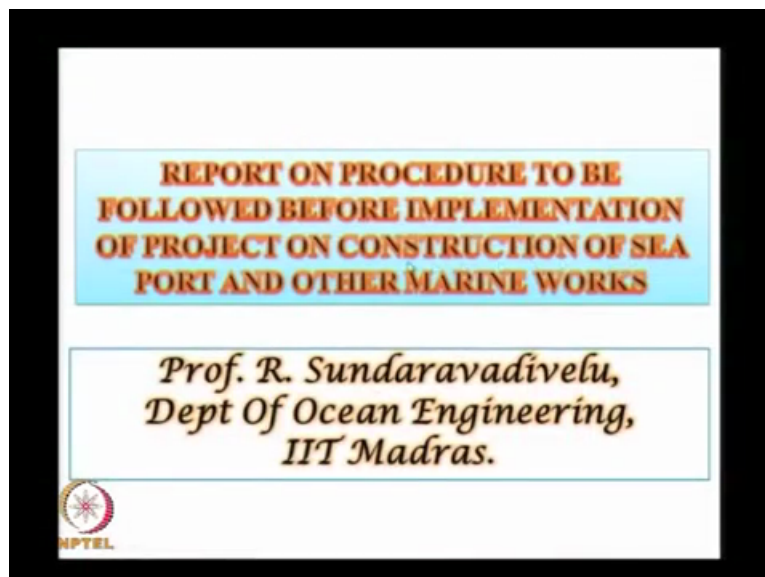


Port and Harbour Structures
By Prof R. Sundaravadivelu
Department of Ocean Engineering,
Indian Institute of Technology Madras
Module 8, Lecture 42
Procedures and Clearances Before
Implementation of a Project

See last class told you that clearances are required to sort any project. I will tell you about 4 steps involved before implementation of project and construction of sea port or other marine works. Other marine works includes sea water intake system outfall systems etc these are for atomic power plants thermal power plants for all those things also same procedure is to be adopted.

(Refer Slide Time: 00:44)



A construction of not only sea port, hello why are you going like that video is going on why are you crossing you got out this side you do not have any sense at all hmm? You go and sit there, sit that place. Sea port includes ship yards and other facilities also.



(Refer Slide Time: 01:20)

STEPS FOR CONSTRUCTION OF MAJOR PROJECT ON MARINE WORK

Step: 1
✓ preliminary project report (PPR) / Technical feasibility report

Step: 2
✓ "Form I - duly filled in" along with the terms of reference (TOR to be spelt out by the developer of the port) and PPR to the "Expert committee for infrastructure development and miscellaneous projects, Ministry of environment and forest"

Prof.R.Sundaravadivelu,
Department of Ocean Engineering,
IIT Madras

The first step is to prepare a preliminary project report, which is also sometimes called as technical feasibility report developer needs techno economical report feasibility report. So these reports are prepared based on secondary data, secondary data means whatever the data which is available and general guidelines for cost estimate another thing. typically this should be prepared within a month's time.

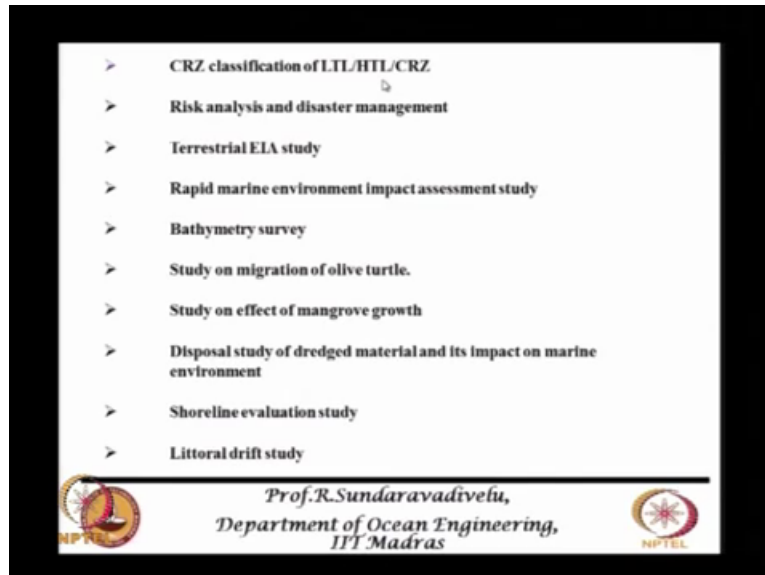
Once you prepare this technical feasibility report there is a form this is called as a Form 1 this should be filled in along with we have to give Terms of Reference, Terms of reference means what all the studies that we are going to do that has to be mentioned in that and enclose this preliminary project report then we have to submit to the expert committee and they will review this and then they will be giving additional terms of reference which may have to be carried out.

