Photo: Bedouin Camp near Dhulail, Zarqa River Basin

Securing rights and Restoring Range Lands for Improved Livelihoods in the Badia of the Zarqa River Basin - Jordan

Base line study
November 2011

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EXECUTIVE SUMMARY

This report is made to contribute to a global programme of IUCN in four countries where drylands are a dominant part of the landscape: Botswana, Jordan, Mali and Sudan. The programme “Securing Rights and Restoring Drylands for Improved Livelihoods Programme” is funded by the European Commission. This report for Jordan serves the purpose of identifying major issues related to land restoration and securing resource rights for local communities to develop their livelihoods in the Badia, the dry range lands of Jordan, that form an important part of the project area, the Zarqa River Basin. A preliminary version of this inception has been updated in view of recent, accelerating and major urbanization and industrial developments and related changes in land use in the western part of the project area. The inception has focused on four major domains that are land degradation processes, the legal and policy framework around dryland management, resource and tenure rights for local people in the Badia and an analysis of stakeholder and governance issues (see Chapters 2 to 5).

Most of the land in the Zarqa River Basin is characterized as arid or semi-arid land, which is damaged as a result of environmentally inadequate human activity. These activities have impacted negatively human well-being and social and economic development. Biodiversity is being lost and improper land use and heavy ground water extraction are important causes of degradation of lands and vegetation. A report of the Ministry of Environment (2006) confirm the observations made in this report and state that important causes for the here discussed land degradation trends are: (1) population increase; (2) land tenure and ownership conflicts; (3) lack of environmentally friendly national land use management plans and policy; (4) weak enforcement of agricultural legislation and guidelines for best practices; and (5) other barriers that include knowledge, communication, and institutional coordination.

In both the western and eastern parts of the Zarqa River Basin, economic viability and long-term sustainability considerations have been absent in the decisions regarding land management. Depletion of natural resources is for an important part caused by short-term financial interests in use of land and water by affluent individuals, often having the right connections in the capital. This has been furthered by external economic developments and the weaknesses or quasi-absence of both environmentally sustainable policies and their enforcement. As a result rural livelihoods strategies are shifting from livestock production/range management and rain fed cereals to highly intensified agriculture such as poultry, cattle production, irrigated vegetables and orchards, partly linked to export markets. The “promise” of short-term financial gains, even in the more remote and eastern/southern regions of the country, have also led to a trend where more and more Bedouin tribal families, that had their livelihoods from range management, are increasingly making fixed ownership claims on either tribal land or government lands. These “promises” are triggered by the possibility to gain a license for a ground water well. The license is officially granted only when based on a valid business plan (putting poor families on the disadvantage) or the prospect of for instance shale oil or other mineral resource exploitation. It is within this context that the here proposed project has to navigate.
This here described situation is comparable to many other dryland regions in Africa and Asia, and field work and discussions in focus groups for this project inception confirm in further detail the trends sketched above.

Within this more general context, it seems that facts on the ground and the rapid acceleration in very recent years of land use development trends in the western part of the Basin (intensive agriculture, urbanization and industrialization) have overtaken the project. While these trends are critically important to take into account, also in the eastern parts of the Badia, in most of the initial pilot sites in the western parts of the project area very little grazing land is left (less than 3 km² in each village) and livestock range management has become a marginal activity both in terms of land use and livelihoods. For the sake of relevance and representativeness of project activities, one or two of the actual project sites in the western part of the basin can be maintained and could serve as a case study to demonstrate how under rapidly changing demographical and industrialization conditions, alternative models to extensive range management can be explored for livestock development in limited grazing areas, while protection these areas from further degradation. It would be advisable to focus for this on state lands, such as under the jurisdiction of the Ministry of Agriculture.

The project objective is to contribute to reversing land degradation in the traditional drylands in the country. The last chapter of this report will develop a possible theory of change and recommendations for future work in this project. In short these recommendations will focus on:

1. developing high level political support for the above theory of change, with emphasis on the economic scenarios at stake (in view of continued or reversed trends of land degradation);
2. initiate a stakeholder dialogue for concerted action at different levels of decision-making based on an in-depth analysis of constraints and opportunities and a strategic planning of activities and resources that would feed the above higher policy levels;
3. initiate an in-depth gap analysis of current legislation on natural resource use in the Badia (compatibility with international laws, possible contradictions with customary rules and regulations) to offer proposals for improvements of the legislative framework and relevant policies that take into account as much as possible customary rules and regulations for resource tenure and usufruct;
4. Pilot range management strategies at the local level in relevant and representative pilot sites in the Zarqa River Basin where long-term and sustainable range management is still possible. Among the major activities that could be undertaken in these pilot sites/communities are the development of a rangeland management plan/strategy for which the local community can take ownership and assume accountability, and that has the potential to be scaled-up to other areas, while exploring supportive governance arrangements for this;
5. Explore the potential of a value chain approach to ecosystem services, in order to develop viable economic alternatives (e.g. eco-tourism activities and the valuing, processing and marketing of ecosystem products of high economic value derived from protected and managed Badia species, such as zafara’an, dyes, and etheric oils) and assure the necessary buy-in from both high level policy makers and local communities to sustain range management in the long-term and preserve the Badia natural heritage;
6. Engage urgently in monitoring change indicators for improved livelihoods and restored ecosystems, such as on environmental/land conditions, tenure rights, value chain development, livelihoods, governance and legislation;
7. Engage in a participatory learning and documenting process on decision-making, stakeholder interaction, perceptions on range management and land degradation, empowerment and right-based issues and changes in attitudes and belief systems.
1. INTRODUCTION

1.1. Background

IUCN has recently engaged in a worldwide dryland management strategy and has started in 2010 the implementation of a “Securing Rights and Restoring Drylands for Improved Livelihoods Programme”. The programme notably focuses on the conservation, restoration and sustainable management of restoration and sustainable management of ecosystems and their services, as the basis for improved livelihoods, in four diverse dryland areas (in Botswana, Jordan, Mali and Sudan), to be achieved through more secure rights, better management, and enhanced income generation opportunities.

The majority of the land in Jordan is characterized as arid or semiarid land. Rainfall in these areas is below 200 mm/year (see Figure 1) and because of this, land is only marginally suitable even for dryland agriculture. Most of this land is used for range management with small pockets of dryland agriculture (mainly wheat and barley) and of irrigated agriculture. The problems of water and land degradation are increasingly becoming a serious threat to livelihoods of a large segment of households particularly poor households who rely more greatly and directly on available natural resources for their livelihoods than other socio-economic groups due to lack of alternative livelihood options accessible to them (Al-Serhan, 2010).

The target zone/project area identified for the Jordan component of the overall programme is the Zarqa River Basin in the center north of the country. As Figures 1 and 2 show (when compiled) most of the land in this river basin is below 150 mm annual rainfall, and even unsuitable for dryland agriculture. A good part of this basin is indeed situated in the “Badia”, the common Arabic word in this region for “rangelands” in the dryland areas that are semi-arid to arid. The term Badia is tied to the Bedouin, the herder tribes who have developed their age-old pastoral and nomadic livelihoods in these areas, by traveling with their cattle in large stretches of land. Before the modernization dynamics of the last century these livelihoods were in harmony with the environmental conditions of the Badia; and the range land management practices developed and then used can be considered as a sustainable response to the harsh conditions of the area. The Zarqa River Basin is for a major part situated above the Amman-Wadi Sir Aquifer (B2/A7). The Amman-Wadi Sir aquifer is overlain by a basalt aquifer in its eastern/northeaster part - Wadi Dhuleil area and northeast of it (ARD, 2001). The basalt aquifer extends from the Wadi Dhuleil and Azraq region in Jordan to Jabal Al Arab in Syria1. Azraq and zarqa are respectively the masculine and feminine forms of the Arabic word for “blue”.

This inception report provides background information as well as a first “state of the art” inventory of issues that are important to consider for successful implementation of the project in the dry rangelands of the Zarqa River Basin in Jordan.

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1 This aquifer represents the main aquifer in Wadi Dhuleil area and even to its north and north-east. There is a hydraulic connection between the Basalt and the underlying Wadi As Sir aquifer formation (B2/A7) and they are considered as one hydraulic unit. The estimated recharge to the whole Basalt aquifer in Jordan is about 45 MCM/y of fresh water, suitable for all types of usages. Of that amount, only 28 MCM/y are available within the Amman-Zarqa Basin in Jordan, while the rest discharges into the Azraq basin (ARD, 2001; reference obtained from IUCN-ROWA).
The Zarqa River Basin is one of the most significant basins in the country with respect to its economical, social and agricultural importance. It is located in the central north part of Jordan and covers an area of 3,567 Km$^2$ from the upper north-eastern point to its outlet near
King Talal Dam in the west, and is part of five governorates, namely; Amman, Balqa, Jarash, Mafraq and Zarqa (see Figure 2).

The Zarqa River Basin can be divided in two main regions (see Figure 3):

1- **The western part, the catchment area of Sail Amman, the southern branch of the Zarqa River and all the small sub-watersheds in the north-west of the basin.**

   *Sail* is the local term for “water flow”. The catchment is situated in Amman and Zarqa Governorates. Sail Amman finds its sources from springs that are located in the now densely populated down-town area of Amman City, called *Ras el Ain* (*Ain* is the Arabic word for spring; *Ras* means the head, or main area in this case). The flow of these springs are connected to the Zarqa Aquifer Basin that is partly recharged by rainfall in the Amman area. Intensive underground abstraction in the upper basin, and diversion of rain water into the urban drainage and sewage networks have strongly reduced the base flow of this river. At Al-Sukhna Sail Amman finds its confluence with Wadi Dhulail to form the Zarqa river proper. Zarqa River flows westwards through Jarash and Balqa Governorates and drains into the water reservoir formed by the King Talal Dam. Because of its low quality water from Sail Amman and Zarqa River is only used to irrigate forage and trees along the Zarqa river banks. This water is actually a mix of fresh water and treated waste water from As-Samra Treatment Plant and is not appropriate to irrigate vegetables (Venot, 2003). The intensive withdrawal from the Zarqa Aquifer Basin has affected negatively soil quality and land use in this part of the Basin, as will be discussed in section 4.3.

2- **The catchment area of Wadi Dhulail, the eastern branch of the Zarqa River (Wadi Dhulail and Qaa Khanna areas in Figure 3):** The catchment area is situated in Zarqa and Mafraq Governorates. Where it may be sourced from springs in the mountains across the border with Syria, Wadi Dhulail is an intermittent stream, with seasonal water flow dependent on rainfall only in the winter and spring period. Where rainfall does not exceed 50
mm/annum, the region witnesses intensive plowing in marginal land by Bedouins to strengthen land claims. The region is characterized by soil and climatic conditions poorly suited for annual cropping or for the practices employed by new migrants putting additional pressure and stress on natural habitats resulting from land tenure issues (Hatough et al., 1986; Venot, 2003).

![Figure 3. Surface water sub-basins of the Zarqa River Basin. Source: OPTIMA (2006)](image)

In these areas human activities have caused important environmental damage. Key problems in the project area are population growth, land degradation and soil erosion, water scarcity and deterioration of water quality (around Sail Amman 80% of the industries and solid wastes disposal sites are located, while it hosts 20% of Jordan’s population mainly in dense urban settings). Most of the area is dried out and its natural vegetative cover has almost been eliminated. This degradation of land and vegetation resources is for a good part caused by important withdrawals from the ground water basins, disturbing the fragile moisture balances in the deeper soil layers where roots of trees and shrubs are getting their water. Especially in the western parts of the River Basin this water has been used to meet increasing drinking water demands for a rapidly growing urban population. For another part this land degradation is the result of expansion in agriculture, also mainly in the western parts of the River Basin, that has drained millions of cubic meters per year from the ground water basins. Fundamental roots of the problem are to be found in the country’s rapid population increase, mismanagement of land and water resources, and changes in lifestyle (OPTIMA, 2006).

The Zarqa River Basin is also chosen because it is the target zone of a priority programme in land restoration of the Jordan Government, the Zarqa River Restoration Programme that is implemented by the Ministry of Environment with important support from the IUCN-ROWA Office, notably its Regional Water Resources and Dryland Programme (REWARD). Most of the activities of the Zarqa River Restoration Programme are implemented in the western part of the Basin, notably around Sail Amman, the southern branch of the Zarqa River.
As mentioned a large part of the Zarqa River Basin is situated in Zarqa and Mafraq Governorates. Zarqa Governorate is a densely populated urban governorate, but in terms of the Human Development Index (HDI), Zarqa Governorate presents a worrying picture. It has fallen from third to sixth place out of the twelve Jordan Governorates and has recorded the smallest increase in HDI value over the five year recorded period (MOPIC, 2004). Jordan's absolute poverty incidence is estimated to be 33% in terms of population and 25% in terms of households. Zarqa and Mafraq Governorates have the second highest absolute poverty lines.

1.2. Overall Goal

The main goal of the study is to provide an understanding about the best ways (including governance dimensions) to restore degraded natural rangeland resources and secure local rights to these resources, so as to serving the socioeconomic needs and livelihood of the people in a sustainable manner in the project area, i.e. the Badia of the Zarqa River Basin in Jordan. The study would provide "baseline" information for monitoring change, including existing and potential indicators for environmental/land degradation.

Drylands, and also the Badia in Jordan present unique challenges for sustainable management: challenges that are not generally well reflected in policy and development planning. A key challenge is the high unpredictability of precipitation, which varies greatly between seasons, between years, and between areas within any given landscape. This extreme variability has led in many places to unique adaptations, both in terms of drylands biodiversity and in drylands livelihoods. However, the adaptations of dryland livelihoods are often misconstrued "as backward and in need of change". Efforts to "modernise" dryland livelihoods by eliminating some of the more challenging adaptive practices have led to increased poverty and environmental degradation.

With this and the IUCN Draft Drylands Strategy (2009) in mind, this EC funded project seeks to strengthen natural resource management in the drylands by first addressing governance of and rights over natural resources. Based on stronger natural resource governance, the project will help to strengthen and institutionalize participatory planning to use this as a platform for strengthening livelihoods, through improved natural resource management and improved use of markets for sustainably produced goods and services. This inception study will sketch the contours that may give direction and justification to the further implementation of the project.

1.3. Methodology

This document is based on an inception study that has reviewed or investigated the following domains:

1. Review of the national Policy Environment, particularly related to Land Tenure and Drylands Development and Desertification.
2. Analysis of land and resource rights in project area
3. Review of current environmental conditions in the project area, existing and potential indicators of environmental (land) degradation;
4. Analysis of natural resource stakeholders and wider stakeholder review (including local and institutional stakeholders in participatory planning processes);
The inception study is implemented through desk studies, focus groups and individual interviews (with use of semi-structured questionnaires), in accordance with the general ToRs for inception studies in the four countries involved in the programme (see ToR in Annex 1).

The work done for the present study has included focus groups and interviews with fifty-eight participants from NGOs, national and local governments, the private sector and universities to review the current conditions of the natural resources in the Zarqa River Basin (see Questionnaires used in Annex 2). At the same time tools and possible priority actions were discussed about how natural resources can be recovered to improve current and future livelihood of local people.

Initial focus sites were selected within Zarqa Governorate in the western part of the River Basin, notably in the localities of Al-Hashemmiya, Dhulail, Al-Khaldia and Al-Sukhna. The field data was gathered using a participatory research approach and focused group discussion; one group in each of the four selected focus sites. Several field visits by team members were carried out to different sites in the area before conducting the four workshops. Key groups and individuals were asked to attend the workshops. The discussions were based on structured guidelines designed by the researchers. In addition, more unstructured discussions were held to get a detailed understanding on the key issues discussed. More information on these focus sites is provided in Chapter 6.1.

At the same time, an inventory and evaluation of the natural resources in the four study areas was made, as well as an identification of the direct land users and relevant human impacts on them by actual processes of land development and degradation. In parallel desk studies were undertaken on current knowledge about land tenure, landownership and customary use rights in the area as well as on governance issues and government policy and legal frameworks related to land tenure, environment and desertification.

Analysis of the outcomes of above preparatory studies revealed that in the selected pilot sites/communities dryland agriculture and notably rangeland management have become rather insignificant. In all four areas land still used for grazing or for dryland agriculture is minimal (not more than 2 resp. 0.5 km² on a total community area of 12 to 20 km²), while in the same areas urbanization, industrialization and intensive irrigated agriculture are becoming rapidly the dominant use of land. Hence in a second stage of this inception study further exploratory work was done in areas in the more eastern parts of the Basin. Range management practices of Bedouin families here are still widespread, although also here has started a process of encroaching land investments either for industries or irrigated agriculture, notably along the main roads. This inception study will incorporate the insights acquired and take into account the facts on the ground of a fast accelerating process of urbanization, industrialization and intensification of agriculture over the last few years in the western parts of the Zarqa River Basin.

