
CPDAC Sub Committee

Performance Evaluation-Lakshadweep

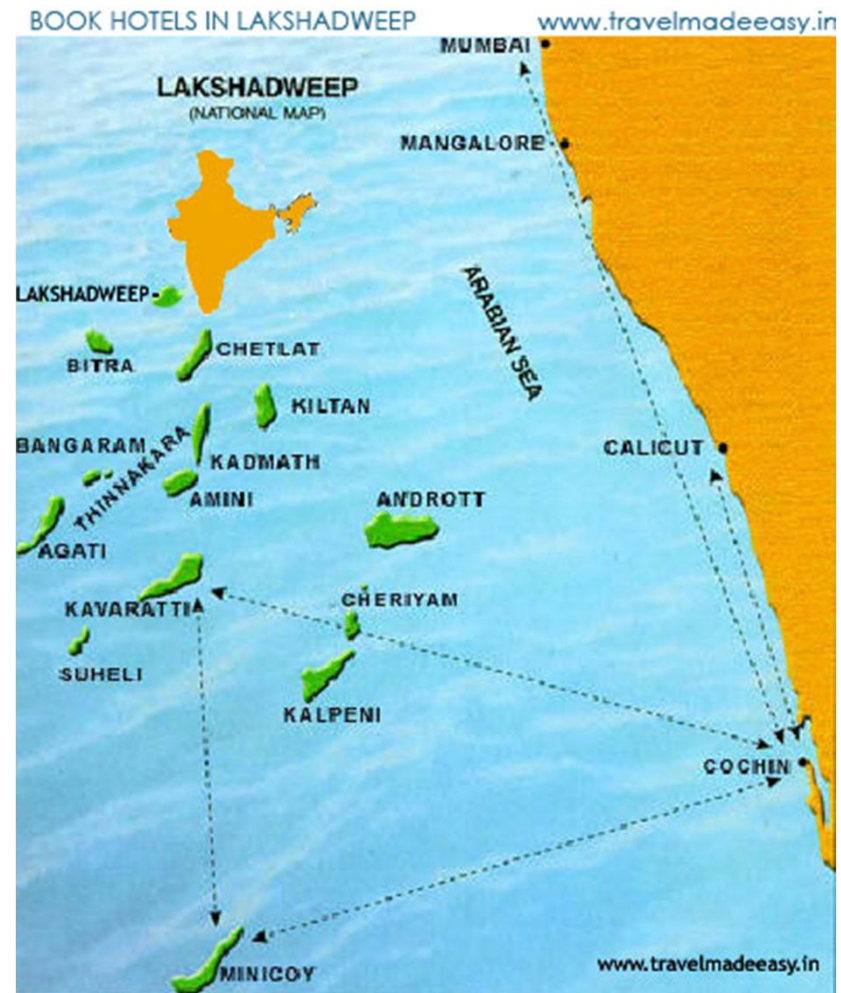
Lakshadweep



- Lakshadweep the smallest union territory of India is a group of coral islands of unparalleled beauty.
- "Lakshadweep" which means 'A Hundred Thousand Islands' is 36 islands, 12 atolls, 3 reefs and 5 submerged banks in the Arabian Sea.
- These emerald islands, rich in greenery and fringed by silvery beaches overwhelm with their natural beauty.

Lakshadweep Islands

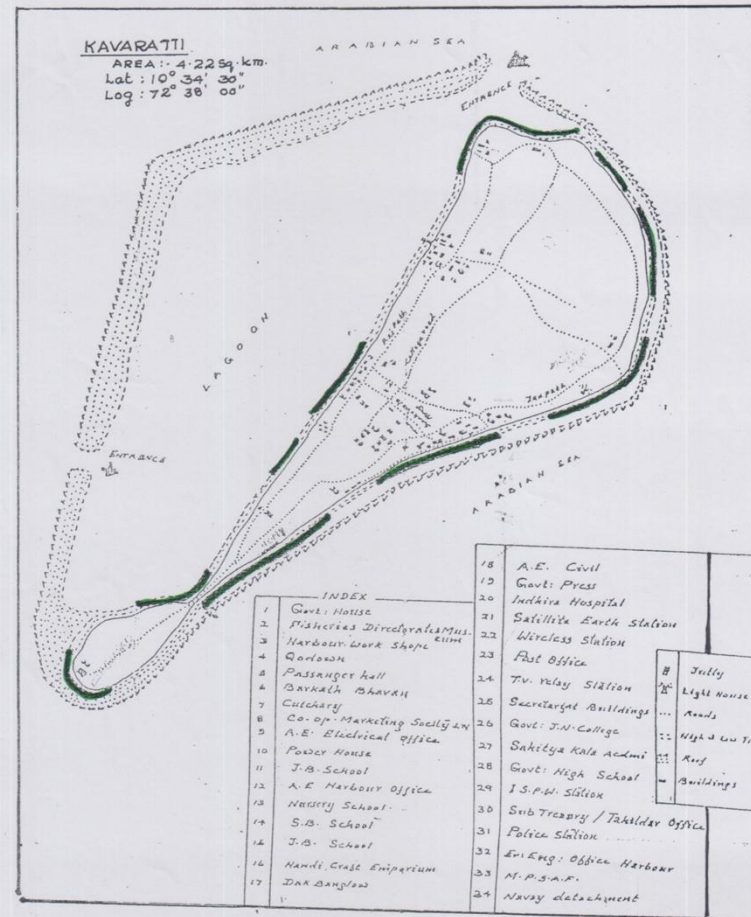
- Agatti has one of the most beautiful lagoons in Lakshadweep. Agatti is the only island with an airport;
- Bangaram is a tiny teardrop shaped island which lies very close to Agatti and Kavaratti. Bangaram is encircled by a continuous halo of creamy sand;
- Kadmat has emerged as one of the most beautiful dive centers in India. Variety of fishes like rays, sharks, and clear water with 20-50 meter visibility;
- Kalpeni is known for its scenic beauty and the small islets called Tilakkam & Pitti and an uninhabited island on the north called Cheriya. A huge shallow lagoon encloses all of them;
- Kavaratti is the administrative capital of the smallest union territory Lakshadweep. Kavaratti is the most developed and inhabited of 36 islands that are present in the Lakshadweep;
- Minicoy Island is the second largest and the southern-most among the islands of the Lakshadweep. Minicoy has a culture very different from that of any other island in Lakshadweep.



