



# The Strategic Master Plan for Petra Region

**June 2011**

**Contracting Authority:**

The Petra Development and Tourism Region Authority  
Attn.: Mr. Mohammad Farajat  
Project Administrator  
Procurement Division  
Wadi Musa, Jordan  
Tel +962 (3) 2157093

**Contractor:**

ATC Consultants GmbH  
Seilerstaette 7/4,  
A-1010 Vienna, Austria  
[www.atc-consultants.com](http://www.atc-consultants.com)

In Association with  
DesignWorkshop and  
JCP s.r.l.

**DESIGNWORKSHOP**

consulting procurement  
**jcp**  
srl

# Table of Contents

<b>1</b>	<b>Summary of findings from the diagnostics phase</b>	<b>6</b>
<b>2</b>	<b>SWOT Analysis of the Petra Region and its Six Communities</b>	<b>10</b>
2.1	Petra Region	10
2.2	Wadi Musa	12
2.3	Taybeh	13
2.4	Umm Sayhoun	14
2.5	Baidha	15
2.6	Rajif	16
2.7	Dlagha	17
<b>3</b>	<b>Vision for Petra Region</b>	<b>18</b>
3.1	Vision Statement	18
3.2	Mission Statements for the Petra Region	18
3.3	Strategic Objectives	20
<b>4</b>	<b>Development scenarios</b>	<b>22</b>
4.1	Scenario A: Full protection of all environmental and archaeological resources	22
4.2	Scenario B: Focus on full economic development	23
4.3	Scenario C: The Synthesis - Focus on balanced and sustainable development	25
<b>5</b>	<b>Economic Development Strategy</b>	<b>29</b>
5.1	Develop from a tourism attraction to a tourism destination	29
5.2	Destination Management and Marketing	30
5.2.1	Concept of tourism areas with varying intensity	32
5.3	Economic diversification	34
5.3.1	Agriculture and food processing	35
5.3.2	Handicraft and local production	36
5.3.3	Medicinal herbs	36
<b>6</b>	<b>Development guidelines and regulations</b>	<b>38</b>
6.1	Investment Promotion	38
6.1.1	Provide small-scale investment opportunities	38
6.1.2	Promoting national and foreign direct investments	39
6.1.3	Quantitative and qualitative demand for accommodation	40
6.2	Destination Management & Marketing	43
6.2.1	Creation of a DMO – Destination Management Organization	44
6.2.2	DMO as Product Development Organization	45
6.2.3	Establish Local Escort Service	57
6.2.4	DMO as Marketing Organization	58
6.2.5	Some additional tasks of Petra DMO	59
6.2.6	Recommended structure the Petra DMO	60
6.2.7	Operational Action Plan for the Petra Destination Management Organization	61
6.3	Social Issues	62
6.3.1	Lack of cohesiveness of the six communities	62
6.3.2	Unemployment	63
6.3.3	Family planning and marriage related issues	64
6.3.4	Potential threat of social violence in schools and at home	64
6.3.5	Education and youth empowerment	65
6.3.6	Influence of Tourism - potential hazard for traditional social structures	66
6.4	Protection of the Natural and Cultural Environment	67
6.4.1	Brief overview of constraints	67

6.4.2	Specific conservation and mitigation measures .....	67
6.5	Land-use.....	71
6.5.1	The planning process .....	71
6.5.2	Recommendations for Ongoing Planning for the Petra Region.....	74
6.5.3	Municipal Zoning for the Communities of Petra .....	78
6.5.4	Tourism Zones with the Petra Region.....	78
6.5.5	Recommendations for Land Use for the Expansion Areas.....	79
6.5.6	Development Standards for the Tourism and Residential Areas.....	80
6.6	Transportation.....	83
6.6.1	Present Situation and General Considerations .....	83
6.6.2	Recommended comprehensive Bus Transportation System .....	83
6.6.3	Creation of a Regional Transportation Facility (RTF) .....	86
6.6.4	Other transportation means considered.....	88
6.6.5	Alternative means of local Transportation: Animals & Sports Vehicles .....	90
6.7	Water Demand, Rainfall, Water Harvesting, and Storm-water Management.....	91
6.7.1	Water Supply .....	91
6.7.2	Wastewater Treatment .....	92
6.7.3	Rainfall Floods.....	92
6.8	Energy .....	94
6.8.1	Present Energy Consumption .....	94
6.8.2	Energy conservation and increased share of renewable energy.....	94
6.9	Public Facilities and Services.....	96
6.9.1	Educational Facilities .....	96
6.9.2	Parks .....	96
6.9.3	Medical Facilities .....	97
6.9.4	Places of Worship.....	97
6.9.5	Police and Fire Protection.....	98
<b>7</b>	<b>Action Plan for Development .....</b>	<b>99</b>
7.1	Scenarios of Development.....	99
7.1.1	Scenarios of Average Spending .....	100
7.1.2	Development of Water Supply Needed.....	101
7.1.3	Development of Improved Wastewater Treatment.....	102
7.1.4	Development of Electricity Consumption .....	103
7.1.5	Development of the Number of Rooms.....	104
7.1.6	Development of Jobs Created .....	105
7.1.7	Development of Investment for Accommodations and Additional Attractions:	105
7.2	Priority & Sequence of Recommended Actions.....	107
7.3	Investment road map .....	117
7.3.1	Creation of a Destination Management Organization (DMO).....	117
7.3.2	Central Gardens Wadi Musa.....	118
7.3.3	Further projects with regional relevance .....	120
<b>8</b>	<b>ANNEXES .....</b>	<b>129</b>
<b>9</b>	<b>Proposed investment projects for the Petra Region .....</b>	<b>130</b>
<b>10</b>	<b>Map Atlas .....</b>	<b>131</b>

## Index of Tables

Table 1:	Average estimated hours spend in the high-frequency core area of the PAP .....	26
Table 2:	Carrying capacity of the PAP .....	27
Table 3:	Base model: Accommodation capacity calculation.....	41
Table 4:	Effects of increase in length of stay on occupancy rate.....	41
Table 5:	Effects of increase in percentage of overnight visitors .....	42
Table 6:	Accommodation facilities and number of employees in Petra Region .....	43
Table 7:	Overview of actual & potential tourism products & services in Petra Region.....	46
Table 8:	Structure of DMO: Component, core functions and tasks .....	60
Table 9:	Action Plan for DMO .....	61
Table 10:	Precedent Hotel Densities .....	78
Table 11:	Site Coverage Calculations .....	81
Table 12:	Recommended building heights .....	82
Table 13:	Water catchments area and runoff volume in the Petra area.....	94
Table 14:	School requirements within the PDTRA region.....	96
Table 15:	Park requirements within the PDTRA region .....	97
Table 16:	Clinics and hospital requirements within the PDTRA region .....	97
Table 17:	Places of worship requirements within the PDTRA region.....	98
Table 18:	Overview Spending (basis 2008).....	100
Table 19:	Assumptions for Present and Future Average Spending: .....	100
Table 20:	Assumptions for Present and Future Water Supply: .....	101
Table 21:	No changes assumed.....	101
Table 22:	Assumptions for Present and Future Wastewater Treatment .....	102
Table 23:	Action Plan for priority projects of Stage 1 (Years 1 – 3) .....	107
Table 24:	Establish a Destination Management Organization (DMO).....	107
Table 25:	Activity: Animal Park & Interpretation Center.....	108
Table 26:	Wadi Musa Re-Urbanization & Central Gardens .....	109
Table 27:	Arts & Crafts Center and Petra Design Institute .....	110
Table 28:	Multi-purpose Entertainment & Conference Center .....	111
Table 29:	Main priorities and sequence of action .....	112
Table 30:	Cost estimate for DMO.....	118
Table 31:	Estimated investment cost: Petra Bedouin Animal Park & Interpretation Center	122
Table 32:	Estimated investment cost: Multi-purpose Entertainment & Conference center.	124
Table 33:	Estimated investment cost: Petra Arts & Crafts Center incl. Design Institute.....	126
Table 34:	Cost estimate: Petra public transportation system.....	127

## Index of Graphs

Graph 1: Accommodation occupancy rates by category in 2009.....	43
Graph 2: Diagram of the recommended bus system .....	85
Graph 3: Diagram showing the red line bus route .....	85
Graph 4: Bus stand design .....	87
Graph 5: Diagram showing a possible Teleferic System for Wadi Musa .....	90
Graph 6: Water catchments in the Petra Region .....	93
Graph 7: Scenarios for Total Spending .....	101
Graph 8: Water Supply.....	102
Graph 9: Wastewater Treatment .....	103
Graph 10: Electricity Consumption .....	104
Graph 11: Number of Rooms .....	104
Graph 12: Total Occupation from Tourism .....	105
Graph 13: Investment (Accommodation & Attractions).....	106

# 1 Summary of findings from the diagnostics phase

The process of developing the Strategic Master Plan for the Petra region incorporated a diagnostic phase, including stakeholder interviews and workshops. The findings of this initial phase are documented in the attached reports (diagnostic report, workshop report, and questionnaire report). This section provides a summary of the findings from the diagnostics phase, which is the basis for the elaboration of the “*detailed analysis, scenarios and strategy, including guidelines and regulations to encourage private investment while protecting the park*” (task 3).

## **Socio-Economic Analysis**

From an economic point of view, Petra mainly depends on the tourism sector. In the last decade, tourism has greatly improved in the region, while the traditional sector of agriculture has increasingly declined due to the growing water shortage and the comparatively easy income opportunities in tourism. The entire region has a population of 27,944 people (DOS 2009), which - based on an estimated average population growth rate of 3% - could nearly double within the next two decades. Thus, increased pressures on housing and social-welfare services are expected, which are already inadequate in some of the communities. The social structure of the population is characterized by a variety of tribes, subdivided by clans, which have a tendency to favor members of the same clan when it comes to hiring employees. This explains to some extent why members of one tribe and/or one community are often dominating some businesses (e.g. tour operators). As a result, benefits from tourism are not shared equally among all the tribes and communities of the region. While tourism offers the most job opportunities in the Petra Region (both legal and illegal ones) women are largely excluded from this labor market segment: only approximately 10% of the people working in the tourism sector are female (10% MOTA). Overall, the workforce in the Petra Region is well educated and includes many academics, especially in Wadi Musa where the College of Archaeology, Tourism and Hotel Management is located. The regional unemployment rate is at 9% lower than the Jordanian average of 12% (Al-Hasanat, 2009). Unemployment in the Petra Region mostly affects women as well as the population group aged between 21-25.

## **Petra Archaeological Park (PAP)**

The region's most important resource is the Petra Archaeological Park, which is one of the world's richest and largest archaeological parks. Due to its outstanding universal value, it became a UNESCO World Heritage site in 1985. The dramatic Nabataean and Hellenistic rock-cut temple and tombs (approached by a natural winding rocky cleft, the Siq, which is the main entrance from the east to a once extensive trading city) represent a unique artistic achievement. They are masterpieces of a lost city that has fascinated visitors since the early 19th century. The entrance approach and the settlement itself were made possible by the creative genius of the extensive water collection, distribution and storage system of the Nabataean people.

The Cultural Space of the Bedu in Petra and Wadi Rum was inscribed in 2008 on the UNESCO Intangible Cultural Heritage List of Humanity. Some families of Bedu tribes – namely from the Bidoul, the Ammaariin and the Sa'idiyyiin – continue to use the Nabataean water collection system and caves near Petra. The Bedu communities inhabiting this area keep a tradi-

tional pastoral culture and related skills alive. The Bedu of Petra and Wadi Rum have preserved specific knowledge related to flora and fauna of the area, traditional medicine, camel husbandry, tent-making, craftsmanship, as well as trekking and climbing skills.

The monuments of the Petra World Heritage site are subject to ongoing erosion due to wind and rain, exacerbated by windblown sand due to reduced ground cover. They are also vulnerable to flash flooding along Wadi Musa through the winding gorge (Siq) if the Nabataean diversion system is not continually maintained. Moreover, the property is under pressure from tourism, which has increased twofold during the last 10 years, particularly at congestion points such as the Siq. In 2010 the total visitor number of the PAP has reached 909.474 visitors, which is coming close to the maximum carrying capacity of the park, currently estimated by UNESCO at about 1.26 million (UNESCO, 1994). The region is also vulnerable to the infrastructure needs (e.g. electricity, sewage treatment, transportation) of local communities.

A UNESCO mission reporting on the current state of the park - scheduled for 2011 - will evaluate the current state of the Petra Archaeological Park (PAP) in more detail. Currently, some buildings impair the visual integrity of the site. Furthermore, PAP is still lacking a clear management plan as well as a detailed definition of the park's boundaries based on GIS data. Several plans for the modernization and re-organization of PAP have already started to be realized by the PDTRA, such as a new ticketing policy, plans for a new visitor centre or training for horse guides.

### **Tourism**

Most of the visitors to the PAP are foreigners: 63% of the visitors are European while only 10% are Jordanians (PNT 200910). Other tourist source markets still have a large growth potential, such as the Asian market. Visiting Petra is the priority of nearly all tourists coming to Jordan for the first time - even if they only stay only for a short period of time and spend relatively little money in the region compared to how much they spend in other tourism destinations. The short duration of stay is related to an insufficiently developed variety and quality of tourism products and to lacking marketing capacities. Furthermore, uninspired, low-quality and often imported souvenirs are not suitable to motivate high tourism expenditure. In general, the access to Petra is rather convenient from the airports of Amman and Aqaba as well as the Jordan cruise ship port of Aqaba. Tourism in Petra concentrates in two peak seasons, March through May and September through November. Tourists can choose from accommodation facilities in all categories. The average occupancy rate of the hotels in the region was 40% in 2009 and approximately 50% in 2008 (MOTA). Most of the hotels are currently located along the scenic road between Wadi Musa and Taybeh as well as in Wadi Musa proper. Tourism in the region mainly focuses on the PAP, while other existing resources of the region (such as Prehistoric and Neolithic archaeological sites and stunning natural sites) are not at all, or are only to a very limited extent developed and promoted as tourism products.

### **Land-Use and Urbanization**

Undocumented or unclear land ownership is one of the main issues impeding the development of the region and needs to be addressed urgently. A significant amount of land in the Petra region is owned by the government and, by law, must not to be transferred to private ownership. Therefore the total amount of private land for development and agriculture is limited.

Five existing forms of land use currently exist within the Petra Region: 1) urban development, 2) agriculture, 3) forestry, 4) protected areas and 5) tourism zones as represented by the

Petra Archaeological Park. Urban development occurs in a series of towns and villages generally situated along the Scenic Road between Baidha and Rajif, including the nearby village of Dlagha. Land is used for agriculture throughout the region on small fields and larger fields in the eastern part of the region. The fields are partly on government land or on land leased from the Ministry of Finance. More than 363 km<sup>2</sup> of the 796,4 km<sup>2</sup> total area of the PDTRA is covered by land with slopes steeper than 30%. This land is hardly suitable for development. Similarly, wadis are not suitable for development. Including a fifty-meter setback from the centerline, roughly 50% of the land within the PDTRA lies within Wadis. They must be protected in order to prevent seasonal flooding, but also to protect their rich vegetation. Old photographs from the region illustrate how lush and inviting the vegetation of PDTRA once was. It is recommended that efforts be made to return the native vegetation to its historic condition. Previous attempts of zoning in the region have remained uncompleted and only cover a small portion of the region. The Dar Al Handasah (1996) report provided detailed urban development plans for the communities of Wadi Musa, Taybeh and Umm Sayhoun. The lack of land to expand these communities is a challenging problem, especially for Umm Sayhoun. The Sigma report of 2000 provides a definition of three zones along the Scenic road: A (extremely sensitive), B (sensitive) and C (slightly less sensitive). Each of these zones has limited development permits. The National Park Management Plan, dividing the park into eight different zones, has established a specific zoning classification for the PAP.

### **Environment**

The Petra region is a unique place for plant geographers and of great interest to botanists for its diversity. Three bio-geographical regions intermesh here: the Mediterranean, the Irano-Turanian and the Sahel-Arabian region. Furthermore, Petra is characterized by a dramatically changing landscape reaching from 290m above sea level AS in the southwest up to 1700m ASL in the north, where the Hisheh oak tree forest is located. The region encompasses three different microclimates, explaining the diversity of the region's flora. However, no comprehensive studies on the flora have been undertaken until now. Thanks to the co-operation with NCARE, our team was able to compile lists of the flora existing in the region. The Petra Region contains about 15-17% of all items on Jordan's unusually rich species list and 39% of the families, indicating its rich biodiversity. Out of the already recorded species, 29 are listed as rare or endangered. Based on the current state of research, an estimated 35 medicinal plant species with known economic potential and wild relatives of eight crops of importance exist within the region.

The fauna of Petra is of equally great diversity: 332 species (PNT 1996) have been identified within the region, of which the majority are insects and birds. However, also in this case a proper mapping of the wildlife in the region is currently lacking. It has to be highlighted that many ecosystems and habitats for the regional flora and fauna are already degraded or are under threat. Due to its exploitation as firewood source, the Hisheh forest has been severely diminished. This is also one of the causes for the aggravated flash flooding issues occurring in the Siq during wintertime. At times, harsh winters with snowfalls make the region difficult to access. Overgrazing is another major threat to the environment as little vegetation is left to protect fertile soils from being washed away by seasonal floods, leaving the land infertile and more exposed to landslides.

### **Infrastructure and Public Services**

Water shortage due to the drying out of natural springs is one of the major issues threatening the future of the Petra region. The 214 liters per capita per day that were available in 2007 are predicted to drop to 145 liters by 2030 if the population keeps growing at the present rate.



Critical to addressing the water needs of the region would be the increased inclusion of intensive water harvesting and water re-use efforts. To some extent the issue can be solved through expanding the existing Waste Water Treatment Plant. This water can be used for fodder farming as well as landscape and parks irrigation. A possibility for the long-term future would be to obtain an additional water supply from the planned "Red Dead Canal."

Besides the crucial water issue, the ability of the region to support urban development is also directly related to the availability of infrastructure – roadways and transportation systems, sewer, waste disposal, electricity and telecommunications. Much of the existing urbanized areas require an improved and adequate infrastructure. Regarding solid waste disposal, the PDTRA has started to undertake initial measures by creating a dedicated unit for this issue. The main roads of the region are in good condition but smaller roads that lead to less touristic places are in poorer condition. The town of Wadi Musa is suffering from serious traffic congestions during peak business hours, which is accentuated by the tourism traffic passing through town. Available public services such as schools, hospitals and leisure facilities (e.g. youth or sports centers) are unevenly and insufficiently distributed across the region. Specifically, communities located at the periphery of the region (e.g. Dlagha and Baidha) have inadequate medical services, insufficient numbers of high schools for the increasing number of students and a lack of leisure and recreation facilities.

### **Stakeholders**

Besides the Petra Development and Tourism Region Authority, there are many stakeholders involved in the region, each with their own set of priorities. Among these stakeholders are governmental institutions, which in specific areas have a strong say (e.g. archaeological protection or use of land), as well as protective bodies such as UNESCO, PNT or RSCN. Of great importance are the local populations of the six communities, the Bedu tribes with their traditions and all stakeholders involved in the regional tourism industry. Special attention must be paid to the 19 associations and cooperatives located in the region, which already present an encouraging basis for an increasingly active engagement of the regional population in planning for their future well being.

## 2 SWOT Analysis of the Petra Region and its Six Communities

This section elaborates on the Strengths, Weaknesses, Opportunities and Threats for the Petra Region as a whole and for its six communities. Issues that apply for all communities are included in the regional SWOT and not repeated individually.

In addition, SWOT analyses at the community level have been prepared. The main tourism infrastructure and facilities were developed in geographic proximity to the main attraction. Hence, Wadi Musa and Umm Sayhoun, the closest communities to the PAP, experience the most significant impacts in terms of income generation and job opportunities but also experience negative agglomeration effects such as increased traffic congestion, pollution, increasing land prices, etc. These effects visibly decrease with the distance from the main attraction (i.e. following a typical center-periphery model). Hence, tourism development has the least effect on Dlagha and Baidha. The opportunities and threats for each of the communities are, however, quite different, as elaborated on in the individual SWOT analyses below.

### 2.1 Petra Region

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• A well known, unique UNESCO World Heritage Site of great interest: Petra Archaeological Park</li> <li>• Election of Petra as one of the Seven Wonders of the World has further increased the image and reputation of Petra</li> <li>• Still existing rich local cultures, which has been designated as UNESCO Intangible Heritage</li> <li>• An impressive semi-arid mountain landscape with deep wadis and a great variety of unique geological formations across the region</li> <li>• Existence of unique plants and herbs which are of great scientific value and medicinal interest</li> <li>• Rich bird life of interest to bird watchers</li> <li>• Good connections to major international airports in Amman and Aqaba as well as to the cruise ship harbor in Aqaba</li> <li>• Good condition of the main roads across the region</li> <li>• In general, a relatively high education level of the local population and the desire to be actively involved in the future of their region. Significant educational resources in the fields of tourism and archaeology (including the College of Archaeology, and the College of Tourism and Hotel Management)</li> <li>• The local business community is active in</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficiently developed supply chain infrastructure, including limited and/or poor quality supplies of goods for sale in the local tourism industry as well as agricultural products, souvenirs, and handicrafts; limited resources for maintenance and equipment tied to tourism business.</li> <li>• Insufficiently developed variety and quality of tourism products outside PAP</li> <li>• Local micro- and small business enterprises have limited marketing capacities and limited access to local markets for tourism-related products</li> <li>• The local and regional economy is primarily dependant on tourism</li> <li>• The Petra society is highly fragmented based upon affiliation to specific tribes or communities</li> <li>• Unequal distribution in the region of the positive and negative effects of tourism (positive: income and job opportunities; versus negative impact of high land prices, traffic congestion, pollution...)</li> <li>• Public services and Information and Information &amp; Communication Technology (ICT) networks lacking in parts of the region, resulting in unequal opportunities for business and tourism</li> <li>• Insufficiently developed hospital and health services</li> <li>• Environmental problems have resulted from a lack of regulations of the externalities resulting from tourism, farming, pic-</li> </ul>

<p>the tourism industry and benefits from patterns of healthy rivalry and cooperation between firms</p> <ul style="list-style-type: none"> <li>• Overall perception of the importance of preserving and protecting the PAP</li> </ul>	<p>nickling and other industries and activities</p> <ul style="list-style-type: none"> <li>• Persistent water shortages throughout the region</li> <li>• Policymakers lack sufficient data to make decisions on a regional basis</li> <li>• Local transportation systems are insufficient to capture increased traffic resulting from increased tourism, population, and household wealth</li> </ul>
<p><b>Opportunities</b></p>	<p><b>Threats</b></p>
<ul style="list-style-type: none"> <li>• More effective linkages of different parts of the region resulting from enhanced transportation services, thereby allowing for better exchange of products and ideas and maximization of existing infrastructure assets</li> <li>• Providing a more specific profile of each community, thereby allowing for greater specialization and income opportunities throughout the region based on the characteristics of each community</li> <li>• Establishing a strong destination marketing organization aiming at extending the stay of tourists, balancing seasonal patterns and improving the variety and quality of tourism products</li> <li>• Utilize the regional demand created by tourism to develop a more effective supply chain (involving agricultural products, handicrafts, maintenance operations, retail sales, etc.)</li> <li>• Diversify and enhance the quality of tourism products and attractions in order to increase the length of stay, in order to distribute benefits across the region and provide job opportunities for women</li> <li>• Increase the supply and variety of accommodations and provide additional guesthouse licenses, thus fostering local investments and job and income generation in the community</li> <li>• Enhance regional value creation by supporting local investments</li> <li>• Raise awareness among the local population and tourists in the various areas of concern (child labor, environmental protection, lack of interpretation of Nabataean history, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Unstable political situation of the Middle East affecting tourism negatively</li> <li>• Global Economic crisis affecting number of international tourists visiting Petra</li> <li>• Global warming exacerbating the consistent lack of water</li> <li>• Unregulated development leading to severe environmental problems and damages to the PAP (threatening the UNESCO World Heritage status)</li> <li>• Decline in agriculture endangers the agricultural and pastoral landscape as well as the perpetuity of local cultures</li> <li>• Population and tourism growth could aggravate infrastructural, environmental and social problems in the region</li> <li>• Increased socio-economic disparities between population centers and outlying districts (in terms of education, jobs, income, quality of life, etc.) could create tensions in the regions</li> </ul>

## 2.2 Wadi Musa

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Proximity to the entrance to the PAP and therefore strategically well-located to benefit from tourism</li> <li>• Most of the hotels and other tourism services (e.g. restaurants or souvenir shops) are located in Wadi Musa, providing jobs to the local inhabitants</li> <li>• Developed business community with successful local entrepreneurs</li> <li>• Good education facilities including a University College for Archaeology, Tourism and Hotel Management</li> <li>• Bus connections available to other regions and to major destinations in the country</li> <li>• Handicraft co-operatives are producing original craftwork such as jewelry inspired by Nabataean design</li> <li>• Several local tour operators conduct business in Wadi Musa</li> <li>• Good mobile phone network coverage and reasonable internet access</li> </ul>	<ul style="list-style-type: none"> <li>• Significant negative agglomeration effects (traffic, pollution, noise, increasing prices for land and goods, etc.)</li> <li>• A lack of sufficient recreational, leisure and entertainment facilities and areas for tourists and the local population</li> <li>• Bad smells and potential hygiene problems resulting from keeping animals and stables in the residential area</li> <li>• No infrastructure available for animals (e.g. riding paths)</li> <li>• Breach of regulations for some building activities (e.g. Crown Plaza)</li> <li>• Poorly developed transportation system and visitor flow management</li> <li>• Building in the Wadi reduces green areas and aggravates environmental problems (e.g. flash flooding)</li> <li>• High dependence on tourism industry and the loss of traditional industry sectors</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Upgrade importance of tourism accommodation facilities (inside and outside), especially those promoting private investments made by local owners</li> <li>• Improve / create public spaces that increase the quality of life and enhance demand for goods and services by both locals and tourists</li> <li>• Implement innovative transportation solutions</li> <li>• Identify new space for residential development outside the main tourist attractions</li> <li>• Strengthen role as a centre of knowledge for archaeology, Bedu traditions and agriculture</li> <li>• Regulations and facilities for keeping and employing animals in designated areas</li> </ul>	<ul style="list-style-type: none"> <li>• Growing tourism may aggravate pollution, environmental problems and traffic congestion if not managed properly</li> <li>• Breakdown of tourism industry (e.g. due to political or economic crises) would heavily affect the population in Wadi Musa</li> <li>• If negative agglomeration effects increase within Wadi Musa, hotels or tourism facilities located outside will gain a competitive edge</li> <li>• Unpredictable social effects may result from total reliance on tourism</li> <li>•</li> </ul>

### 2.3 Taybeh

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• General infrastructure in good condition</li> <li>• Proximity to Wadi Musa allows the area to benefit from public services and job opportunities provided in Wadi Musa</li> <li>• Proximity to regional hospital provides job opportunities and convenient services to the Taybeh population</li> <li>• Taybeh women's association produces original ceramics inspired by Nabataean designs</li> <li>• A successful tourism structure in traditional local style Taybet Zaman provides some – if limited - income to the local population</li> <li>• Great view over the Wadi Taybeh and easy access to the Wadi</li> </ul>	<ul style="list-style-type: none"> <li>• Besides Taybet Zaman, few accommodation facilities provide sources of income and jobs (particularly locally owned units)</li> <li>• Expensive land prices due to Taybeh's relative proximity to the centre and a shortage of buildable land</li> <li>• Lack of public spaces, parks and sports centers (e.g. youth centers for boys and girls)</li> <li>• Lack of tourist attractions limits potential benefits to Taybeh from tourism</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Development of tourism activities and investments in accommodation facilities is relative attractive:               <ul style="list-style-type: none"> <li>○ Location at the entrance of Wadi Taybeh is conducive for eco-tourism</li> <li>○ Available space for outdoor activities and camping</li> <li>○ Geographic proximity to Wadi Musa and the PAP</li> </ul> </li> <li>• Improved public transport connection to the PAP and Wadi Musa enhances the potential for investments in tourism accommodation facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Taybeh may become an outskirts of Wadi Musa leading to a potential loss of its own identity and development of negative agglomeration effects</li> <li>• The supply of developable land might not be sufficient to account for the growth in population and tourism</li> <li>• Negative attitudes towards tourism may result from increased traffic rushing throughout town without producing benefits to Taybeh</li> </ul>

## 2.4 Umm Sayhoun

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Unique relationship with the PAP, which is of interest to the visitor and helps the visitor to understand the PAP as what it was formerly: a place to live</li> <li>• Experienced in dealing with tourists, relatively good English, open and positive attitude towards tourists</li> <li>• Many people with extensive knowledge about the PAP area</li> <li>• Proximity to PAP provides for easy access to the park and to income opportunities</li> <li>• Competences in tour guiding and trekking by foot as well as with donkeys, horses and camels</li> <li>• Several tourism related associations, such as the Umm Sayhoun Women's Tourism Cooperative or the Umm Sayhoun Men's Tourism Cooperative</li> </ul>	<ul style="list-style-type: none"> <li>• Negative agglomeration effects also linked to particular scarcity of developable land (traffic, pollution, housing, etc.)</li> <li>• Insufficient public services (education, health, public transport, waste collection, etc.)</li> <li>• Linked with the above, lower educational level and thus higher vulnerability of inhabitants then in other communities</li> <li>• Bad smell and potential hygiene problems from keeping animals and stables in the residential area</li> <li>• No infrastructure available (e.g. riding paths) for animals</li> <li>• Land use does not allow for development of commercial activities in Umm Sayhoun and therefore puts pressure on the PAP</li> <li>• Child labor in the PAP leads to lower educational achievements</li> <li>• Lack of public spaces, parks and sports centers (e.g. youth centers for boys and girls)</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Some elements of traditional Bidoul lifestyle still exists, which the local population is ready to share with tourists (e.g. weddings), thus allowing tourists to experience the "authentic" local culture</li> <li>• Proximity to the PAP makes it a good location for tourism shops, restaurants and small hotels/guesthouse especially if it integrates well with the newly suggested transportation system. These developments would decrease pressure on the PAP</li> <li>• Regulations and facilities for keeping and employing animals in designated areas and for alternative touristic uses</li> <li>• Tackle major issues such as education, environmental protection, preservation of the PAP, etc. with an awareness-raising program</li> </ul>	<ul style="list-style-type: none"> <li>• Breakdown of tourism industry (e.g. due to political or economic crises) would heavily affect the population in Umm Sayhoun</li> <li>• Population growth and uncontrolled development of the community may severely damage the integrity and preservation of the PAP</li> <li>• Population growth may lead to increasing pressure to provide additional developable land</li> <li>• The use of child labor may lead to deteriorating social conditions, and the lack of education may impede socio-economic development in the medium term</li> <li>• Lack of hygiene and close contact to animals may lead to diseases</li> </ul>

## 2.5 Baidha

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Beautiful scenery unaffected by negative agglomeration effects in Wadi Musa and Umm Sayhoun</li> <li>• Proximity to alternative attractions (e.g. Little Petra, Wadi Araba) and other potential tourism activities (hiking, horse riding, etc.)</li> <li>• The Amaariin camp owned by the Baidha Tourism and Archaeological Cooperative Society offers jobs to some segments of the male population</li> <li>• A women's handicraft association ("Amaariin Centre for Fabrics and Craft") produces original objects, such as bags made from recycled materials and provides jobs for some women</li> </ul>	<ul style="list-style-type: none"> <li>• A lack of basic infrastructure and utilities (ICT networks, water and electricity supply)</li> <li>• Insufficient public services (education, health, public transport)</li> <li>• Pollution and environmental damage (deforestation) resulting from heavy picnicking during weekends</li> <li>• The lack of sufficient skills and competencies in the local population necessary to effectively develop the tourism industry</li> <li>• Almost total lack of sufficient tourism infrastructure</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Allow for the development of accommodation facilities, thus supporting private investments in guesthouses and "boutique" hotels, that are small, usually privately operated hotels of good quality with a favorable price-quality ration (They relate to large chain hotels like ladies' dress "Boutiques" to department stores – therefore the name).</li> <li>• Interest shown by some potential investors from Jordan and abroad</li> <li>• Strengthen the activities of the existing associations (camping, handicraft, souvenir shop)</li> <li>• Provide access to and interpretation of attractions located close to Baidha (e.g. Little Petra, Neolithic village, etc.)</li> <li>• Construction of designated picnic areas with services and toilets</li> <li>• Development of residential area and secondary residencies</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental problems due to overgrazing, collection of firewood, picnicking, etc.</li> <li>• Visual pollution resulting from uncontrolled and unregulated construction activities</li> <li>• Lower educational standards and limited economic opportunities result in social problems and increased vulnerability for a wide range of the population</li> </ul>

## 2.6 Rajif

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Relative strength in agriculture due to the area's good water irrigation system</li> <li>• Attractive and green community with beautiful views and proximity to the proposed Masoudha protected area and its outstanding landscapes</li> <li>• Well-preserved old town (old Rajif)</li> <li>• Relatively active community that takes initiative to solve problems</li> <li>• Well-functioning School for Children with Special Needs was initiated by locals with Jordanian and international assistance</li> </ul>	<ul style="list-style-type: none"> <li>• Poor ICT networks</li> <li>• Insufficient public services (education, health, public transport)</li> <li>• Relatively high unemployment rate</li> <li>• Very limited base of tourism infrastructure, tourism services and tourism products; tour operators use land for camping activities, providing limited benefits to the local community</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Old town has many well-preserved old house structures which are now used as stables but could be turned into tourist facilities such as a handicraft markets, restaurants or accommodation facilities</li> <li>• Skills for production of local handicraft products with women and men</li> <li>• Spectacular natural resources conducive for developing outdoor leisure, recreational and sport activities for tourists and locals alike</li> <li>• Strengthen production, branding and marketing of local agricultural specialties (e.g. apples, olives, oil products, herbal plants, etc.)</li> <li>• Provide access to and interpretation of archaeological sites close to Rajif</li> <li>• Development of residential area and secondary residencies</li> <li>• Home stay or agricultural tourism program, particularly targeted at Jordanians who may want to escape Amman for the weekend</li> </ul>	<ul style="list-style-type: none"> <li>• The irrigation system requires repairs that cannot be funded through operating profits; diminishing average precipitation limits the capacity of agriculture.</li> <li>• Threat of soil erosion and potential landslides and floods</li> <li>• Negative attitude towards tourism resulting from tourist traffic rushing through the town without benefitting Rajif</li> </ul>



## 2.7 Dlagha

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Proximity to proposed Masoudha protected area with outstanding landscapes</li> <li>• Existing Bedu-culture still using tents</li> <li>• Relatively active and experienced in agri-culture</li> <li>• Large availability of developable land</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of basic infrastructure and utilities (no internet, bad water and electricity supply)</li> <li>• Insufficient public services (education, health, public transport)</li> <li>• Road through the village allows for speeding endangering the community</li> <li>• No tourism facilities, products and services, hence very limited benefits of tourism development in Petra region</li> <li>• Low skills and competences in the fields required for tourism development</li> <li>• Low educational level in general creating vulnerability and limiting future development potential</li> <li>• Geographic distance to the centre reducing income and job opportunities and limiting involvement in political processes</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Enhance spill-over effects through better connectivity and transport to the centre (public transport, internet) <ul style="list-style-type: none"> <li>○ Better access to labor market</li> <li>○ Better access to public services such as education and health</li> <li>○ Stronger involvement in decision making</li> </ul> </li> <li>• Upgrade capacities for local production of agricultural products that will be needed in the growing tourism industry of the region</li> <li>• Provide access to, and interpretation of archaeological sites close to Dlagha</li> <li>• Development of outdoor tourism activities (camping, trekking, horse riding, offering authentic Bedouin experience etc.)</li> <li>• Development of alternative accommodation and tourism facilities such as camp sites</li> </ul>	<ul style="list-style-type: none"> <li>• Development potential restricted because of lacking basic infrastructure, utilities and education as well as - interrelated - lower level of skills and competences ...</li> <li>• Negative attitude towards tourism resulting from tourist traffic rushing through the community without benefitting Dlagha</li> <li>• Diminishing precipitation and lack of water endangers agriculture as main source of income</li> </ul>

## 3 Vision for Petra Region

### 3.1 Vision Statement

Become a world-class tourism destination based on Petra's unique, well-preserved and authentic cultural and natural heritage, outstanding service quality and environmental standards.

The Vision Statement for the Petra Region needs to be defined on two very different, but equally important levels:

1. On the Regional Level for the Local Population – the presently approximately 30.000 people from various tribes of traditional origin who have been living here – some within the present boundaries of the PAP - and who live now in the six municipalities.
2. On a National and International Level for the Kingdom of Jordan and for the International Community representing the whole world. As one of the most significant sites that was nominated some 25 years ago on UNESCO's World Heritage List, Petra as a unique and outstanding Cultural Heritage also belongs in the true sense of the word to Mankind.

Therefore, the right of the people living in the Petra Region to earn their livelihood from the reputation and the potential proceeds of this unique treasure must be recognized as being of equal value as the right of the Kingdom of Jordan and the International Community to protect the site, which was also voted as one of the Seven New Wonders of the World, and preserve it for future generations.

PDTRA – established by Jordanian law as the managing authority of the region including the PAP – is called upon to recognize both goals and to negotiate on a continuous basis with both sides sensible and balanced procedures that will in a reasonable way accommodate both the wellbeing of the inhabitants of the Petra Region and the desire of mankind for its protection. The concept of sustainable development should be the guiding principle of these decisions.

The leadership of PDTRA has expressed their steadfast commitment to turn Petra Archaeological Park and its surroundings into a place that will be experienced by visitors as the World Class Destination it is perceived by reputation. It is their vision for Petra to reach the top at international standard matching its reputation as an outstanding member of the Seven New World Wonders and the UNESCO World Heritage List.

It is suggested that for each of the six municipalities specific vision statements will be formulated to guide the development path of each community; e.g. some may not want any direct tourism activities within their borders, whereas others may see tourism playing a major role. It is suggested to invite the local population to participate in the definition of the roles their communities will play within the economic and cultural development of the Petra Region.

