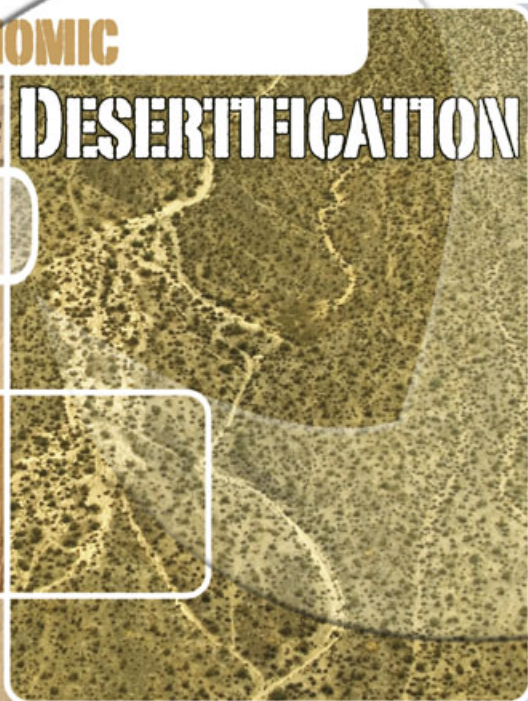
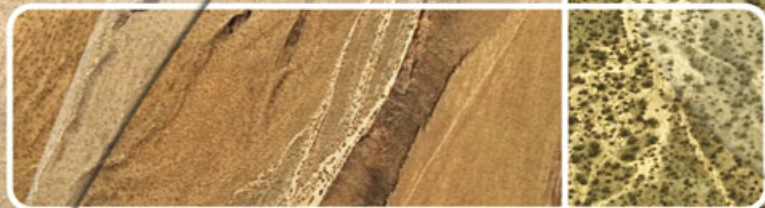




# HUMAN AND SOCIOECONOMIC

# CONSEQUENCES OF DESERTIFICATION

J. L. Rubio   V. Andreu  
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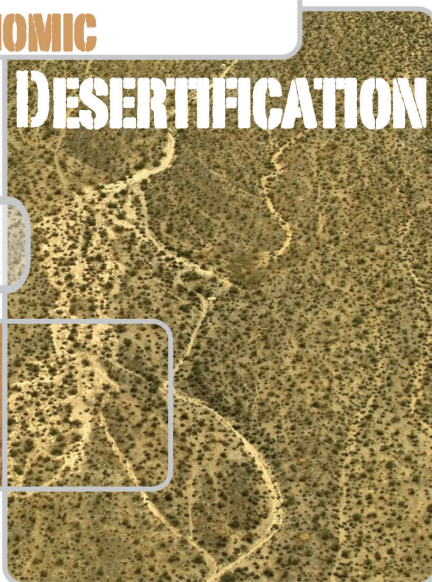
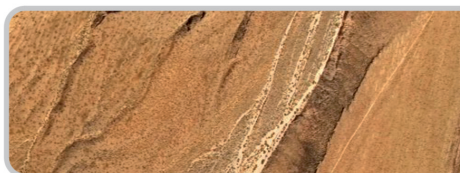


CAMPUS  
DE EXCELENCIA

**HUMAN AND SOCIOECONOMIC**

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J. L. Rubio V. Andreu  
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DE EXCELENCIA

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# Prologue

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José Ramón Calvo Fernández  
*Director, Campus of Excellence*

The problem of desertification, defined as the land degradation in arid zones as a result of human intervention and the influence of climate variations, is an issue progressively receiving more attention and concern but not free from controversy.

Spain is the EU country with the highest incidence of this phenomenon caused by complex interactions of biophysical, climatic, social, cultural and economic factors.

The outcome of global concern on the consequences of desertification was the ratification in 1995 of the United Nations Convention to Combat Desertification (UNCCD), which has since then the legally binding framework backed by 192 countries for confronting this environmental and socio-economic problem.

Scientists from all over the world specializing in the issue have spent decades trying to find solutions to the problem.

