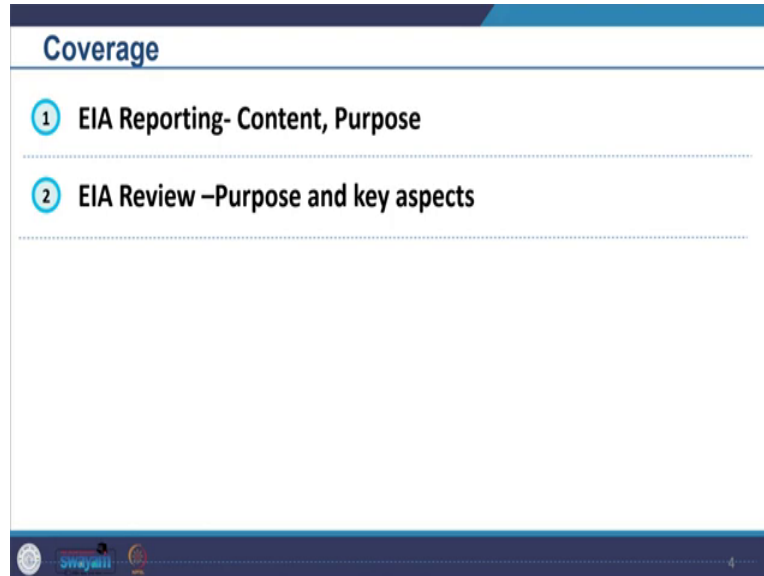


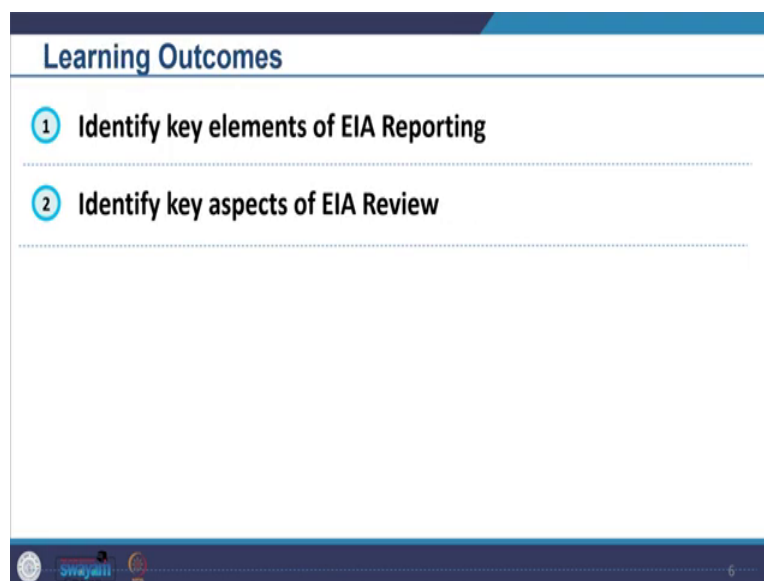
Environmental Impact Assessment
Professor. Harshit Sosan Lakra
Department of Architecture and Planning
Indian Institute of Technology, Roorkee
Lecture 57
EIA – Reporting & Review of EIA Quality

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Welcome to the course Environmental Impact Assessments. In today's session, we are going to look at EIA reporting, and how it is done, and then we will also look at how EIA reports are reviewed for their quality. So, accordingly, our coverage will include that we will look at EIA reporting, we will look at its content and purpose and then we will look at the EIA review process, what is its purpose and what are the key aspects when EIA reports are looked into when they are reviewed and how do reviewers look at that.

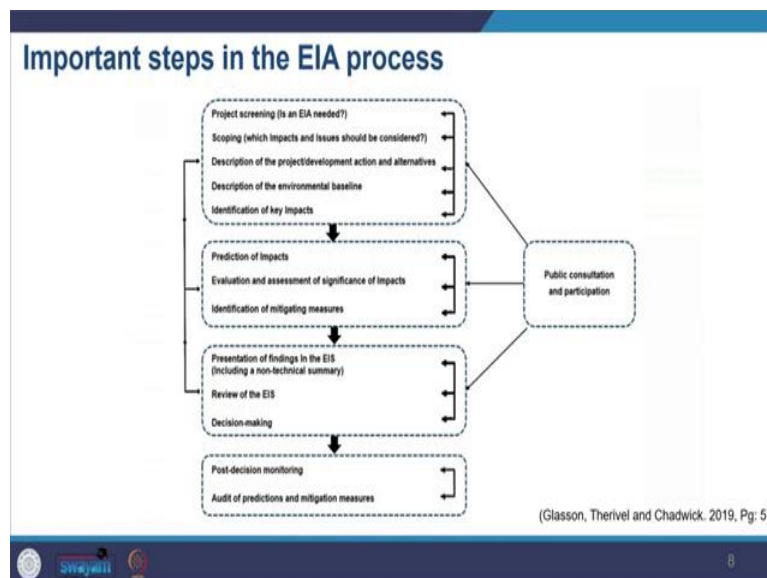
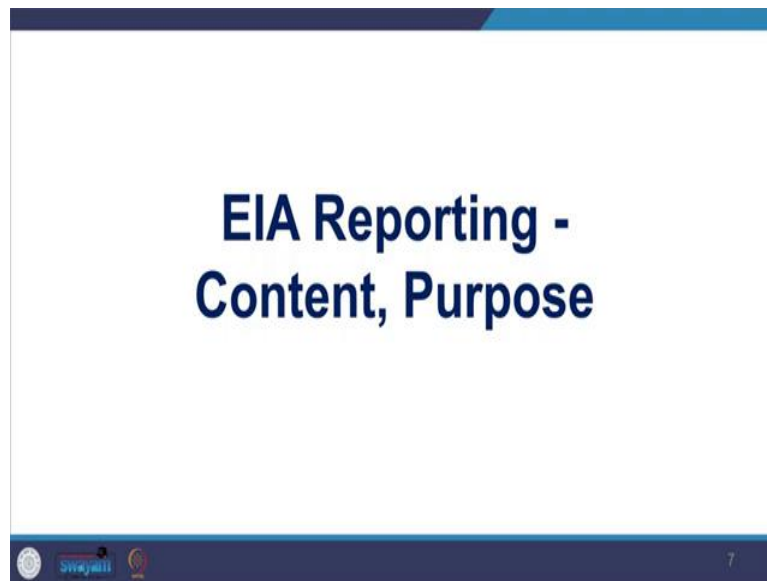
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So, accordingly, the expected learning outcome is that after completion of this session, you should be able to identify key elements of EIA reporting what all should be put, so you should be able to list and structure EIA reporting and then understand what should come in which part of the reporting.

Further, you should be able to identify key aspects of EIA review, and what the good quality report looks like, so you should be able to identify those and then be able to judge EIA report quality.

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So, looking at EIA reporting content and purpose we see that just to locate ourselves where we are, which process we are talking about, we are here in the fourth box where we are doing like the review of environmental impact assessment. So, that part we are in, and then after the report has been prepared and it is submitted for review we will look at the review part.

So, we will look at both how the report writing is done as well as how the report is reviewed. So, if you are a reviewer what things you would look for when you are checking, that you are evaluating an EIA report as well as when you are preparing it what would be the key structure and within the structure also how do you understand each component of that structure. So, we are basically in the third box of this EIA process.

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APPENDIX III (See paragraph 7)		Generic Structure of EIA Document	
GENERIC STRUCTURE OF ENVIRONMENTAL IMPACT ASSESSMENT DOCUMENT			
1. INTRODUCTION			
<ul style="list-style-type: none"> • Purpose of the report • Identification of project & project proponent • Brief description of nature, size, location of the project and its importance to the country, region • Scope of the study - details of regulatory scoping carried out (in the case of projects requiring scoping) 			
2. Project Description			
<ul style="list-style-type: none"> • Condensed description of basic aspects of the project (based on project feasibility study, study to assess environmental effects. Contents should be provided to give brief picture of the following: <ul style="list-style-type: none"> - Type of project - Need for the project - Location (map showing general location, specific location, project boundary & project site layout) - Size or magnitude of operation (and Associated activities required for the project) - Proposed schedule for approval and implementation - Technology and process description • Project description including drawings showing project layout, components of project etc. Schematic representation of the feasibility drawings which give information important for EIA purpose • Description of mitigation measures incorporated into the project to meet environmental standards, environmental operating conditions, or other EIA requirements as required by the project • Assessment of how & latest technology for the use of technological value 			
3. Description of the Environment			
<ul style="list-style-type: none"> • Study area, natural components & existing • Establishment of baseline for valued environmental components, as identified in the scope • Base maps of all environmental components 			
4. Anticipated Environmental Impacts & Mitigation Measures			
<ul style="list-style-type: none"> • Details of anticipated Environmental impacts due to project location, process activities, project design, project construction, regular operations, final decommissioning or stabilisation of a completed project • Measures for minimising and/or offsetting adverse impacts identified • Inevitable and ineliminable constraints of environmental components • Assessment of significance of impacts (Criteria for determining significance, Assigning significance) • Mitigation measures 			
5. Analysis of Alternatives (Technology & Site)			
<ul style="list-style-type: none"> • To state the existing scenario results in need for alternatives • Description of each alternative • Summary of adverse impacts of each alternative • Mitigation measures proposed for each alternative and • Selection of alternative 			
6. Environmental Monitoring Program			
<ul style="list-style-type: none"> • Technical aspects of monitoring the effectiveness of mitigation measures (incl. Measurement methodologies, frequency, location, data analysis, reporting schedules, emergency procedures, model budget & procurement schedules) 			
7. Additional Studies			
<ul style="list-style-type: none"> • Public Consultation • Risk assessment • Social Impact Assessment (SIA) Action Plans 			
8. Project Benefits			
<ul style="list-style-type: none"> • Improvements in the physical infrastructure • Improvements in the social infrastructure 			
		<ul style="list-style-type: none"> • Employment potential - skilled, semi-skilled and unskilled • Other tangible benefits 	
9. Environmental Cost Benefit Analysis		<ul style="list-style-type: none"> • Recommended at the scoping stage 	
10. EMP		<ul style="list-style-type: none"> • Description of the administrative aspects of ensuring that mitigation measures are implemented and their effectiveness monitored, after approval of the EIA • Check certification for implementation of the project 	
11. Summary & Conclusion (This will constitute the summary of the EIA)		<ul style="list-style-type: none"> • Evaluation of how, adverse effects have been mitigated 	
12. Declaration of Consultants engaged		<ul style="list-style-type: none"> • The names of the Consultants engaged with their brief resume and nature of Consultancy rendered 	

So, looking at like EIA report structure we follow generally in the Indian context we look at Appendix Three of EIA Notification 2006, which helps you to identify what should be the key report structure so that is the available guideline. As well as here I have also taken inputs from ToR which also gives you a sectoral view of what kind of report layout has to be there, and what would be the key elements which have to come in here.

So, looking at the EIA notification 2006 you can see here that I have taken the snip from the notification. So, you can see that you have an introduction where you put the purpose of the report, and why the report has been prepared. Then you identify the project and project proponents, and you tell about those things.

Then you also tell about the nature, size, location of the project, and its importance to the country and region. So, you tell its significance, it is important because that is why you are doing it and it has this particular project has to be done because it is needed, it is important, and then the scope of the study what all the EIA would be covering here and details of the regulatory scoping carried out as per the terms of reference.

So, what terms of reference, what was the guideline that you were supposed to cover within the EIA report, and how did you cover that? Then you look at the second part which deals with project description. So, here you give a range of things ranging from a condensed description of the aspects of projects, so you give like in a very condensed form, what are the different aspects of the project including the feasibility study, why it is feasible and likely to cause environmental effects, what kind of environmental effects it would cause and detail should be provided to give a clear picture to any reader of the report.

So, it would tell about the type of projects, the need for the projects, and the location, size, or magnitude of operation at what scale it is going to operate. And propose a schedule for approval and implementation, what is the schedule that has been followed, and then the technology and the process description?

Then the project description and all the detailed drawings, maps, components, diagrams, all these things have to be provided and what kind of mitigation measures will be incorporated into the project that all needs to be told here. An assessment of new and untested technology for risk of technological failure.

So, if any kind of technology has not been assessed before it has been used you need to describe the information in the report. So, that would come as a project description and you may also reconnect with all the components we have talked about like the process part, the different domain parts, and different components within that domain which we had discussed in terms of legislation, in terms of its process and methods. So, all those have to be accordingly put in the project description.

