Environmental Impact Assessment
Professor Harshit Sosan Lakra
Department of Architecture and Planning
Indian Institute of Technology, Roorkee
Lecture 30
EIA Process – Follow-Up (Monitoring and Auditing)

Welcome to the course- Environmental Impact Assessments. In today's session, we are going to look at the follow-up where we do Monitoring and Auditing after the decisions.

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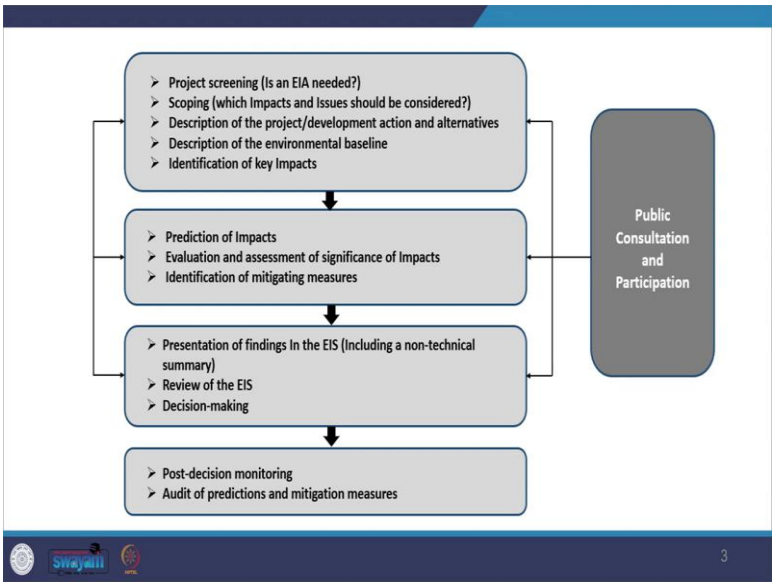

So, if you recollect, we are in, what we covered in the previous lecture, we looked at this right-hand box of public consultation and participation, as well as the third box where we looked at the presentation of the findings in environmental impact assessments. Then we looked at how we review and examine the EIA report how the decision-making happens, and that we saw it from the Indian context.

So, today, we will look at the last box here. And with this, we will be finishing our EIA process part. So, we will look at how we do follow-up. So, we have decided whether the project has to be done or not. And then, now project is executed and it starts functioning. So, the other most important part is about post-decision monitoring, how we monitor what we had predicted and what we have committed to undertake with all the terms and conditions that we talked about in the previous class.

So, we audit various predictions, and then the mitigation measures that we have said about taking. So, if you look at EIA, in principle, it is not just about the decision-making or furnishing information for decision-making. But it is also the continuous process of improving our approach or improving our understanding of how to address environmental risks. So, we talked about a range of environmental problems and risks.

So, EIA is one part of it, where based on that we decide whether we have to go ahead with a project or not. But it is not just that, in the process, you also keep learning and seeing how that process can be further improved. Various element policy elements can be changed in that. So, it is important to keep testing the predictions we have made.

So, we made a lot of predictions in the report about what will happen, and what not will happen. It is important that, after this when the project is approved, with certain terms and conditions, it is important to monitor it to follow up and find out what was predicted was in line or not, and what commitment terms and conditions they had committed for whether they are following or not.

So, it is an important part, but then it is not implemented very well. This monitoring and auditing where you monitor an auditor or audit the project and its impact, is also called EIA follow-up. And it is important because it helps improve the planning of EIA and future projects. So, learning from all these projects helps us to improve the process and eventually how to handle all the projects through the EIA process. So, it not only helps in like the project, one stage, but it helps us to understand all the stages.

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So, looking at the coverage. So, today we are going to look at the key elements of EIA we will look at certain definitions, and then we will look at what kind of questions we look at when we do follow-up on what we look at the project when it is executing and when it is functional. And then what are the monitoring practices at the international level? Then we look at how, the developing countries' experiences have been unwilling to just very, very briefly touch upon some of the case studies.

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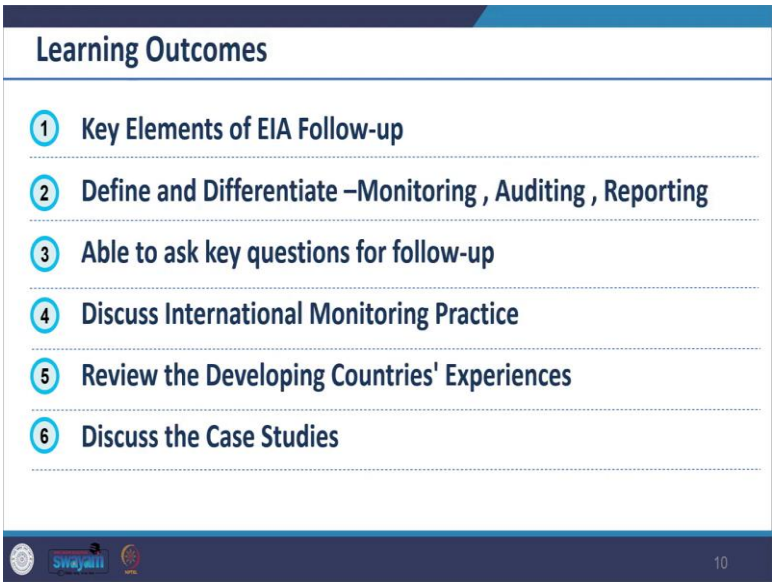

So, the expected learning outcome is that you should be able to identify key elements of EIA follow-up. So, what are the key elements of follow-up then you should be able to define and differentiate what is monitoring what is auditing what is reporting, and so on. And you should be able to ask key questions for follow-up, like what, I need to look for, and then you should be able to discuss international monitoring practice, like what is happening.

And then you should be able to review the developing countries' experiences, like what challenges they are facing, or how well they have been able to do. And then I will just quickly give you links and tell you about one or two case studies here. So, here in the table, you can see the key elements of EIA follow-up, which has been, and we see that key element from the project proponent's perspective, like the people who do the EIA, and the people who are bringing up the project. So, what are the real benefits of following up with that?

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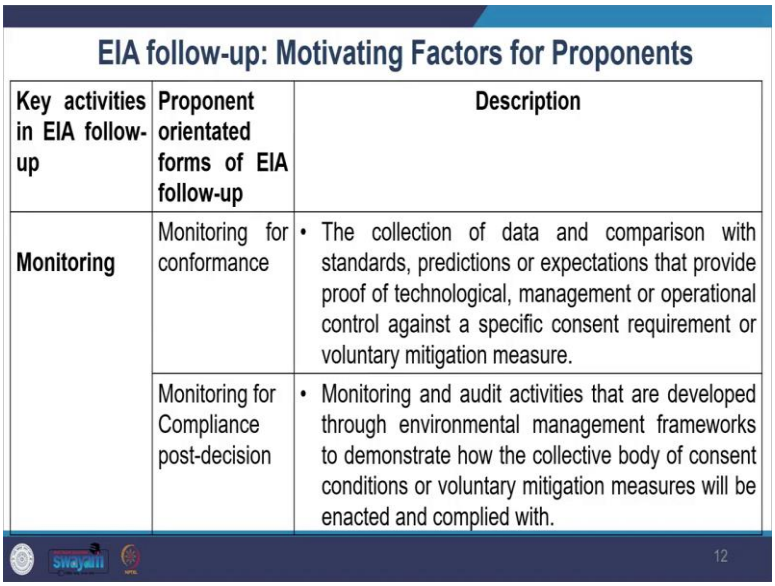

So, here you see that, one is the monitoring part, and monitoring allows the confirmation. So, it allows the confirmation, like, it allows them to confirm whatever they had predicted and what standards they have been

following. So, that allows them to confirm. So, in this stage, you do the data collection, you compare with the standards, and you show that it is as per the prediction or expectations.

And it also provides proof of technology. So, whatever technology you have adopted, it shows that it is working or not working. And then you also see monitoring for compliance post-decision. So, after the decision, also, it helps you to align with that. And then it also helps you to evaluate so and it helps you to generate future knowledge.

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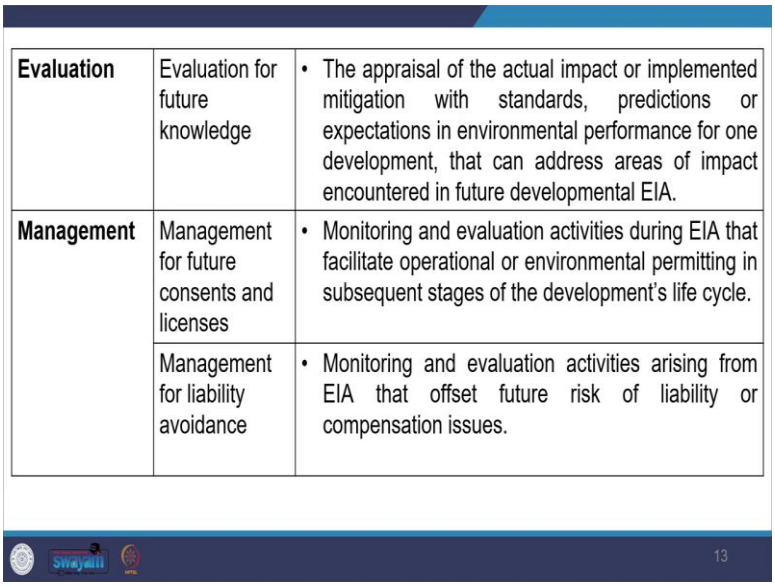

So, the appraisal, and the review will allow you to understand how the mitigation is working or not. Are we able to keep up with the standards or not and what kind of predictions and expectations have happened? So, it also further allows you for the management. It allows you to further functioning and licensing purposes, and what things to avoid.

