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Task Order 99

## LIVELIHOOD AND INCOMES FROM THE ENVIRONMENT IN SINAI (LIFE – SINAI)



## CENTRAL SINAI COMMUNITY NEEDS ASSESSMENT REPORT

**December, 2009**

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**Photo Source:** Central Sinai Assessment Team

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## Central Sinai Community Needs Assessment Report

*Second Draft*

Prepared by the LIFE Sinai Community Needs Assessment Team

2 December 2009



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## GLOSSARY OF ACRONYMS AND SPECIAL TERMS

GOE	Government of Egypt
IRG	International Resources Group (a Washington DC-based consulting firm that is the prime contractor for USAID's LIFE Sinai project)
LIFE	Livelihood and Income from the Environment
Markez	First level administrative division below the Governorate
NGO	Non governmental Organization
NSG	North Sinai Governorate
PRA	Participatory Rapid Appraisal (methodology)
USAID	United States Agency for International Development

## EXECUTIVE SUMMARY

**Background.** This report: *Central Sinai Community Needs Assessment* is submitted in partial fulfillment of the LIFE Sinai contract scope of work, specifically for Task I “Socio-economic Surveys, Land Tenure, Engineering Surveys, and Community Needs Assessments”. The report is a synthesis of secondary information from various sources, especially databases from North Sinai itself, augmented by a series of in-depth interviews, focus group discussions and gender separated community group meetings of a select group of Central Sinai communities.

The Assessment Team<sup>1</sup> discussed the overall scope of work for the LIFE Sinai Program with IRG and developed a methodological approach for undertaking the surveys. The overall approach drew from Participatory Rapid Appraisal (PRA) methodology and was supplemented by directed interviews and focus group discussions. The team was constrained in conducting field surveys by security-related travel restrictions in Central Sinai. However, it was able to carry out completed group surveys of nineteen communities from late March through early July, and conducted focus group meetings from June through August, 2009.

**Summary of Findings.** The report’s findings focus primarily on the development and status of human capital, community support services and infrastructure and livelihood strategies and sources of income.

Central Sinai is dominated by Bedouin communities. In this respect, the character and development of the northern coastal zone of the North Sinai Governorate (NSG) is dramatically different from that of the Central Sinai sub-region. The Bedouin population is overwhelmingly rural, characterized by extreme poverty, poor health, widespread illiteracy and a low level of social and economic integration with the rest of Egypt. Both secondary data and field surveys show a steady erosion in almost all indicators of economic development, subsistence and quality of life. The level of development and provision of infrastructure and

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<sup>11</sup> The LIFE Sinai Community Needs Assessment Survey Team was headed by Dr. Magdy Ghanem, Dr. Mahmoud Attia El Shwadfey and Dr. Marawan Mostafa Hassan of Suez Canal University in El Arish, who collected field data with the assistance of university associates and students of Bedouin origin.

social services generally worsens the farther south into the interior of Central Sinai that one travels. Thus El Hasana *markez* and its associated towns and villages are somewhat better developed than Nekhl *markez* and its associated villages.

Nekhl *markez* is predominantly urban mostly because the extreme aridity of the climate in this *markez* cannot support a large urban population. Conversely, the rural proportion in El Hasana *markez* is more predominant in part because grazing and subsistence agriculture are more viable. Illiteracy is widespread is especially dominant in the towns of the northern coast even though the proportion of illiterates to educated is very high in Central Sinai. This is likely due to the ability of illiterates to find low skilled work in the north coast cities. Health and nutrition status is poor, overall, in central Sinai and especially so for women and children with quite inadequate intakes of water.

Employment in the formal sector in central Sinai is heavily concentrated in services and trade while the vast majority of the population works in the informal, subsistence agriculture sector. Migration of the relatively young and able to the North Coast and out of Sinai is an increasing trend leaving increasingly high dependency ratios in both towns and Bedouin settlements. At 38% the proportion of the population under 16 is quite high and this cohort requires important public services such as schools and health services both of which are significantly lacking in this region.

The evidence clearly points to a fundamental, structural poverty problem that can be only addressed through substantial investment and significant human adaptation to changing resource conditions. The current dispersed pattern of settlements in Central Sinai likely emerged over the centuries dictated by traditions relating to spatially distributed tribal affiliations, land rights and a dependence on scarce water resources and livelihoods based on the grazing of livestock. These social and resource constraints made denser settlements and more intensive economic activities unfeasible or unsustainable. However, provision of modern health, education and infrastructural support to such widely dispersed and often shifting settlements has proven to be equally unfeasible and certainly not cost-effective. Compounding this conundrum of

development is the apparent reluctance of many Bedouins to change their traditional lifestyles to accommodate the changes needed to improve livelihood prospects and their quality of life.

**Summary of Recommendations.** The last section of the Assessment provides a number of recommendations in the areas of physical and social infrastructure, health services, education and literacy services, job training for agriculture and other possible initiatives to address the fundamental structural problems of Central Sinai. Many of the Assessment Team's recommendations would require enormous sums of money in that they assume that the present configuration of settlements in Central Sinai is not likely to change. Currently, in the absence of significant social programs in Central Sinai, change is occurring autonomously. Increasingly, central Sinai Bedouin families are moving north or leaving Sinai altogether. This migratory trend is found among the young and more adaptable parts of the population. Given the likelihood of steady climate change leading to ever-reduced water resources to the region – and this is the ultimate development constraint – it is likely that settlements will be forced to become more concentrated in order to be more viable and that traditional forms of livelihood will need to change significantly.

For such radical change to occur, a long-term and thorough-going dialogue will be required with the whole of the Central Sinai Bedouin community, as well as a commitment by the Government of Egypt (GOE) to pursue a gradual but steady transformation of the structure of Bedouin communities in Central Sinai.

# I. INTRODUCTION

## I.1 BACKGROUND

The primary goal of the Livelihood and Income from the Environment (LIFE) Program in Sinai is to assist poorer Bedouin communities in the Central Sinai sub-region through comprehensive sustainable development in a manner that is appropriate to the local culture. The Program is designed to promote water resource availability and distribution, upgrading basic community services such as health, education, transportation and utilities, providing increased employment and business opportunities, and building community institutional capabilities.

The first Task of the Preliminary First Year Work Plan focuses on undertaking a baseline study to provide comprehensive and accurate data on the natural, social, economic, infrastructural and cultural aspects of communities in Central Sinai. This information is to be organized and used by team members and their counterparts in the North Sinai Governorate (NSG) to develop work plans for specific support activities and to evaluate progress and performance in the implementation of the LIFE Sinai Program. This database is to be further developed and updated over the duration of the Program, and regularly provided to the NSG for review, feedback and its own use. Based on this study as well as interviews and discussions with other Program stakeholders, appropriate development interventions are to be implemented to improve living conditions and the quality of life for the population by increasing ability of Bedouin societies to respond and adapt to changes in natural resource use as well as economic diversification.

Accordingly, this report presents the findings of the field-based studies and supporting secondary information, which together constitutes the *Central Sinai Community Needs Assessment*. The report has four sections:

- objectives and methodology used
- description of the status quo of the communities in Central Sinai and people's attitudes towards development as well as the major social and economic problems requiring development interventions;

- priorities for development of infrastructure, utilities and public services, income and livelihood opportunities, and
- Building institutional capabilities.

The final sections of the report discuss the opportunities and challenges of development in Central Sinai and recommendations for consideration of the LIFE Sinai Program for implementing community development and related infrastructural projects in Central Sinai.

## I.2 PURPOSE AND SCOPE

The stated objectives of the LIFE Sinai Program's participatory rapid appraisal study of Central Sinai are two-fold:

*First:* Describe the current state of the population, their characteristics, conditions, problems and natural resources use. This includes details on the services, natural resource used and physical and social infrastructure.

*Second:* Identify the population needs and priorities. Evaluation methods were used for analyzing community-level opportunities and threats with regard to social inclusion and improving the quality of life of the vulnerable groups among Bedouins.

## II. METHODOLOGY

To achieve the study's objectives, the Assessment Team relied on a combination of quantitative and qualitative data from different sources as well as tools for collecting data adequate to the nature of the study's requirements and on well-defined methods for obtaining a representative sample of the population. This is described in this section of the study.

### 2.1 DATA COLLECTION & DATA ANALYSIS

Three types of data were used as follows:

- **Secondary Data** acquired from different sources such as public statistics of population, natural resources, utilities and services, which are available at the North Sinai Information Center; the Central Agency for Public Mobilization and Statistics (CAPMAS); Egypt's Cabinet Information and Decision Support Center (IDSC); and finally data available in development reports produced by agencies such as Agriculture, Education and Health departments, among others.
- **Documentary Data** such as the decrees, laws and other documents of the NSG.
- **Qualitative Field Data** on the local population's attitudes towards development and the various social, economic and environmental challenges they face in their life, together with high

priority needs, such as water, food, transport, energy, basic utilities, education, health and other public services.

In collecting and analyzing these data, the study also used field data acquired through Participatory Rapid Appraisal (PRA) which was obtained through some Focus Group Discussions (FGD), in-depth interviews with village leaders and the local public, and field inspections of communities and their surrounding environs. The study depended on anthropological observation concerning people's lives and their day-to-day challenges.

## 2.2 TARGET GROUPS

In collecting and analyzing the study data in the field, the Assessment Team paid particular attention to selected groups of Bedouin populations in Central Sinai (22 communities were targeted, but only 19 community surveys completed), fourteen of which are in El Hasana *markez* and the rest in Nekhl *markez*. In El Hasana, group discussions were conducted in the following Bedouin communities: ten groups in the tribes of Tayaha which are Moweilah, Al Houdh, Ein, Wadi El Quseima, Um Shehan, Abu Arqan, Bir Beda, Abu Qaryan, Rouwaisat, and El Motamteny; in addition to four more groups belonging to the Trabeen tribe, i.e., Khariza Arief Al Naqa , Al Ghayatheen, Sheikh Hameed, and Mangam. As for Nekhl, group discussions were conducted in five communities, three belonging to Tayyaha: Taweel Al Hamedh, El Qua'h and Bir 7, with two communities belonging to the Ahyawat tribe: Reed and Naqab.

Thirty eight group discussions were conducted, in all, two per community (one each for men and women), with a total participation of 443 Bedouins distributed as follows: 315 in El Hasana or 71.1% of the total and 128 in Nekhl or 28.8% as detailed in Table I. A total of 46.5% of the samples were females. All three large tribes, Tayaha, Trabeen, Ahyawat, were proportionally represented. As shown in Table 2, the participants in El Hasana were from Tayaha and Trabeen and participants from Tayaha and Ahyawat clans showed up in the Nekhl discussions. Total participants from Tayyaha were 288 making up 65% of the total, followed by those of Trabeen, 81 participants, at 18.28% while Ahyawat presented a total of 74 at 16.7% of the total participants.

**Table I. Participants in Group Discussions in Central Sinai by Gender and Markez**

Town	Male		Female		Total	
	Num.	%	Num.	%	Num.	%
El Hasana	169	53.65	146	46.35	315	71.11
Nekhl	68	53.13	60	46.88	128	28.89
<b>Total</b>	<b>237</b>	<b>53.5</b>	<b>206</b>	<b>46.5</b>	<b>443</b>	<b>100</b>

**Source:** Central Sinai Survey Group Discussions, 2009

**Table 2. Participants in Group Discussions in Central Sinai by Tribe and Markez**

Tribe	El Hasana		Nekhl		Total	
	Num.	%	Num.	%	Num.	%
Tayaha	234	81.25	54	18.75	288	65.01
Trabeen	81	100	0	0	81	18.28
Ahyawat	0	0	74	100	74	16.7
<b>Total</b>	<b>315</b>	<b>71.11</b>	<b>128</b>	<b>28.89</b>	<b>443</b>	<b>100</b>

**Source:** Central Sinai Survey Group Discussions, 2009

The work team faced some administrative difficulties in attempting to obtain official permits to collect data in Central Sinai, the NSG citing security reasons for not issuing such permits. However, the team resorted to personal connections in reaching some areas of Bedouin communities. Nevertheless, some data were impossible to obtain with security officials chasing researchers off field sites.

## III. DESCRIPTION OF THE COMMUNITIES

### 3.1 LOCATION AND GEOGRAPHIC FEATURE

The North Sinai Governorate lies in northeastern Egypt between longitudes 32 °34" E and latitudes 29° 31" N, bordered on the north by the Mediterranean Sea along a stretch of 220 kms. The southern border runs from the Mitla Pass to just north of the town of Taba. It is bordered on the East by the international border with Israel along 252 km., from Rafah on the Mediterranean to north Taba. On the west the border stretches from the Mitla passage in the south to the sea in the North.

The total area of the Governorate is around 28,992 km<sup>2</sup>, representing 2.9% of the area of Egypt. Of this, Central Sinai comprises 74% (21,665 km<sup>2</sup>). Table 3 shows that the area of El Hasana is 10,622 km<sup>2</sup>, or 49% of the area of Central Sinai, while Nekhl is not greatly different covering 11,043 km<sup>2</sup>, or 51% of the area of Central Sinai.

**Table 3. Central Sinai Area According to Regional Division (Markez)**

Districts	Area / km <sup>2</sup>	%
El Hasana	10622	49.0
Nekhl	11043	51.0
<b>Total Central Sinai area</b>	<b>21665</b>	<b>100</b>

**Source:** North Sinai Governorate Information Center, 2009.

The geography of the area encompasses two types of environments: the coastal area in the north and the mountains and plateaus in the center of the Peninsula. The coastal area is composed of plains bordering the sea with a width ranging from 20 to 40 km inland, covered with sandy, wavy or flat dunes. Most of the true desert environment is in Central Sinai in the form of a series of plateaus with intermittent high mountains tapering towards the north, such as Mount Maghara (776m above sea level), Mount Halal (881m), and Mount Yaleq (1094m). A group of valleys (*wadis*) dissect these mountains, such as Wadi El Arish, the largest drainage basin complex oriented from south to north and crossing two large plateaus, Al Tih and Al Ojma<sup>2</sup> (between latitudes 29° and 30° N), with a total watershed area of 19,000 km<sup>2</sup>.<sup>3</sup>

With respect to climate, North Sinai is part of a hot sub-tropical desert region. However, temperatures vary according to distance from the sea and altitude. In summer, the average temperature in Central Sinai area is high, especially in low altitude areas, while it is relatively lower in the coastal strip in the north and in the high mountainous areas. Temperatures tend to be moderate in winter in the whole area: El Arish has an average winter temperature of 10.5 ° C, while that for the inland town of Nekhl is 17.7° C.

The region is prone to storms and atmospheric depressions in winter when northwestern or western winds blow. Sometimes these carry rain. In spring and early summer, winds are generally from the north. Most rain precipitation occurs in winter, accounting for 60 percent of total annual rainfall. Precipitation is higher on the northern coast and increases towards the north east, while decreasing south and west to Central Sinai. Rain is generally irregular and consists of two types: a thin drizzle for short intervals of no more than an hour, or storm rain in the form of heavy torrents but for short intervals, mostly accompanied by thunder storms, in November and December.<sup>4</sup>

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<sup>2</sup> National Planning Institute, Issues of Planning and Development. Ibid.

<sup>3</sup> North Sinai Governorate Information Center, Statement of Jan. 2009.

<sup>4</sup> North Sinai Governorate Information Center, Climate Weather and Physical Characteristics in North Sinai, 2009.



## 3.2 ADMINISTRATIVE AND TRIBAL DIVISIONS

The NSG is divided into six regional divisions (or *markez*), with a total of six cities, 82 rural local government units covering 82 villages, and 459 hamlets and other small rural settlements.<sup>5</sup> El Hasana *markez* includes 12 villages with 74 affiliates. The villages are: Gaday, Homma, Gafgafa, Rissan, Gharqada, Maghara, Mafariq, Mangam, Baghdad, Qarya, Meleiz, and Kilo 64 (Wafa). The police precinct of El Quseima is affiliated to El Hasana *markez* and includes eight villages with 37 affiliates: Wadi Al Amr, Quseima, Maghfar, Maqdhaba, Monbateh, Umm Qatf, Umm Shehan, Bir Beda. At the west of the El Hasana *markez* there are the Ayayada and Ahyawat tribes while on the east dwell the Trabeen and Tayyaha tribes.

The Nekhl *markez* is made up of Nekhl town as well as 10 villages and 49 affiliates. The villages of this *markez* include Ras al-Naqab, Kontella, Sedr al Hetan, Tamad, Beir Greid, Khafga, Brook, Neteela, Ein Tweiba, El Salam. This *markez* includes the two tribes: Tayyaha and Ahyawat.

## 3.3 ARCHEOLOGICAL FEATURES

The physical geography of the Central Sinai area, with its mountains, valleys and wild life, has its distinctive features, which add to the attraction of the area as a potential desert tourism destination. In addition, there are the historical and spiritual characteristics of the region. Central Sinai includes El Hasana *markez*, centered around the town El Hasana named after the ancient El Hasana well. Other historical sites are the Ein Qadesh, where Moses and the Jews dwelled for a long time during the Diaspora in the Sinai Peninsula before reaching the Holy Land<sup>6</sup>. The Nekhl *markez* occupies a strategic site in the middle of the road linking North and South Sinai governorates. Nekhl town was the old capital of the region as well as the center of the Diaspora area. It is said that the name Nekhl (to sieve) is justified by its fine sand as if having been well sieved. In the ancient times, it was a resting place for Egyptian pilgrims on the *haj* and where Queen Shagaret Al Durr once passed when this route to the Hejaz was first inaugurated. The Egyptian Sultan Qonsowah Al Ghorri built a castle there in 1516, in the Ottoman period, to secure the pilgrimage route. Some of its historical landmarks are the historic Nekhl castle, Arish *wadi* sources, the old pilgrimage road, the historic painting of Sultan Ghorri on the way to Mecca, the famous Mitla Pass, and the Diaspora mountains.

