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## ANNEX A: INCREMENTAL COST ANALYSIS

### 1. Broad Goals

1. Syria has established its priorities in the area of biodiversity conservation through preparation of a National Biodiversity Strategy and Action Plan (NBSAP). This plan calls for a variety of short- and long-term measures aimed at enhancing conservation of biodiversity, including its agricultural components. Enhanced protected area management is an important component of this goal-setting document.

### 2. Global Environmental Objective

2. The project's direct global environmental objective is the conservation of globally significant biodiversity within three project demonstration sites. This includes the conservation of important species, genetic and ecosystem diversity within these sites. In addition, through support to provincial and national-level structures, the project will contribute to the conservation of globally significant biodiversity throughout Syria. This will be achieved both through direct project actions as well as through an expected replication effect. The latter will be engendered through the demonstration and dissemination of a functioning model of protected area management, which is currently lacking in Syria.

### 3. Baseline

#### *i. Baseline situation*

3. **Annex F** below presents a problem tree, which describes the threats facing globally significant biodiversity in Syria and the accompanying barriers that have so far hindered the establishment of an effective system of protected area management as a tool for biodiversity conservation. The problem tree arose from a participatory process of threats analysis. The conclusion of this analytical process was that the main threats and barriers could be grouped into the following problem areas:

- Problem 1: Existing policy, legislative and institutional structures, particularly those related to protected areas management, do not provide effective support for biodiversity conservation or sustainable use objectives
- Problem 2: Protected area management systems at individual sites are poorly structured. PA managers have limited capacities to plan or implement systems and actions based on principles of sustainable use or biodiversity conservation.
- Problem 3: Local people living in and around existing PAs have few alternatives to unsustainable resource use and have an adversarial relationship with PA managers.

4. Taken together, the above three problem areas constitute the baseline situation upon which the present project seeks to build. Each is summarized briefly below.

#### PROBLEM 1: POLICY, LEGISLATIVE AND INSTITUTIONAL STRUCTURES

5. As described in the main text, responsibility for management of nearly all PAs in Syria rests with MAAR. However, MAAR and its Forestry Department have had little if any exposure to international developments and emerging concepts related to biodiversity management. Partly for this reason, there has

been little effort made to manage these protected areas in the interests of biodiversity. Rather, the PAs have continued to manage largely as forest reserves. Prevailing policies and legislative requirements have not encouraged actions, for example, to identify, monitor or make efforts to conserve, important or rare animal or plant species or assemblages. Likewise, institutional structures within MAAR did not reflect the special importance of the PAs, which were supposed to be established.

6. In the case of MSEA, similar problems have prevented an effective contribution on its part to better PA management. First, MSEA lacked clear legislative guidelines to define its role in PA management. As a result, its attempts to engage MAAR in discussions or to foster actions for biodiversity conservation were scarcely successful. In the case of an ongoing WB-GEF project, the Cedar and Fir Protected Area project, this situation contributed to conflict between the Ministries and eventually to the effective paralysis of the project. Also, like MAAR, MSEA has been unable thus far to build adequate human capacities for a suitably effective contribution to PA management.

7. Under the baseline scenario, i.e., in the absence of GEF support for PA management, it is unclear whether substantial progress would be made in eliminating the above-described problems. As a result, globally significant biodiversity would almost certainly continue being eroded throughout the country, including within PAs. Baseline spending for institutional, legislative and policy reform under the baseline scenario, i.e., in the absence of a GEF project, has been roughly estimated at \$168,000 during the planned 7-year duration of the GEF project.

#### PROBLEM 2: PROTECTED AREA MANAGEMENT SYSTEMS AT INDIVIDUAL SITES ARE POORLY STRUCTURED.

8. Under the baseline scenario, management efforts at the three selected demonstration sites mainly involved patrolling for compliance monitoring, fire prevention and mono-specific afforestation. Under the baseline scenario, spending within these areas of activity would have been an estimated US\$1,374,000, with the large majority of these funds having been directed to mono-specific afforestation.

9. Notably absent for this list are a host of measures needed for effective protected area management, ranging from effective signage, zoning, management planning, ecological monitoring, education and awareness efforts, etc. In this case, the deleterious effects both of action (e.g. inappropriate afforestation techniques) and inaction (e.g., failure to undertake ecological monitoring or effectively reduce threats from local communities) together would contribute to increased loss of biodiversity under the baseline scenario.

#### PROBLEM 3: LOCAL PEOPLE LIVING IN AND AROUND EXISTING PAS HAVE FEW ALTERNATIVES TO UNSUSTAINABLE RESOURCE USE AND AN ADVERSARIAL RELATIONSHIP WITH PA MANAGERS.

10. Surveys conducted by a team of national consultants working during the PDF-B stage made frequent contact with local people living within and immediately surrounding the three demonstration sites. The findings of these surveys indicated varying levels of tension – from moderate to severe – between forest department personnel and local villagers. Villagers in general did not feel themselves to have been adequately consulted or involved in decisions related to resources that in some cases they had had access to for generations. Under the baseline scenario, gradual improvement might have been expected in these relationships, as communities became accustomed to recently enacted restrictions on access to resources, although increasing population pressures in project site areas might have partially mitigated these positive impacts.

11. Spending under the baseline scenario, aimed mainly at preventing local people from utilizing PA resources, is estimated at \$125,000 during the project period.

#### **4. GEF Alternative Project**

12. It should be noted that a great deal of progress has already taken place (particularly with respect to problem area 1), during the course of an extended PDF-B development process. While not all of this progress was directly due to the PDF-B, nevertheless it appears certain that it has served as a stimulus to many of the developments in this area. Thus, the alternative described below includes some developments, which have already taken place during the PDF-B process and will be built upon during the full project phase.

13. As called for by standard LFA methodology, the above-described three problem areas have been ‘flipped’ into outcomes to be achieved by the present project. These are discussed below.

OUTCOME 1 - POLICIES AND INSTITUTIONAL SYSTEMS THAT ALLOW FOR THE WISE SELECTION AND EFFECTIVE OPERATION OF PROTECTED AREAS TO CONSERVE GLOBALLY SIGNIFICANT BIODIVERSITY

14. This outcome will help to firmly establish and consolidate a national system for protected area management. Key steps achieved in Syria during the project preparation period have included passage of environmental legislation aimed, *inter alia*, at clarifying the role of MSEA in the PA management system, along with institutional changes such as the creation of a new Department for Biodiversity and Protected Area Management (DBPAM) within MAAR. During the full project phase, these developments will be consolidated through capacity building at individual and institutional levels, including the development of clearly defined and effective roles for Damascus-based units of MAAR and MSEA. Total costs of this component of the GEF alternative are estimated at US\$2.05 million of which \$1.58 million will be provided by GEF and \$0.48 million by Government.

OUTCOME 2 - EFFECTIVE TECHNIQUES FOR PA MANAGEMENT AND BIODIVERSITY CONSERVATION HAVE BEEN DEMONSTRATED AND AREA AVAILABLE FOR REPLICATION

15. Under Outcome 2, practical models of PA management will be made operational at three key demonstration sites. This will include the introduction of common PA management techniques such as zoning, management planning, etc. It will also involve a shifting / re-orienting of planned baseline activities, particularly afforestation, to better reflect biodiversity conservation objectives. Total costs of this component of the GEF alternative are estimated at US\$3.20 million, of which \$1.62 million will be provided by GEF and \$1.58 million will be provided by Government.

OUTCOME 3 - SUSTAINABLE USE OF NATURAL RESOURCES IN AND AROUND PROTECTED AREAS IS DEMONSTRATED THROUGH THE DEVELOPMENT AND IMPLEMENTATION OF A PROGRAMME FOR ALTERNATIVE SUSTAINABLE LIVELIHOODS AND COMMUNITY RESOURCE MANAGEMENT

16. Outcome 3 will develop and demonstrate models for transforming the presently difficult relationship between protected areas and their surrounding local populations. The process will begin by building on work undertaken in the PDF-B aimed at better understanding local inhabitants’ present interactions with project sites, along with their socio-economic situations and development needs. This will be followed up by an effort to encourage the development of alternatives to present resource-intensive modes of economic behavior, e.g., firewood collection, goat grazing, etc. Total costs of this component of the GEF alternative are estimated at US\$1.45 million, including US\$1.0 million from UNDP, US\$0.35 million from Government and US\$0.10 million from GEF.

## **5. Scope of Analysis**

17. The scope of the present incremental cost analysis (ICA) has geographic and thematic aspects. Geographically, the scope has been defined at two levels: first, it includes the three demonstration protected areas, which are the focus of activities under outcomes 2 and 3; second, it includes the entire PA management system as a focus of replication. Thematically, the project is closely focused on the development of an effective PA system as a tool for biodiversity conservation.

18. In terms of defining baseline and alternative levels of spending, the above-defined scope means that spending within the three demonstration PA has been included, along with national-level co-ordination efforts for the entire PA management system. However, operational expenditures at PAs other than the demonstration sites are excluded from the analysis.

## **6. Costs**

19. Baseline expenditures within the systems boundary of the project outputs are estimated at US\$1.67 million. These are the estimated costs of all relevant investments, programmes and management activities that would have taken place in the absence of a GEF project.

20. The total cost of the alternative project necessary to ensure sustainable development and the conservation of globally significant biodiversity is US\$6.92 million. The total additional, or *incremental cost*, which is the difference between the baseline and the alternative projects, is US\$5.25 million.



**Overall Objective: To ensure that Syria’s globally and nationally significant biodiversity is sustainably used by, and provides benefits to, its current generation while being conserved for the benefit of present and future generations worldwide**

	<b>Baseline (B) (existing environmental management)</b>	<b>Alternative (A) (additional biodiversity conservation measures)</b>	<b>Increment (A-B)</b>
Global Benefits	<ul style="list-style-type: none"> <li>Protected areas covering globally significant areas exist on paper, but are not subject to effective management actions or protection. Rare ecosystem assemblages, species and genetic diversity at these sites are at continuing risk of loss.</li> <li>Limited institutional, human and financial capacities put core biodiversity areas at risk</li> <li>The existing ‘system’ of protected areas management fails to encourage any effective connections or integration between site-level management and broader, bio-regional or national strategic conservation objectives, including those related to CBD implementation</li> </ul>	<ul style="list-style-type: none"> <li>Practical tools for planning and managing protected areas for biodiversity are demonstrated at three sites</li> <li>National capacities to manage globally significant biodiversity are increased</li> <li>A national-level system for protected areas management, with co-ordination among all relevant ministries, ensures that individual PAs are managed with broader national or bio-regional-level conservation objectives paramount</li> </ul>	<ul style="list-style-type: none"> <li>Globally significant species, ecosystem and genetic biodiversity is conserved at project sites</li> <li>Core biodiversity areas are conserved through informed management</li> <li>Prioritization and co-ordination of conservation effort enhances achievement of national- and global-level conservation goals within PAs and beyond</li> </ul>
Domestic Benefits	<ul style="list-style-type: none"> <li>Local people are putting pressure on limited resources, while confronting an unsympathetic management structure that fails to allow them an effective voice in management</li> <li>Officials and local people have a limited awareness of global biodiversity issues and the significance of their national patrimony</li> </ul>	<ul style="list-style-type: none"> <li>Local people are able to take advantage of alternative livelihood opportunities and to participate in decision-making concerning local resources</li> <li>Awareness is raised together with practical skills in biodiversity conservation and sustainable use</li> </ul>	<ul style="list-style-type: none"> <li>Improved sustainable use opportunities and a lower level of conflict between local people and authorities</li> <li>Increased awareness and knowledge</li> </ul>

<b>Outcome 1 - Policies and institutional systems that allow for the wise selection and effective operation of protected areas to conserve globally significant biodiversity</b>						
<b>Outputs</b>	<b>Baseline (B) (existing environmental management)</b>		<b>Alternative (A) (additional biodiversity conservation measures)</b>		<b>Increment (A-B)</b>	
AA 1.1: Institutional capacity building for PA management	Gov't	\$39,000	GEF	\$270,600	GEF	\$270,600
			Gov't	\$139,000	Gov't	\$100,000
	TOTAL	\$39,000	TOTAL	\$409,600	TOTAL	\$370,600
AA 1.2 - Human resource development	Gov't	\$60,000	GEF	\$380,200	GEF	\$380,200
			Gov't	\$135,000	Gov't	\$75,000
	TOTAL	\$60,000	TOTAL	\$515,200	TOTAL	\$455,200
AA-1.3 Support for carrying out PA-related co-ordination responsibilities—MAAR	Gov't	\$49,000	GEF	\$355,800	GEF	\$355,800
			Gov't	\$149,000	Gov't	\$100,000
	TOTAL	\$49,000	TOTAL	\$504,800	TOTAL	\$455,800
AA-1.4 Support for carrying out PA-related co-ordination responsibilities—MSEA	Gov't	\$20,000	GEF	\$561,050	GEF	\$561,050
			Gov't	\$60,000	Gov't	\$40,000
	TOTAL	\$20,000	TOTAL	\$621,050	TOTAL	\$601,050
Outcome 1 totals	Gov't	\$168,000	GEF	\$1,567,650	GEF	\$1,567,650
			Gov't	\$483,000	Gov't	\$315,000
	TOTAL	\$168,000	TOTAL	\$2,050,650	TOTAL	\$1,882,650

<b>Outcome 2 - Effective techniques for PA management and biodiversity conservation have been demonstrated and are available for replication</b>						
<b>Outputs</b>	<b>Baseline (B) (existing environmental management)</b>		<b>Alternative (A) (additional biodiversity conservation measures)</b>		<b>Increment (A-B)</b>	
AA 2.1 - Local cadres are trained and qualified in ecosystem planning and management	Gov't	\$20,000	GEF	\$390,000	GEF	\$390,000
			Gov't	\$95,000	Gov't	\$75,000
	TOTAL	\$20,000	TOTAL	\$485,000	TOTAL	\$465,000
AA 2.2 - Adequate information is available to managers and decision-makers on fauna, flora and other aspects of natural systems at project sites	Gov't	\$30,000	GEF	\$325,600	GEF	\$325,600
			Gov't	\$90,000	Gov't	\$60,000
	TOTAL	\$30,000	TOTAL	\$415,600	TOTAL	\$385,600
AA 2.3 - Project sites are operated according to an approved management plan, including a functional zoning scheme, job descriptions, management hierarchy, a strategy for sustainably removing threats and rehabilitation measures	Gov't	\$39,000	GEF	\$313,600	GEF	\$313,600
			Gov't	\$109,000	Gov't	\$70,000
	TOTAL	\$39,000	TOTAL	\$422,600	TOTAL	\$383,600
AA 2.4 – Implementation of site management plans	Gov't	\$1,285,000	GEF	\$595,000	GEF	\$595,000
			Gov't	\$1,285,000		
	TOTAL	\$1,285,000	TOTAL	\$1,880,000	TOTAL	\$595,000
Outcome 2 totals	Gov't	\$1,374,000	GEF	\$1,624,200	GEF	\$1,624,200
			Gov't	\$1,579,000	Gov't	\$205,000
	TOTAL	\$1,374,000	TOTAL	\$3,203,200	TOTAL	\$1,829,200

