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Sharaf Al-Kheder\textsuperscript{a}, Naif Haddad\textsuperscript{a}, Mahmood Abo Jaber\textsuperscript{b}, Yahya Al-Shawabkeh\textsuperscript{a} & Leen Fakhoury\textsuperscript{c}

\textsuperscript{a} Department of Civil Engineering, Faculty of Engineering & Applied Sciences, ALHOSN University, Abu Dhabi, UAE
\textsuperscript{b} Engineer and Urban Planner, Ministry of Municipal Affairs, Jordan
\textsuperscript{c} University of Jordan, Amman, Jordan

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Socio-Spatial Planning Problems within Jordan Valley, Jordan: Obstacles to Sustainable Tourism Development

SHARAF AL-KHEDER*, NAIF HADDAD*, MAHMOOD ABO JABER**, YAHYA AL-SHAWABKEH* AND LEEN FAKHOURY†
*Department of Civil Engineering, Faculty of Engineering & Applied Sciences, ALHOSN University, Abu Dhabi, UAE; **Engineer and Urban Planner, Ministry of Municipal Affairs, Jordan and †University of Jordan, Amman, Jordan

ABSTRACT Jordan Valley represents a distinctive variety of natural and cultural resources. It is considered a major destination for seasonal tourism in Jordan. However, the valley suffers from a serious shortage in urban infrastructure necessary for sustainable tourism development. A field survey is carried out to identify the type and range of such problems in relation to the existing infrastructure system. The survey also examines both the role of local community in tourism development and potential revenues. This study analyses the major aspects of such shortages and their effects on tourism sustainability. The paper attempts to present and discuss 1) the effect of inadequate urban infrastructure (roads, waste disposal, and water supply) on the valley tourism potential and local standards of living that represent a challenge for sustainable cultural tourism and eco-tourism; 2) the role of local communities’ involvement in tourism development (e.g. safeguarding heritage sites) and in poverty alleviation mechanisms; 3) the role of Geographic Information Systems (GIS) spatial mapping in identifying/analysing the major infrastructure problems and threats in the region, in addition to identifying main heritage assets and related tourism opportunities.

Introduction

The identification of the impacts of poor spatial (town and regional) planning practices on tourism development is an important research topic and an area that is often overlooked in both spatial planning and tourism planning literature. So, it is important to clarify these planning concepts and how they are related to the work presented in this paper. Three layers of planning are being scrutinized: (1) regional planning (sometimes referred to as territorial planning) taking Jordan Valley as a whole; (2) the individual urban plans for each town (rather than city planning as the focus is small-medium size towns); (3) tourism plans for the region.

Regional planning strategies focus on understanding the current and future growth behaviours of the region in order to meet the recent development requirements and to identify
the future ones, associated with the short and long-term actions needed. In order for regional planning to achieve urban sustainability, a balance needs to be achieved among the four fundamental dimensions of the urban process: economic, social, environmental and political (McGranahan and Satterthwaite, 2003). Regional planning looks at the whole area as a unit and works on developing general master plans for the entire region, while taking into consideration the special needs for individual communities in a way that ensures environmental protection of the entire area, harmony in regional development projects and ownership rights (White, 2009). Haughton and Counsell “argue the need to see regional planning as a part of a multi-scalar governance system, whose importance should not be underestimated” (2004, pp. 135–145). Regional plans are effective tools for planning large projects that cover the entire region such as transportation networks, water systems and wastewater networks that can serve a number of communities. As part of the regional planning agenda it is important to understand the relationship between urban changes and regional balance for forecasting how urban and regional development would proceed (Jo and Adler, 2002).

On the other hand, town planning focuses more on designing and managing the physical landscape features for different land use activities, at a smaller scale for a given town or local community. Local town planning needs to clearly present the effect of environmental quality and urban infrastructure management on tourism development and local communities (Cotton and Tayler, 2000). This could raise the issue of eco-tourism and sustainability within local communities, tackling themes related to cultural heritage sites which are subjected to mass tourism, affecting the sustainability of surrounding local landscape and community livelihoods (Nelson, 2004; Butcher, 2007).

According to the International Cultural Tourism Charter (1999, principle 2, 1), Managing Tourism at Places of Heritage Significance, “The long term protection and conservation of living cultures, heritage places, collection, their physical and ecological integrity and their environmental context, should be an essential component of social, economic, political, legislative, cultural and tourism developments policies”. There should be also an emphasis on designing the tourism plans in a way that helps in reducing poverty and increases the benefits for local communities from tourism such as direct economical revenue, better infrastructure systems, more jobs, etc. (Ashley et al., 2000; Ashley, 2005).