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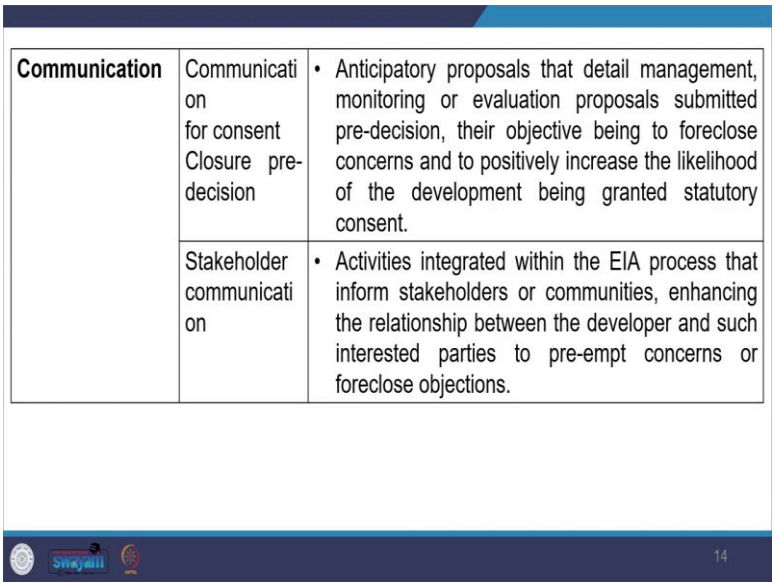

So, you develop those kinds of things, it allows you for communication, like how well you are taking care of communicating with the stakeholders and all authorities that how the good practices can take care of the sustainable development aspect. So, that is the key element like what we see is like what kind of benefit one has because of the follow-up. So, now looking at some of the definitions.

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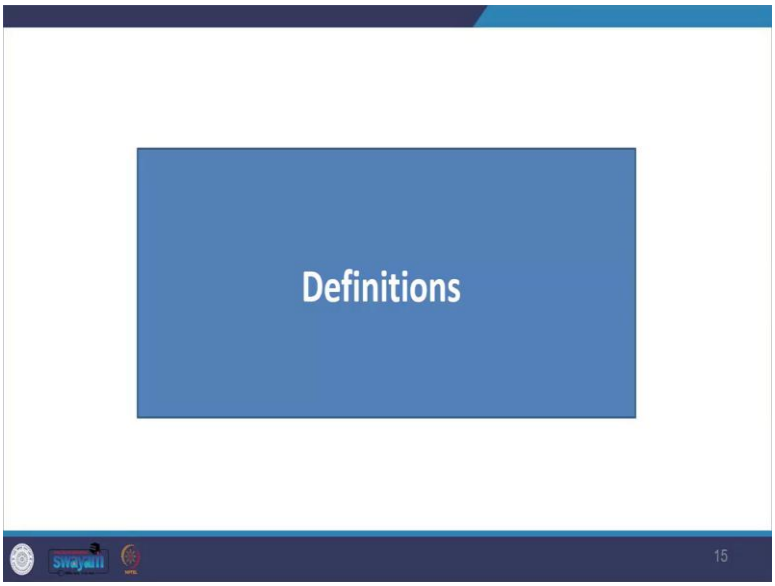

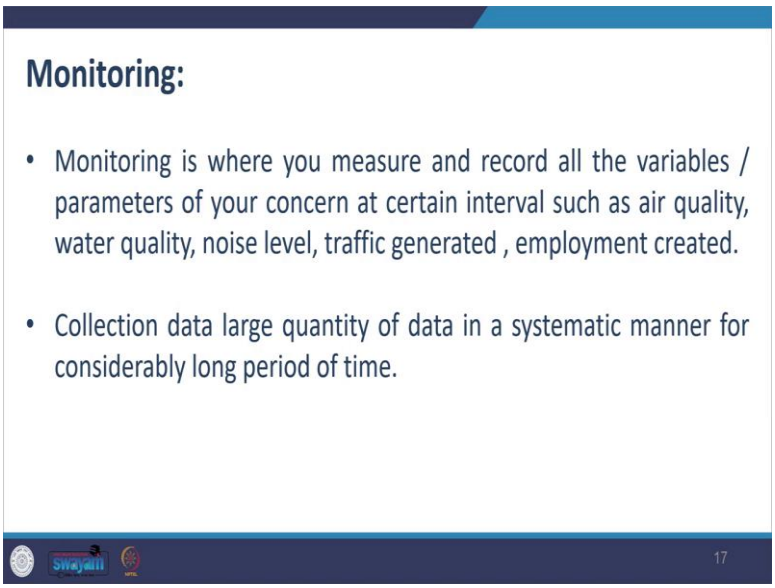

So, one is monitoring, what do we mean by monitoring, monitoring is where you measure where you take into account, and you record all the variables. So, like you said, you wanted to claim the air quality water quality, noise level, and what kind of traffic you will generate. So, you are going to measure that. So, you are going to take care of the water, and air quality there you will regularly maintain on maybe a daily basis, hourly basis, water quality, noise level, and then traffic generated, what kind of employment you have created at various stages.

So, you are going to record all those things. So, that is like taking those recordings is monitoring, and you would be collecting data in large quantity to think of data which you will be collecting, and you will be collecting in a very systematic manner for a very long period. So, through monitoring, we can see how these

parameters behave. So, you will see like where a quality is going up or down, water quality is going up or down, and how it is happening in a given context.

So, it adds value to our understanding, and knowledge, which we have, and to what scale the impact is happening, how far the air pollution is happening, and how far water quality is improving or deteriorating. So, the monitoring helps to improve the project management and it also helps in creating a protection system and also creating a response system.

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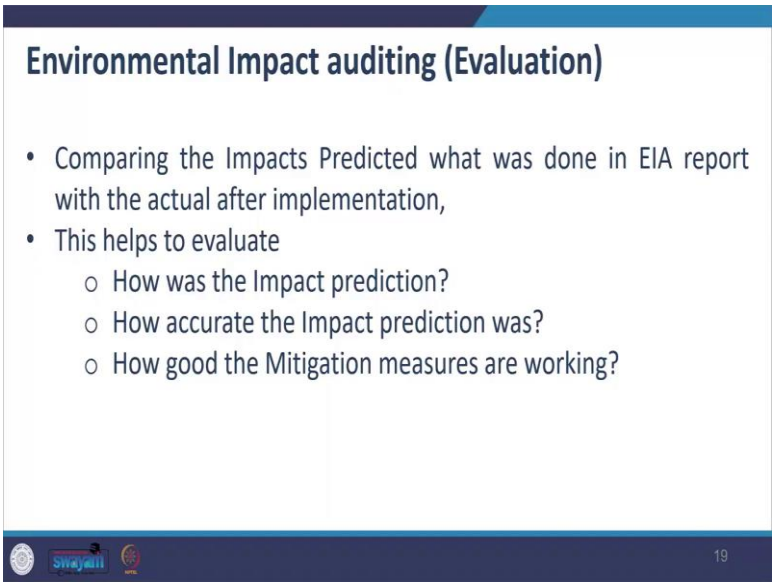

So, there is another term which we see is the environmental impact auditing or we also say evaluation. So, this involves comparing the impacts predicted what you had predicted, in the report to the actual after implementation, so you predicted this would be the air quality now you check out the implementation was the air quality, it is better or worse. So, that is what you do environmental impact auditing.

And this helps to evaluate how, was the impact prediction. How accurate the impact prediction was? It also helps us to know how well, the mitigation measures are working. So, I not only like your prediction part but also what mitigation, measures you are taking to cut down that kind of impact on how well they are working. So, it also helps you to take care of that.

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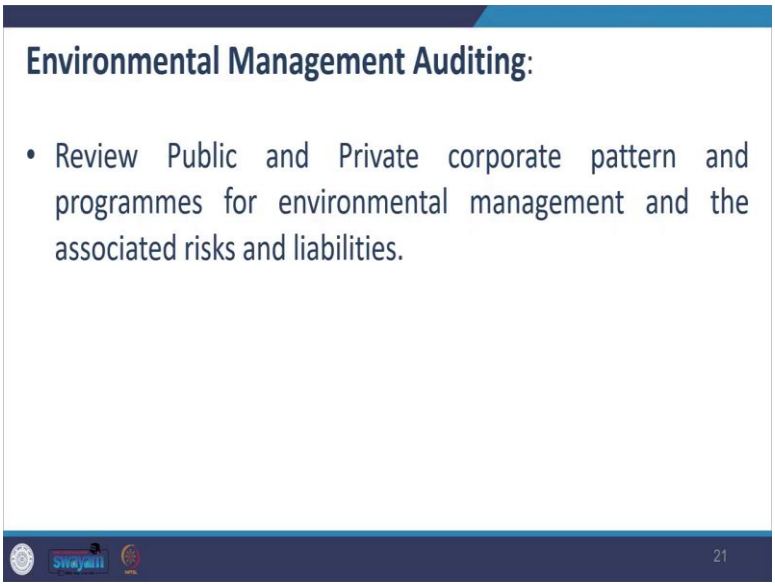

You find another term, which is Environmental Management Auditing. So, in that, you see that environmental managing auditing, you review public and private corporate patterns like it is done at a larger scale, where you look at all the policies and programs, and you see what and how the environment management has been done, and then what kind of risk and what kind of responsibilities liabilities are there, so that, that is about the environmental management auditing.