<b>Outcome 3 - Sustainable use of natural resources in and around protected areas is demonstrated through the development and implementation of a programme for alternative sustainable livelihoods and community resource management</b>						
<b>Outputs</b>	<b>Baseline (B) (existing environmental management)</b>		<b>Alternative (A) (additional biodiversity conservation measures)</b>		<b>Increment (A-B)</b>	
Activity Area 3.1: Local community interaction with and socio-economic dependence on site areas and site resources are fully understood by site managers	Gov't	\$50,000	GEF	\$100,000	GEF	\$100,000
			UNDP TRAC	\$100,000	UNDP TRAC	\$100,000
			Gov't	\$100,000	Gov't	\$50,000
	<b>TOTAL</b>	<b>\$50,000</b>	<b>TOTAL</b>	<b>\$300,000</b>	<b>TOTAL</b>	<b>\$250,000</b>
Activity Area 3.2: Site management plans and operational actions address threats arising from local community activities in and around site areas			UNDP TRAC	\$100,000	UNDP TRAC	\$100,000
			Gov't	\$50,000	Gov't	\$50,000
	<b>TOTAL</b>	<b>\$0</b>	<b>TOTAL</b>	<b>\$150,000</b>	<b>TOTAL</b>	<b>\$150,000</b>
Activity Area 3.3: Alternative livelihood activities and opportunities are identified and made available to local communities where required to reduce or eliminate anthropogenic threats to site areas	Gov't	\$75,000	UNDP-TRAC	\$800,000	UNDP-TRAC	\$800,000
			Gov't	\$195,000	Gov't	\$120,000
	<b>TOTAL</b>	<b>\$75,000</b>	<b>TOTAL</b>	<b>\$995,000</b>	<b>TOTAL</b>	<b>\$920,000</b>
Outcome 3 totals	Gov't	\$125,000	GEF	\$100,000	GEF	\$100,000
			UNDP-TRAC	\$1,000,000	UNDP-TRAC	\$1,000,000
			Gov't	\$345,000	Gov't	\$220,000
	<b>TOTAL</b>	<b>\$125,000</b>	<b>TOTAL</b>	<b>\$1,445,000</b>	<b>TOTAL</b>	<b>\$1,320,000</b>
PDF-B			GEF	\$194,000	GEF	\$194,000
			Gov't	\$27,000	Gov't	\$27,000
			<b>TOTAL</b>	<b>\$221,000</b>	<b>TOTAL</b>	<b>\$221,000</b>
Project totals	Gov't	\$1,667,000	GEF	\$3,485,850	GEF	\$3,485,850
			Gov't	\$2,434,000	Gov't	\$767,000
			UNDP-TRAC	\$1,000,000	UNDP-TRAC	\$1,000,000
	<b>TOTAL</b>	<b>\$1,667,000</b>	<b>TOTAL</b>	<b>\$6,919,850</b>	<b>TOTAL</b>	<b>\$5,252,850</b>

## Annex B - Logical Framework / Project Planning Matrix

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
<b>Overall Objective</b>	To ensure that Syria's globally and nationally significant biodiversity is sustainably used by, and provides benefits to, its current generation while being conserved for the benefit of present and future generations worldwide			
<b>Project purpose</b>	To demonstrate practical methods of protected area management that effectively conserve biodiversity and protect the interests of local communities, while supporting the consolidation of an enabling environment that will facilitate replication and effective PA management throughout the country	<ul style="list-style-type: none"> <li>• Overall human footprint within demonstration PAs, as defined by an impact reduction index to be developed under biodiversity monitoring programme, is measured annually and reduced 25% by Year 3 and 50% by end of project.</li> <li>• Species-specific surveys indicate at least 25% recovery in populations of target globally significant species by end of project</li> <li>• 40% of local communities involved in sustainable use of the natural resources in the 3 sites by end of the project</li> <li>• 50% increase in ecosystem integrity by end of the project and 50% decrease in level of threats</li> <li>• At national level, 40% increase in land area under PA status by end of project</li> </ul>	<ul style="list-style-type: none"> <li>• Biodiversity monitoring reports (see AA 1.3 and 1.4)</li> <li>• Biodiversity monitoring reports (see AA 1.3 and 1.4)</li> <li>• Monitoring reports measuring people participation in the project</li> <li>• Biodiversity and natural resource monitoring reports</li> <li>• PA annual reports</li> </ul>	<ul style="list-style-type: none"> <li>• Ecological corridors outside of PAs are maintained through effective landscape-level conservation, PA-extensions and additions</li> <li>•</li> </ul>

	<b>Description</b>	<b>Verifiable Indicators</b>	<b>Means of Verification</b>	<b>Risks and Assumptions</b>
<b>Outcomes</b>	1 - Policies and institutional systems that allow for the wise selection and effective operation of protected areas to conserve globally significant biodiversity	<ul style="list-style-type: none"> <li>• By end of Year 2, a detailed and agreed set of streamlined national institutional arrangements describing the functions of all units and agencies involved in PA management and clarifying their respective roles and mechanisms of co-operation</li> <li>• By end of Year 4, relevant HQ units possess a critical mass of trained staff able to effectively manage the overall PA system, including oversight of individual PAs</li> <li>• By end of project, MAAR has developed and is implementing a comprehensive set of HQ-based activities aimed at managing and extending PAs within forest areas and other dryland ecosystems (rangelands)</li> <li>• By end of project, MSEA is implementing a system for inter-sectoral co-ordination through which it is able to closely monitor and provide direction to other ministries to ensure that the national system of PAs plays a visible role in achieving national biodiversity conservation and sustainable development objectives</li> </ul>	<ul style="list-style-type: none"> <li>• Inter-ministerial Memorandum of Understanding</li> <li>• Project reporting</li> <li>• Project reporting: mid-term and final evaluations</li> <li>• Project reporting: mid-term and final evaluations</li> </ul>	The project receives all required cooperation from relevant Government stakeholders.

	<b>Description</b>	<b>Verifiable Indicators</b>	<b>Means of Verification</b>	<b>Risks and Assumptions</b>
	2 - Effective techniques for PA management and biodiversity conservation have been demonstrated through the design and implementation of management plans at three sites	<ul style="list-style-type: none"> <li>• By end of Year 4, local cadres and managers at project sites are trained in ecosystem-based management and have been exposed to examples of international best practices</li> <li>• By end of Year 2, baseline monitoring reports on biodiversity dynamics and natural resource management are available for each project site</li> <li>• By end of Year 2, integrated management plans are agreed at each site. Plans may be updated annually on a rolling basis thereafter</li> <li>• Management actions are implemented in accordance with management plans</li> </ul>	<ul style="list-style-type: none"> <li>• Project reporting</li> <li>• Project reports –</li> <li>• Site management plans</li> <li>• Site management plans; site-based annual reports</li> </ul>	No major external threats or factors outside the systems boundary impact upon sustainable management of the sites
	3 - Sustainable use of natural resources in and around protected areas has been demonstrated through the development and implementation of a programme for alternative sustainable livelihoods and community resource management	<ul style="list-style-type: none"> <li>• Examples of participatory management mechanisms and stakeholder feedback systems are incorporated into management plans and operations.</li> <li>• 40% of rural and bedouin communities involved in sustainable use of the natural resources in the 3 sites by end of the project</li> </ul>	<ul style="list-style-type: none"> <li>• Management plans and operational policies, feedback from local stakeholders, management committees and community consultations.</li> <li>• Reports measuring local stakeholder participation in the project</li> </ul>	Socio-economic and human development priorities of local communities can be addressed in a sustainable manner while conserving the biodiversity of the project areas.
<b>Activities</b>	<p><b>Outcome 1 - Policies and institutional systems allow for the wise selection and effective operation of protected areas to conserve globally significant biodiversity</b></p> <p><i>Activity Area 1.1 Institutional capacity building for PA management.</i></p> <ul style="list-style-type: none"> <li>o Review and rationalize task descriptions of relevant HQ units (MAAR and MSEA) to ensure minimal overlap and maximum coverage of required PA-management and co-ordination tasks.</li> <li>o Review and propose changes to relevant unit responsibilities and lines of authority within MAAR and MSEA</li> <li>o Preparation of a policy report describing in detail a set of streamlined, yet effective, national institutional arrangements for PA management. The report should include a detailed and comprehensive organigramme showing responsibilities of, and relationships among, national-level agencies for PA management</li> <li>o Above institutional arrangements should be codified formally, for example in a Memorandum of Understanding among relevant agencies or another formal policy agreement on institutional set-up.</li> <li>o Provide support for improved operational processes, such as planning and financial management</li> <li>o Prepare periodic policy analyses, with participation by MAAR and MSEA, to derive lessons learned from experience at project demonstration sites (see Outcomes 2 &amp; 3) and to develop agreed strategies for applying these lessons at existing and proposed new PAs</li> </ul>			

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
	<p><i>Activity Area 1.2: Human resource development</i></p> <ul style="list-style-type: none"> <li>o Review and rationalize job descriptions of relevant staff within HQ units (MAAR and MSEA) to ensure minimal overlap and maximum coverage of required PA-management and co-ordination tasks.</li> <li>o Development and implementation of training programmes within MAAR and MSEA to upgrade PA-related management skills among relevant staff</li> </ul> <p><i>Activity Area 1.3: Support for carrying out PA-related co-ordination responsibilities—MAAR</i></p> <ul style="list-style-type: none"> <li>o Develop and implement methodologies and guidelines for baseline biodiversity information gathering, assessments and ongoing monitoring / inspection of PAs.</li> <li>o Improve capacities for investment planning related to PAs.</li> <li>o Develop and implement mechanisms for identifying and prioritizing potential new PAs within forest areas. These may include ecological surveys and social impact assessments to be undertaken prior to PA establishment.</li> <li>o Develop more biodiversity-friendly environmental remediation efforts.</li> <li>o Develop mechanisms to ensure that national-level wildlife conservation objectives are incorporated into site management planning.</li> <li>o Develop and implement national-level and site-specific strategies for conservation and regeneration of rare and threatened forest species.</li> <li>o Standardize reporting by provincial-level Forest Departments concerning PAs within their jurisdiction. Prepare and disseminate a single Annual Report covering MAAR-operated PAs.</li> </ul> <p><i>Activity Area 1.4: Support for carrying out PA-related co-ordination responsibilities—MSEA</i></p> <ul style="list-style-type: none"> <li>o Strengthen implementation of all legally mandated inter-sectoral co-ordination responsibilities related to PAs. These will include, <i>inter alia</i>, co-ordinating a national-level process of PA identification and selection.</li> <li>o Ensure that data and information flows from MAAR-managed and other PAs flow into a centralized data management system capable of monitoring biodiversity change within both PAs and the broader landscape. These should include both ecological information as well as information on threats and threat reduction, particularly at demonstration sites.</li> <li>o Based on information and data collected at both PA and landscape levels, produce periodic assessments of the efficacy of the national system for PA management and proposals for its improvement. These will constitute lessons learned, beginning with experience at demonstration sites.</li> <li>o Assess the existing system for Environmental Impact Assessment (EIA) as it relates to PAs and propose necessary revisions.</li> <li>o Develop rules and requirements for establishing and monitoring PAs, including financial and budgetary, ecological assessments (studies) as a tool for prioritization, (re)-definition of objective process for identifying, nominating and approving, social impact assessment prior to establishment.</li> <li>o Raise public awareness concerning the role of protected areas in biodiversity conservation in Syria. This should include preparation and wide dissemination of awareness materials including brochures, posters, a ‘user-friendly’ annual report, etc.</li> <li>o Disseminate project results actively within the Middle East region and beyond.</li> </ul> <p><b>Outcome 2 - Effective techniques for PA management and biodiversity conservation have been demonstrated and are available for replication</b></p> <p><i>Activity Area 2.1: Training of local cadres and managers in ecosystem planning and management</i></p> <ul style="list-style-type: none"> <li>o Training needs assessment and development of training programmes</li> <li>o Implement site-based training programmes and team-building exercises</li> <li>o Implement cross-site, job-specific training programmes</li> <li>o Undertake study tours to successful regional examples of protected areas, especially GEF project sites</li> </ul> <p><i>Activity Area 2.2: Implement biodiversity monitoring programmes</i></p> <ul style="list-style-type: none"> <li>o Preparation of guidelines for data collection and monitoring by PAs (see AA 1.3)</li> </ul>			

	Description	Verifiable Indicators	Means of Verification	Risks and Assumptions
	<ul style="list-style-type: none"> <li>o Hold workshops to discuss monitoring guidelines with officials from each demonstration site</li> <li>o Add site-specific component to general monitoring guidelines for each site</li> <li>o Prepare initial baseline biodiversity report for each site based on agreed guidelines</li> <li>o Undertake follow-up monitoring throughout project lifespan</li> <li>o Regularly provide collected data in a standardized format to national-level database and GIS system being managed by MSEA (see AA 1.4)</li> </ul> <p><i>Activity Area 2.3: Development of site management plans</i></p> <ul style="list-style-type: none"> <li>o Review and assessment of current management practices, including policies of restoration using heavy vehicles, afforestation, etc., to assess suitability and impacts on biodiversity</li> <li>o Develop draft 5-year management plans to address issues such as threat removal, development of functional zonation schemes, revisions to job profiles and management structures, ecological rehabilitation measures and investment planning</li> <li>o Review draft management plans with institutional partners and with local stakeholders</li> <li>o Finalize management plans</li> </ul> <p><i>Activity Area 2.4 Implementation of site management plans</i></p> <ul style="list-style-type: none"> <li>o Specific activities to be defined under 2.3 above</li> </ul> <p><b>Outcome 3 - Sustainable use of natural resources in and around protected areas has been demonstrated through the development and implementation of a programme for alternative sustainable livelihoods and community resource management</b></p> <p><i>Activity Area 3.1: Assessment of local community relationships with demonstration sites and site resources</i></p> <ul style="list-style-type: none"> <li>o Undertake a comprehensive, participatory socio-economic assessment of each site, building upon the preliminary assessments undertaken during the PDF-B phase.</li> <li>o Assess the extent and nature of local community dependence on site resources, both directly (fuel, water, food, medicinal or income-generating resources) and indirectly (existence values, environmental values including watershed and soil stability, etc.)</li> <li>o Identify, quantify and prioritize various anthropogenic threats to the sites, e.g., grazing, agriculture and agrochemical use, hunting, wood-chopping, charcoal-making, etc.</li> <li>o Assess the extent to which these anthropogenic threats affect biodiversity in and sustainable use of the sites and the degree to which these threats need to be reduced or eliminated to achieve sustainability.</li> <li>o Record and catalogue local community knowledge of site resources, including medicinal plants and their properties</li> </ul> <p><i>Activity Area 3.2: Site management plans and operational actions address threats arising from local community activities in and around site areas.</i></p> <ul style="list-style-type: none"> <li>o Incorporate socio-economic resource use data into site management information (GIS) systems.</li> </ul> <p><i>Activity Area 3.3: Alternative livelihood activities and opportunities are identified and made available to local communities where required</i></p> <ul style="list-style-type: none"> <li>o Undertake briefings and discussions with local communities to explain how their activities affect the sustainability of the sites, and the necessity for finding alternative sustainable livelihood activities to substitute for existing unsustainable activities.</li> <li>o Identify, in close consultation with local communities, potential alternative livelihood activities, which are acceptable substitutes for existing income and resource sources.</li> <li>o Research and pilot-test potential alternatives to identify those sustainable livelihood activities, which are most suitable for local socio-economic and ecological conditions.</li> <li>o Once suitable alternative livelihood activities have been identified and accepted by local communities, provide technical and financial support for the implementation of these alternatives in all affected communities.</li> </ul>			

## ANNEX C. RESPONSE TO EXTERNAL REVIEWS

### STAP Roster Technical Review of Project Brief UNDP PIMS: 227 Biodiversity

### SYRIAN ARAB REPUBLIC: Conservation and Protected Area Management

**By Professor Vernon H Heywood**

Centre for Plant Diversity and Systematics

School of Plant Sciences

The University of Reading, UK

#### **Introduction**

The Protected Area system of the Syrian Arab Republic is still under development and the 16 currently existing Protected Areas together represent one of the lowest national percentages under protection in the region. The present proposal aims to provide a practical system that will achieve the conservation of important aspects of the country's biodiversity while at the same time involving local communities and respecting their interests and rights. It aims to do this by putting in place structures, mechanisms and legislation that will (1) allow rational selection and effective operation of Protected Areas; (2) develop and apply appropriate techniques for the management of these areas and the conservation of the significant biodiversity that they contain; and (3) develop and apply methods for the sustainable use of resources within and adjacent of these area through involving the local communities in their management and provision of alternative means of maintaining their livelihoods.

With a land area of 18 377 000 ha, Syria has 461 000 ha of forests, representing 2.5% of the land area and 229 000 ha of plantation forests. Many of the old mountain and coastal forests that house cedars, pines, firs, junipers and oaks, as well as wild relatives of domestic fruit trees such as almonds, plums and pears, are threatened.

Due to the prevailing harsh climatic conditions of the region, much of the forestland comprises of savannah areas, open woodlands, and land with scattered trees and xerophytic shrubs. The central and eastern parts of the country are largely occupied by very extensive areas of steppe or semi-desert (the Badia), representing more than half the national territory.

In terms of species biodiversity, Syria has a flora of some 3,100 species of which 243 (7.8%) are endemic to the country, some animal 2500 species, including 360 bird species nearly half of which are migratory, and 125 mammal species of which the large mammals seriously affected by habitat loss, competition with grazing sheep and goats, and uncontrolled hunting. Although Syria is rich in biodiversity, it is an exaggeration to claim (para 7) that it is considered the third most biologically diverse country in the Mediterranean Basin – unless one means the Eastern or Levantine sector.

