D O C T O R O F P H I L O S O P H Y D I S S E R T A T I O N

Policies to combat desertification and climate change in the Southern-Mediterranean region in the context of international development cooperation

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Dora KULAUZOV

CONTENTS

List of figures

List of tables

List of abbreviations

CAP: common agricultural policy of the EU

CARPE: common agricultural and rural development policy of the EU

CBD: Convention on Biological Diversity

CDM: Clean Development Mechanism of the Kyoto Protocol to the UNFCCC

COP: Conference of the Parties

EC: European Commission

ECCP: European Climate Change Programme

EDF: European Development Fund

EIB: European Investment Bank

ENP: European Neighbourhood Policy

EU: European Union

ESDP: European Security and Defence Policy

EWS: early warning system

FAO: Food and Agriculture Organisation

GCOS: Global Climate Observing Systems

GCTE: Global Change and Terrestrial Ecosystems

GDP: Gross Domestic Product

GEF: Global Environment Facility

GM: Global Mechanism of the UNCCD

GMES: Global Monitoring for Environment and Security

HDI: Human Development Index

IDC: International Development Cooperation

IGBP: International Geosphere-Biosphere Programme

IGCO: Integrated Global Carbon Observation

IGOS: Integrated Global Observing Strategy

IMC: Inter-ministerial Committee on IDC in Hungary

INCD: Intergovernmental Negotiating Committee on Desertification

IWG: Inter-ministerial Working Group on IDC in Hungary

IPCC: Intergovernmental Panel on Climate Change

IPED: International Panel of Experts on Desertification

LADA: Land Degradation Assessment in Drylands

LUCC: Land-Use and Land-Cover Change

LULUCF: Land-Use, Land-Use Change and Forestry

MA: Millennium Ecosystem Assessment

MAP: Mediterranean Action Plan

MDGs: Millennium Development Goals

MEDA: Mediterranean Action

METAP: Mediterranean Environmental Technical Assistance Programme

NAP: National Action Programme to Combat Desertification

NATO: North Atlantic Treaty Organisation

NATO CCMS: NATO Committee on the Challenges of Modern Society

NATO SCOM: NATO Science Committee

ODA: official development assistance

OECD: Organisation of Economic Cooperation and Development

OECD DAC: OECD (see above) Development Assistance Council

OSS: Observatoire du Sahara et du Sahel

P/PET: ratio of annual precipitation to potential evapotranspiration

PPP: Purchasing Power Parity

SAPCD: Subregional Action Programme to Combat Desertification (Maghreb Arab Union)

SMAP: Short- and Medium-Term Priority Environmental Action Programme

SPS: NATO Science for Peace and Security Committee

SWOT: Strengths, Weaknesses, Opportunities, Threats

UNCCD: United Nations Convention to Combat Desertification

UNCED: United Nations Conference on Environment and Development

UNCOD: United Nations Conference on Desertification

UNCTAD: United Nations Conference on Trade and Development

UNDP: United Nations Development Programme

UNEP: United Nations Environment Programme

UNFCCC: United Nations Framework Convention on Climate Change

WEU: Western European Union

WSSD: World Summit on Sustainable Development

Glossary

adaptive capacity: the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences

climate change: any change in climate over time, whether due to natural variability or as a result of human activity (in the definition of the IPCC)

desertification: land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities (in the definition of the UNCCD)

drought: the naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, together with very high temperature and evaporation rate at the same time, causing serious hydrological imbalances that adversely affect land resource production systems, including all living organisms and the human society

drylands: arid, semi-arid and subhumid areas (in the definition of the UNCCD), plus hyper-arid areas (in the definition of the MA)

threat: any action or sequence of events that threatens to degrade the quality of life for the inhabitants of a state or significantly constrains the range of policy choices available to a state

vulnerability: interface between the exposure to the physical threats to human well-being and the capacity of people and communities to cope with these threats; more specifically the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change and desertification

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The above entitled PhD dissertation focuses upon the positive correlation between international development cooperation policy and policies to combat desertification and climate change. The interlinkages of development cooperation and the environment is an area of increasing importance under the aegis of both the EU and the OECD. Hungary as a new EU Member State and an emerging donor country is in the process of formulating its international development cooperation policy. For this, it is useful to learn from the relevant experiences of the older EU Member States, the European Commission and other major donor institutions that have a history of international development cooperation activities. The geographical focus is on the Maghreb countries of the Southern-Mediterranean region in line with the Euro-Mediterranean partnership and the new European Neighbourhood Policy.

At the theoretical level, the reframing process of the concept of desertification is analysed in the light of international negotiations, and it is argued that international level negotiations on the definition of desertification should be reopened in order to agree on a definition which does not exclude geographical regions and countries from the scope of the UN Convention to Combat Desertification.

Considering the empirical aspect of this research, after determining the target countries, a SWOT (strengths, weaknesses, opportunities, threats) analysis is carried out as regards geographical features and desertification and climate change related policies for the focal recipient countries, and the analysis of selected international development cooperation projects implemented by the target donors in the countries of the Maghreb subregion discloses to what extent the examined projects fulfil the requirements of the principle of country-drivenness. These analyses revealed that most of the projects implemented in the international development cooperation framework are in line with the needs of the recipient countries in the field of combating desertification and adapting to the impacts of climate change. However, measures should be strengthened and more donor support is needed in specific areas. If there is no option to prevent a process/event, adaptation and mitigation are available as response measures. Adaptation has key importance for these countries to be able to cope with the unavoidable impacts of further climate change and desertification. The majority of donor projects have so far been implemented related to adaptation. This tendency should continue when designing additional projects in the frame of international development cooperation.

Furthermore, the international development policy framework of an emerging donor country, Hungary is examined in detail. Finally, recommendations are formulated as regards the Hungarian donor policy in relation to its potential future role and involvement in the Euro-Mediterranean partnership. It can be suggested that it would be worth considering for Hungarian decision makers to include the Maghreb countries, or at least one of them among the development cooperation partners of Hungary and implementing projects within the

framework of the Euro-Mediterranean partnership in the specific field of combating desertification and climate change, potentially with collaboration of experienced EU donor states which have so far actively participated in partnership building with the examined countries of the Maghreb subregion.

Keywords: climate change, desertification, drought, drylands, global environmental change, international development cooperation, policy subsystems, reframing, security, threat, vulnerability.

1. INTRODUCTION

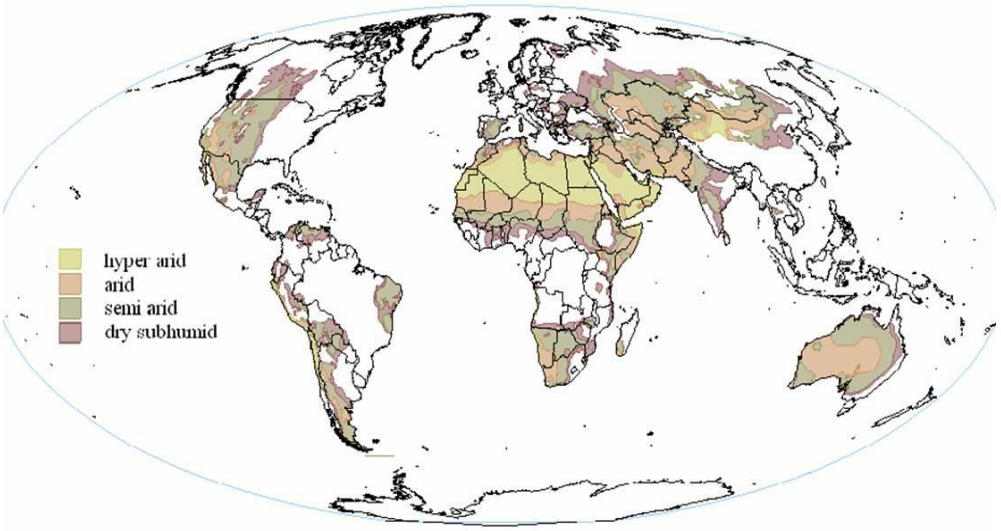
The global climate has changed due to *natural processes* throughout the history of Earth, thus contributing to large-scale changes on the planet. Since the industrial revolution, *human interference* has significantly contributed to increasing the amount of greenhouse gases in the atmosphere, thus increasing the *risk of climate change* (IPCC Working Group I 2007). Climate change in the human context is a highly relevant issue and a challenge of cornerstone importance in the 21st century on account of the fact that it could have significant impacts not only on the environment, but also on economy and society, either directly or due to the fact that society and economy are strongly affected by the environment.

The land degradation process strongly interconnected with climate change is *desertification* which gained international attention in 1977 in the frame of the UN Conference on Desertification. Land degradation means the reduction or loss of the biological or economic productivity of drylands (arid, semi-arid and dry sub-humid areas). *Drought* is a phenomenon which is closely related to both climate change and desertification as it appears as a result of natural climate variability, and which is aggravated by human factors as well.

As the former UN Secretary Genral, Kofi Annan declared in one of his speeches, "drought and desertification threaten the livelihood of over 1 billion people in more than 110 countries around the world". Furthermore, the Executive Secretary of the UNCCD claimed that "it is widely recognized that environmental degradation has a role to play in considerations of national security as well as international stability. Therefore, desertification has been seen as a threat to human security." These statements justify the need for dealing with the issue of desertification at all levels.

According to data from the World Atlas of Desertification (1997), around 39.7% of the total land areas of the world fall into the categories of drylands (see Fig. 1).

Figure 1: Global land area classification – aridity zones
Source: World Atlas of Desertification (1997)



As for a more up-to-date source, namely the Millennium Ecosystem Assessment (2005b), *drylands* (including also hyper-arid areas) *comprise 41.3% of the global terrestrial area*, and *drylands are home to 34.7% of the global population* in the year 2000. The Millennium Ecosystem Assessment defines desertification as a persistent reduction of land productivity in drylands, thus distinguishing reduced productivity due to natural, short-term climatic variations from persistent variation caused by land degradation. The way of defining the term desertification, i.e. considering it as a process or as an end-result of a process, and determining its geographical boundaries (whether to include or not to include hyper-arid areas) affects the policy tools that are available to combat this problem. Therefore, at the theoretical level, the analysis of the reframing process of the term desertification provides an added value of this research. The impact of international negotiations is examined on the different conceptualization of desertification together with its determining role in policy directions.

The international regimes of combating climate change and desertification can be seen as fields of "low politics" in the sense as the term *regime* is used by Duke (1997). In the international arena, the United Nations Framework Convention on Climate Change (UNFCCC) is an instrument of basic importance for climate change mitigation. The UNFCCC was opened for signature in June 1992 at the Rio de Janeiro Earth Summit, and entered into force in 1994. At present, 195 states plus the European Community are Parties to the Convention. The issue of desertification was raised first as a national and regional level problem and gradually developed into the form of a global convention. At the beginning of this process, desertification was recognised as a major economic, social and environmental problem of concern, which resulted in the adoption of a Plan of Action on Combating Desertification in 1977. Since 1992, the Rio process has promoted sustainable development. One of the outcomes of the process launched by the Rio de Janeiro Earth Summit is the coming into existence of the United Nations Convention to Combat Desertification in those countries

experiencing serious drought and/or desertification, particularly in Africa (UNCCD). The UNCCD was adopted in 1994 and came into force in 1996. At present, 190 countries plus the European Community are Parties to the Convention.

The results of manifold scientific research show that there is a significant interaction between climate change and desertification. While the scientific aspect is broadly contained in the literature (e.g. Parry *et al.* 1988, Parry 1990, Faragó *et al.* 1991, Kemp 1994, Thomas and Middleton 1994, Williams and Balling 1996, World Atlas of Desertification 1997, Burroughs 2001, IPCC WG I. 2001 and 2007, Geeson *et al*. 2002), the *linkages between climate change related policies and desertification related policies* have not adequately been covered yet. This means that the available literature deals either with climate change policy and its implementation (e.g. Collier and Löfstedt 1997, Faragó 1998, European Commission 2000a, Meyer 2000, IEA and OECD 2001, IPCC WG II. and III. 2001 and 2007), while others focus on desertification policy (e.g. Grainger 1990, Mainguet 1994, Geeson *et al.* 2002), and direct policy linking between the two regimes can be found in some cases only, e.g. in the development cooperation context (OECD 2002) but only on a theoretical level.

For the purposes of the research, the differences between desertification and climate change in policy experience and in geographical scale are to be taken into consideration. As for *policy experience*, anthropogenic climate change is a new phenomenon that never existed in the history of modern mankind, and for some time the public and policy makers were not persuaded of its existence. Therefore, climate change policies are new in the history of policy making, and there is little experience. Desertification, on the other hand, is a phenomenon of a very old history, and one that prevails for centuries in all the affected countries. However, earlier it was not called desertification, although it always existed. Therefore, there are practices, as well as policies at many levels, that deal with soil fertility reduction resulting from agricultural and pastoral practices.

In this respect, it is worth analysing this plethora of agricultural, water, livestock, and forestry policies all of which aim at sustaining dryland productivity (a technical term for the political term "combating desertification"), and identifying how each of them constitute adaptation to climate change, contributes to mitigation of climate change, or leads to exacerbation of climate change. Based on the difference in the history of desertification policies and climate change policies, it can be assessed to whether implementation of desertification policies for a longer time period was effective, and the lessons learned can be applied for enhancing climate change policies.

Considering the *geographical scale*, desertification processes often affect whole geographical subregions (e.g. the Maghreb) and regions (e.g. the Southern-Mediterranean). Climate change and desertification have cross-boundary effects, and these may be direct or indirect. As for desertification, the direct effect is rather hypothetical: theoretically, desertification in one country may affect regional climatic patterns; these may be shared between several countries in the region, such that the climatic response induces desertification in a neighbouring country. The indirect effect of desertification, on the other hand, is well identified: due to desertification in one country, environmental refugees pour into a neighbouring country; this does not necessarily cause desertification in the other country, but brings about other social, economic and political problems (UNCCD COP3 1999). There is only one certain cross-boundary effect – dust storms (many of which come from drylands but not due to desertification, yet some of them seem to be caused by desertification). On the other hand, the direct link between desertification and poverty is not well established. What is clear is that poverty is greater in drylands than in non-drylands, but drylands have low productivity which is a factor in poverty even without the presence of desertification (Safriel 2005).

Another important difference between the two phenomena is that regional (e.g. European Union) policies for climate change will not affect climate change in Europe, hence

climate change in Europe will continue to impact Europe, including its desertification, regardless whether there are effective climate change policies. On the other hand, desertification policies of the EU will definitely determine desertification trends within the EU. So, there is a certain asymmetry there. However, policies for local adaptation to climate change are much more critical than policies for local mitigation that have global but not local impact.

Climate change and desertification are not only partly human-induced phenomena, but also they have a wide range of serious *impacts on human life*. Food security and agriculture, water management, international migration, border security, and crises and conflicts are among those areas. In this respect, climate change and desertification have a security dimension and can be regarded as security challenges as well. Therefore, it is reasonable to examine climate change and desertification related policies in the *context of security*.

Having summarized and justified the importance of the issues of desertification and climate change as focal policy areas of the research, it should be emphasised that these problems in developing countries can be adequately handled only by means of assistance of developed countries and organisations in the frame of *international development cooperation*. Therefore, this paper focuses upon the positive correlation between international development cooperation policy and policies to combat desertification and climate change.

The interlinkages of development cooperation and the environment is an area of increasing importance under the aegis of both the EU and the OECD. The *European Union* is the largest donor in the world and provides for more than 50% of the world's official development assistance. Therefore, it is reasonable to examine EU donor activities in the field of combating desertification and climate change in a developing region. In line with the Euro-Mediterranean partnership and the new European Neighbourhood Policy, the Southern-Mediterranean region is a priority area at the Southern borders of the EU.

Within the Southern-Mediterranean region, the *Maghreb subregion* includes developing countries that have a large area and population affected by desertification and the adverse impacts of climate change and drought. Soil erosion in the Mediterranean is the most severe in the Southern-Mediterranean Maghreb countries, namely Morocco, Algeria, and Tunisia. Furthermore, a serious water shortage is predicted for Algeria and Tunisia by 2025 and for Morocco by 2050 which will exacerbate the effects of drought and desertification in several aspects. This will result in a decline in agricultural production which leads to a decrease in GDP and economic growth as agriculture is a major factor of these countries' economies. This process could lead to increased rural poverty and migration influencing also border security for the EU.

Having justified the target regions from the donor and recipient side, the analysis in this research includes one more party in between, namely a relatively new EU Member State and emerging donor country, *Hungary*. The root for this particular choice is three-fold.

The first reason is related to *politics and international development cooperation*. The country currently is in the process of formulating its international development cooperation (IDC) policy which aims at narrowing the number of its IDC partner countries and it is emphasised at the level of the Ministry of Foreign Affairs that more attention should be paid to the African continent in the near future. It is also suggested in an official publication of the Ministry of Foreign Affairs (Külügyminisztérium 2002) that *projects for economic cooperation and development* and resource allocation should be investigated related to the Euro-Mediterranean cooperation in order that the country could also take part in the preparation and implementation of such projects in the future. It is also proposed that the place of the Southern-Mediterranean region should be positioned within the emerging Hungarian international development cooperation policy framework.

The second factor for involving Hungary in this research relates to the fact that the

country declared itself as an *affected country party* under the umbrella of the *United Nations Convention to Combat Desertification* (UNCCD). This means an obligation for the country to design national action programmes including policies and measures to combat desertification and prepare national reports on the implementation of the UNCCD. The *geographical features* of Hungary, climatic regimes, the pattern of land degradation, and the recurrence of drought makes the country similar to the countries of the Mediterranean region affected by desertification in this respect.

A third reason is connected to another obligation of Hungary in the frame of the UNCCD, i.e. the country as an EU Member State should play a donor role under the Convention. The obligations of a *developed country party under the UNCCD* include providing for financial, technical and scientific assistance to affected developing country parties, particularly in the African continent by means of international development cooperation policy. Regarding the African continent, the Southern-Mediterranean is the nearest region to Hungary. To fulfil this obligation, Hungary could contribute low-cost capacity building, scientific networking, and experience sharing related assistance to these countries in the field of policies to combat desertification. For making the above a reality, a useful tool is to learn from the relevant experiences of the older EU Member States, the European Commission and other major donor institutions that have a history of international development cooperation activities. Therefore, recommendations for Hungary's active involvement in the Euro-Mediterranean partnership are made based on the results that arise from the analysis of the present IDC policies of EU Member States.

The *overall aim* of the present research is to identify policy gaps and windows of opportunity in the application of international development cooperation policy as a tool to combat desertification and adapt to the impacts of climate change. This will be based on an evaluation of national needs in the field of desertification and climate change of selected

Sothern-Mediterranean countries compared to the outcomes of international development cooperation projects carried out in these recipient countries. Lessons learned based on problem definition can be used when further developing the international development cooperation policy field in an emerging donor state, Hungary. A major assumption in this research is that besides the scientific aspects of the interlinkages of climate and desertification processes, the climate change and desertification policy subsystems are also interlinked.

The next chapter provides for a detailed description of specific aims, objectives, and formulation of individual research questions.

2. AIMS AND SCOPE OF THE RESEARCH

Having set the introductory context, and before reviewing the available national and international literature related to the focal topics covering the scientific and partly the policy aspects as a starting point of the research, the aims, objectives and research questions are identified in this chapter.

2.1 Overall aim and objectives

Desertification and climate change can be considered to be threats to human security, and international development cooperation policy is regarded as a tool to contribute to solving these problems. A typical example of an affected region is the Southern-Mediterranean including the EU's neighbouring developing countries. Therefore, this research focuses on the positive correlation between international development cooperation policy and policies to combat desertification and climate change.

Hungary as a new EU Member State and an emerging donor country is in the process of formulating its international development cooperation policy. For this, it is important to learn from the relevant experiences of the older EU Member States, the European Commission and other major donor institutions that have a history of international development cooperation activities. The geographical focus is on the Maghreb countries of the Southern-Mediterranean region in line with the principles laid down in the Euro-Mediterranean partnership and the new European Neighbourhood Policy. The interlinkages of development cooperation and the environment is an area of increasing importance under the aegis of both the EU and the OECD.

Based on the above considerations, the *overall aim* of the present research is to *identify policy gaps and windows of opportunity in the application of international development cooperation policy as a tool to combat desertification and adapt to the impacts of climate change*. This is based on an evaluation of national needs in the field of

desertification and climate change of selected Sothern-Mediterranean countries compared to the outcomes of international development cooperation projects carried out in these recipient countries. Lessons learned built on problem definition can be used when further developing the international development cooperation policy field in an emerging donor state, Hungary. A major assumption in this research is that besides the scientific aspects of the interlinkages of climate and desertification processes, the climate change and desertification policy subsystems are also interlinked.

The SWOT (strengths, weaknesses, opportunities and threats) technique is appropriate to gain an overview of the state-of-play of climate change and desertification processes and policies in the Maghreb countries. As it is later on explained in the literature review, security concerns cannot be neglected when tackling the issue of climate change and desertification. Therefore, climate change and desertification should be combated in the EU's neighbouring Mediterranean developing countries with EU assistance. Thus, it is reasonable to evaluate whether donor projects are in line with the partner countries' needs, or in other words to disclose whether the principle of country-drivenness is present in the examined international development cooperation policies.

To make it more specific, the EU's MEDA programme and the bilateral donor activities of EU Member States can be investigated (European Council 1996 and 2000). From this exercise, findings will arise that can be adapted for the purposes of further formulating the Hungarian donor policy which will also be analysed focusing on the formulation phase of the policy cycle. Using the results of the evaluations proposed above, gaps in international development cooperation policy will be discovered concerning its contribution to strengthening the synergies of the climate change and desertification policy subsystems in the target subregion.

At the *theoretical level*, the analysis of the *reframing process of the term*

desertification provides an added value. The impact of international negotiations will be examined on the conceptualization of desertification together with its determining role in policy directions.

Considering the *empirical aspect* of this research, detailed *objectives* are the following.

(i) Preparing a SWOT (strengths, weaknesses, opportunities, threats) analysis for the selected Southern-Mediterranean countries and the subregion itself from a geographical and policy environment aspect in order to provide a solid base for analysis as regards the effects of donor activities of the European Union. It provides a basis for evaluation whether a country-driven approach is applied in the examined donor policies. Before doing that, target donor and recipient countries are to be identified in the spirit of triangulation.

(ii) Selected international development cooperation projects are to be analysed that are implemented by the target donors in the countries of the Maghreb subregion. This analysis discloses to what extent the examined projects fulfil the requirements of the principle of country-drivenness.

(iii) The gaps and windows of opportunity are examined in relation to the international development cooperation policy framework. Furthermore, international development cooperation policy of an emerging donor country, Hungary is examined in detail, with special emphasis on the policy formulation process. On the basis of results of analyses described in (i) and (ii), recommendations are formulated as regards the Hungarian donor policy in relation to its potential future role and active involvement in the Euro-Mediterranean partnership.

When carrying out a policy analysis in the research, it may be useful to learn from the following suggestions of the Global Environment Outlook (UNEP 2002a): not all policy instruments are appropriate for all situations; ensuring timely access to accurate information is of basic importance as it allows for early warning of, inter alia, environmental

processes/phenomena; strong institutions and environmental governance are prerequisites for all other policies; and there are important linkages between environmental and social issues.

2.2 Research questions

In line with the previously defined aim and objectives, the following *research questions* can be identified.

Research question 1: What are the main geographical and policy strengths and weaknesses of the Southern-Mediterranean region, and what major opportunities and threats can be identified for these countries in the field of combating desertification and climate change? This particular question contributes to fulfilling objective (i). It is of basic importance to carry out a SWOT analysis for the subregion and the selected target countries as it could provide a starting point for further policy analysis specified under objectives (ii) and (iii).

Research question 2: To what extent are the examined international development cooperation projects in line with the Maghreb countries' needs identified in the SWOT analysis, and to what extent these projects fulfil the requirements of the principle of country-drivenness? This question helps to fulfil objective (ii). The relevance of this question is that the lack of integration of policy factors, measures and the lack of consideration of the different potential impacts of a certain policy on other policy areas lead to the emergence of inappropriate and seemingly uncoordinated projects.

Research question 3: What are the gaps and windows of opportunity in the examined international development cooperation policy framework, and what lessons learned can be applied when further developing the Hungarian international development cooperation policy in relation to the country's potential future participation in the Euro-Mediterranean partnership? In this respect, on the basis of results of analyses described in (i) and (ii), recommendations are made for the future formulation of Hungarian donor policy in order to

fulfil a double purpose: obligation under the EU and obligations under the UNCCD. This question assists in fulfilling objective (iii).

2.3 Added value of the research

The present research could produce the following outcomes by analysing available data and information, which provides for an *added value* in relation to what is presented in the related literature.

(i) The analysis of the reframing process of the desertification concept discloses how different definitions have been formulated in the framework of international negotiations, and how the various definitions lead to different policy conclusions.

(ii) An overview is gained concerning the strengths, weaknesses, opportunities, and threats for the selected Maghreb countries from a geographical and policy environment aspect.

(iii) An analysis of selected international development cooperation projects implemented by the target donors in the countries of the Maghreb subregion discloses to what extent the examined projects fulfil the requirements of the principle of country-drivenness.

(iv) Gaps and windows of opportunity in the context of policy synergy are identified concerning international development cooperation policy as a tool to combat desertification and climate change. The formulation phase of the Hungarian international development cooperation policy is analysed and recommendations are made for the country's possible active involvement in the Euro-Mediterranean partnership.

2.4 Initial statements

The research is based on the following starting points which should be justified through concrete examples of policies and projects.

Statement 1: Climate change, desertification and drought are threats to human security.

Statement 2: Policies for combating desertification contribute to adapting to the adverse impacts of climate change.

Statement 3: Adequate policies for combating desertification and drought have a role in decreasing vulnerability to the impacts of climate change, and also in mitigating climate change. There must be a distinction between the local level adaptation and the global level mitigation of global warming by afforestation in local drylands.

Statement 4: International development cooperation and official development assistance contribute to meeting the main environmental challenges of the 21st century in the recipient countries.

In line with the above aims, objectives, and research questions, the relevant literature is presented and summarized in the following chapter.

3. DESERTIFICATION AND CLIMATE CHANGE AS RESEARCH FIELDS FOR SCIENCE AND POLICY – A LITERATURE REVIEW

The main aim of this chapter is to disclose the essential scientific background and interlinkages of desertification and climate processes from the relevant literature in order to provide a basis for geographical selection and to prove that these are significant issues to tackle for the future. Another aspect is to summarize the major policy elements and situation at the international, regional and subregional level with the purpose of outlining a policy framework for these two specific policy fields.

3.1 The science link: interrelations of desertification and climate processes

Climate change and desertification are two phenomena which are related to the term of global change. *Global environmental change* as defined by the International Geosphere-Biosphere Programme (IGBP 1997) covers four focal areas: (i) changes in land use and land cover; (ii) the world-wide decline in biodiversity; (iii) changes in atmospheric composition, especially the increase in CO_2 concentration; and (iv) changes in climate. In another approach (Thornes 1995), global environmental change implies the impact of events or processes: (i) that are global in their effects (e.g. volcanic eruptions); (ii) that are themselves global in extent (e.g. deforestation); and (iii) which occur at the global scale (e.g. climatic changes).

Rising concentrations of greenhouse gases in the Earth's atmosphere, resulting from economic and demographic growth since the industrial revolution, are leading to potentially irreversible climate change through the *enhanced greenhouse effect*. Scientific evidence confirms that climate change is taking place and that most of the warming observed during the last 50 years is attributable to human activities (IPCC Working Group I. 2001). Scientists further project that the rate of change will be more rapid than previously expected. Projections

for climate change, based on current models, include the rise in global average surface temperatures by 1.4 to 5.8 degrees Celsius over the next 100 years. This projected rate of warming is the highest in 10,000 years. The rise in temperature is predicted to have strong adverse effects including rising sea levels (between 9 and 88 centimetres), more irregular precipitation patterns, and an increase in extreme weather events (IPCC Working Group I. 2001). The most recent IPCC report (IPCC Working Group I. 2007) confirms that the certainty of projected adverse climate change impacts has increased from "likely" to "very likely" comparing the findings of the 2001 report and the 2007 report of IPCC.

The term *climate change* is applied in different ways for different purposes at the international level. According to the United Nations Framework Convention on Climate (UNFCCC 1992), „climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (Art. 1), i.e. it focuses on the anthropogenic causes and mitigation options. The usage of the same term by the Intergovernmental Panel on Climate Change (IPCC) refers to „any change in climate over time, whether due to natural variability or as a result of human activity" (IPCC Working Group I 2001 and 2007), i.e. it is an extended application of the term.

A shift in temperature zones caused by *climate change* could seriously affect the ecosystems and biodiversity and lead to a geographic shift in the occurrence of different species and/or the extinction of species in many locations as the world's ecosystems will not be able to adapt as fast as the climate is changing (IPCC Working Group I. 2001). Changes in precipitation and more irregular precipitation mean that water resources in many regions will come under further stress. This will affect both fresh water supplies and irrigation. Floods are further expected to increase land degradation. Moreover, higher maximum temperatures are expected over nearly all land areas. Warm seasons will become dryer in most mid-latitude

continental interiors, increasing the frequency of droughts and land degradation. This will be particularly serious for areas where land degradation, desertification and droughts are already severe. Sea level rise may also lead to the salinisation and loss of low-lying agricultural land.

Reynolds *et al.* (2003) claim that *desertification* is considered to be *one of the most critically important issues in the field of global environmental change* that has undeniable interlinkages with climate, biodiversity loss, land cover change, and human dimensions of change. It affects potentially one-fifth of the world's human population. They quote the UN Secretary-General, Kofi Annan: "drought and desertification threaten the livelihood of over 1 billion people in more than 110 countries around the world" (p. 5). Reynolds *et al.* (2003) state that the issue of desertification can only be resolved by considering the meteorological, ecological, and human dimensions of the problem itself and the various interactions between these factors.

Grainger (1990) similarly argues that "desertification is one of the most serious problems facing the world today" (p. 1). He puts the emphasis on the major distinguishing features of desertification: degradation of soil and degradation of vegetation. In the usage of the UNCCD (1994), *drought* means „the naturally occurring phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems" (Art. 1 (c)). As for drought, the World Atlas on Desertification (1997) uses two different categories: agricultural drought which is expressed in terms of the moisture requirement of crops, and meteorological drought which involves moisture deficit in relation to mean precipitation. Otherwise, meteorological drought is defined as a period of below average rainfall lasting for a year or so, and the time element what distinguishes drought from desiccation which means reduction in moisture availability on a decadal scale (World Atlas on Desertification 1997).

Grainger (1990) examines three types of drought: agricultural drought, meteorological

drought, and hydrological drought. As far as agricultural and meteorological drought is concerned, he uses similar definitions that are referred to in the World Atlas of Desertification (1997), plus he defines hydrological drought which occurs when the flow of rivers is too low to supply the needs of crops or the population's fresh water needs. Thomas and Middleton (1994) also provide definitions for desertification and drought, and when exploring their causes, they draw attention to the political-institutional factors. The above named authors consider desertification to be both a *process* and an *end-state of a process.*

It is stated in the World Atlas of Desertification (1997) that *desertification can affect climate and climate can affect desertification*. Climate change at the global scale will impact on the extent of drylands, i.e. arid, semi-arid, dry sub-humid, and hyper-arid areas and the nature of climatic regimes within them. Drylands include terrestrial regions (in this sense includes deserts as well) where water scarcity limits the production of crops, wood, and other ecosystem provisioning services (Millennium Ecosystem Assessment 2005b). Climate change is declared to be relevant to the issues of desertification and land degradation, especially if the balance between moisture gain and moisture loss through evapotranspiration is altered. "Such changes will alter the extent and distribution of drylands and may intensify, or even perhaps reduce, problems of moisture availability and drought occurrence, by changes in climatic variability" (p. 8). It is further explained in the Atlas that long-term climatic changes, driven mainly by external forcing mechanisms, and past changes in Earth-Sun relationships, have had considerable effects on the development of landscape, soils and animal-plant distribution in drylands. The issue of *climatic variability* is further discussed in the Atlas in the context of linking it to variations in climate forcing mechanisms.

The World Atlas of Desertification (1997) applies the definition for the term desertification as laid down in the UNCCD (1994). Focusing on soil degradation, the Atlas identifies the following factors that have interrelationships with soil degradation: climate

(rainfall, evapotranspiration, temperature, and humidity), land (terrain, vegetation, geology, hydrology, and soils), land-use (farming systems, output/input ratio, and sustainability), and socio-economic factors (population density, land/people ratio, land tenure systems, and farm policies).

Climate change and land surface changes and processes have certain positive and negative feedback loops with each other. Pitman *et al.* (1999) examined the role of the land surface in weather and climate. The authors claim that the role of the land surface ranges from certain purely physical influences to major biological influences and demonstrate that the *land surface contributes to influencing weather and climate*. It is stated that there is evidence from climate modelling which shows that perturbations at the surface can impact on the regional-scale climatology. Furthermore, the use of climate-system models can demonstrate that land cover changes during the last 7000 years amplified climate variations both at the regional and at the global level. It is also shown that variations in orbital forcing seem to be amplified by vegetation-atmosphere feedbacks. Kabat *et al.* (1998) states that the role of the land surface in controlling climate is still underestimated and suggests a new approach to climate change impact studies, i.e. instead of impact research driven by climate change scenarios, the susceptibility and vulnerability of different functions of the Earth system resources and ecosystem resilience should be studied.

One of the EU research and development projects called MEDEFLU is focusing on the evaluation of the surface fluxes of carbon and energy for selected forests in the Mediterranean region. Related to this project, Miglietta and Peressotti (1999) conclude – based on the finding that Mediterranean forests are a source of carbon during the late summer drought – that soil moisture (influencing transpiration and soil respiration) has a critical role in determining the size and sign of the carbon flux. Decreased precipitation could lead to substantial carbon losses from these systems and at the same time it could have positive feedbacks on the atmospheric

balance of greenhouse gases. Thus, changes in climate may result in severe land degradation and finally in desertification, esp. in the Mediterranean. Within the framework of the MEDALUS (Mediterranean Desertification and Land Use) project, soil erosion and ecosystem models for projecting future desertification, including under impacts of further global warming have been developed (World Atlas of Desertification 1997). The project aimed at improving the scientific basis for understanding and managing semi-arid environments undergoing great change. EU funded research has also focused on desertification risk assessment and land degradation assessment (LADAMER project), and on land suitability models and desertification indicator systems (DESERTLINKS).

Global warming may contribute to increased stresses in drylands, and in turn, poor land-use practices, especially those that lead to vegetation destruction and soil loss, can contribute to processes that lead to atmospheric warming. "Therefore *strategies* that lead to amelioration of both problems are likely to be of great global importance" (World Atlas of Desertification 1997, p. 140, emphasis added). Following this line of logic, it can be argued that improving international development cooperation policies could contribute to successfully combating climate change and desertification.

3.2 Global environmental change and security

Global environmental change (including climate change and desertification) and security have tight interconnections. In order to understand these interrelationships, at first place, the concept of security should be explored. A starting point for this may be the following statement: "Security is about survival." (Buzan *et al.* 1998, p. 21).

3.2.1 Framing the security context

The term *security* can be defined as "the move that takes politics beyond the established rules of the game and frames the issue either as a special kind of politics or as above politics" (Buzan *et al.* 1998, p. 23). Security sectors can be placed into a *system structure* which is composed of the following levels: international system, international subsystems (including regions with distinguishing territorial features), units (including the national level), subunits, and individuals. International security deals mainly with how human collectivities relate to each other in terms of threats and vulnerabilities, but it may address the way such collectivities relate to threats from the natural environment. According to Buzan *et al.* (1998), military, environmental, economic, societal, and political security sectors can be distinguished. This sectoralization reflects the widening of the security concept, i.e. expanding it from the strictly military sense towards broader dimensions.

Environmental security is a special category due to its cross-sectoral nature in the sense that several other sectoral issues can be viewed through an environmental lens. Some examples of this are the disruption of ecosystems (including climate change, desertification, loss of biodiversity, deforestation), depletion of natural resources and pollution, uncontrollable population growth and migrations, food problems (including poverty, famine, overconsumption, loss of fertile soils and water resources), economic problems (unsustainable production, structural asymmetries), and civil strife (war-related environmental damage and violence related to environmental degradation). It should be noted that threats and vulnerabilities are issue-specific in the environmental sector. Referent object can be the environment itself, i.e. services provided by the natural environment or certain strategic parts of the environment.

In another approach (Lonergan 2000), environmental degradation and natural resource depletion are potential causes of conflicts, they can be seen as threats to environmental welfare

and thus national security, and they are among the factors that affect human security. Insofar *human security* is concerned, the UNDP (1994) provides an extended definition. In this respect, human security includes the overarching areas of economic security, food security, health security, environmental security (access to water, clean air, and non-degraded land system), personal security, community security and political security. In the same report, environmental degradation is referred to as a threat to global human security, together with uncontrolled population growth, excessive international migration, international terrorism, and disparities in economic opportunities. As the Executive Secretary of the UNCCD put it in one of his speeches in 2003, "it is widely recognized that environmental degradation has a role to play in considerations of national security as well as international stability. Therefore, desertification has been seen as a threat to human security."

A *threat* can be defined as "...any action or sequence of events that threatens to degrade the quality of life for the inhabitants of a state or significantly constrains the range of policy choices available to a state..." (Lowi and Shaw 2000, p. 1). As it is formulated in the European Security Strategy (A secure Europe in a better world 2003), "security is a precondition of development" (p. 3). That is one of the reasons why international development cooperation policy should contribute to security, including environmental and human security. Threats to human development might stem from the natural environment that are not caused by human activity (e.g. earthquakes, droughts), and from human activity through the natural systems (e.g. greenhouse gas emissions, carrying capacity) (Buzan *et al.* 1998). Considering that threats are dynamic, conflict prevention and early warning are of basic importance.

3.2.2 The role of early warning

Early warning is a tool to understand the precursors and process of escalation of conflict and violence, and thus it is a tool to contribute to conflict prevention. According to Last (2003), the main underlying causes of conflict include poverty, limited access to resources, flawed economic systems, and ideology. These causes are compounded by dynamic pressures including environmental degradation.

According to Cockell (2003) the content and practice of early warning activities are influenced by the subject (e.g. conflict EWS, drought EWS), the operational purpose (e.g. prevention, preparedness), the method (quantitative, qualitative), the user, the target recipient, and the format of the EWS. An EWS should always provide the base for preventive action. As it is argued by Cockell (2003), there are certain gaps in the process in which the results of early warning are converted for the purposes of preventive action. These gaps include, inter alia, the followings: difficulty of planning multisectoral responses to complex causes of conflict; strategic considerations are often left behind immediate operations; ad hoc early warning analysis are used instead of a systematic model; and there are deficiencies in channelling the results of early warning analysis to the decision makers' level and to respond with adequate policy and operations. To cope with these problems, a *planning approach* could be beneficial. In line with this particular approach, early warning can be defined as "the process of collecting and analysing information for the purpose of identifying and recommending strategic options for preventive measures" (Cockell 2003, p. 188).

An EWS differs from intelligence systems since an EWS is not concerned with a direct threat to the gatherer of information, and focuses on different destabilizing factors within states, which means if we wish to observe another state within the framework of an EWS, we need its consent (Adelman 1998b). A specific type of EWS (Adelman 1998a) is designed for receiving signals for a process/event (like in the case of drought or famine EWS).

According to Walker (1989), components of an ideal EWS are the following: detection, evaluation, and prediction of a hazard (but first the hazard must be defined), and construction of a forecast or warning message. It is important to note that different EWSs should not produce conflicting messages. An EWS should also identify the potential victims. Information provided by an EWS must be clear, accurate, adequate, valid, and should come in time indicating significant events/processes. The importance of desertification and drought monitoring and early warning is also emphasised by Vermes (2006a and 2006b).

It can also be argued that early warning systems are adequate instruments for predicting drought events and to distribute the relevant data and information to the decision makers' level effectively.

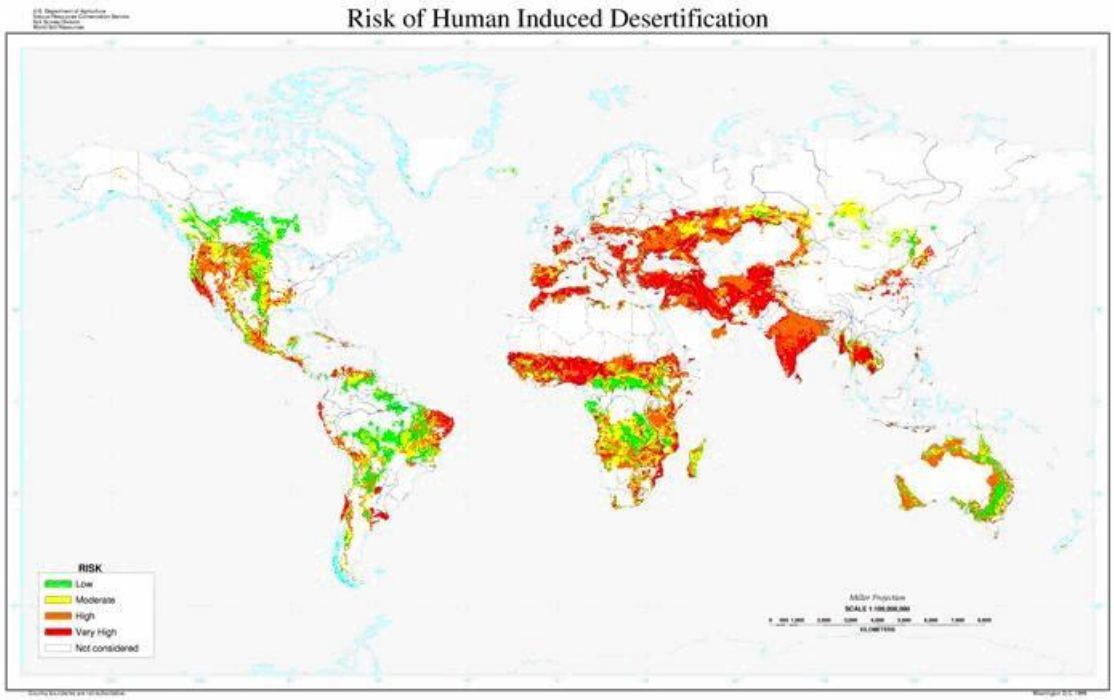
3.3 Desertification and climate change in the human context

Besides the general scientific base and linkages, the human induced character of the climate change and desertification issue is worth examining in more detail. Reynolds and Smith (2002) ask the question: "Do humans cause deserts?". According to the referred authors, climate (particularly drought) is obviously a controlling influence, and it is equally certain that humans and their activities have caused desertification in some places. However, a great deal of disagreement exists as to the causes and extent of this type of land degradation, and consequently about how much of its impact on human well-being is manageable (the risk of human-induced desertification is illustrated on Fig. 2). The situation is similar in the case of anthropogenic climate change, and these factors can have certain linkages.