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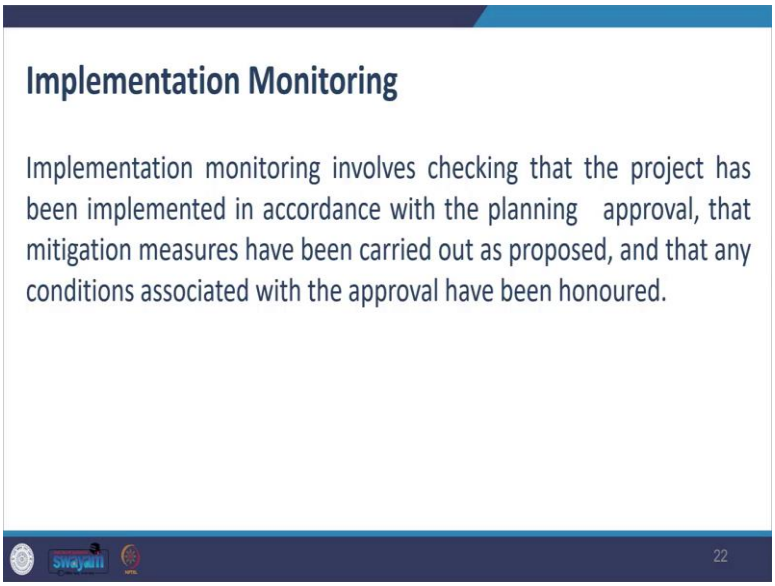

So, we see another term which is Implementation Monitoring. So, this involves checking that the project has been implemented by the planning approvals, whatever terms and conditions he had given, so, whether the proponents are implementing the project in that manner or not. So, and then also what mitigation measures what they had said they would take care of, are they being carried out or not? So, that all is implementation monitoring. So, that was about some of the key terms.

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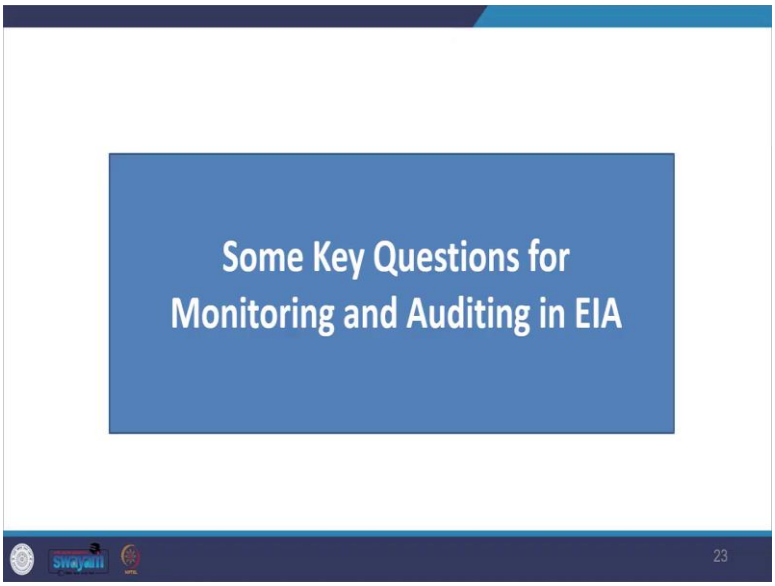

Now, we are going to see like, when you do follow up, when you do monitoring and auditing, what kind of questions do you look into.

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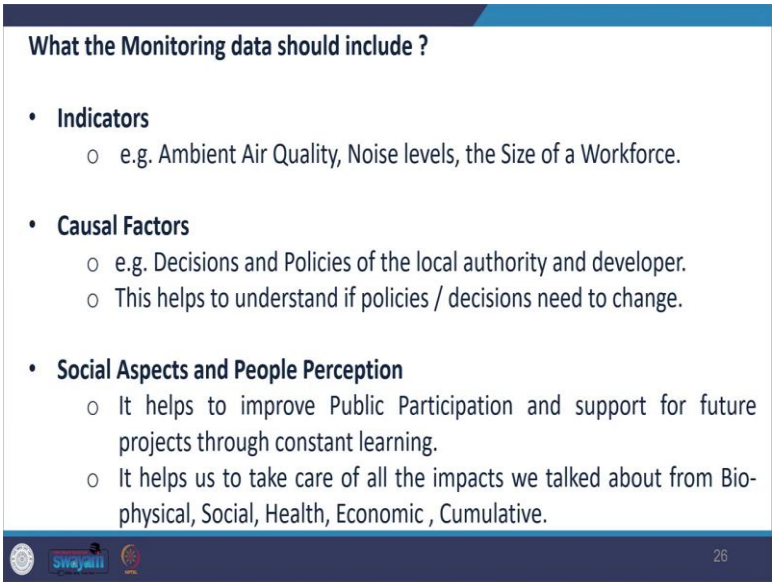

So, like, you will be collecting a lot of data, so what kind of data should be included? So, like if you are using indicators, you have to take ambient air quality, you have to take noise level, the size of the workforce, and the range of impacts, which we had talked about. So, you can have indicators for that and you can connect further it is suggested that not only those by physical impact, but other causal factors, all those need to be taken care of, like how many like, what decisions you have been making, what kind of policy changes you have been making, and then how changing those decisions and policy can also change the indicators.

So, that all also needs to be taken care of. Plus, you also need to take care of the social aspects, because in the EIA report, you look into several impacts, so even those aspects, not just the geophysical aspect, the social aspect also needs to be taken care of in the monitoring, and even people is perception how they are

perceiving because if you keep track of people perception there, it helps them to improve their support, improve the understanding and create awareness. So, even that, should be taken care of.

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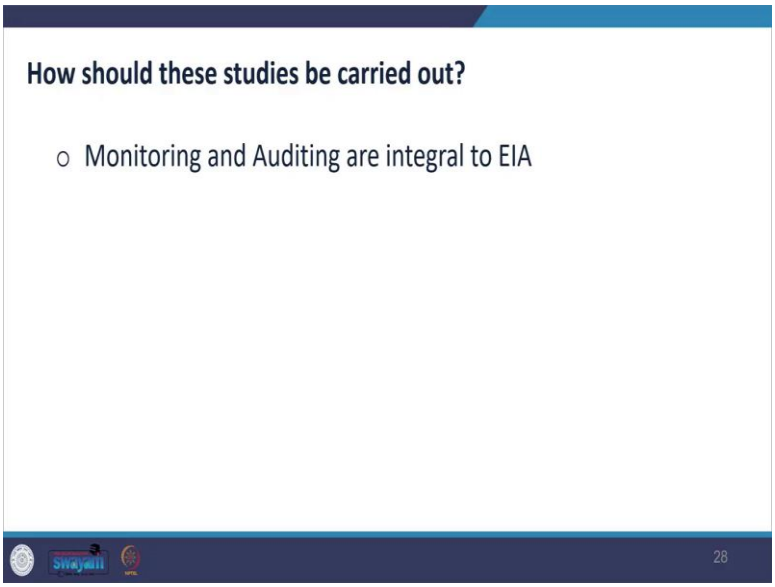

And then, how you should undertake these studies and how you should carry out all these studies. As you will see, monitoring and auditing are a very integral part of EIA. And you should keep this in mind from the very beginning. So, at every stage, you make provision for monitoring and auditing. So, that you can monitor and audit at the latest stage when the project is being executed, so executed. And it is very important that monitoring and auditing have very clear objectives.

You know what has to be done and need to have a clear idea of what period you will need, like for how many like have, you had to collect data every 3 months or have you had to collect data every day, how do you have to collect and how you are going to monitor. So, all that needs to be seen. You also need to have a clear understanding of all methods for data collection.

So, how I am going to collect the data? So, from where I am going to collect the data, like what methods and equipment I am going to use? So, you will see that with various sectors. In India, EIA is an actuarial manual that provides you with all the methods for data collection purposes. So, looking at who should undertake such studies, you need to develop partnerships with various stakeholders.

So, you can have research institutions, that can undertake studies and then you can have local authorities who can undertake certain things and you can also have a local community who can be involved in data collection and reviewing the process. And many times you will see that, depending on the context monitoring may not be mandatory or can be optional as well. In India, it is mandatory as per the notification of 2006. So, monitoring is mandatory.

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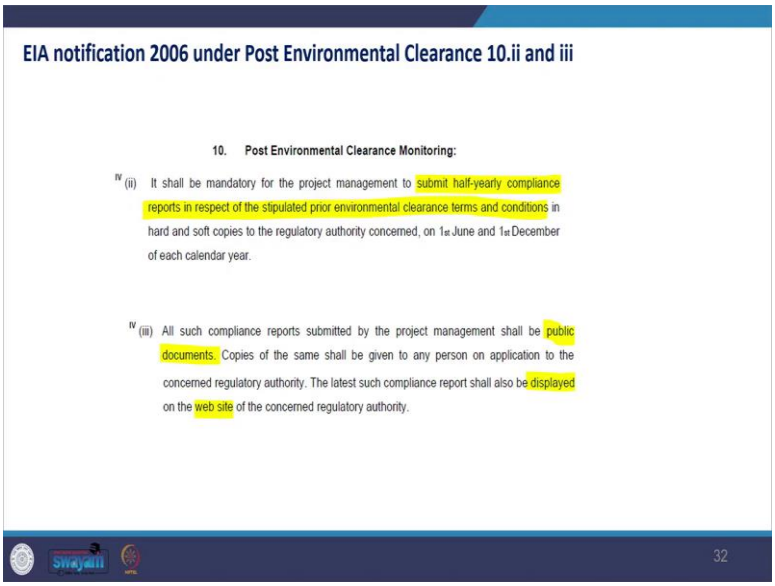

So, you can see the post environmental clearance 10.2 and 10.3 which gives you a clear understanding that it is a mandatory process and then you need to submit a half-yearly compliance report, and then the document has to be made available for the public and has to be displayed on the website of the regulatory authorities. So, that all has to be undertaken. As you see EIA is dependent on context. So, even monitoring and auditing are dependent on the context. So, it varies from place to place context to context.

