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Desertification and Migration:
From Almeria I to Almeria II:
Achievements and Policy Tasks

© Hans Günter BRAUCH

Privatdozent (Adj. Prof.), Free University of Berlin, Berlin, Germany

Chair, Peace Research and European Security Studies (AFES-PRESS). Mosbach, Germany

Fellow, College of Associated Scientists and Advisers, UNU-EHS, Bonn, Germany

Text of oral speech (final version)

Su majestad,
Distinguidos huespedes, organizadores y colegas todos,
Señoras y señores,

Permítame en primer lugar agradecer su distinguido discurso de inauguración, la invitación para venir a Almería, así como la oportunidad de poder dirigirme a ustedes y exponerles algunas ideas sobre desertificación y migración.

Como científico político me quisiera centrar en los temas acerca de la seguridad humana y ambiental, vinculados con las transformaciones sociales.

Desgraciadamente mis conocimientos de español son muy limitados y por lo tanto permítame continuar en inglés.

Both new soft security issues of '*desertification*' and '*migration*' I addressed first in Spain. My first studies on 'migration' were published by the Spanish Foreign Ministry in 1997.

At the Valencia NATO conference on 'desertification' as a security issue in December 2003 I first conceptualized 'desertification' as a security problem.

My talk is structured in ten parts. I will first define the concepts of desertification and migration, discuss key drivers, and review four models for analyzing linkages between nature and humankind. Then I will review the 'politicization' and 'securitization' of both processes in Almeria and Valencia. I will touch on recent migration trends for Spain and address climate change impacts for the Mediterranean in the 21st century that will intensify desertification. I will conclude with two proposals for a research institution and for proactive EU policies.

2. Definition and Drivers of Desertification

The Rio Conference in 1992 defined desertification "as land degradation in arid, half-arid and dry sub-humid areas, resulting from various factors, *including climatic variations* and *human activities*." Art. 1 of the *UN Convention to Combat Desertification* (UNCCD) aims at: "(i) prevention and/or reduction of *land degradation*; (ii) rehabilitation of *partly degraded*

land; and (iii) reclamation of *desertified land*". The objective of the UNCCD (Art. 2) is twofold to "combat desertification" and "to mitigate the effects of drought", especially in Africa with "long-term integrated strategies" aiming at "improved productivity of land, and the rehabilitation, conservation and sustainable management of land and water resources".

The *Millennium Ecosystem Assessment* defined land degradation as: "*the reduction or loss of the biological or economic productivity of drylands*." Accordingly,

- drylands occupy 41% of the land area and home 2 billion people;
- 10-20% of drylands are degraded;
- 1-6% of dryland people live in desertified land;
- Desertification is a result of a long-term failure to balance demand and supply of ecosystem services in drylands. The increase is due to *human factors* (population, socio-economic, political pressures, globalization, land-use patterns) and climatic factors (drought, water).

According to Mendizabal and Puigdefabregas desertification is driven in Southern Europe by *market forces* and in the Maghreb by *poverty*.

For the *Millennium Ecosystem Assessment* 'synthesis' report:

Desertification is caused by a combination of [indirect and direct] factors that change over time and vary by location.

This requires specific assessments of indirect and direct drivers as a precondition for strategies against desertification. The *Millennium Ecosystem Assessment* noted major *research and knowledge gaps* on the geographical extent of desertification. 90% of the dryland populations live in developing countries that "are far behind … in human well-being & development".

The *Millennium Ecosystem Assessment* discussed four global and regional reactive or proactive scenarios for technology development/ adaptation. Most promising are the regional proactive *Adaptation Mosaic* and the global proactive *TechnologyGarden Scenario* I will discuss later. Understanding the impacts of desertification

- on human well-being ***requires*** improved knowledge on interactions between socio-economic factors and ecosystem conditions.
- There are ***scientific challenges in detecting thresholds*** when drylands reach a critical or effectively irreversible change. …
- ***Impact of poverty reduction strategies on desertification has not been explored*** by governments and the international community.

- Contribution of dryland urban areas to desertification is not known.

The *Millennium Ecosystem Assessment* did not analyze the impact on migration, domestic economic and political crises & conflicts.