This report is structured in a way that for each chapter on the four above mentioned domains an overview of issues is given, with at the end a short conclusion (chapters 2 – 5). Chapter 6 provides background on pilot sites, while Chapter 7, based on the earlier conclusions, makes an overall analysis and conclusion and provides recommendations for the way forward in the project.
2. POLICY ENVIRONMENT

2.1. Environmental Degradation Policies – Shift from Traditional to Institutional

Natural resources in the project area have long been managed under traditional customary governance systems many of which are still practiced, although not legally recognized by government institutions. Customary or traditional systems of resource management generally run on the principle of community interests rather than individual benefits, providing safety-nets for those without secure access to resources or assets (Dutton and Shahbaz, 1999). Population growth drove people to cultivate land not previously used for farming. Shifting cultivation and grazing have been appropriate traditional responses to abundant land, scarce capital and limited technology. However, traditional land resource management systems were unable to adapt fast enough to prevent overuse of resources, and government was unable to keep up with infrastructure and human needs of populations. These traditional customary management systems have given way to more institutionalized governance, controlled by government decision makers and planners, however without being very effective neither.

2.2. Jordan’s Environmental Policies and Legislation

First environmental planning and policy formulation took place in 1991 when the National Environmental Strategy (NES). Subsequent laws and policies developed are summarized in Table 1 below. The NES was formulated by a national consultation process led by the Ministry of Municipal, Rural Affairs and the Environment, with technical assistance of IUCN and financial assistance from USAID. The NES was the first environmental strategy in Jordan. It has responded to the recommendations of the World Conservation Strategy of 1980 formulated by IUCN, UNEP and WWF. The NES aimed to maintain long-term environmental balance and enhancing the preparation of a development plan, while ensuring its continuity through economic planning. Subsequently a first national environment protection law was issued in 1995. In 1996 a National Environmental Action Program (NEAP) was developed, aiming to guide government environmental policy and investment decisions and to articulate programmes to implement such decisions.

Table 1. A chronology of environmental and Agricultural sector-specific Planning in Jordan from 1991-2006 (MoEnv, 2007):

<table>
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<tr>
<th>Policy</th>
<th>Issued by</th>
<th>Year</th>
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<tr>
<td>National Environmental Strategy</td>
<td>Ministry of Municipal, affairs and environment</td>
<td>1991</td>
</tr>
<tr>
<td>Water Strategy and policies</td>
<td>Ministry of Water &amp; Irrigation</td>
<td>1998</td>
</tr>
<tr>
<td>National Agenda 21</td>
<td>General Corporation for Environmental Protection</td>
<td>2000</td>
</tr>
<tr>
<td>Poverty Reduction Strategy</td>
<td>Ministry of Social Development</td>
<td>2001</td>
</tr>
<tr>
<td>National Strategy for Agricultural Development</td>
<td>Higher Socio-economic council</td>
<td>2002</td>
</tr>
<tr>
<td>Biodiversity Strategy and Action Plan</td>
<td>Ministry of Environment</td>
<td>2002</td>
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</table>
A National Agenda 21 was finalized in 2000 which incorporates a comprehensive chapter on desertification, including causes, actions to be taken, and proposed projects that would address these threats (UNCCD 3rd Jordan National Report, 2007). A country study on biodiversity was prepared and a Biodiversity Strategy and Action Plan was developed by the Ministry of Environment (MoEnv, 2002). A new primary environmental legislation is Law No. 1 of 2003. Based on this Environment Protection Law, the Ministry of Environment (MoEn) became responsible for issuing the necessary regulations such as nature protection, water protection, environmental impact assessment, and land and soil protection (LDK ECO SA, 2006). The following regulations are issued pursuant to the Environment Protection Law No. 1 (LDK ECO SA, 2006):

1- Environment Protection from Pollution in Emergency Cases  
2- Water Protection  
3- Air Protection  
4- Protection of Marine Environment and Coastal Protection  
5- Natural Reserves and National Parks  
6- Management, Transport and Handling of Harmful & Hazardous Substances  
7- Management of Solid Waste  
8- Environmental Impact Assessment  
9- Soil Protection  

As a further specification the soil protection by-law was issued in 2005 in accordance with law No.1. In this by-law, land degradation processes included soil pollution, erosion and desertification. The by-law explicitly included future plans to combat desertification and decreasing drought effects by all possible means within the UNCCD framework (MoEn, 2006).

The Agricultural Law of 1999 was replaced in 2002 by a new one (Agriculture Law No. 44; Ministry of Agriculture, 2002). This Agricultural Law has the objectives of ensuring sustainable use of agricultural natural resources without causing environmental degradation. It also aims to combat desertification and conserving biodiversity. The Environmental Protection Law (2003) and the Agricultural Law (2002) can be considered as constituting the main Legal Framework for issues concerning Desertification and Biodiversity. A careful analysis of both laws strongly suggests that they were formulated with special care to all environmental issues. Issues included in these laws are to be observed during the implementation of various activities.

In 2006 a National Strategy and Action Plan to Combat Desertification was developed (NAP; MoEnv, 2006). The overall objective of the NAP is to provide integrated development programmes targeting local communities and environmental components in areas under threat of desertification. The specific objectives of NAP are:

1- To highlight desertification as a national priority and develop a National Action Plan to be integrated within the national policy in a participatory approach to ensure commitment of all stakeholders for its implementation.  
2- To outline measures needed to combat desertification and mitigation effects of drought and the misuse of land through effective action at all levels supported by international cooperation and partnership arrangements, in the framework of an integrated approach contributing to the achievement of sustainable development of affected areas.

The National Strategy and Action Plan to Combat Desertification (MoEnv, 2006) recognizes that there are still important legislative deficiencies. The Box below cites the most important issues.
Deficiencies in Legislation
The assessment of the laws and regulations is beyond the objectives of the NAP. However, some points can be noticed regarding these regulations:
• Much interference between the different legislations,
• Absence of compulsory legislation concerning land use, although land use policy is already formulated,
• Absence of quantitative environmental indicators and quality functions related to soils and land,
• Many of the laws were issued early last century and need revision and updating,
• Some laws directly related to environment need to be activated.
Source: National Action Plan to Combat Desertification (MoEnv, 2006)

The NAP involves long-term integrated strategies that focus simultaneously, in affected areas, on improved productivity of land and the rehabilitation, conservation and sustainable management of land and water resources, leading to improved living conditions, in particular at the community level. Among the main programmes proposed the following two are closely related to the subject of this study: 3. Capacity building and institutional development; and 4. Restoration of degraded ecosystems of rangelands and forests (MoEnv, 2006). Notably the 4th Programme has proposed a project that would deal with Community Based Rangeland Rehabilitation by three complementary components being Rangeland Inventory, Rangeland Restoration and Eco-tourism.

2.3. Proposals for a National Rangeland Strategy for Jordan

Amidst these more general efforts for developing environmental development policies, a draft National Rangeland Strategy for Jordan was prepared in 2001 by the national Rangeland Strategy Committee in the Ministry of Agriculture, with support of the CIDA-funded Sustainable Rangeland Management Project (SRMP). The main priority axes proposed in this strategy are mentioned in the Box below.

The short and long term objectives of this national range strategy were defined as follows:
1. Control deterioration of the rangelands and reverse the desertification process.
2. Increase sustainable livestock production by restoring the productivity of rangelands and increasing sustainable range fodder production.
3. Improve and conserve the rangeland environment.
4. Improve the socio-economic conditions of the rangeland inhabitants.
5. Support and develop range institutions with financial and human resources, particularly the Range Department.
6. Amend and develop legislation pertinent to the rangelands.
7. Encourage local communities and inhabitants to adopt animal production improvement programs, pay more attention to quality of animals and participate in range development and management.
8. Work with concerned agencies to solve problems related to rangelands such as tribal lands, find suitable solution for the common use of rangelands and relate use to fixed rights.
9. Support fodder production in order to encourage intensive breeding.
10. Encourage local communities and sheep breeders to adopt intensive breeding techniques to regulate stocking rates.
Key Policy Issues for a Rangeland Strategy

For sustainable management and use of the rangelands ten key policy issues have been identified as elements for a Rangeland Strategy.

1. Participation of rangeland users in policy formation, strategy development and implementation.
2. Transformation of rangeland tenure system so that users have long-term stake in sustainable use.
4. Rangelands and water policy: Use of groundwater and harvesting of surface water.
5. Rangeland policies in context of Agricultural Sector Structural Adjustment and macro-economic policy.
6. Policies and Strategies for government support services to rangeland user groups.
7. Enhancing biomass and vegetative cover of the rangelands to increase sustainable production of the rangeland.
8. Enhancing sustainable livestock production through introduction of improved stock, animal husbandry and stock management.
9. Fuel wood use in the rangelands: development of alternative sources of energy and/or development of community fuel wood lots.


The recommendations made for this strategy are probably incorporated in the National Strategy for Agricultural Development (NSAD) that was prepared by the Consultative Economic Council, 2002 for the decade 2000-2010. The strategy stressed on sustainable agriculture and protection of natural resources. The strategic and operational programmes were comprehensive and covered most issues of biodiversity conservation and sustainable use in addition to combating desertification (MoEnv, 2007). The NSAD developed Action Plans for four subsectors: (i) Rainfed Agriculture, (ii) Livestock and Rangeland, (iii) Irrigated Agricultural in the Jordan Valley and (iv) Irrigated Agriculture in the Highlands. Key actions for the livestock and Rangeland sub-sector are summarized below (MoEnv, 2007).

Key Actions for the Livestock and Rangeland Sub-sector (NSAD, 2002)

1. Protect natural rangelands, organize grazing, and increase the productive capacity of rangeland resources.
2. Define land uses according to productive capacity, giving priority to the development of areas that have high potential of incorporating water-conservation and management measures as an integral component of rangeland development.
3. Develop rangeland on the basis of integrated management approach and local community participation.
4. Conserve agro-biodiversity and use it for rangeland development and expand the establishment of natural and rangeland reserves.
5. Develop agricultural farming systems that integrate water-harvesting techniques in the development of rangeland.
6. Monitor environmental changes and combat desertification.
7. Increase animal feed production, improve its quality and introduce new feed resources.
8. Promote small family livestock projects.
9. Support livestock breeders’ organizations and encourage the establishment of councils or specialized associations for production and marketing of produce and providing support services.

10. Support integration between plant and livestock production.

2.4. Other Environment relevant Rules and Regulations in Jordan

The next chapter will discuss in more detail different legislative formats for landownership and resource tenure.

Legislation for the water sector

Due to the increased demand on water and the scarcity of its supply, the Ministry of Water and Irrigation (MWI) adopted a Water Strategy in 1998. The strategy was supplemented with different water policies in four water sectors aiming to make a balance between water demand and supply and emphasizing the role of private sector and attracting private investment into the economy. The four policies are related to: groundwater management, irrigation water, water utilities and wastewater management.

Agricultural exports have decreased dramatically. Gulf countries have discontinued importations of agricultural products from Jordan because of its political position and support of Iraq during the Second Gulf War. Saudi Arabia blocked the market for Jordanian fruit and vegetable products that are irrigated with wastewater. Consequently, the agriculture income has substantially dropped by around 40% from 1994 to 1999 (Suleiman, 2004). The government then started to be aware that agriculture could not expand any more in the project area, and different measures to alleviate the supply demand deficit were taken. These are (Suleiman, 2004):

- Control of the abstraction of ground water.
- Already in 1992, drilling agriculture wells was prohibited in all the areas of the country (Hadidi, 2002).
- In 1995, the Jordanian authorities adopted a new strategy aiming at the implementation of a water allocation policy. The priority for water allocation was firstly attributed to the urban sector then to the industrial and tourism sector, and finally to the agricultural sector.
- As a result reduction of irrigation water allocated to the Jordan Valley.
- Investigations have been carried out to bring water from Disi aquifer 18 in the south of the country to Amman city.
- The Ministry began to review the water sector and to publish policy paper concerning its strategies to manage water utility, groundwater, surface water and wastewater resources.
- Imposition of a fee of JD 0.25 per m$^3$ of exploited groundwater for drinking purposes in the middle of April 2002 (Hadidi, 2002).

Where all these measures seem to be valid for tackling water scarcity in Jordan, many of these laws and rules are not implemented or enforced.
2.5. Difficulties Facing Environmental Management and Implementation in Jordan

Many difficulties face the proper implementation of environmental management programmes in Jordan, such as capacity of institutions and their staff and legislative, institutional, and technical and management problems (MoEn, 2005, 2006; Hadadin and Tarawneh, 2007). A summary is given below. Key issues have to be further studied in the implementation of the project.

**Capacity**
- Desertification is not considered as a national development priority.
- Lack of a common working definition for sustainable land use and planning.
- Lack of land use planning and legislation.
- Lack of financial resources to combat the permanent damage to agricultural lands.
- Duplication and absence of roles and responsibilities of organizations working in land management.
- Absence of a national database and system to monitor desertification.
- Weak capacities of local communities.
- Inadequacy of education, training, and public awareness programs for various target groups on sustainable land management.

**Legislative**
- Lack of compatibility between national legislation and global environmental laws regarding desertification, causes and consequences.
- Lack of a clear legal mechanism for enforcing the use of integrated land use as a part of comprehensive national development planning.
- Weakness of existing laws and inadequate enforcement of laws, codes, and regulations.
- Weakness of legal advocacy in dealing with desertification issues.
- Weakness of coordination between legislators and subject matter professionals in what is related to law formulation and revision.

**Institutional**
- Multiplicity of institutions responsibilities and overlapping authorities.
- Lack of communication and coordination among agencies.
- Lack of proper instruments for monitoring and inspection,
- Conflict between centralization and decentralization of operations to the local level.
- Weakness of private sector activities in the field of combating desertification.

**Technical and Management**
- Lack of monitoring and evaluation system of environmental quality indicators.
- Lack of stakeholders’ awareness and participation in the process.
- Lack of incentives for applying modern environmental/anti desertification management methods.
- Lack of funds. Financial resources are limited and widen the gap between legislation and implementation.
2.6. In Conclusion

An important observation in the above cited National Rangeland Strategy (MoA, 2001) is still valid and worthwhile to cite here:

*It is evident from the preceding sections of this paper that there is much understanding as to the importance of the rangelands, trends and projections as to their use, the populations of rangeland users their livelihoods and life styles. There is an appreciation of the extent, processes and causes of rangeland degradation and its impacts on both rangeland users and their livelihoods and on the broader interests of the Jordanian people, economy and the natural resource base on which they depend. There is also considerable insight and experience – particularly from projects and programmes implemented in the rangelands with and for the rangeland users - as to what policies, legislation, regulations and approaches are needed to address the problems of rangeland degradation and non-sustainable use. It is recognised that production from the rangelands makes important contributions to the economy of Jordan. However, it is also recognised that, in the long run, sustainable use and management of the rangelands, the scarce water resources and limited pasture and bio-mass resources, is crucial to the protection of the resource base of the nation and the livelihood and quality of life of every citizen.*

The Rangeland Strategy continues this observation by stating that “directive “top-down” policies, laws and regulations and prescriptive extension has not worked well; while much can be learned “from successful project and programme experience with participatory approaches involving all stakeholders in rangeland management decision making, planning and implementation”. It concludes by recommending “an overall rangeland strategy with a complementary set of policies, regulations and support services, to ensure that user groups and communities have the security of tenure and incentives to use the rangelands in a sustainable manner while optimising production and their income”.

The authors of this report do not think that at this policy level - ten years later - much can be added here. These observations and conclusions are in close alignment with the recommendations made in Chapter 7 of this Inception Report. However it is noted here that after ten years not much progress is made yet to develop such a strategy in the specific policies and legislations to strengthen action on the ground. Many of the difficulties facing environmental management and implementation in Jordan (section 2.5) are strongly valid for the management of the rangelands. Many of the issues mentioned there will be dealt with, indirectly or directly, in the recommendations given in Chapter 7.
3. LAND TENURE AND RESOURCE RIGHTS IN THE PROJECT AREA

3.1. Shifts in Land Use in the Jordan Badia

In Jordan most of the real drylands, with rainfall less than 200 mm/year, are considered as rangelands, rainfed agriculture being a very marginal exercise. These rangelands in the semiarid regions constitute between 85 and 91% of the land (about 8 million hectares). The natural rangelands are defined as “the wide-open, non-fenced lands where fodder grow naturally, that are not suitable for traditional farming due to lack of rain, low fertility, rough terrain and high rockiness or because of a combination of these factors, which makes the land optimum use restricted to production of fodder for animals”. (Abu Zant, 1999; Sinkri, 1977). In Jordan, the Agriculture Law No. (20) for the year 1973 defined the rangelands as “all lands registered as such and any other state-owned lands where annual rainfall is below 200mm and that do not have sustainable irrigation, or the lands confined for public use”. Thus, this Law took only the average annual rainfall into consideration, and disregarded other factors which play important roles in defining the rangelands, such as the land topography, fertility, physical and morphological characteristics which have a close relationship with rangelands’ utilisation and sound management (MoA, 2001. National Rangeland Strategy for Jordan).

In the Zarqa River Basin, an important part of the land is classified as sparsely vegetated area (see Figure 4) and constitutes the main part of the Badia rangelands. These rangelands, found mainly in the eastern part of the Basin, are deteriorated mainly due to human misuse and to the harsh environmental conditions of these lands. Overgrazing, uprooting of shrubs for firewood, plowing rangelands for cereals crops and establishing land claims are the main factors that contribute to the misuse of range resources (NCARTT, 2004). Most of this rangeland in Jordan is located in its arid zone which, however, still provides important grazing potential (HTS, 1956). In this area, where rainfall is rarely adequate to produce a reasonable crop (100-500 Kg/ha) and limited vegetative growth is common, barley is only cultivated for hay. Before the advent of the tractor, marginal lands were rarely plowed because of the high labor input required for animal drawn plowing. With the introduction of the tractor on a major scale in the early 1950’s, expansion of tillage into the steppe lands speeded up (HTS, 1956). In recent years, this expansion has become increasingly rapid. Although 91% of Jordan is constituted by rangeland, no long term development and land use policy was set up for Jordan as a whole. The political neglect of rangelands development has led to pasture degradation, desertification processes, and overgrazing of Badia’s pastureland.