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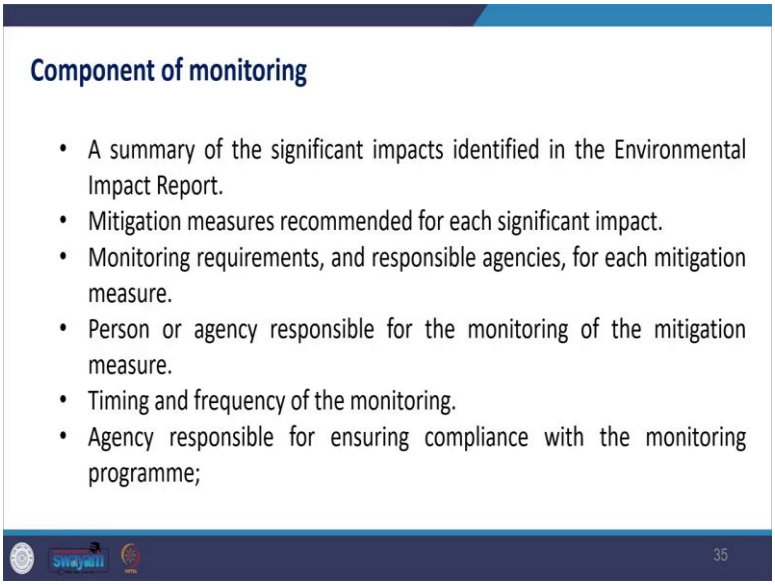

And looking at the components of monitoring it involves certain things. So, as you see a summary of the significant impact. Like what are the impacts which were identified, and what kind of mitigation measures were recommended for each significant impact. So, what kind of mitigation measures like what impact do we find and what kind of mitigation measures we take, and then what kind of monitoring requirements are there so what how you would monitor those requirements, and who will be the responsible agencies and, and what kind of mitigation measures would be taken for that.

And then what agency or person will be responsible for monitoring and the mitigation measures? So, who will monitor what mitigation measures you suggested, and how would be monitored? Then you would be looking at the timing and frequency of monitoring how frequently you would be doing it twice a year regular basis, how you will be doing it, and then the agency responsible for ensuring that the project complies with what they have committed for. So, that is about the components of monitoring.

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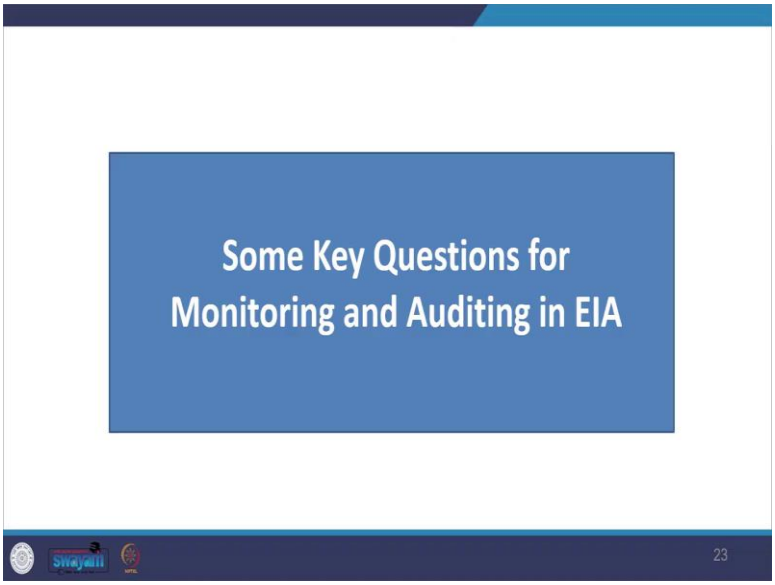

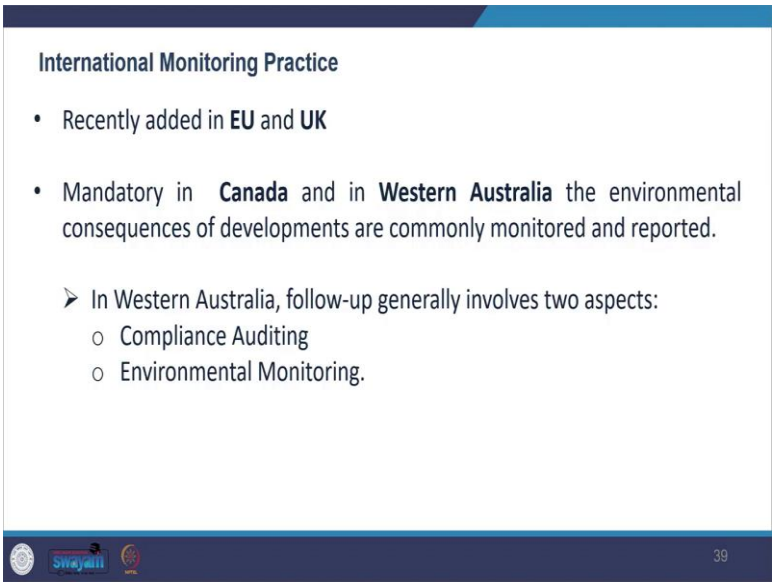

And then now looking at some of the international monitoring practices, it has been recently added in the EU and UK, it was not mandatory, but it has been added you will see that in a few country's regions, it is mandatory. So, you see in Canada, you see in Western Australia, so they have follow up where they have the need to comply, they have compliance auditing and environmental monitoring provision.

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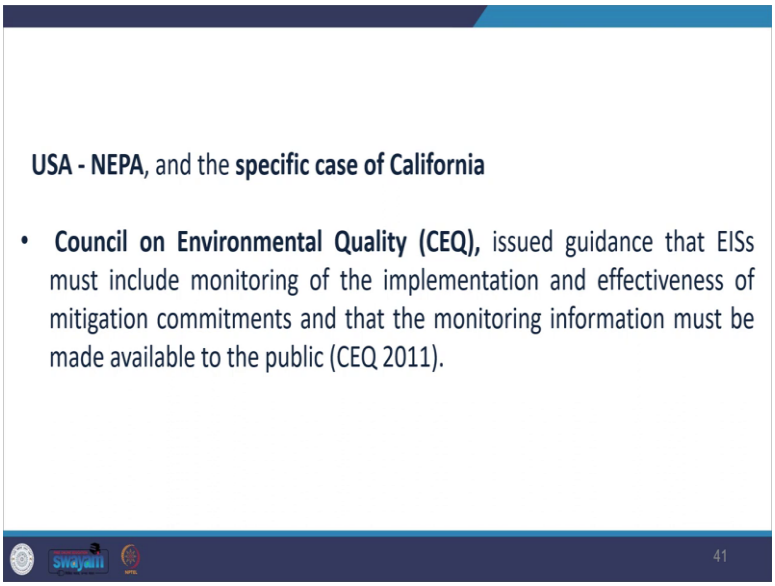

When you look at USA-NEPA. So, they have Council on Environmental Quality CEQ, so they have issued guidance that the EIA report must include monitoring of the implementation and effectiveness of mitigation commitments. So, whatever commitment project proponents have made, it has to be implemented. And then monitoring information must be made available to the public. So, it has to be not only made but it has to be made available to the public. And they have this CEQ guidance recommends that the agency should identify the source of monitoring funding in their proposal and then also identify parallel performance standards for mitigation measures what will be the performance standards for that so that all has to be expressed.

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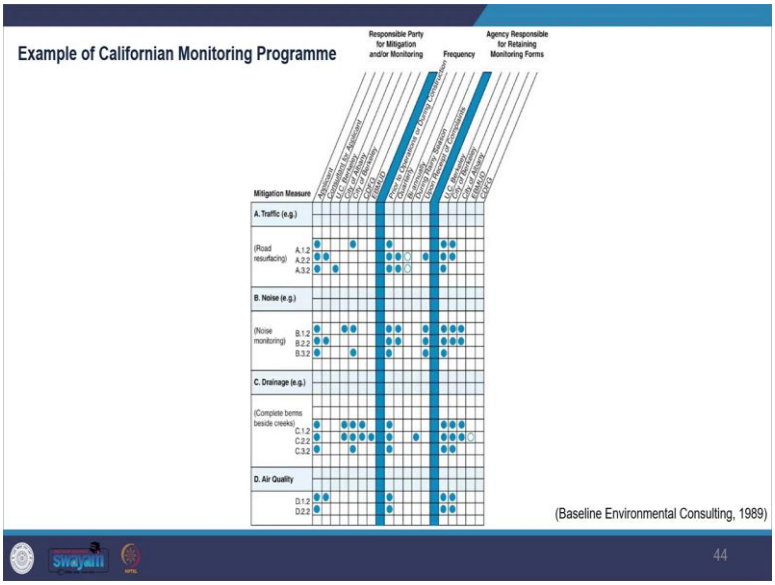

So, in the figure here, you will see that it provides examples of key elements of the monitoring program and all the reporting plans. So, you can see here, that this is from the California man monitoring program. Here you can see, how mitigation measures are recommended. So, you can see, the traffic noise drainage air quality on the column side, and you can see on the upper side, on the right-hand side responsible party for

mitigation, then you can see, the frequency then you can see the agency responsible for retaining monitoring firms who will keep the data.