An effective planning practice is to use this two tier system (urban planning within the framework of a regional plan). This system works for different countries and regions in the world. For example, Malta developed an effective system that integrated national and local spatial planning policy, and social, economic and environmental policy sectors to achieve development sustainability (Chapman, 1999). This involved preparing local plans, after consulting governmental and local authorities and the public, which fit into the regional plan of the Maltese Islands and coincide with regional government policy (Ebejer, 2002). Such a system ensures a harmony in spatial planning where both the regional and local development goals can be achieved without any conflict. Another example for integrating regional and local planning strategies can be seen in using spatial planning as an instrument for promoting sustainable development in the Nordic countries (action programme for 2001–2004; website: http://www.lpa.dk/topmuenen/Publikationer/Andre_Sprog/2002/planaegning_som_instrument_i_Norden_UK.pdf). The scheme of this work depended on implementing regional planning strategies while taking into consideration the distinctive characteristics of regions at the local domain. Another work by Alden and Awang (1985) focused on studying regional development in Malaysia, taking into consideration the extent of regional welfare differentials and regional strategies aimed at combating such problems. Through studying the town planning system in Hungary, Kovács (1998) concluded that the active town development in the country had its origin in strong political action.
at the level of the central state. In Jamaica as well, the planning is performed at both the central (policy direction and guidance to the seven agencies) and the local levels to ensure integrated environmental planning and sustainable development policies and programmes, and to improve customer service (Urban Planning and Regional Development Task Force, 2007).

The conclusion, therefore, is to develop ways in which the three planning processes (regional, town, tourism) can overlap and work together. Tourism planning strategy should go beyond that concerning cultural heritage and consider the broader discipline of regional tourism planning and tourism master plans that do indeed map tourism assets alongside tourism infrastructure and tourism services. GIS is a very valuable tool for this as long as the various departments all agree to work with the same plan (e.g. Ministry of Municipalities and Planning, Ministry of Agriculture, Ministry of Tourism and Antiquities, the local Municipalities, etc.). The benefits of this work can be demonstrated in two ways: while better urban layouts and reduction in pollution make the area more attractive to tourism, tourism contributes to local economic development and environmental improvement. Besides, there is a need to refer to local authorities’ and non-government organizations’ (NGO) contribution to poverty alleviation measures within rural communities surrounding heritage sites. Such measures, in accordance with the Millennium Development Goal (MDG), aim to improve local people’s living conditions, mainly in relation to secure housing provided with potable water, sanitation and drainage systems and sustainable solid waste disposal mechanisms, as well as renewable energy technologies (United Nations Millennium Goal website: http://www.un.org/millenniumgoals/bkgd.shtml).

In many developing countries the existing urban infrastructure systems and adopted urban management policies and practices require major review to achieve a sustainable urban environment (Cohen, 2004). In the case of Jordan, a number of tourism development plans have been produced. In 1997, a comprehensive master plan was developed for the Dead Sea shore to identify suitable sites for investment (Jordan valley Master Plan, 2008). However, such master plans did not pay much attention to the existing tourism resources or to the evaluation of the tourism infrastructure and tourism services.

Another preliminary master plan was developed in 2004 for the whole Jordan Valley region, for economical and development potential evaluation, by the Ministry of Water and Irrigation and the Jordan Valley Authority in cooperation with the USAID (Jordan Valley Master Plan, 2008). More recently, in 2008 a land use plan was designed for the north east Dead Sea basin by the USAID Jordan Economic Development Program. The main target of this newly developed local master plan is to sustain the existing tourism resources, while identifying and organizing the needed infrastructure development requirements, in a way that improves the living standards of local communities (Jordan Valley Master Plan, 2008). The project was supported by valuable input from the governmental bodies, private sectors, and local communities, besides taking the currently adopted polices in the region into consideration. In general, the project is a very important step toward developing tourism in the Jordan Valley. However, a continuous follow-up is needed in the implementation phases of the project to tackle any unexpected obstacles that may appear. Furthermore, this project is of a local nature, so it is important to develop similar master plans for the other regions and to connect them within a general regional master plan, as some development aspects (e.g. transportation system), is not specific to this area and need to be handled at a regional scale.

Study Area and Spatial Attributes

Jordan (96,188 km$^2$) can be divided into three main geographic and climatic areas: the Jordan Valley, the Mountain Heights Plateau, and the Eastern Desert, or Badia region
(RSCN, 2007). Jordan Valley, at Longitude 35.248° and Latitude 36.707° earth coordinates, forms the northern branch of the east African rift system, extending along the western part of Jordan, and forming the lowest elevation of lands in the world at the Dead Sea (about 407 m below sea level). The Jordan River ecosystem withholds a unique biodiversity, as it crosses the whole valley towards the Dead Sea Basin. The current study area is located at the northern part of the Jordan Valley, (Figure 1A) about 60 km long with a total population of 100,000 per capita, most of them working in agriculture. The area is connected to other Jordanian cities with a moderate quality road network system (Figure 1A) serving tourism and transportation of agricultural crops. This region is highly fertile, producing most of the agricultural crops for local use and export (Figure 1B).