In the last two decades, livestock owners have started to shift from subsistence to commercial production. This change resulted first in an increase of livestock numbers in Jordan from 2.1 million in 1990 to 4.1 million in 1993. After that period, livestock numbers started to decrease to 2.6 millions in 1998 and less than 2 millions in 2002. This decrease was due to government subsidy cuts, the availability of veterinary services and the increased prices of live animals in the export market (OPTIMA, 2006). Land use in the rain fed arable areas, partly used for grazing, is highly dynamic and changes according to different conditions. In addition to the above changes in livestock production, technological and demographic developments enhanced the development of urban areas and infrastructure and agricultural areas. These latter factors increased the demand for agricultural land, and have put more lands under cultivation, especially in the western parts of the Badia around the Sail
Amman Branch of the Zarqa River, between Amman and Sukhna. Indeed, during the period 1992-2002 about 28% of the area of open spaces here was converted to arable lands (OPTIMA, 2006). As a result, livestock does not constitute anymore the main source of income for the Bedouins, although herds remained until now an important form of wealth and status, rather than a mere source of income (Van Aken et al., 2007).

Figure 4. Land use in the Zarqa River Basin. Source: OPTIMA (2006).

It needs to be mentioned that the shift from animal husbandry /rangeland management to permanent agriculture during the last four decades notably in the western part of the Zarqa River Basin has resulted in a direct improvement of the living standards of people here and in indirect socio-economic benefits to the country. Agriculture is scattered within the basin from rainfed orchards, olive and field crops in the drylands to irrigated agriculture on the river banks (OPTIMA; 2006). In Jordan irrigated agriculture represents now the main economic activity in terms of population employed and economic return (Jabarin, 2001). Although highly unsustainable and not in its natural habitat, olive trees are the most important crop in the Zarqa Basin (52% of the total irrigated surface), while irrigated vegetables represent 22%. Other important crops include trees like Apple, Peach, and grapes (8, 5 and 2% of the irrigated surface) along the Zarqa River bank and seasonal crops like Alfalfa (5%), Barley and Wheat 5%, and Vegetables and Melon 22% in the Sail Amman Valley and the upper stream of the Lower Zarqa River. However, it is important to realize that most of this irrigation is based on treated waste water (Venot, 2003), especially in the western part of the Basin.

The conversion from pastoralism to sedentary agriculture followed a past tradition of the British Mandate: since the 1960s several government projects have aimed at settling Bedouins: for instance, the Water Authority of Jordan (WAJ) dug deep wells and managed open channel networks in the region of Wadi Dhulail. This was the first incentive for
irrigation development of a nation in construction and following a modernization paradigm. In most cases, large publicly managed projects failed but Bedouins took up the idea and drilled their own wells in an attempt to appropriate/claim land. They kept however part of their herds. Irrigation had its heyday in the late 1970s and early 1980s: the two oil crisis of 1973 and 1979 provided an interest in agricultural development in the Jordanian deserts with an expanding regional market for fruits and vegetables. Remittances from Jordanians (especially from Palestinian origin) living in the gulf increased and were partially invested in the agriculture sector (Francois, 2008).

Apart from these earlier developments irrigated agriculture in the Badia of the Zarqa River Basin mainly developed during the last three decades through large private investments: the investors concerned belong to high society (MPs, senators, entrepreneurs, sheikhs, etc.). While part of this agriculture is highly capital intensive and profitable, around 30% of irrigation water was used in low-value olive-tree farms. Orchards were a legacy of a time when the drilling of wells was subsidized, and were held for reasons of prestige, as a means of keeping ownership and control of land. Negative impacts passed on to the more vulnerable rural groups, notably low-income Jordanian categories (refugees, Jordanian tribes of low status, female laborers) and male migrants (Van Aken et al., 2009).

Figure 5. Bedouin camp amidst real estate development – near Dhulail
(Source: Authors)
3.2. Land ownership and tenure in Jordan

Land ownership in Jordan can be categorized as the following (Al-Oun, 2008):

1. Land that is privately owned and called (Miri and Mulk), which is land owned by individuals that is registered and documented.
2. Tribal land (Wajehat El-Ashayeria), which is claimed by the tribe and historically distributed by the sheikhs.
3. The state land with free access to all resources (Al mawat), which is the land owned by the state and but at the same time claimed by tribes, although it is not divided among the tribe members.

For a long period in the past (prior to the 1950s), Jordan’s rangelands were characterised by effective land tenure systems and grazing rights that were associated with tribal institutions. This arrangement protected the resources within those lands and provided for their use in ways that assisted in rangeland conservation and continued productivity under the prevailing environmental and social conditions. Upon elimination of these systems and rights and the declaration of rangelands as State-owned areas that are open for everybody to use, new unsustainable land uses encroached upon the rangelands. Many of these areas were over-used without consideration to the resource sustainability requirements or their long-term productivity. The elimination of tribal ownership also led to lack of incentives to encourage Bedouins and other pastoralists to maintain and conserve the resources and rangelands under their control and use. Therefore, we find that the identification and definition of the ownership (and/or use rights to rangelands would greatly assist in setting up plans for rangeland development and improvement. According to the Agriculture Law No. (20) for the year 1973, as noted above, all natural rangelands are owned by the state; but in practice and reality, the case is the opposite. The area of these lands is about 80 million dunums (8 million hectares), or 90% of the Kingdom's total area of 89.3 million dunums (MoA, 2001. National Rangeland Strategy for Jordan).

As in many other parts of the world, and notably in Africa, the parallel existence of formal registered land ownership and customary tenure arrangements is the cause of profound conflicts between government officials and local people over state land and tribal land (Al-Oun, 2008). One peculiarity of the formal land tenure system is the role of the state as the ultimate owner of the land and water. State land covers most uncultivated, so called dead land (Al mawat which means “nothing will survive in the area”), which includes grazing lands operated under common property regimes (Forni, 2001). Another type of land owned by the state is what is called as Miri, mainly derived from what had been community land in pre-Islamic times, with the state later representing the community. Due to the changes in the role of the state in most of the developing countries during the last few decades, the tendency throughout the region has been towards privatization. A gradual and deliberate withdrawal of the state from land ownership and direct operation on these lands for the benefit of private landownership is obvious. Whereas traditional resource tenure systems were communal in nature, introduction of private ownership has broken down the social bonds that regulated resource use and conservation. Especially for the poor or the landless, individualization and registration of land as private property has meant in many cases losing access to necessary resources like water, grazing areas and firewood. Contrary to the belief that an individual land title improves security of tenure and production, traditional systems had the advantage of being flexible allowing various forms of land borrowing and leasing arrangements that accommodate needs of the landless (Al-Oun, 2008).

In the past, land and water were controlled by the Ashira (tribe) represented by the Sheikh (tribal leader) and were linked to the notion of Dirah. The term Dirah refers to the tribal
territory, together with a system of exchange organized around the Khuwa (the payment to tribes to obtain their protection). Much like in the Sudan/Sahel Zone in Africa, access to resources was allowed to other tribes depending on demographic pressure, climatic conditions, resource scarcity and existing alliances. Thus, the borders and the geographical extension of a Dirah were often flexible but within customary perceptions of land and its tenure that still persist nowadays (Bocco, 1987). This notion of communal territory is thus interlinked with indigenous ideas of resource property. As Lancaster (1999) indicated, ownership comes through access, use, action and is validated by defense and reputation.

### 3.3. Access to Water Resources

While access to scarce natural resources is a common cause of conflict in the Badia, there is a growing competition among the different sectors over the use of land and water, leading to further conflict. Demand for land and water is increasing, whilst especially surface and ground water resources are under increasing stress (Shatnawi, Shammout, and Naber; 2008). Over-use of surface and groundwater will in the longer term affect negatively regeneration of already scarce vegetative cover in the rangelands and hence accelerate desertification processes and reduce potential for range management. To control the use of groundwater in the Badia, the Government has taken regulatory measures including limits on new well licenses, progressive installation of meters on all wells so that abstractions could be monitored, and enforcing and further restricting permit conditions. Pricing control has been applied through the introduction of a resource tax, a volumetric charge on water abstractions. These controls have been institutionalized in the "Groundwater Control By-Law 85" of 2002. Adversely, these practices have made farmers lobby through their local Farmers Association for more water, under the pretext of investing in sustainable agriculture, while ignoring safe yield requirements or the rights to water of future generations (OPTIMA, 2006). In most cases the priority for use of groundwater withdrawals is for agriculture (mainly vegetables and fruit trees). Although in earlier times in the target area livestock depended mainly on surface water and not on groundwater for drinking, increasingly drinking water is provided in cisterns by bringing water with tankers from groundwater wells elsewhere. This water is provided for free by the government authorities to herders. Nevertheless, most of this groundwater is not (anymore) available for livestock, and the restrictive measures mentioned above (meters, permits, etc) have put herders at a disadvantage, as these wells were in a way common property and not used and managed for individual agricultural purposes. Livestock owners have not much incentive to abide by these control measures as their lifestyle and “production model” is dependent on much more than one well. As a result in areas where permanent agricultural land use is at the increase, nomadic livestock owners depending on rangeland are squeezed out. This is roughly the situation in the areas east of Sail Amman and in the catchment area of Wadi Duhlail. Land degradation here is severe and many wells have even closed. In the Sail Amman area many ground water wells have been dug for more industrial purposes. For example, at last 11 groundwater wells were dug here for the purposes of a petroleum refinery).
3.4. Indigenous Management Systems in the Badia Rangelands

Many pastoral people, in Jordan and other parts of the world, evolved sound ecological strategies and practices to enable them live in harmony with their environments. Many of these indigenous knowledge systems and the associated institutional arrangements are in danger of breaking down as a result of mistaken modern interventions in the Jordan Badia. Much of this indigenous knowledge is still valid and should be built upon for restoration and more sustainable use and management of the Badia (the Jordan rangelands).

However, the trend has been to replace pastoral management systems with other land use lifestyles, instead of improving and making these systems more sustainable. These trends, encouraged by government policies have created territorial / ownership boundaries that have excluded others, and especially livestock herder communities, from water and rangeland resources. At the same time these new land use styles have resulted in serious environmental degradation especially around watering points and new challenges to the Bedouin pastoral groups.

Developing sound pastoral systems though recognized as a viable land-use system in arid and semi arid areas, is unfortunately given very low importance by governments, development agencies and research institutions. Traditionally, pastoral property rights systems supported mobility across large areas with their land tenure generally held on a communal basis with no one person having absolute rights to property. The traditional ways of pastoral grazing are therefore being subjected to more and more changes, leading to new problems. Moreover, in some parts of Jordan, important tracts of rangelands have been allocated to nature conservation bodies that do not incorporate the needs of pastoralists in their activities, thus denying them access to water and grazing (Al-Oun, 2008).
3.5. Focus Group Field Analysis

In relation to the subjects mentioned above the following critical issues came out of a series of focus groups with different stakeholders (locals, decision makers, municipalities members, NGO, and GOs, both genders). Semi-structured questionnaires used in the focus groups are in Annex 2.

1. Different perceptions on access rights to natural resources:
   The evolution of use of and control over natural resources shapes the way stakeholders view and perceive their rights. Land and water resources are a vital source of livelihood for many households in rural areas, and especially so for herder communities. For instance, with regard to water resources, local people perceive that any water resource located in their vicinity is owned and can be used by them and that they should be given priority of rights. Meanwhile, the government perceives rights over natural resources in an entirely different way. The government considers itself the absolute owner and custodian of these resources and all Jordanian have the same rights over benefiting of these resources, wherever it’s locality. Hence, according to government authorities a specific water well cannot be used and exploited exclusively by the local people on whose land the well is situated. From the Government perspective all Jordanians have the same right of access, and therefore, it is the Government who can grant access and rights to such a water resource. As described in section 2.2 on landownership the same applies to land resources. Where local communities claim use of right to their tribal, if not ancestral lands, for the government access and rights are governed by the state. This lack of consistency between government and local recognition of rights and access to land, water and other natural resources is leading to confusion. This is a given not only in the Jordanian Badia but also in other parts of the country. Most people in the focused groups defended the traditional rights systems regarding the use of water and land. They indicated that the old system protects land and water. Land was considered a common property and its protection and restoration was a duty of all benefiting directly or indirectly from it. Meanwhile, the government imposed systems of land tenure offer individuals a piece of land to use the way they like regardless of the consequences on the environment and people.

2. Erosion of the authority of customary right systems to land and water resources:
   There are no legal rights other than the three systems described in section 2.2. Traditionally, pastoral customary property rights systems supported mobility across large areas with their land generally held communally with no one person having absolute rights to property. These customary right systems are a reflection of sound ecological strategies and practices that evolved over time among pastoral people enabling them to live in harmony with their environments. Modernization, new claims on the same land and water resources, the contradictions between customary and formal laws has eroded much of the “authority” of these customary right systems. The traditional ways of pastoral grazing are therefore being subjected to more and more changes, leading to new problems. The breakdown of customary rules governing access and the contradictions between such customary law and government legislation has, as in many parts of Africa, created a vacuum and hence insecurity about what rules to abide to. Related to this loss of authority in customary right systems is an import loss of traditional local knowledge in conservation and responsible use of land and water resources.

3. Highly insecure access and rights to rangeland natural resources:
   The resulting situation where neither customary nor government law is effectively enforced to regulate access and use of natural resources has led to disrespect of
traditional rules for sound land use/range management and as a consequence unsustainable levels of use, contributing to further land degradation. Moreover, people feel irritated as there is no clear guidance for the application of customary rules and regulations that are recognized and used by all government bodies in the same way. There is therefore high uncertainty on what is allowed and what not with regard to access and rights on land, water and other natural resources.

The already growing pressures on these resources are further increased by the more recent trends towards privatization of land holdings, especially in the western part of the Zarqa River Basin (notably around Sail Amman in the area between Amman City and Zarqa Town). This trend of privatization made possible by government legislation directly interferes with claims people would make under customary right systems on the same land, and hence contributes to a sense of insecurity with regard to access and rights on land and water resources as well as to the erosion of “authority” exercised through such traditional right systems. We have to differentiate here between two situations: (i) state land where some tribes are still trying to make land claims and where the decisions on ownership or use rights of these lands by these tribes are made by the Department of Land and Survey of the Ministry of Agriculture (???). And (ii) state land that is considered Treasury land that cannot change ownership but that can be used by local/tribal communities if the environmental conditions and location are suitable, for instance away from industry area with high pollution, from army areas, or away from Samra treatment waste water plantation area. Future pilot activities should take these different status of land into account.

4. Inequity in access and rights; different rights and privileges
It should be noted that in principle and according to the state laws that there is no specific ethnic group having more advantages over other ethnic groups regarding rights. The state law does not differentiate neither between men and women in terms of access and rights to natural resources. However, local or customary laws treat men and women differently, and do not give women rights over owning or accessing natural resources such as land or water. This issue needs further study during project implementation.

The inherent conflict between such formal and customary laws is further exacerbated by a strong perception among local people that the government is not fair in providing access and rights to the use of natural resources under their control. They said that the powerful are given exclusive legal access by government agencies to land and water resources that were before also accessible to them. They note that the legal access give to these powerful persons has given them the right to use these resources in a way they think is economically beneficial to themselves, regardless of the damaging consequences on the environment (depletion of groundwater levels, soil degradation, etc). For instance the presence of a refinery estate close to Al Hashemiya town for which 12-18 wells were used and not accessible anymore to the local community. The over-abstraction of ground water in an adjacent basin, the Azraq Basin, by big landowners with ties to government and other high ranking officials is one other very speaking examples.

5. Governance with regard to access to and rights on natural resources
In view of the above observations it will not be amazing that the actual governance system for access and rights issues is problematic. Participants in the focus group indicated that many governmental interventions and policies took place without
understanding why and how they were planned and implemented. In other words, transparency is absent. Although most of the state interventions regarding natural resources are legalized by the government itself, participants stated that their voice was absent and they were never consulted. Additionally, such interventions have often harmed human well-being as well as the whole ecosystem. Participants stressed again that fairness is absent as well and that the government, especially the Ministry of Water and Irrigation, gave exclusive rights to some people to dig wells and make use of other natural resources on the expense of others. On the other hand, participants indicated that the government bodies dealing with natural resources are not conscious of the fact that affected people are aware of their rights. With regard to performance, the participants affirmed that all governmental bodies who are involved in managing natural resources in the area measure their performance according to their own criteria and do not consider stakeholder evaluations. Additionally, participants indicated that lack of accountability makes them confused about the rules and regulations that govern natural resource, though decision makers claim otherwise. At last but not in the least, participants reflected that one of the underlying reasons that make current governance arrangements inadequate to conserve biodiversity and support resilient livelihoods is corruption, e.g the granting of permits for wells and tracts of lands to a small group of influential people with good connections in the capital.