### 3.2 Mission Statements for the Petra Region

The people of the Petra Region have a high degree of pride in their homeland and – as was clearly seen in the interviews and workshops with altogether close to 400 residents of the

area – a full understanding of both their responsibilities for protection and for their chances to utilize these opportunities. This shared understanding of the people of Petra Region will need to be supported by a regulatory and institutional framework that guides and directs individual behavior. PDTRA is responsible for developing and implementing this framework.

**PDTRA**, the Petra Development and Tourism Region Authority, will act responsibly in every possible way to protect the archaeological, cultural and natural treasures of the area and to foster and maintain development in a sustainable way. At the same time the PDTRA will always act in the best interest of the people of the region and will strive for social equality and equal opportunities for all citizens of the region alike.

Special emphasize must be put on reaching equal status and rights for women and for men independent of their belonging to a certain tribe or community and on respecting the traditional structures and the cultural identities of the local population.

In order to achieve this goal, a Management Plan should be elaborated that will serve as a guideline for reaching and maintaining a high standard of development and will guarantee service quality both to the local population and their visitors from abroad.

**Alternative idea “out-of-the-box”**

At this point it may be appropriate to bring up the idea of seeing the PAP in the context of a continuous protected area that would reach from Dana to Rameh and of strengthening the position of the towns and villages both along the scenic road AND along the Wadi Araba. In the context of Jordan’s large tourism route from Amman to Petra – Wadi Rum – Aqaba and returning to Amman via Wadi Araba and the Dead Sea, the small villages may in the future become “gateways” to the Park as well. In this case an extension of the area of the PDTRA should be considered.

The **Government of the Kingdom of Jordan**, in recognition of the unique status and the worldwide reputation of Petra, will be asked to supply the necessary administrative support as well as infrastructure to the Petra Region, which is likely to be the place most associated with Jordan. This would include also the financial resources for supporting some necessary infrastructure investments in the area as well as the “Management of Change” tasks that will be required for bringing the level of service quality to Petra to truly earn its outstanding international reputation. Only with full national support will the PDTRA be in a position to fulfill their role not only as facilitators of development and growth, but also their equally important task of preserving and protecting the archaeological treasures from the potential negative impacts that may result from growing visitor numbers.

Another issue of great importance will be the supply of sufficient water resources. Even though it is suggested to revive the unique Nabataean tradition of water management that was likely the most advanced and most innovative at the time, some 2000 years ago, this measure alone will not be sufficient in view of the recent climate changes and the severe decline of precipitation observed during the past 10 years or so. Therefore, and in view of the projected figures in population growth it will be necessary for the region to participate to a larger extent in one or more of the water projects, which are presently in the planning or implementation stages.

The **Municipal authorities** of the Petra Region are urged to recognize the manifold development opportunities offered to their communities by the unique status of the Petra Region as

well as their special roles and responsibilities, both in the need to protect and preserve their homeland for themselves and for future generations and to utilize in an optimal way the opportunities for economic and social development. This includes the development of unique identities and of social ties within each community as well as a continuous dialogue with the PDTRA and the other communities.

### 3.3 Strategic Objectives

- Long-term protection and preservation of the unique cultural and natural values must have precedent over short-term economic benefits
- Encouragement of entrepreneurial behavior and a market economy within a strictly enforced set of transparent and coherent rules and regulations
- Strengthen regional value creation from economic activities and development of region-specific competitive advantages
- Urban development in compact and delightful urban forms that can be served in an efficient way by infrastructure and public services and allow future populations to be accommodated with the minimal consumption of land
- Provision of basic infrastructure and public services throughout the region creating equal opportunities

It is by common agreement of all stakeholders in the Petra Region and in Jordan, that the long term protection and preservation of the unique cultural and historic values of the place must at all times have precedent over short term economic benefits. Environmental and Archaeological Resources of the region must be protected from the outset in order to be handed over to future generations. By doing so the cultural landscape and indigenous culture of the Bedouin people will also be preserved.

The region and its business community needs at all times to be conscious of the fact that it lies within their responsibility not to overextend the fragile ecological conditions and the tourism carrying capacity of the region in general, and of the PAP and the other valuable archaeological treasures in the region in particular.

The tourism potential of the region is expanded by, rather than diminished by, strict regulations and measures for the protection of environmental and archaeological resources – the more protected areas the more tourism. In the tourism research community it is called the “Costa Rica solution”, where 25 percent of the entire country is set aside as national parks. Tourism development should be guided by upgrading the quality of service in the entire region with the goal to enhance and improve the “tourism experience” and consequently the level of satisfaction of visitors.

Even though, there is strong awareness among the local population of their responsibility for the rich heritage of Petra (“...this is not our treasure – we share it with the world and we need to hand it over undestroyed to our children...” as one young tour operator put it), in complex issues such as finding the right balance between utilization and protection of a fragile environment, it is always very difficult for individual persons to assume overall collective responsibility for the effects of their actions; thus the political institutions are called upon to elaborate and agree upon a very strict set of rules and regulations that are fully transparent and can be clearly understood. Within this regulatory framework competition and free entrepreneurial

spirit should be encouraged and the basic principles of a market driven economy should be followed.

In order for the communities to best benefit from the development process, economic activities ought to be as diverse as possible; agriculture and forestry must be maintained and enhanced, education and training should lead to the development of other economic activities as well, since dependence on one single source of income may be risky for any economy. Tourism may be particularly affected by political crises, economic upheavals, terrorist attacks, weather disasters, health hazards and so on.

Each town and village should be developed in compact, dense delightful urban forms that can be served in an efficient way by transportation and services. Communities and villages should be developed as attractive urban settlements not only for the local residents but also as attractions for guests – there is a win/win relationship for both locals and visitors in improving the townships.

A regional approach must have precedent over merely local action, but also respecting the different traditions and cultures and particular interests of each community. This common approach shall ensure the equal provision of basic infrastructure, public services and Information and Communication Technology (ICT) networks throughout the region.

It is further suggested to adopt a long-term perspective with coherent and transparent measures that will enhance trust of both the local community and national or international investors in the regulatory environment.

## 4 Development scenarios

The authorities responsible for the implementation of some or all of the recommendations put forward in the Strategic Master Plan for the Petra Region will need to consider alternative solutions. Therefore, we have suggested three different scenarios, each with a distinctly different focus. Since finding the right balance between protection of the environment and the unique cultural treasures on the one hand and the understandable desire of the population to make good use of these treasures on the other hand are – and always will be – a constant theme in the implementation process, the scenarios will be structured around this subject matter:

- Scenario A: Emphasis on full protection of environmental and archaeological resources
- Scenario B: Emphasis on full economic development
- Scenario C: Emphasis on balanced and sustainable development

### 4.1 Scenario A: Full protection of all environmental and archaeological resources

Petra's outstanding worldwide reputation is based primarily on the unique cultural value of its archaeological sites. However, the special appeal of the region results as much from the colorful rock formations in this semi-arid landscape, underscored by stunning sunrises and sunsets, as it does from a lucidly lit sky. Because of its relative distance from major population centers with a population affluent enough to travel since its rediscovery in the early 19th Century until the last quarter of the 20th Century the site was much marveled about but rarely visited. Thus, it was possible for a few dozen Bidoul families to live undisturbed amidst the site.

Only in the past 25 years, after the resettlement of the Bidoul and the declaration as a site to be protected on UNESCO's List of Cultural World Heritage, did international organized tourism discover Petra in a big way. Unfortunately, in spite of some draft management plans and serious attempts to better organize tourism flows within what is now referred to as the PAP (Petra Archaeological Park), the management was never quite able to actually implement measures to effectively curtail the overabundance of tourism-related activities inside the PAP, such as an uncontrolled number of animals and carriages, licensed (and unlicensed) souvenir shops and food stands. In addition, in spite of the fact that it is against the law, there are children and youth peddling goods and services.

UNESCO, Petra National Trust (PNT), the Royal Society for Conservation of Nature (RSCN) and other national and international institutions concerned with the protection of cultural and natural heritage have been pointing to the negative effects caused by overutilization for some time. The uneven distribution of tourist flows (concentrating in a 'camel-back' curve of tourism activity during the spring and autumn) has resulted in the arrival of up to 5,000 visitors per day during peak periods. The growing number of tourists and the increasing size of the local population alike are causing an extensive use of precious natural resources such as water and wood.

As research of Petra's natural environment has shown, the collection of firewood leads to a massive destruction of vegetation and leaves the soil without any protection. This is a major issue as the rainfalls in wintertime appear as massive floods, not only taking away the fertile top layer of soil, but also threatening the lives of tourists and the people living in the region. While these flash floods appear in winter, another main issue is the general lack of water of

the region during the rest of the year. Local and regional officials have observed a general decrease in the output of the springs, which has led to a severe shortage of water for agriculture.

Furthermore, mass tourism has negative effects on the preservation of the PAP as previous studies on the carrying capacity of the area have shown; every human or animal contact has in some way negatively affected the very delicate sandstone. A strict carrying-capacity regulation was already proposed by the UNESCO management plan for Petra in 1993. Furthermore, busses and SUVs inside and outside the park are also damaging the site.

In addition, advocates of protection fear that further expansion of tourism may also seriously and potentially irrevocably damage the existing unique plant and bird habitats. Indeed, as mentioned in our diagnostics report, The National Centre for Agricultural Research and Extension (NCARE) has listed several plant species as endangered. In order to protect the unique natural environment in this part of the region, RSCN is planning to establish the Masoudha Reserve, which will partly be within the Petra Region.

During the workshops, young people specifically have mentioned that they wish that more green energy, recycling and a general sustainable way of living will be introduced to the region in the future. This scenario focuses strongly on the introduction of sustainable ways of living in the region and a more forceful protection of the environment.

If the Petra region wants to preserve its natural and cultural richness for the generations to come, it is essential to establish strong protective measures. Thus it is crucial to strictly monitor the number of visitors arriving to the region and the park. Natural reserve areas throughout the region should be established in addition to strict rules and limits regarding farming, building etc. for the local population. In return, Petra will be able to maintain its reputation as a unique site in the world. Since tourism to the region would be limited, Petra would become a more exclusive destination not easily accessible to everyone. Also, the evaluation of the questionnaires shows a distinct perception by the local population that tourism may harm their cultural traditions. Bedu traditions show a particularly strong link to the environment and this scenario would focus on the conservation of their living environment as well. Strict conservation also means that the number of visitors or the total number of hours that visitors spend in the PAP should not be further extended.

#### **4.2 Scenario B: Focus on full economic development**

Even though the diagnosis of the Petra region clearly shows that it is more advanced economically than the Jordanian average, the rate of unemployment is still relatively high. Investors from outside the region earn a major part of the revenues from tourism. The benefits from tourism that are reaped in the Petra region are distributed very unevenly among the six municipalities. The result is a very uneven development of the communities across the region, leaving some of them without sufficiently functioning basic infrastructure and services, such as good roads and means of transportation as well as high quality water, electricity and telecommunication services, which together form the basis for social and economic development.

Therefore it is quite understandable that a major part of the local population, particularly in the less privileged parts of the region and layers of society, strive for their participation in the economic benefits that only some are currently enjoying. They will argue for furthering the

growth of tourism in the region; even though most of them also recognize the need for protection, they call for their fair share in a growing tourism industry in the region.

Indeed, as the workshops conducted in all six communities have shown, communities located further away from the main attraction PAP, which are not traditionally involved in tourism, perceive themselves as losers of the current tourism boom because of higher market prices for land and daily products. In addition, their traditional agricultural lifestyle becomes more and more difficult due to the decreasing delivery of the local springs resulting in a severe lack of water. Thus, many see opportunities for their own economic development and wellbeing in an expansion of the tourism sector.

The workshops have clearly shown that a major part of the population in all communities shows a desire to be involved in tourism and to either attract tourists to their communities or at least to find reasonably well-paid employment opportunities in tourism enterprises. Others, especially women, see opportunities for themselves in selling their handicraft products (jewelry, souvenirs, woolen clothing, carpets, etc.) to tourists or their agricultural products (grain, meat, milk products, fruits and vegetables, etc.) to hotels and restaurants. Both of these market opportunities are not well organized yet and therefore bring only very limited benefit to the local population. Section 5 will provide recommendations to better exploit these economic potentials. Therefore this scenario bases its future development plan for the region on the priority of economic growth through increased growth of tourism, including income from agriculture and manufacturing of local products.

In order to increase the number of tourists coming to the Petra region and visiting the PAP at any given time, the present visitor flow concept must be improved and traffic systems must be optimized. In addition, to maximize benefits from tourism, visitors should be motivated to spend as much money as possible on attractive souvenirs and fashionable products as well as on high quality individual tourism services (private guides, animals & carriage rides, entertainment features etc.), preferably related to PAP and the "Petra Experience." To facilitate this strategic scenario, an essential task will be to increase the number of tourist attractions in the region, creating incentives for tourists to stay in the region longer.

This strategy would result in enhanced interpretation and exploration of existing secondary sites (e.g. Little Petra and the Prehistoric excavation sites in its neighborhood near Baidha) and of manmade attractions (like an Animal Park and riding centre or an Arts and Crafts Centre for watching, learning and shopping, etc.). With regard to choosing the best locations for the newly to be created attractions, there are two schools of thought:

1. Spread the attractions evenly across the region in order for all communities to participate more directly in the proceeds from economic activities related to tourism.
2. Take a more concentrated planning approach for new attractions (preferred by tourism destination planners), building attractions in a more concentrated way near tourism accommodations. This would considerably reduce any additional strain on the environment resulting from transporting large numbers of visitors between tourist accommodations and various decentralized attractions, and would provide tourists more time to enjoy themselves (and spend money!). The advantage for the local population is that smaller communities and villages will not feel the detrimental effects of tourists' roaming within and outside of their living environment (in some cases that has led to a considerable upheaval of the social structure of communities). The Petra Region is comparatively small enough to allow all for workers in the tourism industry to travel no more than half an hour from their homes to work places. Outside of working hours,



they can continue to lead traditional lifestyles and remain undisturbed by the presence of tourists.

Obviously, in order to cater to the increasing number of tourists, the region must expand its accommodation capacities and provide an adequate transportation system. Essentially, this scenario focuses on maximizing visitor rates and tourism-related spending. Under this scenario, only the “market” would cap growth (i.e. if the quality of the experience declines because of overcrowding, pollution and environmental problems, fewer people will come).

### **4.3 Scenario C: The Synthesis - Focus on balanced and sustainable development**

Both strong and somewhat weaker arguments support scenarios A and B. Therefore, it seems to make sense to look at all parameters, both in terms of preservation and protection and increased development and utilization, in order to find the proper balance between these considerations.

All local stakeholders in the Petra Region agree that a serious threat to the actual substance of the PAP and the surrounding natural habitat must be averted under any circumstance. This shared understanding shall guide all planning efforts as overriding principle. The true difficulty, however, will involve actually defining to what degree and under what condition the site will suffer serious damage from tourism or other potentially damaging economic activities.

A commonly accepted method for determining the threshold between sensible utilization and overutilization that may cause lasting damage has been to determine a so-called carrying capacity of a site. Usually, the carrying capacity is expressed in terms of the number of visitors that can visit a given site within a certain timeframe (usually an hour, a day, a month or a year) without causing damage and at the same time also allowing for a certain degree of visitor comfort.

However, factors that go beyond this mere quantitative assessment are usually not considered and should, by no means, be neglected. In Petra’s case, the following aspects must be carefully analyzed:

- The average time a visitor spends inside the PAP: The bottleneck currently is only the zone between the Park Entrance along the Siq and the Treasury up to the Lower Back Gate. In this core area of PAP, visitors spend an estimated 5.25 hours on average (See table 1). For a visit to the Treasury and also for other tours such as to the Monastery, visitors need to walk in and out the Siq. Furthermore, under the present system visitors are invited (by dozens of shops, traders and animal keepers as well as two restaurants) to spend even more time than necessary within the park; this situation – unusual for a site of top international standing – is further prolonging visitors’ time inside the park. A well-designed, well-stocked and well-managed rest/food/shopping area at the PAP’s Exit Gate, as is now customary at virtually all major well-managed sites of equal importance as Petra around the world, is expected to reduce the average time spent by visitors inside the park and is likely to considerably increase the average expenditure per visitor. By reducing the amount of time a visitor spends within the park (and at the same time increasing the quality of the experience), the carrying capacity would be effectively increased. It is possible to accommodate more people without increasing negative impact on the park and, in-turn, increase overall revenue.

**Table 1: Average estimated hours spend in the high-frequency core area of the PAP**

<b>Activities</b>	<b>Estimated hours now</b>	<b>Reduction of hours</b>
Walk in	1.5	1.5
Interpretation/site visit	1	1.2
Shops/Food/Animal activities	1	-
Walk Out	1	-
Petra by Night (3 hours, 10% of the visitors)	0.3	0.3
*) Additional visit to Monastery, etc. (time to walk through Siq, shopping, food, etc. – 3 hours, 15% of the visitors)	0.45	-
<b>Total average visitor hours</b>	<b>5.25</b>	<b>3</b>

*\*) Pls. note: In the future, when visitors want to enter PAP for a second visit, they may enter by bus from the Back Gate at Umm Sayhoun to the Lower Gate*

- The distribution of visitor numbers over the day and over a year: A ticket system with a limited number of “slots” for a maximum number of visitors per hour (e.g. 75 visitors every 5 minutes) will result in a more even distribution of visitors in a given day (as proven successfully at several of the top tourism sites in the world such as Monticello, the Thomas Jefferson home in Charlottesville, Virginia or the Sistine Chapel in Rome). The distribution of visitor numbers over the year is likely to continue to follow strong seasonal fluctuations following seasonal climatic and social patterns, including holiday, festive and vacation schedules. Consequently, cultural and natural resources may experience periods of rejuvenation following seasonal peaks in visitation.
- Other negative effects within and outside of the PAP: The various business activities inside PAP are leading to traffic by trucks and SUVs as well as to the use of Diesel generators that are negatively affecting the site. Most important, however, there is at all times a great number of animals inside the PAP (many of them illegally) that are causing considerable damage from their physical impacts (urine, excrement, hoof damage on roads and paths), particularly to the very fragile stone works.

An “out-of-the-box” idea: as part of a proactive and environmentally conscious strategy PDTRA may consider, without any major loss in revenue, announcing well ahead (at least 1,5 years – so tour operators will have enough time to plan ahead) the closing of its gates for a few weeks with the credibly explained and well-promoted goal “to give the Park and its archaeological treasures time to rest, to relax and recuperate...”. At the same time, the people working inside and outside the PAP may need time to recuperate as well.

The studies undertaken by UNESCO (1994) and US/ICOMOS (1996) as well as the current visitor figures constitute the starting point for calculating the carrying capacity in the context of a balanced and sustainable development path. Before 2010, the annual visitor number had peaked in 2008 at 813,267 persons. The aforementioned studies estimated a carrying capacity of 730,000 to 1,600,000 visitors.

Based on the number of visitors in 2008 and the average time that a visitor spends in the park, the total of yearly visitor hours amounted to almost 4.3 million. As mentioned above, the management of the visitor flow in the PAP is currently not well managed and the visitors are encouraged to spend more time in the PAP than necessary. All of the three scenarios highly recommend in the medium term the reduction of the average time each tourist spends in the core zone of PAP as well as the removal of all animals, shops and restaurants from this area. This is in line with the strategic priority of preserving the park and has no impact on the eco-

conomic value created. Actually, by placing shops and restaurants outside PAP but near the park, business will increase because the shops and restaurants can have longer hours of operation and will be open for non-park visitors as well. Also, the quality of their operations will be improved because they will have to compete with other shops and restaurants in Wadi Musa and elsewhere.

Assuming that the average duration of visitation can be reduced to three hours, this would mean that the number of visitors could be increased to more than 1.4 million without changing the total visitor hours. If protective measures and a professional visitor-flow management system were introduced, the carrying capacity could probably increase by 50% to about 2.1 million visitors. This strategy, however, requires the implementation of the following:

- Removal of shops and restaurants from PAP (and creation of bazaars/Souqs outside the archaeological site with reserved rights for those who currently operate in the park).
- Removal of all animals from the park (and development of alternative products and services by the suggested Destination Management Organization; also the support of private initiatives for alternative services).
- Establishment of a professional visitor-flow management system (including an online-booking facility, pre-booking of time-slots, limiting the hourly number of visitors, etc).
- Regulation and enforcement (monitoring, control, penalties, raising of awareness, etc.)
- Implementation of a one-way system where visitors are picked up from the back road.

Although it may be possible to further raise the number of visitors, we consider that higher visitor figures to conflict with the strategic priority of preserving the PAP (it might, however, be pursued under scenario B). In any case, scenario B also requires a clear zoning of the park and defined buffer zones. In order to politically realize such a scenario, expanded protected areas elsewhere within the PDTRA area could be considered as compensation

**Table 2: Carrying capacity of the PAP**

	Base 2008	0%	25%	50%	100%
Number of visitors	813,267	1,423,217	1,779,022	2,134,826	2,846,435
Average individual visitor hours in the PAP	5.25	3	3	3	3
Average total visitor hours in the PAP	4,269,652	4,269,652	5,337,065	6,404,478	8,539,304

It will be absolutely essential to consult with environmental experts and scientists who are invited to verify or falsify these assumptions and the deducted hypothesis to arrive at a commonly agreed upon, reasonable actual carrying capacity for Petra, defined by a maximum number of human visitor per hour, per month and per year.

From the preservation perspective, the focus must be on reducing the negative impacts of tourism through professional management, strict regulations and enforcement. From the economic perspective, the aim is to effectively utilize carrying capacity and offer tourists a stunning experience. This goal is, however, linked to the preservation of the site and to professional management and interpretation. Thus, preservation and economic value creation are closely interlinked.

The utilization of the carrying capacity, however, can be more difficult than is currently expected. The number of visitors more than doubled since 2006. If one would expect the number to increase at an equal rate over the next four years, the carrying capacity as currently defined would be reached in 2014. However, there is no guarantee that current trends will continue. In the past, the Petra Region also experienced significant reductions in visitor num-

bers (e.g. from 481,000 in 2000 to 159,000 in 2002). In any case, the mentioned carrying capacity will only be reached if the Petra Region attracts investments (particularly in the accommodation sector) and enhances capacities to manage and market the destination as a whole.

# 5 Economic Development Strategy

Economic development needs to be founded on absolute or comparative competitive advantage. The Petra Region has the (rather rare) advantage of a worldwide unique and not imitable resource, the PAP. Hence, the economic development strategy needs to be build around this strength and ask two main questions in order to leverage the economic potential:  
How to strengthen the value created through tourism?  
How to diversify economic activity?

## 5.1 Develop from a tourism attraction to a tourism destination

The answer to the first question lies in a transformation of Petra Region from a mere attraction to a tourism destination. The difference between the two is that currently most tourists come to see the PAP only and leave afterwards. The PAP is the attraction and tourists, in general, don't see the value of staying longer in the region. A tourism destination is a place where tourists go to in order to spend an extended period of time or even their holidays.

A destination, hence, is more than one single attraction. It usually includes a range of services and tourism products that can be experienced in the region. Clearly, the PAP will remain the highlight, the main pulling force for tourists to come to the region. However, in this context, value needs to be added to the **tourists' experience** in order to make it worthwhile staying longer, e.g. through

- The experience of Nabataean and other local cultures;
- The experience of a desert nature;
- The experience with animals;
- The experience of being active in mountain sports;
- The experience of relaxing and recreation in a nice environment, etc.

Given the limited capacities of the PAP, the economic development potential is fairly limited if the average length of stay cannot be increased. The limit, in this case, would be the maximum carrying capacity of the park. An increase in the average length of stay has the effect of multiplying the economic potential. This, in turn, will make the big difference in terms of income generated in hotels and other accommodation facilities as well as the money spent in the region for food, souvenirs, entertainment and activities outside the park.

The vision for the Petra Region, therefore, includes the notion of becoming a "world-class tourism destination". To become a world-class tourism destination, Petra Region still has a quite long and uphill road to take. However, given the uniqueness of the PAP, it is possible. It will require continuous improvement and work on the aspects that make a world-class tourism destination. The progress in achieving this strategic objective can be measured and monitored by the following **indicators**:

- Average length of stay
- Average spending per visitor
- Visitor satisfaction
- Return visitors
- Opinion of professionals (tour operators, travel journalists, UNESCO, consultants, etc.)

## 5.2 Destination Management and Marketing

In order to become a destination, the **visitors' experience** needs to be enhanced by more varied and high quality tourism products and services. New and improved tourism products and services, however, also need to be communicated to the potential tourists (even before they arrive in Petra Region). Tourists usually make their travel plans before they arrive in the country and therefore, they usually decide beforehand how many nights they will stay in a particular location. Hence, in order to exploit its economic potential, Petra Region needs to improve and innovate, which relies on capacities in two key areas:

- **Product Development**
- **Marketing**

One of the main obstacles to turning into a destination is the lack of institutional capacity as well as limited knowledge and experience in the region for quality tourism products and services to develop. Countries in transition are different in this respect compared to the so called "developed world" where tourism has had time to develop over decades; thus learning and the acquisition of knowledge has occurred over a long period of time.

In the Petra Region, the number of visitors has increased dramatically within only a few years. The tourists come because of the greatness of the PAP and the relative intensive national advertising campaign for Petra launched by JTB. Thus, some - for the region still significant - income can be generated without high-quality services. However, this relatively 'easy money' can distort the perception and attitudes in a way to hinder innovation and the development of more diverse and attractive tourism offers (see e.g. section 2.6.2 in the diagnostic report).

Therefore, it is unlikely that the Petra Region will become a destination without public intervention to facilitate product development and marketing. Actually, even the well-developed tourism destinations have usually created an organizational and institutional structure in order to support product development and marketing, usually called **Destination Management Organization**. The establishment of a product and marketing support infrastructure will be crucial to:

- Develop new tourism products and services (e.g. Animal Park; Bedouin Festival; trails in the region for hiking, riding, trekking; interpretation centers; etc. see section 6.2 for possible products)
- Establish cooperation with private actors in order to initiate and operate new tourism products
- Build partnerships with different stakeholders in the region (e.g. communities, associations, university, educational facilities, NGOs, etc.)
- Marketing of the region as a destination (including but not only the PAP) in advance. The variety of products and attraction in the Petra Region needs to be communicated in advance to tourists using different tools and channels such as Internet, journalists, work with tour operators, PR, advertising, etc.
- Create a local marketing platform for regional tourism products and services in order to inspire tourists to new experiences, i.e. additional services and products in the region.

The above tasks are different to the usual responsibilities of public administrations, the many important tasks of which are shown below:

- To assist national authorities in the implementation of the tourism policy;
- To Exercise control over and monitor the delivery of tourism services in the region in order to ensure adequate quality levels and safety;

- To issue building permits and licenses for setting-up business activities;
- To provide for the Tourism Region a long-term policy for the sustainable development of tourism, which is to be implemented in accordance with the National strategy and according to local tourism resources and needs;
- To lead and participate in the work of the Advisory Council of the Tourism Destination Management Organization (DMO) for the Petra Region;
- To decide on all zoning issues, specially those regarding tourism development, within the Region and to register the tourist sites located on the territory of the region
- To participate with its own representatives in the Regional Expert Committee for the categorization of tourist sites;
- To create and maintain current records of the categorization of tourist sites located on the territory of PDTRA;
- To certify on a monthly basis declarations of the tourism register and to collect the tourist tax to be levied in successful tourism destinations;
- To assist in the maintenance and conservation of natural and cultural-historic sites on the territory of the Petra Region.

In most countries with a successful and thriving inbound tourism industry this separation of tourism administration and tourism product-development & marketing has already been successfully implemented. The latter were established on the basis of Public Private Partnership models with Tourism offices formed as Limited Liability stock companies with the public bodies (State or Municipalities) as the majority – in many cases even the sole – shareholders. Quite often private business has been invited to become (minority-) shareholders in order to develop in the true sense of the word a ‘sense of ownership for the common cause of developing and marketing the destination.

The Jordan Tourism Board (JTB) is a typical example for that trend and was officially launched in March 1998 as an independent, public – private sector partnership committed to utilize marketing strategies to brand, position and promote the Jordan tourism product as the destination of choice in the international markets. At the same time the highly important tasks of shaping and executing tourism policy remained with the Ministry of Antiquities and Tourism. In order not to create yet another independent institution, it may be considered to install the newly to be created Petra-DMO under the ‘umbrella’ of JTB (e.g. as semi-independent branch of JTB in Petra that will be also responsible for the development of new tourism products).

Whereas in highly developed tourism destinations such organizations deal primarily with the task of marketing the destinations (in these cases they are often called Destination Marketing Organizations), in a case like Petra, where the transition from “Attraction to Destination” is still in process, however, DMO needs to stand for **Destination Management Organization**, which will include both important functions of product development and marketing. Destination Management, including product development and marketing for regional tourism services and products cannot be efficiently done on a national scale. The JTB’s task would be to attract tourists to Jordan (naturally using Petra as main attraction). The role of the regional DMO would be to inspire tourists to stay longer in the Petra Region (i.e. communicate that Petra is not only an attraction but a destination in itself).

The public administration’s crucial and highly important tasks of shaping tourism related policies and creating the framework conditions and guidelines that will facilitate the development of a market oriented tourism industry should be left to the PTDRA administration and their high-ranking civil servants. Therefore, it is recommended that a strong Tourism Division

should be maintained within PDTRA, which deals with tourism policy as well as with working on the clearly described administrative tasks necessary for any well functioning destination.

### 5.2.1 Concept of tourism areas with varying intensity

Currently, Petra Region faces the problem of increasing negative agglomeration and congestion effects in Wadi Musa, where the entrance to the park is located. This also affects negatively the experience of tourists and the quality of life of the local residents. In contrast, the other communities have very limited benefit of tourism development and experience tourists rushing through their villages in busses and spending (even their limited) money in Wadi Musa.

In order to absorb the tourism flow without negative environmental and social consequences, significant investments are required both in general as well as in a tourism specific infrastructure. The costs for these investments are clearly constraining the development options and the available funds have to be used in the most efficient and effective manner.

There is a dominant wish of the local population to increase income and job opportunities while there is also an apprehension of social risks of tourism inflows. In general, it can be noted that a majority of the local population values contact with tourists. However, it will be important to also reserve spaces for privacy, where locals find shelter from the direct impact of tourism.

To address the manifold constraints and objectives that relate to the long-term vision of becoming a world-class tourism destination, the concept of high intensity and low intensity tourism areas is recommended. While tourism is happening to a certain degree in almost the whole of Petra Region, this concept means that most of the tourism activities should be concentrated in defined areas. The communities might even agree on some tourism-free zones, i.e. an area where no accommodation facilities and other tourism products are offered.

Rationale	High Intensity Tourism Area	Low Intensity Tourism Area
Economic function	Opportunities for entrepreneurial activities and jobs for people from the whole region and even from outside.	Opportunities for entrepreneurial activities and jobs for people mainly from the specific community.
Social function	Large number of tourists shall be provided with high quality services, entertainment and experiences without intrusion into the life of the residents (except locals that choose to come themselves)	In this zone, a more qualitative interaction between local residents and tourists is possible through activities such as hiking, riding, camping etc. Clearly, the number of tourists must be constrained as otherwise the social and family life of the local population may suffer.
Attractions	Number and diversity of shops, restaurants, bars for a large number of tourists and locals, museums and other attractions as well as a delightful, attractive public space and gardens (without congestion, noise, pollution)	Experience of a more traditional lifestyle and activities linked to nature, animals, sport and spiritual experiences. Capacity for "smaller numbers" of tourists and locals



Accommodation	The bulk of accommodation facilities are provided in this area, including large hotels	Alternative accommodation facilities are provided in this area, including boutique hotels and guesthouses
Investment	The main share of large-scale (foreign) investments should happen in this area; local investments can equally happen, will, however, be constrained by the large investment cost to be financed.	Encouragement of smaller-scale investments with a strong emphasis on encouraging investments primarily from inhabitants of the Petra Region.
Transport	Frequent and regular public transport needs to ensure a smooth flow of visitors as well as the possibility to travel to work for residents from all communities of the Petra Region. In addition, there needs to be an area with restricted transport in the core in order to create the required ambience and quality of experience. Sufficient parking capacities at the entrance to the Petra Region (not at the PAP!) need to be provided.	A public transport bus system shall connect the low intensive tourism areas with the center; both for visitors to reach the attractions as well as for residents to be connected to the center. Overcrowding by car and bus traffic is not accepted. Busses and cars must not create negative effects by rushing through villages, to be enforced by strict speed limits, road adjustments, etc.)
Infrastructure	The basic infrastructure for dense tourism development as well as for an enjoyable public space needs to be put in place and will be a precondition for larger-scale investments that will bring the character of a "destination" to the area.	Necessary investments will go hand in hand with covering the basic infrastructure and public services needs of the local residents. Only some limited additional public infrastructure investments are required

The alternative to the concept as described above would be the development of so-called 'touristic islands', a concept that is primarily used in developing countries with a very low level of development. Such 'touristic islands' are major hotel or resort complexes that provide all the services for the tourist they may need. The tourists spend most of the time and money within these complexes or for services organized through these providers. Such a development is common in transition or developing countries because of lacking capacities to provide adequate services, tourism products and marketing in the region. Hence, in order to provide for the ambience and experience that are expected by many holidaymakers, the services and products have to be secured by or within such hotel or resort complexes. Such a development also leads to usually very low-paid jobs as the only benefit to the region, whereas the main value generated through such tourism investments remains with the investor (i.e. the profit). The described 'touristic islands' have a rather limited impact on regional value creation.

Hence, the described concept of high intensity and low intensity tourism areas aims at developing a system where international and local providers of accommodation facilities, tourism products and other services can interact and benefit mutually. The high intensity tourism area will create the required "local market" for a diversity of shops, restaurants, bars and attractions. Local people (from the entire Petra Region) can develop these different businesses that will be attractive to tourists who may stay in internationally as well as locally owned hotels.

Tourists usually appreciate the opportunity to go out (of the hotel complex) and enjoy a variety of offers, if safety, cleanness, hygiene, ambience, quality, etc. are satisfactory.

The development of high-intensity tourism areas will be very beneficial to the development of the character of a destination, creation of job and income opportunities for the local population and will attract investments. Entrepreneurial activities shall be open to all, based on merit and business success.

The development of low-intensity tourism areas will complement the tourism offer with products and attractions that require only small-scale investments and can therefore be implemented by residents. Residents can participate in tourism development without suffering a heavy impact on their social and family life.

### 5.3 Economic diversification

The economy of the Petra Region had traditionally relied on agriculture. However, the importance of agriculture has diminished compared to tourism because of the higher income prospects in tourism and the increasingly difficult climatic conditions for agriculture. Besides tourism and agriculture, public services, including the military, are main employers. Some jobs are provided in handicraft, construction and service industries. The main growth driver over the last years has been tourism. However, also agriculture and pastoral farming have an important tourism - and social - dimension since they preserve the indigenous local cultures.

Tourism leads to positive effects for the whole population: especially infrastructure and public services are provided that are the basis for a good quality of life and economic development opportunities. However, not everybody is suitable or willing to work in tourism. Also, tourism in Jordan has fluctuated because of external reasons such as political insecurity in the region or larger macro-economic developments.

Therefore, economic diversification would reduce the dependency on tourism and would offer a larger range of job opportunities. However, economic diversification cannot be "ordered" from top down but needs to rely on businesses that are competitive, i.e. that are capable to sell their products because of a higher product quality, service quality, cheaper prices, better adaptation to customers' needs etc.

While policy cannot determine the future development, it can create favorable conditions for the development of competitive industries. Competitive advantage usually requires a specialization in one or in related sectors, i.e. the development of clusters. Specialization means:

- The existence of a **labor force** with skills and competences in a specific field;
- The existence of **educational facilities** and courses targeted on these skills;
- The existence of **research and development** capacities in related technological fields;
- The existence of specialized **suppliers** for a certain industry;
- The existence of **supporting industries** and supporting structures for these industries (e.g. consulting companies, planning companies, marketing agencies, etc.);
- The existence of **demand** in the specific sector in the region;
- The existence of **natural resources** relevant for a specific sector;
- The existence of appropriate **infrastructure** for this sector; and
- The existence of a favorable **institutional and regulatory environment**.

The above-mentioned factors are interlinked so that an elaborated, well-functioning and region-specific production system can be developed. The combination of these specific and specialized factors to a production system creates a unique situation in the region that cannot easily be copied. This uniqueness coupled with the difficulty to transfer the competencies or copy them are the main reason why some regions become more competitive than others.