Then number 3, you see that description of the environment. So, here you would be telling wherever the project is located about the environment. So, what is the study area, what is the duration of the study, and then the components and the methodology that you have adopted for this particular study?

And then you need to establish the baseline for the valued environmental components VEC which we have studied, so you will be doing the baseline you have seen for every domain you have seen, and already seen how to conduct a baseline study. So, that has to be given here in the description of the environment. And then base maps of all environmental components. So, all the maps have to be provided.

Then the fourth part of the report you see anticipated environmental impacts and mitigation measures. So, here you provide details of investigated environmental impacts due to the project's location, possible accidents, possible project design, project construction, and because of its operations and because of its other stage of decommissioning or related rehabilitation of the completed project.

So, based on all these we have seen that we do impact assessment for all the stages, the broad stages are the construction stage, operation stage, and decommissioning stage, and aligned activities with that with the process and then also if rehabilitation is involved. So, all that would be coming in this segment of the report.

Then you would also give measures for minimizing and or offsetting adverse impacts that have been identified. So, how you are going to minimize the impact and impact and how you are handling it? And then you will also identify the nature of what we had discussed in the very beginning you will review what is the reversible or irreversible impact, what is the magnitude of the impact, what is the duration, nature, and temporal nature of the impact, and so on.

So, that all aspects you would be looking at and discussing in this segment and you will be assessing the significance of the impact based on all these criteria which we had already discussed and upon that which cannot be handled what would be the mitigation measures so that all usually go in this part of the report anticipated environmental impacts and mitigation measures.

So, now looking at point number 5, you look at the analysis of alternatives. So, you discuss that not just that side or that particular design but you also discuss the changes in the technology and change in the site. So, you review that you have not only looked at that particular site but you have looked at the alternative sites as

well and then you have also looked and explored various available technologies, and based on that you have chosen the optimal option.

So, in case the scoping exercise results in a need for alternators, when the scoping is done and if there is a need for alternatives you would be identifying, and analyzing alternatives here and you would describe each alternative like what a similar way the project descriptions each alternative would be described with that in that terms what kind of technology and what kind of site changes are happening.

You would also give a summary of the adverse impacts of each alternative like how each alternative is changing. So, mitigation measures proposed for each alternative also have to be discussed, and then out of all those alternatives you have seen in many cases when we were doing the sectorial methods you have seen how we discussed alternatives compared upon the alternatives.

So, in the sixth segment, you can see the environmental monitoring program EMP, so here you give the technical aspects of monitoring the effectiveness of the mitigation measures. So, you look at how you are dealing with all kinds of impacts and what kind of solutions you are giving how you are going to measure all these things what will be the frequency location, how you are going to analyze the data, what will be the reporting schedule, emergency procedures, detailed budget and procurement schedules, so how you are going to give that. So, we have already seen EMP, so that part comes here.

And then in the seventh segment, you see any additional studies, any kind of references which you have put together has to be placed here, so you look at and then key point here is the public consultation, so how you have undertaken public consultation that all has to be recorded and what inputs you got from the public consultation and how that was taken care of have to be recorded here.

Plus, the risk assessments like what are the involved risks and then also social impact assessment and rehabilitation and resettlement action plans if that is also involved in your project that has to be placed here. And then you see the project benefits so not only the adverse impact but the positive impact that you will have from the project. So, how it is going to improve the physical infrastructure, and social infrastructure has to be provided here.

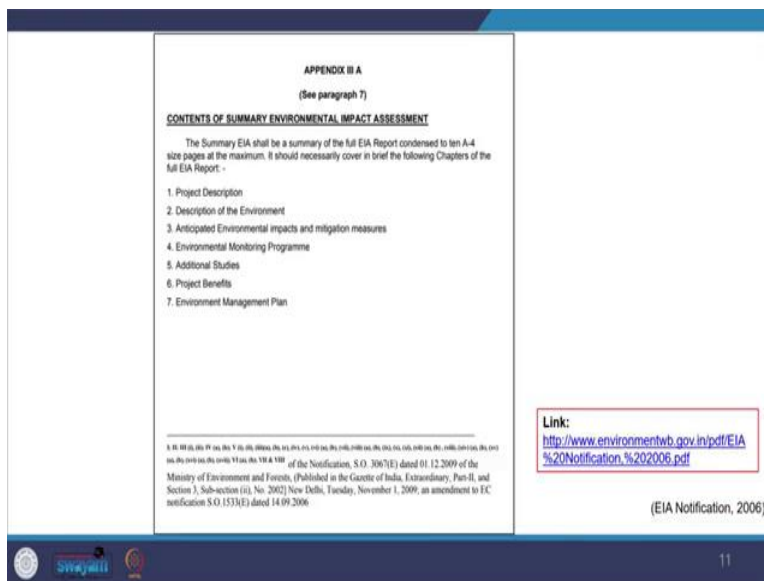
And you see in the ninth segment you have environmental cost-benefit analysis, you need to put it only if it has been identified at the scoping stage otherwise it is not a necessary element of EIA reporting. Then here you will have an EMP environmental management plan. So, here for category a it is mandatory to provide EMP and certain category b might also require EMP so first category a it is mandatory.

So, whatever the residual impacts are that cannot be minimized how you are going to handle them through the EMP environmental management plan? So, that has to be provided here, and then you will describe the administrative aspects of ensuring that all the mitigation measures are implemented and their effectiveness is monitored it also has like it is usually like we had discussed done after the approval of EIA.

So, this EMP is usually done after the project has, these actions taken once the project has been approved. And then later part deals with the summary and conclusion which helps anybody to evaluate what kind of, what direction, what judgment it leads to. So, the overall justification for the implementation of the project and, explanation of how adverse effects have been mitigated is what you will be putting under the summary and conclusion.

And then disclosure of consultants engaged so you see the 12 parts. So, if you are part of the team then all this information has to be disclosed here. So, that is the overall structure given by notification 2006.

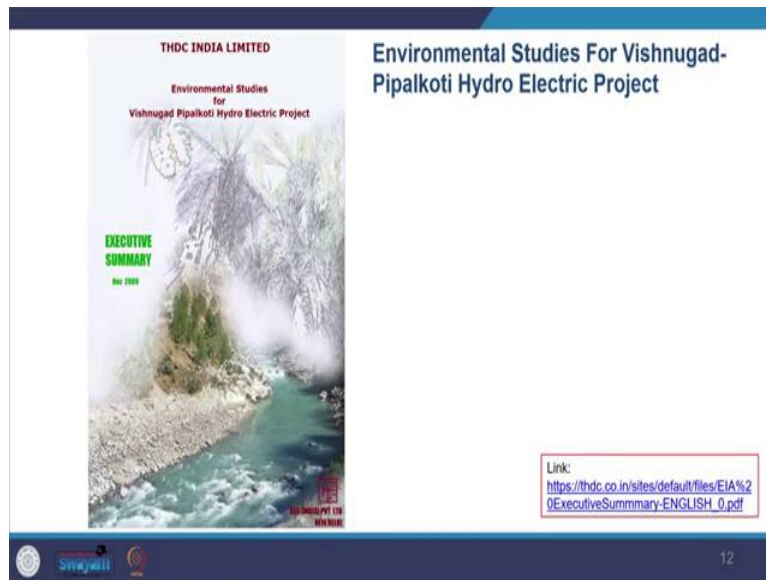
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You also see it gives you the summary of EIA reports so it would also have a summary which would be mostly read and a summary will have all these 7 points which you can see, project description, description of the environment, and anticipated environmental impacts and mitigation measures, environmental monitoring program, additional studies, project benefits, and environmental management plan.

So, all these things would also be there in the summary part and the summary is said to be very important because most of the time this would be read frequently in any report. So, I have given you a link to these particular examples, there are many you can download from the Ministry of Environment, you can download from their site.

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I have given you the link to one of the reports here, it is a lengthy report in certain volumes. So, you can go through that and try to understand how the report is I have put some of the snip here for your understanding but it is a very detailed report so I am giving you separately to understand.

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Structure of EIA Report

(TGM for Thermal Power Plants, 2010)

Table 4.4: Structure of EIA Report

S.No	EIA Structure	Contents
1	Introduction	<ul style="list-style-type: none"> Purpose of the report Identify scope of project & project preparation Brief description of nature, size, location of the project and its importance to the country/region Scope of the study - details of regulatory scope(s) covered (as per Terms of Reference)
2	Project Description	<p>Condensed description of those aspects of the project found in project feasibility study, likely to cause environmental effects. Details should be provided to give clear picture of the following:</p> <ul style="list-style-type: none"> Type of project Site for the project Location (map showing general location, specific location, project boundary & project site layout) Size or capacity of operation (and) Associated activities required by it for the project Proposed schedule for approval and implementation Technology and process description Project description including drawings showing project layout, components of project etc; schematic representations of facility drawings which give information required for EIA Description of mitigation measures incorporated into the project to meet environmental standards, environmental operating conditions, or other EIA requirements (as required by the scope) Assessment of New & updated technology for the risk of technological failure
3	Description of the Environment	<ul style="list-style-type: none"> Study area, period, components & methodology Establishment of baseline for VECs, as identified in the scope Base maps of all environmental components
4	Anticipated Environmental Impacts & Mitigation Measures	<ul style="list-style-type: none"> Details of foretold environmental impacts due to project location, possible accidents, project design, project construction, regular operations, fuel decomposition or utilization of a completed project Measures for minimizing and / or offsetting adverse impacts identified Intervisible and irreversible components of environmental component Assessment of significance of impacts (Criteria for determining significance, scoring significance) Mitigation measures
5	Analysis of Alternatives (Technology & Site)	<ul style="list-style-type: none"> In case, the scoping exercise results in need for alternatives Description of each alternative Summary of adverse aspects of each alternative Mitigation measures proposed for each alternative and selection of alternative
6	Environmental Monitoring Program	<ul style="list-style-type: none"> Technical aspects of monitoring the effectiveness of mitigation measures (incl. Measurement methodologies, frequency, location, data analysis, reporting schedules, emergency procedures, detailed budget & procurement)
7	Additional Studies	<ul style="list-style-type: none"> (as/where) Public Consultation Risk assessment Social Impact Assessment, B&R Action Plans
8	Project Benefits	<ul style="list-style-type: none"> Improvements in physical infrastructure Improvements in social infrastructure Employment potential -skilled, semi-skilled and unskilled Other tangible benefits
9	Environmental Cost Benefit Analysis	<ul style="list-style-type: none"> If recommended at the Scoping stage
10	EMP	<ul style="list-style-type: none"> Description of administrative aspects that ensure proper implementation of the mitigative measures and their effectiveness monitored, after approval of the EIA
11	Summary & Conclusion (This will constitute the summary of the EIA Report)	<ul style="list-style-type: none"> Overall justification for implementation of the project Explanation of how, adverse effects have been mitigated
12	Disclosure of Consultancy engaged	<ul style="list-style-type: none"> Names of the Consultancy engaged with their brief resume and nature of Consultancy rendered

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So, that was about the structure, very generalized structure and I have again snipped another EIA report structure from the sectoral guidance from the, this is from the thermal power plant guidelines which have been prepared again by the ministry. So, here you see how they give different components and these are aligned with thermal power plants, so all sectorial wise you can see a very standard, they have suggested a report structure which you can also use apart from that ToR would be the key reference.

So, many of these suggested ToR are given here plus you have it in sectoral guidelines, plus how through the system of ministry they would also provide stand, aligned ToR for the preparation of the report. So, here you can see the thermal power plant EIA report and then you see the more or less the structure, introduction, project descriptions, and the kind of details that would slightly vary, or added things would be there given the domain, and nature of the project.

So, description of the environment's anticipated environmental impact and mitigations, analysis of alternative and then environmental monitoring program, additional studies, project benefits, environmental cost summary, and disclosure of consultant engaged. So, you can also look at the sector-wise structure as well for the EIA report.

So, looking at the key purpose of the EIA report the idea is to provide very coherent statements, when we say coherent it is very consistent clear statements of what kind of impact the proposal, whatever project is coming will have, and the measure that can be taken to reduce and remedy them so what happens it contains essential information for like the report will be read by the proponent to implement the proposal in an environmental and socially responsible way.

So, it is meant for proponents, it is also meant for the responsible authority which is going to make an informed decision so you have to also put all the information in a very systematic way so that the responsible authority can make the decisions regarding what has to be done whether it is in an environmentally suitable way or not.

And what kind of terms and conditions that which it applies to all need to be attached for the approval and authorization of the responsible authority and then also for the public, report you are going to make or you are public then you need to know that it has to have a certain quality.