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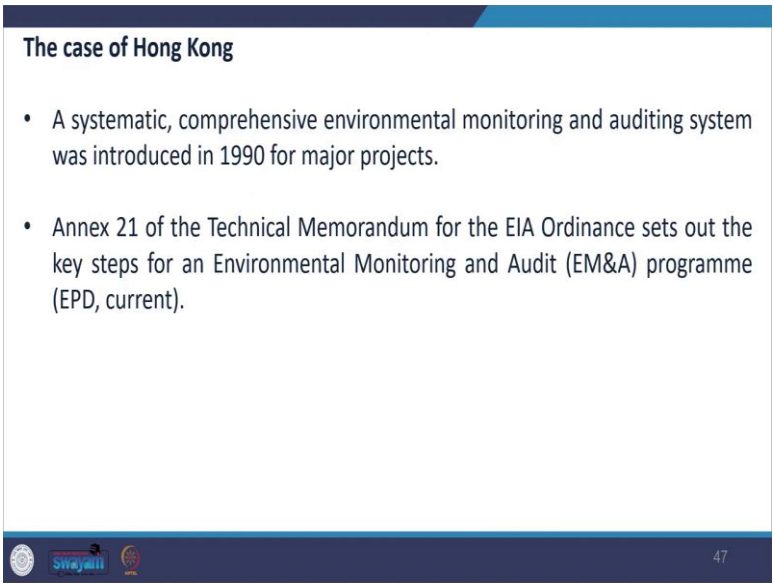

So, see that, is one of the good practices from California you can see here, then likewise, you can see from Hong Kong, that they have developed a very systematic comprehensive environmental monitoring and auditing system for all the major projects and then they have a technical memorandum for EIA, which gives key steps for environmental monitoring and auditing.

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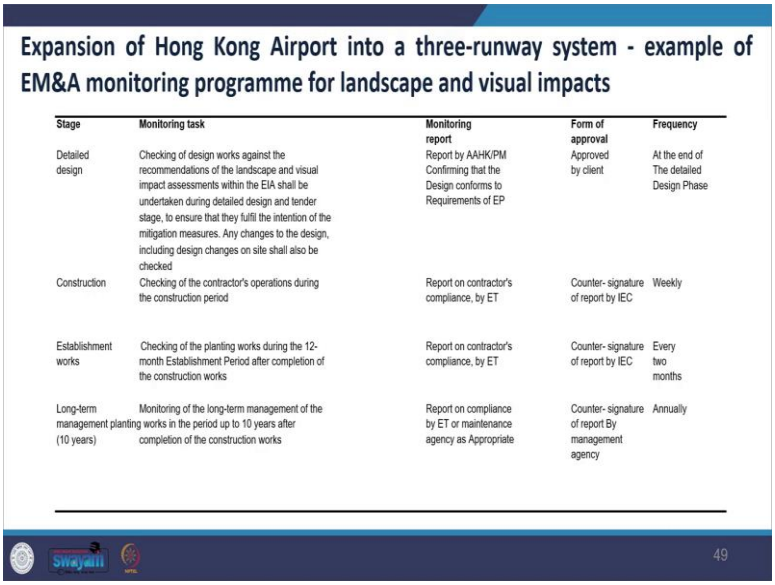

So, you can see their monitoring tasks what kind of report has to be undertaken and then what kind of approval is required, and what kind of frequency in which they have to collect. So, you can see here and then you also find several UK public agencies undertake monitor monitoring of particular pollutants so you need not do it for your project. Local planning authorities also monitor some of the conditions attached to the development permission. So, in our case, we will see CPCB vs SPCB, they collect a lot of data and monitor a lot of data.

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And that was about some of the countries looking into developing countries' experiences, there have been a lot of challenges and monitoring, implementing monitoring in developing countries, because of the cost of the study involved. Then, there is also a problem with relevant data and information, how much data and information is available, how aware the public is and how involved the public is, and then how one can enforce the decision. And we see that Ghana shows some good practices.

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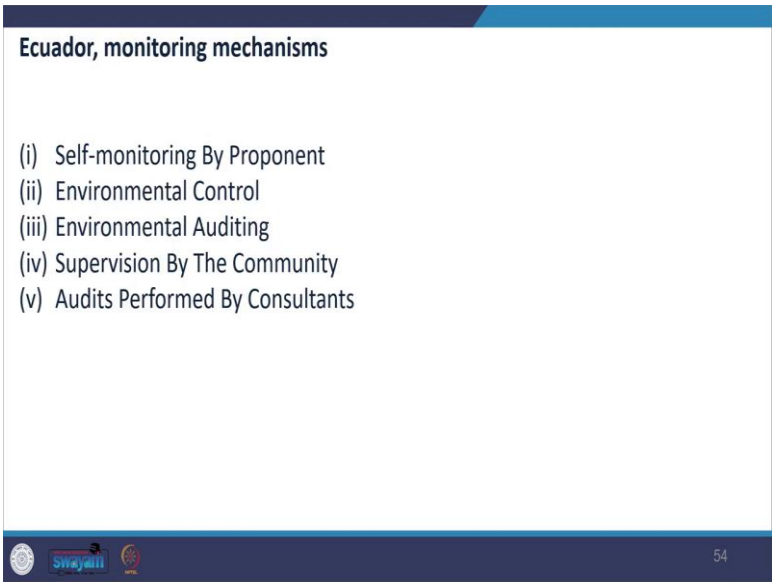

We also see, in Ecuador, they have developed a monitoring mechanism, which is like self-monitoring, it takes care of the environmental control, environmental auditing, and supervision are also provides an audit performed by a consultant provision is made for that as well. So, that is about monitoring now looking at the auditing practice.

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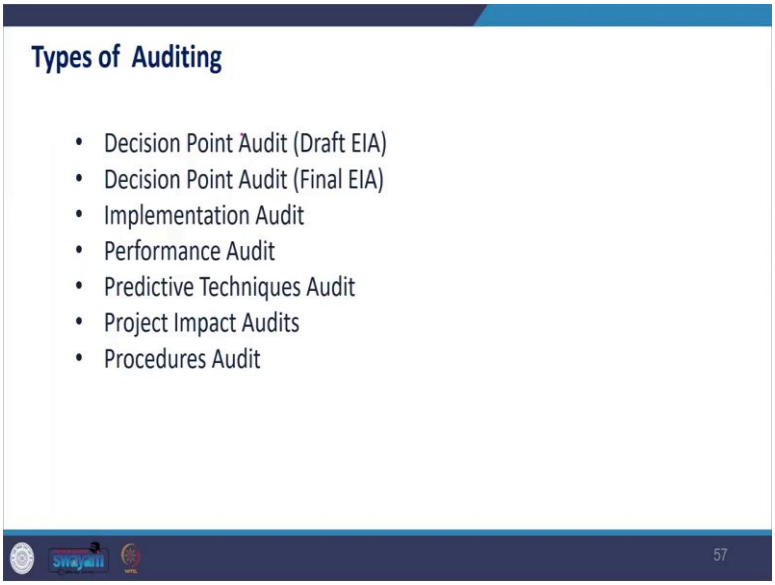

So, there are a lot of types of auditing. And as provided by our textbook, which we are referring, so we see decision point audit, which is like when we look at it at the draft EIA stage, and then, which is done by the regulating authority in the approval process, then you also have decision point audit, which is like fine at the stage of final EIA. It is also done by the regulatory authority. And then, you see implementation audit, which is like done scrutiny, done by the government or the public to ensure that what has been committed that is been implemented, they are complaining by it or not, then you also see performance audit.

So, where you see the overall performance of the project, it could also include government and public here, and then you also have predictive technique audits. So, whatever technique you use for making the

prediction, you also check how effective those predictive techniques are. And then you also do a project impact audit. So, you compare the actual project to the predicted impact, and then you see how the prediction and how the actual, and then you also see the procedure audit in which the external review is done to check the procedure can be done by the government or the industry for that. So, there are a lot of challenges with the nature of impact prediction, which has been done so a lot of impact predictions give very descriptive information.

