

# **Liwa Oasis: an overview**

## **Oazy Liwa: ogólna charakterystyka**

### **Introduction**

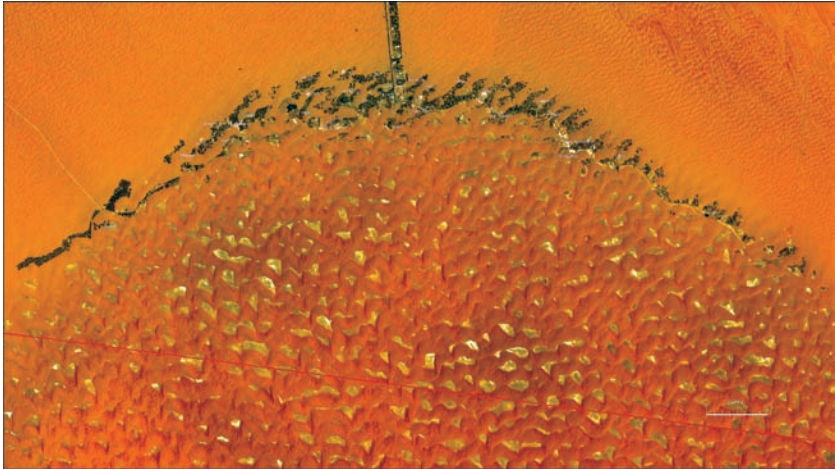
While far from the population centres of modern United Arab Emirates (UAE), the Liwa Oasis region has significant historical, economic and political importance. Liwa is located in the south-central area of the UAE (Fig. 1). Politically, Liwa is under the governance of the Western Region of the Emirate of Abu Dhabi. Liwa is situated approximately 100 km south of the Arabian Gulf and approximately 25 km north of the border with Saudi Arabia. It lies on the north-eastern boundary of the Rub Al Khali, or the Empty Quarter, the largest continuous sand desert in the world. The oasis is in the form of an arch and covers an area of 3,694 km<sup>2</sup> [El-Sayed 2000]. The climate is extremely dry, although there is a lack of recorded data; rainfall is estimated to be less than 50 mm a year [Glennie 1998]. Temperatures range from 41 to 50 degrees Celsius in the summer and lower to reach 13 degrees Celsius in the winter [El-Sayed 2000].

## Topography

Moving south from the coastal plains of the Arabian Gulf, there is a gradual rise in elevation, from sea level to approximately 50 metres above sea level in the sabkah plains [United Arab Emirates University 1993]. These sabkah plains are flat inter-dune areas covered in fluvial gravels [El-Sayed 2000] from which the dunes rise above. The dunes increase in size southward changing from linear and transverse dunes into the complex and large mega-barchanoid dunes characteristic of the Liwa region. They reach as high as 100 metres and attain a width of up to 500 metres [Wood 2011]. These mega-dunes dominate the landscape south from Liwa to the Saudi border providing a spectacular vista. Mega-barchans are a complex of dunes superimposed on top of other dunes, the mechanics of which are still little understood [Cooke et al. 1993]. The Shamal winds which blow across the Arabian Gulf from the NNW are responsible for shaping these dunes [Juyal et al. 1998]. Normally, these winds average around 10 knots, but can increase to 22 knots between March and August. This field of massive dunes begins at the Liwa region and continues south beyond the Saudi border [El-Sayed 2000]. The aerial photo in Figure 2 shows how the mega-barchans begin on the southern edge of the Liwa Oasis and extend southward across the border with Saudi Arabia (red line).

Interspersed between, and surrounded by these mega-dunes are the sabkah plains. These plains develop due to the dynamic interaction with the water table creating a level from which aeolian deflation is restricted [Wood, Imes 1995; Juyal et al. 1998; El-Sayed 2000]. These flat plains have salt-encrusted surfaces. Surface water collected in ponds at low-lying areas evaporates leaving salt crystals behind. Salt encrusting is increased as pore waters drawn from saline groundwater reach the surface and evaporate [El-Sayed 2000].

Being closer to the groundwater, within reach of the date palms' roots, the sabkah plains are used for agriculture. The aquifer was last recharged approximately 5,000 to 9,000 years BP. Recent measurements indicate that there is no current recharge occurring



Źródło/Source: NASA World Wind screenshot, public domain.

**Figure 2.** Liwa Oasis and mega-barchans

**Rycina 2.** Oazy Liwa i megabarchany

[Wood, Imes 2003]. As a result of a declining water table, the government is supplementing the water supply with desalinated water. It has been hypothesized that the last recharge events had their origins in water flowing from the Red Sea into the Indian Ocean and then taken up by the monsoons which then deposited precipitation in the Liwa region [Wood 2011]. In their study, Elmahdy and Mohamed [2015] claim that the source for groundwater in Liwa comes from the Oman Mountains in the east and the Hegaz Mountains in Saudi Arabia.

There are two oilfields close to the Liwa Oasis region, one just south and the other just north of the eastern edge with another approximately 20 km further north. To the north-east of the oasis there are another two oilfields. The oilfield to the south is very close to the Saudi border which is disputed and is still being negotiated [The Economist Intelligence Unit 2007]. Thus, populating this region allows the UAE to have a superior claim to the territory. These and offshore oilfields are the primary source of income for the Emirate of Abu Dhabi and for the country.