So, the report is meant for the public to understand the proposal and its likely impact on people and their environment. So, there will be three broad categories of readers who are going to read your report. And then a good report, an EIA report would meet the following targets like it would be actionable whatever we are talking about we should be able to implement it.

So, a document that can be applied by the proponent to achieve environmentally sound planning and design. So, whatever you are planning should be actionable, it should not be impractical but very practical to translate on the ground. Further, it should be decision relevance, this document should help present necessary information for the people to make decisions. So, your document should help decision-makers to make relevant decisions.

Further, it should be user-friendly, and your document should communicate the technical issues to all different parties in a very clear and comprehensive way. So, your report needs to be very user-friendly so keep those things in mind irrespective of the technical details it needs to be user-friendly, very readable, and actionable and should help in making the decision.

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EIA report typically includes following items

- Executive or non-technical summary.
- Statement of the need for, and objectives of, the proposal.
- Reference to applicable legislative, regulatory and policy frameworks.
- Description of the proposal and how it will be implemented .
- Comparison of the proposal and the alternatives to it.

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So, the EIA report as we have already seen includes many components so here you see that it has like we said should be a summary executive or non-technical summary which would probably be used for the public communication document so you see the importance of the executive or a non-technical summary.

And then you would also have statements for the need for an objective of the proposal. The reference to applicable legislation so all the legislative which we studied so all that reference have to be made and then a description of the proposal as we saw in the notification 2006, so how those descriptions, what content has to come that all need to be made and comparison of the proposals and the alternatives. So, even if you are comparing that to all the alternatives you have looked at all the possible alternatives before you came to one particular solution.

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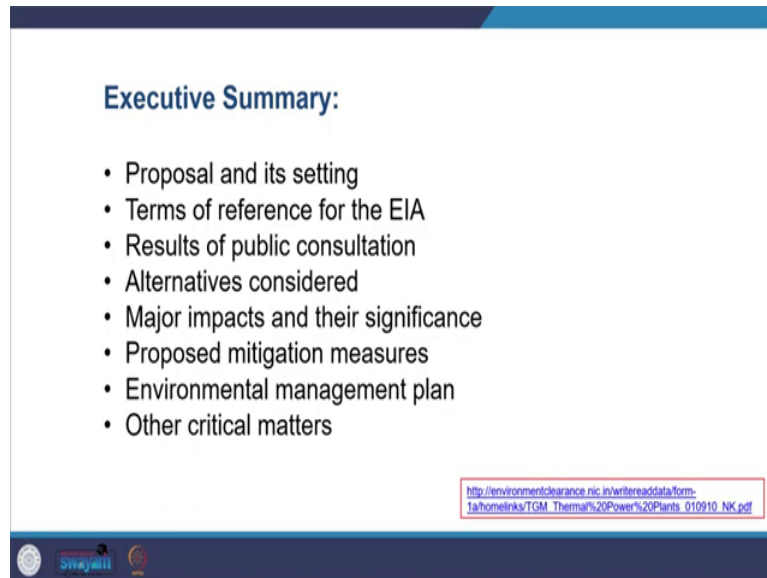
- Description of the project setting.
- Description of baseline conditions and trends.
- Review of the public consultation process.
- Consideration of the main impacts likely to result from the proposal.
- Evaluation of the significance of the residual impacts.
- An environmental management plan.
- Appendices containing supporting technical information (methods, list of references, etc).

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And then your report should also describe the project setting including the relationship so that is all you see in the notification 2006 structure. Description of the baseline condition as well as what kind of inputs you got from the public consultation process. And then how you are taking care of the main impact so that all should come very clearly.

And then how you evaluate the significance of all kinds of impacts what are the residual impacts and how you are designing the practical, best environmental options you are coming up with. And then you would be also giving the environmental management plan like you saw in the notification and then how all the technical information is laid out.

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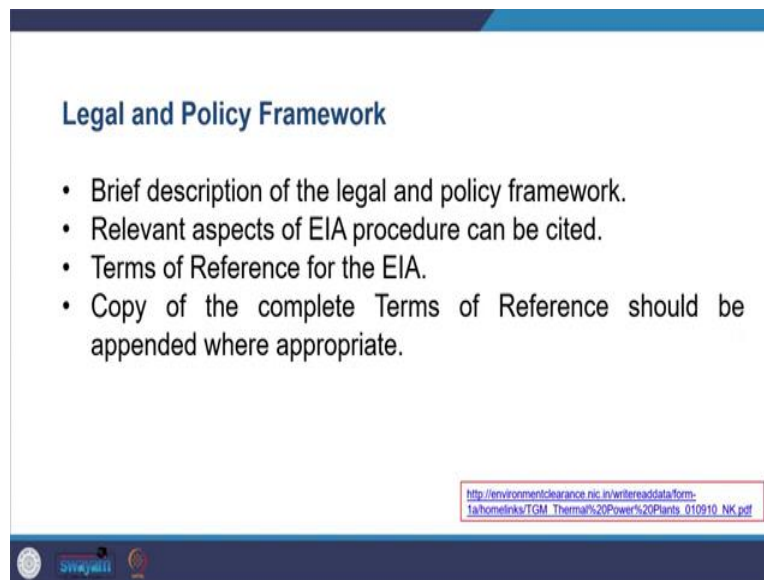


So, looking at the executive summary it should like when you are taking care of executive summary, it should describe the proposal and its setting in a very brief manner, terms of reference, what terms, terms of reference become very key here because that is the line in which you need to work and that is what is desired as the outputs from your EIA report.

So, terms of reference for the EIA, what was the terms of reference, the results of the public consultation, alternatives considered, major impacts and their significance, proposed mitigation measures, the environmental management plan, and any other critical matter that bears on the decision so all that has to come in the executive summary and a very crisp concise manner.

And then in the report you would also be telling in your introduction the need and objective of the proposal. So, it gives a clear statement of the need for an objective of the proposal, why it has been done and you need to substantiate the reference for why within which policy, within which plan the particular project is done. You can also refer to the demands and issues which the place that the project is trying to address.

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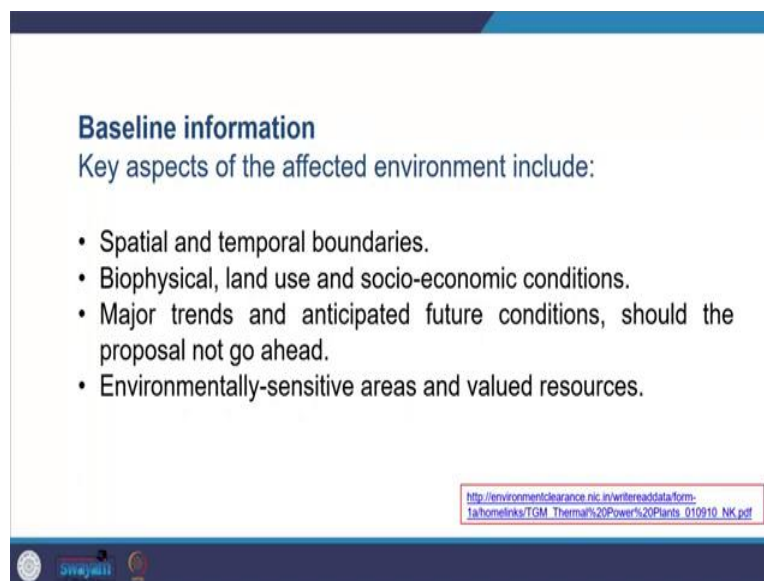
Legal and Policy Framework

- Brief description of the legal and policy framework.
- Relevant aspects of EIA procedure can be cited.
- Terms of Reference for the EIA.
- Copy of the complete Terms of Reference should be appended where appropriate.

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And you need to give the legal and policy framework and this is usually a very brief description about which within what legal and policy framework you are working on. Usually, terms of reference would also guide you on which legal and policy framework you need to adhere to.

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Baseline information
Key aspects of the affected environment include:

- Spatial and temporal boundaries.
- Biophysical, land use and socio-economic conditions.
- Major trends and anticipated future conditions, should the proposal not go ahead.
- Environmentally-sensitive areas and valued resources.

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You need to describe the proposals and alternatives like we have already discussed here and then the baseline information which becomes the key to the entire report. So, you need to provide the spatial and temporal boundaries, biophysical land use and socio-economic conditions, the major trends and anticipated future conditions, and environmentally sensitive areas.

So, all that is what you studied in the legislation as well as method parts from the scoping part to the baseline assessment domain-wise so all those domain-wise domains that are relevant to your project have to be provided in this particular report.

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Statement of the nature, scope and results of public consultation

Following points can be included:

- Identification of the interested and affected public.
- Method(s) used to inform and involve stakeholders.
- Analysis of the views and concerns expressed.
- How these have been taken into account.
- Outstanding issues and matters that need to be resolved.

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You would be providing a very concise but complete statement of the nature scope and results of public consultation. So, how you have taken care of public consultation, the number of places you conducted public consultation, and what kind of problems came up? So, you need to take care that, you have identified what were the interests of the people, you took, you also mentioned what methods were adopted to engage with the stakeholders and then also what kind of views and concerns were expressed and how you take into account all these kind of concerns.

And what kind of issues are there which are yet to be resolved in your case? So, that all needs to be informed here. Then you would also take care of each impact and how you predicted the impact so all domain-wise what we did you will also do domain-wise relevant to the nature of your project.

So, the prediction of each major impact, consideration of their compliance, how did you comply with that, what kind of recommendations are there, how are you evaluating the significance of the impact, and then what are the limitations associated with impact predictions, so what method you adopted, what is the limitation of that particular method, so what you would know about and what you are likely not to know. So, all those things have to be given.

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Impact characteristic summary table (prepare for each alternative)			
Alternative No.	Impact Type		
	Air quality	Health	etc.
Nature			
Magnitude			
Extent/location			
Timing			
Duration			
Reversibility			
Likelihood (risk)			
Significance			

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And just to recap we have seen most of it so here your impact characteristic summary table will be prepared, showing what are the impact characteristics, and impact type on what it will have an impact. And then this would be given in a very summarized form. And you would also do a comparative evaluation of like what kind of adverse and beneficial impact would be there, so there will be certain positive impact, there will be such negative impact, so you would be comparing between that as well.

And how effective your mitigation would be, how your benefits and costs are distributed locally and regionally and what are the opportunities for community and environmental enhancement. So, we have seen all these so that all need to be combined here.

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Assessment Criteria	Alternative 1	Alternative 2	Alternative 3	Alternative 4
TRANSPORT ECONOMIC EVALUATION				
Project Total Estimated Cost (\$ Million)	103	104	105	105
Benefit Cost Ratio (BCR)	0.75	1.11	0.86	0.78
Net Present Value (NPV) (\$ Million)	-18.9	8.3	-10.4	-17.7
IMPACTS				
Land Required (ha)	299	165	305	290
No. of Houses Acquired (within right-of-way)	2	6	3	6
Road Safety (reduction in accidents in first year of operation)	2.7	3.4	3.0	2.9
Business and Tourism	-	0	0	0
Agriculture	-	-	0	0
Social	+	0	0	0
Traffic Noise	+	0	0	0
Land Use Planning	+	0	-	0
Flora and Fauna	0	0	0	-
Exotic Vegetation	0	-	-	-
Landscape	+	0	0	0
Archaeology and Heritage	+	0	0	0

http://environmentclearance.nic.in/writereaddata/form-1a/home/links/TGM_Thermal%20Power%20Plants_010910_NK.pdf

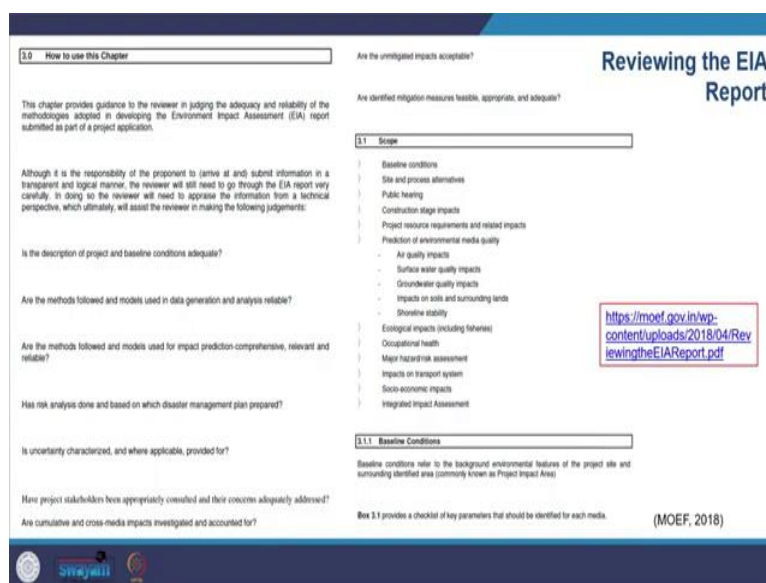
So, here you can see how the transportation economic evaluation has been done. So, here you see how alternative 1, alternative 2, alternative 3, and 4, all that evaluation, what are the impacts, and what are the positive, what are the negative impacts all that has been evaluated across the alternatives here and across the

different domain, traffic noise, land use, flora fauna, exotic vegetation, landscape and so on. So, it helps, so in all that domain-specific what you have done has to be summarized here.

