1960 to present). Spain: Vera Basin (3,000 BC to present). France: lower and middle Rhone valley (5,000 BC to 1550 and 1800 to present). Further research was undertaken on the role of present day human perceptions of the natural and cultural environment in decision-making which concerns the landscape particularly in respect to infra-structural works. These studies were carried out in a subsequent phase in the Epirus, the Argolid and in the Veneto in Italy.

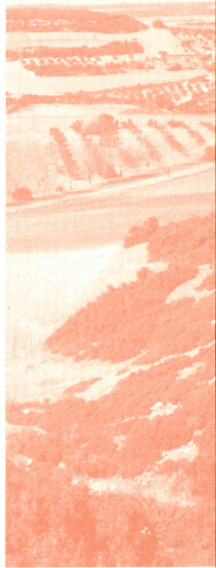
The results of these case studies contributed to models of dynamics and degrees of sensitivity to soil erosion. Confirmation of

changes in climate was also found and the human impact and interaction with the environment were examined.

Conclusions of the first phase:

- It is essential to establish more long term data concerning the interaction between climate, soil, vegetation and society.
- There is a need to examine understand the dichotomy and interaction between nature and culture in western tradition.
- The term 'resilience' is recommended as a shift in thinking away from 'sustainability'. i.e. focus on the ability to cope with natural change rather than on maintenance or prolongation of present circumstances.
- Dealing with degradation of natural resources should be based on the principle that it is inevitable. Policies concerning degradation should not be confrontational as 'Technofixes' often only aggravate the problem, reinforcing a belief in power over nature rather than a need for adaptation to changing circumstances.
- Finally, the project strongly recommends conscious effort to elicit local knowledge to feed into the debate on potential scenarios and consequences of policy action.

A second phase has recently been approved and, in contrast to the investigation of the many temporal scales (described above) will be primarily concerned with the spatial aspects of the dynamics. The project will focus on the definition of the various levels which drive the dynamics involved. It will also investigate ways in which the dynamics articulate at various levels. Thus the project aims to create decision support models of these dynamics which facilitate investigation of alternative scenarios for the future and develop ways in which to map these dynamics in geographical time-space.



3.2

Coordination and dissemination of results

Research can only be fully justified if it can be taken forward for practical application in resolving the problems investigated. To derive maximum benefit from the efforts of the various scientific undertakings within the EU and in associated third countries coordination measures are necessary. Coordination and information exchange initiatives are strongly encouraged in the provisions of the Convention to Combat Desertification.

“Concerted Actions”

Apart from cofinancing joint research projects, the Environment and Climate Programme and its predecessors have supported Concerted Actions which are aimed at coordinating research and other projects already funded by public authorities at national or European level. A Concerted Action on Desertification and its relevance to contemporary environmental problems in the Mediterranean was established in 1996 which aims to review, stimulate and strengthen the cooperation of research in the field of land degradation in the Mediterranean. This includes work to identify the potential applications of desertification research, knowledge and action in other areas of EU activity described in this report. These objectives are to be met through a series of workshops and reports.

A publication will be produced soon which describes the activities undertaken in this field by governmental institutions and NGOs within each of the affected Member States and another report is planned to examine the project summaries of all EU funded research on Mediterranean Desertification in order to define priorities for the Fifth Framework Programme.

“Accompanying measures”

Apart from financing joint research projects and concerted actions each of the research programmes under the Fourth Framework Programme can fund workshops, seminars, networks and other actions to disseminate the results of European funded research. These may be financed as integral parts of joint research projects or as separate events. Publications are listed in Annex II.E. In addition, a new initiative called the ENRICH network has been launched to coordinate research collaboration.

A conference has also been organised by the Environment and Climate Unit of DG XII aimed at raising the profile of EU research into desertification to alert both public and policy makers to the extent, nature and urgency of the problem and to translate the results of scientific research into policy development and actions. A summary report of the Conference is included in Annex I.

ENRICH

The European Network for Research Into Global CHange (ENRICH) is a policy support mechanism which acts as a clearing-house for the exchange of information in the area of global change - which includes the changes in the earth's climate, land productivity, water resources, land use, ecological balance and natural resources. ENRICH aims primarily at improving research cooperation through workshops and other collaboration initiatives. It will support projects which "add value" to ongoing research activities in

particular by considering remaining gaps that could be addressed within EU research programmes in this field and preparing the ground for more coherent and integrated research undertakings in future.

ENRICH is a joint initiative of the Environment and Climate Programme and the International Cooperation (INCO) programme (described in Chapter 2) and the Marine Science and Technology Programme. Indicative contributions of the former programmes have been set at 3 million and 1.2 million ECU respectively for the period 1994-1998.

International Conference on Mediterranean Desertification:

Research Results and Policy Implications
Crete, Oct-Nov 1996.

Attended by about 300 scientists, policy makers and land managers from over 20 countries, this important conference drew attention to the large body of research which has been undertaken in last 20 years. It also focused the attention of the scientific community on the implications of their research, both for future research efforts and for those immediately confronted with the problems (i.e. farmers and others in the affected areas, local and regional authorities national governments and the EU).

A brief summary of the conclusions of the conference follows: Firstly, we need to increase and facilitate constructive interaction and unobstructed flow of information between scientists and policy makers e.g. by

formulating joint action plans. There is a clear and continuing need for education, training and information to all actors especially to those at the local level who must bear the cost of difficult choices. The active cooperation of the local population and authorities has to be secured both for the acceptance and successful implementation of pilot projects and policies. Concretely, it was proposed to identify and carry out coordinated pilot projects (at least one in each affected Member State) to be connected by a network for the exchange of information and technology. To accompany this network, a mechanism for monitoring the state of the environment should be set up which would act both as a research tool and a warning system. It was proposed to the EU that a Community Initiative be established to support pilot activities, the network and other coordinating tasks. A number of concise scientific areas for research were also identified with emphasis on extreme events, land cover interactions with local climate, biotechnology and regional rainfall patterns.



3.2

Agricultural Research

The Third Framework Research Programme (1990-1994) included two other programmes which supported research into the problem of desertification from the point of view of agricultural production. The first is the Competitiveness of Agriculture and Management of Agricultural Resources (CAMAR) Programme and the second is the Agro-Industries, Forestry and Rural Development (AIR) Programme. Relevant projects under these Programmes are listed in Annex IIC. Twenty were financed under these programmes which received a total EC contribution of approx. 16.3 mECU.

FAIR

These programmes were superseded by the Agricultural and Fisheries Programme (known as FAIR) in 1994. Within this, the agriculture, forestry and rural development section aims to develop the necessary scientific and technical basis for preparation, implementation, monitoring, control and adjustment of Community Policy. Themes such as the reform of the Common Agricultural Policy, the multi-functional management of forests and rural development may fund projects relating to investigation of desertification, and one relevant project has been funded under this Programme so far.

Research Task Forces

Eight task forces were launched in 1996 to support the Fourth Framework Programme for Research. Their collective aim is to define priorities in collaboration with socio-economic actors, to reinforce coordination among various Community, national and private research initiatives and to "stimulate a favourable environment for innovation".

One task force, **Water - Environment** concerns the development of a European strategy for the sustainable development of water resources particularly around the Mediterranean and within which two target themes concern dry-land conditions:

Combating chronic water deficit: In this matter, the task force aims to promote research to improve methods of environmental impact assessments for different planning projects (changing land use, transfer between river basins etc.) particularly to assist planning officials. Also envisaged are methods of forecasting and rational management of water supply and demand, harmonisation of administrative structures of water authorities and diversification of water supply sources.

Forecasting and management of crisis situations: Research action to establish preventive practices and to improve basic knowledge on the causes and effects of severe droughts will also be fostered.



A. Aro / University of Cagliari

CORINE Database

The CORINE pilot programme ran from 1985-1990 and was established for the purpose of gathering, coordinating and ensuring the consistency of information on the state of the environment and natural resources in the Community. A prototype geographical information system was thus constructed and developed for this purpose and linked to a consistent database. Soil erosion risk, important land resources and land cover were included amongst the first priority areas for application of this system in southern areas of the Community. The data provided will form a basis to support Community policy development. Several research projects dealing with desertification in the Mediterranean area have worked on data retrieved from the CORINE network.

The project has produced a wide range of outputs - a pool of expertise, a series of data sets on land resources as well as methods of assessing soil erosion risk and land quality in southern areas of the Community in a form appropriate for policy applications. It has laid the foundations for improved understanding and management of land and other environmental resources in the European Community in the future.

From 1993, management of the CORINE project was officially transferred for five years to the European Environment Agency (EEA) based in Copenhagen. Certain tasks are taken up by European Topic Centres (ETCs) to develop the work programme and to deliver the agreed data, information, reports and other services in collaboration with Member States. (Contact address in annex III).



Agricultural Measures

3.3

The EC's Common Agricultural Policy (CAP) was devised as one of the mainstays of the European Economic Communities. The majority of funds available under the CAP, financed via the European Agricultural Guarantee and Guidance Fund - Guarantee Section, are dedicated to measures concerning the common regulation of agricultural sector markets (CMOs). Some measures are also included which aim to improve agricultural structures. Although environmental considerations have not yet been fully incorporated into the regulations governing the CMOs, the provisions of the Single European Act, the Fifth Environmental Action Programme and the Maastricht Treaty have all stimulated the integration of environmental protection into agricultural and rural development policy.

Actions under the CAP of relevance to the problem of desertification concern reforestation and soil conservation programmes, measures to reduce the impact of agricultural production methods on the environment, actions to monitor and prevent forest fires as well as research programmes. As with Regional Policy described in the next section, the Commission's role is in the identification of Community priorities and the approval and scrutiny of development programmes. These programmes are proposed and implemented by the Member States and individual projects are managed directly by national administrations. Therefore, as detailed project information is unavailable, this chapter will concentrate on the enabling framework of sectoral policies, legal instruments and financing structures which provide guidance and financing for projects contributing to the fight against desertification.

Reform of the Common Agricultural Policy

In 1992, the European Community's Common Agricultural Policy (CAP) was reformed to improve the equilibrium of markets for agricultural produce and the competitiveness of European agriculture given the surpluses and over exploitation of resources experienced during the 1980s.

At the same time, recognition of the damaging effects which intensified farming and the trend towards ever greater agricultural yields led to increased policy dialogue and emphasis on environmental impacts of agriculture. Consequently, the major overhaul of the CAP has been accompanied by two Measures setting up incentive schemes for better environmental practices by farmers throughout Europe. In the context of these reforms, the farmer is no longer viewed within the CAP as a food producer alone but is now taken into account as a caretaker of the environment, countryside and landscape.

Agri-environment programmes - Regulation 2078/92

These Programmes, approved under the agri-environment Regulation, aim to support the Community's agriculture and environmental policies to accompany the reform of the Common Agricultural Policy and to contribute to supporting farmers incomes. The measures approved under the Programmes encourage farmers to undertake farming methods compatible with protection and maintenance of the environment and can therefore have a significant contribution to addressing desertification in the southern European Member States. Premiums are payable under the aid scheme described below to compensate farmers for loss of income or additional costs incurred.

Purposes of the Aid Scheme of the Agri-environment Regulation 2078/92

inter alia

a. **Low input and organic farming:** to reduce substantially the use of fertilisers and plant protection products, to keep to the reduction already made, to introduce organic farming or to continue with organic farming;

b. **Extensive crop and forage production:** to change to more extensive forms of crop production; including forage production - by means other than those referred to under (a) above - to maintain extensive production methods introduced in the past or to convert arable land into grassland;

c. **Extensification of livestock production:** to reduce the proportion of sheep and cattle per forage area;

d. **Other environmental farming practices:** to use other practices compatible with the protection of the environment and natural resources, as well as maintenance of the

countryside and the landscape, or to rear animals of local breeds in danger of extinction;

e. **Upkeep of abandoned land:** to maintain abandoned farmland and woodland in good condition;

f. **Long-term set aside:** to set aside farmland for at least 20 years with a view to its use for purposes connected with the environment, in particular for the establishment of biotope reserves or natural parks or for the protection of hydrological systems;

Training and demonstration projects:

Measures may be included in the Programmes to train farmers with regard to farming or forestry practices beneficial to the environment. Additional measures may be introduced specifically to provide for traineeships and demonstration projects. These are to be designed to promote practices compatible with protection of the environment and natural resources, maintenance of the countryside and the landscape and to promote codes of good farming practice.

Programmes are developed by the national or regional authorities according to local need. In areas susceptible to desertification pressures, the programmes may aim primarily at reducing such pressures. The measures directly relevant to combating desertification are listed in the box above.



European Commission / D. Peter

To ensure the achievement of its environmental goals in an efficient way, the programmes introduced under this Regulation clearly need to be monitored and evaluated. An obligation to do this was introduced in 1996 (Reg. 746/96).

Examples of programmes containing measures designed to protect dryland areas exist or are planned in all Mediterranean regions. In the case of France, programmes are established in each region containing both general measures (such as support for organic farming) devised on the national level and local measures. Local measures may be targeted at a single valley or mountain area and, in the Mediterranean regions, several measures exist to prevent the spread of fires or to protect fragile grazing systems, with the specific aim of combating tendencies to desertification.

To take another example, the programme on the mainland of Portugal comprises a series of measures designed to protect the environment vulnerable to desertification pressures.

Significant measures have also been implemented throughout Italy and Spain. In the case of Greece, programmes are in the early stages of implementation, but anti-erosion and other measures are planned to address desertification issues.

The EAGGF contribution to all measures in the programmes in each of the Mediterranean Member States is given in the table below.

Agri-Environment Programmes	EAGGF contribution to measures (in mECU)					
	1993	1994	1995	1996	1997 (est.)	Total
Reg 2078/92						
Greece	0.0	0.0	0.0	1.5	5.0	6.5
Spain	8.3	13.8	15.7	32.8	155.6	226.2
France	67.1	73.1	106.2	118.9	183.5	548.8
Italy	0.0	0.0	54.4	41.5	223.6	319.5
Portugal	0.0	12.0	38.6	40.0	59.9	150.5
Total	75.4	98.9	214.9	234.7	627.6	1,251.5

Agro-Forestry Programme - Reg 2080/92

The second of the accompanying measures to the reform of the Common Agricultural Policy was the Agro-forestry programme (Reg 2080/92). The structural objectives of this reform were to accompany the changes foreseen in the context of balancing agricultural markets by encouraging an alternative use for agricultural lands and development of forestry activities in agriculture.

