No.4/5/2011-CED/213-46

भारत सरकार

Government of India

केन्द्रीय जल आयोग

Central Water Commission

कमरा न.806 (उ) सेवाभवन,
रा.कृ.पुरम,नई दिल्ली 110606
Room No.806 (N), Sewa Bhavan,
R.K. Puram, New Delhi-110066
Dated: ~~Mar, 2011~~ 1st April

To

As per list.

Subject: 12th Meeting of Coastal Protection & Development Advisory Committee (CPDAC) – Forwarding of Minutes – reg.

Please find enclosed a copy of the minutes of 12th meeting of Coastal Protection and Development Advisory Committee (CPDAC) held at Bhubaneswar, Orissa during 3-4th March, 2011.

Your comments, if any, may kindly be communicated at the earliest. It is also requested to take follow-up action on the items concerning your State/Department and send a report in this regard to this office at the earliest.

Encl: As above.

Yours faithfully,

(Rajesh Kumar)
Chief Engineer (P&D) &
Member-Secretary (CPDAC)
Tel.No.011-26102267
Fax. No. 011-26176710
26175862

Copy for kind information to: PSO to Chairman, CWC, and New Delhi.

List of Members of CPDAC

1 Member (R M) & Chairman, CPDAC
C.W.C.,
2nd floor, Sewa Bhawan,
R.K.Puram, New Delhi-66.

2 Chief Engineer (P&D) & Member Secretary, CPDAC
C.W.C.,
815(N), Sewa Bhawan,
R.K. Puram, New Delhi-66.

3 Commissioner (Ganga),
Ministry of Water Resources,
8th Floor, Block -11
CGO Complex, Lodhi Road,
New Delhi-111003.

4 Advisor (I & CAD),
Planning Commission,
Yojna Bhawan, Sansad Marg,
New Delhi-111001.

5 Advisor/Joint Secretary
(Impact Assessment)
Ministry of Environment & Forests,
6th Floor, Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi-111003.

6 Development Advisor (Ports),
537,Transport Bhawan,
Ministry of Shipping, Road Transport & Highways,
1, Parliament Street,
New Delhi- 111011.

7 Engineer-in-Chief (Irrigation)
Irrigation & CAD Department,
Errum Manzil,
Hyderabad - 500 082
(Andhra Pradesh)

8 Member Agriculture,
State Planning Commission,
Govt. of Tamil Nadu,
Ezhilagam, Chepauk,
Chennai - 600005.

9 Chief Engineer (C&SR),
C.W.C.,
Sangamam,
Gandhimaanagar, Peelamedu P.O.,
Coimbatore ï 641 004
(Tamil Nadu)

11 Chief Engineer (Irrigation),
2nd Floor, Junta House,
Annexe, Panaji- 403001.
(Goa).

11 Director,
National Institute of Oceanography,
Dauna-Paula,
Goa- 403001.

12 Secretary,
Narmada, Water Resources &
Water Supply Department,
Govt. of Gujarat,
Block No. 9, Sardar Bhawan,
Sachivalaya,
Gandhinagar- 382011.
(Gujarat)

13 Chief Engineer,
Irrigation&Admn.,
Govt. of Kerala,
Thiruvanathapuram- 695033
(Kerala)

14 Director,
Central Water & Power Research Station (CWPRS),
P.O. Khadakwasla,
Pune - 411124.
(Maharashtra)

15 The Chief Executive Officer, (Commissioner, Water Transport)
Maharashtra Maritime Board,
Indian Mercantile Chamber (3rd Floor)
Ramajibhai Kamani Marg,
Ballard Estate, Mumbai - 400 038.

16 Engineer-in-Chief (Water Resources),
Secha Sadan, Govt. of Orissa,
Bhubaneshwar - 751101.
(Orissa)

17 Deputy Director General,
Geological Survey of India,
Marine Wing,
Bhu Vigyan Bhavan, DK-6, Sector-2,
Salt Lake City,
Calcutta - 700091
(West Bengal)

18 Secretary,
Irrigation & Waterways Deptt.,
Govt. of West Bengal,
Jalsampad Bhawan, Salt Lake,
Calcutta- 700091.
(West Bengal)

19 Head, Marine and Water Resources Division,
Space Application Center,
Ambawadi Vistar P.O.,
Ahmedabad ï 380015

20 Chief Hydrographer,
National Hydrographic Office,
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Dehradun-248001

21 Chief Engineer, APWD,
Andaman & Nicobar Administration,
Port Blair-744111

22 Superintending Engineer,
Lakshadweep, PWD,
Kavaratti, Lakshadweep-682555

23 Chief Engineer, PWD,
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Pondicherry-605001

24 Member (Planning),
Ganga Flood Control Commission,
Sinchai Bhawan 3rd Floor,
Patna ï 800015.

25 Director (Ports & I.W.T.),
Baithkol, Uttara Kannada,
Karwar ï 581302
Karnataka.

26 Shri M.M. Kamath
Chief Engineer (Retd.)
Chairman, T.E.C. Anti-sea Erosion
Works in Karnataka
Mizar, Ramakrishna Pai Compound
Mannagudda, Mangalore-575 003