Then we may also have to prepare a detailed project report with all these TOR what we have proposed as well as the additional terms of reference specified by the committee we have to carry out everything along with the detailed project report which includes the cost estimates in a based on the site specific data then it goes into step 4, is it clear? That is you smell out some reference submit to the committee it will review the terms of reference what you have submitted.

It will specify additional terms of reference then you carry out all those things one of the advantage is earlier in our MOEF they never spell out what are additional terms of reference. Everytime you go to the meeting they will go on adding additional terms of reference they

will ask you to do certain things more and things like that. But in this procedure what is now formulated you submit the preliminary project report you submit the terms of reference what you are doing they specify the additional terms of reference what is to be carried out by that it becomes complete.

(Refer Slide Time: 03:28)



So what are all the things that are required normally in a terms of reference CRZ classification, what is CRZ? You know what is CRZ? Coastal Regulation Zone it is specified. What are the activities that can 1,2,3,4, like that it is specified. LTL is low tied level and High tide level and one of the problems in India is suppose there is a doctor you want to start a profession so you undergo some training, right? If it is a Lawyer he goes for appendorship, for Engineer nothing is required once you get the degree. You fellows are disturbed in the video.

Where is it required? Not in India it is called as a professional Engineer it is required in many developed countries even in Malaysia you need a license to do the anybody with a bachelor degree in Engineering they can start the company here that is not the case. I was telling CRZ classification has to be done only by 7 authorized agencies not by one and all. One of them is NIOT which is in Chennai; another is Institute of Remote sensing in Anna University, the third one is NIO Goa like that. Only Agencies which have scientific manpower and equipments they only can do.

And risk analysis and disaster management that also should be included that is called as terrestrial AA study, what is terrestrial? what is marine? What is the difference between

terrestrial and marine? On land is terrestrial, on water is marine. There is a Accreditation council is there National Board of Accreditation. Now they have accredited agencies which can do the industrial AA, only those agencies can do, not everybody can do. Marine AA also they are doing it but it is not yet completed.

So this lacuna in anybody doing the work is now modified or changed completely so that only the qualified agencies will do the work that is the Terrestrial AA and Rapid Marine Environmental Assessment study. There are two types of studies they are environmental one is a Rapid AA study and another is Comprehensive. Rapid AA means it is for one season. There are three seasons in India: One is the North east Monsoon, South west and Non monsoon. One of these monsoons they do that is called as a Rapid AA comprehensive now a days they are asking for most of the project. The (())(06:15) project earlier they did not do the Comprehensive now they have been asked to do the comprehensive, most of the atomic power plants they want them to do the comprehensive AA.

There are some zones of Accreditation some zones of erosion which is already identified along the India map wherever the erosion rate is very high more than one meter per year or something like that then you have to do the comprehensive AA study. We have to do a bathymetry survey that is to find out the depth of water then the migration of olive turtle. Which are the olive turtles migrating in India? Which are the locations? Hmm? Marina Beach, then where else? There are certain locations in India which are very used for (Micro) olive turtles none of you know. Have you seen Olive turtle at least? Not photograph atleast.