This Regulation has aimed to contribute towards an overall improvement in forest resources and towards forms of countryside management more compatible with environmental balance as well as to combat the greenhouse effect through absorption of carbon dioxide. As with the Agri-environmental programme, an aid scheme was established in order to bring about the requisite change in practices



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Purposes of the Aid scheme of the Agro-forestry Regulation 2080/92

Art 2.1

a-c. Afforestation of agricultural lands: this covers the costs of afforestation; an annual premium per wooded hectare to cover main-

tenance costs during the first 5 years; and an annual premium per hectare to compensate for the loss in revenue resulting from the afforestation of farmlands (max. 20 years)

d. Investment Aid for the improvement of woodlands including shelterbelts.

The aid scheme excludes the planting of Christmas trees. In case of fast-growing species cultivated in the short term, aid is eligible only for farmers practising farming as a main occupation and provided that planting is adapted to local conditions and is compatible with broader environmental concerns.

The total amount budgeted throughout the EU Member States during this period was approx. 1,249 mECU. The four Member States most affected by dryland degradation have been allocated 65% of these funds. 24% of the total has been directed to Italy alone where the Regulation constitutes one of the main instruments for addressing desertification.

Agro-Forestry Programme Reg 2080/92

Afforestation Actions 1993-1997	Greece	Italy	Portugal	Spain	Total four Member States
Total estimated EAGGF contribution (mECU)	43.5	300	96	430	869.5
Target wooded surface area (ha.)	15,000	80,000	94,000	305,750	494,750
Total area implemented as of 1996	6,234	50,235	50,035	238,112	344,616
Percentage of target reached	41%	62%	53%	77%	69%

Additional forestry measures

In addition to the measures funded under the EAGGF, desertification can also be addressed within a budget line created to provide agricultural credits to support additional forestry measures such as those described below.

Programme for Protection Against Forest Fires

Approximately 1.2% of Europe's residual forests have been destroyed through fire in the decade to 1992, mainly in the southern regions of the Community. Damage caused by forest fires is one of the leading immediate causes of land degradation in Mediterranean Europe and when combined with periods of drought the situation is greatly worsened. In recent periods, timber fuel accumulated in extensive abandoned pastoral and agricultural areas has often aggravated the impact of fires on ecosystems. In addition, by reducing landscape diversity, some ecosystems have become more at risk of fires.

The European Community has supported action against forest fires under its agricultural policy since 1979. The latest Programme (Reg 2158/92), established in 1992 and recently extended for a further five years to 2001, aims to increase the consistency of Member States' forestry measures in general and measures to protect forests against fire in particular. This imposes an obligation on the Member States to investigate their own fire risk areas and to present their general forest fire protection plans to the Commission. During the period 1992-1996, 480 projects were supported for a sum of 63 mECU specifically to prevent fires. In addition, a Community Forest Fire Information System has been set up which constitutes an important evaluation tool for the analysis and prevention of the causes of forest fires.

Programme for the Protection of Forests against Atmospheric Pollution

In 1987, the European Community started a large scale monitoring programme to provide regular information on the effects of atmospheric pollution on forests and their condition in general (Reg 3528/86). In 1992, these measures were reinforced by the establishment of a network of plots for intensive monitoring (Reg 2157/92).

In addition, the Community also supports pilot projects to improve understanding of the effects of air pollution on forests and to develop methods for maintaining and restoring of damaged forests. In these ten years, large scale forest condition assessment has

- provided comprehensive knowledge of the extent, dynamics and spatial distribution of forest damage in terms of defoliation in Europe.
- created a comprehensive database suitable for future time series analyses of defoliation and studies in combination with further ecological parameters.

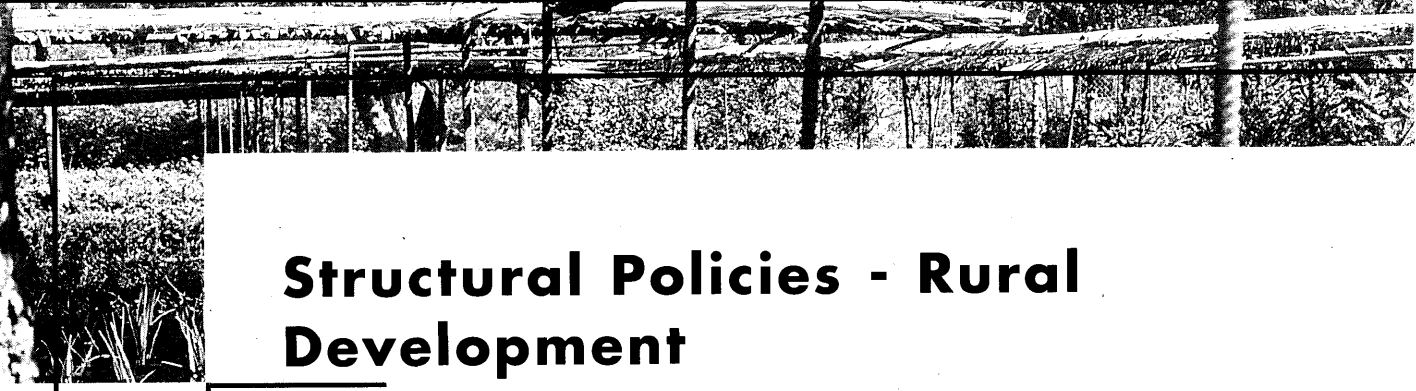
An ad hoc working group was established in 1987 mainly to clarify and harmonise the assessment criteria and methods used in the visual evaluation of tree condition in countries with Mediterranean vegetation. Gaining more insight into the influence of Mediterranean stress factors on forest health are major objectives of the group.



European Commission / D. Peter



3.3



Structural Policies - Rural Development

3.4

The Structural Funds

The Structural Funds are the main financial instruments of the European Community for the achievement of the goals of economic and social cohesion. They consist of four Funds of which two can support measures relevant to addressing desertification: The European Regional Development Fund (ERDF) and the Guidance Section of the European Agricultural Guidance and Guarantee Fund (EAGGF-G).

The ERDF was set up in 1975 to provide assistance to the most disadvantaged regions of the Community. Its overall orientation has remained towards investment in production, businesses, infrastructure and human resource development, though since the adoption of the Community's Fifth Environmental Action Plan in 1992 described earlier, substantially more resources have been directed towards the protection and improvement of the environment. A description of some of the new initiatives supported by the ERDF is provided later in this section.

The Guidance section of the EAGGF supports the adjustment of agricultural structures and the development of rural areas. By cofinancing measures in areas eligible under the regional Objectives 1 and 5b of Structural Funds policy, it can fund measures for sustainable development and the rural environment including developing and strengthening agricultural and forestry structures and for maintaining, enhancing and restoring the landscape. The Guidance section of the Fund is implemented on the basis of different Regulations of which the main one includes a provision for structural measures to combat certain climatic hazards e.g. reparation of lands, land or pasture management, restoring agricultural and forestry production after natural disasters (Reg 2085/93). Another relevant Regulation concerns the development of forests in rural zones

(Reg 1610/89) which has promoted afforestation and reforestation in areas threatened by erosion, as a result particularly of severe storms and wildfires. In addition, measures to rationalise forestry have been supported, such as the construction of forest tracks for the prevention of fires, setting up forestry associations, development and rationalisation of marketing and application of forestry products. A Regulation to promote specific measures to encourage agricultural development in certain regions of Spain (Reg 1118/88) has also supported relevant measures.

In 1993, the Structural Funds were reformed and at this time new regulations were issued which increased consideration of environmental aspects at all levels of programming and implementation of Cohesion Policy. Thus, it is now compulsory that regional development plans submitted by the Member States contain a description of the prevailing environmental conditions as well as an assessment of the environmental impact of the measures proposed for the subsequent period (see below). The proposed plans must also set out the actions taken to associate the national environmental authorities in preparation and implementation of such measures.

Regional Development Objectives

Allocation of the Structural Funds is divided on the basis of 7 priority objectives. The first of these, Objective 1, encompasses many of the most disadvantaged rural areas in the EU (including the whole of Greece and Portugal, 11 regions in Spain, the Mezzogiorno regions of Italy and the island of Corsica, France - see Reg 2081/93 for details). These areas correspond closely to those most affected by desertification and drought in the South of Europe and the rest of this section will concentrate on these regions*.

Structural Funds

Objective 1

Regions whose development is lagging behind i.e. where per capita GDP is less than 75% of the Community average. The emphasis of activities here is on "catching up" and specific development objectives include the

infrastructure required for economic development, including protection of the environment.

In addition, other types of activity are identified under Objective 1 including investment in job creation, transport and energy networks, small and medium enterprises, research and development, health and education infrastructure, vocational training and various other rural development measures.

*N.B. Other areas such as Catalonia and southern mainland France are also affected by dry conditions and soil erosion. These areas are eligible for structural funding under Objective 5b which is aimed at vulnerable rural areas with a low level of socio-economic development and which meet two out of the following three criteria: a high rate of agricultural employment, low levels of agricultural income, low population density or a strong trend towards depopulation. Measures are intended to promote economic diversification and the emphasis is on investment in infrastructure to create jobs outside agriculture and protecting the environment.

There follows a brief description of some of the activities of the period 1989-1993 in the Objective 1 regions of each of the relevant countries together with some of the perspectives for 1994-1999 as outlined in development programmes known as Community Support Frameworks (CSFs).

A note on the administrative framework - for each objective, these pluri-annual programmes are proposed and implemented by authorities within the Member States. The Commission's influence in the initiation of regional development plans and programmes is limited in accordance with both the EU's general principle of subsidiarity and the additional principle of partnership within the Structural Funds. The main initiatives for addressing desertification therefore, must come from the affected countries themselves.

Italy

Relevant provisions from Italy's CSF are incorporated within the national triannual programme for environmental matters which includes management of water resources, the conservation and improvement of the natural environment as well as instrumental support actions and research into the environment. As regards the agricultural sector, diversification of production and the reduction of inputs necessitated by the reduction in agricultural

prices following the reform of the CAP should also permit a favourable policy towards the environment provided that enough accompanying actions are adopted for the training of farmers. In addition, rural development measures, especially in the inland areas, aim at improving land tenure and limiting the negative consequences of depopulation (erosion, forest fires, etc.).

Spain

The first of the objectives set out in the environment sub-programme of Spain's Community Support Framework is to address the degradation of the country's extensive dry areas. The development programme envisages actions within a Reforestation Plan, a Plan for Forests and Water, a Plan for Combating Erosion and a Plan for Combating Forest Fires.

Forestry measures to be financed under the EAGGF-Guidance Section in 1994-1999 include the afforestation of 161,012 hectares, the establishment of forest routes extending for 11,345 kms, forest improvement over 182,115 hectares to prevent soil erosion, and protection measures against forest fires and diseases over an area of 371,763 hectares. Actions under the heading environmental protection and conservation will cost approximately 71 mECU.



3.4

Watershed Restoration and Management

Spain

Spain's Watershed Restoration and Management (WRM) Programme to tackle desertification is currently entirely cofinanced through European Community funding - partly through the EAGGF partly through the Cohesion Fund.

Conceptual and technical planning of WRM at the national level is made on the basis of the National Plan for Hydrological Forest Restoration and Erosion Control, the first of which was prepared in 1991. This plan estimates that 43.8% of Spanish territory is affected by soil erosion and 18.12% or 91,600

km² is severely affected (almost all affected areas are arid, semi-arid or dry sub-humid lands).

The WRM approach entails an integrated analysis of the land resources of the watershed and their degree of degradation. Land use management plans are then drawn up for soil and water conservation activities in each watershed. The land use proposal must also try to satisfy the socio-economic demands of the people living in the area.

Actions to implement the plans include appropriate reforestation with indigenous Mediterranean species, silvicultural treatments, forest and grazing management, the conservation of agricultural soils as well as structures such as check-dams to control torrential water flow.

Portugal

Portugal's CSF mentions the problem of desertification under its fourth priority area: "strengthening the regional economic base" which is aimed at maintaining "population levels in the less developed regions so as to prevent desertification of the interior". Action to maintain rural farming populations in these fragile areas can directly contribute to preventing land degradation.

The EAGGF-Guidance supported a programme of actions against drought over the period 1989-1993 for a total cost of 50.9 mECU. The current CSF include plans to plant or replant 55,000 hectares of forestry land in addition to the activities supported under the Reg 2078/92 (described on page 45 above) for a total cofinancing cost of 10.9 mECU.

Greece

Greece's CSF includes measures for the rational management of water resources through implementation of a series of hydraulic water storage and supply works as well as those works involving soil protection, improvement of irrigation water quality and reduction of losses. Management plans by catchment area provide the framework for those operations. One particular element of the rural development programme involves forestry protection

extending over 60,000 hectares with another 7,000 hectares planned for forest development. Accompanying actions such as forest inventories and mapping are also foreseen.

In Greece, during 1989-1993, 40 mECU was spent on measures to combat drought through storage of water and measures to reduce water losses through wastage.

France

The Programming Document for the island of Corsica 94-99 refers to planning measures to preserve, rehabilitate and develop the natural landscape in areas which have been damaged. Forestry protection measures are also planned to complement the actions proposed under the accompanying measures to the CAP described earlier.

Other aspects of Regional Development

The geomorphological and climatic factors which lead to the physical degradation of land are often compounded by the impact of planning decisions which fail to take into account the particular vulnerability of affected areas. Europe's regional policies, can contribute at a broader level to addressing desertification through measures to improve spatial distribution of human activities in order to reduce pressures on scarce resources.

Spatial Planning and the Prevention of Drought and Desertification

The Mediterranean regions have, for a number of years, seen an increase in drought conditions. Beyond climatic trends, the worsening impact of drought is generally attributed in part to a series of inappropriate spatial planning practices and poor management of water resources.

