CHAPTER 2

MALDIVES ISLANDS - THE REGION

This chapter deals with the Physical and Ecological Milieu of the region under study; the Maldives islands, present land use, the cultural context of the islands through a description of regional settlement history in an archaeological point of view with the help of the evidence of explorations and excavations carried out on the island by the previous investigators. The first part of this chapter gives a summary of the physical potentials of Maldives islands that motivated the settlement developments. Detailed descriptions of topography, hydrography, geology and soils highlight the possibilities of how the natural environment affects the sustainability of human settlements in the research area.

The second part includes a brief history of regional settlement derived from the archaeological research conducted over the period of time. The modern history indicates the continuity of the regional settlements after the Pre Islamic and medieval period.

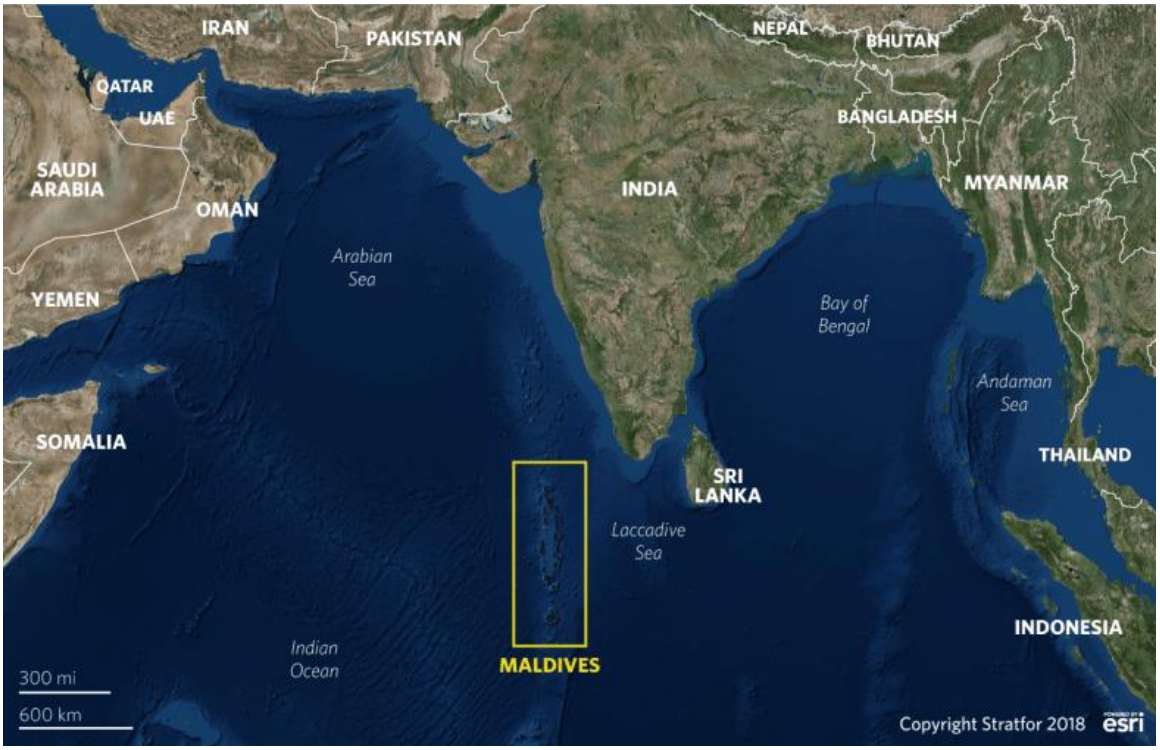
2.1 The Region

The Maldives is a large archipelago consists of 1190 coral islands, scattering over 860 km in a north-south direction in the Indian Ocean and covering an area of 90,000 sq km. About 202 of these islands are inhabited and are grouped into 26 natural atolls and 19 atolls for administrative functions (Map 2.1). These atolls are located on the top of an undersea mountain range known as Laccadive-Chagos Ridge, which broadens into the Central Indian Ocean from the south-west coast of the Indian subcontinent. The majority of the atolls consist of a ring-shaped live coral reef supporting several islands. Most of the islands are undersized with varying size between 0.5 and 5 sq. km.