### 3.6. In conclusion

While in Jordan rangelands in the semiarid regions (less 200 mm) constitute between 85 and 91% of the land (about 8 million hectares), the political neglect of rangelands development has led to pasture degradation, desertification processes, and overgrazing of Badia’s pastureland. Current government arrangements are far from adequate to support resilient livelihoods, sustainable range management, and conservation of biodiversity and land restoration in the Badia. At the same time developing sound pastoral systems, although recognized as a viable land-use system in arid and semi-arid areas, is unfortunately given very low importance by development agencies and research institutions. Underlying reasons for this situation of insecure resource tenure and consequent resource degradation are amongst others:

1. Contradictions between customary right and formal legislation. Where in Jordan three types of landownership can be distinguished (privately owned, tribal lands and state lands); it is often in the latter two that unclarity and insecurity on access, rights or ownership has led to neglect of traditional range management systems that were based on sound ecological practices and to unsustainable other land use practices.

2. Different perceptions on access rights to natural resources and the erosion of authority of customary right systems as related to above contradictions and have increased highly insecure access and rights to rangeland natural resources.

3. Not unimportantly, the tendency that more privileged people have easier access to land and water resources through formal procedures of permits and licences, while the use they made of these land and water resources is often not sustainable.

4. This relates notably to a strong tendency to approve licences for groundwater wells for private business (intensive agriculture, poultry, industrial purposes) without ensuring accountability for sustainable land use practices, has led in many cases to over-extracting of ground water. Such over-extraction, besides limiting access of herder families to...
precious resources necessary for their livelihoods, has in many instances negatively affected land and vegetation conditions, leading to land degradation.

5. The above tendencies, moreover, are often related to irregularities in providing such licenses.

6. Above reasons are also due to insufficient awareness that the Badia drylands are an environmental heritage that can be preserved and utilized in more sustainable ways.

All in all, there do not seem to be many legal options to enhance strengthened customary land rights and access rules. Non-legal avenues are rarely explored and would require important capacity building and advocacy at the policy level. A perhaps useful vehicle in doing so could be the IUCN governance principles that highlight legitimacy, subsidiarity, fairness, do no harm, performance, accountability, transparency and right-based approaches (see page 5 ToR for this study). Chapter 7 will provide suggestions for project activities that will support a local governance and development approach and that will help assure access rights to herder families within actual governmental and legislative frameworks, while contributing to the restoration of the Badia ecosystems.
4. CAUSES FOR LAND DEGRADATION IN THE PROJECT AREA

4.1. Working assumptions and paradigms in land degradation

Drylands in developing countries are often characterised by disproportionately high levels of poverty, frequently associated with unsustainable natural resource use and environmental degradation. Additionally, a rapid process of dryland urbanization poses a challenge to water supply and food provisioning systems, compounded by the exhaustion of the supply of new suitable land for agriculture, loss of biodiversity including dry forest ecosystems, and evidence of fertility loss in cultivated soils. Many dryland regions are both geographically and politically marginalised and sometimes prone to conflict and insecurity. Weak penetration of government services into these areas, associated with a general disregard for the rights of local populations has in many cases contributed to governance failures in drylands. Many drylands are best suited to communal management, due to their scale, their comparative low production potential, and their diversity and distribution of resources. The capacity of traditional institutions to effectively govern these communal systems has weakened in most countries, which has led to breakdown in sustainable management and creation of disincentives to sustainable natural resource management. Where governance has broken down, the outcomes are often increased poverty and social exclusion, environmental degradation, constraints to economic development, tenure insecurity and weak credit markets among others. This general analysis, expressed in the IUCN Dryland Strategy (2009) applies for almost hundred percent also to the Badia in Jordan.

Dryland ecosystems are sometimes considered to be in a constant state of flux, as a result of the high level of climate variability: shifting from one steady state to another in cycles of varying lengths. In such situations, measuring environmental degradation becomes problematic, since there is no simple environmental condition/state against which to measure change. This has created challenges in defining and monitoring desertification, and has frequently led to erroneous diagnosis of desertification, resulting in efforts to fix a non-existent problem, which in some cases have even contributed to the creation of the problem.

The Terms of Reference for the inception studies in the four countries of this programme (Annex 1) refer to two paradigms for understanding land degradation dynamics. The TOR refer to the Millennium Ecosystem Assessment reporting that (at least in Africa) two contending paradigms challenge our understanding of the drivers of change.

- a desertification paradigm which suggests that ‘bioclimatic drivers and anthropogenic drivers that traditionally maintain dryland ecosystems in a stable state become drivers of change, pushing the transition from sustainable exploitation of ecosystem goods and services to a new ecosystem state of a much lower level of service provision’ – sometimes called the ‘doomsday scenario’, and
- a counter-paradigm which holds that ‘the chain-reaction cycle of reduced ecosystem productivity and poverty are far from inevitable’, estimates of the extent of degradation are unreliable, and different and more positive outcomes have been achieved through adaptive and dynamic management by land users.

IUCN that has commissioned this study, takes its understanding of drylands from the counter-desertification paradigm, accepting that the area affected by desertification is significantly lower than the often cited 70%, and that population increase does not automatically lead to land degradation. Central to IUCN’s view is that sustainable
development in the drylands relies on socio-political change as much as, if not more than, technological change. A growing body of knowledge on sustainable drylands development can be found, and the prevailing trend is that long term sustainable development in the drylands stems from strengthening governance, building institutions and empowering people. By contrast, technical solutions have often been inadequate and have been poorly adopted, poorly sustained, or in some cases have simply been ineffectual or even harmful.

Where the authors of this study agree with the views of IUCN above that strengthening governance and empowering people are key for sustainable development in dryland ecosystems, they would add that such governance and empowerment has been given far too little attention in development programmes and priority setting for policies and funding. They would add also, however, that extensive research over more than a decade around the 1980ies implemented in the dryland zones of the Sahel in Western Africa (Van Keulen, H, and Breman, H, 1990), has demonstrated that the two mentioned paradigms mentioned above are not mutually exclusive. There is substantial evidence that over exploitation of the natural resource of an ecosystem, and notably its inherent fertility levels, has indeed lowered productivity levels, often referred to as the carrying capacity of the ecosystem. In this long-term research it is also recognized that ecosystems in the Sahel have a high degree of resilience, i.e the inherent capacity to recover. It is this resilience of ecosystems that forms the basis for the second paradigm and on which adaptive and dynamic land management needs to build. Good local governance and strong empowered local institutions are most probably the most appropriate vehicles to make best use of the resilience of dryland ecosystems. Nevertheless, the research done on carrying capacity of dryland ecosystems in the Sahel also shows that over exploitation of resources can reach a state that is irreversible. In such a case a resilience threshold is reached where the ecosystem cannot recover anymore to a higher state of productivity. Understanding dynamics in dryland ecosystem management needs also to recognize that reaching such irreversible thresholds is not a theoretical possibility.

### 4.2. Causes for Land Degradation in the Jordan Badia

Together with important changes in the lifestyles of Bedouin tribes in Jordan (see below), there are a number of critical underlying development trends that together form the root cause of land degradation in the Badia of Jordan.

- **Population and Urban Growth:** The high population growth exerts more pressure on the natural resources to meet the demands of the increasingly growing population (MoEn, 2006b). This is leading to over-exploitation of land resources, vegetation cover and under-ground water aquifers (Hadadin and Tarawneh, 2007).
- **Urbanization and Industrialization:** The Industrial Sector shows a significant growth, a considerable expansion of industrial cities and centers (GCEP, 2001). The severe limitation of agricultural land has been further aggravated by the loss of the best agricultural land to rapid urbanization and industrial uses, especially around Amman and some other cities in Jordan (GCEP, 2001).
- **Land Management, Resources, and Use:** Inappropriate land use planning and land management as well as unsustainable agricultural practices create threats for the environment and land productivity as well as for public health. Intensification of agricultural land use and notably shifts from extensive range management to intensive and high input agricultures have led to over exploitation of land and water resources. Some groundwater aquifers have indeed been exhausted beyond natural recharge rates and inadequate surface water supplies (MoEn, 2006).
- **Centralization and weak Coordination**: The government of Jordan remains one of the most centralized in the Arab world. Many services that normally fall under the responsibility of the municipal level are centralized. Additionally, there are weaknesses in cooperation and coordination among state’s agencies.

![Figure 7. Environmental Degradation in the Project Area. Source: Authors 2010.](image)

Although their impact is important, the first two trends are not further elaborated in this study. For lands concerned these trends are irreversible and all further agricultural and range land use is excluded here. The third trend is further discussed in this Chapter, while the fourth trend is discussed in Chapters 2 and 5.

### 4.3. A Changing Bedouin Identity and lifestyle

All of the trends above have led to profound changes in the lifestyle of Bedouin tribal communities, and notably in the nomadic pattern of shifting place of living as a function of water availability and rangeland conditions. In a time of much sparser population densities and no other claims on land and water resources, these nomadic patterns were most probably a wise and sustainable way to use and manage the available resource basis. However, new international borders have severed pastoral routes, and “the cement blockhouse has replaced the goat-wool tent”. Or as someone interviewed put it: “the pure Bedouin phenomenon has disappeared from the dictionary of the Jordan Tribes, but the sedentary Bedouin (partially depend on the livestock) still exist”. This shift from pastoralism to sedentary live style and land use of the Bedouin tribes seems now to be widespread in Jordan; there are only few places in the country where the traditional lifestyle of Bedouin tribes is still prevalent. There are still Bedouin families who use tents and still move from area to another seeking for grass for their livestock. However, they have at the same time big houses and keep their children and part of their families in these houses who work in the civil services, army and schools. Nevertheless Jordan society and politics is highly tribal based.

Changing these nomadic lifestyles has also been purposeful policy of governing authorities since the British Mandate period. Agricultural development through irrigation projects for Bedouins was viewed by the British as the first step of a wider detribalization process that would help stabilize the country and settle new farmers to a neglected land an essential step to economic integration, social liberation and stability within nation construction (Van Aken et al., 2009; Lowdermilk, 1944). Consequently, many Bedouins have shifted their lifestyle from being completely pastoral to army employment and other economic activities (Van Aken et al., 2009). These colonial policies are continued supported by the actual government and the Royal Court who provide services for improving their live income and economic situation to cope with world progress.
Modernization did however not by itself mean the disappearance of tribal solidarity – on the contrary, it has readapted to new political and ecological environments. Bedouin values and tribal belonging have been mobilized and reproduced as part of a process of nation building within a demographic context marked by a large population of Palestinian origin, a contested border in the Jordan valley, and the Hashemite Kingdom’s need for legitimacy in a politically tense regional environment. Moreover, tribal identity has become the basic channel for allocation of resources by the central government (Shami, 1982; Van Aken et al., 2009).

4.4. “Modernization of land use”, changes in land productivity and land degradation

This shift in lifestyle, in conjunction with, if not also caused by, the above mentioned other trends, has obviously been an important driver of changes in land use with high and often negative impact in terms of degradation of land and water resources. This being said, there are important differences in the degree that these changes in lifestyle has affected land use. In the western more populated and industrialized parts of the Badia, in the Sail Amman and lower Zarqa River sub-catchments around the big urban centers such as Amman and Zarqa, land use has almost completely changed as mentioned in section 2.1. Where farmers, and among them many Bedouin have still livestock, the range of lands where they can graze is highly limited and confined to those lands with the least potential for permanent agriculture (in the focus sites/village areas for this study this is not more than a couple of square kilometers, for instance in Al Sukhna, the total area of grazing land is not more than 1.6 and in Al Hashemiah 2 km²; in the municipality areas of Dhulail and Al Khaldia there does not seem to be any grazing lands available anymore. More to the east, in the Wadi Dhulail catchment, the situation is less clear and land use is governed by the presence of water wells (illegal or with formal permits) where agriculture is concentrated, next to still large tracts of lands where herders, mainly Bedouin, graze their sheep, goats and camels. Where in the western parts rangelands as part of the overall land use has for an important part disappeared, such rangeland management is still an option in the eastern part, albeit more limited than in the old days.

How agricultural modernization and related changes in land use and ownership have transformed the local management of resources, and consequently affected (degraded or improved) land quality conditions (a.o. fertility, soil structure, moisture capacity) may be very different from place to place. In the more fertile areas around river banks privatization may have worked out well, increasing productivity levels. As Mundy and Smith (1991) have shown there seem to be two main effects of developments planning in agriculture in parts of the project area: (i) more formal landownership allowed legal landholders to adhere to long-term planning of use of their land, as these new farming units were stable in relation to ownership. At the same time (ii) such long-term planned land use allowed long-term preservation of soils and a shift to higher value production, that became more profitable for the farmer even in the short term. This may well be so and valid for land with specific soil characteristics and notably higher natural fertility levels. However, in the western parts of the Badia, that are more intensively used for permanent agriculture, the exclusion of livestock from these more productive agricultural lands with private ownership has pushed livestock holders to the poorer lands and reduced the resource base for rangeland management (both in terms of nutrients and in space). It may well be that this has triggered here land degradation processes that have become irreversible, i.e a lower threshold of inherent land productivity has to be taken into account for sustainable no degraded areas might be restored further use of those already more marginal lands. In the more eastern parts of the Badia, this does not seem yet to be the case.
4.5. Shifts in Water Resources Management; access and quality:

Centralized water management and the shift from surface irrigation to micro-irrigation and pressurized pipelines from wells date back to the 1980s and have, in a very short time, radically changed the ways of thinking about the use of water. This context of change is at the core of today’s struggles and conflicts that arise around water resource use at the local level. We face a situation of legal pluralism, with a confusion of overlapping formal and informal water property rights systems and claims, in a context characterized by a lack of local participation and increasing water scarcity (Van Aken et al, 2009).

A first major change has been the transition from a system of water allocation based on the household head and tribal representatives to an allocation based on fixed land use, controlled by a government water administration vested with a new authority (Van Aken et al., 2009). A second main consequence is the changed idea of water in relation to time. With the establishment of a central bureaucracy, a new characterization of water in terms of quantity (cubic meters) and pressure of supply has been introduced. Third, with state controlled irrigation, a new idea of territory in relation to local communities has taken place. With drip irrigation and the introduction of pressurized collective networks during the 1990s, water has also gone underground and is not directly available or physically visible. Last, expert knowledge has become more important today than before in managing water since it has introduced a specific culture of organization (Van Aken et al., 2009).

Especially the western parts of the Zarqa River Basin, the catchments of Sail Amman, the lower Zarqa River, and the western parts of Wadi Dhlail are facing recent groundwater deterioration due to a very large increase in water demands for domestic, agricultural, and industrial uses (Al Kuisi et al, 2009; Al Abbadi, 2008). As explained earlier this has important negative impact on water availability and soil moisture content for the agricultural and rangeland areas. Moreover, the river flow characteristics have been further modified by the discharge to the river of treated domestic and industrial wastewater that composes nearly all of summer flow and substantially degrade the water quality (Al Abbadi, 2008). These environmental risks are not only for the areas close to the riverbanks, where most of the irrigated agriculture takes place, but also for the underlying groundwater reserves from which water is withdrawn in areas more distant from the riverbed. Indeed, the infiltration of heavily polluted wastewater in the western part of the project (north-north east Sukhna and Hashemya areas, has deteriorated groundwater quality to a level that is unsuitable for irrigation, while the increase in soil salinity in the same area has reduced agricultural productivity as mentioned in a study of IDRC (2006). Equally important this decrease in water quality of ground water from wells has also importantly affected livestock and range management activities here.

These changes have had major if not dramatic impact for livestock holders that operate on a basis of vast tracks of rangeland for grazing their herds. Pastoral livestock activities and range management depend largely on free access to watering points. When access to these watering points is limited if not denied – either by settled farmers or by government authorities - then this importantly reduces the options of “range land managers”, i.e the Bedouin tribes, to make best choices in directing their cattle to those lands where grazing is possible, depending on the micro-climatic conditions of the year. Reducing these options is leading in almost cases to over-grazing and as a consequence the start of desertification/land degradation processes. This issue of access to watering points is maybe the core dilemma for finding the right balances between land use for permanent agriculture and range management purposes. It is one of the core issues in finding sustainable land use options in the rangelands of the Sahel Zone in Western and Eastern Africa (such will be studied in the...
sister projects in Mali and Sudan). These access problems are compounded by the water quality deterioration of groundwater mentioned above.

### 4.5. Degradation of Biodiversity

Biodiversity conservation is an important concern shared by many public and civil organizations in Jordan. A national biodiversity committee was established within the process of developing the National Biodiversity Strategic Action Plan (NBSAP), functioning as an advisory group on biodiversity issues for the MoEnv. Jordan has implemented many biodiversity conservation projects in the past decade. Some of the most notable biodiversity conservation projects in the country are the Dana and Azraq Protected Areas managed by the Royal Society for the Conservation of Nature (RSCN) and the Ministry of Agriculture.

Most of the Zarqa River Basin is located in the Steppe and Saharo-Arabian Zones, except maybe the narrow stretches around the Lower Zarqa River, north-westwards of Al Sukhna. These zones correspond to the Badia (the Jordan rangelands) with desert and semi-desert climates and comprise between 85% and 91% of Jordan’s land area, while being much less populated than the rest of the country (MoEn, 2006). The total number of plant species in the area is estimated to be between 2300 and 2500, of which 2000 are vascular plants (Al-Eisawi, 1982; GCEP, 2001). Plant diversity has declined dramatically because of habitat encroachment by urban and agricultural development, deforestation, and deterioration of rangelands by over-grazing and soil erosion, illegal collection of valuable plants, and depletion of major water resources (MoEn, 2006). Agricultural activities and their associated weeds have in many places replaced the indigenous flora communities.