So, that was about EIA reporting so you see how, whatever we have studied from the environmental status to legislation to different methods, domain-wise methods, how all of them come together in these segments, so your report can be massive, voluminous, given the intensity in which you have to undertake the study. So, we have already seen how big the team would be and how you would need different domain experts. So, this would be how it would culminate and the final product would look like.

Now, we are looking at the reviewing aspect, and how the EIA would be reviewed. So, once your report is made or while you are also making a report you need to understand how the report would be reviewed so that your report is of considerably good quality what is desired and it addresses the purpose of EIA reporting.

(Refer Slide Time: 28:55)



So, we see that there is guidance which is used by the reviewers so here we see that it guide the reviewing and judging the adequacy and reliability of the methodology adopted in developing the EIA report. So, when judges and the reviewers review your report how they would look at your report now?

So, this is from the FCC website, so this is the guidance that is given to the reviewers you also take note that these keep changing the guidance information keep changing so you need to check what is updated and the latest data available from the website of your different agencies, ministries, department which as per your context. So, you need to continuously check that.

So, here it provides you that detail so you can see that it gives there is the description of the project in baseline conditions adequate so they look at questions like that, are the methods followed in models used in data generation and analysis reliable so they will see that whatever models, methods you have used whether they are reliable or not and other methods followed and models used for impact prediction, comprehensive so are they comprehensive or not, they give all the details not are they relevant whatever models you have

used are they relevant and reliable or not, so do they give reliable results or not so the reviewers would be looking at that.

So, you have, whenever you make a judgment about which models to use with methods to use, you need to have a strong understanding of its relevance, its reliability what kind of information it would give. Then the risk analysis is done and based on which disaster management plan is prepared. So, whether you have done it or not and on what basis have you prepared the disaster management plan?

And then is uncertainty characterized where applicable provided for. So, we did talk a lot about uncertainties involved in prediction so have you categorized that and have you, what kind of information you have provided about that? Then a reviewer would also look at have the pay of project stakeholders has been appropriately consulted, whether they have appropriately consulted as per the norms, and whether their concerns have been addressed or not.

And then are, and also you see here they look at cumulative and cross-media impacts investigated and accounted for. So, you might do it domain specific then how have you taken care of course media impacts also have you looked at the cumulative impact so that all will be evaluated for the completeness of your report, and are the unmitigated impacts acceptable, so if there are unmitigated impact are they acceptable or not, and are identified mitigation measures feasible appropriate and adequate or not.

So, that is all it will the reviewers would look at and then they would look at the scope and within the scope what kind of baseline condition, sites, process alternatives, public hearing, all that you have given or not then they will look at how you are looking giving the baseline conditions and they would usually have a checklist of key parameters as per the domain with which they would be checking your report so you can see some of the checklists here.

This document also we are providing you the link and also through the discussion forum will be sharing this. And then how the site, process, and alternatives have been discussed and then how what kind of drawings and details have been given and what the preferable scales, all those have been mentioned and mentioned and they are available for the reviewers to see and then also like here for the public hearing itself an overview of the issues discussed whether you have discussed it not, how the concerned raised were responded by the project proponents they will look at, they would tell you what was the concern raised and have you addressed it back or not.

And then how these responses were conveyed back to the consulted, so not only how you took their feedback and how did you responded but did you also communicate back with them. And what were the public hearing panel observations and so on?

(Refer Slide Time: 33:35)

Reviewing the EIA Report

Box 3.2

General

- Layout map (1:2000 scale) showing different units, power line, roads, storage, water source, sewerage, storm drainage, water pool, housing, green belt and other important features and surrounding landscape
- Location of the project and its accessibility: Capital and operating costs of pollution control, Project investment and implementation schedule
- Distance from coastal areas/surface water bodies/ecologically sensitive areas
- Requirements of land, its present use and whether change in land use will be conforming to the Country or Town Planning approved plans

Construction phase

- Direct employment during construction possible influx of labours and stress on public utilities and services
- Use of water and power and its source during construction, proposed earth moving, dredging and drilling operations
- Proposed plan for transportation and storage of construction material
- Detailed schedule of activity and resource requirements
- Disposal of solid waste/dredged material

Operation phase

- Direct employment for operation
- Raw materials, fuels and chemicals to be used, their quantities, characteristics, arrangements for transport to site, storage, including storage facilities, pipeline etc.
- Detailed manufacturing processes alongwith flow diagram
- List of main equipment and machinery
- Built-in pollution control equipment, their efficiencies
- Mixing methods/dredging methods
- Management of effluents within the project site and their capacities (viz. boilers, workshop, treatment plants etc.)
- Existing and proposed facilities like canteen, staff colony, security, recreation centre, hospital, schools etc. (both existing and proposed)
- Products and by-products, their storage and transport

1.1.3 Public hearing

The State Board provides the details of Public Hearing to the reviewer. At this stage the proponent is obliged to respond to issues raised during public hearing.

In reviewing the adequacy of the consultation process, together with the incorporation of its results into the detailed EIA, the Impact Assessment Agency should examine whether the procedure has been followed as per MoEF notification and

- An overview of the issues discussed
- How the concerns raised were responded to by the project proponent
- How these responses were conveyed back to those consulted
- What are the public hearing panel's observations

To assist the review in appraising the adequacy of the consultation process, Box 3.3 contains checklist of programme objectives and issues for verification.

Box 3.3

Objective	Issues to verify
Stakeholders Identification	Sub-sections to EIA Project Proponent aware of all those groups and individuals who will be directly affected by the social or environmental impacts of the project?

<https://moef.gov.in/wp-content/uploads/2018/04/ReviewingtheEIAReport.pdf>

(MOEF, 2018)

Reviewing the EIA Report

Impact Identification

This project proponent addressed to mitigation options, those all social and environmental impacts of significance to the local population and other stakeholders been assessed in the EIA (including the indirect social impacts).

Mitigation Options

How the project proponent addressed the issues of project compensation and rehabilitation as per the provision.

Monitoring

Have project affected groups been proposed to be provided in monitoring the effectiveness of social and environmental impact mitigation and is a plan for the same provided?

Community Development

Is proponent working to promote local development within the wider community?

3.1.4 Construction Stage Impacts

The project construction phase (though generally short term in comparison to the operation phase) can lead to significant environmental impacts. Significant impacts can result through short term, high intensity pressures on the physico-chemical environment in relation to air, groundwater, surface water, soils and land. Risks to fragile and ecologically sensitive systems are of particular importance while assessing the Construction Stage Impacts, in addition to hazards and risks posed to construction stage workers.

The stress on infrastructure, socio-cultural incompatibility due to integration of construction workers and living conditions and consequent public hygiene are also important issues to be considered while assessing impacts during construction stage.

The reviewer will need to examine whether these specific issues are considered while adopting methods of prediction of construction stage impacts.

The prediction of construction stage impacts should also include any impacts occurring as a result of project initiation along with construction, (e.g. quarry, roads, temporary labor colonies, borrow areas) the waste and effluents generated during construction, and any other impacts resulting through the commissioning of temporary structures created during construction phase.

3.1.5 Project Resource Requirements and Related Impacts

This subsection guides in reviewing those impacts arising out of a proposed projects resource consumption. Again, the objective of the reviewer is to verify that all the significant impacts have been duly considered and that the analytical tools and approaches used for their prediction and the EIA are relevant and reliable.

This subsection, therefore, provides the reviewer with a series of checklists addressing the prediction of resource related impacts falling under the following headings:

- Impacts on public utilities (Box 3.6)
- Impacts on natural resources (Box 3.8)

The prediction of impacts resulting through the consumption of fuel and raw materials would of course depend on the materials in question. Specifically, focus would be required on materials whose availability is limited. Moreover, if raw material extraction is to be included as a part of the project impacts resulting from activities, mining will also need to be predicted.

Box 3.4

Impact on Public utilities arising out of use of the utilities for project activities

Stress on distribution resources e.g. water and power supply and transportation and resultant decrease in reliability and increase in break downs and accidents during construction and operation phases of the project

<https://moef.gov.in/wp-content/uploads/2018/04/ReviewingtheEIAReport.pdf>

(MOEF, 2018)

So, you see the box 3.3 here so stakeholders identification, impact identification, mitigation options, monitoring, and community development. So, all these aspects will be looked at by the reviewers. Also at different stages, construction stage impact, then project resource requirement and related impacts so would be used as a checklist and reviewing all these aspects.

(Refer Slide Time: 34:04)

Reviewing the EIA Report

Step 1 - Undertake a mass balance and estimate the quantity of waste

Step 2 - Compare the above quantity of waste (project emissions effluents/solid wastes) with the baseline data

Step 3 - Identify the appropriate method for impact prediction

Step 4 - Prediction of impact

Step 5 - Look into uncertainties involved in the prediction

The mass balance process can be verified in relation to the emission and discharge load information. The reviewer will need to check the input and output levels for each process depicted in the process flow sheet.

The next step in prediction is to collate the relevant data describing the attributes and wastes along with baseline conditions.

Step 3 will require the reviewer to validate the relevance of the method adopted (Annex V) for making impact predictions.

It is important to note that for many of the impacts, the approaches adopted are subjective. In all such cases, the reviewer will need to examine the effort made within the EIA study to remove the maximum feasible bias through the use of sampling procedures and Group Interaction techniques viz. Delphi, brain storming, etc. Such impact predictions will, therefore, necessitate discussion. Any predictions based on subjective assessments will need to be clearly presented and accompanied by.

In Step 4 the prediction made is verified.

<https://moef.gov.in/wp-content/uploads/2018/04/ReviewingtheEIAReport.pdf>

(MOEF, 2018)

And then the prediction of environmental media quality how you have taken care of, so we have studied here resource balance so like here they specify how different steps you have taken and how the impact prediction has been done or not so they would be checking that way.

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Reviewing the EIA Report

The final stage (Step 5) of the environmental quality review will consider the previous 4 in relation to this presentation.

For large projects, environmental quality (and resource status) results will be presented in the form of maps of a scale of 1:25,000 or 1:50,000 (optionally using Geographical Information Systems) along with the thematic maps of baseline conditions.

3.1.7 Socio-economic Impacts

The prediction of socio-economic impacts can include assumptions and value judgments. Attention needs to be paid to cases preserving the social cost/benefits of different stakeholder groups that were not determined or resolved through the process of consultation.

Much of the socio-economic data required for EIA does not exist, except to a limited extent in the Census records (conducted every 10 years, with the next due in 2001), and Revenue records. In many cases, these data will need to be validated and suitably verified by the project proponent/consultant through sample surveys. It is the responsibility of the reviewer to check the adequacy of data and suitability of sampling methods adopted in social surveys.

In many cases village maps and topographs etc. are not updated, and may be inaccurate. The proponent may be asked to supplement the data by way of satellite images.

3.1.8 Ecological Impacts

This subsection provides guidance for review of assessment of ecological impacts due to the project activities, viz. construction and operation. The assessment of impacts on ecosystem is normally based on subjective judgments. It is a good practice to base the subjective judgments on the available knowledge on:

- Plant and animal life and their habitat requirements and migratory routes
- Basic community ability to withstand or respond to disturbance
- Impending changes, impacts and results from similar projects and classification of impacts based on their intensity, time scale and spatial extent.

A few bad practices normally found in EIA reports and need to be discouraged by the reviewer are:

- Evasion of possible impacts and lack of their assessment
- Omission of pertinent information necessary for unbiased evaluation of impacts
- Inadequate description of adverse impacts
- A plethora of basic data or information without interpretation or correlation with possible impacts

An illustrative lists for consideration in an assessment of impacts on ecological systems are outlined in Annex VI and reviewer may take into account if the relevant issues are adequately addressed in the assessment or not. Guidance for relevant issues for different project types is in Annex VII.