27 Dr. Vallam Sundar
Professor, IIT Madras
Ocean Engineering Department
C-6-13, Second Link Road, IIT Madras,
Chennai - 600 036

28 Shri D.K. Maiti,
MD, West Bengal Fisheries Corp.Ltd.,
GN-31, Sector-5,
Salt Lake City,Kolkata-700 091

Permanent /Special Invitees:

29 Economic Adviser
Ministry of Water Resources
Room No. 7, B Wing
Shashtri Bhawan
New Delhi - 110001

30 Chief Engineer,
Design Research and Construction
Support,
PWD, WRO,
Cheppakkam,
Chennai - 600 005

31 Director,
Centre for Earth Science Studies,
Akkulam,
Thiruvananthapuram - 695 031
(Kerala)

32 Project Director & Sci G
ICMAM Project Directorate
NIOT Campus,
Velachery-Tambaram Main Road,
Pallikaranai,
Chennai ï 601 302

33 Director,
Beach Erosion Directorate,
Central Water Commission,
"Jaladhara", 27/1927-A,
Kasturba Nagar, Kochu-Kadavanthra,
P.O.Kadavanthra,
Cochin - 682 020.

MINUTES OF 12TH MEETING
OF
COASTAL PROTECTION & DEVELOPMENT ADVISORY COMMITTEE (CPDAC)

The 12th meeting of the Coastal Protection & Development Advisory Committee (CPDAC) was held at Bhubaneswar, Orissa during 3-4th March, 2011, under the Chairmanship of Shri R.C Jha, Member (River Management), CWC, & ex-officio Additional Secretary to the Govt. of India. List of participants is enclosed at **Annexure-I.**

After presentation of bouquets and lighting of the lamp, Shri H.C Behera, Engineer-in-Chief, Department of Water Resources, Govt. of Orissa in his welcome address emphasized the importance of CPDAC in giving common platform for all maritime States for coastal protection issue. He expressed hope that the committee will give proper suggestion to Orissa, which is facing problems and challenges of cyclone, Climate change, sea erosion in many places etc.

The Guest of Honour, Smt. Usha Padhee, IAS, Additional Secretary, Department of Water Resources, Orissa emphasized that the importance of coastal area/ coastal protection cannot be undermined and indicated that by 2025 3/4th of population will depend on Coastal Economic Zone. Sustainable and bottom up solution including stakeholder was emphasized. She stated that Soft Engineering solution, taking into account, natural dynamism is expected from the experts and expressed hope that the committee will suggest implementable solution to coastal protection issues.

The Chief Guest, Sh. Suresh Chandra Mahapatra, IAS, Principal Secretary, Dept. of Water Resources, Orissa in his address stated that CPDAC is an important committee and is extremely happy of hosting the meeting. He emphasized on the complex nature of Orissa coast and the importance of proper data collection for protection measures.He expressed that the protection measures suggested should not have adverse effect and should be sustainable. He also emphasized the importance of integrated solution and expressed the hope that the meeting will address the challenges likely to be faced from climate change.

Sh. R.C Jha, Member (River Management), CWC & Chairman, CPDAC, in his address reminded the participants about the magnitude of coastal erosion around Indian coast. He reminded the members about the importance given by the Govt. of India in coastal protection and the initiative taken by CPDAC in the form of NCPP (National Coastal Protection Project) which has resulted in the technical assistance by ADB in three States and further being extended for two more States. He expressed his sincere thanks to Govt. of Orissa for hosting the 12th meeting of CPDAC at Bhubaneswar. He appreciated the arrangements made for the meeting and site visits.

The inaugural session concluded with a vote of thanks proposed by Shri Janaki Ballabha Mohpatra, Superintending Engineer, DWRO, Govt. of Orissa.

Thereafter the presentations and agenda were taken up as session-I & session-II respectively by Sh. Rajesh Kumar, CE (P&D), CWC & Member-Secretary, CPDAC.

Session-I – PRESENTATION

The following Presentation/State Report were given

1. Presentation by Sh. K Rabadia ,SE, Surat Irrigation Circle, Gujarat
2. Presentation by Sh. G.P Roy, DD,FMIS, Dept. of Water Resources, Orissa
3. Brief Report by Sh. B.S.N. Reddy, E-in-C, I&CAD, Andhra Pradesh
4. Brief Report by Sh. Sai Subramanian,EE, PWD, Puducherry
5. Presentation by Sh. Ajay Pradhan,MD, DHI (India) water &Environment Pvt. Ltd, New Delhi
6. Presentation by Sh. S.P.Abraham, Director(Beach Erosion), CWC
7. Presentation by Sh. B. Nagendrakumar, Consultant coastal Engineer, Chennai
8. Presentation by Prof. V. Sundar, Dept. of Ocean Engineering, IITM, Chennai

The brief summaries of above presentations are enclosed as **Annexure-II.**

Session-II – AGENDA

12.1 CONFIRMATION OF THE MINUTES OF 11th MEETING

The minutes of 11th meeting of Coastal Protection Development Advisory Committee held at Chennai (Tamil Nadu) during 4-5th January 2010 was circulated to all the members of CPDAC vide letter no. 4/5/2007-CED/ 96-123 dated 15/02/2011. No comments were received. With the permission of Chair, the minutes of 11thmeeting of CPDAC were confirmed.