In 1991, the Commission developed a policy document setting the European agenda on sustainable and balanced land use planning for the nineties. The theme was developed further, and presented in 1994 in a publication entitled Europe 2000+: cooperation for European territorial development which set as its primary goal the achievement of a viable use of territory through sustainable development and made a number of recommendations regarding in particular, cross-border and trans-national cooperation in the field of spatial planning. These strategy documents were instrumental to the development of the European Spatial Development Perspective (ESDP), the INTERREG IIC initiative and the TERRA programme.

European Spatial Development Perspective

The European Spatial Development Perspective (ESPD) is a policy-oriented document which is aimed at a substantial contribution to effective implementation of a new spatial development strategy encompassing economic, social and environmental dimensions. It identifies the wise management and development of the natural and cultural heritage as one of the three spheres of activity along with a more balanced and polycentric urban system and more equal access to infrastructure and knowledge. This is of key importance for the overall goal of a balanced and sustainable organisation of the Union's territory. One of the operational objectives identified in the document is the establishment of a European network of open spaces for the preservation of natural resources, including protected areas.

INTERREG IIC

As a corollary to the ESDP and the result of several Ministerial meetings, strong support from the European Parliament, and the

Committee of the Regions, the INTERREG IIC instrument was introduced. This is a financial instrument to fund programmes for trans-national spatial planning within which one element is specifically aimed at action against drought in the four affected Member States.

Under this heading, the INTERREG IIC initiative is intended to favour two types of action: Firstly, those which contribute to sustainable land management avoiding excessive consumption of water and favouring the rational and equitable distribution of water resources. Secondly, cooperation amongst the Member States and the local authorities and communities in the exchange of knowledge and experience including technical assistance to non-European Mediterranean countries and Eastern European third countries.

Eligible actions:

- identification of sensitive areas which could benefit from land use planning.
- studies of hydrological and ecological balance within river basins.
- sustainable water exploitation.
- study of water balance in dryland areas.
- better irrigation techniques etc.
- surveillance systems, protection and re-establishment of sensitive areas.
- awareness programmes, training, demonstration and incitation.

The design of operational programmes should be conceived in such a way that one Member State can benefit from the effects of actions taking place in another country. Priority is given to proposals developed in collaboration with community groups.

The budget for these measures in the four Member States is 144 mECU over the period 1997-1999. Other funds may be made available within the framework of INTERREG IIC to support cooperation with non-EU countries of the Mediterranean, Eastern Europe and the ex Soviet Union (from MEDA, PHARE and TACIS Funds).

TERRA

The TERRA Programme grew as a complement to the INTERREG IIC initiative in order to fund networks of regional and local authorities in vulnerable areas of the EU that are



3.4



experiencing difficulties in developing an integrated planning strategy. It expressly includes zones where soil erosion and desertification are a threat in Spain, Greece, Italy and Portugal.

TERRA is aimed at finding new approaches and solutions for facing up to such vulnerability which could serve as examples for other similar areas within Europe or open up new opportunities for experimental research. It is intended that the results of such pilot projects could be used in the future for raising awareness among the public and officials at all levels of the utility and pertinence of strategic land use planning. This programme was launched in 1996 and projects will cover the period 1997-1999.

The Cohesion Fund

The Cohesion Fund was set up under the Maastricht Treaty, to stand alongside the Structural Funds. In aiding less prosperous Member States, it has the overall objective of boosting EU economic and social cohesion in preparation for economic convergence. Interventions are concentrated on environmental improvement and transport infrastructure, sectors where the commitments of poorer countries are especially onerous. Eligible countries are Spain, Portugal and Greece and Ireland. The Fund is estimated to amount to approximately 16 bn ECU over the period 1993-1999 of which equal shares will be apportioned to transport and the environment.

Unlike the Structural Funds, projects are submitted directly to the Commission for approval and should in principle be larger than 10 mECU. From 1993-1995, the total financial commitment to environmental projects in Spain, Greece and Portugal has amounted to 2,572 mECU.

Environment Section

EC Regulations on water supply, urban waste water and urban waste are the principal environmental Directives to be implemented with the Cohesion Fund. However, a significant number of projects outside these three fields of intervention have also been assisted, especially in the case of Spain, such as erosion control measures and reforestation, reflecting the spe-

cial needs of the country.

Water supply and management. Being one of the primary objectives of the environmental section, 35% of the total funds for Spain, Greece and Portugal (834 mECU) have been committed under this heading to major infrastructural projects. The majority of these projects concern the provision of drinking water, and the improvement of water quality. However in several cases interventions have the additional objective of avoiding over exploitation of surface and ground water resources and have been targeted at the worst drought affected areas.

Improving the management of scarce water resources can bring a significant contribution to the mitigation of desertification through reduced exploitation of ground water resources and by stabilising rural communities in dry land areas, however, identification of the contribution made to the fight against desertification or rural land degradation is very difficult to isolate in financial terms.

Afforestation, combating erosion and the regeneration of ecosystems damaged by fire. These projects, which include afforestation actions and anti-erosion works, river basin management plans, monitoring projects as well as studies, are more directly targeted at desertification control. A total of 291 mECU has been committed under this heading which represents a substantial commitment toward measures addressing desertification. Up to the time of writing however, this type of project has only been prioritised by Spain, which has received the lion's share (98%) of total commitments under this heading during 1993-1995.

These include integrated projects which involve biological measures to improve plant cover through afforestation and other forestry work aiming to maintain the balance between soil protection, the progression of vegetation and the stabilisation of water channels. (An example of these projects is presented in the box below). One project has also been cofinanced in protected areas of mainland Portugal to restore vegetation cover after damage by wildfires in 1995, for an EU contribution of 5.4 mECU. This project is envisaged as the first stage of a three phase plan estimated to cost a further 15 mECU.

In addition, integrated plans for the restoration of water supply, forests and the environment of river basins have been implemented in Spain (PICHRA I & II). Total contribution of Cohesion Fund to these plans is 71.4 mECU over two years. A computer network has been established to monitor the availability of water in the Spanish river basins (SAIH) to allow better management of water throughout an entire river basin, particularly in the areas worst affected by drought and desertification. The total contribution of the Cohesion Fund

to the computer network is 25.4 mECU over 1993-1995.

Finally, a study of water resources covering the whole Iberian Peninsula has been launched which aims to analyse the current resources of the river basins common to Spain and Portugal with the objective of providing a coordinated approach for evaluating potential future investments specifically under the Cohesion Fund.



3.4

Afforestation and complementary actions to combat erosion and desertification and regeneration of fire damaged ecosystems

Ebro river basin.

Total cost:	19,190,546 ECU
EU contribution:	15,352,436 ECU (80%)
Other Funds:	Direccion General de Planification, Spain
Date of signature:	7.4.95
Project duration:	1.4.95 - 31.12.95

This is one of a series of measures implemented throughout the major river basins in Spain with similar aims and methods.

Objectives

- to control wind and water erosion and to restore the biological capacity of degraded zones.
- to prevent and combat fires and to restore damaged areas.

- to restore vegetative cover and ensure the stability and protection of soils.
- protect and improve the quality of water resources.
- to improve socio-economic opportunities and infrastructure such as to prevent population migrations in depressed areas
- to induce other effects such as the generation or protection of biodiversity, or the development of the area's aesthetic or recreational potential.

The project aims firstly to stop the process of erosion and desertification by afforestation of species better suited to the local environment and treatment for existing vegetation and small scale hydro-technical works to stabilise river beds against torrent erosion. The second component of the project involves the regeneration of forest areas damaged by fire, through intensified reforestation operations and protection of existing vegetation cover.

An integrated model has been used which is aimed at protecting natural resources from the processes of desertification. Environmental impact assessments are undertaken ensuring that forest species are introduced to lands either where there is no risk of negatively transforming the local ecology or where similar species have been present for at least the last fifty years.



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International Conference on Mediterranean Desertification

Research Results and Policy implications

Sissi, Crete (GR) 29.10-1.11.1996

Synthesis

On October 29 - November 1, 1996, the European Commission sponsored an International Conference on Mediterranean Desertification in Crete, Greece. The Conference was organised by NAGREF (The Greek National Agricultural Research Foundation) and the Directorate for Science, Research and Development (DG XII), in partnership with several other Directorates General (VI, VIII, XI, XVI). It was held under the auspices of the Greek Ministries of Agriculture, Development and Environment, Planning and Public Works and in the context of the Environment and Climate Programme of DG XII.

The aim of the conference was to raise the profile of EU research and policy in this field, to alert both public and policy-makers to the extent, nature and urgency of the problem, and to translate the results of scientific research into policy development and actions.

About 300 scientists, policy-makers and land managers from over 20 countries (Europe, Africa, USA, Israel, India) participated. The Conference was organised around two main plenary sessions where invited speakers presented short, well-focused papers of an essentially review character that highlighted the main issues to be resolved. Poster sessions were organised providing an opportunity for individuals or groups to present their work in a context conducive to discussion and interaction.

On the final day, three Round Table discussions were held addressing the key issues with a view to identifying tangible actions following the Conference and enabling the Commission to further develop its programme of research and development in relation to desertification.

The Conference was highly successful. Firstly,

it drew wider attention and gave increased visibility to the research which has been undertaken in the past twenty years, notably among National authorities and the European Commission's Directorates-General responsible for EU policies; secondly, it provided an occasion to establish links with the Secretariat of the Convention to Combat Desertification; thirdly it provided the occasion for an inventory and review of results achieved over that period; and fourthly it focused the attention of the scientific community on the implications of their research, for future research efforts, as well as for those immediately confronted with the problems: farmers and others in the stricken areas, local and regional authorities, national governments and the EU.

Three workshops followed the plenary presentations at this international Conference, in which these implications were discussed, under the following headings:

- Formulating Research Priorities
- Co-operation in Combating Desertification
- Mediterranean Land-use and Sustainability: Management practices and Mitigation

The present synthesis attempts to summarise the main issues which were commonly identified as of the highest priority in each of the workshops. Summary reports of the individual workshop are also available. They present the main issues discussed and propose some priorities which came out of the discussions in each individual one.

Concertation of efforts in combating land degradation and desertification

The Mediterranean basin is a complex mosaic of different environments, different cultures and different histories of human interaction with the environment. They share many problems, such as the spatio-temporal uncertainty of rainfall, the abandonment of rural areas and growing urbanisation, the lack of industrialisa-



tion in many areas, the loss of agricultural potential, natural hazards (seismicity, forest fires and floods) and the influx of tourists. But because of the differences just mentioned, they manifest themselves in a wide range of ways, and potential remedies differ.

It was a general consensus at the Conference, that every possible effort needs now to be directed at mounting and sustaining a concerted effort at limiting and, where possible, reducing the extent of land degradation and desertification and related problems. Concertation between different efforts at all levels in the European administrative structure, but also between the different sectoral interests and disciplines, as well as between different spatio-temporal scales of research and implementation is essential for success. Much has been achieved in this area over the last few years, but much more can be done.

Linking research and policy

The urgent need is generally felt to bring together research and policy much more closely and effectively. On the one hand, this implies appealing to such research disciplines as 'science policy research' and aspects of management research, but it also entails initiating and maintaining an ongoing substantive dialogue between the various communities concerned: end-users, local and regional stake-holders and administrations, national and EU-level policy-makers and researchers of different kinds. There are several important aspects of any effort in this direction which merit mention. Firstly, there is a need to investigate the respective roles of policy and research. Secondly, an effort will have to be made to identify the main issues and problems which render the generalisation of scientific observations, as well as the application and administration of policies, difficult. Many have to do with cultural differences (and the ensuing difficulties of communication) between research disciplines and between these and those who use their results in the context of policy making and -implementation. Thirdly, new structures and forms of communication will have to be found to improve the interaction between all participants, which balance the bottom-up and the top-down aspects of information exchange.

Scale matching

Some of these problems are related to 'scalar transitions' both within the process of scientific generalisation, and within that of policy implementation. Moreover, the research and policy communities exchange ideas only at specific points in the decision-making process. Scientific theories (themselves highly condensed, abstracted and thus different from the field observations initially studied) feed into policies at the most general (national or EU) level. The policies are implemented via a 'chain of command' of people at different administrative levels (which have interpretations related to their own position in the hierarchy and/or the sector involved), and the policies' 'on the ground' effects are therefore different from their aims. Study of these policy results feeds information back into science at the level of the day-to-day observation. The major problem with this situation is that there is little communication between scientists and those responsible for policies at intermediate levels, little or no focus on discussing the questions arising at those levels, and consequently hardly any systematic knowledge about the dynamics occurring at each level. Yet, in practice, at the level of the interface between end-user and the physical environment, the problems are different in scale and in nature than those occurring at the interface between end-users and those responsible for policy implementation, etc. Research and dialogue should therefore take place at all the levels concerned, and include the processes of knowledge formulation and -use, as well as those of policy formulation and -implementation, in order to better identify the different agendas involved, and to formulate the relevant questions, research aims, policies and policy implementation measures at each level.

A related problem is that of the recurrent mismatch between the spatio-temporal scales of policies, natural and socio-economic phenomena. The CAP, for example, is designed for large surfaces, for example, and neither the policy nor the administrative units applying it are adapted to the spatial diversity of the Mediterranean basin. The scalar problems which this causes should be reviewed and adapted.

'Fast track' development of operational tools

The vast amount of information that has thus far been gathered is inevitably uneven, but its sheer size itself seems to suggest that it would be useful to pass, where possible, beyond this stage and to combine its various strands for the combat against desertification and land degradation. This requires combing the extant research for the most promising approaches, the most relevant information, the areas which are insufficiently developed, etc., and to put a concerted effort into rapidly bringing relevant knowledge together in a set of 'fast track' operational tools which allow the combination of insights gained in different disciplines, in such a way that they meet the needs of all those who are combating desertification and land degradation. It is acknowledged that these tools will need to be further refined, but such a 'fast track' use of extant knowledge is essential if we are to limit, mitigate and combat desertification and land degradation. In this respect, delays do not only cost money, but cause additional hardship, so that time is of the essence.