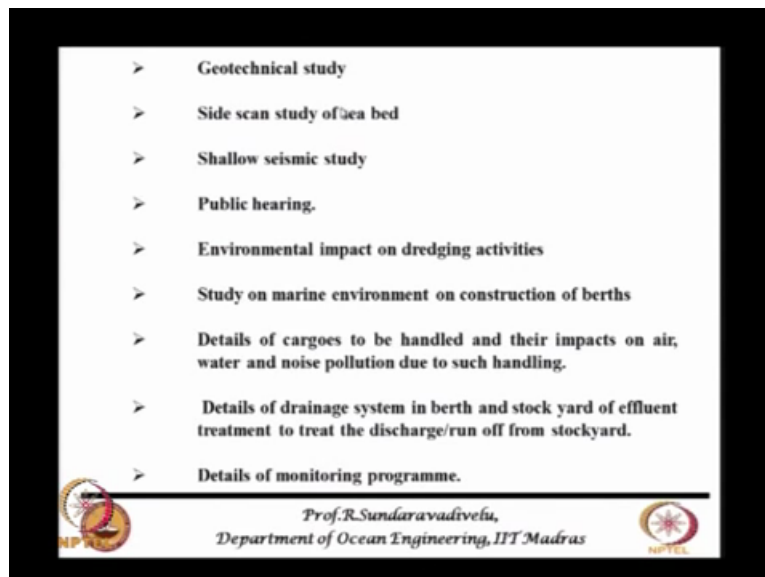
There is a coast in Orissa they have this Olive there is a river called as [Rushikulya river](#) north of the river mostly it is on the river bed. Marina is not the correct answer it is (()) (07:25) where olive turtles are coming. Especially on this (())(07:30) only this olive turtles come. How many eggs they lay? Olive turtles, it is in hundreds or thousands nature is giving them you know protection even if the eggs are damaged still it will come but this has to be protected.

Then again Mangrove, what is Mangrove? Hmm? What is Mangrove? Shall I it does not hmm? See Mangroves they grow only in the inter tidal waters where are the Mangroves in India? West Bengal, which place it is called? [Sundarbans](#), where else? Andaman. Another place? Anybody from Tamil Nadu here? Raise your hand, hmm? Any place in Tamil Nadu? Hmm? Pichavaram where is it? Near Chidambaram there also we have Mangroves. What is

the advantage of these Mangroves? During even Tsunami it protects the coast line from this. So that is also so these are the two things that are to be considered.

These olive turtles are in two rivers one is the Mahanadi basin that is called as Baghdi Mahan another is [Rushikulya river](#) then another is (())(08:54) also there are other places also but Orissa coast is more famous for this. Why do we have to provide olive turtle? What happens if it dies? Why should we worry about that? Hmm? Contagious means? It is not disease. I thought contagious, contagious species why should you protect that? How does it affect the (())(09:19) system? Foot shine is the correct answer. So it depends on the foot shine it is not only endangering this particular species it will only endanger the whole system also.

(Refer Slide Time: 09:37)



Then disposal study of dredged material and its impact on marine environment then shoreline evaluation study, and littoral drift study. These are the studies that are to be carried out very important studies.

But some more studies are there that is geo technical study, Geo technical means bore well investigation, Side scan study, Shallow seismic study these are the two studies these two studies can be done may be in a area of 1 square kilometre this study may cost about ton lakh rupees whereas Geo technical studies will cost suppose 1 to 2 crores Marine bore well investigation. This is done in the DPR stage whereas these two studies are done for most of the projects when you go to the step 3 or step 4.

Public hearing: you know what is public hearing ? have you heard of it? Public hearing is a mandatory requirement this is done by a district collector where all the people go and the developer makes a presentation it is video graphed just like todays lecture this whole thing is video graphed and it is kept as a documentation it is done for major projects whether it is a atomic power plant thermal power plant, whether it is a port facility for anything we do this public hearing. In public hearing all the public can go and make a presentation also.