3. Definition and Drivers of Migration

Migration covers these features of people's movements from
a) rural to urban livelihoods (*urbanization*),
b) temporary '*internal displacements*' due to natural hazard & conflict
c) permanent internal, regional, international South-North migration. Migration may be *forced* (push factors) or *voluntary* (pull factors). Environmental factors due to water scarcity, soil degradation, climate change may force people to leave their homes to survive or to have better prospects for life and economic and human well-being.

The UN defined an environmental refugee as a "person displaced owing to environmental causes, notably land loss and degradation, and natural disaster." Myers claimed that in 1995 there were 25 million environmental refuges without providing statistics.

In the 1993 "State of the World Refugees" report UNHCR listed *environmental degradation* as *one of four root causes of refugee* flows besides political instability, economic tension

and ethnic conflict. A UN report used the term "*environmentally displaced persons*" for persons who are displaced within their country or who have crossed an international border and for whom environmental degradation, deterioration or destruction is a major cause of their displacement, although not necessarily the sole one. An OSCE Background paper listed as environmental root causes of migration: ground water, salinisation, desertification, deforestation; natural disasters and climate change.

But environmental "refugees" are not entitled a refugee status neither in international conventions nor in national immigration, asylum or internal security laws. Thus, environmental refugees are not reported in national or in international migration statistics. No statistics exist on environmental migration due to desertification, drought or famine.

But environmental change causes migration and migration contributes to environmental change. A consensus exists that ***soil degradation, erosion, desertification and drought contribute to distress migration***. Disasters cause, and trigger or contribute to migration, while ***migration may intensify disasters*** due to a ***high social vulnerability***. But no detailed global or regional estimates or data exist to quantify this. **Much research is needed to fill the many existing knowledge gaps.**

4. Models on Linkages of 'Desertification' and 'Migration'

Several models on the linkage between Global Environmental Change and societal outcomes are relevant for *desertification* and *migration*.

- The *Pressure-State-Response* (PSR) model of *OECD* distinguished between 'pressure', 'state of the environment' and 'response'. It assumes that human activities put pressure on nature that leads to environmental changes to which the state and society respond.
- The *UN Commission for Sustainable Development* (UN-CSD) used a DSR (*Driving Force-State-Response*) model.
- The *European Environment Agency* (EEA 1998) distinguishes "*Driving Force - Pressure - State – Impact - Response* (DPSIR) for the analysis of environmental problems and environmental indicators.
- The *Millennium Ecosystem Assessment* distinguished direct and indirect drivers of change that affect human well-being and ecosystem services. Besides the material minimum for a good life, health and good social relations, security is considered as a key element of human well-being that influences the freedom of choice. Security is the ability to live in an environmentally clean and safe shelter, and the ability to reduce vulnerability to ecological shocks.

These four models (of OECD, UN-CSD, EEA and MEA) are used for environmental indicators and ecosystem assessments. But they do not focus on links between GEC, hazards and socio-political impacts.

This is the goal of ***my own PEISOR model*** where *P* (*pressure*) refers to six drivers of global environmental change (*survival hexagon*); *E* to the *effects* of the linear, non-linear or chaotic interactions within the 'hexagon' on environmental scarcity, degradation and stress; *I* to extreme or fatal *impacts* of human-induced natural hazards (storms, flash floods, flooding, land slides, drought); *SO* to *societal outcomes*: internal displacement, *migration*, urbanization, crises, conflicts, state failure and R to *response* by society, business, the state where traditional and modern technological knowledge can make a difference.

5. Politisation and Securitisation: From Almeria to Valencia

Two stages of putting environmental issues in general and desertification on the international scientific and political agenda can be distinguished as part of a strategy of 'politisation' and 'securitisation'.

The first strategy was launched at the Stockholm Conference in 1972 that established UNEP and at the Rio Conference in 1992 with the adoption of a negotiation mandate for UNCCD

that has resulted in the political regime with the UNCCD secretariat in Bonn in 1999. Spain politicised the 'desertification and migration' linkage in 1994 at Almeria, and securitized desertification at Valencia in 2003.

The Almeria Statement on Desertification and Migration of 1994 interpreted desertification as a 'global' and migration as a 'natural' phenomenon. It called for a "holistic approach to local development, empowering the local population and protecting the environment within a poverty-reduction scenario, should be combined with more effective migration policies in such areas."