12.2 STATEWISE COASTAL LENGTHS AND COASTAL ATLAS

In the 11th meeting, representative from NHO informed the committee that a comprehensive exercise of re-evaluating coastal length is being taken up in the wake of methodological changes based on Survey of India maps. NHO was requested to document the standardized procedure for evaluating / determining the coastal length and methodology adopted. States were also requested to submit the methodology adopted by them to NHO.NHO was not represented in the meeting. Chairman CPDAC noted that no action has been taken on this issue by the maritime States and NHO and suggested that interim reports can be submitted based on the guideline decided in the 11th meeting i.e. excluding creeks and estuaries in determining coastal length. Shri K. Rabadia, SE, Gujarat, expressed difficulties in getting the information from SAC, Ahmedabad. Chairman CPDAC stated that SAC, Ahmedabad can be requested for interim report of coastal length based on satellite imageries and SOI can be approached for further confirmation if required. Shri Sai Subramanian, EE, Puducherry, suggested that SOI may be entrusted for evaluation of coastal length.

Member Secretary, CPDAC informed the members that in the 11th meeting, it was decided to re-constitute the sub-committee for preparation of coastal atlas and pursue for the

allotment of fund to SAC, Ahmedabad. Accordingly the Sub-committee was re-constituted and the meeting of the re-constituted Sub-committee was held on 4th May 2010. He requested Shri Reading Shimray Director, Coastal Erosion, CWC to apprise about the deliberations of the meeting to the committee members. Shri Reading Shimray told about the deliberations which is enclosed as **Annexure-lll.** It was also informed that the fund amounting to₹ 24 lakh out of 60 lakh, which has been proposed in the revised proposal submitted by SAC,Ahmedabad in January, 2010, has been released to SAC in November, 2010. He also informed that Coastal States are to provide the spatial information of the protected coastline to SAC, Ahmedabad.

(Action: NHO, Maritime States/UTs, SAC, Ahmedabad and CPDAC Secretariat)

12.3 DATA COLLECTION, COMPILATION, ANALYSIS AND PUBLICATION

Chairman, CPDAC inquired about the status of the work entrusted to ICMAM & CW&PRS during the 11th meeting. CW&PRS & ICMAM were not represented in the meeting. He also informed that web site on Water Resources Information System (WRIS) has been created and expressed that a link / layer on the website can be designed exclusively with information on coastal data . He sought suggestion from the members on the optimum network and parameters for data collection. Dr. Sanil Kumar, NIO, Goa informed that project for collecting data has been taken up by them at 12 sites in Karnataka on funding from ICMAM and informed that INCOIS is having some valuable data. Forecast data of current, wave etc. are given freely to the State Governments by INCOIS but may not share such data with other private agencies including World Bank, ADB etc. He also suggested that data collection could be on parameters like waves, current, shoreline change, beach profile and satellite imageries. Chairman, CPDAC suggested that data collection can be standardized instead of project specific collection and sought suggestion on optimal network. He also stated that efforts should be made to make data available in the WRIS and should not be secret rather be available freely to all. Prof. Sundar suggested that CPDAC should be very clear on the type of data to be collected. Chairman, CPDAC expressed the desire to know from the experts the optimal network and the data parameters that should be collected. Prof. Sundar informed about the data collection done by Tamil Nadu. Representative from Tamil Nadu was requested to furnish detail on data collection done by the State to CPDAC. Smt. K.P Padmavathy, CE, DR&CS, PWD, Tamil Nadu agreed to the suggestion. Shri S.V Prabhavalkar, SE, Goa suggested that CWC should take over the data collection for the whole country.

Chairman, CPDAC emphasized the importance of interaction with the concerned organization like CW&PRS, ICMAM, INCOIS etc. in connection with data collection and stated that a separate meeting can be organized on this issue before the next meeting of CPDAC.

(Action: CW&PRS, ICMAM & CPDAC secretariat)

12.4 RESEARCH AND DEVELOPMENT

12.4.1 RESEARCH PROPOSALS

Chairman, CPDAC enquired about proposals of Tamil Nadu which were also mentioned in the 11th CPDAC meeting. Smt. K.P Padmavathy, CE, DR&CS, PWD, Tamil Nadu informed that four proposals submitted last year have not been sanctioned. One proposal which was approved in 2005 need revalidation of MoWR as funds have not been utilized due to lapse of time. Chairman, CPDAC suggested that Tamil Nadu may submit the details of the four proposals to CPDAC Secretariat to facilitate approval.

(Action: Tamil Nadu, CW&PRS & CPDAC secretariat)

12.4.2 INSTITUTIONAL STRENGTHENING

12.4.2.1 ORGANISATIONS

Smt. K.P Padmavathy, CE, DR&CS, PWD, Tamil Nadu stated that the division which was engaged in the data collection and research work has been assigned some other work by Govt. of Tamil Nadu and urged Chairman, CPDAC that a division in each States may be sponsored by CWC for data collection. Shri S.V Prabhavalkar, SE, Goa informed that Goa has such a dedicated division but it needs support for automation on data collection from CWC.