## History

The region of the Liwa Oasis carries important historical weight. To the end of the 18<sup>th</sup> century this region was occupied by the Bani Yas tribe. The Bani Yas are a confederation of tribes that eventually migrated to Abu Dhabi and formed their capital there. In 1796, Sheikh Shakbut bin Dhiab, the head of the Bani Yas moved to the settlement of Abu Dhabi [Heard-Bey 2007] after the accidental discovery of freshwater on Abu Dhabi Island [Rugh 2007]. The ruling family of Abu Dhabi, the Al Nahyans, trace their ancestry to this group of nomadic Bedouin who had their origins in the Najd situated in the interior of the Arabian Peninsula [ibidem]. In the mid-1800s, the Bu Falasa and Rumsha parts of the Bani Yas disheartened over the ascension of Khalifa as the ruler of the Bani Yas, splintered off and moved northward to settle in Dubai. From this group the Maktoums emerged, who are the ruling family of Dubai today [ibidem].

Although the Bedouin are most often thought of as desert dwellers engaged in nomadic pastoralism, herding goats and camels, they were also engaged in two other economic endeavours. The first of these economic activities was the farming of date palms. Along with camel milk, dates formed the mainstay of the Bedouin diet. The water in the aquifer under Liwa is brackish due to the presence of salts in the soils; however, the date palms are resistant to the higher saline levels. Small settlements of approximately 20 houses were dotted along the oasis near the plantations located on the sabkha plains, where the palm roots had easy access to the groundwater. Access to the limited supply of sweet water found in the dunes determined the location and size of the settlements. Several remnants of the original homes are still present and some fortifications still exist [Heard-Bey 2007].

Date palms are harvested between July and September. This is a labour intensive process and many Bedouin come in from the desert to assist. This requires arrangements to be made to have others watch the camels and water them. In some cases contracts are arranged between different tribes to ensure the maintenance of the camels. In order to gain cash for trade, the Bedouin would also leave

the desert and travel to the coast to engage in the pearling industry. This also necessitated a contractual arrangement to be made for others to take care of the camels [idem 2004, 2007]. Currently, the Liwa region is productive in date farming and other agricultural activities.

## Economy

Date farming is still prevalent in the region; satellite photos show how plantations have spread to occupy the inter-dune flats. However, the villages today are built on top of the dunes overlooking the farms. In addition to date palms, hardy grasses are grown for fodder. In one farm visited by the author it was noted that the grasses were grown underneath the date palms in an intertillage method. Most of these villages are purely residential and are usually not occupied year round. There are 39 villages spread out along the highway that covers the entire region and links the oasis to three major highways running northerly to the coast. Most villages have a mosque and some have a small store, usually adjacent to the mosque. Other forms of agriculture are being practised, most notably fruits and vegetables grown in greenhouses. For the most part these farms are supported through government subsidies [Al Qaydi, Arthur 2008].

The majority of economic activity, other than farming which accounts for 73% of the employment, occurs in the central town of Mezaira. Some industrial activity is situated just south of the city and there are many retail and service establishments within the city. A large hospital in Mezaira services the region, as do many government offices located there. Several hotels provide the tourists with a true desert experience, taking advantage of the large megabarchans. A big new hotel property has been built on the eastern edge of the oasis and is situated deep in the desert. Constructed on a sabkha plain, it affords stunning views welcoming the tourist as giant dunes frame the plain. The week-long Date Festival which occurs in mid-July is designed to bring the most modern farming methods to the date farmers. However, it is also a cultural event highlighting the region's history and culture. This festival is hoped to boost tourism in the region [*Liwa Date Festival...* 2012].

Employment in the oil industry is only 8% at the moment, but there are plans to bring the Shah oilfield on line in the year 2030 [Oxford Business Group 2010]. The government of Abu Dhabi has made plans for growth in the region that should triple its size.

## Population and Government

Currently, the population of the region is 20,196, but as mentioned above, the government expansion plans are predicting a growth to 65,000 by 2030. Part of this growth will be encouraged by the movement of the administrative centre to this region [ibidem]. New villages have been built across the entire arch of the oasis mostly consisting of residential units and a mosque. Several villages have schools, but due to the low population some of these schools have been temporarily closed. These villages are now located on top of the dunes saving the sabkah plains for agricultural use. Along the highway there are small businesses, either general stores, restaurants, or agricultural supplies. As part of the government agricultural subsidies, the government provides training, loans, pesticides, and assistance with drilling wells. In return, the government buys the produce and markets it within the country [Arthur, Al Qaydi 2010]. These government offices, warehouses and collection stations are also located directly off the highway.

The Western Region of Abu Dhabi, of which the Liwa Oasis is a part, is the largest land area in the UAE, yet the least populated. The Abu Dhabi government sees this area as an opportunity to divert population growth from the northern emirates which have been rapidly urbanized.

The political importance of this region arises from its being the historical homeland of the Abu Dhabi ruling family. The Shiekh of Abu Dhabi is also the President of the country by virtue of Abu Dhabi's oil wealth supporting the government. Furthermore, an ongoing dispute over the southern border of the UAE has yet to be ratified. This dispute began in the mid-1950s when the Saudis occupied the Buraimi Oasis in the west of what was the Trucial

States, a British protectorate. With the aid of the British, the Saudis were driven out and negotiations began to resolve the conflict diplomatically. In 1974 an agreement was reached, but never published, with the Saudis that gave them control over the Shaybah oilfield straddling the UAE border. While relationships with Saudi Arabia remain cordial, both being members of OPEC and the GCC (Gulf Coast Council), this border, along with a stretch of land along the western coast of the Gulf, remain under dispute.

## Conclusion

The Liwa Oasis suffers from many disadvantages, a harsh climate, difficult terrain, and remoteness from major population centres. Despite these difficulties, Liwa retains not only a historical and cultural significance, but a current political and economic importance. As the governments' plans unfold, it is expected that the region will see significant growth. However, as the settlement of the oasis has always been seasonal and temporary, it may prove difficult to attract families to take up permanent residence. The oasis is certainly an area which deserves more in-depth research to understand the many dynamics affecting development. It is hoped that this collection of articles will spur others to investigate the region.

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