Integrated multidisciplinary research

Desertification and land degradation are phenomena that are due to the interaction between processes in the atmosphere, terrestrial ecosystems and human societies and they impact on all aspects of human life in the areas affected. We can therefore not afford to dispense with efforts to increase our comprehension of the phenomena and our capacity to react. Although much has been achieved, some major lines of fracture remain between large groups of disciplines, notably between the natural, the life and the social sciences, but also between research focused on explanation and understanding on the one hand, and research aimed at better application of our knowledge on the other. This is necessary because a way forward will have to mediate between the many conflicting sectoral interests operating on virtually all of the European territory. To optimally manage a catchment basin, for example, it is necessary to understand (among other things) its weather, geology and its hydrology (the constraints on water quantity and flow), but also its agriculture and its non-agricultural

(tourism, industry) economy (which determine water use), its spatial organisation (and the need for a transport infrastructure), its social networks (which in many instances determine the population's response to policies) and its administrative structure (which implement the extant policies). Answering the many questions involved, in turn, requires the collaboration of a large number of disciplines on a basis of equality. Important efforts are needed to develop true, integrated, multidisciplinary between the disciplines in each of the major groups referred to earlier, although not necessarily in the form of very large projects.

Focus on target areas

Different problems have best (or first, or most easily) been observed in different areas, so that the research has highlighted erosion dynamics in one area, vegetation dynamics in another, hydrological problems in a third, etc. To some extent, studying similar phenomena at a range of sites along transects has enhanced comparability and comparison - but different transects have themselves been chosen on different scientific grounds. What is needed therefore is to bring the results and efforts together by focusing as much of the research as possible on a limited number of specific (sub-) regions, encouraging different teams to apply their perspectives in joint research on a few sample areas which, in different ways, point up the generic problems of which the Mediterranean suffers. This will greatly improve the efficiency and effectiveness of the multidisciplinary research involved, it can produce immediate and tangible management benefits for these regions, and it can support local as well as central efforts and initiatives.

To this effect, one could divide the Mediterranean into a set of systemically coherent target areas (e.g. coasts, mountains, enclosed isolated basins, etc.). These areas will have to be defined in such a way that the relevant limits for different disciplines can be honoured without jeopardising their focal character. In conjunction with local authorities one could then, at various scales, inventory the most pressing problems and focus all efforts on finding efficient ways to dealing with them.



Regional, continental and global aspects

The processes involved operate at many different scales, and it was felt that the research should reflect this. At present, one focus is at the global level - both in climate research and in desertification studies involving the large deserts of the Earth. Another level is purely Northern Mediterranean, involving the atmospheric, geospheric, biospheric and human dynamics in Southern Europe. It is felt that convergence between work done at these different scales is a priority, as well as a clearer articulation of the specifics of each level and the role of dynamics principally operating at the other levels. More attention needs to be devoted to the relationship between the northern and southern rims of the Mediterranean, to the role and specificity of the Mediterranean and Southern Europe in global environmental conditions (climate, land/sea relationship), and to the relation between the Mediterranean and the rest of Europe.

Investigation of the sensitivity of drivers at the regional level

Although most of the drivers of the processes involved have been identified, what is not clear yet are the threshold values at which they interact. Climate, the economy, geography and policies (as well as the other drivers) all have non-linear moments in their trajectories at which they exceed or surpass thresholds which set feedback loops in the remainder of the system in working. These values differ from region to region between the major deserts of the world, but equally between the different regions of the Mediterranean basin, and between periods. Thus, we know that the "degradation threshold" in SE France has been substantially lowered over the last 10 000 years. A large part of the research to date has been focused on identifying drivers and devising ways to describe/model the processes in general terms so that the conclusions were "portable". In actual fact, the long history of symbiosis between different peoples and their environments in the Mediterranean means that in each region different equilibria have

been found, so that regional differences account for much. Comparative research between regions in the Mediterranean is therefore a priority. Equally, it seems profitable to promote a contrastive/ comparative approach between the Mediterranean and other (semi-) desert areas in order to better understand the specificity of Mediterranean conditions.

Sharing different kinds of knowledge: participation, communication and education

The variety of knowledge and opinions on land degradation and desertification is very great indeed, reflecting many different scientific and cultural traditions but also, for example, differences between rural and urban experience, differences between scientists (many of them from non-desertified countries) and people in the first line of involvement in the field - farmers, their advisers and their immediate local and regional authorities. All these different kinds of knowledge are important, as they are both part of the problem and part of the only possible durable solution, one which takes all the interests involved into account. It is therefore urgent to effectuate a shift towards participatory research concerning all levels and sectors of the community:

In this context, it is essential that an important effort be directed at communicating the problems of land degradation and desertification, and the research results as well as their implications, to all involved. Clearer and more appropriate formulation, better techniques of presentation, new means of communication all have to be developed in order to minimise distortion. Such means will have to be adapted to the different audiences involved.

To actively stimulate all-round participation in designing optimal ways to combat desertification and land degradation in different areas of the Mediterranean, more widespread and more encompassing education on environmental matters should be encouraged, as well as the inclusion of an adapted regional component in such education, which deals with the problems encountered in daily life.

Conference Summary

- Desertification in arid, semi-arid and dry sub-humid areas is an extreme state of land and water degradation resulting from adverse human action upon them.
- There is an increasing awareness concerning the problem of sustainable land and water management.
- The mitigation of desertification is impossible without the development of human resources. The need for the investigation and implementation of socio-economic measures alongside new technology was stressed.
- There is a need for the constructive interaction and unobstructed flow of information between scientists and policy makers. Such interaction can be facilitated by formulating integrated interaction plans and improving national and international links in land and water policy design and implementation, through concerted actions and effective joint committees.
- There is a clear and continuing need for education, training and information dissemination to all actors, but especially to the ones at the local level who are asked to make the commitments and bear the brunt of the sometimes unpleasant actions.
- The active co-operation of the local population and local authorities has to be secured for the acceptance of pilot projects and the successful implementation of policies, and even for assistance in research projects. A bottom-up approach is strongly recommended.
- The identification and realisation of co-ordinated pilot projects (at least one in each Member-State) is recommended. Such projects are to be connected by a network for early warning and the exchange of information and technology. This network should include a monitoring mechanism concerning the state of the environment - which acts both as a research tool and as a warning system. Such a network could also interact and be advised by a panel along the lines of IPCC. In case this panel is constituted, Greece will be happy to host its first meeting at Santorini next year.
- It is proposed to the European Union that a Community initiative should be established to support pilot activities, the network, and other co-ordinating tasks. Such an initiative should require the active involvement and collaboration of a number of DG's (e.g. DG VI, VIII, XI, XVI)
- A number of concise scientific areas for research were identified, with emphasis on extreme events, land-cover interaction with local climate, bio-technologies, regional precipitation patterns and others with emphasis on topics with direct application.
- Integrated land-use planning and rational management of water resources at regional and inter-regional levels are imperative.
- Globalisation of policies to deal with desertification and land degradation for the whole Mediterranean basin is strongly recommended.
- National, EU and international agricultural policies in the threatened areas must be reshaped to guarantee the sustainability of land and water resources.



Projects supported by the European Community

Methodology adopted for carrying out the survey

ACP states. Projects were identified by cross referencing information from two sources. The first source was an inventory produced in May 1996 during the course of a recent evaluation of EU environmental programmes. However, the report took a restrictive definition of what constitutes a desertification related project within its classification system, and many projects listed therein as land resource management, forestry or biodiversity projects were also considered to be relevant. It was necessary therefore to obtain the Annual Reports of the Delegations in each relevant ACP state which give brief descriptions of all ongoing projects. Where information was unclear and time permitting, follow up discussions were held with desk officers and project dossiers examined. Additional data was obtained from the EDF project database.

For the ALA-MED countries, the Inventory mentioned above was the primary source of preliminary project identification. Projects identified on this basis were discussed with desk officers.

In both cases, projects in dryland areas which concern soil and water conservation, the management of natural resources, promotion of alternative energies, environmental education, anti-erosion measures an afforestation, improvement of agricultural practices, long term food security measures in the field and smallholder agricultural irrigation have been included in our project selection. It was decided that large scale irrigation works would not be included, in line with the latest debates on the nature of the concept of desertification which

hold that desertification is mainly concerned with rainfed systems as irrigation systems involve other specific issues such as the salinisation of soils and groundwater reserves which are not necessarily related to dryland degradation.

European Member States. During the course of previous inter-service consultations, a range of policy initiatives which concern rural dryland areas of Europe were initially identified. Projects from the LIFE programme were selected from official lists grouped by policy priorities. Research projects were identified on the basis of catalogues of contracts and on advice from officials. Information on funding programmes under the Agricultural and Regional Policies were identified and transmitted by officials of these DGs. As explained further in chapter 4, projects cannot be listed in the same way as for the projects in developing countries. This is due, firstly, to the fact that desertification actions are included among many more general measures in the field of water management, afforestation etc. and are in most cases not individually identified. Secondly, the operational partnership between the Community and the Member States in the management of most agricultural and regional policy programmes, means that individual project details are not available at the Commission. The exception to this rule is the Cohesion Fund which is directly managed by the Commission. Projects relating to erosion control and afforestation actions under this Fund are therefore listed in annex D

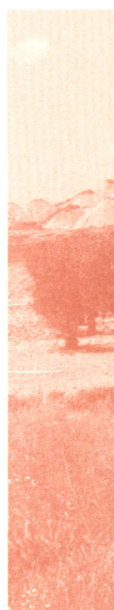
In all cases, it should be made clear that the sums of money attributed in the project listings represent the financial commitment agreed by the EC as opposed to payments subsequently made.

Projects listed in shaded rows are described in further detail in the relevant section of this report.

Development Projects in ACP Countries 1990-1995

(excluding cofinanced NGO projects listed in a separate table)

Country	Funding source	Project Title	Year	EC contribution in ECU	Brief Project Objectives and Description	Contracting Partner
Benin	Env	Farmers grazers relations in North how this conflict effects the degradation of the environment	1991	348,560	Studies how the degradation of the env. is linked to conflicts between herders and farmers. Analyses how migration paths affect prot. areas. Examines the Pastoral Water Plan and which types of land use can incr. sust. of past. or agric. ways of life.	Research Institute
Botswana	EDF	TA to the Department of Water Affairs, Ministry of Agriculture	1992	1,000,000	To identify reliable ground water resources for development and distribution of rural communication to overcome the serious drought problems of recent years	Government
Botswana	EDF	Forestry Protection and Development	1992	3,000,000	Aim is to improve cons. and management of existing woodland resources to ensure hshold energy supplies, create employment and income generating poss. To contribute to the diversification of the agric. sector. To reverse the trend toward deforestation.	Government
Botswana	Env	Environment Public Awareness Programme	1991	95,000	Production of comprehensive video programme aimed at students and teachers of the role of wildlife clubs in environmental conservation. Set up a computerised management programme for coordination of conservation activities. Prep. of cons. handbook.	NGO
Botswana	Env	Wildlife (elephants) impacts in North: Modelling Vegetation and Land use patterns using remote sensing and collateral data	1992	165,572	Research of areas most vulnerable to serious deterioration of vegetation and wood species by elephant populations. Develop spatial and dynamic models to determine the factors of degradation; elephants, grazers, human impacts and drought.	Research Institute
Burkina Faso	EDF	Valorisation des ressources en eau Sud-Ouest	1992	15,000,000	Improvement of the economic use of water resources through the promotion of microprojects of agricultural, pastoral and commercial development of water. Project beneficiaries: grassroots organisations.	Government
Burkina Faso	EDF	Accueil equipments solaires PRS/Sourou, Yatenga and Passore	1993	2,000,000	Project aims to make maximum use of water resources in order to improve living conditions of rural populations as part of a follow up to the major regional solar programme of the 6th EDF.	Government
Burkina Faso	EDF	Confection d'outils cartographiques pour la gestion de l'environnement	1995	1,950,000	Support to National Action Plan for the Environment PANE which works to preserve and better manage natural resources. Maps will assist in land use management and supervision of protected forests.	Government
Burkina Faso	EDF	CTA: actions de Centre Technique de cooperation agricole et rurale	1995	128,416	Study seminars on management of national forests, erosion control, restoration of degraded soils, regeneration of agroforestry parks	Research Institute
Burkina Faso	EDF + CPF + FASA	PASA et le Nouveau Dispositif de Securite Alimentaire	1993	8,300,000	Programme to reorganise the agricultural sector, aimed at boosting food security, strengthening and diversifying local production and conserving and improving the management of natural resources.	Government
Cape Verde	Env	'Remote Sensing Agricultural Resources	1991	324,300	Exam of morphometrics for better agricultural development of natural resources, applying it to forecast and follow up harvests, identifying agric. potential and mapping aptitude of soils to run-off.	Government
Central African Republic	EDF	Programme de Developpement Rural du Nord	1993	14,600,000	To prevent rural depopulation. Activities incl. counter the advance of arid zones, participatory rational exploitation of nat. resources and dev. of private sector tourism/income generation. Conservation, protection + env monitoring of two national parks	Government
Chad	EDF	Rehabilitation of Zakouma National Park	1990	1,070,482	To develop effective programmes to combat desertification and to provide socio-economic benefits to the local community. To reduce human pressure from degrading resources of the park.	NGO
Chad	EDF	Programme de Conservation de l'Environnement dans le Sud Est	1992	3,500,000	To rehabilitate two national parks which act as barriers to encroachment of desert and are important biodiversity reserves. Participatory research of sust. dev. measures for rational management of nat. resources, impr. knowledge of protected ecosystems.	Government/ NGO
Chad	Env	Kouri Bovine Race	1993	345,000	Research into conservation of race of cattle endemic to Lake Chad through aiding local population to modify agro-pastoral systems in areas subject to desertification	Government
Chad	CPF	DIAPER apport national	1994	30,380	Support to Regional Programme for the analysis of and preparation of forecasts for food security.	Government