The Jordan Valley region represents an attractive tourist destination, mainly during winter and spring, and has a rich heritage of several outstanding archaeological sites scattered along the valley (Savage and Keller, 2007). The northern part of Jordan Valley is a rich region in terms of its cultural and natural resources. Archaeological excavations uncovered the existence of a historical urban settlement at Shuna Hill, dating back to the Stone and Bronze Ages. About 100 caves, of different shapes and sizes, dating back

![Study Region](image)

(a) Study area location on a GIS Jordan map

![Images showing part of the study area](image)

(b) Images showing part of the study area (looking west)

**Figure 1.** Northern Jordan Valley study region spatial distribution. (a) Study area location on a GIS Jordan map; (b) images showing part of the study area (looking west)
to 3200 BC were discovered in the area. The remains indicate extensive historical urban settlement and active trading movement with neighbourhood regions. Pella is one of the most important Roman Decapolis cities in the region (Figure 2). Furthermore, the internationally significant historical and eco-religious Baptism site of Bethany (beyond Jordan) has the potential to become one of the most popular hotspots on the regional Holy Land tourism agenda (Haddad et al., 2009).

In terms of natural resources, the area contains a diversity of natural species and a distinguished biodiversity system forming an amazing open natural park. Among such resources is the large number of water streams distributed all over the valley forming a series of green strips surrounding the water paths (Figure 3 shows an example from the Pella area). The area also contains a number of dams representing a destination for ecotourism (Figure 4 shows Wadi Al-Arab dam). It is worth mentioning also that the area contains a number of hot water springs, rich in sulphur and minerals, which are used for certain medical purposes. Such importance of the study area, at both levels: cultural and natural, put heavy duties on all governmental and NGOs to make the best use out of such a rich environment.

Research Significance and Field Survey

Field Survey Structure

A field survey was carried out to determine the feedback from the primary and secondary stakeholders. This consolidated the authors’ previous knowledge of the major problems the area is witnessing, as related to the infrastructure system and local communities’ living standards. The sample size of the field survey is 171 (200 copies were distributed of which 171 surveys were filled and returned). The first part of the survey sheet is designed to collect various demographical information about local communities including the career, age, gender, educational level, and family information.

The sample size covers a wide variety of local citizens for each demographic factor. The career factor as an example includes different types of professions such as the governor, engineers, teachers, labourers, and school and college students (Table 1 shows part of these demographic results). The survey questions are categorized into three types: tourism, economics, and planning. Tourism questions are designed to investigate the existing tourism activities in the region, the challenges facing the existing archaeological and

Figure 2. View of the archaeological site in Pella
tourism sites, the role of local community in the tourism industry, and the marketing issues to promote such sites. Economical questions focus on studying the economical status of local communities and its relationship to tourism, the necessary development projects for the region, and the role of governmental and non-governmental organizations in developing the region. The empirical survey results (in numbers) are shown in Appendix 1, and are used for further in-depth analysis to extract the most important facts as related to tourism industry in the area and to highlight the major concerns expressed by the stakeholders.

Survey Data Analysis and Assessment

This section presents in-depth empirical analysis of a number of the key field survey questions in order to draw some conclusions regarding the status of the study region in terms of infrastructure quality, local communities’ circumstances and development requirements. The following survey results support our arguments regarding the condition of the existing urban infrastructure and the local community living standards in the region that will be further investigated in the coming sections of this paper.
Assessment of Tourism in the Region

The survey results indicate that:

1. The area is witnessing a highly active tourism movement (56% agreed to this fact) (Figure 5). Tourism is seasonal and reaches its peak during the spring season. However, during this season, the region is heavily crowded with visitors (mostly local from different parts of Jordan) with their automobiles distributed all over the valley, along the street sides due to the shortage or absence of parking.

2. There is a lack of attention directed to archaeological and natural touristic sites. The majority (62%) agree that those sites are getting little attention, while 29% say that they do not get any attention at all (Figure 6). Even though the region is rich with numerous archaeological and natural tourist sites attracting large numbers of tourists,
many of the existing tourism sites, such as Pella, the therapeutic hot springs in Shuna, etc., are not adequately developed as tourism destinations (41% go for absence of development and 52% for lack of development work). This lack of development and attention directed to those sites is partially the responsibility of the local community and related authorities (Figure 7).