The local population in rural areas are heavily dependant on the natural resources found in forests, steppe (Badia), and around rivers, for their daily livelihood (food, medical plants, fuel, etc) and this leads to increased pressure on ecosystems and their component species in heavily populated regions (Syrian Second National Report to CBD).

## Scientific and technical aspects

The project preparation was undertaken as part of a GEF PDF-B grant. This included a careful and detailed process of site selection: out of 13 candidate sites, five were shortlisted, chosen according to a set of criteria (see Annex K: Site selection). Following visits to the five short-listed sites by an interdisciplinary team of national and international experts and their recommendations, three sites were chosen by the Project Steering Committee, that are ‘both globally significant in their own right as well as representative of the critical issues facing biodiversity in Syria and thus amenable to replication ...’(para 27).

The chosen sites are the Al Fronloq protected area, Jebel Abdul Aziz Mountain, and the Abou-Qubies protected area. Each of the three selected areas was then studied by national experts and the Project Brief contains summary descriptions of their physical and biological features, baseline activities and threats to them. These provide an excellent basis for assessing their significance and the problems involved in maintaining them and conserving their biodiversity on a sustainable basis. The Al Fonloq site contains *Pinus brutia* forests and pure stands of *Quercus cerris* subsp. *pseudocerris*; the Jebel Aziz contains populations of *Pistacia khinjuk*, a primitive pistachio species, and *P. atlantica*, recognized as a priority species for forest genetic resources by IPGRI/CIWANA, as well as various fruit tree wild relatives; and the Abou-Quibies protected area has forests of *Quercus calliprinos*, *Carpinus orientalis*, *Fraxinus ornus* and *Quercus cerris* subsp. *pseudocerris*, and various important resident bird species.

The Project is a large and complex one, spanning seven years. The Project Brief is generally well presented and documented and makes a persuasive case. It is refreshing to find that the information on biodiversity has been well researched and highlighted. Perhaps not enough detail has been given of the effects on biodiversity of the ways in which it is used by local populations (about half of the country’s population is rural), such as the levels of wild harvesting of medicinal and other useful plants and the effects these have on population survival and maintenance. Likewise, areas such as species population recovery programmes, which are technically difficult and time-consuming, are somewhat glossed over (Annex B Logical Framework verifiable indicators).

The **Baseline Course of Action** is presented as separate scenarios for the three selected sites. These describe the socio-economic context, including the types of activity engaged in, such as agriculture, livestock raising, hunting and off-farm income generation, and the current site management and policy for each site and detail the ongoing threats that would continue to affect the biodiversity of the areas under the baseline scenario – fire, over grazing, wood cutting and charcoal making, hunting, tourism, encroachment and land conversion and roads. Table 2 summarizes the threats in the three project sites (para 78). It is noted that, for example, there is a proposal still under consideration by the Ministry of Agriculture and Agrarian Reform to extend the Al-Fonloq site from 1500 ha to 4500 ha; in the Jebel Abdul Azia, in the context of the PDF-B preparatory process, the site was extended from 4220 ha to 49 000 ha, and it is estimated that about 10% of the population of each village is involved in collecting medicinal herbs, while collection of seed of *Pistacia atlantica* and *P. khinjuk* is an important activity; while at the Abou-Qubies site, which is species-rich and may house some 25 rare or threatened species, there is an issue regarding the size of the area, as 11 000 ha were designated originally in 1999 but the

national team survey found that only 5000 ha were included – a matter that needs to be resolved; it also notes that apart from patrolling no management practices are carried out at this site.

An analysis of the baseline situation is given in Annex A (Incremental Cost Analysis) and a problem tree is presented as Annex F. These make the point that the present system of Protected Areas does not function well enough to conserve adequately the country's global and nationally important biodiversity, that management systems are poorly structured at the demonstration sites, that existing policy, legislation and infrastructure related to PA management do not incorporate biodiversity or sustainable use considerations, and that people living in and around PAs have few alternatives to practicing unsustainable resource exploitation and have an adversarial relationship with PA managers.

A summary of the Beginning of project situation to compare with the End of project situation (given on p. 22) would have been useful.

The **GEF Alternative Course of Action** gives as the development objective, to ensure that the country's globally and nationally important biodiversity is sustainably used by present generations while conserving it for future generations, while the project objective is the demonstration of practical methods of PA management that will conserve biodiversity effectively and allow the lessons learned to be applied to PA management throughout the country. To achieve this proposes three outcomes which amount to a thorough overhaul of the PA system at all levels and in all its components. The first of these addresses the fact noted in the baseline assessment that Syria has yet to develop a properly functioning and integrated system for PA management and includes activities that will build institutional capacity, develop human resources, provide technical support in both the Ministries involved (Agriculture and Agrarian Reform and Environmental Affairs), and support for coordination in both Ministries.

Some of these activities are bold and far-reaching and recognize current weaknesses in the PA present system, notably lack of coordination and rationalization of tasks, and communication failure within and between the key Ministries. It stresses the need for ensuring that protected areas function do not operate in isolation but as part of a broader landscape although it is not clear if this implies adopting a landscape or bioregional approach to biodiversity management which would certainly be desirable if not essential in this context.

The recognition that baseline biodiversity information needs to be gathered is welcome as are the proposals for developing a centralized data management system for monitoring biodiversity change (AA-1.4.ii) although it is not clear if the size and complexity of such a task is fully appreciated by the Project designers. Outcome 2 includes the implementation of the biodiversity monitoring programme (AA 2.2) that will build on work undertaken during the PDF-B to produce base-line assessments of floristic and faunal diversity. It is not clear from the objectives listed whether this also involves developing the baseline data (see AA 2.2 ii) and if so how it relates to the activities envisaged in Outcome 1. Outcome 2 also includes training of personnel in ecosystem planning and management which will be a critical factor in the project. As expertise in this area is currently lacking, it is not clear how this training will be undertaken and by whom. This should be made clear and the necessary budgetary provisions specified. Likewise, the development of site management plans will depend on support from 'Damascus-based experts'

although it is not clear whether these already exist or will have to be appointed from outside the country.

The third outcome will be the demonstration of sustainable use of natural resources in and around the protected areas. The Project Brief recognizes that this will be critical as some of the local communities concerned have been hostile to forestry officials involved in maintaining forest areas and it is essential that they become instead partners in biodiversity conservation if the project is to succeed. The activities involved here include a detailed assessment as to how the local population use the existing resources, either directly as medicinal plants, fuel wood, food, grazing, hunting etc. or through their dependence on ecosystem services such as soil protection, climate moderation etc. These assessments aim to include recording local knowledge as to how such resources are used (ethnobiology), which is can be a difficult, specialized and lengthy task that also involves consideration of intellectual property rights which are not mentioned in the Project Brief. Models for the equitable sharing of benefits deriving from these resources will also have to be developed. Even more difficult will be the activities involved in finding alternative ways of providing sustainable livelihoods and income generation (AA 2.3).

The end of project situation (para 91) will, if achieved, represent a major transformation of the current structure, capacity and effective management of the three project sites, the conservation and sustainable use of globally and nationally biodiversity that they house, and the offer the possibility of applying these nationally to the whole Protected Area system.

### **Global environmental benefits and/or drawbacks**

Several global environmental benefits would derive from this Project if successfully implemented, such as:

- The conservation and sustainable use of globally significant biodiversity within the three project demonstration sites, notably forest ecosystems that contain important stands or populations of economically important tree species such as *Pistacia khinjuk* and *Quercus cerris* subsp. *pseudocerris*.
- The conservation of the habitats of numerous endemic species of plants, birds, and large mammals, many of which are rare or endangered
- The protection of the habitats of numerous migratory species of birds
- The conservation of the habitats of important wild relatives of fruit trees and forages
- Experience of the establishment and implementation of Protected Area system in which stakeholder local communities are closely involved in the planning and management

### **The GEF context, goals and operational strategies, Council guidance and provisions of the relevant Conventions**

The Project satisfies all the main strategic considerations listed in the Operational Strategy 2 Biodiversity and meets the requirements of the GEF OP 1 on Arid and Semi-Arid Zone Ecosystems. It aims at the conservation and sustainable use of important components of biological diversity, such as significant ecosystems, globally threatened species, conservation of wild relatives of crops and forages, through many of the activities listed in O.P. 1.17.

The Project clearly addresses many of the provisions of the Convention on Biological Diversity, notably Articles 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17 and 18 and Annex 1 Identification and Monitoring.

### **Regional context**

South West Asia of which Syria forms part is an important area biogeographically and is at a phytogeographical crossroads where the Holarctic and Palaeotropical floristic kingdoms meet. It includes elements of both the Irano-Turanian Regional and the Mediterranean Centers of Endemism. Most of the region is arid or semi-arid and subject to threats by overgrazing, overharvesting of fuelwood, and the mainly rural population depends to a considerable degree on exploiting local resources such as medicinal and aromatic plants and fuelwood. It contains significant forest resources of cedars, firs, oaks and pines, many of whose habitats have been seriously depleted and it is important that significant samples of these forest ecosystems be maintained and managed sustainably in all countries of the region where they occur. The region is a centre of diversity and origin for many plants of agriculture and houses important wild crop relatives. Syria has a relatively rich flora and a considerable amount of unique biodiversity (endemic plants and animals).

### **Replicability**

If successfully implemented, the Project contains a number of elements that will be of application throughout the Middle East and SW Asia. Especially valuable will be the lessons learned from restructuring and reinforcing the Protected Area System and the management and infrastructure needed to implement it, as well as solving communication problems and fostering co-operation between the different Ministries and Agencies involved. Equally important will be the lessons that can be learned from the introduction of mechanisms for the participation of local communities in the planning and running of the protected areas and for devising means of providing alternative livelihoods for those displaced from areas where they currently enjoy both ecosystem benefits and exploitation of wild plant and animal resources for food, fuel, medicine and other purposes. The biodiversity information gathering mechanisms, databases and monitoring systems will also be of great interest to other countries in the region and should be easily applicable to them where appropriate.

### **Sustainability**

As the Project Brief makes clear, the successful conservation and sustainable use of biodiversity depends on having in place institutional structures that are effective, efficient and permanent. This will require a radical restructuring of the present PA system. It also recognizes the risks involved in the necessarily strong PCU being seen as a substitute for rather than a complement to the existing Government agencies. It will be essential to ensure that after the end of the project and the disbandment of the PCU adequate and permanent mechanisms for maintaining coordination between agencies are in place.

The Project plans to build up a critical mass of local expertise rather than depending on external international consultants and this is laudable although it is not at all clear how the necessary training can be implemented with the limited external support apparently envisaged. The amount of training required is very large and varied and a clearer picture of how this will be achieved – in house, secondment, short courses, reverse training etc. – and the numbers and grades of staff involved (pre-existing or to be recruited) needs very serious consideration as the success of the whole project will depend on it.

### **Contribution to the improved definition and implementation of GEF strategies and policies**

If successful, the radical reorganization and restructuring of the PA system should provide valuable lessons for other countries faced with similar problems. The Project should contribute to developing GEF strategies for Protected Area management, especially in arid and semi-arid zones and provide valuable lessons for refining strategies for sustainable management of plant and animals resources in such environmentally vulnerable areas. The development of participatory management systems involving local communities and the planning of alternative sources of livelihood for those displaced from areas that will be protected will also make a useful contribution to GEF strategies and policies for arid zones.

### **Secondary issues**

- **Linkages to other focal areas**

In the light of the apparently increasing aridity of the region and its consequences for PA management and biodiversity protection, the Project has some relevance to the Focal Area of Climate. Some aspects of the Project are also relevant to the Land Degradation Focal Area.

- **Linkages to other programmes**

The Project Brief notes (para 95). that it has been designed so as to provide to provide complementarily to other GEF projects, notably (1) the World Bank-GEF MSP project at Arz/El Shouh protected area near Slenfe (see also paras. 24-25 and 121) which has demonstrated a clear challenge to be overcome related to institutional co-ordination between MAAR and MSEA; and (b) the UNDP-GEF's regional project for Conservation and Sustainable Use of Dryland Agro-Biodiversity of the Fertile Crescent (approved in October 1998).

There should also be linkages with the UNDP/UNEP-supported Biodiversity Planning Support Programme Arab States (in which the WESCANA programme of IUCN–The World Conservation Union, coordinates the Arab States region and its 16 countries) and its database on biodiversity expertise in the region.

- **Degree of involvement of stakeholders**

Involvement of key stakeholders, notably local communities in and around the Protected Areas, is a major component of the Project and a detailed stakeholder plan is given in Annex G. The project formulation process has involved extensive stakeholder consultation. Stakeholder

participation during project implementation will be ensured through an ‘Advisory committee of direct resource users’ and a ‘Project’s sub-steering committee’ for each project site.

- **Capacity-building aspects**

Much of the project is concerned with and dependent on the capacity building for developing the management structures for a transformed PA system and for practical implementation of PA management policy at each site and field operation.

- **Innovativeness**

The most innovative aspects of the project will be the major effort to ensure local stakeholder participation in planning and management of the three selected sites and the intention of providing alternative livelihoods for local populations that are adversely affected by the Project.

### **Conclusions**

This is a complex and ambitious project that is largely dependant on (1) being able to develop successfully new management structures and put in place the necessary infrastructure to manage and develop the Protected Areas, and on (2) training the cadres of staff at various levels need to achieve this. If successful it will provide a useful model for the region as well as achieving the conservation of significant amount of globally important biodiversity at the ecosystem, species and genetic level.

I strongly support the proposal which is well presented and detailed. My only serious reservation concerns the ability to develop sufficient trained capacity within the planned time frame to undertake the very wide range of operations involved, such as baseline biodiversity surveying, information system development, ecosystem and species management, monitoring, species recovery, ethnobiological and socio-economic surveying, complex negotiations with local populations and other stakeholders, and reorganization of infrastructure and communication systems at all levels.

28 March 2003

## Summary of changes made in response to GefSec comments

Comment	Response and description of change to brief
The area of the three protected areas	These are 4,500 ha (Al Fronloq), 49,000 ha (Jebel Abdul Aziz) and appx. 5,000 ha. (Abou Qubies), for a total of approximately 58,500 ha. This information is now provided on the cover page of the Executive summary and in the titles preceding the descriptions of each PA.
Further details (mechanism, budget) of how replication is expected to be achieved through this project)	<p>A new summary of replication issues is provided in the revised brief (see paragraphs 127-128), along with the following new activities:</p> <ul style="list-style-type: none"> <li>• Prepare periodic policy analyses, with participation by MAAR and MSEA, in order to derive lessons learned from experience at project demonstration sites (see Outcomes 2 &amp; 3) and to develop agreed strategies for applying these lessons at existing and proposed new PAs. (Activity Area 1.1 - this activity will receive an estimated US\$50,000 in GEF support.)</li> <li>• Disseminate project results actively within the Middle East region and beyond (Activity Area 1.4 – this activity will receive an estimated US\$50,000 in GEF support).</li> </ul>
Co-financing (cash or in-kind)	This is now specified on the cover page of the brief
The difference and value added of the training for MSEA and MAAR by both (WB/GEF and UNDP/GEF) projects	<p>The following text had been added as footnote<sup>29</sup> of the revised project brief:</p> <p>“Training and capacity building under the UNDP-GEF project will build on and complement support being provided through the WB/GEF project. However, as a full-size project with a larger training component, it will provide greater depth and breadth of support than that being provided under the WB-GEF project. At local and provincial levels, training will benefit MSEA and MAAR officials who were not involved with the WB-GEF project, which did not work in their provinces. At national level, the UNDP-GEF project will further build capacity among officials who may have already received some support from WB-GEF. Careful co-ordination between the projects will ensure that there is no overlap in areas covered by the two projects’ training components.”</p>