Country	Funding source	Project Title	Year	EC contribution in ECU	Brief Project Objectives and Description	Contracting Partner
Djibouti	EDF	Projet de lutte contre la désertification Yoboki	1991	130,000	Agropastoral programme involving establishment and management of seed farms, afforestation activities.	Government
Djibouti	EDF	Construction d'un laboratoire d'analyse des sols et de l'eau	1995	115,000	Construction of a laboratory for the study and analysis of soils and availability of water resources	Government
Eritrea	CPF	Afforestation and soil conservation project in Anseba	1995	2,129,286	To prevent soil erosion by constructing soil and water conservation structures such as hillside terraces checkdams micro basins soil and stone bunds both on farm lands and hillsides. To afforest the treated dam catchment areas	Government
Ethiopia	EDF	Small scale environmental protection measures	1993	2,200,000	Small scale environmental protection measures aimed at achieving sustainable agricultural production	NGOs
Ethiopia	EDF	AFAR Pilot Pastoral Development Project	1993	1,900,000	Pilot project including animal disease control programmes small scale irrigation, improved forage production. Strong participatory element.	Government
Ethiopia	EDF	Wildlife Conservation Project	1994	2,700,000	To improve long term security of wildlife resources in Mago Nechisar and Omo National Parks to dev. community awareness and particip in the management of nat. resources and to optimise financial returns. Problems of land tenure will be tackled.	NGO
Ethiopia	Env	Conservation of the Borana Rangelands	1994	933,000	To improve food security of 5000 families through increasing capacity to manage their own development activities. Project activities incl. forage development, impr. access to water supply, impr. and diversify food supply to reduce dep. on dairy products.	NGO
Ethiopia	Trop For	TFAP Forestry Sector Review	1992	79,160	Review will form a basis for the rational development and utilisation of forest resources in the country. Concerns the role of forestry in land use including: land-use planning, farm forestry/extension, livestock/ fodder and soil/water conservation	NGO
Ethiopia	Trop For	Community Forest and Wildlife Conservation Project: Phase I	1992	560,106	Collect + analyse socio-econ. env'l and physical data. Est. agreement btwn local + national institutions and project to protect + manage natural forests. Provide alternative sources of income to communities. Impr env awareness through training inter alia	NGO
Ethiopia	Trop For	Community Forest and Wildlife Conservation Project: Phase II Land Use and Farm Forestry	1995	1,253,770	Continuation of above project. Objectives as above though expanded to include increased focus on national policy matters.	NGO
Guinea Bissau	Env	Remote sensing bush fire	1991	167,390	Pilot project to test the possibilities of satellite remote sensing for the surveillance and management of bush fires and how they affect sylvopastoral soil erosion and fallow practices.	Government
Kenya	EDF	Mara Conservation Project	1990	1,350,000	Components forest protection, research and environmental monitoring, road repair and anti-poaching support in Masai Mara reserve. Conservation training and extension in surrounding areas.	Government
Kenya	Trop For	Arabuko Sokoke Forest Management and Conservation Project	1993	1,900,000	Natural forest management and conservation which will in turn prevent elephants raiding crops in search of scarce water resources. On-farm water supply and tree planting to avoid overexploitation of the neighbouring forest.	NGO
Lesotho	Env	Community Forestry Project	1993	700,000	To halt the degradation of the environment. A further 600,000 trees will be planted in areas threatened by erosion. Community participatory education + training on env. protection, land cons. and protection of biomass resources particularly firewood.	NGO
Lesotho	EDF	Microprojects scheme for agricultural and rural development	1990	3,000,000	Microprojects scheme for agricultural and rural development, 10% of the surface area of Lesotho is considered to have soil erosion	NGO
Malawi	EDF + CPF	ADD Food	1994	3,440,125	Pilot project to disseminate agroforestry techniques among poor rural communities to counter soil erosion + fertility loss due to maize monoculture and deforestation. Activities to improve maize yield, crop diversification and training of 150 advisors.	Government
Malawi	EDF	Agricultural Land/Food Potential and Population Nutrition survey	1993	450,000	First phase aimed at predicting food needs. Second phase aimed at filling gaps identified including improved agricultural techniques but primarily agricultural land tenure reform which is a major restraint against improving food security.	Government
Malawi	EDF	Programme to restore agricultural production after the 1993/94 Drought	1994	7,000,000	Distribution of agricultural inputs to recipients of Food Aid and to replace fertiliser in order to supply 800,000 families for this planting season.	Government

Country	Funding source	Project Title	Year	EC contribution in ECU	Brief Project Objectives and Description	Contracting Partner
Malawi	EDF	Poverty Alleviation Programme - Pilot Project Agroforestry	1995	1,000,000	Overall objective is sustainable food production at individual household and village level. Sustainable land utilisation at catchment area level. Full project entitled "Promotion of Soil Conservation and Rural Production" recently agreed for financing.	Government
Mali	EDF	Lutte contre l'érosion dans les terroirs desservis par la route Bandiagara Dourou	1993	900,000	Protection of the road against erosion with anti-erosion works realised by the rural populations themselves on the edge of the road as well as on the agricultural lands along the route	Government
Mali	EDF	Lutte contre l'ensablement et développement des ressources forestiers	1993	6,810,000	Aims to stop sand accumulation in villages and agricultural lands and communication routes in the North and to protect and develop forest resources. Also aims to develop market crops in areas protected by forests. Integral role of women is highlighted.	Government
Mali	EDF	Nord Est Mali développement élevage Gourma	1993	1,366,580	Part of larger project in Gao region. Principal activities are training and literacy of herders, improvement of productivity incl pasture management, water infrastructure.	Government
Mali	EDF	Accueil Pompes solaires	1993	2,900,000	Support to regional solar programme begun under the 6th EDF promoting the use and adoption of solar energy in CILSS countries where woodfuel resources were under serious threat of overexploitation	Government
Mali	EDF	Valorisation des eaux de surface en 5ème région	1995	300,000	To improve the living conditions of 27,500 approx inhabitants thanks to a better food security and more balanced management of natural resources.	Government
Mali	EDF	Micro-realizations: Barrages et aménagements des bas-fonds, Protection du milieu naturel et Elevage: production de fourrage	1992	1,617,249	Microprojects. Actions are initiated exclusively by the beneficiary populations who contribute 25% of investment cost and take into account the technical + management capacities of the interested villages.	NGOs
Mali	EDF	Gestion des forêts classées de Macina et Baraoueli	1994	760,000	Protection of forest areas through participatory sustainable management system. Promote local operation structures for forest management. Institute contractual agreements between public structures and village populations. Develop management plans.	Government
Mali	EDF	Elevage Mali Nord Est II	1995	4,228,356	Improvement of revenues and living conditions of the nomadic and fixed populations in the NE. Improvement of agricultural and herding systems with a greater responsibility to the local population and the promotion of their economic activities	Government
Mauritania	EDF	Mésures Nationales accompagnant le Programme Régional Solaire	1993	2,520,000	National component of a Regional project which aims to use solar energy to power equipment for water pumps	Government
Mauritania	EDF	Développement économique de la région du Lac d'Aleg	1995	3,000,000	To secure the population in Aleg Lake region. Improvement + securisation of rural incomes. Reducing pressures on land through impr. relation between farming and herding. Improved expl. of water resources + rehab of water infrastructure.	Government
Mauritania	EDF	Développement économique et agricole de la région de Tagant	1995	700,000	Involve local communities in designing a regional management scheme for village lands as well as conservation programmes and the economic agricultural development of these lands.	Government
Mauritania	Env	Gestion des ressources forestiers	1995	313,000	Protection, regeneration and development of woody biomass resources. Elaboration of new regulatory regime for management of protected forests. Transfer of responsibility for prot. forests to the local populations. Control of firewood and charcoal development.	Government
Mauritius	EDF	National Derocking Scheme	1990	3,000,000	To put at the disposal of small holders new lands and raise the productivity of those currently available in actions of rock clearing.	Government
Mauritius	EDF	Gestion des ressources naturelles et agricoles	1992	1,960,000	The project comprises actions to help the transitional agriculture, management of pastoral and forestry resources	Government
Mozambique	Env	Sustainable Agriculture in Machaze	1995	1,160,000	Improve food sec. through risk diversification. Integrate concern for env. and nat. resources in production techniques incl. soil cons. and farmer managed seed supply systems. Also progs of infrastructure rehab., nutritional educ, and rural water supply.	NGO
Niger	EDF	Développement en zone pastorale (Azaouagh-Tadress-Nord Dakoro)	1994	18,000,000	To preserve animal prod. through management of nat. resources by improving the network and management of water supply. To improve living standards and raise revenues of herders by improving health service and education provision and creating cereal banks etc.	Government

Country	Funding source	Project Title	Year	EC contribution in ECU	Brief Project Objectives and Description	Contracting Partner
Niger	EDF	Programme de petite irrigation dans la basse vallée de la Tarka	1993	16,000,000	Protection of valley lands through treating 6000 ha of river basin areas. Developmt of rural credit structures. Regularise supply of inputs. Rationalise and improve markets for produce. Minimise the risks of over-production and diversification	Government
Niger	Env	Programme faune (Giraffes) environnement gestion des terroirs dans la région de Kouré Dallol Bosso Nord	1994	480,000	To set in place the social inst., econ and tech. conditions for sustainable development of nat. resources. Assist the local pop. in drawing up a Land Management Plan of all environmental resources which form the basis of their agric. production systems.	NGO
Senegal	EDF	Programme de developpement de la region de St Louis. Volet: Environnement	1993	1,800,000	To halt degradation of env. and its negative impact on agric. prod. particularly targeting wind erosion with wind breaks and afforestn. Prog. will also look at the institutional environment and define tools with which to rationally manage village lands.	Government
Senegal	Env	Remote sensing on woody vegetation	1991	264,000	To evaluate current natural vegetation with an inventory of species and their chars. linked to a multi-temporal study of the evolution of amount and location of vegetation over the past 20 years. Options for the management and rational exp. of the area.	Research Institute
Sudan	EDF	TA Drought Preparation and Anti Desertification	1991	435,000	TA in the field of drought preparedness and fight against desertification to the Ministry of Agriculture and the Relief and Rehabilitation Commission for policy preparation and updating of the national plan.	Government
Togo	Env	Formation et Demonstrations Agroforestières dans le Nord	1993	1,200,000	Aims to address the effects of the degradation of the env. and the reduction of agric. activity in the region of Kara and Savannes. Elements incl. innovative agroforestry techniques, training local populations and primary and secondary env. educ.	NGO
Uganda	EDF	Strengthening Economy and Policy Research in National Agricultural Research Systems	1994	1,150,000	Strengthening Economy and policy research in national agricultural research systems.	
Zambia	EDF	Forest Resources Conservation and Wood Fuel Studies	1995	284,000	Dramatic reduction of forest base through deforestation and over exploitation for woodfuels. Two studies to provide basis for future EDF project examining forest resource management including conservation and the supply and demand of woodfuel.	Research Institute
Zimbabwe	EDF	Small scale irrigation programme	1990	6,000,000	Aims to provide 800 families with irrigated smallholdings. Small holders involved in management of irrigation blocks and responsible for payment of operation and maintenance	Government
Zimbabwe	EDF	Development Programme for Communal Areas in Kariba Region	1993	4,600,000	To consolidate land use system developed in pilot phase to promoté community managemt concept for nat. resource development, to strike sustainable balance btwn farming, livestock and wildlife. Thus reduce land degradation, protect env. and impr. food sec.	Government
Zimbabwe	Env	Land Use Patterns and Sustainability of Agro-pastoral Systems in the Zambezi Valley	1993	300,000	Study aims to describe changing land use patterns 1951-1993 and changes in wildlife and livestock pop: 1979-1993. Yearlong econ. survey of selected hsholds. How wildlife, other nat. resources and agric. contribute to hshold econ. Determine if sustainable.	NGO
East Africa	EDF	Programme Speciale pour les pays voisins au Ruanda	1994	47,000,000	Env. element aims to restore and protect env. mainly through reforestation of areas severely degraded due to pressure from incoming refugees. Other project elements: rehab and improve transp. infrastructure. To rehab. health care and education systems.	Governments
East Africa	EDF	IGADD: Renforcement de l'efficacité des systèmes de surveillance par la télédétection	1995	1,994,000	To improve information related to food security and management of natural resources. More specifically, to reinforce regional cooperation through the development of national capacities in data analysis and coordination of information distributed.	Inter-Governmental Organisation
East Africa	EDF	IGADD: Household Energy Programme	1995	1,750,000	Incr. awareness of within IGADD and intl community re household energy and env. degradation. Form. sub-regional strategy. Identify + promote use of affordable + sust. energy sources. Propose + recommend transfer of energy efficient approp. tech.	Inter-Governmental Organisation
East Africa	EDF	ILCA Research Coordination and Training for Improved Livestock Production in East Africa	1993	1,950,000	Coordination and training for improved livestock production in East Africa support to International Livestock Centre for Africa	Inter-Governmental Organisation

Country	Funding source	Project Title	Year	Total EC contribution in ECU	Brief Project Objectives and Description	Contracting Partner
South Africa	EDF	SADC Wildlife Management Training project	1995	8,000,000	Train wildlife personnel which will have a positive impact on ecological balance through improved conservation of soil, water and vegetation on agricultural land adjacent to wildlife areas and via extn of multiple land use in agriculturally marginal areas.	Inter-Governmental Organisation
South Africa	EDF	SADC Regional Food Security Training Programme	1993	5,000,000	Impr. knowledge and skills of staff in food security agencies (public/private). Impr. capacity of existing institutions to provide training. Impr. professional + managerial effectiveness of national and regional agencies re policy analysis + implementn.	Inter-Governmental Organisation
West Africa	EDF	Surveillance ressources renouvelables (SANAS)	1992	140,212	Development of a reliable method using remote sensing to forecast cereal production in the Sahel and irrigation waters in the catchment basin of the Niger. Preparation of national services in Burkina Faso, Mali, Niger and Senegal	Inter-Governmental Organisation
West Africa	EDF	Recherche Amélioration de la jachère en Afrique de l'Ouest	1994	2,800,000	Research in Mali, Ivory Coast, BkFaso, Niger and Senegal to define systems for improving management of fallow practices; to compare and transfer agro-sylvo-pastoral techniques among the countries of the region; to train technical and scientific officers.	Inter-Governmental Organisation
West Africa	EDF	CILSS Instruction de la Phase II du Programme PFIE	1995	101,835	Project to support the regional Information and Education Programme on the Environment (PFIE) described below.	Inter-Governmental Organisation
West Africa	EDF	PFIE transition between phases I and II	1994	600,000	To raise awareness among schoolage children in the Sahel. The Programme aims to bring about consciousness of the seriousness of desertification and the urgency of their own mobilisation.	Inter-Governmental Organisation
West Africa	EDF	Renforcement du CERAAS Centre d'étude régional d'adaptation à la sécheresse	1994	1,700,000	To reinforce the CERAAS which is a specialised lab. of the ISRA (Senegalese Inst of Agric. Research) by adapting its scientific and technical capacity to needs of the Region relating to desertification. Impr. effectiveness of national research systems.	Government
West Africa	EDF	PFIE II	1995	16,000,000	Two main objectives to improve the quality and the effectiveness of teaching at the primary school level and to reinforce the local capacities for management of natural resources in the Sahel	Inter-Governmental Organisation
West Africa	EDF	DIAPER III	1992	9,997,868	To reinforce national and regional capacities of each Member State of the CILSS to provide the political decision makers of these countries and other partners with the statistical information necessary to forecast agricultural production.	Inter-Governmental Organisation
Africa	Trop For	Images régionales scientifiques et techniques et réalisations audiovisuelles. Ressources naturelles et agronomie	1992	2,269,360	Regional scientific remote sensing of natural and agricultural resources. Improvement of techniques and production of audio visual presentations	Research Institute
West Africa	Env -	Pastoral Associations for natural resources	1993	305,000	Study to formulate practical recommendations + policies in sust. local resource managemt in Mali, Burkina Faso and Niger. Inventory of local meas. over last 10 years looking at integration of rangeland dev't with crop farming and forestry activities etc.	Research Institute
West Africa	Env	Evaluation of projects on remote sensing	1994	126,000	Produce inventory of teledetection projects to assess the state of the art in field of land use, management, mapmaking, (pasture, farmland, river basins, forests), surveillance (biomass resources, bush fires etc.), desertification, harvest systems.	Research Institute