Based on the diagnostics report, there are a number of sectors that deserve consideration for economic diversification in the Petra region:

### 5.3.1 Agriculture and food processing

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Traditional industry, some knowledge and affinity for agriculture</li> <li>• A sector that creates employment opportunities for women</li> <li>• High demand because of population growth and tourism industry. The tourism industry applies high standards in terms of quality and reliability</li> <li>• Low labor cost</li> </ul>	<ul style="list-style-type: none"> <li>• Labor intensive, low-technology production capacities (lack of availability of modern agricultural machinery)</li> <li>• Lack of maintenance facilities for modern agricultural machinery</li> <li>• Limited knowledge in more sophisticated agricultural technologies</li> <li>• Scarcity of water has become an increasing problem</li> <li>• Lacking regulations lead to environmental problems such as overgrazing</li> <li>• Lack of competences to create “special” products, branding and marketing</li> <li>• Use of species/seedlings not ideally adapted to natural conditions in the Petra Region</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Higher food prices because of demand created from tourism (hotels, restaurants, etc.)</li> <li>• Potential to sell high priced “specialties” from Petra region (Nabataean products), organic farming, etc.</li> <li>• Develop food processing capacities</li> <li>• Explore crops/species more suitable for the natural conditions in Petra Region</li> <li>• Potential to show traditional production methods (workshops) to tourists</li> <li>• Because of the strategic (tourism) importance of Petra Region, Jordan might provide for water supply through national projects (e.g. Red to dead canal or through introducing intensified water-harvesting methods)</li> <li>• Agriculture contributes to preserving “cultural landscape” and “traditional lifestyles” with intrinsic and touristic value</li> <li>• Agriculture combined with research in water harvesting, irrigation and production technology in arid regions (Nabataean tradition) could lead to an upgrading of the sector; there is demand for this technology that could be exported</li> <li>• Agricultural production increases the</li> </ul>	<ul style="list-style-type: none"> <li>• Aridity of the land: over the last decades the annual precipitation has decreased and might decrease further, falling ground water levels,</li> <li>• Increased de-vegetation, soil erosion and risk of flooding due to over-grazing</li> <li>• International competition: Reliability, “standard” quality and lower cost of national and international suppliers have to be achieved</li> <li>• Brain drain and “workers” drain from agriculture to tourism because of perceived higher income opportunity and ease of work</li> <li>• Unclear land-use and landownership situation, “inherited” land-use rights</li> </ul>

autonomy of the region	
------------------------	--

### 5.3.2 Handicraft and local production

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• High demand from tourists on the site</li> <li>• Some local associations producing original handicraft are already existing</li> <li>• The interest from women of most communities to be more involved in this sector</li> </ul>	<ul style="list-style-type: none"> <li>• Limited, labor intensive and low-technology production capacity</li> <li>• Limited understanding of “chic products fancied” by tourists and of the characteristics of high quality “authentic” souvenirs</li> <li>• Related to the above, products are relatively expensive and/or of inferior quality</li> <li>• Very low variety of sold products, standard products are imported and sold everywhere</li> <li>• Limited understanding/awareness of the value of doing things differently/innovate</li> <li>• Low skills in branding and marketing of local products</li> <li>• No strategically well-located selling points</li> <li>• Strong competition which cheap products manufactured in India and China</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Develop higher quality and higher priced souvenirs</li> <li>• Define as a condition for the (new) shops to also (only) sell souvenirs produced in the region; e.g. a certain percentage of the shop floor must be dedicated to local products (that would create demand – a strong push from shop-owners to create a supply of high quality souvenirs in the region)</li> <li>• Points of sale for well-designed and high quality souvenirs (together with branding) can be nationwide</li> <li>• Based on upgraded handicraft production, quality local production in related “fashion” fields can develop (textiles, woodwork/furniture, leather, etc.)</li> <li>• Establishment of a design school / institute for innovative local production</li> </ul>	<ul style="list-style-type: none"> <li>• International competition; imports of cheap products/souvenirs from India and China hamper the development of local production</li> <li>• Protectionist behavior of shop owners and associations in the region constrains innovative and entrepreneurial behavior to produce unique and genuine goods</li> </ul>

### 5.3.3 Medicinal herbs

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Knowledge about the use of traditional medicinal herbs is part of the Bedu-culture, which is still preserved in some communities of the region</li> <li>• Unique flora of the region includes herbs and plants, which are said to have strong medicinal effects</li> <li>• Local population is interested in sharing their unique knowledge</li> <li>• Bedu culture has been designed as In-</li> </ul>	<ul style="list-style-type: none"> <li>• Besides some sages, no exploitation of medicinal herbs or production facilities exist in the region</li> <li>• Laboratories are not available in Petra Region</li> <li>• Limited knowledge about how to develop this sector commercially</li> <li>• Lack in venture capital to develop new products from medicinal herbs</li> <li>• Limited awareness about the importance</li> </ul>

tangible Heritage by UNESCO, is therefore already recognized as being unique	of cultivating and preserving the ecosystems for the medicinal herbs
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• If it takes off, medicinal herbs can be the source for high-value production</li> <li>• An opportunity would be to search for international investors in this field and allow a joint-venture for exploring the potential of medicinal herbs</li> <li>• Create a regional field of expertise in the use of traditional medicine also at research level e.g. setting up a specific research centre at the AHU</li> <li>• Use the UNESCO nomination of the Bedu culture as intangible heritage for marketing and attracting funds for research activities</li> <li>• Use and cultivation of medicinal herbs and traditional application of such may be of interest to tourists; thus creating positive spill over effects for the tourism industry (e.g. creating something similar to Ayurveda tourism in South-India)</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental hazards and climate change might destroy the required ecosystems for medicinal herbs</li> <li>• Traditional knowledge of the older generation people about the effects of medicinal herbs may soon get lost</li> <li>• If not carefully controlled some false “medical herbs” recipes might appear, which are not linked to any traditional knowledge and have no medicinal effect</li> <li>• By “cheaply” selling a license, most of the value might be created outside the region</li> <li>• If not re-cultivated, the plants used for the medicinal products might disappear and further endanger already threatened species</li> </ul>

In general, it should be clear that whatever the policy decisions in future are, it is advised that each decision is investigated also from the perspective of how specific knowledge can be created in the region and how knowledge spillovers might be created (i.e. that the knowledge does not stay within the doors of the foreign owned company run by foreign managers). Knowledge is the key factor for medium- and long-run development.

## 6 Development guidelines and regulations

### 6.1 Investment Promotion

Private investment should concentrate on the most competitive sectors in Petra Region, i.e. tourism and related industries. Private investment is required to increase the quantity and quality of accommodation facilities as well as to enhance the tourism offerings and the provision of supplies and other inputs in the tourism economy. Private investments can come from regional or extra-regional sources (including foreign investments).

#### 6.1.1 Provide small-scale investment opportunities

Regional private investments offer some advantages over extra-regional ones:

- **Enhancement of regional value creation:** According to our interviews, locally owned hotels and businesses purchase more products from the region than internationally owned businesses. Furthermore, business profits will largely be used in the region either to expand the business or for the private consumption of the owner.
- **Increased support for and acceptance of tourism / economic development:** Higher involvement and financial gain will lead to a higher acceptance. Based on the interviews, many disapprove of hotel development without integration into the regional value chain. Too often, tourism development merely provides low paid jobs for locals and intrudes into the local culture.
- **Development of a business culture and regional knowledge base in tourism:** The development of successful tourism businesses by local entrepreneurs will lead to financial gains and higher respect within the local community. In the medium-term and long-term it is equally important that this process strengthens the regional knowledge base in tourism-related areas, which is the basis for developing innovative products, processes, marketing strategies and organizations, etc.

Today, there are already a number of successful local businesses in the Petra Region, with Wadi Musa representing the main center for economic activities. Overall, however, regional private investments are constrained by:

- Limited potential to finance large-scale investments in the short-term (such as larger hotels and significant tourism infrastructure)
- Limited understanding of marketing
- Limited awareness of business opportunities
- Limited understanding about the wants and needs of international tourists
- Limited experience in meeting required/desired quality standards
- Lack of necessary competencies and skills

Therefore, in order to foster economic participation and entrepreneurship of local people, we suggest the development of small-scale investment opportunities. Currently, mainly medium-sized and some larger hotels provide accommodation facilities in Petra Region. The creation of private accommodation facilities such as guesthouses and/or small-scale “boutique” hotels has not been a priority to date. Such facilities would require a lower level of initial capital and management skills than large hotels. Hence, the entry barrier for entrepreneurial activities is relatively low. However, the following preconditions need to be satisfied:

- The establishment of land-use and building regulations for this segment

- Regulation of business licenses linked to a classification system (for comfort, outside appearance, cleanliness, safety, etc.)
- Monitoring and control systems
- Organization of marketing for these facilities (see section 5.2)

The development of private / guesthouse accommodation facilities needs to be linked with a licensing and quality control system. In order to receive a license, the private / guesthouse accommodation facilities will need to fulfill clearly defined criteria. After meeting the set criteria, the private / guesthouse accommodation facilities should be marketed by the DMO (see section 5.2 on destination marketing) using a shared web-portal and should be promoted to Tour Operators. Therefore, quality control and marketing are both fundamental to such an initiative. Tourists and tour operators will only consider such an option if the quality can be ensured and if they are informed about such an initiative. The defined criteria should include outside appearance as well as the comfort and cleanliness of the establishment. Different categories could be established to provide more choices in accommodation types to tourists based on their priorities and budgets.

A possible alternative for local investors may involve developing smaller but higher-end boutique hotels. In Damascus, this segment has developed well recently. This segment could be very attractive for individual travelers who might not want to mix with large crowds from tour buses, which is a common scenario currently in the Petra Region. Most if not all of the existing five-star hotels in Petra would be considered four star by international comparisons.

The opportunity to earn money coupled with the quality criteria will create an incentive for owners of local buildings to upgrade their houses, which will lead to an improvement of the appearance of the whole area. A further advantage of this option is that the benefits of tourism can be spread more evenly throughout the region and that there will be opportunities for many more people to engage as “entrepreneurs” in tourism. In successful cases, these entrepreneurs will then try to expand their businesses, which will initiate a virtuous circle of success.

In order to start this activity, the PDTRA / Government (possibly in collaboration with international donors) could provide incentives to upgrade the quality of (potential) private accommodation facilities, guesthouse and small-scale hotels in the form of subsidized loans, microfinance instruments or small grants be made available for all communities in the region. Investment support should be restricted to specific criteria addressing outside appearance, environmental issues (e.g. water consumption), comfort and/or needs of market segments with growth potential.

### **6.1.2 Promoting national and foreign direct investments**

While endogenous growth and investments from Petra Region should be supported, national and foreign direct investment (FDI) will also play a role in financing larger tourism projects such as major hotels, thus increasing the supply of tourism accommodation. The increase in supply of tourism accommodation might also force hoteliers to be increasingly innovative in prolonging the stay of tourists in order to achieve increased occupation rates. In this regard, a co-operation with local tour operators and service providers to increase the variety of attractions and activities would enhance regional value creation.

International groups/companies have a good awareness of required service standards and expected quality levels. According to statistics, the four- and five- star hotels (that are owned

by international groups) have better occupancy rates than the three-star hotels. They link the local market with international demand and trends. Also, to some extent, they set the benchmarks for the local business community. Thus, out of self-interest, the locally owned hotels will be interested in learning why these hotels enjoy higher occupancy rates and higher average prices.

Many observers have overlooked however, the fact that superior market access, in addition to service quality, leads to higher occupancy rates. A well-known and established brand facilitates market access (i.e. strengthens the ability to sell rooms directly to travelers) enables a benefit from the group's Internet booking facilities or increased bargaining power with tour operators. Also, the brand suggests the traveler-specific quality levels in terms of comfort, hygiene and service.

In order to attract large-scale investments, a stable regulatory environment and conditions must be established to allow for profitable investments. Particular measures to be addressed include the clarification of landownership rights and allowing a higher site coverage ratio than the current twenty-five percent maximum. Also, the location for such investments will require careful consideration. The recommendations in terms of land-use are addressed in Section 5.5. In general, it is assumed that the Petra Region is attractive enough for foreign direct investments (FDI) in tourism even without providing tax exemptions or incentives as long as the region establishes a transparent institutional framework.

The population of the Petra Region would benefit most from national and foreign direct investments if these investments were integrated with the local value chains. Larger private investments usually involve a negotiation process with a given municipality. If public land is sold / rented to potential investors, preference should be given to investors with an intention to vitalize the local production, goods and services benefitting the Petra Region as much as possible.

### **6.1.3 Quantitative and qualitative demand for accommodation**

In Section 4, three development scenarios were described based on the carrying capacities of the PAP. Scenario A prioritizes preservation and would limit the total visitor hours in the park to the maximum amount reached in 2008. Scenario B prioritizes economic development over preservation and in theory maximizes the number of visitors. Scenario C describes a balanced and sustainable development path. As mentioned in Section 4, in order to increase economic value creation and at the same time strengthen the preservation of the PAP, it will be necessary to undertake strong organizational measures within the PAP itself. However, if such measures are taken, the carrying capacity of the PAP is estimated to be approximately 2.1 million people without damaging the site.

In order to enable 2.1 million visitors to see the PAP, investments in accommodation facilities are required. Table 2 estimates the required accommodation facilities assuming that the overall structure of tourism in Petra Region does not change. The base for the calculations is 2008 with a total visitor number of 813,267. The scenarios have already been described in Section 4. Currently, there are about 4,000 beds and 2,100 rooms in the Petra Region. According to MOTA statistics the occupancy rate was 51.7% in the Petra Region in 2008 (based on total available beds). Statistics in relation to the length of stay and the percentage of visitors to the PAP who stay at least one night in a hotel are not available. However, given the total visitor number and the occupancy rate of 51.7%, it is a plausible scenario that about 77% stay overnight and that the average length of stay is 1.2 nights. Given that this overall



structure (i.e. length of stay, occupancy rate, percentage of overnight visitors) does not change, the required accommodation facilities would include 3,684 rooms for Scenario A, more than 7,000 rooms for Scenario B and 4,605 to 5,526 rooms for Scenario C Table 3).

**Table 3: Base model: Accommodation capacity calculation**

	Base	Scenario A	Scenario B	Scenario C low	Scenario C high
Average total visitor hours in the PAP	4,269,652	4,269,652	8,539,304	5,337,065	6,404,478
Increase in visitor hours	0%	0%	100%	25%	50%
Average individual visitor hours in the PAP	5.25	3	3	3	3
Number of visitors	813,267	1,423,217	2,846,435	1,779,022	2,134,826
Accommodation/Bed Capacity	4,000	7,000	14,000	8,750	10,500
Number of rooms (1.9 beds per room)	2,105	3,684	7,368	4,605	5,526
Percentage of overnight visitors	77.3%	77.3%	77.3%	77.3%	77.3%
Overnight visitors	629,017	1,100,779	2,201,558	1,375,974	1,651,169
Average length of stay in Region (in days)	1.2	1.2	1.2	1.2	1.2
Overnights	754,820	1,320,935	2,641,870	1,651,169	1,981,403
<b>Average Occupancy (Beds)</b>	<b>51.7%</b>	<b>51.7%</b>	<b>51.7%</b>	<b>51.7%</b>	<b>51.7%</b>

The following tables show what happens to the average occupancy rate if the Petra Region manages to improve the structure of tourism activities through targeted intervention, i.e. to increase the length of stay or to increase the percentage of visitors that stay overnight. Table 4 illustrates the effects of an increase in the average length of stay in the region of overnight visitors to 1.7 nights. In this case (comparing Tables 3 and 4) the occupancy rate increases dramatically from 51.7% to 73.2%. The number of overnights would increase even in Scenario A from approximately 1.1 million to approximately 1.9 million. In comparison, without changing the structure of tourism activities, it will be relatively hard to top this figure under Scenario C (estimates in the base model are between 1,652 thousand and 1,981 thousand).

**Table 4: Effects of increase in length of stay on occupancy rate**

	Base	Scenario A	Scenario B	Scenario C low	Scenario C high
Average total visitor hours in the PAP	4,269,652	4,269,652	8,539,304	5,337,065	6,404,478
Increase in visitor hours	0%	0%	100%	25%	50%
Average individual visitor hours in PAP	5.25	3	3	3	3
Number of visitors	813,267	1,423,217	2,846,435	1,779,022	2,134,826
Accommodation/Bed Capacity	4,000	7,000	14,000	8,750	10,500
Number of rooms (1.9 beds per room)	2,105	3,684	7,368	4,605	5,526
Percentage of overnight visitors	77.3%	77.3%	77.3%	77.3%	77.3%
Overnight visitors	629,017	1,100,779	2,201,558	1,375,974	1,651,169
Average length of stay in Region (in days)	1.2	1.7	1.7	1.7	1.7
Overnights	754,820	1,871,325	3,742,649	2,339,156	2,806,987
<b>Average Occupancy (Beds)</b>	<b>51.7%</b>	<b>73.2%</b>	<b>73.2%</b>	<b>73.2%</b>	<b>73.2%</b>

In comparison, Table 5 shows how the average occupancy rate changes if the percentage of the PAP visitors who stay at least one night in Petra Region could be increased. In the model, the percentage was increased from 77% to 85%, which leads to an increase of the occupancy rate from 51.7% to 56.8%. The number of overnight stays would increase in Scenario A by approximately 130,000 in Scenario B by approximately 261,000 and in Scenario C by between 163,000 and 196,000 compared to the base model presented in table 3. Hence, the effect of increasing the number of overnight visitors further has less potential than enhancing

the length of stay. Both adaptations of the model, however, show that the Petra Region would do well in strengthening and increasing the variety of tourism products and marketing the region as a destination that offers much more than “only” the PAP. If the Petra Region succeeds in doing so, both the length of stay and the percentage of overnight visitors will increase, which can have an even more important positive impact than just allowing a higher number of visitors into the park.

**Table 5: Effects of increase in percentage of overnight visitors**

	Base	Scenario A	Scenario B	Scenario C low	Scenario high
Average total visitor hours in the PAP	4,269,652	4,269,652	8,539,304	5,337,065	6,404,478
Increase in visitor hours	0%	0%	100%	25%	50%
Average individual visitor hours in the PAP	5.25	3	3	3	3
Number of visitors	813,267	1,423,217	2,846,435	1,779,022	2,134,826
Accommodation/Bed Capacity	4,000	7,000	14,000	8,750	10,500
Number of rooms (1.9 beds per room)	2,105	3,684	7,368	4,605	5,526
Percentage of overnight visitors	77.3%	85.0%	85.0%	85.0%	85.0%
Overnight visitors	629,017	1,209,735	2,419,469	1,512,168	1,814,602
Average length of stay in Region (in days)	1.2	1.2	1.2	1.2	1.2
Overnights	754,820	1,451,682	2,903,363	1,814,602	2,177,522
Average Occupancy (Beds)	51.7%	56.8%	56.8%	56.8%	56.8%

The occupancy statistics of MOTA in 2009 illustrate that the five star hotels achieve the highest occupancy rates followed by three- and four-star hotels (see Graph 1). In addition, five-star hotels offer the largest number of beds (1,381) followed by three-star hotels (956) and four-star hotels (455). However, compared to international standards, some (if not all) of the five-star hotels would be more appropriately classified as four-star hotels (see Table 6). Overall, we suggest that the region invest in the three segments in roughly equal proportions. In addition, the Petra Region has unrealized potential in developing alternative accommodation facilities such as camping guesthouse and private accommodations. Table 6 also shows that most of employees working in the hotels are male Jordanians and that only very few women are working in the sector.

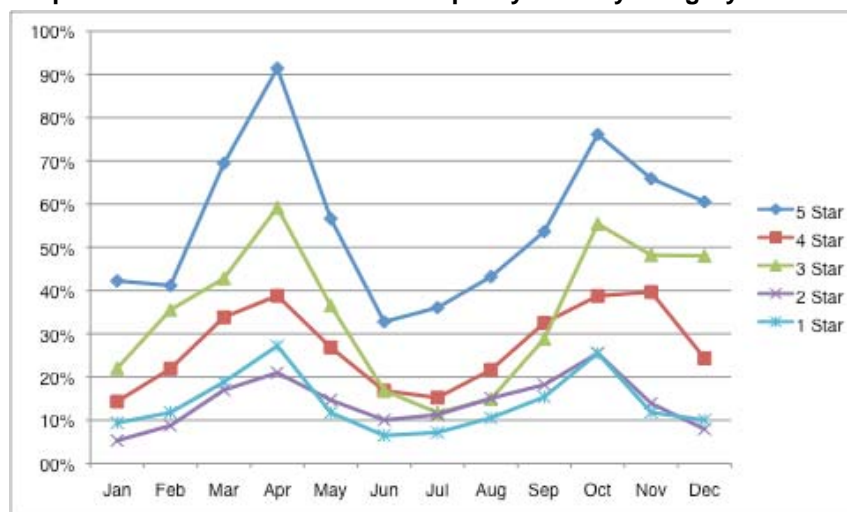
The five-star hotels can be considered as the “flagships” of the region and will require knowledge from outside the region in terms of professional management and operations. The other segments can, however, be developed primarily with knowledge and resources from within the region, which would have a very direct effect on the income and wealth of the region.

**Table 6: Accommodation facilities and number of employees in Petra Region**

Petra	No. of Hotels	Suites	Rooms	Beds	Jordanian employees		Non-Jordanian employees		Total
					M	F	M	F	
Five Stars	6	70	760	1,381	604	15	21	4	644
Four Stars	2	8	234	455	119	0	2	0	121
Three Stars	7	1	504	956	184	6	53	1	244
Two Stars	2	0	109	224	14	0	3	0	17
One Star	7	0	212	419	37	3	6	0	46
Camping	2		50	90	9	0	0	0	9
<b>TOTAL</b>	<b>26</b>	<b>79</b>	<b>1,869</b>	<b>3,525</b>	<b>967</b>	<b>24</b>	<b>85</b>	<b>5</b>	<b>1,081</b>
Unclassified Hotels	14	0	233	484	34	5	10	0	49
<b>Total Petra</b>	<b>40</b>	<b>79</b>	<b>2,102</b>	<b>4,009</b>	<b>1,001</b>	<b>29</b>	<b>95</b>	<b>5</b>	<b>1,130</b>

*MOTA 2010*

**Graph 1: Accommodation occupancy rates by category in 2009**



*MOTA*

## 6.2 Destination Management & Marketing

It has become a state-of-the-art procedure in all successful tourism destinations around the world to strictly separate the **political functions** needed for successful tourism development and the **management functions** that comprise the important tasks of Product Development and Marketing.

A wide range of important administrative and policy functions are much better performed by public administrations rather than by outsourced promotion agencies. Therefore, we recommend that PDTRA maintain its administration-oriented Department of Tourism and Investment. There are a number of important functions that this department should fulfill:

- Shaping, recommending and overseeing tourism policy in the Petra Region
- Representing the interests of the tourism industry in all matters regarding land-use planning and zoning

- Acting as a liaison for all tourism-related matters between public authorities and local tourism stakeholders
- Responsibility for setting and maintaining clear and acceptable quality standards, such as classification of hotels, restaurants and other tourism enterprises
- Interpreting important statistics regarding the performance of tourism in the region
- Other responsibilities may be added as need arises

As far as the functions of product development and marketing are concerned, an efficient and strictly service-oriented Destination Management Organization (DMO) is recommended for the Petra Region, as most successful tourism destinations now use state of the art DMO's. A DMO that should be independent to the widest degree possible should be responsible for making sure that tourism in Petra is performed at the highest possible level. Responsible product development and marketing are the core objectives of the DMO, which needs to be effectively managed by a qualified team of well-educated, well-trained and well-paid experts, preferably with good experience in top international tourism organizations and enterprises.

The Petra Archaeological Park belongs to the globally recognized top tier of UNESCO World Heritage Sites, which has a powerful potential brand value with an internationally approved mark of distinction. It entirely depends on the declared World Heritage site whether it uses this opportunity or not and takes advantage of this distinction.

UNESCO has recognized the creation of Destination Management Organizations (DMO's) as a suitable structure for World Heritage sites to show their commitment to sustainable regional development. The creation of a DMO would help to produce a powerful network effect, which ultimately lets all sites and adjacent communities benefit.

UNESCO is citing numerous examples in many parts of the world (predominantly Western Europe and Canada) where the World Heritage status is serving as an economic catalyst for whole regions and where World Heritage designation has become a driving force for socio-economic development. Thus, the designation of Petra as UNESCO World Heritage offers opportunities for the whole region that are – according to UNESCO's World Heritage Center – best realized through the creation of a DMO.

### **6.2.1 Creation of a DMO – Destination Management Organization**

A business- and market-oriented unit that is structured like a private business, even though it may be, at least partly, integrated into and funded by the public domain, best performs the clearly marketing-oriented tasks of a tourism destination. UNWTO, the United Nations World Tourism Organization, favors the creation of such a DMO to be staffed by well-trained specialists that concentrate solely on the performance of the tasks of managing and marketing all the relevant sites of a tourism destination.

Hence, we suggest the establishment of a **Destination Management Organization (DMO)** as an entity that will be responsible for all activities in the region related to destination management and marketing.

There are two different options for the structure of such a DMO:

- To have it fully controlled by PDTRA through the creation of a subsidiary company or a public body;
- To set up an association with different members involved in the field of tourism in the Petra region (e.g. PDTRA, business sector, communities).

Due to the national importance of Petra (both in terms of identity as well as economic development), we suggest that PDTRA should have **full control** of the DMO. However, as the efficiency and effectiveness of the DMO will also depend upon the cooperation with the business sector and the communities, it is suggested that they (the business sector and the communities) have a say in the nomination of the DMO's management as well as the approval of the development and marketing plans. The DMO shall service the whole region and provide support and marketing for entrepreneurs and associations from all communities, tribes and families.

The proposed **financing** of the suggested DMO is based on the fact that all businesses in the Petra Region benefit from tourism either directly or indirectly. However, the individual businesses have only very limited resources to conduct effective marketing, which would allow them to attract more tourists to use their services and thereby stay longer in the region. Hence, it appears legitimate to request that all businesses contribute to the destination marketing efforts. This arrangement is frequently implemented by a tourism tax that is defined as a percentage of revenues. The percentage shall be higher for businesses directly involved in tourism (e.g. hotels) than for businesses, which only receive indirect benefits from tourism (e.g. a local carpenter or other suppliers of good and services to the tourism industry). We furthermore suggest that the contributions of the business community be matched with funds from PDTRA.

The management and operation of the DMO requires continuity and therefore, the Chief Executive Officer (CEO) shall be employed for a term of at least four or five years. The CEO will receive strategic objectives from which he will develop a tourism development plan for his term and annual marketing plans, including budgets, concrete activities and outputs, and measurable indicators etc. Both plans must be approved by the PDTRA (and potentially the other members of the association). The executive power shall reside with the CEO, who will report to the PDTRA (and potentially other members of the association).

A DMO is "to lead and coordinate all tourism-related activities under a coherent strategy." It does not control the activities of all partners but brings together resources and expertise and has a degree of independence and objectivity to lead the way forward. Having initially undertaken marketing activities only, DMO's are now becoming strategic leaders in the entire process of destination development and management.

### **6.2.2 DMO as Product Development Organization**

One important task of the DMO will involve **product development**. In line with the need to develop a sensible and sustainable tourism product and tourism marketing strategy that will not merely promote Petra for the purpose of increasing numbers of visitors, the creation of attractions outside of the PAP must be a high priority. The planning of such attractions must be market driven and follow worldwide best practice examples. The new products will have to be in line with Petra's present brand perception and must in effect support and strengthen Petra as an environmentally responsible site. The Petra DMO has an obligation to encourage continuous improvements of Petra's tourism product.

Product development will have the responsibility to motivate visitors with attractive offers to stay longer in the Petra Region. Important functions of interpretation and of learning to better understand the social, ecological and historical context of the site must be brought about by highly attractive installations inside and also outside the PAP.

Another challenge for intelligent product development will be to make best use of the rich resources of indigenous animals that are available in the region. This process should be organized in a manner so that they may be watched, petted (by children), ridden or used for drawing carriages. These animals (camels, horses, donkeys, sheep and goats) are strongly and positively associated in the imagination of tourists from all over the world due to the desert life of Bedouins.

The initial investment in product development and marketing will need to be supported. There have been initiatives by different associations. However, many of these initiatives have not flourished because of the lack of marketing and to some extent the lack of product quality. Without marketing, there may be disappointment because even good products will not find their customers on their own (or the customers will not find the products).

Besides developing and operating products itself, the DMO shall also support private initiatives in this field. This support can include technical support and training, the provision of grant schemes for community projects or the provision of microfinance and guarantees. Table 7 lists a number of actual and potential tourism products and services in the Petra Region that can be developed. In addition, the attractions and sites close to the Petra Region as identified in the Diagnostics Report shall also be considered.

**Table 7: Overview of actual & potential tourism products & services in Petra Region**

<b>Tourist Product</b>	<b>Strengths</b>	<b>Weaknesses</b>	<b>Opportunities</b>	<b>Threats</b>
<b>Horses</b>	<ul style="list-style-type: none"> <li>• Authentic Bedouin product</li> <li>• Good image ('Indiana Jones')</li> <li>• Relatively good looking, well cared horses</li> </ul>	<ul style="list-style-type: none"> <li>• Only 600 m at the entrance, led at the holster</li> <li>• Not promoted</li> <li>• Not offered outside of park</li> </ul>	<ul style="list-style-type: none"> <li>• Propose horse-riding trails at other more exciting places outside the PAP</li> <li>• Create horse-riding spectacles for tourists</li> </ul>	<ul style="list-style-type: none"> <li>• Disputes regarding horse ownership titles and revenues from the PAP admission fee</li> </ul>
<b>Donkey rides</b>	<ul style="list-style-type: none"> <li>• Donkeys seen outside the Arab world as a 'sympathetic' animal</li> <li>• Animals have great climbing capacities</li> </ul>	<ul style="list-style-type: none"> <li>• Presently illegal status inside the PAP. In addition, donkey rides are often associated with child labor</li> <li>• Complaints about ill treatment</li> <li>• Not offered outside of park</li> <li>• May be hazardous due to lack of regulations</li> </ul>	<ul style="list-style-type: none"> <li>• Create a regulated donkey trail outside of the PAP</li> <li>• Create a 'donkey farm' explaining the traditional role and utility of donkeys for Bedouins. This exhibit could provide tourists the opportunity to use them in a traditional way (e.g. for water transporta-</li> </ul>	<ul style="list-style-type: none"> <li>• Exploitation of donkeys will continue unless the general perception of the animal changes</li> <li>• Require strict measures to reduce child labor otherwise boys may continue working with donkeys instead of going to school</li> </ul>

			tion)	
<b>Camel rides</b>	<ul style="list-style-type: none"> <li>This most authentic animal is expected by many tourists to the area</li> </ul>	<ul style="list-style-type: none"> <li>Available only inside the PAP</li> <li>No introduction to culture or riding techniques offered</li> <li>Reputation of being 'difficult to ride'</li> </ul>	<ul style="list-style-type: none"> <li>Create a regulated camel trail outside of the PAP</li> <li>Create a 'Camel Park' explaining about the traditional role and utility of camels for Bedouins. This exhibit could provide tourists the opportunity to use them in a traditional way (e.g. for water transportation)</li> </ul>	<ul style="list-style-type: none"> <li>The risk of designing a camel attraction that is too tourism-oriented, thereby hiding the actual craftsmanship involved in working with camels. In a worse case scenario, camel rides could highlight ill treatment of the animals.</li> </ul>
<b>Horse and camel trekking inside the Park, away from the main tourist routes</b>	<ul style="list-style-type: none"> <li>Many very attractive alternate routes, e.g., to the base of Jebel Haroun (Aaron's Tomb)</li> </ul>	<ul style="list-style-type: none"> <li>Not much promotion</li> <li>Lack of well trained guides</li> </ul>	<ul style="list-style-type: none"> <li>Provide training for guides on the protection of the monuments and knowledge of the PAP in order to explain to tourists</li> <li>Set up appropriate marketing structures</li> </ul>	<ul style="list-style-type: none"> <li>Competition among horse owners</li> <li>Business only run by one tribe which may exclude others</li> <li>Lack of regulation could result in ill-treatment of the PAP environment e.g. damaging archaeological sites</li> </ul>
<b>Horse and camel trekking outside the Park</b>	<ul style="list-style-type: none"> <li>Attractive programs by local Tour Operators are already on the Market</li> <li>More treks of any length could be offered, e.g. from Dana in Tafilah to Petra OR from Petra to Wadi Rum and/or Aqaba etc.</li> </ul>	<ul style="list-style-type: none"> <li>Accessible through local tour operators</li> <li>An alternative to 'mass tourism' that is currently not very well promoted</li> </ul>	<ul style="list-style-type: none"> <li>Provide training for guides knowledgeable in horsemanship as well as well as with cultural and natural sights</li> <li>Develop further specific trails across the region, e.g. connecting ecolodges</li> <li>Set up appropriate marketing structures</li> </ul>	<ul style="list-style-type: none"> <li>Competition among horse owners</li> <li>Business only run by one tribe may exclude others</li> <li>Lack of regulation could result in ill-treatment of the environment e.g. destruction of rare species or other hazards</li> </ul>
<b>Animal Park and Interpretation)</b>	<ul style="list-style-type: none"> <li>Traditional knowledge</li> </ul>	<ul style="list-style-type: none"> <li>A sufficiently large</li> </ul>	<ul style="list-style-type: none"> <li>Offer a complete experience</li> </ul>	<ul style="list-style-type: none"> <li>Potential competition be-</li> </ul>

<p><b>tion Center</b></p>	<p>of living and working with animals still alive in the region</p> <ul style="list-style-type: none"> <li>• Many animal guides already experienced in working with tourists would be immediately available</li> <li>• Stunning landscape offers a variety of trails for all types of animals and visitor expectations</li> </ul>	<p>enough area needs to be dedicated to this purpose and a new structure built</p> <ul style="list-style-type: none"> <li>• Needs an efficient and fair way to manage the center</li> </ul>	<p>rience with animals for tourists</p> <ul style="list-style-type: none"> <li>• Centralized management and promotion of different animal trail and treks for tourists</li> <li>• Diversify tourism offers related to animals through including interpretative center, animal races, performances, shops etc.</li> <li>• Provide care and shelter for animals</li> </ul>	<p>tween animal owners and tribes</p> <ul style="list-style-type: none"> <li>• Lack of regulation could result in ill-treatment of animals and the environment e.g. destruction of rare species or other hazards</li> </ul>
<p><b>Mountain bike trails</b></p>	<ul style="list-style-type: none"> <li>• Beautiful surroundings and varied landscape offering a large choices of potential exciting trails for mountain bike tours</li> <li>• More and more tourists come also by bike to the region to explore it</li> <li>• Mountain biking is a world-wide successful activity with little impact on the environment</li> </ul>	<ul style="list-style-type: none"> <li>• No specific trails for bikes are existing</li> <li>• No bike rentals are yet existing in the region</li> <li>• Currently no guides for this type of activity are available</li> </ul>	<ul style="list-style-type: none"> <li>• Provide a new type of activity especially targeted on families and people who would like to undertake sportive activities in the region</li> <li>• Quite original type of activity as only few places in the Middle-East are offering bike related activities</li> <li>• Escorts could be trained specifically to guide this type of activity</li> </ul>	<ul style="list-style-type: none"> <li>• Difficulty of the local population to understand the concept as mountain biking is not a well-known past time activity in the local society</li> <li>• Need to identify the right trails for this activity with the right topography and without destroying any protected area</li> </ul>
<p><b>Local Escort Services</b></p>	<ul style="list-style-type: none"> <li>• Many tribe members have great knowledge of the area including the less touristic parts of the PAP</li> </ul>	<ul style="list-style-type: none"> <li>• No formal training and low education level</li> <li>• New training program needs to be established at the AHU</li> </ul>	<ul style="list-style-type: none"> <li>• Provide job qualification also to members from tribal communities with lower education level</li> <li>• Provide additional legal in-</li> </ul>	<ul style="list-style-type: none"> <li>• Confusion with nationally licensed guides if difference is not explained and marketed clearly</li> </ul>



	<ul style="list-style-type: none"> <li>• Many tribe members are already used to work with tourists and have good foreign language skills</li> <li>• They can provide an authentic insight into their culture and true stories</li> </ul>		<ul style="list-style-type: none"> <li>• come sources</li> <li>• Cater for tourists looking rather for entertainment and personal contact than for “education”</li> </ul>	
<b>Camping in the Baidha / Little Petra area</b>	<ul style="list-style-type: none"> <li>• Several campsites of varying quality and price range available</li> <li>• A more Bedouin experience of the region</li> </ul>	<ul style="list-style-type: none"> <li>• Not well enough marketed</li> <li>• No camping grounds for self-campers available</li> <li>• Ecological soundness not guaranteed in all camps</li> <li>• Some camps are located inside the PAP borders – status is in need of clarification</li> </ul>	<ul style="list-style-type: none"> <li>• Create a central agency to promote camping located in Baidha, develop individual specifications of campsites e.g. for children, honeymooners, young people, families, luxury etc</li> <li>• Promote an ecological, sustainable experience of the site</li> </ul>	<ul style="list-style-type: none"> <li>• Unclear border of the PAP can lead to dispute with authorities e.g. UNESCO, PNT</li> <li>• If badly managed can lead to further environmental destruction or disputes among locals</li> </ul>
<b>Hiking within and around the PAP</b>	<ul style="list-style-type: none"> <li>• There are some attractive hiking paths that offer new and unusual views</li> <li>• Hiking is becoming more popular worldwide</li> </ul>	<ul style="list-style-type: none"> <li>• Only a few treks are marked and mapped</li> <li>• Vast potential for historical, environmental, anthropological and cultural interpretation is underused</li> </ul>	<ul style="list-style-type: none"> <li>• Create an entire network of hiking routes around the region connected to major points of interest (scenery, cultural or animal) and to eco-lodges etc. that are clearly mapped out</li> <li>• Propose well-trained guides providing background information</li> </ul>	<ul style="list-style-type: none"> <li>• If not carefully regulated tourists might hike without supervision, possibly leading them to dangerous trails or to destroy unique biotopes</li> <li>• Rivalry among communities regarding who has right to guide in particular areas and the lands that are appropriate for hike crossings and camping locations</li> </ul>