## Annex D: Response to STAP Review

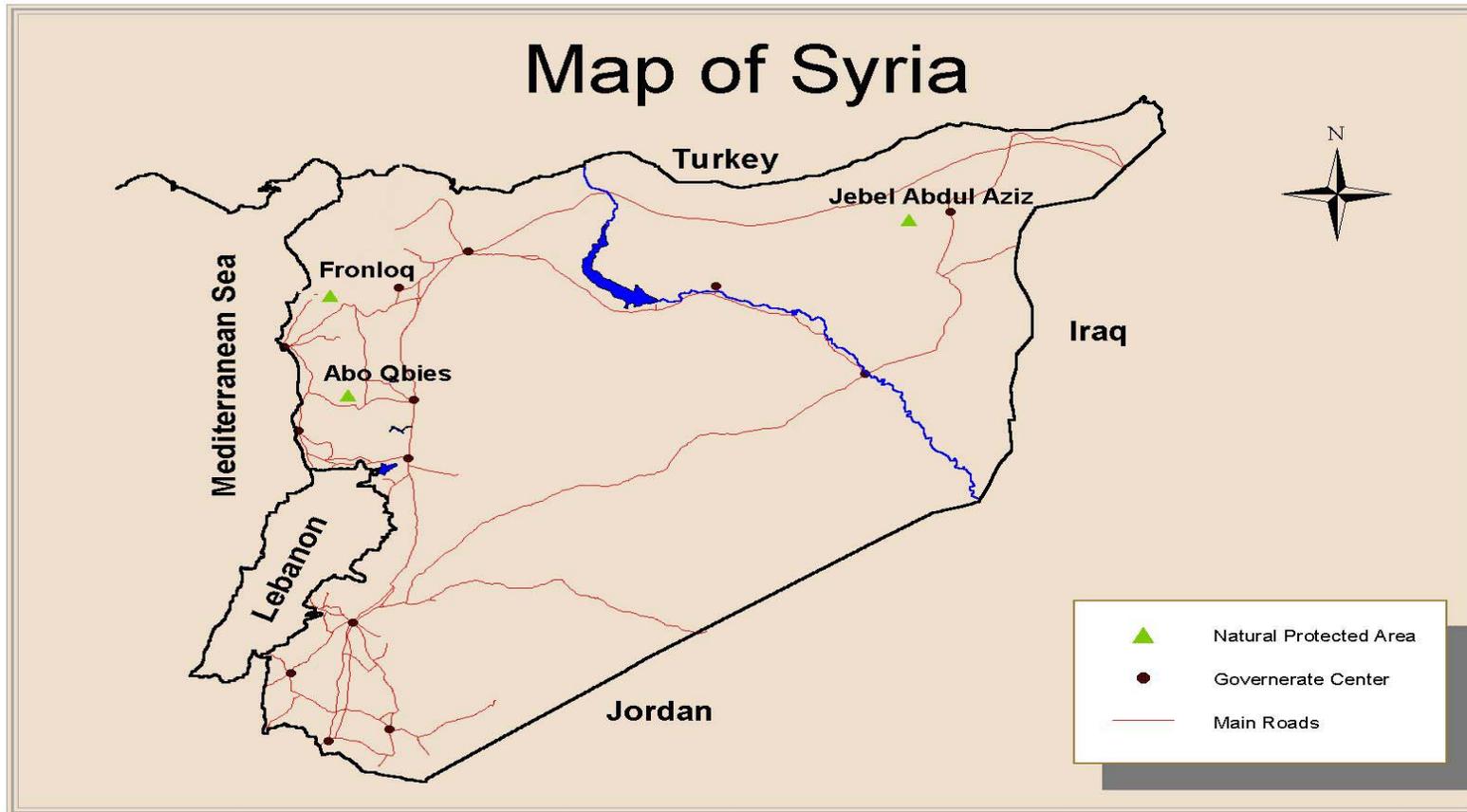
The project proponents would like to thank the STAP Reviewer for his constructive comments on the draft project brief. The following table matches issues raised in the review with specific responses, including, where appropriate, changes made in the revised brief.

Issue raised by the reviewer	Discussion and / or summary of changes made in revised project brief
1 - “Although Syria is rich in biodiversity, it is an exaggeration to claim (para 7) that it is considered the third most biologically diverse country in the Mediterranean Basin – unless one means the Eastern or Levantine sector.”	New text reads: “In terms of floristic biodiversity, Syria is considered one of the most biologically diverse countries in the Mediterranean Basin.”
2 - “Perhaps not enough detail has been given of the effects on biodiversity of the ways in which it is used by local populations (about half of the country’s population is rural), such as the levels of wild harvesting of medicinal and other useful plants and the effects these have on population survival and maintenance. “	As far as the project team is aware, there have been no assessments on the scale or nature of medicinal plant/ NTFP use in Syria. However, the scale and nature of NTFP use in demonstration site areas appear to be fairly stable. Local community use has been going on for a long time, so if it were at unsustainable levels the resource would have been exhausted long ago. There have been no large-scale changes in the scale or nature of NTFP use in recent years which would indicate that sustainability has been compromised; no major population shifts or socio-economic changes to increase or decrease reliance on NTFP, and no sudden commercialization or intensification of NTFP use that might push harvests above sustainable levels. Thus, based on available data, it would appear reasonable to conclude that populations of NTFPs should be sustainable for now. Obviously this can and should be investigated further during full project implementation
3 - “...areas such as species population recovery programmes, which are technically difficult and time-consuming, are somewhat glossed over (Annex B Logical Framework verifiable indicators).	The feasibility of species population recovery programmes will be assessed in greater detail in the inception phase of the full project.
4 - “A summary of the Beginning of project situation to compare with the End of project situation (given on p. 22) would have been useful.”	The reader is referred to the introductory matrix of the ICA (incomplete at the time of the STAP Review), which provides a clear before and after picture related to national and international benefits.
5 - “[The draft brief] stresses the need for ensuring that protected areas ... do not operate in isolation but as part of a broader landscape although it is not clear if this implies adopting a landscape or bioregional approach to biodiversity management which would certainly be desirable if not essential in this context.”	The project proponents believe that it is important for the project to remain focused on protected areas management. However, Syria’s network of protected areas can and should play an integral part in a ‘bio-regional approach’ to biodiversity management. Such an approach would consider factors such as the role and adequacy of existing PAs in achieving national-level conservation objectives, the importance of corridors between PAs and the need for conservation actions within the broader landscape. A macro-level overview of this type is within the mandate of MSEA and increasing capacities in this area will form an element of the co-operation taking place under AA-1.4. Description of this AA has been revised accordingly.
6 - “Outcome 2 includes the implementation of the biodiversity monitoring programme...It is not clear from the objectives listed whether this also involves	Yes, additional baseline data concerning biodiversity at project demonstration sites should be collected under AA 2.2 (see LFM activities list).

Issue raised by the reviewer	Discussion and / or summary of changes made in revised project brief
developing the baseline data (see AA 2.2 ii) and if so how it relates to the activities envisaged in Outcome 1.”	
7 – “Outcome 2 also includes training of personnel in ecosystem planning and management which will be a critical factor in the project. As expertise in this area is currently lacking, it is not clear how this training will be undertaken and by whom. This should be made clear and the necessary budgetary provisions specified.”	<p>As noted in the draft brief, training will take place under AA 1.2 and 2.1 and will take a variety of forms, including site-based training programmes and team-building exercises, inter-site exchanges and study tours. It is clear that, particularly during the initial period of the project, access to international expertise will be an important part of a strategy for building capacities. At some point, the project also intends to rely on a ‘training of trainers’ approach, so that staff within Damascus- and/or Provincial capital-based units can gain the capacity and tools needed to share knowledge with field-based staff.</p> <p>As far as budgetary provisions are concerned, noting the concerns expressed by the STAP Reviewer and following further consultations with Government counterparts, the size of both GEF and Government co-financed budgetary allocations for training have been increased substantially in the revised brief.</p>
8 – “The amount of training required is very large and varied and a clearer picture of how this will be achieved – in house, secondment, short courses, reverse training etc. – and the numbers and grades of staff involved (pre-existing or to be recruited) needs very serious consideration as the success of the whole project will depend on it.”	See previous comment. Also, note that training needs assessment and training programme development will be important activities during Year 1 of the project.
9 – “There should also be linkages with the UNDP/UNEP-supported Biodiversity Planning Support Programme Arab States (in which the WESCANA programme of IUCN–The World Conservation Union, coordinates the Arab States region and its 16 countries) and its database on biodiversity expertise in the region.”	This linkage has been added to the project brief (see paragraph 97) and will be actively pursued during the full project phase.
10 – “My only serious reservation concerns the ability to develop sufficient trained capacity within the planned time frame to undertake the very wide range of operations involved, such as baseline biodiversity surveying...” etc., etc.	Please see previous comments concerning increases in relevant budget lines. Indeed, the incremental cost analysis has been reviewed based on the STAP Reviewer’s comments and the overall size of the proposed GEF grant has been moderately increased as a result.

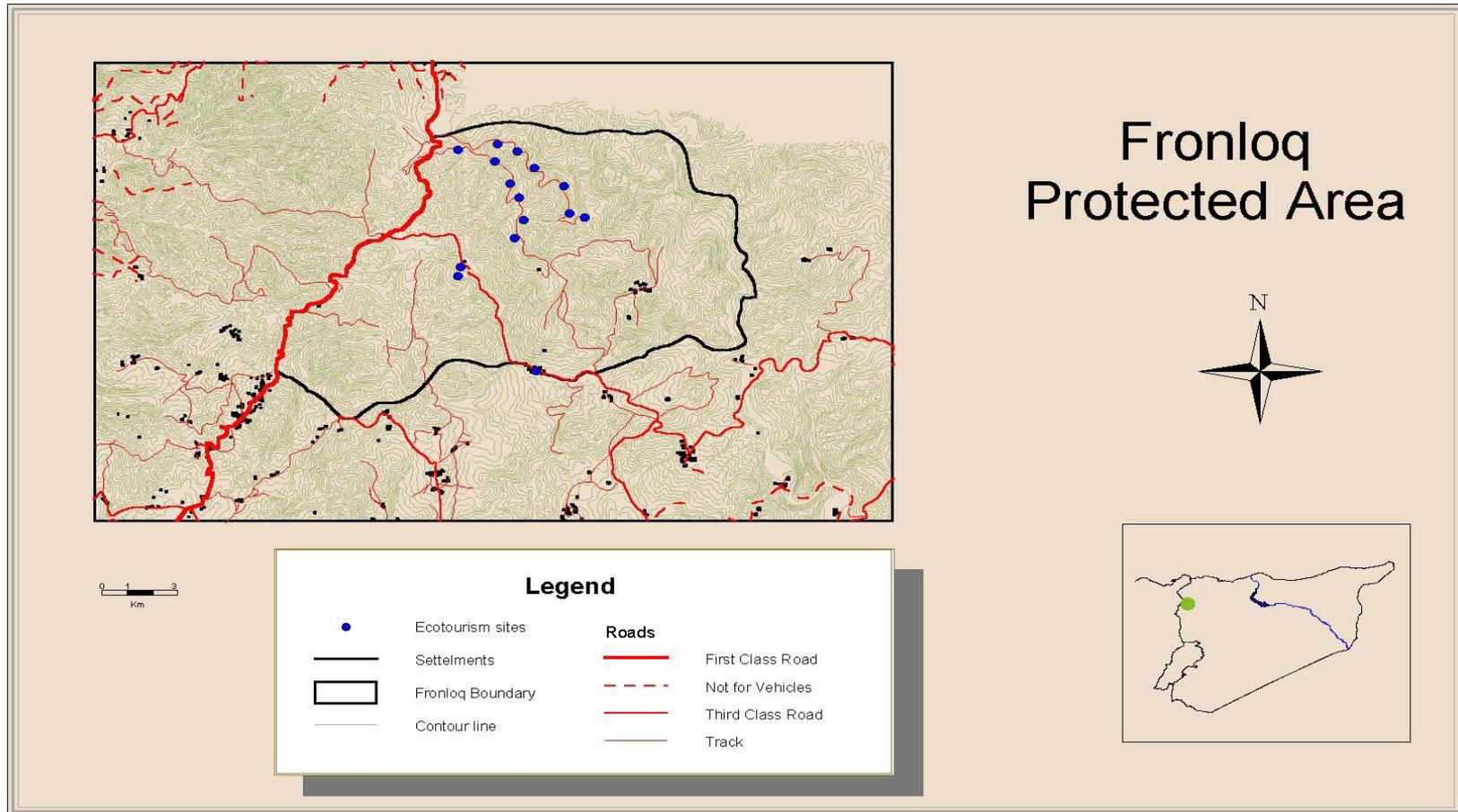
Annex E: Maps

1. Map of Syria

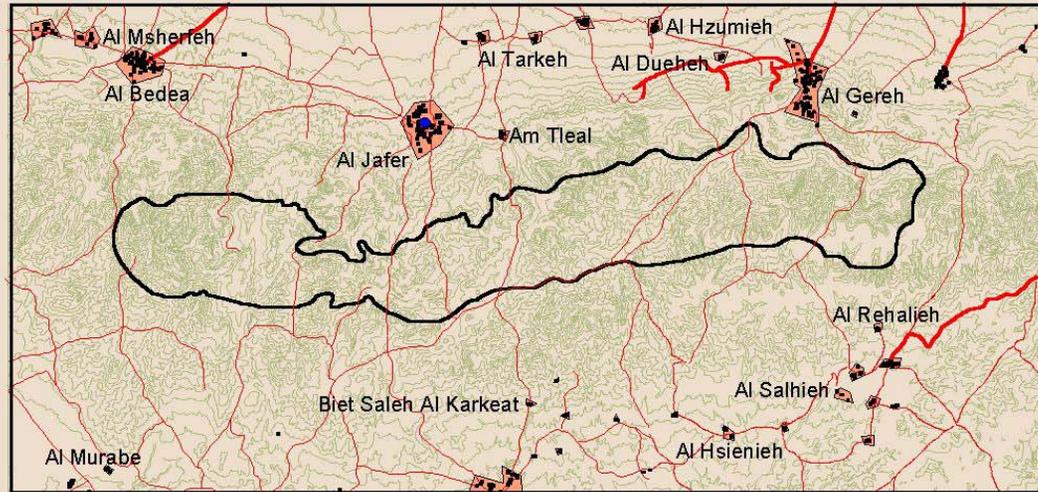


C

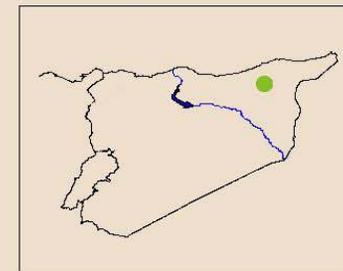
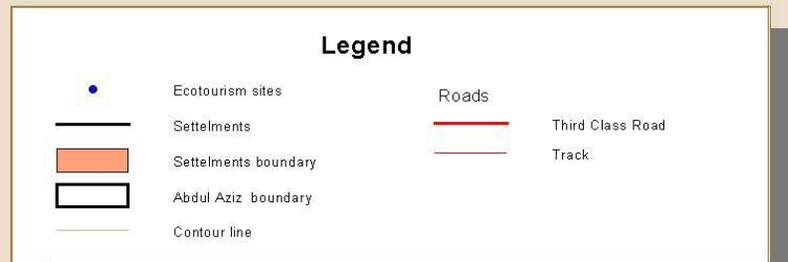
Map 1: Al Fronluk