Chairman, CPDAC suggested that States may explore the fund sourcing through well conceived proposals.

(Action: Maritime States/UTs)

12.4.2.2 TRAINING AND STUDY TOURS

Member secretary, CPDAC informed about training conducted by NWA & CW&PRS in pursuance to last CPDAC meeting and informed that basic training given by NWA can be availed by the maritime states. He suggested that CW&PRS may be requested for specialized training required by the states on coastal engineering.

(Action: CW&PRS/ Maritime States/UTs)

12.5 COASTAL MANUAL

12.5.1 PREPARATION OF INDIAN SHORE PROTECTION MANUAL

A presentation was made by Sh. Sanil Kumar, Scientist, NIO on the background and status of manual on ñProtection and control of coastal erosion in Indiaò. He pointed out that the work assigned to NIO is to update the existing manual and not to prepare a fresh Shore Protection Manual. He expressed reservation on using the name of the manual as per agenda note since permission for reproducing from Coastal Engineering Manual (CEM), USACE was obtained in the context of existing manual. In the presentation he indicated the date of draft finalization as July, 2011 and completion by November, 2011.

Prof. V. Sundar, IITM, Chennai raised the issue of the necessity/relevancy of such manual in view of the existing and exhaustive manual namely CEM, USACE and European Manual. He opined that any designer will refer to the CEM, USACE and European manual and the manual being prepared by NIO, Goa may have no user as concerned State departments hardly get into the detailed design.

Chairman, CPDAC sought opinion of the members on the relevance and necessity of the manual. Prof. V. Sundar suggested that `manual` be replaced by` ñguidelineò in the title and it should include failures and success stories of coastal protection measures under taken by the States/various agencies. Reference can be inserted on the use of Geotextiles/Geo-tubes etc. as coastal protection measures. He also suggested that such failures/success stories /new technology should be regularly updated in the CPDAC website. Shri Sai Subramanian, EE, PWD, Puducherry also added that it should also have some guidelines to the States to tackle emergency measures. He pointed out that in the new CRZ Notification, 2011, there is no provision to tackle such emergency measures. Director, Coastal Erosion, CWC pointed out that the notification has been circulated to all CPDAC members for comments as requested by the MoEF. Shri D.K. Maiti, MD, West Bengal Fisheries Corp. Ltd, Kolkata and Ex-Secretary, Irrigation, West Bengal was of the opinion that the notification is final and may not need comments. Shri R. Shimray, Director, Coastal Erosion, CWC informed that amendments can always be suggested and requested for comments from the members on the notification. Chairman, CPDAC suggested that members may submit success and failures stories of coastal protection works to CPDAC secretariat for updating the CPDAC Website.

(Action: All members, NIO, CPDAC Secretariat)

12.5.2 MANUAL ON CONSTRUCTION TECHNIQUES OF COASTAL PROTECTION WORKS

CW&PRS entrusted with the job was not represented in the meeting. Technical Memorandum on ñ**Guidelines for Design and Construction Technique of Sea Wall"** submitted to the CPDAC secretariat by CW&PRS was circulated to the members. Chairman, CPDAC observed that the circulated Technical Memorandum cannot be considered as a guideline and requested the members for suggesting material with subject matter that need to be added for use as guideline.

(Action: All members & CW&PRS)

12.6 REVIEW OF THE EXISTING WORKS

Performance Evaluation of works done in Lakshadweep was presented by Shri S.P Abraham, Director (Beach Erosion), CWC, Cochin. Detail is given at **Annexure-II.** Chairman, CPDAC desired that Sub-committee should cover more works and increase its activities and suggested inclusion of NIO in the sub-committee. Shri A. Mahendran, CE (CS&RO), CWC, Coimbatore requested for cooperation from all maritime States and members of the sub-committee.

(Action: CE, C&SRO & Director, Beach Erosion Dte, CWC, CW&PRS& CPDAC Secretariat)

12.7 NATIONAL COASTAL PROTECTION PROJECT (NCPP)

NCPP was initiated with a view to explore the possibility of funding coastal protection works through external assistance. MoWR pursued for funding. After discussion between GoI and Asian Development Bank (ADB) for funding on coastal protection works, ADB approved grant for Technical Assistance (TA) named PPTA. The PPTA final report was submitted in May, 2009.The TA was used to prepare an investment project for sustainable coastal protection and management in the States of Goa, Maharashtra and Karnataka. ADB loan of about $ 250 million is in the pipeline for the three States. The PPTA broadly supports NCPP. Furthering the concept of PPTA, assistance including introduction of new technology and extending assistance through ADB, PPTA -2 has been initiated for Programme ï 2, which is likely to cover the States of Tamil Nadu and Gujarat.