At the Campus of Excellence we saw that we had to join this struggle, and as a result the working group was formed that produced this book, which was coordinated and edited by Professor José Luis Rubio together with an excellent group of internationally recognized collaborators who are authorities on the issue.

But, why do it at a meeting like Campus of Excellence?

Because, since this activity's beginnings, one of its goals has been to tackle environmental problems and contribute to solving them through the diffusion of the enormous pool of knowledge produced within it.

Since it set out on its course in 2005, it has covered some productive terrain and has today become completely coherent and has gained recognition within the international educational sphere. During this period a group that's the best that could be brought together at one time and included over 400 Postgraduate students from universities from 30 countries, 600 scientists and experts from institutions of higher

learning from the 5 continents, successful businessmen and representatives from international organizations, including 40 Nobel Laureates, have come together at one of the most important hubs of thought and knowledge. Making it possible for them to participate and share their ability for critical thought with a new generation are hallmarks of the identity of this event.

This initiative, a pioneer of its kind in the world, has succeeded in bringing together respected international authorities in science, economics, politics and culture with Postgraduate students from 50 of the leading universities in the world with the aim of contributing their creative ability to helping to resolve problems that exist in the world, exchange experiences, learn from masters and share ideas and solutions to the challenges posed by them and, additionally, create the possibility for new professional opportunities.

Likewise, Campus of Excellence has built itself upon an international platform of debate and global thought, like a *think tank* of the highest level.

All of the talent present is put to use by the various interlocutors in order to contribute new ideas for progress and plans for development.

The solutions that are put forth, the ideas that flow out of these discussions and the conclusions that are arrived at are intended, each one from their vantage point, to serve the common cause of helping to solve all kinds of problems present in the world, be they social, environmental, economic or otherwise, considered mostly from an academic perspective but without losing sight of the social or business related factors that are what makes finding fair and viable solutions possible.

For all of those reasons, and in keeping with the vocation for service that the Campus of Excellence was founded with, we thought that it was an excellent opportunity to tackle this serious environmental problem. Thanks to the effort, tenacity and dedication of Professor José Luis Rubio it has been possible for the first product to come out of this “factory” of transferring knowledge and experiences which is “The Campus” to be the book that we now have before us and which was preceded by an institutional declaration made at the end of the 2007 edition in which the experts of every area who were present there called upon governments to adopt the measures needed to deal with this problem.

Lastly, I would like to use this opportunity as Director of this event to congratulate the authors, and thank the University of Las Palmas de Gran Canaria through its President, Professor José Regidor, who was the one who made the publication of this book possible. I would also like to thank the Publications Services at the academic institution for their excellent layout and design work.

I believe we have before us a work which will become an international point of reference regarding a problem of worldwide scope that more and more demands

attention and urgent solutions. I likewise believe that if we can, between all of us, contribute our “*grain of sand*” so that the sand stops advancing and so that effective and viable avenues are found for solutions to the problem of reforestation of our arid lands we will have contributed a small part to abating some of the principle problems present in the world we live in and in the environment. And, in the meantime we will have contributed, if I may say so, to imparting more purpose to this academic initiative that has already completed 5 years of existence.

Las Palmas, March, 2009



# Introduction

.....

José Regidor García  
*Rector, University of Las Palmas de Gran Canaria*

The societies have an enormous capacity to transform the territories where they live in. Sometimes the sign of those actions is positive, but others can be very negative. When the human activity turns into desert an area that before was not, not only alters an essential life support – the soil – but also the water cycle and the living beings. Among them are the humans, scourges and, at the same time, victims of their inadequate management if soil is degraded, because from it we precisely obtain most of the foods that we consume. Desertification is an act of collective irresponsibility, a process that – following a popular expression – implies “bread for today and hunger for tomorrow”.