Since the Almeria symposium 1994, little systematic research on the links between desertification, drought and famine as well as forced migration and conflicts has occurred. Of two empirical projects by Homer-Dixon (Toronto) and Bächler (Berne) only the Swiss project analyzed soil degradation as a cause of conflict and in many case studies. Few empirical studies were done in the U.S. focusing on Desertification and Migration for Mexico and Argentina.

The global interactive dialogue during the UNCCD-CRIC 3 meeting in 2005 put these issues on the UNCCD agenda. In my conclusions I pointed to a lack of scientific knowledge on the links between natural factors (desertification, drought,

famine) and societal, socio-economic and political consequences (forced migration, crises, low level violence, mass protests, hunger riots below war level). Case studies are lacking on environmentally-induced desertification, drought and hunger-triggered migration as are systematic statistics on the socio-political impacts of these events. Thus multidisciplinary approaches of natural and social scientists are needed for policy-oriented integrated strategies for early warning of forced migration triggered by hazards.

6. Migration Patterns in the North-western Mediterranean

Since 1950 to 2000 a fundamental shift occurred in the migration in the Western Mediterranean countries. From 1950-1970 there was a net emigration from Spain, Portugal and Italy, but since 1970 there was a net inflow of migrants of a million during the 1970s and two millions during the 1990s. The rapidly increasing irregular migration from the Maghreb and Sub-Saharan Africa has posed manifold security problems for the recipient countries and the migrants. For the emigration countries migration reduces potential domestic protests among the hopeless and increases the prospects of remittances for family members. Some host countries are confronted with an emerging humanitarian catastrophe. For them migration has become a challenge for their national and internal security.

In Spain a significant increase in immigration has occurred during the past decades where immigrants have increased from 300,000 (1975) to 4.8 million (2005) or sixteen fold in 30 years. Since 1995 the migrants have increased from 1 to 4.8 million people or from 2.5% to 11.1% of the total population. The number of refugees remained 5500 people. Between 2000 and 2005 Spain had an average annual net migration inflow of 405.000 migrants. As a result the Spanish population rose from 39 921 (in 1995) to 40 717 (2000) and 43 064 (in 2005).

This increase in immigrants in Spain is already reflected in changes in the UN population projections between the 2000 and 2004 revisions. While the medium variant of the UN population projection (of 2000) projected a significant population decline for Spain (-8.6 million) from 2000 to 2050, the 2004 revision projects for Spain an increase of 1.8 million by 2050. The Spanish labour force may benefit by 2050 from immigration and the economic impact of ageing will be less severe.

While this immigration was no direct outcome of environmental or desertification factors, the inflow has increased from those countries in North and Sub-Saharan Africa that are victims to desertification.

7. Climate Change Impacts in the Mediterranean to 2100

During the 20th century climate factors were rarely responsible for desertification in the Mediterranean. But according to many regional climate models its impact will be severe in Southern Europe in the 21st century with temperature increase and precipitation decline.

Martin Parry, a co-chair of the WG II of the IPCC, in September 2005 projected that temperatures will rise more in the Mediterranean while the precipitation would decline. The frequency of hot summers will double by 2020 and will be 10 times as frequent by 2080. Several climate projections may be dramatic for Spain by 2020, 2050 and 2080. According to Parry:

- it will be warmer in the North, drier in the South;
- increased frequency of extremely hot days and seasons;
- more water shortage and heat stress in the South;
- This may aggravate desertification in the South.

This may require major agricultural readjustments in Spain:

- decline in production of citrus and in export of 'virtual water';
- excellent potential for solar energy for electricity & desalination.

The potential danger of drought in the Mediterranean will increase due to precipitation decline. The impacts on crop yields for Spain are disputed. Some project a slight increase in crop

yields in Spain (+ 0-2.5%) while others project a decline in cereal production (-1%-10%) for the years 2050 to 2080. Soil degradation and desertification are more difficult to predict!

8. Millennium Ecosystem Assessment: From *Reactive* to *Proactive Scenarios*: *TechnoGarden* & *Adapting Mosaic*

According to the *Millennium Ecosystem Assessment* the proactive scenarios involve changes in policies, institutions and practices. The global reactive scenarios will increase the impact of climate change and the regional scenario will increase poverty as additional drivers for distress migration from Africa to South Western Europe. Up to 2050 *three* of *four* scenarios can mitigate the negative consequences of growing pressures on ecosystems, but the changes will be large.