The fourth meeting of the CPDAC Sub-Committee on performance evaluation

- The fourth meeting of the CPDAC Sub-Committee on performance evaluation of coastal protection works was held in the office chamber of Superintending Engineer, PWD, at Kavaratti, Lakshadweep on 6th January 2011.
 - The field inspection of the coastal areas of Kavaratti was carried out on 6th, 7th & 8th January 2011.
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PLATE No: I



Members Present

- Shri A.Mahendran, Chief Engineer, C&SRO, CWC, Coimbatore & **Convenor**, CPDAC Sub-Committee.
 - Shri S. Attakoya, Superintending Engineer, PWD, Lakshadweep, Member
 - Dr. H.B.Chauhan, Scientist, Space Application Centre, Ahmedabad, Member
 - Shri S.P.Abraham, Director, Beach Erosion Directorate, CWC, Kochi & **Member-Secretary**.
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Invitees

- Shri Arun Jadav, Executive Engineer, LPWD, Kochi.
 - Shri K.K.Santhappan, Assistant Director II, Beach Erosion Directorate, CWC, Kochi.
 - Shri A.K.Alikoya, Assistant Engineer (Civil), PWD, Lakshadweep.
 - Shri P.P.Abdulrahiman, Engineering Assistant to SE, PWD, Lakshadweep.
 - Shri K.P.Liyakathali, JE (Civil), PWD, Lakshadweep.
 - Shri Omar Shareef.K, JE, PWD, Lakshadweep.
 - Shri Hashim Nawas, JE, PWD, Lakshadweep.
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Background

- Vide function ~~%w+~~ of the MoWR resolution dated 17th April 1995, CPDAC has been given the mandate *“To review the performance of the works carried out by the States and evolve improved design techniques based on such experience from time to time”*. Hence the Sub Committee was set up during the 6th meeting of CPDAC.
 - Three Sub Committee meetings were held at Kerala, Karnataka and Goa respectively and that at Lakshadweep was the fourth meeting of the Sub-Committee.
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Delay for holding 4th Meeting-

Some facts

- Fourth meeting of the subcommittee was proposed to be convened during 22-26 May 2006 in UT of Lakshadweep. This had to be postponed due to departure of the then Convener to Guwahati;
 - During the 11th CPDAC meeting, Chairman CPDAC desired that CW&PRS take more initiative for review of existing works,
 - A meeting scheduled to be held during 26th and 27th October 2010 had to be cancelled due to pre-occupation of some of the sub-committee members;
 - The meeting was finally convened during 6th to 8th January 2011.
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Committee members visits to sites



Beach near Govt. house (North End)



- Tetra pods and boulders are used;
- At certain places gaps have been filled with sea sand;
- There is a masonry wall along the coast;
- No overtopping is reported at this place during monsoon;
- There are rock outcrops and reef lines in the offshore at this location. These outcrops are helping in breaking the waves and dissipating the energy.

Beach at Boat jetty (West Side)

- No protection works have been carried out at this beach.
- This is a very important tourist place and the beach is also widely used for berthing boats for fishing;
- Coastal accretion has been observed at this place;
- The jetty which is perpendicular to the beach may have Influenced this phenomena to some extend.



