

GOVERNMENT OF INDIA
CENTRAL WATER COMMISSION

COASTAL PROTECTION & DEVELOPMENT ADVISORY COMMITTEE

MINUTES OF SECOND MEETING

DATE : 13TH - 14TH JANUARY, 1998

VENUE : MANGALORE

The Second Meeting of the Coastal Protection and Development Advisory Committee (CPDAC) was held at Mangalore on 13th January, 1998, followed by a field inspection on 14th January, 1998. The list of participants in the meeting and field inspection is enclosed at Annexure A. The report of the inspection of coastal protection works in Karnataka is at Annexure B.

Sh. J.M. Ratna Naik, Secretary (Minor Irrigation) , Govt. of Karnataka welcoming the members of CPDAC, stated that next to Kerala, Karnataka is facing serious problem of coastal erosion. For protection of the sea coast, Karnataka has developed two typical sections of sea walls to suit different wave conditions. He added that the cost of construction of sea walls is exorbitant and large stretches of sea coast of Karnataka are yet to be protected. These are beyond the financial means of the State Government. Therefore, he stressed that the proposal for external assistance for protection of sea coast may be expeditiously decided by the CPDAC. He further indicated that for futuristic development and protection of sea coast, remote sensing is ideal and Karnataka State Remote Sensing Technology Utilisation Centre, Bangalore, has been involved in the mapping of the sea coast. These could be utilised by CPDAC for making proposals for protection of sea coast.

Shri T.D. Sundarababu, Chairman, CPDAC, mentioned that the Indian sea coast extending from West Bengal to Tamil Nadu on Bay of Bengal side and Gujarat to Kerala on Arabian sea side are perpetually exposed to ravages of sea. Valuable property and infrastructure are irreversibly damaged. He explained the background of formulation of Beach Erosion Board and the work done by it so far. He also explained about the necessity of renaming of Beach Erosion Board to CPDAC and new activities and mandate assigned to the Committee. He emphasized that the National Coastal Protection Project need to be drawn expeditiously. CWC would be glad to consolidate the proposals received from various State Governments and take up further necessary action.

The agenda items were thereafter taken up for discussion.

1. CONFIRMATION OF THE FIRST MEETING

No comments on the first meeting of the CPDAC held on 20-21 November, 1995, were received from Members. As such the minutes of the First Meeting were confirmed.

1.1 TO ORGANISE A COORDINATED PROGRAMME OF COLLECTION, COMPILATION, EVALUATION AND PUBLICATION OF DATA RELATING TO VARIOUS NATURAL PHENOMENA AND COASTAL PROCESSES WHICH AFFECT THE COAST LINE.

The Govts. of Karnataka and Goa have nominated nodal officers to collect available data from various agencies in their States. The progress made by other States in this regard could not be ascertained as other States were not represented in the meeting.

The Chairman once again stressed the need to have a nodal officer to collect available data and also about the need to create National Coastal Data Centre. He also advised that other States should be requested to act expeditiously.

1.2 TO ORGANISE GENERAL INVESTIGATION, STUDIES AND RESEARCH WITH THE HELP OF CENTRAL AND STATE ENGINEERING RESEARCH INSTITUTIONS.

1.2.1 INVESTIGATION FOR MUD BANKS ALONG KERALA COAST.

The progress on investigation for mud banks along Kerala coast by Centre for Earth Science Studies (CESS), Trivandrum, could not be ascertained as no representative from CESS attended the meeting. The Joint Director, CWPRS, Pune, indicated that the estimated cost of Rs. 3.23 lakhs for studies on mud banks may be insufficient. He added that Karnataka Engineering Research Station (KERS) have earlier prepared a Scheme costing around Rs. 40 lakhs and this could be considered now.

The Chairman reiterated that the required research proposals may be submitted by CESS early, so that CWC could compile the same for discussion in the next meeting.

1.2.2 SATELLITE IMAGERIES TO MONITOR SHORE LINE CHANGES.

As the Members from Kerala, Maharashtra, Gujarat, Orissa and Union Territory of Pondicherry have not attended the meeting, the action initiated by them to monitor shore line changes could not be ascertained. The Head, Ocean Engineering, National Institute of Oceanography, Goa, mentioned that satellite imageries have been collected by them and compared with the past data of the coastal processes. The report on the subject showing accretion and erosion problems of Goa has been prepared by them. A copy of the same was circulated in the meeting. The Director, Marine Wing, Geological Survey of India (GSI), Cochin, mentioned that GSI has also carried out certain studies in this regard and these would be of interest to the Members.

The Chairman mentioned that each State Government is now carrying out studies according to their own needs. He suggested that a coordinated effort at national level may be made for interpretation of remote sensing imageries/data and using the same for protection and development of sea coast.