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<sup>5</sup> Egypt Description Encyclopedia, *ibid*, 2007.

<sup>6</sup> North Sinai Governorate Information Center, Report on North Sinai Governorate Development, 2009.

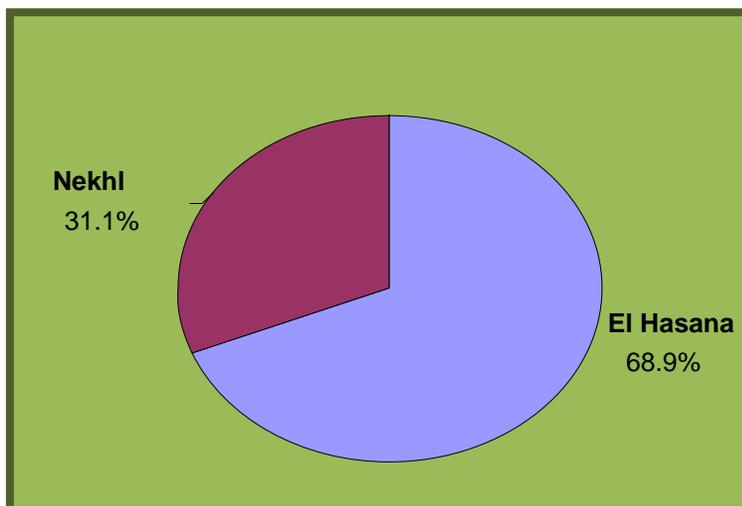
## 3.4 DEMOGRAPHIC CHARACTERISTICS, HOUSEHOLD AND COMMUNITY PROFILE

### 3.4.1 POPULATION SIZE

The population of the North Sinai Governorate is estimated at 362,933 people according to 2008 data, representing 0.4% of the total population of Egypt (81.7 million). The population is distributed unevenly over the Governorate: the coastal strip—especially in El Arish, B'ir Al-Abd and Rafah—is generally more densely populated. El Arish is the most populous place in the governorate. Its population of 148,439 people in 2008 is around 40.9% of the NSG's population. El Arish's urban population is 144,531 of the total or 97.2%, while the rural population around the city was a meager 3,908 at 2.7%. In second place is B'ir Al Abd *markez* with 67,762 people. Third in population size is Rafah with 62,466 people<sup>7</sup>.

In contrast, Central Sinai (Nekhl and El Hasana *markezes*) have the least population in this governorate. Central Sinai, as a whole, had an estimated population of 35,808 in 2008 making up 9.9% of the governorate's population. El Hasana made up the main share, at 24,672 people or 68.9% of the total of Central Sinai or 6.8% of the total of NSG; the remainder of the population resides in Nekhl *markez*, i.e., 11,136 people or 31.1% of the Central area and 3.06% of the total population of the governorate (see Figure 2).

**Figure 2. Distribution of Population in Central Sinai by Markez**



**Source:** North Sinai Governorate Information Center, 2009.

<sup>7</sup> North Sinai Governorate Information Center, Statement Jan. 2009.

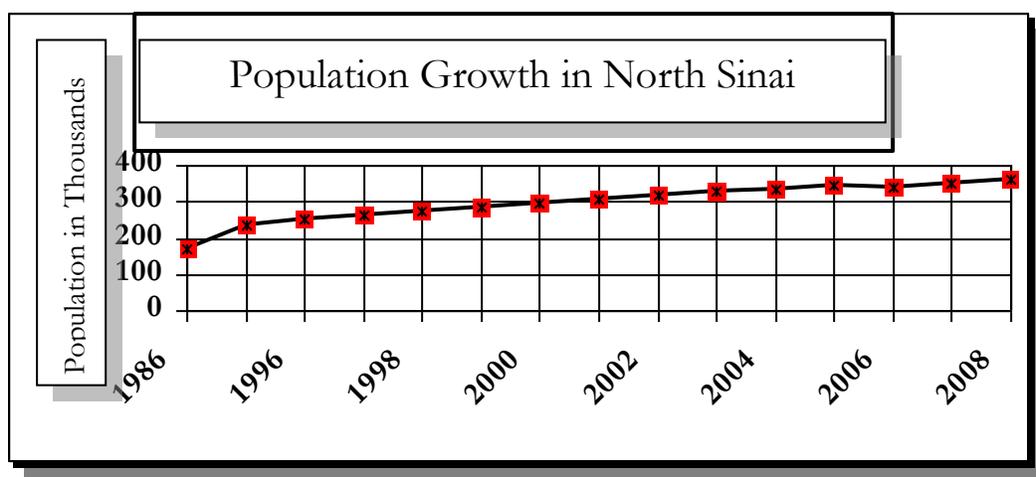
### 3.4.2 POPULATION DENSITY

Despite the large area, the average population density in the NSG does not exceed 229 persons/km<sup>2</sup> in the inhabited areas. The density of the whole of the Governorate is about 13 persons/km<sup>2</sup> -- the lowest in population and in population density in Egypt. In turn, the Central area is the lowest in density in the NSG as well as in population, despite its being the largest in area at 79% of the total area of the Governorate. The inhabited areas in El Hasana and Nekhl *markezes* total around 409.11/km<sup>2</sup> and 141.76/km<sup>2</sup> respectively, with a population density of 79.60 persons/km<sup>2</sup> while; population density for the whole area, is 2 persons/km<sup>2</sup> and 1 person/km<sup>2</sup>, respectively. This is basically a trace rate and demonstrates the extent of the population vacuum in Central Sinai.

### 3.4.3 POPULATION GROWTH

The low population density in the Governorate does not necessarily signify a low natural increase rate. Indeed, this governorate shows the highest natural increase rate of all the governorates of Egypt -- a 2.88% annual growth in 2008. In particular, the Governorate witnessed an unprecedented growth rate in population in the last 20 years (Figure 2 shows the growth that took place in the population during the period from 1986 to 2008). The NSG in 1986 had an estimated population of 171,505 people and reached 362,933 people in 2008, of which the urban population was 218,443 people or 60.2% of the total population of the governorate. The rural population was 144,490 or 39.8 percent.<sup>8</sup>

**Figure 3. Growth in North Sinai Population for the Period 1986 to 2008**



**Source:** Central Agency for Public Mobilizations and Statistics, 2008.

<sup>8</sup> North Sinai Governorate Information Center, Statement, Jan. 2009 (latest estimate).

### 3.4.4 URBAN/BEDOUIIN DISTRIBUTION

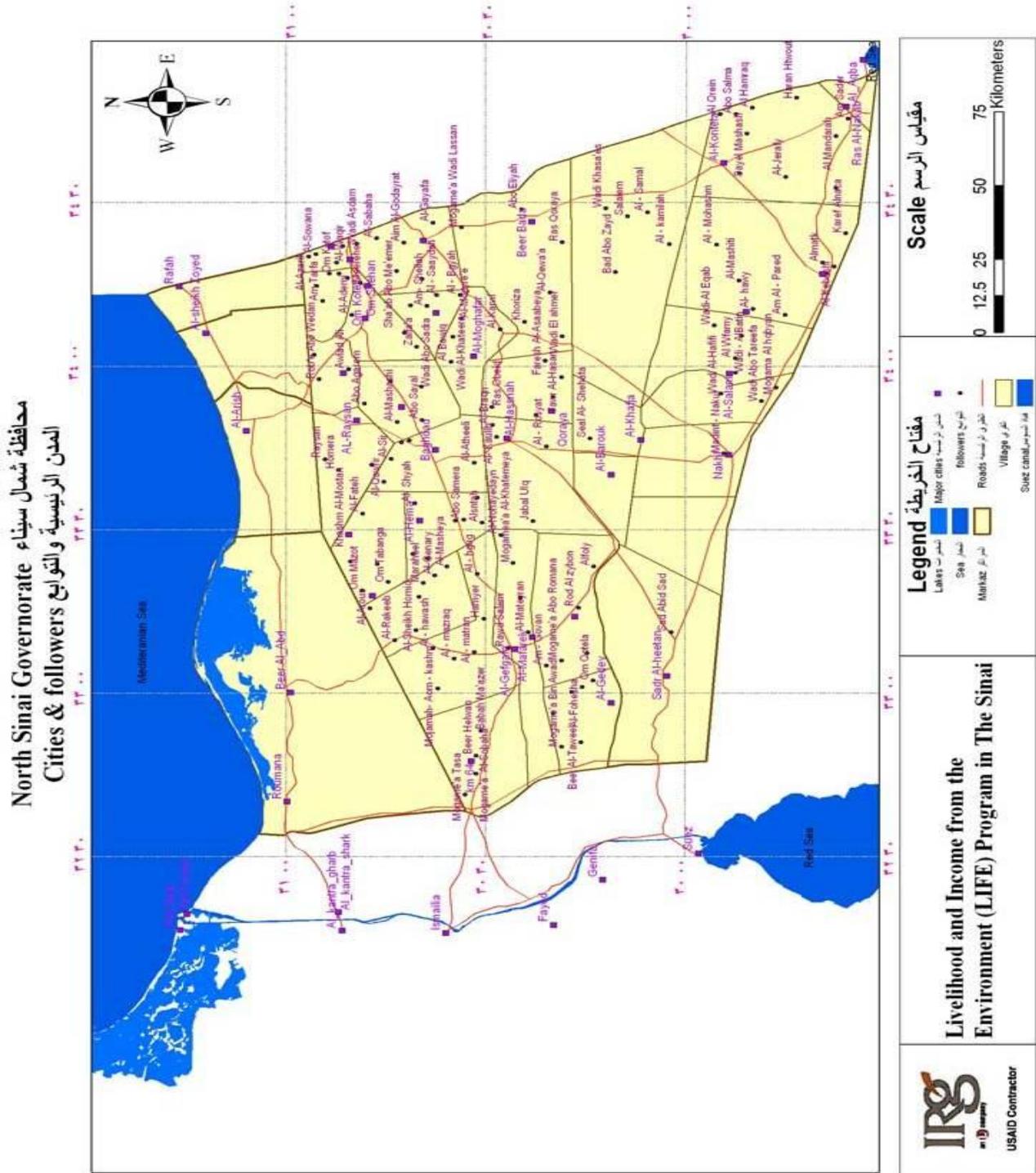
Not surprisingly, the Bedouin/urban differential is the highest in the Central Sinai area since there is a significant proportion of the population residing in Bedouin desert communities, resulting in a higher proportion of the rural Bedouin than urban residents of any ethnicity. Table 4 shows the Bedouins residing in Bedouin communities in Central Sinai as a whole amount to 24,396 people or 68.1% of the total Central Sinai population, of which 21,858 reside in El Hasana (89.6%) markez as opposed to 2,538 in Nekhl (10.4%) markez. Residents of the urban areas in Central Sinai as a whole total 11,413 people or 31.9% of the total Central Sinai population (see Figure 3), of which 2,814 people are in El Hasana (24.7%), and 8,599 in Nekhl (75.3%). This suggests that the majority of the Central Sinai population dwells in Bedouin communities, most of which are in El Hasana while the urban population is concentrated mainly in Nekhl.

**Table 4. Central Sinai Population according to the Urban/Bedouin Communities**

Markez	Bedouin Communities Population		Urban Population	
	Num.	%	Num.	%
<b>El Hasana</b>	21858	89.6	2814	24.7
<b>Nekhl</b>	2538	10.40334	8599	75.3
Central Sinai Total	<b>24396</b>	<b>68.1</b>	<b>11413</b>	<b>31.9</b>

**Source:** Cabinet Information and Decision Support Center (IDSC), 2008.

Figure 4. Towns and Bedouin Settlements in the NSG



### 3.4.5 GENDER

While the urban/Bedouin differential is high within Central Sinai, the gender differential is relatively balanced. The rural population of El Hasana has 11,716 males, or 53.6% of the total population residing in the Bedouin communities, versus 10,142 females, or 46.4%. The urban population, a minority in El Hasana, consisted of 1,517 males versus 1,297 females (53.9% and 46.1% respectively of the total urban population in El Hasana). Among the females of both urban and rural sectors, 4,050 are in the reproductive age cohort. The data show a balance in gender distribution in both the Bedouin and urban areas in El Hasana. Males in the Bedouin and urban sectors were 53.6% and 53.9%, respectively. The female rates were very close too at 46.4% and 46.1% in the Bedouin and urban areas respectively. However, the rather large disparity between numbers of males and females, especially considering the tendency of males to migrate out of the region in search of work, suggests that there may be a relatively high degree of female mortality in this region.

Demographic differences by gender in Central Sinai are relatively small for both residents of the Bedouin and urban communities despite showing slightly higher male rates in both sections of Nekhl. Table 5 shows that the male – female ratio of Bedouin communities is on the order of 55.6% to 44.4%. The urban population in the same area showed a difference of 60.3% against 39.7% between males and females in Nekhl, but this is against a rather small denominator. Among the females of this *markez* 1,852 are of reproductive age. The following table displays the distribution of the population in the NSG including the Central area according to the administrative *markezes*, also detailing urban and Bedouin communities as well as gender distribution in every sector.

**Table 5. Governorate of North Sinai Population Distribution According to Region, Gender, and Urban/Bedouin Communities**

Markez	Urban Pop.		Total Urban	Bedouin Pop.		Total Bedouin	Grand Total
	Male	Fem.		Male	Fem.		
El Arish	76225	68306	144531	2048	1860	3908	148439
Rafah	17206	16287	33493	14668	14305	28973	62466
Nekhl	1530	1008	2538	4780	3818	8598	11136
El Hasana	1517	1297	2814	11716	10142	21858	24672
B'ir Al Abd	7897	7469	15366	26469	25927	52396	67762
Sheikh Zuweid	10130	9751	19701	14286	14471	28757	48458
<b>Governorate Total</b>	<b>114505</b>	<b>103938</b>	<b>218443</b>	<b>73967</b>	<b>70523</b>	<b>144490</b>	<b>362933</b>

**Source:** Central Agency for Public Mobilization and Statistics, 2008.



Women's Focus Group Discussion in a Central Sinai Village

### 3.4.6 AGE STRUCTURE

For the age group distribution in this Governorate, the 15-60 age group is the largest age cohort with 209,116 people (57.66% of the total population). Children less than 6 years of age come second in the distribution of age-groups, registering 62,758 (17.3%). This arises from the natural growth rate in this Governorate, attributed to a high birth rate of 32 newborn for every thousand people<sup>9</sup>. The third category is the age group 10-15 with 43,328 people at 11.9%. Following in the fourth position are children between ages 6 and 10 with 32,368 in 2008 at 8.9%. This means that 38% of the NSG population is 15 years old or younger, which results in a relatively high dependency ratio and one requiring a significant provision of public services, especially in health and education. Moreover, it poses a serious challenge for future employment, especially in Central Sinai. The older cohort (age 60 and higher) has the fewest numbers with 15,363 at 4.3% of the total population. The following is a table showing the population distribution in Central Sinai according to age.

The age-group distribution of the population as a whole in the governorate of North Sinai is not different from that of the different *markezes* of the governorate, creating a consistency in the

<sup>9</sup> North Sinai Governorate Information Center, Statement, Jan. 2009 (latest estimate).

distributions in all the regions of the governorate. As data in Table 6 show, the cohort making up the labor force (15-60 age-group) in Central Sinai is the largest with 20,071 in 2008, making up 18.2% of the total population while the elderly group has a mere 995 people or 2.9% of the total population.

**Table 6. Population Distribution in Central Sinai by Age**

Age Group	El Hasana Markez		Nekhl Markez		Total	
	population	Ratio	population	Ratio	population	Ratio
Less than 6 years	2469	11.9%	2244	6.3%	6513	18.2%
6-10	2599	7.2%	1281	3.6%	3880	10.9%
10-15	4376	12.2%	2827	16.3%	20071	65.0%
60 & more	752	2.1%	243	0.67%	995	2.9%
<b>Total</b>	<b>24672</b>	<b>100%</b>	<b>11136</b>	<b>100%</b>	<b>35808</b>	<b>100%</b>

### 3.4.7 EDUCATION STATUS

In this section, we examine the current status of education levels of the population of North Sinai, generally, but of Central Sinai and its Bedouin population in particular. The single most important determinant of economic development in the modern world is human capital development and education along with health are the most important components of human capital.

#### 3.4.7.1 CURRENT STATUS OF LITERACY AND EDUCATION IN THE CENTRAL SINAI REGION

##### Basic Education Services

Official data concerning the education status of the population of North Sinai generally show relatively low levels of education generally. This is obvious in the indicators of enrollment, dropout rates and literacy in North Sinai in general and in Central Sinai, in particular. As indicated in Table 7, the extent of the population having had any enrollment in North Sinai schools is quite low amounting to less than a quarter of the total population of the NSG. The male rate is 54.5% as against 45.5% for females. The majority of those with any formal education are concentrated in El Arish, Sheik Zuweid and Rafah all along the northern coast.

**Table 7. Proportion of the Population with Any Degree of Formal Education by Gender in North Sinai**

Male		Female		Total	Percent of the population
Num.	%	Num.	%		
44,812	54.5	37,436	45.5	82,248	22.7

Source: Egypt's Cabinet Information and Decision Support Center, 2008.