<p><b>Petra By Night Program/event: Three nights a week tourists are able to visit Petra at night</b></p>	<ul style="list-style-type: none"> <li>• Excellent, attractive and successful program</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunity for interpretation of Nabataean Culture should be better used</li> </ul>	<ul style="list-style-type: none"> <li>• Rework presentation in order to provide more thorough interpretation of the site</li> <li>• Create such events in other places for small numbers of people</li> </ul>	<ul style="list-style-type: none"> <li>• Need for guidance and good explanations otherwise tourists might feel disappointed</li> <li>• Avoid turning it to a mass-event but allow tourists to experience the site in a more peaceful way</li> </ul>
<p><b>Little Petra Interpretative Center</b></p>	<ul style="list-style-type: none"> <li>• Providing explanation on Little Petra (historical and cultural importance)</li> <li>• Introduce local Bedouin life style and its natural environment</li> </ul>	<ul style="list-style-type: none"> <li>• Apart from a few explanatory signs no detailed explanation is given to the site (e.g. its discovery, regional importance and artistic particularities)</li> </ul>	<ul style="list-style-type: none"> <li>• To provide a better preparation for the visit of the site to the visitors and extend their stay in Little Petra</li> </ul>	<ul style="list-style-type: none"> <li>• If not well located and designed could damage the site</li> <li>• Needs careful research etc. in order to not replicate general information provided elsewhere</li> </ul>
<p><b>Little Petra as Event site</b></p>	<ul style="list-style-type: none"> <li>• Music and dinner overlooking the caves of Petra is a very attractive product for exclusive guests and MICE tourists</li> </ul>	<ul style="list-style-type: none"> <li>• Only appropriate for very limited numbers of tourists</li> </ul>	<ul style="list-style-type: none"> <li>• Involve more of the local population in the preparation of the event</li> <li>• Market it for other select events</li> </ul>	<ul style="list-style-type: none"> <li>• Potential damage to the site if not properly executed</li> </ul>
<p><b>Bedouin Festival event in Little Petra organized by the Amaariin Bedouin Camp</b></p>	<ul style="list-style-type: none"> <li>• Was very popular and attractive one time event</li> <li>• Great potential as a permanent event</li> </ul>	<ul style="list-style-type: none"> <li>• As a one-time event, it is not very cost effective</li> <li>• Requires significant time and planning to protect Bedouin identity</li> </ul>	<ul style="list-style-type: none"> <li>• Turn it into a regular event especially during the off-season, thus attracting tourists outside of the peak season and provide them with a good reason to return</li> </ul>	<ul style="list-style-type: none"> <li>• “Bedouin” culture becomes a shallow marketing product adapting remaining traditions to Western taste</li> </ul>
<p><b>Petra Kitchen</b></p>	<ul style="list-style-type: none"> <li>• Well-established and attractive product</li> <li>• Tourists are taught Arabic-Jordanian cooking and can eat the</li> </ul>	<ul style="list-style-type: none"> <li>• Starts losing authenticity</li> </ul>	<ul style="list-style-type: none"> <li>• Similar projects could be offered across the region focusing on different types of cuisine or even taking place at local</li> </ul>	<ul style="list-style-type: none"> <li>• Rivalry among the tribes</li> <li>• Standards of quality would need to be established</li> </ul>

	delights of their work		homes to be more authentic and provide jobs for housewives (could be targeted mainly to women)	
<b>Jewelry-making sessions</b>	<ul style="list-style-type: none"> <li>• Visitors watch local women making jewelry</li> <li>• High-class, tasteful products</li> </ul>	<ul style="list-style-type: none"> <li>• Very poor marketing</li> <li>• Jealousy among local traders needs to be overcome</li> </ul>	<ul style="list-style-type: none"> <li>• Project could be better marketed and extended to other handicraft associations e.g. pottery making in Taybeh</li> <li>• Could organize special weeklong courses where participants could learn the Nabataean style of art and other regional techniques. They could also participate in a number of programs that would allow them to learn several handicraft skills in a set period of time</li> </ul>	
<b>Petra Arts and Crafts Center including a Design Institute</b>	<ul style="list-style-type: none"> <li>• Original crafts production already in existence in the region</li> <li>• The possibility to use old Nabataean designs found in the Petra site as an inspiration source</li> <li>• Especially suitable for women who expressed</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of trained designers in the region</li> <li>• Lack of ability to produce “in” products satisfying international customers</li> </ul>	<ul style="list-style-type: none"> <li>• Create truly original Arts and Crafts products of high quality and innovative design which could even be exported</li> <li>• Improve and specialize the skills of the local population</li> <li>• Visitors could visit the center and learn more about</li> </ul>	<ul style="list-style-type: none"> <li>• Rivalry amongst tribes might lead to unequal opportunities for all to participate in the center</li> <li>• Competition of imported souvenirs and other products for sale to tourists</li> </ul>

	an interest to be involved in this activity		the production which would create incentives to buy the products	
<b>Central Souq for souvenirs and crafts</b>	<ul style="list-style-type: none"> <li>• Associations in the region are already producing good quality handicraft products</li> <li>• Local women have ideas for producing and selling new handicraft and self-made products</li> <li>• Experienced vendors are available</li> <li>• Great interest from visitors to take home souvenirs unique to the region</li> </ul>	<ul style="list-style-type: none"> <li>• Currently no central place available to sell handicrafts produced in the region and a general lack of marketing of the products available</li> </ul>	<ul style="list-style-type: none"> <li>• Souq at a strategic location attracting most of the visitors would allow for better sales</li> <li>• Enhance the quality standards of the souvenirs sold and offer common marketing</li> <li>• Open also in the evenings when PAP is closed</li> <li>• Offer additional time to sell products and entertainment for visitors</li> <li>• Provide a regulated environment</li> </ul>	<ul style="list-style-type: none"> <li>• Standards of the Souq need to be established and maintained in order to avoid offering low quality and uninteresting imported goods to the visitors</li> <li>• Rivalry with current shop-owners</li> </ul>
<b>Exploring traditional Bedu medicinal knowledge on herbs and plants</b>	<ul style="list-style-type: none"> <li>• Knowledge about the use of traditional medicinal herbs is part of the Bedu-culture which is still preserved in some communities of the region</li> <li>• Unique flora of the region including plants which are important for medicinal use</li> <li>• Local popu-</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of understanding that plants need to be re-cultivated once they have been collected - ,the amount of plants in existence now will not be enough to sustain such a business in the future</li> <li>• No association or other structure is currently in-</li> </ul>	<ul style="list-style-type: none"> <li>• If it takes off, medicinal herbs can be the source for high-value production</li> <li>• An opportunity would be to search for international investors in this field and allow a joint-venture for exploring the potential of medicinal herbs</li> <li>• Creates a regional field of expertise in the use of traditional medicine al-</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental hazards and climate change might destroy the medicinal herbs</li> <li>• Traditional knowledge of the older generation of residents about the effects of medicinal herbs is disappearing</li> <li>• If not carefully controlled some false “medical herbs” recipes might appear, which are not linked to any traditional knowledge</li> </ul>

	<ul style="list-style-type: none"> <li>• Bedu culture has been designed as Intangible Heritage by UNESCO, is therefore already recognized as being unique</li> </ul>	<ul style="list-style-type: none"> <li>• The detailed analysis of the flora existing in the region is not shared</li> </ul>	<ul style="list-style-type: none"> <li>• Use the UNESCO nomination as Intangible Heritage of the Bedu culture as a strong marketing point</li> <li>• Promote use of traditional Bedu medicine and herbs as a tourist product showing cultivation of plants and its use going beyond just buying the final product (e.g. creating something similar to Ayurveda tourism in South-India)</li> </ul>	<ul style="list-style-type: none"> <li>• By “cheaply” selling a license, most of the value might be created outside the region.</li> <li>• If not re-cultivated the plants used for the medicinal products might disappear and further endanger already threatened species.</li> </ul>
<b>The old village of Rajif</b>	<ul style="list-style-type: none"> <li>• Example of old Jordanian village architecture</li> <li>• Good substance</li> <li>• Excellent potential for extending visitor stay</li> </ul>	<ul style="list-style-type: none"> <li>• Needs political consensus in the village to pursue</li> <li>• High levels of investment are needed</li> </ul>	<ul style="list-style-type: none"> <li>• Create a hotel in Taybet Zaman style and/or high quality tourism Souq</li> <li>• Could become a new tourism centre in the region which would benefit Rajif’s economy</li> </ul>	<ul style="list-style-type: none"> <li>• Dispute among the locals</li> <li>• Need to be locally owned or have great local involvement otherwise won’t be accepted by locals</li> </ul>
<b>The old village of Elgi in Wadi Musa - an example of local village architecture</b>	<ul style="list-style-type: none"> <li>• Only a concept design, as of yet, it seems like a sound idea for an authentic tourist center offering guests a glimpse of local life-style.</li> </ul>	<ul style="list-style-type: none"> <li>• Too early for any kind of judgment</li> </ul>	<ul style="list-style-type: none"> <li>• Create a proper authentic tourist center giving explanation on local life-style, the production of local products and the opportunity to buy high qual-</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of efficient marketing so that tourists are aware of it</li> <li>• Involve the entire region, otherwise it will lead to more rivalry</li> </ul>

			ity souvenirs from across the region	
<b>Authentic old Jordanian villages turned into hotels</b>	<ul style="list-style-type: none"> <li>• Taybet Zaman and Beit Zaman among the most popular hotels, because they offer local flavor</li> </ul>	<ul style="list-style-type: none"> <li>• Need to find sites of comparable attractiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Create a whole network of local houses-style hotels catering for individual tourism e.g. in Rajif's old town</li> </ul>	<ul style="list-style-type: none"> <li>• Need to be locally owned or have a great local involvement otherwise won't be accepted by locals</li> </ul>
<b>Guesthouses in the communities</b>	<ul style="list-style-type: none"> <li>• The rise of tourists requires more accommodation</li> <li>• Tourists interested in knowing more about the locals and their link to the site</li> <li>• Can be established in existing buildings</li> </ul>	<ul style="list-style-type: none"> <li>• Not yet existing in such a form in the region, therefore lack of example and experience</li> </ul>	<ul style="list-style-type: none"> <li>• Create an income opportunity for local families</li> <li>• Offer an alternative and more personal place to stay for tourists</li> </ul>	<ul style="list-style-type: none"> <li>• Need to establish a specific licensing and quality controlling system</li> <li>• Rivalry among the population</li> </ul>
<b>Eco-lodges along the trails across the region</b>	<ul style="list-style-type: none"> <li>• Stunning natural landscape of the region with two natural reserves worth exploring on trails</li> <li>• One example of an eco-lodge already existing close by in Wadi Feynan</li> </ul>	<ul style="list-style-type: none"> <li>• No eco-lodge currently exists within the region</li> <li>• Little local knowledge on how to establish and run an eco-lodge</li> </ul>	<ul style="list-style-type: none"> <li>• Create an entire network of eco-lodges in the region inviting tourists to explore the region even longer</li> <li>• Create environmental friendly accommodation</li> </ul>	<ul style="list-style-type: none"> <li>• Need to be carefully designed in order to minimize impact on nature</li> <li>• High costs to maintain eco-lodge might be difficult to sustain during low tourism season</li> <li>• Due to lack of specific knowledge little involvement of the local population</li> </ul>
<b>Hammams &amp; SPAs</b>	<ul style="list-style-type: none"> <li>• Several hammams exist in Wadi Musa for relaxing and bathing (e.g. Petra, Salome and the Loofah Turkish Bath and others)</li> <li>• A charmingly</li> </ul>	<ul style="list-style-type: none"> <li>• Little promotion so far</li> <li>• Visitors often unsure about hygienic standard</li> </ul>	<ul style="list-style-type: none"> <li>• Set up a clearer promotion strategy and general hygiene rules, create original hammams in other communities especially catering to tourists camping</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of hygiene might lead to a bad experience</li> <li>• Increased lack of water making it environmentally irresponsible to open more hammams</li> <li>• 'Culture of shame' restrict-</li> </ul>

	revived bath at Taybet Zaman		in the surrounding area	ing locals from sharing same structures as tourists
<b>Multi-purpose Entertainments &amp; Conference Center</b>	<ul style="list-style-type: none"> <li>• Attractive setting</li> <li>• Prominent destination would enhance conference organizers image</li> <li>• Can be used by locals as meeting place</li> <li>• Can be used to offer additional entertainment in the evenings during the tourist high seasons. screening famous movies related to the region</li> </ul>	<ul style="list-style-type: none"> <li>• No large structure exists today - only small capabilities in hotels</li> <li>• New complex would need to be built</li> <li>• No experience in handling conferences</li> </ul>	<ul style="list-style-type: none"> <li>• Would help counter-balance seasonality of tourism, as conferences could mostly take place in tourist low seasons</li> <li>• Petra to become a place in the Middle East for annual meetings for business- and trade associations</li> <li>• Offer locals and tourists a new space for entertainment activities</li> <li>• Provide an adequate space for regional meetings of the local population</li> </ul>	<ul style="list-style-type: none"> <li>• New large construction could have a poor aesthetic impact in the region</li> </ul>
<b>Holiday camps for urban children from other regions of Jordan and the Arab world</b>	<ul style="list-style-type: none"> <li>• Unique heritage and traditions of the region on which the Jordanian identity is based, which is not well known by the other regions in the country, therefore would have a social benefit for Jordan</li> <li>• Unique environment enabling a large selection of different activities</li> </ul>	<ul style="list-style-type: none"> <li>• Bad image of the Petra region in other parts of Jordan, they see it as possibly a backward region</li> <li>• No such initiative has been set-up until now, no managing body for such activity has existed until now</li> <li>• Is not a year-round activity as it primarily orients around school holidays</li> <li>• Possible</li> </ul>	<ul style="list-style-type: none"> <li>• To provide occupation and jobs especially for the female population through teaching children about local tradition and agriculture, as well as, the archaeological and natural heritage</li> <li>• A home-stay program provide small extra-income for some families</li> <li>• Low-season alternative for tourism if matched with local school-holidays as</li> </ul>	<ul style="list-style-type: none"> <li>• Due to cultural resentment and lack of confidence in the regional population, families from other regions would not agree to send their children to holiday camps in the region or would not be able or ready to pay for such services</li> <li>• Lack of cooperation from the ministry of education or from local schools</li> <li>• Conflicts between the regional population and the guest children due to lack of</li> </ul>

		<p>lack of sufficiently qualified teachers or childcare workers</p> <ul style="list-style-type: none"> <li>• Need to find places where children could stay</li> <li>• Limited capacity and limited opportunity to create economic benefits</li> </ul>	<p>then some of the tourist infrastructure could be used</p> <ul style="list-style-type: none"> <li>• To positively influence the image of the region on the national level and therefore to strengthen the support of the whole country to promote and protect the region and its heritage</li> <li>• Raise awareness for the issues in other regions of Jordan through showing children</li> </ul>	<p>understanding of specific socio-cultural context</p>
<b>Geology discover trails</b>	<ul style="list-style-type: none"> <li>• Beautiful and highly interesting geological structure of the entire region</li> <li>• Can be easily explored based on the existing roads</li> </ul>	<ul style="list-style-type: none"> <li>• No proper explanation presenting existing knowledge and research on the geology of the region is currently available, unclear how great the importance of the local geology is in worldwide comparison</li> <li>• Lack of interpretation center or signs</li> <li>• Lack of local expertise in the field of geology</li> </ul>	<ul style="list-style-type: none"> <li>• A new field of expertise on the regional geology could be set up providing deeper insights on the history of the region</li> <li>• Local guides with geology knowledge could be trained</li> <li>• Geology exploration in the region could be promoted throughout the academic world</li> </ul>	<ul style="list-style-type: none"> <li>• Geology might remain secondary compared to the archaeological and cultural importance of the Petra site and therefore will not be a main focus of interest only in the context of creating new tourism products</li> </ul>
<b>Bedouin music and folklore festivals</b>	<ul style="list-style-type: none"> <li>• UNESCO listed as intangible cultural heritage</li> <li>• Existing genuine and authentic culture</li> </ul>	<ul style="list-style-type: none"> <li>• Organization of interactions with tourists in a systemic manner (that also leads to in-</li> </ul>	<ul style="list-style-type: none"> <li>• Interest of travelers in discovering other cultures and authentic experiences</li> <li>• Organize dance and</li> </ul>	<ul style="list-style-type: none"> <li>• Touristic utilization of local culture can lead to changes in lifestyle and culture</li> <li>• Genuine local cultures may</li> </ul>



	<ul style="list-style-type: none"> <li>Local cultures are popular (e.g. Books such as "Married to a Bedouin" add to the myth)</li> </ul>	<p>come generation for the local people)</p>	<p>music workshops</p> <ul style="list-style-type: none"> <li>Organize folklore festivals</li> <li>Provide "windows" when and where tourists can experience the culture</li> </ul>	<p>change due to external influences</p>
--	--	--	--	--

### 6.2.3 Establish Local Escort Service

In this context, well-trained local people will be needed to act as guides, escorts or entertainers. It is them who will – to a much higher degree than the providers of the basic services like accommodation, food, drink, shopping and travel – make a distinct difference if a visit or a vacation will be just more or less satisfactory, or it will be truly outstanding and memorable.

These kinds of jobs have more to do with entertainment and making people laugh and feeling happy than with actually providing tangible services. There are some people who will want to know as much as possible about the historic and cultural background of a destination or a site. However, there are also many visitors who are certainly open to learn about a site, but not so much in academic detail. Many people are interested in hearing good stories about people who used to live here or still live here, about their lifestyle and their joys, their daily life their festivities, and yes, also about the sad stories. It is living history, presented in an authentic way by locals who can talk tell about their country and their region in a credible way.

It is with such well-trained guides or escorts with whom a resort like Petra can make a real difference. What is needed; a) an open and welcoming attitude to meet guests and treat them like friends b) a sound knowledge about the local culture and the historic context in a broad way c) solid and extensive knowledge of local folklore and lifestyle and – last but not least – d) a certain degree of showmanship and mastering the traditional (Arab!) art of storytelling. For all of the guides an excellent knowledge of the local geography and terrain as well as First Aid and safety measures will be mandatory.

These guides or escorts – both women and men - of varying age groups, suitable to serve various target groups in various languages may act as escort/guides either on regular walks through PAP or – and here is the strongest long term potential – for walking tours or riding tours in less frequented parts of the Petra region and surrounding nature reserves – e.g. Dana and Masoudha where visitors can enjoy experiences far beyond the visit of the PAP.

It is suggested that the tourism faculty of the local university (AHU) will develop a two semester training program for such escorting services. Obviously the graduates of the courses will not receive the same license as the longer and more intensively trained fully licensed official Jordanian Tour Guides; rather, they would receive a "light" version of a tour guide license. In order not to be mixed up, it may be suggested to give them a different name, like for instance "Petra Tour Escorts".

#### 6.2.4 DMO as Marketing Organization

In order to be able to realize effective destination marketing several basic requirements need to be fulfilled:

- Destination marketing requires an organization with fully dedicated human and financial resources
- Destination marketing needs to be market (demand)-driven (and not supply-driven!)
- Destination marketing needs a strategic approach that is followed over a couple of years in a consequent manner
- Destination marketing also needs to be pro-active and innovative with pilot initiatives and concrete measures

In order to strengthen the development of the Petra Region and to promote it as a world-class destination, it is essential to enhance its marketing capacities. Several tools can be used in order to help to promote the image of Petra as one the top destinations of the world. Indeed, world-class tourism destinations in other countries have without exception created central reservation systems and DMO's in order to promote their facilities and to make the booking process for tourists easier and more effective. Currently hotels in the Petra Region market their facilities and services separately and have rooms booked only through their own reservation systems. This disadvantages smaller locally owned hotels particularly, which are competing to some degree with large international chains. Besides, tourists hardly receive any information about additional offers and attractions in the Petra Region beside about the PAP. Due to this lack of information and of other incentives, tourists only plan to stay for one day in the Petra region and continue their travels after having visited the PAP without exploring the immediate environment of the PAP and the culture.

In order to avoid this, **Destination Marketing** aims at:

- Attracting tourists to come to the region
- Lengthening the duration of stay
- Informing tourists about the attractions and possibilities in the Petra region
- Creating a brand identity for the Petra region
- Providing possibilities for local tourism businesses (hotels, guides, travel agents, restaurants, etc.) to sell their services already in advance
- Providing support to local businesses to sell their services on-the-spot to tourists
- Actively managing the relationships with tour operators and other intermediaries and thus gain bargaining power for the region

The **tools** to achieve these aims are:

- Develop and maintain a modern brand, including:
  - Logo
  - Slogans
  - Design guidelines for all written material
- Develop and maintain a comprehensive, attractive and easy to use Website for the region, including:
  - Information about the attractions in the Petra Region (cultural, natural)
  - Information about tourism products in the Petra Region (for all providers that fulfill transparent quality criteria)
  - Information about accommodation (for all accommodation facilities that fulfill transparent quality criteria)
  - Information about transport within the region and to the region
  - Reservation service for accommodations

- Reservation service for attractions and tourism products:
  - Tickets for the PAP
  - Tickets for other attractions (e.g. Little Petra)
  - Purchasing of other services and tourism products
    - Guided hikes
    - Camel/horse/donkey rides
    - Tickets for events (Petra by night and potential other events)
    - Workshops (cooking, herbs, etc.)
  - Purchasing of transport tickets
- Reply individually to answers of tourists
- Information about climate and weather conditions
- Tourism Awareness
- Public relations
- Brochures
- Relationship management with tour operators
- Representation on tourism fairs
- Manage complaints

### **The social media – today's word of mouth communication**

The continuing rise of the Internet as a communication tool for travel and tourism presents challenges and opportunities for destination marketing organizations. Research has found that it takes the average consumer one month to plan their holiday. In this time they will visit an average of 12 websites and perform 21 searches. Interestingly, tourist boards do not play a dominant role in this process, in part because they cannot recommend one travel product over another. Thus consumers get much of the information they need from “user-generated content” (UGC), that today contributes significantly to the decision making process.

It is suggested that Petra's own website should be a gateway to the social media sites -- users can interact within a Petra context. Petra's site will send them to Flickr to post photos of Petra visits; they will send them to Twitter and Tweet. The Petra DMO will stimulate/motivate the creation of fan pages on all these sites, especially on Facebook and Twitter. All this sending is performed by opening up a second browser window with each link so the user also remains on one of the Petra web pages and can return to the site after Tweeting, etc. Petra DMO shall use blogging software to let people post stories in a blog format.

#### **An idea out-of-the-box: Inviting a "Blogger-in-Residence"**

Since blogs are usually updated daily, as opposed to a journalist writing one or two feature articles, Petra could take advantage of that day-to-day characteristic of a blog by inviting an accomplished, well-followed travel blogger to take up residence for one month in Petra. Like a "Blogger-in-Residence" their only obligation would be to post a daily commentary. Sure, there is a risk if the person turns out to not like the place, but at least by reading the daily posts, if there was a problem, the Petra DMO could step in to solve it, and opposed to just waiting to see an article after publication in a magazine where there is then no return.

### **6.2.5 Some additional tasks of Petra DMO**

In addition to product development and marketing, there are few additional tasks for this body that will be crucial for Petra reaching the status of a top destination.

- A key responsibility of the Petra DMO is to **build partnerships** among stakeholders; achievements will depend greatly on the work of other organizations and authorities.

- A DMO in a Tourism region is responsible for the important task of **awareness raising**, both among visitors and tourists, awareness that both sides need to respect each other, their different cultures and also the sensible environment.
- Together with PDTRA the DMO will see to it and monitor that the **laws relating to tourism are adhered to**; they will report to the law enforcement authorities when and where laws are broken.
- The DMO will participate in the important process of **local capacity building** (together with the local educational institutions and the local AHU College).
- Petra DMO will be **promoting Petra** but is not selling commercial services. Coordination and cooperation with commercial operators, who will also have their own individual marketing strategies, is crucial to ensure cost-efficiency and profitable activities.
- The Petra DMO must have confidence in the quality and availability of these products. Therefore it needs first-rate coordination with all the providers of tourism products, the authorities and organizations that license and monitor them.
- Petra DMO must promote a positive tourist experience, including e.g. public transport and police-services, which may impact the tourist experience; clear communication channels with these organizations are needed.

### 6.2.6 Recommended structure the Petra DMO

The formation of a state-of-the-art Destination Management Organization for Petra is highly recommended as a first step for implementing the strategy. The structure of the Petra DMO must fulfill two key objectives. The first is to operate in accordance with the legal framework that has established the organization. The second is to operate as efficiently as possible to provide cost effective services to the tourism industry and the Government to ensure customer-focused services to be provided to both tourism sector and tourists. This involves many stakeholders and specific areas of responsibility, as set out in the following table.

**Table 8: Structure of DMO: Component, core functions and tasks**

Component	Core function	Core tasks
1. Board of Directors from PDTRA and selected local stakeholders	• Corporate Supervision	<ul style="list-style-type: none"> <li>• Liaison with municipality</li> <li>• Liaison with target groups and stakeholders</li> <li>• Monitoring of PETRA DMO performance</li> </ul>
2. CEO (Chief Executive Officer)	• Overall management	<ul style="list-style-type: none"> <li>• Liaison with Board of Directors</li> <li>• Implementation of Board policy</li> <li>• Management of PETRA DMO</li> <li>• Liaison with target groups and stakeholders</li> </ul>
3. Brand & Product Development of Services	<ul style="list-style-type: none"> <li>• Promoting the entire <b>Destination-Petra</b></li> <li>• Improve tourism product</li> </ul>	<ul style="list-style-type: none"> <li>• Promotion activities</li> <li>• Visitor Centre</li> <li>• Creative regional programs</li> </ul>
4. Marketing and Research Services	<ul style="list-style-type: none"> <li>• Providing Marketing and Information Services</li> <li>• Supporting promotions</li> </ul>	<ul style="list-style-type: none"> <li>• Market research (local – e.g. on visitor satisfaction)</li> <li>• Strategic local marketing planning</li> <li>• Providing tourist information</li> <li>• Media relations</li> <li>• Support for Tour programs &amp; Events</li> <li>• Data collection and analysis of tourism statistics for local use</li> <li>• Tourism related publications</li> </ul>

5. Finance and Administration Management; Jordanian Stakeholder relations	<ul style="list-style-type: none"> <li>• Financial control</li> <li>• Office management</li> </ul>	<ul style="list-style-type: none"> <li>• Personnel administration</li> <li>• Management accounting</li> <li>• Financial accounting</li> <li>• Legal affairs, Budget preparation</li> <li>• Co-monitoring of performance</li> <li>• Evaluating tourism programs; Key account management</li> </ul>
--	--	---

The PETRA DMO must represent Petra as a tourist destination as well as Petra's tourism industry.

### 6.2.7 Operational Action Plan for the Petra Destination Management Organization

**Table 9: Action Plan for DMO**

Actions	Details	Responsibility
Annual Marketing Plan	Essential to ensure proper use of resources, identification of objectives and integration of all promotional activities	Senior management of PETRA DMO and Industry Partners
Development of branding strategy	Necessary to ensure development of Petra's 'brand' and to achieve synergy between promotions and products	Marketing Department with support from a specialist agency
Print material style, with promotional slogan and marketing theme	To support brand awareness, This should be sustained for several years	Marketing Department with support from a specialist agency
Coordinated promotional program	Essential to achieve synergy between public and private sector promotions – as much as possible PR / very sparingly advertising	Brand Development and Marketing Departments
Produce attractive information material	A well informed tourist will stay longer, visit more areas and will spend more	Marketing Department
Journalists visits	To achieve greater coverage of Petra in the international media	Media Relations Unit Marketing Department
Travel trade familiarization trips	To achieve greater coverage of Petra in tour operators' and other travel intermediaries' programs, and to educate their sales staff	Brand Development Department and Media Unit
Co-operative promotions	To benefit from multi-centre programs with Athens and other neighbors	Brand Development and Marketing Departments
Promotion at tourism trade- and consumer fairs	Fairs must be well chosen to be suitable for target markets, and effective pre-planning is essential	Brand Development and Marketing Department
Web site and Web 2 promotions	An important source of information for tourists, but must be comprehensive, easy to access, linked to other Jordan and commercial sites, and include an enquiry response service	Marketing Department Webmaster
Travel trade newsletter	Effective to keep Petra in front of the international travel trade and media	Marketing Department
Product development with increased themes and "fun factor"	Tourists want more things to do than just visit historical sites. Broaden markets by encouraging new target groups	Senior Management
Improve merchandising for handicraft and souvenirs	Increases the spending opportunities for tourists, and the economic benefits to Jordan	Marketing Department
Better tourist information services: Petra Visitor	Will improve the image of Petra, and a well informed tourist will stay longer,	Senior Management & Marketing Department

Centers	visit more areas and will spend more	
Development of new and innovative tour programs	International tour operators are looking for new tour options and new excursions that make their program different from their competitors	Brand development and private sector
Strengthen co-operation with the travel trade and airlines	Provides synergy between promotions and uses promotional budgets more effectively	Senior Management & Marketing Department
Co-operation with tour operators, airlines, guide books, regional alliances	Provides synergy between promotions and uses promotional budgets more effectively	Marketing Department
Promotion of new self-drive and walking tours	Tourists are looking for new tour options and new excursions that make their holiday different. Increases return visits.	Brand & Product Development with Private Sector
Development of event tourism	There is market demand for a special experience holidays	Brand & Product Development with Private Sector
Human resource development – in house & for tourism industry partners	Increased skills means better services, which means a more satisfied customer. Skilled workers earn more	Personnel Officer
Improved data collection and analysis	Ensures better understanding of tourism and tourist markets, and allows faster reaction to market changes	

### 6.3 Social Issues

In the Petra Region, the social structure is inhomogeneous; the communities are growing at a varying pace and are moving towards modernization even though there doesn't seem to be a strong active participation in the process from their side. The communities of the region have been affected differently by tourism resulting in a tendency for traditional family structures to be less dominant in some areas. The external impact of the western culture brought by tourism on the local culture causes social issues and concerns, adding to the usual challenges the societies engage in the process of change .

Currently, even if the main problems can be identified, exact statistics regarding the social situations of each community are not available. Therefore an overall recommendation is to improve the database by conducting regular detailed surveys on each of the issues mentioned so that the required data may be collected.

#### 6.3.1 Lack of cohesiveness of the six communities

A major underlying issue of the Petra Region is that little communication, exchange and cohesiveness between its six communities exists. The limited interactions between the communities can be related to the different social and financial status of the tribes living in each community and a strong feeling of pride to belong to a specific community. The behavior of the communities is still dominated by the competition for the scarce resources of the region and the traditional importance of tribal society structure in compensation for the relative low level of public welfare. This lack of cohesiveness is aggravated by the uneven distribution of economic benefits from tourism to the six communities and a feeling of being disadvantaged by the communities located at the periphery of the region.

Recommendations:

- The PDTRA should create a healthy environment for the potential cooperative projects and programs among the six communities. Spreading the notion of working together will benefit the work of the authority and the region as well.
- Creation of a forum where the communities can exchange their experiences and work together to find common solutions for their problems. All groups of society should participate at regular events for the communities including the women and youth.
- Creation of a Local Public Radio Station: the Petra Region with a population of close to 30.000 people currently has no effective means of communication. There is no local newspaper and no effective way for the authority to communicate neither with the people nor for NGO's and other public or private institutions. A public radio station has proved to be the most cost effective instrument around the world for emergency purposes, weather warnings, entertaining and informing elderly or disabled people. Also, the educational value of public radio as an instrument of awareness raising must not be underestimated.

### 6.3.2 Unemployment

While the average unemployment rate of the region is lower than the national average, the lack of jobs – particularly for young people and women - is nevertheless a problem for the region. Especially for women, this is a complex issue due to traditional gender norms and their early exit from the labor force means that their employment opportunities are restrained. The role of women remains predominantly confined to childbearing and -rearing as well as to household chores. Because activities that bring them in direct contact with tourists are regarded as inappropriate, many women said that the production of handicraft and other self-made products would be the most suitable income generating activity for them. Even women with high education levels are struggling to find adequate jobs within the region. The unemployment of women is potentially leading to other serious implications such as for women's rights and empowerment. For the male population the difficulty to make a good earning can lead them to engage in illegal activities often linked to tourism (e.g. deceiving and cheating tourists by selling fake or forbidden objects).

#### Recommendations:

- Entrepreneurial activities and initiatives in tourism as well as other sectors should be supported in order to reduce the level of unemployment of the local population in general.
- Develop policies to promote activities and sectors, which have large labor input (services, handicraft production and agriculture).
- Provide capacity-building opportunities especially for women and youth to improve their level of skills (vocational training, on-the-job training e.g. marketing, finance, and IT etc.).
- Existing handicraft initiatives run by women should be supported further through providing marketing and other training, as well as, opportunities to sell their products.
- A specific program should be initiated and run by women, which would provide targeted help for women from the region to find suitable jobs. In addition, the PDTRA could consider policies to encourage firms that employ women.
- A regional scheme of "women teach women" could be created, which would allow better-educated women to teach those who are lacking specific skills. As well as sharing skills, this would allow the creation of greater solidarity among women across the region.



- PDTRA should have a specific female representative for women issues, who can be easily reached by the local population e.g. through holding periodic assemblies in the communities.

### **6.3.3 Family planning and marriage related issues**

Petra Region has experienced a rapid population growth. The lack of sufficient family planning is the main reason. In traditional cultures the need for labor force for farming results in a preference for many children and for boys. The concept of “family planning” is often difficult to accept by men, and women often do not feel courageous enough to even discuss this subject with their husbands.

The marriage age of girls is another factor influencing family planning and population growth. Traditionally, women in the region are getting married at a young age, which is impeding them from pursuing their education and may also lead to health problems. Providing the opportunity for girls to study longer and to have a career will naturally contribute to a slow-down in population growth, as it will result in later marriage and childbearing.

Awareness raising for issues related to family planning and the increased interaction between the different communities should further contribute to successfully fight issues arising from the tradition of intermarriage within a tribe. Indeed, in several communities an unusually high number of mentally and physically challenged children can be found which may be linked to this practice.

Recommendations:

- Provide awareness-raising programs, particularly for men, on family planning.
- Increase the awareness on women’s reproductive health, especially regarding the potentially negative effects of early marriages on female health. This could be done through specific programs run in the health clinics of each community.
- The clinics in each community may consider providing couples, which intend to get married with a free medical test in order to check the possibility of having mentally challenged children. This test is being provided in Amman and published through special programs done by religious leaders (Muslim & Christian) and the Ministry of Health.

### **6.3.4 Potential threat of social violence in schools and at home**

Social violence against women and children is a phenomenon occurring in communities all around the world, which potentially might also arise in the Petra Region. This could include restraining women’s integration into the community and preventing them from exercising their social role or denying a wife her social and personal rights in order to indulge her husband’s intellectual and emotional propensities. This adversely affects the woman’s self-esteem, emotional growth, psychological health, liberty and social integration.

Emotional violence (verbal violence) is another known form of social violence, which is often directed against children. Schoolchildren and their mothers have raised complaints about discrimination and even beating in schools. This type of punishment by some teachers may put students at risk and it will create psychological problems.

As it is a common phenomenon in all societies it is crucial to create structures and associations helping to prevent and protect children, women and families against this form of violence.



Recommendations:

- Advocacy and awareness campaign for the communities targeted especially to school communities, community leaders, teachers, students, and parents.
- Create associations and other structures offering psychosocial service and counseling.
- Capacity building for teachers on providing better education methods for the learning process.

### **6.3.5 Education and youth empowerment**

In the Petra Region, it has been observed that schools tend to lack modern didactic teaching methods and instead remain fraught by neo-patriarchal approaches discouraging creativity and problem-solving abilities. Other obstacles for improving the educational standards of the region are teachers' low salaries, scant opportunities for enhancing their competencies, lack of adequate facilities, overcrowded classrooms, outdated curricula or others. Particularly the lack of access to modern communication means throughout the region disadvantages the future of the children. The Internet plays a fundamental role in education, not only as a source for information but also to enroll in universities, identifying education and job opportunities as well as to participate in courses and classes that are supported by online tools.

The lack of sufficient financial means leads parents to prefer to send boys to school, while girls remain at home in order to provide care for siblings and elderly family members. However, some children purposely choose not to attend school in order to work with tourists inside the PAP. The possibility to quickly and easily earn money allows children to provide an extra income for their family. However, it harms the children as they are not getting school education and are involved in illegal activities as Jordanian law strictly forbids child labor. Furthermore, it contributes to promote a wrong image of the region as being backward and poor, where even small children are forced to work.

Recommendations:

- Implement a number of capacity building modules and provide training on life skills (communication skills, negotiation/refusal skills, empathy, cooperation and teamwork, advocacy skills, decision-making and problem solving skills, critical thinking skills, skills for managing feelings as well as stress management skills) for teachers, children and youth within the education system.
- Libraries should be available to all young people of the region. Where libraries cannot be set up or can only be created in the long run, a library-bus scheme could allow communities located in the periphery to borrow books or smaller libraries to share resources of bigger ones.
- Provide all schools with modern ICT facilities supporting the education of schoolchildren.
- Establish more youth centers for boys and girls across the region and provide them with the equipment needed to offer a variety of activities, such as computers or music instruments etc. Ideally the youth could be involved in setting up these centers through initiating for example fund raising campaigns to equip the centers.
- Create (especially for girls), a scheme for sports facilities open at specific times to them and dedicated places where girls and women could meet in each community (e.g. women center which would also provide targeted classes for them).
- Hold regular youth consultation meetings and encourage each community to select a male and a female youth representative. These youth representatives would be in-

vited to closely follow and discuss together with official representatives the plans for the future of the region.

- Collaborate with schools and teachers to develop measures to keep children in school, which will include educating and awareness rising of parents.
- Install 'follow up' social service assistance to children withheld from schools.
- Promote life skills among education providers, decision makers, children and young people to reinforce a sense of "schooling and tourism" in Petra and to promote labor rights - including gender equality -, in order to place children and youth on a better footing, enabling them to pursue their own educational, cultural- and career development.
- Raise the awareness of tourists: When buying a ticket, tourists should be informed that they harm children and the development of the region if they give money to children or pay children for products or services. They should be reminded that only education could improve the social and economic situation of the children over the medium- and long-term.
- Establish clear regulations: It is suggested to remove economic activity from the PAP and create designated areas for shops, restaurants, etc. outside of PAP. In this new entertainment, tourism services and facility area there should be strict controls that there is no child labor.

#### **6.3.6 Influence of Tourism - potential hazard for traditional social structures**

The evaluation of the questionnaires distributed during the community workshops shows that tourism is perceived as beneficial for the Petra Region. Across all communities, the large majority of people expressed the wish to have more tourism attractions and more tourism accommodation facilities in their communities. However, according to the workshops especially women fear that tourism may potentially threaten their local traditions and customs.

Recommendations:

- The local community should have the option of being directly or indirectly or not at all involved in tourism. In the future planning process PDTRA should consider the division into three types of tourism zones; a) high tourism intensity; b) low tourism intensity; and c) "tourism – free" residential area. In this way the negative influences of tourism can be contained and tradition be kept leaving the population the choice not to be directly involved in tourism. This however requires that enough alternative sources of income are available in each community.
- There are several possibilities of creating family income that are indirectly related to tourism, since tourists constitute potential buyers. There are many examples where such local productions have led to worldwide marketing of quality products of high value and good taste:
  - Producing and selling handicraft products for souvenir shops and souqs in the Petra Region and in Jordan in general as well as for export.
  - Producing and selling medical and aromatic native herbs
  - The creation of a design institute where handicraft and arts can be produced and sold.
- An idea that was discussed locally was the establishment of a research institute for environmental studies – with a special emphasis of researching traditional Nabataean skills of water management – providing job opportunities for qualified women and men in research and education.

## 6.4 Protection of the Natural and Cultural Environment

Protection of the natural and cultural environment of Petra must be seen as a long-term investment in a landscape context without which the main antiquities site is significantly less valuable. The extended stay days envisioned for the Petra Region depend almost entirely on the "canny exploitation" of this landscape, as it holds the additional attractions, which will keep visitors in the Region.