Chairman, CPDAC opined that the cost of the ADB aided schemes are exorbitant and suggested that soft structures may be tried by engaging Indian consultants and contractors conversant with using soft technology& geo- textiles. Prof. V. Sundar opined that skilled personals are required for implementation of offshore structures and unforeseen expenditure is included in the cost estimate making it costly. He also informed that States should be very cautious in the use of geo-tubes especially on the contract agreement. Term on damage clause needs to be integrated and the source of sand should also be specified. Shri D.K Maiti added that States should also be aware that any exposed Geo-tubes will hardly last three years. Prof. V.Sundar informed that there are many companies in India dealing with geo-textiles and suggested for a workshop where all manufacturers can present their products.

Chairman, CPDAC suggested that Indian companies dealing with geo-textiles can be invited in the next CPDAC meeting which can be organized within 6 months and expressed the desire to organize CPDAC meeting at least twice a year.

(Action: All maritime States/UTs, CPDAC Secretariat)

12.8 MASTER PLAN FOR COASTAL PROTECTION

Member Secretary, CPDAC stated that during the last CPDAC meeting States were requested to take initiative on the preparation of master plan for coastal protection and informed that there was no response from the States. Prof. Sundar stated that Tamil Nadu and Kerala have master plans which were prepared after Tsunami event of 26th December, 2004 and expressed his willingness to share them with CPDAC.

(Action: Prof. V. Sundar, Maritime States/UTs, CPDAC secretariat)

12.9 COMPOSITION OF CPDAC

Member Secretary, CPDAC informed the confirmation of Non official members by MOWR namely Dr.V. Sundar, Professor, IITM, Chennai, Shri.D.K.Maiti, MD, West Bengal Fisheries Corp. Ltd (Retired Secretary, Govt. of West Bengal) and Shri. M.M. Kamath, CE (Retired) & Chairman, TEC for anti-sea erosion works in Karnataka.

12.10 STATUS OF COASTAL PROTECTION WORKS IN MARITIME STATES

Member Secretary, CPDAC informed that none of the States responded in supplying information on coastal protection except Tamil Nadu and Kerala. Gujarat representative informed that they have recently forwarded the information to CPDAC Secretariat. Chairman, CPDAC directed all maritime States to submit the same.

(Action: Maritime States/UTs, CPDAC Secretariat)

12.11 ANY OTHER ITEM WITH THE PERMISSION OF CHAIR

Shri B. Poiyaamozhi, Development Adviser (Ports), Ministry of Shipping informed the committee that lot of new ports are coming up and likely to cause erosion. He told that Ministry of Shipping is concerned with policy issue only and has no control over construction of smaller ports. He stated that causes of coastal erosion either natural or artificial need to be identified first in determining the coastal protection solution. He also mentioned that new CRZ notification has not given sufficient attention to Ports and Harbors. He further informed that geo-tubes are being used at Kolkata Port on experimental basis and comments on the performance can be sent to CPDAC.

12.12 VENUE OF THE NEXT MEETING

It was decided to request either Karnataka or Kerala to hold the next CPDAC meeting before the end of 2011. Since both the Sates were not represented in the meeting, it was decided that Gujarat may host the next meeting in case of unwillingness by the two States.

(Action: Karnataka/Kerala/Gujarat& CPDAC Secretariat)

SITE VISIT

Site visit was organized on 4th March, 2011.Participants were divided into two groups. One group visited erosion affected areas in Puri and protection works being carried out at Ramchandi on Konark-Puri Road. Other group visited Chilika Lake where erosion and accretion is causing shifting of mouth of the lake; the group visited the erosion site at Puri as well.

Annexure-I

Participants of 12th CPDAC Meeting

S.N	Name & Designation
	CWC
1.	Shri R.C. Jha, Member (RM), CWC & Chairman, CPDAC.
2.	Shri Rajesh Kumar, Chief Engineer (P&D), CWC & Member-Secretary, CPDAC.
3.	Shri A. Mahendran, CE, C&SRO, CWC , Coimbatore
4.	Shri Reading Shimray, Director (Coastal Erosion) CWC, New Delhi.
5.	Shri S.P. Abraham, Director(Beach Erosion),CWC, Cochin
6.	Shri R.N. Singh, Dy. Director, CWC, New Delhi
7.	Shri P. Sukumaran Assistant Director-II, CWC, New Delhi
	Other Central Agencies
8.	Shri B. Poiyaamozhi, Development Adviser (Ports), Ministry of Shipping, New Delhi
9.	Dr. Thomas Mathai, Director, Geological Survey of India, Kolkata
10.	Shri Sanil Kumar, Scientist, NIO, Goa
	State/UT's
11.	Smt. K.P. Padmavathi, CE(DR&CS),PWD,WRO, Chennai
12.	Smt. Jayanthimurali, IFS, HOD, State Planning Commission, Chennai
13.	Shri B.S.N. Reddy, Engineer-in chief, I&CAD, Andhra Pradesh
14.	Shri H.C. Behera, Engineer-in-Chief, Dept. of Water Resources, Orissa
15.	Shri K.B. Rabadia, SE, Surat Irrigation Circle, Gujarat
16.	Shri S.V. Prabhavalkar, SE, WRD, Goa
17.	Shri A.S. Salelkar, SE, WRD, Goa
18.	Shri PramodBadami, EE, WRD, Goa
19.	Shri D. Khaleel Ahmed, DD, IHH, Poondi, Chennai
20.	Shri Sai Subramanian, EE, PWD, Puducherry
	Non-official members
21.	Prof. V. Sundar, Dept. of Ocean Engineering , IITM, Chennai
22.	Shri D.K. Maiti, MD, West Bengal fisheries Corp. Ltd, Kolkata
	Private members invited for presentation
23.	Shri Ajay Pradhan, MD, DHI (India) Water & Environment Pvt. Ltd, New Delhi
24.	Shri B. Nagendrakumar, Private Consulting Coastal Engineer, Chennai