Central Sinai has the lowest school enrollment levels as can be seen in Table 8. The number of enrolled students at all levels in Central Sinai was 3,007 students or 3.6% of the total enrollment of North Sinai Governorate. Against the total population of Central Sinai, that rate becomes 8.4%. The majority of Central Sinai's students are males, 65.5% against 34.5% for females. Most live in El Hasana with 79.4% against 20.6% in Nekhl.

**Table 8. Education Enrollment According to Gender and Markez in Central Sinai**

District	Male		Female		Total		% of Central population
	Num.	%	Num.	%	Num.	%	
El Hasana	1583	66.4	801	33.6	2384	79.4	6.7
Nekhl	383	62.1	234	37.9	617	20.6	1.7
<b>Total</b>	<b>1966</b>	<b>65.5</b>	<b>1035</b>	<b>34.5</b>	<b>3001</b>	<b>100</b>	<b>8.4</b>

Source: Egypt's Cabinet Information and Decision Support Center, 2008.

The data in Table 9 show that the majority of students enrolled in Central Sinai are concentrated in the elementary education, primary and preparatory levels. The highest levels are in primary education at 70.0% of all education enrollments. This is followed by preparatory-stage enrollment at 16.6%; the enrollment rate decreases with the movement upscale. The predominant trend clearly tends towards primary school. In part, this is due to the perceived disutility of educational levels beyond the primary level, especially considering that most Bedouins have a rural life style and relatively simple agricultural livelihoods. In addition, access to schooling beyond the primary level tends to be difficult since secondary schools, in particular, are located outside of the Central Sinai region necessitating a relatively long commute or boarding arrangement, which is normally out of the question for most Bedouin families financially and, in some cases, culturally.

**Table 9. Enrollment According to Type of Education, Markez and Gender in Central Sinai**

Education Levels	El Hasana		Nekhl		Total			
	Male	Female	Male	Female	Male	Female	Total	%
One-class schools	0	11	0	0	0	11	11	0.4
Nursery	6	2	5	10	11	12	23	0.8
Primary	1131	674	216	168	1347	842	2189	72.9
Preparatory	313	111	44	29	357	140	497	16.6
Middle	119	1	112	27	231	28	259	8.6
Higher	14	2	6	0	20	2	22	0.7
<b>Total</b>	<b>1583</b>	<b>801</b>	<b>383</b>	<b>234</b>	<b>1966</b>	<b>1035</b>	<b>3001</b>	<b>100</b>

Source: Egypt's Cabinet Information and Decision Support Center, 2008.

Regarding dropout and illiteracy issues in elementary education, the data indicate a very small percentage, not higher than 0.96% in the dropout rate in the primary level, and an even smaller rate at the preparatory stage, 0.61% of all students enrolled. On the other hand, illiteracy rates are relatively high, 60,356 persons or 16.6% of the population were illiterate in the 2008 census<sup>10</sup>. The majority of the illiterate are within the age group 10 years and higher at the rate of 21.13%<sup>11</sup>. This suggests a considerable degree of self-selection in school attendance. While the north coast has the largest share of population within the governorate, so it also has the highest rate of illiteracy. Thus illiteracy in El Arish, Ras Al Abd and Rafah recorded the following rates respectively: 20.9%, 22.9% and 25.3%. Central Sinai has 2623 persons, or 17.02% of total illiterates in the governorates, and 7.6 of the population of Central Sinai. These are concentrated in El Hasana as the largest in number of residents. It seems that the most crowded areas of Sinai have the highest rates of illiteracy, which is attributed to their being the most attractive to the poorer brackets of the population in search of work.

**Table 10. Elementary Education Dropout Rates in North Sinai**

Primary			Preparatory		
Male	Female	Total	Male	Female	Total
0.19	0.77	0.96	1.16	1.8	0.61

**Source:** Egypt's Cabinet Information and Decision Support Center, 2008.

### Literacy Services

As Table 12 indicates, illiterates in North Sinai number about 53,000 or 14.6% of the population. Although the Central Sinai portion of total illiterates amounts to only 17% of the total, because of the overall smaller Central Sinai population they amount to approximately a quarter of the Central Sinai population, which is quite a large percentage. On the other hand, there are relatively large concentrations of illiterates in some of the northern coastal towns some of whom may also be Bedouins, though the available data do not drill down to that level of differentiation.

<sup>10</sup> Source: North Sinai Governorate Information Center, Jan. 2009.

<sup>11</sup> The Public Organization of Adult Literacy, Jan 2009.

In Central Sinai, the incidence of illiteracy is not evenly distributed. Overall, more females than males are illiterate, though this is not the case for El Hasana *markez*, which has the largest share of illiterates (see Table 13) a slight majority of which are males. Not surprisingly, most illiterates are also Bedouin.

**Table 12. Illiterate Population in Central Sinai (10 years and above)**

District		Number	Percentage
1	El Arish	12114	8.2
2	Sheikh Zuweid	11737	24.2
3	Rafah	8070	12.9
4	B'ir Al Abd	12219	18.0
5	El Hasana	6171	25.0
6	Nekhl	2689	24.1
Central Sinai Total		8860	24.7
<b>Total</b>		<b>53000</b>	<b>14.6</b>

**Source:** Adult Literacy & Combating Illiteracy Public Organization, Feb. 2009.

Moreover, the collected qualitative data acquired through in-depth interviews and group discussions somewhat contradict the official data or perhaps show a strong generational difference in educational levels. Interviews indicate that the majority of the residents in Bedouin communities that were studied suffer a low level of education; in fact, they are mostly illiterate, especially the elderly and females. Even the small educated bracket of the local population rarely enjoy more than a limited education confined to the primary level, except in rare cases where individuals have obtained a secondary-school-level vocational diploma. In some communities, only schoolchildren are literate and barely literate at that.

**Table 13. Illiteracy According to Markez and Gender in Central Sinai**

District	Male		Female		Total		Percentage of illiteracy to that of North Sinai
	Num.	%	Num.	%	Num.	%	
El Hasana	959	50.4	944	49.6	1903	69.9	11.89
Nekhl	329	40.1	491	59.9	820	30.1	5.13
Total	1288	47.3	1435	52.7	2723	100	17.02

**Source:** Egypt's Cabinet Information and Decision Support Center, 2008.

### 3.4.7.1 CURRENT STATUS AND UTILIZATION OF EDUCATION SERVICES IN THE CENTRAL SINAI REGION

Education services can be divided into illiteracy classes and the formal education system. The former may cover both adults and school age children who are not in the school system while the latter covers the normal school age cohort of 6 – 18 years of age. The assessment below is not meant to be comprehensive but rather to describe the condition of those services and their coverage of the affected populations.

The data in Table 14, below, reveal that the number of persons enrolled in literacy classes is far lower than the number of total illiterates in North Sinai as a whole. These enrolled total 3128 according to the Adult Literacy and Combating Illiteracy Public Organization, (Feb. 2009 statistics); that is a mere 5.9% of the total illiterates in the NSG. In Central Sinai, enrolment in literacy classes amounted to a similar 5.6% of the total illiterates in Central Sinai. Although the total in Central Sinai represents 16% of all enrolment in literacy classes in the governorate, this partly reflects the significantly smaller population of the region compared to the whole but, as noted, the need is greater in this region because the illiterate are so much greater a portion of the total population and for that reason represent a significant drag on the economic development potential of this sub-region. The data also suggest that there may be an actual shortage in the availability of literacy services due possibly to factors such as a lack of funds, personnel, suitable locations and educational aids all of which may be compounded by the dispersed population of Central Sinai. The small numbers of those attending literacy classes also could be interpreted as reluctance by some of the Bedouin to erase their illiteracy. This may partly account for the high dropout problem, which, in turn, is compounded by an absence of positive incentives (either culturally or externally provided) or appropriate obligatory measures taken to combating illiteracy.

**Table 14. Illiteracy Indices in Central Sinai and in North Sinai as a Whole**

Location	Classes		Illiterate		Enrolled		Total		Class Size
	No.	%	No.	%	Urban	Bedouin	No.	%	
El Hasana	24	80.0	6171	69.7	0	347	347	5.6	14.4
Nekhl	6	20.0	2689	30.3	60	92	152	5.7	25.3
<b>Central Total</b>	30	20.3	8860	24.7	60	439	499	5.6	14.6
<b>Governorate Total</b>	148	100	53000	14.6	1058	2070	3128	5.9	13.0

**Source:** Adult Literacy & Combating Illiteracy Public Organization, Feb. 2009.

## Public Education Services

Access to public education services and utilization of these services follow a well-established pattern in which the northern area of the NSG enjoys more and better facilities, which are in turn utilized by more of the school age population than is the case for Central Sinai. The total number of students in three stages—primary, preparatory and secondary—currently totals some 82,251 in the NSG or 62.9% of the population of the age cohort 6-18 years. A majority of these students are male: 54.7% vs. 45.3% females. However, enrolled students in Central Sinai amount to only 3,579 or 29.6% of the school age population, i.e. 4.3% of all enrolled students in the whole Governorate. Thus, the total school-age population deprived of education in North Sinai as a whole is 37.1% while the rate soars in the Central area to 70.4%, indicating in part that educational services in Central Sinai are the poorest in the Governorate in spite of some apparent indications of a relative improvement in recent years. The number of enrolled students is presently proportional to the available capacity of the school system embodied in the number of schools, classes, teachers and student – teacher ratios. Central Sinai is served by 87 schools making up about 18% of the total number of the governorate schools. Central Sinai has 371 classes, representing 19.6% of the total classes in North Sinai, and 388 teachers at a mere 6% of the governorate teachers. Nevertheless, the student to teacher ratio is 9:1, i.e., a class density of about 9 students, which is good but unfortunately merely reflects poor school enrolments.

### 3.4.8 MARRIAGE

The period 2002-2004 witnessed a sharp rise in marriage statistics in the NSG. The public census data issued by the Central Agency for Public Mobilization and Statistics (CAPMAS) in 2006 show a rise in marriages in that 3-year period as the actual numbers rose from 758.4 marriage contracts per 100,000 persons in 2002 to 782.4 in 2003. In 2004 it reached 786.8 which is an increase of 3.1%. This is followed by decreases in 2005 and 2006 as marriages were 732.7 and 698.3 contracts per 100,000 persons respectively<sup>12</sup>.

This appears to be a part of a longer trend. The governorate registered an increasing trend in the number of marriages over more than 20 years. Census data for 1986 showed the number of married people in the Governorate at 58,028 persons. This number rose in 1996 to 93,084

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<sup>12</sup> Egypt Description Encyclopedia, 7<sup>th</sup> Ed. Vol. 3, Egypt's Cabinet Information and Decision Support Center, 2008.

persons, i.e., an increase of 35,056 in ten years. The number reached 134,720 in 2006, i.e., a hike of 41,636 persons in ten years. This goes on to reach 142,273 persons in 2008. Divorce rates also record a noticeable rise in over the twenty year period. The number in 1086 was 4,704 divorced and widows/widowers and rose to 11,730 divorced and widows/widowers in 2008 (See Table 15).

**Table 15. Population Trends in Marriage Status for the Age Group 15 to 65 Years**

Personal Status	*1986	*1996	*2006	**2007	**2008
Bachelor	21541	36148	50869	52217	53721
Married	58028	93084	134720	138290	142273
Divorced/Widow	4704	5672	11108	11402	11730
Total	84273	134904	196697	201909	207724

Certainly, a large share of this increase simply reflects the overall population increase in the Governorate during this same period. Moreover, GOE requirements for birth and marriage certification as a pre-requisite for many government services may be driving at least part of the increase in marriage certifications. Traditionally, Bedouin births and marriages have often not been registered with the State.

**3.4.9. WORK STATUS**



*Water Tank in a Central Sinai Village*

The reality of Central Sinai reflects the organizational framework of the labor market (reflected in manpower and unemployment rates) in addition to the different stages of economic and social advance as well as the development of production in the society. A relatively low level of unemployment is experienced in North Sinai in general, as it does not exceed 5.3% of the total population. This is consistent with the data concerning education levels where higher education graduates, who generally suffer

more from unemployment than lesser educated brackets, are also less numerous. The lesser educated brackets, who enter the labor market earlier, obtain better chances of employment in the

non-governmental sector where low and semi-skilled positions are relatively more available locally than jobs requiring high skills/advanced education.

The Governorate's Information Center recorded data in 2008 relating to unemployment in the different districts of North Sinai. While the rate is 6.5% in El Arish, it does not exceed 4.3% in Sheik Zuweid. The rate plummets in the Central area (Table 16), where it is a mere 1.7%. This may be related both to the low population rates in the area and to outmigration to areas in the north and elsewhere of those seeking employment, adding to the pressure on the labor market in the north. Unfortunately, we do not have statistics showing the breakdown of employment by sector, which might show where employment is strongest. It is likely, though, that agriculture predominates, with services (including trade and government) a strong second. It is also worth noting that these statistics record employment in the formal sector and it is quite likely that a majority of Central Sinai residents, especially in rural areas, are pursuing livelihoods in the informal, subsistence or semi-subsistence agricultural sector, which may be largely unrecorded.

Regarding woman's participation in the labor market, the female contribution is relatively limited compared to males over North Sinai in general, including the Central area. In Central Sinai, the female cohort of working age (15-60 years) comprises 46.2%, but participation in paid work outside home is only 7.9%. However, this does not indicate a low rate of participation of Bedouin women in the economic activities since they are active doing housework, shepherding, firewood-collecting, and agricultural jobs within the matrix of the gender vernacular distribution of work—all done informally for no pay within the family and as a result not showing in the official statistics. In fact, it is likely that a large proportion of work for both genders in Central Sinai lies in the non-recorded informal sector, which is also the case for many developing countries.

Other economic activities exist as well among Bedouin communities in Central Sinai. In the Reid and Naqab communities, some take up quarrying jobs; others work as guards in the neighboring regions at the time of crop harvesting. Government jobs available to the Bedouins in Central Sinai are limited. These usually consist of low-skill jobs in the city hall, mosques or as guards for gas or cement companies—all low-paid jobs barely sufficient for subsistence.

**Table 16. Employment Status by Gender and Location in Central Sinai in 2008**

District	Gender	Pop. (15 years +)	Manpower (15 years+)	Work status of Pop. 15+		% of Unemployment
				Employed	Unemployed	
El Hasana	Male	7916	7628	6611	117	1.7%
	Female	7089	425	415	10	2.4%
	Total	15005	7153	7026	127	1.8%
Nekhl	Male	3419	2828	2790	38	1.3%
	Female	2644	401	394	7	1.7%
	Total	6063	3229	3184	45	1.4%
<b>Total</b>		21068	10382	10210	172	1.7%

There is a real scarcity of small businesses that could provide job opportunities to the inhabitants of the remote areas. The Bedouin areas are often deprived of any commercial stores which could both satisfy the need for various goods and provide chances for employment and economic recovery. Existing stores are few and far between, usually outside these communities or at quite a distance from them. They also suffer from low operating capacity and generally do not supply any significant job opportunities.

Facing unemployment, some inhabitants of the Central area (especially in communities such as Umm Shehan, Khariza Areefat Al Naqa, Bir Bada, and Al Mangam) have resorted to starting their own businesses in the form of small shops with meager operating capital and inventories. Thus their clientele often find themselves obliged to go the nearest town, El Hasana or Nekhl, to satisfy their needs. "Mobile Stores" - cars selling ordinary dry goods - travel through these communities to provide them with needed goods but usually at a high cost in most cases.

Other economic activities that some Bedouins rely on in a limited way in Central Sinai and El Hasana in particular, are attempts to benefit from the special nature of the environment, making use for example of the medicinal plants and wood of the area, driving some to invest in these plants to create income. Some in the Khariza Areefat Al Naqa work in jobs of extracting charcoal through collecting firewood to sell in the market. Others in Ein Umm Al Ramla collect medicinal herbs from the mountains in order to sell them as well. Their particular environment plays an important role in shaping the Bedouins activities, especially in the arid circumstances in which they live, although it

seems quite unlikely that charcoal making is a sustainable business model in the long-term in a harsh desert environment.

Coexisting with the previously mentioned economic activities and complementing them are some simple industries that play a specific economic role in the form of local products such as olive oil and handicraft products in the form of simple textiles, hand woven cloths, carpentry products, and so on<sup>13</sup>. In terms of sustainable forms of small business, the processing and marketing of selected agricultural products and handicrafts have a significantly greater *potential* for economic growth and employment than retail trade does. However, this potential will require significant commitment from the GOE as well as capital investment and training.

### 3.5 ECONOMIC CHARACTERISTICS

The most important economic characteristics of Central Sinai can be determined through a number of economic indicators of the principal economic sectors in the NSG in general; these can be seen in agriculture, animal husbandry, industry, mineral resources, tourism and other services.

#### 3.5.1 AGRICULTURE AND LAND USES

Regarding the agricultural sector, Table 17 points to the constraints of cultivable land in the NSG. The total area of cultivable land is 1,259.58 km<sup>2</sup>, at 4.3 % of the total area of the Governorate<sup>14</sup> and most of the inhabited area is used for agriculture at 83.4%. For Central Sinai, in particular, the table displays a total cultivated area of 474.37 km<sup>2</sup>, or around 2.2% of the total area of Central Sinai. The cultivated area in the Central area occupies 79.8 % of the total inhabited area of that region. In general, in desert environments, inhabited areas (settlements) and agricultural areas show a high degree of co-location because they face the same common constraints – the lack of water. Most cultivated parts of the Central area are concentrated in El Hasana *markez* (77.4%, versus 22.6% of cultivable land in Nekhl *markez*). However, the total cultivated land in El Hasana and Nekhl is very limited, lying mostly within the Bedouin communities at a rate not exceeding 3.5% and 1.5% of the total area of the two districts respectively. As for the rest of the area of Central Sinai, the onlooker can only see dry desert and arid land with the exception of a limited area on which the

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<sup>13</sup> Find more details in Ahmed Abu Zeid et al., *Desert Communities in Egypt: An Ethnographic Study of Systems and Patterns in North Sinai*, The National Center of Social and Criminal Research, Rural & Desert Communities Section, Cairo, 1991.