### 6.4.1 Brief overview of constraints

Natural hazards include earthquakes, flashfloods and climate change. Intensifying the severity of these hazards are human contributions to the bundled processes, which constitute desertification:

- De-vegetation (overgrazing, fuel wood gathering and inappropriate agricultural practices);
- Soil depletion (depletion of organic matter, erosion and consequent inability to bank rainwater);
- Depletion of groundwater resources (over-extraction and channeling runoff) and intensification of drought cycles through de-vegetation;
- Inappropriate development (roads, construction sprawl, pollution of air, water, view sheds, etc.).

It is important to accept the reality of climate change and the need to adapt within the context of long-term change. Certain kinds of reforestation and agricultural development, for example, are simply no longer feasible due to hydrological changes in the Region and in Jordan as a whole. At the same time, it is worthwhile to note at the outset that all of these constraints also present opportunities for investment and positive development for the local communities: opportunities for "canny exploitation."

### 6.4.2 Specific conservation and mitigation measures

#### Assessment

It is vitally important that PDTRA build its databank for the region in order to make informed and appropriate planning decisions. At present there simply exists no complete and scientific baseline data on the flora and fauna of the Region. While the SMP mapping exercises have contributed to PDTRA's basic planning tools, there is also no formal risk analysis for the region, nor is there a data bank of background/baseline information on the hazards noted above (e.g., floods and earthquakes). It is recommended that the following assessments be conducted and available as planning tools:

- Assessment of hazards: information on individual categories of hazards; historical research; collection of data; hazard frequency; location of hazard occurrence; intensity of hazards; hazard mapping and zoning;
- Assessment of vulnerability of populations and physical and built environment: existing and projected; what are the elements exposed to hazards? What is their value?
- Assessment of risks: risk is the product of hazard and vulnerability;
- Review of existing capacities of community/society/region to face the risk and to cope with it while defining the acceptable level of risk for the community/society/region.

Successful development of new local agri-business, range management measures and eco-tourism – not to mention environmental conservation – will depend on the availability of base-

line data, which does not currently exist. It is recommended that the following baseline surveys be conducted as soon as possible:

- Survey and mapping of natural vegetation, including establishment of GIS for long term vegetation monitoring and evaluation of ecosystem integrity;
- Biomass assessment for the various biotic zones with in the Region;
- Detailed forest survey and baseline assessment of forest health, especially in Hisheh/Ba'aja.

Earthquake preparedness is largely a matter of assessment and planning to focus effective earthquake protection strategies at enhancing earthquake resistance of buildings to earthquake damage, reinforcement of structural systems to increase the ability of a building to meet an earthquake's lateral forces and isolation of the building from the ground in order to interrupt or divert the lateral thrust of an earthquake. Such precaution should be taken when planning for new hotels or other major structures. Furthermore it is recommended to elaborate an effective response plan for emergency action in the event of an earthquake with full involvement of the people and of earthquake professionals.

### **Conservation & Mitigation**

Virtually the entire range of measures which would together conserve and mitigate existing damage to the Region's environment could be lumped under the heading of slope stabilization. Soil conservation and rainwater harvesting are "two sides of the same coin," as depleted and denuded soils cannot "bank" rainwater, leading to runoff of precious water resources and erosion of equally precious topsoil. Terracing and water harvesting, accompanied by both active and passive re-vegetation, will be crucial to halting ecosystem degradation, promoting local agri-business and livestock husbandry and to landslide and flood control.

#### Slope stabilization through terracing & water harvesting

- Terracing to contour across slopes with remaining topsoil

Throughout the Region, from lower Masoudha to the Namala Pass, the remains of Nabataean terracing systems are evident from the highest elevations all the way down to Wadi 'Araba. These terracing systems were not always for plantation: they were part of an integrated system of erosion control and water harvesting. Holding topsoil in place simultaneously encourages vegetation growth and enables the banking of rainwater, which is a mutually beneficial process.

- Restoring and introducing small-scale historic and new Nabataean-style hydraulics  
Terracing and Nabataean-style small scale hydraulic works in the upper catchment areas also function as flood control. Rainwater runoff is not allowed to gather momentum in the upper reaches of the watershed and become destructive at lower elevations. At lower elevations, particularly below the bare granite sandstone reaches below 800m above sea level more significant dams would harvest water for small-scale farming and livestock owners.

- Restoration of medium-scale dams on lower-elevation catchments.

We suggest that there is no point in building "huge protective structures" designed for catastrophic events, which are generally underused most of the time, but prove insufficient when an exceptional flood does occur. Extensive channeling of wadis and hardscape storm runoff systems only formalize the negative aspects of bare rock runoff, depriving the ecosystem of groundwater and failing to maximize the potential of rainfall. We recommend repairing as many as possible of the ancient dams built in the valleys by the Nabataeans for flood protection rather than to adopt an approach based on a few major engineering works.

### Re-vegetation

De-vegetation includes both tree cutting (deforestation) and the extensive clearing of steppe shrubs, e.g., *Artemisia sieberi* (Ar. sheeh) and *Achillea fragrantissima* (Ar. gaysoum) for agriculture and firewood. Acute and widespread degradation of the land by de-vegetation is a relatively recent phenomenon, a function of combined factors including deforestation, overgrazing and expansion of the agricultural land into the marginal lands and changes in farming practices. De-vegetation is a major contributory factor to soil erosion and consequently to the increase in magnitude and effect of flashfloods.

### Passive re-vegetation

- **Grazing control: zoning, implementation of managed grazing projects**  
Presently overgrazing gravely threatens both wadi and steppe vegetation. Based on biomass assessments (see above) the Region could be zoned into areas suitable for a variety of managed grazing regimes. Based on vegetation mapping (see above) some areas with sensitive species associations should be off-limits to all but the most carefully managed grazing for biodiversity enhancement.

- **Prohibition of firewood collection, picnic management**  
Unmanaged picnicking, both by locals and by tourists on overnight excursions, as well as firewood collection for domestic use is exerting a significant impact on forest cover. The establishment of managed picnicking areas, regulation of camping areas, and consistent enforcement of existing forestry laws are necessary to halt deforestation of woody plants and shrub species such as *Artemisia sieberi* (Ar. sheeh) and *Achillea fragrantissima* (Ar. gaysoum) which form the fabric of steppe vegetation which holds the topsoil layer in place.

### Active re-vegetation

- **Reforestation**  
A program of active reforestation should be established in line with the *Petra Archaeological Park Operating Plan* (PAPOP) guidelines. PAPOP advocates reforestation with native species propagated from locally gathered seed. Such a nursery program is an ideal use of treated wastewater from the Wadi Musa Wastewater Re-Use Project, which is currently releasing tertiary-treated water in to the wadis below the treatment plant.

- **Managed grazing**  
It would be advisable to institute managed grazing programs which combine temporary feed subsidies as incentives with gradual destocking of the range and seasonal management of grazing to improve species richness and biodiversity.

- **Firewood production/ alternatives**  
Another ideal use of treated wastewater is the production of firewood as an alternative to unmanaged deforestation for firewood use. Native species such as *Retama raetam* and *Artemisia sieberi* respond well to propagation and use virtually no water after establishment.

The olive press waste product known as *jift*, should also be promoted as a firewood substitute, particularly amongst tour operators and camps, who require large quantities of fuel wood for campfires. At least two local companies have switched entirely to *jift* since 2009, and its use solves both a waste problem (*jift* is highly acidic) and a deforestation impact.

### Creation of a GeoPark encompassing Wadi Rum, Petra Region, Masoudha and Dana:

The “Bare Rock” map (p.18 of the Map Atlas) depicts the region as overwhelmingly composed of bare rock, unsuitable for most development. This is not just any sort of bare rock, however: the geology of the Petra Region is unique, breathtaking, vast and varied. The very forces which create earthquakes – the contact between three continental plates – have also created the dramatic peaks and wadis of the Jebel Shera'. A geological tour of Petra reveals a fascinating series of landscapes marked by a great diversity of geological and geomorphological features. Due to this diversity the development of specific geological visitors' trails has a great touristic potential. Furthermore, there is a great opportunity for additional world recognition of the larger area of Petra and surroundings as outstanding GeoPark, which could comprise an area, including the Dana biosphere reserve, the Petra archeological park and the future Masoudha special conservation area.

Petra Region as a model and leader for water harvesting:

- Showcase the Nabataean systems – restore, interpret, demonstrate
- Use Nabataean infrastructure as the basis for trails and camps
- Update and refine Nabataean systems for local sustainable agriculture
- Use the Water Re-Use Project as a demonstration site
- Create a knowledge center, which leads the Region in innovative water conservation

Develop middle and high-end ecotourism networks:

- Wadi Rum and many of the local tour operators already serve low-end – these should be better marketed through the DMO.
- Within the plan for zoned tourism development designate intensive use, light use, no-go for vehicles, no-go for anyone; accordingly establish a network of walking trails, camel trails and horse trails connecting comfortable 'high-end' camps or guest houses
- Develop local lodgings with set menus based on seasonal/local products (see below), analogous to the Italian "agro-turismo" network.
- To serve this network develop two-tiered guide services – besides the guides which are officially approved guides through a national exam, a program to provide “light license” to become escorts for tourists only within the Petra region should be initiated, giving especially the lower educated local population a chance to provide licensed guiding services. Escorts would work in guiding treks, horse/ camel excursions, climbing, bicycle or eco-tours; the licenses could be provided through programs at the College of Tourism & Antiquities.
- Develop a system of managed picnicking and campgrounds for both domestic use and tourist use. Use a portion of the tourism income to fund services for domestic picnicking, especially at Sidd al-Ahmar.

Develop sustainable local agri-business

- Develop agro-industry focused on small-scale productive of medicinal and aromatic species, with a cooperatively owned processing unit to produce extracts and essential oils.
- Managed grazing projects to produce high quality meats and free-range organic meat as value-added products;
- Develop agro-industry focused on the small-scale production of organic/ heirloom vegetables.
- Establish restaurants focused on local products (above), Mediterranean rim cuisine, and vegetarian menus.

### **Institutional support**

While these matters will be addressed in detail in other parts of the Master Plan, it is worth noting that none of the specific measures outlined above can be implemented in the absence of institutional support, including informed planning, capacity building, project management and law enforcement.

Zoning and building codes potentially protect the watershed from further degradation. The population would require project managers to implement new agricultural practices and managed grazing programs, and these project managers will likely require capacity building exercises to improve technical expertise as well as adequate staffing, transportation and support. Finally, there must be a framework of enforceable laws in place, and the political will, staffing and infrastructure (e.g. vehicles) to enforce them consistently, without favoritism.

## **6.5 Land-use**

### **6.5.1 The planning process**

It is recommended to base the preparation of a comprehensive land use plan for the Petra Region upon several simple yet important principles. First, the archaeological and natural resources of the region must be protected from the outset as their integrity is critical to the long-term economic health of the region and the well being of local residents. For this to occur, these resources must be identified and mapped comprehensively. Past studies have considered only areas immediately surrounding the various communities. As a result outstanding questions remain about the appropriate boundaries of the Petra Archaeological Park, the protection of resources outside of the park, and the boundaries and the function of the surrounding buffer zone. We have prepared Land Sensitivity Maps to address these issues (See Land Sensitivity Maps pages 7 - 21 of the Map Atlas). Although information was obtained on the habitat of important bird species this information was not factored into the Land Sensitivity Map because it was not deemed to be sufficiently accurate. Similar information obtained from the Natural Resource Authority (NRA) suggests that much of the Petra Region has been considered for mining concessions. It is assumed that - given the priority placed on the creation of natural and archaeological reserves and protection - the PDTRA will work with the NRA to insure that these concessions are extinguished and that mining does not occur in the region (See Land Sensitivity Maps pages 13-17 of the Map Atlas).

It is recommended to wisely manage and/or protect lands with the following characteristics:

- Wadis
- Steep slopes (above 30%)
- Archaeological sites
- Monuments
- Tree and forest cover
- Fault lines
- Scenic views (both from major sites in the PAP and from the Scenic Road 35)
- Agricultural soils
- Soils with bare rocks
- Reserves
- Conservation areas

Development should be encouraged where it has the least impact on important archaeological and natural resources and allows for the greatest ease and efficient delivery of public facil-

ities and services. The lands recommended for conservation are shown on (See Conservation Land in PDTRA p. 38 of the Map Atlas). Lands with agricultural soils should be wisely managed or protected. Growth will require additional investment in roads, utilities, and public facilities and services. As a general rule a compact development pattern allows for the most efficient delivery of infrastructure and services and the greatest protection of archaeological and natural resources. (See Growth Efficiency Maps pages 23 - 31 of the Map Atlas)

Development should occur in a logical and orderly fashion. Investment in infrastructure and public facilities likely cannot occur in all communities at once and therefore priorities must be established. By combining the Land Sensitivity Map with the Growth Efficiency Map, we prepared a Development Priorities Map. The highlighted areas are those land areas where development can occur with the least impact on important archaeological and natural resources and allowing for the greatest ease and efficiency of providing public services. (See Development Priorities Map p. 29 of the Map Atlas.) Such an approach also suggests logical phasing for future development of the region, as outlying areas, not currently serviced by utilities and public facilities would be the last to develop. In turn, the PDTRA should strongly resist the pressure to serve these outlying areas before existing development areas are fully built out and current deficiencies of utilities and facilities are met.

It is not sufficient to simply indicate the appropriate locations for development. Once the appropriate lands have been identified and priorities established, the quantity and character of development that is appropriate within the region must then be considered. The quantity of development is a product of the projected growth rate of the region. This growth rate is in turn influenced by the success of the PDTRA in implementing an effective tourism strategy and conservation strategy for the region.

The ability of the PDTRA to accommodate the projected growth of the region is dependent upon the form and character of the communities desired by local residents. Amman, for example, has developed at roughly twice the current population density of Wadi Musa. The Petra Region can accommodate a great deal of growth if a form and density similar to Amman is deemed acceptable. However, such density may not be in keeping with the desires of local residents, the expectations of national and international visitors, or protection of the archaeological or natural resources. Such a balance is often described as the "carrying capacity" of the region; however, the concept of "carrying capacity" has a qualitative dimension that must also be considered. This is particularly true of tourism communities where the potential of the region to capture tourism expenditures is directly related to the quality of the place.

In addition, advances in technology or alternative levels of investment can also affect the carrying capacity of the region. For example, water is the primary constraint on the future development of Jordan and of the Petra Region. It is likely that development within the Petra Region has already exceeded the level that can be balanced with the natural rainfall and groundwater resources of the region. The level of future development that can occur within the Petra Region will be determined by the amount of water allocated by the National Government from either the well fields near Ma'an, the Red to Dead Canal, or any other new resources that may be developed.

In determining the magnitude of build out of the region, it is useful to develop a series of Development Scenarios. These scenarios will allow the economic development potential of the region to be considered, as well as, the potential impacts of projected development.



Determining the future development of the Petra Region also has a political dimension. Some alternatives may be acceptable to local communities but not to national or international environmental or cultural resource preservation groups. Some scenarios may adversely impact the region's archaeological and natural resources, while others may not optimize the economic potential of the region. For this reason, a series of alternative Development Scenarios have been created, which will allow the leadership of the nation and PDTRA, local residents, and interested national and international parties to consider the future of the region.

The four development scenarios considered will be then tested in order to understand the ability of the land to accommodate these varying levels of growth. The variables in this analysis are the densities, the quantity of developable land and the population growth rate. The analysis assumes that the average household size remains constant under all scenarios while the average density of development may change. However, experience elsewhere suggests that as income and education levels increase, average household size generally declines. Strategies to increase the economic prosperity and educational attainment of local residents, therefore, can in turn reduce the impact of population growth on the environment.

Research elsewhere would suggest that the education of women could have a significant impact on family size. Other than establishing a cap on the total build-out of the region, there are simply no means to manage the population growth rate. In responding to this growth, the PDTRA can choose to a) develop more densely b) lower the standards for protection of sensitive lands (no protection of agricultural lands, wadis, etc.) and thus increase the total developable land c) put a cap on the total population or total units or d) form a hybrid of a, b or c.

The Growth Efficiency Map illustrates those portions of the Petra Region, which can most easily be serviced by existing infrastructure including utilities (water, sewer, electric, and telecommunications), roadways, and public facilities (schools, police and fire stations, medical facilities, and parks). Ideally development would be located within easy walking distance of public facilities in order to minimize the need for transportation. The closer development is to existing utilities and roadways, the lower the cost of development. As with carrying capacity, this map can be modified over time by public or private investment. The extension of new roadways or utility lines makes previously undeveloped areas of the region more economical to develop. A reasonable return on public or private investment, however, would suggest that the region maximize the use of existing infrastructure before expanding into new areas. Similarly, the ability and cost of providing fire and police protection, emergency services and transportation to distant locations creates another burden on the PDTRA. (See Growth Efficiency Summary Map p.28 of the Map Atlas).

By combining the Land Sensitivity Map with the Growth Efficiency Map, a third map can be created – the Development Priorities Map. As the communities within the Petra Region expand, they should grow into those areas which do not contain sensitive resources and which are in close proximity to utilities, roadways, and public facilities. The Development Priorities Map helps to establish the priority for new development and for public investment to accommodate it. (See Growth Efficiency in Maps pages 23-31 of the Map Atlas)

The growth of each community needs to be carefully balanced to its water needs and infrastructure requirements, and in a manner that does not increase flooding within the Petra Region and the Petra Archaeological Park in particular. With this in mind, the Municipal Planning District map suggests planning areas for each community. In general, the planning areas

conform to the boundaries of the watershed in which the community lies. In this way the Municipal Planning District supports the concept of watershed management.

### **6.5.2 Recommendations for Ongoing Planning for the Petra Region**

The preparation of the Strategic Master Plan for the Petra Region revealed a number of potential areas for improvement in ongoing planning processes. This plan was prepared with the best information currently available in the public domain and/or from various government ministries. However, additional original research would greatly benefit the ongoing planning of the Petra Region and improved and ongoing processes for public engagement; information gathering, storage, and retrieval; and collaboration with special interest groups would help to create an even better plan in the future. In particular, the following recommendations should be implemented:

#### **Information Gathering and Research:**

- Gathering information for this effort was made difficult by the fact that each Ministry maintains its own geographic information system database and information. Planning for Petra and other regions of the country would be much easier and more efficient with the creation of a National Geographic Information System to which all Ministries provide data and continual updates. It is recommended that this data be provided at no charge between Ministries and to consultants working on projects for the government in order to facilitate information flow.
- As a condition of activities within Petra Region, all public and private sector entities should be required to provide all research and technical data to PDTRA as a means of building the authority's GIS database for the intelligent long-term management of the region. Similarly all utility providers (water, sewer, electric, telecommunications, etc.) should be required to provide GIS compatible mapping of their infrastructure systems.
- A website should be created whereby all interested partners, particularly environmental and archaeological researchers, would access data in order to facilitate ongoing research in the region.

#### **Ongoing Public Engagement:**

- PDTRA should create an ongoing system for soliciting public input concerning the management of the region, including the establishment of advisory councils from each community and the major economic sectors. The current process of public engagement, in which stakeholders have significant involvement in planning only periodically and in conjunction with major planning efforts, is not efficient.
- PDTRA should hold a series of work sessions with major national stakeholders – including Petra National Trust, Royal Society for the Conservation of Nature, UNESCO, ACOR, and other archaeological institutes – to review the recommendations of this plan and to solicit their input.
- PDTRA should hold a series of work sessions with all national ministries to review the recommendations of this plan, to solicit their input and to ensure alignment of all national strategic plans. Ideally the strategic plans of all ministries would align with the planning horizons of this document – three years, seven years and 20 years. In addition, efficient management of the resources of PDTRA would be aided by the appointment of an individual from each ministry as a liaison to the PDTRA.

#### **Additional Research Needs:**

This strategic master plan makes specific recommendations regarding lands that are suitable for conservation and lands that are suitable for development. These recommendations are

based upon the best information currently available at this time. More detailed research would allow for more intelligent and better-informed decisions. In particular, four areas of ongoing research are needed:

- The data obtained from PNT and RJGC provides a general overview of vegetation zones and types. A more detailed mapping of native plant communities throughout the Petra Region should identify plant communities that are rare and endangered or which have potential commercial value.
- Mapping of all known archaeological resources within the region. The Department of Antiquities and the Getty Conservation Institute Middle Eastern Geodatabase for Antiquities (MEGA), MEGAJordan are currently creating an electronic inventory capable of maintaining information on site location and extent, site characteristics, and site condition, which will help standardize and centralize information on archaeological sites throughout the country in a single system focused primarily on the aims of heritage management and research. As a first priority, the data should focus on sites that are a high priority for protection, coordinating with the Department of Antiquities and Hashemite University. The recommendations of this plan should be updated once information from this project can be made available.
- More detailed topographic data will more clearly define areas where development is constrained and will also assist in a more accurate delineation of water sheds to balance growth and water supply. A higher resolution aerial will allow wadis to be delineated. 1 meter data is recommended for urbanized areas and 3 meter data for regional planning. LIDAR (Light Detection and Ranging) data can provide this level of accuracy.
- A mapping of geological resources and conditions, notably geologic faults and landslides, which might affect developable areas.
- A hydrologic investigation to determine the amount of site coverage that can be accommodated in the area without creating site flooding in the Siq and other areas of Wadi Musa.

#### **Protected Areas, Buffers and Boundaries:**

We believe that PDTRA should partner with the Royal Society for the Conservation of Nature to manage the ecological resources of the region in order to build capacity within PDTRA for ecosystem management. This partnership would include ongoing research by RSCN on the environmental attributes of the region such as wildlife habitat, native plant habitats, etc., similar to what this organization has completed for the new Masoudha Reserve. It is also recommended that RSCN and PDTRA continue to plan the development of a network of trails throughout the Petra Region, which would connect the region to the Dana Reserve, Yellow Mountain, Petra, Masoudha and Rahmeh Reserves.

The escarpment of the Wadi Araba and the spectacular geology of this region should become a continuous protected area from the Dana Reserve on the north (and perhaps beyond) to the Rahmeh Reserve on the south (and perhaps beyond). Along this corridor a trail network can be developed linking the Feynan eco-lodge with the dunes of Yellow Mountain, to another encampment or eco-lodge providing employment to residents of Baidha, to Petra, and on to five-star eco-lodge in Al Hai neighborhood north of Wadi Musa. Care should be given to identifying the locations and standards for trail use by horses, camels, four-wheel drive vehicles, mountain bicycles and hikers. This protected area would be provided with a zoning plan that identifies Core Areas of critical wildlife and plant habitats or archaeological resources with limited tourism activities and multiple-use areas where grazing, agriculture, and tourism activities could occur.

Based upon the results of the RSCN investigation, another Reserve (perhaps associated with Yellow Mountain) may be appropriate on the northern boundary of the Petra Archaeological Park as a buffer along this boundary. Similarly, the intervening area between the PAP and Masoudha area may also be added either to the PAP. For much of the region, Bedouin use of the land for grazing and agriculture should continue. (See Regional Conservation Strategy Diagrams p. 34 of the Map Atlas).

We believe that the communities should consider how the villages, which border this protected area, might also benefit along the Wadi Araba Highway as well as the communities within the Petra Region. These communities might provide park rangers for the southern boundaries of both the Petra Archaeological Park and the RSCN Reserves as well as to provide other tourism services.

The Kings Highway and the Masoudha Highway through the Petra Region should be designated as Scenic Roads. These roads should be promoted for their scenic value and be protected from development that is inconsistent with these aesthetic qualities and that might diminish their tourism value. (See Land Sensitivity Analysis – Areas Visible from Scenic Road p. 20 of the Map Atlas.)

It is not clear how the boundaries of the Petra Archaeological Park were established. Discussions with UNESCO have not revealed the rationale for the boundaries. Similarly there is no apparent logic to the Petra Region boundaries. We recommend that the Petra Region boundary change as shown to more logically conform to watershed and topographic boundaries. In a similar way, the boundary of the PAP should be modified as well. Furthermore, agreement should be reached on the appropriate boundary of the PAP before UNESCO begins its planned boundary mapping and documentation efforts in 2011. (See Proposed PDTRA and PAP Boundaries p.35 of the Map Atlas.)

In order to maintain a diverse economy, prime agricultural lands within the Petra Region have been mapped and should be given high attention to keep the balance between environment and development. An Agriculture Zoning district should be created to protect these lands from development. (See Soils – Suitable for Agriculture p.16 of the Map Atlas.)

**Petra Archaeological Park:**

It is recommended that the Petra Museum be moved from the park into the town of Wadi Musa in order to reduce tourism impacts within the archaeological site but also to provide reasons for visitors to the park to visit the city centre of Wadi Musa as well and to extend hours of visitation into the evening. Three sites should be considered for the new museum: one along Wadi Musa adjacent to the university, a second replacing the current PDTRA office buildings in the heart of downtown, and a third adjacent to the new visitors' centre. Ideally, this museum would be the product of an international design competition in order to draw attention to the improvements within the region.

The proposed theatre which is intended to provide orientation to visitors to the Petra Archaeological Park should be located in such a way that it can also be accessed and utilized at night and other times when the park is closed to show films set within Jordan (Indiana Jones and Last Crusade, Lawrence of Arabia, etc.) or about ecological (desert landscapes) or archaeological themes of relevance to the Park. The theatre should also be designed in such a way

that it can be utilized for lectures, theatrical, and musical performances as well. Such events can be effective in increasing hotel occupancy during the low and shoulder seasons.

A zoning plan has been suggested for the Petra Archaeological Park. Prior to adoption, this plan should be fully vetted with the Petra National Trust, UNESCO, RSCN, and various archaeological missions as well as with the local communities.

Access to certain areas of the PAP, notably the Monastery and High Place, should be made available only to those in sufficient physical condition to make the hike. The use of electric vehicles, horses, and donkeys should be banned in order to protect these sites. However, this total ban of vehicles and animals will only affect the core areas of the PAP, visited by the majority of the tourists and will contribute to avoid further overcrowding. In other, less frequented parts of the PAP, the use of animals on specific trails should be allowed. (See Petra Archaeological Park Conceptual Zoning Plan p.36 of the Map Atlas.)

Currently the economic incentives created by work opportunities in the park favor the young and uneducated, as little qualifications are required to drive a cart or donkey, to transport guests or to sell souvenirs within the park. The absence of “barriers to entry” is a significant reason for the child labor problem in the park. The elimination of horses and donkeys within the park will no doubt be met with resistance. However, if all visitors to Petra were required to take a guide, there would be new opportunities for locals to establish businesses as guides as the use of carts and donkeys fades away. We recommend that PAP develop a qualification/certification program for guides, who would receive a license as “local guides,” in addition to the present work of some 70 “Jordanian Guides” who need to have a BA and broader knowledge that entitles them to guide all over Jordan. Minimum educational requirements (high school or college) and a periodic testing of one’s knowledge of Petra and Nabataean history and culture would be required. Additional certification might be required for guides that develop specialized knowledge (and are trained and tested for this knowledge). This would include interpretive themes such as the archaeological investigation process, archaeological restoration, Neolithic cultures, native and medicinal plants of the Petra region, local cultures, etc. Guides would thus have incentive to gain new bodies of knowledge because they would be able to charge more with more certification OR lead a wider range of trips and tours. Economic incentives need to be aligned with desired outcomes.

The Crown Plaza Hotel, currently located within the park, is well suited for the benefit of tourists. However, there is some criticism that it unduly encroaches on the park and impacts important scenic and archaeological resources. In addition, as with many of the hotels within the region, it is designed and operated as an independent “island,” with guests “held captive” by individual operators. All meals, for example, are often eaten in the same facility during the course of the guest’s stay in the region. In many cases the locations of these hotels do not support ‘walkable’ communities, requiring the transport of guests by bus or car. In the future hotels should be located to benefit the entire community, with guests located in easy walking distance of other restaurants and shops. In so doing, the perception that the benefits of tourism flow to outside interests rather than the community will be diminished and resentment reduced since expenditures will be spread more broadly through the community. Similarly, through expenditures by visitors in local shops and restaurants the economic health and quality of local enterprises will improve – a benefit to the quality of life of all residents of the PDTRA. We recommend that when the Crown Plaza reaches a point of becoming functionally obsolete and is in need of reconstruction that it be sited either outside the park or, at a mini-

mum, at the edge of the park, fronting a public street where hotel guests can more actively engage in the community.

### 6.5.3 Municipal Zoning for the Communities of Petra

Each of the communities within the Petra Region currently has zoning in place. However, when this zoning was created, the type of extensive land analysis that is contained here was not undertaken. As a result, the current zoning plans do not protect wadi lands, agricultural soils, steep slopes or forest cover from development. In a similar way, important views from the Scenic Road or within the PAP are not adequately protected. In addition, the development opportunities described within this document were also not fully contemplated. For this reason, an update of the zoning plans of all communities is warranted recommendations in this report.

The form of zoning currently utilized in the Petra Region is what is often referred to as Euclidian zoning. In this type of zoning, land uses are separated horizontally into discrete districts - residential, commercial, and industrial, etc. This can lead to the inflexible use of land for property owners and reduced vitality for the community. Such zoning often precludes corner grocery stores and neighborhood restaurants, for example.

Urban designers and planners are increasingly turning to form-based codes to direct development. Such codes are more concerned with the form and character of a community than with the separation of uses. Form-based codes are particularly appropriate for a tourism-based community where the character and walkability of the community itself becomes a major draw for tourists. It is recommended that the PDTRA give consideration to replacing the current Euclidian zoning codes of the community with a form-based set of standards.

### 6.5.4 Tourism Zones with the Petra Region

An estimate of the demand for additional hotel rooms within the Petra region, suggests that an additional 3500 rooms may be needed by 2030 if the maximum carrying capacity should be reached by that time. As tourism facilities within the Petra Region will consist primarily of these hotel rooms and related attractions and interpretation and entertainment facilities, it is useful to consider the amount of land that will be required to accommodate this maximum number of additional hotel rooms. An evaluation of hotel development within the PDTRA, in Amman, and in Aqaba suggests that a density of 150 hotel rooms per hectare can be considered a reasonable standard. At such density, 27 hectares of land would be required just for additional hotel facilities.

**Table 10: Precedent Hotel Densities**

<b>Hotel</b>	<b># Rooms</b>	<b>Density (rooms/Hectare)</b>
Feynan Eco-lodge	26	n/a
Taybet Zaman	105	50
Mövenpick Nabataean Castle	90	32
Petra Panorama Hotel	130	88
Mövenpick-Petra Entrance	183	366
Sheraton, Amman	268	268
Bristol, Amman	170	88
Four Seasons, Amman	192	192
Radisson Blu Tala Bay Resort, Aqaba	336	168
<b>Average Density</b>		<b>156,5</b>

From point of view of road accessibility, a good location for these tourism facilities is along the Scenic Road. However, in order to minimize bus and automobile circulation within the Petra Region, ideally as many rooms as possible should be located within walking distance of the park entrance/exit gate. Dlagha is considered too distant from the park entry for major tourism development. With the exception of some eco-lodge(s) in the newly designated Masoudha Reserve no additional hotel development is anticipated in this community. The residents of Rajif have expressed reservations about the development of tourism accommodation facilities in their community as well. For this reason, only a small number of hotel rooms would be recommended for Rajif, ideally associated with the restoration of Old Town Rajif. In Taybeh, another 200 hotel rooms are recommended. These would ideally be located near or adjacent to the existing Taybet Zaman and would extend the tourism district from Taybet Zaman up to the Scenic Road. These rooms could be configured as one major branded hotel or a series of smaller boutique hotels, or still more guest houses, depending upon the desires of local residents.

Another eco-lodge of approximately 25 rooms is anticipated in the north of the Petra Region, ideally at a one-day hiking or riding distance from the existing Feynan Lodge in the Dana Reserve. This would form part of the lodge-to-lodge system outlined in this strategic plan. Ideally, the majority of the employees of this eco-lodge would come from Baidha. As in Taybeh, a few hundred-hotel rooms are anticipated over time in Baidha, focusing on serving those with a special interest in Little Petra and/or the Neolithic sites in Baidha as well as the proposed Petra Animal Park. Umm Sayhoun, although currently overbuilt for the available land area should nonetheless, have an opportunity to participate in tourism as well. It is anticipate that rooms would be built in Umm Sayhoun in the form of family run guesthouses.

The majority of hotel rooms, therefore, would fall to Wadi Musa. These rooms however, should not be spread throughout the city, in part to insure that residential neighborhoods are not adversely impacted by tourism and the car and bus traffic they inevitably bring with them. Instead, the 2850 projected hotel rooms would be clustered in and around the entry to the Petra Archaeological Park, along the proposed Central Gardens, and in Old Town Wadi Musa. In this way these "hot beds" can help to stimulate the shops and restaurants in the city and contribute to a walkable environment. Wherever possible hotel rooms, as in the Mövenpick at the Park entrance would be built above retail shops and restaurants, creating a dynamic environment for visitors to the region.

An additional 100 units have been projected for expansion of the existing hotels along the Scenic Road. It would be preferable to expand existing facilities, which already require transportation services and which have already impacted their given sites, that to encourage sprawl into new, currently undeveloped areas of the PDTRA.

#### **6.5.5 Recommendations for Land Use for the Expansion Areas**

The land analysis described earlier in this strategic master plan has identified areas for future development of each of the cities within the PDTRA. While a portion of these areas will be needed for future tourism development, the vast majority of the lands should be utilized for residential housing development in response to the natural growth of the PDTRA region, and not for speculative development.

Within these residential areas designated neighborhood centers will enhance the quality of life of area residents by locally serving facilities within walking distance of their homes. These

services would include a mosque, an elementary or middle school, a neighborhood park and playground, and local shops and retail. It is anticipated that these neighborhood centers will require approximately eight hectares each. At this time, these neighborhood centers are located only diagrammatically. The precise location and configuration of these neighborhood centers should be determined at the time the residential areas they serve are developed.

Development within these areas should only occur in response to the growth of population within the region. It is strongly recommended that an urban growth boundary be defined around each community beginning with the existing designated town boundaries. Expansion of the town boundaries should only occur once the land within the existing town boundaries are built out. Premature extension of these boundaries will discourage compact development within the communities, lead to undue land speculation, foster poor urban planning, and require significant and premature investment by the PDTRA in infrastructure and services – funds that are better used to address existing deficiencies within the existing developed areas. Development within these areas will be decided upon by the Commissioners higher council in Petra region, which will be responsible for land use and regulations.

#### **6.5.6 Development Standards for the Tourism and Residential Areas**

It is not clear why prior planning studies for the region suggested allowed site coverage of only 25% of lot area. Perhaps it was an effort to insure the rural character of the region. Perhaps it was to provide for onsite agriculture on residential home sites. Perhaps it was to insure that some open space remained within the communities of the Petra. A thorough investigation into the contractual agreements between the World Bank and the Government of Jordan did not reveal any obligation on the side of the Jordanian authorities to adhere to a certain site coverage, with the exception of the so called “Dara” area (opposite the Mövenpick hotel, located below the Al Hussein University Wadi Musa college) near the PAP Entrance, where a site coverage of not more than 25% has been agreed in the minutes signed by both parties before contract signature. There are no regulations stipulated for site coverage in the 2005 "Second Tourism Plan" (they only refer to flood control measures in a general way).

This strategic plan suggests more precise means of meeting these objectives. First, by zoning lands with environmental and archaeological constraints throughout the PDTRA as conservation lands, the predominately rural character of the region is preserved. Second, by insuring that the prime agricultural soils within the region are zoned as agriculture, the agricultural economy of the region can also be preserved. Finally, to insure that adequate open space remains within the communities is provided, two approaches are suggested.

First is to very clearly zone the wadis of the region as conservation lands with sufficient setbacks to insure that buildings do not encroach on these important drainages. Wadi agriculture, common in the time of the Nabataeans, can remain and perhaps even be expanded within the communities. A second form of open space, developed park land within the neighborhood centers of the community will insure that the residents of the community have places for active recreation and community gatherings.

As a result of insuring that agricultural lands, open space, and the rural character of the region are well protected, those lands that are deemed suitable for development should then be developed as healthy, vibrant, economic enterprises and wonderful residential neighborhoods. Rather than a 25% site coverage allowance, **it is recommended that this figure be**



**raised to 50%.** This recommendation is based on an analysis of hotel developments within Amman, the PDTRA, and Aqaba. It should be noted that an outlier example, the site coverage of the Bristol Hotel in Amman, is a situation in which all parking is structured. Structured parking is not considered to be financially feasible for the Petra region and inconsistent with visitors' perception of visitation to the PAP. These higher coverage ratios will create a more favorable condition for development and help to insure the economic success of new venues. A similar analysis was conducted of residential neighborhoods in Amman and Aqaba and Wadi Musa. This analysis would similarly support the 50% site coverage figure.

**Table 11: Site Coverage Calculations**

<b>Hotels</b>	<b>Parcel (Ha.)</b>	<b>Buildings (Ha.)</b>	<b>Drives/parking (Ha.)</b>	<b>Site Coverage (%)</b>
Taybet Zaman	0,465	0,081	0,100	38,92
Mövenpick Nabataean Castle	2,838	0,671	0,801	51,87
Petra Panorama Hotel	1,474	0,737	0,207	64,02
Mövenpick-Petra Entrance	2,791	1,087	0,216	46,66
Sheraton, Amman	0,113	0,020	0,013	29,20
Bristol, Amman	0,433	0,229	0,184	95,38
Radisson Blu Tala Bay Resort, Aqaba	2,500	0,967	0,336	52,12
<b>TOTAL/AVERAGE</b>	<b>10,614</b>	<b>3,792</b>	<b>1,856</b>	<b>53,21</b>
<b>General Sites</b>				
Wadi Musa downtown (typical sample area)	4,125	1,621	0,452	50,25
Taybeh central district (typical sample area)	5,103	1,466	0,840	45,19
Umm Sayhoun (typical sample area)	0,130	0,027	0,015	32,31
Amman residential (typical sample area)	1,500	0,685	0,169	56,97
<b>TOTAL</b>	<b>10,858</b>	<b>3,799</b>	<b>1,476</b>	<b>48,59</b>

**It is recommended that site coverage for all development within the PDTRA region be capped at 50%. However, it is absolutely essential that in raising the coverage limit from the current 25% that all recommendations to wisely managed conservation lands are implemented (steep slopes, agricultural lands, forests, wadis, and archaeological sites). To raise this limit and not appropriately zone these conservation lands, particularly the setbacks from the wadi would be disastrous as runoff and flooding into developed areas and the park would be increased.**

Furthermore, all developments must be required to retain or percolate 100% of rainfall and runoff on their site based upon the predevelopment condition. A minimum of 50% of the site area should be in trees, shrubs, or other porous materials. Cisterns must be required for all buildings at a minimum size of 20 square meters of roof area. Other techniques to be considered are porous pavements (porous concrete, porous asphalt, or porous pavers for parking and roadway areas), rain gardens and bioswales (bioswales are landscape elements designed to remove silt and pollution from surface runoff water), or green roofs. Failure to en-

force these measures will result in a deterioration of the existing condition. However, if there is no firm commitment and willingness to require these features, the current coverage condition should not be changed.