Annexure-II

SESSION -1: PRESENTATIONS

1. GUJARAT

Shri K. B. Rabadia, SE, Surat Irrigation Circle, Gujarat gave presentation on coastal erosion problem especially in Southern Gujarat. The total coastal length of Gujarat is about 1291* km. (*Coastal length is yet to be reconciled by NHO).* Valsad, Navsari, Surat and Bharuch districts of Gujarat State has its western boundary as Arabian Sea having length of about 200 km out of which 120 km is vulnerable to erosion. Along this coastal length extensive coastal erosion is noticed during last 10 years. Navsari District, some part of Valsad and Surat District experiences severe sea erosion problems. Different types of protection works mostly using flexible poly propylene rope gabion have been executed but result is not encouraging. During high tide of July 2009 protection schemes at village Nani Danti ï Moti Danti, District- Valsad, village ï Onjal Machhiwad, District- Navsari were totally damaged and protection scheme at village- Bhat District- Navsari was partially damage. He concluded that severe sea erosion problem is increasing in other areas. P.P. gabions are not suitable and protection using Tetrapod is costly affair. If protection work is carried out by larger size stones, Gabions, Tetrapods, Beach will lose its natural beauty. He emphasized that at present works are carried out by considering local problem but it is required to study whole coastline, study costal process and to find out cause of erosion and prepare mathematical model which will be required for providing permanent solution for erosion with eco-friendly design.

Possible reasons of the failures were discussed. Prof. Sundar was of the opinion that lack of proper toe protection usually is one factor contributing to such failure. He also sought the opinion of Kerala which has number of such protection works. Kerala was not represented in the meeting. Shri Thomas Mathai, Director, GSI, mentioned that not all Gabions in Kerala are a failure. Sh. D.K. Maiti, Ex-Secretary, West Bengal enquired whether overtopping of the structure could be a contributing factor in failure.

Shri K. Rabadia, SE responded that failure is in the mid portion of the structure and ruled out both overtopping and toe protection as contributing factor for the failure in the present case.

Sh. D.K. Maiti, Ex-Secretary, West Bengal indicated that vandalism of poly propylene rope may also be one of the reason. Shri S.V. Prabhavalkar, SE, WRD, Goa suggested that public passage/pathway or ramp can be in built for such protection works

2. ORISSA

A presentation was made by Sh. G.P Roy, DD, Dept. of Water Resources, Orissa on Coastal Erosion. It was informed that a buffer zone exists in the coastal belt of the State. It spans from 5-15 km in different coastal blocks. Characteristics of Coast of the State were represented as under.

Coastal Length	476 Km
From Rushikulya to Mahanadi Mouth	Micro Tidal (<2m) and High wave energy
Mahandi to Dhrama Mouth	Estuarine, Mudflats and Mangrove swamps
Baleswar Coast ï Miso Tidal (2-4 m)	Low Wave Energy, Silty and Muddy
Sediment along the Coast	Fluvial , Marine , Brackish , Lacustrine and Aeolian
Shoreline Along the delta	Protruding (extending) seawards

Details about the proposed project at Pentha village under World Bank assisted ICZM Project was also given during the meeting. It was also informed that under National Cyclone Risk Mitigation Project (NCRMP) proposals for reconstruction and new saline embankment of 150 km, protection measures at sea face and construction of 165 sluices on the embankments at estimated cost of ₹ 150 crore have been included. Protection at Puri is being proposed under JNNURM. It was also indicated that other protection measures may be considered for funding under Flood Management Programme.

3. ANDHRA PRADESH

Brief Report on sea erosion at Uppada coast and nearby village namely Subbampeta and Ameenabad situated at 14km north of Kakinada port was given by Sh. B.S.N. Reddy, E-in-C, I&CAD, Andhra Pradesh. The cause of erosion can be ascribed to the peculiar feature at the coast i.e. the existence of 17km long narrow sand spit called the Godavari sand spit (Hope Island) which has been steadily extending in length due to progressive deposition of sand transported by waves in form of littoral drift coming from the south. This sand spit forms a big shallow bay called the ñKakinada Bayò which is open from the north, breaks the continuity of the shoreline and consequently the continuity of sand travelling along the coast, resulting into deposition at the head of the sand spit. It cannot therefore reach Uppada shore as it otherwise would have done, leaving the energy to pick up the material from the coast near Uppada, thus resulting in Coastal erosion. CW&PRS has recommended construction of geo tube sea wall to prevent sea erosion at Uppada village near Kakinada in east Godavari district. Till date 60% of the work has been completed. Permission accorded to entrust the work on nomination to M/S Garware Wall Ropes Limited, Chennai, as the agreement was concluded with the firm.