<sup>14</sup> North Sinai Information Center, 2008.

Bedouins erect their homes and some public utilities<sup>15</sup>. This is a good reflection on the absolute limitation of agriculture as a contributor to the economic livelihoods of the population of Central Sinai.

**Table 17. Area of Cultivated Land in North and Central Sinai, 2008**

Total area of North Sinai (km <sup>2</sup> )	Inhabited area (km <sup>2</sup> )	Cultivated land km <sup>2</sup>		
		(km <sup>2</sup> )	% of the total area of North Sinai	% of the inhabited area of North Sinai
<b>28992</b>	1578	1259.59	4.3	79.8
C. Sinai District	Total area (km <sup>2</sup> )	Inhabited area (km <sup>2</sup> )	Cultivated land (km <sup>2</sup> )	% of the inhabited area of North Sinai
<b>El Hasana</b>	10622	409.11	367.1	23%
<b>Nekhl</b>	11034	141.76	107.3	9%
<b>Total</b>	<b>21656</b>	<b>550.87</b>	<b>474.37</b>	<b>32%</b>

**Source:** North Sinai Governorate Information Center, 2008.

Despite the availability of large areas of empty land that could be cultivated in all these communities, the local population cannot use them for cultivation because of the ultimate limiting resource, i.e. the availability of suitable and sufficient water supplies. Some lands were cultivated in previous years and then abandoned because of the sudden scarcity of rain. This happened in some lands in the Umm Shehan community which, as the inhabitants unanimously assert, were cultivated in the 1950s. Certainly, the whole of the NSG has been suffering from a long-term drought over the last decade. Whether this is a part of a long-term cyclical shift due to climate change is uncertain but seems increasingly likely.

Regarding agricultural crops of North Sinai, the relevant structure is composed of horticulture, palm trees, as well as both summer and winter crops in addition to the Nile crops, as shown in Table 18. Where possible, members of those Central Sinai communities that were interviewed expressed a preference for cash crops such as olive, almond, grapes, watermelon, peaches, corn,

<sup>15</sup> North Sinai Information Center, 2008.

wheat, barley, etc. North Sinai has an area under horticulture of nearly 13,000 feddans (acres). However, Central Sinai's contribution to this is currently extremely small (87 feddans, making up only about 0.7% of the total horticulture in the Governorate). A similar pattern holds for date palm groves.

**Table 18. Crop Systems of the Cultivated Areas of North Sinai**

District	Cultivated Area (feddans)		Vegetable Area (feddans)			
	Horticulture	Palm	Winter	Summer	Nile	Total
El Arish	9056	2760	1314	731	983	3028
Sheik Zuweid	34987	749	2025	685	400	3110
Rafah	44641	28	2390	712	272	3374
Beir Al Abd	7431	4920	1735	592	1058	3385
El Hasana	1784	10	0	42	40	82
Nekhl	518	3	4	1	0	5
<b>Total</b>	<b>98417</b>	<b>8470</b>	<b>7468</b>	<b>2763</b>	<b>2753</b>	<b>12984</b>

**Note:** 1 feddan = 1.038 acres

**Source:** North Sinai Agriculture Directorate, 2009.

Table 18 describes production of several of the most important agricultural crops in North Sinai.



*Olive Trees in a Central Sinai Village*

Figuring significantly among these are olive, tomato, cantaloupe, almond, peaches, wheat and barley with a total area under cultivation of 131,964 feddans or 76.8% of the total cultivated land in the Governorate. Total agricultural productivity in the NSG is 33.9 tons/feddan while in Central Sinai the productivity rate is 24.9 tons/feddan, with a distribution between Nekhl and El Hasana at

19.7 tons/feddan and 5.2 tons/feddan respectively<sup>16</sup>. The differences in productivity are due to a) the availability of suitable (non-brackish) and sufficient water supplies, especially for horticulture; b) adequate investment and operating capital for vegetable and fruit tree crops, and c) suitable soils and perhaps tenure uncertainties, in that order.

<sup>16</sup> Source: North Sinai Governorate Information Center, 2008.

Field qualitative data acquired through discussion groups with the inhabitants of some Bedouin communities in El Hasana and Nekhl indicate that most Bedouins of Central Sinai depend on agriculture as the main source of income, side by side with shepherding. They basically depend on dams for irrigation in addition to groundwater, which allow for regular cultivation of certain crops. However, agriculture in the Central region, especially in Nekhl, depends on the rate and regularity of rainfall as well as torrential rain events in certain seasons of the year.

**Table 18. Agricultural Production and Cultivated Land in North Sinai**

Crop (units)	Cultivated area (in feddan, or ardeb*)	Products (in ton, etc.)	Productivity (product/area)
Olive (tons)	15958	10441	0.65
Peach (tons)	60446	196512	3.2
Almond (tons)	10988	8440	0.76
Tomato (tons)	5138	62112	12.1
Cantaloupe (tons)	1698	21091	12.4
Barley (ardeb)	29234	81094	2.8
Wheat (ardeb)	8502	23882	2
Total	131964	403572	33.91

Notes: 1 ardeb = 5.62 U.S. bushels

Source: North Sinai Governorate Information Center, 2008.

Some of the inhabitants work as agricultural laborers for others in neighboring communities where water is more available, as in Umm Shehan near the Rawafah dam, and Khariza Areefat Al Naqa where around 3000 olive trees are grown in addition to grapes and other fruit. However, the Bedouins may just as readily work as agricultural laborers in other regions such as El Arish and Sheikh Zuweid. The extent to which they do so depends upon individual household access to water and suitable land and the regularity of water availability among other factors. Certainly, family operating capital for agricultural activities is likely to play a significant role, especially amongst poorer households.

Some communities have seasonal crops which depend on rainfall, such as in Wadi El Quseima where the inhabitants grow wheat and barley in winter and in Wadi Moweilah where vegetables are grown in the rainy season. There are various crops, various seasons for growing them, and various

sources for water. However, there are other crops which are generally common to all these communities, most important among which are cash crops such as olives, barley, and wheat and fruits such as peaches, figs, grapes and watermelon.

Some scattered patches of cultivated land can be seen in the remote Bedouin communities, especially in the Nekhl region where olives, pomegranates, wheat, barley, tomato, watermelon, zucchini, cucumber, almond, grapes and figs may be grown, although many of the annual crops may succumb to drought. In other communities which suffer from severe desertification, such as Naqab, Gheibya in the Nekhl region, such crops are quite scarce. The little arable land that exists in these communities is used for sheep grazing and firewood collection.

The Bedouin make use of natural plants in the environment to gain additional income. Some scattered plants are utilized for grazing and in preparing remedies for some diseases. Some of the most widespread herbs are: wormwood, southernwood, boxthorn (matrimony vine), and *Capparis spinosa*. These herbs are widespread but in scattered patches, and are rare in certain communities. In contrast, they are more abundant in other communities such as in Taweel Al Hamidh in Nekhl and Moweilah in El Hasana. In Al Ein-Umm Al Ramlah community in El Hasana, some of the available herbs include: *Lycium*, *H. strobilaceum*, *Pituranthos tortuosus* and thyme. The Reid communities benefit from selling medicinal herbs to traders who transport them to markets. There is almost unanimous agreement among the inhabitants of Central Sinai that the decline of rainfall in recent years has caused the disappearance of some wild plants in many areas. An additional factor, although not noted in community responses, is the effect of livestock over-grazing.

### **3.5.2 ANIMAL AND PASTORAL PRODUCTION**

In addition to agriculture, the inhabitants of Central Sinai also herd animals a great deal, which is the principal traditional livelihood of the Bedouin. Essentially, this means that the pastoral groups that live in the more stable communities have mixed agricultural systems. The inhabitants of the Maqdaba (El Hasana region) and both Tamad and Beir Greed (Nekhl region) among others practice such systems.

In fact, the single most important economic activity of the majority of the inhabitants of both El Hasana and Nekhl markezes is shepherding. This is followed by annual and perennial crops. Shepherding remains the basic resort for revenue in the face of dry seasons and intermittent paid employment. Moreover, animals are a form of household asset to be sold in times of dire income

stress. When precipitation becomes scarcer and agriculture becomes unreliable and unemployment soars—the Bedouins stay home or work for others when possible. Thus, grazing remains one of the principal core activities but also fall-back survival strategy for hard times. Clearly, animal husbandry becomes a more important part of household livelihood strategies for families who own a significant number of sheep and goats, in particular, since large animals have much greater feed and care requirements.

Animal husbandry appears to have expanded steadily recently, as indicated in the data for the interval 2005 -2008 (see Table 19). However, on closer inspection, this increase has mainly been in the small ruminant category (sheep and goats) while large ruminants show a steady decline. Moreover, even sheep and goats show a sudden and sharp drop of 66% in recorded numbers in 2008.

**Table 19. Development in the Numbers of Animal Resources in the NSG**

Type/Year	2005	2006	2007	2008
<b>Cows</b>	3030	2368	2727	1922
<b>Buffalos</b>	110	110	66	47
<b>Sheep</b>	86071	77185	96155	38310
<b>Goats</b>	112430	94245	121488	56190
<b>Camels</b>	2570	2256	2535	1908
<b>Total</b>	<b>204211</b>	<b>176164</b>	<b>222971</b>	<b>98377</b>

**Source:** Veterinary Directorate, Feb., 2009.

For sheep and goats, the numbers increased steadily at the level of the NSG, including the Central area, over the whole period until 2008. The fact that there is a sudden and dramatic drop in the recorded numbers for 2008 – absent a sudden and widespread animal disease, sale or slaughter – suggests that there may well be a problem with collection of the statistics in this instance. This needs to be investigated further (see Table 20).

**Table 20. Development of Numbers of Sheep and Goats in North Sinai**

Year	Arish	Rafah	B'ir El Abd	S. Zuweid	Nekhl	El Hasana
<b>2004/2005</b>	54117	26534	25579	49855	12192	30224
<b>2005/2006</b>	62657	22646	12308	30535	31092	12192
<b>2006/2007</b>	70143	20881	40679	44162	13551	28227
<b>2007/2008</b>	16316	11561	28655	19009	9507	9452

As regards the production of the Governorate in red meat, 2006 witnessed a large increase in the number of cattle heads followed by a precipitous drop in 2007 and a slight recovery in 2008. An increase is also recorded in the field of poultry production which scored an amount of production of 2307.7 tons. Again, we see a serious drop in production in 2008, though not as sharp as for other animals (see Tables 20 and 21).

Grazing activities in Central Sinai<sup>17</sup> are bound up with the local social system. With the spread of agriculture and tribal animal husbandry, clans have tried to hold fast to the traditional boundaries of their lands, which are based on grazing rotational patterns, which are partly seasonal in nature. As a result, grazing is subject to certain rules and conditions. The right to use pasture land is no longer given freely to all as it may once have been. New rules have arisen depending on the traditional relations between the tribal and the regional (or geographic) distributions. These rules posit that the link to a particular region means the natural right to utilize the land of this region, a right exclusive to the inhabitants of those regions. Other remote grazing areas far away from the areas of domicile of these groups are open for all for grazing their animals.

**Table 21. Volume of Production of Red Meat Secured in the NSG**

Year	Total annual production volume		Value in L.E.
	Head per year	Ton per year	
2005	3026	409	10,225,350
2006	4068	513	15,386,430
2007	2671	362	12,653,235
2008	3371	472	16,521,540

**Table 22. Development of Annual Volume of Production of Poultry**

Year	Private Sector Farms		Total volume in tons	Value in LE
	Total	Active		
2005	288	154	2178	15,246,000
2006	310	250	2307.74	16,154,145
2007	340	260	3615.21	12,653,235
2008	362	93	826.53	6,612,240

<sup>17</sup> For more details, see Ahmed Abu Zeid et alia, Desert Communities in Egypt: An Ethnographic Study of Systems and Patterns in North Sinai, *ibid*, pp 115-208.

The principle seems to be that the right to graze in the open areas of pastures is open for everyone as long as this right does not breach individual tribal rights to the land and does not harm overall cultivation. Some areas of abundant plants, herbs and bushes are well known to the shepherders. However, increasingly, most grazing happens in areas near their domiciles since this provides protection to women who generally are the shepherds, especially unmarried women, while tending camels requires men who can lead them to graze in areas more remote in the mountains and other rough terrain. This helps to explain the vernacular gender distribution of work in this area. In addition, the social status of both genders in the patriarchal Bedouin society is based on both kinship and prejudice, which overestimates the male and underestimates the female on the social level, regardless of any individual women's contribution to the economic welfare of the group. Two complementary types of grazing activities can be distinguished on the basis of the length of the period taken in each grazing trip and the participants, in addition to the changes that affect the kinship group and the kind of activity practiced by the shepherd. The first pattern is the grazing trek during the normal (spring) season made to distant areas. During this time, shepherds prefer the southern areas for such trips with one section of the kin group setting out on a trek to the grazing areas while the rest stays behind to tend the Spring crops, drip-irrigating watermelon and other crops. The second type is permanent grazing, i.e. lasting even after the normal grazing season. This is carried out in places near domiciles and when the girls can venture out on their own. In many cases, the shepherdesses take whatever is necessary (food, etc.) so that they can stay the whole day in the open in the company of other shepherdesses.

### **3.5.3 INDUSTRY AND METAL PRODUCTION**

Industrial activity covers several types of manufacturing in the NSG. The single leading small industrial category is cement brick factories, which number 58 in the NSG. Second in order are tile factories which number 28 in North Sinai, most of which are concentrated in El Arish. As for Central Sinai, there are nine factories which produce cement, needlework and clothes, cement bricks, tiles, olives and marble, among other commodities. They are all concentrated in the El Hasana region (see Table 23).

In addition, there are 783 workshops, concentrated in El Arish and Sheik Zuweid. Central Sinai has the least number of workshops of all the areas of the NSG—El Hasana comes last among the other

regions (See Table 24). In North Sinai, the shops that provide personal services stand out, numbering 333 workshops, followed by ones that provide metal work services (177).

**Table 23. Manufacturing Capacity by Type in North Sinai**

Sector	Arish	Rafah	Zuweid	Hasan a	B'ir Abd	Total
Cement bricks factories	34	9	10	1	4	58
Clay bricks factories	1	-	-	-	-	1
Tiles factories	10	-	4	1	6	21
Textile factories	3	-	-	-	-	3
Plastics factories	6	3	1	-	-	10
Marble masonry factories	1	-	-	1	-	2
Needlework and clothes	2	-	-	2	-	4
Olive mills	11	1	1	1	2	16
Grain grinding mill	2	4	2	-	-	8
Animal fodder factories	2	-	-	-	4	6
Quail production	1	-	-	-	-	1
Battery factories	1	-	-	-	-	1
Poultry farms	1	2	1	-	1	5
Juices and marmalade	-	1	-	-	1	2
Sweets factories	2	-	1	-	2	5
Dairy products	2	-	-	-	-	2
Plastic bags factories	2	-	-	-	-	2
Ice factories	1	-	-	-	1	2
Cement factories	-	-	-	2	-	2
Salt factories	-	-	-	-	6	6
Paper bag factories	-	-	-	1	-	1
Granite and marble factories	1	-	-	-	-	1
Total	83	20	20	9	27	159

**Source:** City Councils, Jan. 2009.

In North Sinai, there are three large industrial zones: the heavy industrial zone in the Central area, the zone of medium and small industries at B'ir El Abd, and craft industries zone at El Arish<sup>18</sup>.

Focusing on the industrial zone of Central Sinai, we encounter an area of 4,480 km<sup>2</sup>, 4 km<sup>2</sup> of which are planned for the cement sector, 20 km<sup>2</sup> for the mining sector, 10km<sup>2</sup> for personnel housing. All 4 km<sup>2</sup> allotted to the cement sector is completely utilized by seven factories (two for gray and

<sup>18</sup> Opportunities of Mining Activities & Added Value to Preserve our Mineral resource for Posterity, North Sinai, Mining & Industry Committee , pp 4-6.

white cement, one for cement packing bags, one for prefabricated houses, one for building materials, one for pipes and the last for cement bricks). Planning has also been proposed for a cement industries zone, which is now being implemented at Rissan Eneiza, in addition to the Armed Forces cement factory south of Mount Lobna, already under construction. As for the metallurgic and mineral industries in the south Baghdad area, work has started on an area of 2 km<sup>2</sup> by 1.5 km<sup>2</sup> as a first stage of an industrial estate. With more development, the area has grown to around 20 km<sup>2</sup> which will harbor ten factories in the fields of manufacturing marble, silicon alloys and metal fittings.

**Table 24. Number of Workshops and Workers in North Sinai Regions**

District	Number of workshops	Number of workers
El Arish	485	826
Rafah	101	189
Sheik Zuweid	109	149
B'ir El Abd	79	133
El Hasana	1	1
Nekhl	8	22
<b>Total</b>	<b>783</b>	<b>1320</b>

Source: Craft Industries Directorate, North Sinai, Jan. 2009.