Map 2.1. Map of Maldives Islands

2.2 Physiography

The Maldivian archipelago is positioned in the equatorial Indian Ocean, south-west of India (Map 2.2). It extends in a north- south direction between 7° 06′ N and 0° 42′ S for more than 800 km. At the north and south margins the atolls lie separately with an inner basin having depths ranging from more than 500 m in the north to 300-400 m in the south. Double chain if atolls are present in the central sector of the Maldive Ridge placed between 5° 30′ N and 2°30′ N.



Map 2.2 Location of Maldives Islands

Credit: Google Earth

The Maldives archipelago is made up of 22 circular or elongated shaped atolls varying sizes from a few kilometres to ten kms .There are 1190 small low lying shoal islands, covering an area of 298km^2 of land surface with maximum elevation of about five metres above sea level .Every atoll is created by a marginal rim adjoining a lagoon generally less than 50-60 m deep, while in the southern part some reach depths of more than 80 m.

The southern atolls are encircled by barrier reefs fortifying them against the frequently visited violent waves and severe storms in the islands. However, the north t atolls are not protected and thus several places just awash. Every enclosing reef has deep openings which forms suitable passageway permitting ingress and egress to vessels and boats between atolls. Several will allow the large ships also and others are convoluted and risk. The sea is free from storms within the atolls and safe anchorage is possible with bottom of the coral and sand. Another feature is that it is possible to

navigate through these passages amongst the islands and reefs without anxiety as the coral dangers are visible from the masthead at some distance for the reason that of the clarity of the sea water and the whiteness of the coral.

2.3 Climate and Rainfall

The Maldives is characterized by the south-west monsoon (wet season) starts from April to November (with a mean wind speed of 5.0m/s) and the north-east monsoon (dry season) continues from November to March with a mean wind speed of 4.8m/s two monsoon periods. Humidity in these islands is high and having fluctuating temperature ranging between 24°C and 30°C. The moderately this freshwater lens were the source of potable waters for Maldivians historically which is affected by seasonal changes in rainfall patterns. (Bailey *et al.* 2014).

The southern atolls receive more rainfall with an annual average of 3050 mm, while in the northern atolls it is only 1520 mm. The south-west monsoon carries heavy rain to the whole archipelago and extends from the end of April to the end of September. The rainfall falls considerably during the north-east monsoon season which prevails from December to March. Northern group of islands experiences periods of drought. Gales are unusual and cyclones are very rare in Maldives islands since it is outside the main area of tropical cyclones. However, strong winds and storms may hit the archipelago causing severe damage throughout the south-west monsoon season.

2.4 Soils

Geologically, the soils of the Maldives are young and consist of considerable amounts of the unweathered coral parent material, coral rock and sand. Soils are coarse in texture, and low in depth with a brown top layer followed by a transition layer on top of the underlying parent material of coral reef limestone. Fine deep soils are found with clay deposits in some low-lying areas and areas subjected to noteworthy mechanical breakdown from human activity. In *Kulhi*, which is a lagoon environment, clay accumulation may be seen formed from marine and biological sources over a long period of time. The presence of the thick hard- pan layer cemented with calcium carbonate in many places prevents root action of plants except large trees. The soils

are characterised with high porosity and high infiltration rates which results to the poor water-holding capacity of the soil (MFAMR 1995).

The soils are largely alkaline with pH values between 8.0 and 8.8 except in depressions and lagoons where higher levels of humus are present. The higher alkalinity is mainly due to the presence of excess calcium. The soils are basically poor characterised with scarcity in nitrogenous nutrients, potassium and several micronutrients predominantly iron, manganese and zinc.

2.5 Water resources

Apart from a few wetlands or freshwater lakes, there are no rivers or streams in any of the islands of Maldives. The freshwater resources of these islands subsist as groundwater in basal aquifers, by and large unconfined in nature below sea level in the shape of a thin fresh water lens. It is mentioned as early as 6th century CE by Cosmas (Maloney 2013) that the majority of the travellers were fascinated to these islands by their fresh water resources. Traditionally, the Maldivians have been reliant on groundwater from shallow well dug in the ground. Surface freshwater is usually deficient all through the archipelago in several of the islands in the northern and southern atolls characterised with swampy areas, shallow freshwater lagoons, and some fresh or brackish water ponds. Freshwater pond in Fuvahmulah serves as a noteworthy reservoir for supply of freshwater.

2.6 Biodiversity

The natural environment of the Maldives offers rich growth of tropical trees and shrub. Salinity, the extreme calcareous nature of soils and the salt-laden winds are the grounds for the harsh environmental surroundings which is why the number of species in the Maldives, either native or naturalised and is limited.