Desertification is a very significant problem, as much at world-wide scale, as to a large extent on Mediterranean Spain and in the Canary Archipelago. These islands are a magnificent laboratory to study the consequences of desertification and, at the same time, the response capacity of nature and human beings facing that problem. It is about spaces intensely exploited during centuries, where the traditional agrarian society destroyed forests, plowed lands for farming, exploited grasslands intensely, and exhausted the aquifers. But this same society, in parallel, was able to develop exemplary soil conservation practices – such as terraces –, efficient systems of water management – for example, gabions– or agricultural practices in balance with the environmental conditions as occurs, for example, with cultures on sand or pyroclasts (volcanic fragmented material).

The change towards an urban-tourist model brought with it substantial changes, also of different nature. The policies of reforestation, developed from the second half of the last century, and the conservation strategies have significantly improved the vegetation cover of the islands, at least in the peaks and half way zones. It is highlighted by the capacity of the Canarian nature to regenerate when the pressure on it ends, and suitable protection and management actions are applied. In contrast,

the coastal environments have been so drastically transformed that desertification acquires its greatest intensity: the soil artificialization. Many of the new urban growth has been carried out on the best agricultural soils, mortgaging irreversibly a non renewable resource and that, in addition, is very scant in the Canary Islands.

To analyze, diagnose, and offer actions to fight against desertification are, nowadays, high-priority tasks world-wide. Spain has published in 2008 the *National Action Plan against Desertification*, which tries to determine the causal factors and to establish measures to fight against its effects. The University of Las Palmas de Gran Canaria comes out to the set of initiatives that try to know better this problem and, at the same time, it is committed to the awareness in this subject of the professionals that is forming in its classrooms. Considering that desertification is not only an environmental problem, but also an economic and social one, it is really opportune the publication of this book on “Human and socio-economic consequences of desertification”. We hope that the contributions included in it favor the reflection, allow learning from the errors, to know the good practices and, even so, to avoid the deterioration of still not degraded areas.

# Foreword

.....

Grégoire de Kalbermatten  
*Deputy Executive Secretary UNCCD*

## **PAYIN ATTENTION TO LAND AND SOIL**

Unprecedented environmental change is indisputable. Environmental tipping points are fast approaching. The Millennium Eco System Assessment and the GEO 4 Assessment of UNEP plead for more integrative work on the part of the concerned international agencies to arrest trends of natural resources depletion, a concern which is more present than ever, also in the light of emerging issues such as the evolving climate change agenda, food shortage, agro fuels or the widening impact of natural resources scarcity on geo political tensions. I was pleased to find out that some of these relationships were evidenced during the International Campus of Excellence that took place in Fuerteventura, Canaries Island, in August 2007.

Climate change is no longer a scientific or thematic issue. It is a civilization issue. Today climate change must be seen as an umbrella paradigm and we should identify what is the next focus for environmental policy. As a co-author of the desertification Synthesis of the Millenium Ecosystem Assessment I would submit that such a focus will have to do with coping with vulnerabilities and I see the United Nations Convention to Combat Desertification (UNCCD) as playing a helpful role in the international community building the indispensable bridge between environment and development.

During its presidency of the Conference of Parties of the United Nations Convention to Combat Desertification, the Government of Spain played a leading role in mobilizing an international consensus on a more decided response of the international community to address such challenges. An important impulsion was given at COP 8 in Madrid to the implementation of the Convention through the adoption of a 10 years Strategy.

Under emerging trends of natural resources scarcity, the new UNCD Strategy strongly backs more integrative work to maximize the delivery of land based eco systems services. Soil fertility and water conservation for example are sine qua non upstream conditions for arable land productivity and food security. Hence the Strategy is precisely an opportunity to relate the global conservation agenda to emerging economic and development critical issues.

Adaptation to climate change is such a cross cutting issue. The warming trend will enhance desertification risk and its associated effects on socio-economic and human problems. Interactions between land degradation and adaptation to climate change must be made more explicit and be recognized through institutional and financing arrangements in the post Bali road map context. In this context it is particularly necessary that a strong representation of desertification, land degradation and drought (DLDD) is recognized as a matter of priority to bring enhanced scientific information that would create motivation at the level of governmental policy makers who do not always have a natural inclination to address longer term environmental challenges.