National ACP Programmes	All sources listed above	Total financial contribution to 62 national development projects	1990-95	168,913,732
Regional ACP Programmes	All sources listed above	Total financial contribution to 18 regional development projects	1990-95	99,734,275
All ACP	NGOs	Total financial commitment to 81 development projects and mini projects (NGO cofinancing)	1990-95	11,449,809
All ACP	All sources	Total financial contribution to 163 national and regional development projects	1990-95	280,097,816

Codes used in the above table

EDF:	European Development Fund governed by the Lome Convention
CPF:	Counterpart Funds generated by sales of EU food aid
FASA:	Food Aid Substitution Aid (Financial Assistance)
Env:	Budget Line for the Environment in Developing Countries Ref No B7-5040 (post 1995 renamed B7-6200)
Trop For:	Budget Line for Actions in favour of Tropical Forestry in Developing Countries Ref No B7-5041 (post 1995 renamed B7-6201)

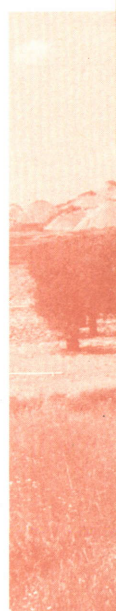
Development Projects in the Mediterranean Region 1990-1995

Country	Funding source	Project Title	Year	EC contribution in ECU	Brief Project Objectives and Description	Contracting Partner
	4th Prot	Review of Master Plan - Land and Water resources	1992	66,860	To assist in the preparation of Egypt's environmental master plan for better management of land and water resources	Government
	4th Prot	Improvement of agricultural productivity in arid and semi arid zones	1990	2,000,000	To provide a basis for optimal use of region's land and water resources. Activities: dev. + promote improved techniques for producing crops + livestock, to formulate comprehensive land use recommendations aimed at optimising the region's scarce rainfall	Research Institute
	4th Prot	Azraq groundwater resources study	1990	3,000,000	To study the levels and quality of ground water resources in Azraq	Government
	4th Prot	Télé-détection au Maroc	1994	4,000,000	Improvement of surveillance techniques of the potentialities of economic sectors such as forestry, will provide data for sound management of natural resources.	Government
	4th Prot	Aménagement anti-érosif du Bassin Ouest Haser	1995	60,000	Antierosion works in the river basin of West Haser	Government
	4th Prot	Forestry sector support programme	1995	3,500,000	Long term sust. dev of forestry subsector. Increase agricultural and forests production + improve living standards of rural populations. Activities: set up GIS, introduce participatory planning approach, test management plans, prepare training materials etc	Government
	3rd Prot	Developpement agricole du Sud Ouest du Kef	1990	10,000,000	Integrated agricultural development project including protection of agricultural lands, livestock management, etc.	Government
	4th Prot	Conservation des eaux et des sols	1993	45,000,000	Flood control / anti-erosion works and management of river basins. Mobilisation of water which is usually lost for domestic, agricultural and pastoral use. Within the framework of the National Soil and Water Conservation Strategy.	Government
	4th Prot	Conservation des eaux et des sols II	1995	20,000,000	Continuation of above project	Government
	Campus	Désertification et Aménagement de la bordure sud du Méditerranéen	1992	98,500	Organise in depth study of causes + mechanisms of desertification. Propose pastoral management strategies + solutions for the Maghreb and Egypt. Project involved 2 courses for trainers re the relation btwn steppe and oasis + desertification management	Research Institute
	Campus	Transmediterranean Network for training research and training through in solar cells and materials for photovoltaic conversion	1992	71,000	To study solar electricity. Two courses of training, one on photovoltaic conversion and solar electricity and postgraduate studies on the physics of the solid, solar cells and photovoltaic conversion. Traineeships + applied research actions in EU also.	Research Institute
	Campus	Environmental management programme	1992	62,400	To develop technical capacity to implement environmental management systems within the participants' respective organisations. Two training courses for trainers on soil management, impact evaluation and marketing policies. Traineeship in Maastricht.	Research Institute
	Campus	Application des sources d'énergie nouvelles et renouvelables dans les pays méditerranéens aspects économiques technologiques et environnementaux	1992	94,000	To study the energy and environmental situation in Mediterranean countries. Intensive training courses in Morocco and Italy. Activities will be focussed on environmental aspects and on the capacity to manage energy production.	Research Institute
	Campus	Analyse et diagnostique de petits périmètres irrigués	1994	74,000	Project related to a programme of courses examining strategic aspects of rural devt. designed to be transferred to Med. Universities. A training of trainers course + continued training of exps. + civil servants in irrigation, drainage + water resources.	Research Institute
	Campus	Med Céréales et sécurité alimentaire	1994	96,900	To improve the management of durum wheat + barley production relating to their agronomic and technological (agro-industrial) aspects in order to support better the needs of the maghreb populations and livestock herds.	Research Institute
	Campus	Programme de formation en techniques expérimentales utilisées dans l'évaluation de ressources naturelles et dans la gestion de l'environnement	1994	90,000	To arrive at a rational exploitation of natural resources + at env. management at the institutional + commercial levels. Courses on natural resources, pollution, analysis + measuring techniques, maintaining scientific materials + env. management + evaluation.	Research Institute
	Campus	Formation spécialisée en matière de géologie appliqué et environnement	1994	85,000	Decreasing the contamination of water and desertification Optimising exploitation of mining resources and the prevention of geological risks. Traineeships and training in research. Courses analysing fragile geological structures etc.	Research Institute
All Mediterranean	Total financial contribution to 17 projects		1990-95	88,298,660		

Projects in Asia 1990-1995

(excluding cofinanced NGO projects listed in a separate table)

Country	Funding source	Project Title	Year	EC contribution in ECU	Brief Project Objectives and Description	Contracting Partner
China	ALA	Jiangxi Sandy Wasteland Development Project	1992	4,000,000	Project aims to stabilise and utilise for agricultural purposes the sandy wastelands along the provinces rivers and lakes through the planting of shelterbelts and forestry and especially through the establishment of irrigated high value horticulture	Government
China	ALA	Gansu Provincial Irrigation Experiment and Training Centre	1993	1,700,000	Consolidation of earlier project. Establish Provincial Irrigation Training Centre. Aims at improving food security situation + increasing incomes by utilising the scarce water resources more efficiently + improving crop yields and agricultural production.	Research Institute
India	ALA	Rehabilitation of the Common Lands, Aravali Hills	1990	23,200,000	Env protection through restoration of veg. cover to enable villagers to meet their needs in fuelwood, fodder + timber from the hills in ecologically sustainable manner. Forest replanting, soil works + fodder development. Reinforce community institutions.	Government
India	ALA	Bhimtal integrated watershed management	1990	4,400,000	To halt deforestation + protect soils in hills where strong ecological degradation to meet local population's needs in fuelwood, fodder + timber in ecologically sust. manner. Includes afforestation, pasture + fodder dev, constr. of terraces + bunds etc.	Government
India	ALA	Doon valley integrated watershed management	1990	22,500,000	To arrest and reverse on going degradation of env. Important to involve local population and impr. quality of rural life. Strong focus on women. Activities incl. social forestry, minor irrigation, agric. inputs, soil conservation, energy conservation.	Government
India	ALA	Community Management of natural resources in Gujarat	1993	14,000,000	Reduce rural poverty by raising incomes + reducing migration. Dev. of forest production to raise rev. + reduce overexploitation of nat. wood. Also village institution dev., water management, biogas prog., training programme, savings + credit schemes etc.	NGO
India	ALA	Ravine Stabilisation Uttar Pradesh	1995	12,100,000	Soil conservation and forest protection works. Project design is based upon an innovative approach towards undertaking soil conservation work on State and communal lands.	Government
India	ALA	Afforestation of wastelands and agroforestry in Haryana	1995	23,300,000	Env protection through afforestation to enable villagers to meet their needs in fuelwood, fodder + timber from the wastelands without harming the ecology. Based on the same principles as the above project in another 350 villages of Haryana.	Government
Pakistan	ALA	Environmental rehabilitation in NWFP and Punjab	1992	25,200,000	Develop + strengthen local capabilities in sust. resource management. Interrupt process of degradation of watershed lands + repair damage to nat. resources. Ensure balance btwn econ. growth + nat. res. preservation. Forest + range management, soil cons. works	Government
Pakistan	ALA	Asian NGOs Conference on combating desertification	1995	50,000	Support to Conference attended by NGOs and delegates from 24 Asian Countries, UNEP, UNSO, Interim Secretariat to CCD and UNDP.	NGO
Regional	TACIS	Water resources Management and agricultural production in the Central Asian Republics	1994	4,750,000	Interrepublic water apportionment and development of principles and institutions. Improvement of water resource management and operating systems and dev. of new technologies	Government
All Asia	Total financial contribution to 11 projects		1990-95	135,200,000		



Development Projects in Latin America 1990 - 1995

(excluding cofinanced NGO projects listed below)

Country	Funding source	Project Title	Year	EC contribution in ECU	Brief Project Objectives and Description	Contracting Partner
Chile	ALA	Programa de desarrollo integrado Region Norte	1992	10,000,000	Institutional support to development corporations in the region + impr. local agric production to reverse depopulation. Improvement of enterprise framework. Improvement in avail. of water resources and preservation of ecological balance.	Government
Chile	Env	Acciones para combatir la desertificación en la IV region Fase II	1994	330,000	To develop techniques + activities in capacity building, education + awareness raising to combat desertification through improved management of caprine herds, intro. of alternative energies, env. education + incr. implementation of existing env. legislation	NGO
Chile	Env	Environment profile semi-arid region Chile	1991	168,075	Research study to establish the existing environmental situation + to assess the different contributing factors. Evaluate the incidence of desertification. This study formed basis for above project.	NGO
Nicaragua	ALA	Tropisec	1993	7,000,000	Promote effective restart of production + to reverse process of economic and env'l. degradation. Rehab. of agric. production ie. reorganisation of production models + tech. to surmount principal limiting factor in the region's agric.: desertification.	Government
Peru	Trop For	Programme pilote de reforestation extensive de Algarrobos en region desertique	1994	375,827	Nursery multiplication techniques with specific species of tree	NGO
All Latin America	Total financial contribution to 5 projects		1990-95	17,873,902		

Projects funded under the NGOs cofinancing budget line 1990-1995

Country	Project Title	Year	EC contribution in ECU
Benin	Centre de Formation à l'Agricultural Biologique Tohoué	1994	354,527
Burkina Faso	Appui au développement intégré des départements de Kantchari et Boutou (animation villageoise, hydraulique, maraichage lutte contre l'érosion, etc) province de La Tapoa	1990	361,820
Burkina Faso	Appui à l'agriculture, l'élevage et au reboisement dans 13 villages de la province du Yatenga	1990	174,185
Burkina Faso	Appui à la diffusion de techniques de défense des sols et fabrication de compost dans 20 villages des provinces de Boulikiemde et d'Ouhritenga	1991	106,512
Burkina Faso	Education à la lutte contre la désertification Yako et Tougan	1991	137,021
Burkina Faso	Actions agro-hydrologiques de lutte contre la désertification et de formation au Kouritenga	1991	122,717
Burkina Faso	Appui a un programme de reboisement (consolidation et desengagement) mené dans la province du Yatenga	1993	254,554
Burkina Faso	Tapis Herbacés appui au sauvegarde de l'environnement lutte contre la desertification, Yatenga et Passoré)	1993	151,933
Burkina Faso	Appui aux groupements d'artisans du Yatenga et notamment pour leur programme de lutte contre l'érosion	1993	178,048
Burkina Faso	Programme de lutte contre la désertification par la conservation des eaux, la restauration des sols et le traitement des ravins, département de Kombri	1994	121,151
Burkina Faso	Aménagement des terroirs villageois dans 19 villages des province du Yatenga et du Bam notamment approvisionnement en eau, production agricole et infrastructure sociales	1994	311,440
Burkina Faso	Programme de conservation et d'utilisation des eaux dans la région de Bam-Kongoussi	1994	226,496
Burkina Faso	Appui aux activités menées par la cellule agro-forestière des groupements NAAM	1994	158,901
Burkina Faso	Projet Agro-Ecologique, Yatenga	1994	171,100
Eritrea	Appui via FADEP, a un programme de développement intégré mené dans la région de Metekel (irrigation, education, élevage reboisement etc.)	1995	206,593
Ethiopia	Valorisation des ressources hydro-agricoles (incl reboisement) dans 5 districts des régions de Mendida et de Shashemene	1990	455,264