Physiographically ,and in general, the Maldives islands can be divided into three zones namely, i) the foreshore or lower beach, ii) the beach crest (beach top) and iii) the inner island. The foreshore can be divided further into high tide level and and high-storm levels. The former is usually situated at an elevation of 0.5 m above mean sea level and the latter is situated ahead of the reach of normal tides at about 0.8 to 0.9 m. The average elevation of beach crest is about 1.2 and the inner islands are at about 1.45 m above mean sea level (Morner *et al*., 2004).

The foreshore or lower beach zone is entirely exposed to wave action, wind and salt spray. This comprises the beach area amidst the high tide line and the beach crest and unstable in nature. This is composed largely of coarse coral sand in the lower portion and gravel. This harsh environmental condition does not support vegetation. However, occasional creeping sand-binders such as *Ipomoea littoralis* and *I. biloba* alongside with *Launaea pinnatifida* and *Portulaca alata* in the upper portion is possible. Similarly, the beach crest is also exposed to winds and salt spray and its lower margin is often inundated by seawater throughout spring tides. The beach crest may perhaps spread about 5 to 20 m inland. This is responsible for the suitable environment for strand plant communities including a distinct association of trees and shrubs and a few sand-binding creepers and herbaceous plants. Noteworthy among them is the *Scaevola taccada* – the most common scrub community found in Maldives islands and acts as an effective wind break. The others are floraare *Tournefortia argentina* which is a dominant strand community, the *Guettarda speciosa* community which is normally found only on highly elevated beach crests and is characterized by the presence of other species such as *Scaevola taccada*, *Pandanus tectorius* and a scattering of *Pisonia grandis* and *Cordia subcordata* trees.

The inner islands of Maldives support the atmosphere for the growth of various florae which exists in the form of pure stands or as mixed forest. Coconut plantations are very common closely to beach-crest vegetation and in moist areas they functions as shelter and supports the growth of under storey tree species like *Morinda citrifolia* and *Guettarda speciosa*. Within such coconut groves, species like *Pandanus odoratissimus, Calophyllum inophyllum* and *Hibiscus tiliaceus* are also found, but in low amounts (Fosberg, 1957). Other species include small pure stands of *Hernandia nymphaeifolia, Cordia subcordata* and *Barringtonia asiatica* in moist areas and pure stands of *Hisbiscus tiliaceus* and *Premna serratifolia* in drier places. The major tree species in these forests are *Pandanus, Hibiscus tiliaceus, Cordia subcordata, Hernandia nymphaeifolia, Calophyllum inophyllum, Barringtonia asiatica, Ochrosia oppositifolia, Guettarda speciosa, Adenanthera pavonina* and *Terminalia catappa*. It is to be noted that the flora in Maldives islands does not follow any fixed features like the dominance, frequency or density. The setting up of extensive coconut plantation actually disturbed the original distribution of trees and shrubs which resulted in the presence of beach-crest scrub communities and mixed forests only up to a short distance from the shoreline in many of the islands. Majority of these florae in the beach scrub community and mixed forests are tolerant towards various salt actions through winds, salt spray, salinity in the soil and nutrient-poor soils (MHAHE 2002)

Maldives islands are very rich and diverse in its Marine biodiversity. Studies identified 1090 species of fish, 36 species of sponges, 180 species of stony corals and 250 species of hermatypic corals in these islands and also 9 species of whales, 15-20 species of sharks and 7 species of dolphins and 5 species of turtles. Extensive studies have also documented about 285 species of algae, 5 species of seagrass, 400 species of molluscs, 350 species of crustaceans and 80 species of echinoderms (MHAHE 2002)

2.7 Present land use

The present land-use pattern of Maldives islands is entirely different from the historical land-use pattern initiated by the uninterrupted development and expansion

of modern urban settlement. Since tourism is one of the major economic sectors several permanent buildings were constructed and being constructed for restaurants and hotels to facilitate foreign tourists who visit these islands. Agriculture in Maldives is controlled by limited land availability however; sufficient land is available on uninhabited islands for food and forestry production. Uninhabited islands are prone to climate risks since those islands have been leased out for tourism related activities. As a result, the local adaptive capacity and the natural way of resilience of islands are being reduced involuntarily in various inhabited islands. The design and plan of the modern constructions and unplanned island drainage system to survive heavier rainfall also invites risk in the islands. Sand ridges are flattened during land reclamation or sand mining. Changes in the coastal vegetation and inland wetlands resulted in other forms of land use. Such major physical alterations resulted from land reclamation, harbour and road construction created fresh problems like flooding and erosion, thus damaging natural island resilience.