3. There is a lack of marketing and promotion through media (80% indicate that there is almost no media coverage for the tourism product in their area as shown in Figure 8). This is one of the more important challenges facing tourism in the region. The fact that there is no proper usage of the region’s agricultural nature in marketing agro-tourism by designating certain farms to be visited by tourists is another issue related to area tourism management. Most interviewed people say that it is not possible under the current planning circumstances to develop tourism opportunities and in order to achieve this, effective measures at both budgetary and legislative levels need to be taken.

Assessment of Local Community Economical Status and the Role of Tourism

The second significant issue the survey focuses on is the local community economic status and role. The empirical results show that:
1. 74% of the responses agree that there is a high level of poverty in the region among local citizens while only 26% go with moderate income level and 0% for high income level. This is true, as most of the people in the region work in farming which is just a seasonal job (mainly during winter and early spring seasons).

2. Tourism plays a very minor role in increasing the income level of local communities (49% go for slight contribution and 46% say that it makes no contribution at all, as shown in Figure 9). This can be attributed to the lack or absence of tourism development and investment projects by government or private sector.

Figure 7. Local community role in protecting and sustaining tourism sites

Figure 8. Media role in tourism promotion

Figure 9. Tourism contribution to increasing the local income level
The reason behind such shortage in development projects is lack of financial support, either by the government or through NGOs and civil community organizations. The majority (62%) think that NGOs and civil community organizations have made no contribution at all in developing the region (Figure 10).

Assessment of Urban Infrastructure Planning and Management

Aspects related to the urban infrastructure planning and management in terms of the current condition and development requirements as well as their role in tourism development were assessed. The empirical results ensure that 70% of the surveyed people think that the existing urban infrastructure system is not suitable enough to cope with tourism (Figure 11). Such deficiency appears in three main aspects:

1. Shortage in tourism services (hotels, restaurants, etc.) within the area: 73% of the surveyed sample indicate that there is even an absence of such services (Figure 12). This is associated with a noticeable shortage in infrastructure services for local communities such as sewage systems; healthy housing and cleaning services (Figure 13 illustrates 88% agreement on the fact that the shortage is huge in these necessary living requirements).

2. The existing road system is not appropriate, in terms of quality, number and traffic conditions, to serve the increasing demanded for tourism in the area: 47% point out that there is an urgent need for new roads and 44% agree that only few roads are good quality (Figure 14). Furthermore, the survey results indicate that there is a serious accessibility problem facing the visitor in moving from one place to another in the valley (51% agree on that, as shown in Figure 15). Lack of different types of transportation modes and poor road conditions to reach some of the sites are some examples of such a problem.

3. Poor infrastructure serving the region as illustrated in Figure 16. There is a shortage of special regional programmes for solid and liquid waste management, given the large amounts of waste produced from the pesticides, fertilizers and other toxic liquid/solid materials used in agriculture and other industries in the area. Of the surveyed sample, 57% agree that such programmes are not available at all, while 36% has indicated that only a few such programs do exist on a limited scale.

Assessment of Urban Infrastructure Deficiency

In order to understand the reasons behind such urban infrastructure deficiency a survey question was designed for this purpose (Figure 17). Results show that 36% think that
Is the Existing Infrastructure Suitable Enough to Cope with Tourism?

- Yes: 70%
- No: 29%
- No answer: 1%

**Figure 11.** Infrastructure suitability for tourism

Tourism Services (hotels, restaurants,...etc) Availability

- Largely: 73%
- Slightly: 24%
- Not at all: 2%
- No answer: 1%

**Figure 12.** Availability of tourism services

Any Shortage in Infrastructure Services (sewage systems, healthy housing, and cleaning services)?

- Huge shortage: 88%
- A little: 10%
- Services are perfectly available: 2%

**Figure 13.** Shortage in services provided for the local community

Roads Availability (in terms of quality and number) to Access Tourism Sites

- Sufficient number and quality: 47%
- Few of them have good quality: 9%
- Urgent need for new roads: 44%

**Figure 14.** Roads availability problem
the problem is related to improper planning and management practices while 19% see it as an issue of financial support. However, the largest group (37%) thinks that it is a combination of factors: economic, planning and management issues, and the weak role of local community. In another related survey question the majority mention that the lack of harmony between laws and legislative aspects designed to develop the region and the way they are implemented is another reason for such infrastructure deficiency.

**Technical Assessment of the Urban Infrastructure System**

This section presents a technical analysis and evaluation of the major infrastructure problems, deduced from the field survey section of the study region (mainly North Shuna and Mashare). Problems range from: inadequate master land-use planning, lack of urban infrastructure services, and poor environmental management. The topographic nature of the study area and the related economic situation that depends mainly on
agriculture have enforced a kind of linearly shaped connection of towns and villages in the North-South direction (see Figure 1A), as the planned residential areas are bounded by the mountainous ridges to the east and the farm lands to the west. This represents a major constraint in relation to the adopting a better urban planning strategy for the region.