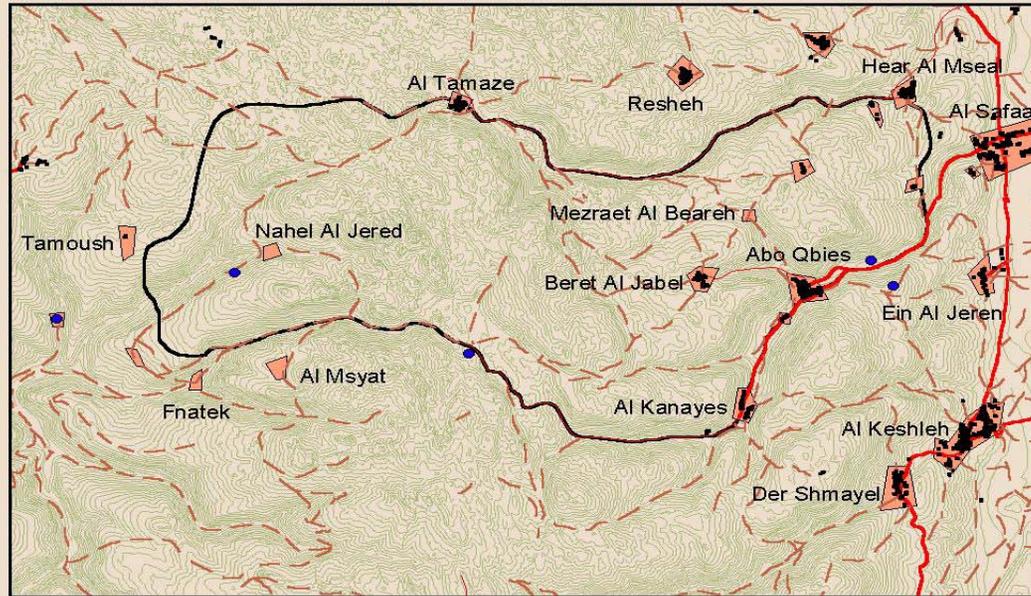
Map 2: Jebel Abdul Aziz



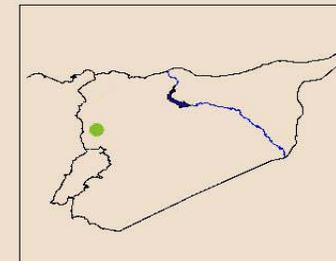
## Abdul Aziez Protected Area



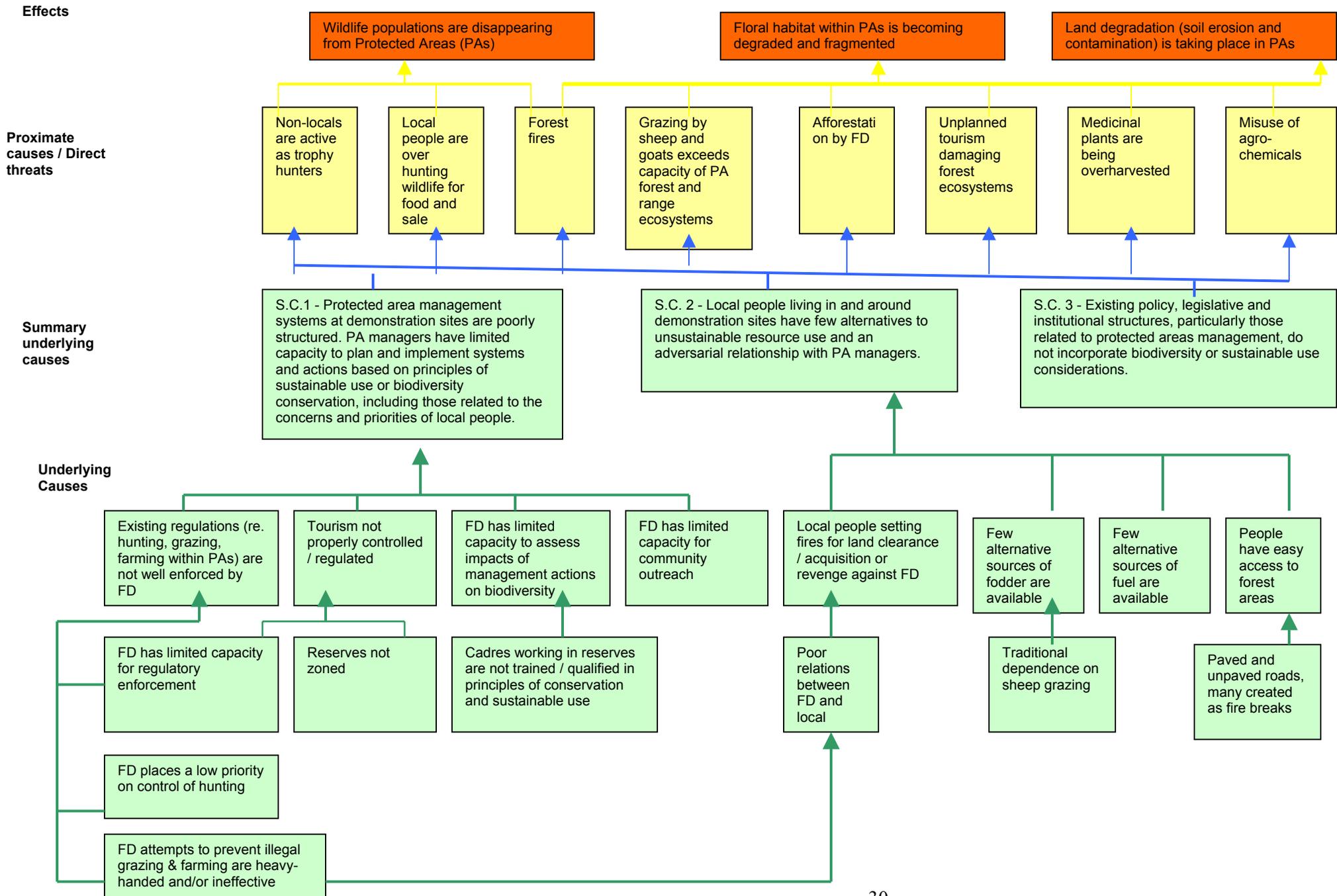
**Map 3: Abu Qbais**



# Abo Qbies Protected Area



# Annex F: Problem tree



## **Annex G: Stakeholder participation plan**

### **1. Introduction**

The project formulation process, and in particular the definition of problems and solutions—the latter encompassing objectives, outputs and activities—has involved a wide process of stakeholder consultation. As other experiences suggest, long-term resource use and biodiversity conservation have a better chance of success if genuine avenues are available for the participation of local stakeholders in the management of biodiversity resources. Recent awareness as to the importance of input by local stakeholders has led to growth in the number of local groups involved in one way or another in environmental protection activities. These include recent campaigns by participating government organizations – MSEA and MAAR – and NGOs on issues such as water conservation and reforestation.

The project objectives and activities have thus been defined with particular attention to the involvement of local stakeholders. The project design has received genuine support from the executing and implementing agencies as well as local stakeholder groups such as farmers and herders' associations. This support is expected to ensure that the project as formulated contains solid avenues for the participation of local stakeholders in the decision-making process and in the implementation of project activities.

### **2. Description of PDF-B consultation process**

The project formulation process, and in particular the definition of problems and solutions—the latter encompassing objectives, outputs and activities—has involved a wide and lengthy process of stakeholder consultation. Initial consultations with MSEA and MAAR laid the foundation for the PDF-B process and made clear early on that the project would adopt a different approach from that taken by the WB-GEF project. Following the selection of sites, sites visits took place which widened the circle of participation in two ways. First, provincial and district-level officials were consulted and provided with initial introductions to the project's purpose and methodology. Consultations were held with officials ranging from the Provincial Governors to the Provincial offices of MSEA to the Provincial and District-level Departments of Forestry. Second, initial consultations were held with local people living in and around project sites, many of who had quite distinct, and not always positive, views of the PAs.

Consultations with these two types of stakeholders – official and local – continued throughout the PDF-B preparation process. Officials were brought together twice at national level, first for a Project Development Workshop utilizing the LFA methodology and second for a Project Endorsement Workshop. These discussions, along with bilateral discussions involving the Minister of MSEA and Deputy Minister of MAAR, were critical in ironing out a foundation for co-operation between the ministries, as well as for detailing the nature of GEF support.

Site-level forestry department officials and local inhabitants were again consulted, this time at length, during the preparation of site profiles. During this process, a team of eight national consultants spent several weeks at the sites, gathering information for their sectoral reports. These consultations were essential for gaining a better view of what was happening at each site.

The main mechanism by which information/data was gathered was through extensive consultations with both the local communities and local representatives of the various government institutions active or involved in the area. The reason for using this dual approach was to ensure that a complete picture was formed and to avoid any bias.

The local stakeholder consultations were carried out through a field survey whose main objectives were to collect data on: a) the means of livelihood, modes of subsistence and other patterns of human behavior employed by the local populations in the three proposed project intervention sites. b) Assess the current levels of awareness on conservation management and receptivity to new initiatives within these populations.

The Field Survey included the establishment of key contact households/sources within each location. Choosing these household members was via probability sampling in order to avoid collecting data from non-representative segments of the population. The techniques of sampling included stratified sampling and judgment sampling to get the best and most accurate results. During site visits extensive interviews were then carried out with the identified key households using both formal and informal questioning techniques.

The survey covered key issues such as:

- 1- The main modes of subsistence including employment in the area as a whole and by the designated households in particular.
- 2- Various relevant activities and patterns of human behavior such as wild plant collecting, hunting, main sources of fuel, modes of transport, types and sources of building materials, etc.
- 3- Spatial distribution and land usage for both domestic and non-domestic purposes.
- 4- Test the existing levels of awareness on conservation resource management.
- 5- Test response to proposed creation of protected sites and related initiatives.

In particular data gathered from the last two items was used to help prepare a wider multi-disciplinary approach/strategy with other consultants to promote the project amongst the local populations within the proposed sites and gain their cooperation.

### **3, Summary findings of socio-economic and stakeholder analysis<sup>1</sup>**

#### *A. Al-Fronloq*

##### 1. Socio-economic description

Fronluq is a densely wooded area of the coastal mountain region. There are a number of villages (5 main villages) in the habitable parts of it most of which are centered on water sources (natural springs). Al-Aterah is in the middle of the protected area and has a population of 200-300 inhabitants depending on the season. The remaining villages are on the perimeter of the proposed protected area and consist of the following villages in order of magnitude: Al-Khadra with 500 inhabitants rising to 700 in the summer; Al-Kabir with a population of 180-200 and rising to 400 in the summer (tourist) season; Al-Kantara with about 200 inhabitants and Beit Shorduk/Shoruok with about 120 inhabitants. There are also a number of very small settlements on the periphery with populations ranging from 20-30 inhabitants and one abandoned village (Al-Kanais). There are a large number of springs in the area, which as mentioned the villages tend to centre around. In Al-Kabir for instance there are nearly twenty springs serving the village.

There are several population centers nearby the protected area, including the town of Kassab (6 km from the site), the village of Qastal Mouaf (5 Km west), and the town of Rabeeha (8 Km to the southeast). The main urban center connected with the site is the city of Lattakia (50 Km). No nomadic groups or transhumants are present in the site area.

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<sup>1</sup> The findings summarized in this section are presented at greater length in the socioeconomic reports prepared by Dr. Amr Al-Azm and Dr Nour Al-Din Mouna

The main sources of livelihood in the Frunluq region are agriculture, animal herding and tourism. The total area set aside within the Frunluq forest for agriculture is 580 ha., of which only 5% is for wheat and barley production. The remaining 95% is used in horticulture. The average land holding for wheat and barley is between 0.4-0.6 ha. The most important crops however are fruits. Over 50% of the horticultural land is set aside for apples, 10% is for almonds and the remainder for citrus and other fruits, including olives. These are grown in orchards distributed within and around the protected area. Grazing (mainly cows, since goats were banned 30-40 years ago) is also carried out within the protected area. The cows are either local breeds, which tend to be hardier, or mixed breeds. The average milk yield for the local breeds is approximately 5 kg/day while mixed breed cows yield between 15-20 kg/day. They are usually fed concentrates purchased from the local markets (70%) or grazed on stubble following the harvest season (30%). Beekeeping and honey production is a rapidly growing alternative source of income with most of the sales going to passing trade and tourists. There are also a number of stalls and small cafes (about 8 in number) also centred around a major spring, which usually operate during the summer tourist season.

The population of the area is of varying ethnic origins. For instance, Al-Khadra is about 10 percent Arab and 90 percent Turkmen. Nearly 6 percent of the population of the above villages migrates to urban areas (mainly Lattakia), while about 2 percent migrate to Lebanon as workers. Major reasons reported for out-migration include small size of land holdings, land fragmentation, population pressures and low-income levels.

## 2. Conclusions

The main problem facing the inhabitants of the region particularly those within the protected area is that of sustainability and this is partially demonstrated by the high level of migration and gradual abandonment of these villages. The current available land usage for agricultural activities, grazing or other subsistence activities is insufficient to sustain existing populations and further restriction will inevitably be applied within the protected area. Tourism is providing an important alternative to some of the local populace but the benefits are unevenly distributed and often haphazard. Improving relations and greater involvement by the authorities managing the proposed site in regulating and organizing many of the suggested activities is essential and would provide much needed local employment opportunities. There is also a need for the involvement of local communities in the management of the protected area especially with regards to the balancing of conservation requirements with their economic needs.

## **Solutions and Recommendations:**

The solutions outlined here have been put to various members of the local community especially identified key stakeholders and their responses and opinions have been noted.

- a) Tourism has the potential of becoming an important alternative source of income. By organising and regulating it would be possible to increase the level of income generation currently derived and protect the habitat at the same time. The licensing of stalls and picnic/beauty spots within the protected area would help control tourist access to the forest since they would only be permitted to sit in these specified areas. This should include the provision of electricity, toilet and rubbish disposal facilities. Regulating the use of fire to cook food would also be desirable whereby only the stall holders or licensed charcoal grillers would be allowed to light fires in these spots. The tourists/picnickers would then be required to pay the stallholder a predetermined fee for the services provided. In return the stallholders would be required to maintain, protect and look after their licensed spot and act as litter collectors, fire wardens and guides
- b) Providing loans and credit facilities especially to the poorer members of the community would be desirable. These could then be used to set up small businesses most popular of which appear to be: beekeeping and honey production, fattening of calves for resale rearing mixed breed cows. Mushroom farming was suggested (see socio-economic report) and whilst no one knew anything

about it they were receptive the idea. It should be noted however that mushrooms require storage facilities and rapid access to markets as they spoil quickly. Such credit schemes have already been tried out in this and other areas with very mixed results. The main reasons for failure is usually either impractical repayment schemes or more importantly very complicated and restrictive selection criteria for loan qualification. These credit facilities should therefore be provided in conjunction with training and education concerning the care, maintenance and upkeep of the proposed project so that the investment is not lost due to the death or mismanagement.

- c) Wild herbs such as Zoufa (*Micromaria julian*), basil, etc, are all gathered by the locals in season. Apart from what is kept for personal consumption the rest is sold to dealers and merchants who frequent the area. The sale of these herbs represents another important and viable source of income with excellent potential for development. These herbs maybe packaged and sold locally to the heavy passing tourist trade, which already frequents the area in search of honey and olive oil. In particular, those which are used for making herbal tea, decorations and basil can become very marketable if packaged and presented/marketed appropriately.

## B. *Jebel Abdul Aziz*

### 1. Socio-economic overview

Jebel Abdel-Aziz is occupied mainly by Bedouins belonging to the “Mountain Baqqara” tribe, which is a branch of the main and well-known “Baqqara” of Der El-Zor. Other groups known "Bani Sabaa" belong to Taye Tribe settled in Om Talil village (100 people), and some households belong to "Noaem Tribe" settled in Al-Sayed Hassan village (120 people). They are located mainly on the plateaus in the central region in villages or settlements of which there are about ten, with another ten in the surrounding foothills. The current total population is about 15,000, although this figure fluctuates due to the seasonal influx of other groups (such as the Jbour, Shrabn and Udwan clans) using areas of the Jebel Abdel-Aziz for grazing, especially in winter. Average family size in the mountain area is estimated at 10 persons.

The nearest urban center is the city of Hasakeh which is also the capital of the Mouhafaza of Hasakeh. It is worth noting that the Mouhafaza of Hasakeh has over 1.2 million inhabitants, comprising nearly seven percent of the total population of Syria, the majority of whom are working in agriculture and animal husbandry.

About 40 percent of the total labor force in the mountain area is involved in livestock production, 20 percent in agriculture production and 20 percent in off-farm activities. Males from 10 to 15 years of age are mainly involved in shepherding, while those between 15 and 55 work in both agriculture and sheep-raising. Women constitute about 60 percent of on-farm labor. It is estimated that the average working period varies between 6 and 9 months per year for men and 8.5 to 11 months for women.

The main sources of subsistence in the area are thus agriculture (marginal farming) and animal husbandry. Agriculture is based on dry farming on the plateaus and in the lowlands around the mountain, the main crops being wheat and barley. Barley is the dominant crop used primarily as fodder for the animals, whilst wheat is grown mostly for local household consumption. There are also some vegetables grown but this tends to be on a very small scale mainly in gardens for personal use. This however has been severely affected by the recent drought with most people turning over their land for pasture. The drought has also affected the main sources of drinking water (wells), many of which have turned brackish. Recently, local people have had to rely on water being brought in by trucks and some settlements have been abandoned at least temporarily. The drilling of new wells is currently banned, which has added to the problems of water shortages.

Animal husbandry is a very important source of subsistence in the Jebel Abdel-Aziz and the region as a whole. It is based mainly on ungulates (sheep, goat and to a lesser extent camel) with sheep being the dominant form of livestock (about 95%). Their main pasture areas are on the mountain especially during autumn/winter and spring. The lowlands and plains are also used especially after the harvest season. Overgrazing is one of the major problems in the region due to the uncontrolled use of the territory for grazing and has been a main source of conflict between the locals. These conflicts can sometimes take on a very serious nature especially if deaths occur leading to clan feuds that can last for decades. One of the main sources of trouble has been the annual influx of Kurds from the Malkiyyeh area who used to bring large herds to graze on the mountain. This practice however has been banned for a number of years now and has had a dramatic effect on reducing the problem of overgrazing.