Country	Project Title	Year	EC contribution in ECU
Ethiopia	Appui, via REST, à un programme de développement rural y inclus un volet conservation et protection des ressources, région du Lac Ziway	1992	500,000
Ethiopia	Appui au programme triennal de banquettes anti-érosives mené par REST au Tigré	1993	879,025
Ethiopia	Appui à un programme de développement intégré mené dans la région de Mareko (amélioration de la production agricole, de la santé de l'élevage, conservation des sols, etc).	1994	500,000
Mali	Appui au développement agricole de la zone 6 de Badoumbe, région de Kayes	1990	216,191
Mali	Introduction de techniques culturales appropriées et de protection de l'environnement agro-sylvicole via la CMDT dans les régions de Bla, Tomininan et de Ségou	1991	118,630
Mali	Appui à un programme de protection de l'environnement mené dans le cercle d Bankass, région de Mopti	1992	494,511
Mali	Appui à un programme d'environnement communautaire notamment de lutte contre la désertification cercle de Tominian, région de Segou	1994	365,789
Mauritania	Appui aux activités agricoles notamment par la mise en place de protection pour les cultures, région d'Assaba	1994	106,000
Niger	Appui à un programme de reboisement, région de West Mirriah, département de Zinder	1990	498,465
Niger	Appui à un programme de conservation/récupération des sols de reboisement et de production agricole pluviale, sous-préfecture de Mirrah, département de Zinder	1991	288,774
Niger	Lutte contre la désertification dans la vallée de l'Aymabaho	1994	325,699
Niger	Programme d'aménagement de la forêt de Boyanga	1994	155,260
Niger	Appui à la conservation et l'utilisation rationnelle de la forêt de Takieta, département de Zinder	1995	327,818
Sudan	Appui à un programme de reboisement mené dans la région de Juba	1992	247,508
Tanzania	Appui à un programme de reboisement mené dans la région d'Isamani, district d'Iringa	1992	302,347
Tanzania	Appui à un programme de reboisement mené dans la région de Malangani, district de Mufindi	1992	245,314
Togo	Appui à un programme agro-sylvo-pastoral mené dans la région d'avati/Agbelouwe	1995	360,000
Uganda	Agro-forestry programme, Soroti	1995	134,604
Zimbabwe	Appui à un programme de sécurité alimentaire basée sur la culture des grains et le contrôle de leur résistance à la sécheresse, région de Bulaweyo	1993	443,752
Zimbabwe	Appui à un programme communautaire de conservation des sols et d'approvisionnement en eau, district de Hurungwe	1994	289,249
An additional 62 projects have been cofinanced in ACP countries over this period with sums of less than 100,000 ECU. Most of these are miniprojects set within a block grant for which maximum funding per mini project is usually 15,000 ECU			1,158,611
ACP	1990-1995 Total financial commitment to 81 projects and mini projects		11,449,809
Brazil	Appui aux activités menées par la Comissao Pastoral da Terra dans 4 états du Nord Est	1995	299,597
Brazil	Appui via CAATINGA à un programme de crédit alternatif et de formation pour les petits fermiers dans la zone semi-aride du Nord Est	1995	1,000,000
Brazil	Appui à un programme de promotion de l'agriculture mené dans le "poligon da secas" état de Bahia	1994	148,447
Brazil	Appui à l'agriculture écologique en région aride, Sao Sebastiao do Umbrezeiro, état de Paraiba	1990	41,656
Mexico	Appui aux activités menées par Enlace Rural Regional notamment dans le soutien aux petits paysans de la zone semi-désertique du Alto Mezquital	1991	4,363
Mexico	Appui, via ERRAC et des opérations de SWAP à un programme de développement intégré (reboisement, irrigation, formation, santé, protection de l'environnement), Sierra Madre y Gorda	1993	306,776
Latin America	1990-1995 Total Financial contribution to 6 projects and miniprojects		1,800,839
India	Appui à un programme de développement rural mené dans 60 villages du district de Periyar (lutte contre l'érosion, irrigation, amélioration de la production agricole, crédit, formation, etc.)	1995	362,742
India	Appui, via HARC, à un programme de gestion des ressources naturelles, état de Uttar Pradesh	1995	63,585
India	Amélioration du système d'irrigation, du système de conservation des eaux et du sol et appui à une action de reboisement, région de Panchmahal	1992	745,100
India	Appui à un programme de lutte contre la sécheresse et l'érosion, dans les régions de Thanagazi et de Sariska, état du Rajasthan	1990	7,978
India	Appui à un programme de lutte contre les effets de la sécheresse dans la région de Khariar, district de Kalahandi, état d'Orissa	1990	6,999
Asia	1990-1995 Total contribution to 5 projects and mini projects		1,186,404
All developing countries	1990-1995 Total contribution to 92 projects and mini projects		14,437,052

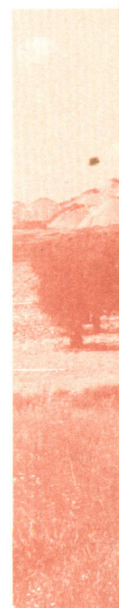
EC funded research in developing countries

Research projects in sustainable dryland agriculture and desertification phenomena 1991-1996

Research Programme	Year	Project Title	Nationality of partners from EU	Nationality of partners from Developing Countries	EC contribution in ECU
STD III	1991	Range Development in the endangered sudan savanna in Sokoto State, Nigeria	Germany*, Greece	Nigeria	360,000
STD III	1991	Fixing woody symbiosis of research towards sustainable revegetation and enhanced soil productivity in arid and semi-arid zones	UK*, Spain	Kenya	600,000
STD III	1992	Rehabilitation des terres dégradées au Nord et au Sud du Sahara	France*, Italy	Senegal, Tunisia	370,000
STD III	1992	An integrated model of the food supply system in region, Zimbabwe	UK*, Italy	Zimbabwe	500,000
STD III	1992	Rehabilitation of degraded and degrading areas of Tigray	Italy*, Netherlands, Spain	Ethiopia	508,770
STD III	1992	Impacts of agricultural intensification on resource use sustainability and food safety and measures for its solution in highly populated subtropical rural plains in China	Italy*, France	China	490,000
STD III	1992	Land Resources Inventory, environmental changes analysis and their applications to agriculture in the Abaya lake region, Ethiopia	Italy*, UK	Ethiopia	510,050
STD III	1992	Evaluating the potential for bambara groundnut as a food crop in semi-arid tropics	UK*, Netherlands	Tanzania, Botswana, Sierra Leone	611,150
STD III	1993	Natural resource development and utilisation in the Sahel	Ireland*, France, Portugal	Senegal, India	460,000
STD III	1993	Study of Protein-rich forages for their nutritional and anti-nutritional characteristics as supplementary feeds for ruminants in the semi-arid tropics	UK, Italy, Portugal	Zimbabwe*	378,596
STD III	1993	Physiologie de l'adaptation à la sécheresse et création variétale pour les régions sèches	France, Belgium, Portugal	Senegal*, Mali	850,000
STD III	1993	Amélioration génétique de l'adaptation à la sécheresse de l'arachide	Portugal, France	Senegal*, Botswana, Brazil, Burkina Faso	290,000
STD III	1993	Raccourcissement du temps de jachère, biodiversité et développement durable en Afrique centrale et en Afrique de l'Ouest	France, UK	Cameroon, Senegal, Mali	430,000
STD III	1993	Selection of drought tolerant fruit trees for summer-rainfall regions of Southern Africa and India	UK*, Germany	India, Zimbabwe	470,000
STD III	1993	Risques et intensification: le problème du diagnostic hydrique et minéral des céréales	France*, Italy	Mali Zimbabwe	475,000
STD III	1993	Selection of fast growing trees for sustainable production in the semi-arid zone	UK*, (Finland)	Senegal Cameroon	500,000
STD III	1993	Improved water and soil management for sustainable agriculture in the Huang-Huan-Hai rivers plain	Portugal*, UK, (Switzerland)	China	530,000
STD III	1993	Régénération et conservation de sols volcaniques indurés et stériles d'Amérique latine	Portugal*, UK, (Switzerland)	Chile, Ecuador, Mexico	450,000
STD III	1994	Etude de diversité biologique de l'Atriplex Halimus pour le repérage d'individus résistants à des conditions extrêmes du milieu	France*, Belgium	Algeria, Chile, Morocco, Tunisia	570,000
STD III	1994	Land use, household viability and migration in the Sahel	UK*, Netherlands, Germany	Burkina Faso, Benin	399,734
STD III	1994	Evaluation of the stability of soil organic matter pools in African agro-ecosystems for improvement of sustainable soil management	Italy*, France	Ethiopia Nigeria	339,997
STD III	1994	Improvement of market oriented small ruminant production systems and sustainable land use in arid and semi-arid regions of S. Africa	UK*, Ireland, Italy, Portugal	Mozambique Zambia Zimbabwe	425,000
STD III	1994	Development of sustainable farming systems on mountainous, low fertility grazing land in S. America	Germany*, Spain	Brazil, Bolivia, Chile	470,000
STD III	1994	Dynamics of soil fertility and management in savanna farming systems in Africa	UK*, Netherlands, Spain, Italy	Ethiopia, Mali, Zimbabwe	478,000
STD III	1994	Improved integration of small ruminants with a view to economical and ecologically sustainable production in small holder crop - livestock systems in Southern Africa	Germany*, Greece, Portugal, Italy, Denmark	Zimbabwe, Zambia, Malawi, Swaziland, Lesotho	475,000
STD III	1994	New food products from Prosopis fruits in Latin America: a base for the extension of the culture and the prevention of desertification in Arid Zones	Spain*, UK	Peru, Mexico	380,000
STD III	1994	Biological management of soil fertility in small-scale farming systems in Tropical Africa	UK*, France, Denmark, Spain	Kenya, Tanzania, Zambia, Zimbabwe	420,000
STD III	1991-1994	Total contribution to 26 research projects in ACP and ALA states			12,741,297

Research Programme	Year	Project Title	Nationality of partners from EU	Nationality of partners from Developing Countries	EC contribution in ECU
Avicenne	1992	Integration of satellite land surface assessment with socio-economic parameters for global desertification monitoring in the arid Mediterranean	France*	Tunisia, Egypt	195,000
Avicenne	1992	Data processing for a Mediterranean Automated Environmental Monitoring Network (MEDNET)	France*	Cyprus, Malta	153,530
Avicenne	1993	Vulnerability of ground water resources to natural radiological hazards in the semi-arid terrains of N. Africa and the Mediterranean Basin	UK*	Jordan, Cyprus	225,110
Avicenne	1993	Improvement of the water use efficiency of wheat under dry and saline conditions in the Maghreb	Belgium*	Morocco, Tunisia, Algeria	247,750
Avicenne	1993	Generating new technologies to control desertification and salinisation effects in the Mediterranean Basin	Portugal*, Spain	Turkey, Israel	330,640
Avicenne	1993	Improvement of the techniques and parameters of surface irrigation in the oasis of N. Africa	Netherlands*, Portugal	Tunisia, Morocco	206,000
Avicenne	1993	Monthly and seasonal prediction of rainfall cycles over the Mediterranean Basin	France*	Morocco, Tunisia, Algeria	2,052,500
Avicenne	1993	Water resource management in an interdisciplinary perspective	Netherlands*	Egypt, Morocco	25,180
Avicenne	1993	Recharge characteristics and groundwater quality of the Grand Erg Basin	UK*	Tunisia, Algeria	341,000
Avicenne	1993	Analysed climatology of rainfall obtained from satellite and surface data in Eastern Med. Region	Italy*	Turkey, Jordan, Syria	387,000
Avicenne	1993	Rainfall forecasts and strategic irrigation management	Italy*	Egypt	368,000
Avicenne	1993	Hydro-Med: Dev. of a computerised methodology for the evaluation of the vulnerability of aquifers in southern Med. basin and its validation on two sample areas in Tunisia and Malta	Italy*, France	Tunisia, Malta	300,000
Avicenne	1993	Development of a methodology based on NOAA Satellites (AVHRR Sensor) observations for the control of Fresh Water Resources and their evolution	Spain*, Portugal	Morocco	484,066
Avicenne	1993	Characterisation of large watersheds for surface run-off water harvesting in support of sustainable human settlement of natural vegetation in arid and semi-arid areas	Netherlands*	Morocco, Israel	789,920
Avicenne	1992-1994	Total Financial contribution to 14 research projects in Mediterranean countries			6,105,696

* indicates project coordinator



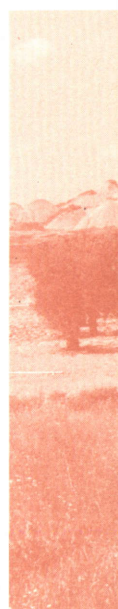
Research Programme	Year	Project Title	Nationality of partners from EU	Nationality of partners from Developing Countries	EC contribution in ECU
INCO-DC	1996	Sustainable domestication of indigenous fruit trees: Interactions between soil and biotic resources in some drylands of Southern Africa	Italy*, Germany	Botswana, Namibia	446,000
INCO-DC	1996	Degradation processes in open forest lands in sub-saharan Africa	UK*, Norway, Belgium	Senegal, Tanzania, Uganda	901,000
INCO-DC	1996	Desalinisation of sea water using renewable energy sources	Greece*, Italy, Portugal	Cyprus, Jordan	750,000
INCO-DC	1996	Development of methodologies for the assessment and management of groundwater resources and risks in coastal zones	Portugal*, UK	China, Macau	510,000
INCO-DC	1996	Sustainable Halophyte utilisation in the Mediterranean and Subtropical Dry Regions	Germany*, Italy, Portugal, Greece	Morocco, Pakistan, Tunisia, Egypt, Kuwait, U.A.E.	550,000
INCO-DC	1996	Anthropogenically induced changes in groundwater outflow and quality and the functioning of eastern African nearshore ecosystems	Netherlands*, Portugal, Belgium	Kenya, Mozambique, Senegal, Tanzania	606,000
INCO-DC	1996	Sustainable production of natural resources and management of ecosystems: the potential of south american camelid breeding in Andean region	Italy*, UK, Germany, France	Argentina, Bolivia, Chile, Peru, Ecuador	850,000
INCO-DC	1996	Impact of climate variability on agro-ecosystems and water resources in drylands	Netherlands*, UK, Italy	Egypt, Argentina, India, China, Niger	465,000
INCO-DC	1996	Impacts of land use policy on environment, wildlife, demographic and socio-economic indicators in East African savannahs	UK*, Belgium	Tanzania, Kenya	400,000
INCO-DC	1996	Concerted action for the evaluation of the environmental sustainability of agricultural systems in the southern cone of Latin America	Netherlands, UK, France	Chile*, Brazil, Argentina	440,000
INCO-DC	1996	Hydro-Med programme de recherche sur les lacs collinaires dans la zone semi-aride du pourtour mediterranean	France*, UK, Spain, Sweden	Tunisia, Syria, Morocco	619,000
INCO-DC	1996	Spatial and temporal variation of soil nutrient stocks and management in sub-Saharan African farming systems	Netherlands*, France, Greece	Burkina Faso, Kenya	550,000
INCO-DC	1996	Combining systematic and participatory approaches for developing and promoting strategies for sustainable land and water management	UK*, Belgium	Tanzania, Uganda	560,000
INCO-DC	1996	Potentials of low-external input and sustainable land use in Kenya and Uganda	Netherlands*, Portugal	Kenya, Uganda	502,000
INCO-DC	1996	Alimentation, savoir faire et innovations agro-alimentaires en Afrique de l'ouest	France*, Germany	Benin, Burkina Faso, Senegal	520,000
INCO-DC	1996	A new integrated geophysical approach for the rational management and exploration of groundwater resources	Netherlands*, France, UK	Cyprus	519,000
INCO-DC	1996	Genetic Improvement of pigeonpea and management of intercropping systems in semi-arid areas of East Africa	Belgium*, Germany	Kenya, Uganda	543,500
INCO-DC	1995-1996	Total Financial contribution to 17 research projects in all developing countries			9,731,500
All research programmes	1991-1996	Total Financial contribution to 57 research projects in all developing countries			28,578,493