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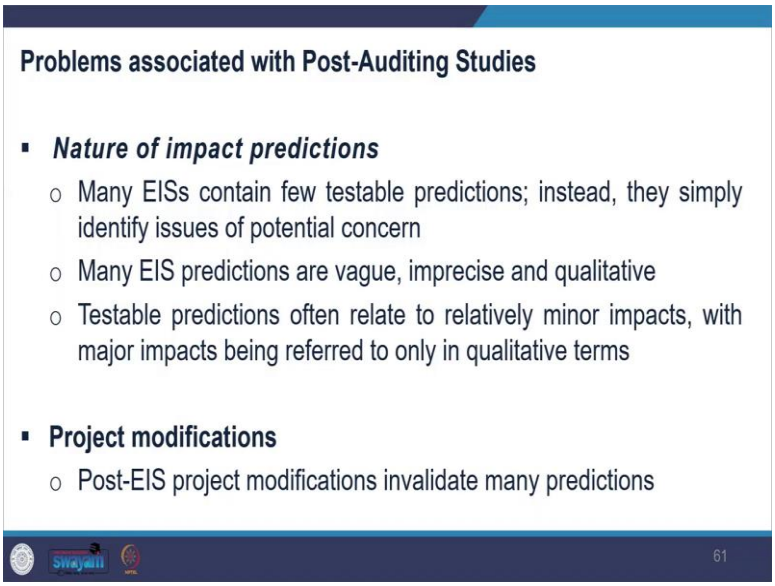

So, it is, it is very difficult to test them may not give numbers that can be verified, and because of their vague and imprecise, like more of a qualitative assessment, they cannot be tested. And also, they can be modifications, which can also invalidate the prediction. And then sometimes there is inconsistency in the data.

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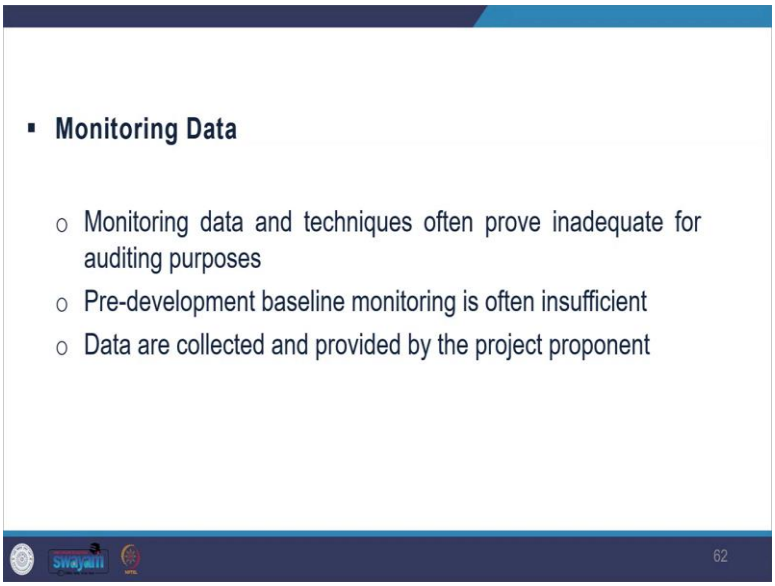

Sometimes, the monitoring data and technique are inadequate for auditing purposes, and what kind of data that has been collected, is not sufficient. So, that also creates a lot of problems in actually implementing auditing.

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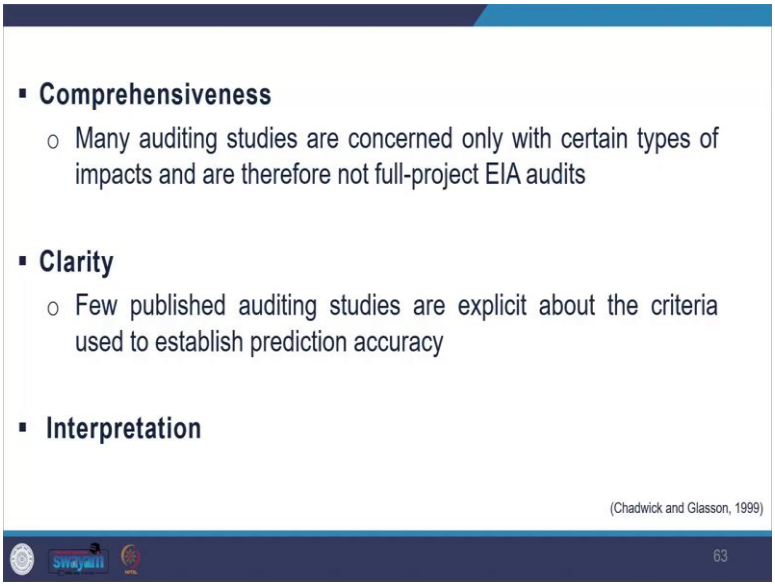

And then, many auditing studies are concerned only with certain types of impacts. So, they do not look at all the impacts. So, it also makes it very subject-specific. And in a lot of places, there is like now, recent auditing comes with very detailed about the criteria and methods that they have used, and then some of them do not. So, it becomes difficult to compare. It also creates challenges for the interpretation aspect. Such problems, have in many instances, limited a process to meet its objective. So, we do not know whether the EIA process we did is protecting our environment or not.

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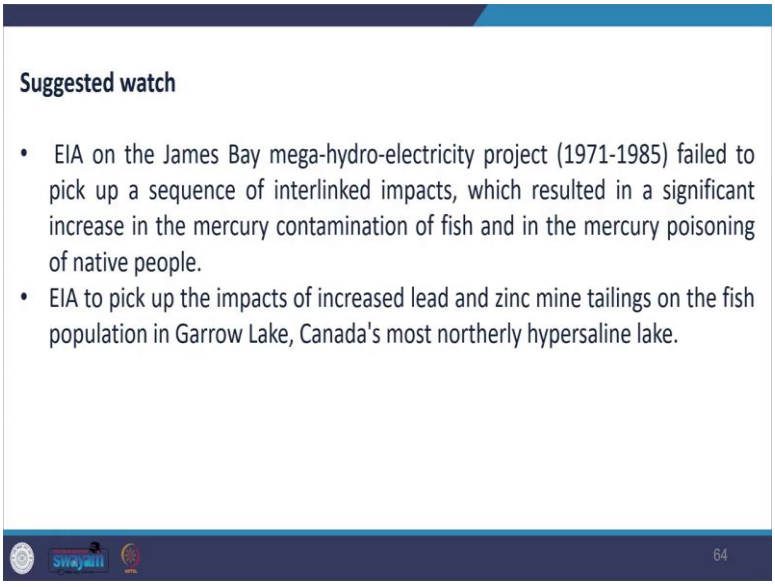

So, I have given you a lot of examples and the suggested watch, which you can see about different, different projects.

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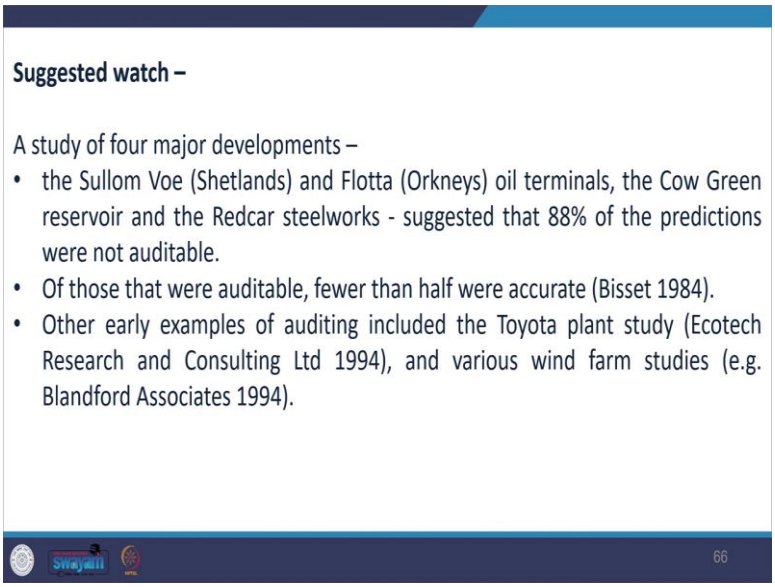

Where there were differences in what was predicted and what happened on site.

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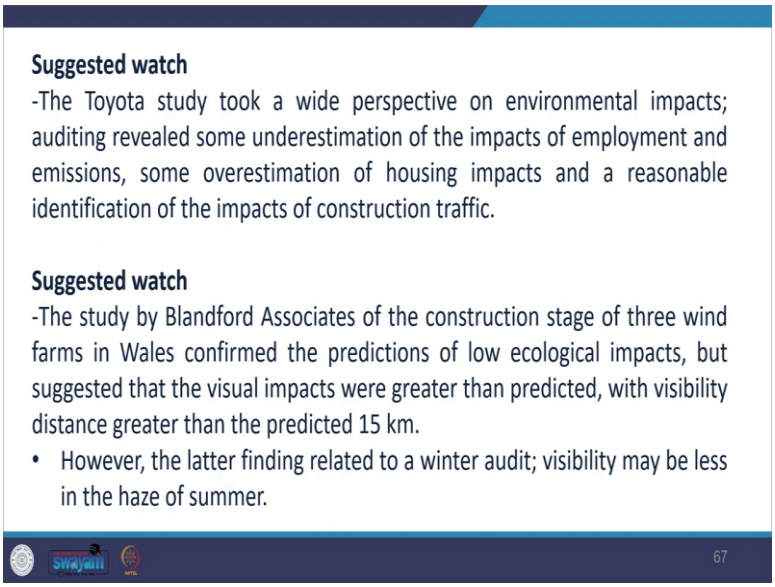

So, were all audit firms possible? It was also seen that either the EIA report was overestimating or underestimating. So, the prediction was not really up to mark.