The Annex VIII guides for ecological impact prediction and review needs to verify the compliance.

3.1.9 Occupational Health Impact

The report should identify major occupational health and safety hazards and whether provision has been made to meet the available standards/guidelines. Specific measures for control of fugitive emissions and odour nuisance should be enumerated. A list of references in this regard is enclosed as Annex IX.

3.1.10 Major Hazard Risk Assessment

Risk assessment can be applicable at a number of levels. Where it has been identified that the proposed project may contain significant risks and hazards, the following recommended methodologies (Annex X) constitute good practice on behalf of the proponent in assessing their probability and mitigation.

- Hazard Prone Units - Maximum Credible Accident Analysis using Fire Explosion and Toxicity Indices as listed in Dow's manual
- Damage Distances - EFFECTS or WHAZIM models (TNO, Netherlands)
- Failure Probabilities - HAZOP or Fault Tree analysis
- Assessment of Risk - using exposure potential, failure probability and damage distances
- Screening of Risk - accept or reject decisions based on fatality rates
- Mapping of risk contours
- Layout and locations of hazard/risk prone areas/site

During the review all the assessment methods followed, their reliability, and presentation will need to be determined.

<https://moef.gov.in/wp-content/uploads/2018/04/ReviewingtheEIAReport.pdf>

(MOEF, 2018)

Likewise, they would be checking for socioeconomic impact, they would be checking for ecological impact, occupational health impact, major hazard, and risk assessments so we have covered all these.

(Refer Slide Time: 34:35)

3.1.11 Impact on Transport System

Raw materials including water and fuel and/or finished products including wastes are transported to / from the project site both during construction and operation phases. The impact of this on transport system, viz. Capacity to carry, congestion, need for expansion/augmentation should be assessed. In the case of pipeline transport, risk analysis and DMP should follow it.

3.1.12 Integrated Impact Assessment

The integrated impact assessment should include the identification of impacts resulting from the accumulation of impacts to the project region. These impacts are often termed cumulative and can result through cross media transfers and blending of pollutants.

Adequate account of potential cumulative impacts should, therefore, identify the:

- Dispersal of pollutants
- Cross media transfer of pollutants
- Accumulation of pollutants
- Environmental problems are acute (eutrophication of water bodies, heavy metal contamination and entry into the food chain etc.)
- Environmental media status is bad
- Ecosystems are fragile
- Sensitive areas are under stress

<https://moef.gov.in/wp-content/uploads/2018/04/ReviewingtheEIAReport.pdf>

(MOEF, 2018)

And then also look at the impact and transportation system so this as well we have covered so the reviewers would be looking at how well you have done that and then also integrated impact assessment so all these will be reviewed. So, these are the guidelines given to the reviewers so keep that in mind how the reviewer is going to evaluate, whether your project will get clearance or not would depend also how well your report is communicating.

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Review of EIA - Appraisal

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So, now moving on to the second part where we look at the review of EIA, where the appraisal is done. So, what we saw here was how your reports will be judged. So, now your assessment of what you have done, and the quality of EIA what you have done would be reviewed here.

(Refer Slide Time: 35:22)

Purpose and objectives of review

Purpose is to establish if the information in an EIA report is sufficient for decision-making.

Key objectives

- Review the quality of the EIA report.
- Take account of public comment.
- Determine if the information is sufficient.
- Identify any deficiencies to be corrected.

(EIA Training Resource Manual, 2002)

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So, the purpose and objective of the review is to review the quality of EIA reports so that we have already seen part of it and then it also takes care account of public comments so how you have taken care of public comments and then determine if the information is sufficient or not so whatever information you have given whether it is sufficient or not and are there any deficiencies that needs to be improved upon.

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EIA review – aspects for consideration

- Compliance with Terms of Reference.
- Information is correct and technically sound.
- Account taken of public comments.
- Complete and satisfactory statement of key findings.
- Information is clear and understandable.
- Information is sufficient for decision-making.

(EIA Training Resource Manual, 2002)

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Different aspects are considered while reviewing the EIA whether you have complied with terms of reference, whether taken information provided is correct and technically sound then public concerns have been taken into are complete and satisfactory, information provided is clear and understandable, and whether the information is sufficient for decision making.

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EIA review — types of procedure

- **Internal review:**
 - Low operating costs
 - Can lack rigour and transparency
 - Often no documentation of results
- **External review:**
 - Independent, expert check on EIA quality
 - More rigorous and transparent
 - Report on sufficiency or deficiency
 - Publish the review report

(EIA Training Resource Manual, 2002)

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EIA review types of procedures you see that there can be internal review and there can be external review. When you do an internal review it has certain limitations that it can lack rigor in transparency and you might not have enough documentation it can be low in terms of budget it might save you money but then you can also have an external review which can have an independent expert check on EIA quality.

So, you can check the EIA quality, it can be more rigorous and transparent and then it can also show what is sufficient, and what is deficient, and you will be able to publish the review report. So, you have these internal reviews and external reviews but you see that there is much more advantage of taking external reviews.

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EIA review procedures

- Environmental agency
- Independent panel (or mediator)
- Standing commission
- Inter-agency committee
- Planning authority

(EIA Training Resource Manual, 2002)

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The EIA review procedure includes for this you can have environmental agencies that can come in, you can also have an independent panel, then you can have standing commissions, inter-agency committees, and planning authorities which all can help to take the EIA review.

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EIA review – steps to good practice

- Set the scale of the review
- Select reviewer(s)
- Use public input
- Identify review criteria
- Carry out the review
- Determine remedial options
- Publish the review report

(EIA Training Resource Manual, 2002)

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While you are doing an EIA review there are certain steps to a good practice that is like it can be a scale of review whether good or bad, how you scale it up, evaluate the review, then you can select the reviewers you can, you use the public input, you identify review criteria, how you going to review and you can carry out the review. Then determine remedial options and how you are going to take care of it whatever the problems are and publish the review report.

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EIA review criteria

The following can be used (in order of priority):

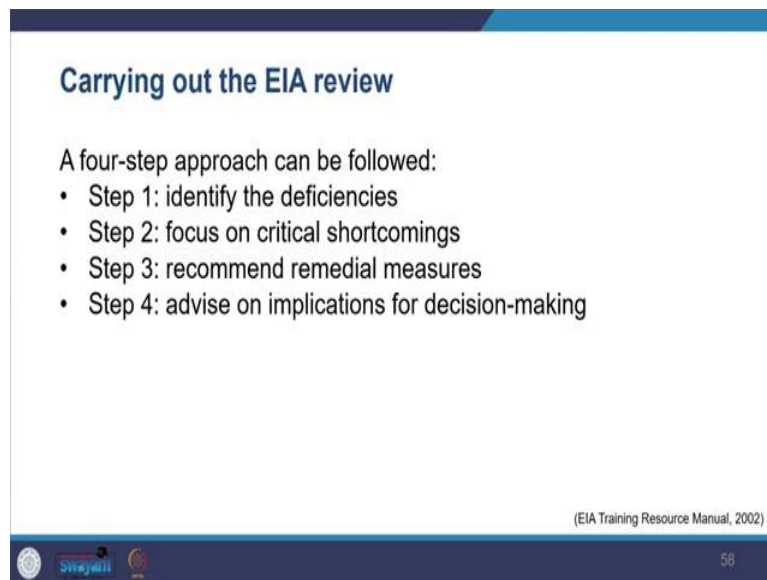
- Terms of reference.
- EIA reports of comparable proposals.
- Other guidance including:
 - EIA requirements, guidelines and criteria.
 - Principles of EIA good practice.
 - Knowledge of the project and typical impacts.

(EIA Training Resource Manual, 2002)

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So, the following can be used in order of priority, for review criteria the key aspect here again and again which has been repeated is the terms of reference. And EIA reports of comparable proposals so wherever you find EIA reports from other cases, similar cases you take as a reference point and you also have other guidance like what are the EIA requirements, guidelines, and criteria and then you can also look at certain good principles of EIA and the entire course where we have learned it so all these can be used as a reference.

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Carrying out the EIA review

A four-step approach can be followed:

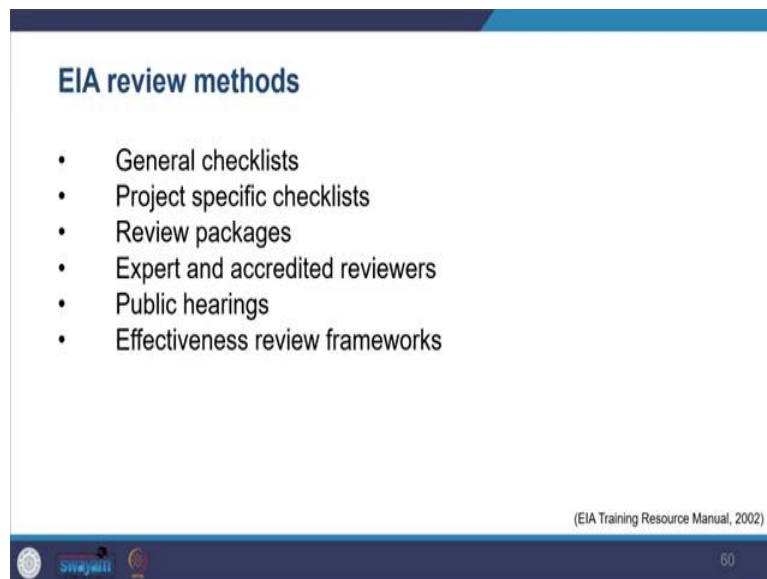
- Step 1: identify the deficiencies
- Step 2: focus on critical shortcomings
- Step 3: recommend remedial measures
- Step 4: advise on implications for decision-making

(EIA Training Resource Manual, 2002)

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Then you carry out the EIA review process which is like here by the UN training program you see that it has been updated by four steps, step 1, identify the deficiency, focus on critical shortcomings, recommend remedial measures, advise on implication for decision making. So, you are reviewing the report path here so you can take care of these four things.

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EIA review methods

- General checklists
- Project specific checklists
- Review packages
- Expert and accredited reviewers
- Public hearings
- Effectiveness review frameworks

(EIA Training Resource Manual, 2002)

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And then there are a lot of review methods, you have general checklists which are used generally, then you have project-specific checklists also, review packages are also offered by many institutions and research institutions, experts and aggregated reviewers also can come in, and you can also have a public hearing and also there are frameworks which helps you to review.

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A Rating Scale for EIA review

Rating	Explanation
A	generally well performed, no important tasks left incomplete
B	generally satisfactory and complete, only minor omissions and inadequacies
C	just satisfactory despite omissions and/or inadequacies
D	parts well attempted but must, on the whole be considered just unsatisfactory because of omissions and/or inadequacies
E	unsatisfactory, significant omissions or inadequacies
F	very unsatisfactory, important task(s) poorly done or not attempted
N/A	not applicable, the review topic is not applicable in the context of the project

(EIA Training Resource Manual, 2002)

So, for some of them, this is the scaling part that I talked about so you can have A, B, C, and D ratings, so you can have reviewers tick to this that A generally well performed no important task left incomplete. So, B is generally satisfactory and incomplete only minor omissions and inadequacy of the report. So, even you can see, you can as an exercise you can look at certain reports and see how well it addresses all the aspects of EIA.

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Procedures for Reviewing EIA Reports

These procedures are based on the work of

Lee, N. and Colley, R. (1990) *Reviewing the Quality of Environmental Statements*.
Occasional Paper Number 24. EIA Centre, University of Manchester

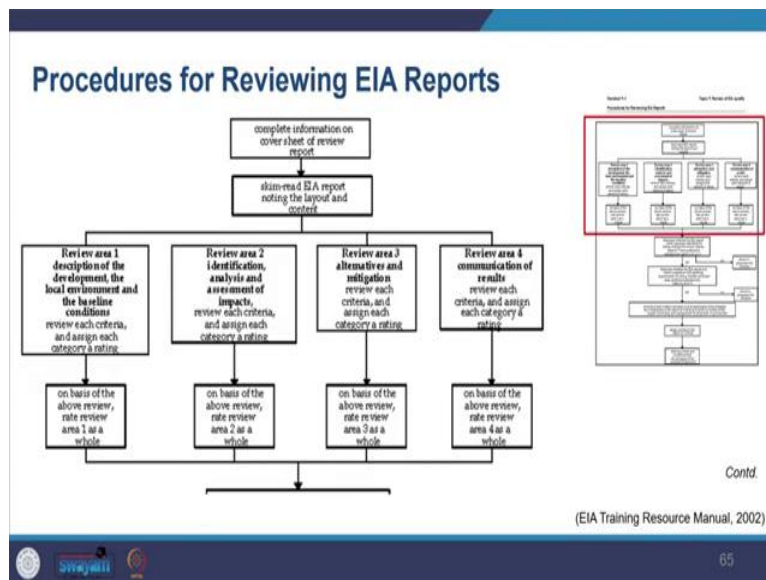
and

Boyle, J. and Mubvami, T. (1995) *Training Manual for Environmental Impact Assessment in Zimbabwe*. Department of Natural Resources Ministry of Environment and Tourism, Zimbabwe

(EIA Training Resource Manual, 2002)

So, here from one of the examples from the UN training manual and then also from the Zimbabwe training manual we see the process which is adopted for EIA reporting.