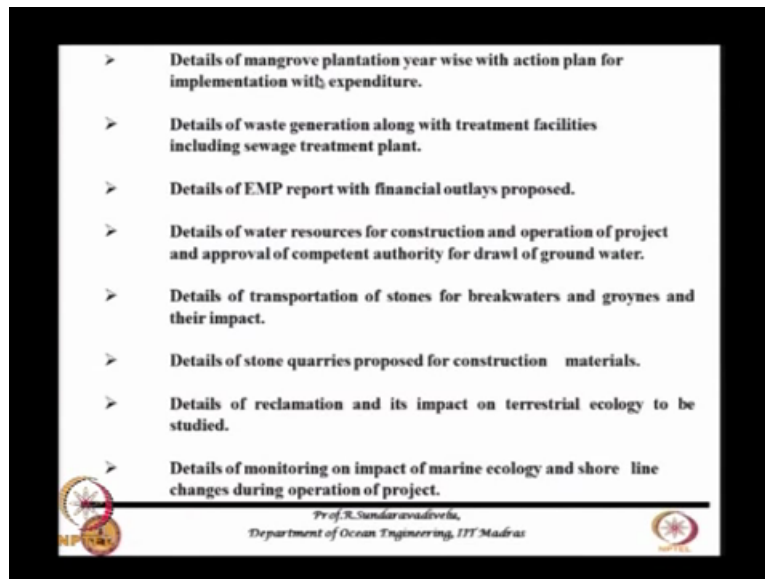
If they have some problem they will say that we do not want the facility here you know one of the power plant was said that atomic power plant in Maharashtra I think and based on the public opinion they said they will not build that power plant at that location. Similarly the Vedanta they have some satellite it is there in (())(11:21) Portnov an industry was shifted there and they will say that certain remedial measures are to be done. They will also say that even in Kudankulam power plant Tamil Nadu Government has announced about 500 crores package for the people nearby. There is a budget 150 crores has been given to them.

So they will tell what is that they need if the power plant comes at that location. Then we have to do the environmental impact on dredging activities study on Marine environment and construction of berths. We have also to discuss details of cargoes to be handled and their impacts on air, water and noise pollution due to such handling. Details of drainage system in berth and stock yard of effluent treatment to treat the discharge run off from the stock yard, Details of monitoring program.

There are two activities one is the environmental impact assessment another is an environmental management plan the third one is the monitoring program. The monitoring program is normally done once in 6 months. There is a branch office for this MOEF of ministry of Environment Forest at Bangalore. They take care of the southern region. So the developer has to submit the monitoring plan.

And when the project is executed they submit their report, it can be monthly, bimonthly or once in 6 months depending on the data to be collected that to be submitted. The future for any Engineering activity is on environmental impact and management plan. So without this it is very difficult to carry out any project.

(Refer Slide Time: 13:02)



So suppose you are removing any Mangroves in certain areas Mumbai airport also we have to remove certain areas Mangroves so we have to go for Mangrove plantation with action plan with the expenditure being being in the funds of the project development. What are the ways that are generated? What are the treatment facilities including sewage treatment plant especially for the desalination plants as well as cooling water intake there is a intake and outfall where you have to dispose outfall has to be done.

That environmental management plan what is the financial outlays that are propose that also has to be given. The water resources for construction and operation of project and approval of competent authority for drawl of ground water. Generally it is not allowed to tap the ground water. In Kerala I think it is for Coca cola or Pepsi they have been told not to draw the ground water. Most of the Marine projects we do not allow them to tap any ground water. They have to do the desalination only.

This is another important aspect that is a transportation of stones for break water and groynes and their impact. So quarry may be at a distance of 30 kilo meter or 60 kilo meter or 100 kilo meter. So if you transport these stones by trucks whatever road you have laid that road will not be in good condition. The another problem is associated with the traffic generated the pollution and other aspects also.

And the quarries are another area of importance there is a license given to the quarries that how much can be removed from the quarry also is to be done. Details of reclamation when you dredge it you will reclaim on the land and what issues impact on terrestrial ecology to be studied. And the details of monitoring on impact of marine ecology and shore line change

during operation project that is how the shore line is changing that also has to be measured and that has to be reported.