**Table 25. Number of Workshops and Workers by Industry Type**

Activity	Workshops (No.)	%	Workers (No.)
Weaving and Textiles	13	1.7	13
Alimentary Products	7	0.9	10
Paper, Printing & Publishing	5	0.6	6
Metallurgy Services	19	2.4	33
Personal Services	333	42.5	473
Wood Services	107	13.7	198
Chemical Services	10	1.3	19
Metal Products	177	22.6	273
Miscellaneous	105	13.4	285
Basic Metals	7	0.9	10
<b>Total</b>	<b>783</b>	<b>100</b>	<b>1320</b>

Source: Craft Industries Directorate, North Sinai, Jan 2009.

Mining is one of the principal industrial economic activities in Central Sinai. There is an abundance of mineral and raw material resources such as marble with its high-quality types (Al Hassa Filletto,

Triesta, Sinai Rose, White Sinai, Botticino, Brescia, Emperador, Maghara Golden, and Serpegente), which are compared to the best Italian and international kinds<sup>19</sup>. In fact, mining has occurred in Central Sinai since Pharaonic times. Mineral resource exploitation has grown dramatically in the quarter century between 1982-2008 (see Table 25). New materials that had not been produced in the past have now started to hit the market, such as marble, sand, and dolomite.

**Table 26. Metal Resources Development between 1982 and 2008**

Material	Production of each material (volume of mined material)	
	1982	2008
Marble	-	58,364 m <sup>3</sup>
Gravel Soil	74832 m <sup>3</sup>	357,657 m <sup>3</sup>
Gravel	87478 m <sup>3</sup>	75,817 m <sup>3</sup>
Sand for building	58617 m <sup>3</sup>	574,874 m <sup>3</sup>
Sand for glass making	-	178,718 m <sup>3</sup>
Limestone	85346 m <sup>3</sup>	480,694 m <sup>3</sup>
Mud	-	30,000 m <sup>3</sup>
Dolomite	-	278,325 m <sup>3</sup>
Clay	-	14,250 m <sup>3</sup>
Salt	-	1,215,903 tons

**Source:** Quarry Project, Feb. 2009.

Overall reserves of these materials have been estimated at 9.5 million m<sup>3</sup> especially in the areas of Mt. Yalaq and Mt. Maghara. Exports have begun to enlarge these mining activities further: marble and fine white sand are exported to several countries such as Italy and China<sup>20</sup>. Despite the large reserves of mineral resources in North Sinai, actual exploited amounts remain limited, mostly exploited by the private sector with a quite meager governmental investment<sup>21</sup>. It is clear that most mineral industries depend on manpower from outside Sinai. More importantly, these industrial and mining activities have not benefitted Central Sinai inhabitants, since investors in Central Sinai do not have any development obligations towards the Bedouin communities in their environment – in spite of the land and facilities they have obtained and the large profits they have made through their projects in this region. No social responsibility is required of investors to link investments to development activities with the purpose of ameliorating the quality of life of the local population.

<sup>19</sup> Opportunities of Mining Activities & Added Value to Preserve our Mineral resource for Posterity, North Sinai, Mining & Industry Committee , pp 3-4.

<sup>20</sup> Opportunities of Mining Activities & Added Value to Preserve our Mineral resource for Posterity, North Sinai, Mining & Industry Committee , pp 2-3.

<sup>21</sup> The Quarry Project, Feb. 2009.

### 3.5.4 TOURISM AND ECOTOURISM

Tourism has been considered one of the pillars of economic development in the NSG, since the area enjoys many advantages of location and historical archaeological sites. Its environment provides venues for various touristic activities, such as beach tourism, conference tourism, and therapy trips, as well as historical, religious and cultural tourism. It has distinctive traditions, popular



*Water Tank in Central Sinai Settlement*

foods and folklore, such as Bedouin poetry and lyrical heritage. Desert tourism, nature reserves, marine sports and yachting are all potential venues<sup>22</sup>.

The most important touristic landmarks in North Sinai can be seen in sites such as the ancient Arish Museum, the Heritage Museum, Alah Eddin Gate, Rafah Panorama, the Wild Reserve of Rafah, Sheik Zuweid Wetland in Sheik Zuweid, and

Pharma City in the B'ir El Abd region, in addition to the Zaraniq Reserve west of El Arish. In the Central area, there are several potential touristic sites, most prominent among which are Quseima Oasis, Ein Quseima, Nekhl Citadel and the memorial painting of the Islamic pilgrimage road in the Nekhl region.

Tourism development in North Sinai now includes two tourist villages in addition to 6 touristic hotels and 12 popular ones. Furthermore, nine projects were set up for youths, in addition to the already existing beach villages owned by companies and different societies, syndicates and private businesses. The global indicators of tourism (Table 27) show that there are 1065 rooms containing 2303 beds in North Sinai. Most hotel services are available in El Arish and some other coastal areas.

<sup>22</sup> Tourism Directorate & the Regional Agency for Promoting Tourism in North Sinai, "Horizons of Touristic Investment in North Sinai", (Paper presented to the Investment Conference at Arish, 12/7/2008) in collaboration with the Regional Agency for Promoting Tourism, July 2008, pp 2-4.

However, hotel capacity is limited and reflects barriers hampering tourism promotion in North Sinai amongst them internal security and safety.

Central Sinai totally lacks regular hotels or other normal tourist services. Moreover, visitation currently is severely restricted by safety and access factors. Traditionally, the region relied on small-scale desert tourism in the form of safaris. Available tourism capacity in Central Sinai was used by the tourist companies without any responsibilities towards the inhabitants, the environment, or cultural heritage. Most tourism activities – limited as they were – provided no benefit to the local inhabitants, in the form of ownership of assets, partnerships in running these businesses, or participation for livelihood opportunities. Within the NSG as a whole, almost all ownership, management and operation of tourism-related enterprises are vested in outside interests.

**Table 27. Number of Hotels and Tourist Villages in North Sinai**

Tourist Villages			Tourist Hotels			Popular Hotels		
No.	Rooms	Beds	No.	Rooms	Beds	No.	Rooms	Beds
2	90	226	6	622	1254	17	353	823

**Source:** Tourism Directorate & the Regional Agency for Promoting Tourism in North Sinai, “Horizons of Touristic Investment in North Sinai”, (Paper presented to the Investment Conference at Arish, 12/7/2008) in collaboration with the Regional Agency for Promoting Tourism, July 2008.

## 3.6 COMMUNITY INFRASTRUCTURE AND BASIC SERVICES

Following is an exposition of the infrastructure and basic services available in North Sinai, focusing on the Central area. It also includes an analysis of the state of the utilities of water, sanitary sewage, electricity, roads, transport, communication, service buildings, education and the different social utilities.

### 3.6.1 WATER

People obtain their needs for water from three principal sources: rainfall, torrential floods and underground water supplies through wells and desalination plants. Tables 28 and 29 show that North Sinai, as a whole, has 11 desalination plants with a total capacity of 203,880 m<sup>3</sup>/day, of which 9,520 m<sup>3</sup> are produced by four plants in Central Sinai at 4.7% of the total capacity in North Sinai, against 194,363 m<sup>3</sup>/day in the rest of the governorate (95.3%). This reveals an imbalance in water distribution, making the north by far the largest beneficiary of available water resources.



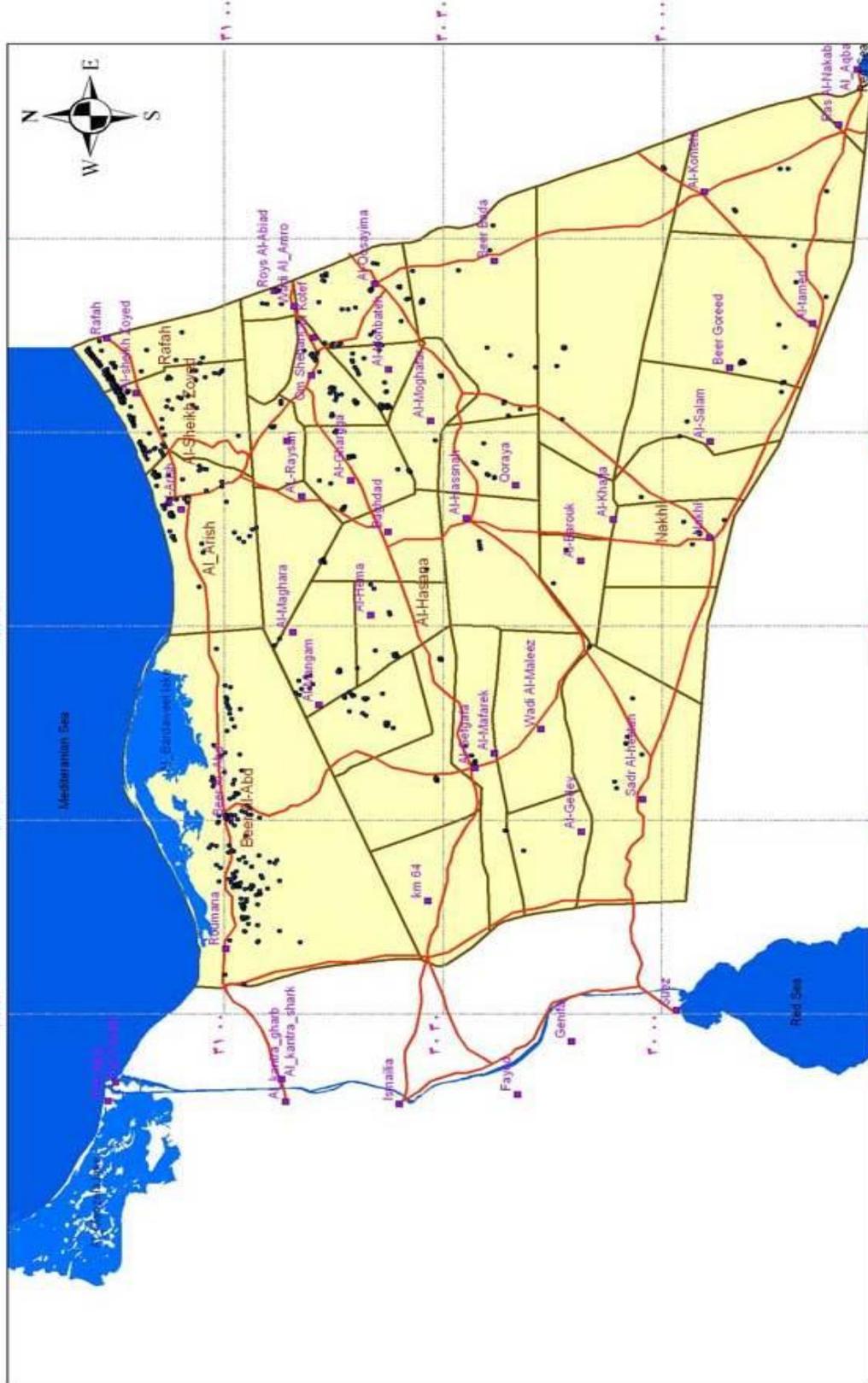
*Bedouin Dwelling in Central Sinai (summer)*

Furthermore, a large part of the total capacity of the water plants—estimated at 112,000 m<sup>3</sup>/day—is taken from the Nile by three plants, making up 55.9% of total supplies. The remaining part—91,880 m<sup>3</sup>/day—is derived from groundwater supplies at 45.1%. Groundwater supply in Central Sinai is 9,520 m<sup>3</sup>/day, or 10.4% of the total groundwater produced in the NSG, which indicates a shortage of water in the Governorate in general and in the Central area in particular.

There is also an imbalance in the distribution of water supplies within Central Sinai: El Hasana enjoys more than 90% of the water available to the Central region. This means that the problem of water shortage has a relatively more severe effect on Nekhl, since the proportion of population in Nekhl is considerably more than 10% of Central Sinai.

Overall, unless declining groundwater supplies in Central Sinai are supplemented by significant piped water supplies, i.e. Nile water or supplies from large scale desalination plants (which don't exist), the absolute barrier of water scarcity provides a serious impediment to economic development in which water is an essential component.

محافظة شمال سيناء  
North Sinai Governorate  
الأبار  
Wells



**مقياس الرسم**  
Scale

0 12.5 25 50 75 Kilometers

**مفتاح الخريطة**  
Legend

- البحيرات  
Lakes
- البحر  
Sea
- المدن الرئيسية  
Major cities
- الطرق الرئيسية  
Roads
- القرى  
Village
- مراكز  
Makaz
- الابار  
Wells

**مقياس الرسم**  
Scale

0 12.5 25 50 75 Kilometers

**Livelihood and Income from the Environment (LIFE) Program in The Sinai**

**IRG**  
USAID Contractor

**Table 28. Water Supply Sources in the North Sinai Governorate**

	Water Source	Capacity		Status Quo		Year Est.			
		Nile	Ground Water	Other	Nominal m3/day		Actual m3/day	Working	Not
<b>East Qantara Water Purification for North Sinai</b>	*				1,040,000	1,040,000			1995
<b>El Arish</b>	Desalination		*		2000	0	-		1983
	Wells		*		64,800	45,360			
<b>B'ir El Abd</b>	Romana Pumping	*			4,500	4,000			1995
	B'ir El Abd Pump	*			5,000	4,000			1995
<b>Rafah</b>	Wells		*		20,000	13,000			
<b>S.Zuweid</b>	Wells		*		28,500	24,000			
<b>El Hasana</b>	Desalination: El Hasana 1 El Hasana 2 Abu Regeila Gafgafa		*		564	500			1985 2001 2003 2008
	Wells		*		13,600	8,080			
<b>Nekhl</b>			*		450	340			2001
			*		900	600			2003

Source: North Sinai Water and Utilities Department, Feb. 2009.

**Table 29. Sources of Fresh and Underground Water Used in Central Sinai and North Sinai as a Whole**

	Wells		The Nile		Total	
	Capacity M3/day	%	Capacity M3/day	%	Capacity M3/day	%
<b>El Hasana</b>	8,580	90.1	0	0	<b>8,580</b>	<b>4.2</b>
<b>Nekhl</b>	940	90.9	0	0	<b>940</b>	<b>0.5</b>
<b>Central Total</b>	9,520	10.4	0	0	<b>9,520</b>	<b>4.7</b>
North Sinai Total	<b>91880</b>	<b>45.1</b>	<b>112,000</b>	<b>55.9</b>	<b>203,880</b>	<b>100</b>

### 3.6.2 SANITARY DRAINAGE

Sanitary drainage or wastewater plants operating in North Sinai include four principal units, 52 subsidiaries and three treatment plants with an actual drainage capacity of 30,900 m<sup>3</sup> per day. These sanitary plants are concentrated in El Arish: three principal plants, 51 subsidiaries and three

treatment plants. The remainder, a principal plant and a subsidiary, are in B'ir Al Abd. However, most wastewater plants are not operational or do not work at full capacity.

It is clear that there is a gap between the quantity of the consumed potable water and available wastewater capacity in North Sinai. Consumption of potable water is 189,040 m<sup>3</sup>/day, while wastewater capacity does not exceed 30,900 m<sup>3</sup>/day: a gap of 158,140 m<sup>3</sup>/day, which means that the existing drainage network covers only 16.3% of the used water (Table 30). The remaining percentage (83.7%) is drained into the land with adverse environmental consequences in certain areas. Moreover, an important source of agricultural water, in the form of reusable waste waters, is being forfeited essentially. This perverse outcome may be a combination of poor governmental policies and budgeting (for operational costs of wastewater plants) and artificially low prices for produced water, making reusable wastewater uneconomic to produce and thereby compete with either piped water or groundwater.

**Table 30. The Gap between Potable Water Consumption and Sanitary Drainage Capacity in North Sinai**

District	Consumed potable water m <sup>3</sup> /day	Sanitary Drainage capacity m <sup>3</sup> /day
Arish	106,360	30,600
Sheikh Zuweid	27,500	0
Rafah	16,500	0
Beir Al Abd	30,000	300
El Hasana	8,080	0
Nekhl	600	0
<b>Total</b>	<b>189,040</b>	<b>30,900</b>

**Source:** North Sinai Sanitary Drainage, and Water Utilities, Feb. 2009.

Although sanitary drainage capacity has been increased in the past few years, the resultant boost does not satisfy the people's needs in this respect, with the drainage network covering mostly the urban areas of the main towns. The sanitary drainage sector has not yet covered all regions, leaving 230,858 people, or 63.6%, in North Sinai, with lack of a sanitary drainage network. As the data in Tables 30 and 31 show, Central Sinai has no sanitary drainage at present.

For the population of the smaller desert communities, individual wastewater treatment plants are simply unfeasible, since tying in groups of settlements to one common plant would be prohibitively

costly due to the far-flung nature of these settlements. However, a variety of other solutions are possible, including septic tank systems and low cost water recycling systems combined with dry composting toilets and similar devices. It is not clear whether such solutions have been investigated previously for Central Sinai, but these could be cost-effective and healthy alternatives for desert communities.

**Table 31. Areas Deprived of Sanitary Drainage in North Sinai**

District	Deprived areas		Total population deprived of sanitary drainage
	Urban	Desert Communities	
El Arish	0	4	18,361
Sheikh Zuweid	1	14	48,458
Rafah	1	11	62,466
B'ir Al Abd	0	23	65,765
El Hasana	1	20	24,672
Nekhl	1	10	11,136
<b>Total</b>	<b>4</b>	<b>82</b>	<b>230,858</b>

Source: North Sinai Sanitary Drainage Utilities, Feb. 2009.