4. PUDUCHERRY

Shri Sai Subramanian, EE, PWD, Puducherry informed that about 15km is affected due to erosion in the UT. Hard structures are strongly opposed by the locals. Eco-friendly proposal will be submitted for approval. He requested support from MoEF and MOWR/CWC. Smt. K.P Padmavathy, CE, DR&CS, PWD, Tamil Nadu, Chennai was of the opinion that protection measures in one State/UT should not transfer the adverse effect to other State/UT in particular reference to Puducherry and Tamil Nadu and also suggested that Central agencies should coordinate in this aspect. Shri Sai Subramanian, EE, PWD, Puducherry assured that any protection measure proposed in Puducherry will be done in Consultation with Tamil Nadu.

5. DHI

A presentation was made by Shri Ajay Pradhan, MD, DHI on **optimal Use of Numerical modelling Tools in connection with Coastal Protection and Developments**. He concluded that Modelling tools exist which can be used toprovide design basis, test and optimize various layouts including morphological development, quantify impact on the adjacent coast lines and quantify sediment loss.

6. PERFORMANCE EVALUATION OF COASTAL PROTECTION WORK IN LAKSHADWEEP

Director (Beach Erosion), CWC gave presentation on finding of forth meeting of the sub-committee of CPDAC on ñPerformance Evaluation of Coastal Protection worksò held at Lakshadweep in Jan, 2011. Sub-committee visited the protection works at beach near Govt. house, Boat jetty, Burial ground, Chicken Neck, Helipad, Kavaratti Harbour,Puthiyapally and near Administratorôs office.

Following observations/recommendations were made by the sub-committee.

1. The places where the protection works have been carried out have become stable,
2. No ecological damages have been reported along the coastline in U.T. of Lakshadweep due to the protection works,
3. The completed coastal protection structures have provided protection to valuable land, houses and other installations along the coast,
4. Protection works wherever carried out have controlled further erosion,
5. Some places coastal nourishment could be observed due to the protection works enhancing the process.
6. The coastal protection works carried out are as per the designs evolved by CW&PRS, Pune.
7. 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.
8. 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.

9. 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.
10. 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,.
11. Tourist potential and economical aspects on account of the same also be considered.
12. 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 (Mini break waters parallel or perpendicular to beach providing tetrapods/big stock over coral reef); the higher officers are not in favour of the same.
13. DPRs may be prepared by pooling specialistsô knowledge.

7. SEDIMENT ACCUMULATOR IN BEACH (SAB)

Sh. B. Nagendrakumar gave a presentation on SAB Technology which has been implemented in Mahabalipuram, near a temple. In the northern side, the erosion took place. He informed that SAB (Sediment Accumulator in Beach) technology is a Patented Technology for beach development. The function of Beach Lock Unit in the Surf zone prevents movement of floated sediments by current. Success story of SAB technology was presented through photographs showing the exposed stretches during monsoon and sandy beach during non-monsoon season.

He gave particulars about execution of the work. The length of protection is about 300 m with cost of about ₹ 35 lakh. He stated that work was completed in about 6 months.

8. Prof. V. SUNDAR

Dr. V. Sundar gave a presentation on important aspect of the Coastal Protection. He gave information about the interaction of tsunami with vegetation, design parameters for the Green Belt for different types of vegetation and its effectiveness. While discussing hard structures, he emphasized on the characteristics of an Ideal Sea wall viz Less Reflection and run-up, optimum use of coastal space, less/no wave overtopping, low crest elevation and less maintenance cost. Different types of sea wall viz Vertical Wall, Galveston sea wall, Flaring shaped sea wall and circular cum parabolic sea wall were discussed in terms of above ideal characteristics. He gave further information on different types of armour blocks mainly KOLOS which is a modified version of DOLOS by reducing the distance between vertical arms and hence having reduced susceptibility to failure. Same has been used in Krishnapatnam Harbour. He discussed various aspects of Artificial

Beach Nourishment, Sand by-passing, and usage of geo-synthetic in coastal protection activity.

Prof V. Sundar summarized the overall presentation session as requested by Shri R.C. Jha, Chairman, CPDAC. He remarked that only new presentation in the present CPDAC meeting was SAB Technology. While referring to the failure of protection works in Gujarat he stated that Sharp angular stone edges cutting the nylon ropes, where the wave action is there will be the reason for the failure of gabions. He cautioned the S

tates in the use of geo tubes especially on the contract agreement. Term on Damage clause need to be integrated and the source of sand should also be specified. Filling of sand bags should be executed very carefully as any unfilled section may result in failure.

Annexure -III

Minutes of the First meeting of Reconstituted Sub-committee of CPDAC on Coastal Atlas held on the 04th May, 2010 at CWC H.Q., New Delhi

1. Sh. Rajesh Kumar, C.E.(P&D), CWC and Member Secretary, CPDAC welcomed the participant. After introduction of members, he gave a brief back ground about preparation of Coastal Atlas and the importance given by CPDAC on its preparation. He mentioned that the usefulness of such Atlas will depend on how accurately it reflects the ground reality, and adaptability to changes. He appreciated the completion of the back ground work of the Atlas by SAC. Thereafter he requested Dr. Ajai, Convener of Sub-committee to elaborate upon the current proposal of SAC for preparation of Shoreline Change Atlas and tasks for the sub-committee.