2.8 The Cultural Context

The cultural history of the Maldives is interwoven with the history of the wider Indian subcontinent and the adjacent regions, covering the areas of South Asia and Indian Ocean. The existing population follows Islam; however, before the introduction of Islam in 1153 CE, indication of an established Buddhist tradition was in these Islands. Various scholars framed the cultural history of the Maldives into early pre-Islamic/ Buddhist phase which is credited prior to 1153 CE and the Islamic period (Bell 1940; Forbes 1987; Mohamed 2005; Raghupathy 1994; Romero Frias 1999'; Maloney 2013). According to them, first millennium CE witnessed Austronesian contacts in the Maldives islands and subsequently there was an unidentified phase in which they have reservations on the presence of Hinduism. Portuguese occupied the islands from 1558 to 1573, and during 1600s to 1965, Maldives islands were Dutch protectorate and later British protectorate.

Numerous anthropological and linguistic works document several information regarding the system of kinship, governance, language, resource use and craft production on these islands (Romerio Frias 1999; Maloney 2005 ; Vitharana 1997;

Colton 1995). Maloney's (2013) studies pointed out three conflicting kinship systems viz; the Dravidian, the North Indian, and the Arab. According to him, the most fundamental is the Dravidian and endures evidence of matrilineal kinship similar to the Nair and other matrilineal groups of Kerala. Maloney also explains the cross-cousin marriages which/that were customary in these islands but considered by Arabs as incestuous. Romero-Frias (2015) suggested the concept of bilateral kinship system in these islands which includes in the equal interaction with both maternal and paternal kin. He also observed a system of open marriage with a high degree of sexual independence.

Arabs and the influence of Arab trade lead to the formation of the Maldivian state polity with centralization of trade, market and economy (Peterson 1982).According t0 Maloney (2013) three major levels of governance have persisted viz; the island, atoll and the national government. Romero- Frias (1999) opined the existence of separate administrative districts which were known as *madulu* derived from the Sanskrit *mandala*. The evidence on the ruling lineage during pre-Islamic period is not identified, however, the first king after the conversion to Islam was known as Sultan and these islands were ruled by Sultans and Sultanas till presidency was adopted in 1968 (Maloney 2013).

Divehi is the official language of Maldives islands and is peculiar in many respects. Linguistic studies suggested that Sinhalese and *Divehi* had the common root from Prakrit as supported by the events explained in

Mahavamsa. These studies also suggest Dravidian influences in the place names in the Maldives islands (De Silva 2009). Geiger (1996) initially linked *Divehi* to Sinhalese and he opined that this language developed from Sinhalese no earlier than the tenth century CE (cf. Vitharana 1997; Reynolds 2003).

The Maldives faces various challenges like the lack of land based resources and is reliant on a limited set of natural resources, primarily marine resources. Money Cowrie shells were an important resource which were largely exploited and were reported from India, Mainland Southeast Asia and Africa (Mikkelsen 2000). For

sanding the Maldivian *Dhoni* and for making percussion instruments, the skins of sharks and rays were used. They also used coconut fibres for making coir ropes and twine, palm products and also timber for household activities and also for building their houses and other structures

2.9 Maldivian Archaeology through the ages

Maldivian archaeology began in the mid-1800s as a practice of antiquarianism and mostly gave emphasis to retrieve, identify and document probable Buddhist monuments and other related artefacts (Seland 2014). In 1836, the Indian Navy's Lieutenants, Young and Christopher proposed a Buddhist period in these islands with the observations of a Sri Lankan Buddhist priest on surviving religious monuments and presence of Bodhi trees (Bell 1940). In mid-1800s, these claims were substantiated with some small scale unscientific excavations. A *Havitha* on Landhoo Island in Noonu atoll was excavated by the locals and a number of copper and/ or gold discs believed to be coins from a coral stone reliquary were discovered. However the coins were destroyed immediately after the excavation. This site was visited by John Stanley Gardiner and also by H C P Bell during 1900s. (Forbes 1987).

The later half of the 1800s witnessed archaeological research during which various Buddhist monuments were discovered and also studies were initiated in the places associated with Buddhist traditions. Extensive survey and research was done by C.W. Rosset (1886), Stanley Gardiner in 1900 (Gardiner 1904) and HCP Bell in 1879, 1920 and 1922 (Bell 1940).