**Table 32. Lack of Sanitary Drainage for People and Regions in Central Sinai vs. North Sinai as a Whole**

District	Deprived population		Deprived areas	
	Number	%	Number	%
El Hasana	24,672	68.9	21	65.6
Nekhl	11,136	31.1	11	34.4
<b>Total Central Sinai</b>	<b>35,808</b>	<b>15.5</b>	<b>32</b>	<b>39.0</b>
<b>Total Governorate</b>	<b>230858</b>	<b>63.6</b>	<b>82</b>	<b>100</b>

Source: North Sinai Sanitary Drainage Utilities, Feb. 2009.

### 3.6.3 HEALTH SERVICES

The data collected reveal certain indicators concerning the status quo of the health services in North Sinai in general and in Central Sinai in particular. As Table 33 shows, there are two types of health units: public hospitals and rural health units in the desert Bedouin communities. Public hospitals in NSG number seven, one of which is in Central Sinai, in Nekhl. The NSG has 59 health units, of which 13 are in the Central area, representing 11.9% of the total health units. Within the

Governorate as a whole there are 480 physicians, of whom 57 work in the Central area (22% of the total). Nurses in the NSG number 1352, of whom 140 (10.3%) serve Central Sinai. The data also show that the total number of hospital beds in NSG does not exceed 474 beds, of which 20 are in the Nekhl public hospital, giving Central Sinai 4.2% of the NSG total.

Table 34 indicates that each health unit in NSG serves around 6151 people (1.7% of the total population of the Governorate). The physician/patient ratio is also high, with 756 people per physician. Nurses are in short supply as well, with 268 persons per nurse. A single hospital bed is supposed to serve 765 patients at the level of the Governorate.

**Table 33. Availability of Governmental Health Service in North Sinai and Central Sinai**

Governmental Health Services in Central Sinai and North Sinai as a Whole								
	Hospitals	Health Units	Physicians		Nurses		Beds	
				%		%		%
El Hasana	0	9	46	80.7	112	80.0	0	0.0
Nekhl	1	4	11	19.3	28	20.0	20	100.0
Central Sinai Total	1	13	57	11.9	140	10.3	20	4.2
Governorate Total	7	59	480	100	1352	100	474	100

**Table 34. Relative Access to Governmental Health Services in Central Sinai and the Governorate as a Whole**

	Population	People per health unit	People per physician	People per nurse	People per bed
El Hasana	24672	2741.3	536.3	220.3	0
Nekhl	11136	2784	618.7	397.7	556.8
Central Sinai Total	35808	2754.4	559.5	255.8	1890
Governorate Total	362933	6151.4	756.1	268.4	765.7

**Source:** Ministry of Health, North Sinai Health Directorate, 2009.

As a subcategory Central Sinai, with less than 10% of NSG's total population, experiences lower ratios except for hospital beds. There are 2,754 people per health unit, 559 per physician, 255 per nurse, and 1,890 people per hospital bed. However, these ratios – at both the NSG and Central Sinai level --are very high and not conducive to adequate delivery of health services.

In Central Sinai, and especially among the Bedouin, traditional medical practices, rather than modern medical services, are frequently used – not only because of isolation but also of poverty. There is clear evidence of the spread of diseases, malnutrition and high infant mortality amongst the Bedouin community in particular, in addition to adverse conditions of reproductive health. However, official statistics may fail to reveal actual conditions, since Bedouins do not generally tend to register their births and deaths, nor to report their illnesses. Moreover, the isolated nature and inaccessibility of many Central Sinai settlements make it difficult for authorities to keep accurate record-keeping on general health conditions in those areas.

### **3.6.4 ROADS**

The total length of the road network of North Sinai, in 2007, was estimated at 6,891.47 km covering regional level roads and some villages and Bedouin communities. The Governorate has three types of roads: provincial roads linking this Governorate with other governorates; highways which link the regions with one another, and internal roads linking residential areas inside towns and villages for regular daily traffic. As detailed in Tables 35 and 36, the greatest part of these roads falls in the provincial category making up 3,885.4 or 56.4%. This is followed by highways with a length of 1,669.4 km or 24.7%. Finally, internal roads comprise 1,306.99 km or 19.0% of the total. Naturally, the wide expanse of the Governorate requires priority to be given to the provincial and regional highways at the expense of the internal roads of daily community use.

Although the area of Central Sinai comprises three quarters of the area of the NSG, it enjoys a total of only 3,162.37 km of road length, or 45.9% of the total length of the roads of the whole Governorate. In contrast, the northern areas, which cover an area representing one fourth of the total area of North Sinai, possesses a network of roads making up 54.1% of the total—a clear imbalance in the distribution of roads between the northern and the Central areas but one almost entirely due to the population distribution and urban nature of the northern coast. In addition, the distribution of the roads in the Central area, as seen in Table 37, is similar to the distribution on the level of the whole Governorate, where most of the length in the Central area is concentrated on the provincial roads—1951.9 km or 61.3%—which is followed in rank by the highways of 1,019 km or 32.0%, and ending up with internal roads of 212.47 km representing 6.7% of the total roads in Central Sinai.

In Central Sinai, El Hasana *markez* has a higher proportion of the roads of all types. Its share of roads is 2,026 km or 63.6% of the total for Central Sinai while the Nekhl share is 1,157 or 36.4%, as shown in Table 35. As for the internal roads, these have an immediate effect on the local economy of the residents of the Central area,

**Table 35. Transport Roads in North Sinai Governorate, According to Regions, 2008**

Region	Main & highways		Provincial		Local Internal				Total
	No.	Length (km)	No.	Length (km)	Paved roads		Dirt roads		
	No.	Length (km)	No.	Length (km)	No.	Length (km)	No.	Length (km)	
	15	181.5	65	505.08	142	296.76	3	4.5	987.84
El Arish	5	102	55	423.85	69	212.78	9	127.52	866.15
Sheikh Zuweid	6	71.1	32	405.2	85	149.8	13	18.3	644.4
Rafah	10	325.8	71	599.1	105	267.15	26	17.71	1209.76
B'ir El Abd	15	714	45	1166.35	48	145.72	0	0	2026.07
El Hasana	5	305	16	785.5	25	57.3	2	9.45	1157.25
Nekhl	56	169904	284	2885.08	474	1129.51	53	177.8	6891.47

**Source:** The Public Organization of Roads and Bridges, Construction Organization, 2008.

Table 36 shows their length to be 212.5 km or 44.8% of the total internal paved roads for the NSG as a whole. Of this total, about 146 km of paved roads are in El Hasana, i.e. 71.8%, of total paved roads. Interestingly, El Hasana apparently has no unpaved roads while Nekhl has a negligible amount, suggesting that all roads are designed for normal automotive use. Presumably, the location and length of non-surfaced roads and tracks usable by 4 WD vehicles is not recorded in the statistics, though this is bound to be important for isolated Bedouin settlements.

**Table 36. Transport Roads by Markez in Central Sinai, 2008**

District	Highways		Provincial		Internal roads				Total	
	km	%	km	%	Paved		Dirt roads		km	%
					km	%	km	%		
El Hasana	714	70.1%	1166.35	59.8%	145.72	71.8%	0	0	2026.1	63.6
Nekhl	305	29.9%	785.5	40.2%	57.3	28.2%	9.45	100%	1157.3	36.4
<b>Total</b>	<b>1019</b>	<b>100%</b>	<b>1951.85</b>	<b>100%</b>	<b>203</b>	<b>100%</b>	<b>9.45</b>	<b>100%</b>	<b>3183.4</b>	<b>100%</b>

**Source:** The Public Organization of Roads and Bridges, Construction Organization, 2008.

Population density around the road network in North Sinai in 2007, the latest for which figures are available, yields a rate of 52.9 person/km, which indicates a general balance in the Governorate

overall. However, Central Sinai has the least population density in this regard compared to the rest of North Sinai. The density at El Hasana and Nekhl is 11.9 persons/km and 9.7 persons/km respectively.

**Table 36. Distribution of Internal Roads, Paved & Dirt Roads, in Central Sinai According to Region**

District	Paved vs. Unpaved and % of Each to Total Length of Roads				Total
	Paved		Dirt Roads		
	Length	Rate	Length	Rate	
El Hasana	145.7	100%	0	50.0%	145.7
Nekhl	57.3	85.8%	9.5	14.1	66.8
<b>Total</b>	<b>203.0</b>	<b>95.5%</b>	<b>9.5</b>	<b>4.4</b>	<b>212.5</b>

**Source:** The Public Organization of Roads and Bridges, Construction Organization, 2008.

### 3.6.5 TRANSPORTATION

Data, as shown in Tables 37, 38, and 39, show that there are three principal means of transportation available in North Sinai. These include provincial vehicles linking North Sinai with the other governorates in the form of private sector taxis of 5 -7 passengers, minibuses of 14 passengers and public sector buses (such as the East Delta Company buses). Public sector vehicles, totaling 536, represent 45.2% of the total “public transport services”. Moreover, there are also vehicles, cabs, minibuses and *tok-toks* (three-wheel small vehicles), numbering 482 vehicles or 40.7% of the total vehicles used for transporting the public. Highway vehicles linking the towns of the regions comprise 167 vehicles or 14.1% of total vehicles.

**Table 38. Internal Transport Means Available in North Sinai**

Means	Number	%
Internal service vehicles	482	40.6%
Town cab	167	14.1%
Provincial vehicles	536	45.2%
<b>Total</b>	<b>1185</b>	<b>100%</b>

**Source:** North Sinai Information Center, 2009.

Although various bodies (public sector, private sector and non-governmental societies) contribute to providing land transportation services in the Governorate, these services have not yet efficiently covered the needs of all the towns of North Sinai. Passenger transportation among the regions of

the Governorate is connected with the sites of economic activities and the supply of other services. Transportation activity is thus increasing east of El Arish (Rafah and Sheikh Zuweid) because of commercial agricultural activities and in the region of B'ir Al Abd where there are fishing activities, as well as in El Arish for tourism, small manufactures, trade and services. However, the regions of Central Sinai (El Hasana and Nekhl) still suffer a shortage in transportation, especially due to the low and dispersed rates of population, and in spite of the existence of mining and heavy industry in this area, which requires passenger transport lines in the form of subsidized minibus services to cater for the needs of workers there. Table 38 details the number of vehicles (town cabs) available in the Governorate that start their trips from El Arish to other towns in the NSG.

**Table 39. Numbers of Town Cabs Circulating from El Arish to Other North Sinai Towns**

	Trip	Number of Vehicles		Total
		Microbus	5-7 passenger cab	
1	Gafn – Gafgafa- Aswat	1	1	2
2	Nekhl	4	6	10
3	El Hasana	5	4	9
4	Sheikh Zweid	14	8	22
5	Rafah	49	59	108
6	B'ir Al Abd	10	6	16
	Total	83	84	167

**Source:** The Public Organization of Roads and Bridges, Construction Organization, 2008.

**Table 40. Numbers of Cabs Circulating from North Sinai to Other Governorates**

	Trip	Number of Vehicles		Total
		Microbus	5-7 passenger cab	
1	El Arish - Cairo	0	195	195
2	Rafah - Cairo	0	215	215
3	Ismailia	21	55	76
4	Qantara	14	34	48
5	Zaqaziq	1	1	2
	Total	36	500	536

**Source:** North Sinai Traffic Department

### 3.6.6 COMMUNICATIONS

Communication services are available for wide sections of the population in NSG in general. As shown in Table 41, total telephone landlines include 42,456 lines covering the needs of 85% of the families, most of whom live in the northern and urban areas. In contrast, Central Sinai has limited telephone communications with only 530 lines covering the needs of 0.4% of the population, which is a clear indication of the isolation of the Central Sinai population as well as the lack of infrastructure. Unfortunately, reliable statistics appear to be lacking on the availability and use of mobile phones. Throughout the developing world, these have emerged as the communications vehicle of choice since they avoid the huge capital infrastructure costs associated with land lines. If the pattern is similar to the rest of Egypt as well as Bedouin populations in other parts of the Middle East, mobile phones are likely to be relatively common, though not as common as mobile phone use among urban populations because of financial reasons.

However, according to the data provided in Table 40, mobile phones are far less common than fixed land line phones, a fact which seems somewhat unlikely. Moreover, the number of wireless phones (presumed to mean mobile and satellite phones) in El Hasana is greater than in El Arish, which has a far larger and more economically active population. No mobile phones are recorded as in use at all in Nekhl. Hence, these recorded wireless communication rates should be regarded with some degree of caution. It seems more likely that some wireless phones have been registered outside of the NSG but are being actively used within the Governorate.

**Table 41. Wire and Wireless Communication Services in North Sinai**

District	Capacity of Tel. Exchange		Working Lines	
	Exchange	Wireless	Exchange	Wireless
El Arish	37,314	1000	30675	109
Sheikh Zuweid	5,768	1100	3627	102
Rafah	4,000	1100	2558	247
B'ir Al Abd	8,096	500	5066	2
El Hasana	768	2600	216	203
Nekhl	896	0	314	0
<b>Total Central Sinai</b>	1,664	2600	530	203
<b>Total North Sinai</b>	56,842	630	42456	663

Source: Egyptian Communication Company, Feb. 2009.

### 3.6.7 ENERGY

Electricity is one of the main sources of energy used in most parts of the NSG, followed by natural gas, which is used for household purposes in towns in small gas cylinders (larger ones for shops and other small businesses). The Governorate has nine electricity plants which started operation in the 1980s and 1990s; these are distributed over the regions of North Sinai as displayed in Table 42.

**Table 42. Electricity Plants in North Sinai 2008**

Name	Year of operation	Nominal capacity (KW/H)	Actual capacity (KW/H)	Total generated power (KW/H)
Salam Electricity Plant (Diesel)	1990	22,400	10000	172,943
Rafah Electricity Plant	1984	1,632	650	0
El Hasana Electricity Plant	1994	945	460	2,550
Nekhl Electricity Plant	1994	3,140	1100	41,690
Wadi Al Amr (Awga) Elec. Plant	1995	630	500	35,810
Gafgafa Electricity Plant	1995	1,260	750	36,980
Ras Al Naqab Electricity Plant	1996	4,000	4,000	3,369,672
Arish Steam Electricity Plant	1996	66,000	66,000	548,467,000
Total		<b>100,007</b>	<b>83,460</b>	<b>552,146,645</b>

Source: North Sinai Electricity Distribution Company, Plant Management-Steam Plant, Feb, 2009.

Electricity production has increased recently to amount to between 552,146,645 kw/h and 595,661,133 kw/h<sup>23</sup> in 2008, which is reflected in the quota per individual increasing in 2008 to 8564 kw/h. Table 43 shows the increase of the individual allocation over a five-year period.

**Table 43. Electrical Power Allocation per Individual (KW/H)**

District	2004	2005	2006	2007	2008
El Arish	1432	1420	1440	1298	1371
Sheikh Zuweid	601	763	1012	1110	1080
Rafah	500	452	901	2534	2680
B'ir Al Abd	922	1026	1100	1103	1107
El Hasana	333	277	698	1130	1177
Nekhl	761	298	372	1031	1149

Source: North Sinai Electricity Distribution Company, Feb, 2009.

<sup>23</sup> Total power produced data differ according to the source of the data. The Plant Management-Steam Plant gives the figure 552,146,645 kw/h while the Electricity Dist. Company gives the figure 595,661,133 kw/h. The Plant Management-Steam Plant gives the figure 552,146,645 kw/h while the Electricity Distribution Company gives the figure 595,661,133 kw/h.

The availability of electricity per individual, as shown in Table 43, in both Rafah and El Arish, is greater than in Central Sinai (El Hasana and Nekhl) and in Sheikh Zuweid. This may be in part due to differences in non-domestic or commercial demand. Lighting is shown in Table 44 where street lamp posts are available in 82 villages in the different regions of the Governorate. Some 30 of these villages are in Central Sinai, representing 36.6% of the total served villages of the Governorate. Both El Hasana and Nekhl still suffer from poor lighting for urban areas. The situation is the same in most affiliated communities—a lack of electrical power that is conspicuous in the whole of the Central area, and an indication of the imbalance in the distribution of energy among the population in the Governorate and the large number of people deprived of electricity. The potential exists for alternative street lighting for rural areas and other off-grid areas, such as provided by small photovoltaic arrays fixed on individual street poles, which have become increasingly common in desert regions in both developing and developed countries with reliable amounts of sunshine.

**Table 44. Villages and Settlements without Street Lighting**

District	Suburb		Affiliates		Village	
	Lighting	no	lighting	No	lighting	no
El Arish	0	-	14	10	4	-
Sheikh Zuweid	4	-	125	15	14	-
Rafah	14	-	34	11	11	-
B'ir Al Abd	3	-	35	54	23	-
El Hasana	2	2	35	76	20	-
Nekhl	2	5	3	46	10	-
Total	25	7	246	212	82	-

**Source:** North Sinai Electricity Distribution Company, Feb, 2009.

### 3.7 COMMUNITY AND INSTITUTIONAL CAPACITIES

Nongovernmental organizations in North Sinai emerged as early as the late 1950s. In 1957, the first two societies were set up: Al Nasr for Social Development and The Cultural Palace of Sheikh Zuweid. Several others emerged from the 1960s-1990s. Presently, North Sinai has 215 nongovernmental organizations as shown in Table 45. Some of them are active in the field of local social development, numbering 178 societies or 82.7% of the total societies in North Sinai. However, only 37 societies, or 17.3% of the total, practice social care activities. It should be noted

that this division is somewhat arbitrary since social care and local social development usually overlap in the work of NGOs. Most of these societies have a strong religious basis.