It is worth noting that the term "climate" in the definitions of desertification is not very applicable without qualifications. Distinctions can be made between "climate variability" which is a natural phenomenon and "drought" as its subset, and which occurs both at the local and at the global scale; and "climate change" which means a directional trend, rather than fluctuations

which characterize the "climate variability". Regarding "climate change", it can be used in the historical/geological context, but in recent usages it implies "global climate change", i.e., it is a "climate change" at the global scale, which has diverse local implications, like increasing the local climate variability. Furthermore, the current use of the term "climate change" usually implies "anthropogenic climate change". Finally, it is agreed that the current climate change phenomenon is a result of "global warming", with high certainty that the major driver of it is human activity.

Figure 2: Risk of human induced desertification
Source: Soil map and soil climate map, USDA-NRCS, Soil Survey Division, World Soil Resources, Washington D.C.



3.3.1 The socio-economic context

There is a complex of socioeconomic and biophysical causal factors involved in land degradation that have differing levels of influence in different regions of the world at different times, and it links with other issues, such as vulnerability and poverty alleviation, in various ways. As Reynolds and Smith (2002) point it out, failure of the scientific community to develop a consensus about this complexity has resulted in simplistic interpretations that have been passed on to policy makers and policy practitioners. Recognising the need for new interdisciplinary approaches to address the problem of desertification, Reynolds and Smith (2002) present a synthetic assessment framework which builds on the various linkages between socioeconomic and biophysical factors, as well as the fact that these linkages evolve over time at different scales.

Various approaches are described in an OECD report (1991) that could be used to achieve a better understanding of the socio-economic disruptions related to climate change and that could contribute to answering the question at what point the social and economic benefits arising from actions to prevent further increase in the concentration of greenhouse gases in the atmosphere could outweigh the related costs. Kemp (1994) places societal and environmental components of global environmental issues into the focus of his analysis using an integrative approach. Reynolds *et al.* (2003) suggest that the key to combating land degradation in drylands is to sustain a *balance* between change in dynamic natural and social systems. They believe that sustainable land use is possible when the rate of change and spatial overlap in the environmental and human systems are matched.

The need to consider the below main elements when studying desertification is emphasised:

- there is no standardised definition for desertification (land degradation);
- land degradation is often the result of climate variability, especially drought, thus the

underlying causes are not only anthropogenic (e.g. desertification in the Sahel is now viewed by many as a "synergy" of human activities and drought, namely, it is likely that if only one of them was in place then and there, no desertification would have occurred);

- not all changes have a direct, immediate impact on the human systems.

Williams and Balling (1996) claim that *human activities* have an important impact on climate. What remain uncertain are the magnitudes of human-induced climatic change, and its impacts on areas that are susceptible to desertification. They focus not only on the above context, but also on the impacts of desertification on climate, and vice versa, impacts of climate on desertification (including on soils, vegetation, and the hydrological cycle), and examine the potential for mitigation strategies. The above authors recommend, inter alia, the enhancement of regional climate monitoring networks, the application of seasonal climate forecasting in dryland management, and the identification of sources and sinks of dryland carbon.

The lessons learned in connection with global land-use and land-cover change are summarised by Lambin and Geist (2001). They argue that despite the belief advocated by some other authors that *land-cover change* is continuous, it is rather a disjunct process, with periods of rapid and shock-like change. As for *land-use change*, models should be developed, which requires, inter alia, an understanding of how changes in climate and global biogeochemistry affect land-use and land cover, and vice versa, to integrate feedback loops. Ramankutty *et al.* (2001) discuss the impact of human activities on land cover change in the context of the availability of global data sets. They refer to the efforts made to quantify the extent of human-induced land cover changes at a global scale, and they claim that despite this, there have been relatively few comprehensive studies of such changes and that the available databases are not really useful for spatially explicit modelling. Some arguments signal that desertification is rather a human-induced phenomenon than a natural one (NATO SCOM/CCMS workshop

2003). However, desertification and climate change also affect human security and human life as described in the following subsection.

3.3.2 Desertification and climate change as security issues

Not only human activities have serious impacts on the process of climate change and desertification (see 3.3.1), but also these affect the quality of human life in various ways, therefore it is important to place these issues in the context of security. With the aim of revealing linkages of climate change, desertification and security, the previously presented definitions are applied in the dissertation.

Not only the concepts of climate change and desertification have undergone a reframing process, but the same has happened with the concept of security. During the past decades, the concept of security started to widen and deepen at the same time, i.e. economic, social and environmental dimensions gained more ground, and new referent objects were added other than the nation state, namely the levels of analysis extended. At the UN level, sectoralisation of the concept took place such as in the health, energy, food, and livelihood security dimensions.

At the level of the individual, desertification can be seen as a *human security* issue. If ecosystems are concerned, it is an environmental security problem, if social groups are focused on, it is a social security and food security issue. Similarly, climate change may be a factor in the emergence of conflict situations (Brauch 1996), thus it has a security dimension.

Food security is a major global concern. The sensitivity of the world food system is analysed by Parry (1990) in a variety of ways in which it could be affected by further climatic changes. The effects of climate change on agriculture are discussed and an estimation of the impacts on plant and animal growth is provided. Furthermore, potential means to adapt agriculture to climate change are considered. It is stated that climate variability and greenhouse gases have an effect on the food system, and different methods of assessing the impacts of

climate change are described in an integrated manner. It has to be noted that the Millennium Ecosystem Assessment (2005) use "food" as a "provisioning service" of ecosytems, and that "cultivated systems" are one of the 12 ecosystem groups that cover the surface of the globe. Under such definitions or usages desertification and climate change reduce the ability of cultivated ecosystems to provide their services of primary productivity and food production. The interlinkages of climate-related impacts on agriculture through biophysical, economic and social systems are focused on by Parry *et al.* (1988). By considering possible future scenarios of climate change, a range of probable climate-induced effects on food production and potential adjustments to managing the related risks are identified.

Climate change and desertification can be seen as *soft security challenges*, i.e. non-military security issues that are also related to the concept of national security which should be expanded to include environmental threats like desertification. However, it is still a debated question whether socio-economic factors are consequences or – rather or at the same time – triggers of the desertification process. Desertification can be considered a broken balance between scarce natural resources and the demands of modern society (NATO SCOM/CCMS workshop 2003). Potential tools to handle this are the following: protection of biodiversity; strengthening local communities; training for connecting theory and practice; public awareness raising and strengthening the sense of responsibility; and placing policies to combat desertification in a wider frame, i.e. integration of desertification related policies with sector policies (e.g. natural resources management policy, agricultural and rural development policy, forest policy, water management policy, transport policy, and tourism policy).

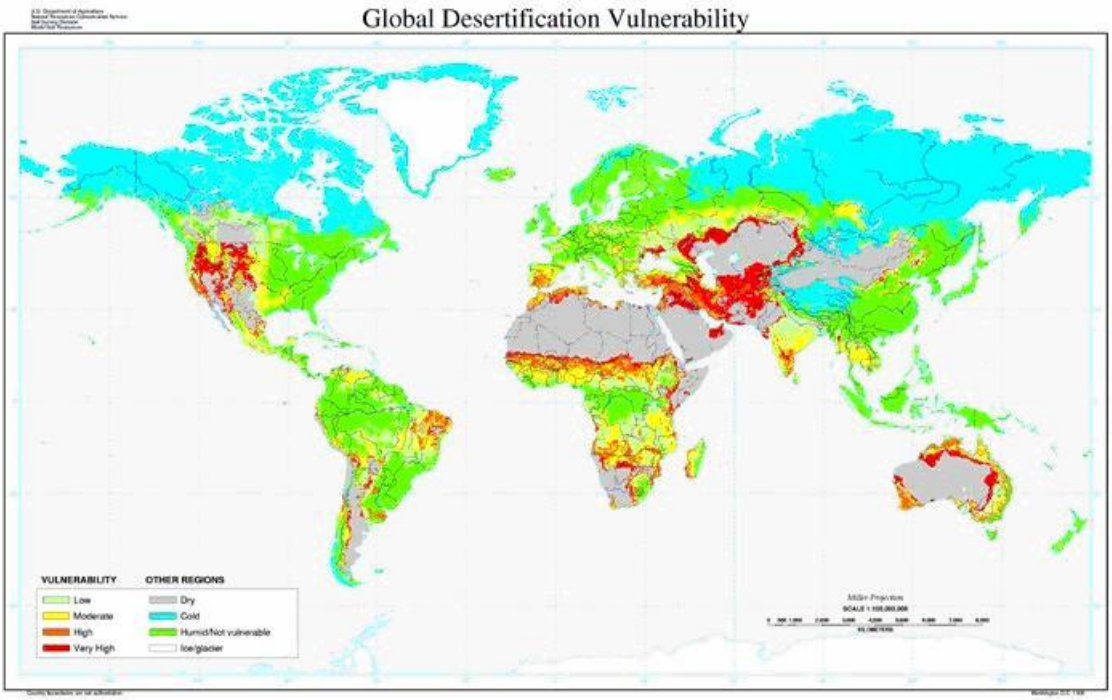
The evolution of the environment at global and regional levels provides society with serious challenges which at some stage may imply a risk to individuals. It is now increasingly recognised that negative trends in environmental quality and the depletion of vital resources carry a potential for conflict situation (e.g. speeding up of illegal immigrations, thus influencing

border security). Therefore, the linking of drought early warning systems with conflict early warning systems is a useful tool to combat both problems (NATO SCOM/CCMS workshop 2003). As human activity triggers desertification and climate change, these phenomena in turn affect the quality of human life and thus security, policies should be designed in a way that helps to improve security through applying measures which primarily aim at combating desertification and climate change.

It is stated in the Global Environment Outlook (UNEP 2002a) that "one of the most effective responses to human vulnerability to environmental change is to strengthen mechanisms for early warning" (p. 311). *Vulnerability* is an interface between the exposure to the physical threats to human well-being and the capacity of people and communities to cope with these threats. Climate vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity (IPCC Working Group II 2007).

Threats can arise from social and physical processes, thus human vulnerability integrate many environmental concerns. Global vulnerability to desertification is illustrated on Fig. 3. Possible policy responses to vulnerability include: (a) reducing the threat through prevention and preparedness initiatives, and (b) improving the coping capacity of vulnerable groups to enable them to deal with the threats (UNEP 2002a). If a threat cannot be reduced, adapting to it can be an effective response.

Figure 3: Global vulnerability to desertification
Source: Soil map and soil climate map, USDA-NRCS, Soil Survey Division, World Soil Resources, Washington D.C.



Following the line of argument by Buzan *et al*. (1998) about classical security complex theory which offers an analytical framework for regional subsystems as objects for security analysis, the issues of climate change and desertification can be placed in that framework, supposing the application of the term *security complex* as "a set of states whose major security perceptions and concerns are so interlinked that their national security problems cannot reasonably be analysed or resolved apart form one another" (Buzan et al. 1998, p. 12). Kepner et al. (2006) presents several case studies in the Mediterranean region where the interconnections of desertification and security are disclosed.

The systems approach is a suitable tool which contributes to understanding the effects of global environmental change as a non-traditional threat on security, and the interlinkages of socio-economic processes and natural processes, and the feedback of these processes to security.

3.4 Systems approach for studying global environmental change issues

In the study of global change questions a *systems-level approach* should be used as opposed to the use of the old "pollution pipe" (simplistic and linear) approach to climate change impact studies (Steffen 1999). As Steffen (1999) points it out, the International Geosphere-Biosphere Programme (IGBP), which is based on several research projects and framework activities, has applied a systems approach.

Accordingly, the IGBP's work on terrestrial ecosystem interactions with global change are focused on the ecosystem-level effects of elevated CO_2 and its interactions with other factors. Changes to the structure and composition of vegetation are examined by means of the Dynamic Global Vegetation Models that are built on the interactions of the following structural elements: atmospheric forcing, land surface, carbon balance, vegetation dynamics and

phenology. The IGBP projects are focusing on major components and processes within the Earth system and the framework activities provide an integrative and supportive background for those (IGBP 2003a). Focusing on climate change and desertification, two of the IGBP projects should be particularly considered, namely the GCTE and the LUCC projects (IGBP 1997).

The main scientific objectives of the Global Change and Terrestrial Ecosystem (GCTE) project is to predict the effects of changes in climate, atmospheric composition, and land use on terrestrial ecosystems, including agriculture, forestry, soils; and biodiversity; and to determine how these effects lead to feedbacks to the atmosphere and the physical climate system (IGBP 2003b). The IGBP (1997) prepared a synthesis report about GCTE and related research which contains a summary of components and drivers of global change and covers the issue of terrestrial ecosystem interactions with global change, adaptation and the terrestrial carbon cycle.

The Land-Use and Land-Cover Change (LUCC) project is a joint research project of IGBP and the International Human Dimensions Programme on Global Environmental Change (IGBP 2003c). Main objectives of the project is to obtain a better understanding of global land use and land cover driving forces; to investigate and document temporal and geographical dynamics of land use and land cover to define the links between sustainability and various land uses, and to understand the inter-relationships between land-use, land-cover change, biogeochemistry and climate.

Land-use dynamics is a comparative case study approach aimed at improving an understanding of the variation of the nature-society dynamics of land management, thereby facilitating regional and global modelling. It aims to identify and analyse a series of regional situations that represent the major clusters of LUCC dynamics, thus contributing to the local and regional understanding that is essential for climate impact and sustainability research.

Land-cover dynamics involves regional assessment of land-cover change as determined from direct observation (e.g. satellite imagery and field studies) and models built from these observations. It seeks to provide spatial specificity in the land-cover outcomes associated with the management of particular land uses. The importance of climate and land observations leads directly to the next section.

3.5 Global observations and assessments as information sources

Policy making needs reliable data and information. Observing systems serve this particular purpose and they are essential tools for designing appropriate early warning systems.

3.5.1 Observing and early warning systems

The International Global Observing Strategy (IGOS) is based on an international partnership with the aim to produce comprehensive global, regional and national data and information to satisfy the *environmental information* needs of policy-makers, and to support scientific and operational environmental programmes (IGOS 2002). Information generated by IGOS is used for a wide range of areas of decision-making: climate change, forecasting of climate variability, desertification, biodiversity, global forest cover, food security, land-based activities etc. All the activities of the IGOS is claimed to contribute to achieving a deeper scientific understanding, early warning and providing guidance for policy-making.

As stated in the strategy (IGOS 2002), *integrated global observations* are not only crucial for understanding the underlying causes and consequences of environmental change, but also for the implementation and verification of the relevant international conventions. IGOS is used when implementing the UNFCCC and supports the work of IPCC and the United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE). IGOS has several focal themes, one of which is the Integrated Global Carbon Observation (IGCO) Theme. The IGCO integrates the terrestrial, atmosphere, and ocean

components of the carbon cycle into a unified strategy with the objective of developing a flexible strategy for international global carbon observations over the next decade.

The Global Climate Observing System (GCOS) should also be considered since it aims at ensuring that data required to meet the needs of users for climate system information is obtained and made available for: climate system monitoring and climate change detection; assessing impacts of and vulnerability to climate variability and change (e.g. terrestrial ecosystems) as inputs to adaptation analyses; research to improve understanding, modelling and prediction of the climate system; and application to sustainable development (Westermeyer 2003). GCOS is operating through networks, focusing on the observation of climate variables for atmospheric, oceanic, and terrestrial context to use for the purposes of, inter alia, the UNFCCC and the UNCCD.

As Garcia and Herrera (2003) argue, the study of climate requires a characterisation of the mean state and variability of the atmosphere and ocean over long time scales. As for the human-induced character of desertification, the GLASOD (Global Assessment of Human-induced Soil Degradation) project focuses on mapping of soil degradation caused by human activities (World Atlas on Desertification 1997).

Observing systems operate not only at the global level, but also at the regional level. Since the EU is a relevant regional organisation from the aspect of the research, EU-level observations are worth taking into account. As part of the EU's strategy for sustainable development (European Commission 2001a), it was decided that a European capacity for Global Monitoring for Environment and Security (GMES) should be established by 2008. The growing importance of an EU Common Foreign and Security Policy has led to a focus on the interplay between the human dimension of environmental policy and the broad issues of European security, both in a geopolitical context and in terms of the wellbeing of individual citizens (European Commission 2000b).

The goal of the GMES initiative is to provide for a coherent system that meets the specific information needs for policy-making and research in the field of environment and security (European Commission 2001e). GMES will provide enhanced information services for different policy sectors such as e.g. environment, agriculture, science, regional development, external relations, security, and development cooperation. It will serve the implementation of the European Strategy for Space (European Commission 2000b) particularly in three main aspects: global change, environmental stress and natural and man-made disasters. In the context of the Petersberg tasks defined by the Western European Union (WEU) i.e. conflict prevention and crisis management, and with the emergence of a European Security and Defence Policy (ESDP), the EU needs to upgrade its space capabilities (European Commission 2000b and 2001f). The GMES can be considered to be a mainstreaming effort of early warning systems with science and policy (Brauch *et al*. 2003).

The above observing systems provide data to construct appropriate early warning systems for specific purposes, such as for drought prediction and famine early warning.

3.5.2 Global assessments

Not only global observations, but also – with the cooperation of scientists and researchers on an international scale – global assessments and analyses are needed for effective policy-making. The *Millennium Ecosystem Assessment* (MA), launched in 2001, is an integrated assessment, designed to meet some of the assessment needs of, among other conventions, the UNCCD. The objectives of the MA contribute to meeting the needs of decision-makers for peer-reviewed, policy-relevant scientific information on issues related to ecosystems and human well-being (Millennium Ecosystem Assessment 2005a). As Reid *et al.* (2002) summarise, the MA consists of a global assessment and a series of linked regional, national, and local assessments. Four working groups have been established to serve the major objectives of presenting a methodology for multi-scale assessments, describing each major

ecosystem service; assessing the findings of previous global scenario analyses and developing a set of scenarios with quantitative estimates of changes on ecosystems and human well-being, as well as elaborating a conceptual framework and typology for response options.

The *Land Degradation Assessment in Drylands* project (LADA) is a GEF-supported project executed by FAO and implemented by UNEP, and responds to the need to strengthen support for land degradation assessment at international and national levels. It aims at generating up-to-date ecological, social, economic and technical information, including a combination of traditional knowledge and modern science, guiding integrated and cross-sectoral planning and management in drylands. It also responds to the needs of the "joint work programme on dry and sub-humid lands" between the Convention on Biodiversity (CBD) and the UNCCD. As for its scope, LADA develops a framework for land degradation assessment at global and national levels with the purpose of identifying socio-economic and environmental benefits arising from addressing land degradation in drylands in terms of conservation of biodiversity and international waters, and sequestration of carbon. The objectives of the project include, inter alia, a review and synthesis of data and information related to the development of land degradation assessment in drylands; development, testing and revision of integrated land degradation assessment approaches and methods; and capacity and network development for assessment of land degradation.

Further international projects that are worth mentioning include ones in the frame of the following programmes: CINFAI, INTERREG, MEDROPLAN, MIPAIS, MEDOCC, MEDDMAN, AQUASTRESS, CLEMDES, MEDALUS, LADAMER, DESERTLINKS, and DESERTWATCH. The International Centre for Agricultural Research in the Dry Areas (ICARDA) convened the Mashreq/Maghreb Project (started in 1995) that united Algeria, Iraq, Jordan, Lebanon, Libya, Morocco, Syria and Tunisia for sustainable dryland management.

Global observations and assessments are of essential importance because they provide

information and analyses for policy makers that are needed at all stages of the policy cycle as sound policy should be based on scientific data and assessments.

3.6 Mitigation and adaptation strategies

Responses to climate change and desertification can be in relation either to mitigation or adaptation. Related to climate change, *mitigation* is usually defined as an anthropogenic intervention to reduce emissions from various sources of greenhouse gases or enhance their sinks (IPCC Working Group III. 2001). In the case of desertification, mitigation implies reducing or changing the scale of human interference in order to combat land degradation. However, the term of mitigation is not officially used by either the UNCCD or other international organisations for desertification.

Adaptation refers to all those responses that may be used to reduce vulnerability to climate change (European Commission 2003a). Areas for adaptation to climate change include natural resources management (e.g. land/soil, water, forest and coastal resources), related economic sectors (agriculture, forestry, fisheries etc.), infrastructure, human settlements and human health. It should be noted that measures for adaptation, including natural resources management, and mitigation should not be seen as mutually exclusive. On the contrary, certain options can offer synergies between these different objectives and their maximisation is often beneficial to reducing poverty (European Commission 2003a).

As for adaptation, some generic objectives are the following: (i) improving the design of infrastructure and long-term investments; (ii) increasing the flexibility of vulnerable managed systems (e.g. changing activity or location); (iii) enhancing the adaptability of vulnerable natural systems (e.g. reducing non-climatic stresses); (iv) reversing trends that increase vulnerability (e.g. slowing development in vulnerable areas such as flood-plains and coastal zones); and (v) improving the preparedness and awareness of society (European Commission

2003a). Vulnerability to climate change and desertification depends on the level of development as well. It is suggested that socio-economic development level, population, and technological development level influence vulnerability in a country (IPCC Working Group II 2007).

Basically mitigation of climate change is trying to reduce the change by dealing with its causes. Concerning the fact that mitigation in itself will not deal with the problem effectively, there is also a need to adapt to the change. The difference is that while it is evident that even if the best mitigation actions are taken climate is going to change, whereas it is believed that desertification still can be prevented, and that desertified areas can be fully rehabilitated, and it is all a matter of cost (unlike in the case of climate change in which physics determines that whatever cost is paid warming is to prevail for a relatively long time, long enough to merit adaptation).

Focusing on mitigation, measures aiming at the reduction at source level include energy efficiency measures, renewable energy sources and new and cleaner technologies. Natural resources management options such as land use, land use change and forestry may also serve mitigation purposes since they offer significant carbon conservation and sequestration potential. Two major types of mitigation strategies are mentioned in the World Atlas on Desertification (1997), namely: conservation/protection of existing carbon sinks, and increasing the capacity of land to sequester carbon.

World soils and the terrestrial biomass pool are two of the five major global carbon pools (Lal 1999). The soil carbon pool can be divided into soil organic carbon pool and soil inorganic carbon pool. The above author summarises the inter-relatedness and fluxes between the different carbon pools and comes to a conclusion that *carbon sequestration* in soils can be considered to be a win-win strategy. Although carbon sequestration is considered to be an opportunity for CO_2 mitigation, it involves an inherent risk, i.e. carbon is lost as easily as it is

gained. In general, halting land degradation will slow down the rate of release of CO_2 to the atmosphere, and rehabilitating degraded lands can contribute to sequestering carbon in plants and soils (World Atlas of Desertification 1997).

Leemans (1999) declares deforestation to be one of the most important sources of CO_2 emissions into the atmosphere and that carbon dynamics depends, inter alia, on the dynamics of land abandonment and that the actual length and intensity of the land use defines the carbon that remains in the soils, and the timing of and period after abandonment defines the total carbon in vegetation. He concludes that the actual local dynamics of sequences of land-use activities must be identified in order to scale towards regional and global processes.

The question of terrestrial sinks related to the Kyoto Protocol is examined by Dolman (2000) considering that the importance of research in the field of carbon sequestration of the terrestrial biosphere has significantly risen with the adoption of the Protocol. Articles 3.3 and 3.4 of the Kyoto Protocol are the most relevant from this aspect. The author draws the following policy conclusion in relation with terrestrial sinks: “the terrestrial sink is too large to be ignored, but also too small to be sufficient to counter fully the fossil fuel emissions” (p. 12). He also adds that a crucial element is missing in most studies that estimate carbon sequestration, and that is: disturbance.

Scholes (1999) raises the question: will the terrestrial carbon sink saturate soon? Examining the factors that are responsible for the terrestrial sinks in a simple whole-earth terrestrial carbon cycle model, he suggests that the terrestrial carbon sink strength will arrive at its peak soon, followed by a decline in sinks within the forthcoming decades. He argues that land use change contributes to the sink and source behaviour of the terrestrial biosphere. In the northern hemisphere forest re-growth constitutes a sink, while in the southern hemisphere the conversion of tropical forests to croplands is characteristic which serve as a carbon source. Thus, the extent of land acting as sink declines which reduces the integrated sink capacity and

shortens the period to its exhaustion.

The role of the terrestrial biosphere (as a sink or source of carbon-dioxide) in the overall global carbon balance is discussed by Hutjes *et al.* (1998). The FLUXNET initiative is referred to which is a long-term observational network to examine various ecosystem-atmosphere fluxes. Inter alia, FLUXNET contributes to our understanding of the direct land cover - climate interactions. Krujit (2001) deals with the question of direct measurements of CO_2 concentrations related to changes in land-use and climate at the regional scale.

Having presented the most relevant and recent elements of the scientific and policy literature, the next task is to provide for a theoretical framework for this research.

4. THEORETICAL FRAMEWORK

Having reviewed the most relevant literature connected to the topic of this dissertation, the following sections provide a theoretical framework for the research.

4.1 Analysis of and for climate change and desertification policies as policy subsystems

Policy subsystems and related policy processes can be analysed *of* and *for* the policy process (Parsons 1995). The 'of' type analysis deals with analysis of policy determination and policy content, while the 'for' type focuses on advocacy coalitions and information for policy. Policy evaluation is a special category as it relates to both categories. As for the present research, basically policy determination and content will be analysed combined with policy evaluation.

Both climate change policy and desertification policy have become part of the international policy system as two of its subsystems. Systems analysis as a tool can be used for political analysis where there is an open system with demands that are serving as inputs, and outputs that are functioning as regulators for specific support, and where the policy black-box and the different elements of the system are connected to each other through feedback loops (Easton 1965). Considering that political interactions in a society constitute a system of behaviour, the international political system has different subsystems (Easton 1965). If we consider policy analysis itself a creature of politics which is designed to create paradoxes and to resolve them in a particular direction (Stone 1997), when analysing a policy subsystem, a systems approach to politics can be adapted.

Following this line of argument, it seems reasonable to consider the *national policy arena to be a system* which has numerous policy subsystems. The major policy subsystems that stay in the crossing point of synergetic elements of climate change and desertification policy are the following: agricultural policy, rural development policy, water management policy,

environmental policy, and tourism policy. The systems approach leads to the next consideration, the functioning of the climate change and the desertification policy subsystems themselves.

In the present research, *systems theory* is applied in a double sense. In the first case, inputs are the *demands* of the Maghreb countries in the field of combating climate change and desertification, while EU international development cooperation *projects* implemented in these countries serve as outputs of an open system of national policies. The focus will be on comparing demands and project outcomes to evaluate whether donor projects are in line with the real demands of the recipient countries. In this respect, processes in the black-box are not focal areas of concern. In the second case, the *formulation phase* of the Hungarian donor policy will be analysed as one of the subsystems of the national policy system. This will be followed by *linking* the Hungarian donor policy with the Maghreb countries' policies to combat climate change and desertification.

Policy subsystems at the national level

The term international level is understood in the research as a level that is above the national one including regions and subregions. Based on the adaptation of the systems approach designed for the international political system which has different subsystems (Easton 1965), it is reasonable to handle climate change policy and desertification policy as policy subsystems of the national level policy systems of the examined countries.

Further regarding the theoretical aspects, following the lines of argument by Howlett and Ramesh (1995) on different models of decision-making, namely the rational (or business-like), the incremental (or political) and the garbage can (non-rational) models, the incremental model stays closest to the present research. The *incremental model* (Braybrooke and Lindblom 1970) can be characterised with the following main features:

- limitation of analysis to a few policy alternatives differing slightly from the status-quo;

- a greater analytical preoccupation with the ills to be remedied than desired positive goals;
- the analysis explores only some, not all potential consequences of a considered alternative;
- fragmentation of analytical work to many participants in policy-making.

Braybrooke and Lindblom (1970) provide a detailed analysis of the strategy of *disjointed incrementalism* as an analytical framework. According to their perspective, this type of analytical strategy is advised to apply when a policy aims at reaching a small change and when the understanding of the problem is relatively low. They suggest analysis of foreign aid policy as one of the fields to focus on with this particular strategy. Therefore, this analytical strategy can be used for analysing international development cooperation policy.

The different analyses may be focused on the following main aspects: legal and programme elements, institutions and actors.

Legal background and programme aspects

The legal background (international agreements, national legal and policy documents, binding decisions, and other related documents) and legal framework in which the Hungarian donor policy, and the legal frame in which the Maghreb countries' climate change and desertification policy subsystems operate should be clarified. Furthermore, it should be highlighted what types of programmes need to be analysed related to climate change policy and desertification policy, how these programmes have been developing. In this respect, not only operational programmes for e.g. desertification or climate change should be considered, but also financial mechanisms that assist in channelling financial resources from developed countries to developing countries.

Institutional aspects

The institutional set-up, the institutional structure in the policy hierarchy, the role of institutions, and the networking between them is one consideration at the national level. Besides, it may be examined how the institutional system has been developing in Hungary that

provide for the policy responses (including monitoring, data collection, data bases, forecasting), and policy coordination, and how efficient these institutions are. For this, the institutional approach can be applied.

The institutional approach recognises the non-linear and dynamic nature of policy-making and the critical role formal and informal policy actors play in both policy formulation and policy implementation (European Commission 2003c). The institutional approach can guide the analysis of policy formulation and implementation, the identification of the individual policy networks, and the analysis of interrelations of policies to discover duplication, overlap, and conflicts, if any. In the present research, as indicated earlier, analytical emphasis will be on the formulation phase of the Hungarian donor policy cycle.

Actors

The research identifies the major stakeholders related to the targeted policy subsystem, it may also provide for an analysis of existing and potential advocacy coalitions, their shared values, networks, interest groups, the characteristics of the functioning and effectiveness of the stakeholder dialogue. As for advocacy coalitions, they may comprise officials, interest group representatives, and any other types of actors who share a particular belief system (Sabatier and Jenkins-Smith 1993). For this purpose, an actor-oriented, interpretative approach can be applied.

The interpretative analysis can provide a more thorough understanding of environmental problems in a socio-economic context in general. This will contribute to the understanding of social and ecological logic of particular negotiating groups when defining the term desertification. Thus, as the European Commission (2003c) suggests, policy outcomes can be more thoroughly understood than in the case of top-down, linear and structuralist perceptions of policy implementation.

4.2 Theoretical contribution of the research: analysis of the reframing of the desertification concept

In the following subsections the meaning and importance of frames, framing, and reframing are discussed, followed by an analysis of the reframing process of the concept of desertification in the light of international negotiations, and a discussion of the most recent developments.

4.2.1 Framing the policy context for desertification and climate change

In framing the policy context, the choice of *conceptual lenses* is an important factor since different perspectives are used when studying issues (Rein and Schon 1996). In the field of both climate change policy and desertification policy, the choice of conceptual lenses also influences the issue of policy choice, therefore within the framework of this research the conceptual framework is one of the focal areas of analysis for defining the frame. For this purpose, the frame-reflective approach is an appropriate tool which includes frame-critical policy analysis that focuses on academic-theoretical controversies. The *frame* defines the context for the policy, therefore the policy object changes within different boundaries that influences policy design inquiry. Open zones of inquiry appear at policy windows, i.e. assumptions and values that shape inquiries (Rein and Schon 1996).

Throughout a time horizon, frames may change and *reframing* of the policy may take place. Reframing of a policy context can appear within exogenous and endogenous processes. (Rein and Schon 1996). Reframing can happen through the interactions of actors in policy networks and advocacy coalitions. In this sense, policy actors can be considered to be *designing systems* that act based on their perceptions (Hart and Kleiboer 1995). As Schon and Rein (1994) point it out, a) designers may reflect on the changing problematic situation and they reframe the problem according to their new understandings; b) reframing may be a result of a blockage of the policy making process; and c) designers may reflect on the policy object

trying to understand frame conflicts and the underlying controversies.

During the history of international environmental negotiations, the policy context for both climate change and desertification has undergone a reframing process. While in the 1970s, desertification was seen as a local and regional type of problem, the Rio Summit placed the issue in a global context in 1992, and the Johannesburg Summit provided an overall frame for sustainable development, including a frame for desertification policy in 2002 (WSSD Plan of Implementation 2002). In line with quite recent developments, desertification has emerged as a human security challenge.

As for climate change, first the focus was on the natural and human-induced character of change, and then mitigation of the problem has become a focal area of concern (since the adoption of the Kyoto Protocol in 1997). During 2006-2007, the issue of climate change has gained more importance and more attention by a number of high level decision makers at national levels. The issuing of the most recent report of the Intergovernmental Panel on Climate Change (IPCC) in 2007 has pushed even forward the presence of the climate change issue on the political agenda in numerous countries. The science based arguments provided in the report (IPCC Working Group I 2007) suggest that climate processes will determine our life and our future. Accordingly, there is a tendency from now on to consider climate change as an umbrella for any other related issues (e.g. desertification, biodiversity, environmental health).

The process of reframing of these concepts has a key role in understanding the basic terms, interlinkages, and ways to combat these phenomena. As climate change has been more widely researched than desertification, the reframing of the concept of desertification will be analysed as a theoretical contribution of this dissertation.

During the formulation and reformulation phase of the term desertification, there was a clear *policy disagreement*, while the question of handling the situation led to policy disputes (controversies) as used by Schon and Rein (1994). It was the 1970s when *policy disputes*

started to be seen in terms of interests and powers. This coincides with the time when the initial international debate on desertification was launched in 1977. As defined by Schon and Rein (1994), *frames are the underlying structures of belief and perception* that provide for a basis of policy positions. In policy disputes, parties with distinct interests have conflicting frames. Therefore, in the following subsection the differing positions of the individual negotiating groups in the forum of the UN will be analysed in relation to desertification.

Framing transforms data to recommendations and facts to values, thus policy controversies often lead to a win-lose political game. Schon and Rein (1994) emphasise that actors' interests are determined by the frames which they hold, and they continue a dialogue about policy issues which is called a policy discourse. In this sense, *international negotiations constitute a forum for policy discourse*.

"A policy frame is the frame an institutional actor uses to construct the problem of a specific policy situation" (Schon and Rein 1994, p. 33). Environmental protection is a good example of the reframing process, and desertification is a specific issue for consideration. Discontinuities regarding interests result in changing world views and this leads to reframing. The effect of *reframing* is ambiguous in itself as it may mean a solution to policy controversies or may lead to an escalation of policy controversies.

Understanding the reframing of the desertification concept has a key role in analysing national policies and international development cooperation projects in the field of combating desertification. That is the reason why it is of essential importance to investigate the history of the various approaches applied when defining the term of desertification. It determines whether strictly local, subregional or even regional and global context and solutions are considered. Furthermore, the relations of desertification with other policy areas like climate change and other concepts like human security can be mirrored through examining reframing.

In the following subsections, the impact of international negotiations on the concept of

desertification (policy disputes in policy discourses) will be analysed in light of the history of the various definitions of desertification, and the most recent developments and debates will be presented connected to the reframing process.

4.2.2 Analysis of the impact of international negotiations on the concept of desertification

The problem of desertification in dryland areas can be traced back through several centuries. There has always been a correlation between long-term changes in climate and changes in human activities. As long as the population density in a desertification-endangered area remained sufficiently low, the ecological consequences of human activities remained relatively insignificant or were concentrated within a very limited area. That may explain why desertification did not come up as an issue for international consideration throughout a long time in history.

Desertification is a land degradation process that has evolving definitions at the international level. The term *desertification* was first used by two French ecologists: L. Lavauden in 1927 and A. Aubreville in 1949, who at that time eye-witnessed the land degradation occurring in North and West Africa (Dregne, 1996). Since then, more than one hundred definitions have appeared in the English literature. The term desertification has often been misinterpreted and applied in a sense which refers to desert encroachment into previously non-desert areas driven by human activities (Thomas and Middleton 1994). Herebelow, the most important international milestones will be explored that influenced the framing and reframing of the concept of desertification.

From UNCOD to UNCED

The United Nations Conference on Desertification (UNCOD) in Nairobi in 1977 was the first official international forum that dealt with desertification. The UNCOD adopted a Plan of Action to Combat Desertification which defined desertification in a complex and accurate

manner. In this approach, desertification means "...the diminution or destruction of the biological potential of the land, (which) can lead ultimately to desert-like conditions. It is an aspect of the widespread deterioration of ecosystems, and has diminished or destroyed the biological potential, i.e. plant and animal production, for multiple use purposes at a time when increased productivity is needed to support growing populations in quest of development. ... The deterioration of productive ecosystems is an obvious and serious threat to human progress. … In exceptionally fragile ecosystems, such as those on the desert margins, the loss of biological productivity through the degradation of plant, animal, soil and water resources can easily become irreversible, and permanently reduce their capacity to support human life. Desertification is a self-accelerating process, feeding on itself, and as it advances, rehabilitation costs rise exponentially. Action to combat desertification is required urgently before the costs of rehabilitation rise beyond practical possibility or before the opportunity to act is lost forever."

Analyzing the above definition, it can be stated that all relevant aspects of desertification are considered in it. It lays down the view that desertification is a *process* which leads to *decreased biological potential of land* and *deterioration of ecosystems* on the land, and it refers to the contributing factor of *growing population* and the linkage with *development*. This can be seen as a very comprehensive and modern view of desertification. The major *strengths of this definition* include the above described integrated approach to desertification and consideration of all relevant factors, and the overall geographical coverage without the exclusion of any affected geographical regions. The reason for this may be that the main aim of UNCOD was to raise the issue of desertification to the focus of international attention and tried to be as inclusive as possible in terms of definitions, interlinkages, geographical scope and proposals for solutions.

The last sentence of the Plan of Action already refers to the fact that desertification should be handled as an urgent matter. However, in the following 15 years development had been rather limited regarding combating desertification.

From UNCED through INCD to UNCCD

The United Nations Conference on Environment and Development (UNCED) placed the issue of desertification in a global context under the umbrella of sustainable development in 1992 in the frame of the Rio Summit for the pressure by developing nations led by *African countries*. There was an agreement in Agenda 21 (1992) to call on the UN General Assembly to establish the Intergovernmental Negotiating Committee on Desertification (INCD) to prepare for the UNCCD by 1994. The INCD completed the necessary negotiations in five sessions throughout 13 months and as a conclusion of its work, the UNCCD was adopted in 1994.

The starting point for negotiations in the frame of the INCD was that governments accepted in paragraph 12.2 of Agenda 21 (1992) the following definition: "Desertification is land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities." Despite this important agreement, some fundamental definitional issues remained and raised the following questions (INCD 1993a) which were crucial in the initiation of negotiations during the sessions of INCD leading to the adoption of the UNCCD.

(a) What is the scientific meaning of drought? How long do abnormal conditions have to persist to reach a drought threshold? What would the intensity and duration of a drought have to be to characterize it as serious?

The above questions reveal that the significance of drought was recognized at the time of negotiations. However, the questions signal that drought is a phenomenon that has to be paid attention when tackling desertification. Similarly to desertification, it is another term that

can be defined in different ways and the way determines what is considered serious and what will be understood as “affected by drought” in terms of the Convention, which also influences the number of countries eligible for financial support under the UNCCD.

(b) Are there accepted definitions of land degradation in various cropping, pastoral and forest systems?

As land degradation was used simultaneously to desertification where the geographical areas was specified under the term of drylands, land degradation itself had to be understood and conceptualized.

(c) How are arid, semi-arid and dry sub-humid areas distinguished? Would it be useful to employ the term drylands in referring to these three areas as a group?

This question shows the insistence of developing countries, esp. from the Africa group to narrow down the Convention’s geographical scope excluding humid areas and set the focus on dryland areas.

(d) Which countries are experiencing serious drought and/or desertification? Is it necessary to list them in an annex to the Convention? What does it mean to combat desertification in countries experiencing serious drought but not yet experiencing desertification?

These questions reflect again on differing perspectives, i.e. whether to list affected countries and thus providing more emphasis on their affectedness, and how to distinguish between countries affected by desertification or affected by drought in light of becoming eligible for financial support in the frame of development cooperation under the umbrella of the Convention.

Analyzing the document which was prepared at the second session of INCD (1993b), a number of converging and diverging views can be detected in many areas such as the definition of desertification. In this paper, only the *diverging views* are focused on and the role of these

are analysed in the reframing of the desertification concept. Regarding the *global nature of desertification*, one viewpoint states that it is a geographically widespread phenomenon and its effects are ultimately felt worldwide in the biosphere and atmosphere. Combating desertification contributes to sustainable development in dryland areas and helps to solve other global problems such as global warming and the loss of biodiversity. An opposing view claims that desertification is not a global issue in the same sense as climate change and biodiversity are. Even if this phenomenon is recognized as a problem of global significance as it is prevailing in all regions in Agenda 21 (1992), it does not affect all countries of the world nor influence global systems in the same way that climate change and biodiversity loss do.