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**Case study on range land rehabilitation in Tall Al Remah**

*BRP has worked on Community Based Rangeland Rehabilitation in the Tall Al Remah area in the northern eastern Badia from 2002-2009. It was a pilot demonstration site with a total area of about 300 dunum (30 hectare). BRP has worked together with the local community in this project by using some simple water harvesting techniques, cultivating a number of valuable plants such as “Salsoa” and “Atriplex”, and protecting the pilot area from the herders but without using fencing.*

*Every year, the biomass and the livestock stocking rate (carrying capacity) is calculated, and after 3 years of protection without any grazing and according to the stocking rate at that time herdsmen from the community were allowed to graze inside the pilot site. To encourage the local community to engage in this protection activity the project have offered a number of initial incentives like some employment opportunities and training on range and herd management.*

*The protection of the pilot area allowed the shrub and grasses to regenerate and to recover the land by vegetation. Even some very rare species - such as crocus species - that have very high commercial value as they are provide the basic material for saffron – re-appeared in the pilot site. One of these crocus species is called in Arabic “za’aafaran”. In fact the methodology followed aligns well with the traditional Bedouin practices of protection of the rangelands; in Bedouin language, protection is called “hima”. For further information please visit the following website: [http://www.badia.gov.jo/arsearch.html](http://www.badia.gov.jo/arsearch.html)*
Environmental degradation in the Zarqa River Basin has numerous negative impacts on its ecosystems that include loss of biodiversity, increasing loss of the scarce vegetation cover, the spread of disease among humans and livestock, and increasing poverty and degraded livelihood conditions. It has to be emphasized that this area is a vulnerable ecosystem that has been subjected to many changes and disturbances during the past 50 years. The main traits of these disturbances are (IDRC, 2006; MoEn, 2006):

- Over-extraction of underground water has led to the desiccation of surface vegetation.
- Overgrazing in the Eastern Desert continues to be a persistent threat to the integrity of this fragile ecosystem. Evidences of overgrazing have been indicated in both reduced productivity and changing plant community compositions resulting in decreasing carrying capacity.
- Agricultural activities like cropping of marginal lands which are only suitable for use of rangelands.
- Urban Development and encroachment into natural habitats.
- Poverty and related unsustainable use of natural resources.

### 4.7. In conclusion

There is quite a consistent view of many stakeholders that there is important land degradation in the Badia of the Zarqa River Basin caused by overgrazing, over exploitation of the land for agriculture, groundwater over-pumping as well as droughts and possibly climate change. There are important indicators that seem to confirm this observation, such as the disappearance of key species such as different crocus species (Laban et al, 2010), the impoverishment of pasture lands, reduction of plant diversity and increased number of invasive species, the increased sealing of soils, and more indirectly the lowering of groundwater tables. However, very little systematic research is done until this date, except some experimental monitoring by the Badia Research Programme. In any case more needs to be done to provide substantiated analysis of the degree and dynamics of land degradation. Chapter 7 will discuss possible indicators that need to be measured in a base-line study in selected pilot sites, so that degradation trends and possible restoration can be monitored.

As mentioned earlier in this report, distinction has to be made between two highly different areas in terms of recent land use developments. The first area is in the western part, around Sail Amman and the Zarqa River, downstream of the confluence of Sail Amman and Wadi Dhulail, as well as around the western part of Wadi Dhulail. Here development processes towards urbanization, industrialization and permanent irrigated agriculture are radically changing the landscape and can be considered irreversible. The same applies to rather narrow stretches of land around the major roads going to the east, where the same changes in land use are encroaching on the traditional rangelands of Bedouin tribes. In these areas grazing/rangelands are getting so minimal that range management is not anymore a valid option. Many of the actual conflicts over land, and notably tribal lands or “government” lands that are customary used by the Bedouin tribes, are related to this process of new land development. In many cases such new land development is directly related to getting access to groundwater, and it may be questioned to what extent such development is sustainable and not leading to an important further decrease of Jordan’s scarce water resources. However, these degradation processes, as important and negative they may be, are not the focus of the project for which this study is done.

The second area is situated in the more eastern part of the Zarqa River/Wadi Dhulail Basin, east of the first area. In this area, the above new land developments are less prominent (except along the main roads) and urbanization and industrialization are less important
drivers of change. Land degradation processes are here more directly related to changes in agricultural use, groundwater extraction, reduced mobility of herders and economic factors, such as poverty and alternative employment possibilities. As mentioned in the focus groups, the primary cause of land degradation here are licenses for wells for withdrawing groundwater for other purposes than drinking water for livestock and people. This has led to declining water tables that have eventually led to the drying up of springs, the vegetation to disappear, over-grazing and subsequently the degradation of ecosystems. In these areas there could still be scope for solutions that would maintain livelihoods of Bedouin herder families, reduce land degradation and preserve the heritage and ecosystems of the Zarqa River Basin Badia (the target area of the project). Chapter 7 will elaborate on practical recommendations for activities that could be implemented in the remaining two years of the project.
5. RELEVANT STAKEHOLDERS AND GOVERNANCE

5.1. Identification and Analysis of Rangeland Management Stakeholders in the Zarqa River Basin

The general definition of stakeholders includes those individuals, groups and organizations interested, involved, impacted, or in charge, in this case of natural resource. The participatory research for this inception study provided further understanding about who plays what role in the governance, management, and planning of natural and other resources in the project area and notably in the four focus areas selected. The following stakeholders were identified.

Local stakeholders and their livelihoods
As mentioned in the conclusions of Chapter 4, two different areas need to be distinguished in the Zarqa/Dhulail River Basin; the urbanized/industrialized western part and the eastern part. In the eastern part the extent of rangelands is highly limited and often restricted in its local communities to less than 3 km². In these areas, except waste land that is often even to rocky for grazing, farm land is dominated by either irrigated agriculture (vegetables, orchards) or intensive livestock production (cattle, poultry) in small areas (stable, fenced land). There are only few herder families left practicing grazing in somewhat larger areas, but often not much more than 5 km². In the more eastern part the dominant land use over large stretches of land is grazing and range management by Bedouin families, except along the main roads, where the same land use intensification processes can be observed as in the western parts of the River Basin. Even so, most Bedouin families have now their permanent houses, where most of the family is living.

In the western parts of the Zarqa River Basin the general collapse of ecosystems has had direct effects on the livelihoods of the people living there. Local communities in the basin here face serious threats to their livelihood due to a number of factors including abuse of resources and environmental degradation, rapid population growth, industrialization, declining agricultural productivity, air and water pollution, and increasing salinity of soils and waters. Poverty and degraded livelihood conditions magnified the environmental impacts. Food and water security of the poor are being compromised by the current environmental degradation taking place in the basin which exacerbates the current socio-economic situation (Al Abbadi, 2008).

Agricultural services are almost absent and irrigation water losses are high, since field observations indicate considerable over-irrigation. Local farmers have little experience and knowledge about the efficiency in irrigation usage (Suleiman, 2004). Despite that fact that they use modern drip irrigation system, farmers use this system improperly. There exist only two kinds of farming in the basin: small rented farms cropped with vegetables and larger farms planted with trees (olive or varied other fruit trees: nectarine, peaches). There are only very few mixed farms that combine agriculture with grazing livestock. Most of the farms along Zarqa River are irrigated by spring and shallow wells (30 to 35 meters deep) located along the Zarqa River bank (Venot, 2003).

In the eastern parts the land development process as in the western part are still less obvious. However also here, the potential prospects of land increasing in value for different
reasons (possibility of getting a license for a well, shale exploitation) are pushing people, including the Bedouin families to make more specific claims to land that were used and managed before by customary rules and understanding. Successive droughts and ground water withdrawal are also here putting livelihoods at risk.

**Institutional stakeholders**

Based on field analysis and archival research, it appears that there are many stakeholders involved in the activities related to land use and range management in the Zarqa River Basin. They range from governmental agencies, research and academic institutions, NGOs, private companies, consumers, industries and farmers associations. They are directly or indirectly involved in research, planning, operation, monitoring, and regulation activities as related land use and environmental issues. The following stakeholders were identified as the most important ones that are directly involved (OPTIMA, 2006):

- Ministries of Water and Irrigation, Agriculture, Interior, Health and Environment; Ministries of Industry and Municipal and Rural Affairs; Water Authority of Jordan;
- Royal Scientific Society; Royal Jordanian Geographic Center; Badia Research Programme/ The National Centre for Research and Development; National Center for Agricultural Research and Extension;
- Jordan Environmental Society; Jordan Society for Combating Desertification and Badia Development; Arab Women Organization of Jordan; Friends of the Earth Middle East, Royal Society for the Conservation of Nature; IUCN Regional Office for West Asia; Water, Environment and Dry lands Center
- Zarqa and Mafraq Governorates; Municipalities of Greater Amman, Greater Zarqa and Mafraq; Village Councils, Chambers of Industry of Amman and Zarqa; Jordan Farmer Association; (OPTIMA, 2006).

Key players in the domain of this study however are the Ministries of Agriculture, Water & Irrigation and Municipal and Rural Affairs, the related Governorate Offices in Zarqa and Mafraq Governorate.

### 5.2. Governance related issues

According to different authors (IDRC, 2006; OPTIMA, 2006; Al Abbadi, 2008) and our own opinion there are a number of key constraints related to governance for water management in the Zarqa River Basin, and for that matter in other parts of the country. The same set of constraints applies without doubt also to land use and range management in this Basin.

- Fragmented and unclear governance of the basin.
- Competition among different users and sectors.
- Nonexistence of inter-stakeholder agreements.
- Lack of experience and knowledge with systematic approaches applied to management of water and land resources.
- Conflict and overlap of responsibilities between different institutions. No single authority has been set up formally by law.
- Lack of enforcement of water legislations and policies.
- Financial resources are often not sufficient to complete management plans.
- Limited involvement of private sector.

Some reflection is given below on how stakeholder coordination and governance could be organized and what are the constraints to do so. Issues related to Legislation and policies are dealt with in chapter 2. Relations between local communities and government agencies and related governance issues are discussed in detail in section 5.4 below.
Coordination obstacles

1. **Lack of Qualified Cadre**
   The different technical Ministries (MoA, MWI, MoE) do not have enough and qualified cadre to execute rehabilitation projects for improved range management, especially in the more remote areas of the eastern Badia and to engage in coordinated action.

2. **Difficult Institutional Arrangements and Coordination at Basin level:**
   Administratively, the basin is located in five governorates: Amman, Balqa’a, Jarash, Mafraq and Zarqa. No single authority is established to administrate the whole basin for integrated water resources management, optimization, and quality improvement, while there are no other institutional arrangements to coordinate affairs between Governorates, except the below mentioned Zarqa River Basin Committee chaired by the MoE, with however little power and authority. As a result it is also bureaucratically difficult to coordinate and assign responsibilities among the different governmental agencies that are involved (OPTIMA, 2006; LDK ECO SA, 2006; Abbadi, 2008). Indeed, when international organizations such as World Bank and FAO and other donor agencies were strongly supporting a national water scarcity policy, it was difficult for the Jordan Government to identify a single authority to implement this policy (OPTIMA, 2006).

Coordination Opportunities

The following coordination mechanisms among the different stakeholders in the Zarqa River Basin are already in place and could be made use of:

1. **Zarqa River Basin Committee**
   The restoration of the Zarqa River Basin has been declared a top priority by the Government of Jordan. The Ministry of Environment has been given the charge to lead the consultation, technical and policy processes. In her tasks the MoE is supported by the IUCN ROWA office in Amman to provide technical and stakeholder consultation guidance. For the implementation of the Zarqa River Basin Restoration Programme a coordinating committee has been installed and endorsed by the highest policy level in Jordan. Thos Committee brings together representatives of the relevant Ministries, such as Water & Irrigation, Agriculture, Interior and Rural Areas and Municipalities, as well as the Water Authority of Jordan. In view of the urgency to solve issues around water pollution and over-extraction of ground water, notably along Sail Amman and the lower reaches of the Zarqa River, most of the activities are implemented in the western parts of the Basin. The here discussed project has identified its intervention areas within the Zarqa River Basin, so as to give more attention to the drier less intensively used lands somewhat away from the major rivers. From this it follows that coordination activities for the here discussed project will be closely linked to the overall coordination for the Basin by the Zarqa River Basin Committee.

2. **Coordination of Water and Wastewater Management in the Zarqa River Basin**
   There are two public agencies in charge of the management of water resources in the basin: Ministry of Water and Irrigation (MWI) and the Water Authority of Jordan (WAJ) (OPTIMA, 2006; LDK ECO SA, 2006). Both are important for ensuring equitable rights to all users and sustainable use of water resources, notably groundwater from wells in the whole Basin (and not only around the Zarqa River bed). They are both member in the above Zarqa River Basin Committee, and this will enhance inter-ministerial and inter-institutional coordination of activities by both committees, on condition that a proper place is given to the important issues of good land use outside the direct confines of the Zarqa River valley. This should notably include issues around range management and finding the right balances between agriculture and livestock production.
5.3. Field Analysis on Stakeholders Relations (Focus Groups)

In relation to the subjects mentioned in this chapter the following critical issues came out of a series of focus groups with different stakeholders, including decision makers from related government organizations. Semi-structured questionnaires used in the focus groups are in Annex 2.

1. Ineffectiveness of Institutions to facilitate appropriate governance amongst different Natural Resource User Groups.

A number of institutions deal with natural resources and different user groups: Ministry of Agriculture, Ministry of Water and Irrigation (MWI), Ministry of Environment (MoEn), and Ministry of Municipal and Rural Affairs (MMRA). MWI issues licences to operate new water wells for investment purposes. MMRA rules mainly in regard to land issues. The focus group discussion asserted that MWI is hindering local people’s attempts to deepen the existing water wells as these water wells are drying up. Discussions with local people revealed that corruption is a main limitation for the proper functioning of existing governmental bodies. For example, powerful people are able to get such licences in areas where digging new water wells are not recommended or authorized. It was mentioned also that almost all factories in Dhulail do violate the environmental standards legislated by MoEn, thanks to social connections with policy makers.

2. Ineffectiveness of Municipalities.

By law the main governmental departments dealing with resource management in the area are municipalities; related and relevant organizations are Ministry of Agriculture, Ministry of Environment, and Ministry of Interior. The Head of each Municipality is elected by the local people, meaning that the Head is expected to express the voice of the local people and is supposed to work for their benefit. However, most of the mayors complained about lack of financial resources needed to meet local people’s demands for instance for agricultural land restoration. For example, an engineer working for the Municipality of Dhulail sorrowfully said that although the Municipality has a comprehensive plan for restoring land in Dhulail, it was not able to get any response or support from any of the central governmental bodies dealing with natural resources management in the area.


Theoretically, participants said decision making concerning natural resources should be a joint process between governmental bodies and local people particularly those households whose livelihoods are associated with land and water resources. However, in reality decisions are totally controlled by the government bodies and their perceptions about what strategies are best for managing or restoring natural resources. For example, participants in Al-Hashemmiya said that the drinking water coming from the state’s well has a salinity problem, while there are potable and better wells within the area of the Khirbet As-Samra Wastewater Treatment Plant (KSWWTP). Access to these latter wells however is denied by the government.

Participants clearly stated that managing land, water and other natural resources is at the mercy of the government bodies. As mentioned in the focus groups, any decision made in Amman or Zarqa has influence on the life of the pastoralists. For example licenses for wells for withdrawing of groundwater for other purposes have led to declining the water table level, that have eventually led to the drying up of springs, the vegetation to disappear and subsequently the ecosystem was degraded. This presents a conflict between the government and local pastoralists’ interests.
The mayor has the responsibility for enforcement of legislation (rules, decrees, etc) regarding any industrial and environmental activities within the municipality boundaries. However, in reality lack of law enforcement and corruption are negatively affecting land and water resources in the area.