There is a clear concentration of these societies in the northern zone, especially in B'ir Al Abd, El Arish and Rafah, leaving Central Sinai with a meager 2.3% of such societies, including Society Development and Mawaleeh Society Development in Quseima; Society Development in El Hasana; Desert Unity in Nekhl; and Sinai Desert Friends in Magharah. This concentration of the societies in the north reflects the deteriorating developmental situation in Central Sinai, with the active part of the population moving northward in search of better livelihood opportunities.

The dispersed population and deteriorating livelihood in Central Sinai prompted the five Central Sinai NGOs to adopt broad ranging services, including cultural, educational, economic and religious activities, to address the shortages of community support services in the region. For instance, Al Hasana Society Development addresses legal issues and works in the field of caring for orphans and development of projects for women. Sinai Desert Development Society also cares for orphans and provides financial help to the needy in addition to supplying health care through a charity dispensary. Despite that, the capacity of NGOs lags far behind meeting the needs of the people. The number of individuals served by these societies is limited, registering 7161 people per society in the Central area, or a rate of 20% of the targeted population for each such nongovernmental society. Therefore, the Bedouin community institutions, in the form of kinship exchange relationships within the tribe and the common-law institutions, fill the gap in Central Sinai.

**Table 45. North Sinai Nongovernmental Organizations**

Total North Sinai Societies		Type of Society				Central Sinai Societies	
		Local society development		Social care			
No.	People per NGO	%	No.	%	No.	No.	People per NGO
215	1688	178	82.7	37	17.2	5	7161.6

**Source:** Social Security Ministry site: <http://www.mss.gov.eg>

## IV. OPPORTUNITIES AND CHALLENGES OF DEVELOPMENT IN CENTRAL SINAI

Current problems facing Central Sinai are numerous and highly inter-related, making it difficult to determine which should take priority in terms of its ability to resolve other problems. Given this, the Assessment Team used two major criteria to help determine selection of the problems to be addressed. The first criterion is the gravity or centrality of a particular problem to social and economic development needs, while the second is the extent to which the problem can be addressed in practical terms and within the temporal and financial constraints of the LIFE Sinai Program. The gravity of the problem can be determined through its primary and consequent effects, in addition to its persistence and the number of people affected. As for the possibility of solving any given problem, the Team has attempted to rank these through a matrix arraying the type of



developmental interventions required and the extent to which local political, social and economic conditions will permit a solution.

*Focus Group Meeting in a Central Sinai Village*

It should be noted that this assessment was derived in part from the analysis of the largely secondary data collected for this report but also from the field survey interviews and discussions, which included the expressed priorities and preferences of the Bedouin groups interviewed.

Accordingly, a matrix of the problems can be developed on the basis of these two criteria to determine four types of problems as follows:

1. First priority problems (serious but relatively easy to address)
2. Second priority problems (less serious but possible to resolve)
3. Third priority problems (more serious and also more difficult to address)
4. Fourth priority problems (less serious but difficult to address)

## 4.1 FIRST PRIORITY PROBLEMS

**Three major problems** qualify as first priority problems, revealed in the circumstances of the people in Central Sinai; these are:

- potable water scarcity
- drought and food shortage, and
- geographic isolation.

Extremely urgent as they are, they affect the poorest sectors of the Central Sinai population. These are serious but relatively easy to address even if only partially so or in stages through a series of development interventions. The following analysis sheds some light on the nature of these problems.

### 4.1.1 WATER SCARCITY AND DROUGHT

Life in the Bedouin communities in Central Sinai is harsh and marginal because of the region's deteriorating environmental conditions for the sustenance of livelihoods. Foremost is the scarcity and low quality of available water. The availability of ground water sources per capita in Central Sinai ranges from 0.08 m<sup>3</sup> in El Themed area to about 1m<sup>3</sup> in El Quseima. With the exception of El Hasana, which enjoys a year-round potable water supply, most of the other areas have groundwater supplies that are not suitable for year-round consumption because of excessive mineral content, mainly calcium and magnesium ions, or high rates of salinity.<sup>24</sup> Inconsistent and declining rainfall rates have exacerbated the problem, driving people to migrate along the route of the Sheikh Gaber Canal on the north coast and to adjacent governorates, Unless and until the prolonged drought conditions are reversed, and with the eventual completion of the Sheikh Gaber canal irrigation and reclamation project, it is expected that the Central Sinai Bedouin population will gradually move north leaving an increasingly remnant population behind.

Well water in Central Sinai is derived from depths of 1200-1500m with a high salinity of 2000-5000 parts per million. Daily yields average a rate of about 40m<sup>3</sup> per hour over a normal seven-hour operating day. The cost of drilling and preparing a single well can reach as much as LE 6 million. In Central Sinai there are 65 deep wells and seven well-water desalination plants with a capacity of

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<sup>24</sup> Mohammed Zaki, Environmental Conditions and their Effects on Water Sources, p. 515.

100-150m<sup>3</sup>/day for each well with a capacity of producing potable water not exceeding 1100m<sup>3</sup>/day, which is not sufficient to cover the needs of the population or its development requirements.<sup>25</sup>

#### **4.1.2 FOOD SHORTAGES**

In the Bedouin communities of Central Sinai most people, especially women and children, suffer from food shortages and resulting anemia and chronic illness linked with malnutrition. These ailments are the natural consequence of the barrenness of the area and its concomitant socioeconomic problems, most important of which are chronic poverty, fluctuating seasonal incomes, high food prices, poor health care, and ignorance of the principles of nutrition especially for children under six years of age. Therefore, one of the priorities of the Government's settlements projects (World Food Program) has been linking improved housing to a package of nutritional aids. This assistance has had positive results but has not always been sustainable.

#### **4.1.3 GEOGRAPHIC ISOLATION**

Group discussions with people in Central Sinai revealed that the majority of the Bedouin communities suffer from geographic isolation. Although some are connected to the asphalt road network, they are still far from the neighboring urban centers, leading a life mostly devoid of community and commercial services, as well as social networks and employment opportunities. Furthermore, most road networks linking these communities, where they exist, are not complete and start at a far distance in the desert, obliging the Bedouins to prepare tracks to reach the different communities. For instance, the Moweilah community and the Houdh community in Gayfa are 90km and 102km distant from El Arish, respectively. They are 70km and 82km distant from El Hasana. Therefore, geographical distance and the difficulty of reaching these areas through the existing, incomplete asphalt network (serving Khariza, Arifat Al Naqa and B'ir El Beda communities, for example) is serious, requiring them to depend only on dirt roads (such as Motamteny community). This has also increased the difficulty of supporting remote communities through the delivery of health, educational and other basic services.

The Nekhl region includes six communities suffering from severe isolation: Al Reid, Taweel Al Hamidh, Al Qua'h, B'ir Sabaa, Al Naqab and Al Ghabya. Distances between the communities range widely; some are close to Nekhl, such as Al Reid, B'ir Sabaa, and Al Hamidh (less than 30km) while

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<sup>25</sup> Development Obstacles and Challenges in North Sinai.

others are far more remote. For instance, the Naqab community is located 110km from Nekhl, as compared to Al Qawaa (70km) and Al Ghabya (30km). These distances create particular difficulties for transport of the local population. The associated cost of any transport that may be available (albeit infrequent and unscheduled) also creates a financial burden which many inhabitants simply cannot afford. Therefore, most are forced to accept their isolation and absence of communication with other areas.

## **4.2 SECOND PRIORITY PROBLEMS**

Two problems can be categorized as being of second priority in the life of the inhabitants of Central Sinai. These are problems that are perhaps less critical than water or geographic isolation, but can be addressed with sufficient outlay of funds and innovative approaches. They comprise poor health conditions and the lack of energy supplies.

### **4.2.1. POOR HEALTH CONDITIONS**

A severe shortage of health service units exists, as described previously, especially in Central Sinai. In addition to the actual shortage in number, these units suffer a conspicuous deficiency in medical equipment, beds, medicines, doctors, nurses and other associated support. Thus, Central Sinai inhabitants are forced largely to depend upon indigenous traditional medicines derived from medicinal herbs and plants of the area. While some of these plants are known to have genuine therapeutic properties, they are not an adequate substitute for proper medical diagnosis and treatment in many cases.

### **4.2.2. LACK OF ENERGY SUPPLY**

An imbalance exists in the distribution of electrical power among the population of the NSG as a whole, in addition to the complete lack of power in certain parts of Central Sinai. This lack undoubtedly affects the overall quality of life, including education, health, small businesses and the level of daily interaction of the local population.

## **4.3 THIRD PRIORITY PROBLEMS**

Central Sinai residents, as reflected in the community surveys, suffer from four problems which fall under the third priority category from their perspective. These problems may be as or more serious than others with regard to long-term sustainability, but also require more time, resources and structural changes to resolve. These problems comprise a) the low level of education, b) the decline in population and its dispersion over Central Sinai, c) nomadism and unstable economic

relationships, and, d) fundamental issues of Bedouin recognition of state ownership of the land versus. the assertion of their customary tenure rights.

#### **4.3.1. LOW LEVELS OF EDUCATION**

As we have seen, Illiteracy is prevalent among the Bedouin communities in El Hasana and Nekhl *markezes*, especially among the elderly and females. The small number that is educated only has acquired primary school education in most case and preparatory school in rare cases. In some communities, literacy is almost totally absent among adults and even low among school-age children. The necessary building of human capital is not occurring among a large sector of the population of Central Sinai.

#### **4.3.2 LONG TERM POPULATION DECLINE**

Because of the harsh environmental conditions in Central Sinai on the one hand and the limited opportunities for livelihood afforded by development projects and suitable forms of business investment, Central Sinai has become a push area for population leading to a steady outmigration from the region. Furthermore, development programs targeting Central Sinai have not necessarily targeted population stability and construction of vital services in the region. This has led to an imbalance in the population profile with children, older people and female residents tending to predominate and males of active economic ages tending to leave the region, at least periodically, resulting in a lower standard of living in Central Sinai.

#### **4.3.3. NOMADISM AND ECONOMIC INSTABILITY**

With scarcity of water and inadequate food production, many Bedouin are forced to roam frequently in search of water and grazing lands and resort to a livelihood strategy of multiple and diverse income sources in order to adapt to conditions of scarcity. The result is that the Bedouin of this region live under condition of chronic social and economic instability.

#### **4.3.4. LAND TENURE AND CUSTOMARY RIGHTS CONFLICTS**

Conflicts over tribal land ownership among Central Sinai's inhabitants stem from issues over access and use (including grazing and sub-surface water rights) as well as the right of alienation or transfer of ownership to third parties other than resident tribal members in Central Sinai. These conflicts arise from the prevalent belief that all the land of Sinai is owned by the various Bedouin tribes. This has posed a serious obstacle to investment in the region, since the Bedouin object to allocating lands to investment without either consultation or compensation. Bedouins have tended to demand

official recognition of their customary ownership of the land as their natural inheritance right and one passed down to them from their ancestors. The end result has been a prevailing atmosphere of mistrust between various Bedouin communities and official State organs.

#### **4.4. FOURTH PRIORITY PROBLEMS**

Five other problems have been identified, which can be categorized as a fourth priority status – namely, those that are perhaps less critically pressing for short-term livelihoods but also potentially difficult to address in the short term. These problems include: a) the prevalent tribal spirit that is adverse to total integration in civil life; b) low levels of Bedouin participation in developmental efforts; c) lack of sanitary drainage; d) inadequate non-governmental activities; and e) utilization of wild forage species required for grazing animals.

##### **4.4.1. TRIBAL AND NOMADIC ATTITUDES THAT ARE ADVERSE TO URBAN LIFE**

Essentially, a conflict exists between long established and parochial tribal customs and a more national orientation of citizens called for in a modern, sovereign state. This conflict is hardly unique to Sinai's Bedouins but nevertheless has created intrinsic problems in attempts to integrate the Bedouins into the national mainstream, in part due to geographic isolation and real differences in culture, history and ethnic origin that persist to this day.

These socio-cultural factors have tended to exacerbate the marginalization of the Bedouin, sometimes causing them to retreat to their secluded life away from modern civil society or providing reason to persist in their traditional lifestyle. Two opposing points of view have arisen in this respect: the first is that the existing Bedouin tribal composition should be dismantled, thus pushing the Bedouins to adopt a modern “nationality” instead of the traditional tribal one; the second is that the Bedouin should be dealt with in a manner that preserves their tribal entities and mores, inevitably leading to a widening gap between tribal rules and traditions and the official laws and policies of the State. This is clearly not an easy problem to handle, and it requires a greater effort at dialogue and creative visions to achieve an integration based on a third way that can avoid a conflict between the tribes and the State.

##### **4.4.2. POOR PARTICIPATION IN DEVELOPMENT PROGRAMS**

A number of development programs have been undertaken over the last thirty years in Central Sinai and that have suffered from poor Bedouin participation and lack of sustainability for several complex reasons. Some are related to the nature of the Bedouin culture, which is wary of

integration and interventions or programs originating from outside the bonds of kinship and tribal ties. Other causes arose because of mutual misunderstandings and communication breakdowns between project managers and the Bedouin. There were even undertones of enmity at times, since some Bedouins appeared to be motivated by financial return without concomitant commitment on their part.

However, it is the experience of the LIFE Sinai Program to date that the Central Sinai Bedouin generally are eager to embrace interventions that address perceived pressing needs. The actual implementation of those interventions requires continuous community outreach and participation, and a sense of partnership and ownership. Since the GOE partner of the LIFE Sinai Program is the NSG, a sensitive bridging mechanism has been pursued to garner trust amongst all partners involved. This process has involved considerable time and effort, but is essential to achieve sustainability rather than “quick fixes”.

#### **4.4.3. LACK OF SANITARY DRAINAGE AND SOLID WASTE FACILITIES**

Bedouins suffer from a lack of sanitary drainage and waste disposal in towns and other settlements. Such a lack could well have environmental consequences in the foreseeable future – especially in more urban areas such as El Hasana. The in-migration of former rural residents, together with their livestock, to larger settlements has created a foraging problem relating to solid wastes, as well the increased need for sanitary disposal systems. This obviously has impending public health ramifications.

#### **4.4.4. THE POOR STATE OF NGO ACTIVITIES IN CENTRAL SINAI**

Inadequate non-governmental organizational development and programs in Central Sinai have been chronic weaknesses of the region. The number of NGOs is small, in part because the Bedouin tribal support system provides an umbrella for socio-cultural interaction and economic exchange, supplying a means of dispute resolution directly and according to well-established and stable mores. Thus, in their view, there is no pressing need to adopt the concept of civil society and its framework of citizen interaction vis-à-vis the State. This can create certain difficulties, especially in Central Sinai, when development programs, depending on local participation beyond the narrow tribal concept, are introduced. The few existing non-governmental organizations have tended to be captive to tribal traditions and clan affiliations.

#### **4.4.5. DESERTIFICATION AND DISAPPEARANCE OF INDIGENOUS FLORA AND FAUNA**

The scarcity of rainfall generally and the long-standing drought (now seven to eleven years' duration, depending upon different experts) has led to a spreading desertification in the Central area of Sinai, which in turn has led to the erosion and degradation of the natural vegetation necessary for grazing livestock. In turn, this has resulted in increasing livelihood difficulties for the Bedouins, pushing them to further roaming and economic instability, and leading both to a reduction in the vital animal assets on which these nomads depend, as well as longer-term adverse impacts on biodiversity. Several of the communities surveyed reported the disappearance of species and reduced ranges of both endemic flora and fauna.

## V. RECOMMENDATIONS TO THE LIFE SINAI PROGRAM FOR CENTRAL SINAI DEVELOPMENT

Based on the above discussion of the social problems and priorities of Central Sinai, we can determine the high priority intervention needs at the level of infrastructure, public services, health, education and development of local institutions. The above discussion has revealed formidable existing gaps in meeting the needs of the Central Sinai population. A careful analysis of these gaps has led the Assessment Team to specific recommendations which can be implemented through certain timely programs.

### 5.1 BASIC AND COMMUNITY INFRASTRUCTURE NEEDS

Based on the problems with the first priority, there are three urgent needs that fall into the infrastructure field, which are:

- providing clean water for human consumption and agriculture
- consolidating road networks, and
- developing transport utilities.

#### 5.1.1. PROVISION OF WATER FOR HUMAN CONSUMPTION AND AGRICULTURE

Providing water for human consumption and agriculture for Central Sinai's inhabitants depends fundamentally on, first, prudent groundwater exploitation and management and, secondly, rainfall and torrential rain capture. Since well water is insufficient to satisfy the needs of the people, they have traditionally constructed cement or rock water tanks for the accumulation of rain water along with dams to retain stormwater runoff. This has provided Central Sinai inhabitants until the recent past with enough water for their sheep and desert crops. The cement and rock water tanks (*haraba*) are numerous and widespread within the communities and around their outskirts. However, these rainwater catchment devices are obviously useless if there is no rain or runoff to replenish them. Scarcity or absence of rain represents a major problem to all Bedouin communities. It seems there is some unanimity in all the interviewed communities that the recent years and especially the years since 1995 or 1997 have been the worst in scarcity of rain and torrents within living memory, at least.

No rain, for instance, has fallen on the Sheik Hameed and Masajid communities since 2003. These communities have no alternatives other than ground water extraction from a deep well three

kilometers away. A worse situation is when, even where wells do exist, they are not able to provide permanent sources of water all year round. The Moweilah well, for instance, serves its community most of the year but fails in the summer months, especially July and August, when it tends to dry up. The local people then resort to water tank vehicles which bring water from outside the community, as was the case for the Abu Qiran community interviewed in this assessment. Nevertheless, the water the inhabitants do obtain is not often sufficient for both drinking and agriculture. Complicating this situation is the fact that local residents may not like the desalinated water provided by the local council because of its taste, which they regard as non-potable.