The Strategy can stimulate progress in the area of Early Warning Systems, assessment, improving the data flow for eco system management and capacity building in affected countries. As the same time, the quest of countries affected by DLDD for a source of investment is ongoing while the financing environment trend is sobering notably due economic and budgetary constraints in donor countries. To anticipate predictable constraints, the attention focuses on the 2012 horizon of the global finance architecture to address climate change. A principal chance of DLDD issues to be dealt more seriously is to facilitate their tuning into existing/emerging/innovative supplies for climate adaptation fund, market based mechanisms, carbon funding...

Someone said “it pays not to treat the soil as dirt” but we need to document this statement. We must emphasize stronger science for assessment and capacity building, long term monitoring, reducing uncertainties, understanding impacts, work on Natural Resources Management/climate cross cutting issues and pilot projects to test the sustainable paradigm part of Sustainable Land Management notably in the drylands.

# Conclusions

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José Luis Rubio

Desertification menace is a permanent characteristic of the drylands of the world. It has long been present and probably will remain an enduring threat. In the present decade, population growth, pressures on soil and water resources, climate warming trend and increase in the prices of basic food has exacerbated land degradation, food security, social instability and forced migrations.

Desertification processes are altering and collapsing the natural systems that support human societies in the drylands. In their last consequences desertification implies a double rupture: the rupture in the capacity of terrestrial ecosystems to provide goods and benefits and the rupture in the provision of ecological functions and regulations. Desertification impacts are becoming one of the most important drivers of social destabilization in many regions scattered all over the five continents. The problems associated with desertification risk are particularly likely to develop critical level when associated with a complex set of several causal acting together. The biogeophysical conditions of drylands establish a natural base line of vulnerability that is likely to be aggravated by the implications of climatic warming trend.

The impacts on natural resources mainly soil, water and biomass production do not make distinctions on administrative borders but the pressures and consequences are more dramatic in countries with less capacity to mitigate, to adapt or to ameliorate land degradation processes. Societies, countries and regions are particularly vulnerable when sensitive environmental conditions, weak social and political institutions, poverty, high population density and political instability converge.

Alternative livelihoods can be practiced in most drylands. However for attaining dryland sustainability alternative and traditional dryland livelihoods need to coexist as a mutual back-up, for buffering against uncertainties that affect both the ecological

and the human dryland systems. Arid, semi-arid and dry sub-humid areas have huge technical potentials for developing sustainable approaches in various fields like energy resources, cash- crop agricultural exports, ecotourism, biotechnologies or pharmaceutical developments. The EU countries and their private sector may fund innovative and imaginative approaches stressing the potential of rural production.

Whereas an acceptable level of knowledge on the biophysical drivers of desertification exists, the large gaps in understanding the social-economic-policy drivers of desertification needs to be bridged by well focused and targeted multidisciplinary and internationally coordinated joint scientific research.

Demographic development plays an important role on overexploitation of fragile terrestrial ecosystems. The combination of high population growth with soil degradation, increasing drought impacts and water scarcity, aggravate the risk of dismantling basic systems of subsistence and increase the hazard of food insecurity.

There is a complex set of interactions between desertification and environmental human displacements. The migratory phenomena and desertification processes are bound by an intricate connection that affects the viability of subsistence resources in countries with underdeveloped economies. It is worth insisting on the necessity to increase knowledge on the linkages of poverty, desertification and migration. In this respect foreign aid through overcoming present lack of international priority to address migrations phenomena is urgently needed. The cost of not acting signify a constant increase in situations of poverty, exclusion and social instability, which lead to an increase in disorganized forced displacement and increase on conflicts and insecurity.

A substantial increase in the level of international dialogue and cooperation is a priority. The actions should be oriented to the integration of the politics of security, migration, development and environment based on human security and local development. In this respect it is recommend the identification of “hot spot” on environmental security related to land degradation, the improvement of instruments for impacts evaluation and to reinforce the coordination of international organisms and institutions. Clearly more resources should be invested in emigration areas as a preventive measure and to promote development which is supported by environmental services that are resilient to climate variations.