Other sources of subsistence include the use of natural resources such as hunting and the gathering of wild plants and fruits. The Jebel Abdel-Aziz has wooded areas, which include pistachio, fig, hawthorn and terebinth. The terebinth was favored by the locals for the oil that can be extracted from its seeds and its wood is considered to be the best for burning. This has in turn led to serious problems of deforestation and ensuing soil erosion.

The afforestation project launched by MAAR in 1988 created significant job opportunities in the project area where nearly 400 local workers were employed. Consequently, the rate of unemployment has declined recently to 30 percent. Out of the unemployed people, 70 percent are women and 30 percent are men. MAAR's Law No. 20 has prohibited woodcutting in the mountain site area since 1993. However, women, who participate in the silviculture program are allowed to collect pruning operation residues. Collection of dead and broken branches is permitted for fuel wood uses. Grazing in the reserve area is not allowed except in the locations where trees are more than ten years of age providing that sheep but not goats are permitted for grazing.

Women mainly collect medicinal herbs on the mountain from April through June. Collected materials are consumed in the form of tea and spices and are used for medical purposes. It is estimated that about 10 percent of the population of each village are involved in medicinal herb collection. The estimated average income generated from marketing the medicinal herbs in Al-Hasakeh city is about 60-70 SP/day (2000 SP/month). Truffles are harvested in certain years during March and April. *Pistacia atlantica* and *P. khinjuk* seeds are collected during October and November. Other potential uses of *Pistacia atlantica* seeds include the extraction of oil and the extraction of gums from the terebinth. An individual can collect between 15-20 Kg/yr of pistachio seeds. It is estimated that the total production of seeds in the mountain may reach up to 10,000 Kg in good years of fruiting.

Finally there are a number of known prehistoric sites in the Jebel and a structure known as the "Succar" palace. There is also what appears to be a Roman road, running straight from tell Tamr to the "Succar" palace. The lowland areas and plains around the Jebel are rich in major archaeological sites especially in the Khabur valley.

## 2. Conclusions

Currently approximately over half of the total area of the Jebel Abdel-Aziz has been declared a protected area, which has placed severe restrictions on the local settlements especially those who traditionally relied on these areas for their pasture as well as a source of firewood for cooking and warmth in the winter months. The result has been a serious decline in the number of animal herds, which as previously mentioned, are the main source of subsistence and an increased dependence on agriculture. The area under cultivation, however, is neither sufficient nor reliable enough to sustain these communities leading to hardship and a constant decline in the standard of living. The active and apparently rampant forestry regeneration program has also contributed greatly to the problem by further restricting access to both

grazing and land which may otherwise be opened up to agriculture. Lack of schools, education and employment opportunities in the Jebel Abdel-Aziz, have further exacerbated the situation, although the forestry program does provide some temporary employment on short-term contracts.

If further constraints or strains are imposed on the existing communities without solutions to the existing problems and issues or providing alternative means of sustainable livelihood, gradual settlement abandonment may become the only viable option remaining to these communities. Therefore, there is a need for the involvement of local communities in the management of the protected area especially with regards to the balancing of conservation requirements with their economic needs.

### **Solutions and Recommendations:**

The solutions outlined here have been put to various members of the local community especially identified key stakeholders and their responses and opinions have been noted.

- a) Provision of loans and micro-credit facilities especially to the least well off members of the community could then be used to set up small businesses such as fattening of calves for resale or rearing mixed breed cows. Similar credit schemes have already been tried out in this and other areas with very mixed results as previously mentioned. The main reasons for failure is often due to unworkable repayment schemes coupled with very complicated and restrictive bureaucratic procedures for loan qualification. These credit facilities should therefore be provided with training and education concerning the care, maintenance and upkeep of the proposed project so that the investment is not lost due to the death or mismanagement.
- b) An exchange program of sheep for mixed breed cows should be encouraged and supported since it would alleviate the need for grazing and the much higher yields obtainable from this breed should if properly managed, cover the increased costs of relying almost exclusively on animal feed. Current local experiences with this breed have been mixed however but that is mainly due to lack of experience in managing it.
- c) Providing water for irrigation either through rain traps, cisterns and small dams or wells would greatly improve crop yields and allow for more variety to be cultivated.
- d) Although some of the local inhabitants gather and sell in the local markets herbs, seeds and fruits, the majority shy away from this form of activity or will not openly admit to participating in it for social taboo reasons. The sale of truffles however appears to be more acceptable probably due to its high profit returns where an estimated income of about 200 sp. a day has been quoted by the locals. Other high income activities such as the production oil from *Pistacia atlantica* seeds and the extraction of gums from the terebinth should also be encouraged. *Pistacia atlantica* oil for example can fetch a price of 350 sp/kg as opposed to that of olive oil which is priced at 100 sp/kg.

### *C. Abu-Qubeis*

#### 1. Socio-economic overview

The total population living in and around the site is estimated at 5,100. These are divided amongst nine villages: three are entirely located within the site boundaries, three border the site and three are located on the periphery, yet outside of the site. In addition, there are six towns located within fifteen kilometers or so of the site, with a combined population of some 45,000 people. Finally, three main urban centers – Hama, Tartous and Lattakia – are all found within 55-85 kilometers distance.

Nearly 50-60 percent of the households living in the above nine villages have benefited from land reform in the nearby Ghab plain. Therefore, seasonal migration takes place from all of the villages to the Ghab plain where wheat, barley, cotton, sugar beets and maize are grown. About 10 percent of the population of each village appears to migrate to urban centers, mainly Damascus, compared to about 7 percent who

migrate to Lebanon as workers. Major reasons reported for out-migration include small size of land holdings, land fragmentation and its remoteness, population increases and low incomes.

Nearly 95 percent of the total labor force in the site area are involved in on-farm activities, of which 80 percent are working in plant production mainly horticulture, and 20 percent in livestock husbandry, mainly goat raising. Boys mainly herd goats, and in a few cases the families hire labor for shepherding the flocks. While off-farm activities include agricultural and non-agricultural works. The forestry Five percent of the total labor force are involved in off-farm activities. The main kind of off-farm activities is in the form of state employment (forest guards, rangers, drivers, forestry fireman, etc.), that accounts for 8 percent of the total population of AQS area.

Households generate their incomes from on-farm (70%) and off farm activities (30%). Horticulture production generates the highest contribution of on-farm income, which accounts for 65 percent compared to about 5 percent from cereal production and about 30 percent from livestock production. The estimated annual average income ranges from 75-100,000 Syrian Pounds. Off-farm income generates about 30 percent of the total family income. Off-farm work include agricultural and non-agricultural activities. Government employees generate an average annual income of 36,000 SP, while landless workers generate about 40,000 SP per year to support their families. Unemployment rate is 30 percent and is considered relatively high in the site, out of which 10 percent for men and 20 percent for women.

## 2. Conclusions

The main problem facing the inhabitants of the region, particularly those within the protected area, is that of sustainability. This is partially demonstrated by the high level of migration, both seasonal and permanent. The current available land usage for agricultural, grazing or other subsistence activities is insufficient to sustain existing populations and further restrictions will inevitably be applied within the protected area. Of particular note are restrictions on goat herding, which is a primary source of income in the area. Improving relations and greater involvement by the authorities managing the proposed site in regulating and organizing many of the suggested activities, particularly those related to tourism, is essential and would provide much needed local employment opportunities. There is also a need for the involvement of local communities in the management of the protected area especially with regards to the balancing of conservation requirements with their economic needs.

### **Solutions and Recommendations:**

The solutions outlined here have been put to various members of the local community especially identified key stakeholders and their responses and opinions have been noted.

- a) Loan schemes and credit facilities for small businesses such as: beekeeping and honey production, fattening of calves for resale and rearing mixed breed cows would help boost the local economy and raise standards of living. Another idea proposed was keeping silk worms, a traditional product in some parts of this area and discontinued only relatively recently. Reintroducing silkworm production with appropriate training could be very profitable especially where there are pre-existing, Mulberry trees. It should be noted however that similar credit schemes have already been tried out in this and other areas with very mixed results. The most obvious reasons for failure have been noted in previous sections.
- b) Wild herbs and plants such as Zoufa (*Micromaria julian*), thyme, capers etc, are all gathered by the locals in season. Apart from what is kept for personal consumption the rest is sold to dealers and merchants who frequent the area. Developing the sale of these herbs can represent another important and viable source of income. These herbs maybe packaged and sold locally to passing

- tourist trade, which already frequents the area or to traders and distributors in the nearby towns and cities. In particular, those which are used for making herbal tea, or dried and used in cooking can become very marketable if packaged and presented/marketed appropriately.
- c) A goat exchange program should be encouraged, whereby for every so many goats sold a mixed breed cow may be offered in exchange at a subsidized rate. Although mixed breed cows cost more to keep since they require feed almost exclusively and are more vulnerable to illness, they have a much higher output of milk and more importantly eliminate the need for grazing thus reduce pressure on the habitat.
  - d) Providing water for irrigation either through rain traps, cisterns and small dams or wells would greatly improve crop yields and allow for more variety to be cultivated. Most important is tobacco, which is currently cultivated under dry farming conditions, but if irrigated, it could increase output by almost tenfold. The increase in income that could be derived from such a rise in productivity would be substantial enough to have a very marked effect in reducing current dependence on the habitat.
  - e) Tourism can become an important alternative source of income by organizing and regulating it since it would increase the level of income generation currently derived from it and protects the habitat at the same time. Designating specific picnic and beauty spots within the protected area would help control tourist access to the forest since they would only be permitted to sit in these specified areas. These special sites or areas should be provided with electricity, toilet and rubbish disposal facilities. Use of fire to cook food should also be regulated whereby only qualified or licensed charcoal grillers would be allowed to light fires in these spots. The tourists/picnickers would then be required to pay the license holder a predetermined fee for the services provided. In return the license holders would be required to maintain, protect and look after their licensed spot and act as litter collectors, fire wardens and guides.

#### **4, Framework for stakeholder participation in decision-making and project implementation**

Stakeholder participation during project implementation will be ensured in a number of ways. The project will have two main vehicles for participation in the decision-making process. These comprise “advisory committees of direct resource users” and “project’s sub-steering committees” in each project site. Please, note that while each site will apply this structure for participation, committees’ composition will vary.

The rounds of consultations strongly suggested that resource users whose livelihoods will be affected heavily by the GEF alternative have a formal structure for participation and a direct communication link with the local and international experts involved in the management of the project. This formal and direct participation is even more important when resource users present a relatively high degree of vulnerability, as has been observed in several project sites.

Representative from farmer associations and herder associations are candidates for these committees. Other candidates for these committees comprise representatives from groups engaged in educational or social/organizational activities such as the party youth groups (Shabibah) and the women’s union. Their role can be of particular importance where raising public awareness is an issue both within the stakeholder community and the general public as a whole. Certain key stakeholders from within the community should also be considered as candidates. Often, the latter group is not organized by means of association or other similar structures. The project will have to undertake an effort either to foster the creation of associations or help the group in selecting candidates that fully represents their interests in the project’s decision-making process. The committees might also include representatives from the tourism sector since tourism is expected to play an important role in presenting alternative sustainable means of livelihood.

The “advisory committees of direct resource users” will provide independent inputs into the definition, implementation and evaluation of project activities. As its name indicates, their role would be of an advisory nature and their recommendations would not be binding. However, their recommendations would constitute formal annexes of the project annual review and formal annexes to the minutes of the project sub-steering committee meetings (see next paragraph). This should ensure that the opinions and interests of those most vulnerable enter the project’s decision-making process.

In addition to these advisory committees, the project will have sub-steering committees in each project site. These will comprise representatives from the formal structures of government, other stakeholders in each site and at least one member of the “advisory committee of direct resource users”. The presence of village leaders within these sub-steering committees would be highly desirable. These committees would provide guidance to project activities, serve as one of the main vehicles for stakeholder input, and review, approve and monitor the quarterly workplan for each project site. Their maneuverability and degree of freedom would be limited by the boundaries given by the overall framework of activities defined by the project document and the National Project Steering Committee.

The objective of having these two types of committees acting simultaneously is two-fold. The first objective is to ensure the participation of stakeholders in the formal project decision-making process (mainly done through the Sub-steering committee). The sub-steering committees are endowed with formal tools to influence the design and implementation of project activities. The second objective is to provide a backup channel (“advisory committees of direct resource users”) that can make sure the interest of most vulnerable groups are not diluted whenever sub-steering committees comprise relatively big numbers of participants or present significant power asymmetries. Together, these structures are aimed at ensuring that project management units have access to inputs from all relevant stakeholders, that stakeholders have the tools to participate in project activities, and that the most vulnerable groups are heard and not disproportionately affected by any alternative.

Finally there is a need to set up a monitoring committee, which is able to study and quantify the impact of any program or activity likely to affect stakeholder resources and subsistence. This would then act as an indicator as to whether these programs are having a positive or negative impact on the community which in turn would act as a gauge as to whether the project is succeeding or failing and in which sectors. Members of this committee should be recruited from the national consultants and key decision makers within government. Local stakeholders have been purposely excluded from this committee due to the need for objective analysis.

## **5. Conclusions**

The following general remarks may be applied to all the communities observed in the various regions and habitats covered by this study:

- There is a need for adopting a participatory approach regarding the management of these sites involving the local stakeholders as they are considered primary beneficiaries and their full cooperation is vital for the success of these programs.
- Improving infrastructure in the form of roads, telephones, electricity healthcare facilities and educational institutions all of which would contribute to the improvement of the local quality of life and raise the standards of living in these areas.
- There is a critical need to solve the existing conflicts between the socio-economic values of the local environmentally damaging non sustainable activities such as goat grazing in forest, wood cutting for fuel and charcoal making and the values of biodiversity and environmental preservation.

- Where credit programs have been suggested these should be targeted at the poorest and most needy within the community while doing away with the stringent conditions required of prospective applicants such as providing guarantors etc.
- There is a need to set up a monitoring system which is able to study and quantify the impact of any program or activity, which is likely to have an impact the stakeholders' resources and subsistence. This in turn would act as an indicator as to whether it having a positive or negative impact on the community.

## **Annex H: Biodiversity Significance**

West Asian ecosystems are diverse. The terrestrial ones include Mediterranean forest in the north and sub-tropical mountainous vegetation in the south and southwest. Vast deserts with scant vegetation exist between the northern and southern parts of the region, particularly in the 'Empty Quarter' of Saudi Arabia. Marine ecosystems include extensive coastal areas bordering semi-closed water bodies such as the Persian Gulf, the Mediterranean and the Red Seas, and the open waters of the Arabian Sea. The main marine ecosystems include mudflats, mangrove swamps, sea grass and coral reefs. Large and small rivers in Iraq, Syria, Lebanon and Jordan are the focus of the freshwater ecosystems. Natural freshwater springs are found throughout the region.

The people of this region have traditionally made sustainable use of their natural habitats and conserved biodiversity - for example through the Al Hema system of rangeland protection and by prohibiting hunting during certain months of the year. Screening for genetic improvement was begun on cereals and sheep as long as 10 000 years ago (Ucko and Dimbleby 1969). However, more recently overgrazing, deforestation and hunting have contributed to desertification and the extinction of some native plants and animals. These include the Asian lion, *Panthera leo persicus*, which used to live in the northern parts of the region, but disappeared in 1918 (Kingdon 1990); the Syrian wild ass, *Equus hemionus hemippus*, which disappeared in 1928 (Balouet 1990); and the Arabian ostrich, *Struthio camelus syriacus*, which used to live in Syria and Arabia, but became extinct in the 1940s due to overhunting.

### **○ Biodiversity in West Asia**

West Asia's ecosystems are inhabited by numerous species of flora and fauna. Numbers of recorded plant species range from 301 in Qatar (Batanouny 1981) to more than 3 000 in Syria (WRI, UNEP, UNDP and WB 1996). Marine algae range from 216 in the Persian Gulf to 481 in the Red Sea (Mohamed and others 1996); there are 21 species of mammals in Kuwait and 92 in West Bank and Gaza; numbers of birds range from 312 in Kuwait to 413 in Saudi Arabia; and reptiles range from 29 in Kuwait to 84 in Saudi Arabia (ACSAD 1997a, WRI, UNEP, UNDP and WB 1998).