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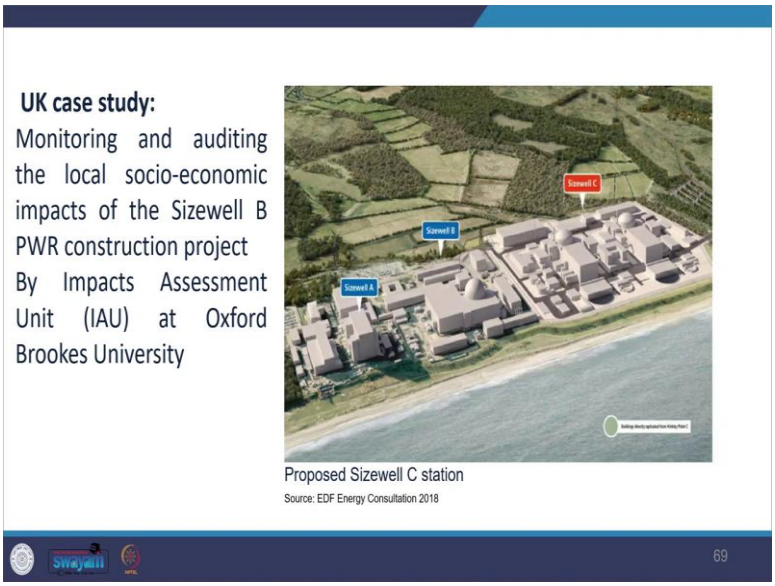

And we see further, one case study where EIA auditing has been done which is mostly taking care of the socio-economic impact rather than just the physical impact. So, that is the about that is about the Sizewell B PWR construction projects, which was done by the Impact Assessment Unit, Oxford Brookes University. So, they undertook this assessment auditing. So, they studied the impacts of several power stations and contributed to the understanding of the EIA system. And they focus mostly on the socio-economic impact. They stated clear objectives of the said study in the image you can see the scope of the studies.

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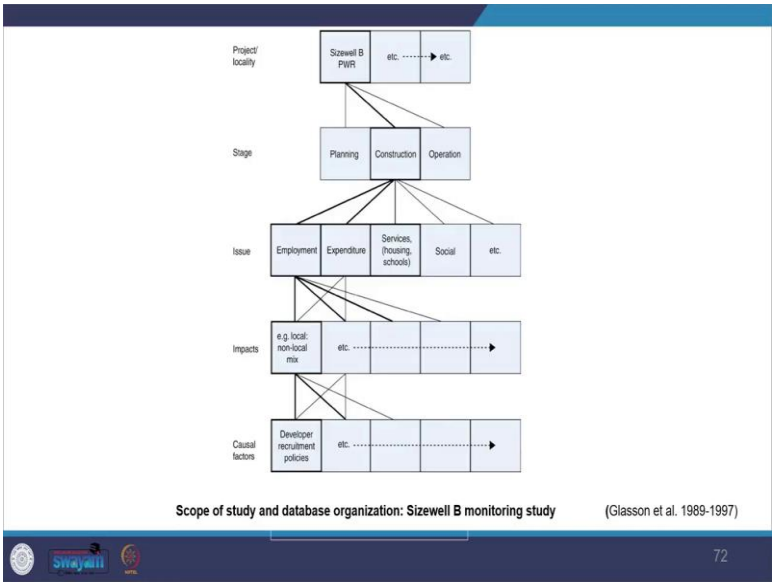

So, how are the project locality, what different stages of planning construction operations are there, and then issue you about employment expenditures, social services, housing, what kind of impacts and causal factors so that all, they had a clear objective, like really what they want to review, the monitoring study included a collection of a range of information, and these were like statistical data. And then, the statistical data included, like, how many workers were employed at the construction stage, how many housings were created, and what kind of expenditure was made.

And they also had a special scope. So, when you are reviewing you need to define how much area you would assess the impact. So, the study included information from the developer and the main contractor on site, and then also relevant authorities, and then also public agencies.

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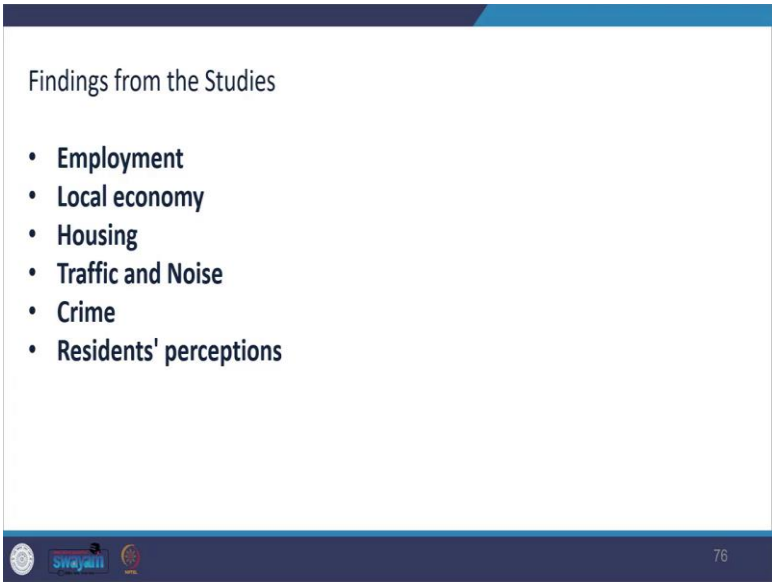

And then they also came out with the findings on like, what was the employment scenario, what they had protected? And what happened, what was the local economy, because of this project, and then what the housing scenario was the traffic and noise value crime and resident's perception. So, in the EIA report, they would predict and, in this auditing, they will check how it is going with the prediction and what is the actual there. So, they also documented the learning from the auditing process. So, in that, they also showed how they could take care of different things while auditing is undertaken.

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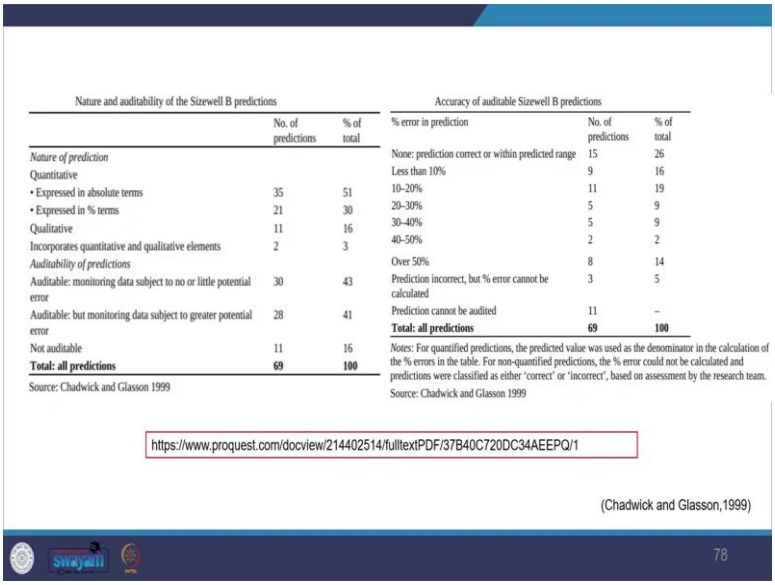

So, in this image, you can see like, what they had predicted the nature of prediction to like, what kind of what was happening, while the auditing was done in the on this right-hand side table, you can see. So, I have given you the link to this particular study. Then you can also see another UK case study where the

monitoring of local impact was done for the London 2012 Olympic projects, it was a very big project at that time.

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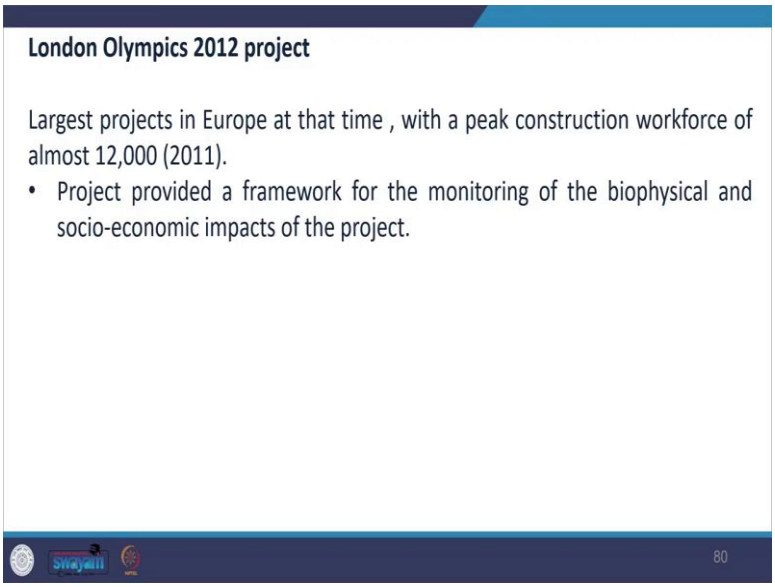

So, this project evolves the framework for monitoring of biophysical and socio-economic impact of the project.