In addition to coverage requirement on individual sites, the PDTRA can also play a role in minimizing runoff and in encouraging water harvesting. All public parking areas (including on street parking spaces and parking at schools, hospitals and other public facilities, and parking within the Petra Archaeological park) should be constructed of porous materials. As suggested in the recommended street sections, all roadways should be “right sized” and no larger than the minimum needed to accommodate slow moving traffic. Streets should be constructed consistent with the ideal of “complete streets” providing places for cars, transit, cyclists, and pedestrians, opportunities for civic gathering spaces, shade through street trees, and provisions for green storm-water management within the rights of way. By so doing impervious surfaces within the PDTRA will be minimized.

Table 13 shows the existing building heights in Petra Region per community as well as the recommended building heights measured in stories. The greatest heights are recommended in the Petra Entrance Hotel Area with 6 to 8 stories. At the street edge 6 stories shall be allowed while those buildings internal to the parcel may be 8 stories. With the exception of the Petra Entrance Hotel Area, it is suggested that the maximum building height in Wadi Musa shall be 4 stories. On the Scenic Road, it shall be allowed to build hotels with up to 3 stories above the road elevation, as it is the case already for some existing hotels. In Taybeh hotel zone, it is recommended that the building heights should be up to 4 stories. In all other areas throughout Petra Region, we recommend building heights of 2 stories.

**Table 12: Recommended building heights**

	Existing Building Height (Story)		Recommended Building Height (Story)	
	Residential	Hotel Commercial	Residential	Hotel Commercial
Baidha	1 to 2	1 to 2	2	2
Umm Sayhoun	2 to 4	3 to 4	2	2
Wadi Musa	1 to 4	2 to 4	4	4
Petra Entrance Hotel Area	-	4 to 8	-	6 to 8*
Downtown	2 to 5	2 to 5	4	4
Taybeh	1 to 4	2 to 4	2	4
Rajif	1 to 2	1 to 2	2	2
Diagha	1 to 2	2 to 3	2	2
Scenic Road (above the road elevation)	-	3	-	3
Eco-lodge	-	2	-	2

*\*With the development of a form-based code, the buildings along the street edge should be 6 stories, while buildings internal to the parcel may be 8 stories.*

In addition to the suggested requirements for site coverage and building heights, it is strongly recommended that all commercial (hotel, office, retail, and other tourism facilities) and all

public buildings (schools, mosques, park visitor facilities, medical facilities, etc.) be built according to the standards of the Jordan Green Building Council. The Jordan Green Building Council created under the Patronage of HRH Princess Sumayyah Bint Al Hassan and with USAID support should become an important strategic partner for the PDTRA. Working with the Jordan Green Building Council, similar standards should be developed for residential projects as well to insure a high level of quality but also at a price that is affordable to local residents. The implementation of such green building standards will also help to reduce the water and energy demands of region (an already challenging condition) but also insure that runoff is dealt with in the most environmentally friendly manner. Furthermore, green building is consistent with the expectation of international tourists and the Jordanian public.

## **6.6 Transportation**

### **6.6.1 Present Situation and General Considerations**

The present traffic and transportation situation in the Petra Region and particularly in Wadi Musa is considered by all parties concerned as one of the most critical issues in the region. One of the main reasons is the fact that most of the traffic for tourists visiting the PAP presently needs to go through the narrow (and often quite steep) streets of downtown Wadi Musa; this not only consumes time but also causes considerable traffic jams and pollution through carbon dioxide and noise. Most of the tourists arriving in Petra come in groups using large buses that often have difficulties passing each other.

This transportation situation makes shopping in downtown Wadi Musa for tourists and locals alike a rather uncomfortable experience. As a result, downtown shops and restaurants are by far not reaching their true sales potentials. Since a majority of the hotel rooms is located along the Kings Road, visitors are forced either to use their own buses for all visits during their stay or to take taxis (something only done by a small number). Even fewer tourists are taking the rather infrequent local busses that presently operate mostly based on demand.

As far as transportation for the local population is concerned, the inhabitants of communities at some distance from the central Wadi Musa area have mentioned inadequate regional transportation as a major obstacle to their economic development. However, it needs to be said that the main North-South road ("King's Road") between Baidha and Dlagha is in comparatively very good condition. The Scenic Road is quite wide and would allow for a separate bus lane and/or some parking spaces. So far, throughout Jordan hardly any parking areas or traffic lanes are striped. It is suggested to stripe roads in the Petra Region, in order to define bus lanes and/or bike lanes. Narrowing the roads (even with paint) would calm traffic and slow speeds (a very good thing in a tourist zone!). Large parts of the Scenic Road have a paved width of about 10 m minimum and extra space on the shoulder: the presence of two good driving lanes of 3.55 m width each would leave sufficient space for parking buses, riding bicycles etc. (See Major and Minor Road Sections Map p. 42 of the Map Atlas).

### **6.6.2 Recommended comprehensive Bus Transportation System**

Under present conditions and in the short-term (three or seven years) a state-of-the-art bus system is recommended to ease the obvious traffic problems of the Petra Region in general and in Wadi Musa in particular. The Petra bus system should be established as quickly as possible and should integrate the concept of a new Regional Transportation Facility (Interception Lot) at the main access road to Wadi Musa from Amman, Ma'an and Aqaba as well as the planned back exit of the Park in Umm Sayhoun. It would also fully replace the existing

public transportation system and would support the strategy of banning commercial buses almost entirely from entering Wadi Musa. It will integrate the current activities of establishing a bus line out of the back entrance of the PAP and bringing visitors back to a newly designed Entrance/Exit Gate. It is proposed as a system for both the local population and for tourists alike:

For the local population is recommended to offer a ticket for protected parking at the Regional Transport Facility with a bus ticket for maximum user comfort. This should motivate local residents who don't use their cars for commercial purposes to use public transportation instead. For tourists the price for using the buses ought to be included in their PAP Entrance ticket, so they can use the buses of all lines in a Hop-on / hop-off fashion that will motivate them to visit other tourism attractions and installations in all parts of the Petra Region, which in turn will be of great benefit to the local business community.

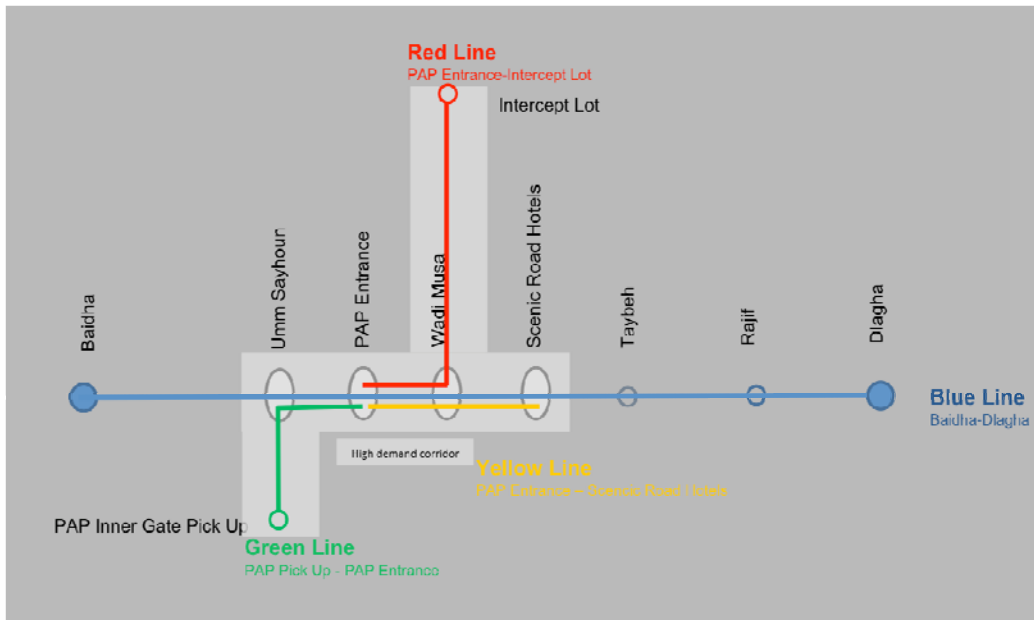
It is recommended for the PDTRA to outsource the entire bus operation to an experienced bus operator to be chosen on the basis of a nationwide public tender. Preferably, the winning company will own and operate the buses. The ticket prices, including price differentiation, would still need to be determined. Both express and local buses should alternate on these routes depending on demand. Petra tourists would want express service from the Regional Transportation Facility to the PAP Gate. Locals will need or prefer local service with stops they can walk to.

In order to meet the varying traffic demand it is recommended to use three types of buses  
Small buses (seating & standing capacity up to 50 passengers) as they are being used now to serve the local traffic between Baidha and Dlagha as well as the buses planned for the new Yellow line from the PAP to the Entrance/Exit Gate.

Large size buses (seating & standing capacity up to 150 passengers) that can cope with additional peak traffic volumes, presumably in the morning and afternoon hours.

It is suggested that private buses should not be permitted to enter Wadi Musa with the sole exception of vehicles that are carrying guests with reservations and their bags to hotels. After that, buses will still be parked outside of the watershed during the period of the guests' stay.

**Graph 2: Diagram of the recommended bus system**



**The Red Line: City Line (1 to 7 year scenario)**

The Red Line connects the new Regional Transportation Facility of Wadi Musa with the Park Entrance and is the backbone of the inner city transportation system of Wadi Musa. Depending on the estimated demand, city buses or articulated bendy can be utilized. Given a demand of up to 2,000 persons per hour in the peak hour and 100 persons per bus, 20 buses per hour are required, which corresponds to a frequency of one bus every three minutes. To avoid congestion, special bus lanes, for buses and taxis only, could be designated in some areas, if possible. The road infrastructure is not in an appropriate condition yet (surface, gradient and width) to meet the needs for this system.

**Graph 3: Diagram showing the red line bus route**



### **The Blue Line: Regional Line**

The Blue Line serves as the regional line to meet the needs of both the local population and the tourists who are accommodated outside of the very center (i.e. along the scenic road or in the villages or camps in the vicinity).

### **The Green Line**

The Green Line serves mainly as back haul link from the Inner Gate of the PAP up to Umm Sayhoun and on to the PAP-Entrance/Exit Gate. A planned bus stop in Umm Sayhoun has three functions:

1. Pick up tourist riding on animals or walking up to Umm Sayhoun (instead of taking the bus from the Inner Gate) to bring them back to the PAP Entrance
2. Change from to the Blue Line in the direction Baidha
3. Enable a stop for tourists visiting or staying in Umm Sayhoun.

### **The Yellow Line**

An additional Yellow Line may be considered that would operate between PAP Entrance and the Scenic Road and would serve as a direct link to the new built up area and the southern part of the town without touching the very center and therefore lead to a mitigation of traffic there.

#### **6.6.3 Creation of a Regional Transportation Facility (RTF)**

In the medium term (3–7 years) a comprehensive solution for all traffic arriving at the Petra Region should be established. Buses arriving from Amman or Aqaba should preferably use the Desert Highway (rather than circulate through Rajif and Taybeh into Wadi Musa). A new intermodal facility should be constructed at the junction east of Wadi Musa (just outside of Ein Musa) of the roads from and to Amman and Aqaba and Ma'an. For the time being, the existing bus facility in Wadi Musa should remain in its current location. Also visitors who have a hotel reservation and arrive with their private cars are invited to park their cars at the RTF, which shall offer protected parking spaces.

Only local residents and shopkeepers would be allowed to drive their cars into downtown Wadi Musa. For them, parking would be permitted at some future (partially open underground) parking facilities as well as in some clearly designated downtown areas, usable by sticker only. Local shop owners and local residents could have an annual pass ("sticker") for their cars; all other cars, including rental cars, would have to park outside of the core area. This would allow for the creation of some attractive pedestrian/shopping zones in downtown Wadi Musa.

If such rules and the alternative of a competitive public transport system will be implemented early, visitors will become accustomed easily to parking their cars outside the town or at the Scenic Road Hotels; such solutions are becoming ever more accepted in ecologically fragile destinations, such as Venice or Zermatt.

However, since distances are too long and grades too steep for visitors and residents alike to only walk in downtown Wadi Musa, we suggest a low-emission public transportation system from the Regional Transportation Facility through Wadi Musa to the Entrance Gate of the PAP.

## Regional Transportation Facilities (RTF) and long time tourist bus-park

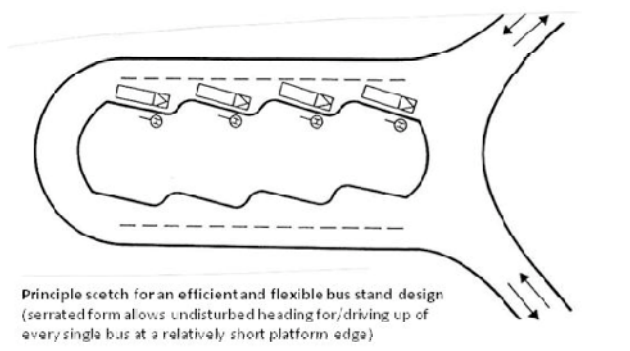
The RTF supplies the following functions:

- Transfer of incoming tourists and other persons coming from outside Wadi Musa by tourist buses or regional buses or private cars to the
  - Local buses heading PAP or
  - Other local public transportation system of Wadi Musa or
  - Taxi services
  - ...and vice versa
- Parking of tourist buses (short term and long term parking; after drop off at the hotels, buses are just allowed to park here)
- Protected Parking of private cars (especially from outside Wadi Musa, but also for cars of residents)
- Supply of basic services for transferring persons and tourist busses parking and the drivers including gas station and repair services

### RTF transfer capacities needed (assumptions with high demand):

- Incoming tourists by bus (50 persons-bus): up to 8.000 persons/day and 2.000 persons/peak hour
- Arriving tourist busses: 40/peak hour
- Time for disembark: max 8 min/bus
- Therefore needed incoming bus stands: 8
- Minimum headway of high capacity Bus line to PAP (red line, 150 persons-bus):  
4 min headway (→ capacity 2250 persons/hour),  
3 min headway (→ capacity 3000 persons/hour)] (capacity should be above incoming tourist number)
- Boarding time Red Line: 8 min
- Therefore needed Red Line stands: 4
- 3 bus stands for regional and for local bus (capacity not high, but longer boarding times)
- For bus stand design see drawing below

**Graph 4: Bus stand design**



If generously designed (according to an absolute high peak including huge reserves) 18 bus stands and therefore some 240 m platform edge would be sufficient.



The platform of the Bus Interception Lot (pedestrian only) is equipped with basic services (restrooms, small food and beverage kiosks, information desks, storage for luggage, ticket sales, etc) and allows flexible pedestrian relations in all directions.

Space needed (form adaptable to topography):

Some 120 m x 65 m (= 7.500 m<sup>2</sup>) for RTF inclusive access roads

Thereof the RTF-building some 110 m x 50 m (= 5500 m<sup>2</sup>)

**Private car park:**

Private car park on Level(s) above Level 0 of Bus Interception Lot; some 200 private parking spaces per level 1 to n of the RTF-building (= 6500 m<sup>2</sup>) could be supplied.

**Parking of tourist buses:**

Parking of tourist buses (calculated for the longest 15 m buses): some 200 spaces needed (ca. 150 m<sup>2</sup>/bus inclusive share of drive ways and access roads). Land requirement: max 30.000 m<sup>2</sup>

#### **6.6.4 Other transportation means considered**

The team of experts and a number of local residents discussed a range of potential transportation solutions and recommendations for the Strategic Master Plan. The planning effort considered and discussed all transportation questions and issues in light of the concerns and interests of both local residents and visitors to the Petra Region.

#### **Air Transportation**

Even though the driving times from the airports of Aqaba and Amman to the Petra Region range from only one-and-a-half and three hours respectively, the Petra Region has repeatedly considered building its own airport. Although the project team determined that a new airport would be unnecessary and economically unviable in the near future, the creation of a world-class tourism destination at Petra may require direct air access in the future. Therefore, it may be wise to begin initial steps in the site selection process for a future airport along the Wadi Musa/Ma'an Highway. (The need for this airport is not anticipated in the near or medium term, however).

#### **Railroad**

Railroad service is currently unavailable in the Petra Region. We have learned about some ideas to revive the historic Hejaz Railroad, of which – as far as we learned – some portions remain intact. The ultimate goal and the dream of many connoisseurs of both places would be to connect the two great sites of Nabataean History, Petra and Madain Saleh in a very romantic way. In addition, the more recent history of Lawrence of Arabia and the Hejaz Railroad could be enacted as well. We suggest keeping this project in mind for the long-term perspective; in particular as there is a considerable intent by Saudi Arabia to be seen to open up to international tourism (in addition to religious tourism, where it is already a world leader). In addition, it would enhance international trade opportunities for firms located in Petra Region.

#### **Electric Tram**

The subject of running an electric tramline in Wadi Musa also has been mentioned, particularly by some of the leading families of Wadi Musa. The concept as such would be a highly recommendable solution from an ecological and also from a scenic point of view and might add considerable charm to the town; also, there is hardly a better way to watch a town than through the windows of a tram. However, from a technical point of view there are some se-



were obstacles to overcome. For one, only some sort of rope railway will be able to overcome the inclines (similar to the one in San Francisco, California). This would be very costly (and almost impossible to run on the curves!). Furthermore, engineers have warned that the combination of the extreme heat that occasionally occurs with the sand and the amply necessary lubrication grease would pose tremendous problems that would be difficult to solve.

### **Teleferic**

The construction of cable cars or teleferics at various points was, and still is being considered as a serious and in-principle feasible solution to solving some of the traffic problems in the Petra Region. Whereas there are several advantages to using teleferics, there are some severe disadvantages as well.

#### **The main advantages of Teleferics:**

- Almost no direct emissions – one of the lowest polluters - no noise pollution
- Capable of moving a great number of people from A to B in the shortest possible time – e.g. for one day not-overnight visitors (who may not be a preferred target group!) to be transported from the Regional Transportation Facility to the PAP and back
- Requires very limited space (only for pillars and stations, the rest is in the air)
- Handles capacities between 2,000-4,000 people/hour quite well
- Comparatively low operating cost
- Low personnel cost
- Low passenger per-mile cost for consistent use of a great number of people

#### **The main disadvantages of Teleferics:**

- Transportation only point to point – no variants and only few stops possible
- Additional means of transportation needed if passengers are to be disbursed
- Visible pollution of a site (therefore not appreciated by UNESCO World Heritage Centre)
- Relatively high initial investment needed compared to a bus solution
- Low job creation rate, because not many personnel needed

#### **Three possible Teleferic installations were considered:**

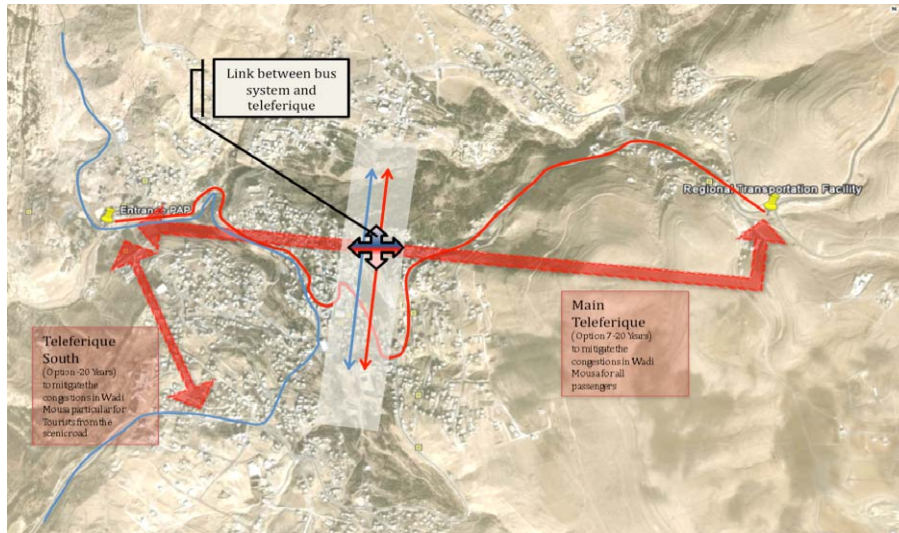
- a) From the Regional Transportation Facility to the Park Entrance Gate; this would be used predominantly by day visitors whose buses are not permitted to enter Wadi Musa
- b) From a point where the Scenic Road enters Wadi Musa to the Park Entrance Gate; for tourists staying in a hotel along Kings Road (particularly in case more hotels would be built there)
- c) From the bottom of PAP (near the present museum) up to the back exit of PAP at the lower end of Umm Sayhoun, were visitors would again be met by buses

Alternatives a) and b) are shown in a graph below. However, none of them is recommended in the short or medium term because the movement patterns of locals and tourists are complex with many possible stops whereas a Teleferic can only serve very few stops. At a minimum, two stops are required: one at the entry to the park and the other in downtown. Otherwise visitors would simply go from their bus to the park and back without ever visiting the downtown area (and spending money there!).

Alternative c) has not been pursued further, because it would cause considerable visual interference and thus jeopardize the integrity of the place as a UNESCO World Heritage Site; in addition, a solution with low-emission buses is currently in the process of being implemented, that seems – even though far from being perfect – quite reasonable in the short term.

While no Teleferic solution is being recommended for the immediate future, we suggest keeping in mind the described alternatives and possibly additional ones for the longer-term perspective. During the last few years robust progress has been made in the field of R&D for mechanical movers (including air-conditioning of the cabins), This development resulted from the stormy growth of uphill cable cars for winter sports and mountain tourism. New technology and new solutions may appear in the not too distant future.

**Graph 5: Diagram showing a possible Teleferic System for Wadi Musa**



*Diagram showing a possible Teleferic System for Wadi Musa (in any style and possible routing; not decided yet) to connect the Regional Transportation Facility with the City of Wadi Musa and the PAP Entrance. Connections to the bus system in the center are designated.*

### 6.6.5 Alternative means of local Transportation: Animals & Sports Vehicles

Even though the terrain around the PAP is quite steep, the use of mountain bikes has been suggested as an alternative means of transportation for the fit, the young and/or the athletic types. Since recently, when electro-supported bicycles at affordable prices have reached the markets in the US and in Europe, the target group for this most environmentally friendly means of transportation has significantly grown, even in the mountainous terrain of the Petra Region.

Therefore, mountain bike trails should be developed to link all of the communities together. Such a circuit would allow visitors to circulate throughout the region without the use of automobiles and allow for bike touring as another activity to extend visitor stays. Bicycle rental and servicing may be a welcome source of income that only requires comparatively small investment sums for private entrepreneurs in the region. Even a limited number of motorbikes for pleasure rides (as the late King Hussein is reputed for having enjoyed them!) on the relatively good roads that lead away from Petra may be an offer that will attract a number of tourists and will motivate them to stay for an extra day or two.

In view of the serious threat that the high number of animals is causing to the sand stone objects within the PAP, the park should ban all animals from the park that are not naturally living there. We are aware of the fact that such a move would mean a radical change from the present practices, as an ever-growing number of animals and their owners are competing for a comparatively small number of visitors who are actually making use of these services within the PAP. Therefore we suggest a radically different concept for the use of animals. This would include the discontinuation of the present offer to cover the first 5,600m distance after the PAP Entrance gate on horseback: an activity not chosen by most, because those who do not know how to ride are still apprehensive and those who know how to ride find it quite unattractive to be drawn down the road by a horse guide. Also the horse drawn carriages that are presently racing through the Siq are suggested for relocation to other more suitable tracks because they cause under the present conditions as much stress among their passengers as among the pedestrians who are being chased by them and feel threatened, not to mention the impact on the PAP.

On the other hand, the vast majority of visitors perceive the animals in the region as highly likable; this may be the reason why the real or perceived mistreatment of animals by their owners ranks by far as the number one complaint among visitors of Petra. Thus alternative uses of animals in the Petra Region are suggested:

- Riding an animal of choice from the bottom of the PAP (near the present museum) up the back road to the PAP Exit Gate – self-riding on donkeys, horses or camels in small groups as an alternative to the presently planned bus service at a (comparatively) small extra cost.
- Creating an extra lane for riders, horse- (or donkey-) drawn carriages and possibly bikers along the Scenic road between Wadi Musa and Taybeh offering these rides with its outstanding views particularly to the residents of the hotels, riding from their hotels along this road and back.
- Allowing for a limited number of horse drawn carriages and riding animals between the Hotel area near the PAP Entrance Gate and the shopping area / pedestrian zone.
- Creation of an Arabian Animal Center for children & families with a small zoo (including goats, sheep and desert animals), a small race track and a stable with animals for going on treks of varying lengths in the desert or in the mountainous areas of the Petra Region.

A well-structured and well-marketed animal program has a good potential to become a true added attraction for tourists, motivating them to considerably lengthen their stay in the region.

## **6.7 Water Demand, Rainfall, Water Harvesting, and Storm-water Management**

### **6.7.1 Water Supply**

Based on a projected growth rate of 3.25%, the size of the population in the Petra Region in the years 2013, 2017 and 2030 will be 30,000, 35,000 and 53,000 respectively. Water supply within Jordan is set by the national government. The per-capita water allotment in Ma'an Governorate for the year 2007 was 214 liter per day. Due to water scarcity in Jordan this rate may well be lowered. If we need to maintain at least 150 liters per capita per day for PDTRA, the annual water demands for the years 2013, 2017 and 2030 will be 1.64, 1.92 and 2.90 million cubic meters respectively. According to a statistic of the United Nations Environmental Program (UNEP) a tourist consumes about 300 liters a day. Water use tied to other recreational activities such as swimming pools or golf is not included in this figure. Calculating with

potentially 2 million overnights in Petra Region and an average rate per overnight (including the recreational activities) of 400 liters a day, this would add an additional demand of up to 0.8 million cubic meters per year (in 2008, there were approximately 750,000 overnight stays).

The water is currently supplied using ground water from the well fields in the region such as Qa'a Well Field. In order to satisfy the growing demand for water, other sources need to be explored. The following options have been studied or are under construction:

- **The Disi Conveyer:** The work on this project started at the beginning of 2010 and will likely be completed by the year 2012. The new conveyer that is built will supply Amman with water from Disi groundwater aquifer in the south of Jordan. The route of this project will pass along the desert highway about 30km to the east of PDTRA and building intake from the conveyer to PDTRA will supply water to the region.
- **Red-Dead Canal:** This project foresees a canal from the Red Sea in Aqaba to the Dead Sea that will utilize gravity flow over most of the route. The hydropower will be used to generate electricity where part of that power will be used to desalinate seawater or brackish water from Wadi Araba ground water aquifer. This project is still in the study phase.
- Developing existing or new ground water well fields

### 6.7.2 Wastewater Treatment

Related to the per-capita water supply of 150 liters per day, the estimated wastewater-generating rate is 100 liters per capita per day. With this rate, the Waste Water Treatment Plant (WWTP) is expected to process 5300 cubic meters in the year 2030 if all communities are connected to the sewer network. Furthermore, based on the assumption that a tourist produces 180 liters of wastewater per day and planned 10.500 tourism beds, an additional capacity of 1890 cubic meters is required. The communities that are connected to the sewer system are Wadi Musa, Taybeh, Umm Sayhoun and Baidha and the current WWTP is designed to treat 3400 cubic meters per day. For Rajif and Dlagha, we recommend building a small WWTP close to them since the distance from those communities and the existing WWTP is about 30 km and the route of any conveyer will be through very tough topography and against a steep land slope.

The current WWTP: the WWTP is designed to treat 3400 cubic meters per day and with the projected generated wastewater rate of 7,190 m<sup>3</sup>/d by the year 2030, this WWTP needs expansion to accommodate another 3,800 m<sup>3</sup>/d. In addition, main conveyer serving wastewater from Wadi Musa and the other communities to the WWTP needs to be redesigned to accommodate the growing wastewater volumes.

### 6.7.3 Rainfall Floods

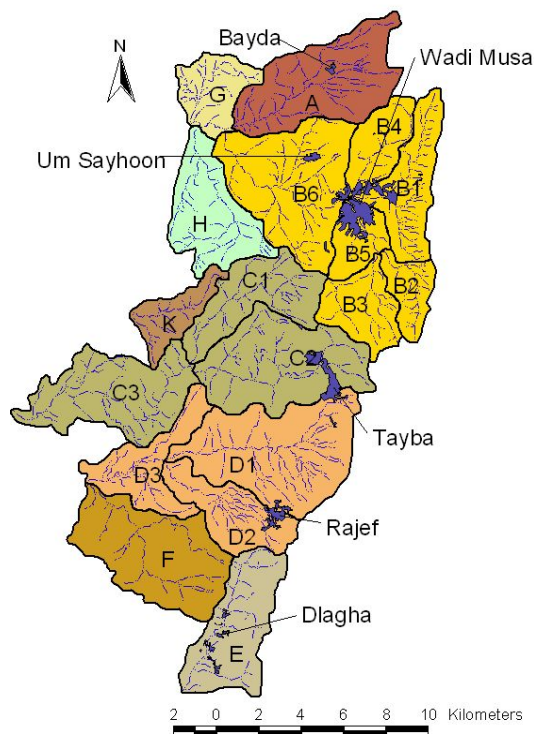
The map below shows the catchments A, C, D, E, F, G, H and K that are collecting flood water and drain it into Wadi Araba to the west; these catchments can be used for water harvesting (i.e. to collect and store water for agriculture uses such as limited vegetable farming and animal watering). The estimated volumes of runoff water from these catchments and their sub-catchments is about 2.9 million cubic meters that can be collected and stored using simple water systems such as small earth dams and ponds.

On the other hand, Catchments B is divided into six sub-catchments that merge to the west of Petra and drain down to Wadi Araba. The upper five sub-catchments have an area of about two thirds of the total area of the catchment A and drain into the Siq, causing floods in the

rainy seasons. We propose building a series of retention or detention ponds and small check dams that can help in reducing the flooding through the Siq and storing water for agricultural use. Also, a large part of the sub-catchments B5 and B1 are urbanized areas (Wadi Musa) where most of the rainfall runs off. In these areas, a good rainfall drainage system needs to be designed and implemented with detention ponds to limit the peak floods that will contribute to the flood in the Siq.

The other communities form only small parts of the catchments and, hence, have a limited effect on the runoff from these catchments. On the other hand, a flood protection and drainage system becomes even more important as the towns grow. More open areas and fewer built areas would help to retain the runoff and increase water storage in the soil profiles.

**Graph 6: Water catchments in the Petra Region**



**Table 13: Water catchments area and runoff volume in the Petra area**

Catchments	Catchments Area (hectares)	Runoff Volume* (million m <sup>3</sup> )
A	2648	0.32
B1	1531	0.18
B2	670	0.08
B3	1126	0.14
B4	930	0.11
B5	744	0.09
B6	3091	0.37
C1	1678	0.20
C2	2846	0.34
C3	2464	0.30
D1	3298	0.40
D2	1375	0.16
D3	1363	0.16
E	1982	0.24
F	2816	0.34
G	1023	0.12
H	1854	0.22
K	802	0.10

\* Based on average annual rainfall of 150 mm and runoff coefficient of 8%

## 6.8 Energy

### 6.8.1 Present Energy Consumption

Energy use data with the PDTRA is not readily accessible. The Annual Report of the Ministry of Energy and Mineral Resources indicates that the average per capita use of electricity in Jordan is 1999 kilowatt hours per year, or roughly one fourth of energy usage in the United States or Western Europe. This average calculation does not, however, consider the considerable demand placed upon the system by hotels and other tourism facilities. Observations with local residents indicate that there are frequently power outages and other disruptions of service. The continued economy growth the Petra Region depends upon a reliable electrical supply and distribution system, and in particular the three-phase power necessary to run elevators and other equipment for the convenience of international guests.

The implementation of green buildings standards for all structures within the PDTRA will place an emphasis on energy conservation and help to reduce peak demand. Consideration should be given to the creation of solar arrays and / or wind turbine energy generation to provide green energy to the PDTRA. Such facilities should, however, be sited out of view of the Petra Archaeological Park and Scenic Road.

### 6.8.2 Energy conservation and increased share of renewable energy

Energy conservation and the utilization of renewable energies are an asset for any region since it protects the environment and increases energy diversity and thus helps to achieve independence from fossil fuels.

A general recommendation in order to know where and how energy can be saved and renewable energy utilized in the Petra Region is to undertake at first an analysis of the obstacles to reach these aims. Some of these obstacles are obvious, such as:

- High investment costs for renewable energy systems compared with the costs of more traditional energy generation systems.
- Lack of human resources expertise in the region to install alternative systems.
- Lack of regulations (e.g. building codes and other legislation, tax) to support energy saving and the use of renewable energy sources.

The Master Strategy for the Energy Sector in Jordan (2007 to 2020) includes some recommendations on the rational use of energy and the utilization of renewable energies, which are also valid for the Petra Region.

#### Increased energy efficiency

Cutting down energy consumption should always have priority. Energy can be saved in all sectors: domestic, industry, commerce, government, transportation and water pumping. The above Master Strategy sets an overall target of 20 % less energy consumption for 2020.

Recommendations to achieve this target are:

- Broad awareness campaigns;
- Tax incentives for buying and installing energy saving equipment;
- Tax incentives for using transportation consuming less energy;
- Change in building codes to provide for better insulation of houses;
- Creation of an award for increasing energy efficiency.

#### Utilization of renewable energies

Jordan aims at having a share of 7 % of renewable energies in the total energy mix by 2015 and of 10 % by 2020. This is not so much by international comparison and should be achievable.

For the Petra region it would be most important to first look at such sectors where the utilization of solar energy is economically feasible even now. This clearly is the sector of using photovoltaic technologies to heat household water.

Recommended incentives to promote are:

- Financial incentives to install such technologies, such as providing zero-interest loans for private investors (households, hotels etc.);
- Changing regional building codes to facilitate the installation of such technologies;
- Marketing best practices in the sector so that others will follow good examples.

There are at least two possibilities to use renewable energy in the Petra region. One would be the installation of solar cell systems for lighting remote areas and in other niche applications. The other one would be the use of municipal waste for generating electricity for smaller applications such as air conditioning. It is recommended to carry out feasibility studies to further explore such options.

The utilization of wind energy cannot be decided at regional level. Since this would require large infrastructures and connections with the national electricity grid, this is a question, which has to be tackled at national level.



## 6.9 Public Facilities and Services

The population growth of the PDTRA region will require that the need for schools, parks, medical facilities, places of worship, and police and fire protection be anticipated and planned for in advance. Within Jordan there are no clearly defined planning ratios for these facilities relative to population.

### 6.9.1 Educational Facilities

Some ministries, such as the Ministry of Education do plan according to the 3, 7, and 20 year time horizons considered by this document. There is no reason to create an educational planning process separate from that of the PDTRA. However, an analysis of existing ratios of schools to population will provide some indication of future needs. As input from the public meetings indicated a general concern about the quantity and quality of schools, these ratios should be considered a minimum. The actual need may be higher. Schools within the existing communities of the region are generally spaced from 500-800 meters apart. This distance places students within easy walking distance of school and minimizes the need for transportation. It is recommended that future schools be located so that all residences are within a 500-meter walking distance. Based upon this simple analysis, Baidha, Taybeh, Rajif, and Dlagha are adequately served by the existing schools. However, with continued population growth, Wadi Musa and Umm Sayhoun will need additional facilities.

**Table 14: School requirements within the PDTRA region**

Community	2010 Population	Existing Schools	Current Schools/1000	2030 Needs Schools
Baidha	401	2	0.005	0.9
Umm Sayhoun	1631	2	0.001	3.7
Wadi Musa	17085	25	0.001	38.9
Taybeh	5719	13	0.002	13.0
Rajif	1614	5	0.003	3.8
Dlagha	1434	3	0.002	3.3
Total	27944	50	0.002	63.6

*Calculated Based Upon 3.5% Growth Rate*

### 6.9.2 Parks

Public engagement with the residents of the PDTRA region suggests that there is a substantial shortfall of developed recreation fields within the communities. Developed parkland is so small in area as to make calculations of a ratio of existing park hectares to population irrelevant. Land for active recreation where it does exist is comprised primarily of school grounds. While these areas do provide some room for active recreation for children, there is little ground for active recreation by adults. The dimension and quality of sports fields at schools is often inadequate. For comparison, standards in the United States would suggest 1.5 developed sports fields per 1000 population or roughly 1.8 hectares per 1000 population.



**Table 15: Park requirements within the PDTRA region**

Community	2010 Population	Existing Park Area	Existing Sports Fields	Current Park Hectares/ 1000	Current Sports Fields/ 1000	2030 Park Area Need	2030 Sports Field Needs
Baidha	401	1.2	1	0.003	0.002	0.9	0.8
Umm Sayhoun	1631	1.2	1	0.001	0.001	3.7	3.1
Wadi Musa	17085	12	10	0.001	0.001	39.1	32.6
Taybeh	5719	7.2	6	0.001	0.001	13.1	10.9
Rajif	1614	1.2	1	0.001	0.001	3.8	3.2
Dlagha	1434	1.2	1	0.001	0.000	3.3	2.7
Total	27944	24	20	0.001	0.001	64.0	53.3

*Calculated Based Upon 3.5% Growth Rate*

### 6.9.3 Medical Facilities

In a similar way, the current ratios of medical facilities per population can also be calculated. While Baidha and Umm Sayhoun are by ratio still too small to warrant a clinic of their own, one might argue that each community in order to provide quality health care to its residents should have at a minimum one clinic. Again, such ratios should be considered. A more detailed assessment of the health care needs of the PDTRA is needed but beyond the scope of this study.