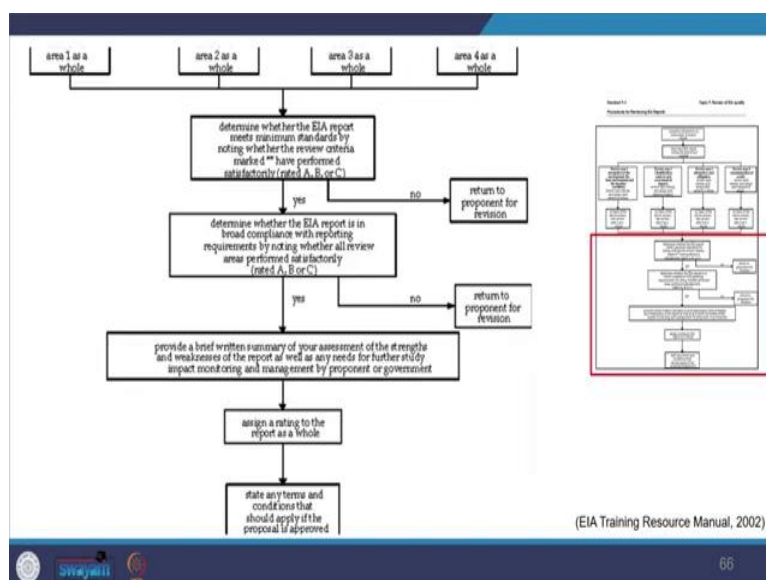
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So, here you see how you have complete information on the overall sheet of the review report, then you skim read EIA reports, then you have review area one and all these areas, review area 2, review area 3, and review area 4 depending on the description of the development and the local environment and baseline condition, review area 2 identification analysis and assessments and alternatives and mitigation, communication of the results.

So, all these areas how you are describing, how you are identifying, how you are looking at the alternatives, and how you are communicating the results all become very important in how you are going to, how your report will be evaluated for its quality.

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So, you see how yes or no you look into all these segments here. So, this is the kind of checklist that is used in Zimbabwe for their reviewers.

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The image shows three review forms for EIA reports, labeled 'Minimum requirements', 'Broad compliance', and 'Overall quality'. Each form includes a title, a 'Review of EIA Report' section, and a 'Review criteria' table. The 'Minimum requirements' form asks if the EIA report title and date are correct, if the report was reviewed by the correct authority, and if the date of review is correct. The 'Broad compliance' form asks if the report meets the minimum requirements, if it is in compliance with the EIA Act, and if it meets the overall quality criteria. The 'Overall quality' form asks if the report is in compliance with the EIA Act, if it meets the overall quality criteria, and if it meets the approval terms and conditions. Each form has a table with 'S/N', 'Criteria', and 'Rating' columns.

So, review of EIA report to examine the people reviewers, the committee would review and put in reports in this way. So, EIA report title, date, EIA report reviewed by date of review, reviewer criteria they would give a rating to your report, and then they would look at the minimum required broad compliance, overall quality and then review area 1 and so on all the reviews areas would be seen. So, I will be giving you these documents, so you can see the complete review areas here.

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Review of EIS- Appraisal (Indian Context)

Appraisal: Detailed scrutiny by the Expert Appraisal Committee or State Level Expert Appraisal Committee -

- Application and other documents like the Final EIA report.
- Outcome of the public consultations including public hearing proceedings.

(TGM for Thermal Power Plants, 2010)

So, looking at the Indian context, here we use the term appraisal, appraisal which means the detailed scrutiny by the expert appraisal committee or it can be state-level expert appraisal committee which we have also covered before while we were doing the process part. So, there you look at the application and other documents like the final EIA report plus you also look into the outcomes of the public consultation and how you have incorporated that in the overall EIA report, so that is what is checked.

It is said that the review process when the quality of the review is checked is like the inbuilt process to see the balance, the sustainability aspect so how the report is taken care of even the environment is taken care of, and the intention of the EIA, the broad intention of the EIA is addressed within that.

So, it allows us to see whether the information is enough and whether it is helping to make the judgment or not. So, this is as per the like I have taken these parameters from the sectorial area of the thermal power plant and I will be also giving this link to these documents which you can also download from the ministry website. So, there for this particular domain thermal power plant they have given how the appraisal would happen.

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Appraisal

- It shall be made by Expert Appraisal Committee (EAC) to the Central Government or State Level Expert Appraisal Committee (SEAC) to State Level Environment Impact Assessment Authority (SEIAA).

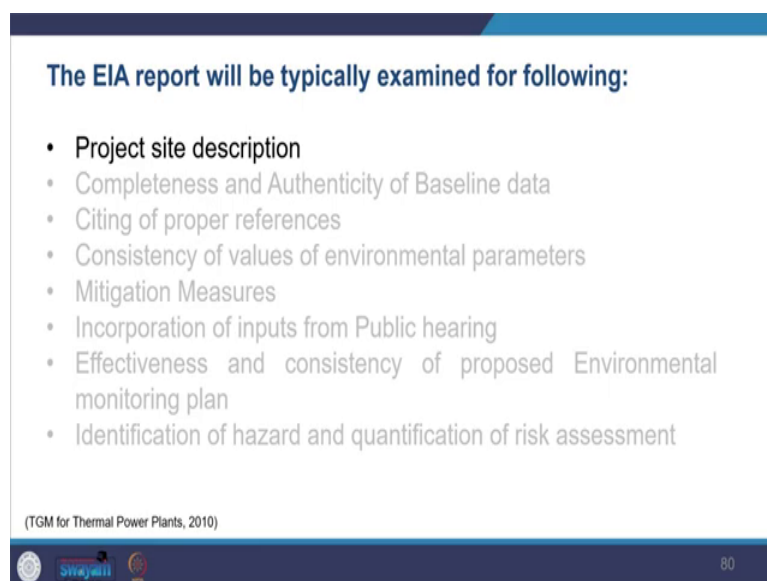
(TGM for Thermal Power Plants, 2010)

swayamprakash

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So, in the appraisal, it would in general mean detailed scrutiny of all the assessments you have done by the committee so the committee is going to look into it and the appraisal will be made by the advisory committee to the central government or SEAC or to SEIAA. So, the key aspect again is the ToR where if that is not been completely addressed it would be returned to the person who is prepared or it can be rejected as well.

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The EIA report will be typically examined for following:

- Project site description
- Completeness and Authenticity of Baseline data
- Citing of proper references
- Consistency of values of environmental parameters
- Mitigation Measures
- Incorporation of inputs from Public hearing
- Effectiveness and consistency of proposed Environmental monitoring plan
- Identification of hazard and quantification of risk assessment

(TGM for Thermal Power Plants, 2010)

swayamprakash

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And so again they would be as per this domain the project site description would be looked at.

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EXECUTIVE SUMMARY

1. INTRODUCTION

THDC India Ltd. proposes to commission Vishnugad Pipalkoti Hydro-Electric Project on the river Ganga, a major tributary of the river Ganga. The project is a run-of-river hydroelectric project with an installed capacity of 100 MW. The project is located in the village of Vishnugad, in the district of Garo, in the state of Meghalaya.

1.1 PROJECT CONTEXT & LOCATION

1.1.1 Project Context

Development of hydro power remains important for energy security of the country. Considering the fact that hydro power is a renewable source of energy and is environment friendly, compared to coal based thermal power plants, and also the fact that India has high hydro potential, policy decisions were taken at national level to diversify hydro power to meet the country's growing energy demand.

India is currently facing an energy deficit. In northern region there is a energy deficit of 11.41 percent and a energy deficit of 17.42 percent and the demand for energy is projected to further increase as per the Central Electricity Authority, the demand for power in the northern region alone is projected to rise from 35,148 MW during 2012 to 47,077 MW in 2017-18.

To meet the all India peak demand and energy requirement at the end of 12th Plan, a specific addition of new 40,000 MW has been assessed during 12th Plan (2012-2017), which includes 30,000 MW of hydro electric power.

The requirement of power during the period during the year 2012-13 in the state of Meghalaya and the Northern Region was 274.86 and 10481 MW against availability of 497.86 and 24210 MW respectively. There was a deficit of 2.20 and 1.76 respectively. Shortage of a new state class hydroelectric capacity for development of hydro power projects. The hydro power potential of the state is estimated to be 31,000 MW in total.

Installed capacity	12.17 MW
Capacity developed	808.1 MW (6.81%)
Capacity under construction	1000 MW (8.30%)
Capacity yet to be developed	1287 MW (10.81%)

1.1.2 Project Location

Vishnugad Pipalkoti Hydro Electric Project is a run-of-river project located on the right bank of the river Ganga, in the village of Vishnugad, in the district of Garo, in the state of Meghalaya. The project is located in the village of Vishnugad, in the district of Garo, in the state of Meghalaya. The project is located in the village of Vishnugad, in the district of Garo, in the state of Meghalaya.

The nearest village station is at Vishnugad, which is 12 km from the project site. The project is located in the village of Vishnugad, in the district of Garo, in the state of Meghalaya.

1. PROJECT DESCRIPTION

The project comprises the following main components:

- Dam: A dam with a crest height of 100 m and a length of 100 m. The dam is located in the village of Vishnugad, in the district of Garo, in the state of Meghalaya.
- Power House: A power house with a capacity of 100 MW. The power house is located in the village of Vishnugad, in the district of Garo, in the state of Meghalaya.
- Tail Race Tunnel: A tail race tunnel with a length of 100 m. The tail race tunnel is located in the village of Vishnugad, in the district of Garo, in the state of Meghalaya.
- Penstock: A penstock with a length of 100 m. The penstock is located in the village of Vishnugad, in the district of Garo, in the state of Meghalaya.
- Turbine: A turbine with a capacity of 100 MW. The turbine is located in the village of Vishnugad, in the district of Garo, in the state of Meghalaya.
- Generator: A generator with a capacity of 100 MW. The generator is located in the village of Vishnugad, in the district of Garo, in the state of Meghalaya.

https://thdc.co.in/sites/default/files/EIA%20ExecutiveSummary-ENGLISH_0.pdf

(Environmental Studies for Vishnugad-Pipalkoti Hydro-Electric Project, 2009)

So, here you can see in the example I have taken from DHDC the project from the ministry website how the document is used I have just taken from the summary they are providing and this is the cleared report, so this report got environmental clearance, so I have just taken from that. So, you see how they are providing all the information related to the project and location.

And then clarity and descriptions, so how all the things are clearly described and for the thermal power plants there you need to give the drainage pattern, location of eco-sensitive areas, vegetation characteristic, wildlife status, and so on. So, here you again see from this report how they have provided.

(Refer Slide Time: 44:38)

NANDEDEVI BIOSPHERE RESERVE

Although there is no direct impact of the project on the protected area, the EA assessed the potential of indirect impacts on the transition and buffer zones of the NDRB, and determined that such impacts are not significant, during construction or operation. The EA recommends provision of compensation to enhance the quality and the management of the buffer zone, even if the project's impacts are not significant.