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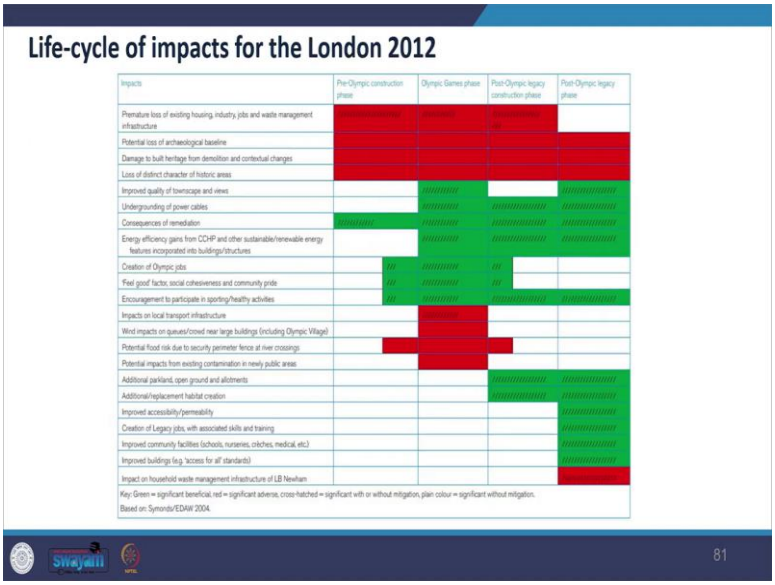

So, you can see here, how they are looking at the lifecycle of the impacts for the London Olympics, and then a range of impacts, and then how it is taking care of the pre-Olympic construction phase, Olympic Games phase, Post Olympics, construction phase and Post-Olympic phase. So, how things are happening, so that all framework was developed. And they did the construction stage monitoring. And then they had all the parameters, what to monitor, when to monitor, how to monitor.

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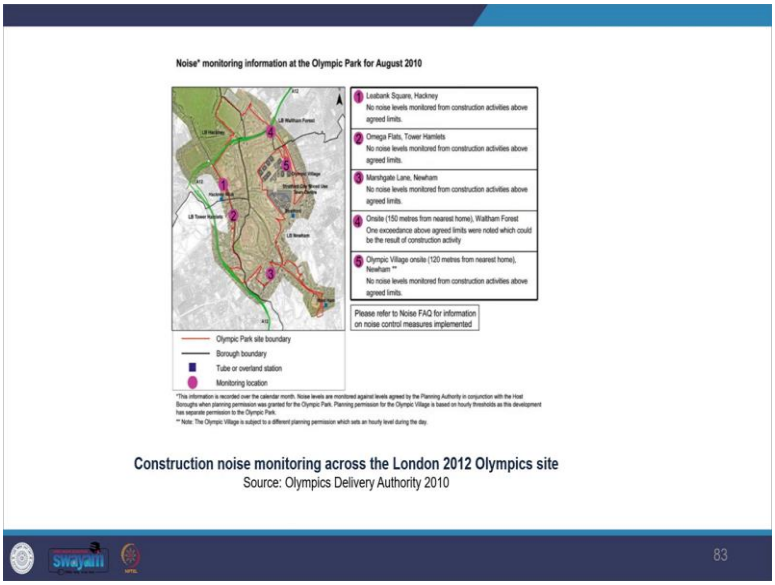

And you can see, here the instruction noise monitoring, methods, and parent monitoring information they had.

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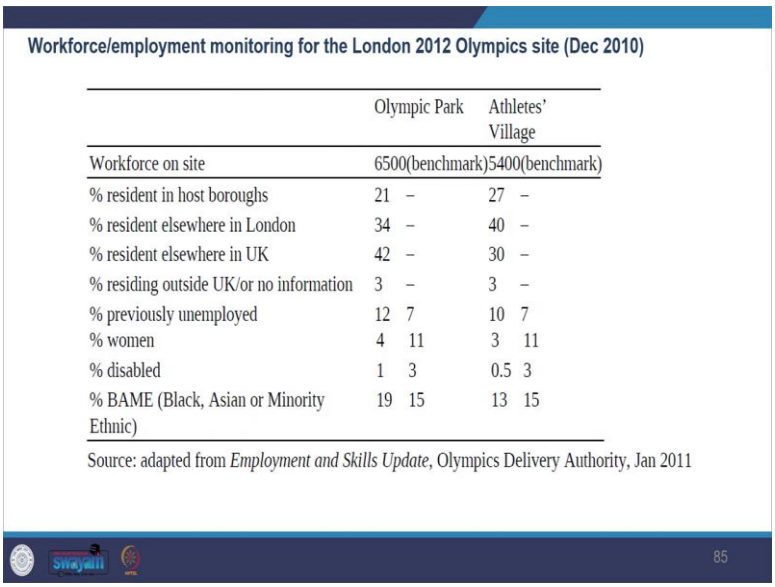

Here, you can see some of the monthly socio-economic monitoring characteristics of the construction workforce, so you can see what kind of workforce it was creating. So, you can see here, what kind of framework has been developed. So, that is all for today. So, summarizing what we covered in this particular session, and with this session, we will be finishing the EIA process part.

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So, here in this, we saw the key elements of EIA follow-up, what is the purpose and what is the benefit of that. And then we defined and differentiated between monitoring, auditing, and reporting. Then we looked at what key questions we have to look into when we do follow-up. Then we looked at some of the international monitoring practices and then what are the real challenges in developing countries related to follow-up then I just gave you links and a brief on the two case studies to understand the different formats and how the reviews can be done.

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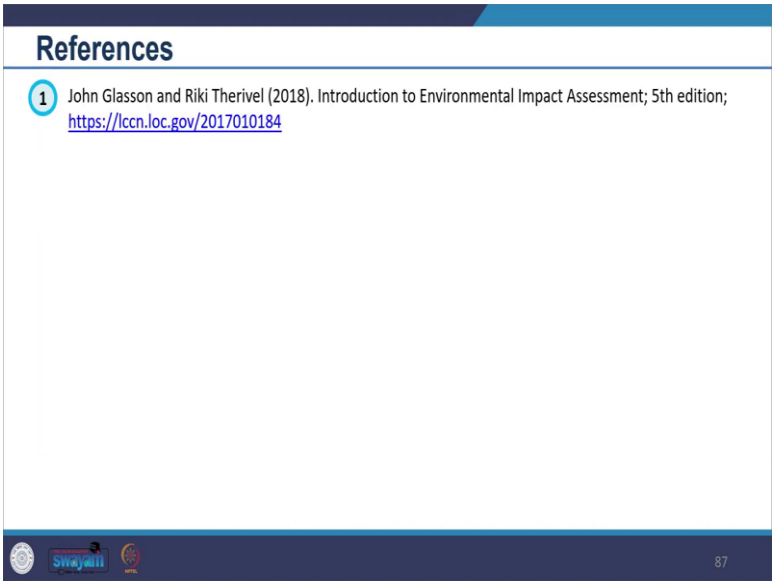

So, that was all for today and then this, this is our key textbook which we are referring to.

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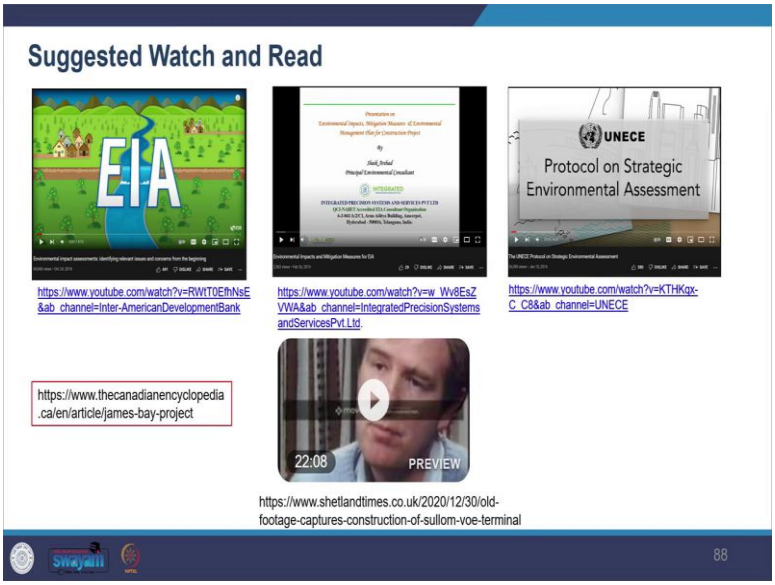

These are the suggested watch and read because our coverage is very limited, so you can read more if you are interested and explore further.

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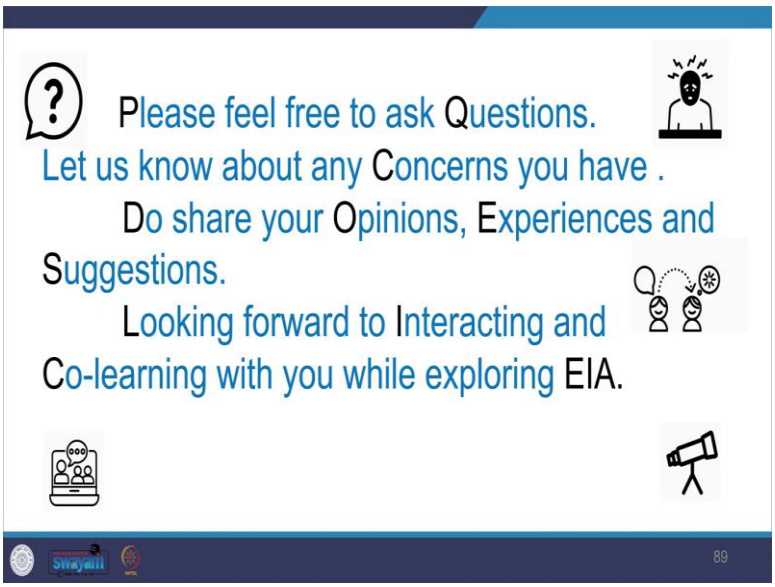

Please feel free to ask questions. Let us know about any concerns you have to share your opinions, experiences, and suggestions looking forward to interacting and Co-learning with you while exploring EIA. Thank you.