Master Land-Use Planning

The results of the review of the major tourism development projects in the area, given earlier in the literature review section, and the field survey and secondary data collection (archival, desk top review, meetings with officials, visits to the municipality), demonstrate that the common planning behaviour adopted in the region is of developing local master plans for each town instead of one regional plan covering the whole valley. This has resulted in inadequate regional planning policies necessary for large-scale tourism development projects, e.g. a regional road network, causing an improper use of land and weak enforcement of certain urban laws, resulting in serious urbanization problems such as mixed land use (urban-agricultural, for example in Figure 1bB), environmental threats and a low quality urban infrastructure system. One of the improper planning aspects is illustrated in the case of urban parks and open public recreational spaces. Existing planning schemes of the North Shuna area reveal very few areas that can be reserved for new urban parks, even though the municipality used to own land (previously assigned as an urban park area) totalling 18,000 m². The municipality changed the land use category to residential, leaving a remaining potential area of only about 2394 m².

Even when an area is reserved for a park, often this area is not suitable for such activity. The absence of a master plan results in a lack of landscape spatial studies and ineffective urban planning policies, including improper site selection. This is noted in the Friends of the Earth Society Park, originally part of an agricultural unit with a total area of 20,000 m², located outside the planned area and not well served with the necessary infrastructure services such as water, electricity, etc. Furthermore, the proposed location of the bird zoo, next to Friends of the Earth Society Park, by the municipality is another example of improper planning; the location of the zoo is outside the planned area and the environmental region is not suitable for bird breeding due to the extremely hot temperatures in late spring and summer.

An important aspect of improper planning, as recorded in our recent local residents’ social survey, is related to their poor living and environmental conditions as part of the surrounding area. This is clear from the low cost of the residential parcels, each an area of 12 m × 24 m, distributed to citizens by the Jordan Valley Authority at different selected sites in North Shuna and Mashare areas. In this case the allowable building size is 8 m × 18.5 m, according to the region’s planning codes, thus resulting in longitudinal-shaped buildings. The same situation applied to those land owners, with 50% of their lands having an area of no more than 250 m². Nevertheless, citizens have not complied with building codes, due to the small building plot width, thus increasing building sizes and increasing building densities. This has created unhealthy living conditions attributed to the lack of proper air ventilation and light accessibility.

The above discussion shows the urgent need for a regional master plan for the Valley interrelated with individual town/local plans which can clearly highlight areas suitable for different tourism services (e.g. parks). Such master plans can also satisfy the individual requirements for each town in terms of better living standards and infrastructure elements for local communities. We anticipate also that the inefficient bureaucracy and poor management procedures (amongst other issues) have contributed to such inadequate urban infrastructure and housing provision, and no clear sustainable tourism vision for the
area. Furthermore, re-evaluation of the adapted urban laws and policies is also needed, to ensure their compatibility with the existing landscape infrastructure system.

**Availability of Urban Infrastructure Services**

Problematic issues related to transportation, infrastructure services availability and environmental management are discussed in the following subsections.

**Roads and Traffic Evaluation**

The existing road networks in the northern Jordan Valley are used extensively by farmers to transport their crops and by tourists. As shown in the empirical results of the field survey, the network suffers from serious problems reducing its capacity and efficiency. Lack of high standard roads serving different regions in the study area (such as the Mashare area) causes an accessibility problem to natural and cultural heritage sites (Pella, for example, which is located near Mashare). Most of the existing roads are poorly designed with narrow lanes (a width of only 6 m or less). According to the planning codes, as in the Shuna area shown in Figure 18, the roads have steep longitudinal slopes at mountainous area sections, and with poor maintenance of the road surface (see Mashare town, Figure 19). Illegal on-road parking aggravates the problem by substantially reducing road carrying capacity, as shown in Figure 19 for Mashare town. In addition, there is a clear shortage of road signs necessary to direct tourists to their desired natural/cultural site destination. There is also a lack of proper guard rails along dangerous road sections, and a need for better highway lighting.

In terms of traffic flow, the towns of North Shuna and Mashare suffer from heavily jammed roads during rush hours. This is attributed to various causes. Firstly, the central business

![Figure 18. Narrow roads problem in the planned area](source: Ministry of Municipal Affairs)
district area is very small in North Shuna (50,000 m²), where all trading shops and government departments are located, attracting heavy traffic for long periods. Secondly, the poor design of roads and absence of adequate car-parking areas aggravate such traffic problems. Thirdly, the region is crowded with large sized agricultural tractors working on farms which affect the traffic flow. The traffic congestion problem reaches its peak during the holidays and especially during the winter and spring tourism seasons (for example an average of about 15,000 visitors a day visit the North Shuna area during peak seasons and for the Baptism site the number of tourists reached 8,487 visitors in March 2010 (Petra, 2010).