Tunisia was especially active in the drafting of the Convention. It suggested, inter alia, that the biological diversity of arid and semi-arid areas affected by desertification, as well as the diversity of interrelated environmental, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic elements constitute an intrinsic value of drylands. This wording, however, was not included in the final text of the Convention.

Tunisia was on the viewpoint that due to the global nature of the problem, combating desertification calls for solutions at all levels, namely at the international, regional, and national levels. Following this line of argument related to the global nature of desertification, Tunisia suggested that the Convention serves as an essential framework for global protection of the environment and for progress towards sustainable development. It was also promoted that combating desertification should be closely linked to integrated environmental management that takes account of the physical and socio-economic aspects of the ecosystem involved. In this point of view it is clearly reflected that Tunisia supported a balanced approach in the Convention as to *bio-physical and socio-economic aspects*.

Turning to conflicting viewpoints regarding the *definition of desertification*, the following areas can be identified. On the one hand, there was a proposal that the Convention

should extend the agreed definition of desertification (by Agenda 21) to include relationships among ecosystems, climatic factors and the socio-economic conditions of populations affected by desertification. On the other hand, it was proposed that it would not be desirable to extend the agreed definition of desertification to deal with the promotion of sustainable development generally nor to encompass hyper-arid, humid, sub-humid or arctic areas. In this battle, the African developing countries became the winner as they kept a pressure on the negotiation process to use the geographically narrower approach.

The drafters were aware of the fact that definitions would influence the scope, subject matter and funding arrangements of the Convention. They should be unambiguous and based on sound empirical evidence. Therefore, the International Panel of Experts on Desertification (IPED) was requested to prepare for INCD a report outlining alternative definitions and their implications for the Convention. It was also suggested that definitions in Agenda 21 or earlier agreed by the United Nations Conference on Desertification (UNCOD) should be drawn on as much as possible. Most of the definition proposals used the Agenda 21 definition as a starting point.

It is laid down in the above document (INCD 1993b) that it is important to define drought and distinguish it from desertification as a different but interlinked problem requiring different response strategies. It was agreed on that the Convention should not include a definition of humid or sub-humid climates, and the Convention should not deal with humid areas or with forest or other ecosystems outside drylands. A further suggestion related to the concept of combating desertification which should give full consideration to socio-economic factors leading to the exploitation of marginal lands, e.g. poverty alleviation promotion of alternative livelihoods, and development of alternate energy sources. Climate classification definitions (dryland, arid, semi-arid, dry sub-humid) should follow the UNEP's World Atlas of Desertification definition. Similarly, definitions of drought and its different manifestations

(meteorological, agricultural, hydrological) should follow the standard World Meteorological Organization usage. It was also proposed that numerous related terms should be included in UNCCD as part of a list of definitions. However, most of these are not incorporated in the final version of the Convention's text. In the negotiations there was agreement on that desertification constitutes rather a *process* than a state. The word "process" can be detected in all of the INCD documents that deal with the definition of desertification.

During the fourth session of INCD (1994), a revised negotiating text of the Convention was presented and discussed. In this text, the definition of desertification contained in Agenda 21 was kept and later on approved in the final text of the UNCCD by the United Nations General Assembly in 1994. The definition of desertification in the UNCCD reflects the results of the negotiations under the aegis of the INCD, i.e. desertification refers to „land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities" (Art. 1 (a)). Land degradation is defined as the reduction or loss of the biological or economic productivity of drylands. Arid, semi-arid and dry sub-humid areas are those which are "other than polar and sub-polar regions, in which the ratio of annual precipitation to potential evapotranspiration [P/PET] falls within the range from 0.05 to 0.65" (Art. 1 (g)).

It is important to note that this is a simplified definition in comparison with the one that was agreed on in 1977. It narrowed down the geographical scope to arid, semi-arid and dry-subhumid areas and excluded other regions of the world that are also threatened or affected by desertification, namely hyper-arid and humid areas. It means that during the over one year negotiation process, there was no real intention to widen the context and the geographical coverage of the term desertification from the part of any of the interest groups.

As far the question of *geographical coverage* is concerned, there were diverging views during the negotiation process on whether to include exclusively arid and semi-arid areas or to

involve sub-humid areas as well in the term desertification. The outcome is balanced in the sense that finally (similarly to the Agenda 21 definition) arid, semi-arid and dry sub-humid areas are considered under the term drylands and regarded as affected by desertification.

With respect to the bio-physical vs. socio-economic emphasis, as the European Commission (2006) notes that one of the strengths of the UNCCD is that it integrates these two approaches in a balanced way in comparison with the other Rio Conventions. However, it also means a weaker scientific basis for the UNCCD.

As also emphasised by the European Commission (2006), the *current official definition of desertification* used in the UNCCD *is restrictive* in geographical terms and therefore excludes large areas of the world affected by land degradation. This limitation of the UNCCD definition emerged clearly with the adoption of the Fifth Regional Implementation Annex (briefly called Annex V) of the Convention in 2001. This Annex contains Central- and Eastern European countries affected by mainly human induced land degradation processes also under climatic regimes other than arid, semi-arid and dry-subhumid.

From WSSD to MA

Another milestone was the WSSD in Johannesburg in 2002. The Johannesburg Summit provided an overall framework for sustainable development, including a frame for desertification policy in 2002 (WSSD Plan of Implementation 2002). It promoted, inter alia, an integrated approach in combating poverty and desertification and called the developed nations to provide financial resources, technology transfer and capacity building to affected developing countries to help to establish desertification and drought monitoring and early warning systems, and design integrated policies, strategies and measures for agriculture, water management, forest management, rural development, energy, and alleviating poverty. This specific approach recognises the importance of combating drought besides desertification. Goal 7 of the Millennium Development Goals includes a water-related aim, namely halving the

proportion of people without sustainable access to safe drinking water by 2015.

The WSSD, inter alia, called for the preparation of the *Millennium Ecosystem Assessment* (MA). Leading scientists from all over the world contributed to this huge analytic work. The MA (2005a) did not constitute an international political negotiation process but an interactive dialogue of scientists. Therefore, based on scientific considerations, the MA took a step ahead from the Agenda 21 and UNCCD desertification definition and extended the geographical scope for the term drylands. As opposed to the definition for drylands in the UNCCD which includes only arid, semi-arid and dry-subhumid areas, the MA argues that the concept of drylands involves hyper-arid areas (deserts) as well. The reason is that desertification affects all continents (incl. deserts and desert-margins), except Antarctica, where water scarcity limits ecosystem provisioning services. In this sense, this definition constitutes a step ahead from the narrow UNCCD definition and stays closer to the extended UNCOD one. This is a positive development together with the fact that the Fifth Regional Implementation Annex for Central- and Eastern Europe contains areas that fall under humid climatic regimes but still affected by desertification. However, these developments have not yet been reflected in the official UNCCD definition for desertification.

In line with quite recent developments, desertification has emerged as a security challenge. It was discussed in the forum of NATO Committee on the Challenges of Modern Society in 2003 in the security context. Different approaches and interlinkages were considered in the meeting, such as the migration and poverty context. Nevertheless, no common definition was agreed upon as it was not the aim of the workshop and geographical focus was only on the Mediterranean region.

The role of 30 years of international negotiations and scientific networking is undeniable in the formulation and development of the concept of desertification.

Summary of main points of debates:

- *Is desertification a process or an end-state of a process?* As Nasr (1999) argues, the main difference in defining the term desertification lies in the differing views of researchers, i.e. whether they consider desertification to be a process of change or an end result of that process. Regarding this question, all of the examined definitions approached desertification as a process and it is reflected in the main negotiating texts and approved documents.
- *What should be the geographical coverage of desertification?* According to the UNCOD definition, any area of the world can be affected by desertification. As opposed to this approach, the UNCCD definition narrows down to arid, semi-arid and dry subhumid areas, while the MA takes a step ahead to come closer to the original definition and includes arid, semi-arid, dry subhumid and hyper-arid areas. The extended MA approach can be seen as a very positive development and it may signal a process towards reconsidering and re-extending the concept of desertification at some point in the future. However, it has to be noted that such a return to the UNCOD definition would require a complete restructuring of the UNCCD itself and its financing mechanisms.
- *What should be the focus on: the biophysical or the socio-economic aspects of desertification?* What is meant by desertification differs in the scientific and policy communities (Reynolds and Smith 2002). Scientists tend to place the emphasis on the biophysical aspects, while politicians and decision-makers tend to focus on the socio-economic features. The UNCCD is unique in this sense in comparison with the other Rio Conventions as it balances the biophysical and socio-economic factors and approaches. Nevertheless, critics say that this is the reason for the weak scientific basis of the UNCCD.

4.2.3 Recent developments and debates on the term of desertification

Recent negotiations at the UNCCD conferences of the parties (COP6 – COP8) and in

the forum of the Group of Experts of the UNCCD reflect that *a change may be anticipated*. Developed country parties (esp. the EU) and the Central- and Eastern European affected countries have an interest in lobbying for an extension of the scope of desertification to areas other than arid, semi-arid and dry-subhumid and in reforming the Convention. Nevertheless, *developing, esp. African countries' main interest is to maintain a status quo* regarding the scope and functioning of the Convention. The reason for this is that the UNCCD is not considered to be primarily an environmental convention but a development convention and developing nations want to retain their privileges concerning the funding mechanisms under the Convention. A solution has to be found which satisfies the needs of affected developing countries while which takes into consideration the changing interests of developed and non-dryland affected countries with special regard to an extension of the definition of desertification.

Under the umbrella of the Conference of the Parties of the UNCCD, debates are ongoing concerning how to define desertification in order to reflect international developments. It will have a significant impact on the future of the UNCCD Committee on Science and Technology (CST) and its supporting scientific body, the Group of Experts (GoE). It is suggested by one of the leading members of GoE, Prof. Laszlo Vermes (2007) that inconsistencies in the concept and definition of desertification hinder the elaboration of the new World Atlas of Desertification. It is argued that desertification has severe impacts on non-drylands as well. Biophysical impacts include dust storms, downstream flooding, impairment of global carbon sequestration capacity and climate change, while the social impacts relate to migration, deepening poverty and political instability. Therefore, one of the objectives of the GoE was to provide for a glossary of core terms for desertification and drought. Rethinking of the presently applied UNCCD definition is needed in order to adjust to the geographical characteristics of all affected participating nations. As it was mentioned previously, this became

even more relevant with the adoption of the fifth regional implementation annex (Annnex V) of the UNCCD in 2001 as this Annex contains Central- and Eastern European countries with sub-humid and even humid climatic features where desertification is considered a phenomenon that affects them and which is also a future threat to their economies.

Experts of the MA also encourage the GoE to advise the UNCCD Conference of the Parties (COP) to alert to the shortcomings of the Convention's definition as it is not only misleading in the geographical sense, but also confuses donor states and raises doubts about the significance of the UNCCD in the eyes of the general public. Therefore, the reframing of the concept of desertification seems to be a never-ending process, at least it has restarted again. Whether the ongoing discussions at the GoE level can be channelled to the negotiating floors of the COP and whether the definition could be re-extended not to exclude hyper-arid, sub-humid and humid areas is a question of the near future. It may be anticipated that negotiating groups will work on agreeing a more suitable definition for this term in the forum of the forthcoming COPs.

The *European Commission* (2006) is also on the opinion that *the UNCCD should be brought back to its original roots* and a restructuring is needed within the Convention's bodies. A starting point for this process could be the reformulation of the still controversial definition of desertification. However, one can be sure that it will not be a rapid or smooth process as the main negotiating group for developing countries (the G77) with particular regard to African affected countries cannot be easily persuaded to give up their privileged situation under the Convention.

To summarize, the way how desertification is defined and how the concept is reframed from time to time influences a wide range of areas as follows: compilation of a new, comprehensive World Atlas on Desertification; determining the geographical boundaries and the number of affected countries under the UNCCD; the future structure and functioning of the

Group of Experts, the Committee on Science and Technology within the Convention; and also the future development of the UNCCD itself. It can be concluded that in the sense used by Schon and Rein (1994), designers of the concept of desertification reflect on the changing problematic situation and they are trying to reframe the problem according to their new understandings. So far the *reframing* process of the *concept of desertification* has contributed to *escalation of policy controversies* as it has initiated discussions and reconsideration of definitions at the international level as described above. Whether a new wave of reframing of the term desertification can lead to a win-win solution on a global scale is a question for the future.

5. METHODOLOGY

The problem of climate change and desertification has emerged in the policy analysis field during the past few decades. It has become a focus of discussion and analysis in numerous countries, regions, and even at the international level. Related to this process, institutional frameworks have formulated at all levels. In line with the broadening of the policy dimensions of climate change and desertification, a number of individual actors and networks of actors have become involved in the policy cycles of the climate change and desertification policy arena. Since the climate change policy subsystem and the desertification policy subsystem cannot exist in isolation, complex interactions have arisen with other policy subsystems.

This chapter focuses on how the policy subsystems of combating climate change and desertification can be studied in relation to international development cooperation, from the methodological aspect. Considering that the *policy system* is a complex one, especially at the international level, examining different types of analyses and methods was required which can be adapted to the study of the climate change and desertification policy subsystems and the policy subsystems of their related policies. When choosing an appropriate methodology or rather a mix of different methodologies, the overall aim of the research was considered, i.e. to identify policy gaps and windows of opportunity.

During the research design phase the following elements were focused on: policy context framing, theoretical framework for analysis of the functioning of the climate change and desertification policy subsystems, and methods in the narrower sense. For this, the primary tool was to analyse climate change and desertification related policies, and to discover the synergies between them using a systems approach. For the purposes of this research, the cross-cutting policy areas of climate change and desertification include agricultural policy, rural development policy, water management policy, environmental policy, and tourism policy, and

all are under the common frame of international development cooperation policy. In the context of the North-South relationship, the role of carefully designed donor policies was covered, while in the frame of the South-South cooperation the future prospects of the subregion were considered.

5.1 Research design framework for analysing policy subsystems

The research process in general can be divided into two major phases, namely research planning and execution. In this section, the focus is placed on the planning phase which can be divided into further sub-phases: research definition and research design selection (Hedrick *et al.* 1993). The term research design is used in a similar narrow sense by Marshall and Rossman (1989), where it focuses on the way the study will be conducted, so in this respect, it equals the term research methods. According to another approach (Denzin and Lincoln 1998), research design is described as the main element of the research strategy that identifies who, what, where and how will be analysed. Research design – in an even broader sense – is defined by Punch (1998) as the overall plan for a piece of research including the strategy, the conceptual framework, the question who and what will be studied, and the tools to be used for collecting and analysing data. In this research the latter complex approach was used since the focus of the research – the climate change and desertification policy subsystems – is a complex and structured area itself.

In accordance with the above, the simple questions of what, who, where, and how were reformulated to adjust them to the needs of the research that focuses on the examination of the international climate change and desertification policy subsystems in the following way:

- what to study: policy frame, policy content, the functioning of the climate change and desertification policy subsystems at the national level in the selected Southern-Mediterranean countries, and also adapted to the subregional level, i.e. the Maghreb

subregion (in the relevant literature, the term policy subsystem is used exclusively in the national level context), and the functioning of the Hungarian donor policy subsystem;

- who to study: actors, stakeholders, networks of institutions/actors in the Hungarian international development cooperation policy subsystem;
- where to study: in the international policy arena (esp. EU, Hungary, and Mediterranean partner countries), where the policy system is considered to operate at the national level;
- how to study: methods and techniques to be used to carry out the study.

The above elements and stages are interlinked, thus they do not appear as artificially separated parts in this chapter. Rather, they were considered in their complexity, keeping in mind the aim of the research and the basic tool for that, i.e. studying particular policy subsystems. Only this way it was possible to identify the synergies between the climate change policy subsystem and the desertification policy subsystem.

As suggested by Marshall and Rossman (1989), any research design should include a site and sample section, research strategies, data collection techniques, data analysis strategies, and a time schedule. Therefore, this chapter includes detailing the research strategy, and the chosen techniques for data collection, analysis, display and verification.

5.2 Research strategy

The most important methods for analysis included the followings: content analysis of policy documents from primary sources; a survey carried out in an electronic format; SWOT analysis; project case studies; policy formulation analysis; personal communications with key individuals who have access to in-depth, non-published information; participation at international conferences and field trips; and participant observation.

The research was basically a qualitative one with certain quantitative elements. Useful methods for carrying out a qualitative research are summarised by Punch (1998) providing an

overview of research design, data collection and analysis techniques. It is argued that *qualitative research* requires a life situation and a holistic overview, where certain themes might be isolated, and where many interpretations are possible (Punch 1998). Since climate change and desertification policy issues and the subsystems themselves cannot be separated from other elements of the policy system, an integrated approach was required in the methodology.

When depicting the research strategy adapted to the purposes of the present research, the principle of *triangulation* was a major consideration. First, *document analysis* from primary and secondary sources served as a starting point to get an overview of the policy situation for the chosen policy fields. Second, based on the results of document analysis, a *survey* with open-ended questions was carried out with key informants who have access to unpublished information and who have an in-depth view of the issue. Third, a *project level analysis* was made. Fourth, *participant observation* was also applied when analysing the Hungarian international development cooperation policy. In the case of studying climate change and desertification policies in the Maghreb countries, either detached or participant observation were not used as the author of this paper is not located in the chosen geographical research environment. However, on the occasion of international conferences, there was an opportunity to do participant observation of climate and desertification policy experts. Fifth, *personal communications* with key individuals were also carried out. This included experts from the Hungarian Ministry of Environment and Water and the Ministry of Foreign Affairs, and national focal points of the UNCCD in the frame of international conferences. Sixth, participation in field trips in the target subregion provided for collecting up-to-date and practical data. Finally, the *project case study* method was used taking also into consideration that the purpose of a case study is to represent the case, and not to represent the world (Stake 1998). In order to identify what type of case study it should be, the literature helped to define

different possibilities.

As Yin (1993) puts it, “the case study is a method of choice when the phenomenon under study is not readily distinguishable from its context” (p. 3). Yin describes single, multiple, exploratory, explanatory and descriptive case studies. An *explanatory case study* looks basically for patterns, while a descriptive case study is not very much concerned with cause-effect relationships but focuses on the scope and depth of the object. For any type of case study, case selection, setting up of screening criteria, and determining the unit of analysis (in order to limit the boundaries of the study) are of essential importance.

As for case studies, Marshall and Rossman (1989) deal with four different approaches, namely exploratory, explanatory, descriptive and prescriptive. The exploratory type of research focuses on investigating little-understood phenomena to discover important variables to generate hypothesis for further research. For this type of research, the central questions are what the patterns are and how the patterns are linked with one another. As for the *explanatory* type of research, it aims at explaining the forces behind the phenomenon and revealing the causal links. Focal questions in this case are what policies are shaping the phenomenon and how these forces interact with each other. As far as descriptive research is concerned, it documents the phenomenon (disclosing the structures in the phenomenon), while predictive research concerns forecasting the outcomes resulting from the phenomenon. As Stake (1998) argues, an instrumental single case study is an appropriate method when a particular case is under examination to provide insight into an issue or refinement of theory. As Fischer (2003) points it out, a main goal of social science research is to provide for explanatory theory.

According to Punch (1998), a case study is more a strategy than a method, and it is both a process of learning about the case and the product of the learning. The case study type to be used in the research was an *instrumental single case study*: selected projects were analysed in the Southern-Mediterranean region. It should also be mentioned that three

countries were focused on from the Southern-Mediterranean and from that aspect, a *comparative analysis* was applied. The study was basically *explanatory* and *descriptive* in nature with some potential exploratory elements. As far as the boundaries of the case study are concerned, there is a geographical boundary on the one hand (the specified subregion), and a policy boundary (only projects in the field of policies that are closely related to the research topic were focused on) on the other hand.

First, the target donor and recipient countries were identified in the spirit of triangulation. Second, a SWOT (strengths, weaknesses, opportunities, threats) analysis was carried out as regards geographical features and desertification and climate change related policies for the focal recipient countries in order to provide a clear basis for evaluation whether a country-driven approach is applied in the examined donor policies. Third, selected international development cooperation projects were analysed that were implemented by the target donors in the countries of the Maghreb subregion. This analysis disclosed to what extent the examined projects fulfil the requirements of the principle of country-drivenness. Fourth, the international development policy framework of an emerging donor country, Hungary was examined in detail. Finally, on the basis of results of the four fields of major analyses, recommendations were formulated as regards the Hungarian donor policy in relation to its potential future role and involvement in the Euro-Mediterranean partnership.

5.3 Specific methods to answer the individual research questions

The methodology helps to map policy frames, test causality between knowledge, policy frames and policy outcomes, and retrieve data from policy documents, elite interviews and academic literature. In the methodology selection, the specific features of the stages of the research (problem definition, problem description, gap analysis, policy recommendations and policy arguments) influenced the choice of appropriate methods tools.

5.3.1 Data collection techniques

There are numerous methods for collecting data. Data categories on which the research relied on include data for policy analysis, data for comparative assessments, and metadata (data incl. all data sets). Basically, qualitative data types were needed.

Not only the research strategy, but also data collection techniques are strongly related to the purpose and type of the research (Marshall and Rossman 1989). Primary *data collection techniques* included reviewing policy papers, applying participant observation, field visits and a survey, while supplemental techniques contained, inter alia, graphs, maps and photos, personal communications and projective techniques.

In order that the study itself can result in useful policy analysis, at an initial stage of the research, policy content was analysed. *Policy content analysis* may include a description of the policy and how it has developed (Parsons 1995). For surveying the environment in which the policy is/has been formulated, the complexities of the level of *understanding of the problem* (high or low) and the *scale of change* aimed to be reached by the policy (small/incremental or big/abrupt) should be taken into account (Braybrook and Lindblom 1963). Accordingly, research areas included examining how well and adequately the complex problem of climate change and desertification is understood, and what the perceptions of the different policy actors are. The content analysis assisted in identifying certain synergies of the two policy areas.

Participant observation may be used as an exploratory technique, as an initial phase of methods, as a supplementary technique, as part of a multi-method approach, or as a main technique in an explanatory study (Gillham 2000). The present research (see research questions) was basically explanatory type. Participant observation was basically used for analysing the Hungarian donor policy. However, observation was not widely applied in the case of the Maghreb countries' climate change and desertification policies because of the different geographical locations of the researcher and the policy participants to be observed.

Participant observation in the latter case was possible on the occasion of international conferences.

Field visits were also helpful in gathering data and getting a flavour of the given country's culture, economic and social environment. A *survey* and *personal communications* were also useful in justifying information gained as a result of document review.

5.3.2 Data analysis methods

Having collected the necessary data, a significant part of the research was to analyse data and translate it into applicable information.

As Patton and Sawicki (1986) claim, policy analysis is "a systematic evaluation of the technical and economic feasibility and political acceptability of ... policies (or plans or programmes), strategies for implementation, and the consequences of policy adoption." (pp. 19-20). Furthermore, policy analysis can be considered an activity that sorts and arranges information in order to reveal interrelations and to provide an explanation for decision-makers to make it less complicated to choose between policy alternatives (Webber 1991).

The *policy analysis process* can be divided into the following main phases as suggested by Patton and Sawicki (1986). First, the problem has to be verified, defined and detailed in a way that avoids ambiguity. Second, evaluation criteria have to be established which are central to the problem under analysis and most relevant to key participants in the decision process and which take availability of data into consideration. These criteria could correspond to the requirements for effectiveness, efficiency, legality, political acceptability, administrative ease, cost-benefit etc. Third, on the basis of the criteria, alternative policies can be identified. It is argued that the no-action alternative (i.e. continuation of the status-quo) and an alternative with minor modifications to the status-quo deserve consideration. It is also in line with the incremental model. Fourth, alternative policies should be evaluated in order to recognize the differences between the options from the perspective of economic-technical feasibility and

political acceptability. Fifth, a selection has to be made among alternative policies.

The issue of establishing relevant evaluation criteria is essential to measuring achievement of any objective. The most common criteria are as follows (Patton and Sawicki 1986): technical feasibility criteria which measure whether policy outcomes achieve their purpose; economic and financial feasibility criteria which show policy outcomes in terms of impact on relevant stakeholder groups; and administrative operability criteria which examines how possible it is to implement the proposed policy within the political, social and administrative context. In this research, the selected policies that are related to climate change and desertification were evaluated in the international development cooperation context.

Other major data analysis methods included a *SWOT* (strengths, weaknesses, opportunities, and threats) *analysis* to identify the basic geographical features, vulnerability and policy framework for combating desertification and climate change of the Maghreb subregion; and a comparative *project analysis* of selected internal development cooperation projects implemented in the target subregion.

These methods were combined with the techniques of memo writing (theoretical memos and reflective memos) and coding (i.e. developing concepts and revealing relationships between concepts and phenomena). Recording data in the form of field notes and electronic databases and managing data are important part of any research as it facilitates data analysis (Marshall and Rossman 1989). Managing data during the whole research and displaying it as part of the research were important elements in the research process. Data were displayed in the form of written text, maps, charts and tables.

5.3.3 Triangulation and verification of results

Methodological triangulation was applied as a tool to obtain external checks on the validity of the findings of the research in order to reduce the likelihood of misinterpretation. In

triangulation, it is important that three or more sources all coincide to support the findings. It means that a multiple source of information was obtained and various procedures were employed. This was carried out by analysis of primary sources (policy documents), a survey, a SWOT analysis, participant observation, personal communications, secondary sources (academic and journal papers), comparative case studies, and field visits.

5.3.4 Methods by research question

The individual research questions can be answered using the methodology below. Regarding *research question 1*, with the perspective to prepare a SWOT (strengths, weaknesses, opportunities, threats) analysis concerning the Southern-Mediterranean geographical and policy environment, the primary data gathering method was document analysis of national reports and national action programmes of the selected donor and recipient countries on combating desertification and implementation of the UNCCD, national communications of these countries on implementing the UNFCCC, subregional action programme to combat desertification, and the UNEP GEO data portal. These sources provided data for analysing the geographical characteristics of the Maghreb subregion and the national and subregional level policy framework that is in place for combating desertification and climate change. A field visit in Tunisia and personal communications with desertification focal points and experts in the frame of international conferences contributed to triangulation for this analysis.

Focusing on *research question 2*, this is basically an explanatory type of question, and analysis of *policy implementation* and *content* were useful tools plus evaluating the recent policy developments in this field in the target subregion. Data was gathered from document analysis, personal communications with experts who have an overview of the recipient countries' policy situation, survey and field visit. Data analysis method was basically a comparative analysis of projects implemented in the Maghreb subregion. For those projects or

programme elements which contribute to tackling climate change and desertification, it was necessary to reveal whether these have helped the Mediterranean partner countries and whether these have filtered to the related national level policies of the recipient states.

As far as *research question 3* is concerned, the analysis resulted in revealing those policy elements which make each other stronger in effect to achieve a win-win situation. On the other hand, gap analysis contributed to identifying windows of opportunity with the help of which policies could be formed in a way that negative impacts from one subsystem to the other could be prevented. Policy recommendations were made primarily for the national level. In answering this research question, results arising from the examination of the issues included in the previous two research questions were incorporated.

5.4 Summary of methods and limitations of the methodology

The previous sections focusing on framing the policy context, policy content analysis, and the functioning of the international climate change and desertification policy subsystems provided guidance what, who and where should be studied. These sections discuss also how the analysis can be carried out in general and specifically in answering the individual research questions. This is due to the complex nature of the mentioned policy subsystems themselves and the potential policy analysis tools that might be used for the purpose of the research. For drawing directions for further policy improvement or policy change, the gap analysis is an appropriate technique which helps to identify areas for further research and further analysis (Dunn 1991).

The overall analytical approach that was used to achieve the goals of the research involved the following primary tasks.

1) Setting the theoretical frames which involve defining the geographical (subregions) and policy (subsystems) boundaries of the research.

2) Applying the SWOT technique to identify major factors that contribute to vulnerability to desertification and climate change in the Southern-Mediterranean subregion.
3) Identifying synergies of climate change and desertification policies of the Southern-Mediterranean countries in the context of development cooperation.
4) Evaluating donor contribution in the frame of the Euro-Mediterranean partnership to combat desertification and climate change from the partner countries' aspects.
5) Analysing the formulation phase of the emerging Hungarian international development cooperation policy.
6) Making recommendations for the Hungarian donor policy: whether it would be worth to get involved in the Euro-Mediterranean cooperation and to initiate donor projects in the Maghreb countries, and if yes, what kind of donor projects would be the most beneficial for the partners' needs and still in line with the Hungary's national interests.

To summarize, the following steps were taken during the different phases of the research.

Content analysis of policy documents

a) In order to be able to *outline the potential target donor countries* of the European Union and some *international donor organisations* and the *recipient countries* of the Southern-Mediterranean region to focus on, primary data retrieved from the donor and recipient database of the OECD Development Assistance Council (DAC) and the EU Donor Atlas was analysed.

b) With the aim of carrying out a *SWOT* (strength, weaknesses, opportunities, and threats) *analysis* regarding the focal *recipient countries situation* from the geographical, economic, social and environmental (esp. land degradation, desertification, drought events, and greenhouse gas emissions) aspects, reviewing policy papers of the affected countries in the relevant policy fields (agriculture and rural development, environmental policy, energy, forest

and plantations policy, water management, transport and tourism) was necessary. These included national strategies, national reports on implementing the UN Convention to Combat Desertification (UNCCD), national action programmes to combat desertification and drought, and national communications on the implementation of the UN Framework Convention on Climate Change (UNFCCC).

c) As a tool to verify data which serves as a basis of the SWOT analysis, it is necessary to retrieve primary data from other data sets, and a reliable source is the Global Environment Outlook (GEO) data sets. On the basis of the *UNEP GEO database*, graphs were designed which help to demonstrate and analyse basic information on the affected developing Southern-Mediterranean countries.

d) Considering that the *international development cooperation (donor) projects* had to be also analysed, official development assistance (ODA) reports of the selected donor countries in the field of combating desertification and drought were reviewed. The analysis of selected projects whether they correspond to the demands of the Maghreb countries was completed on the above basis.

e) In the research, focus was placed not exclusively on the North-South type donor-recipient international development cooperation, but also on an important element of South-South cooperation among the affected developing countries, in this case a *subregional cooperation* of the Maghreb countries under the aegis of the Maghreb Arab Union with the aim of combating desertification was considered.

f) As far as the *Hungarian emerging donor policy* is concerned, its brief couple-of-years history was investigated, and for this it was essential to review national legal, conceptual and policy documents.

Survey

Apart from content analysis of data from databases like the OECD DAC database and

the EU Donor Atlas (see above), paramount importance was attached to *justify the target donor and recipient countries' selection*, in the spirit of triangulation. As part of the research, an issue paper containing *open-ended questions* was sent out to national focal points of UNCCD, UNFCCC, MEDA, SMAP and GEF to selected donor and recipient countries. Pre-selection of target countries and organisations was made based on the above-mentioned content analysis. As a result of analysing answers and rate of reply to the survey, the number of countries and organisations to focus on was narrowed down.

SWOT analysis

A *SWOT* analysis is a good tool in describing the state of play in the examined area and therefore in identifying gaps and windows of opportunity for the subregion. The strengths and weaknesses analysis part of a SWOT was built on the static environment, where the strengths included the static positive features, while the weaknesses highlighted the negative characteristics. Building on these static positive and negative factors, the consideration of positive and negative forces arising from the external (dynamic) environment lead to identifying opportunities and threats. Land area and population affected by desertification was considered together with climate factors like drought and socio-economic factors like GDP, rate of population growth, land use, and major causes of desertification in the Maghreb countries. The national legal, conceptual and policy framework of these countries to combat desertification and climate change was reviewed together with their participation in related international environmental conventions. Furthermore, aspects related to the functioning of the public administration system and project coordination were considered in the field of combating desertification and climate change. The major criterion for identifying strengths, weaknesses, opportunities, and threats was selecting factors that contribute to vulnerability to desertification and climate change in the Maghreb subregion. This made possible filtering information that was retrieved from the different policy documents, field visits and personal

communications.

Project-based analysis

In order to have a full overview of the donor-recipient relationship, not only policies, but also *international development cooperation projects* carried out in the concerned Southern-Mediterranean countries needed to be considered, including information on project status, relevant policy field, donor country/institution, project costs, share of donor contribution to project total costs, project duration, and geographical location within the concerned affected developing country. This information was gained from different sources as follows: Internet databases of the involved donor institutions; the afore-mentioned national policy documents (national reports and national action programmes of recipients, and donor reports); and replies from the survey. On the basis of the previously described SWOT analysis, it was possible to evaluate whether these donor projects serve the interests and needs of the partner countries.

Field visit

In June 2006, an *international conference on desertification* entitled "The future of drylands" was organised by UNCCD, UNDP and UNESCO on the occasion of the International Year of Deserts and Desertification. The conference was held in Tunis, *Tunisia* with participation of scientists, experts and decision-makers, including a whole-day *field visit* to interesting project sites. Within the framework of this professional programme, there was a chance to see a dam (irrigation) project, a farm where medicinal herbs are produced, and also there was a presentation about the history of organic agriculture in the country, including a description of the Technological Centre of Organic Agriculture where the presentation took place. The conference and the field visit both were very useful and provided a real-life experience, therefore this way it was easier to get a flavour of the economy, society, culture and environmental state-of-the-art of a Maghreb country in the study subregion so it

contributed to triangulating data for the SWOT analysis.

Personal communications

This type of data collection method was applied for the following purposes. Triangulating data for the SWOT analysis required relying not only on document analysis, but also personal communications with national focal points of the UNCCD and desertification experts in the frame of international conferences. With the aim of analysing the formulation of the Hungarian donor policy, experts of the Hungarian Ministry of Environment and Water and the Ministry of Foreign Affairs were involved.

Review and validation procedures included the following: self-critical review notes based on the author's own perceptions of where information being recorded may be incomplete, biased or in error; triangulation: multiple sources of information were obtained, especially for critical pieces of information; and reviews by selected professionals.

There are certain *limitations* rooted in the methodology. These are the following. A diverse range of definitions exist for the basic concepts of climate change, desertification, and security, and policy subsystems can be placed in different contexts (see e.g. Easton 1965 vs. Sabatier 1993). It is an individual choice of the researcher to choose between alternative definitions and apply then the selected terms in an appropriate way throughout the research. A different choice of definition use may lead to different conclusions.

In the policy analysis literature, policy subsystems have been dealt with as parts of the national policy system. Nevertheless, in the research policy subsystems are analysed, *mutatis mutandis*, at the subregional level, building on the assumption that the policy systems of these levels have their common roots in the national policy system.

Finally, the Maghreb countries of the Mediterranean are French-speaking countries which means that a considerable number of policy documents are available only in French. However, the author of this dissertation was learning French, and this helped to overcome the

language related shortcomings.

Despite the above limitations, the author of this dissertation believes that the results of analysis can securely be applied in practice.

6. SETTING THE POLICY CONTEXT FOR CLIMATE CHANGE, DESERTIFICATION AND INTERNATIONAL DEVELOPMENT COOPERATION

In the light of theory and practice, the policy context is set in the forthcoming sections of this chapter at different levels. Therefore, the UN, the OECD, the NATO, and the EU level desertification and climate change policy frames will be considered, followed by a narrowing down approach to target the Southern-Mediterranean region.

6.1 Policy context at the international level

The aim of this chapter is to set the policy context for combating climate change and desertification at the international level, examining relevant policies in the forum of the UN, the EU, the OECD, the NATO, and then to focus on the regional-subregional level.

6.1.1 United Nations – FCCC and CCD

Turning from science to the *policy aspects* at different levels of the policy arena, Agenda 21 (1992) provides a framework as it deals with both climate change and desertification. As it was mentioned earlier, the UNFCCC (1992) and the Kyoto Protocol (1997) are major *international policy instruments* in the field of climate change policies. While the UNFCCC aims at stabilisation of greenhouse gas emissions, under the Kyoto Protocol, industrialised countries should reduce their combined greenhouse gas emissions by at least 5% compared to 1990 levels by the period 2008-2012.

The main objective of the UNFCCC is the stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Therefore, the Parties should promote sustainable development, and policies and measures to protect the climate system against further human-induced change should be integrated into national development programmes (UNFCCC 1992). The idea of stabilising greenhouse gas concentrations has been further developed within the

framework of the Kyoto Protocol (1997) which was adopted in 1997 and entered into force in 2005.

The Protocol includes guidance for national policies (Art. 2), lays down national commitments (Art. 3), introduces the flexibility mechanisms (Art. 6, 12, and 17), and tackles the questions of land use, land-use change, and forestry (Art. 3.3, 3.4), and the issue of compliance. As for the flexibility mechanisms, those are the following: joint implementation (Art. 6), clean development mechanism (Art. 12), and international emissions trading (Art. 17). From the aspect of this research the *clean development mechanism* (CDM) is the most relevant to mention. The reason for this is that developed states can initiate investments in developing partner countries which aim at reducing the emissions of greenhouse gases.

Article 2 of the Kyoto Protocol defines guidelines regarding *policies and measures* to facilitate achieving the Parties' quantified emission limitation and reduction commitments under Article 3 in order to promote sustainable development. These include, inter alia, the enhancement of energy efficiency, protection of sinks and reservoirs of greenhouse gases, promoting sustainable agriculture, and the limitation/reduction of the emissions of greenhouse gases not controlled by the Montreal Protocol. The purpose of the Kyoto Protocol in establishing the flexibility mechanisms is to assist Annex I Parties, i.e. developed countries and countries with economies in transition, to the UNFCCC to meet their commitments under the Protocol in a cost-efficient manner. All the above issues have been further developed in the Marrakech Accords (2001) during the seventh Conference of the Parties to the UNFCCC.

Under the UNFCCC (1992), both developed and developing countries are committed to developing and submitting inventories on greenhouse gas emissions by sources and removals by sinks (such as forests, which absorb carbon dioxide) and reporting on measures taken to implement the UNFCCC; adopting national climate change mitigation programmes and adaptation strategies; promoting technology transfer; cooperation on scientific and technical

research; and promoting public awareness, education and training.

As for the UNCCD, it is worth noting that the Convention makes a distinction between developed, affected, and developing country Parties and determines the obligations of the countries accordingly. For *affected countries*, obligations include preparing National Action Programmes (NAPs) for desertification/drought mitigation and fulfilling reporting obligations on national policies and measures to combat desertification. As far as *developed countries* are concerned, their primary obligation under the Convention is to provide financial and technological assistance to affected developing countries. Besides, reporting on their related donor activities and the most important aspects of implementation of the UNCCD is also an obligation.

One of the items considered by the Subsidiary Body on Scientific and Technological Advice (SBSTA) of the UNFCCC at its seventeenth session was the cooperation with relevant international organisations with a focus on the cross-cutting thematic areas and activities under the UNCCD, CBD and the UNFCCC (SBSTA 2002). These cross-cutting areas include the following: technology development and transfer; education and outreach; research and systematic observation; capacity-building; reporting; impacts and adaptation. It should be noted that these are mentioned particularly for showing the climate change and desertification policy link in specific aspects (Kulauzov 2003).

The Intergovernmental Panel on Climate Change (IPCC) provides not only for establishing the scientific basis for climate policies, but also it deals with potential mitigation and adaptation measures. The IPCC Special Report on emissions scenarios (IPCC, UNEP and WMO 2000) draws several storylines and scenario families predicting future emissions of greenhouse gases under different circumstances. Based on the scientific findings and potential future scenarios, the IPCC provides for mitigation and adaptation options. The IPCC identifies climate change to be a problem with unique characteristics that involves complex interactions

between climatic, environmental, economic, political, institutional, social and technological processes (IPCC Working Group III 2001).

Considering that changes are often non-linear and irreversible, the development of *response policies* could take place in a policy environment characterised by uncertainty and risk. The IPCC defines *mitigation* as an anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC Working Group III 2001). It is argued in the referred paper that the effectiveness of climate change mitigation can be enhanced when climate policies are integrated with the other objectives of national and sectoral policies and programmes. In connection with forests, agricultural lands and other terrestrial ecosystems, the paper reminds that although conservation and sequestration of carbon result in higher carbon stocks, these measures could lead to higher future carbon emissions if these ecosystems are severely affected by either natural or human-induced disturbances.

As far as *adaptation* policies are concerned, the IPCC claims that adaptation is a necessary strategy at all scales to complement climate change mitigation efforts (IPCC Working Group II 2001). In connection with droughts, the paper argues that there is some evidence that certain economic and social systems have been affected by the recent increasing frequency of droughts. As for the agricultural context, even though increased carbon-dioxide concentration can stimulate crop growth and yield, the benefit may not always overcome the adverse effects of heat and drought.

6.1.2 European Union

Along with the above international policy developments in the field of climate change policy, the *European Union* (EU) as a *regional economic integration organisation* has formulated its own climate change programme (European Commission 2000a), which is in harmony with the Sixth Environment Action Programme (European Commission 2001b), and the EU's Strategy on Sustainable Development (European Commission 2001a). The European

Climate Change Programme (ECCP) can be considered to be an implementation programme of the Sixth Environment Action Programme.

The European Commission has taken several *climate-related initiatives* since 1991, when it issued the first Community strategy to limit carbon dioxide (CO_2) emissions and improve energy efficiency. A further step, directly related to the adoption of the Kyoto Protocol, was the launching of the European Climate Change Programme (European Commission 2000a). The main objective of the ECCP is to identify and develop all the necessary elements of an EU strategy to implement the Kyoto Protocol. This is carried out through ensuring sectoral integration of climate change considerations.