Comparative Distribution of Forest Types

Forest Type	State/Buffer Zone	Project Area	Project Area	Project Area
Sal	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+

Comparative Status of Natural Resources in the Project Area

Resource	State/Buffer Zone	Project Area	Project Area	Project Area
Sal	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+
Sal + Moisture Conservation Engineering	+	+	+	+

<https://thdc.co.in/sites/default/files/VPHEP-ExecSumm-ENG.pdf>

(Environmental Studies for Vishnugad-Pipalkoti Hydro-Electric Project, 2009)

Table 4.2: Assessment of Impacts and Mitigation Measures

S. No.	Project Phase	Activities	Impacts	Mitigation Measures
1.	Construction Phase	(i) Acquisition of Forest Land	Loss of Forests land is 80 ha.	<ul style="list-style-type: none"> Obtain Forest clearance from MoEF Strict implementation of approved Compensatory Afforestation Plan in accordance with Forest (conservation) Act 1980 and Uttarakhand Forest Policy. Carry out plantation in 160 ha area.
		(ii) Felling of Trees	The clearing of project sites for construction requires felling of trees. A total number of 2,465 trees are felled. The trees consist of plantation in forest land and vanpanchayat land. All the species are commonly distributed throughout the project immediate influence as well as project influence area hence, the impact will be insignificant.	<ul style="list-style-type: none"> Compensatory Afforestation may be carried to compensate the loss of trees. Double no. of trees 4,930 trees may be planted in lieu of trees felled. Proper compensation must be given to vanpanchayat for the land and standing crops Compensation for fruit bearing trees may be compensated including cost of fruit yield of 5 years. The vulnerable species <i>Berginia ligulata</i> (Sitpara), <i>Nedychium</i>

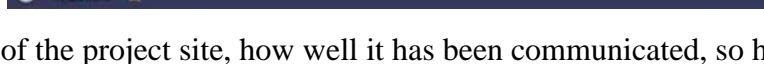
Final Biodiversity Report **Environment & Ecology**

Link: <https://www.thdc.co.in/content/vishnugad-pipalkoti-he-project-environment>



S. No.	Project Phase	Activities	Impacts	Mitigation Measures
1.	Construction Phase	(i) Clearing of Forest area for construction activity	<ul style="list-style-type: none"> The project area is located in the transitional zone of Haridwar (Dist. Dehra Dun) - natural Movement of wildlife is reported in the area therefore check post may be established in the project area in consultation with Forest Department. Plantation of tree species which are major species of habitat for wildlife in consultation with Forest Department in degraded and open areas Awareness program on Environment and Wildlife Conservation may be provided to the work force. Forest Act and Wildlife Act may be strictly enforced. 	<ul style="list-style-type: none"> Compensatory Afforestation (double) for all cleared under the Degraded Forest Area. Compensatory afforestation scheme where there will be increase in the vegetation. Proper compensation must be given to vanpanchayat for the land and standing crops Compensation for fruit bearing trees may be compensated including cost of fruit yield of 5 years. The vulnerable species <i>Berginia ligulata</i> (Sitpara), <i>Nedychium</i>
		(ii) Construction of Plant area	<ul style="list-style-type: none"> The project area is located in the transitional zone of Haridwar (Dist. Dehra Dun) - natural Movement of wildlife is reported in the area therefore check post may be established in the project area in consultation with Forest Department. Plantation of tree species which are major species of habitat for wildlife in consultation with Forest Department in degraded and open areas Awareness program on Environment and Wildlife Conservation may be provided to the work force. Forest Act and Wildlife Act may be strictly enforced. 	<ul style="list-style-type: none"> Compensatory Afforestation (double) for all cleared under the Degraded Forest Area. Compensatory afforestation scheme where there will be increase in the vegetation. Proper compensation must be given to vanpanchayat for the land and standing crops Compensation for fruit bearing trees may be compensated including cost of fruit yield of 5 years. The vulnerable species <i>Berginia ligulata</i> (Sitpara), <i>Nedychium</i>

Link: <https://www.thdc.co.in/content/vishnugad-pipalkoti-he-project-environment>



So, also the description of the project site, how well it has been communicated, so here and then how various impacts have been communicated here, so they have summarized all the impacts and how the mitigation measures are there so this so all this you see here project phase-wise they have done it.

(Refer Slide Time: 44:57)

The EIA report will be typically examined for following:

- Project site description
- Completeness and Authenticity of Baseline data
- Citing of proper references
- Consistency of values of environmental parameters
- Mitigation Measures
- Incorporation of inputs from Public hearing
- Effectiveness and consistency of proposed Environmental monitoring plan
- Identification of hazard and quantification of risk assessment

(TGM for Thermal Power Plants, 2010)

Link: <https://www.thdc.co.in/content/vishnugad-pipalkoti-he-project-environment>



8. ENVIRONMENTAL MANAGEMENT PLAN

Environmental Management Plan (EMP) is the key to ensure a safe and clean environment. The desired results from the environmental mitigation measures proposed in the project may not be obtained without a management plan to assure its proper implementation & function. The EMP envisages the plans for the proper implementation of mitigation measures to reduce the adverse impacts arising out of the project activities during pre-construction, construction and operation stage. Details on all the aspects and budget provisions have been detailed in the Consolidated EIA & EMP Report. A monitoring plan is framed to monitor the implementation of activities provided in EMP. A summary of budget provisions of EMP is detailed below.

Summary of EMP Budget

S. No.	Item	Activities proposed	Cost (Rs. million)
1.	Biodiversity Management	Development of Herbal garden, Compensatory afforestation, Roadside plantation, Wildlife protection	66.60
2.	Implementation of CAT Plan	Forestry work, Soil & moisture conservation, Wildlife management, Capacity building and exposure visit, Village level development and livelihood support, Income generation activities, PMC running cost, Alternate Energy support, Fish management, Construction & Renovation works, micro planning etc.	40.095
3.	Ruck Management Plan	Disposal Plantation on spoil slope, Tarring of slopes, Fencing, nursery development & maintenance, Watch & ward and a portable pump	19.781
4.	Fish Management	Transportation of seeds from TERRI Balower hatchery, Management of Sewer tract, Habitat restoration.	11.400
5.	Greenbelt Development Plan	Plantation of trees, shrubs and herbs	4.151
6.	Rehabilitation of Quarry	Filling up the excavated site, Green manure, Fertilizer, pesticides, fencing maintenance and watch & ward	5.000
7.	Solid Waste Management	Two covered track for transportation of solid waste to landfill site, 10 persons for 5 years	10.799
8.	EMP Measures for Road	Clearing & grading, Insect wall catch water interception	9.000

(TGM for Thermal Power Plants, 2010)

So, they will also check for the completeness and authenticity of baseline data. Citing of proper reference, so whether you have taken all the data from where you have taken all that has been properly indicated or not. Whether the values of environmental parameters are consistent or not with each other also be checked.

What are the mitigation measures, that is all given in this as well, and then you can see here a summary of the EMP budget also provided as the requirements. And how the input from public hearings has been incorporated. And then the effectiveness and consistency of the proposed environmental monitoring plan. And then how hazard and quantification of risk is done.

(Refer Slide Time: 45:42)

Review Methods

- General checklist
- Project specific checklists and guidelines
- EIA review framework and packages
- Expert and accredited reviewers
- Public hearings
- Comprehensive review of the EIA process

(EIA Training Resource Manual, 2002)

So, while reviewing you can use the general checklist method so you see that MOEF gives a checklist. It can also have a project-specific checklist and guidelines as per the domain. Then you can use the framework and packages the ones which we saw from Zimbabwe. Then you also have expert and aggregated reviewers. A public hearing is also part of it.

(Refer Slide Time: 46:08)

Rating scale to answer the following questions in detail:

- A. excellent (thoroughly and competently performed)
- B. good (minor omissions and deficiencies)
- C. satisfactory (some omissions and deficiencies)
- D. poor (significant omissions and deficiencies)
- E. very poor (fundamental flaws and weaknesses)
- F. no opinion (insufficient basis/experience on which to judge)

(EIA Training Resource Manual, 2002)

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This is another scale that you can see where the report can be evaluated like excellent, good satisfactory, and so on.

(Refer Slide Time: 46:18)

I. EIA process	
Were the following activities completed fully and successfully?	
a) screening — proposal classified correctly as to level and requirement for assessment?	
b) scoping — process completed and resulted in: <ul style="list-style-type: none">i) priority issues and relevant impacts identified?ii) key actors involved?iii) reasonable alternatives established?iv) terms of reference / study guidelines prepared?	
c) impact analysis — process completed in scope and depth necessary? <ul style="list-style-type: none">i) affected environment (baseline) conditions described?ii) estimation and prediction of main impact categories?, including<ul style="list-style-type: none">- indirect and cumulative effects?- other relevant factors?iii) suitable database and methodologies used?	
d) mitigation — necessary measures or environmental management plan identified, including: <ul style="list-style-type: none">i) follow up and monitoring arrangements if strategies are untried or impacts uncertain?	
	<ul style="list-style-type: none">ii) specification of contingency plans or non-standardised operating responses?
	e) significance — residual effects evaluated as to potential severity?, including reference to: <ul style="list-style-type: none">i) their scope, duration and irreversibility?ii) relative importance to dependent communities or ecological functions?iii) possible compensation or offset mechanisms (also 2d)?

(EIA Training Resource Manual, 2002)

Within the process itself, the process ensures EIA quality so you can see how screening, scoping, impact analysis, mitigation, and significance, so whether the entire process has been carried out properly or not would also help you to review the quality of EIA.

(Refer Slide Time: 46:35)

Quality of EIS/EIA report

- Consistency with the terms of reference and the process followed
- Is the information:
 - a) Complete — informed decision can be made?
 - b) Suitable — right type of information included?
 - c) Understandable — easily apprehended by decision maker?
 - d) Reliable — meets established professional and disciplinary standards?
 - e) Defensible — risks and impact are qualified as to proposal uncertainties?
 - f) Actionable — provides clear basis for choice and condition setting?

(SadZer, 1996; EIA Training Resource Manual, 2002)

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So, another scale which you can see for the EIA report.

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Shortcoming	EIA Reporting Example
The need for a project cannot be justified	An EIA report substantiates the need for offshore exploratory drilling in a remote and sensitive Arctic Sound primarily in terms of energy security and economic development. The broader opportunity costs of opening the area to development are overlooked.
The objective and alternatives are too narrowly stated	An EIA report on a proposed by-pass road identifies the objective as relieving traffic congestion, failing to consider broader transport issues and alternatives.
The description of the proposal does not cover the key features	An EIA report describes the proposed construction of an industrial plant but omits information about construction of a pipeline and other facilities to transport and handle raw materials and finished products to and from the plant.
Selection of alternatives does not take into account environmental aspects	The EIA report on a car racing circuit in a coastal dune landscape only considers alternatives meeting motor sport requirements, visitor 4C "needs" and public safety regulations. It overlooks environmental considerations, such as noise abatement, protection of land surface and dune ecology.
Key problems affected by the proposal are not described	An EIA report describes the proposed construction of a coal-fired power plant using surface water as cooling medium. It does not divulge that the surface water body is already used by other industrial activities for this purpose to the limit of its cooling capacity.
Sensitive elements in the affected environment are overlooked	An EIA report for a pipeline project does not indicate that the proposed alignment will dissect certain areas of ecological value.
Environmental target values and standards are not properly taken into account	An EIA report for an extension of an airport describes the impacts up to the standard of 25 per cent of people seriously affected by aircraft noise, whereas the target value aims at 10 per cent of people seriously affected.

(Internet, 2022)

Usually, there are certain shortcomings in the EIA report, reports the general observed, and then the cases marked are indicated here. So, these examples are here as per the UN training manual so the list is given to you here which you can see I will just highlight which are the key shortcomings.

So, the need for a project cannot be justified so sometimes reports where it is written the key aspects are not justified for the project, the objective and alternatives are too narrowly stated so you do not enough, you do not sufficiently describe it. The description of the proposal does not cover the key features so then also most of the time these problems are there.

The selection of alternatives does not take into account the environmental aspect. So, those problems are also seen. Key problems affected by the proposals are not described so that can also happen, sensitive elements in the effective environment are overlooked. Environmental targets values and standards are not properly taken into account.