5.4. In conclusion
The above initial mapping of stakeholders already demonstrates the institutional complexities around range management and land use. The management of natural resources in all the sub-study areas tends to be controversial. If water and land resources are properly managed there are opportunities to improve livelihoods of herder families. However, when the right measures are not taken and there is lack of coordination between the governmental bodies and local people it can also be an important source of tension. Among the major issues brought up by the participants is that all processes involving planning and budgeting are totally monopolized by government bodies, while local interests groups (herder communities) are not at all involved in planning, budgeting and decision-making. Even at the implementation level there is high mistrust and it was mentioned in the focus groups that each party is accusing the other for not respecting plans made. This is not very surprising if local parties have not been involved in making those plans at the first place. This will indeed lead to mutual mistrust between parties. Unfortunately, there do not appear to be many rather independent institutions in Jordan who have the capacity and political cloud to facilitate new governance arrangements. In short there is an important lack of participation of local stakeholders in planning and budgeting for natural resource management and mistrust between them and government stakeholders. Chapter 7 will provide suggestions how to overcome this. In any case a more refined analysis of roles, decision-making processes and power relations will be necessary as well as high level and independent facilitation of processes that may lead to better understanding and governance.
6. DESCRIPTION OF PROPOSED SITES

6.1. Actually selected pilot sites

As mentioned in the Introduction initial focus sites were selected within Zarqa Governorate in the western part of the River Basin, notably in the localities of Al-Hashemmiya, Dhulail, Al-Khaldia and Al-Sukhna (see map in Figure 6; Al Sukhna not mentioned but just north of Zarqa City; Al-Khaldia not mentioned but around the main road between Zarqa and Mafraq cities). The field data was gathered in these focus sites using a participatory approach and focused group discussion; one group in each of the four selected focus sites. These focus groups were selected in such a way that key stakeholder groups were represented in them: local community, GOs (decision-makers), NGO representatives, land owners in charge of state lands, people from industrial and agricultural estates. These key groups and individuals were asked to attend the workshops. The discussions were based on structured guidelines designed by the researchers organized according to four themes: (1) land use; (2) legislation and government department; (3) wild life ecology/biodiversity; and (4) marketing chain and small enterprise (economic activity); (see Annex 2). In addition, more unstructured discussions were held to get a detailed understanding on the key issues discussed. An important part of these discussions is reflected in the sections on focus groups in Chapters 3 and 5.

The following subsections give a short typology of these four selected communities. Below Tables with data on land use and farm types is provided.

**Al-Sukhna and Al-Hashemmiya**

Al-Sukhna and Al-Hashemmiya area are located in Zarqa Governorate along Sail Amman. Al Sukhna has a refugee camp of unofficial gatherings. Rehabilitation works in the camp allowed about 3,300 Palestine refugees to live in decent shelters (ECHO, 2005). An early study by USAID (1997) indicated the existence of twenty out of the twenty six major springs in the project area had normal flow at that time. Two springs, including the one in Al-Sukhna which was the most important spring in the basin (average annual discharge of 564 m³/hr) have however dried up. Al Sukhna and Hashemmiya are heavily populated and build-up areas with little grazing land left (Al Sukhna: 1.6 km² out of 12 km²; Hashemmiya: 2 out of 13 km²). There exists an oil refinery and power plant at Al-Hashemmiya area. For details on land use and farm types see the Table below.

**Dhulail**

Dhulail is an area located north-east and not far from Amman, east of the Amman- Mafraq Highway. It was here that in the old times the first Bedouins settlements were established. They are now in majority converted from being bedouins to sedentary people. During the 1950s, several international organizations launched sedentarization programs for Bedouin tribes linked to irrigated agricultural development plans. As discussed in Chapter 4.2, these plans were viewed as essential steps to economic integration, stability in the region and control of the rangelands (the Badia) (Bocco, 1993; 2006). The area irrigated with groundwater gradually increased. Government licenses and soft loans for drilling private wells led to a new development frontier ‘moving ever eastward into an increasingly ecologically and economically marginal environment’ (Millington et al., 1999; Van Aken et al., 2009). Wealthy and dynamic entrepreneurs, emulating or replacing past Bedouin or peasant (fellahin) settlements, made massive investments and developed this irrigated but often unsustainable agriculture. When groundwater pumping started in 1965, there were only...
around 25 wells in the area. Fifteen years later (1980) the number of wells had almost quadrupled (Van Aken et al., 2007). A study by Shaner (2001) indicated the use of 2.5 MCM of fresh water to irrigate about 2,100 dunum as part of the Dhulail Irrigation Project that provided farmers with groundwater pumped from deep wells, delivered to a storage reservoir, and distributed to their fields. The system once served a larger area that includes 8,000 dunum of irrigable land. The size of this area has been cut back because of falling aquifer tables and increased salinity of the pumped water. It is beyond any doubt that these land use intensification developments have been at the expense of the better grazing lands in the area. Recent data indicate that there are no grazing lands anymore in the Dhulail area (see Table below).

Figure 8. Governorates and towns in the Zarqa River Basin. Source: OPTIMA (2006).

Al-Khaldia

As Dhulail, Al Khaldia is located just east and west of the Amman-Mafraq ancient Highway. A study by ICBA (2004) described prospects and conditions for agricultural production at Al-Khaldia, which includes: (1) third poorest governorate in the country; (2) much saline groundwater plentiful; (3) prevailing farming system is mixed–irrigated summer vegetables and fruit trees, rain fed olives, livestock herd including significant dairy industry (cattle); while income-diversification attempts faced forage shortages, and land and vegetation degradation. Existing arrangements for rangeland management included: (i) tribal institutions are recognized but do not have a managerial role; (ii) cooperatives manage grazing reserves; (iii) individual rights (Miri) are allocated to settled tribal members; and (iv) land allocation during settlement was based on tribal affiliation (Ngaido and Kirk, 2002). For further details on land use and farm types see Table 1 below.
In general
In the selected communities the following different categories of farms have been distinguished:
- Vegetable and orchard farms: owners of water wells with land over 100 Dunums (10 has) using drip irrigation to grow vegetables and olive trees.
- Animal feed/fodder farms: owners who are allowed to use wastewater for irrigation of fodder (animal feed) crops, but who use this wastewater to plant vegetables and trees.
- Mixed farms/small holdings: farmers that supplement their agricultural farm income with income from small holdings of sheep and goats.
- Large cattle farms: owners of cow holdings in fenced farms that exceed 1000 heads and rely on bought animal feed and milk production.
- Poultry farms: owners of poultry holdings, basically in Dhulail.

Several field visits by team members were carried out to different sites in the area before conducting the four workshops, also to make an inventory of the natural resources in the four study areas. The outcomes of these field studies can be summarized as follows: degradation is increasingly becoming a serious threat to livelihoods of the poor who rely greatly and directly on available natural resources for their livelihoods and who lack alternative livelihood options. This and many other reasons (see earlier Chapters) caused a change of lifestyle of the local people. Pastoralism although recognized as a viable land-use system in the area is being given very low importance by governments, development agencies, and research institutions. The trend is to replace pastoralism with other lifestyles and land uses, not to improve and make the system more sustainable. Such policies created physical “landownership” boundaries that excluded others from water sources and pasture. Further, tenure security under traditional system is weakening due to a number of factors including growing population pressure, a growing economy that is increasing the demand of outsiders and entrepreneurs for land, improper adjudication and a private land market. Finally, market possibility of natural products in the area is limited. Marketing channels are still traditional and inadequate. As further explained in section 7.2 this is a critically important issue and as mentioned in the ToR for this Inception Study needs to be further investigated in the course of the project.

Table 1. Land use and farm types in the four selected pilot sites

<table>
<thead>
<tr>
<th>Item</th>
<th>Al Sukhna</th>
<th>Hashemmiya</th>
<th>Dhulail</th>
<th>Al Khaldia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of habitants</td>
<td>17000</td>
<td>20000</td>
<td>50000</td>
<td>30,000</td>
</tr>
<tr>
<td>In agriculture</td>
<td>70%</td>
<td>80%</td>
<td>90%</td>
<td>80%</td>
</tr>
<tr>
<td>In non-agriculture</td>
<td>30%</td>
<td>20%</td>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td>Area of the village /municipality territory</td>
<td>12 Km2</td>
<td>13 Km2</td>
<td>20 Km2</td>
<td>27 Km2</td>
</tr>
<tr>
<td>build-up area</td>
<td>3 km2</td>
<td>4 km2</td>
<td>11 km2</td>
<td>27 km2</td>
</tr>
<tr>
<td>irrigated agriculture</td>
<td>1 km2</td>
<td>1 km2</td>
<td>18 km2</td>
<td>18 km2</td>
</tr>
<tr>
<td>Orchards</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>dryland agriculture</td>
<td>0.4 km2</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>grazing lands</td>
<td>1.6 km2</td>
<td>2 km2</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Breakdown grazing lands according to ownership</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>private land</td>
<td>0.6 km2</td>
<td>1 km2</td>
<td>??</td>
<td>??</td>
</tr>
<tr>
<td>treasury land</td>
<td>0.5 Km2</td>
<td>0.4 Km2</td>
<td>None</td>
<td>0.3Km2</td>
</tr>
<tr>
<td>Land of MoA, other Ministries</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

2 there were only very few herder families left in the target areas
The project was identified in early 2008, and pilot sites were indicated on the basis of the knowledge then available. It seems the project has been overtaken by very fast developments in the area since then, characterized by a surprising and accelerated development of private investments in permanent agriculture and other industrialized activities. In any case a field survey carried out in October 2011 observes that very little grazing activity has remained, while most of the livestock activities have become homestead bound. The table above gives an overview of land use and farm types in these pilot sites.

On the basis of this information and in view of the very recent and accelerating processes of urbanization and industrialization, it may be questioned to what extent these pilot sites can be considered relevant and representative as rangelands in Jordan, especially in view of the focus and scope of the overall project. Section 6.3 and Chapter 7 will consequently recommend shifting at least part of the pilot sites to more suitable areas more to the east/north-east of the Zarqa River Basin. Nevertheless, one or two of the actual project sites in the western part of the basin can be maintained and could serve as a case study to demonstrate how under rapidly changing demographical and industrialization conditions, alternative models to extensive range management can be explored for livestock development in limited grazing areas, while protection these areas from further degradation. It would be advisable to focus for this on state lands, such as under the jurisdiction of the Ministry of Agriculture. In these overgrazed pilot sites it can be explored how restoration can be encouraged, partly by preventing access to it by livestock owners, partly by allowing controlled grazing. Such measures could be accompanied by finding other rangelands for these livestock owners taking into account their age-old customary rights in the larger area. While it may be necessary to explore the use of some additional incentives, a pilot project here would have the objective to determine the most cost-effective package of complementary measures to improve the incomes of these livestock owners.
6.2. Benchmarking impact in pilot sites according to indicators

An important part of this project deals with measuring change both in terms of social and institutional dynamics and physical aspects related to land use and land restoration. Before making a selection an inventory is made of possible indicators used in Jordan or elsewhere for different aspects as related to land and biodiversity restoration and socio-economic improvement of livelihoods. Afterwards a short list is proposed of indicators that are practical and measurable for use in the field. It will be an urgent first follow-up task of the project to design a benchmarking monitoring approach on the basis of selected indicators that will enable the project to substantiate progress made during and at the end of the project. Below follow different sets of indicators proposed by different authors.

Table 2. Desertification process and possible indicators (NAP / MoEnv, 2006; adapted from FAO/UNEP, 1984).

<table>
<thead>
<tr>
<th>Desertification process</th>
<th>Assessment factor (indicator)</th>
</tr>
</thead>
</table>
| Degradation of vegetation  | 1- Canopy cover of perennial plants (%).  
                                  2- Range condition (%) of desirable vegetation (climax).  
                                  3- Vegetation productivity.                                                                 |
| Erosion by water and wind  | 1- Type of erosion.  
                                  2- Subsoil exposed, % of area.  
                                  3- Soil thickness (cm).  
                                  4- Increase in eroded area, % per year.  
                                  5- Sediment deposition in reservoirs.  
                                  6- Annual loss of storage (%).  
                                  7- Wind erodibility groups (texture of soil).  
                                  8- Mean annual wind speed at 2 meters height m/s.  
                                  9- Rating of potential sand movement.                                                             |
| Soil salinization           | 1- Morphological indicators.  
                                  2- Soil EC and ESP.  
                                  4- Crop yields, % of potential productivity.  
                                  5- Surface area adversely affected, % of delineated area.                                     |

Potential environmental degradation indicators proposed by others that can be used in the study area include (IDRC, 2006; Al Abbadi, 2008):

- Decrease in soil depth and organic matter and fertility.
- Soil crusting and compaction.
- Appearance/increase in frequency/severity of dust and sand dunes.
- Salinization/alkalinization.
- Alteration in relative reflectance of land (Albedo change).
- Decline in ground water quality and quantity, and increased seasonality of springs and streams.

Existing Biodiversity indicators (MoEn, 2005):

- Vegetation: Decrease in vegetation cover and above ground biomass; Decrease in yield; Alteration of key species (biodiversity); and Deterioration and reduction of seed bank.
- Animal: Alteration in key species distribution and frequency; Change in population of domestic animals; Change in herd composition; and Change in livestock yield.
Governance/rights indicators
To monitor the degree local people are involved in planning, information sharing and decision-making some of the indicators that are presented in Table 2 below could be used. They are used in participatory technology development approaches for sustainable land use. (Van Veldhuizen et al, 1997). Some could be added to capture especially access and tenure rights.

Table 3. Examples of indicators for monitoring governance processes at the local level

<table>
<thead>
<tr>
<th>Area of interest</th>
<th>Examples of indicators</th>
<th>Area of interest</th>
<th>Examples of indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-confidence</td>
<td>▪ Number of people speaking up in meetings</td>
<td>Organisational development</td>
<td>▪ Number of groups</td>
</tr>
<tr>
<td></td>
<td>▪ Ways in facing officials</td>
<td></td>
<td>▪ Participation in meetings and activities (who?)</td>
</tr>
<tr>
<td></td>
<td>▪ Value given to own ideas, own knowledge, culture</td>
<td></td>
<td>▪ Conflict resolutions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ Own financial management</td>
</tr>
<tr>
<td>Analytical skills</td>
<td>▪ Frequency of use of analytical tools and techniques</td>
<td>Horizontal linkages</td>
<td>▪ Participation in meetings with other villages</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>▪ Joint activities with other villages</td>
</tr>
<tr>
<td>Experimental skills</td>
<td>▪ Number of experiments</td>
<td>Vertical linkages</td>
<td>▪ Number of visits by support agencies to the village</td>
</tr>
<tr>
<td></td>
<td>▪ Quality of experiments</td>
<td></td>
<td>▪ Links with journals, etc</td>
</tr>
<tr>
<td>Leadership</td>
<td>▪ Number of farmer extensionists</td>
<td>Resource mobilization</td>
<td>▪ Degree of institutionalization of these links</td>
</tr>
<tr>
<td></td>
<td>▪ Functioning of farmer extensionists</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.3. Suggestions for indicators to use in the project
Drawing on above lists of indicators and adding others, the following indicators are recommended to use for baseline studies and further benchmark monitoring (every six months or year) in the old and new pilot sites.

Land degradation/restoration
- Type of erosion and subsoil exposed, % of area.
- Decrease in soil depth (soil thickness in cm)
- Decrease in organic matter (%) and fertility
- Soil crusting and compaction.
- Sediment deposition in reservoirs
- Alteration in relative reflectance of land (Albedo change; proposed for UNCCD projects in the Badia).
- Decline in ground water quality and quantity, and increased seasonality of springs and streams.

Biodiversity status
- Decrease in vegetation cover and above ground biomass (%);
- Alteration of key vegetation species (biodiversity; occurrence and density)
- Vegetation productivity
- Alteration in key animal species distribution and frequency;
- Changes in herd composition (kind and numbers)
- Change in livestock yield (diary products and newly borns)
Livelihood indicators
- Number of children at primary school
- Education level of women
- Financial contribution of women to household income
- Access to television
- Quality of sanitation facilities
- Increase in benefits from rangeland practices (income, number of animals, other)

Governance indicators
- Confidence in facing officials; values given to own ideas, knowledge and culture
- Number of conflicts resolved
- Number of activities undertaken with other local communities
- Degree that customary rights are recognized by and put in practice with the endorsement of government agencies
- Number of supporting agencies to the community
- Frequency of links with media
- Financial management of community groups
- Own contributions to activities (money or/and in-kind)

Policy indicators
- Number of proposals for modification in legislative documents
- Number of such proposal discussed in parliament

6.4. In conclusion
In view of the observations made above, it is strongly recommended to select new pilot sites (at least two or three) in areas as close as possible of the eastern borders of the Zarqa River Basin. These areas should have dominantly range management and grazing practices. Situations may be distinguished according to distance of the main roads and access/distance to watering points. When selecting new pilot sites they should take into account a number of criteria, such as location, suitability, size, land ownership, the future potential use, the acceptance by locals, etc. Notably selected areas should take into account the different status of land ownership (governmental and customary as discussed in Chapter 3. One or two old pilot sites (Khaldia or Dhulail) could be maintained as a reference and case study on the negative impact of new land developments on range management and livelihoods of people depending on such land use. For each pilot site, general information on land use and farm types, as well as general income earning types need to be made (see Table 1 above). Information should be detailed for different combinations of land uses by either customary and/or formal law, and with an indication how these interact. A stakeholder analysis and in-depth focus groups need to be held on the issues pertinent to this project (rights, land degradation, governance, legislative issues, etc; see also section 8.3). With help of the suggested indicators above a baseline need to made in an early stage of follow-up work in the project.
7. CONCLUSIONS

7.1. General analysis and orientation

The main goal of the project, for which this initial study is made, is to provide an understanding about the best ways to restore and secure rights of herder communities on natural resource use so as to serve their livelihoods in a sustainable manner and to do so in a way that is sound and sustainable from a land use point of view. In Jordan the project will be implemented as part of the IUCN supported efforts of the Government of Jordan to restore the Zarqa River Basin. Most of the land in the Zarqa River Basin is characterized as arid or semiarid land, which is damaged as a result of environmentally inadequate human activity. These activities have impacted negatively human well-being and social and economic development. Biodiversity is being lost and the mismanagement of land and water resources (improper land use and heavy ground water extraction) is an important cause of degradation of lands and vegetation.