The main task of the second phase of the ECCP (2002-2003) was to facilitate and support the actual implementation of the priorities identified in the first phase. Apart from this, the areas of focus were expanded to include agriculture and forestry in the sinks context. A number of specific actions, identified under the first phase of the ECCP, that needed further study in terms of emission reduction potential and cost-effectiveness, are also being developed.

Furthermore, an EU-wide emissions trading scheme was elaborated (European Commission 2001d) and approved by the European Parliament (European Parliament and Council 2003). In relation to EU climate policies at the country level, Collier and Löfstedt (1997) present case studies of six European Union countries, focusing on actual emissions, response policies, and examining the feasibility of climate change policies, and conclude with a comparative analysis of the findings.

Turning attention to the field of *international development cooperation*, there is no framework legislation at the EU level. The reason for this may be that international development cooperation (IDC) policy is placed among policies where the European Commission (EC) and the Member States have shared competence. At the EU level, different common policy frameworks exist related to the different recipient regions, while at the level of

the Member States, bilateral and multilateral official development assistance (ODA) strategies have a significant role. As an example, the Mediterranean Action Programme (MEDA) provides a framework for development in the Mediterranean region.

Nevertheless, the EC established a framework for action building on the interlinkages of climate change and development cooperation. This framework is the *EU Action Plan to accompany the EU Strategy on Climate Change in the Context of Development Cooperation* which was adopted in 2004. A preceding document is the Strategy itself which was initiated by the Commission and endorsed by the Council in 2003. The overall objective of the Strategy and Action Plan is to assist EU partner countries in meeting the challenges posed by climate change, in particular by supporting them in the implementation of the UNFCCC and the Kyoto Protocol. This is to be done through mainstreaming, i.e. that climate change considerations are not treated in isolation to other development activities but integrated into country and regional strategies and sectoral programmes in order to ensure that our efforts to reduce poverty are sustainable. The Strategy identifies the following strategic priorities which the Action Plan translates into specific actions and sub-actions: a) raising the policy profile of climate change; b) support for adaptation to climate change; c) support for mitigation and low greenhouse gas development paths; and d) capacity development.

The Commission and the Member States are implementing the Action Plan together in a coordinated and complementary manner and in line with their respective development cooperation programmes and priorities. The Council will review the implementation of the Action Plan in 2007, following the first bi-annual report, and consider further action beyond 2008 which currently marks the end of implementation of the Action Plan. A task force (including Commission and some MS) has been set up to further the implementation of the Action Plan which is in harmony with the new *EU Development Consensus*. It is stated that in the climate change context, the Commission will focus on the implementation of the EU Action

Plan on climate change and development and that *adaptation* to the negative effects of climate change will be central in its support to least developed countries and small island developing states.

Similarly, the European Commission considers desertification policy primarily in the context of development cooperation policy. However, some of the EU Member States are also affected countries in terms of the UNCCD. As for *policy on soils*, a Commission communication was approved entitled "Towards a Thematic Strategy for Soil Protection" (European Commission 2002c). The document summarises the soil related problems in the EU Member States. It aims at a systematic assessment of the impact of certain Community policies, i.e. environmental policy, agricultural and regional policy, transport policy and research policy on soils, and provides for the basis of a strategy on soils which has been elaborated and is currently in the phase of discussions. Besides, the EU's common agricultural policy (CAP) or the further developed common agricultural and rural policy (CARPE), and water policy (with a focus on the EU Water Framework Directive, European Parliament and Council 2000) as sectoral policies should be mentioned in connection with the desertification issue.

As shown above, the two areas are dealt with separately, without taking adequately into account the effects of one particular measure for mitigating one problem on the other policy area. Therefore, sectoral integration is promoted by several EU instruments such as the Sixth Environment Action Programme, the Lisbon Strategy, and the Cardiff process.

From the *security aspect*, the Southern-Mediterranean is a developing region which is located right at the borders of the EU. "Europe has a substantial security interest in the Mediterranean area ... but the Community has remained largely irrelevant to their [Mediterranean partners] security: it is neither a threat, nor a prospective protector" (Pomfret 1986, p. 31). In line with this, the EU Mediterranean policy has been evolving through several

stages (Pierros *et al.* 1999), starting from the early agreements (1961-72), developing into a global Mediterranean policy (1972-89), a redirected Mediterranean policy (1989-94), and finally establishing the Euro-Mediterranean partnership (since 1994).

The *Euro-Mediterranean partnership* was launched by the Barcelona process in 1995, and originally involved the EU15 plus Algeria, Morocco, Tunisia (i.e. the Maghreb countries); Egypt, Jordan, Syria, Lebanon (i.e. the Mashreq countries); Israel, the Palestinian Authority; Turkey, Cyprus and Malta. The Barcelona conference aimed at launching a process which leads to the creation of a Euro-Mediterranean free trade area by 2010. The Barcelona process established cooperation over the promotion of democracy and human rights as an integral part of EU-Mediterranean relations in order to ensure stability in the region. However, as critiques of the Euro-Mediterranean partnership suggest, the absence of trans-Atlantic coordination with respect to the Mediterranean makes the process less efficient (Vasconcelos and Joffé 2000).

6.1.3 OECD

The *Organisation for Economic Cooperation and Development* (OECD) as an international organisation has several climate policy related papers which show that this is an issue of concern for the OECD countries. One of the recent analyses (OECD and IEA 2002) focuses on climate relevant policy assessment. The paper provides for national policy reviews, sectoral policy evaluations (including energy policy, transport policy, waste policy, and agricultural policy), and an analysis of various economic policy instruments. OECD policies and measures for common action to reduce the emissions of greenhouse gases were summarised at an earlier stage by Pálvölgyi (1997). Economic and financial instruments, financing energy efficiency in countries with economies in transition, demand-side energy management, policies for the agricultural sector and the transport sector are analysed.

The issue of desertification does not appear directly at the OECD level, rather it is touched partly within the framework of the agricultural policy evaluations. The OECD policies

are important in the respect that some countries of the OECD may be considered as potential objects for analysis in the research, with particular regard to the fact that those are among the major donor countries that have a decisive role in international development cooperation.

6.1.4 NATO

The *North-Atlantic Treaty Organisation* (NATO) is traditionally a military organisation, but its structure includes a civilian part as well with security related non-military functions (NATO 1999). From the aspect of the focal topic of this research, the NATO Science Committee (SCOM) and the NATO Committee on the Challenges of Modern Society (CCMS) are relevant to be mentioned. After the merger of the above committees, a new committee was set up in June 2006, namely the Science for Peace and Security (SPS) Committee. Desertification as a security challenge is a new and emerging issue for the referred NATO Committees' work. In line with NATO's strategic objectives, the impacts of environmental degradation, in this case those of desertification, are of crucial importance from the aspects of peace, stability, and security. Climate change and desertification can negatively impact economy, social order, stability, food production and thus food security, migration, and border security. Therefore, revealing the interconnections of these factors is of major importance.

Accordingly, NATO SCOM and CCMS organised a workshop in December 2003 with the main aim of analysing national and regional dimensions of desertification in the socio-economic context. The workshop provided a frame for combating desertification and land degradation as issues for security. Further objectives included revealing the causes of desertification at the regional level, analysing past tendencies and alternative futures of land use, and examining the interconnections of desertification and migration processes, with special regard to security (NATO SCOM/CCMS workshop 2003). Considering that desertification is a major problem in the Mediterranean, NATO SCOM/CCMS examined this issue in the

context of the Mediterranean region. More precisely, besides NATO members, the countries of the Mediterranean Dialogue (namely Algeria, Morocco, Tunisia, Mauritania, Egypt, Israel and Jordan) are involved in this process. It was concluded that combating desertification effectively requires international cooperation and the linking of science and policy.

6.2 Policy context at the regional, subregional and national levels

Narrowing down from the global level, the linkages between climate change and desertification issues at the regional and subregional levels are considered below. In this case, the Southern-Mediterranean represents the regional scale, while the Maghreb area is considered at the subregional level.

6.2.1 The wider Mediterranean area

It can be stated that the Mediterranean region can be considered to be a *security complex* (see definition of this term in 3.3.2). In order to understand this, the concept of the Mediterranean has to be defined which is not an easy task. *The Mediterranean* is a sea, a climate, a landscape, a way of life, all of these and much more... – as King *et al.* (1997) put it. Whether a narrower or wider definition is used for the Mediterranean should always hinge on the focus of the given research. Therefore, different approaches are considered as follows.

In the Blue Plan (UNEP 1975), only the Mediterranean riparian countries are considered. Portugal, for example, is not included, but climate and culture are Mediterranean type there as well. In the Blue Plan, the definition of the Mediterranean follows the Barcelona Convention's geographical approach. According to Grenon and Batisse (1989), the main subsystems of the Mediterranean environmental system are soil, inland water, forests, the coast, and the sea. Population issues appear in the Blue Plan through demographic groupings: (a) Spain, France, Italy, Greece, Yugoslavia; (b) Algeria, Egypt, Libya, Morocco, Syria, Tunisia, Turkey; (c) Albania, Cyprus, Israel, Lebanon, Malta, Monaco. Common features of

the Mediterranean are the fragility of natural resources, food dependency, and the fact that the area of land under annual/perennial crops is less than 50% of the total surface area of the given Mediterranean country. In certain countries, this ratio is even less, i.e. it is below 10% in Algeria, Libya, and Egypt (Grenon and Batisse 1989).

As for the *Euro-Mediterranean partnership*, seven EU Mediterranean member states (Spain, Portugal, France, Italy, Greece, Cyprus and Malta) can be found plus Algeria, Morocco, Tunisia (i.e. the Maghreb countries); Egypt, Jordan, Syria, Lebanon (i.e. the Mashreq countries); Israel, the Palestinian Authority; and Turkey. In NATO's *Mediterranean Dialogue*, the same Northern-Mediterranean EU countries are included plus Algeria, Morocco, Tunisia, Mauritania, Egypt, Jordan and Israel. From the aspect of this research, the study area has to be identified in order to provide a geographical boundary for the research. This could be done when the overall situation – for the purposes of this research – is analysed.

As King (1996) argues, "from the EU perspective, Southern Europe is seen as the soft and vulnerable 'underbelly' of Fortress Europe" (p. 12). As Brauch *et al.* (2003) claim, environmental security in the Mediterranean region is affected by global environmental change. Both past tendencies and scenarios for the future contribute to justifying these statements.

International *migration* is a global humanitarian issue which occurs quite significantly, inter alia, throughout the Mediterranean region. The Mediterranean Sea can be considered to be a migration frontier (King 1996) in the sense that northward migrations flows from the Southern Mediterranean have escalated in the recent decades, esp. towards those Northern Mediterranean EU member states that acceded to the European integration during the 1980s, switching Spain, Italy, Portugal and Greece to the status of immigration countries. Underlying causes of this include environmental deterioration, natural disasters, ethnic conflict, and religious theories but the *development gap* between Northern and Southern Mediterranean countries could be identified as a key factor. Rural underdevelopment in most Southern-

Mediterranean countries is linked to climate and the overexploitation of natural resources caused by population pressure (European Commission 2002a). Migration is one of the most pressing and potentially destabilizing political challenges for Europe (Overbeek 1995).

Population levels and their geographical distribution are key concerns in economic development and major influences on the state of the global environment. Population, environmental variables, economic well-being and development are closely interwoven. There is a vicious cycle for poverty, population pressure, and environmental deterioration. Population increase will aggravate environmental and development problems in the forthcoming decades (Tisdell 1998). Problems in the developing parts of the Mediterranean region are multifaceted and include rapid population growth which leads to overpopulation and underemployment, political instability, lack of democracy and human rights, water disputes, and struggling economies with international trade dependency, sectoral diversification needs and financing needs. In line with these, Europe faces manifold challenges like security challenge, demographic, economic and environmental challenge.

As for the future, migration processes could go on in the same directions as now, since for the Northern-Mediterranean zero population growth rates are envisaged, while in the Southern- and Eastern-Mediterranean population will double during the next 20 years. Immigration pressure will continue in the Northern-Mediterranean until there is not adequate development in the Southern-Mediterranean. Moreover, climate scenarios suggest that in the Mediterranean warmer and drier conditions are likely to prevail over the next half century which could lead to a water crisis.

Global warming is a factor that aggravates depletion of natural resources, esp. water, which is likely to create further migratory movements in various regions, including the Mediterranean region (A secure Europe in a better world – European Security Strategy 2003). Thus, *water security* will soon rank with military security also in the Mediterranean, as Pierros

et al. (1999) point it out. This projection is in line with the findings of the most recent IPCC report (IPCC Working Group I and II 2007) according to which precipitation will decrease by up to 20% in the forthcoming century in the Southern-Mediterranean region and water stress will increase due to climate change esp. in the African continent. As for policy implications, monitoring and early warning should be improved, which requires financial resources, and as suggested by Brauch *et al*. (2003) small scale water-harvesting projects should be designed and implemented consolidated into regional and national plans of action.

Furthermore, agricultural activity contributes to degradation of the Mediterranean environment which leads to desertification. According to the Blue Plan, most severe erosion occurs in Southern-Europe and in the Maghreb countries in the Mediterranean. Main indicators related to the process of desertification in the Mediterranean are the following (Brauch *et al.* 2003): overgrazing, shrub cleansing, soil erosion, over-cultivation of food or field crops where grazing was typical earlier, and salinization that relates to irrigated agriculture. Agricultural production will be negatively affected by climate change as the IPCC report states it (IPCC Working Group II 2007), which means that the area suitable for agriculture, the length of growing seasons and yield potential, particularly along the margins of semi-arid and arid areas, are expected to decrease. This process would further adversely affect food security.

In general, demands on land, fresh water and other natural resources are rapidly growing, and it may be assumed that natural resources have the potential to play an even more important role as a cause of war in the future than they had in the past (Westing 1986). Therefore, environmental protection and sustainable development should be a priority issue in the EU's Mediterranean agenda (Pierros *et al.* 1999).

6.2.2 The target region of the Mediterranean: Northern and Southern focus

The Southern-Mediterranean is a region within the wider Mediterranean which would be appropriate to be analysed as it comprises developing countries at the borders of the EU.

Before turning to the specific features of this area, the characteristics of the Northern-Mediterranean are summarized to gain an overview of the situation in the developed parts of the wider Mediterranean.

Country reports both from the Northern and Southern parts of the region show that desertification is present throughout the entire Mediterranean, and that it appears not only as a biophysical phenomenon, but also it has serious socio-economic implications. These include a loss in the quantity and quality of water resources, loss of fertile land and a fall in food production, and loss of income and decreased opportunities for the local rural communities. These factors could lead to increased international migration and human displacement.

The Northern-Mediterranean

The *Northern-Mediterranean* with its irregular rainfall, poor soils, abandonment of traditional agriculture and unsustainable water exploitation has been recognised as a region with increasing desertification problems (Geeson *et al.* 2002). Soil erosion can be considered to be the most serious form of land degradation in Mediterranean uplands, which leads to siltation of water courses, reduced soil productivity (due to nutrient wash-out and structural deterioration), limited vegetation growth, and extensive desertification.

Considering the countries of the Northern-Mediterranean region of the EU, Spain, Portugal, France, Italy, Greece, Cyprus and Malta are worth mentioning. However, Portugal, Greece, Cyprus and Malta may not be relevant from the aspect of this research since they are not really active in participating in the wider Mediterranean cooperation. As for France, although it is not affected by desertification, and is not involved in regional activities under the UNCCD, from the development cooperation aspect it is an important donor country that has tight relations with certain Southern-Mediterranean developing states.

The Northern-Mediterranean thus here is understood as a subregion that includes Spain, France, and Italy. The Northern-Mediterranean EU countries have tight relationship

with certain developing countries, especially with those from the Mediterranean region. They are not only affected countries from the aspect of desertification (except France), but also they implement donor policies in developing countries, and thus the security context and donor context can effectively be studied on their cases, esp. in relation to a subregion that is at their direct borders at the Southern shores.

It is important because it is very likely that European countries have immigration problems not due to European desertification, but due to, inter alia, African desertification. Thus, appropriate anti-desertification policies implemented in Europe will not affect the security of Europe; this one will be affected by non-appropriate desertification policies outside of Europe, which can be influenced by effective donor policies carried out by European states in developing countries. In line with this, demographic policies have also a role to play, since desertification, population and migrations have strong interconnections. However, in line with an increasing MEDA budget in the recent years, all the main EU member states (except France) reduced their national ODA programmes in the Mediterranean (Youngs 2001).

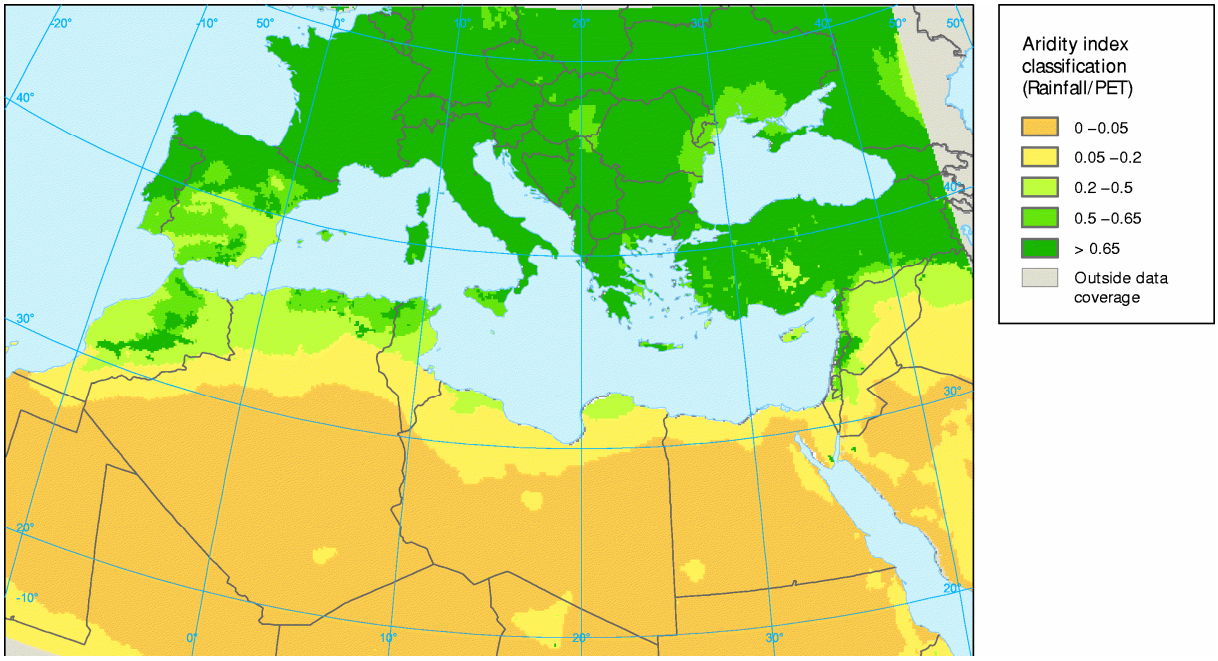
The Southern-Mediterranean

As for the *Southern-Mediterranean*, a narrowing down approach is used to select the focal countries for the purposes of the present research. Reviewing the relevant literature, availability of data and policy experience in the Euro-Mediterranean cooperation suggests that some Maghreb countries (Algeria, Tunisia and Morocco) and Egypt from the Mashreq group are worth focusing on. This does not mean that any other Mediterranean countries might not be touched upon according to different policy aspects, but will not be handled as a target area of the research.

The Mediterranean Region is highly sensitive towards environmental degradation on account of the early appearance and activity of man and the fragile character of the environment itself. “Perhaps nowhere else has nature done so much for man, has man in turn

so transformed nature." (Grenon and Batisse 1989, p. 1). Furthermore, the previously introduced Southern-Mediterranean countries also experience serious droughts and desertification plus water scarcity which might worsen with climate change (see climate sensitivity based on aridity index classification for the Mediterranean on Fig. 4), and they belong to Annex I of the UNCCD. The IPCC confirms (IPCC Working Group II 2007) that Africa is one of the most vulnerable continents to climate variability and climate change due to multiple stresses and low adaptive capacity. Some adaptation to current climate variability is taking place, however, this may be insufficient for responding to future changes in climate.

Figure 4: Climate sensitivity – the Mediterranean
Source: European Environment Agency
http://dataservice.eea.eu.int/atlas/viewdata/viewpub.asp?id=495 (cited on 3 September 2004)



6.2.3 Development cooperation between North and South

As Brauch *et al*. (2003) conclude, combating desertification is a major environmental, development and a security task for the Mediterranean, which can be carried out mainly in the framework of effective *donor policies*, promoting adequate agricultural and environmental policies using a proactive approach. When dealing with subregional level policies, it should be noted that national policies can be *enforced*, while regional, subregional policies cannot be enforced. In this respect, it should be considered to what extent national policies are affected by the lack of enforcement of international policies. Not only enforcement, but also *monitoring* of results of policy implementation should be of concern for identifying the main points for policy change.

Examining the recipient side, Algeria, Morocco, Tunisia and Egypt are all eligible to receive official development assistance (ODA) according to the list issued by the OECD Development Assistance Council (DAC). ODA inflows (both total and per capita) reached their peak in the beginning of the 1990s in these countries (UNEP 2004).

The EU proximity policy towards the Mediterranean region is governed by the *Euro-Mediterranean partnership*, as it was mentioned earlier. The partnership is implemented mainly through the MEDA programme which offers technical and financial support measures to accompany reform in the partner countries. Currently, MEDA II (Budget line 19080201) amounts to € 5.35 billion for the period of 2000-2006.

In 2000, the funds committed to Euro-Mediterranean partnership activities amounted to €1.002 million and the total payments reached €472.2 million (European Commission 2002a). Most of these funds were committed within the framework of the MEDA Programme (€879.2 million in 2000). The remaining funds were committed on other specific budget lines like Peace process, Democracy, and Palestinian refugees (€122.8 million in 2000).

The MEDA programme provides financial support to the EU Mediterranean policy as defined in the Barcelona Declaration. Since 1995, efforts have concentrated on two aspects: promoting the transition towards an open economy and helping partners meet the attendant socio-political challenges.

A total of €600 million was committed and €498 million disbursed in the Mediterranean and Near and Middle East region in 2003 (European Commission 2004a). The MEDA II programme (2000-2006 with a budget envelope of €5.35 billion) aims to improve implementation of the reform programmes and projects aimed at providing a better response to the expectations of the beneficiaries (European Commission 2002a). In future, emphasis will be on a small number of strategic programmes. Consequently, financing will not be available for small-scale or isolated projects outside the programme priorities.

Multi-annual strategy documents for the period of 2000-2006 are the basis of programming at national and local levels. Three-year National Indicative Programmes (NIPs) and Regional Indicative Programmes (RIPs) are based on these strategy documents, and then annual financing plans are adopted and implemented at national and regional levels (European Commission 2002a).

MEDA includes an environmental component, the *Short- and Medium-Term Priority Environmental Action Programme* (SMAP). SMAP was adopted by the 27 Euro-Mediterranean partners in 1997. The SMAP concentrates on five priority areas, two of which are relevant to desertification, namely "integrated water management" and "combating desertification". Under the SMAP, a total of four desertification-related projects were implemented since 2000, amounting to €8.3 million of EC financial contribution (European Commission 2004b). However, it should be noted that projects on water infrastructure are excluded from SMAP, regarding that it falls in the category of water, not the environment component of MEDA. Besides, Mediterranean partners have benefited from European

Investment Bank (EIB) funding and related interest rate subsidies for environmental activities. Concerning the national and the regional levels, funding for the environment corresponded to around 6% of MEDA I, and around 9% of MEDA II for the period of 2002-2004 (European Commission 2003d).

According to the Report on the first five years of implementation of SMAP (European Commission 2003d), integration of environmental considerations in other fields of cooperation of the Euro-Mediterranean partnership has been rather limited. These other fields include the following: the EC financed the Euro-Mediterranean Water Information System, there was a project on energy management and planning in urban areas, and the project DELTA of the Euromed Heritage II programme involves preservation of the environment in an integrated spatial approach.

Furthermore, activities on water management and combating desertification in the Middle East are financed under the MEDA Peace Process initiative which complements the Barcelona Process. Under this, a Water Initiative and a *Regional Initiative to Control Desertification* are to be mentioned. The latter one involves Egypt, Israel, Jordan, the Palestinian Authority and Tunisia, and consists of three components: Watershed Development Programme, Treated Wastewater and Biosolids Use and Socio-Economic Policy Options. Outside MEDA, numerous projects addressing environmental needs of Mediterranean Partners were financed under the LIFE 3rd Countries programme.

It is laid down in the Report on the first five years of implementation of SMAP (European Commission 2003d) that there is a need to look for synergies with the related global conventions including the UNCCD, when implementing the respective priority fields of SMAP. It is claimed in the report that the environmental field has been treated simply as a sectoral policy isolated from the others, rather than considering it in its horizontal dimension. Therefore, further efforts should be made to ensure policy coherence and complementarity

among projects funded by different instruments in the same geographical areas both within and beyond the Euro-Mediterranean partnership with a view to the fact that the existence of clear national environmental and/or sustainable development policies would contribute to respect more nationally agreed priorities.

6.2.4 Potential involvement of an emerging donor, Hungary in this cooperation

Hungary as an OECD country and a new EU Member State is considered to be an emerging donor. The country's international development cooperation (IDC) policy concept started to formulate in the late 1990s, and it was adopted in 2001. It was the year 2003 which signalled the start of developing the institutional and financial framework. It is evidence that Hungary has to catch up with developed EU and OECD donors. In this process, it is necessary to learn from the experiences of those donor countries that have a history of IDC activities.

Although it would be desirable based on the European Neighbourhood Policy, the country has not yet participated in the Euro-Mediterranean cooperation. Another point is that despite the fact developed countries have an obligation to support affected developing countries in their efforts to combat desertification under the aegis of the UNCCD, Hungary has not provided any kind of assistance in this particular policy field within the framework of its emerging donor policy. This issue will be analysed in detail in chapter 10. It has to be noted that formulating and implementing an effective IDC policy is not only an international obligation for the country, but also a national interest.

A publication by the Hungarian Ministry of Foreign Affairs (Külügyminisztérium 2002) deals with Hungary's donor policy in relation, inter alia, to the Southern-Mediterranean region. Considering the aims and available policy tools of Hungary for implementing a framework policy for the Southern-Mediterranean, it is suggested in the publication that Hungarian policy makers should investigate and *analyse projects for economic cooperation and development* and resource allocation under the aegis of the EU MEDA programme in order that the country

could also take part in the preparation and implementation of such projects in the future. It is also proposed in the document that in view of Hungary's joining the EU MEDA programme, the place of the Southern-Mediterranean region should be positioned within the emerging Hungarian international development cooperation policy framework.

7. THE EU AS A KEY PLAYER IN DEVELOPMENT COOPERATION

The European Union is a regional economic integration organisation that has a history over a half-century and that is one of the important players at the global level. Herebelow, the international development cooperation activities of the EU are focused on in the frame of the Euro-Mediterranean partnership. The results of the research survey are also discussed in the context of this chapter.

7.1 A decade over for the Euro-Mediterranean partnership

The EU represents more than 50% of the world *official development assistance* (ODA) and the European Commission (EC) itself accounts for 10% of world ODA. Therefore, it seems reasonable to study the example of carefully selected EU (European Commission and EU Member States) donors' activities, evaluate them, and finally to draw conclusions for the emerging Hungarian donor policy.

Article 177 of the Treaty of the European Community sets three major objectives for the EC development policy, namely: sustainable economic and social development of developing countries; smooth and gradual integration of developing countries into the world economy; and campaign against poverty in developing countries. In the EU Constitution (2005), development cooperation is considered an EU policy in its own right for which the Community has shared competence.

The *EC development policy statement* (European Council and Commission 2000) aims primarily at the reduction and eradication of poverty by supporting sustainable development, promoting integration of developing countries in the world economy and combating inequality. Environment is a specific cross-cutting theme in the statement, which has to be taken into account in all sectoral policies. The human security perspective that includes access to water,

food and shelter, health and education etc. is a crucial part of the EC development policy objectives.

The *Barcelona process* which has paved the way for the Euro-Mediterranean cooperation is based on three pillars: political and security partnership, economic and financial partnership, and social, human and cultural partnership. However, achieving the economic objectives of the Barcelona process has been rather limited.

Since the reform of the EC external assistance, programmes and projects are thought to be more responsive to the partner countries' needs. The new development policy is focused on poverty reduction in six key areas, and one of them is food security and rural development. As a result of the reform, the institutional structure was strengthened, i.e. the EuropeAid Cooperation Office was set up in 2001 to implement the Commission's development policy. In 2004, 9% of the financial resources (including the EC budget and the European Development Fund) of the European Commission were dedicated to external assistance.

Partly on account of this fact, as a recent policy initiative, the *European Neighbourhood Policy* (ENP) was launched in 2003 as a new framework for relations with the EU's Southern and Eastern neighbours. The ENP Action Plans specify reform objectives and EU support for the Mediterranean partner countries. In the ENP, the Mediterranean region receives a great emphasis. Specific areas for Euro-Mediterranean cooperation include effective water and waste management, esp. with regard to the continuous rural to urban migration in the region, management of coastal areas in view of environmental protection and tourism development. However, according to an EU document (European Policy Review Group 2005), real progress has so far been rather limited, therefore it is necessary to re-evaluate the framework for environmental cooperation in the Mediterranean.

Within the framework of the European Neighbourhood Policy, *National Action Plans* are approved and implemented throughout the Mediterranean in the form of bilateral

cooperation. There is such an Action Plan agreed with Morocco, Tunisia, Israel, Jordan, Palestinian Authority, Egypt and Lebanon. *Regional and country strategy papers* have been prepared by the Commission. As for the regional component of cooperation, the SMAP provides financial resources. SMAP I (1998-1999), SMAP II (2000) and SMAP III (2005) have funded projects with a total of EUR 50 million. Besides, the Life Third Countries programme and the METAP are worth mentioning. Finally, the European Investment Bank (EIB) provides through its FEMIP facility MEDA-subsidised loans for transport, energy and environment projects. Annual payment on external assistance in the Mediterranean region reached EUR 1.5 billion in 2003. In line with the reform, the volume of payments to countries in North-Africa and the Middle-East has increased significantly, *rising by almost 90% between 1999-2003* (EuropeAid 2004).

As it was described earlier in this dissertation, EU cooperation with the region is basically carried out through the Euro-Mediterranean Partnership, including the SMAP programme for the environment, and the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (1978). However, there has been very little interaction between these two initiatives. It is interesting to note that with the exception of the Mediterranean Environmental Technical Assistance Programme (METAP), coordination of donor assistance is implemented basically at the project level.

Although the EU is a key player in donor activities, the area of *environmental cooperation* with the Mediterranean has been rather poorly coordinated. Therefore, a new strategic approach is needed. Considering that in the Southern-Mediterranean countries, environment ministries are generally weak, the capacity of environmental administrations should be strengthened, environmental concerns should be integrated into other sectoral policies, and adequate level of finance for the environment should be ensured.

The Barcelona Convention is implemented through the *Mediterranean Action Plan*

(MAP). The MAP system includes the Mediterranean Commission on Sustainable Development and the Mediterranean Strategy for Sustainable Development which was adopted in 2005. In the *Mediterranean Strategy for Sustainable Development*, it is claimed that more than *80% of dryland areas are affected by desertification* in the region (UNEP 2005), and the consequences of desertification will be exacerbated by the impact of climate change. Agricultural land is being lost not only due to desertification, but also on account of soil salinization and urbanization. Another major environmental challenge, inter alia, is the depletion and degradation of scarce, over-exploited water resources. In order to tackle the challenges, specific priority fields of action are identified in the Strategy, including better water resources management, improved rational energy use, adaptation to the impacts of climate change, sustainable tourism as a leading economic sector, and sustainable agriculture and rural development.

In the framework of the 10th Anniversary Euro-Mediterranean Summit of heads of states and governments in Barcelona in November 2005, a five-year work programme was adopted with the aim of implementing the objectives of the Barcelona Declaration of 1995 and providing the basis for *Euro-Mediterranean cooperation for 2006-2010* (Barcelona Summit Document 2005). The document provides for political and security partnership, sustainable socio-economic development and reform (including a roadmap by 2010), education and socio-cultural exchanges, migration, social integration, justice and security. From the environmental point of view, sustainable socio-economic development and reform refers to developing national capabilities in the field of scientific and technological research, promoting environmental sustainability and implementing the Mediterranean Strategy for Sustainable Development, developing a roadmap for de-polluting the Mediterranean by 2020, and co-operating to enhance the impact of tourism while ensuring environmental sustainability.

Official development assistance (ODA) payments to Mediterranean partner countries

from the European Development Fund (EDF) showed a significant rise in 2004, as a 60% increase can be detected in comparison with the year 2003. This means that in 2004 the EU contributed *EUR 1125 million to the Mediterranean partners* in the form of ODA (European Commission 2005a). This amount alone is equivalent to the total amount of payments made during the MEDA I period (1995-1999). Most countries of the Mediterranean are considered to be in the middle-income category. However, their present level of development combined with sometimes weak economic growth, demographic pressures, a high unemployment rate, stagnating average income (which is almost 10 times lower than the European level), and economic reforms require interventions which focus on combating poverty and improving governance. It must be noted that economic growth in the Southern-Mediterranean improved in 2004 as a direct consequence of the increased oil prices and high world trade growth. In 2005, the EC made a mid-term evaluation on the Barcelona process which reiterated the priorities of the process which are valid also for the next term of 2007-2013.

The *Millennium Development Goals* (MDGs) are closely interrelated with each other and target the objectives in a complex way. Only one example: reducing the proportion of people living in extreme poverty or suffering from hunger (MDG1) requires, inter alia, sustainable water use in agriculture and combating land degradation (MDG7). The MDGs relevant to the Southern-Mediterranean include key priorities such as *environmental sustainability* (e.g. through the SMAP), integrated local water management, combating desertification, and waste and coastal zone management. In 2004, new projects dealt with the water sector and environmental issues, mainly in Morocco, Lebanon and Jordan, and with the rehabilitation of rural areas in Algeria and the transport sector in Morocco.

The Barcelona Process, the Association Agreements and the European Neighbourhood Policy Action Plans provide the strategic framework for an enhanced Euro-Mediterranean Partnership. In the following section the focus is on the cooperation between the EU and the

Southern-Mediterranean.

7.2 The EU – Southern-Mediterranean cooperation

As for the *general economic conditions*, according to statistics by FAO (2002), the GDP increased by 5.9% in 2000 for the region of the Middle East and North Africa as a consequence of the high petrol prices. As for economic development in the Southern-Mediterranean, the countries of the region have had an average growth of 3.9% per year. As a positive example, Tunisia's GDP growth showed an average of 4.8% per year, while as a negative example, Morocco's growth averaged at 3% per year in the period of 1995-2004. The reason for this slow growth in Morocco is mainly due to external factors, such as six droughts in ten years, and a slow European growth. In the region of North Africa and the Middle East, the share of people living in absolute poverty (i.e. on less than 1 USD per day) was 2% in 2001 (GEF 2005).

Analysing trade integration of the Maghreb subregion with the EU, it can be stated that during the past 25 years, the share of exports of the Maghreb countries to the EU increased. The same tendency can be observed for Algeria and Tunisia, while there is stagnation as regards Morocco. Concerning imports of the Maghreb subregion from the EU, over the past 20 years, there was approximately a 10% decrease, with the same tendency in Algeria and Tunisia. However, Morocco's imports from the EU increased by 7% during the same period.

As it was stated earlier, MEDA II (2000-2006) has a budget of EUR 5.3 billion for funding bilateral and regional programmes (European Commission 2003b). Bilateral programmes focus on supporting economic transition and contributing to strengthening the social factors. Under the economic and financial partnership, the regional programme provides funding for regional action programmes in specific areas, such as the environment, transport, energy and telecommunications.

In connection with NATO's Mediterranean Dialogue, since 1997 Annual Work Programmes have been prepared which include elements from the Partnership for Peace Programme including military cooperation, civil emergency planning, scientific and environmental cooperation (NATO 2005).

Previously, it was mentioned that Morocco, Algeria, Tunisia, and Egypt belong to the middle-income country group in the OECD ranking. More precisely, they are all *low-middle income countries* in the categorization by the OECD Development Assistance Council (DAC). At present, share of EU aid over total aid falls in the category of 75%-100% in Tunisia, 50%-74% in Morocco and in Algeria, and 25%-49% in Egypt. Examining a ten-year period between 1992 and 2002, it can be claimed that EU aid for Morocco and Tunisia has slightly changed, while there was a decrease of 25% of aid to Algeria and an increase of 25% in Egypt (analysis is based on data from the EU Donor Atlas 2004). In this section, the abbreviation "EU" means European Union and includes the European Commission (EC) and EU Member States, therefore EU aid here is understood as a sum of EU Member States' aid and European Commission (EC) aid. As for the same rates in terms of share of EC aid over total aid, these are the following: 75%-100% in Tunisia, 25%-49% in Morocco and Algeria, and 0%-24% in Egypt.

However, examining the *ratio of aid* to the region of North-Africa and the Middle East as percent of total EU aid, and EC aid, the numbers show that this region receives more attention, i.e. more aid in terms of EC average than in terms of EU average. This statement is justified with the following data: 10% of all aid provided by EU Member States go to this region, and 11% of EU aid is directed to this region, while 17% of total EC aid is committed in this region. The tendency of the inflow of EU and EC aid is also interesting to look at. Examining a 30-year period (1972-2002), EU aid to the region remained quite stable in terms of the ratio of allocating EU aid to the different regions. This means that it was 12% in 1972,

and 13% in 2002. Concerning the share of this region from total EC aid, it doubled during 30 years: it was 8% in 1972, and 17% in 2002. Regarding individual recipient countries, Tunisia and Algeria have received more aid from the EC than from EU Member States. The situation is vice versa in the case of Morocco and Egypt.

Altogether, *aid provided by the European Union* is not neglectable in these Southern-Mediterranean countries, as EU aid is 81% of all ODA in Tunisia, 73% in Morocco, 62% in Algeria, and 31% in Egypt. Top donors in the region are as follows: 1) EU, 2) Arab Countries, 3) USA, 4) EC, and 5) France. Top recipients of EU aid in the region are 1) Morocco, 2) Egypt, and 3) Tunisia, while top recipients of EC aid in the region include 1) Tunisia, 2) Morocco, 3) Algeria, and 4) Egypt.

Applying a sectoral approach, *top donors* of the region are the following EU Member States in the area of *water and sanitation*: Germany, EC, France, Spain; in the field of *food aid*: EC, France, Italy, Germany, Belgium, Spain; and in the field of *environmental protection*: France, EC, Germany, Spain and Italy.

As far as *aid dependency* of the individual recipient countries is concerned, Morocco, Algeria and Egypt belong to the group of countries with low aid dependency (ODA/GNI is <2%), while Tunisia is a country with medium aid dependency (ODA/GNI is 2%-10%). In terms of human development index, all these countries are at the medium level.

In the following section, focus is placed on identifying the key players (i.e. countries and international organisations) in the cooperation of the EU with the Southern-Mediterranean partner countries. Narrowing down the research focus and selecting on the most important donor and recipient players are of basic importance, taking account that recommendations for an emerging donor country like Hungary can be made if there is a solid evaluation of the relevant experiences of the mostly involved countries.

7.3 Survey results

As part of the research, an issue paper containing *open-ended questions* was sent out to national focal points of UNCCD, UNFCCC, MEDA, SMAP and GEF to selected donor and recipient countries as follows. Donor targets: Austria, Belgium, Denmark, France, Germany, Italy, Portugal, and Spain. Recipient targets: Algeria, Egypt, Morocco, and Tunisia. This first round of selection of donors and recipients were based on analysis of data gained from the EU Donor Atlas (2004) and the OECD DAC country statistics (OECD 2006). Besides, the questions were addressed to the relevant focal points of the European Commission (EC), to secretariats of international organisations like UNCCD, GEF, GM and IFAD. Questions were specifically tailored to the different target groups, i.e. for donors and for recipients.

The *main aim* of sending such issue papers for selected representatives of countries and international organisations was to *justify the target group of countries and organisations* to be examined from the aspect of the donor activities and recipient behaviour. As a result of analysing answers and rate of reply to the survey, the number of countries and organisations to focus on was narrowed down.

Questions included a *request for information* on the countries' legislation, strategy or concept in the field of international development cooperation; on ranking partner priorities and sector priorities; the amount and break-down of ODA committed to combating climate change and desertification; and on concrete projects. A sample questionnaire can be found in Annex II. Answers have been partial, which means that target persons do not dispose over all the requested information even in their specific field.

An interesting outcome is that none of the addressed focal points from recipient countries replied at all. That is the reason why no recipient sample questionnaire is presented in Annex II. However, this problem cannot be considered unique in the history of research regarding surveys and questionnaires sent to the Southern-Mediterranean developing

countries' representatives. A UNCCD related publication (Enne and Yeroyanni 2005) documents a similar result, i.e. the Observatoire du Sahara et du Sahel (the Observatory of the Sahara and the Sahel - OSS) did not receive any reply to the desertification related questionnaires from UNCCD focal points of Algeria, Egypt, Morocco, and Tunisia. The publication provides the following explanation. The focal points might believe that the necessary information is accessible and already available, or feels that the study has no relevance for them. This explanation may be applied to the present case as well. Therefore, concerning recipient countries, the justification for selecting Algeria, Egypt, Morocco and Tunisia is laid down based on the referred data analysis of EU Donor Atlas and OECD DAC statistics (see justification in 7.3.1).

As far as EU donor countries are concerned, answers arrived from Austria, Denmark, Germany and Portugal, while no reaction was received from the part of Belgium, France, Italy and Spain. From the part of the European Commission, replies arrived, and considering the referred international organisations, answers arrived from the secretariats of UNCCD, GM, and IFAD.