1.2.3. COASTAL ATLAS

Much action has already been taken for preparation of the coastal Atlas. It was decided that the map to be included in the Atlas may be of A4 size. The Chairman requested State Governments to expedite preparation of the maps, so that the Atlas could be compiled and published early. He suggested that a meeting exclusively to discuss the preparation of the coastal Atlas and to sort out problems, if any, being faced in this regard may be held at New Delhi early. He also cautioned about the need to seek the approval of the competent authorities for publishing.

Director, GSI, Cochin, mentioned that the GSI has also published certain maps and these would be useful for preparation of the coastal Atlas.

1.2.4. STRENGTHENING THE FACILITIES FOR COASTAL ENGINEERING RESEARCH BY THE STATES.

It was noted that not much progress in this regard could be achieved. Chairman requested CWPRS to address the concerned States to expedite submission of proposals.

1.3 TO LAY DOWN PRINCIPLES IN CONSTRUCTION TECHNIQUES OF COASTAL PROTECTION MEASURES FOR THE GUIDANCE OF STATE AUTHORITIES.

1.3.1 USE OF FLAT STONES.

Director, KERS circulated a copy of their report on use of flat stones as well as cubical stones for sea wall construction (Copy of the report is at Annexure- C). The Joint Director, CWPRS, mentioned that it is preferable to use cubical stones only for sea wall construction and flat stones may be used only when cubical stones are not available. He further added that the toe as well as the armour of sea wall should preferably be constructed using cubical stones only. Professor J. Dattatri, Karnataka Regional Engineering College, mentioned that the specification of sea walls suggested by CWPRS clearly states that only cubical stones should be used. In using cubical stones, the stone blasting techniques being followed is a constraint. He further added that artificial concrete blocks could also be tried in place of cubical stones.

The Chairman mentioned that the economics of maintenance of sea walls constructed by flat stones and cubical stones are not given in the report of KERS. Except Karnataka perhaps no other State seems to have adopted flat stones for construction of sea wall. Hence, a general conclusion on use of flat stones could not be made. He requested KERS to continue the research work and inform Committee about further findings.

1.3.2 USE OF COIR IN MARITIME APPLICATIONS.

The Kerala State representative was not present at the meeting. Thus the position of use of coir for sea wall construction could not be ascertained. The Chairman mentioned that Kerala's findings may be awaited.

1.4 TO REVIEW THE PERFORMANCE OF THE WORKS CARRIED OUT BY THE STATES AND EVOLVE IMPROVED DESIGN TECHNIQUE BASED ON SUCH EXPERIENCE FROM TIME TO TIME.

1.4.1 MODIFICATION IN THE DESIGN OF SEA WALL.

It was noted that the CWPRS design of sea wall was adopted in Kerala and Karnataka. The Secretary (Minor Irrigation) indicated that in Karnataka wherever beach width is less, the CWPRS design was adopted and is working satisfactorily. In places where beach width is wider the design developed by KERS is found to be more effective. The Karnataka report on construction of sea walls undertaken in Karnataka according to CWPRS and KERS designs were circulated (Copy of both design sections is at Annexure D & E respectively).

Professor J. Dattatri, Karnataka Regional Engineering College mentioned that according to CWPRS design the toe portion needs to be constructed one metre below water level. He mentioned that such construction by excavating trenches for toe anchoring is difficult and usually the contractors were reluctant to carry out such works.

The Chairman mentioned that instead of excavation below water level for toe, the toe may be constructed using small concrete piles. The representative of CWPRS indicated that this was experimented by them and found to cause erosion at toe. Chairman added that from the discussions in the meeting it emerges that the CWPRS design with modification of buried toe is considered a better design. However, the experience of Kerala in this regard may also be taken into account before any conclusion is made. He suggested that the State Standing Technical Committees should look into this matter.

1.4.2 PREPARATION OF INDIAN SHORE PROTECTION MANUAL.

No progress on preparation of Shore Protection Manual by Sub-Committee set up for this purpose could be achieved so far. Members expressed that the necessity of preparation of such manual may be reviewed. Chairman of the Sub-Committee for preparation of Shore Protection Manual was not present in the meeting. It was decided that the work of the Sub-Committee may be kept in abeyance till the next meeting of CPDAC. It was, however, informed by Dr. N.M. Anand, Scientist, National Institute of Oceanography (NIO), Goa, that a Manual on protection and control of coastal erosion in India was published by NIO, Goa.

1.4.3 PROJECT PROPOSAL FOR SEEKING EXTERNAL ASSISTANCE.

A consolidated scheme for implementing a National Coastal Protection Project was to be prepared. Certain proposals received from Kerala, Karnataka and Gujarat were found to be in order and comments on proposals received from other maritime States, including the revised proposal of Rs.575.00 crores from Karnataka were forwarded to them. As the comments were not received from all the States, the proposals could not be consolidated for seeking external assistance. The Secretary (Minor Irrigation) requested that since Karnataka proposal is found to be in order this may be taken urgently and may not be linked with the proposal from other States. It was agreed that Scheme may be finalised based on information received up to March, 1998.