*Improved Bedouin Housing in Central Sinai*

As a result, some keep roaming among the different rock and cement tanks searching for what water remains there for drinking and raising their sheep. Hence, Central Sinai's inhabitants need urgent solutions to address the water shortage and raise the allocation of water to these communities' inhabitants, essentially to double the current amount which is 9,520m<sup>3</sup>/day in order to reach 19,040m<sup>3</sup>/day. This could be done through building a series of small desalination plants, adopting a decentralized approach to serving the small Bedouins communities instead of the old centralized method of large desalination plants serving large areas.

While the new plants are being built, daily water allocations can be transported by water tank vehicles to the communities most deprived of water. This is a necessary, if possibly transitory, step to be undertaken, given the existing demands. If drought conditions continue for any length of time, then many of the more isolated and vulnerable settlements will probably cease to exist. The key is to identify those areas where funding commitment relates to long term sustainability.

### **5.2.1. WASTEWATER NETWORK DEVELOPMENT**

Water scarcity in the Bedouin communities in El Hasana and Nekhl *markezes* has more or less led to the absence of sanitation and sewage networks in this region. Some homes have water closets which are not used because of the lack of water. Hence the inhabitants resort to the old habits of defecating in the open at night—habits which have continued to exist since their homes are scattered and well-distanced from each other and the area they live in is rugged with many mounds and depressions of terrain. Nevertheless, the Bedouins are increasingly in need of sanitary drainage networks for reasons of hygiene and improving the quality of their lives.

### **5.2.2. CONSOLIDATING ROAD NETWORKS AMONG BEDOUINS COMMUNITIES**

Despite the existence of a paved road network which connects some communities to the neighboring regions, the greater majority of the communities under study suffers one way or another from difficulties in using the existing road network. Some do not have a paved road leading to the network and hence to other communities. So they use their dirt road tracks over long distances, such as in Houdh in Al Gayfa using Khariza road, Abu Erqan, Rouwessat and Motamatni communities. Some communities have some paved roads but which are not completed, as in Al Ein Um Al Ramlah, Khariza Arif Al Naqah, Beir Beda, Al Ghayasseen, Abu Qerian and Al Mangam communities.

Paved or unpaved roads are threatened by the encroachment of sand dunes that can close some of the roads— a natural phenomenon considering the desert nature of the area in the whole of North Sinai. Wadi Quseima and Wadi Al Mangam are two communities suffering the most from this problem, which is often accompanied by sand-carrying winds coming from B'ir Al Abd. The distance that separates these communities from urban areas has created a greater internal bond within some of them who depend on internal paved roads, as in Mowelah, Wadi Quseima, Sheikh Hamid and Masajid communities.

Consequently, the Central Sinai area needs a consolidation of its road networks connecting the desert communities through repair, paving and building new roads with a length of around 100 km to connect the isolated communities to the other communities and major towns.

### 5.2.3. DEVELOPING TRANSPORT UTILITIES

An adequate transport network requires a good road network. The greater majority of the communities suffer, as we have seen, from an obvious lack of a good internal road network connecting the different communities. This has a number of consequences, most important of which is the difficulty the inhabitants have in finding suitable forms of transport. Finding one is usually confined to certain places and times. Concerning time, the Al Ghayasseen and Quseima inhabitants cannot find a suitable means of transport in the afternoon. Bedouins taking trips outside the community could wait for hours for a means of transport and end up sometimes cancelling the trip or camping out overnight. When transport is available at some distance, they may resort to walking long distances (Abu Qerian, Sheik Hamid, Masjid, and Rouwessat), or using donkey carts to carry them to the main road (Mowelah), or huddle in the box of a lorry or a pickup vehicle. In some communities, roads are rare or absent altogether since the road network has not yet covered their area, as in Khariza Arif Al Naqah, and Beir Beda. Feelings of dissatisfaction and disappointment of the inhabitants embody the degree of suffering they experience in their attempts to find an adequate means of transportation, which adds to their isolation as well as the difficulty of obtaining services and commodities that are lacking in their communities.

Under the LIFE Sinai Program, a start has been made to provide a skeletal public transport system to serve the major arteries within Central Sinai, as well as to cater to the needs of school children, teachers and other community service providers in more populous areas. Hopefully, this skeletal service eventually will be expanded to other settlements, as well as encourage the provision of private ancillary transport services from minor hubs to more outlying communities. Unfortunately, in reality, a public bus system cannot reach more isolated settlements served by non-paved roads.

Unless secondary transport services are heavily subsidized, financial reality dictates that most isolated settlements will remain without any scheduled transport service. As and when commercial opportunities arise for private sector initiatives to step in, some of these shortfalls may be reduced. The stark reality is that it is neither feasible nor sustainable in the long term to adequately serve the needs of the existing settlement pattern in Central Sinai. However, in no way does this detract the need to explore innovative means to expand the system through public-private partnerships.

## **5.3. PUBLIC SERVICE NEEDS**

### **5.3.1. SUPPORTING YOUTH CENTERS**

To activate development efforts serving the Bedouins in Central Sinai, interest should be directed towards young men and women through establishing social centers for cultural, sports and entertainment activities, in addition to educational and vocational services that help them acquire relevant work skills and become better prepared for the current world. It is suggested, in this respect, that 10 youth centers be set up inside the Bedouins communities to attract the young, in order to augment the few centers currently available. In the absence of such activities, the young may be attracted to growing narcotic plants and participate in their trafficking under the lure of quick but illegal profits, leaving behind productive work, education and integration into the modern society. Hence, youth centers can play a crucial role to help stimulate development efforts and to make better utilization of their time.

### **5.3.2. USING SOLAR POWER**

Most of the communities studied suffer a lack of electrical power, which, when available, is not reliable since it is generated by facilities working only for a few hours per day. In Khariza Arif Al Naqah, and Abu Qerian, the generators run for 4-6 hours daily after sunset. Some communities lack electricity altogether, so people use firewood in their homes as in B'ir Beda and Al Ghayasseen, although the electricity cables are only 300 meters away. Some communities were able to get electricity from the public network in areas such as Mouwelah, Houdh in Al Gaya using Charisa road, Al Ein Um Al Ramah, Umm Sheehan, and Hammed Al Massaged. However, the current is weak and is interrupted very frequently when weather conditions are adverse. Electricity is available in certain areas but not others, and the wirings are made by the inhabitants from landlines in a random pattern, creating several problems. In Nekhl, the electricity cables are there but in bad condition and sometimes lack efficient wiring. In addition, the service covers only 20% of the desert area of this community.

Pilot solar activities, which were indicated as a potential fast-track intervention in LIFE Sinai's First Year Preliminary Work Plan, should be further explored. Since Sinai is composed of vast desert areas exposed to ample sunlight for long hours each day over for at least nine months of the year, it should be feasible to make use of clean and renewable solar energy for purposes ranging from lighting to small electric power units for workshops, cooking and water distillation.

## 5.4. HEALTH NEEDS

### 5.4.1. DEVELOPMENT HEALTH CARE

Health units in Central Sinai communities are rare. Most of these communities rely upon those in the towns of El Hasana or Quseima, which may be at quite a distance. The problem is exacerbated due to the lack of roads connecting these communities to the health unit towns, forcing the inhabitants to use traditional remedies encouraged by the availability of herbal medicines in the local environment. Most of the health units that were established in these communities have been closed and are currently not in use, as in Khariza Arifat Al Naqah. The Nekhl region communities lack any such units and the inhabitants have to travel to the main town to be provided service in the public hospital. The problem is, of course, worse in communities in areas farther from the main towns, such as the Naqab people who live in greater isolation with no adequate means of transportation. The people there suffer stings and bites from scorpions, snakes and rodents with resulting serious health complications.

The inhabitants of these areas in Central Sinai in general need more and better health services. One approach of better serving outlying communities is through mobile health units that can cover larger areas. Data on health services in the settlements are inadequate; however, it is safe to say that these services are most probably very limited at present.

The alternative approach is to provide permanent facilities in areas of need. It is estimated that this would entail:

- Establishment of new health units: a total of 106 new units, each serving up to 300 people.
- Increasing the number of physicians: commissioning an additional 301 physicians so that the ratio of physician per person becomes 1:100.
- Increasing the number of nurses by adding 576 new nurses assuming that a nurse serves 50 people.
- Adding extra health unit beds: adding 99 beds so each will serve 300 people.
- Building and equipping mobile medical clinics and ambulances in addition to the necessary medical equipment and other needs.

Obviously, this is an enormous undertaking, and one that would require common sense to dictate priorities to determine location and need. As a general guideline, it would appear to be more

financially prudent to provide health service through selected mobile services, augmented by limited infrastructural interventions.

## **5.5. EDUCATIONAL NEEDS**

### **5.5.1. NEW LITERACY CLASSES**

Of the 8,860 adults in Central Sinai categorized as illiterate, only 5% are enrolled in literacy classes. For all illiterate adults to be served would require over 600 classes rather than the 30 classes that exist. Obviously, only a portion of this population may want to enroll. It is probable, however, that the latent demand far exceeds the current supply of classes. As such, additional initiatives in this area need to be pursued for selected settlements, using a “train the trainers” approach.

### **5.5.2. NEW PUBLIC EDUCATION CLASSES**

Most communities in Central Sinai suffer from a lack of schools for their children. Even when such schools exist, they are for only some grades of the primary stage, as is the case in B’ir Beda where there are only three classes/grades. In Abu Qaryan, Ein and Um Ramlah, the nearest school of any level is over 7 kilometers away. The distances that the pupils have to go to reach their nearest schools have played a role in their decision to relinquish their education altogether. Another factor in obstructing educational efforts is that some Bedouins prefer teachers from their area or tribe who are aware of their traditions and habits. Also, they may prefer to engage their daughters in shepherding instead of sending them to school, as in Quseima.

In Nekhl Markez, it can be said that a majority of school age children suffer from an overall lack of adequate educational institutions and the means to get there. Currently, the Markez has three primary level schools, at Reed, Qua’h and Naqab. In the latter, the school was established by the community’s own efforts and provides only three classes/grades. In Taweel Al Hameed, approximately 100 school-age children do not go to any school because of the problems of distance and transportation.

Providing schools for all the communities simply is not feasible because of the small population in any individual community. Instead, schools of different levels should serve varying groups of communities. Although public education is a pressing issue, the level and scope of the problem places it beyond the limited duration and funding of the LIFE Sinai Program.

## 5.6. COMMUNITY LIVELIHOODS

Several measures can be undertaken to improve the standard of living of the Bedouins population in the local communities:

- To address the rising rate of poverty in communities, compounded by rampant illiteracy and harsh living conditions, training and job opportunities are required urgently – especially for youths.
- Central Sinai inhabitants need commercial markets to be able to buy their basic needs of foods and to activate trade and local economic growth. Currently feeder markets are undeveloped and value chains are very undeveloped.
- There is a need for activating small projects and providing loans to individuals, in addition to qualifying them to start such investment projects.
- Women, especially, need technical and funding support to improve their families' livelihoods. A grant program through an existing community development association addressing the production and marketing of Bedouin handicrafts would be an obvious first step.
- There is a need, whenever it becomes feasible, to help tourism to prosper in communities through tourist projects here in which Bedouins participate in the development, operation and ownership.
- There is a need for awareness campaigns and training programs to enhance the competitive capabilities of the young in the work market in addition to qualifying them to do social work and establish non-governmental organizations to serve the civil society.

The Assessment Team recognizes that these recommendations are very ambitious and probably unachievable over the short term and certainly within the period of the LIFE Sinai Program.

Moreover, a number of the recommendations assume that the current dispersed settlement pattern of Bedouin communities in Central Sinai will not adapt their spatial patterns in accordance with environmental changes. We recognize that, within the foreseeable future, many of these settlements are not going to be viable and that, for human settlement in Central Sinai's harsh environment to continue, there will need to be fundamental changes in both settlement patterns and livelihoods. These, in turn, will require equally fundamental changes in the behavior, mores and even social structure of the more traditional Bedouin communities.



*Improved Infrastructure in a Central Sinai Village*

For this reason, we call for the establishment of a long-term and comprehensive dialogue with the Central Sinai Bedouin community to address questions of social integration into the Egyptian polity, gradual and assisted changes in settlements, livelihoods and use of community services with the goal of improving the survival and quality of life of the Bedouin while retaining as much as possible of their traditional family structure and value system that can be compatible with modern life.

## APPENDICES

# APPENDIX I: FIELD SURVEY GUIDELINES

## LIFE Sinai Program

### Field Survey Guidelines

- 1- Settlement group name
- 2- Date of meeting:
- 3- Attendance
  - a. Women's group
  - b. Men's group
- 4- Description of the road to the settlement group
  - a. Asphaltic
  - b. Trail
  - c. Tough Trail
- 5- Distance from Al-Arish
- 6- Distance from the Markaz center
- 7- Number of Families in the settlement group
- 8- Literacy status (%)
  - a. Illiterate
  - b. Hardly read and write
  - c. Educated
- 9- Mosque
  - a. Distance to the nearest mosque
  - b. Is there an Imam usually in the mosque?
  - c. Mosque infrastructure condition
- 10- Number and Type of Houses
- 11- Health Unit
  - a. Number of health units
  - b. Presence of doctors and/or nurses
  - c. Distant to the nearest health unit
- 12- Schools
  - a. Number and level of schools
- 13- Other Institutions
  - a. Type of institution
  - b. Description
- 14- Electricity
  - a. Is there any public electricity?
  - b. Source of other electrical power

15- Number and Type of Stores

16- Tribe

- a. Name of the Tribe
- b. Sheikh name

17- Local Community leaders

- a. Name of the community leader(s)

18- Available water resources

a. Flash Floods

- i. Number of flash floods during 2008
- ii. Number of flash floods to date this year
- iii. Are flash floods are very common (average number per year)?

b. Rains

- i. Number of rain events last year
- ii. Number of Rain events this year
- iii. Is rainfall common in this area (average number of rainy days per year)?

c. Groundwater Wells

i. Deep Wells

- 1. Characteristics
- 2. Dependability and withdrawal

ii. Shallow Wells

- 1. Characteristics
- 2. Dependency and withdrawal

d. Water Diversion Structures (Harabat)

i. Romanic Type (Rock Type)

- 1. Is water available for the whole year?
- 2. How much water is available?

ii. Concrete Type (Rock Type)

- 1. Is water available for the whole year?
- 2. How much water is available?

e. Dams

- i. Number of dams
- ii. Type of dams

19- Water Usage

- a. Drinking
- b. Agriculture
- c. Domestic use

20- Land Resources and Uses

- a. General land uses
- b. Existing Cultivation
  - i. Type
  - ii. Pattern

- iii. Area
  - c. Wild Plants
    - i. Current use
    - ii. General and other use of wild plants
  - d. Wildlife
    - i. Types and frequency of observation
- 21- Social Characteristics
- a. Average number of household
  - b. Type of families
    - i. Compound families
    - ii. Nucleus families
    - iii. Expandable families
    - iv. Woman head of household
  - c. Family Growth rate
    - i. Number of birth cases
    - ii. Mortality rate
  - d. Expansion system for the family
  - e. Number of persons with types of disabilities
  - f. Inward and outward migration and travel patterns
    - i. Number and frequency
    - ii. Purpose
    - iii. Destinations
  - g. Original Home
  - h. Duration of residency in the current place
  - i. Livelihood
  - j. Income resources
  - k. Tribal series
  - l. Housing system and conditions
- 22- Business activities
- a. Agriculture
    - i. Type
  - b. Grazing
    - i. Number of livestock
    - ii. Type of livestock
  - c. Others
  - d. Private sector
    - i. Number of stores
    - ii. number of productive enterprises
    - iii. Financial resources
    - iv. Markets
-

1. Nearest market
2. Market name
3. Distance
- v. Public Sector
  1. Number of employees
  2. Type of employment (labor, office work,..etc)

23- Infrastructures

- a. Transportation
  - i. Availability
  - ii. Routes
- b. Electricity
  - i. Availability
- c. Fuel
  - i. Availability
  - ii. Cost
- d. Solid waste
  - i. Collection
  - ii. Management

24- Features of the daily routine for women

25- Community needs assessment

- a. Crisis
  - i. Exposure to crisis
  - ii. Crisis seasons
  - iii. Reasons for the crisis
  - iv. Approach to cope with the crisis
- b. Nutrition and dietary habits
  - i. Common type of food
  - ii. Frequency of food consumption each month
    1. Meat
    2. Fruits
    3. Vegetables
    4. Fish
    5. Legumes
    6. Chicken
- c. Traditional customs
  - i. Hajj
  - ii. Omra
  - iii. Marriage
  - iv. Others
- d. Transportation
  - i. What is the availability of transportation for the settlement group?

1. Individuals
  2. Community
  3. Transport of crops and livestock
  4. Satisfaction with existing transportation
- e. Major Problems
- i. Description
  - ii. Solution proposals
  - iii. Main Problems and Proposed Solution

## ATTACHMENTS

**ATTACHMENT 1: ASSESSMENT TEAM FINDINGS  
FROM SURVEYS, FOCUS GROUPS AND  
OBSERVATIONS**

**ATTACHMENT 2: PHOTOGRAPHIC RECORD OF  
SURVEYED SETTLEMENTS**

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