Summing up the number of persons addressed and the number of replies that arrived, the rate of reply is 20%. However, considering the number of countries and organisations approached and the number of replies not by person, but by country and organisation, the rate of reply doubles, i.e. it is 41%.

In Table 1, a summary can be found on the results of comparing data from the survey and data from other sources, i.e. the EU Donor Atlas (2004), an internal material of the Külügyminisztérium (2006b), and national reports of donor countries on the implementation of the UNCCD. Where no reply has arrived, these other sources are indicated in the below table.

Table 1: Summary of comparison of the donor survey and other sources

Donor country / organisation - replied to the survey?	Is the Maghreb subregion an IDC priority?	Priority partners within the Maghreb subregion?	Is there an IDC legislation in the country?	Priority policy field environmental cooperation with the Maghreb?
Austria - yes	not any more	N/A	Federal Act on Development Cooperation (2002)	N/A
Belgium - no	no	N/A	Act on International Cooperation (1999) (source: Külügyminisztérium 2006b)	N/A
Denmark - yes	no	N/A	Act on Development Cooperation (1998)	N/A
France - no	yes	1. Morocco 2. Algeria 3. Tunisia (EU Donor Atlas 2004)	No, there is not. (Külügyminisztérium 2006b)	N/A
Germany - yes	yes	1. Tunisia 2. Morocco 3. Algeria (survey) 1. Morocco 2. Algeria 3. Tunisia (EU Donor Atlas 2004)	No, there is not, but the budget of the ministries includes an IDC finance line.	water management
Italy - no	yes	1. Tunisia 2. Morocco 3. Algeria (source: EU Donor Atlas 2004)	Act on Development Cooperation (1987) (source: Külügyminisztérium 2006b)	forest management
Portugal - yes	not any more	N/A	Government Decree on Development Cooperation (1999)	N/A
Spain - no	yes	1. Morocco 2. Algeria 3. Tunisia (EU Donor Atlas 2004)	Act on International Development Cooperation (1998) (source: Külügyminisztérium 2006b)	water management

EC - yes	yes	1. Tunisia 2. Morocco 3. Algeria	EU Strategy and Action Plan on Climate Change in the context of Development Cooperation (2004)	N/A
UNCCD - yes	yes	N/A	N/A	N/A
GEF - no	N/A	N/A	N/A	land management and renewable energy
GM - yes	N/A	N/A	N/A	N/A
IFAD - yes	yes	N/A	N/A	agricultural and rural development

From data contained in the EU Donor Atlas and OECD DAC statistics, it is evident that target donors should include Germany, France, Italy and Spain, despite the fact that no answer was received from France, Italy and Spain. The survey results confirm that Germany is active in implementing projects in the mentioned recipient countries, while the Southern-Mediterranean region is not a priority area any more for Austria, Denmark and Portugal. No reply arrived from Belgium but data shows that the situation is similar, i.e. it is not a priority region for Belgium either. Finally, answers from Germany support findings of the referred publications, i.e. Germany should particularly be considered when focusing on donor activities carried out in the Southern-Mediterranean region.

With respect to international organisations, the European Commission cannot be neglected, and also it is worth taking into account activities under the aegis of the GEF and IFAD. The reason for not considering the UNCCD and the UNFCCC is that these provide an umbrella for country supported donor activities but these are not financing organisations themselves. The situation is similar in the case of the GM, as it is only a financial mechanism, not a fund, that channels resources from donors to recipients in the field of combating desertification. In the case of GEF, it is the financial mechanism of several conventions, including the UNFCCC (since 1992) and the UNCCD (since 2003), and also IFAD is an organisation that supports projects in recipient countries, so GEF and IFAD activities need to be considered.

Analysing replies, although it can be concluded that answers support the facts found in the relevant statistics, there is a slight difference in the case of Germany regarding the ranking of priority partner countries (see 7.3.2).

7.3.1 Justification of target recipients

The reason for selecting four target recipient countries in the second round, namely *Morocco, Algeria, Tunisia and Egypt* for the purposes of this dissertation can be justified based on the findings presented in 7.2 and can be summarized as follows. First, the region itself receives 10% of EU Member States' aid, 17% of EC aid, and in total 11% of EU aid. Out of all recipient regions of the world, this region has received stable attention by the EU for 30 years. In respect of EC aid, the importance of this region doubled in the period of 1972-2002.

The share of EU aid over total ODA in these countries is more than 50%, with the exception of Egypt. Tunisia and Algeria are more important for the EC than for Member States, while Morocco and Egypt are more important for Member States than for the EC. Further expansion on justifying the circle of target recipients can be found herebelow when examining the donor countries.

Despite the fact that Egypt is an important recipient partner of the EU and its Member States, the focus will be on *Morocco, Tunisia, and Algeria* as they are located in the Maghreb subregion and can be analysed in that subregional context, while Egypt is part of another subregion (the Mashreq), and shows very distinct geographical features in comparison with the Maghreb countries.

7.3.2 Justification of target donors

When identifying the EU donor countries which are worth studying in connection with the Southern-Mediterranean region, a starting point is that top donors of this region include the EU, the EC and France. Besides, donor assistance directed to the region can be examined from a sectoral and a geographical aspect. From the sectoral aspect, the EC and the following EU countries may be involved (see sectoral discussion in 7.2): France, Germany, Belgium, Spain, Italy, Greece, and Portugal. However, as explained in 7.3, Belgium, Greece and Portugal do not consider this region a priority.

Considering donor countries' partner priorities, the following can be observed. For Morocco, major donors include the EC, France, Germany, Spain, and Italy. Algeria's primary donors include France, Belgium, and Spain. Tunisia is primarily supported by the EC, France, Spain, and Italy. The main donors of Egypt involve France, Germany, Austria, the Netherlands, Spain and Italy. In respect of the selected recipient countries, Portugal and Greece contribute ODA to a smaller extent.

Based on the above argumentation and on the survey results presented in the previous sections, it seems reasonable to focus primarily on international development cooperation activities of the *European Commission, France, Germany, Spain and Italy*. As for international organisations, donor activities financed by *GEF and IFAD* should also be taken into consideration.

Analysing the priority partners of the target EU donors based on data from the EU Donor Atlas and based on results of the survey, the followings can be stated. The European Commission favours the Mediterranean developing countries in the following order: 1. Tunisia, 2. Morocco, 3. Algeria, 4. Egypt, which shows a preference for Maghreb countries. In the case of Spain as a donor, although the order slightly changes, there is also an evidence for a preference for the Maghreb region: 1. Morocco, 2. Algeria, 3. Tunisia, 4. Egypt. As for France, the order is as follows: 1. Morocco, 2. Egypt, 3. Algeria, 4. Tunisia. In the case of the Italian donor policy, preference order is: 1. Tunisia, 2. Morocco, 3. Egypt, 4. Algeria. As far as Germany is concerned, there is a slight difference in the order based on data from the EU Donor Atlas and answers received from the relevant focal points. According to data from the Atlas, priorities are as follows: 1. Egypt, 2. Morocco, 3. Algeria, 4. Tunisia. In case of the survey results, the order is somewhat different: 1. Egypt (this is the only same position), 2. Tunisia, 3. Morocco, 4. Algeria.

In conclusion, comparing the above preference orders, it can be stated that Tunisia is a

number one priority for the EC and for Italy, Morocco is a leading partner for Spain and France, and Egypt is the number one for Germany, while Algeria has less importance, it is a number two priority only for Spain. Taking into account also second priority countries, the overall order of priority partner countries is the following: *1. Morocco, 2. Tunisia, 3. Egypt, and 4. Algeria*.

At this stage, it is worth looking into the donors' policy frame in more detail. There is no framework legislation in the field of international development cooperation at the EU level. The reason for this may be that international development cooperation (IDC) policy is placed among policies where the EU and the Member States have shared competence. Examining the individual focal donor countries' legislative framework, while there is no act or law on the IDC policy in Germany and France, there exists an act on international development cooperation in Spain and Italy. In Spain, this particular act entered into force in 1998. As for Italy, the country has an old history of development cooperation, its act entered into effect already in 1987. Despite the fact that Germany does not have a specific act on IDC, the budgetary allocation of the different ministries includes a financial budget for IDC actions.

Referring to the above presented survey, Germany sent a reply to most of the important donor policy related questions. Based on this, it can be revealed that water management is the number one priority sector for international development cooperation in the field of climate change, desertification and drought in relation with the focal recipient countries, in the order as follows: Egypt, Tunisia, Morocco, and Algeria. Other priority fields include vocational training and economic development of the private sector, environmental policies and natural resource management. The German agency responsible for development cooperation suggests that in the future *water management* should be kept as a major priority, together with more emphasis on *rural development* and *environmental protection*. Referring to the significance of implementing the UNCCD, it is important to note that the Federal Ministry for Economic Co-

operation and Development (BMZ) has a sectoral strategy on implementing the UNCCD in the frame of international development cooperation.

The above analysis paves the way for further stages in the research, i.e. the focus has adequately been narrowed down, while data and information were justified from different sources. Data on specific projects are analysed in chapter 9. Before that, a SWOT analysis is prepared on the geographical features and policy environment of the recipient countries, as project evaluation from the aspect of recipient country drivenness is possible on the basis of comparison of project aims and results and information in the SWOT table.

8. POLICIES OF THE SOUTHERN-MEDITERRANEAN COUNTRIES AT THE NATIONAL AND SUBREGIONAL LEVEL

In order to be able to reveal a comprehensive picture on the target recipient countries' geographical, socio-economic and policy environment characteristics, and in light of preparing a SWOT (strengths, weaknesses, opportunities, and threats) analysis, the following questions should be answered.

1. Which part and what percent of population is affected by desertification in the Mediterranean? This involves examining the geographical extent of desertification, the population living on that land; poverty and vulnerability of the affected population; and the subregional-regional consequences of desertification.
2. What are the major causes (including both human and natural factors) of desertification in the study subregion? On the one hand, drought patterns and the availability of freshwater resources should be examined, and on the other hand the social, economic and policy factors incl. population pressure; land use patterns and practices are worth tackling.
3. What types of policies are currently applied and what is needed in order to prevent or combat desertification in the Southern-Mediterranean? It is necessary to examine different policy tools to disclose the relevant best policies and practices in the field of agricultural, water management, forestry, tourism, rural development and environmental policies.

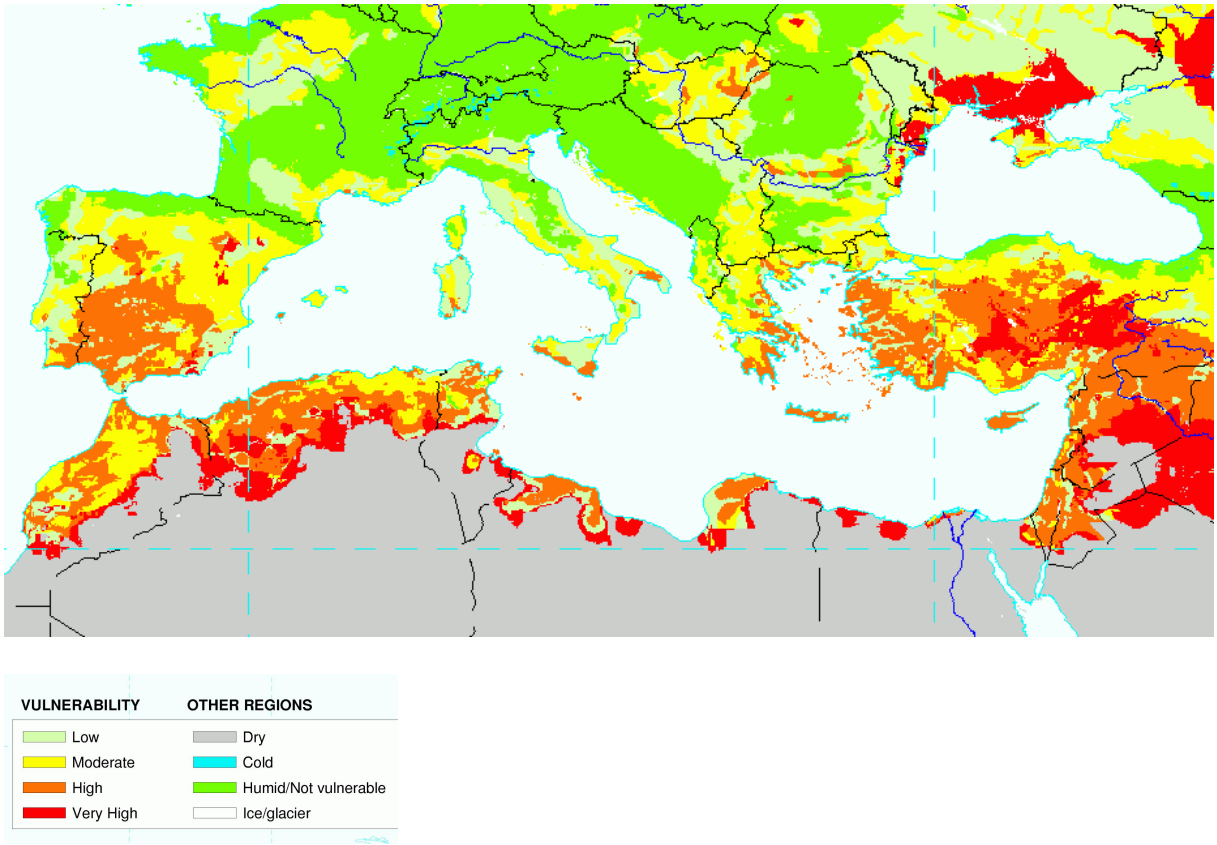
The above questions focus primarily on desertification the reason for which can be found in the difference in the history of desertification policies and climate change policies as explained in the chapter on Introduction. Following that line of argument, it can be assessed to what extent the implementation of desertification policies has been effective, and the lessons

learned can be applied then for climate change policies as well, especially in the field of adaptation to the impacts of climate change.

8.1 Geographical features of the subregion

Reiterating the definition of desertification by the UNCCD, i.e. desertification is land degradation in drylands, it is essential to know what percentage of the area of different countries of the subregion is classified as *dryland areas.* According to data from the UNEP GEO data portal (UNEP 2004), roughly *50% of Morocco's total land area*, *20% of Tunisia's total land area*, and *10% of Algeria's total land* area fall into the category of *drylands*, i.e. arid, semi-arid or dry sub-humid areas. Some of these data might be surprising, but it has to be noted that as specified earlier, hyper-arid areas (deserts) are not included in the term of drylands in the above approach. It must be noted that the above numbers would be much higher if deserts were to be taken into consideration as well, i.e. it would be 93% for Morocco, 94% for Tunisia, and 97% for Algeria, as large parts of these countries are covered by deserts. This is an important point what is considered dryland area and affected by desertification. As per the theoretical discussion about the reframing of the concept of desertification in 4.2, the chosen definition has an impact on approaching the problem of desertification and selecting appropriate preparedness and response policies. Considering that the official UNCCD definition covers only arid, semi-arid and dry-subhumid areas, and it is in connection with the financial support mechanism, it is reasonable to use the above data when examining dryland areas in the Maghreb countries. Fig. 5 illustrates natural soil vulnerability to desertification of the Southern-Mediterranean region.

Figure 5: Vulnerability to desertification of the Mediterranean region and South-Eastern Europe
Source: Soil map and soil climate map, USDA-NRCS, Soil Survey Division, World Soil Resources, Washington D.C.



The Southern-Mediterranean can be characterized by the following major types of soil degradation (in the order of severity and significance in leading to soil deterioration): water erosion, wind erosion, chemical deterioration, and physical deterioration. *Water erosion* is a widespread degradation process, especially in the Maghreb area, which is exacerbated by *deforestation* and population growth. Whereas deforestation is the direct driver, population growth is an indirect one as deforestation is driven by population growth. To halt the process of deforestation, as a policy response, Morocco and Algeria have launched tree planting programmes. Soil erosion has been increasing also on account of the breakdown of traditional soil conservation techniques. In line with this, where mixed livestock and agricultural activities occur, there is little evidence of soil degradation. As for *wind erosion*, a potential policy solution is the stabilization of mobile sand dunes. *Chemical deterioration* is severe particularly between the Atlas Mountains and the Mediterranean coastline, where a primary cause is nutrient depletion. Salinization is also a problem with a chemical nature. It is especially a major issue in Tunisia. Finally, the main reason behind *physical deterioration* is water logging.

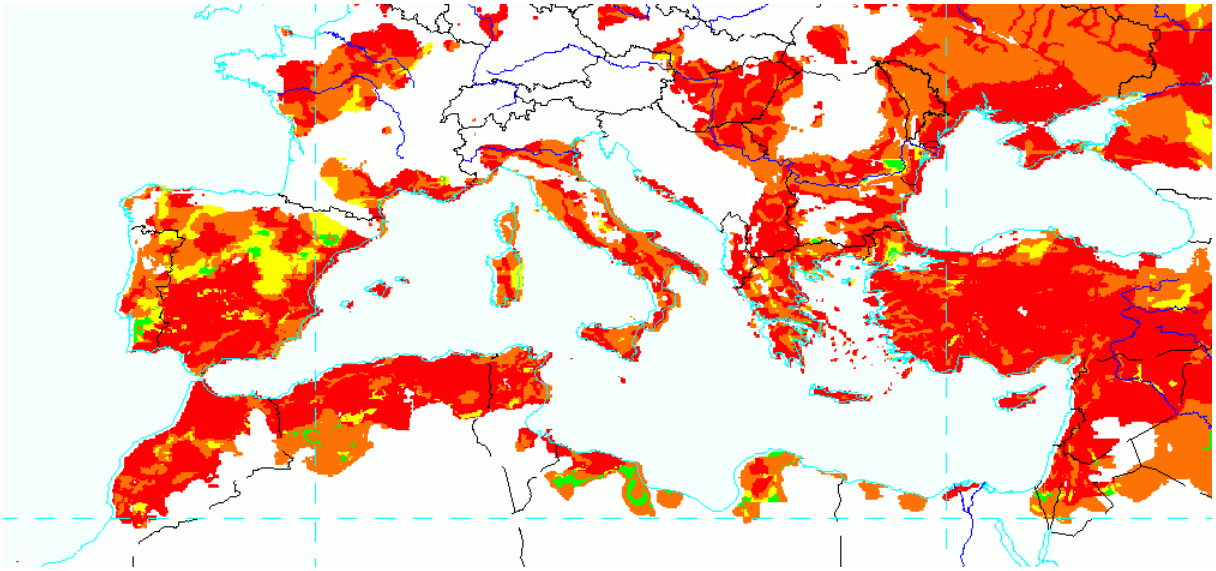
In *Morocco*, human activities are considered to be the principal cause of land degradation. An arid climate affects 93% of the country's territory. It is estimated that the forest vegetation cover is decreasing with 31,000 hectares per year mainly due to use for energy generating purposes. Water erosion is also intense, particularly in the area of North-Morocco. Furthermore, the subsurface water reserves are exposed to a high level of exploitation resulting in a lowering groundwater table which contributes to an increased fragility of these reserves. In the Southern and Eastern parts of the country, the dominant type of soil degradation is wind erosion. This is one of the major manifestations of desertification. Salinization is also a problem to be mentioned in connection with soils. As for *Tunisia*, overgrazing, deforestation, irrigation, recurring drought, saline water and soil, and

overexploitation of groundwater resources are among the main causes of desertification. Similarly, in the case of *Algeria*, overgrazing, poor farming practices, and recurring drought contribute most to desertification processes. For a representation of the risk of human induced desertification in the Mediterranean region, see Fig. 6.

Further basic characteristics of the Southern-Mediterranean developing region are presented herebelow based on data from the Northern-Africa sections of UNEP (2002b), except where otherwise indicated. The Southern-Mediterranean is one of the most arid areas of the world, characterized by precipitation which shows a varied temporal and geographical distribution, i.e. it experiences highly variable rainfall and recurrent droughts. The subregion receives only 7% of Africa's total precipitation and this is not evenly distributed. The average rainfall of most of the region is below 650 mm/year. Considering a 30-year average, precipitation is below 100 mm/year in Algeria, slightly more than 300 mm/year in Tunisia, and around 350 mm/year in Morocco (UNEP 2004).

It might be suggested that the hazard of *drought* in the Southern-Mediterranean has increased mainly as a result of expansion of cereal cultivation to drought-prone rangeland and reduction of fallow systems. This process was fostered during the colonial period by large-scale land expropriation and by displacement of peasants to marginal lands. It was also influenced by incentive-raising policies for cereal production, mechanization of agriculture, and by increased demand for food associated with rapid population growth. Drought has major socio-economic significance in the subregion concerning that rain-fed cereal cultivation is predominant. Drought also aggravates the impacts of overgrazing, thus increasing degradation of natural vegetation and soils.

Figure 6: Risk of human-induced desertification of the Mediterranean region and South-Eastern Europe
Source: Soil map and soil climate map, USDA-NRCS, Soil Survey Division, World Soil Resources, Washington D.C.



The subregion is dominated by arid conditions and extensive deserts with the exception of a narrow strip along the Mediterranean shoreline where the climate is rather humid. A major issue of concern is, therefore, *freshwater availability* for domestic, agricultural and industrial consumption. Although most people have access to water resources as a result of high levels of infrastructure development, water demand management and integrated water resources management are priority policy fields. Water quality is an emerging issue, particularly with regard to salinization arising from poor irrigation practices, and pollution from industrial and domestic wastewater disposal. Renewable groundwater resources are in the form of shallow alluvial aquifers, recharged from the main rivers or from precipitation. Exploitation of groundwater resources over the past ten years has led to a reduction in water pressure levels, and overextraction from the shallow aquifers has led to increased water salinization and a rapid inland advance of the saltwater interface. Demographic pressures on water resources are high, especially in the Maghreb countries. This situation could be changed with better management of integrated water resources, with a greater focus on the quantity and quality required for different uses and with a rational development of natural resources (Mairota *et al.* 1998).

Global warming and *regional climatic change* impose an additional potential threat to the scarce existing freshwater resources in the Southern-Mediterranean. The subregion has frequently been affected by cycles of droughts and flooding and, with climate change these are expected to intensify. In the dryland areas population growth will push people onto marginal land which is highly vulnerable to desertification, thus exacerbating the impacts of climate change.

Related to the fact that the subregion has an arid climate, forests and woodlands are not common in most of the countries of the subregion except along the coast of the western Mediterranean countries and the Atlas Mountains. Although some countries have actually shown increases in forest cover in the past 30 years (owing to establishment of plantation

forestry), the major concern in the subregion is still *loss and degradation of natural forests* and wooded areas. The share of forests and woodlands compared to total land is around 2% in Algeria, 5% in Tunisia, and 20% in Morocco (UNEP 2004). Areas in the subregion are affected by agricultural activities, overgrazing and deforestation. It can be summarized that desertification in the Maghreb subregion has been caused by the following factors (UMA 1999): historical factors, economic developments, social situation, and climatic factors (esp. drought).

Having reviewed the main geographical characteristics of the subregion, in the light of preparing for the SWOT analysis, it is essential to have an overview of the social and economic situation as well.

8.2 Analysis of the socio-economic state-of-the-play and vulnerability in the subregion

Regarding the overall performance of the economies of the examined Maghreb countries, they have been experiencing an increase in their *gross domestic product* (GDP) at purchasing power parity (PPP) per capita (for details on GDP growth and trade relations, see discussion in 7.2.). As for population growth, the population of Northern Africa (including the target subregion of the Southern-Mediterranean) doubled between 1970 and 2000 (from 85 million to 174 million people), and is continuing to grow at an average of 2 per cent per annum (UNEP 2002b). However, a continuous decline is projected in the population growth rate by 2050 (UNEP 2004). Annual *population growth* rates have decreased most significantly in the Maghreb countries, and now they are below 2%.

Quite a considerable number of the total *population* of the Maghreb countries live *in dryland areas*. The percentage is roughly *75% in the case of Morocco, 50% in the case of Algeria*, and *25% in the case of Tunisia* (UNEP 2004). Similarly to the approach used in 8.1, the term dryland is understood for arid, semi-arid, and dry-subhumid areas in line with the

official UNCCD definition. It should also be noted that in all of these countries more than 50% of the total population live within 100 kms of the coastline, and 45-65% of the total population live in urban areas (UNEP 2004). The *human development index* (HDI) also shows a steady increase in the concerned countries.

Considering the *agricultural area*, in Morocco and Tunisia, it is around 70% and 60% respectively, while in Algeria, it accounts for only 20% of the total land area of the countries (UNEP 2004). In the case of permanent pastures, they account for around 40% in Morocco, 30% in Tunisia, and 15% in Algeria, as percent of total land area. Due to extreme aridity, a major issue for the subregion is *scarcity of arable land*. The harsh climatic conditions and the predominance of shallow and highly erodible soils make cultivation less efficient. This, together with increasing consumption and demand for luxury foods has been responsible for rising demands on agricultural production and for pressures on land. Policy responses to meet this rising demand have included enhancing cropping intensity; extending the area of land under cultivation; and intensive irrigation and use of chemicals. Soil vulnerability to degradation is affected by two basic environmental considerations (World Atlas of Desertification 1997). First, agricultural activities are affected, inter alia, by soil type, climate parameters and water resources. For instance, irrigated arable farming is possible where there is water source. Second, natural environmental factors affect which degradation processes occur at specific locations (e.g. intensive grazing in Tunisia has led to water erosion especially on steep slopes).

As far as the *agricultural sector* is concerned, in the years 2000 and 2001, drought seriously reduced agricultural production in the region (FAO 2002). In North-Africa, agricultural production increased only by 0.7% in 2000, while by 2% and 7.1% in 1999 and 1998, respectively. As for the countries of the region, agricultural production can be characterized by the following data (FAO 2002). In Morocco, agricultural production decreased by 3.7% in 2000 and by 10.5% in 1999. As a result of droughts, the production of

cereals decreased by 51.8% in 2000 and by 46.7% in 1999. During the years of the 1990s, the predominance of cultivation sensible to drought was characteristic, e.g. cereals. The country experienced six drought events between 1990-2000. Similarly, in Algeria agricultural production decreased by 4.7% in 2000, and cereals production reduced by 61% in 2000 and by 36% in 1999. In Tunisia, overall agricultural production decreased by 4.9% in 2000, and cereals production by 42%.

Having reviewed the interconnection between drought and economic decline, it is of utmost importance to consider *vulnerability* of the Southern-Mediterranean to climate variability and drought. As described in 8.1, the region can be characterized by adverse climatic conditions and a low level of precipitation, a high variability of precipitation levels and a high grade of aridity. The productive land areas are also extremely vulnerable to drought, thus it might lead to irreversible phenomena like desertification, particularly in the absence of adequate measures. As drought is in close connection with climate variability, a related problem is the scarcity of water resources in the region and again, the lack of adequate policies and measures.

Drought is a structurally recurring phenomenon in the region with highly complex causes rooted in geographical and topographic differences, oceanic and continental influences, and exposure to winds from east and west and to atmospheric pressure from the Azores islands. Besides, human factors such as demographic pressure contributed to ecosystem degradation during the past decades and to increasing vulnerability to droughts and desertification on lands that are marginal, arid and fragile.

As for the *number of drought events* in the Mediterranean countries (FAO 2002), Morocco experienced 22 years of droughts in the twentieth century. This number was exceeded only in the fourteenth and seventeenth centuries. Similarly, in Tunisia there was 23 years of droughts during the twentieth century. It is important to note, that 10 out of the 22

years of droughts in Morocco occurred during the 1980s and 1990s, and the last three of the twentieth century occurred subsequently in 1999, 2000 and 2001.

Relating to droughts, the *scarcity of water* could considerably be impaired as a consequence of future climate change. Degradation of water resources is especially serious in zones with low level of precipitation which is characteristic in 70% of the region. Demand for water is rising constantly, while supply is diminishing. In the countries of the region, 60-90% of water is used for agricultural purposes. There is a pressure for water among the sectors of agriculture, industry, households and tourism. Thus, water distribution is a significant issue for decision-makers. According to projections (FAO 2002), *Algeria and Tunisia will suffer from serious water scarcity by 2025, while Morocco by 2050*. Since 1998, 3 years of droughts caused the earlier depicted decrease in agricultural, esp. cereals production. However, droughts not only led to a decline in agricultural including livestock production, but also contributed to constraining the supply of water between 1999 and 2001.

In the region of North Africa and the Middle East, the ratio of population with access to an improved water source is 90% in the case of urban population, and 75-80% in the case of rural population (GEF 2005). Regarding access to *drinking water* in the examined countries, more than 80% of the population in Algeria, Morocco and Tunisia have access to good quality water (European Commission 2005b). Drinking water coverage is an important element for development. In each of these countries, the share of rural population with access to improved drinking water coverage is above 60% (UNEP 2004). According to data from the year 2000, in Algeria, Morocco, and Tunisia, *water use* is less than 100% related to the renewable water resources of the individual countries, which can be considered a positive sign, since the amount of water that is consumed is covered by renewable water resources. It is interesting to discover that the agricultural sector has the largest share in water use. Agriculture accounts for between 60% and 85% of water use in the mentioned countries (UNEP 2004).

As for *energy use*, both total final energy consumption per capita and total primary energy supply per capita have gradually been increasing in these countries. In line with this, carbon dioxide emissions (both total and per capita) have slowly been rising as well (UNEP 2004). Mentioning carbon dioxide emissions is important regarding the fact that it is a most significant greenhouse gas.

In Algeria, Morocco and Tunisia, the 1999-2001 droughts resulted in a huge disparity in the country's agricultural balance, local and rural economies and speeded up *migration due to rural poverty*. The most vulnerable and affected social groups are agricultural farmers in dryland areas.

As the Millennium Ecosystem Assessment (MA 2005a) states, desertification is a result of a long-term failure to balance demand for and supply of *ecosystem services* in drylands. Human factors that contribute to desertification can be categorized as direct factors (land use patterns and practices) and indirect factors (population pressure, socio-economic and policy factors, distortion to international food markets). Climatic factors include droughts and projected reduction in freshwater availability due to global warming.

Increased integration of land and water management, and pastoral and agricultural land use is a key method for *desertification prevention* as it provides an environmentally sustainable way to avoid desertification. In the policy field, *proactive land and water management policies* can help avoiding the adverse impacts of desertification. In the region of North Africa and the Middle East, the proportion of protected land area compared to total land area slightly increased during the past ten years, from 4% in 1994 to 5% in 2004 (GEF 2005).

It has to be noted that there is no reliable statistics on how much of the drylands of the examined countries is desertified, while economic statistics is more accurate. Therefore the MDGs that address poverty are more pragmatic than the UNCCD that addresses land degradation. A possible conclusion is that development aid needs to address the social-

economic-political issues rather than the biophysical ones. For instance, it is more effective to invest in improving governance or population policies in these countries than in means to increase agricultural production. The national level policies are analysed in the following sections.

8.3 Desertification and climate change policies in the Maghreb subregion

The *Maghreb subregion* is the Western part of North-Africa and includes Algeria, Morocco, Tunisia, Libya and Mauritania. As it was stated earlier, in this dissertation the focus is on *Algeria, Morocco and Tunisia*. The reason for this is that Mauritania cannot be considered to be a Mediterranean country, and Libya is very specific due to its different political regime and economic development pathway, and only the three mentioned focal countries participate in the Euro-Mediterranean partnership from the Maghreb group. The Maghreb can be characterised by the following main features: a great proportion of arid, semi-arid and dry subhumid zones; lack of framework actions for intervention; priority for actions to combat desertification and drought among the national priorities of the subregion; rural poverty; an increasing number of population affected by desertification and frequent return of drought especially in the past two decades. The whole Maghreb subregion comprises 70 million inhabitants, half of which are living in rural zones and totally depend on vulnerable natural resources (UMA 1999).

Major *physical characteristics* of the region include intensive precipitation, violent storms, soil erosion and increased soil vulnerability. In the arid and semi-arid zones of the region, generally soils are badly utilised, and this inappropriate agricultural use increases degradation. Soils are rich in calcium and gypsum which also limit productivity. Recurring droughts during the past two decades provoked important deficits in the level of surface water. Soil and vegetation degradation have contributed to a decrease in soil productivity, and

indirectly to worsening quality of life of affected population and an increased vulnerability to climate change. And vice versa, over-exploitation of natural resources has led to increased soil degradation. Another factor that has had a major affect on desertification is demographic growth in the region. Besides, climatic factors have also contributed to an accelerated process of desertification, as the variability of precipitation and climate amplified the frequency of droughts and contributed to a worsening hydrological balance. Water resources in the Maghreb, esp. potable water and water for irrigation seriously decreased due to drought. In the Maghreb subregion, desertification is a result of three major processes, namely deforestation, overgrazing, and mismanagement of agricultural land (UMA 1999).

As the Intergovernmental Panel on Climate Change (IPCC Working Group I, 2001) puts it, changes in rainfall and intensified land use would exacerbate desertification processes by the reduction in the average annual rainfall, runoff and soil moisture in Northern Africa (medium confidence). Increases in droughts and other extreme weather events would add to stresses on water resources, food security, and human health, and *would constrain development in the region* in the long run (high confidence).

Actions to combat desertification are relatively ancient in the subregion, for instance, mobilisation of hydrological resources and integration of concerns related to desertification into other sectors, e.g. agricultural development have an old history. The basic difference from then and now can be identified in the number of people living in drylands. Nevertheless, the problem of desertification was not taken into consideration in the national development policies of these countries until the end of the 1970s. It is likely that by that time population reached a threshold which brought about a socio-political crisis, and the option that all problems are from desertification per se has also not been validated. The 1980s signalled the adoption of national strategies and plans to combat desertification integrated into national economic and social development policy. Principal measures involved reforestation,

conservation of soil and water, mobilisation of water resources, and legislative and institutional measures.

As for *institutional cooperation*, the Marrakech Treaty of 1989 established the Secretariat General of the Maghreb Arab Union with the aim to harmonise Maghreb structures for combating desertification. A number of subregional projects and activities to mitigate desertification were initiated and implemented under the new structure. Since the adoption of the UNCCD in 1994, the Maghreb countries have taken several initiatives, among which the most important one was the adoption of the Maghreb Charter for the Protection of the Environment and Sustainable Development.

As a further step in the framework of this subregional cooperation was the adoption of the *Subregional Action Programme to Combat Desertification* (SAPCD). Major objectives of the SAPCD include partnership, cooperation, participation, exchange of information, enforcement of subregional capacities, and executing common projects to support national level efforts. The SAPCD is based on the national action programmes, provides a strategic frame for harmonising desertification policies, serves as an instrument of pooling past and present experiences, and serves as a frame for reinforcement of national and subregional capacities for information, research and development and contribute to identifying, planning (including that of early warning systems), programming, executing and monitoring programmes and projects to combat desertification at the national and subregional level (Union du Maghreb Arabe 1999).

The Programme provides a strategic framework for integrating desertification policies into policies to eliminate poverty and increasing quality of life in the Maghreb. Different types of projects have been implemented under the SAPCD, the most relevant ones for the topic of this dissertation are the following: institutional support, programme development, subregional desertification information system, evaluation of the state and dynamics of desertification in the

Maghreb, preparedness plans for drought and catastrophes, and establishment of a regional network for ecosystems monitoring. As for financing of projects, mainly the following sources are used: Global Environment Facility (GEF), Global Mechanism (GM) of the UNCCD, and the private sector.

In order to understand the situation in the subregion in more detail, it is necessary to have an overview of the related policies at the national level.

8.4 National-level policies and measures in selected Maghreb countries

It is worth examining how drought and desertification are handled at the national level, using several examples. Information provided herebelow is based partly on national reports and national action programmes (NAPs) to combat desertification of affected recipient countries and partly on survey results from the replies by a donor country, Germany. The review of NAPs confirms that the national level policies and measures and the programmes and project that are implemented within the frame of international development cooperation do not target hyper-arid areas (deserts and desert margins) in line with the guidance of the UNCCD. This is an important example what impacts the framing of the desertification concept has on national policies and international cooperation as introduced in the theoretical section in 4.2.

8.4.1 Morocco

Morocco ratified the UNFCCC in 1995, the UNCCD in 1996, and acceded to the Kyoto Protocol in 2002. In Morocco, the climate shows great variability on an annual and decennial scale. Comparing the years of 1978-94 with the period of 1961-77, data (UMA

1999) clearly demonstrates that the amount in precipitation between the months of October and April decreased by 30%. Four out of ten periods of drought during the 20th century appeared in the final 15 years of the century. For the future, more extended periods of drought are predicted.

Starting with an overview of the *legal background*, the following legislation exists in Morocco. The Act on Environmental Protection and the Act on Environmental Impact Assessment were approved in 2003. There is an ongoing debate on the Draft Regulation on the National Environmental Protection Funds, on the Draft Regulation on the Composition and Tasks of the National Committee and the Regional Committee for Environmental Protection, and on the Draft Regulation on Public Participation in the field of Environmental Impact Assessment.

There is no indication on the existence of a strategy or concept or programme on combating climate change and desertification in the IDC context in Morocco, with the exception of a National Environmental Action Plan which was approved in 2002. The reason for this may be that it is a recipient country and therefore it may be adequate to deal with the different sectors separately. However, in the frame of the country's obligations under the UNCCD, Morocco regularly prepares and submits national reports on the national level implementation of the UNCCD, and the most recent report is the third one (Troisiéme Rapport National 2004).

The UNCCD makes provisions for the preparation of national and regional action programmes, primarily for Parties in affected regions. Implementation of these programmes requires both the technical and financial support of developed countries as well as the involvement of local communities. The objective of these national action programmes is to formulate the practical activities needed to overcome desertification and mitigate the adverse impacts of drought (Kulauzov 2006). In line with this, Morocco formulated a national action

programme to combat desertification (Programme d'Action National 2001) as well. In the field of climate change policy, the country submits regularly national communications on the implementation of the UNFCCC (Communication Nationale 2001). Furthermore, Morocco is currently participating in a bilateral twinning project with Italy on experience sharing in the field of adopting the EU legislation, i.e. the acquis communautaire. In the frame of this project, several environmental protection related areas are concerned, including the field of climate change and desertification.

As for the *institutional background*, under the auspices of the Agricultural Ministry, a national committee was set up in order to facilitate co-ordinating financial resources, to help affected rural population with problems related to, inter alia, potable water, livestock production and work opportunities. For the years 2000-2001, the government of Morocco assigned 650 million USD for such activities under the national action programme to combat desertification and drought. This amounts to one-third of the total investments in the country.

There is a tendency in policy thinking to shift gradually from crisis management to proactive *risk management*, particularly in the field of agriculture. It is important as agriculture is sensitive to climate fluctuations. However, in numerous countries of the region risk management policies have not yet been elaborated. Experience reveals that countries with risk management policies are more effective in combating desertification and drought. In Morocco, a national observatory was established under the authority of the Ministry of Agriculture with the primary aim of elaborating a national policy action plan to combat desertification and drought in collaboration with other relevant institutions. A second aim is to establish an institutional infrastructure which includes an *early warning system* and information system for decision makers and users on drought. And third, it is important to detect the beginning of the drought event in time, and distribute information to decision makers as this makes preparation for drought possible.

In the country, the State Secretariat for the Environment is responsible for the operational and technical coordination in the field of the environment. This State Secretariat is functioning within the Ministry of Territorial Development, Water and the Environment of Morocco. The State Secretariat is responsible for formulating national policies and integrated strategies serving sustainable development. The problem of desertification belongs to this unit as well, including cooperation with the UNCCD Secretariat, the implementation of the National Action Programme (NAP) to combat desertification. The responsibility for the latter task is shared with the Directorate for Risk Monitoring and Prevention.

Combating desertification in Morocco reached a turning point in 2001, although Morocco has a long tradition of initiating measures to combat desertification. The measures included mobilisation of water resources, development and conservation of the forest sector, and irrigation agriculture in the dryland zones. It must be noted that only forest and water conservation are measures to prevent desertification, whereas developing water and forest sectors are measures to increase productivity, and if they are carried out improperly, they can cause desertification. Only if there are indicators to show that these two have been done in an environmentally sustainable way, it is possible to suggest they are not going to cause desertification.

The year 2001 can be considered to be a turning point in the sense that this year signals the approval of the country's *National Action Programme* (NAP) to combat desertification (Programme d'Action National 2001). The NAP emphasises that measures to combat desertification cannot be limited to preservation or reconstitution of natural resources. On the contrary, measures have to target combating poverty especially in the rural environment in order to hinder further over-exploitation of natural resources. The NAP is in harmony with the Rural Development Strategy 2020 which was adopted in 1999. The following common principles govern both the Strategy and the NAP: integration, participation, cooperation, and

decentralization. The focal institution for implementing the NAP is the Ministry of Agriculture and Rural Development. Since 2001, the Ministry has applied a new approach for initiating pilot projects and coordination incentives to implement the NAP, determining priorities for the middle-term, introducing monitoring and evaluation of projects in the field of both bilateral and multilateral projects.

The following programmes are in effect in Morocco: the National Environmental Action Plan provides the framework for all environment related policies in the country (Union Européenne 2003), Strategy for Water Resources Mobilisation, National Programme of Irrigation, Land-use Strategy, National Forestry Programme (1999), Rural Electrification Programme, and Social Priorities Programme (Programme d'Action National de Lutte contre la Désertification au Maroc – Démarche 2004). The general development path of the country is implemented within the framework of Five Year Plans, the present one is valid for the period of 2005-2010.

Based on facts and figures from the National Action Programme (NAP) for combating desertification in the Kingdom of Morocco (Programme d'Action National 2001), the following lessons learned can be summarised in the field of inconsistencies and limitations of the desertification policies and measures in Morocco. In one single statement from the NAP, past approaches applied by government authorities to control natural resources degradation did not lead to the expected results. These limitations are manifold and have their roots in legal and organizational frameworks, programme scope and procedures for programme design and implementation, staffing and funding mechanisms.