The emphasis of the project in Jordan proposed by IUCN and accepted by the European Commission is on desertification in large rangeland areas where herder communities (Bedouin in the case of Jordan) are still practicing as best as possible their age-old land use systems over considerable large stretches of land. Critically important here are the issues around their customary rights especially in view of government policies and legislation that make it difficult to exercise those rights. When focusing on range management and customary rights of Bedouin communities the project will see how it can contribute to reversing land degradation in the traditional range lands, where there is still access to large stretches of range lands is still possible and where there is still scope for doing something in order to sustain benefits and livelihoods of these herder communities within the formal policy frameworks.

In both the western and eastern parts of the Basin, economic viability and long-term sustainability considerations have been absent in the decisions regarding land management; they were not a priority for Jordanian institutions in the project area. Depletion of natural resources is for an important part caused by short-term financial interests in use of land and water of affluent individuals, often having the right connections in the capital. This has been furthered by the weaknesses or quasi-absence of both environmentally sustainable policies and their enforcement and economic dynamics. As a result rural livelihoods strategies are shifting from livestock production/range management and rain fed cereals, with isolated spots of seasonal irrigated farming, to highly intensified agriculture such as poultry, cattle production, irrigated vegetables and orchards, partly linked to export markets. The “promise” of short-term financial gains, even in the more remote and eastern/southern regions of the country, have also led to a trend where more and more Bedouin tribal families, that had their livelihoods from range management, are increasingly making fixed ownership claims on either tribal land or government lands, with all the (sometimes armed) disputes that are associated with such claims. These “promises” are triggered by the possibility to gain a license for a ground water well (since 2002 the license is officially granted only when based on a valid business plan putting poor families on the disadvantage) or the prospect of for instance shale oil or other mineral resource exploitation. It is within this context that the here proposed project has to navigate.
A report of the Ministry of Environment (2006) confirm the observations made in the chapters of this report and state that important causes for the here discussed land degradation trends are: (1) Population increase; (2) Land tenure and ownership conflicts; (3) lack of environmentally friendly national land use management plans and policy; (4) weak enforcement of agricultural legislation and guidelines for best practices; and (5) other barriers that include knowledge, communication, and institutional coordination. Our field work and the participants in focus groups have mentioned the following environment related problems: heavy use of water for drinking and industrial demand, heavy use of lands for settlement, confused and conflicted priorities, contradicting policies, too many public agencies, and natural droughts in the area (low precipitation). Lack of organizational and coordination structures among the different stakeholders, inadequate knowledge on governance processes and legislation related to the area, and insufficient entrepreneurial experience has limited the participation of local communities in decision processes around land and water use. These focus groups confirm in further detail the trends sketched in the above section.

The here sketched situation is comparable to many other dryland regions in Africa and Asia, and it is not an exception that the Jordan Badia is both geographically and politically marginalised and prone to conflict and insecurity. Weak penetration of government services into these areas and general disregard for the rights of local populations has in many cases contributed to governance failures in drylands. Many drylands are best suited to communal management, due to their scale, their comparative low production potential, and their diversity and distribution of resources over large stretches of land. The capacity of traditional institutions to effectively govern these communal systems has weakened in many countries, which has led to breakdown in sustainable management and creation of disincentives to sustainable natural resource management. Where governance has broken down, the outcomes are often increased poverty and social exclusion, environmental degradation, constraints to economic development, tenure insecurity and weak credit markets among others.

Within this more general context, it seems that facts on the ground and the rapid acceleration in very recent years of land use development trends in the western part of the Basin (intensive agriculture, urbanization and industrialization) have overtaken the project. Where these trends are critically important to take into account, also in the eastern parts of the Basin and even farther to the east (and for that matter in the south of the country), the rational for the selection of initial pilot sites seems to have been undermined by the rapid land use changes occurring even in the last three years (the project was proposed early 2008). As mentioned in Chapter 6 most of the pilot sites identified have very little grazing land left (less than 3 km² in each village) and livestock range management has become a marginal activity both in terms of land use and livelihoods.

### 7.2. A suggested theory of change

Although the odds are not very favorable, there are still options to reverse the negative trends sketched in the former section. A Theory of Change that may be put in practice however, will depend importantly of the political “goodwill” of governmental agencies, and high level policy and decision makers. Such a Theory of Change, to be further developed and articulated as part of the project, could be shortly described as follows.

The ultimate objective of land development in the rangelands of Jordan, the Badia, both in the vast southern and eastern stretches of the country is to be sustainable and to preserve the interests of future generations in Jordan. Such sustainable development should be socially acceptable, economically viable, ecologically sound and embedded in the governance and
legislative structures that will promote these three dimensions of sustainability (Bruntland, 1994). Changes in land and resource use will take these four dimensions into account.

From the analysis and discussions in this report it is evident that the negative trends find their root cause in short-term financial interests. Reversing these trends is only possible when economically viable alternatives are offered. A theory of change for sustainable land use in the Badia is built on this premise. This premise is part of a broader condition for sustainable management of natural resources. Such management will only happen if people having access to and making use of these resources can assume a sense of accountability for the management and use of such resources. Such sense of accountability will only happen if they do have concrete benefits of such use, if their rights to the use of those resources are secured, if they have the confidence that they have the necessary management knowledge and, as importantly, if they can exercise sufficient influence to secure such benefits, rights and knowledge. These four preconditions for assuming accountability for resource use at the local level are summarized in the diagram below (Laban, 2007, Laban et al, 2009).

**Figure 9. Pre-conditions for local communities to assume accountability for sustainable natural resource management (Laban, 2007)**

For local people benefits need to be clear and tangible. Long-term benefits are accepted, but only when combined with more short-term benefits (Guye and Laban, 1994). In a theory of change such short-term and long-term benefits need to be part of economically viable land use activities that can be sustained in the long run and are ecologically sound, i.e. do not degrade biodiversity and the land and water resources they are making use of.

There are two important avenues for alternative economically viable land use activities that can provide such benefits to local people. One avenue is found in the valuation (processing and marketing) and preservation of indigenous plant species with high economic value that are found in the Badia, such as *Crocus* and *Artemisia* species (see case study in section 4.5). The other avenue is the development of eco-tourism activities that generate income and create the incentive to preserve the very resource that makes such eco-tourism interesting. These two avenues serve at the same time the national long-term and economic interest of preserving the heritage of the country: the natural resources of the Badia. Both avenues require minimal but necessary changes in the management of range land and water resources; it will also require changes in the actual governance around the Badia in terms of legislation and tenure rights. As mentioned ensuring such tenure rights is another condition for enabling people to assume accountability for the use of a natural resource, be that water, land or vegetation. Both avenues are elaborated in a comprehensive programme proposal for the Badia Ecosystems developed by the Badia Resource and Development Centre (Laban et al, 2010). The next section will elaborate on a number of concrete strategic activities that can be
started in the current land restoration/securing local rights project, implemented by IUCN and partners in Jordan. These strategic activities will give hand and feet to the change processes necessary to preserve the Badia, their ecosystems and the livelihoods of people who still depend on these natural resources.

As mentioned, pursuing such a “theory of change” is only possible if it is genuinely supported by government authorities and political decision makers (if there is the political goodwill to do so). This is critically important to ensure most of the preconditions for local level accountability mentioned above: rights, benefits and claim-making power. This is a critical assumption for the project, and in general for the preservation of ecosystems and livelihoods in the Badia. Change will not happen without resistance and the project should be both aware of and analyze this resistance in order to bring about the necessary change. Greatest resistance can be expected at two levels: (i) those influential entrepreneurs (and politicians) who are merely interested in short-term financial gains from unsustainable exploitation of groundwater resources for essentially unsustainable (land use) production systems. And (ii) the tribal families that have customary claims on lands in the Badia and that do not have the trust in the actual governance systems for the above suggested changes to happen; with the result they will increase their claims on land and water resources to ensure the same short-term benefits pursued by the first category.

The preservation of the Badia and its ecosystems and livelihoods is only possible by pursuing the here suggested “theory of change”. This will require high level commitment of power brokers in the highest levels of decision-making in the Ministries of Water, Agriculture, Environment, Interior and Municipal and Rural Affairs; the Royal Court, the Higher Council of Sciences and the Parliament. If the project judges that this is not realistic, it has to reconsider importantly its objectives and approaches if not the whole project.

7.3. **Recommendations for strategic direction of the project**

In view of the above described theory of change the project is recommended to further explore and where possible develop the conditions that are necessary to bring about the changes necessary for the restoration of ecosystems and livelihoods in the Badia. Apart from technical interventions to monitor land degradation or restoration processes, such conditions have to be found mainly at the level of policy and governance.

In view of the objectives of the project\(^3\) the project in Jordan is recommended to focus its activities in the following seven strategic domains:

\(^3\) Project objective (copied from Project Agreement)
The conservation, restoration and sustainable management of ecosystem services, as the basis for improved livelihoods, in four diverse dryland areas (in Botswana, Jordan, Mali and Sudan), achieved through more secure rights, better management, and enhanced income generation opportunities

**Expected Results (copied from Project Agreement)**

1. Dry landscapes sustainably and equitably managed, including the restoration of degraded areas, based on strengthened institutional arrangements.
2. Security of access rights to private and common pool ecosystem services strengthened, with special attention to those important to women and vulnerable groups.
3. Economic and income generating options for rural communities explored and supported based on natural resource commodities and on valuations of ecosystem services.
4. Policies informed and influenced at local, national, regional and global levels.
1. **Develop high level political support for the above theory of change.** This would include increasing awareness of the economic scenarios at stake (in view of continued or reversed trends of land degradation) and getting the political and institutional support for a governance approach that would favour long-term and economically viable use of the Badia resources. The IUCN governance principles for sustainable conservation of natural resources might be here of guidance. This strategic direction requires the direct involvement of the highest levels of key players in Jordan as well as the support at equally high levels of IUCN.

2. **Initiate a stakeholder dialogue for concerted action** at different levels of decision-making (Ministries and Governorates of Mafraq and Zarqa). It would especially focus on refining analysis of roles of key players, decision-making processes and power relations that effect the wise use of the Badia ecosystems and the livelihoods of local communities. At the implementation level an in-depth analysis of constraints and opportunities and a strategic planning of activities and resources should be made that would feed higher levels of decision-making. Analysis and planning will give special emphasis to the interactions between resource tenure rights, formal legislation and economic dynamics. Such a dialogue should be facilitated by experienced and independent moderators.

3. **Initiate an in-depth gap analysis of current legislation on natural resource use in the Badia.** Such a gap analysis would study existing legislation, its compatibility with international laws, gaps with regard to wise use of the Badia and in view of desertification processes and possible contradictions with customary rules and regulations. This study would notably focus on practical options that still exist for securing resource tenure rights in the Badia for those local communities that are able and willing to invest and continue in range management activities that will contribute to the preservation of their own livelihoods and of the ecosystems they are dependent on. The selection of such local communities would – as much as possible - privilege customary right-holders on the range lands in their environment. On the basis of this study proposals could be offered for possibly necessary improvement of the legislative framework and relevant policies, as well as ways to take into account customary rules and regulations that are both acceptable to local people and can be accommodated within more formal legislative frameworks. For this it may be useful to refer to possibly still existing traditional systems for the management of a natural resource, such as the “Hima” traditions in the region.

4. **Pilot range management strategies at the local level.** This strategic activity requires the selection of relevant and representative pilot sites in which long-term action can be pursued. These pilot sites should be representative for those parts of the Badia where long-term and sustainable range management is still possible. Among the major activities that could be undertaken in these pilot sites/communities are the following:
   - an in-depth local analysis of constraints and opportunities for range land management in the area (with local stakeholders and Government representatives)
   - development of a community based rangeland management plan/strategy in and around the pilot area for which the local community can take ownership and assume accountability, that can be supported by appropriate legislation and that has the potential to be scaled-up to other areas. Such a management plan will deal with areas probably bigger than 5 km² and include the dynamics of herders who travel also far...

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4 If “politically” necessary one or two of the initial pilot sites could be maintained, mainly to serve as a case study for demonstrating what will happen if the above negative trends in land development are not reversed.
outside their direct community territory with their sheep and goats. The development of such a strategy could use the methods and tools of a participatory management cycle as developed by EMPOWERS (Moriarty et al, 2007; www.empowers.info).

- Exploring supportive governance arrangements to sustainable manage rangelands, conserve biodiversity and support resilient livelihoods - local knowledge, technical and on resource tenure, should be taken into consideration in terms of planning, implementing, and evaluating any development project in the area.
- Capacity building of local stakeholders in all relevant aspects (technical and social) to implementing such a rangeland strategy as well as to lobbying and negotiating with higher level decision-makers. For internal learning within the community this would also include coaching in a participatory learning and documenting process to ensure that results and lessons learned will be stored in the collective memory of the community.

5. **Explore the potential of a value chain approach to ecosystem services.** This strategic activity can be considered as the corner stone of the project to get, as indicated in section 8.1, the necessary buy-in from both high level policy makers and local communities. It is here that alternative economically sustainable land use activities have to be identified. This will relate both to the development of eco-tourism activities (an ecosystem service that can give value to other ecosystem services such as soil and water conservation) and the valuing, processing and marketing of ecosystem products of high economic value derived from protected and managed Badia species, such as zafara’an, dyes, etheric oils and other medicinal products, .....). Emphasis in these exploratory studies will be given to privilege community based business opportunities in order to secure the necessary income at this level to sustain range management in the long-term. In doing so differential taxation rules and Badia labelling of products could be considered.

6. **Engage in an in-depth process of monitoring indicators for improved livelihoods and restored ecosystems.** On the basis of indicators proposed in section 6.2 the project has to make final decisions on the indicators it can use for measuring changes both in terms of livelihoods and in land degradation/restoration. As part of the ownership building process these final decisions need to be made with stakeholders at the highest levels of decision-making as well as with the local communities in the old and new pilot sites. Section 6.2 has elaborated a list of such possible indicators of change in different domains related to environmental/land conditions, tenure rights, value chain development, livelihoods, governance and legislation. This strategic activity is urgent as for each of the selected indicators a baseline assessment needs to be made. The benchmark monitoring of change on the basis of these indicators will be done in a strictly participatory manner, also to ensure understanding and ownership of the outcomes.

7. **Engage in a participatory learning and documenting process.** All six strategic activities recommended above need to be embraced by a process where all participants can learn and improve their insights so as to increase mutual understanding of the dilemma’s and opportunities faced and consequently take ownership of shared solutions proposed and visions for the future developed. This process can make use of the experience developed in the EMPOWERS project with documenting processes; they would among others include decision-making, stakeholder interaction, perceptions on range management and land degradation, empowerment and right-based issues and changes in attitudes and belief systems.
7.4. Assumptions for project impact

The following four assumptions are considered critical for the success or failure of the project.

1. Policy change in favor of sustainable management of the Badia is a national urgency and there is high level consensus to work on it. As explained in section 7.1 and 7.2, it is probably this assumption that will be the most critical for the success of the project. If this assumption is not valid, then in fact the project has no relevance. Giving attention to the first strategic direction mentioned in section 8.2 is therefore of utmost importance for the further success of the project. It will require most probably high level facilitation, maybe best to be provided by senior and knowledgeable IUCN staff.

2. Pastoralism is a viable land-use system in the project area. The project works indeed under the assumption that in the eastern parts of the Zarqa River Basin pastoralism and range management is still a viable option and can be pursued. According to satellite images, it is in this part of the River Basin that are still large tracts of land classified as “sparsely vegetated areas”, the areas used for grazing sheep and goats, that form a main part of the Jordan Badia (see Figure 4 in section 3.1 of this report). It is because of this assumption that the project is engaged in Jordan and is given importance. As argued in this report, such pastoral management systems have become irrelevant in the western parts of the basin, apart from some limited grazing activities in very limited areas (often less than 1 km²). The assumption also is that securing more political interest and policy for the real Badia and securing rights of local communities to continue age-old range management practices will improve the quality of both rangelands and livelihoods.

3. There are still policy options to reconcile customary resource rights and land tenure with official legislation: traditional/customary land use systems are communal in nature; introduction of private ownership has broken down the social bonds that regulated resource use and conservation. For poor herder/tribal families, individualization and registration of land as private property may mean losing access to necessary resources like water, grazing areas and firewood. Contrary to the belief that individual land titles improve security of tenure and productivity, traditional systems had the advantage of being flexible allowing various forms of land use arrangements including leaving land in fallow to restore over-grazed areas. The challenge of this project is to find the right balance between such customary and official law systems and explore how such customary systems can be somehow incorporated in official legislation. It is the conviction of the authors of this report that this issue is urgent and of high national interest in order to contribute to reducing increasing tensions around claims on land and water resources.

4. There are viable options for marketing Badia products for the benefit of local communities. The assumption in other words is that there is economic potential for payment of ecosystem products through a value chain approach: Research on market possibilities of natural products from the Badia is limited. Research of BRP has identified a number of products from Badia plants that can provide high added value, such as among others saffron (za’afaran in Arabic) from different Crocus species, if range lands are well protected and managed. However, marketing channels are still traditional and inadequate and involve individual producers, middlemen, retailers, and consumers. Despite marketing channels were short and middlemen’s services were simple, marketing margins of middlemen are still unreasonably high, by creating a huge gap between farm-gate and consumer prices in most cases. This has led to higher benefits for middlemen than for farmers and consumers. Apart from such new products marketing can also include livestock and dairy products. Much effort need to be employed to brand such products as typical “Badia”.