Combating desertification should be a tool for cooperation and crisis prevention. In this context the coordination potential of UNCCD should be further developed in tight connexion with others international organisms and institutions.



# Manifiesto on Desertification, Poverty and Migrations

.....



**Manifiesto on  
Desertification, Poverty  
and Migrations**

José Luis Rubio  
Anton Imeson  
Carmen Arbelo  
Concepción Jiménez  
Antonio Rodríguez  
Marisa Tejedor

Campus de  
**Excelencia**  
Fuerteventura



Campus de Excelencia is an academic event promoted by Fundación Vitalia and the University of Las Palmas de Gran Canaria. Every year it gathers together a group of selected highly qualified post-graduates from all over the world and a distinguished panel. In year 2007 the panel included 13 Nobel Prize winners, three heads of state or governments, seven ministers or former government ministers, four presidents of international organisations and a further 140 internationally renowned guests from the worlds of science and culture. Their aim was to analyse, discuss and contribute possible ideas and solutions, from the perspectives of two generations, to help resolve the problems existing in the world. We approach these with humility but with the conviction that the figures considering these problems and contributing their ideas are more than qualified for their opinions to be taken into consideration, and for them collaborate in tackling what are sometimes dramatic situations, requiring courage and originality to be faced and resolved.

It is from this perspective that the participants in Campus 07, who consider the phenomenon of desertification is one of the shames of our time, with its unquestionable link to mass immigration and the uncontrolled addition to poverty associated with this, has given rise to the need to issue the following document.

**MANIFESTO ON DESERTIFICATION, POVERTY AND MIGRATIONS**  
**Campus of Excellence 2007**

*Corralejo, Fuerteventura, Islas Canarias*

The Plenary of the Campus of Excellence 2007, its academic and institutional speakers and participants in general approve the following “MANIFESTO ON DESERTIFICATION, POVERTY AND MIGRATIONS”, as a result of the speeches and discussions at the Sectoral Meeting on the socioeconomic and human implications of the human aspects of desertification processes.



*Processes of desertification affect 30% of the dry land surface of the planet; there are currently around 200 million emigrants, a large proportion of whom are environmentally displaced; situations of poverty, which oscillate from extreme conditions for survival to precarious living conditions, affect around 2,000 thousand million people. These figures themselves show the magnitude and global impact of these problems, which mainly affect the continent of Africa.*

*Added to this underlying situation, there is a worrying trend towards further deterioration as a consequence of the evolution of global warming, growth of the population and the precarious situation of basic resources such as water and lands. The implications of this trend to deteriorate foresee alarming scenarios that could impact food situations of poverty, an increase in the migratory flow and escalation of conflicts.*

*These problems develop mainly in specific parts of the planet, particularly in arid, semiarid and dry-sub-humid areas, but the causes and consequences are a global responsibility and require shared, ethical solutions.*

*In spite of the existence of both national and international initiatives it is a fact that the existing initiatives are either inefficient or their approaches do not deal with the true roots and causes of these problems.*

*To act more efficiently it is necessary to gain better knowledge of the complex interactions among desertification, poverty and migration; to establish adequate conceptual frameworks that also include the positive aspects of migration and to facilitate access to education and information in the countries affected.*

*There is an important field of activity and the possibility of innovative responses in the social, political, technological and scientific sectors, which may substantially improve living conditions and the economic situation in the countries and the local communities affected.*

*The most highly developed countries must reroute their international trade laws and the perverse effects of globalisation processes that impact economic viability, social welfare and political stability and the environmental health of the countries affected.*

*The participants of Campus de Excelencia 2007 manifest their concern about the unacceptable situation in terms of non sustainability, socioeconomic inequality and a lack of human solidarity represented by these problems.*

*Finally, the Campus demands, mainly from developed countries and international organisations, a change of attitude and the adoption of determined, efficient actions to reverse the trend of these threats that directly affect the conditions of survival and the conditions of dignified life of a great proportion of the world community and, indirectly, humanity as a whole.*