As for the *organisational framework*, it can be claimed that the Moroccan institutional system is characterized by the abundance of administrative actors which results in the fact that a number of agencies and authorities are involved directly or indirectly in natural resources management without prior clarification, at least for some of them, of their mandates and

prerogatives.

Another problem is closely related to the organisational structure and the *lack of an integrated management approach*. This means that autonomist attitudes of government agencies are a major obstacle to their collaboration, coordination and integration. Little synergy is perceptible between the different actors. Excessive centralization of the decision-making process is often identified as a major institutional constraint. In addition, the design procedures of programmes on natural resources development have, so far, followed a top down and hierarchical approach with little or no involvement of civil society. This has created an environment of suspicion and resistance on the part of beneficiaries as to programmes' implementation, as well as serious problems of coordination between the various stakeholders and project partners.

As far as the *legal background* is concerned, it is documented that enacted bills often do not meet the requirements of ensuring continuity and accountability. These are rarely formulated with participation of the public. Analysis of the Moroccan legal documents relating to natural resources management reveals also the scarcity of incentive measures for natural resources conservation. This is particularly common in the field of forestry, rangeland use and soil conservation.

As for some economic indicators, the Moroccan national currency is pegged to a currency basket which includes, inter alia, the euro. The weight of the euro was even increased in the basket in order to take account of the intensifying trade between Morocco and the EU. Examining data on the ratio of external debt and GDP, Morocco can be declared a country with low external vulnerability.

In the field of *project implementation*, it was realized that government structures are not flexible enough to cope with lower-scale levels. The existing administrative and accounting procedures are more suitable for large-scale operations designed at the national level or at least

at a scale of a significant size. However, it was clearly demonstrated that smaller scale projects are always better focused and more successful. The corollary of this approach is that most projects do not meet the flexibility requirements and therefore ignore grass root needs. The inability of government services to integrate population needs at the lowest local level limits the scope of their programs, and the equitable distribution of their benefits among all users.

Besides, the *funding mechanisms of projects* are also identified as a major constraint to successful implementation of projects dealing with natural resources development and conservation. There is a general irrelevance in the loan system, inadequate public funding, absence of mechanisms for fund raising, funding discontinuity and lack of stability and rigidity of encumbrance of funds.

A further constraint is that natural resources management is understaffed. These shortcomings can be illustrated when comparing the extent of areas covered by projects dealing with natural resources and the human resources allocated to oversee them. Furthermore, technicians' mandates are not always clearly defined. Another issue is that adapted technological packages are mostly unavailable which leads to a tendency of standardization of available techniques.

Considering *international development cooperation assistance*, major donors from the part of the EU in Morocco are as follows: EC, France, Spain, Germany, Belgium and Italy. The share of the EU's financial assistance related to total ODA in the country is 73% which shows that the EU is a significant donor for Morocco. Applying a sectoral approach, these donor countries contribute the most in the field of water and sanitation, energy, transport, agriculture, and education. It is interesting to discover the importance of different sectors regarding their share compared to total EU assistance: education – 38%, *energy* – 29%, transport – 14%, *water and sanitation* – 12%, and *agriculture* – 7% (EU Donor Atlas 2004).

8.4.2 Tunisia

Tunisia ratified the UNFCCC in 1993, the UNCCD in 1995, and acceded to the Kyoto Protocol in 2003. In Tunisia, data shows a great inter-annual variability of the climate, esp. as regards precipitation. Further climatic changes will provoke intense droughts and particularly vulnerable water resources will be affected by irregularities in rainfall and extensive salinization.

In Tunisia, measures to combat desertification and to adapt to climate change are included in the National Five Year Development Plans. Currently, the Tenth Plan is valid (2001-2006), and the Eleventh Plan will be in place for the period of 2007-2011.

Tunisia's high economic growth rate (5.6% in 2004) is the result of a continued growth of the agricultural sector and the recovery of the tourism industry. As for agriculture, *organic agriculture* has come to the foreground in the past decade. On the occasion of a field visit in Tunisia in June 2006 (Northern and Central parts of the country, in the area of Tunis, Sousse and Kerouan), the author of this dissertation took part in a presentation which was held by a senior official of the Technical Centre of Organic Agriculture under the leadership of the Ministry of Agriculture and Hydraulic Resources. It was emphasised that organic agriculture as a means to combat desertification has been expanding throughout the country. As data from this Centre demonstrates, while there were only 10 organic farms with 200 hectares in 1997 in the starting year, the number of organic farms increased up to 608 with 20,700 hectares by the year 2005. It was emphasised that Tunisia is the only African country that has legislation on organic farming, and what is more, this legislation is in conformity with the relevant EU regulations. The main partners in the frame of international development cooperation in this particular policy field are France and Italy, and from the subregion Morocco and Egypt.

According to the German reply to the earlier mentioned survey, with the support of international development cooperation in the frame of German technical cooperation, action plans for combating desertification on the national (PANLCD 1998), on the regional

(PARLCD in 9 governorates in Tunisia) and local levels have been or are being established and implemented. To this end, a National Council and Regional Committees are being set up on the basis of national decrees (June 2005). According to information from the UNCCD country information database, Tunisia submitted its NAP to the UNCCD Secretariat already in the year 2000.

On account of great irregularities in rainfall, often a transfer of water resources is needed from the North to the South. Over the past 35 years, Tunisia has made efforts to evaluate and *mobilize water resources* within the country. The progressive management of water has been a central component of the country's socio-economic development strategy. This field also appears in Tunisia's 10th economic plan which was drafted in 2002. Water mobilization focuses on the implementation of a complex system of large and small dams, plus a water supply network that provides for connection between surface and groundwater reservoirs within and between basins. Agriculture occupies around 60% of the total land area of the country, and it consumes around 80% of the water resources. The most common type of irrigation practice is gravity irrigation that accounts for 75% of all systems.

The government adopted an almost unique approach, i.e. the management of irrigation and drinking water schemes were transferred to Water Users Associations (UN Department of Economic and Social Affairs 2005). Moreover, the implementation, operation and maintenance of irrigation-drainage and potable water supply infrastructures were handed over to these associations. There are 2470 associations operating in the country. Their work is supported by the National Solidarity Funds which finances infrastructural investments in rural areas. The Funds are gaining resources not only from the government, but also from international development agencies.

Tunisia actively takes part in a cooperation and concerted management of water resources together with Algeria and Libya and OSS in the frame of the SASS programme

(System Aquifere du Sahara Septentrional). SASS offers a framework for scientific, technical and institutional dialogue, and targets primarily common strategies and management mechanisms for protecting water resources.

The *National Strategy on the Conservation of Water and Soil 2002-2011* provides a frame for activities to combat desertification. Its major aim is to protect agricultural areas and to improve land productivity, to rationalize natural resources management, mobilizing water resources, and to improve the living conditions of farmers. The *National Strategy on the Development of the Forest and Pastoral Sector* is also an important element of combating desertification in the country, which targets reforestation, dune fixation and cactus plantation in first line.

The *Soil and Water Conservation Programme* has been implemented with the financial support of Italy and in cooperation with FAO. The programme targets achieving sustainable rural development and focuses on the local level. The programme has reintroduced traditional Tunisian water harvesting techniques with the use of local material and local labour. Focal regions included the provinces of Kairouan, Siliana, and Zaghouan with the highest percentage of rural residents and largest areas of degraded land in the country. This programme aims at rehabilitating all recoverable drylands. Tunisia has a population policy, and reuse of treated wastewater for irrigation of golf courses as a measure to reduce water shortages. Maybe in these two respects it differs from the other countries in the region.

Similarly to Morocco, in the field of project implementation, there are shortcomings in the administrative procedures, therefore these need to be strengthened in order to ensure smooth and effective implementation with the involvement of affected local population.

Tunisia is primarily supported by the EC, France, Spain, and Italy. German bilateral technical cooperation supports institution building also in the sphere of implementing the UNFCCC. In the field of climate change, the focus is on promoting clean development

mechanism (CDM) projects and establishing the designated national authority required by the provision of the Kyoto Protocol. Tunisia prepares regularly national reports on the implementation of the UNCCD, the most recent one is the third report (Troisiéme Rapport National 2005). The Global Mechanism has conducted a study in conjunction with the International Trade Centre's Export-led Poverty Reduction Programme to develop domestic and export markets for products from dryland and degraded areas.

Based on data on the ratio of external debt and GDP, it can be claimed that Tunisia is a country with high external vulnerability. In this respect, the country very much differs from the other two examined Maghreb countries.

The EU MED Committee supported Tunisia with EUR 115 million in the year 2005. The main share of this support aims at stabilizing the macro-economy, strengthening the private sector, and speeding up environmental protection programmes.

8.4.3 Algeria

Algeria ratified the UNFCCC in 1993, the UNCCD in 1996, and acceded to the Kyoto Protocol in 2005. In Algeria, surface water resources are particularly sensitive to climatic variations. Therefore, appropriate water management policy is of essential importance for the country.

With respect to the *legal background*, there is a Law on Environment and Sustainable Development in Algeria. Furthermore, the implementation of the referred law is supported by the National Action Plan on the Environment and Sustainable Development. With the adoption of this action plan, sustainable development of agriculture became also a priority field in 2000. The National Agricultural Development Plan provides a policy frame for advocating integrated development of rural areas by fostering the conservation and rational management of natural resources such as soil and water.

The Algerian national bank is pursuing a managed floating of the national currency

which is closely linked to the US dollar, reflecting the country's almost exclusive dependence on hydrocarbon exports. Another area which Algeria's financial position hinges on is agricultural revenues.

Agriculture is a dominant sector in water use, i.e. 70% of all types of water use in the country is attributed to agricultural activities. This development plan involves the issues of desertification and water management as well. Several incentives were introduced for farmers in this field, like government participation is ensured in reconverting irrigation systems and water management, and responsibility for drainage operations and localized irrigation systems such as drip irrigation has been transferred to the government with the aim of saving and conserving water. It is an important policy element as all agricultural activities involve irrigation in Algeria. In the Northern part of the country, the introduction of modern agricultural techniques has led to increased stress and overexploitation as regards underground water resources.

In Southern Algeria, a traditional form of *irrigation* is widely applied on conventional farms, the so-called foggara which has a history of 3-4000 years. Major advantages of the foggara system include a reduced water loss through seepage and evaporation, as most of the channels are underground, and there is no need for pumps since the system is fed entirely by gravity. More details on the foggara system can be found in a publication of the UN Department of Economic and Social Affairs (2005).

Algeria prepares national reports on the implementation of the UNCCD (Rapport National 2004). According to this report, measures have been undertaken to combat erosion, prevent further deforestation, to fixate mobile dunes, protect and conserve land, protect water resources and improve access to water, strengthen institutional capacity, and operate a drought monitoring and early warning system. Similarly to Morocco and Tunisia, administrative capacities should be strengthened at national and local levels with a view to be able to absorb

international development assistance in an effective and efficient way for the benefit of local population.

Algeria's primary donors include France, Belgium, and Spain. There is an IDC programme on environmental management and on integrated water management where the donor partner is Germany. Additional data shows that Algeria is a country with low external vulnerability according to the ratio of external debt and GDP.

The EU MED Committee decided to provide EUR 50 million for Algeria in the year 2005. In 2004, GDP growth reached 4.2% in the country due to rising oil prices. In parallel, rate of unemployment has also been decreasing. Good economic tendencies, however, largely hinge on public investments which in turn depend heavily on oil prices. Government measures to modernize the Algerian economy are not adequate yet, but the usage of EU support funds has become more efficient than it was in the past. It is planned that water management programmes and transport programmes are mainly financed from this frame amount.

8.5 National and subregional SWOT analysis

On the basis of the earlier described and analysed facts and figures, a coherent SWOT (strengths, weaknesses, opportunities and threats) table can be compiled for Algeria, Morocco, Tunisia, and for the Maghreb subregion itself. Although it would be interesting to explore what differences can be found within the examined countries with regard to dryland and non-dryland economies, no data is available on that. Therefore, policies are analysed at the national level.

Based on the SWOT analysis, strategic directions are drawn for these countries and subregion. Strategy is understood here as a coherent, unifying and integrative pattern of decisions (Wit and Meyer 1994), which is proactive in its approach and responds to external opportunities and threats, and to internal strengths and weaknesses of the study region, and which allows incremental development of policy subsystems.

Before presenting the SWOT analysis results, the basic features of SWOT are summarized herebelow. The analysis can be based on both geographical and sectoral data and can be applied at different levels (in this case national and subregional). A *SWOT* analysis is always a good tool in describing the state of play in the examined area and therefore in identifying gaps and windows of opportunity for the subregion. An appropriate SWOT analysis is consistent in its content, based on valid data and analysis, and compares the strong and weak points with a baseline. The strengths and weaknesses analysis part of a SWOT is always built on the static environment, where the strengths include the static positive features, while the weaknesses highlight the negative characteristics. Building on these static positive and negative factors, the consideration of positive and negative forces arising from the external (dynamic) environment leads to identifying opportunities and threats.

As it was touched upon in the Introduction chapter, there is a difference in *policy experience* between climate change and desertification policies. Anthropogenic climate change is a new phenomenon that never existed in the history of modern mankind, and for some time the public and policy makers were not persuaded of its existence. Therefore, climate change policies are new in the history of policy making, and there is little experience. Desertification, on the other hand, is a phenomenon of a very old history, and one that prevails for centuries in all the affected countries. However, earlier it was not called desertification, although it always existed. Therefore, there are practices, as well as policies at many levels, that deal with soil fertility reduction resulting from agricultural and pastoral practices.

In this respect, it is worth analysing a variety of agricultural, water, livestock, and forestry policies all of which aim at sustaining dryland productivity, and identifying how each of them constitute adaptation to climate change, or leads to exacerbation of climate change. Based on the difference in the history of desertification policies and climate change policies, it can be assessed to what extent implementation of desertification policies for a longer time

period was effective, and the lessons learned can be applied for enhancing climate change policies. In order to have a clear and straightforward overview of the major strengths, weaknesses, opportunities and threats of the subregion, a table has been created (see Table 2). Having reviewed the main characteristics of a SWOT analysis, the results for the selected countries of the Maghreb subregion can be summarized as follows.

Table 2: Summary of analysis of the current situation for combating climate change and desertification at the national and subregional level

	Morocco	**Tunisia**	**Algeria**	**Maghreb**
Drylands as % of total land area (deserts excluded – source: UNEP 2004)	50%	20%	10%	N/A
Drylands as % of total land area (deserts included – source: NAPs)	93%	94%	97%	N/A
Lands vulnerable to desertification as % of total land area (deserts excluded – source: NRCS 2007)	52%	39%	15%	N/A
Population living in dryland areas as % of total population (deserts excluded - source: UNEP 2004)	75%	25%	50%	N/A
Annual average population growth rate (source: UNEP 2004)	1.7%	1.2%	1.7%	N/A
Infant mortality rate per 1000 births (source: UNEP 2004)	40	40	40	N/A
Improved drinking water coverage as % of total population (source: UNEP 2004)	80%	82%	87%	N/A
Water use per person (source: UNEP 2004)	400 m3	300 m3	200 m3	N/A
Agricultural area as % of total land area (source: UNEP 2004)	70%	60%	20%	N/A

Forests and woodlands as % of total land area (source: UNEP 2004)	20%	5%	2%	N/A
Major types of soil degradation	water erosion, wind erosion, chemical deterioration (salinization)	water erosion, wind erosion, chemical deterioration (salinization), soil destabilization	water erosion	all
Geographical features	adverse climatic conditions, low level and high variability of precipitation, recurring drought, scarcity of arable land and fresh water resources	adverse climatic conditions, low level and high variability of precipitation, recurring drought, scarcity of arable land and fresh water resources, saline water and soil	adverse climatic conditions, low level and high variability of precipitation, recurring drought, scarcity of arable land and fresh water resources	all
Number of years of drought during the 20th century	22 (10 out of it between 1980-2000)	23	N/A	N/A
The role of drought in desertification (climatic factors)	drought impacts rain-fed cereal cultivation, over-exploitation of fresh water resources, and degradation of natural vegetation and soil	drought impacts rain-fed cereal cultivation, over-exploitation of fresh water and ground water resources, and degradation of natural vegetation and soil	drought impacts rain-fed cereal cultivation, over-exploitation of fresh water resources, and degradation of natural vegetation and soil	all

Main socio-economic causes of desertification	expansion of cereal cultivation to drought-prone rangeland, reduction of fallow systems, mechanisation of agriculture due to increased demand for food, increased irrigation, use of chemicals due to population growth, mismanagement of agricultural land, overgrazing, farming on marginal land areas, destruction of vegetation	expansion of cereal cultivation to drought-prone rangeland, reduction of fallow systems, mechanisation of agriculture, increased demand for food, increased irrigation, use of chemicals due to population growth, mismanagement of agricultural land, overgrazing, deforestation, overexploitation of groundwater resources	expansion of cereal cultivation to drought-prone rangeland, reduction of fallow systems, mechanisation of agriculture, increased demand for food, increased irrigation, use of chemicals due to population growth, mismanagement of agricultural land, overgrazing, poor farming practices	all
Most vulnerable social groups	agricultural farmers in dryland areas	agricultural farmers in dryland areas	agricultural farmers in dryland areas	agricultural farmers in dryland areas
Main concerns	freshwater availability (both quantitative and qualitative problem), lowering groundwater table, loss and degradation of natural forests and wooded areas	freshwater availability (both quantitative and qualitative problem), loss and degradation of natural forests and wooded areas, salinization of soil and water	freshwater availability (both quantitative and qualitative problem), overexploitation of groundwater resources, loss and degradation of natural forests and wooded areas	all
Future projections	serious water scarcity by the year 2050	serious water scarcity by the year 2025	serious water scarcity by the year 2025	N/A

Policy frameworks (national and subregional)	Act on Environmental Protection, National Environmental Action Plan, Rural Development Strategy, Strategy for Water Resources Mobilisation, National Programme of Irrigation, Land-use Strategy, National Forestry Programme, Five Year Plan 2005-2010	11th National Five Year Development Plan 2007-2011, legislation on organic farming, National Strategy on the Conservation of Water and Soil 2002-2011, Water and Soil Conservation Programme, National Strategy on the Development of the Forest and Pastoral Sector	Law on Environment and Sustainable Development, National Action Plan on the Environment and Sustainable Development, National Agricultural Development Plan, Act on Water Management	Marrakech Treaty (1989), Maghreb Charter for the Protection of the Environment and Sustainable Development
Policy frameworks (international)	UNCCD (1996) – national reports, national action programme to combat desertification UNFCCC (1995) – national communications Kyoto Protocol (2002) – CDM projects Euro-Mediterranean partnership	UNCCD (1995) – national reports, national action programme to combat desertification UNFCCC (1993) – national communication Kyoto Protocol (2003) – CDM projects Euro-Mediterranean partnership	UNCCD (1996) – national reports, national action programme to combat desertification UNFCCC (1993) – national communication Kyoto Protocol (2005) Euro-Mediterranean partnership	UNCCD - Subregional Action Programme to Combat Desertification (SAPCD)

Response policies in place	national observatory on desertification and drought, renewable energy development, reforestation and conservation of the forest sector, development and mobilization of water resources, irrigation agriculture in the arid zones	organic agriculture support and development, reforestation, rehabilitation of water resources, water harvesting techniques, improve land productivity, rationalize natural resources management, improve the living conditions of farmers, fixation of mobile dunes	prevent further deforestation, fixate mobile dunes, protect and conserve land, protect water resources and improve access to water, strengthen institutional capacity, operate a drought monitoring and early warning system	monitoring projects for national and subregional action programmes, improvement of indicators and communication among stakeholders, demonstration project on strategies to combat desertification in arid lands with involvement of agro-pastoral communities
Measures in progress	risk management, drought early warning system	water resources mobilization	water management programmes	capacity building projects
Strengths	GDP growth mainly from agriculture and tourism, well-developed national policy framework	GDP growth mainly from agriculture and tourism, well-developed national policy and legislative framework	GDP growth mainly from agriculture and industry, national policy framework	N/A
Weaknesses	vulnerable land and water resources, big proportion of affected areas and affected population, weak policy, programme, and project coordination and implementation	vulnerable water resources, extensive salinization, weak policy, programme, and project coordination and implementation	vulnerable surface water resources, overexploitation of groundwater resources due to increased irrigation, weak policy, programme, and project coordination and implementation	N/A

Opportunities	strengthening of the policy coordination and implementation capacities and administration, adaptation measures esp. related to the water and agricultural sector, reforestation, small-scale water harvesting projects, sustainable tourism	strengthening of the policy coordination and implementation capacities and administration, adaptation measures esp. related to the water and agricultural sector, further development of organic agriculture, mobilization of water resources, sustainable tourism	strengthening of the policy coordination and implementation capacities and administration, adaptation measures esp. related to the water and agricultural sector, traditional techniques for irrigation (foggara)	N/A
Threats	more frequent and more intense droughts, serious water shortage, decline in cereals production, salinization of soil and water	more frequent and more intense droughts, serious water shortage, decline in cereals production, further salinization of soil and water	more frequent and more intense droughts, serious water shortage, decline in cereals production	N/A

A major strength of *Morocco* is the well-developed national environmental policy framework which can provide a solid base for effective policy coordination and implementation. Policies and adequate legislation is available in the area of environmental protection, rural development, water resources and irrigation, land use and forestry. However, policy, programme, and project level coordination and implementation have so far been rather inadequate and this factor can be considered to be a weakness of the system. Further weaknesses are rooted in the geographical characteristics of the country, like the vulnerable land and water resources, and the big proportion of areas affected by desertification and affected population. Opportunities can be identified primarily in the strengthening of the policy coordination and implementation capacities and administration, and measures should aim at strengthening the adaptive capacity of the country to be able to respond to climate change, drought and desertification. These measures should relate to enhancing water resources (e.g. small-scale water harvesting projects), improving the agricultural sector, and reforestation. It has to be noted that agriculture and tourism are leading sectors of Morocco's economy, therefore opportunities are connected to their development. Adaptation is a key since the main threats to the country include the more frequent reoccurrence of more intense droughts which could accelerate desertification processes, and can result in serious water shortage, and in a decline in cereals production.

With regard to *Tunisia*, a considerable strength lies in – similarly to Morocco – the well-developed national environmental policy and legislative framework which serves as a basis for effective policy coordination and implementation. Policies and legislation are particularly strong in the field of organic farming, water and soil conservation, forestry, and tourism. At the same time, vulnerable water resources and extensive water and soil salinization constitute the main weaknesses for the country. Considering that agriculture and tourism are determining factors of GDP growth in Tunisia, opportunities include further development of organic

agriculture, mobilization of water resources, strengthening adaptive capacities to cope with extensive drought and desertification, and promoting ways of sustainable tourism. Adaptation is of crucial importance for Tunisia as well regarding that the appearance of more frequent and more intense droughts, serious water shortage, decline in cereals production, and further salinization of soil and water are among the main threats for the country.

As far as *Algeria* is concerned, the national policy framework on the environment, rural and agricultural development, water management and sustainable development is in place and adequate to be used as a starting point for implementing activities in support of combating climate change and desertification. This can be identified as strengths for the country. Decision makers should build on this framework when trying to cope with the main weaknesses of the country like the vulnerable surface water resources, and overexploitation of groundwater resources due to increased irrigation. In relation to this, adaptation would play a major role esp. in the agricultural and water sector, and traditional techniques should be rediscovered and reapplied for irrigation (e.g. the foggara technique) as main opportunities. For Algeria, the main economic sectors are agriculture and industry, so the agricultural field is a significant area to develop. Similarly to Morocco and Tunisia, a major threat for the country is the reoccurrence of periodic and more intense droughts, a serious water shortage and decline in cereals production.

It is proven that the above countries have large territories that are further threatened by desertification, and the vulnerability of soil and water sources and affected population is high. Therefore, these countries should work further on designing various measures for adaptation to climate change to reduce vulnerability. It is important as climate change and desertification constitute a serious risk for security, incl. different security categories like environmental security, food security, and human security. Nevertheless, adaptation has certainly some limitations and various costs are associated with it. As the most recent IPCC report (IPCC

Working Group II 2007) puts it, limitations and costs hinge mainly not only on specific geographical and climatic risk factors but also on institutional, political and financial frameworks. It seems that these frameworks are already in place in the examined countries and therefore policy coordination and implementation should be enhanced and focus should be placed on adaptive responses. The beneficial role of drought monitoring and early warning systems cannot be overemphasized for this purpose.

Besides the fact that the main climatic and geographical features of Morocco, Tunisia, and Algeria are similar to each other, there are slight *differences in geographical terms which require different policy approaches and solutions*. Comparing these differences between the above countries, the following main points can be identified. While for *Morocco and Tunisia agriculture and tourism* are the leading economic sectors, for *Algeria* it is *agriculture and industry*. This is due to the extensive natural gas and oil resources in Algeria. There are differences in the countries' geographical features, esp. in the extension of deserts. In relation to the individual country's territories, the share of *desert coverage* is the *lowest in Morocco*, and the *highest in Algeria*. The fact that Morocco has the greatest proportion of land that is vulnerable to desertification is connected to this feature. Another fact is that the share of agricultural land and forests/woodlands compared to total land area is the biggest in Morocco and the lowest in Algeria.

In relation to water resources, salinization is more a problem for Morocco and Tunisia than Algeria. Irrigation is present in all three countries. The *over-exploitation of groundwater resources* is particularly relevant for *Tunisia and Algeria*. This needs focused attention with special regard to the fact that water shortage will be a more urgent and pressing problem for them than for Morocco, mainly due to a lower level of precipitation. Specific focal areas can be reforestation for Morocco, organic farming for Tunisia, and traditional irrigation for Algeria.

Regarding national policy frameworks, all three countries adopted strategies and action

programmes in the field of the environment, water management, agriculture and rural development, land management, and forestry policies. All of them are parties to the most important international conventions like the UNCCD, UNFCCC, and the Kyoto Protocol. *Morocco and Tunisia* have already launched *clean development mechanism* (CDM) projects under the Kyoto Protocol to introduce cleaner technologies for energy production, energy efficiency and renewable energy. This is not a priority of Algeria due to its huge natural gas and oil resources. Regarding policy measures, in Morocco there is a drought observatory already in place, and there are ongoing measures in the field of renewable energy, reforestation, and water resources mobilization. Tunisia has ongoing measures for organic agriculture, water harvesting, natural resources management, and mobile dune fixation. Algeria has introduced measures to prevent further deforestation, fixate mobile dunes, protect land and water resources, and improve access to water, strengthen institutional capacity, and operate a drought monitoring and early warning system. Measures in progress target drought early warning in Morocco, water resources mobilization in Tunisia, and water management in Algeria. A subregional summary is provided in Table 3.

Table 3: SWOT table for the selected countries of the Maghreb subregion

STRENGTHS:	**WEAKNESSES**:
– national policy and legislative framework (water, soil, forestry, rural development)	– governance and administrative capacity – policy, programme, and project coordination and implementation – vulnerable land, water and groundwater resources – large affected areas and population
OPPORTUNITIES:	**THREATS**:
– strengthening policy coordination and implementation – enhancing adaptive capacity to combat desertification and climate change – organic agriculture – mobilization of water resources – reforestation – traditional techniques for irrigation	– more frequent and more intense droughts – serious water shortage – decline in cereals production – increasing rural poverty

In summary, *major gaps* in these countries relate to the weaknesses as follows:

- policy, programme, and project level coordination and implementation have so far been rather inadequate and poorly coordinated;
- overexploitation of natural resources in general, with special regard to overexploitation of groundwater resources due to increased irrigation, and inadequate land use planning and inappropriate farming practices, particularly overgrazing;
- geographical characteristics of the concerned countries, e.g. vulnerable land and water resources, extensive water and soil salinization, and a big proportion of areas affected by desertification and affected population.

Using internal strengths and weakness as a starting point and adding external factors to the analysis, the following *windows of opportunities* can be identified for the concerned countries:

- strengthening policy coordination and implementation capacities and administration at the national and local levels by promoting good governance;
- enhancing the adaptive capacity of the countries to reduce vulnerability and to be able to respond to climate change, drought and desertification, including measures that target improving water resources (e.g. small-scale water harvesting projects), the agricultural sector, and reforestation.
- developing organic agriculture, reintroducing traditional techniques for agriculture and water harvesting, mobilization of water resources, and promoting ways of sustainable tourism.

Although policies, strategies and technologies are available in the examined countries, it is not possible to determine how individual measures contribute to reducing and managing risk esp. in relation to vulnerable groups of society. Therefore, capacity building for increasing adaptive capability is crucial in the Southern-Mediterranean region.

9. ANALYSING SELECTED INTERNATIONAL DEVELOPMENT COOPERATION PROJECTS IN THE SOUTHERN-MEDITERRANEAN REGION

Having summarized the major strengths, weaknesses, opportunities and threats (SWOT) for the selected Maghreb countries, the next step is to analyse projects that have been implemented within the framework of international development cooperation with the leadership and support of the most important donors of the countries of the Maghreb subregion.

9.1 Relevance of project analysis to the SWOT analysis

The reason for this project analysis is that the results can be compared to the unique characteristics of the individual countries of the subregion described in the SWOT table. As a consequence, conclusions can be made on whether the donor projects are in line with these countries' SWOT features.

Projects are examined which are supported by the major donors identified in the survey section (see 7.3.2). It is investigated whether these projects correspond to the real needs of the concerned recipient countries to contribute to combating desertification and climate change. Furthermore, it is also considered whether those fields are given priority by donors where recipient needs can be identified. Finally, it is also explored whether adequate financial support is provided to the priority policy areas.

With respect to the factors above, the major focus of this chapter is on analysing projects that have been supported by a donor country or institution under the aegis of the so-called North-South type international development cooperation. Besides, in order to reflect upon the fact that development cooperation in the examined fields exist in the form of South-South cooperation, at least an overview will be provided. A complete project analysis in the case of the latter type of cooperation would not be viable on account of two main reasons.

First, South-South, i.e. developing countries' cooperation cannot be considered to be typical international development cooperation. Second, availability of data and information on subregional projects are limited.

In project analysis, special attention is paid to measures that promote adaptation to climate change. Based on the most recent IPCC report (IPCC Working Group II 2007), integrating climate change considerations in development planning has a key role in increasing adaptive capacity. Therefore, analysing the adaptation side of projects is incorporated in project analysis in the following section, with special regard to strategies, action programmes, land-use planning, and infrastructural development.

9.2 Analysis of projects in the frame of the North-South cooperation

A list with selected projects that are being or have been implemented in the Southern-Mediterranean region can be found in Annex III. The list can be considered representative as it includes projects from different countries, various related sectors and donor partners. A categorization is made by country, by the distinctive policy field, and by the donor country or organisation.

Considering projects financed by the European Commission under the aegis of the MEDA programme during the SMAP period of 1997-2002, there are several cases to mention. In the year 2000, out of 6 Southern-Mediterranean regional projects, only one targeted the field of desertification. In this particular project, Tunisia was included from the target countries of the research. Total cost of this project amounted at EUR 1.1 million, with 72% EC contribution. In 2001, out of 9 regional projects, 2 were in the area of combating desertification. One of them is a demonstration project in Morocco and Tunisia and focuses on strategies to combat desertification in arid lands with a total cost of EUR 4.2 million, with 81% EC contribution. Another one also targets Morocco and Tunisia and deals with monitoring and

evaluation systems for national action programmes to combat desertification. The total cost of the project is EUR 2.2 million, with a 68% EC contribution.

Altogether, the afore-mentioned 3 regional SMAP desertification projects (2000-2001) total at EUR 7.5 million, with an EC contribution of 76% (data from EC 2002b). Furthermore, there was a project in 2000 on the implementation of a photovoltaic water pumping and purification programme in the Mediterranean countries, where Algeria, Morocco and Tunisia were targeted, and Spain and France as donors were involved. Total cost of the project amounted at EUR 3.3 million, with a 79% EC contribution.

Data on projects that can be found in Annex III was gathered from the following information sources: national ODA programmes of donor countries, issue papers of the EC, project lists of the GEF and IFAD, national reports of recipient countries, and survey results. Those projects have been collected that can be connected to the field of combating desertification and climate change, and only projects were included in the list on which data and information are available in most of the following lines: policy field, project status, donor partner, total cost of project, donor contribution, project duration, geographical location of project within the recipient country. Taking also into account that the Barcelona process started in 1995, almost exclusively projects are included in the list that were initiated or implemented after the year 1995.

As far as the individual recipient countries are concerned, there are 15 selected projects for Algeria, 37 projects for Morocco, and 19 projects for Tunisia. As for the subregional type projects, there are six projects initiated by the Maghreb Arab Union (see description in section 9.3), and there are also some multi-country projects in the subregion as well. The difference in the number of collected projects country by country reflects the difference in availability and access to data in the distinctive recipient countries, i.e. most project related information is available in connection with Morocco, followed by Tunisia and Algeria, respectively.

In order to gain a reliable picture on these projects, the following aspects will be analysed in the first round: share of different policy fields by country (this will be determined by number of projects and total cost of projects of a given field), and share of major donors in financing these projects (based on the number of projects implemented by a particular donor, and on financial terms). When the results of this analysis are available, they can be compared to the facts and figures of the SWOT analysis, so conclusions can be formulated on whether the project fields and share of the different fields in total national projects are in line with the recipient countries' SWOT features and the essential interest of the recipient from the technical, financial and geographical aspects.

Apart from this, donor contribution can be compared to data from the EU Donor Atlas (2004) and OECD DAC information. An evaluation by donor countries or institutions can be carried out on the basis of analysing number of projects, share of recipients in the total support by individual donors. It will also be looked upon how many of these projects do not require continued support by donors. Besides, projects will be sorted on the basis as well whether they serve the purpose of mitigation of climate change or desertification, or adaptation to the impacts of climate change, and whether these projects apply new technology or promote traditional techniques. All these analyses are important in order to be able to provide recommendations for Hungary as an emerging donor country on which types of projects related to which policy field and with potential involvement of which donor partner would be viable for the country to initiate.

9.2.1 Projects in Morocco

For Morocco, between the period of 1983-2009, a total of 37 donor projects have been selected (at a value of EUR 1,111,087,608) in the following policy fields related to combating climate change and desertification, in the *order of importance based on the number of projects* on the distinctive fields: water management (13), rural development (8), land management (3), renewable energy (3), energy efficiency (3), natural resources management (2), environmental management (1), and forest management (1). Finally, there are some horizontal projects in the field of capacity building (3). Based on these numbers, it can be claimed that *water management* is by far the dominating field with 35% of projects, followed by *rural development* with 21%. Renewable energy, energy efficiency, land management, and capacity building have equal share of 8% respectively. Finally, natural resources management has a share of 5%, and the line is closed by environmental management and forest management with 2.7% respectively.

It is interesting to examine the change of *order of importance when considering total project cost* (see Table 4). In this case, also *water management* gets the first place with 49.2%, followed by *renewable energy* with 30.3%. The other sectors have a smaller share, i.e., energy efficiency, rural development, and natural resources management have a share between 5-6% each. Forest, and land management have a share of between 1-2% each, while environmental management and capacity building stay at the end of the list with less than 1% share. Both orders of importance reveal that the most important donor project fields are water management, renewable energy, energy efficiency, and rural development in Morocco. It can be stated that these types of projects are in line with the country's SWOT features. At the same time, more emphasis should be placed on the *agricultural sector* as a further decrease in cereals production is projected for the country for the next decades due to climate change.

Table 4: Morocco - financial share of project fields compared to total

1) water management	49.2%
2) renewable energy	30.3%
3) natural resources management	6%
4) energy efficiency	5.45%
5) rural development	5.2%
6) forest management	1.93%
7) land management	1.43%
8) environmental management	0.41%
9) capacity building	0.08%
Total	100%

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Furthermore, Morocco has 3 projects that were registered by the CDM Executive Board as clean development mechanism (CDM) projects under the Kyoto Protocol. The list of projects in Annex III contains one relevant CDM project (Essaouria wind power). CDM projects are important in the sense that these not only contribute to the reduction of greenhouse gas emissions but also they are part of international development cooperation.

Examining donor contribution, the 37 selected projects in Morocco are divided by the following *donors by project number*: Germany (17), Spain (6), IFAD (3), GEF-IFAD (2), GEF-IBRD (2), EU (2), EU-OSS (1), GEF-UNDP (1), World Bank (1), UNDP (1), and the European Space Agency (1). According to this order, *Germany, Spain and IFAD* are the main donors among the listed ones. However, it should also be noted that other donors might appear in the list if there was adequate information on their projects. In the absence of it, only the listed ones are considered during the analysis.

As in the case of project fields, *share of donor financial contribution* has to be analysed as well and compared with the results above based on the order of importance of donors by project number. German share of contribution is between 65-100% depending on individual projects. Nevertheless, for most of the German projects no data is available on the share of contribution to total project cost. Spanish contribution was between 39-100%, and in case of most projects it is above 80%. The contribution of IFAD is between 5-70%, the share of loans by GEF-IFAD was around 40-55%, and that of GEF-IBRD was between 6-38%. EC contribution was around 59-80%, and EU-OSS contribution was around 70%. GEF-UNDP contributed 100%. It can be claimed when examining shares and total project costs in detail that the smaller the project total cost is, the bigger the share of contribution or loan is.

Analysing not only percentages, but also real numbers in project contribution, the following order of donors can be depicted: Germany (EUR >65,220,000), IFAD (EUR 36,644,400), GEF-IBRD (35,336,640), EC (18,073,585), GEF-IFAD (16,810,000), Spain

(4,730,721), EU-OSS (284,000), and GEF-UNDP (112,000). Accordingly, the major country donors in this case include Germany and Spain, while the most important ones among the institutional donors are the IFAD, GEF, IBRD, and the EC. These findings are in line with data from the EU Donor Atlas (2004). However, France should be among the major donors but there was no full information available on projects carried out by France in Morocco. It should be noted that the ODA donor report of France includes some projects but the data is not comparable with other data in the table for the required fields.

In Morocco, less than *one-third of the examined projects* can be connected to *mitigation*, while the *two-thirds of projects relate to adaptation*. Mainly adaptation type of projects have been implemented in the field of water management, rural development, natural resources and environmental management, while mitigation type of projects characterize the fields of energy efficiency, renewable energy, land management, forest management, and capacity building.

As far as geographical location of projects is concerned, data shows that most donor projects are implemented in the *Northern parts of Morocco*, a smaller share of projects are carried out in the Southern, Central and Eastern parts of the country.

Cooperation with the *EU* is carried out mainly in the frame of the MEDA programme and in the environmental field it relates primarily to the protection and sustainable land management. Measures have focused on integrated rural development, combating soil erosion, reforestation, and ecosystem protection. Air quality improvement actions have been undertaken in the frame of the SMAP programme.

The EU LIFE programme and the Observatory of the Sahara and the Sahel (OSS) jointly implemented a project on monitoring of desertification in the Southern shores of the Mediterranean includes capacity building and setting up desertification monitoring systems, and NAP evaluation for Morocco and Tunisia. Besides, the project on Setting up monitoring and

evaluating systems for the action programmes to combat desertification in the Maghreb countries of the Mediterranean is carried out within the framework of the EC SMAP programme with the following objectives: set-up of monitoring and evaluating systems for the NAP, establishment of an information system in relation to the UNCCD and the environment, and extension of the system to the regional (Maghreb) level. The OSS also takes part in the project. The project concerns Morocco, Tunisia, and the Secretariat General of the Maghreb Arab Union.

For the year 2007, EuropeAid promotes sectoral support for recipients in the field of infrastructural investments: modernizing energy networks and transport systems, environmental protection, and border infrastructure development. These types of activities well connect to the other programmes and projects of MEDA and the European Neighbourhood Policy.

During the period of 1995-2003, Morocco received EUR 1,186 million from the EU through the MEDA programme. For the future, it is aimed at to continue the reform of the Moroccan civil service sector in the coordination of EU and the World Bank. This EC programme is in harmony with some other bilateral programmes initiated by France, Spain, Belgium and Germany, and also with donor activities of Canada, the US and the World Bank. In the Maghreb subregion the Commission aims at integrating national markets. In 2005, the World Bank launched the FEMIP (Facility for Euro-Mediterranean Investment and Partnership) Trust Fund with EUR 54.7 million, which can be used primarily for technical assistance.

The MED Committee of the EC adopted a framework sum of financial support for Morocco in 2005, which amounted at EUR 148 million. A major part of these resources are designed to reduce poverty in the country, especially focusing on big cities and infrastructural development programmes.

One of the major donors of Morocco is *Spain*. The Spanish development cooperation policy is guided by the Act on International Development Cooperation of 1998. The AZAHAR program is part of the Spanish IDC activities which includes measures in the environmental protection and natural resources conservation field as well. Under its framework, projects are implemented in the area of soil conservation, water management, renewable energy, energy efficiency, sustainable tourism, and environmental planning and management. Considering the main causes of desertification in Morocco, namely, wrong agricultural practices, diminution of forests, inadequate land management, aims of the programme include prevention of further soil degradation, rehabilitation of already degraded soil, recuperation of vegetation and degraded land, reforestation, and reducing vulnerability of ecosystems to drought.

Water management is another crucial topic for the country including development cooperation activities. More than 60% of renewable water resources of Morocco are overexploited which constitutes a risk of serious water shortage in the mid-term. Therefore, the AZAHAR programme supports desalinization techniques, irrigation techniques, and good practices for water management. In the field of renewable energy, the emphasis is placed on the installation of central photovoltaic systems and wind parks. Tourism is an important service sector for Morocco, but the seasonal characteristics of tourism have negative impacts on the environment and natural resources like land and water, and on energy use. Accordingly, the programme targets to encourage tourism that consumes fewer resources. In line with this, integrated cultural-natural tourist products are promoted building on local capacities, and the reduction of mass tourism is also targeted.