The *regionalized proactive scenario* (***Adapting Mosaic***) is most promising. The *globalized scenario* (***TechnoGarden***) provides important tools. The regional *Adapting Mosaic Scenario* requires active adaptive management and investment in education. The ***TechnoGarden Scenario*** requires investment in technologies to increase efficiency of ecosystem services and development of market mechanisms.

In 1997 I proposed a *Renewable Energy Strategy for Andalucía*. Some elements of this suggested strategy have been or are presently being implemented in Andalusia. This renew-

able energy vision was to address the migration pressure from the Maghreb and Sub Saharan Africa and to cope with the economic impact of climate change for Spain. This vision is still relevant and may become more urgent.

The TechnoGarden scenario requires *proactive* policies for a *regional Adaptation Mosaic* that reduce 'desertification' and 'migration'

The two most promising scenarios of a regional *Adapting Mosaic* for Spain, North Africa and the Sahel and a global *TechnoGarden* based on sustainable renewable energy systems is translated into proposals for implementing the goals developed in Almeria I and hopefully leading to policy suggestions resulting from this Almeria II symposium.

Proposal 1: Development of policy-relevant international research activities on the linkage between desertification and migration;

Proposal 2: Development of proactive adaptation and mitigation strategies to cope with the challenges of global environmental change (desertification) and their impacts on 'forced migration'.

9. Proposal for Interdisciplinary Research

Policy declarations are important for political and scientific agenda-setting but they are not sufficient. Declarations do not

create research. Spain will be affected most by desertification and climate change.

Between 2000-2005, in Spain the net immigration of an average of 400.000 persons per year represents 40% of the European total or 2/3 of the total immigration in Southern Europe. This poses national, political, and societal but also 'human security' challenges, vulnerabilities and risks for Spain and for the migrants reaching Europe via Spain. This urgent challenge requires both *reactive* and *proactive* longer-term responses addressing the root causes of both processes.

My first proposal for the conclusions of Almeria II is:

- Andalusia and the University of Almeria may become a focal point for international and multidisciplinary research in the EU to address the linkages between 'desertification' and 'migration'.
- This may require the setting up of an independent funding for an *international research and training institution* with staff from EU, OECD and from countries that are most affected by desertification and environmentally driven and desertification-induced migration.
- Models could be the Hadley Centre in the UK, the PIK in Potsdam CICERO in Oslo, the Swiss Project on *Mitigating*

Syndromes of Global Change that led to many North-South science partnerships.

- This institution could become an important partner of the UNCCD Secretariat and of the United Nations University system.
- Such a policy-oriented research and training institution could make conceptual, empirical and theoretical contributions that can improve our knowledge on linkages and for anticipatory learning in countries affected by 'desertification' & 'migration' (as Spain & Andalusia).
- Additional research assistance from the *7th Framework Research Programme* (2007-2013) may be likely.

10. Proactive Policy Proposal: Desertification & Migration

Almeria II could send a policy message for proactive global, regional, national and local international strategies and policies. The MEA has argued that a regional *Adaptation Mosaic* and a global *TechnoGarden* Scenario are most promising for a proactive environmental policy.

- **Global level**: UN, OECD & EU countries should launch proposals for "*TechnoGardens*" in energy, transportation, housing sectors against drivers of desertification and migration in the 21st century.

- **EU countries** are leading in energy efficiency improvements and in renewable energy sources. This technology initiative could address a root cause of anthropogenic climate change. This technology must be shared with the primary victims of GEC.

- The hyperarid deserts, arid, semiarid & sub humid **drylands** have huge **technical potentials** for **sustainable energy development** (solar thermal & future photovoltaic concentrator technologies). Affordable solar village systems can curb urbanization pressures.

- While the technology development and the build-up of emerging economies of scale will be paid by the North, many longer-term benefits will also occur in the desertified drylands of the South.