Infrastructure Services Availability

The existing urban infrastructure system suffers from a serious shortage in a number of necessary infrastructure services which reduce the overall urban system efficiency and sustainability. Examples of these services and shortages can be summarized as follows:

- In terms of parks and recreational areas, some new urban park projects were established such as the 40,000 m² tourism village park, near a water well rich with minerals for therapeutic purposes. However, this tourism village is considered a private urban park for which entrance fees are required but which lacks the proper facilities necessary to serve tourists.
- The absence of designated areas for light industrial activities. This is noticeable in North Shuna where there is a lack of any designated area for industrial activities such as car mechanics, blacksmithing, carpentry, brick plants, and construction materials shops. This has caused such activities to be concentrated on both sides of the main street. This phenomenon has caused a number of environmental pollution-related problems which have contributed to the deterioration of the urban landscape and to threatening traffic flow. Figure 20a shows a buffer strip (coloured grey) of the locations where such industries are distributed along the main highway in the area, and Figure 20b shows examples of such activities.
- The lack of proper slaughter houses. Most slaughtering takes place outdoors, leading to inappropriate waste disposal and to urban environmental degradation. A few buildings are informally used as slaughter houses, which do not meet any engineering or

Figure 19. Part of the road network problems
environmental standards, such as the one in North Shuna (a 6 m × 4 m building located in a residential area as shown in Figure 21).

**Environmental Management Problems**

This section analyses a number of these problems including wastewater disposal, solid waste management, and other environmental pollution threats.
Wastewater Disposal

Due to the absence of sewer systems and wastewater treatment plants in the region, locals are discarding their wastewater flow into streets, (Figure 22). This is attributed to various causes.

1. With small land parcel ownership, locals tend to build their houses over the whole land, leaving a very small area for sewage pits, with low capacity that gets filled very quickly. This requires continuous emptying of those pits, through special tanks, to the closest treatment plant. However, due to residents’ low income levels and the high cost of the transporting tanks, people delay the disposal process. This causes the cess pits to

Figure 21. Slaughter house in North Shuna
Source: Ministry of Municipal Affairs

Figure 22. Environmental problem related to wastewater disposal into the streets
get full up and start flowing into the streets. This situation raises the issue of poverty alleviation within the area that needs to be explored in the context of sustainable tourism initiatives.

2. Too many houses are connected to one pit (usually 8 to 12 houses as shown in Figure 23); causing conflicts between households over how much each family should pay. In the meantime the wastewater is left to flow into the road for quite long periods.

Solid Waste Management

Lack of solid waste management in the region has resulted in environmental problems (health, visual, traffic, etc.), related to waste collection, improper waste disposal sites (landfills), and the absence of recycling. Waste collection has not been properly managed on a regular basis and does not cover the whole region.

The region lacks proper landfills which meet the minimum health and technical standards where such wastes could be dumped (as shown in Figure 24).

The lack of recycling facilities aggravates the environmental consequences of improper waste disposal. Recycling could be an income generating activity as well as an environmentally appropriate mechanism, as part of the local community’s sustainable development and linked to eco-tourism within the area.

GIS could be of a great benefit in developing an adequate solid wastes management system where an active map of the city and street networks could be developed showing the collection location of wastes, site selection for suitable landfills, etc. There are also other issues related to infrastructure provided by the municipality: community led initiatives to improve the environment, public-private partnership in relation to recycling activities, and NGO appropriate technology programmes related to waste management that can all contribute to solving such problems. In short, an effective solid wastes management system is an urgent priority for the region to protect the existing rich biodiversity.

Other Environmental Pollution Threats

Besides the above mentioned environmental problems, other sources/elements of environmental pollution affect the region’s general environmental status. Some of the pollution elements can be summarized as follows.

![Figure 23. Too many houses are connected to one sewer pit](Source: Ministry of Municipal Affairs)
1. Usage of natural fertilizers (animal dung, e.g. cow and sheep), and their inappropriate application.
2. Extensive usage and application of arsenic, herbicide and other toxic chemical materials.
3. Excess of agricultural crops that cannot be sold to the market and forms a source for different environmental problems.
4. The presence of large numbers of insects and rodents in the area as a result of improper management of wastewater and solid waste.
5. Absence of designated areas/sites for disposal of liquid offal.

These issues are significant in terms of improving the area’s environmental conditions for both local communities and tourism consumption. Local agricultural practices could be promoted as part of the authentic cultural tourism experience. Agricultural products could be used to promote tourism in the region, whilst contributing to local farmers’ subsistent economy. Consequently, as local farmers become part of the tourism cycle, they will then safeguard the heritage sites and contribute to environmental improvements within surrounding areas.