France has signed a cultural and development cooperation partnership convention with Morocco in 2003. In the field of sustainable development, it is aimed at improving the quality of the environment, preserving natural resources, promoting integrated water management methods, and improving the access of population to drinking water. In this area, the priorities

laid down in Morocco's National Action Plan on the Environment are supported by French development cooperation activities. Projects focus on biodiversity and greenhouse gas reduction by renewable energy, esp. solar energy projects.

Projects implemented in cooperation with *Germany* focus mainly on water management and rural electrification like photovoltaic, hydro- and wind energy. To illustrate donor assistance, herebelow some concrete project examples are provided. In the Programme for assisting the implementation of the NAP, the German Technical Cooperation (GTZ) is the main donor partner. Besides the institutional component of the programme, the regional components should be emphasised as follows: development plans for Douar as a pilot region, for Souss Massa Draa in the province of Tiznit, for Taroudant and Chtouka e Ait Baha, and for the palm plantations of the province of Zagora (Programme d'Action National de Lutte contre la Désertification au Maroc – Démarche 2004). The project on the Programme for assisting combating rural poverty, desertification and the impacts of drought is being implemented with the financial help of UNDP. Besides, the Global Mechanism of the UNCCD supports defining and formulating priority projects when implementing the NAP.

Italy has supported development cooperation projects with Morocco mainly under the frame of the UNCCD, FAO, and the EU SMAP programme (e.g. DESERTNET). Projects related to research, networking and technical assistance are characteristic in this cooperation. In the past few years, a favoured type of collaboration was between local administrations of Italy and Morocco.

9.2.2 Projects in Tunisia

As far as Tunisia is concerned, between the period of 1993-2008, a total of 19 donor projects have been selected (at a total value of EUR 287,668,108) in the following policy fields related to combating climate change and desertification, in the *order of importance based on the number of projects* on the distinctive fields: renewable energy (3), agricultural development (3), rural development (2), forest management (2), environmental management (1), sustainable tourism (1), land management (1), and water management (1). Finally, there are some horizontal projects in the field of capacity building (4). Based on the above numbers, it can be claimed that *renewable energy* and *agricultural development* are the major fields with 16% of projects each, followed by rural development with 10.5%. Environmental management, sustainable tourism, land management, and water management have an equal share of 5%. Capacity building is handled separately, as it is horizontal in natures, and it has a share of 20%.

It is useful to investigate the change of *order of importance when considering total project cost* (see Table 5). In this case, also *renewable energy* gets the first place with 35.75%, followed by *agricultural development* with 29.5% and rural development with 12.1%. Energy efficiency and land management have similar share around 8% each. Capacity building and forest management have only 2% each, and finally sustainable tourism and environmental management have less than 1% share. Both orders of importance demonstrate that the most important donor project fields are renewable energy, agricultural development, and rural development in Tunisia. Water management is not included in this list as there is no reliable data available on the related project costs. It can be claimed that these areas are basically in with Tunisia's SWOT features. However, as salinization is a major problem for the country, and serious water shortage and deteriorating water quality is projected for the forthcoming decades, more emphasis should be placed on *water management* projects.

Table 5: Tunisia - financial share of project fields compared to total

1) renewable energy	35.75%
2) agricultural development	29.5%
3) rural development	12.1%
4) energy efficiency	8.8%
5) land management	8.2%
6) capacity building	2.4%
7) forest management	2.2%
8) sustainable tourism	0.65%
9) environmental management	0.4%
Total	100%

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Examining donor contribution, the 19 selected projects in Tunisia can be divided by the following *donors by project number*: Spain (4), Germany (3), IFAD (3), GEF-IBRD (2), GEF-UNDP (2), GEF-IFAD (1), EU (1), EU-OSS (1), World Bank (1), and Italy (1). According to this order, *Spain, Germany and IFAD* are the main donors among the listed ones. However, it should also be noted that other donors might appear in the list if there were adequate information on their projects. In the absence of it, only the listed ones are considered during the analysis.

As in the case of project fields, *share of donor financial contribution* has to be analysed as well and compared with the results above based on the order of importance of donors by project number. Spanish contribution was between 32-100%, while German share of contribution is not known. IFAD provided loans in the range of 42-48%, GEF-IBRD between 20-27%. GEF-UNDP and GEF-IFAD contributed loans around 10% and 18% respectively. The EC contributed 80% and the EU-OSS 71%. It is proven when examining shares and total project costs in detail that the smaller the project total cost is, the bigger the share of contribution or loan is, just as in the case of Morocco. Analysing not only percentages, but also real numbers in project contribution, the following order of donors can be depicted: IFAD (EUR 42,283,440), GEF-IBRD (EUR 10,244,800), GEF-UNDP (8,952,800), Italy (5,200,000) GEF-IFAD (4,226,400), Spain (EUR 3,247,724), EU (EUR 1,600,000), and EU-OSS (1,420,000). Accordingly, the major country donors in this case are Italy and Spain, while the main institutional donors are the IFAD, GEF, IBRD, UNDP. These findings are in line with data from the EU Donor Atlas (2004). It has to be noted that there is no data available on the German share of total project costs, therefore Germany is not considered here. It is important to note that France should be among the major donors for Tunisia according to data in the EU Donor Atlas (2004). However, as only partial information is available on French projects in the ODA donor reports of France, it was not possible to include them in the project analysis.

As stated above, Tunisia is a primary partner country for *France*. This is a strategic partnership which accompanies efforts for opening and modernising the Tunisian economy. The improvement of environmental conditions and the development of tourism in general can be found among the areas of cooperation. Sustainable development has been included in the priorities set by the Tunisian-French cooperation for the period of 2006-2010. Water resources preservation has become a primary priority for the country. In the frame of this bilateral cooperation, integrated rural development projects and drinking water quality improvement, and institutional capacity building on environmental management projects have been initiated and started to implement. Considering that only partial information can be found on these projects, these are not included in the project list of Annex III.

The EC supports three main areas of development in the country, among which the environment and rural development also appears.

In Tunisia, roughly *half of the examined projects* can be connected to *mitigation*, and another half relates to *adaptation*. Mainly adaptation type of projects have been implemented in the field of water management, agricultural development, rural development, sustainable tourism, and partially capacity building, while mitigation type of projects characterize the fields of energy efficiency, renewable energy, forest management, environmental management, land management, and partially capacity building.

As far as geographical location of projects is concerned, data shows that most donor projects are implemented in the *Southern parts of Tunisia*, a smaller share of projects are carried out in the Northern parts of the country.

9.2.3 Projects in Algeria

As far Algeria is concerned, between the period of 1988-2010, a total of 15 donor projects have been selected (at a total value of EUR 153,690,658) in the following policy fields related to combating climate change and desertification, in the *order of importance based on the number of projects* on the distinctive fields: water management (4), rural development (3), agricultural development (3), environmental management (2), and forest management (1). Finally, there are some horizontal projects in the field of capacity building (2). Based on the above numbers, it can be claimed that *water management* is the major field with 27% of, followed by *rural development* and *agricultural development* with 20% each. Environmental management capacity building has an equal share of above 1%, and forest management with a share below 1%.

It is useful to investigate the change of *order of importance when considering total project cost* (see Table 6). In this case, as opposed to the order by project number, *agricultural development* gets the first place with 48.6%, followed by similar shares of around 17% each for *water management*, *rural development* and environmental management. Capacity building has a share less than 1%. Both orders of importance demonstrate that the most important donor project fields are agricultural development, water management, and rural development in Algeria. These areas are in line with the country's SWOT characteristics. Additional emphasis should be added to developing *renewable energy* sources as opposed to the high reliance on oil.

Examining donor contribution, the 15 selected projects in Algeria can be divided by the following *donors by project number*: Spain (5), IFAD (4), Germany (2), GEF-UNDP (2), EU (1), and Italy (1). According to this order, *Spain, IFAD and Germany* are the main donors among the listed ones. However, it should also be noted that other donors might appear in the list if there was adequate information on their projects.

Table 6: Algeria - financial share of project fields compared to total

1) agricultural development	48.6%
2) water management	17.3%
3) environmental management	17%
4) rural development	16.95%
5) capacity building	0.15%
Total	100%

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As in the case of project fields, *share of donor financial contribution* has to be analysed as well and compared with the results above based on the order of importance of donors by project number. Spanish contribution was between 20-100%, IFAD provided loans in the range of 28-59%, while German share of contribution was around 50%. GEF-UNDP contributed loans up to 100% and the EC contributed around 80%. It is clearly demonstrated when examining shares and total project costs in detail that the smaller the project total cost is, the bigger the share of contribution or loan is, similarly than in the case of Morocco and Tunisia. Analysing not only percentages, but also real numbers in project contribution, the following order of donors can be depicted: IFAD (EUR 40,628,800), Germany (EUR 25,000,000), Spain (1,550,661), EC (EUR 860,191), and GEF-UNDP (EUR 236,000). Accordingly, the major country donors in this case include Germany and Spain, while the main institutional donor is the IFAD. It is interesting to note that France and Belgium should be among the major donors for Algeria according to data in the EU Donor Atlas (2004). However, Belgium was not considered based on 7.3.2. As for France, as only partial information is available on French projects in the ODA donor report of France, it was not possible to include it in the project analysis.

In Algeria, *10% of the examined projects* can be connected to *mitigation*, while the *majority of projects is related to adaptation*. Mainly adaptation type of projects have been implemented in the field of water management, rural development, agricultural development and environmental management, while mitigation type of projects characterize the fields of forest management and capacity building.

As far as geographical location of projects is concerned, data shows that the majority of donor projects are implemented in the *Northern parts of Algeria*.

9.2.4 Projects in the Maghreb subregion

On the basis of the above analysis by country, it can be concluded that the most important donor project fields both by number of projects and financial value of projects include *agricultural development, water management, rural development, and renewable energy*. It has to be noted that most information on projects are available on Morocco, and half less on Tunisia and Algeria, therefore, considering donor projects, 37 projects can be selected for Morocco, 19 for Tunisia, and 15 for Algeria. In line with this, comparing total project costs by country, the following can be stated: projects implemented in Morocco have their financial share in the subregion at 71.6%, in the case of Tunisia it reaches 18.5%, and finally Algeria has a share of 9.9%. However, it would not be appropriate to draw general conclusions from these percentages, emphasising the above mentioned fact that information is not equally available in the focal countries of the research.

According to the results of the analyses of the available projects, the most significant donor countries in the subregion are *Germany, Spain, and Italy*, while the most important institutional donors include the *EC, IFAD, GEF, IBRD, and UNDP*. As it was mentioned before, it was not possible to compare full project data from France, that is the reason why France is not included in the above list.

Regarding the examined projects, *one-third* of them relate to *mitigation*, while *two-thirds* aim at contributing to *adaptation*. In relation to climate change, *mitigation* means an anthropogenic intervention to reduce emissions from various sources of greenhouse gases or enhance their sinks. In the case of desertification, mitigation is understood as reducing or changing the scale of human interference in order to combat land degradation. *Adaptation* refers to all those responses that may be used to reduce vulnerability to climate change.

To examine the low-cost project category and the high-cost project category, the following can be concluded. The *highest costs* are associated with *projects* related to

integrated water management, integrated rural development, integrated environmental management, integrated agricultural development, irrigation, water supply, drinking water, wind park, solar based thermal power plant, photovoltaic electricity, energy efficiency, and sustainable land management. The *lowest costs* arise in connection with the following *project types*: elaboration of national climate change/desertification strategy and action plan, related enabling activities, capacity building, institution building, natural resources management programme, environmental management programme, risk management modelling, monitoring systems, forest management, sustainable tourism, emissions inventory, and support for implementing national action programmes to combat climate change/desertification.

9.3 Overview of projects that are part of the South-South cooperation

South-South cooperation is a part of UNCCD implementation. This type of cooperation was already referred to during the second session of the INCD in 1993. It was laid down during the negotiations that improved coordination and cooperation among developing countries is essential to aspects of combating desertification and mitigating drought, and that the exchange of relevant experiences, data and information are also an important element.

Within the framework of the subregional action programme to combat desertification (UMA 1999), there are projects to be commonly implemented in the participating Maghreb countries. Apart from this, in the Observatory of the Sahara and the Sahel (OSS) Strategy (2004-2011), it is planned to establish an early warning system for the UMA subregion and Egypt – based on drought observation and monitoring.

The Secretariat General of the UMA (1999) determined indicators for evaluating projects under the frame of the subregional cooperation to combat desertification: physical realisation of projects, project results and performance (in real terms and in monetary terms), and effectiveness and impact indicators. The list of projects that were planned under the aegis

of the UMA can be found in Annex III. It has to be noted that no information is available on the present status of these projects, whether they have been implemented at all. UMA reports on subregional desertification activities submitted to the UNCCD secretariat are available not only for 1999, but also for the years 2002 and 2004. Both latter reports declare that the planned six projects constitute the priority activities for the subregion, but no data is provided on project status. Therefore, these projects are considered here as planned in 1999.

Description of the following projects can be found in the *Subregional Action Programme to combat desertification for the Maghreb* (UMA 1999). On account of the unclear status of these planned projects, it is not viable to go into a detailed analysis, but it may be worth to draw at least a sketch of these six projects. Apart from one *integrated development programme* of the arid ecosystems of the Maghreb, all other projects relate to the field of *capacity building*. They include institution building project for improving subregional coordination, evaluation project of the process of desertification and establishment of a database and information system on desertification, ecosystem monitoring, and establishing a joint preparedness plan for drought. According to the above document, project duration was planned between 3-8 years, which means that if any of these projects were really implemented, most of them should have been completed by now. The total cost of these projects is around EUR 15.9 million. This amount would be financed partially by the national budget of the Maghreb countries and partly by a number of funds.

Different types of cooperation between UMA and donor organisations are described in the Activity Report of UMA on the implementation of the UNCCD (UMA 2004). It is noted there that the EU SMAP programme contributed to environmental protection in the form of projects that have a subregional character. These include monitoring projects for national and subregional action programmes; improvement of indicators and communication among stakeholders; and promoting the implementation of the UNCCD in the frame of the national

action programmes in the Maghreb countries. For this purpose, the EU contributed EUR 1,438,945 for Morocco and Tunisia in 2002. Apart from this, a demonstration project on strategies to combat desertification in arid lands with involvement of agro-pastoral communities has to be mentioned (UMA 2004) where the EC SMAP programme contributed to implementation in Morocco and Tunisia.

The latter examples reveal that there is no strict border line between North-South and South-South cooperation, and that the best effectiveness can be reached with a combination of the two approaches, i.e. with integration of efforts at the subregional level and with the financial and technical help of donor partners. Therefore, the next step is to examine the conceptual, institutional and financial frame of donor policies of an emerging EU donor country, namely Hungary which may take part in the Euro-Mediterranean cooperation.

10. ANALYSING THE HUNGARIAN DEVELOPMENT COOPERATION POLICY FRAMEWORK

Hungary, through acceding to the European Union, undertook the responsibility to elaborate and implement its *international development cooperation (IDC) policy* in accordance with OECD and EU principles and practices. The basis for the EU's IDC goals were laid down by the Barcelona European Council, and after the enlargement specific official development assistance (ODA) targets were approved for the new Member States. Hungary agreed to contribute to fulfilling the commitments and targets of the UN Millennium Declaration and the Millennium Development Goals. The Hungarian IDC policy is consistent with the EU requirements, our foreign policy and the goals laid down in the government programme. With the purpose of discussing the features of an emerging donor country's development cooperation policy framework, the legal, conceptual, institutional, and financial aspects are considered in the next sections.

10.1 Legal and conceptual background of international development cooperation policy in Hungary

The conceptual and legal frameworks are handled together in this section on account of the fact that they are closely interlinked. In 1999, the Government Decree No. 2319/1999 ruled for compiling an IDC concept, and based on the concept, several legal documents came into existence. The Government approved the *concept* of the Hungarian international development cooperation policy in the year 2001 which provides the conceptual basis of the country's donor policy. Elaboration of the institutional framework started based on the concept, and on-the-ground implementation was launched in 2003 with the set-up of the Inter-ministerial Committee on International Development Cooperation (IMC) by Government Decree No

2121/2003.

The *major aim of the Hungarian donor policy* is to provide financial and technical assistance to countries selected from the list of OECD DAC recipients, in line with the interests of Hungary. Further objectives include promoting sustainable development, democratic transition and stability in the concerned partner countries. This policy focuses on fields where Hungary has comparative advantages such as experience sharing in the area of economic and political transition, research and development, agriculture, education, *environment and water management*, and development of the information society.

It is a great challenge for the country at the present stage of economic development to pursue an efficient IDC policy and catch up with developed donor countries. Nevertheless, there are already certain achievements. By the present day, the legal, institutional, and financial frameworks of the Hungarian IDC policy have been laid down by the government. IDC projects are financed from the IDC allocation of the national budget and the relevant budgetary lines of the interested ministries, and cooperation activities are carried out by different government authorities with the involvement of private and civil organisations.

In order to use the country's limited financial resources in the most efficient way, clear targets and preferences have been set when deciding on the IDC partner countries and IDC sectors. To be able to fully utilise the country's comparative advantages and to ensure maximum added value to the EU common IDC activities, the main focus is on Western Balkan and CIS countries with the intention to share experiences gained during the political and economic transition, and the EU accession.

When identifying priority IDC regions and countries, the Ministry of Foreign Affairs found it necessary to provide special priority to relevant countries in the neighbouring region, since Hungary has a vital interest in the stability and development of the region. The geographical span of Hungary's IDC policy, however, is wider than that, and also reflects the

requirements of sustainable development, poverty reduction in partner countries, their integration into the world economy and promoting democracy, rule of law and good governance. ODA partners therefore have also been chosen from the least developed countries group, whereas some Far-Eastern countries were included due to the tradition of our bilateral relations and experiences from the past decades.

Based on the above mentioned considerations, at present the following *groups of countries* are included in the *priority list of the Hungarian international development cooperation policy*: strategic partners: Serbia and Montenegro, Bosnia-Herzegovina, Vietnam, and the Palestine National Authority; other partner countries: Macedonia, Moldova, Mongolia, Kyrgyzstan, and Ukraine; least developed countries: Ethiopia, Yemen, Cambodia, and Laos; and international commitments: Afghanistan and Iraq. It can be observed that none of the selected partner countries is located in the Southern-Mediterranean region. However, it should also be noted that several priority partners are affected by desertification and drought (e.g. Vietnam, Mongolia, Kyrgyzstan, and Ethiopia).

The list of priority partners is not a final one, in the sense that together with gaining more experience in the IDC field and together with the different development paths of the partner countries, it is possible every year to reconsider the relevance of individual countries in the list. The IMC as the main governing body of the Hungarian IDC policy dispose over the power to change the current list. One example of such a change happened in the beginning of 2006 when it was decided that China should not be included in the list of IDC priority partners taking into consideration its rapidly rising level of development. It can be concluded that in principle it is possible to change the target partners and to include at least one from the Southern-Mediterranean region. Further potentials for this are analysed when touching upon the institutional set-up of the Hungarian IDC system.

10.2 Analysing the institutional side of donor policy formulation in Hungary

As for the *institutional background*, there is inter-ministerial cooperation under the coordination of the *Ministry of Foreign Affairs*. The main decision-making body of the Hungarian IDC policy is a high-level Inter-ministerial Committee (IMC), and the operative body is the Inter-ministerial Working Group on International Development Cooperation (IWG) functioning at the experts' level. Besides, every involved ministry has its own internal structure to coordinate IDC activities and cooperate closely with the Ministry of Foreign Affairs. The involved ministries are as follows: Ministry of Health, Ministry of Agriculture and Rural Development, Ministry of Defence, Ministry of Economic Affairs and Transport, Ministry of Education and Culture, Ministry of Environment and Water, Ministry of Finance, Ministry of Justice, Ministry of Local Governance and Spatial Development, Ministry of Social Affairs and Work, and the Office of the Prime Minister.

From the research aspect, the *Ministry of Environment and Water* has to be mentioned with emphasis among partner ministries of the Ministry of Foreign Affairs, as this is the institution responsible for implementing the UNFCCC and the UNCCD, i.e. for the issues of climate change and desertification. In the learning period of the Hungarian donor policy (2003-2006), one single officer used to be in charge for coordinating donor activities within the Ministry of Environment and Water, and the same person acted as national focal point to the UNCCD. The reason behind it was that the UNCCD is a development convention rather than an environmental convention. From the beginning of year 2007, this function is decoupled, which means that different persons deal with donor policy and the UNCCD. This might make the process less efficient as integration of the two areas had numerous advantages and ensured a comprehensive and effective functioning. Concerning other involved ministries, it is common that one or two persons per institution is/are responsible for intra-institutional coordination in the IDC field.

As it was explained in section 10.1, the conceptual and legal frame of the Hungarian donor policy looks back to the end of the 1990s. However, the institution building started only in the year 2003 (Government Decree No. 2121/2003) with the set-up of the earlier mentioned *Inter-ministerial Committee on International Development Cooperation (IMC)*.

The Committee approved its terms of reference and rules of procedure in its first meeting. In accordance with its *rules of procedure*, the primary responsibility of the Committee is to identify the geographical boundaries and sectoral tasks of the Hungarian IDC policy, and to carry out an inter-ministerial coordination with the aim of implementing a successful donor policy. For this, it defines priority partner countries and sectoral priorities, oversees the general situation of IDC activities, discusses about the most important related issues, and adopts an annual report on the national IDC policy.

Meetings are chaired formally by the Minister of Foreign Affairs. However, in practice, usually this task is delegated to a state secretary or even to a deputy state secretary. The IMC holds its meetings annually or as it is required. During the past 3 years, there were annual meetings held in the beginning of each year. Exact timing and agenda are determined by the chair of the Committee. Decisions can be taken in the event if more than 50% of Committee members are present during the meeting. Every member (i.e. one representative per ministry) has one single vote and decisions are made with single majority voting which makes the decision taking procedure simple and effective. If votes pro and contra are balanced, the chair has the right to decide. There is a record prepared every meeting that lays down the time and place of meeting, participants list, rate of votes and outcome of voting, decisions, comments and suggestions.

The complex work of the Committee is supported by the *Inter-ministerial Working Group on International Development Cooperation (IWG)* with the involvement of the same ministries but delegations are made at a lower hierarchical level. This means that in principle

the IWG consists of head of departments and their deputies. The Working Group is chaired by the head of the Department of International Development Cooperation of the Ministry of Foreign Affairs. The same person acts as the secretary of the IMC. This is the operative body of the Hungarian donor policy as the IWG can make decisions on issues that relate to the day-to-day operations of IDC policy.

A *specific feature* that distinguishes IDC policy in general from sectoral policies is that it contains numerous sectors and policy areas, requires participation and cooperation from the side of the state, the private sphere and the civil sphere, and is implemented outside of the borders of the country with the leadership of the Hungarian government in cooperation with partner countries' authorities. Therefore, useful information can be obtained on the recipient country's economy and business opportunities that can further deepen economic relations between a donor and a recipient. Nevertheless, as it is agreed by the members of the IMC, donor policy must not qualify as trade promotion activity, but it should be handled as a contribution to the implementation of the recipient country's poverty reduction strategy. Therefore, *efficiency and effectiveness of donor activities* are judged not on the basis of profitability indices but on project output in terms of how much a donor project contributed to meeting the demands and promoting the development of the recipient state.

The main share of the national IDC budget is handled by the Ministry of Foreign Affairs which means that it is the major responsible institution that has to prepare regular reports on allocation of financial resources and effectiveness of donor activities. IDC is also seen as a tool to provide business opportunities to small and medium sized enterprises to get new market shares or strengthen their market position abroad, i.e. in the supported recipient countries. In line with this, the Ministry of Foreign Affairs regularly provides such enterprises with information on IDC opportunities. This would lead to another area, namely the even more specific field of tide aid. However, tide aid policy has a different conceptual, legal and

institutional coordination framework, its analysis is constrained by the limitations of this research. Furthermore, humanitarian policy coordination should also be mentioned. It is also in the hands of the Ministry of Foreign Affairs, but again, it has a different institutional coordination mechanism. Therefore, this policy field is not touched upon in this dissertation.

Considering that the IDC policy has appeared as a new element of the Hungarian foreign policy only recently, it is known to the public to a small extent. Therefore, efforts have to be made to improve communications and public awareness raising for different sections of *the public* as follows: decision-makers of state institutions, politicians, social and economic stakeholders, the academic life, and the general public. Providing politicians with adequate information on the IDC policy is of cornerstone importance from the aspect of a successful implementation of the donor policy as this requires a political consensus. Informing the wider public has its own significance, i.e. the public should understand why it is necessary to contribute to combating poverty in foreign countries when poverty is also a problem for the country.

It is worth having an overview of what has happened so far in this specific field. The Foreign Affairs Committee and the Financial Committee of the Parliament received a written report on the actual situation of the national IDC policy in 2005. Besides, reports on international conferences and negotiations are regularly circulated among the members of the IWG. On several occasions, there were seminars organised by the Ministry of Foreign Affairs on IDC policy for politicians, NGOs and private companies. Furthermore, media relations are equally important. Therefore, it is set out in the contracts of winners of IDC project proposals that they have an obligation to promote the IDC goals of the country in public. There is a double-way communication with relevant NGOs on conferences, application opportunities and other important facts of the donor policy. The role of the private sphere cannot be neglected either as it takes part in IDC projects implemented in the selected recipient countries. As for

academic life, in the winter semester of 2004/2005, a so-called UN academy was organised entitled International development cooperation in the 21st century with a series of lectures. Participants included IDC personnel of the different ministries and government institutions, NGOs, and university students. Furthermore, to the concerns of the wider public, an IDC leaflet was issued containing essential information on the policy.

The institutional gaps in the sense that the relation between the IMC and the IWG has not been clarified can well be presented through a concrete example. In the beginning of 2005, there was a proposal by one of the ministries to include an additional country (the name of it is confidential) in the list of IDC priority partner countries. This proposal was for the first time presented in one of the annual meetings of the IMC. A decision was made during that particular IMC meeting that the issue should be delegated to the IWG level and discussed in the next session of the IWG. During that IWG meeting, not all members of the IWG were present. Therefore, a written voting procedure was commenced by the Ministry of Foreign Affairs. A request was made to vote in favour or against by IMC members, but it turned out that in some cases the request for voting did not arrive to IMC members but only for IWG members due to inefficiencies in communication networks between and within ministries.

It was concluded that the procedure was invalid and it ended without concrete results (Külügyminisztérium 2005). The voting results were recorded, and the initiating institution asked for a review of the record. This request was refused by the Ministry of Foreign Affairs based on distinctive arguments. However, a solution was proposed, i.e. to leave this question open for potential future considerations under the aegis of the IMC which has strict rules of procedure. This example shows how important it would be to prepare rules of procedure for the IWG as well and to clarify the distinct roles of the IWG and its relation with the IMC.

It is proposed that besides the efforts taken by the Ministry of Foreign Affairs, other partner ministries should undertake an active role as well in promoting IDC activities. It can

also be concluded that Hungary has to speed up the development of the national institutional framework and has to design a financing schedule as well envisioning a deeper integration into the EU development cooperation policy.

10.3 Financial framework of the Hungarian IDC policy

Hungary's development assistance programmes are mainly *financed* from the central budget. Based on data from the Annual Report of the IMC in the beginning of 2006 (Külügyminisztérium 2006a), approximately HUF 18.88 billion (EUR 75.552 million) was spent on ODA in Hungary in 2005 which roughly corresponds to 0.09% of the Gross National Income (GNI). In the year 2006, ODA amounted approximately at HUF 24 billion (EUR 96 million) which is 0.13% of the GNI, so it can be considered to be step towards meeting the Barcelona commitments of the EU. According to the most recent EU commitments which were approved by the EU General Foreign Affairs Council in May 2005, the ratio of ODA/GNI has to reach up to 0.56% for the EU25 by 2010 with specific obligations for old and new Member States. Old Member States (EU15) have to prove a ratio of 0.51%, while the newly acceded ten countries including Hungary shall reach a rate of 0.17%.

Hungary as an EU and OECD member follows the guidelines of the OECD Development Assistance Council (DAC), although the country is not a DAC member (a prerequisite of becoming a DAC member is to commit at least 0.2% of GNI to ODA). It was mentioned earlier in this paper that the institutional framework was set up and real operations of the Hungarian donor policy started in 2003. Therefore, it is an obligation for the country to submit data and reports on its donor activities. Hungary fulfils this requirement annually. Providing data is the task of Ministry of Foreign Affairs. However, it is important that partner ministries submit good quality data that corresponds to the DAC statistical guidance. At this stage, three country data reports are available for the years of 2003, 2004 and 2005.

Comparing data contained in these reports, it can be stated that there is an increasing tendency in terms of the ratio of ODA/GNI. In the launching year of the IDC policy of 2003, governmental institutions spent (including commitments) HUF 5.3 billion (EUR 21,200,000) on bilateral and multilateral ODA, out of this the Ministry of Foreign Affairs had a share of 25%.

It is claimed by representatives of the Ministry of Foreign Affairs that it is in the interest of Hungary that a move shall be made to increase *bilateral spending* compared to *multilateral commitments*. The aim is to reach a 60% bilateral and 40% multilateral share. At present, the ratio is vice-versa. In the short history of the Hungarian donor policy, the country has been in the process of formulating institutional mechanisms, and available financial resources are also limited. Consequently, efforts have to be made to commit a larger share of resources for bilateral relations, in harmony with the EU regulations for application procedures, monitoring and evaluation systems.

Since 2003, every involved ministry and other government institution has had to prepare and submit to the Ministry of Foreign Affairs a report containing financial data and information on its ODA activities in the given year. The Ministry of Foreign Affairs then compiles an overall report and presents it to the Ministry of Finance in order that this data can be included in the budgetary report for the Parliament. Before this process starts, the report has to be approved by the IMC. Ministries' reports have so far been prepared without using common reporting guidelines. As more experience has been gained, there is a tendency that every year an improved report is submitted to the Ministry of Foreign Affairs by the partner ministries. Nevertheless, there are still many gaps in the provided data, therefore standardization of *reporting requirements* has to be carried out by the coordinator ministry in order that data should be more inclusive and reflect real ODA spending of government institutions in whole.

This is a national interest of the country to submit improved reports with *reliable data* to the EU and OECD DAC. With this measure, a more reliable picture can be gained on Hungary's IDC policy and its implementation. Due to international obligations, in the forthcoming years the country has to increase its ODA spending and commitments. This could partly be improved by exact statistical data provision. Another way of increasing ODA spending requires an *increased budgetary spending*. Financing therefore is a crucial issue for the future of Hungarian donor policy. Essential and stable elements of financing donor policy lies in the IDC budget line of the Ministry of Foreign Affairs and contributions paid to different international organisations that are handled by the Ministry of Finance. A large portion of such activities is financed by the Ministry of Foreign Affairs' relevant budget.

Formulation and implementation of the Hungarian donor policy hinge basically on the available financial resources which determines what type and size of projects can be initiated and implemented in the recipient partner countries and determines also what level of opportunities Hungarian private companies and civil organisation can gain there.

As it was described above, EU membership has an impact on financial requirements of IDC policy. The Barcelona Commitment is part of the EU acquis communautaire, and it is binding for Hungary as well to achieve the outlined target determined ODA spending in terms of total GDP of the country. Comparing Hungarian IDC commitments to commitments by the old EU Member States, it can be concluded that the difference is 12-fold. Although at present decreasing the deficit of the government budget receives more attention, increasing national ODA commitments cannot be avoided.

Taking into account that an effective IDC policy is built on programmes and projects, earlier there was a proposal by the Ministry of Foreign Affairs to plan for a 3-year budget instead of the present annual budgetary planning. However, the present national budgetary system is based on annual planning so the 3-year planning concept does not have viability

according to the current national budgetary legislation framework. Selecting donor projects to provide support for is possible on the basis of the needs of the recipient countries and the priority sectors determined by the IMC. An organisation which wishes to take part in such a project may apply for a competition to receive IDC financial resources. The only exception is when government bodies apply for support, as in this case transfer of financial resources and delegation of tasks are possible. The main decision preparing body for project applications is the *Working Committee of the Ministry of Foreign Affairs*, and the final decision is taken by the minister of foreign affairs. Project implementation has been monitored by the IDC Implementing Agency since July 2004.

Incorporating aspects of environmental protection into the IDC policy is closely related to important domestic, regional and even global interests, and provides a specific opportunity for Hungary to be involved in IDC activities. In the field of *environmental protection*, nature conservation and water management, multilateral cooperation plays a determining role, primarily under the aegis of the United Nations. Bilateral IDC is carried out mainly in the form of expert visits and technical assistance. According to the statistical framework used by the OECD Development Assistance Council (DAC), *ODA payments by the Ministry of Environment and Water* amounted approximately HUF 85.5 million (EUR 342,000) in 2005. Some other Hungarian IDC activities and projects also result in environmental co-benefits. As for the year 2004, payments reached HUF 93.9 million (EUR 375,600) because that year humanitarian aid for the tsunami-hit South-Eastern Asia region was allocated as well. The same number equalled HUF 89.4 million (EUR 357,600) in the year 2003.

Most of the projects implemented or planned within the framework of the Hungarian IDC policy are not directly connected to the field of environmental protection. However, some other IDC activities and projects have environmental benefits. During the period of 2004-2006, out of IDC projects financed from the IDC budget of the Ministry of Foreign Affairs, there are

altogether 13 projects in the field of environmental protection. This will be expanded on in the next section.

10.4 A project-based approach: lessons learned

The *wider frame* of the Hungarian IDC policy is determined also by related international conventions, the UN Millennium Development Goals and such international programmes as e.g. those adopted by the Johannesburg World Summit on Sustainable Development, the Monterrey and Doha Summits. These international frameworks are especially important for environmental protection as they involve numerous development policy goals which are in close connection with various environment related global objectives (e.g. healthy potable water, conservation of biodiversity, renewable energy, reducing cross-border pollution etc.). Thus, it is essential that the principle of integrated donor policy is applied when designing specific IDC policies, programmes and projects. Integrated donor policy means that direct and indirect economic, social and environmental impacts are taken into consideration hand-in-hand.

In the year 2003-2005 (precisely between September 2003 – January 2005), the following *types of programmes* were available in the frame of the Hungarian donor policy: stability and security, concrete bilateral projects, technical assistance, humanitarian aid, and support for programmes of international organisations. The amount totalled at HUF 747,924,169 (EUR 2,991,697). If humanitarian aid is not taken into consideration, the amount equals HUF 687,424,169 (EUR 2,749,697). The countries that have benefited from these programmes are all recipients included in the priority IDC partner country list of Hungary. Analysing support from a sectoral aspect, police training, maintaining law and order, health care, food aid, border security, and agriculture were among the main fields.

Comparing the above data with information gained from a report of the IMC in the

beginning of 2006, it can be concluded that the supported sectors include water management (drinking water, waste water), fisheries, school constructions, hospital constructions and renovations, environmental protection, nature protection, education, and cultural heritage protection, apart from the above. However, it is clear from the facts the most of the implemented and planned Hungarian IDC projects are not directly connected to the field of environment protection, although several donor activities and projects may have environmental benefits.

Among projects that were carried out or planned within the frame of the IDC budget of the Ministry of Foreign Affairs in the period of 2004-2006, only 13 projects are in the environmental field. The value of these projects in monetary terms was HUF 153,148,167 (EUR 612,593) which accounts for 6.2% of the IDC budget of the Ministry of Foreign Affairs. In connection with the fields of implementation and partner countries, the priorities of the Hungarian donor policy are reflected in that these projects are implemented in environmental fields where Hungary can transfer its experiences. Besides, the recipient countries show the importance of their place in the priority list. According to this, 6 projects in Ukraine, 3 in Serbia and Montenegro, 2 in Iraq, 1 in Bosnia-Herzegovina, and 1 in Vietnam are part of the Hungarian IDC commitment.

Among the projects that can be connected to the *environmental field*, water management, i.e. drinking water and waste water treatment projects are in first line to be mentioned from the aspect of this research. In the second line, projects aimed at environmental capacity building, knowledge transfer, and environmental awareness raising, in the third line agriculture, horticulture, and fisheries are to mention. Such types of projects might be relevant in connection with the Southern-Mediterranean region. As summarized in subsection 9.2.4, the following *project types* can be implemented at relatively low costs: financing the elaboration of national climate change/desertification strategy and action plan, related enabling activities,

capacity building, institution building, natural resources management programmes, environmental management programmes, risk management modelling, planning and establishing monitoring systems, forest management, sustainable tourism, emissions inventory, and support for implementing national action programmes to combat climate change/desertification. These types of projects are in line with the needs of the Southern-Mediterranean countries (see results of SWOT analysis in 8.5).

10.5 Recommendations for the future formulation of the Hungarian donor policy

As a starting point, it was earlier proven that the Southern-Mediterranean can be considered to be an important region for the EU Neighbourhood Policy. It is also clear that Hungary is at an early stage of developing its international development cooperation policy and that in this process, it is useful to *learn from experiences* of the old EU Member States and the European Commission which have a history of international development cooperation policies and activities. Therefore, herebelow recommendations are made on the basis of the SWOT analysis of the Maghreb subregion (see chapter 8) and the previously presented project analysis (see chapter 9) which would be worth taking into account when designing another future direction of Hungarian donor policy. It is also important to note that policy alternatives will be described that are slightly differ from the status-quo, in line with the strategy of disjointed incrementalism referred to in chapter 4.

In the spirit of the above, Hungarian international development cooperation policy alternatives are to be examined from the aspect of potential (economic, social, and environmental) impacts on the partner countries' policies and projects as follows:

- status-quo policy (similar rate/amount of financial and/or technical support);
- new priority countries in the frame of the European Neighbourhood Policy (shift in importance in respect of recipients); and

- new priority sectors (preference shift in sectoral approach, e.g. from general environmental protection to combating desertification and drought).

In the survey which was presented in 7.3, an aim was to gather experiences of the above mentioned donor countries and organisations with a geographical focus of the Southern-Mediterranean region in line with the new European Neighbourhood Policy and the Barcelona process. It is undeniable that the *interlinkages of development cooperation and the environment* is an area of increasing importance. In this context, focal policy areas include combating desertification and drought, adaptation to and mitigation of climate change, environmental protection, rural development, agricultural development, water management and irrigation practices, forest and plantation management, energy, transport, and tourism.

The joint ministerial meeting of the OECD Development Assistance Committee and the Environment Policy Committee in April 2006 makes examining the interlinkages of development cooperation and the environment even more relevant. Study questions included therefore the following. In what way and how effectively EU Member States and the European Commission can contribute to policy formulation and policy development in developing states in the environment related policy fields? To what extent could we speak about a "country-driven" approach in these donor policies? What are the results of such projects?

Analysing the findings of the earlier referred chapters 8 and 9 and this particular chapter as well, the following recommendations can be made for further formulating the Hungarian donor policy. However, it should be noted that there is a chance to include any country of the Maghreb subregion in the list of IDC priority partners if at least one of the ministries undertakes the role to initiate it and if it has the power to convince other involved decision-makers. This way, the same failure that happened in the case of another country described above may be avoided.

10.5.1 Institutional environmental strategic planning and coordination

Top-down and bottom-up policy initiatives should be linked under the aegis of the institutional network. It means that the inter-institutional mechanism should allow for accommodating sectoral approaches and at the same time high-level political interests.

Despite the fact that Hungary has an IDC concept, it would be important to formulate a long-term *strategy on international development cooperation* based on the guidance of the IDC Policy Concept, while short-term *action programmes* could convert the strategic goals into operational actions containing the necessary measures, deadlines and responsible institutions. Combating climate change and desertification should be an integral part of the proposed strategy which sets goals that not only would serve national interests but also would ensure compliance with international environmental conventions. An effective implementation of international development cooperation policies can be achieved if there is *environmental consciousness and commitment at the inter-institutional level.*

A key to achieve this is awareness raising through presentations and training. Environmental commitment can be put into practice through establishing *inter- and intra-institutional networks and coordination.* It may be suggested that additionally to the activities of the Ministry of Environment and Water, *environmental officers* should be designated in all other partner ministries that take part in the work of the *Inter-ministerial Working Group on International Development Cooperation (IWG)*. As the IWG reports to the *Inter-ministerial Committee on International Development Cooperation (IMC)*, this mechanism would bring environmental issues and responsibility closer to the decision-makers' level and ensure integration of environmental aspects international development cooperation policy. This procedure could contribute to ensuring that the list of partner countries is reviewed based on environmental interests besides political and economic considerations.

Under the umbrella of the UNCCD, the establishment of the Drought Management Centre for South-Eastern Europe in Ljubljana, Slovenia can be seen as a considerable achievement. The aim of the Centre is to strengthen cooperation and coordination among the affected countries of the subregion primarily through scientific networking and data sharing. The work of the Centre was launched in the first half of 2007, and a positive role of it is anticipated in the process of combating drought and desertification not only in the given subregion, but also in the whole South- and Central European part of the continent. Experiences gained in this cooperation could provide Hungary with tools for designing donor activities in relation to other affected subregions.

10.5.2 Opportunities in integrating environmental concerns into investment decisions

Hungary, with limited financial resources but a wide scientific and networking capacity, could contribute to improving governance and public administration system in the recipient countries by *knowledge transfer and experience sharing*. Good governance and decentralisation in the public sector is of cornerstone importance for improving the recipient countries' administrative and institutional capacity. International development cooperation activities include not only knowledge and know-how transfer, and scientific-technical support, but also *investing in different projects* in selected recipient countries.

According to climate change scenarios, water security will be a crucial issue in the near future on a global scale. From the aspect of combating climate change and desertification, in general, investing in water harvesting projects and reforestation projects has high importance especially in drylands. Analysing the SWOT features and the so far implemented international development cooperation projects of the examined recipient countries, and taking into consideration the financial limitations of the Hungarian donor policy, it can be concluded that additional *adaptation type of projects* should be supported primarily in the following areas: administrative capacity building projects, environmental management projects, small scale

water harvesting projects, agricultural and irrigation projects building on traditional techniques, reforestation projects, and projects supporting sustainable tourism. This is also in line with the needs of the examined Southern-Mediterranean countries.