**Table 16: Clinics and hospital requirements within the PDTRA region**

Community	2010 Population	Existing Clinics	Existing Hospitals	Current Clinics/ 1000	Current Hospitals/1000	2030 Needs Clinics/ Hospitals
Baidha	401	0	0	0	0	0.1
Umm Sayhoun	1631	0	0	0	0	0.3
Wadi Musa	17085	1	1	0.000058	0.000058	3.0
Taybeh	5719	1	0	0.00017	0	1.0
Rajif	1614	1	0	0.0006	0	0.3
Dlagha	1434	1	0	0.0007	0	0.3
Total	27944	4	1	0.00014	0.000036	5.0

*Calculated Based Upon 3.5% Growth Rate*

### 6.9.4 Places of Worship

Generally, places of worship are generated through the private sector. However, sites will need to be created over time. Ideally these sites will be clustered in each neighborhood with schools, parks, medical facilities, and retail facilities in order to create cohesive community centers for each neighborhood. By calculating the ratio of the current population to places of worship, the future needs of the region can be estimated. It appears that the region is well served by places of worship. It is possible that existing congregations and facilities will be expanded in their current locations rather than additional facilities created.

**Table 17: Places of worship requirements within the PDTRA region**

<b>Community</b>	<b>2010 Population</b>	<b>Existing Places of Worship</b>	<b>Current Places of Worship/1000</b>	<b>2030 Need for Places of Worship</b>
Baidha	401	1	0.002	4.5
Umm Sayhoun	1631	1	0.001	1.1
Wadi Musa	17085	4	0.000	0.4
Taybeh	5719	3	0.001	1.0
Rajif	1614	1	0.001	1.1
Dlagha	1434	1	0.001	1.3
<b>Total</b>	<b>27944</b>	<b>11</b>	<b>0.000</b>	<b>9.5</b>

*Calculated Based Upon 3.5% Growth Rate*

#### **6.9.5 Police and Fire Protection**

Statistics on crime incident were not available for the purpose of this study. Similarly local residents did not express concern about the inadequacy of these services. While no effort was made to establish appropriate ratios of police and fire stations per 1000 population, one might reason that the communities furthest from the major population center of the region, Baidha and Dlagha, currently have poor response times for police and fire protection. As tourism development in the region increases it is logical that a police/fire station will be needed in each of these communities as well.

## 7 Action Plan for Development

### 7.1 Scenarios of Development

To illustrate and compare possible realistic ways of a future development of Petra as a tourist destination, four Scenarios based on different assumptions were suggested. The effects of these developments on relevant variables such as average spending will have a direct effect on infrastructure needs, such as water supply, wastewater treatment, energy consumption etc. The need for improved infrastructure will call for public investments, but will in turn be followed by private investment in terms of additional accommodation facilities and additional tourist attractions. This will in turn also have a strong influence on job creation and economic progress in the region. Some of the most important effects are shown and described in more detail in the graphs below.

**Scenario 1** is based on the assumption that a growth in visitor numbers of 5% annually and a growth in the average length of stay of 2,5%, starting from the present level of 1,2 nights per visitor to a maximum average of 2 nights per visitor can be achieved within the next 20 years.

**Scenario 2** assumes 5% growth of visitor numbers too, but no change in the average length of stay, which would remain at 1,2 nights per visitor.

**Scenario 3** is based on the assumption that a growth in visitor numbers of 3% annually and a growth in the average length of stay of 2,5%, starting from the present level of 1,2 nights per visitor to a maximum average of 2 nights per visitor can be achieved within the next 20 years.

**Scenario 4** only assumes 3% growth of visitor numbers and no change in the average length of stay, which would remain at 1,2 nights per visitor.

#### **Important selected baseline data on Petra tourism (basis 2008):**

- *Number of visitors* (both Jordanian and international): 802.866 (according to PAP 2008)
- *Number of international visitors*: 729.404 (according to PAP 2008 International including guests and students)
- *Total number of overnight stays*: 743.992 (85% of international visitors spending an average of 1,2 nights)
- *Total Population*: 27.944 (according to DOS 2009)
- *Number of Rooms*: 1,971

## 7.1.1 Scenarios of Average Spending

**Table 18: Overview Spending (basis 2008)**

	<b>Total Base</b>	<b>Growth Rate</b>	<b>Max Capacity</b>	<b>5</b>	<b>10</b>	<b>20</b>
Number of visitors	<b>802.866</b>	<b>5,0%</b>	<b>2.000.000</b>	1.024.683	1.307.784	2.000.000
... Jordanian visitors in %	<b>9,15%</b>	<b>-3,0%</b>	<b>100%</b>	7,86%	6,75%	4,98%
Number of Jordanian visitors	73.462			80.514	88.242	99.514
Number of international visitors	729.404			944.169	1.219.542	1.900.486
... International overnight visitors in %	<b>85%</b>	<b>0,0%</b>	<b>100%</b>	85,00%	85,00%	85,00%
Number of International overnight visitors	619.993			802.544	1.036.611	1.615.413
Average number of overnight stays	<b>1,2</b>	<b>2,5%</b>		1,36	1,54	1,97
Total number of overnight stays	743.992			1.089.606	1.592.340	3.176.450
Average Spending (JOD)		up until Y5	growth from Y5			
Entrance Fee	50	50	1,5%	50,00	53,86	62,51
Average Spending per overnight (accommodation, F&B)	55	55	3,0%	55,00	63,76	85,69
Average Spending Shopping per visitor	8	20	3,0%	20,00	23,19	31,16
Average Spending Activities per overnight	5	20	3,0%	20,00	23,19	31,16
Average Spending						
Entrance Fee in	36.470.188			47.208.473	65.689.670	118.802.404
Average Spending accommodation, F&B	40.919.551			59.928.325	101.527.689	272.184.338
Average Spending Shopping	5.835.230			18.883.389	28.275.675	59.217.894
Average Spending Activities	3.719.959			21.792.118	36.919.160	98.976.123
<b>Total Spending</b>	<b>86.944.928</b>			<b>147.812.305</b>	<b>232.412.194</b>	<b>549.180.759</b>

**Table 19: Assumptions for Present and Future Average Spending:**

	<b>Description</b>	<b>Present (basis 2010 – no inflation)</b>	<b>Assumptions for the Future</b>
<b>Entrance Fee</b>	To be paid for visiting the PAP	50 JOD	A growth rate of 1,5% is estimated from the year 2015 on (as the entrance fee is already quite high)
<b>Average Spending for Accommodation, F&amp;B per overnight</b>	Money spent for accommodation, food and beverage (hotels, restaurants etc.) per visitor per overnight stay	Approx. 55 JOD per overnight	A growth rate of 3% is estimated from the year 2015 on
<b>Average Spending Shopping per visitor</b>	Money spent for souvenirs, gifts etc. per visitor	Approx. 8 JOD per visitor	A growth of spending up to 20 JOD until the year 2015 and of 3% from the year 2015 on is estimated
<b>Average Spending for other Activities per overnight</b>	Money spent for other (tourist-) activities besides the PAP	Approx. 5 JOD per overnight stay	A growth of spending up to 20 JOD until the year 2015 and of 3% from the year 2015 on is estimated

Thus, it is assumed that the total annual spending generated by all visitors to the Petra Region currently amounts to approximately 87 million JOD.

**Graph 7: Scenarios for Total Spending**

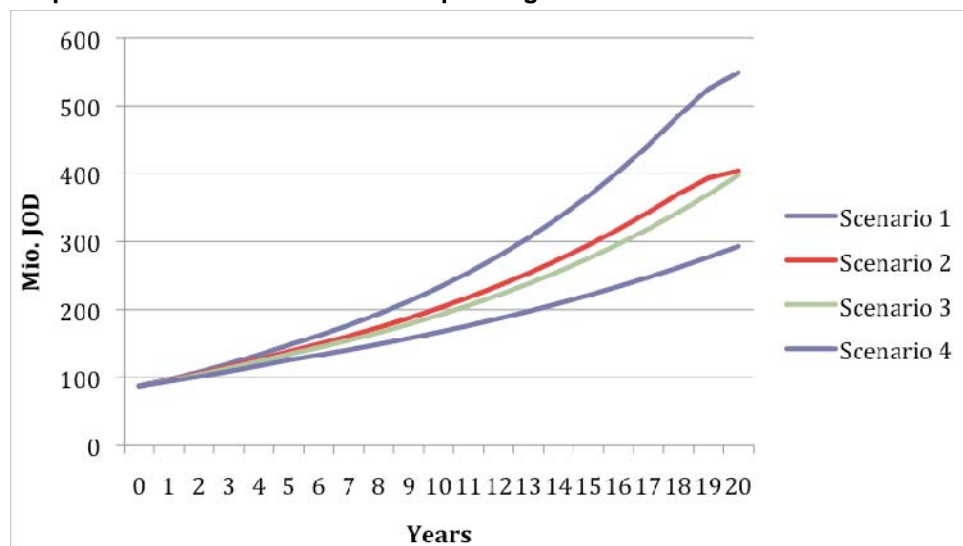


Figure 1 shows a comparative illustration of the four scenarios to the year 2030 (year 20 of the SMP). The illustration clearly shows the importance of visitor growth, but also a longer duration of stay, to achieve a significant increase of revenues from tourism in the Petra Region:

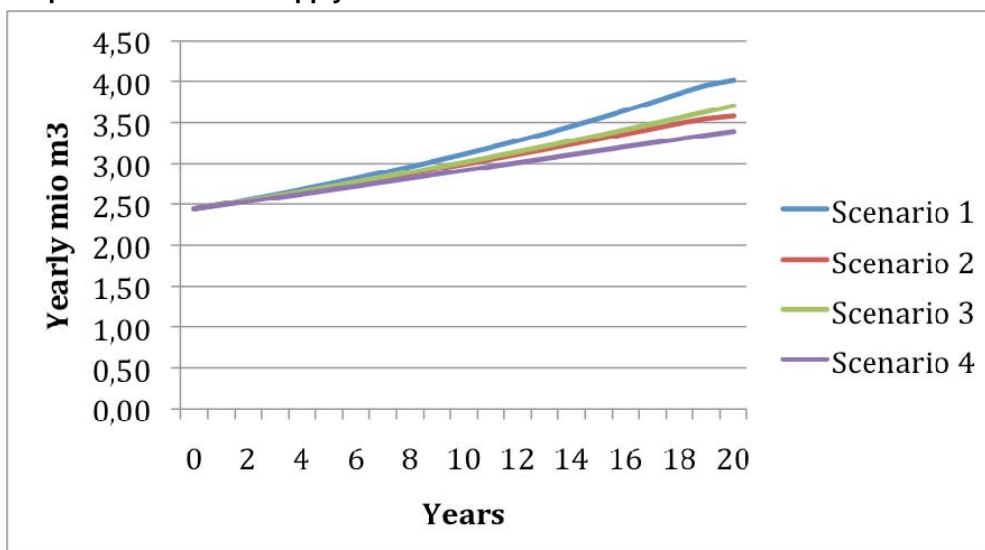
- With a growth rate of visitor numbers of 5% and a growth of the average length of stay of 2,5% to a maximum average of 2 nights per visitor, the spending would grow six fold from 87 million to 549 million JOD until the year 2030 (Scenario 1).
- Scenario 2 and 3 show a similar development of total spending (400 million JOD in year 2030), while in Scenario 4, with only 3% growth of visitors and no change in length of stay, the revenues from tourism would change from 87 to just under 300 million JOD.

### 7.1.2 Development of Water Supply Needed

**Table 20: Assumptions for Present and Future Water Supply:**

	Present		Assumptions for the Future
	Per day per person	Total per year	
<b>Water Supply for Residential use</b>	214 l per resident per day (in 2007)	2,18 million m3 per year (all residents amount 2009)	The daily need of water shall be reduced to 150 l per resident per day until the year 2030 (Ma'an Governorate)
<b>Water Supply for Tourism use</b>	350 l per overnight	0,26 million m3 per year (all overnight stays)	<b>Table 21: No changes assumed</b>

**Graph 8: Water Supply**



The development of the yearly water supply shows a very similar trend in all four scenarios. Although the annual average residential water supply is assumed to be declining because of improvements of efficiency, the growing population and growing tourism are responsible for an increasing water usage.

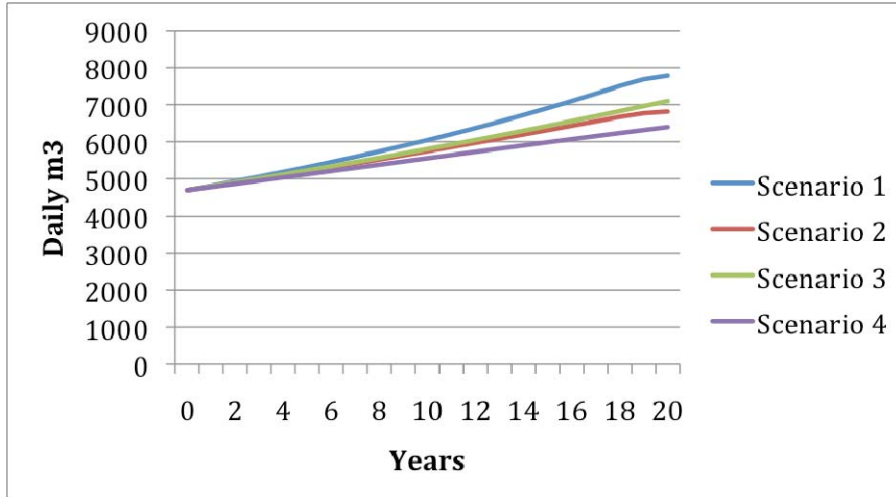
- From a current total amount of 2,44 million m3 per year (residents and tourism), the water supply increases to between 3,39 and 4,01 million m3 in the year 2030, depending on the assumptions of the different scenarios. This is a growth of approximately between 40 and 60% (for both residents and tourism).
- For Scenario 1 and 3, which assume a growth of the average length of stay of 2,5% to an average of 2 nights per visitor within the next 20 years, there is a higher increase of water supply than for Scenario 2 and 4, which assume only a growth of visitor numbers, but no change in the average length of stay. So it can be stated that the increase in overnight stays has a stronger influence on the water supply than just the number of visitors.

### 7.1.3 Development of Improved Wastewater Treatment

**Table 22: Assumptions for Present and Future Wastewater Treatment**

	Present (basis 2008)		Assumptions for the Future
	Per day per person	Total per day	
<b>Wastewater Treatment Residential</b>	143 l per resident per day	3987 m3 water per day (all residents)	The daily wastewater treatment is assumed to be reduced to 100 l per resident per day until the year 2030
<b>Wastewater Treatment Tourism</b>	180 l per overnight	710 m3 per day (all overnight stays)	No changes assumed

**Graph 9: Wastewater Treatment**



The development of the daily wastewater treatment shows a very similar trend in all four scenarios. Although the average daily residential wastewater treatment is assumed to be declining in the future, the growing population and growing tourism is responsible for an increasing need for wastewater treatment. From a current total amount of 4696 m<sup>3</sup> per day (residents and tourism), the wastewater treatment increases to between 6400 and 7800 m<sup>3</sup> daily in the year 2030, depending on the assumptions of the different scenarios. This is a growth of wastewater of approximately between 36 and 66% (for both residents and tourists), produced by a growth of visitor numbers of 80 (Scenarios 3 and 4) respectively 150% (Scenarios 1 and 2) until the year 2030.

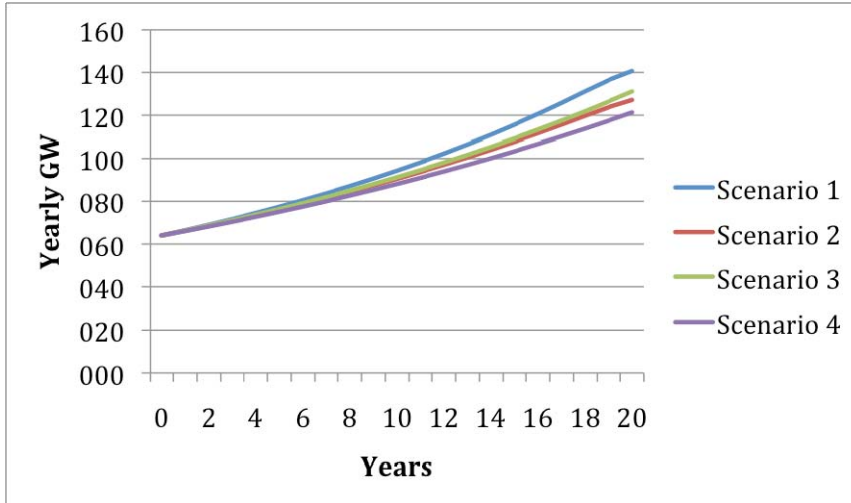
#### 7.1.4 Development of Electricity Consumption

##### Assumptions for Electricity:

- *Electricity residential*: approx. 1999 KW per resident per year (Annual Report of Ministry of Energy and Mineral Resources), i.e. 55,86 GW per year (all residents)
- *Electricity tourism*: approx. 10,95 KW per overnight (two times the residential electricity consumption), i.e. 8,15 GW per year (all overnight stays)

No change to the yearly electricity consumption is assumed for the future.

**Graph 10: Electricity Consumption**

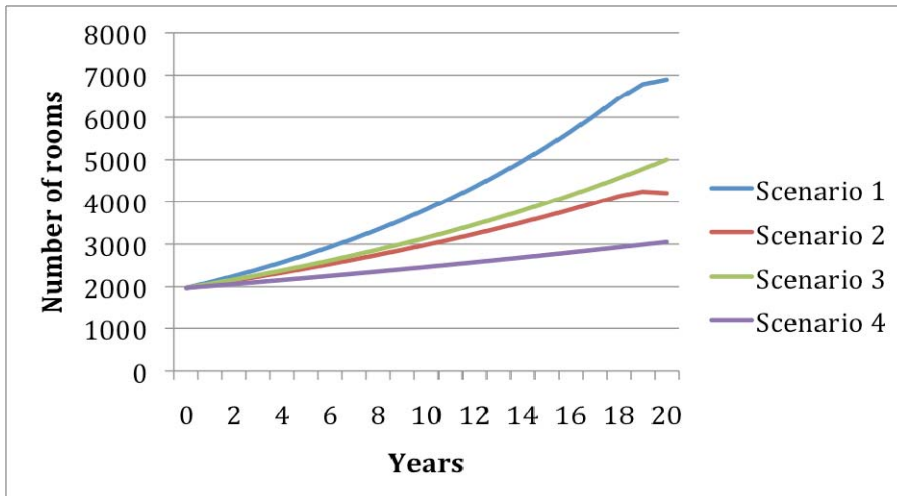


The development of the yearly electricity consumption shows a very similar development in all four scenarios. From a current total amount of 64,01 GW per year (residents and tourism), the electricity consumption increases to between 120 and 140 GW yearly in the year 2030, depending on the assumptions of the different scenarios. This is a growth of electricity consumption of approximately between 90 and 120% (for both residents and tourism), produced by a growth of visitor numbers of 80 (Scenarios 3 and 4) respectively 150% (Scenarios 1 and 2) until the year 2030.

#### 7.1.5 Development of the Number of Rooms

The number of rooms in the year 2008 was 1,971 (sum of rooms in all categories).

**Graph 11: Number of Rooms**



Graph 11 shows a comparative illustration of the number of rooms needed for the four scenarios as depicted above until the year 2030. With a growth of numbers of visitors of 5% and a growth of the average length of stay of 2,5% to an average of 2 nights per visitor, the number of rooms would increase by 250% to 6,900 rooms to the year 2030 (Scenario 1). Scenario 2



and 3 show an increase in the number of needed rooms to 4,200, respectively 5,000, while in Scenario 4, with only 3% growth of visitors and no change in length of stay, the number of rooms would change by 55% to approximately 3,000 rooms in total. Hence, an increase in the length of stay would have a very strong impact on the required number of rooms and consequently on the revenues and investments generated in relation to the provision of accommodation.

### 7.1.6 Development of Jobs Created

To give a prognosis of the number of jobs generated from the growth of visitor numbers and/or an increase of the average length of stay, it is necessary to estimate the general share of jobs created:

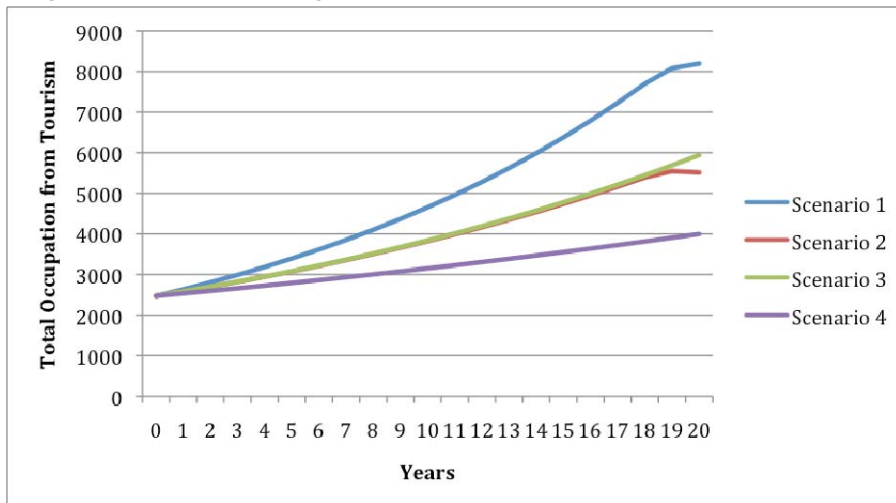
*Direct Jobs:*

- **Accommodation and Restaurants:** approx. 0,75 jobs per room
- **Tourism Agencies & Tour Operators:** approx. 2 jobs per 10,000 international visitors
- **Tour Guides & Escorts:** approx. 1 job per 10,000 international visitors
- **Trekking & Animal Escorts:** approx. 1.5 jobs per 10,000 international visitors
- **Transportation system:** approx. 0.7 jobs per 10,000 international visitors

*Indirect Jobs (local):*

- Approx. 33% of total direct jobs

**Graph 12: Total Occupation from Tourism**



Based on the assumptions above, it is estimated that 2,470 jobs existed in the tourism sector in the year 2008 (sum of all direct and indirect jobs). Depending on the different assumptions of the four scenarios, between 1400 and 5600 additional jobs can be created by the year 2030. This is a growth of jobs in the tourism sector of between 60 and 230% (see Figure 6). The yearly growth rate of jobs in the tourism sector would be between 2,5% (Scenario 4) and 6,5% (Scenario 1).

### 7.1.7 Development of Investment for Accommodations and Additional Attractions:

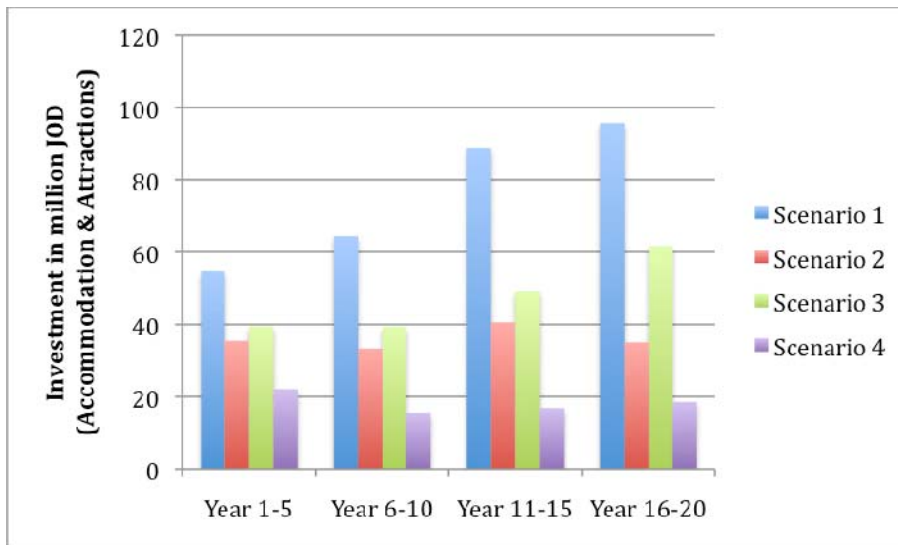
*Accommodation:*

A Growth of visitor numbers and/or an increase of the average length of stay produce an increasing demand for new rooms. The average building costs per room are estimated at 60,000 JOD (1,200 JOD per m<sup>2</sup>). The average area per room is being assumed at 50m<sup>2</sup> (incl. public areas, hall- and stairways, kitchen, restaurant etc.) ranging between approximately 20m<sup>2</sup> per room at a private Guesthouse up to about 80m<sup>2</sup> per room in a 5-star hotel.

*Attractions recommended to be built in the years 1-5 (constant for all four scenarios):*

- Petra Bedouin Animal Park and Interpretation Center
  - Estimated cost 3,349,200 JOD
- Petra Arts & Handicraft Center incl. Design Institute
  - Estimated cost 1,284,000 JOD
- Multi Purpose Conference center (Year 5)
  - Estimated cost 3,444,000 JOD
- Total: 8 million JOD during the first five years

**Graph 13: Investment (Accommodation & Attractions)**



The investment for additional attractions during the first five years is assumed to be constant for all four scenarios; thus the differences between the scenarios result only from the investment for additional accommodations. The growth of the annual investment volume is caused by the increase of the number of overnight stays. The relatively strong growth of investments for Scenario 1 (about 304 million JOD) and for Scenario 3 (190 million JOD) to the year 2030 is a result of an increase of average length of visitor's overnight stay from 1,2 to 2 nights, whereas for Scenario 2 (about 144 million JOD) and Scenario 2 (73 million JOD) a more moderate growth of investment is shown for the next 20 years. In the latter case, the average length of stay would remain at 1,2 nights per international visitor and a growth rate of visitor arrivals at 5% and 3% respectively.

## 7.2 Priority & Sequence of Recommended Actions

This section summarizes the key priorities and suggests a timeframe for the implementation. The implementation is categorized in three phases:

### Stage 1: to be realized within 1 – 3 years from decision on the Petra Master Plan

	Project Description	Objectively verifiable Indicators	Sources of verification	Assumptions / Preconditions
<b>Overall objective</b>	Develop Petra Region to a world-class tourism destination	<ul style="list-style-type: none"> <li>• Average length of stay</li> <li>• Average spending per visitor in Petra</li> <li>• Visitor satisfaction</li> <li>• Return visitors</li> <li>• Opinion of professionals</li> </ul>	<ul style="list-style-type: none"> <li>• Tourism statistics</li> <li>• Surveys</li> </ul>	
<b>Purpose</b>	<p>1. Create viable tourism &amp; leisure products attractive for tourists and residents, which build on the long traditions of living and working in the region</p> <p>2. Branding and marketing to position Petra Region as a tourism destination and providing a platform for selling local products and services</p>	<ul style="list-style-type: none"> <li>• Number of visitors</li> <li>• Turnover and average spending per visitor</li> <li>• Number of residents that utilize the services</li> <li>• Spending of residents that utilize the services</li> <li>• Revenue &amp; profit from the products</li> <li>• Number of staff employed</li> <li>• Local resources used</li> <li>• Growth in relation staff &amp; resources</li> <li>• External opinion</li> </ul>	<ul style="list-style-type: none"> <li>• Annual reports on the individual enterprises</li> <li>• Surveys on satisfaction of visitors and local population</li> <li>• Media reports; press clipping</li> </ul>	<ul style="list-style-type: none"> <li>• Stability in the region</li> <li>• Quality of all related services and attractions</li> <li>• Professional management of the tourism destination</li> <li>• Strengthened participation and involvement of the public in the development of the region</li> </ul>

Table 24: Establish a Destination Management Organization (DMO)

Phases:	Detailed Activities / Content:	Cost:	Conditions:
<ul style="list-style-type: none"> <li>• Propose a DMO structure jointly with PDTRA &amp; JTB, appoint a board and establish an office with the assistance of experienced international consultants (Months 1-3)</li> <li>• Search for and appoint CEO and other key staff (Months 2-4)</li> <li>• Establish 3-year goals and work plan with detailed budget (Months</li> </ul>	<ul style="list-style-type: none"> <li>• Assist PDTRA in investment promotion for accommodation &amp; attractions</li> <li>• Develop - with local entrepreneurs – visitor attractions outside PAP</li> <li>• Provide visitors with an integrated satisfying holiday experience</li> <li>• Apply TQM (Total Quality Management) methods for raising the overall service quality</li> <li>• Provide capacity build-</li> </ul>	<ul style="list-style-type: none"> <li>• Cost:</li> <li>• Consulting / Planning JOD 300.000</li> <li>• Start Up Cost JOD250.000</li> <li>• Annual Operational Cost: approximately JOD 300.000 annually</li> </ul>	<ul style="list-style-type: none"> <li>• Adequate office space</li> <li>• Timely availability of funds</li> <li>• Interest and support in the local business community to cooperate with the DMO</li> <li>• Regional marketing support</li> </ul>

<p>3-4)</p> <ul style="list-style-type: none"> <li>• Design and implement on-site Marketing activities (Months 4-36)</li> <li>• Design &amp; implement together with PDTRA investment promotion strategy for additional accommodation in Petra (Months 4-36)</li> <li>• Planning and supervising construction of key attractions in the PETRA Region (Months 4-36)</li> <li>• Planning &amp; establishment of a training program for Petra Tour Escorts (for culture-, nature-, animal-tours &amp; treks, etc.</li> </ul>	<p>ing to the local businesses</p> <ul style="list-style-type: none"> <li>• Plan tourism zones with high and/or low intensity for the benefit of visitors and the local population</li> <li>• Use all opportunities for local on-site marketing</li> <li>• Prepare a detailed business plan / project fiche</li> <li>• Prepare the search dossiers for CEO and staff</li> <li>• Coach the CEO and training of future staff</li> <li>• Assist in planning and supervision of start up operations in both product development and marketing</li> <li>• Prepare curricula and training material or DMO-staff and Petra Tour Escorts</li> <li>• Rent offices</li> <li>• Establish supervisory board from PDTRA Management &amp; local businesses</li> <li>• Introduce local Marketing Plan</li> <li>• Facilitate creation and implementation of additional attractions</li> </ul>	<ul style="list-style-type: none"> <li>• Revenue: To be finance either through revenues from PAP entrance ticket fee or small tourism tax (e.g. JOD 0,50).</li> </ul>	
---	---	---	--

**Table 25: Animal Park & Interpretation Center**

<b>Phases:</b>	<b>Detailed Activities / Content:</b>	<b>Cost:</b>	<b>Conditions:</b>
<ol style="list-style-type: none"> <li>1. Planning of the animal park and interpretation center (Months 1-6)</li> <li>2. Tender and contracting of the construction works (Months 7-9)</li> <li>3. Construction of animal park and interpretation center (Months 10-15)</li> <li>4. Training of guides and staff (Months 10-15)</li> <li>5. Pre-opening Marketing activities</li> </ol>	<ul style="list-style-type: none"> <li>• Assign suitable land, considering easy access by public transportation and sufficient distance from residential areas (smell &amp; health risk)</li> <li>• Prepare a detailed business plan / project fiche</li> <li>• Prepare the tender dossier</li> <li>• Supervision of the works</li> <li>• Training of future staff</li> <li>• Pre-opening management &amp; marketing</li> </ul>	<ul style="list-style-type: none"> <li>• Consulting / Planning JOD 300.000</li> <li>• Investment Cost JOD 3.050.000</li> </ul>	<ul style="list-style-type: none"> <li>• Allocation of the required land</li> <li>• Smooth procurement processes</li> <li>• Timely availability of funds</li> <li>• Interest and support in the local community to work and pursue business opportunities in the Animal Park and Interpretation Center</li> <li>• Involvement of residents in activi-</li> </ul>

<p>(Months 5-15)</p> <p>6. Tendering lease agreements for different facilities, e.g. shop, café, veterinarian etc. (Months 10-15)</p> <p>7. Opening and introduction phase (Months 12-24)</p>	<ul style="list-style-type: none"> <li>• Prepare lease agreements</li> <li>• Support during introduction phase, ensure quality of service, install quality management system</li> <li>• Special zone for children, with a small petting zoo and guided rides for children</li> <li>• Establish Petra Horse Riding Club (with the Petra Horse Association?) organization riding events and races</li> <li>• Prepare trails for horse drawn and well-designed carriages, preparing trails of different length and difficulty for riding with horses, camels and donkeys</li> <li>• Create a riding school targeting both tourists and residents</li> <li>• Create a multimedia interpretation centre, indoors and outdoors to attract interest of children and adults</li> <li>• Works contracts</li> </ul>		<p>ties for locals (e.g. events, races, horse riding club, etc.)</p> <ul style="list-style-type: none"> <li>• Regional marketing support</li> </ul>
---	---	--	---

**Table 26: Wadi Musa Re-Urbanization & Central Gardens**

<b>Phases:</b>	<b>Detailed Activities / Content:</b>	<b>Cost:</b>	<b>Conditions:</b>
<ol style="list-style-type: none"> <li>1. Develop re-urbanization plan for the new Town Center – with Museum, the High Intensity Tourism Zone near the PAP Entrance and ‘Wadi Musa Gardens’ (Months 1-12)</li> <li>2. Planning of a revitalization of the wadi landscape as a trade mark for Wadi Musa (Months 1-12)</li> <li>3. Start consultation process with local population and businesses (1-12)</li> <li>4. Facilitate participation of Jordanian and international talent in urban planning, de-</li> </ol>	<ul style="list-style-type: none"> <li>• Establish Town Planning Office</li> <li>• Issue works contracts for infrastructure</li> <li>• Prepare a detailed business plan / project fiches</li> <li>• Prepare tender dossiers</li> <li>• Supervision of the works</li> <li>• Support during implementation phase</li> <li>• Monitor competitions</li> <li>• Prepare a system of quality control leading to a total Branding System</li> <li>• Communication and local and international ‘Town Marketing’ activities to international</li> </ul>	<p>Consulting / Planning to be established. Investment Cost to be established</p> <p>Detailed cost estimates for the planning as well construction needs to be established for a seven year development plan</p>	<ul style="list-style-type: none"> <li>• Allocation of suitable spaces, preferably conserving the traditional environments</li> <li>• Smooth procurement processes</li> <li>• Timely availability of funds for infrastructure</li> <li>• Interest and support in the local community to get involved in the process</li> <li>• Sufficient interest to expand horizon and be open for innovations</li> </ul>

<p>sign and architecture (Months 1-12)</p> <p>5. Prepare investment promotion documentation for search for local, national and international investment (Hotel, Multi-functional Event &amp; Conference Center, Museum, Amphitheater, shops, restaurants)</p> <p>6. Start preparing tender and contracting of infrastructure works (Months 6-9)</p> <p>7. Prepare international competitions for architecture &amp; design (Months 6-12)</p> <p>8. Launch Marketing Campaign for the 'New Wadi Musa' (until Opening Months 10-15)</p>	<p>press and urban planning community</p> <ul style="list-style-type: none"> <li>• Creation of a 'state of the art' shopping concept, optimizing sales opportunities to all visitor segments of differing styles and spending capability</li> </ul>		
---	---	--	--

**Table 27: Arts & Crafts Center and Petra Design Institute**

<b>Phases:</b>	<b>Detailed Activities / Content:</b>	<b>Cost:</b>	<b>Conditions:</b>
<p>1. Search for suitable location (Months 1-3)</p> <p>2. Facilitate organization of participating associations, private members and businesses (Months 1-6)</p> <p>3. Search for institutional partners – national and/or international – for establishment of a Petra Design Institute (Months 1-6)</p> <p>4. Tender and contracting of the construction works (Months 4-6)</p> <p>5. Construction/Lease of suitable buildings for work places,</p>	<ul style="list-style-type: none"> <li>• Prepare Rental agreements</li> <li>• Issue works contracts</li> <li>• Prepare a detailed business plan / project fiche</li> <li>• Prepare the tender dossier</li> <li>• Supervision of the works</li> <li>• Training of future staff</li> <li>• Pre-opening management &amp; marketing</li> <li>• Support during introduction phase, ensure quality of service, install quality management system</li> <li>• Create a schedule to show visitors a full curriculum of local artistic and handicraft activities</li> <li>• Establish product segments and sales tools (supporting documents)</li> </ul>	<ul style="list-style-type: none"> <li>• Consulting / Planning JOD 200.000</li> <li>• Investment Cost JOD 1.100.000</li> </ul>	<ul style="list-style-type: none"> <li>• Allocation of suitable space, preferably in a traditional environment</li> <li>• Smooth procurement processes</li> <li>• Timely availability of funds</li> <li>• Interest and support in the local community to work and pursue business opportunities in the Arts &amp; Craft Center</li> <li>• Sufficient interest to expand horizon and be open for innovations</li> <li>• Involvement of local residents in creation of a local Style (Brand)</li> <li>• Regional marketing support</li> </ul>

shops and design institute (Months 6-12)	<ul style="list-style-type: none"> <li>• Prepare a system of quality labels leading to a total Branding System for high quality goods</li> <li>• Communicate to artistic magazines and web sites</li> <li>• Realize a multimedia interpretation center showing background information and activities that are presently not performed</li> </ul>		
6. Training of staff (Months 6-15)			
7. Pre-opening Marketing activities (until Opening Months 10-15)			
8. Opening and introduction phase (Months 15-24)			