The Deputy Financial Adviser, Planning Commission mentioned that anti-sea erosion works are very costly and therefore external assistance is very much needed for the States to complete coastal protection works. Generally, major and medium irrigation schemes are funded by National Bank of Agriculture & Rural Development (NABARD) under Rural Irrigation Development Fund (RIDF). However, considering the seriousness of the coastal erosion problem and its national importance, NABARD may be in a position to fund coastal protection works also. He suggested that in addition to NABARD, the CPDAC may consider assistance from other Agencies also. He further added that earlier the matching assistance to States were given by Centre for protection of sea coast mainly to Kerala State as the problem was severe in this State only. Now, sea erosion has become a serious problem in other States as Karnataka and Goa also. The working group set up by the Planning Commission has recommended a central assistance to the tune of Rs. 150 crores in the 9th Five Year Plan. The 9th Five Year Plan is yet to be finalised and indications are that the year 1997-98 and 1998-99 are likely to be Annual Plans only. Considering the urgency of protection of sea coasts, he suggested that a proposal for Central assistance to States to take up protection of critical stretches may be prepared by CWC and posed to the Planning Commission for sanction.

The Deputy Financial Advisor further added that since sea walls are exorbitantly costly, it is imperative to carry out R&D to develop more cost-effective methods of sea coast protection. The maintenance of coastal protection works is another problem faced by requirements of various capital assets in the country. He suggested that in the Plan activities of the States, the funds required for maintenance could be made.

1.5 TO INTERACT WITH THE INTERNATIONAL AGENCIES ENGAGED IN THE WORKS OF COASTAL PROTECTION AND TECHNOLOGY TRANSFER IN THE FIELD OF COASTAL PROTECTION.

Regarding the Training Programmes needed in the coastal protection works, the Committee was informed that the Central Water Commission would be conducting a Training Course by the end of January, 1998. It was also informed that there was no

response from the maritime States. The representative of CWPRS also informed that they will be shortly conducting training course and the approval of their proposal is awaited from the Ministry of Water Resources. The Chairman stressed that the maritime States should avail the training facility by nominating sufficient number of officers who are related with the works of coastal protection and development.

1.6 TO IDENTIFY THE COASTAL ZONE TO BE DEVELOPED BEHIND THE COASTAL PROTECTION WORKS WITH THE HELP OF STATE GOVTS.

1.6.1 EXPERT COMMITTEE FOR FORMULATION OF GUIDELINES FOR COASTAL ZONE MANAGEMENT OF DEPARTMENT OF OCEAN DEVELOPMENT (DOD)

The Committee requested the members to take necessary action expeditiously.

1.6.2 COASTAL LAND MANAGEMENT AUTHORITY (CLMA)

The Committee stressed the need for creation of Coastal Land Management Authority in each State and requested the Members to take necessary action in this regard.

1.7 NEW ACTIVITIES ASSIGNED TO THE COASTAL PROTECTION AND DEVELOPMENT ADVISORY COMMITTEE.

Regarding the new activities assigned to CPDAC, the Committee suggested the action may be initiated on item no.1 to 3 in the beginning. The Committee can thereafter look into other items of works assigned to it. The States were requested to highlight item-wise activities carried out by them.

1.8 COMPOSITION OF THE COASTAL PROTECTION AND DEVELOPMENT ADVISORY COMMITTEE.

The Committee approved nomination of Shri J. Dattatri, Professor and Head of Department of Applied Mechanics, Karnataka Regional Engineering College, Suratkal as a non-official to the CPDAC. It was agreed that the nomination of other members may be decided through circulation of their bio-data. The members were requested to give their views on nomination of two other non-official members.

1.9 NEW ITEMS

1.9.1 STATUS OF COASTAL PROTECTION WORKS IN MARITIME STATES.

The members were requested to furnish the information needed by the Secretariat of CPDAC at an early date.

1.9.2 SCOPE FOR MANGROVE PLANTATION.

It was felt by the members that mangroves could be an effective method of coastal protection in areas affected by tidal flow. Members expressed concern about destruction of mangrove forests in the country. It was decided that more data on this aspect may be collected and presented in the next meeting.

2.0 ANY OTHER ITEM WITH THE PERMISSION OF THE CHAIR.

The Chief Research Officer, CWPRS, stressed that all the States should be requested to form a separate Coastal Engineering Division to look after the works relating to Coastal Engineering for execution of works with proper understanding and efficiency. This was agreed to, by all the members present.

Secretary (Minor Irrigation) thanked all members and participants of the meeting. He reiterated that the expertise of all the members should be pooled in this forum of CPDAC and through mutual discussion the coastal erosion problems could be tackled. He requested the Chairman to give a thrust to financial support for taking up the coastal protection works.