Beach at burial ground

(South-West)

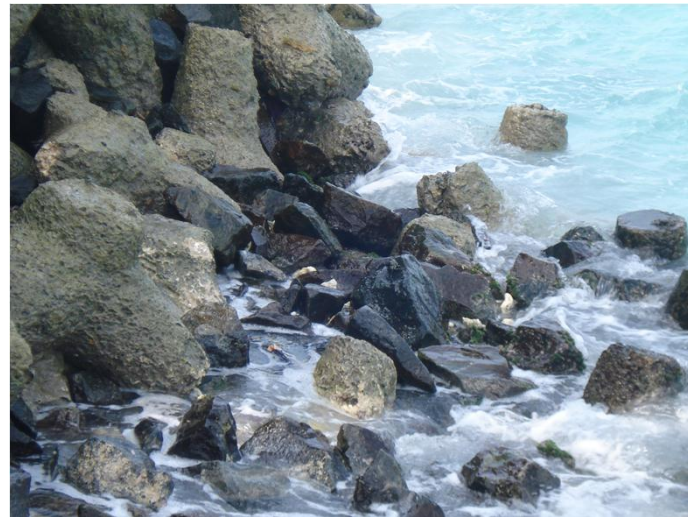
- At this location, the beach is protected by Pilot Scheme No.1 (Drg No.1) as proposed by CWPRS, Pune;
- Rubberized coir bags filled with cement mortar have been used for the protection works.;
- The protection was not successful.
- The cement mortar blocks have been broken at many locations.
- Accretion has been noticed at some places;
- due to exposure of the broken and bare cement mortar blocks it does not leave pleasing look for the beach.



Beach at Chicken Neck

(South-West)

- Tetra pods and boulders are used at this location for the protection works.
- The retaining wall constructed on the ground is safe.
- On the other side, i.e. South-east, erosion has taken place and there is no protection works.



Beach near Helipad (South End)

- The lower terrace of the beach is of natural rock.
- Tetrapods and boulders are used for the protection.
- This protection works were carried out about 2 years back and has been found successful.



Beach near Kavaratti Harbour

- Tetra pods and boulders are used for the protection works.
- As stated by PWD Engineers, in the year 2006, complete erosion took place
- Harbor Department undertaken many protection works at this location adopting the method of tetra pods with boulders.
- An under construction approach bridge was stated to be crashed in 2006



Eastern Beach near Puthiyapally

- Tetra pods and hollow blocks are used for the protection works.
- The hollow blocks have been filled with sea sand and look clean.
- Tetra pods are placed at the lower edge. Another layer of hollow blocks were suggested.
- Hollow blocks allow the incoming sand to settle and retain within their spaces thereby providing a better appearance.
- This method may be more appropriate than boulders as seen at some of the locations.



Coastal Protection near Administrators Office

- This beach is protected using two lines of tetrapods, followed by boulders. A masonry retaining wall is along the banks which will protect the road and other structures from high waves.
- A lot of debris have been dumped all along which is a cause for ugly look.
- Some sand accretion has been noticed intermittently.
- The bed is of hard strata and rough.



BENEFITS ACCRUED

- The places where the protection works have been carried out have become stable,
 - No ecological damages have been reported along the coastline in U.T. of Lakshadweep due to the protection works,
 - The completed coastal protection structures have provided protection to valuable land, houses and other installations along the coast,
 - Protection works wherever carried out have controlled further erosion,
 - Some places coastal nourishment could be observed due to the protection works enhancing the process.
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Maintenance Aspects

- A detailed survey of the structures may be carried out before and after the monsoon every year to assess the performance of the structures.
 - Maintenance of the protection works may be taken up both immediately before and after the monsoon.
 - Necessary maintenance funds should be budgeted by the Govt.
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OBSERVATIONS OF THE SUB-COMMITTEE

- **The coastal protection works carried out are as per the designs evolved by CWPRS, Pune.**
 - **No regular or worthwhile maintenance have been carried out after the construction works at any of the locations. Hence regular maintenance may be carried out.**
 - **Planning and execution of anti-sea-erosion works requires considerable baseline data. No administrative set up is in place for regular collection of coastal data, except monthly collection of shoreline changes. Therefore, Lakshadweep PWD may make all out efforts to start collecting the long term coastal data of current, suspended sediment, wave data, wind etc in a systematic manner.**
 - **The design, construction and maintenance of coastal structures are not well documented. The present set up of the PWD is not sufficient for the purpose. Therefore a separate Division under the control of an Executive Engineer is suggested for the coastal related works.**
 - **Benefit-cost analysis need emphasize the level of protection that need to be provided at each location based on its importance and discussed in the project reports while formulating the coastal protection measures,.**
 - **Tourist potential and economical aspects on account of the same also be considered.**
 - **Efforts are to be made to explore alternative and better technology which will provide protection of sea shores and at the same time, the beauty of the beaches are not spoiled. Though, Superintending Engineer, PWD, Lakshadweep suggested Mali type measures, the higher officers are not in favour of the same.**
 - **DPRs may be prepared by pooling specialists' knowledge.**
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