**Table 28: Multi-purpose Entertainment & Conference Center**

<b>Phases:</b>	<b>Detailed Activities / Content:</b>	<b>Cost:</b>	<b>Conditions:</b>
<ol style="list-style-type: none"> <li>1. Search for suitable location (Months 1-3)</li> <li>2. Search for participating associations, and businesses (Months 1-6)</li> <li>3. Search for investors/operators – national and/or international – also among local hoteliers (Months 1-6)</li> <li>4. Tender and contracting of construction works (Months 4-6)</li> <li>5. Construction and finishing (Months 6-24)</li> <li>6. Lease for in-house services like shops and catering and design institute (Months 12-18)</li> <li>7. Training of staff (Months 18-24)</li> <li>8. Pre-opening Marketing activities (until Opening Months 6-24)</li> <li>9. Pre-opening and introduction phase (Months 21-30)</li> </ol>	<ul style="list-style-type: none"> <li>• Prepare land use agreements</li> <li>• Issue works contracts</li> <li>• Prepare a detailed business plan / project fiche</li> <li>• Prepare the tender dossiers</li> <li>• Supervision of the works</li> <li>• Training of future staff</li> <li>• Pre-opening management &amp; marketing</li> <li>• Support during introduction phase, ensure quality of service, install quality management system</li> <li>• Create a schedule of shows and events for visitors and locals</li> <li>• Establish a PCO (Professional Congress Organization) to commence marketing the Hall for small congresses and meetings during off-season</li> <li>• Prepare a system of quality control leading to a Petra 'Events &amp; Meetings' Brand</li> <li>• Implement Marketing Strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Consulting / Planning JOD 350.000</li> <li>• Investment Cost JOD 3.100.000</li> </ul>	<ul style="list-style-type: none"> <li>• Allocation of suitable space, preferably in a prime downtown</li> <li>• Smooth procurement processes</li> <li>• Timely availability of funds</li> <li>• Interest and support in the local community to accept the new Center</li> <li>• Sufficient interest to expand horizon and be open for innovations</li> <li>• Regional marketing support</li> </ul>

- Stage 2: to be realized within 4 – 7 years from decision on the Petra Master Plan
- Stage 3: to be realized within 8 – 20 years from decision on the Petra Master Plan



**Table 29: Main priorities and sequence of action**

Stage 1	Stage 2	Stage 3
<b>Management and Organization</b>		
<ul style="list-style-type: none"> <li>• Establishment of a DMO-Destination Management Organization, including regulations for financing</li> <li>• Develop marketing and branding strategy</li> <li>• Provide capacity building for the local tourism industry</li> <li>• Develop first annual marketing plan and start pilot initiatives</li> <li>• Invite creative talent for developing – together with local entrepreneurs – visitor attractions outside PAP (e.g. animal center, handicraft center, Bedouin lifestyle center etc.)</li> <li>• Ticketing System for pre-booking and pre-payment of PAP tickets</li> <li>• Design and initiate Total Quality Management system in cooperation with associations and business community to guarantee highest possible quality standards for visitors</li> <li>• Planning detailed concepts for a high intensive tourism zone in Wadi Musa and other intensive tourism zones in the region (shops, entertainment, restaurants, pedestrian area)</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate implementation of first (two) annual marketing plan(s), develop more ambitious marketing plans and activities</li> <li>• Intensified product development activities, professionalize management of tourism products, implementation of pilot products</li> <li>• DMO shall set-up on-line booking portal and control for accommodation facilities as well as tourism services, attractions and products</li> <li>• Pro-active marketing addressing tour operators and journalists</li> <li>• Set-up support system for local tourism activities (including investments in “low intensity tourism zone” for hotel accommodations); linked with dedication of land for low-intensity tourism in peripheral communities</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive re-assessment of the Strategic Master Plan for the Petra Region</li> <li>• Continue to expand or decide to reduce planning and implementation of product development activities</li> <li>• Support in product development should focus on innovation and creation high-value products</li> <li>• Continue to professionalize management of tourism products (TQM Total Quality Management)</li> </ul>



Stage 1	Stage 2	Stage 3
<ul style="list-style-type: none"> <li>• Then move all activities from the park to core tourism zone</li> <li>• Redefine Carrying capacity for PAP and the Petra Region with the goal of reducing negative impact and increasing visitor numbers as well as length of stay:</li> <li>• PAP (less visitor hours) by improving visitor flows</li> <li>• Petra-Region (more visitor hours) by creating new attractions</li> <li>• Define buffer zone, if needed</li> </ul>		
<b>Investment Promotion</b>		
<ul style="list-style-type: none"> <li>• Implement adequate land-use regulations in order to legalize small-scale investments in line with the overall development principles</li> <li>• Establish system to support alternative small-scale investments</li> <li>• Implement regulations of business licenses linked to a classification system (for comfort, outside appearance, cleanliness, safety, etc.)</li> <li>• Establish monitoring and control systems</li> <li>• Organization of marketing for these facilities</li> <li>• Promotion of larger-scale investments in the intensive tourism zones (Wadi Musa close to Mövenpick hotel and PAP entrance;</li> </ul>	<ul style="list-style-type: none"> <li>• Role out small-scale investment scheme also to peripheral municipalities such as Baidha, Rajif and Dlagha</li> <li>• Investments in alternative tourism facilities, attractions and accommodation capacities in the more peripheral municipalities</li> <li>• Further attraction of larger investments in the central areas</li> </ul>	<ul style="list-style-type: none"> <li>• Focus small-scale investment scheme on quality improvements</li> <li>• By then, tourism investments may have grown in some of the peripheral regions, focus on tourism development there</li> <li>• Investigate the capacities for additional larger tourism investments in the core areas</li> </ul>

Stage 1	Stage 2	Stage 3
Scenic Road) <ul style="list-style-type: none"> <li>Investments in main tourism infrastructure in the central areas</li> </ul>		
<b>Economic Diversification</b>		
<ul style="list-style-type: none"> <li>Prepare development strategies and action plans for priority sectors</li> <li>Provide targeted support to sectors that have a relatively strong regional demand (agriculture and food products, souvenirs, maintenance services); including</li> <li>An interesting project of trying to reconnect tourism and agriculture (as is customary in Europe) was brought to attention by the Maqam Al-Nebi Haroun Society (MNHS – a for-profit society in the Petra Region) was brought to attention and seems to deserve support.</li> <li>Training</li> <li>Promote cooperation of tourism sector with other industry sectors</li> <li>Appropriate marketing (hence, the establishment of the Destination Management Organization)</li> <li>Access to finance</li> <li>Support innovations</li> </ul>	<ul style="list-style-type: none"> <li>Develop a cluster management organization for the strongest sectors that aim at developing competitive strengths and innovativeness in selected priority sectors</li> <li>Set measures for technological upgrading of the priority sectors and improved business environment</li> <li>Develop a more qualified and specialized workforce by providing adequate vocational education (capacity building) and training facilities as well as relevant university courses</li> <li>Foster co-operations on regional, national and international levels that aim at introducing improved or new products, processes, organizational arrangements, marketing approaches etc. (innovations)</li> <li>Develop and implement marketing activities to attract firms and supporting industries for the priority sectors; create a reputation and “image” for attractiveness of Petra for the specific industries (maybe linked to the activities of the Destination Management</li> </ul>	<ul style="list-style-type: none"> <li>Enhance the capacity of the cluster management organization</li> <li>Reassess the development and potential of priority sectors</li> <li>Adaptation of measures to support key sectors</li> <li>Further upgrading of the technological capabilities of the firms in priority sectors</li> <li>Strengthen the region’s unique and place-specific advantages</li> <li>Aim at up-scaling production and accessing national and international markets</li> </ul>

Stage 1	Stage 2	Stage 3
	Organization) <ul style="list-style-type: none"> <li>• Provide good quality of life for high skilled labor force (including good schools, transport, ICT infrastructure, intact environment, health services, etc.)</li> </ul>	
Infrastructure and Housing		
<ul style="list-style-type: none"> <li>• Prepare land-use plans, draft and legalize municipal zoning and building regulations based on the recommendations of the strategic master plan</li> <li>• Develop design guidelines to direct future architecture, landscape architecture, and civic infrastructure within the region.</li> <li>• Adjust boundary as appropriate for the PDTRA and PAP to reinforce watershed management strategy and environmental protection.</li> <li>• Establish working relationship with RSCN for the management of environmental resources within the PDTRA.</li> <li>• Update and improve GIS database based upon more detailed flora, fauna, and archaeological input from RSCN and Department of Antiquities.</li> <li>• Dedicate development land for residential use to cover the need for the next three years in</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce as quickly as possible disparities of basic infrastructure and public services among all six communities</li> <li>• Define those public services (e.g. higher education, hospitals, etc) that are to be offered to all population in the region – some can be offered centrally, provided they are made available and easily accessible through good public transport and/or emergency services</li> <li>• The proposed development is compact – thus infrastructure should only be extended, as land is made available for development to absorb the population growth. Implement the Urban Services Boundary concept.</li> <li>• Reassess movement patterns and transportation needs, potentially construction of Teleferic</li> <li>• Improve Water Management Harvesting flood waters and create water storage</li> </ul>	<ul style="list-style-type: none"> <li>• Dedicate land for residential and/or tourism use corresponding to the growth in demand in order to keep development compact and keep land prices stable</li> <li>• Develop basic infrastructure to server the newly development land</li> <li>• Observe carefully the growth rates and land availability and if required take measures to slow down growth</li> <li>• Reassess movement patterns and transportation needs, potentially construction of Teleferic</li> <li>• Strategic water supply project implemented</li> <li>• Assess need for airport and develop respective project if deemed necessary</li> </ul>

Stage 1	Stage 2	Stage 3
<p>line</p> <ul style="list-style-type: none"> <li>○ With the regulatory framework,</li> <li>○ The principle of “growth efficiency”</li> <li>○ And ideally adjacent to existing communities if possible (if not possible, alternative development space shall be dedicated as residential area)</li> <li>○ Identify sites for future retail development, schools, medical facilities, parks, and places of worship in order to stay ahead of population growth (this needs to be done at every phase).</li> <li>● Planning and construction of a comprehensive Mall with Top Class Marketing and Merchandising near PAP exit, where visitors are bound to go through before leaving</li> <li>● Implement Regional Transportation Facility (for regional busses coming to Petra Region)</li> <li>● Implement suggested bus system (red and blue line) for both locals and tourists</li> <li>● Start a comprehensive water management plan – using in an optimal way <ul style="list-style-type: none"> <li>○ Water harvesting and storage from flash floods</li> <li>○ Water supplied by</li> </ul> </li> </ul>	<p>facilities</p> <ul style="list-style-type: none"> <li>● Develop residential area in new areas (priority on Al Hay)</li> </ul>	

Stage 1	Stage 2	Stage 3
the government (Ma'an – Amman pipeline & "red/dead" o Wastewater recycling o Develop and imple- ment a "green" strategy for dealing with storm water management.		

### 7.3 Investment road map

The concept for economic and tourism development emphasizes the transition from Petra's current status of being an attraction for visitors to Jordan and the Middle East to a destination, i.e. a place where tourists have the wish to spend more time in addition to just visiting the PAP. At present, hardly any first time visitors have been informed about other things to see and experience.

Equally, the concept foresees the development of business, income and job opportunities for the residents in Petra Region. The economic development shall enable a certain specialization and diversification of opportunities as well as an upgrading of the already existing opportunities. Such a development will provide more interesting alternatives as compared to the relative low-skilled income opportunities many locals pursue in the PAP.

In addition, the development process needs to consider the scarcity of land, of natural resources and of financial capacities in the region. Hence, a detailed technical analysis was undertaken to understand the land sensitivity and growth efficiency in the region.

#### 7.3.1 Creation of a Destination Management Organization (DMO)

The estimated costs for the DMO shown on Table 26 were calculated on the base of structure and operational action plan as described in greater detail in chapters 6.2.6 and 6.2.7.

According to our experience a relatively small staff of three senior and six junior staff members would be required to start an effective DMO. A centrally located office will be needed as well as good means of transportation and communication. For the management positions there needs to be a search for adequately qualified persons who should bring with them at least seven years of experience in tourism related management positions in English speaking and Arabic speaking countries. In the long run, personnel from the Petra Region should staff a DMO. Therefore, the task of searching for the best-qualified staff needs to start locally. Clearly, the task of building local capacity will be one of the most important for the international consultant and the first CEO. A comparatively generous salary scale is being proposed that should allow hiring highly qualified candidates. In order to train them in the actual tasks to be fulfilled by a DMO, it is strongly recommended to contract for the first three years, an internationally experienced coach and advisor who has had ample personal experience in a management position of a DMO, whose main task would be to assist in the selection process and then to provide one year coaching and training services to all senior and junior staff of the DMO - full time for one year and part time for a further two years.

An operational budget for the first five years is estimated and deals primarily with the marketing aspect of a DMO's duties. This involves the creation and maintenance of a state-of-the-art web site as well as a budget for on-site marketing activities. The highly important task of Product Development will not require a specific budget (no investment incentives etc.); this task needs to draw on the experience and management skills of the staff members and the broad experience of their international coach.

As far as revenues for supporting the DMO are concerned, in many cases a "tourism tax" is being levied from each arriving tourist; the cost estimate shows that a tourism tax of only JOD 0,5 should well support the DMO and may even allow for growth of the organization if and when needed.

**Table 30: Cost estimate for DMO**

<b>Petra Destination Management Organization (DMO)</b>	<b>No.</b>	<b>Increase % /JOD</b>	<b>Annual Cost Year 1</b>	<b>Annual Cost Year 2</b>	<b>Annual Cost Year 3</b>	<b>Annual Cost Year 4</b>	<b>Annual Cost Year 5</b>
<b>EXPENDITURES</b>							
Office Start Up			50.000	0	0	0	0
Office operation & Transportation		3,00%	48.000	48.000	49.440	50.923	52.451
Operational Budget Web Site		5,00%	100.000	30.000	31.500	33.075	34.729
Operational Budget On Site Marketing			50.000	60.000	70.000	75.000	75.000
Personnel		5,00%					
Intern. Coach Start Up Phase - All Inclusive			200.000	50.000	20.000	0	0
General Manager/CEO	1	60.000	60.000	63.000	66.150	69.458	72.930
Senior Staff Marketing/Product Development	2	20.000	40.000	42.000	44.100	46.305	48.620
Junior Staff	6	8.000	48.000	50.400	52.920	55.566	58.344
<b>Total Cost</b>	<b>9</b>		<b>596.000</b>	<b>343.400</b>	<b>334.110</b>	<b>330.327</b>	<b>342.075</b>
<b>REVENUES</b>							
No. Intern. Visitors / Tourism Tax pp	5%	0,5	820.000	861.000	904.050	949.253	996.715
Revenue Tourism Tax			410.000	430.500	452.025	474.626	498.358
<b>Profit/Loss DMO</b>			<b>-186.000</b>	<b>87.100</b>	<b>117.915</b>	<b>144.300</b>	<b>156.283</b>

### 7.3.2 Central Gardens Wadi Musa

A first investment priority recommended in the Strategic Master Plan for the Petra Region is the re-urbanization of the traditional Wadi Musa Town Center (including Elgi) around a newly to be created Town Square (around the present office of the Environmental Department of the PDTRA) and the development of a high intensity tourism zone near the PAP Entrance Gate and Visitor Center (see p.54 of the Map Atlas "Wadi Musa Central Gardens Plan"). This zone shall become a meeting place for tourists and locals alike with a variety of restaurants, shops, entertainment establishments and other tourism attractions for all age groups. Furthermore, public gardens and green areas following the spirit of the traditional green wadi of the area shall be developed and maintained. The traffic impact in this zone shall be reduced to a minimum and a public transport system installed. This development shall:

- Create a place where tourists and locals alike can spend their time in a greatly relaxed and cheerful atmosphere
  - Enjoying restaurants, cafes, shops, museums and other attractions,
  - Meeting people and having social contact
  - Relaxing in the more quite, green and refreshing central gardens
  - Providing a gathering and performance space that the PAP can utilize.
- Create income, business and job opportunities
  - Job opportunities for people from the whole region

- Possibilities for small-scale investments (shops, restaurants, bars, cafes, etc.) for people from the entire region
- Enhance value creation because businesses are reachable not only during the visits in the park but also before and after; the density of shops will allow for diversification and higher value sales.
- Create the ideal environment for large-scale private investments (infill investments in the foreseen areas)
  - Proximity to the park entrance
  - Proximity to the main touristic area
  - Availability of infrastructure and utilities

Based on the clear short- medium and long-term guideline provided by the Strategic Master Plan for Petra, PDTRA with support of the government of Jordan is called upon to provide the framework conditions for private enterprise from the local business community as well as from investors from other parts of Jordan and from abroad to invest in one or more of the proposed projects.

The realization of this new core tourism zone of Wadi Musa and the Petra Region will require: Public investments

- Public space (central gardens)
- Utilities and basic infrastructure for larger hotel investments
- Transportation (public transport, measures to calm traffic in zone)
- Creation of a major souq at the PAP exit for a relaxation, food drink and shopping immediately after the exiting - but to some tiring – experience of the unique wonders of the antique Petra
- Renewal of the area along the road from PAP entrance to approximately current PDTRA building / Elgi
- Create of major attraction in downtown at end of renewal area (e.g. Petra museum to be relocated from within PAP, theatre, multipurpose center, etc.)

Private investments

- Large-scale hotels
- Guesthouses and boutique hotels
- Shops, restaurants, cafes entertainment facilities and establishments as well as other small-scale tourism products

Within the land-use plan, two high-intensity tourism zones are identified: i) areas surrounding the Central Gardens Wadi Musa, and ii) Scenic Road. The development of the central gardens Wadi Musa shall have precedence because it fosters the development of Petra region into a destination with a high quality of life for the local population as well as tourists.

#### **Petra Archaeological Park – Entrance & Exit Gate**

As far as tourists are concerned, this is clearly the center of interest and the place most frequented by tourists, since every tourist will visit it at least twice during a stay in the region, on the way into and out of the park. Presently, at the entrance of the park a modernized version of the present visitor center is in the process of being built, with an interpretation center, ticket sales, shops, rest rooms etc. Experience with major cultural sites, however, shows that the place that most visitors will remain in and will spend a considerable amount of time and money, is a well-designed shopping & entertainment mall that is located at the EXIT GATE through which all visitors must go at the end of a mentally exhilarating and often physically tiring walk. It is at that point when they are most in need of a) going to a toilet and wash up at

clean sanitary rooms, b) are ready for some good food and drinks, c) are ready to relax and enjoy some music, & entertainment and 4) are in a mood to buy valuable mementos of a memorable visit.

Thus it is recommended to build such a Mall at the EXIT GATE right next to the ENTRANCE GATE of PAP, where the buses bringing them out from the bottom of the PAP would drop visitors. Obviously, the only way to exit is through the mall in a way that they need to pass by all the attractive facilities as described above; the mall must present itself so attractively that visitors will – if not forced – so definitely strongly motivated to remain for a while and consume. It is there where the shop owners who are now scattered all over PAP are likely to make better revenue per visitor than before.

As far as layout and organization are concerned: a mall is defined as a building or set of buildings that contain stores that have interconnecting walkways making it easy for people to walk from store to store. The walkways may or may not be enclosed. The mall will thus be following the structure of the traditional bazaar that are known to be among the most popular and therefore most profitable attractions in the top Islamic tourism destinations. Ideally this shopping district could form part of a public street so that the shops can be open at night and other times during which the park is closed, rather than internal to the park, thus limiting a merchant's hours of operation.

#### **Revitalization of the traditional Wadi Landscape**

A major attraction of Wadi Musa – even though somewhat neglected during the past years - is the view over two major wadis with their traditional small-scale agriculture on terraces along the wadi embankments. Lately, a growing interest in reviving these traditions can be noticed. The wadis are clearly the greenest area of the Petra Region. Many families grow vegetables, fruits and olives there and it is a landscape of a truly bucolic atmosphere, rarely seen anymore in our times.

It is suggested to connect and possibly widen to a minor degree the existing paths and small roads. They would become an attractive walkway for locals and tourists, who prefer a leisurely walk to the more strenuous treks in the wider region. These paths would lend themselves well for rides on an animal or with a carriage, offering interesting vistas with great variety. Another attraction would be the (re-) construction of traditional methods of water harvesting, which would at the same time be useful for agriculture and interesting to visitors.

There seems to be a plan promoted by some people of Wadi Musa to set the bottom of the wadi in concrete and build a major road over it, a project that cannot be recommended by the consultants under any circumstances. Such constructions have been made in Europe and North America for more than 50 years and have now been identified as a major reason for the severe increase in flooding in lower lying areas and a progressive drying out of high areas, since water is flowing away in too great a rush. Billions are now spent on re-naturalizing the riverbeds closer to their original shape.

#### **7.3.3 Further projects with regional relevance**

The development of low-intensity tourism zones has to be seen in the context of transforming the Petra Region from an attraction to a destination. Thus, development of the destination must not be about establishing separated and disintegrated islands for tourism that will cause even more traffic and will raise the cost for infrastructure, but should be rather about creating



a system of linked and varied facilities and tourism attractions that together determine the experience of Petra region.

Low-intensity tourism zones could be developed in all communities within PDTRA depending on the development priorities in each community, the market demand and the intelligence and creativity of the inhabitants. However, the inhabitants of the smaller communities should keep in mind that there will be plenty of business opportunities and/or jobs for them in Wadi Musa or any of the tourism zones with lower intensity; thus they may choose to leave their own communities more or less untouched by tourism and yet earn their livelihood from working in the tourism zones. This may be an option to maintain traditional lifestyles without missing out on professional development opportunities. As suggested by the lower recommended building heights and smaller allocation of development areas to the communities of Baidha, Umm Sayhoun, Taybeh, Rajif, and Dlagha, tourism development in these areas is intended to be low in intensity.

The objectives of the tourism development and investment strategy can be summarized as follows:

- Diversify tourism product
- Create income opportunities in decentralized locations
- Make better use of animals and animal tradition
- Create alternative accommodation facilities
- Create alternative job opportunities

In the economic, social and tourism system of PDTRA, there are, however, according to our believes three more core projects that have a vital strategic importance for turning Petra into a world-class resort:

### **Animal Park & Interpretation Center**

Petra Region is characterized by a rich heritage of living and working with animals. Tourists also associate Bedouins with horses and camels. Animals, therefore, should be an interesting element in the tourism experience. On the other hand, being kept in large numbers within the community boundaries, the animals also have negative effects (air pollution, health risks).

At present, animal rides for tourists are offered only within the PAP boundaries but are considered as a rather negative experience by many tourists. The horse ride from the entrance to the beginning of the Siq is offered to international visitors “for free” as part of the ticket; however, few tourists know this and many of those who know are not interested in a short ride on horseback and drawn on a string by a guide who will insist on a sizable tip (5-7 JOD) for this brief ride. Most tourists perceive the extremely bumpy carriage ride down and/or up the Siq that is offered at extra cost as very uncomfortable; it is also dangerous because the drivers tend to ride very fast, jeopardizing pedestrians and peddling and begging children alike.

In addition, archaeologists warn of the irreparable damages to the world heritage site caused by animal effluvia and excrements as well as by animal hooves on some of the rocky mountain trails (e.g. by the overutilization of the trail to the ‘Monastery’ by donkeys that are not permitted within the PAP boundaries anyway).

As a consequence, we see the animals are underused and the income not optimized. Hence, the creation of an animal park outside the PAP will address economic, social and environmental issues.

Attractive trails for horse drawn and well-designed carriages

Riding trails for those tourists who want to ride a horse, a donkey or a camel themselves

- A special zone for children, with a small petting zoo and guided rides for children
- A turf zone where the young animal guides will at a certain hour – e.g. one hour before sunset - conduct playful races on horses, camels or even donkeys – just for the fun of watching it or even for placing small bets on their favorite rider or animal.
- An interpretation center showing the great importance animals has in the life of Bedouin societies
- A well stocked shop with all products that can be associated with animals, including leather, woolen cloths or carpets, cheeses and other food
- A Restaurant with traditional Bedouin as well as other tasty local dishes may be a good addition to the range of services offered

Given the overall positive spirit of cooperation among stakeholders in the Petra Region, we suggest that a cooperative comprising all animal holders in the Petra Region who are presently involved in animal related tourism activities – within and outside of PAP – should be owning the Animal Park and also provide their animals, their knowhow and their own an/or their family members' labor.

It is suggested that PTDRA will provide the Animal Park with the necessary land (between 0,25 – 0,4 square km should be adequate) at a suitable location with all necessary infrastructure (road, electricity, water, telecommunication). A piece of land would be best suited, that lies partly in a tourism zone with low intensity and partly in an agricultural zone and along the main road between Umm Sayhoun and Baidha.

PDTRA would be giving out a limited number of licenses to animal holders, obviously with a preference for those families/persons that are already operating with animals within the PAP. License holders must however agree to submit to a strict rule of conduct regarding treatment of animals and the high standard of service that the Animal Park promises their visitors. Such rule of conduct will be implemented and monitored by PDTRA.

Experienced and professional management must oversee the actual day-to-day operation as well as the all-important strong marketing activities. It will be the Petra DMO's responsibility to select an appropriate management, be it an experienced management company or a strong management personality with proven track record in a related field.

**Table 31: Estimated investment cost: Petra Bedouin Animal Park & Interpretation Center**

<b>Petra Bedouin Animal Park &amp; Interpretation Center</b>	<b>Estimated space requirement in m2</b>	<b>Estimated Cost Construction / Landscaping JOD per m2</b>	<b>Estimated Construction Cost Total in JOD</b>	<b>Estimated Cost Furnishing JOD per m2</b>	<b>Estimated Furnishing Cost Total in JOD</b>
Land Needed (with parking)	300.000	5	1.500.000	0	0
150 Stables at 20 m2	3.000	200	600.000	50	150.000
Interpretation Center	250	500	125.000	400	100.000
Cafeteria	200	500	100.000	600	120.000
Shop	120	500	60.000	300	36.000
<b>Total indoor space</b>	<b>570</b>		<b>2.385.000</b>		<b>406.000</b>
Planning & Unforeseen Cost (20%)					558.200
<b>Estimated Total</b>					<b>3.349.200</b>

### **Multi-purpose Entertainment and Conference Center**

As in many tourism resorts, Petra Region faces the problem of seasonality. Because of the extensive low seasons, it is at present rather difficult for the hotels to reach occupancy rates that are higher than 60%.

The high degree of name and brand recognition of Petra as well as the reputation of Jordan as one of the safest and politically most stable countries in the region and the easy reach from Amman and Aqaba airports, make Petra and its good hotel offering a very attractive destination for the so called MICE market. The acronym MICE stand for Meetings, Incentives (= travel as business motivation), Conventions and Events. Petra has all necessary prerequisites to successfully pursue this very attractive segment of the tourism market, which is known to bring the highest per capita revenue among all forms of tourism, except a suitable meeting facility.

Therefore, it is recommended to build a Multi-purpose Entertainment and Conference Center, consisting of one large hall that will hold up to approximately 400-500 persons as well as up to ten smaller rooms for anywhere between 50 and 150 people (some created by subdividing smaller ones through movable partitions) since many conferences have a need to break up into smaller working groups. Such a Multi-purpose Entertainment and Conference Center can be used for a great number of purposes:

Small and medium sized conferences, meetings of any size

Public and private events, such as weddings and celebrations, concerts, art exhibits and other cultural events

Staging shows and exhibits for business purposes (e.g. incentives, product presentations etc..)

Creating multi-media presentation interpreting the historic and cultural background of Petra; showing some of the great films with local context during tourist seasons (e.g. Indiana Jones, Lawrence of Arabia, Moses etc.)

Multi-purpose Entertainment and Conference centers have proven to be creators of considerable indirect profitability for municipalities and regions that have invested in their construction because of the manifold return in the increase of tax revenue from an increase in both overnight stays and increased average tourist expenditure. Thus, in most cases such conference centers will be built by the public sector and given to the private sector for operation under a management contract or a lease agreement. There are numerous companies that have experience in managing and marketing conference centers, among them a number of international hotel management companies.

Another frequent favored solution is the construction of a Multi-purpose Entertainment and Conference Center with an adjacent hotel (preferably with direct roofed access) on the basis of a Private Public Partnership agreement between the Public sector and a private investor; with an experienced management firm managing both objects. The hotel investor has a clear advantage with such a conference center, because attendees of conferences will prefer the vicinity of their hotel to the meeting venue. The management of the conference center will want to cooperate well with all other hotels in the region as well, in order to secure a good utilization rate. Such an arrangement can therefore result in win-win situations for all parties involved.

A location in the proposed hotel zone near the park entrance or within Old Town Wadi Musa would be preferred.

**Table 32: Estimated investment cost: Multi-purpose Entertainment & Conference center**

<b>Petra Conference Center</b>	Estimated space requirement in m2	Estimated Cost Construction / Landscaping JOD per m2	Estimated Construction Cost Total in JOD	Estimated Cost Furnishing JOD per m2	Estimated Furnishing Cost Total in JOD
Land Needed (without parking)	3.000	20	60.000	0	0
Main Conference Hall - 500 seats (6m height)	600	1.000	600.000	600	360.000
10 rooms at 70 m2 average (with dividers - 3.60 high)	700	800	560.000	500	350.000
General Space	400	600	240.000	300	120.000
Cafeteria	300	500	150.000	600	180.000
Administration & Storage	250	800	200.000	200	50.000
Total indoor space	2.250		1.810.000		1.060.000
Planning & Unforseen(20%)					574.000
<b>Estimated Total</b>					<b>3.444.000</b>

#### **Petra Arts and Crafts Center and Design Institute**

UNESCO has recognized the cultural space of the Bedu in Petra and Wadi Rum as intangible cultural heritage of humanity.

The Bedu have preserved wide-ranging knowledge and skills related to the area around Petra and Wadi Rum, including traditional medicine, camel husbandry, tent making craftsmanship, as well as rituals of coffee making and oral traditions reflecting their mythology. In this context it is regrettable that many of the articles sold in Jordan and in the Petra region are not the products of a national handicraft industry, but come from elsewhere such as Syria, Egypt, Yemen, Iraq, India, China etc.

In the strategic design for the Petra region one must seek for ways and means to foster and promote the living cultures of the local people in all its many forms. Economic analyses in other parts of the world have consistently shown that such policy makes sound business sense if the right kind of investment is planned for.

The problem, common to many prestigious world heritage areas, is the globalization of the handicraft markets and the spectacular growth of tourism at the same time. The consequences of these developments are that the traditional direct and personal contact between the artisans and their clients has been disrupted. The local artisan can no longer assume – as in the past – the combined role of a designer, producer and marketer. However, there is a growing market looking for the unique and the authentic, the benchmark for authenticity being what is true to the artisans' cultural heritage.

The uniformity of the products resulting from globalization has created a new niche for creativity, innovation and uniqueness. In this context there is an increasing demand for well-applied design, much of which comes from the local culture itself and from the imagination and skills of creative artisans. Craft promoters across all geographical borders express concerns that closer links between designers and artisans need to be established. Given the

communication gap between producers and consumers, the designer is seen as an indispensable intermediary, a bridge between the artisans' know-how and his knowledge of what to make and to place on the market.

Innovative approaches to crafts can no doubt be triggered by the introduction of design in various aspects, for example with regard to choice of alternative materials and appropriate technologies or the definition of new product lines. In order to ensure a success it is indispensable to first develop a meaningful alliance between design and crafts. This should be done in a formal training institution, fully in line with the founder of the Bauhaus, Walter Gropius, who believed that the best training for young designers should include courses to free their individual creative ability and give them a knowledge of a range of materials – stone, clay, glass, wood, metal, textiles, paper – for exploring three-dimensional forms easily.

In a nutshell: crafts and design, while illustrating the diversity of cultural expression, have become a real fashion trend in international markets, may offer important benefits to the Petra region in terms of economic growth and social cohesion. They present a great potential for empowering disadvantaged populations, indigenous communities and more particular, women.

We therefore propose to establish a design institute within the Petra region to promote design innovation. If done effectively, newly designed products constitute a perennial asset. The design institute should focus on innovative approaches to training with regard to designing new products, packaging, marketing techniques and management of small enterprises with a special emphasis on vocational training of women and youth.

The Petra National Trust (PNT), Jordanian NGOs such as the Queen Alia Fund, should be invited to participate in this institutional development, whereas Unesco's section for the development of cultural industries could help to organize international exchange of best practice and experts.

Design Institute should be integrated in an Arts and Crafts Center, preferably in a traditional urban structure that will meet tourists' expectations of a world-class tourist resort and will be worthy of one of the most outstanding sites on UNESCO's World Heritage List.

For making the shopping experience more interesting and lively, and to lend credibility to the claim of a high quality standard, there must be an opportunity for tourists/buyers to personally watch the production of some of the most popular items.

In order to make the Arts and Crafts Center's show room offers as wide ranged and as interesting as possible, bona-fide producers of hand made goods from the entire region should be invited to offer their products to the cooperative. If they meet the quality criteria – to be set and monitored by PDTRA together with the DMO – they will be invited to offer their goods on a trial basis and may after awhile join the cooperative if and when their products sell successfully.

There is a wide range of products that could be imagined for the Petra Region Arts and Crafts Center:

- Custom jewelry hand-made from silver or other precious or semi-precious metals and stones
- Handmade woolen carpets or covers

- Handmade woolen or other fashionable textile items, possibly using traditional Bedouin, Bidoul or Nabataean motives
- Facsimile production of traditional Nabataean and Bedouin and Bidoul artifacts
- Traditional handmade leather goods with local design (slippers, belts etc.)
- Household utensils made from wood, ceramic, metal or any other organic material
- Locally produced folk art
- Productions of contemporary Jordanian artists

There is room for more items to be developed and designed in order to expand the product lines. An essential part will be the acceptance of credit card payment as well as a reliable and well functioning fast shipping service, that will relief potential customers of their worry to overburden their luggage with heavy items.

There are some good examples of Arts and Crafts centers that are also economically successful. Typically, it is a place where high quality locally and predominantly hand-made products shown and sold. In most cases they are organized on a cooperative basis as well with all members sharing to a certain degree opportunities and risks. A strong management team with sound business acumen must be established, that will control costs; assume responsibility for a strict quality control and an active marketing strategy. The cooperative will – on advice of the management – set the sales prices at a level that must be competitive and at the same time allow for a sufficient for the joint venture to cover the overhead and marketing expenses of the Handicraft Center.

**Table 33: Estimated investment cost: Petra Arts & Crafts Center incl. Design Institute**

<b>Petra Arts &amp; Crafts Center incl. Design Institute</b>	<b>Estimated space requirement in m2</b>	<b>Estimated Cost Construction / Landscaping JOD per m2</b>	<b>Estimated Construction Cost Total in JOD</b>	<b>Estimated Cost Furnishing JOD per m2</b>	<b>Estimated Furnishing Cost Total in JOD</b>
Land Needed (without parking)	2.000	20	40.000	0	0
Craft Production Show-Floor	300	600	180.000	150	45.000
Design Institute	300	600	180.000	250	75.000
Shop	200	600	120.000	350	70.000
Cafeteria	200	500	100.000	600	120.000
Administration & Storage	200	500	100.000	200	40.000
<b>Total indoor space</b>	<b>1.200</b>		<b>720.000</b>		<b>350.000</b>
Planning & Unforeseen Cost (20%)					214.000
<b>Estimated Total</b>					<b>1.284.000</b>

#### **Petra Public Transportation System for local residents and tourists**

One of the truly weak spots of Petra concerns the highly unsatisfactory traffic situation: Traffic jams caused by oversized tour busses and their poisonous diesel exhausts deter visitors from visiting downtown Wadi Musa if they can at all avoid it. Visitors rather spend evenings with hardly any option for entertainment and shopping in their isolated hotels along the King's Road then taking the pains of traveling in the region with their buses or by Taxi.

The regional public transportation system is quite unsatisfactory for locals and is clearly hampering economic and social development in the region; e.g. buses tend to wait before departing.

ture until they are full rather than adhering to a schedule. This makes commuting to a job in a neighboring community difficult for those who do not own a car.

The present public transportation system is practically not a viable option for tourists at all and – in view of the traffic jams with tour buses – the majority of tourists has little or no options to spend additional time in other parts of the region.

Thus, as shown in chapter 6.5, the creation of a well functioning Public Transportation System is one crucial element for turning Petra into a world-class destination. The table below attempts to give preliminary and rough costing estimates for a scenario that is based on a fully developed traffic system as described in chapter 6.5 for a visitor number of up to 2 Mio visitors in peak years, meaning that the average number of daily visitors could be over 5.000. In order to reach such an average, there would be some days with up to 10.000 visitors. It is for this maximum capacity the system has been laid out in the phase 3 scenarios.

Since transportation systems don't need to be purchased but are available on a leasing basis, the calculation has been based on an estimated number of driven km per year and on the total cost of operating the system per driven km and/or per year. In its full operation 130 comparatively well paid jobs (100 drivers, 20 maintenance and 10 administrations would be created in the region. A major portion of the cost per person (between JOD 2,50 and JOD 4.00 according to economy of scale) could presumably be covered by the price of the PAP entrance ticket. One must not forget, that the added (seemingly free of charge) mobility for visitors would result in an increase in the average per visitor expenditure for shopping, entertainment, visiting other attractions etc.

**Table 34: Cost estimate: Petra public transportation system**

<b>Petra Public Transportation System</b>		<b>PHASE 1 (1-3 years)</b>	<b>PHASE 2 (4-7 years)</b>	<b>PHASE 3 (8-20 years)</b>
		Number of Busses ( 3 buses at 150 pax, 5 at 50 pax)	Number of Busses (15 buses at 150 pax, 10 at 50 pax)	Number of Busses (15 buses at 150 pax, 10 at 50 pax)
		8	25	45
Total annual km		921.422	2.879.444	5.183.000
Total annual Personnel costs	JOD/year	184.184	575.576	1.036.037
Annual depreciation busses	JOD/year	300.120	937.873	1.688.172
Annual bus variable costs	JOD/year	246.164	769.261	1.384.670
Annual depreciation workshops	JOD/year	48.054	150.169	270.305
<b>Total annual costs</b>	JOD/year	<b>778.522</b>	<b>2.432.880</b>	<b>4.379.184</b>
Average total costs per bus km	JOD/bus km	0,84	0,84	0,84
Average daily costs of the bus system	JOD/day	2.133	6665	11.998

Potential revenue for the transportation from ticket sales and advertising has not been taken into consideration in this calculation. Overall, such a vastly improved transportation would certainly have a positive effect in improving the options of education, job mobility etc. for the entire population.

**Further tourism products and services**

The strategic master plan indicated a number of tourism products and investment opportunities in the Petra Region (see sections 6.2.2 and 6.4.4). The implementation of these will increase the tourism experience and foster the development of Petra Region to a destination. Therefore, it is suggested to facilitate the development of new tourism products and services as well as to provide marketing support for them through the Destination Management Organization.



## 8 ANNEXES

**See separate folder with annexes**

## 9 Proposed investment projects for the Petra Region

**See separate folder with illustrations**

# 10 Map Atlas

**See separate folder with maps**