The Red Sea and the Arabian Sea are known for the richness of their marine life. There are, for example, more than 330 species of corals, 500 species of molluscs, 200 species of crabs, 20 species of marine mammals and more than 1 200 species of fish (Fouda and others 1998). Marine biodiversity has been badly affected by overfishing, pollution and habitat destruction. As a result, the fish and shellfish harvest has declined in the Persian Gulf (ROPME/IMO 1996).

Many marine species, including Mediterranean monk seals, marine turtles and marine sponges, are threatened by the continuous deterioration of coastal water quality (Lakkis 1996, Tohmé 1996, Environmental Protection Council, Yemen, 1995). Seawater intrusion is also becoming a real threat to coastal ecosystems (AUB 1994, Youssef and others 1994). The extensive exploitation of sand for construction has aggravated the problem of seawater intrusion and destroyed the habitats of many coastal and marine biota, including marine turtles, along the Lebanese and Syrian coasts. Reclamation and infilling of intertidal areas in Bahrain and marshes in countries such as Iraq and Yemen are destroying habitats and jeopardizing their biological diversity (Environmental Protection Council, Yemen, 1995, UNDP 1998).

There are more than 800 endemic vascular plants in the region (Batanouny 1996), 7 endemic mammals and 10 endemic birds (WRI, UNEP, UNDP and WB 1998). The region has 20-23 endemic corals and 17 per cent of the fishes in the Red Sea are endemic (Sheppard and others 1991). More than 30 per cent of plant species are endemic and some 233 of them are threatened, including *Abies cilicica*, Cedars libani and *Juniperus excelsa* in Syria and Lebanon, which are threatened by deforestation. Thirty-two per cent of the plant species in Yemen's Socotra Island are endemic (Environmental Protection Council, Yemen, 1995). Endemic animal species such as the Arabian leopard *Panthera pardus nimr*, the striped hyena *Hyaena hyaena*, the Arabian tahr *Hemitragus jayakari* and the Arabian wolf *Canis lepus arabs* are also threatened (Kingdon 1990).

Protected areas and national parks have been established in all parts of the region. Examples include the Barouk Cedar Forest, Ehden Natural Reserve and Palm Island Marine Reserve in Lebanon, the Azraq Wetland Scientific Reserve in Jordan, the Umm Qusar Swamp Reserve in Iraq, the Harrat al Harra Reserve, Asir National Park and Al-Jubail Marine Sanctuary in Saudi Arabia, the Arabian Oryx Reserve at Jiddat al Harasis and the Sea Turtle Reserve at Ra's Al-Hadd in Oman, and the Cedar and Fir Reserve in Syria.

The date palm is one of the most important crop plants in the region. The formerly extensive plantations have been drastically reduced over the past few decades as a result of poor irrigation systems, which have led to soil Salinization. Urbanization and the introduction of plant pests have also affected the species. The depletion of underground water levels has led to the deterioration and loss of unique freshwater springs and wetlands with their associated flora and fauna.

Over the next decade, urbanization, industrialization, a growing population, abuse of agrochemicals, uncontrolled fishing and hunting, war chemicals and military maneuvers in the desert are expected to increase pressures on the region's fragile ecosystems and their endemic species.

- **Syrian Ecosystems**

Syrian ecosystems are diverse and distinguished by their special geographical location between southern Europe and Asia from one side and northern Africa and Arab Peninsula from the other side. They are located between two world centers of biological colonizations which are the Mediterranean ecosystem with its unique and distinguished Mediterranean sea area and Iranian toranin ecosystem. The terrestrial ones include Mediterranean forest in the north and sub-tropical mountainous vegetation in the south and southwest. Vast steppe with scant vegetation exist between the middle and the east parts of the country.

- **Biodiversity in Syria**

The different topographical, climatic and soil conditions are home to a large number of flora and fauna. It is believed that there are over 3200 species of flowering plants of which 22 are *Pteridophytes*, 10 are *Gymnosperms* and the remaining are *Angiosperms*. There are more than 2500 species of animals of which 62% are insects, 15% birds, 6% reptiles and amphibians, 5% mammals, and the remaining are primarily invertebrates and micro-organisms.

The national country study refers that about 354 bird species have been recorded in Syria, of which between 161 - 194 species breed in the country and 156 are migratory, either passing through or wintering. At least 21 bird species are considered threatened (11 globally and 10

regionally according to the IUCN Red List) as Cinereous Vulture (*Aegypius-monachus*), Syrian Serin (*Serinus syriacus*), Golden Eagle (*Aquila chrysaetos homeyeri*).

This number may prove to be much higher once ornithological studies are initiated in Syria to survey this major flyway of the Western Palearctic and critical resting stop for migrating birds particularly the birds of prey.

The large mammals of Syria suffered more than any other group of animals through loss of habitat, competition from grazing sheep and goats, and uncontrolled hunting. Early Arab and western travelers in Syria, during the 18<sup>th</sup> and 19<sup>th</sup> centuries, were still reporting on extensive herds of Reem gazelle, Syrian onager and Arabian ostrich. Those observers also told of seeing cheetahs and leopards that depended on the abundance of gazelles and onagers as their primary source of food.

Today those herds of gazelle, onagers and ostrich are entirely gone from the Syrian badia.

Syria has 16 legislated protected areas in the form of nature reserves from different ecosystem, and hence one of the lowest percentages of protected areas to total land area of any country in the Mediterranean region. According to Syrian statistics the percentage is 0.6%, whereas according to international surveys it stands at 0.0%. That figure should be around 10% meaning that about 10% of the area of Syria should be allocated to protected areas.

The establishment of more protected areas is critical because Syria has very few such areas at the present time and according to the Biodiversity Convention it is committed to increasing the protected area.

The Syrian Arab Republic joined the Convention on Bio-diversity, Joining of the Convention came as a result of the awareness of the basic values of biodiversity as well as the ecological and genetic value and the social, economical, scientific, educational, cultural, recreational and artistic values.

Syria also had signed and ratified a number of important international conventions and agreements related to the conservation of biodiversity such as:

- Ramsar Convention on Wetlands.
- World Heritage Convention for Cultural and Natural Sites.
- Specially Protected Areas in the Mediterranean .
- Convention on Combating Desertification.

It is expected to prepare all official steps to sign and ratify the following conventions and agreements, which help in implementation of necessary procedures to protect biodiversity components:

- Convention on the International Trade in Endangered Species CITES.
- Convention on conservation of Migratory Species( CMS).
- African Euro-Asian Water-Birds Agreement (AEWA).
- Cartagena Protocol on Biosafety.

In 1998 the Biodiversity Unit at the Ministry of State for Environmental Affairs published a comprehensive and well researched Country Study of Biological Diversity in the Syrian Arab Republic. The 367 page document represents the efforts of about two hundred from universities, Ministries and research centers, as well as various economic and community based organizations.

The Biodiversity Unit also prepared the National Strategy and Action Plan on Biodiversity and on 13 / 5 / 2002; The Supreme Council for Environmental Safety ratified it.

- **Globally significant biodiversity of Syria**

The world Conservation Monitoring Centre Publish the IUCN red list of threatened animals in Syria which include:

**class Mammalia**

**order Chiroptera,**

Family Rhinolophidae ( Rhinolophus blasii, R. euryale, R. ferrumequinum,)

Family Vespertilionidae ( Miniopterus schreibersi, Myotis myotis,)

**Order Carnivora,**

Family Felidae ( Acinonyx jubatus, Panthera leo persica,)

Family Phocidae ( Monachus monachus,)

**Order Perissodactyla,**

Family Equidae ( Equus hemionus hemippus,)

**Order Artiodactyla ,**

Family Bovidae ( Capra aegagrus, C.apra nubiana, Gazella gazelle, Gazella gazelle gazelle, Gazella saudiya, Gazella subgutturosa, Gazella, subgutturosa marica, Oryx leucoryx,)

**Order Rodentia ,**

Family Sciuridae ( Sciurus anomalus,)

Family Dipodidae ( Allactaga euphratica,)

Family Muridae ( Calomyscus tsolovi, Chinomys nivalis, Mesocricetus auratus,) Family Myoxidae ( Dryomys nitedula, Eliomys melanurus,)

**Class Aves,**

**Order Pelecaniformes ,**

Family Plicanidae ( Pelecanus crispus,)

**Order Ciconiformes,**

Family Threskiornithidae ( Geronticus eremite,)

**Order Anseriformes ,**

Family Anatidae ( Marmaronetta angustirostris, Oxyura leucocephala,)

**Order Falconiformes ,**

Family Accipitridae ( Aegyptius monachus, Circus macrourus,)

Family Falconidae ( Falco naumanni,)

**Order Gruiformes ,**

Family Rallidae ( Crex crex,)

Family Otidae ( Otis tarda,)

**Order Charadriiformes,**

Family Glareolidae ( Glareola nordmanni,)

**Class Reptilia,**

**Order Serpentes,**

Family Viperidae ( *Vipera bronmulleri*,)

**Order Testudines,**

Family Emydidae ( *Emys orbicularis*,)

Family Testudinidae ( *Testudo graeca*,)

Family Trionychidae ( *Rafetus euphraticus*, *Trionyx triunguis* S,)

**Class Amphibia ,**

**Order Anura,**

Family Discoglossidae ( *Discoglossus nigriventer*,)

**Class Avtinopterygii,**

**Order Clupeiformes,**

Family Clupeidae ( *Alosa fallx*,)

**Order Cypriniformes ,**

Family Balitoridae (*Nemacheilus angorae*,)

**Order Atheriniformes,**

Family Atherinidae ( *Atherina boyeri*,)

**Order Cyprinodontiformes,**

Family Cyprinodontidae ( *Aphanius fasciatus*,)

**Order Syngnathiformes ,**

Family Syngnathidae ( *Syngnathus abaster*,)

**Class Insecta,**

**Order Coleoptera,**

Family Cerambycidae ( *Rosalia alpine*,)

**Order Lepidoptera ,**

Family Papilionidae ( *Archon apollinaris*, *Parnassius Apollo*,)

Family Sphingidae ( *Hyles hippophaes*, *Proserpinus proserpina*,)

**Order Odonata,**

Family Calopterygidae ( *Calopteryx syriaca*,)

The three sites were selected according to their national, regional and global importance. They cover the Syria's most globally significant biodiversity, including flora and fauna.

**1- The ecosystem of the Abdul Aziz site:**

The ecosystem of the Abdul Aziz site is composed of steppe vegetation with dominance of scattered woody elements. Trees form the upper story of the plant community while other herbaceous species form lower strata. Major woody species include *Pistacia atlantica*, *P. khinjuk*, *Amygdalus orientalis*, *Prunus microcarpa*, *Pirus syriaca*, *Crataegus azarolus*, *Rhamnus palaestina*. Biannual species present in the site are *Artemisia herba-alba*, *Noea mucronata*,

*Salsola vermiculata*, *Achillea* sp. *Phlomis* sp. and *Thymus syriacus*. A number of annuals are present too. Herbaceous vegetation grows mainly in springtime due to extreme high temperature in summer and extreme minimum temperature in the winter.

Phytosociologically, *P. atlantica* is the dominant species in Pistacietum atlanticae which is well developed only in the northern Syrian desert (Jabal Abdul Al Aziz) where a considerable climax viable population exist compared to isolated individuals in other areas of the region (Zohary 1940). *Pistacia atlantica* here has a wider leaflets which may represent a unique transitional forms to *P. mutica*.

*P. khinjuk* is the other major component of vegetation (nearly 60%) in the protected area with various ecotypes. The species occurs naturally only in this site in Syria and perhaps isolated population are scattered in northern Iraq and in south east Turkey.

- **The main associations present in the mountain of Abdul Aziz:**

Main associations present in the mountain according to Sankary (1982) and Kadi (field work 2001) include:

1. Pistacieto – Agropyroetum: This association is very rich in species and composed mainly of *Pistacia atlantica* and *P. khinjuk* as woody species with some herbaceous elements such as *Poa bulbosa*, *Dactylis glomerata*, *Stipa* spp., *Teucrium polinum*, and *Thymus syriacus*. It is mainly concentrated in Badeeh area and scattered in various locations of the mountain.
2. Crataego – Artemisietium: Main components of this association includes *Pistacia atlantica*, *Pistacia khinjuk*, *Crataegus azaralus*, *Prunus microcarpa*, *Artemisia herba-alba*, *Avena barbata*, *Papaver* spp., *Zizyphora Abd-el-Asissii*, *Mathiola oxycera*. It is found basically on northern slopes
- 3- Atriplexeto – Salsoletum: This association was described in Albadii. Main components are *Pistacia atlantica*, *Atriplex leuoclada*, *Salsola villosa*, *Poa bulbosa* and *Haloxylon articulatum*.

- **Global significance:**

The Jebel has a remnant of forest/steppe associations. These associations represent the nearest living examples to Neolithic sites along the Euphrates some 160 kms to the west where fruits and charcoal of these species were common. Although *P. khinjuk* is present in Iraq, Iran and Turkey, it represents a viable well-preserved population **with good genetic pools of various species** in the Abdul Aziz Mountain, which deserve protection and management.

Nearly 200 species were mentioned in bibliography of the area and/or listed in present fieldwork, are found in the site. Seven of them are endemic to Syria including, *Allium karyateini* Post, *Astragalus chlorostegius* Boiss. et Hausskn., *Astragalus megaloceras* Sam., *Echinops descendens* Hand.-Mazz., *Onobrychis pinnata* (Bertol.) Hand.-Mazz., *Satureia pallaryi* Thieb., *Scutellaria cretacea* Boiss. et Hausskn.

- **The economical and ecological importance. Of the Abdul Aziz site:**

The Abdul Aziz site includes a number of species that have an economical and ecological importance. Of these we mention:

- (1) Genetic resources of fruit trees, that provides vigorous and resistant stock material for cultivars grafting and tolerance to drought and cold with ability to thrive in poor soil conditions. Of these are: *Pistacia atlantica*, *Pistacia khinjuk*, and *Amygdalus orientalis*. Many other species such as *Prunus microcarpa*, *Crataegus azarolus*, *Ficus carica* and *Rhamnus* spp. have similar features.
- (2) Excellent protein rich forage species that can be used for rehabilitation of degraded ecosystems are present in viable populations. Of these we may mention *Atriplex leucloda*, *Avena barbata*, *Dactylis glomerata*, *Salsola villosa*, *Stipa barbata*,

*Aegilops* spp., and *Vicia* spp. Around 20 species were collected from the site by ICARDA.

(3) Medicinal plants are present in prosperous populations. These species are collected and sold in local markets. Some of these species are: *Thymus syriacus*, *Artemisia herba-alba*, *Capparis spinosa*, *Teucrium polinum*, *Achillea* spp., *Ziziphora* spp., *Papaver* spp. and *Alcea rufescens*.

(4) Ornamental species adapted to dry zone such as *Gladiolus aleppicus*, *Ixiolirion tataricum* and *Tulipa Montana* are found too.

- **The wild animals and the globally threatened species**

The Abdul Aziz site harbors a number of wild animals. These include 25 species of mammals, 51 species of birds and quite number of reptiles and insects. There are 12 globally threatened species in the site including, Fox (*Vulpes vulpes syriacus*), Wild Cat (*Felis catus*), Egyptian Vulture (*Neophron percnopterus*), Black Vulture (*Aegyptius monachus*), Griffon Vulture (*Gyps fulvus*), Black Francolin (*Francolinus francolinus*), Golden Eagle (*Aquila chrysaetos*) and White Stork (*Ciconia ciconia*).

- **The globally endangered species**

Twenty-six globally endangered species exist in the site. Of these we may mention: Wolf (*Canis lupus*), Striped hyena (*Hyanea hyanea*), Badger (*Meles meles*), Nubian Ibex (*Capra ibex*), Short-toed Eagle (*Circetus gallicus*), Lanner Falcon (*F. biarmicus*), Houbara (*Chlamydotis undulata*) and Little bustard (*Tetrax tetrax*).

In addition, a number of rare animals appear in different times of the year in the site

## **2-The ecosystem of the Fronloq area**

- **The main associations present in the mountain of the Fronloq:**

five associations (assemblages) have been noted in the Fronloq site. These are:

1- Chaerophyllo-Quercetum pseudocerridis (35 50 32N, 36 00 10E-590m): Main species of this category is the *Quercus cerris* subsp. *pseudocerris*, which has an abundance of 5.5 (Braun-Blanket scale) and coverage of 85-100%. Height of trees is 20-25m. Associated species that distinguish this association include, *Digitalis ferruginea*, *Cicaea cepaea*, *Chaeriphylum libanoticum*, *Lathyrus libani*, *Silene confertiflora* and *Euphorbia macrostegia*.