BRP – NCRD, 2011.
7.5. In final conclusion

Without repeating what is mentioned in this chapter, the project has lost time and should be put urgently on track. Final decisions with regard to the recommendations given in this “Updated Inception Report” by programme management need to be taken soonest. It is up to the project to consider or disregard the opinions and arguments elaborated here, in view what is considered technically, politically and professionally possible. We hope that this report can be made of use for the further implementation of the project.
8. REFERENCES


IUCN (2009). Rewarding Ecosystems, Rewarding People, in Dryland Watershed Ecosystems of the West Asia and Mediterranean Regions. Reward Programme for Regional Water Resources and Dryland Management. IUCN Regional Office for West Asia Essentially Funded by DGCS/Italy Through the Wescana Project and by DGIS/Netherlands Through the IUCN - Wani Programme. Reward Strategic Workshop, Sharm Al Shaikh, May 2009

IUCN (2008). The nature of drylands; diverse ecosystems, diverse solutions, Gland


Mundy, M. And Smith, R.S. (Eds.). 1990. Part-Time Farming, Irbid, Institute Of Archaeology And Anthropology, Yarmouk University.


ANNEX 1. ToR Framework for Inception Studies of the project

SECURING RIGHTS AND RESTORING LANDS FOR IMPROVED LIVELIHOODS
Botswana (Kgalagadi District), Jordan (Zarqa River Basin), Mali (Mopti Region), and Sudan (Kassala Province)

Framework for Country Inception (Baseline) Studies

Summary
IUCN began implementation of the EC funded project “Securing Rights and Restoring Lands for Improved Livelihoods” in 2010, with field projects identified in Botswana, Jordan, Mali and Sudan. As part of the launch of this project, the four countries will complete inception reports that provide background information required for successful implementation of the project in addition to baseline information against which project monitoring can be conducted. This document outlines the rationale for the four country inception studies and provides a generic Terms of Reference that country partners can use to elaborate their studies. The four country studies should be tailored to country requirements but these Terms of Reference provide a framework that will help in coordinating the four studies for the sake of cross-country learning.

Background
Drylands in developing countries are often characterised by disproportionately high levels of poverty, frequently associated with unsustainable natural resource use and environmental degradation. As a result, countries with significant dryland areas are at risk of failing to achieve the Millennium Development Goals, and in particular Goal 1 (Eradicate extreme poverty and hunger) and Goal 7 (Ensure environmental sustainability). The dryland population in developing countries is estimated to have doubled in the past 30 years, with increasing numbers of people vulnerable to drought and climate change. Additionally, a rapid process of dryland urbanization poses a challenge to water supply and food provisioning systems, compounded by the exhaustion of the supply of new land for agriculture, loss of biodiversity including dry forest ecosystems, and evidence of fertility loss in cultivated soils.

Many dryland regions are both geographically and politically marginalised and sometimes prone to conflict and insecurity. Weak penetration of government services into these areas, associated with strong but alienated traditional institutions and general disregard for the rights of local populations has in many cases contributed to governance failures in drylands. Many drylands are best suited to communal management, due to their scale, their comparative low production potential, and their diversity and distribution of resources. The capacity of traditional institutions to effectively govern these communal systems has weakened in most countries, which has led to breakdown in sustainable management and creation of disincentives to sustainable natural resource management. Where governance has broken down, the outcomes are often increased poverty and social exclusion, environmental degradation, constraints to economic development, tenure insecurity and weak credit markets among others.

The Drylands present unique challenges for sustainable management: challenges that are not generally well reflected in policy and development planning. A key challenge is the high
unpredictability of precipitation, which varies greatly between seasons, between years, and between areas within any given landscape. This extreme variability has led to many unique adaptations, both in drylands biodiversity and in drylands livelihoods. However, the adaptations of dryland livelihoods are often misconstrued as backward and in need of change, and efforts to “modernise” dryland livelihoods by eliminating some of the more challenging adaptive practices have led to increased poverty and environmental degradation.

As a result of the high level of climate variability, dryland ecosystems are sometimes considered to be in a constant state of flux: shifting from one steady state to another in cycles of varying lengths. In this case, measuring environmental degradation becomes problematic, since there is no simple environmental condition against which to measure change. This has created challenges in defining and monitoring desertification, and has frequently led to erroneous diagnosis of desertification, resulting in efforts to fix a non-existent problem, which in some cases have even contributed to the creation of the problem.

The Millennium Ecosystem Assessment reported that (at least in Africa) two contending paradigms challenge our understanding of the drivers of change:

- a desertification paradigm which suggests that ‘bioclimatic drivers and anthropogenic drivers that traditionally maintain dryland ecosystems in a stable state become drivers of change, pushing the transition from sustainable exploitation of ecosystem goods and services to a new ecosystem state of much lower level of service provision’ – sometimes called the ‘doomsday scenario’, and
- a counter-paradigm which holds that ‘the chain-reaction cycle of reduced ecosystem productivity and poverty are far from inevitable’, estimates of the extent of degradation are unreliable, and different and more positive outcomes have been achieved through adaptive and dynamic management by land users.

IUCN takes its understanding of drylands from the counter-desertification paradigm, accepting that the area affected by desertification is significantly lower than the often cited 70%, and that population increase does not automatically lead to land degradation. Central to IUCN’s view is that sustainable development in the drylands relies on socio-political change as much as, if not more than, technological change. A growing body of knowledge on sustainable drylands development can be found, and the prevailing trend is that long term sustainable development in the drylands stems from strengthening governance, building institutions and empowering people. By contrast, technical solutions have often been inadequate and have been poorly adopted, poorly sustained, or in some cases have simply been ineffectual or even harmful.

Based on this understanding, and the Draft Drylands Strategy (IUCN 2009), this EC funded project seeks to strengthen natural resource management in the drylands by first addressing governance of and rights over natural resources. Based on stronger natural resource governance, the project will help to strengthen and institutional participatory planning and use this as a platform for strengthening livelihoods, through improved natural resource management and improved use of markets for sustainably produced goods and services.

**Project objective (copied from Project Agreement)**

The conservation, restoration and sustainable management of ecosystem services, as the basis for improved livelihoods, in four diverse dryland areas (in Botswana, Jordan, Mali and Sudan), achieved through more secure rights, better management, and enhanced income generation opportunities.
Expected Results (copied from Project Agreement)

1. Dry landscapes sustainably and equitably managed, including the restoration of degraded areas, based on strengthened institutional arrangements.
2. Security of access rights to private and common pool ecosystem services strengthened, with special attention to those important to women and vulnerable groups.
3. Economic and income generating options for rural communities explored and supported based on natural resource commodities and on valuations of ecosystem services.
4. Policies informed and influenced at local, national, regional and global levels.

Main activities (copied from Project Agreement)

1. Develop Community Environmental Management Plans (CEMPs) – communities to develop their own environmental management plans to foster ownership of restoration activities and their sustainability.
2. Local capacity building for particular communities and their institutions according to identified needs (e.g. environmental restoration, negotiation skills, product processing and marketing, risk management and adaptation).
3. Restoration & Improved Marketing: Assist communities with restoration (e.g. forest, and catchment restoration; improved grazing management; agroforestry) and improved marketing activities.
4. Support dialogues among local stakeholders and of multi-stakeholder dialogues to share, negotiate and agree understanding, knowledge, ideas and priorities (e.g. tenure rights and institutions, regulation of common property resource use) and link communities and government.
5. Participatory studies to (a) analyse existing tenure and rights including common property resources, (b) provide baseline data for monitoring change, (c) analyse community business opportunities of natural products including value chain analysis and (d) provide economic valuations and estimate economic potential of natural products.
6. Communicate success through lessons learnt by communities and Implementing Partners (e.g. policy briefs, manuals, videos & photographs, engagement of policy makers at national or regional levels, international networking or conferences, media, publications).
7. Promote participatory learning and evaluation including developing local baseline understanding, vision for change, monitoring progress and achievements (community indicators and means to measure), action learning and adaptive management.

Key elements of the inception studies to deliver the Main Activities

Four studies are proposed in Activity 5, of which two should be carried out during the inception phase:

1. Analysis of existing tenure and rights including common property resources
2. Baseline data for monitoring change

Additionally it is recommended to use the Inception Study to prepare for Activity 4, by identifying stakeholders in the project area.

Note that “analysis of community business opportunities of natural products including value chain analysis” should be carried out after participatory work that defines which markets are important to the local community. Capacity Assessment (Activity 2) will also be carried out after, or as part of, participatory community work. Also note that the “economic valuations and estimate economic potential of natural products” will be carried out in year 2 as part of the policy engagement.
Expected Results Area 4 also requires a comprehensive review of the existing policy environment and the inception study provides an opportunity to investigate this more deeply.

To avoid a fragmented or disjointed study, the following logic is proposed:

1. Review of the national Policy Environment, particularly related to Land Tenure and Drylands Development and desertification;
   a. Include a review of biodiversity governance in each country – policies, institutions (rules, regulations and other long established patterns of conduct or customs through which people interact with one another), processes (processes through which they are developed, implemented and reviewed) and power (the degree of influence that different actors can exert on policy and decision-making);
2. Analysis of natural resource stakeholders and wider stakeholder review (including institutional stakeholders in participatory planning processes);
3. Analysis of land and resource rights in project area including gender analysis;
4. Review of current environmental conditions in the project area, existing and potential indicators of environmental (land) degradation.

**Framework Terms of Reference**

**Review of Policy Environment, particularly related to Land Tenure, Drylands Development and desertification**

Objective – to understand which policies influence (positively and negatively) sustainable land management in the drylands and identify IUCN’s role in influencing these policies

1. Review the country’s overall policy environment and identify policies that have a link with desertification, indicating how the current policy is designed to influence desertification either positively or negatively
2. Are there specific policies, laws, Acts etc. that reflect the specificities of the Drylands? (e.g. laws on dryland tenure, or legislation on transhumance) How do these reflect are interests or aspirations of different stakeholders?
3. How is the National Action Plan on Desertification reflected in national environmental and agricultural (or other) policy?
4. How well are different natural resource sectors integrated in policy, for example water and rangelands, and how does this influence drylands development?
5. How do government policies on decentralisation support community participation in decision making processes?
6. What are the policy constraints or opportunities for community-based conservation? What are the most appropriate institutional or collaborative arrangements through which to strengthen natural resource governance?
7. What mechanisms exist to integrate biodiversity conservation decisions in local government planning?
8. How effectively does government engage with communities, civil society or other groups in the development of policies?
9. How effectively does government (at different levels) engage with citizens in policy implementation and planning?
10. What capacity gaps are likely to constrain effective engagement of local resource managers in policy and planning dialogue?
11. How policy is implemented/to what extent is policy institutionalized? What are the gaps between policy pronouncements and action?
12. What information is used in policy making? Why are certain paradigm dominants and why do they persist?
13. How do different actors participate in/influence policy making processes? Which groups dominate and which are marginalized (gender, social exclusions)?

**Comments on methodology**

- Literature review combined with consultations with local stakeholders and key informants to gather perceptions on effectiveness of policy (and its implementation) and degree of engagement of different stakeholders in policy and planning cycles.

**Analysis of natural resource stakeholders and wider stakeholder review (including institutional stakeholders in participatory planning processes)**

Objective: to understand who plays what role in the governance, management and planning of natural (and other) resources

1. Identify different groups of natural resource users, and the resources they use privately and in common
2. Which institutions exist amongst different natural resource user groups to facilitate the governance of natural resources and how effective are they currently?
3. Which government departments are stakeholders in natural resource management in the area, what is their role and how effectively do they fulfil it?
4. Who makes decisions over the use of different natural resources and how (who has the power)?
5. Who manages different resources and how (who has the responsibility)?
6. Who benefits and who loses from natural resources and ecosystem services?
7. Who enforces the rules and how? What are the different degrees of influence that different actors can exert on decision making?
8. Which stakeholders play a role in planning and budgeting for natural resource management at different levels?
9. To what extent are the plans of different stakeholders actually implemented in the management of natural resources?
10. Which institutions exist that could play a role in strengthening natural resource management planning and budgeting (e.g. local NGOs, associations, government departments)?

**Comments on methodology**

- Key informant interviews to identify stakeholder groups followed by multi-stakeholder consultations to discuss institutional and power arrangements

**Analysis of land and resource rights in project area**

Objective: to understand how local stakeholders view their rights over different natural resources (land, water, trees etc.), whether there are opposing views (including between communities and government), and ways in which different perspectives can be reconciled to ensure more effective natural resource governance

1. Based on the stakeholder analysis, how does each group perceive its rights over different natural resources?
2. How are these rights reflected and upheld in law?
3. What are the legal options for strengthening land rights, including communal rights, in the drylands, and are there non-legal avenues that can also be explored (e.g. usufruct rights, seasonal grazing rights, access rights etc.)
4. What are the examples of successfully securing natural resource rights in the drylands?
5. How can policy or law support the application of customary rules and regulations over natural resources?
6. Are there inconsistencies between legal and local recognition of rights? If so, what options are there for reconciling the different views?
7. How are the rights of different groups within a community (e.g. women, ethnic minorities) reflected in local norms and national laws?
8. How does existing governance of different natural resources reflect IUCN’s governance principles?
   a. Legitimacy and voice
   b. Subsidiarity
   c. Fairness
   d. Do no harm
   e. Direction
   f. Performance
   g. Accountability
   h. Transparency
   i. Human rights
9. What are the underlying reasons that current governance arrangements are inadequate to conserve biodiversity and support resilient livelihoods, and how can governance arrangements in project sites be improved to rectify this?

Comments on methodology

• Requires background research (e.g. literature review or experts consultation) followed by consultation with stakeholders – perhaps integrated into multi-stakeholder fora above

Review of current environmental conditions in the project area, existing and potential indicators of environmental (land) degradation

Objective: to provide the baseline data against which progress can be monitored, including data on desertification/land degradation, biodiversity indicators, governance and livelihood indicators

1. Review national indicators of desertification (land degradation in the drylands), how they are determined and how they are applied
   a. How do these indicators reflect the realities of dryland uncertainty and non-equilibrium?
   b. How effectively and frequently are data collected and analysed?
   c. What other indicators (e.g. unofficial data) are used in the country?
   d. What is the current condition of land in the study area according to different data?
2. What species data are available in the study area and what can they tell us about land degradation?
   a. Are there key species (including invasive species) that give a reliable indication of land degradation or sustainable land management?
   b. What other biodiversity related data could be of use in monitoring land condition?
3. What indicators of governance/rights can be useful in monitoring project outcomes?
   a. Recommend to use the IUCN governance principles (above) to monitor governance related outcomes
4. What livelihood indicators should be (and can practically be) monitored through the project?
   a. Are there existing routine socio-economic data sets that the project can rely on?
   b. Are there parallel initiatives that the project can collaborate with for monitoring?
5. What indicators of change in policy or government planning should be used by the project?
   a. What are the tangible options for influencing policy (refer to the earlier part of this ToR)?
b. What changes can the project generate in knowledge, attitudes and practice amongst different stakeholders (particularly in policy making circles)?

c. What are the key knowledge areas that the project should contribute to (e.g. role of livestock and livestock mobility in environmental management, importance of communal tenure, compatibility between agricultural production and conservation, dryland uncertainty, non-equilibrium ecology)? How will IUCN know if knowledge gaps have been filled?

**Comments on the methodology**

- This requires comprehensive literature review, possibly with interviews of key experts. Participatory monitoring should be planned as part of the COmmunity Environmental Management Planning process that IUCN will initiate later, and this should be taken into consideration, particular in relation to environmental and livelihood indicators.
- The culmination of this study should be a tentative Theory of change for the project.
ANNEX 2. Semi-structured Questionnaires for Focus Groups

Focus groups were organized by theme

Group 1 - Land Use

- What is the magnitude (scale) of land ownership (the largest value, less value)?
- Who are the land ownership (renters, the owners, residents or non-resident)?
- Did the owners historically implant the land? What kinds of crops they implanted?
- Did the land partition have or appropriation affected the land use?
- Why the landlord selling?
- Why the landlord do not selling?
- How land have used before partition?
- How is the utilization of land after partition?
- What is the law manage ownership of the land?
- What are the causes of low productivity of land?

Group two - Legislation and government department

- What are the legislations manage ownership of the land?
- What are the NGOs (civil institutions) in the region?
- Who are the major participants in decisions making in future proposed projects?
- What are the NGOs whose existence (role) important in management of natural sources?
- What are the institutions whose existence important in management of natural sources and not existence?
- Is there any good model in the region that using land appropriately?
- Is there a harmony between traditional system and system of government correlation to the land?

Group Three - wild life ecology/ Biodiversity

- What wildlife that you watched and no longer existence. why?
- What species of flora you watched in the past and no longer existence. why?
- How much the quantity of livestock in the region?
- What is the impact of livestock on flora?

Group Four - Marketing chain and small enterprise (economic activity)

- What is the economic activity of local community in the region?
- What are the repercussions of deterioration of natural resources and who will be affected or lose?
- Who is the beneficiary of the consequences (results) of deterioration of natural resources?
- What are the proposed (recommended) projects that develop socioeconomic life of local community?