2. Dr. Ajai, Convener of Sub-committee and Group Director, MESG, SAC (ISRO), described that Atlas will be beneficial for Coastal Protection, Coastal Zone Management and even Coastal Vulnerability study. He further stressed on the mandate of the sub-committee. He mentioned that once the project is initiated sub-committee should monitor the progress of work, provide feedback and if required should recommend mid-term corrections. He informed that mapping work has already been completed for the entire coastline of the country and requested CWC for release of the fund. The contents of the atlas were finalized in the meeting.

3. Commodore K.M. Nair, Principal Director, Directorate of Hydrography informed the sub-committee that Inundation Maps prepared by INCOIS for Tsunami Mitigation can also be referred by the SAC. He emphasized that Atlas should be in digital form and use WGS-84 datum which is commonly used. Dr. B.R. Subramanian, Project Director, ICMAM-PD, intimated that these Inundation Maps have been prepared by ICMAM at 1:5000 scale and have been provided to INCOIS. However this exercise is completed for the state of Tamil Nadu. Dr. Ajai, SAC confirmed that Atlas will be in digital form, GIS compatible and would be in WGS-84 datum. He stressed that certain value additions to the Atlas can be done at later stages.

4. Sh. Naveen Tomar, Director, Gujarat, Daman & Diu, GDC, SoI informed that MoEF is also doing extensive mapping work of coastal areas. Sh. Naveen Tomar and Commodore K.M. Nair opined that duplication of work should be avoided. Dr. B.R. Subramanian, Project Director, ICMAM-PD clarified that the work of NHO and MoEF is regulatory/legal in nature whereas the present proposal of Atlas is for planning and development purpose and can be pursued simultaneously.

5. Shri Reading Shimray, Dir (CE), CWC highlighted the decision taken in 3rd meeting of sub-committee ï Atlas will be in digital form and the scale proposed was 1:25,000 and 1:50,000 .He enumerated the importance of such Atlas in overall planning and prioritization of Shoreline Protection/management,

verification of the status of state wise Coastal erosion/coastal length and forming a basis for Coastal Management Information System (CMIS) being pursued under ADB funding. He mentioned that considering the importance of work, fund has already been allocated under 11th plan scheme of ñFlood Forecastingò

6. Dr. A. S. Rajawat, Scientist ñSGò, SAC (ISRO) gave a presentation on the current proposal for preparation of Shoreline Change Atlas of India. He informed the sub-committee that amount of expenditure requirement for protection is huge and currently we do not have any baseline data at national level to prioritize the protection work at national level. Considering the current situation and dynamic nature of the problem use of satellite data is very important. He gave information on the Objectives, Study Area, Collaborating agencies, data requirement, methodology, deliverables etc as submitted in the proposal for preparation of Shoreline Change Atlas of India.

   The major objective is to prepare a digital shoreline change atlas in GIS environment on 1:25, 000 scale using satellite data (1989-91 and 2004-06).

   The detailed objectives are:

   i) To quantify and classify the shoreline as shoreline under erosion, stable and accretion for all the maritime states by integrating shoreline using existing database of 1989-91 and 2004-06 period.

   ii) To integrate the field collected information on coastal erosion and shoreline protection measures of all the maritime states of India in GIS environment.

   iii) To analyse high resolution satellite data of 2009-2010 period for selected hotspot areas (areas showing large shoreline changes) and understand coastal processes responsible for such changes.

   He informed the committee that back ground work like baseline data generation for such Atlas is already completed for the entire coast of India. He told that Highest High Tide Linewill be used as shoreline and in quantifying the erosion, accretion because it is easily detectable on satellite image due to tonal discontinuity. For hot spot areas map will be prepared at higher scale.

7. Finally sub-committee decided on the following points.

   (i) Current proposal for preparation of the Shoreline Change Atlas submitted by SAC, Ahmedabad including Objective, Content, Scale and Methodology was confirmed by the sub-committee. Estimated budget of Rs. 60 lakh for the preparation of Atlas was also recommended.

   (ii) The contents of the Atlas including thematic informations were discussed and accepted as per the proposal.

   (iii) In respect of Objective (ii), it was decided that CWC will arrange the data which will be in spatial format (latitude, longitude and type of the coastal protection structure).

(iv) Sub-committee of CPDAC on Coastal Atlas should monitor the overall progress of work, provide feedback and if required should recommend mid-term corrections.

(v) In respect of prioritization of work it was decided that work should start with State of Gujarat and Tamil Nadu.

(vi) CWC will get the approval of the project from the competent authority and the first installment of the budget will be released by end of May, 2010.

(vii) SAC will start the project immediately after receipt of the first installment of the fund. The project shall be completed within 18 months from the date of release of funds.

(viii) Final deliverable of the project shall be Digital Shoreline change Atlas of India and Statewise A-3 size colored Coastal Atlas.

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