Cultural and Natural Resources Management

A careful assessment of cultural and natural resources highlights some challenges facing the sustainable management of such resources.

There is an urgent need to develop, based on a detailed field survey, a GIS-based map to document all cultural and natural resources in term of spatial location, site attributes, threats, current condition and existing urban infrastructure services at each site (Figure 25 shows an example for North Shuna). The map shown in Figure 25 reflects the use of GIS to show various land-use plans, while GIS can also be used to provide a larger map (or series of maps representing layers of data) with more details and socio-spatial data. Such GIS are needed as a basis to assess the current situation and for future consideration as part of monitoring system.

The existing resources suffer from lack of documentation, conservation and maintenance. This has resulted in significant deterioration of sites and their statuses have changed for the worse, requiring immediate adoption of proper restorative action. Regarding heritage site documentation, listing and safeguarding, 3D laser scanning has been shown to have potential to be of major value to cultural heritage recording experts, and can play a significant role in monitoring (Haddad, 2007). There is a clear shortage of information available regarding the cultural and natural resources in the region, which
emphasizes the importance of developing a digital GIS database containing both spatial and non-spatial information (an example is shown in Figure 26). Gathering such information needs a collaborative effort among researchers, governmental departments, NGOs and the local community that will lead to a comprehensive understanding of the area’s tourism potential. Such data can be used for further analysis such as sensitivity analysis to identify the interaction between the tourism site and neighbouring landscapes.

More efforts are still needed in relation to tourism marketing and heritage branding strategies to increase the awareness of the importance of such sites. There is a need to search for internal and external funding to start a number of conservation projects directed towards threatened natural and cultural resources. Among these efforts is the urgent need to establish new protected areas and reserves at different sites of the Jordan Valley in order to protect the natural and cultural diversity and to provide proper destinations for tourism.

Conclusions and Recommendations

It is clear that the existing spatial planning strategies of the urban infrastructure system in the Jordan Valley are not at the proper level to meet the increasing demands of local community, tourism industry and sustainable development needs. Some of the designed planning sketches and maps proposed by the municipalities in the region have solved some of these problems partially, but without taking into consideration their global extent or trying to solve other existing problems. So such sketches and maps need to be restudied using a scientific and systematic approach looking for sustainable urban solutions. There is a need, therefore, to develop and adopt ways in which the three planning processes (regional, town and tourism) can overlap and work together.

The main priority is to develop a complete master land-use plan for the whole Jordan Valley, utilizing GIS, satellite imagery and Global Positioning System (GPS) techniques.
to organize the different land uses in a way that ensures landscape sustainability for future generations. Such a map (as shown in Figures 25 and 26) could show different land-use spatial layers in the valley, urban infrastructure, and other urban and non-urban activities (social layers) taking place in the area. This master plan should also:
• highlight the existing socio-spatial urban infrastructure—there is a need for onsite field data to be collected during the empirical survey which could then be digitized for analysis and documentation;
• include proposed places for constructing new parks, museums, hotels and other recreational facilities, such as the suggested entertainment open city to be located at the location of Friends of the Earth Society Park.

The other main priority is represented in the fact that the existing urban infrastructure system needs major rehabilitation and maintenance work to increase its efficiency for both local and tourism needs. This should be reflected in many aspects including:

• a comprehensive assessment of the road network for maintenance, adopting better strategies for enhancing traffic circulations, designing an effective wastewater system for sewage disposal, and establishing a complete solid and liquid waste management system in terms of collection, well-managed and designed landfill sites, and recycling.
• recycling could be related to another priority, community participation in environmental improvements within the area.

Tourism development is highly correlated with such improvements in the urban infrastructure system. Such actions will not only serve the tourism industry, but will also enhance the living standards of local communities. An enhanced spatial planning model in this region will ensure more organized urban units, agricultural activities and tourism sustainability in accordance with the ICOMOS Burra Charter (1979) and the International Cultural Tourism Charter (1999). There is also a need to support the public-private partnership efforts in developing the Jordan Valley as a pioneering model for other rural areas in the country. In such projects, attention should be given to develop a mechanism to produce a system of regular and permanent maintenance to ensure the preservation of the area. While infrastructure projects are being developed, comprehensive care for the physical environment, the cultural significance and the architectural and archaeological remains need to be regularly monitored.