Even if the examined Maghreb countries have a lot in common, there are certain differences in the geographical characteristics and policy approaches as discussed in 8.5. Taking into account these differences, the following project types would be viable to support and implement in the frame of international development cooperation in the individual countries. For *Morocco,* support could be provided for designing a drought early warning system, and know-how transfer would be useful on water management techniques, reforestation, and promoting eco-tourism. As for *Tunisia,* knowledge sharing and scientific networking on organic agricultural techniques, water management techniques would be viable, and promoting eco-tourism would be beneficial as well. In the case of *Algeria,* supporting water management projects and experience sharing on preventive measures to hinder further deforestation would be appropriate. For the initial stage of Hungarian donor activities, such projects could be implemented together with another EU Member State, esp. those that are actively participate in the Euro-Mediterranean cooperation, e.g. Spain, Italy, and Germany.

Investing in *clean development mechanism (CDM) projects* not only provides for greenhouse gas emissions reduction via cleaner technologies or reforestation in developing countries, but also establishes a role model for international development cooperation. Even if Hungary has a surplus greenhouse gas emissions quota at present, in the long term, the potential for CDM projects should not be excluded. It would be relevant for Morocco and Tunisia.

Environmental impact assessment should be part of ex ante IDC project evaluations, and ex post project monitoring and benchmarking of environmental performance of such IDC projects would be recommended. Available market mechanisms for financing multilateral

environmental agreements should be applied. Further opportunities include investing in Global Environment Facility (GEF) projects e.g. in the climate change and land degradation focal areas, and in projects in the frame of international environmental regimes like the UNFCCC and the UNCCD. A similar approach could be applied in other areas of development cooperation, namely *tied aid investments* and provide for officially supported *export credits* in developing countries. The environmental concerns need to be reflected in most types of IDC projects, and the IDC budget should be allocated accordingly. A target could be to reach that environmental issues are incorporated in 60-70% of IDC projects.

All the above measures in relation to the Maghreb subregion would be in line with the previously presented suggestion by one of the publications of the Hungarian Ministry of Foreign Affairs (Külügyminisztérium 2002), i.e. in view of Hungary's joining the Euro-Mediterranean partnership and the EU MEDA programme, the place of the Southern-Mediterranean region should be positioned within the emerging Hungarian international development cooperation policy framework. Further cooperation could be built with other donor countries (esp. Spain, Italy, Germany and France) and desertification related projects could be implemented together with them, building on their experience. This would contribute to fulfilling the obligations of Hungary in its capacity as a developed state under the aegis of the UNCCD.

11. CONCLUSIONS

This paper has focused upon the positive correlation between international development cooperation policy and policies to combat desertification and climate change. Hungary as a new EU Member State and an emerging donor country is in the process of formulating its international development cooperation policy. For this, it is useful to learn from the relevant experiences of the older EU Member States, the European Commission and other major donor institutions that have a history of international development cooperation activities. The geographical focus has been placed on the Maghreb countries of the Southern-Mediterranean region in line with the Euro-Mediterranean partnership and the new European Neighbourhood Policy.

A starting point in this research was that besides the scientific aspects of the interlinkages of climate and desertification processes, the climate change and desertification policy subsystems are also interlinked. Building on this presumption, policy frameworks at the international, subregional and national level have been examined taking also into consideration geographical boundaries and economic features of the selected recipient countries, namely Algeria, Morocco, and Tunisia.

The research has found evidence that adequate policies for combating desertification and drought contribute to adapting to the adverse impacts of climate change, thus decreasing vulnerability to climate change, and also mitigating climate change. The most important general and specific conclusions in the light of the added value of the research are summarized in the following sections.

11.1 General conclusions and added value of the research

In the past 30 years, a series of international environmental conferences have placed the concept of sustainable development, climate change, desertification, and biodiversity in the foreground of scientific research, national level policy considerations, and high-level political attention. Among these, the oldest phenomenon, desertification has been chosen as a focal area of research in this dissertation. It has been reviewed on different levels how desertification is connected to climate change, i.e. the scientific and bio-physical aspects have been touched upon, the international policy frames have been covered, and more concretely, the interlinkages of the policy subsystems of desertification and climate change have been analysed on the example of selected countries of the Southern-Mediterranean region.

The close connection between international development cooperation and the environmental field is an area of increasing importance under the aegis of numerous international organisations, especially the European Union (EU) and the Organisation for Economic Development and Cooperation (OECD). The place and potential role of a new EU Member State and OECD member country, Hungary has been examined in this context in order to reveal how viable it would be for Hungary to initiate development cooperation projects in the field of combating desertification and in geographical terms in developing countries of the Maghreb subregion.

Considering the *theoretical aspects* of the research, the reframing process of the concept of desertification has been analysed. It is a very important issue as the way how desertification is defined influences the policy context, policy debates and policy outcomes. Therefore, the frame is the term desertification itself, the policy discourse is the international negotiations that provided a forum for, inter alia, the discussion of the definition of desertification, and the designing systems are the interest groups involved. It has been investigated how international negotiations impacted on the concept of desertification.

Designers of the concept reflect on the changing problematic situation and they are trying to reframe the problem according to their new understandings. So far the reframing process of the concept of desertification has contributed to escalation of policy controversies as it has initiated discussions and reconsideration of definitions at the international level. Reframing seems to be a never-ending cycle for the definition of desertification which has had and will continue to have considerable impacts on the structure and operations of the UNCCD, the related financial support mechanisms, and the number of eligible country parties.

Turning to the *empirical aspects* of this research, the analysis has been four-fold. First, the target donor and recipient countries have been identified in the spirit of triangulation. Second, the major geographical and policy strengths and weaknesses of selected countries of the Southern-Mediterranean region have been analysed, and with respect to the impacts of the external climatic and policy environment, the most important opportunities and threats have been identified for these countries in the field of combating desertification and climate change. Third, selected international development cooperation projects have been analysed that have been implemented by the target donors in the countries of the Maghreb subregion. This analysis has disclosed to what extent the examined projects fulfil the requirements of the principle of country-drivenness. A general conclusion in this case is that the concerned projects are in line with the Maghreb countries' needs identified in the SWOT analysis. However, not all of the projects fulfil the requirements of the principle of country-drivenness, and areas have been suggested where more intense support would be needed (see 11.2.1 for specific areas).

Fourth, the international development policy framework of an emerging donor country, Hungary has been examined in detail. Finally, recommendations have been formulated in relation to Hungary's potential participation in the Euro-Mediterranean cooperation, and further developing the Hungarian international development cooperation policy which would contribute to complying with EU obligations and UNCCD developed country party

requirements (see 11.2.2).

Before going into detail of the main findings for the Maghreb countries and for Hungary, the major *added value of this research* is summarized herebelow.

(i) On the basis of the theoretical analysis of the 30-year-old history of the reframing process of the desertification concept, *it is argued that* reframing has led to an escalation of policy controversies, therefore international level negotiations on the definition of desertification should be reopened, and *the UNCOD definition from 1977 should be applied under the UNCCD* in order not to exclude geographical regions and countries from the scope of the Convention solely based on arguments that affected areas do not fall in the category of arid, semi-arid, or dry-subhumid lands.

(ii) Based on the overview of the major strengths, weaknesses, opportunities, and threats connected to desertification and climate change for *Algeria, Morocco, and Tunisia* from a geographical and policy environment aspect, and the analysis of selected international development cooperation projects implemented by donor states and institutions in the countries of the Maghreb subregion, it is concluded that the examined projects are in line with these countries' SWOT features even if in certain cases the principle of country-drivenness is not in place. *It is recommended that* besides the sectoral donor projects (e.g. in the field of water management, reforestation, sustainable tourism etc.) *a priority for these countries should be to reform, restructure, and decentralise their public administration system* with a view to be able to network and cooperate with project partners and ensure an effective and efficient project implementation and monitoring.

(iii) Considering the international policy framework at the forum of the UN, the OECD, and the EU, the most recent tendencies in the linkage of international development cooperation and the environment, and the national interests of *Hungary, it is suggested that the country should actively be involved in the Euro-Mediterranean partnership*. This

includes designing and implementing projects by providing financial, scientific, and technical support at least in one developing country of the Southern-Mediterranean region. In the initial stages, this could be carried out with involvement of an experienced EU donor country.

11.2 Specific conclusions

In the previous section, the main elements of the research have been reviewed followed by a summary of the main findings in general terms. Herebelow, specific conclusions and recommendations are formulated, first in relation to the analysed developing states of the Maghreb subregion, and second in relation to Hungary as an emerging donor country.

11.2.1 Conclusions for the Maghreb subregion

The Southern-Mediterranean is an area where climate change and desertification processes and human activities are in close connection. The majority of these countries' territories consist of deserts (hyper-arid and arid areas) and semi-arid and dry-subhumid areas (non-desert drylands) that are particularly vulnerable to climate change and desertification. The negative impacts of desertification are further exacerbated by the over-extraction of natural resources mainly as a result of a relatively rapid population growth. These processes form an ever enlarging cycle of strong feedback mechanisms that impact both the natural environment and the different security areas like human security and food security of the affected population.

The SWOT analysis has revealed that most of the projects implemented in the international development cooperation framework are in line with the needs of the recipient countries in the field of combating desertification and adapting to the impacts of climate change. However, measures should be strengthened and more donor support is needed in the fields of water management, water harvesting, water quality improving, and applying

traditional agricultural techniques.

Drought as a phenomenon has occurred as a result of climatic patterns, and influenced desertification processes to a large extent. An effective way of preparing for the projected more frequent reoccurrences of drought, drought monitoring and early warning systems have to be developed or further developed where there is a partial EWS and monitoring system already in place. These are essential part of *preparedness* measures. If there is no option to prevent a process/event, adaptation and mitigation are available as response measures. *Adaptation* as opposed to mitigation has key importance for these countries to be able to cope with the unavoidable impacts of further climate change and desertification. The majority of donor projects have so far been implemented related to adaptation. This tendency should continue when designing additional adaptation related projects in the frame of international development cooperation. Considering that climate change is a global, while desertification is rather a regional problem, the latter can be tackled in a more efficient way. Therefore, for the investigated countries policies to combat desertification should gain increasing attention and support. Regarding that desertification is a phenomenon of a very old history, it is suggested to reconsider the application of traditional methods and techniques in the agricultural and water sector, or alternatively to combine them with modern technologies and mutually adapt the two approaches for compatibility with local conditions and traditions. Furthermore, policies for local adaptation to climate change are much more critical than policies for local mitigation that have global but not local impact.

Concerning that the overall aim of the present research is to identify policy gaps and windows of opportunity in the application of international development cooperation policy as a tool to combat desertification and adapt to the impacts of climate change, the findings in relation to this aim can be summarized as follows. Based on the SWOT analysis of the recipient countries, major gaps and opportunities relate to the following areas. The public

administration system is over-centralized, and policy, programme, and project level coordination and implementation have so far been rather inadequate and poorly coordinated. This can be remediated by strengthening policy coordination and implementation capacities and administration at the national and local levels.

The geographical characteristics of the concerned countries, e.g. vulnerable land and water resources, extensive water and soil salinization, and overexploitation of natural resources are characteristic in general, with special regard to groundwater resources due to increased irrigation, and inadequate land use planning and inappropriate farming practices are present. This increases vulnerability to desertification and climate change. Enhancing the adaptive capacity of the affected countries to reduce vulnerability and to be able to respond to the effects of climate change, drought and desertification could be a solution, including measures that target improving water resources (e.g. small-scale water harvesting projects), developing organic agriculture, the agricultural sector, and reforestation.

11.2.2 Conclusions for Hungary

Regarding the areas summarized in the previous subsection which require further support in the frame of international development cooperation, the role of *Hungary as a donor country* can be specified as follows. Hungary could provide primarily technical and scientific support, and to a lesser extent financial support in the field of administrative capacity building and strategic planning, knowledge and experience transfer, thus contributing to designing adequate preparedness and response policies to enhance adaptive capacity in the concerned recipient countries. Specific project areas can include the fields of water management, water quality improvement, environmentally friendly agricultural practices, drought monitoring and early warning, reforestation, and eco-tourism.

The role of international development cooperation and more specifically the role of the Euro-Mediterranean cooperation can be to provide additional support in line with the identified

opportunity areas for the partner countries and focus efforts particularly on projects and measures as outlined herebelow:

- capacity building for strengthening policy coordination and implementation for national and local level public administration;
- provide financial, technical, scientific and technological support to increase the number and weight of projects that aim at reducing these countries' vulnerability to climate change and desertification, and to target strengthening adaptive capacity, with particular regard to designing drought monitoring and early warning systems, and improving the water, agricultural, forest, and tourism sectors in a sustainable way;
- initiate and implement projects in the above mentioned target sectors with special focus on the following areas: in the water sector – promoting traditional techniques for water harvesting, and mobilization of water resources; in the agriculture sector – promoting organic agriculture and ecological farming; and in the tourism sector – developing different forms of eco-tourism which has less negative impacts on the natural environment and natural resources.

Although the main climatic and geographical features of Morocco, Tunisia, and Algeria are similar to each other, there are certain differences in geographical terms which require different policy approaches and solutions. In relation to this, based on the individual countries' needs, the following can be suggested. For Morocco, support could be provided for designing a drought early warning system, and know-how transfer would be useful on water management techniques, reforestation, and promoting eco-tourism. As for Tunisia, knowledge sharing and scientific networking on organic agricultural techniques, water management techniques would be viable, and promoting eco-tourism would be beneficial as well. In the case of Algeria, supporting water management projects and experience sharing on preventive measures to hinder further deforestation would be appropriate.

Under the frame of the UNCCD, the establishment of the Drought Management Centre for South-Eastern Europe in Ljubljana, Slovenia can be regarded as a considerable achievement. The aim of the Centre is to strengthen cooperation and coordination among the affected countries of the subregion primarily through scientific networking and data sharing. The work of the Centre was launched in the first half of 2007, and a positive role of it is anticipated in the process of combating drought and desertification not only in the given subregion, but also in the whole South- and Central European part of the continent. Experiences gained in this cooperation could provide Hungary with tools for designing donor activities in relation to other affected subregions.

It can be suggested that it would be worth considering for Hungarian decision makers to include the Maghreb countries, or at least one of them among the development cooperation partners of Hungary and implementing projects within the framework of the Euro-Mediterranean partnership in the specific field of combating desertification and climate change, potentially with collaboration of experienced EU donor states which have so far actively participated in partnership building with the examined countries of the Maghreb subregion. This is in line with the intention of the Hungarian donor policy to increase the weight of bilateral cooperation from the current 40% share up to 60% as opposed to multilateral cooperation. Moreover, the obligations of Hungary as a developed country under the United Nations Convention to Combat Desertification could also be met.

11.3 Prospects for the future

As far as international regimes to combat climate change and desertification are

concerned, although they do not have a legally binding force, they provide a basis for identifying additional cooperation fields. To switch such cooperation into reality, extending bilateral cooperation among developed and recipient countries is available as an appropriate tool. In the changing world, the Euro-Mediterranean partnership will hopefully evolve with potential participation of new EU Member States, such as Hungary. It would be beneficial for the country to become a fully developed donor state after several years of the "emerging donor country" period. Taking into consideration reality, it is not possible earlier than in the next decade.

To summarize, the way how desertification is defined and how the concept is reframed from time to time influences a wide range of areas as follows. The compilation of a new, comprehensive World Atlas on Desertification which could give a reliable overview of vulnerable areas at a global scale is lagging behind due to a lack of consensus on the definition of desertification on the basis of which benchmarks and indicators can be agreed upon as well. The desertification definition determines also the geographical boundaries and the number of affected countries under the UNCCD that are eligible for financial support. That is the reason why there are opposing viewpoints from the part of different negotiating groups of countries and this also explains why it will not be easy to reach an agreement on applying a wider definition. This would influence the future development of the UNCCD itself, including its scientific bodies, namely the future structure and functioning of the Committee on Science and Technology, and the Group of Experts.

The reframing process of the concept of desertification has brought about policy controversies as it has initiated discussions and reconsideration of definitions at the international level. Whether a new wave of reframing of the term desertification can lead to a win-win solution on a global scale is a question for the future.

As for proposed future research related to the topic of this dissertation, it can be

suggested that the in-country variability and differences between the dryland and non-dryland economies of each country (Algeria, Morocco, and Tunisia) could also be analysed if reliable statistical data became available. Such an analysis may be of benefit to donor countries' policy makers by providing further guidance in development assistance policies.

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ANNEX I – LIST OF PUBLICATIONS AND CONFERENCE PRESENTATIONS

Publications

- Kulauzov, D. 2005. International co-operation on combating desertification and drought. In *Multilateral environmental agreements and their implementation in Hungary*, ed. T. Faragó, 85-88. Budapest: Ministry of Environment and Water.

Conference presentations

- Kulauzov, D. 2006. *International environmental cooperation on the example of the United Nations Convention to Combat Desertification*. Presentation at the Karinthy Model UN Conference (23 March 2006, Budapest, Hungary).
- Kulauzov, D. 2004. *A sivatagosodás elleni küzdelemről szóló ENSZ Egyezmény (UNCCD) hazai végrehajtása* [National level implementation of the UN Convention to Combat Desertification (UNCCD)]. Joint conference by the Ministry of Environment and Water, Hungarian Academy of Sciences and CEEWEB on the implementation of the Rio UN Conventions (29 January 2004, Budapest, Hungary).
- Faragó, T. and Kulauzov, D. 2003. *Reinforcing the synergies of the Rio Conventions.* Presentation on the occasion of the United Nations Framework Convention on Climate Change (UNFCCC) workshop on synergies and co-operation with relevant UN conventions (3 July 2003, Espoo, Finland).
- Kulauzov, D. 2003. *A sivatagosodás elleni küzdelemről szóló ENSZ Egyezmény (UNCCD) és Magyarország* [UN Convention to Combat Desertification (UNCCD) and Hungary]. Presentation on the occasion of the World Day to Combat Desertification in the Ministry of Environment and Water (17 June 2003, Budapest, Hungary).
- Kulauzov, D. 2003. *Institutional capacity needs in the accession countries*. Presentation on the occasion of the CATEP (FIELD, UNEP and CEU) workshop on emissions trading and project-based mechanisms – synergies between emerging regimes (7 February 2003, Budapest, Hungary).
- Faragó, T. and Kulauzov, D. 2002. *Implementation of the Kyoto Protocol in Hungary*. Presentation on the occasion of the regional seminar on the implementation of the Kyoto Protocol in cooperation with the Central and Eastern European countries – opportunities and practical aspects for French companies (4 October 2002, Budapest, Hungary).
- Kulauzov, D. 2002. *Drought monitoring, assessment and early warning in Hungary*. Presentation on the occasion of the first session of the Committee on the Review of the Implementation of the Convention (CRIC 1) of the United Nations Convention to Combat Desertification (UNCCD) (13 November 2002, Rome, Italy).
- Kulauzov, D. 2002. *Implementation of the UNCCD in the Republic of Hungary*. Presentation on the occasion of the UNCCD regional meeting for Northern Mediterranean, Central and Eastern European and other affected country Parties in preparation of the first session of the CRIC (24 July 2002, Geneva, Switzerland).

ANNEX II – SAMPLE DONOR QUESTIONNAIRE FOR THE SURVEY

1. a) Is there any legislation on combating climate change, desertification and drought in the international development cooperation context in your country?	**Yes** If you can, please specify:	**No**

1. b) Is there a strategy (concept) or programme (plan) on combating climate change, desertification and drought in the international development cooperation context in your country?	**Yes** If you can, please specify:	**No**

2. Please rank* your international development cooperation partner countries in the Southern-Mediterranean region, in the order of your priorities, concerning the period of 1995-2005.	**Algeria**	( )
	Egypt	( )
	Morocco	( )
	Tunisia	( )

3. a) Please rank** your priority sectors for international development cooperation in the field of combating climate change, desertification and drought with the above partner countries of the Southern-Mediterranean region in the period of 1995-2005.	**agriculture**	( )
	rural development	( )
	environmental protection	( )
	water management	( )
	forest and plantation management	( )
	energy	( )
	transport	( )
	tourism	( )

3. b) Please rank** the following sectors in the order of which should be given more priority, which need to be further developed and for which more development assistance is needed in the future in the above mentioned Southern-Mediterranean countries (your future plans).	**agriculture**	( )
	rural development	( )
	environmental protection	( )
	water management	( )
	forest and plantation management	( )
	energy	( )
	transport	( )
	tourism	( )

* When ranking partners, please use numbers between 1-4, starting with the most important partner.

** When ranking priorities, please use numbers between 1-8, starting with the most important priority.

4. a) If you can, please give an estimation on the share of official development assistance (ODA) devoted to combating climate change, desertification and drought as percent of total ODA provided by your country to the relevant Southern-Mediterranean since the beginning of the Barcelona process (1995-2005).

	Approximate ODA devoted to combating climate change, desertification and drought as % of total ODA			
Years / Recipients	**Algeria**	**Egypt**	**Morocco**	**Tunisia**
1995	%	%	%	%
1996	%	%	%	%
1997	%	%	%	%
1998	%	%	%	%
1999	%	%	%	%
2000	%	%	%	%
2001	%	%	%	%
2002	%	%	%	%
2003	%	%	%	%
2004	%	%	%	%
2005	%	%	%	%

4. b) If you can, please give an estimation on the sectoral breakdown of ODA for combating climate change, desertification and drought by country on an average concerning the period of 1995-2005.

	Algeria	**Egypt**	**Morocco**	**Tunisia**
Total ODA for combating climate change, desertification and drought	**100%**	**100%**	**100%**	**100%**
agriculture	%	%	%	%
rural development	%	%	%	%
environmental protection	%	%	%	%
water management	%	%	%	%
forest and plantation management	%	%	%	%
energy	%	%	%	%
transport	%	%	%	%
tourism	%	%	%	%
other	%	%	%	%

4. c) In your view, is the above sectoral breakdown corresponds to the national priorities and needs of your Southern-Mediterranean partner countries?	**Yes** If you can, please give your reasons or references:	**No** If you can, please give your reasons or references:

5. a) Please list projects that have been implemented or planned in the frame of international development cooperation in your Southern-Mediterranean partner countries.

Relevant sector	Title of project	Approximate costs of project (USD/ECU/EUR)	Your share of costs (%)	Partner country (Algeria/Egypt/ /Morocco/Tunisia)
agriculture				
rural development				
environmental protection				
water management				
forest and plantation management				
energy				
transport				
tourism				
other				

5. b) If you have detailed available information on international development cooperation projects with Algeria, Egypt, Morocco and Tunisia in the above mentioned fields, please give reference to existing project webpage or send us a summary of the project.

5. c) If there is an evaluation of the economic, social and environmental impacts of the above projects, please give an internet reference or send us a summary of project evaluation (e.g. cost-benefit analysis, environmental impact assessment, sustainability impact assessment).

ANNEX III – SELECTED DONOR PROJECTS LIST FOR THE MAGHREB SUBREGION (2006)

Recipient country	Policy field	Project title	Project status	Donor country/ institution	Total cost of project (in original currency)	Total cost of project (EUR)	Donor contribution (as % of total project cost)	Project duration	Geographical location in country
NATIONAL									
Algeria	**water management**	Reuse of residual water for agricultural and irrigation purposes in the city of Tlemcen, Maghnia and Terny	I	Spain - AECI Azahar Programme	EUR 1,136,948	1 135 948	20% (AECI)	2003-2005	Tlemcen, Maghnia and Terny (Northern Algeria)
		Creation of a system for the sustainable management of the hydrological region of Cheliff-Zahrez	O	Spain - AECI Azahar Programme	EUR 301,799	301 799	100% (AECI)	2002-2006	Central-Western North Algeria
		Pilot experience of artificial recharge of the aquifer of Mitidja	O	Spain - AECI Azahar Programme	EUR 106,363	106 363	100% (AECI)	2004-2006	Alger (Northern Algeria)
		Integrated water management	O	Germany - BMZ/GTZ	EUR 25,000,000	25 000 000	50%		national
	total cost of above projects in EUR:					**26 544 110**			
	rural development	Introduction of a sustainable rural development model in Daira de el Hachem (Mascara)	O	Spain - AECI Azahar Programme	EUR 473,410	473 410	100% (AECI)	2004-2008	Wilaya de Mascara (North-Western Algeria)
		Support for the national programme on agricultural and rural development	O	Spain - AECI Azahar Programme	EUR 441,900	441 900	100% (AECI)	2002-2007	national
		Pilot project for the integrated rural development of the Mellegue watershed	I	IFAD	USD 31,400,000	25 120 000	28% (loan)	1988-	border of Algeria and Tunisia (North-Eastern Algeria)
	total cost of above projects in EUR:					**26 035 310**			
	agricultur-al develop-ment	Rural development project in the Traras and Sebaa Chioukh Mountains of the Wilays of Tlemcen	not effective	IFAD	USD 39,600,000	31 680 000	30% (loan)	2004-2011	Tlemcen (Northern Algeria)
		Rural development project for the mountain zones in the North of the Wilaya of M'sila	O	IFAD	USD 29,800,000	23 840 000	59% (loan)	2003-	North M'sila (mountains, Northern Algeria)
		Pilot project for the development of mountain agriculture in the watershed province of Oued Saf Saf	O	IFAD	USD 24,100,000	19 280 000	52% (loan)	2001-2008	Oued Saf Saf (North-Eastern Algeria)
	total cost of above projects in EUR:					**74 800 000**			

	environ-mental manage-ment	Integrated environmental management	O	Germany - BMZ/GTZ	EUR 25,000,000	25 000 000	50%	2001-2010	Blida (Northern-Algeria)
		Rehabilitation of palm grove "Palmeraie Beni Abbes"	I	EC - MEDA	EUR 1,075,238	1 075 238	EUR 860,191 (80%)		Palmeraie Beni Abbes (North-Western Algeria)
	total cost of above projects in EUR:					**26 075 238**			
	forest manage-ment	The Dounya Park - a pilot project of an urban forest in accomplishment of the recommendations of the Rio Conventions	O	Italy				2003-	Suburbs of the town of Alger (Northern Algeria)
	total cost of above projects in EUR:					**N/A**			
	capacity building	Elaboration of a national climate change strategy and action plan	O	GEF - UNDP	USD 195,000	156 000	100% (GEF grant)	1998-	national
		Climate change enabling activity (additional financing for capacity building in priority areas)	O	GEF - UNDP	USD 100,000	80 000	100% (GEF grant)	2001-	national
	total cost of above projects in EUR:					**236 000**			
	Total cost of projects in Algeria in EUR:					**153 690 658**			
Morocco	**water manage-ment**	Institutional reinforcement in the field of integrated water management through supporting the organisation of the Lucos watershed	O	Spain - AECI Azahar Programme	EUR 1,920,000	1 920 000	100% (AECI)	2004-2007	North-Western Morocco
		Central Haouz irrigation project	I	IFAD	USD 424,910,000	339 928 000	5% (loan)	1983-	Central Haouz
		National water supply project, phase I	I	Germany - BMZ/GTZ	EUR 14,500,000	14 500 000		1999-2005	national
		National water supply project, phase II	O	Germany - BMZ/GTZ	EUR 10,200,000	10 200 000		2003-2008	national
		National water supply project, phase III	O	Germany - BMZ/GTZ	EUR 12,300,000	12 300 000		2006-2008	national
		Water supply project for North-Morocco	O	Germany - BMZ/GTZ	EUR 39,400,000	39 400 000		2000-2007	Northern Morocco
		Drinking water supply in the region of Loukkos, phase I	I	Germany - BMZ/GTZ				1999-2002	Loukkos region (North-Western Morocco)
		Drinking water supply in the region of Loukkos, phase II	O	Germany - BMZ/GTZ	phase I+II= EUR 48,000,000	48 000 000		2005-2008	Loukkos region (North-Western Morocco)
		Drinking water programme, phase I	I	Germany - BMZ/GTZ	EUR 36,300,000	36 300 000		1996-2002	national
		Drinking water programme, phase II	O	Germany - BMZ/GTZ	EUR 15,400,000	15 400 000		2006-2009	national
		Rehabilitation of water supply in national centres, phase I	I	Germany - BMZ/GTZ	EUR 9,900,000	9 900 000		1996-2003	national centres
		Rehabilitation of water supply in national centres, phase II	O	Germany - BMZ/GTZ	EUR 19,300,000	19 300 000		2002-2006	national centres
		Detection of spatial information for integrated water resources management in the water basin of Souss-Massa (Agadir)	O	ESA				2005-2007	Souss-Massa (Agadir, South-Western Morocco)

total cost of above projects in EUR:					**547 148 000**			
rural develop-ment	Integrated rural communal development in Beni Boufrah through environment protection and soil conservation	O	Spain - AECI Azahar Programme	EUR 841,873	841 873	36% (AECI)	2004-2007	Alhucemas (Northern Morocco)
	Support for the National Action Programme to combat desertification by means of improving living conditions of vulnerable population in Semmar (Nador)	O	Spain - AECI Azahar Programme	EUR 1,080,000	1 080 000	100% (AECI)	2005-2007	Nador (North-Eastern Morocco)
	Economic and infrastructural programme for the rural environment: integrated rural development in Duar de Bu Hamed	O	Spain - AECI Azahar Programme	EUR 630,918	630 918	100% (AECI)	2002-2006	Chefchauen
	Participatory rural development project in the middle Central Atlas (Khénifra)	O	EU	DH 210,200,000	21 020 000	80% (EC)	2002-2006	middle Central Atlas (Khénifra)
	Integrated rural development project on hydrology	O	World Bank	DH 2,270,000	227 000		2001-2006	national
	Livestock and rangelands development project in the Eastern Region - Phase II	O	IFAD	USD 9,200,000	7 360 000	70% (loan)	2003-	Eastern Morocco
	Rural development project in the mountain zones of Al-Haouz province	O	IFAD	USD 30,200,000	24 160 000	60% (loan)	2000-2006	Al-Haouz province
	Support programme for combating rural poverty, desertification and drought, as a sub-programme of the National Action Programme to combat desertification	I	UNDP	USD 3,310,000	2 648 000		2002-2005	national
total cost of above projects in EUR:					**57 967 791**			
land manage-ment	Concerted action on environmental protection and improvement of the population's living conditions in the National Park of Alhucemas	O	Spain - AECI Azahar Programme	EUR 647,957	647 957	80% (AECI)	2006-2007	Alhucemas (Northern Morocco)
	Anti-erosion project in the water basin of Sidi Driss	O	EU	DH 21,315,000	2 131 500	59% (EC)	2002-2006	Sidi Driss
	Participatory control of desertification and poverty reduction in the arid and semi-arid high plateau ecosystems of Eastern Morocco	P	GEF - IFAD	USD 15,750,000	12 600 000	40% (GEF grant)		Eastern Morocco
total cost of above projects in EUR:					**15 379 457**			
renewable energy	Windpark in Essaouria	O	Germany - BMZ/GTZ	EUR 78,000,000	78 000 000	64% (loan)	2003-2006	Essaouria (South-Western Morocco)
	Windpark in Tanger	O	Germany - BMZ/GTZ	EUR 167,000,000	167 000 000		2004-2007	Tanger (Northern Morocco)
	Solar based thermal power plant	O	GEF - IBRD	USD 114,360,000	91 488 000	38% (GEF grant)	1999-	national
total cost of above projects in EUR:					**336 488 000**			
energy efficiency	National project on photovoltaic electricity, phase I	O	Germany - BMZ/GTZ	EUR 22,500,000	22 500 000	20% (loan)	2002-2007	national

		National project on photovoltaic electricity, phase II	O	Germany - BMZ/GTZ	EUR 28,500,000	28 500 000		2005-2009	national
		Energy and environment upgrading of the industrial park of Sidi Bernoussi Zenata, Casablanca	O	GEF - IBRD	USD 11,900,000	9 520 000	6% (GEF grant)	2003-	Casablanca (Western Morocco)
	total cost of above projects in EUR:					**60 520 000**			
	natural resources management	Natural resources management	I	Germany - BMZ/GTZ	EUR 2,400,000	2 400 000	100%	2000-2003	National Parks of Toubkal, Tazekka, Souss Massa, and Bas Draá (South-Western Morocco)
		Natural resources protection and combating desertification	O	Germany - BMZ/GTZ	EUR 3,700,000	3 700 000	100%	2006-2008	national
	total cost of above projects in EUR:					**66 620 000**			
	environmental management	Environmental management and protection programme	O	Germany - BMZ/GTZ	EUR 4,700,000	4 700 000	100%	2006-2008	Rabat, Tanger, Mohammedia (North-Western Morocco)
	total cost of above projects in EUR:					**4 700 000**			
	forest management	Concerted development of the forests of Ifrane	O	GEF-IFAD	DH 214,000,000	21 400 000	55%	2002-2006	Ifrane
	total cost of above projects in EUR:					**21 400 000**			
	capacity building	Modelling for drought risk management for cereals	O	Spain - AECI Azahar Programme	EUR 352,360	352 360	79% (AECI)	2006-2008	national
		SMAP project on the set-up of a monitoring system for the National Action Programme to combat desertification	I	EU-SMAP-OSS	EUR 400,000	400 000	71% (EC)	2003-2005	national
		Elaboration of a national climate change strategy and action plan	O	GEF - UNDP	USD 140,000	112 000	100% (GEF grant)	1999-	national
	total cost of above projects in EUR:					**864 360**			
	Total cost of projects in Morocco in EUR:					**1 111 087 608**			
Tunisia	**agricultural development**	Agropastoral development and local initiatives promotion programme for the South-East	O	IFAD	USD 44,300,000	35 440 000	42% (loan)	2002-	South-Eastern Tunisia
		Integrated agricultural development project in the governorate of Zaghouan	O	IFAD	USD 33,400,000	26 720 000	48% (loan)	1998-2006	Zaghouan, South-Eastern Tunisia
		Integrated agricultural development project in the governorate of Kairouan	I	IFAD	USD 28,260,000	22 608 000	48% (loan)	1993-1999	Kairouan (North-Eastern Tunisia)

total cost of above projects in EUR:					**84 768 000**			
renewable energy	Strengthening institutions in the field of renewable energy through elaborating a wind map	O	Spain - AECI Azahar Programme	EUR 927,500	927 500	32% (AECI)	2004-2007	national
	Solar water heating	I	GEF - IBRD	USD 21,100,000	16 880 000	20% (GEF grant)	1993-2005	national
	Development of on-grid wind electricity in Tunisia for the 10th Plan	O	GEF - UNDP	USD 106,260,000	85 008 000	10% (GEF grant)	2003-	national
total cost of above projects in EUR:					**102 815 500**			
rural develop-ment	Improvement of living conditions, sanitation, health and economic conditions focusing on empowerment of women and combating desertification in the micro-zone of Zograta, governorate of Gabés, South-Eastern Tunisia	O	Spain - AECI Azahar Programme	EUR 1,271,298	1 271 298	39% (AECI)	2006-2008	Governorate of Gabés, South-Eastern Tunisia
	Development project of the mountain zones of the North-West	O	World Bank	USD 42,000,000	33 600 000		2003-	North-Western Tunisia
total cost of above projects in EUR:					**34 871 298**			
forest manage-ment	Reforestation of the Tataouine mountains	O	Italy	USD 6,500,000	5 200 000		2003-	Tataouine mountains (South-Eastern Tunisia)
	Sustainable management of forest ecosystems	O	Germany - BMZ/GTZ	USD 1,500,000	1 200 000		2002-	national
total cost of above projects in EUR:					**6 400 000**			
environ-mental manage-ment	Support program for technical industrial centres in the field of the environment (Phase II)	O	Spain - AECI Azahar Programme	EUR 1,196,310	1 196 310	51% (AECI)	2004-2007	national
total cost of above projects in EUR:					**1 196 310**			
sustain-able tourism	Restoration of the fortress of Santiago on the Chikly island	O	Spain - AECI Azahar Programme	EUR 1,845,000	1 845 000	100% (AECI)	2002-2006	Tunis (North-Eastern Tunisia)
total cost of above projects in EUR:					**1 845 000**			
energy efficiency	Development of an energy efficiency programme for the industrial sector for Tunisia	O	GEF - IBRD	USD 31,800,000	25 440 000	27% (GEF grant)	2003-	national
total cost of above projects in EUR:					**25 440 000**			
land manage-ment	Support to sustainable land management in the Governorate of Siliana	P	GEF - IFAD	USD 29,350,000	23 480 000	18% (GEF grant)		Governorate of Siliana
total cost of above projects in EUR:					**23 480 000**			
water manage-ment	Rational and efficient use of water resources	P	Germany - BMZ/GTZ					national

	total cost of above projects in EUR:					**N/A**			
	capacity building	SMAP project on the set-up of a monitoring system for the National Action Programme to combat desertification	O	EU-SMAP-OSS	EUR 2,000,000	2 000 000	71%	2002-	national
		Demonstration project on strategies to combat desertification with involvement of local communities of Kasserine	O	EU-SMAP	EUR 2,000,000	2 000 000	80%	2002-	Kasserine
		Support for implementing the national action programme to combat desertification	O	Germany - BMZ/GTZ	USD 3,000,000	2 400 000		2003-	national
		Emissions inventory of greenhouse gases: national strategy and action plans for emissions reduction fulfilment of national communications under the UNFCCC	O	GEF - UNDP	USD 565,000	452 000	100% (GEF grant)	1995-	national
	total cost of above projects in EUR:					**6 852 000**			
	Total cost of projects in Tunisia in EUR:					**287 668 108**			
	total cost of above projects in EUR:					**190 226 426**			
	rural develop-ment	West Noubaria rural development project	O	IFAD	USD 54,800,000	43 840 000	34% (loan)	2003-2010	West Noubaria
		Sohag rural development project	O	IFAD	USD 98,300,000	78 640 000	25% (loan)	2001-2007	Governorate of Sohag
		Integrated development of the protected area of Sainte-Catherine	I	EC - MEDA	EUR 942,020	942 020	EUR 753,616 (80%)		
	total cost of above projects in EUR:					**123 422 020**			
	Total cost of projects in Algeria, Morocco, and Tunisia in EUR:					**1 555 743 153**			
SUB REGIONAL									
Maghreb Arab Union (Algeria, Morocco, Tunisia, Libya, Mauritania)	**rural develop-ment**	Transboundary integrated development programme of the arid ecosystems of the Maghreb	P (in 1999)	UMA	USD 4,500,000	3 600 000		3 years	national
	total cost of above projects in EUR:					**3 600 000**			
	capacity building	Institutional support project for the subregional coordination organisation of the Maghreb Subregional Action Programme	P (in 1999)	UMA	USD 4.500,000	3 600 000		8 years	national
		Evaluation of the process of desertification in the Maghreb and establishing a database and an information system on desertification	P (in 1999)	UMA	USD 2,200,000	1 760 000		3 years	national

		Subregional project for promoting a participative approach	P (in 1999)	UMA	USD 3,000,000	2 400 000		3 years	national
		Establishing a regional network of ecosystems monitoring	P (in 1999)	UMA	USD 3,300,000	2 640 000		5 years	national
		Establishing a joint preparedness plan for drouht and assistance in case of a drought event	P (in 1999)	UMA	USD 2,400,000	1 920 000		3 years	national
	total cost of above projects in EUR:					**12 320 000**			
	Total cost of projects in UMA in EUR:					**15 920 000**			
Algeria, Morocco, Tunisia	**water manage-ment**	Implementation of a photovoltaic pumping and purification programme in Mediterranean countries	I	EC, Spain, France - SMAP	EUR 3,296,779	3 296 779	78% (EC)	2000	
	Total cost of projects in subregional programme for Algeria, Morocco and Tunisia in EUR:					**3 296 779**			
Morocco, Tunisia	**agricultu-ral develop-ment**	Demonstration project on strategies to combat desertification in arid lands with direct involvement of local agropastoral communities	I	EC, Italy - SMAP	EUR 4,266,463	4 266 463	80 % (EC)	2000	
	total cost of above projects in EUR:					**4 266 463**			
	environ-mental manage-ment	Set-up of monitoring and evaluation systems for national action programmes to combat desertification in the Mediterranean Maghreb countries	I	EC - SMAP	EUR 2,241,383	2 241 383	71% (EC)	2000	national
	total cost of above projects in EUR:					**2 241 383**			
	Total cost of projects in subregional programme for Morocco and Tunisia in EUR:					**6 507 846**			
Egypt, Tunisia, Turkey	**agricultu-ral develop-ment**	Promoting sustainable use of agricultural land through the introduction of organic farming methods	I	EC, Germany - SMAP	EUR 1,157,585	1 157 585	70 % (EC)	1999	national
	Total cost of projects in subregional programme for Egypt, Tunisia and Turkey in EUR:					**1 157 585**			

Abbreviations used in the above table:

I: IMPLEMENTED PROJECT

O: ONGOING PROJECT

P: PLANNED PROJECT

AECI: Agencia Espanola de Cooperación Internacional (Spanish Development Cooperation Agency)

BMZ: Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung (Ministry for Economic Cooperation and Development)

GEF: Global Environment Facility

GTZ: Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)

ESA: European Space Agency

IBRD: International Bank for Reconstruction and Development

IFAD: International Fund for Agricultural Development

MITC: Ministry of Industry, Tourism and Commerce

SMAP: Short and Medium term priority environmental Action Programme

UMA: Union du Maghreb Arabe (Arab Maghreb Union)

UNCCD: United Nations Convention to Combat Desertification

UNDP: United Nations Development Programme

UNFCCC: United Nations Framework Convention on Climate Change

Currency exchange rate is used as follows: 1USD=0.8 EUR, 1DH=0.1 EUR