* indicates project coordinator

EC funded research in EU member states

Research projects into desertification phenomena and sustainable dryland agriculture 1991-1996

Research Programme	Year	Project Title	EC contribution in ECU
Environment	1991	Post-fire soil and vegetation dynamics in natural and afforested areas in Southern Europe: the role of fire intensity	600,000
Environment	1991	Understanding and anthropogenic causes of desertification and land degradation in the Mediterranean basin (ARCHAEOMEDES)	1,500,000
Environment	1991	Modeling and exploring the impact of climate change on ecosystem degradation hydrology and land use along a transect across the Mediterranean	400,000
Environment	1991	A GIS decision support system for the prevention of desertification resulting from forest fires	500,000
Environment	1991	Palynological study on desertification in south western Europe: Timing natural trends and human impact	300,000
Environment	1991	Assessment of remote sensing techniques for monitoring the extent and progression of desertification in the Mediterranean area (ASMODE)	598,000
Environment	1991	Desertification in the White Mountains of Crete. A botanical study with special reference to the effects of grazing and wildfires	200,000
Environment	1991	HAPEX Sahel	999,000
Environment	1991	An integrated approach to Mediterranean land degradation mapping and monitoring by Remote sensing (DeMon)	249,800
Environment	1991	Origin and evolution of desertification in the Mediterranean an environment in Spain	350,000
Environment	1991	DM2E: Aide à la gestion de l'espace Méditerranéen en voie de désertification grâce à la modélisation des écoulements et de l'érosion des sols sur les bassins versants représentatifs	1,000,000
Environment	1991	Land Management practice and erosion limitation in contrasting wildfire and gullied locations in the Iberian Peninsula	400,000
Environment	1991	Desertification risk assessment and land use planning in a Mediterranean coastal area	250,000
Environment	1991	MEDIMONT - A multinational multi-disciplinary research programme on the role and the place of the mountains in the desertification of the Mediterranean regions	700,000
Environment	1992	MEDALUS II - Project 1 Basic field programme	2,450,000
Environment	1992	MEDALUS II - Project 2 Modeling and regionalisation	2,199,000
Environment	1992	MEDALUS II - Project 3 Managing desertification	1,400,000
Environment	1992	MEDALUS II - Project 4 Research and policy interfacing in selected regions	3,006,700
Environment	1993	EFEDA II - Surface processes and atmospheric modeling for the Echival Efeda Phase II Programme	179,130
Environment	1993	EFEDA II - Aerology and measurement from aircraft	970,000
Environment	1993	EFEDA II - Atmospheric boundary layer, surface energy budget and soil-vegetation atmosphere transfer	559,531
Environment	1993	EFEDA II - Vegetation soil physics inventory and impacts	800,000
Environment	1993	EFEDA II - Hydrological response to land use change and over exploitation of water resources in a semi-arid area of Spain	739,000
Environment	1993	EFEDA II - Assessment of desertification from outer space	1,040,000
Environment	1994	An integrated monitoring and modeling study of desertification and climate change impacts in the Massara Valley of Crete	366,000
Environment	1994	Reclamation of Mediterranean ecosystems affected by wildfires	320,000
Environment	1994	Integrated assessment of environmental degradation connected with forest fire in European areas	413,000
Environment	1994	Management techniques for optimisation of suppression and minimisation of wild fire effects (PROMETHEUS)	741,000
Environment	1994	Biodiversity of the ecotone Pine Forest Mediterranean shrubland as a tool against erosion in Mediterranean areas	265,000
Environment	1994	Environmental perception and policy making - cultural and natural heritage and the preservation of degradation sensitive environments in southern Europe	200,000
Environment	1994	Paleoclimatic reconstruction and the dynamics of human settlement and land use in the area of the module Aguas (Almeria) of the south east Iberian Peninsula	180,000
Environment	1994	Restoration of environmental diversity by effective ecosymbiont monitoring (REDEEM)	306,000
Environment	1994	Modeling vegetation dynamics and degradation in Mediterranean ecosystems	400,000
Environment	1991-1994	Total financial commitment for 33 projects	24,581,161



Research Programme	Year	Project Title	EC contribution in ECU
Env. & Clim.	1995	Characterisation of the aridity processes on Mediterranean Europe, protection and management guidelines	700,000
Env. & Clim.	1995	Remote sensing of Mediterranean Desertification and Environmental Changes (RESMEDES)	659,000
Env. & Clim.	1995	MEDALUS III Project 1: Core Project	2,158,000
Env. & Clim.	1995	MEDALUS III Project 4: ephemeral channels and rivers	2,137,000
Env. & Clim.	1995	MEDALUS III Project 2: target areas	1,875,000
Env. & Clim.	1995	MEDALUS III Project 3: regional indicators	1,830,000
Env. & Clim.	1995	Modeling vegetation dynamics and degradation in Mediterranean ecosystems - MODMED II	231,900
Env. & Clim.	1995	Policy relevant models of the natural and anthropogenic dynamics of degradation and desertification and their spatio-temporal manifestations (ARCHAEOMEDES II)	2,000,000
Env. & Clim.	1995	An integrated approach to assess and monitor desertification processes in the Mediterranean basin (DeMon 2)	1,000,000
Env. & Clim.	1995	An integrated methodology for projecting the impact of climate change and human activity on soil erosion and ecosystem degradation in the Mediterranean: A climatological gradient and dynamic systems approach	600,500
Env. & Clim.	1995	Wind erosion and loss of soil nutrients in semi-arid Spain	799,100
Env. & Clim.	1995	Concerted Action on Desertification and its relevance to contemporary environmental problems in the Mediterranean	290,000
Env. & Clim.	1994-1995	Total Financial commitment to 12 projects	14,280,500
CAMAR	1991	Validity, limits and possible trends of coastal South Mediterranean traditional groundwater irrigated agriculture	592,000
CAMAR	1991	Management of limited water resources: agro-economic impact	845,000
AIR	1992	Diversification of the cropping system and the utilisation of symbiotic associations to reduce production costs and environmental pollution under dryland farming in Mediterranean regions	1,300,000
AIR	1992	The sea water greenhouse for arid lands	1,050,000
AIR	1992	Integrated study (physiology, genetics, molecular biology) of drought tolerance in higher plants	175,000
AIR	1993	The effects of extensification on the ecology, animal welfare and socio-economics of agricultural systems in hill and mountain regions	50,000
AIR	1993	Alternative agricultural land use with fast growing trees	1,800,000
AIR	1993	Incorporating environmental evaluation into policy analysis	39,000
AIR	1993	Conservation, protection and restoration of low elevation Mediterranean coniferous forests threatened by wildfires (Firegene)	690,000
AIR	1993	Improvement of forage crops for semi-arid areas	495,000
AIR	1993	Cypress. A flexible tree for the protection of intensive farmland for the production of high quality wood in marginal forest sites subject to fire risk	920,000
Art 8	1993	Projet-pilote démonstratif pour le développement d'une zootechnie méditerranéenne extensive écocompatibile: pâturage arbustif	890,625
AIR	1994	Exploitation of low input reduced output system for arable crops (UK)	800,000
AIR	1994	Policy measures to control environmental impacts from agriculture	280,000
AIR	1994	The landscape nature production capacity of organic sustainable types of agriculture in the EC	280,000
AIR	1994	Regional guidelines to support sustainable land use by EC-agri environmental programmes	2,800,000
AIR	1994	Experience with the applicability of no-tillage crop production in the West European countries	425,000
AIR	1994	New strategies for improving salt tolerance in crop plants	1,050,000
AIR	1994	Optimal use of animal slurries for input reduction and protection of the environment in sustainable agricultural systems	803,000
FAIR	1995	Genetic molecular and physiological determinants of water use efficiency and drought resistance in major forest trees	1,050,000
Agriculture research Programmes	1991-1995	Total financial contribution to 20 agricultural research projects	16,334,625
All research programmes	1991-1996	Total financial contribution to 65 research projects	55,196,286

LIFE Programme

Pilot projects relating to protecting soils threatened or damaged by fire desertification, or the disappearance of the dune belt in 1995

Year	Project Title	EU Member State	EC contribution in ECU
1995	Protection plan against desertification of Dels Ports region	Spain	647,203
1995	National Reforestation Plan	Spain	139,334
1995	Recovery, conservation and management of species and natural habitats in the coastal area of the central Portugal	Portugal	281,557
1995	Development and implementation of a pilot fire system in the upper basin of Magra river	Italy	166,424
1995	Rehabilitation and sustainable management of four French dunes	France	456,567
1995	Desertification protection against soil erosion in Tinos and Zagori Ioannina	Greece	490,056
1995	Waters circuit from the sources to the Zezere	Portugal	196,008
1995	Total Financial contribution to 7 pilot projects	EU Member States	2,377,149

Cohesion Fund

Projects relating to erosion control and afforestation 1993-1996

1993	Restoration of natural resources of National Parks	Spain	5,413,398
1993	LINDE (1a phase)	Spain	1,071,960
1993	Control erosion Baleares, Canaries, Oriental Pyrenees, Ebro and Garona, Barranca de Pozuengos, Jucar, Segura, Gualquivir and B.H. Sud, Guadiana, Tajo, Duero, B.H. Nord	Spain	50,882,418
1993	Controle de l'érosion Bassin du Rio Ebro, du Segura, du Guadalquivir, du Sul, du Guadiana, du Tajo, du Duero	Spain	28,188,182
1993	Development and restoration of forests	Spain	11,024,143
1993	Riverside management works - Ebro Basin, Jucar Basin, Guadalquivir Basin, Duero Basin, Guadiana Basin, Segura Basin, Norte Basin, Tajo Basin, Sur Basin	Spain	10,878,674
1993	Protection contre les crues du Rio Nalon et Endiguement du Arroyo Mira Flores	Spain	2,119,550
1994	Système automatique d'information SAIH - Bassin du Guadalquivir	Spain	25,433,001
1994	Surveillance du climat et detection du changement climatique	Spain	25,441,616
1994	Etude gestion des ressources hydrique par télédétection	Spain	1,244,257
1994	Plans relatifs à la restauration hydrologique et environnementale des bassin hydrographiques (PICHRA)	Spain	46,237,004
1994	Plans relatifs à la restauration etc. (PICHRA Phase II)	Spain	24,539,419
1994	Retablisement de la couverture vegetale dans les zones protegees	Portugal	5,422,220
1995	Catchment Basin Plans and National Water Plan	Portugal	7,506,317
1995	Boisement et travaux complémentaires en vue de la lutte contre l'érosion et la désertification, et régénération des écosystèmes endommagés par les incendies dans les bassins hydrographiques du Guadalquivir et du Sud	Spain	25,978,655
1996	Boisement et travaux complémentaires en vue de la lutte contre l'érosion et la désertification, et régénération des écosystèmes endommagés par les incendies dans le bassin hydrographique de l'Ebre	Spain	15,352,436
1995	Boisement etc.... dans le bassin hydrographique de Guadiana	Spain	5,754,585
1996	Boisement etc.... dans le bassin hydrographique du Duero	Spain	5,113,726
1995	Boisement etc.... dans le bassin hydrographique du Jucar-Levante	Spain	15,576,429
1995	Boisement etc.... dans les bassins hydrographiques des Iles Baleares	Spain	1,228,422
1995	Boisement etc.... dans les bassins hydrographiques des Iles Canaries	Spain	4,213,238
1995	Boisement etc.... dans le bassin hydrographique du Segura	Spain	5,581,554
1995	Boisement etc.... dans le bassin hydrographique du Tajo	Spain	13,679,978
1996	Boisement etc.... dans le bassin hydrographique du Nord	Spain	12,847,306
1993-1996	Total financial contribution to 25 structural projects		350,728,488

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Belgium

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Fax: (+32) (2) 295 23 00
www: <http://www.europa.eu.int>

Address: Space Applications Institute
Directorate General - Joint Research Centre
European Commission
T.P. 441
I-21020 Ispra Va
Italy

Tel: (+39) (332) 789 765
Fax: (+39) (332) 789 536
www: <http://www.sai.jrc.it>

European Environment Agency (EEA)

Address: Kongens Nytorv 6
DK-1050 Copenhagen K
Denmark

Tel: (+45) 33 36 71 00
Fax: (+45) 33 36 71 99

CTA - Technical Centre for Agricultural and Rural Cooperation

Address: Postbus 380
6700 AJ Wageningen
Netherlands

Tel: (+31) 317 467 100
Fax: (+31) 317 460 067
e-mail: cta@cta.nl

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