Ceylon Civil Service Commissioner Harry Charles Purvis Bell's (HCP Bell) contribution to the archaeological studies of Maldives is commendable. He visited these islands, documented and produced two seminal volumes on the archipelago known as *The Maldive Islands: An account of the Physical Features, History, Inhabitants, Productions and Trade* (1940*)* and The *Maldive Islands: Monograph on the History, Archaeology and Epigraphy.* Bell presented his investigations, including surveys and investigations on various islands in Maldives. His major contribution includes the excavation in Gan Island. It is to be noted that the name of this island is

mentioned in the early Maldivian set of copper plates known as *Dhambidu Loamafanu, Isdu Loamafanu and Gamu Loamafanu* composed during the transition to Islam in the twelfth century CE. These inscriptions give valuable information on a temple at Gan Island which was destroyed and also describes the atrocities faced by Buddhist monks who were beheaded and scriptures were burnt (Romero-Frias 1999).

Maldivian government started archaeological excavations during by excavating Thoddu Island in Ari atoll. The excavation revealed a stupa with reliquary which contained a roman denarius of Caius Vibius Pansa, minted in Rome in 90 B.C and a Buddha sculpture (Forbes, 1984).The Buddha statue was destroyed on the same night and unfortunately little was known about the antiquities including the coins except a series of photographs. The coin has a piercing on it and was in a much worn out condition suggesting that it had been in circulation for quite a long time and believed to have been used as an ornament. It is to be noted that relative dating of the stupa on the basis of the evidence of this coin cannot be done as it is illogical.

During 1960s, no archaeological research works were carried out ,however, several significant finds were reported of which the most important one was the accidental discovery of four carved coral heads highlighting aggressive fanged faces from Male during a construction in 1962 (Forbes 1987).

1970s witnessed research works limited mostly to surveys. Munch-Petersen, a Danish social scientist and botanist, carried out survey in the southern atolls of the Maldives in 1974 and 1977–1981 and suggested a 'rather sketchy' picture of the pre-Islamic period and hypothetically proposed the involvement during early Buddhist period in taro cultivation (Munch-Petersen 1982). Other major contribution was that of an archaeologist Jon Carswell who worked trade and examined the presence of Chinese and Islamic ceramics in the Maldives and placed the presence of those ceramics into a broader Indian Ocean milieu (Carswell 1976).

The 1980–1990s marked a more scientific approach in archaeological research. A series of excavations were lead jointly by the Kon-Tiki museum, the University of Oslo and the Maldivian Government from 1981–1984 (Skjølsvold 1991). In 1983 and

1984, the Maldivian government, in association with the Kontiki Museum, Oslo carried out various expeditions.

Thor Heyerdahl, a Norwegian adventurer and ethnographer who is famous for his *Kon-Tiki* expedition, carried out two archaeological expeditions jointly with Norwegian archaeologists Arne Skjolsvold, Oystein Koch Johansen and Egil Mikkelsen. They undertook excavations in Nilandhoo island and visited other sites in Alifu Atoll, Dhaalu Atoll, Laamu Atoll, Gaafu Alifu, Gaafu Dhaalu Atolls and Gnaviyani Atoll (Forbes 1987). Scientific report was not published on this expedition; however, a book viz The Maldive Mystery was published. This book was a combination of history, legend, myths, imagination, truth and fiction and invited various criticisms as misleading and sensational due to the lack for historical accuracies and the people of the Maldives.

The first scientific excavation in Maldives was conducted from 1996-1998 by Professor Egil Mikkelsen and team from Kontiki Museum, Oslo in collaboration with the National Centre for Linguistic and Historical Research. Over these period of three years of excavation seasons, a mound in Kaashidhoo Island in Kaafu Atoll locally known as Kuruhinna Tharaagadu was excavated. An area of 1,880 sq.m with 64 ruins was excavated which vary in size and shape ranging square, rectangular circular, some with semi-circular extension and one with 16 sides. This excavation indicated that the Buddhist culture was established in the first part of the first millennium CE (Mikkelsen 2000).

Lately, archaeological fieldwork was carried out in early 2016 in the Maldives archipelago at three sites viz; Utheemu in the far north, Malé the capital, and Veyvah in the centre-south and wider surveys. The aim of these excavations were to identify sites belongs to medieval Islamic period, as part of a research project investigating the timescale and nature of the importation of cowrie shells (Cypraea) into West Africa, during 1150 to 1900 CE (Haour *et al* 2016).