(Refer Slide Time: 47:43)

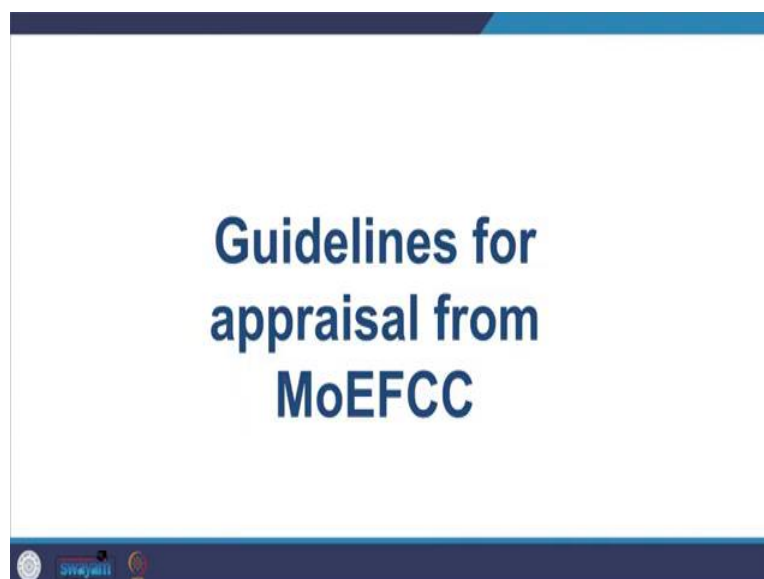
Alternatives do not comply with environmental regulations and standards	An EIA report for a sanitary landfill indicates that the soil types in the area are very diverse, ranging from sand and clay to peat. The alternatives do not take into account the large differences in compaction and subsidence of these soil types, with subsequent failure of underlining and drainage systems.
Appropriate mitigating measures are not considered	An EIA report for a sanitary landfill does not describe a system for collecting methane gas produced in the landfill, even though greenhouse gas emissions contribute to climate warming and should be capped at current levels.
The alternative offering the best protection to the environment is not described or insufficiently described	An EIA report for a bridge or seabed tunnel across an estuary does not examine the alternative of a drilled tunnel underneath the estuary, which will have a much lower adverse impact on the environment.
Serious environmental impacts or risks are not described or are incorrectly described	An EIA report for a sanitary landfill in an area with very variable soil conditions does not describe the environmental risks and consequences of a possible failure of the underlying sealing and drainage systems.
Insufficient or outdated prediction models are used	An EIA report on an urban development scheme makes use of a mobility prediction model using national averages, although local data is available and would permit a more precise prediction to be made.
When comparing alternatives, incorrect conclusions are drawn	An EIA report for a regional management plan for the disposal of municipal sewage sludge compares various alternative methods for disposal. One alternative involves composting the sludge into a low-grade soil additive. The comparison of the alternatives in the EIA report describes this method as an important form of disposal because it greatly reduces sludge volume. However, no account is taken of the limited potential for use of the product due to the high heavy metal content of the sludge.

(Internet,2022)

And then you also see that alternatives do not comply with environmental regulations and standards that are also observations. Appropriate mitigation, measures are not considered so that is generally what has been seen in EIA reporting. Alternative offering the best protection to the environment is not described or insufficiently described.

Serious environmental impacts or risks are not described or incorrectly described so those kinds of problems also come. So, insufficient or outdated predicted models are used, so not the latest models are used, outdated models are used or the models that have certain limitations are used. And when comparing alternatives incorrect conclusions are drawn, so that kind of problem also comes here.

(Refer Slide Time: 48:26)



So, here you can see guidelines for appraisal from MoEFCC, so they have given this guideline. So, we are giving this checklist to you, you can have a look.

(Refer Slide Time: 48:36)

Section B - Guidance Notes for Appraisal

If on completing the preliminary appraisal in Section A, a project proposal is found to require further appraisal, then the reviewer will need to undertake the following steps.

Step 1 (the first task):

For each Review Question the reviewer will first need to decide whether the particular type of information is relevant to the type of development proposed. If not, the reviewer notes this and moves on to the next question.

Step 2 (the second and third tasks):

If the question is considered relevant the reviewer examines the information provided by the developer and assesses it as:

Complete	all information relevant to the decision-making processes is available, no additional information is required.
Acceptable	the information presented is not complete, however, the omissions need not prevent the decision-making process proceeding.
Inadequate	the information presented contains major omissions/omissions; additional information is necessary before the decision-making process can proceed.

Step 3 (the fourth task):

When a question is assessed as Acceptable or Inadequate, the reviewer notes in the right hand column what information is missing, and, where appropriate and feasible, indicates where this information may be obtained according to the following listing:

A) Project Proposal	E) Central Government
B) State Agencies	F) Departmentally
C) Central Agencies	G) Central Pollution Control Board
D) State Government	H) Other (please state)

Section B - Guidance Notes for Appraisal (Contd.)

Step 4 (the fifth task):

On completing an appraisal section, the reviewer may then grade that section according to the format prompted by the Appraisal of Review Area forms supplied.

Step 5 (the sixth and seventh tasks):

On completing the appraisal forms for each review area, these may then be collated using the Overall Appraisal form supplied at the rear of the checklist.

Using this format, the reviewer then indicates his decision and comments for one of the following courses of action:

- Return the Proposal
- Process the Proposal
- Submit the Proposal for Expert Review

<https://moef.gov.in/wp-content/uploads/2018/04/GuidanceforAppraisal.pdf>
(MOEF, 2018)

So, this is how the reviewers would be again seeing in the Indian context like they would have step 1, step 2, they would see how the report is complete, acceptable, inadequate, and then who is the proponent, government, department, center, and central pollution control board and others through what it has been reviewed. And what kind of action step 5, return the proposal, process the proposals, and submit the proposal for expert review so that this is how they are going to check.

(Refer Slide Time: 49:05)

1. DESCRIPTION OF THE PROJECT				
No.	Criteria	Relevant? (Y/N)	Judgement (C/A/I)	Comment
Principal Features of the Project				
1.1	Is the nature and status of the decision(s) for which the environmental information has been prepared clearly indicated?			
1.2	Is the estimated duration of the project construction phase and operational phase mentioned?			
1.3	Are the design and size of the project described, using diagrams, plans and/or maps as necessary?			
1.4	Are the construction details described?			
1.5	Has the reinstatement and after-use of the temporary land taken during construction been described?			
1.6	Are any additional services <ul style="list-style-type: none"> • Water (including desalination plants) • Electricity (including DG sets) • Port • PTV • Emergency service • Laying of pipelines • Construction of roads • Opening of new quarries • Others (please specify) required as a consequence of the project described?			
1.7	Is indication of the nature, quantities and source of materials needed during both the construction and operational phases given?			
Human Impacts				
1.8	Has the public been informed of the proposed project, and have their concerns been heard during the public hearing and responded?			
1.9	If resettlement is necessary, does the proposal include in-depth descriptions of rehabilitation and compensatory packages offered? If it involves scheduled areas/ethnic community, has appropriate measures taken?			
The Project Workforce				
1.10	Has the number of workers during construction and operation phases been estimated?			
1.11	Has the access of workers to the site and likely means of transport been described?			
1.12	Where applicable, has proper account been taken of the housing, health, fuel and sanitary needs of migratory or other workers?			
1.13	Are the issues of worker health and safety described and addressed? Where applicable do these include protection against disease, particularly through endemic transmission to migratory workers?			

<https://moef.gov.in/wp-content/uploads/2018/04/GuidanceforAppraisal.pdf>
(MOEF, 2018)

1. DESCRIPTION OF THE PROJECT (contd.)				
No.	Criterion	Relevant? (Y/N)	Judgement (C/A/I)	Comment
Inputs and Outputs				
1.14	Has an indication of the matrix of transporting materials and products to and from the site during construction and operation and the number of movements involved been given?			
1.15	Have the types and quantities of <ul style="list-style-type: none"> Solid waste Effluent Emissions Noise & Vibrations Heat radiation Residue materials generated During construction and operation of the project, and rate at which these will be produced, been estimated?			
1.16	Have the methods of estimation of quantities of residue and wastes been estimated and indicated?			
1.17	Have the methods in which it is proposed to handle and/or treat these residues and residue materials prior to release/disposal been indicated? Does this include the routes by which they will eventually be disposed-off?			

2. Description of the Project: Appraisal of Review Area		
Score	Grade	Criteria
2	Excellent	The environmental information contains everything required for decision making on the project. There are no gaps.
1	Good	The environmental information contains most of the information required as far as it is relevant in the particular circumstances of the project; any gaps are relatively minor.
0	Satisfactory	The information presented is not complete; there are significant omissions but in the context of the proposed project, these are not so great as to prevent a decision being made on whether the project should be allowed to proceed.
-1	Inadequate	Some of the information has been provided but, there are major omissions; in the context of the proposed project these must be addressed before a decision on whether the project should be allowed to proceed can be taken.
-2	Poor	The information required has not been provided in a far from complete and, in the context of the proposed project, the omissions must be addressed before a decision on whether the project should be allowed to proceed can be taken.

The reviewer can use this Area Checklist to derive a single appraisal of the quality of environmental information submitted within each Appraisal Area. An appraisal of the information could be made according to the following system (which may then form input into the overall project appraisal at the end of the checklist):

I recommend that this Review Area be assigned the following:

Grade	Score	Comment (where a score is less than or equal to zero, and, where appropriate and feasible, please expand on recommended future actions)

<https://moef.gov.in/wp-content/uploads/2018/04/GuidanceforAppraisal.pdf>

(MOEF, 2018)

In our scenario we use the checklist to describe the project and all the parameters they would see and relevant, yes, no, judgment, and comment so they would make these comments, you can have a look at this checklist. So, this has a complete checklist I have snipped it for you from the website, and I will share it with you.

(Refer Slide Time: 49:29)

Summary	
1	Identified key elements of EIA Reporting
2	Identified key aspects of EIA Review

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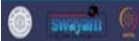
So, that is all that we saw today, we covered, and looked at key elements of EIA reporting the complete elaborates on what report, what the different components of what the purpose of each component and how it is evaluated, and what is looked into when the report is evaluated.

The same way we saw how the EIA reviews the quality of EIA. So, the review process itself is a way of ensuring how the quality is maintained and how the key objective of EIA is met so that is what we covered today.

(Refer Slide Time: 50:03)

References


- 1 Therivel, R., & Wood, G. (2018). *Methods of Environmental and Social Impact Assessment*.
<https://lccn.loc.gov/2017010184>
- 2 EIA Training Resource Manual, UNEP, 2002
https://wedocs.unep.org/bitstream/handle/20.500.11822/26503/EIA_Training_Resource_Manual.pdf?sequence=1&isAllowed=y
- 3 MOEFCC Guidance for Appraisal, 2018
<https://moef.gov.in/wp-content/uploads/2018/04/GuidanceforAppraisal.pdf>
- 4 Environmental Studies for Vishnugad-Pipalkoti Hydro Electric Project, 2009
https://thdc.co.in/sites/default/files/EIA%20ExecutiveSummary-ENGLISH_0.pdf


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So, these were the key references, today's key reference was the UN training manual plus we took some parts from our textbook which we have been referring to Therivel and Wood, and then most of the documents were taken from the ministry website.

(Refer Slide Time: 50:19)

Suggested Watch and Read



Link:
<https://thdc.co.in/sites/default/files/TBD.pdf>

United Nations Development Programme
UNEP
 Division of Technology, Industry and Economics
 Economics and Trade Branch

Environmental Impact Assessment
 Training Resource Manual


Second edition 2002

(Published in the Gazette of India, Extraordinary, Part II, and Section 3, Sub-section (ii) MINISTRY OF ENVIRONMENT AND FORESTS New Delhi New Delhi, 2006)

S.O. 10302) - Whereas, a joint notification under sub-rule (2) of Rule 4 of the Environment (Protection) Rules, 1986 for imposing certain restrictions and prohibitions on new projects or activities, or on the expansion or modernisation of existing projects or activities based on their potential environmental impacts as indicated in the Schedule to the notification, being contained in any part of India, where prior environmental clearance has been accorded in accordance with the objectives of National Environment Policy as approved by the Union Cabinet on 16th May, 2006 and the procedure specified in the notification, by the Central Government or the State or Union Territory Level Environment Impact Assessment Authority (IEAA), to be conducted by the Central Government in consultation with the State Government or the Union Territory Administration concerned under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 for the purpose of the notification, was published in the Gazette of India Extraordinary, Part II, section 3, sub-section (ii) vide number S.O. 1244 (E) dated 16th September, 2010 inviting objections and suggestions from all persons desirous to be affected thereby within a period of sixty days from the date on which copies of Gazette containing the said notification were made available to the public;

And whereas, copies of the said notification were made available to the public on 19 September, 2010;

Link:
<http://www.environmentwb.gov.in/pdf/EIA%20Notification,%202006.pdf>


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So, these are the suggested watches and reads related to the EIA reporting and quality of EIA.

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Let us know about any Concerns you have
Do share your Opinions, Experiences and
Suggestions.
Looking forward to Interacting and
Co-learning with you while exploring EIA

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And winding up please feel free to ask questions, let us know about any concerns you have. Do share your opinions, experiences, and suggestions. Looking forward to interacting and co-learning with you while exploring EIA, thank you.