- **Regional level**: for countries in the Maghreb; Masreq, Sahel, Kalahari, South West & Central Asia, Central & South America & Caribbean the development of a region-specific *Adaptation Mosaic* is needed. An international Research Centre in Almeria could become a leader for pro-active strategies for coping with desertification & migration.
- **EU level:** *political framework for co-operation on renewables in the framework of the Barcelona process* for a su-

stainable development strategy for the environmentally sensitive North Africa region.

a. **in the North** Andalucía, Murcia and Valencia are most attractive sites in the EU and Spain with its high technical solar potential.
b. **in the South** new jobs may reduce the pressure to emigrate. Renewable energy will offer a new source for the desalination of water in Morocco and Tunisia.

- **National level:** a *TechnoGarden* for renewable energy system development & training and for production of solar panels could attract investment for new industries. This could weaken the market driven desertification process and create other employment options. With its new energy law Spain is improving its framework for the commercialisation of renewable energies.

With a co-operative renewable energy strategy for North Africa the MEA's TechnoGarden scenario may gradually be implemented. This energy strategy requires *short*, *medium* and *long term* measures.

Let me conclude,

Twelve years after Almeria I (1994) we still lack systematic empirical knowledge on the links between desertification and migration. The *International Year to Combat Desertification*

may create cooperative structures for interdisciplinary research involving both natural and social scientists and fostering North-South research partnerships.

- No international and multidisciplinary research institution exists on the linkages between desertification and migration.
- The research centre at the *Plataforma Solar in Almeria* has become the leader for developing solar thermal technology in Europe.
- With the construction of the first solar thermal energy site in Europe in Andalucía one element of a TechnoGarden scenario is realized.
- Andalucía and Almeria could become a focal point for global research funded by national, EU and private sources.
- Linking a multidisciplinary *Research Centre for Desertification and Migration* with a *Research and Training Centre for Solar Energy* can train experts from affected regions to study drivers & solutions.
- A trilateral Spanish-Mexican-German initiative for research cooperation on climate change, desertification, migration and on the potential of renewables for national adaptation plans should be considered.

The *UNESCO Decade on Education for Sustainable Development* (2005-2014) offers a political framework for desertification and distress migration.

The EU lacks a longer-term strategy to apply its means proactively to address the challenges the world and its member states will face in the 21st century when climate change will hit the Mediterranean. Parry argued that the food security impacts for the Mediterranean may be severe. This leads me to these proposals:

- It may thus be wise to reduce the market driven forces that have contributed to desertification in Spain, by shifting investments from exporting 'virtual water' (with citrus crops) to exporting energy.
- Instead Spain could become the European pioneer in developing solar thermal and photovoltaic concentrator technologies.
- To develop and to share these technologies with experts from countries affected by desertification contributes to a longer-term and complex proactive human and environmental security strategy for these countries.
- Research can contribute to anticipatory learning and lead to partnership building measures in the framework of the Barcelona process.

- We need science and development partnerships; sharing of knowledge and technologies that can provide answers for those countries that are victims of desertification and emigration pressure.
- Europe needs a human security and development strategy that was proposed in 2004 to Javier Solana by Mary Kaldor and Narcis Serra.
- Achieving 'human security' is not a dream of pacifists; rather it may be a more realistic proactive strategy for coping with global change.
- Foreword looking strategies are needed to combat desertification and to create jobs, livelihoods and human prospects for the young in countries where migration pressures exist.
- The resources we invest today in proactive strategies for dealing with the root causes of desertification and migration may reduce the immense costs of a reactive military strategy for a fortress Europe by building naval walls on its maritime borders.
- It is not only an issue to transfer funds to cope with the present challenge but to develop realistic ideas and joint EU strategies for addressing the root causes of the dual natural desertification and societal migration processes.

- This must be done by the forward looking political leaders of Mediterranean countries.
- A forward-looking climate change policy will be one of the goals of the German EU- and G-8 presidencies during 2007.
- There are many opportunities for bold initiatives. This is a task for European governments and for the close cooperation of governments with the research community and civil society.
- Let me conclude with a sentence of your majesty I remember from a speech on migration issues in 1996: “Todos somos humanos”. This is the spirit for moving from “concepts” to “action”. Both are needed to realize your majesties human perspective to urgent problems.
- I hope this second Almeria Symposium on Desertification and Migration can contribute to both during the next three days.

Thank your for your kind attention.

Muchas gracias por su atención.