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References


Appendix 1. Format and numerical results of the field survey

A Field Survey on Tourism Sector in the Northern Region of Jordan Valley: Existing Infrastructure System and the Role of Local Community

Career:

Age:

Gender

Educational level:

Number of Family Members:

Interview location:

Interview Time/Date:

______________________

T²Q1. Is the region witnessing an active tourism industry?
a) Highly active (96)  b) Moderate (60)  c) A little (15)

TQ2. Is this tourism seasonal?
a) Yes (162)  b) No (9)

TQ3. Which season witnesses the most active tourism periods?
a) Summer (9)  b) Winter (2)  c) Spring (148)  d) Autumn (4)  e) Other³ (8)

EQ4. How do you evaluate the economic status of the local citizens in the region?
a) High income level (0)  b) Moderate income level (44)  c) High level of poverty (127)

EQ5. Does the region’s tourism contribute to increasing the income of the local community? How do you think this can be improved?
a) Large contribution (9)  b) Slightly (84)  c) No contribution at all (78)

PQ6. Is the existing infrastructure (such as roads) suitable enough to cope with tourism in the area?
a) Yes (50)  b) No (119)  c) No answer⁴ (2)

PQ7. Are there tourism services (hotels, restaurants, etc.) available?
a) Largely (3)  b) Slightly (41)  c) Not at all (125)  d) No answer (2)

¹The survey form along with the survey results are presented
²T, Tourism; E, Economics; P, Planning; Q, Question.
³Other: represents rare answers that are a selection of more than one answer (e.g., a + b)
⁴No answer, the interviewed people didn’t answer this question.
PQ8. Are there enough roads, in terms of quality and number, to access/reach the tourism sites?
   a) Sufficient number and quality (15)   b) Few of them have good quality (76)
   c) Urgent need for new roads (80)

EQ9. Do you think that the existence of industrial workshops (such as blacksmiths, vehicle mechanics...etc) on the main road sides presents a major obstacle for development and the best use of these roads?
   a) Largely (24)   b) Slightly (77)   c) Not at all (70)

TQ10. Do you think that there is adequate attention to the archaeological sites in the area?
   a) Large attention (14)   b) A little (106)   c) Not at all (49)   d) No answer (2)

TQ11. Is there a role for the local community in protecting these tourism sites?
   a) Clear and big role (15)   b) Simple role (109)   c) No role at all (47)

EQ12. Are there any contributions for non-government organizations and civil community organizations in developing the region through supporting sustainable development projects?
   a) Clear and big role (9)   b) Simple role (57)   c) No role at all (105)

EQ13. Is the region in need of economical projects to develop the life of local citizens?
   a) Urgent need for many projects (166)   b) Moderate need (5)   c) No need at all (0)

PQ14. Do they think that there is a shortage in infrastructure services (sewage systems, healthy housing, and cleaning services)?
   a) Huge shortage (151)   b) A little (17)   c) Services are perfectly available (3)

PQ15. Is there a good traffic situation/condition in main cities (Shuna and Masharee); in terms of congestion, illegal parking, parking lots availability...etc)?
   a) Yes, to a large extent (29)   b) Moderate (86)   c) Bad situation (56)

PQ16. What about animal slaughter houses; are they adequately available in environment friendly structures and do they have any impact on tourism?
   a) Few with major negative impact (14)   b) Slight impact (80)   c) Adequate numbers with almost no negative impact (77)

PQ17. Are there any special regional programs for solid and liquid waste management?
   a) Yes, largely effective programs (11)   b) Only few programs at small scale (62)
   c) No programs at all (96)   d) No answer (2)

PQ18. Do you think that the shortage in the infrastructure services can be referred to?
   a) Economical problems (33)   b) Planning and management issues (61)   c) Related to local citizens (10)
   d) $a + b + c$ (64)   e) $a + b$ (1)   f) No answer (2)

TQ19. Do you think that the existing tourism sites (Pella, Medical hot springs in Shuna...etc) are adequately developed as tourism destinations?
   a) Largely (10)   b) A little (89)   c) Not at all (71)   d) No answer (1)

PQ20. Do you think there is a harmony between laws and legislative aspects designed to develop the region and the way they are implemented?
   a) To a great extent (7)   b) Moderate (90)   c) Not at all (71)   d) No answer (3)
PQ21. Are you aware of the development projects for the region?
   a) Yes (87)  b) No (84)

TQ22. Did you ever visit any of the archaeological sites in the Jordan Valley?
   a) Yes (169)  b) No (1)  c) No answer (1)

TQ23. Do you think that there is enough media coverage to promote the tourism product in the region?
   a) Yes, to a large extent (7)  b) A little (28)  c) Not at all (136)

TQ24. In your opinion, can we benefit from the agricultural nature of the region in marketing tourism through designating certain farms to be visited by tourists?
   a) Yes, there is a great potential (6)  b) Possible on small scale (17)  c) Not possible (148)

PQ25. Are there any difficulties facing you or the visitor in traveling from or to the region using the available modes of transportation? Can you please explain?
   a) Yes, Many difficulties (88)  b) Few traveling obstacles (71)  c) No, everything is fine (11)  d) No answer (1)