2- Cerco-Ferulagetum autumnalis (35 50 42N, 35 58 12E-660m): In this assemblage *Q. cerris* subsp. *pseudocerris* has an abundance value of 4.4 and 75-85% coverage. Heights of trees are 16-19m. Associated species (mixed tree assemblages) that distinguish this association are: *Cercis siliquastrum*, *Pinus Brutia*, *Rhus cotinus*, *Juniperus oxycedrus*, *Ferulago autumnalis* and *Celsia heterophylla*.

3- Alysso (crenulatae)-Quercetum pseudocerridis: *Q. cerris* subsp. *pseudocerris* and *Pinus brutia* with abundance values of 3.4 and 3.3 respectively. Tree heights are 8-15m. Coverage does not exceed 75%. Major species that distinguish the association are: *Centaurea arifolia*, *Alyssum crenulatum*, *Euphorbia cassia* and *Thymus cilicicus*.

4- Pineto (brutia)-Quercetum pseudocerridis (35 51 11N, 36 00 54E): This association represents a degraded stage of original cover. The following species distinguish this association: *Pinus brutia*, *Q. cerris* subsp. *pseudocerris*, *Aster amani*, *Fumana oligosperma*, *Spiranthes autumnalis*, *Genista anatolica*, *Erica verticillata* and *Styrax officinalis*.

5- Saliceto (libani)-Smilacetum excelsae (35 51 21N, 36 03 34E-450m): This association represents vegetation present along springs and watercourses. It contains a large number of endangered species. Major species of this category include, *Eupatorium cannabinum*, *Smilax*

*excelsa*, *Salix libani*, *Aster amani*, *Scilla bifolia*, *Polypodium vulgare*, *Corylus avellana*, *Mespilus germanica*, *Alnus orientalis*, and *Cornus mas*.

- **Global significance:**

The Fronloq area contains two ecosystems with gradual transition from one to the other. Deciduous trees are concentrated in the middle of the protected area with penetration into surrounding Brutia pine forests. The site contains few openings and roads. The roads function as fire lines (fire breaks). It should be noted here that the site (4500ha.) had no paved roads at all until 1942 when Kassab-Lattakia road (western border) was paved. In 1970, Fronloq-Al-Rabeeha road was paved too. The northern border road was paved in 1988. It should be noted here that roads in general affect biodiversity by fragmenting habitats and creating edge effects. Paved roads increase fauna roadkills and affect animal behavior too. In the site many unpaved roads were opened within the last ten years to function as fire breaks. Off course, these roads increase human access to core area, which may damage biodiversity.

Ecologically speaking, the protected Fronloq area falls within the Eu-Mediterranean to the Upper Mediterranean vegetation zones. Along with the microclimatic features of the proposed protected area, topography and soil properties play an important role in determining species associations and species occurrences. As such, these factors, especially the last two, contributed to the appearance of the poly climax vegetation in the area, where various forest assemblages can be seen (Nahal 1974).

The core area of the Fronloq site (35 50 32N, 36 00 10E-590m) is composed of pure deciduous trees of *Quercus cerris* subsp. *pseudocerris*, where it dominates the forest.

Major associated species of *Quercus pseudocerris* in these sites include, *Alnus orientalis*, *carpinus orientalis*, and *Styrax officinalis*. *Quercus pseudocerris* trees mingle with Brutia pine trees *Pinus brutia* on south and eastern slopes and on shallow soils (GORS/UES 1991).

The other major species in the protected area is *Pinus Brutia*, which is a widespread species in the East Mediterranean sea. The species belongs to the Eu-mediterranean bio-climatic zone. However, It is found in Syria on different strata occupying altitudes from sea level to about 700m.

- **The economical and ecological importance. Of the Fronloq site:**

A large number of species have economical importance such as *Crataegus monogyna*, *Digitalis ferriginea*, *Fraxinus ornus*, *Laurus nobilis*, *Lavandula stoechas* and *Pistacia palaestina* ...etc.

Due to its geographic location, the Franloq site constitutes a bridge between southern Europe and Asia Minor for migratory wildlife species that cross the area. Furthermore, the site is one of the stop over points for globally endangered and migratory birds. Of these are: Black vulture (*Aegyptius monachus*), Golden eagle (*Aquila chrysaetos homeyeri*) and the Crane (*Grus grus*) (UNEP/MSEA 2000, Wolfgang 1995).

- **The wild animals and the globally threatened species**

A number of globally endemic and endangered species in Syria in particular and Middle East in general reside in the Fronloq site. These include, Syrian serin (*Syrinus syriacus*), Syrian woodpecker (*Dendrocopos syriacus*) Finsch's wheatear (*Oenanthe finschii*), Masked shrike (*Lanius nubicus*), Wolf (*Canis lupus*), Roe deer (*Capreolus capreolus*) and tiger salamander (*Salamandra salamandra*) (UNEP/MESA 2000, Wolfgang 1995). The Fronloq site host's quite number of rare and endangered animal species. Of these; 16 globally threatened species (GTS), which include, *Canis lupus*, red fox (*Vulpes vulpes*), follow deer (*Dama dama*), *Aquila chrysaetos homeyeri*, and European roller (*Coracias garrulous*);

- **The globally endangered species**

12 globally endangered species (GES), which include, Badger (*Meles meles*), striped hyena (*Hyena hyena*), Jackal (*Canis aureus*), chukar (*Alectoris graeca sinaica*), *Oenanthe oenanthe*, Eagle owl (*Bubo bubo*) and sparrow hawk (*Accipiter nisus*). In addition a number of rare insect species such as *Lucanus cervus*, *Iphiclides podalirius*, and *Papilio machaon* are found (Asswad 1998, Zakary 1983, UNEP/MSEA 2000).

## 2- The ecosystem of the Abou-Qubies area

- **The main associations present in the mountain of the Abou-Qubies:**

Ecologically speaking, the Abou-Qubies site has the three variants of the bio-climatic zones, which favor spread of many species. In addition, due to its micro-climatic conditions and favorable climate the site is rich in species. The number of species in the protected area is estimated at 350 with perhaps 6 of endemic species. The site also harbors around 25 rare species most of which are started the downward trend. In addition the area contain 20 are rare or endangered species. Since no studies have been conducted in the area, these figures are merely an educated guess.

Physiognomically, The Abou-Qubies site ecosystem is composed of a mixture of evergreen sclerophyllous forests and deciduous forests. Basic components of the evergreen forests is *Quercus calliprinos* (umbrella species) and additional number of secondary woody species such as *Q. infectoria*, *Arbutus andrachne*, *Pistacia palaestina*, *Phillyrea media*, *Laurus nobilis*, *Cotinus coggyra*, etc... These types of forests form a climax community of generally of more than 4m in height. They are found on shallow soils and drier sites on basically southern and eastern slopes (35 14 35N, 36 12 36E-875m). Once disturbed (grazing, cutting, clearing.) retrogression succession starts and leads to secondary plant communities. These secondary communities are composed of maqui of different degraded stages. Various types of maquis are recognized (Abido 2000, GORS/UES 1991) most importantly are:

The protected area contains various elements of the Mediterranean flora and some of the Irano-Turanean elements. Of the hot variant of Mediterranean bio-climate zones few species occur. Most of which are threatened. *Ceratonia siliqua*, *Olea europea* and *Myrtus communis* are major ones in this category. Species found in the Eu-Mediterranean zone are: *Pistacia palaestina* (= *P. Mutica*), *Quercus calliprinos*, *Laurus nobilis*, *Spartium junceum*, *Acer syriacum*, *Juniperus oxycedrus*.

Major species found in the mountain bio-climatic zone of the site are: *Quercus calliprinos*, *Carpinus orientalis*, *Fraxinus ornus*, *Q. pseudocerris*. Natural and man-made Brutia pine stands are present in the site too.

One point to mention here is the series of fire lines and unpaved roads present in the area, which enlarge if they are extensive, the edge effect. The most notable one is the firebreaks that cut through the protected area from Ali-Mejdel site in the south to Tamazeh in the north.

- **Global significance:**

The importance of Abou Qubies protected area comes from its geological, geo-morphological and biological structures. The ecosystem in the area is considered unique in its assemblages of species, which creates habitats sheltering various forms of fauna. Site importance are highlighted in the following points:

It is estimated that the total number of species in the site is about 350. Most of which belongs to the Mediterranean flora, especially to eastern Mediterranean. This site is one of the spots in the

coastal mountains that are very rich in biodiversity that have an economical importance (genetic resources).

The number of endemic species is 6 including, *Iris nusairiensis*, *Origanum bargyli*, *Salvia rubifolia*, *Malus trilobata* and *Daphne libanatica*.

About 20 species are considered rare or endangered. Of these are *Ceratonia siliqua* and *Acer syriacus*. In addition, the site harbors a number of species that have an economical and ecological importance.

*Olea europea* var. *sylvestris*, *Pirus syriacus*, *Amygdalus communis*, *Crataegus* spp. and *Malus sylvestris* are among the species that have intra genetic diversity.

Agro biodiversity includes species of *Trifolium* (more than 10 species), *Medicago* (6 species), *Vicia* (7 species), *Lathyrus* (5 species) and other leguminosae (*Astragalus*, *Lens*, *Pisum*, *Onobrychis* and *Ononis*.). A large number of gramineae members exists in the site including, *Triticum* spp., *Aegilops* spp., *Hordeum* spp. and *Avena* spp...)

Medicinal plants include (*Thymus syriacus*, *Capparis spinosa* and *Matricaria* sp. ...)

The Abou-Qubies site is very rich in ornamental and landscape species such as *Iris* (5 species), *Tulipa* (2 species), *Orchis* (4 species), *Ophris* (4 species), *Cephalanthera* (3 species), *Gladiolus* (1 species), *Asparagus* (2 species), *Fraxinus* spp., *Laurus nobilis*, *Ruscus aculeatus*, *Acer* spp., *Hedra helix* and *Spartium junceum*.

- **The economical and ecological importance. Of the Abou-Qubies site:**

- **The wild animals and the globally threatened species**

On the fauna side of biodiversity, site importance are highlighted in the following points: It is a cross road for migratory species and home for many other resident ones.

It harbors endangered species that have global and regional importance. A number of endemic and endangered species present in the site including, Syrian Serin (*Serinus syriacus*), Black bird (*Turdus merula syriacus*), Wolf (*Canis lupus*), Roe Deer (*Cervus dama*), Hyrax (*Psoracia syriacus*), Grey Hamster (*Cricetulus migratorius cinerascens*) and Tiger salamander (*Salamandra salamandra*).

There are 12 globally threatened species (GTS). These include, Fox (*Vulpes vulpes syriacus*), Wild Cat (*Felis catus*), Wild Boar (*Sus scrofa*), Black Vulture (*Aegyptius monachus*), Hamerkop (*Scopus umbretta*), Black Francolin (*Francolinus francolinus*), Golden Eagle (*Aquila chrysaetos*) and Hoopoe (*Upupa epos*).

- **The globally endangered species**

A number of globally endangered species are found including, Lesser kestrel (*Falco naumanni*), Striped hyena –(*Hyanea hyanea*), Badger (*Meles meles*), Goldfinch (*Carduelis carduelis*), Jay (*Garrulus glandarius*), Great Tit (*Parus major*) and Eagle Owl (*Bubo bubo*). The following butterflies are endangered: *Parnasius apollo*, *Hyles hippophaea* and *Acherontia atropos*.

Rare animals too are present in the site. These include; Jackal (*Canis aureus*), Mongoose (*Herpetc ichneman*), Weasel (*Mustela nivalis*), Roe Deer (*Capreolus capreolus*), Quail (*Coturnix coturnix*), Hobby (*Falco subbuteo*), Hen Harrier (*Circus cyaneus*).

## Annex I: Site selection

Identification, assessment and preliminary short-listing of candidate sites were undertaken in conjunction with the National Consultant team. Site selection was carried-out in four phases:

- i. Development of a set of qualitative and quantitative site selection criteria,
- ii. An initial identification and review of sites nominated by the National Consultant team and mission participants (more than 21 sites)
- iii. Selection of thirteen sites according to quantitative criteria
- iv. Short-listing of five sites according to qualitative criteria.

The qualitative criteria used were:

CRITERIA	POINTS ALLOCATED
Site mentioned in Biodiversity Strategy & Action Plan (NBSAP)	1
Site mentioned in National Environmental Action Plan (NEAP)	1
Site mentioned in National Country Study	1
Site is legislated as a Protected Area/ Reserve	2
Site of special Government or National interest	1
<b>Total for National Criteria</b>	<b>6</b>
Unique Ecosystem	2
Endemic Biodiversity (1-5 spp.= 1 point, more than 5 spp.= 2 points)	2
Migratory Route	2
Presence of Globally-Threatened / Globally-Endangered Species	2
Diverse Ecotopes	2
Agro-biodiversity value	2
Site of special interest to International Conventions/ Agencies (e.g. listed by Ramsar, UNESCO MAB)	2
<b>Total for Global Criteria</b>	<b>14</b>
<b>Total points</b>	<b>20</b>

Using the above criteria thirteen sites were selected, which are listed below along with the national, global and total scores obtained. The final column records significant issues raised during discussions, particularly factors which may discount the site in question (in yellow).

Site	National	Global	Score	Notes
Fronlok complex	6	13	19	Consists of 3 reserves in a coastal area near Latakia
Jebel Abdul Aziz	6	13	19	One of the most prominent sites in Syria
Jaboul Salina	6	10	16	Agro-chemical pollution threat unmanageable
Abu Qbais	5	11	15	NB: Close to WB site, but ecologically dissimilar
Allazab/ Qalamoun	3	12	15	Potentially better as a regional project with Lebanon (site is at the border)

Site	National	Global	Score	Notes
Jebel Al Arab	4	11	15	Overlap with Agro-biodiversity project
Al-Lajat Reserve	4	11	15	
Abu Rajmain	4	11	15	Mountain ecosystem similar to Jebel Abdul Aziz
Sabkhat Muh	4	10	14	Wetland site (seasonal)
Jebel Balais	5	8	13	Mountain ecosystem similar to Jebel Abdul Aziz
Shaiara Sharqieh	4	9	13	Restricted military (missile) site
Al Thawara/ Azad	7	5	12	Transboundary pollution threat from the river
Samaan Barakat	3	7	10	

Qualitative criteria were then applied, including:

*NB: Criteria in italics were not widely applied*

1. Complementarity in ecosystems (no overlaps in ecosystems)
  - a. Complementarity with World Bank project (avoid similar ecosystems)
  - b. Complementarity with UNDP Agrobiodiversity project sites
  - c. Avoid excessive overlap with other donor-funded project sites (e.g. Italian-funded FAO project at Al-Taleela)
2. Threats and problems
  - a. Unmanageable threats/ major threats outside the systems boundary
  - b. Transboundary threats and issues
  - c. Expected scale of threats – not too few or too many
3. Size – not too big or too small for a viable project/ biodiversity conservation site
4. *Geographical distribution – attempt to cover a broad area of the country without creating too much difficulty for project management and coordination*
5. *Degree of donor interest/ probable interest in co-financing*
6. *Baseline situation: degree of baseline activities/ baseline funding in place at the site.*
7. *Socioeconomic factors*
  - a. *Socioeconomic condition and nature of development in the site area (expected scale of alternative livelihood requirements)*
  - b. *Response of local communities/ stakeholders, and degree of support shown.*
8. *Environmental services and values of the site, e.g. water catchment area, etc.*
9. *Socio-cultural, historical and religious values/ significance of the site.*
10. *Future potential: anticipated future development interest/ potential of the site*

Using these qualitative criteria a short-list of five candidate sites was drawn up:

1. The Fronloq complex
2. Jebel Abdul Aziz
3. Sabkhat Muh Salina
4. Abu Qbais
5. Al Lajat Reserve

These sites, and the methods used to select them, were presented to and endorsed by a National Workshop and the National Steering Committee on 18 February. The National Consultant team is presently compiling detailed site profiles of these sites, to assist in selecting three sites for inclusion in the full project. The International and National Consultants subsequently conducted a final site selection based on these site profiles as well as field visits to all five short-listed sites.