The step 3 and step 4 are not you complete step 3 and then go for step 4. I have separated step 3 and step 4 as step 3 for state government and step 4 for Central Government. So both the state government and central government are required. They have to work together for implementing any project. State Government is a final authority it may look at the Central Government as a final authority when it is not always the case.

The state Government has to, there is a state pollution control board, this gives a consent of establishment then only anybody can start the work. But this consent for establishment will be given only after the Central Government gives the approval. What is the port has been established before starting the work, the state government has to give the clearance for consent for operation.

There are two agencies involved for both these things one is the state pollution control board, another is a forest department may be you may not be aware of this state forest department this is very important there are areas where the forest department has to give clearance. They give clearance for all (())(16:20), they give clearance for any damage to the forestry and all those things. Pollution control board gives clearance for air, water, noise pollution, ground water drawl. What happened to the shore lane and all those things ?

There is a ministry of environment in each state government, these people works under the control. Many of you may not be knowing there is a chief secretary for state Government the equivalent Cadre in the Police is Direct General of Police both are of the equal ranks only. They are controlling any state Government activity.

(Refer Slide Time: 17:10)

Step : 3; Clearance from State Government

- Clearance from State Pollution Board to be obtained for giving consent for establishment (COE) of Port facility.
- Clearance from state forest department for establishment of port facility (chief wild life warden of stat government).



*Prof.R.Sundaravadivelu,
Department of Ocean Engineering,
IIT Madras*



Similarly the state pollution control board as well as the forest department the top most secretary of the IFS officers are incharge of this State Forest Development. So both of them have equal responsibility and powers for this state Government clearance.

(Refer Slide Time: 17:20)

Step: 4

- The expert committee of **MOEF** will after security of the Form I will send final terms of reference (**TOR**) to be submitted to the committee covering any **additional TOR** they may require apart from those already mentioned in Form I by the Developer
- **Detailed Project Report (DPR).**
 - > **Metrological & Oceanographic.**
 - > **Geotechnical data**
 - > **Topographical information**
 - > **Transport linkages**
 - > **Traffic study**
 - > **Mathematical model study**
 - a. **Wave tranquility studies**
 - b. **Sedimentation studies**
 - c. **Navigation simulation studies**
 - d. **Disposal study for dredging material**

*Prof. K. Sundaravadivelu,
Department of Ocean Engineering, IIT Madras*

Next step is with the form 1 with the technical feasibility reports with some of the studies especially the CRZ zone mapping based on the secondary data what are all the things that is going on all these things will be done then they will prepare the detailed project report. This may be repetition of what has been given earlier but I will explain they will give the metrological and oceanographic data. Metrological data is rainfall and other information, oceanography is wave, tide, Tsunami things like that.

Geotechnical is soil parameters, Topography means the topographical features of the area, the transport linkages this also has to be done transport linkages there are 4 linkages that is possible, can you tell them? What are the linkage of transport? 4, I told from the port to the interlard, name one or two, railways then roads then transports you are not including them khillan water way then.

What is the fourth one? Pipelines these are the fourth linkages we have to study. Then we have to do the traffic study this is very important the traffic study is influenced both on the environment as well as the cost of the project. Then there are certain mathematical studies being carried out most of the studies can be done in IIT Madras. The wave tranquillity studies to find out what will be the wave inside a harbour basin, sedimentation studies.

If there are some people with the M tech course Engineering or B Tech Naval Architecture they can study the navigation simulation that means when the ship is coming near the port we start the engine attach the boats and then bring the vessel inside that also can be done numerically. Then disposal study of dredging materials, how much time it takes for the

sediment which is disposed to settle, how much area it is covered? All these things can be done in a mathematical model study.

Each study is approximately varying between 5 lakhs to 10 lakh rupees. Each one of these studies. There are standard software packages available, the cost of the software is totally different, but many agencies can do the study, qualified agencies many means it is not more than a dozen within India, maybe I will do it in the next class.