The Chairman, thanking all the members requested that the CPDAC may be treated as a Forum to discuss all important problems related to coastal protection and for dissemination of technical expertise gained by various States. He added that creation of Central Data Bank on coastal processes is an important step for formulating proposals for coastal protection and development. He requested all the members and experts in the field to join together to make coastal protection a success.

The next meeting of the CPDAC was suggested to be held sometimes in the middle of 1998. As the two previous meetings were held in Kerala and Karnataka, it was suggested that the next meeting may be held in Goa which is now facing serious coastal erosion problems.

The meeting ended with thanks to the Chair.

ANNEXURE 'B'

INSPECTION OF COASTAL PROTECTION WORKS IN KARNATAKA ON 14-01-1998

The Coastal Protection and Development Advisory Committee members inspected on 14/01/98 the sea walls constructed by Karnataka Government at Suratkal and Shirali. The observations of the Committee about these works are given below.

1. SEA WALL AT GUNDDA KOPLA, SURATKAL, DAKSHIN KANNADA

The sea wall at Gundda Kopla, Suratkal was inspected by the members. A 200 m long sea wall, according to Karnataka Engineering Research Station (KERS) design has been constructed at this location. The sea wall was constructed in between monsoon low and high water levels in order to allow free movement of sand on the coast. After a detailed study of the vulnerable sea coast reaches, the Karnataka State Standing Committee on coastal protection has selected this site and construction of sea wall was completed in 1994. The approximate cost of construction of sea wall is stated to be around Rs.15.20 lakhs per 100 m in the year 1994. The approximate lead involved in transportation of stone boulders required for sea wall was 27 km. The Committee observed that a sandy beach has been formed in the downstream side of the sea wall, with its toe wall completely covered with sand. The Karnataka engineers informed that the toe section was stable in the previous monsoons. Thus, dumping of stone at toe was not carried out so far. No damage to sea wall could be observed by the Committee. The condition of the launching apron and toe could not be inspected by the Committee as it was covered by sand beach. The Committee suggested that, even if launching apron or toe is not damaged, before monsoon dumping of stone on these areas may be resorted to ensure safety of sea wall.

2. SEA WALL AT SHIRALI, DAKSHIN KANNADA

The sea wall at Sirali, 5 km north of Batkal in Dakshin Kannada was also inspected. A 150 metre long sea wall according to CWPRS design and another wall of 100 metre length according to KERS design have been constructed by Karnataka State at this location.

The sea wall, according to CWPRS design, was constructed during 1995-96 with cubical stones. The crest level of this wall is 2 m. A well-nourished beach has been formed in front of this wall and the visible width of sea wall is around 17 m. The total cost of the 150 m length of the sea wall is reported to be around Rs.21.00

lakhs. The State engineers stated that the toe was constructed after excavating trenches. The Committee found the wall in good condition.

The wall, according to KERS design, was constructed in 1992-93. The cost of the wall is reported to be around Rs.12.40 lakhs for 100 m. No beach has been formed in front of the wall. The wall is covered with vegetation at many places. The toe of the wall is found to be submerged in sea water. It was reported that toe portion of the wall was slightly settled during the last monsoon, but dislocation of stone boulders is not reported. However, trench filling with stones has not been resorted to by State. The Committee, after inspection of site made the following suggestions.

1. The gap between the two sea walls left for movement of fishermen and boats may be at an angle instead of being perpendicular to the seawall. This will help in a way to create some obstruction to the free movement of sea water and thus protecting the area behind sea wall.
2. It is found that the gaps between cubical stones on the apron is packed with small stones. The Committee felt that such packing may not be necessary, as a rough surface of the apron will dissipate wave energy more than a smooth surface.
3. No beach has been formed in front of KERS design wall. It was suggested that State Standing Technical Committee may study the entire river mouth and sea reaches of the region and suggest measures to prevent possible damage to sea wall and to accelerate formation of sea beach.

**No.4(5)/97-CED
Government of India
Central Water Commission
Coastal Erosion Dte.**

**806(N), Sewa Bhavan,
R.K. Puram, New Delhi-66**

Dated the Jan. _____, 1998.

To

**Sub : Second Meeting of Coastal Protection and Development
Advisory Committee (CPDAC).**

Sir,

Please find enclosed a copy of the minutes of the Second Meeting of CPDAC held on 13-14th Jan. 1998, at Mangalore (Karnataka). Your comments, if any, may please be communicated at an early date. It is also requested to take follow-up action on the items concerning to your State and communicate to this Office as early as possible.

If no comments are received by 20th March, 1998, the minutes will be assumed as confirmed.

Yours faithfully,

Encls : As above.

**(B.K. MAZUMDER)
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