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Week - 07
Lecture - 41
Environmental Impact Assessment – 01

Today we will be discussing about Environmental Impact Assessment. In brief we call it as EIA. In one of the previous lectures, I might have mentioned about EIA but we did not have any detailed discussion. To know about EIA and how it works it is very important especially for the know professionals who work in the field of natural resource management. Because we know that natural resource management has a direct link with its surrounding environment, any change in the surrounding environment will impact on the availability of resources.

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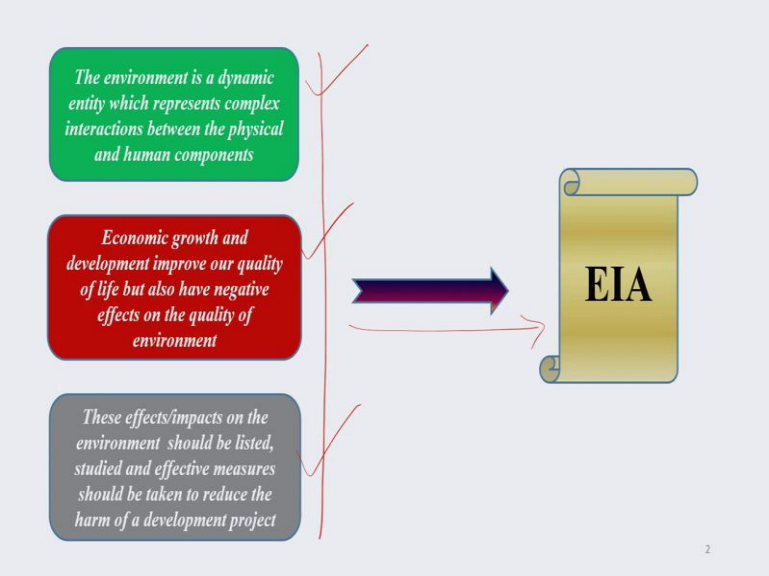

So, in this lecture we will start discussing this important topic on Environmental Impact Assessment. Now, what is actually EIA? We know that environment is a dynamic entity means which keeps on changing with time environment represents complex interaction between the physical and human components. We also know that economic growth and development improve our quality of life but also have negative effects on the quality of our environment and we have discussed in great detail in previous lectures.

These effects of various activities on environment; these effects or impacts on the environment should be listed should be studied seriously and effective measures should be taken to reduce the harm of a development project. We cannot continue with our project activities without evaluating the environment. So, all those things that are mentioned on the left hand side of your screen basically get taken care by environment impact assessment.

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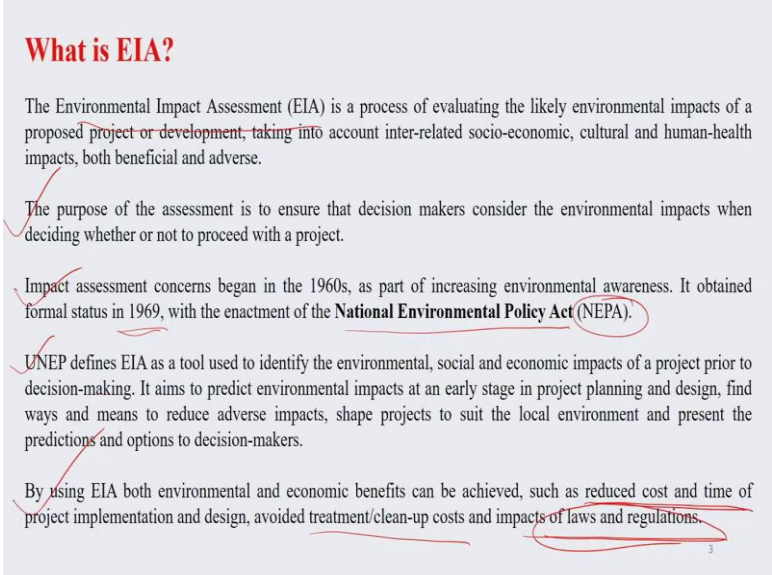

EIA is a process of evaluating the likely impacts on environment by different project activities development activities and which also takes into account the inter-related socio-economic, cultural, human health impacts and various other you know interactions; which in a way impacts the environment. The purpose of this assessment is to ensure that decision makers consider the environmental impacts whenever they decide whether or not to go ahead with a project.

That means, before the project is implemented in any location or site, it is important that you carry out an EIA of that particular project. Impact assessment concerns actually started around 1960s and this was as a part of increasing environmental awareness among society among people. This EIA obtained the formal status only in 1969 with the enactment of National Environmental Policy Act which famously known as NEPA.

United Nations Environment Program UNEP, defines EIA as a tool which is used to identify the environmental, social and economic impacts of a project prior to decision making and this also aims to predict the environmental impacts at a very early stage of a project planning and design. It also finds the ways and means to reduce the adverse impact of a project on the

environment and also helps the project to adjust or shoot the local environment and thus present predictions and options to the decision makers.

So, you can understand that EIA, how important role is played by EIA for restoring our environment in one hand, on the other hand also take the benefits of the natural resources for our sustainable development. By utilizing Environment Impact Assessment both environmental and economic benefits can be achieved. How? Such as reduced cost and time of project implementation and design, avoid treatment and clean-up cost and also impacts of laws and regulation.

So, essentially if you carry out EIA, before the implementation of a project, you basically can avoid this kind of negative expenditures, which not only cost your extra money but also cost our environment it also brings in certain you know litigation also. So, why to go for this kind of negative aspects when we know that EIA is there and it is a powerful tool to help us.

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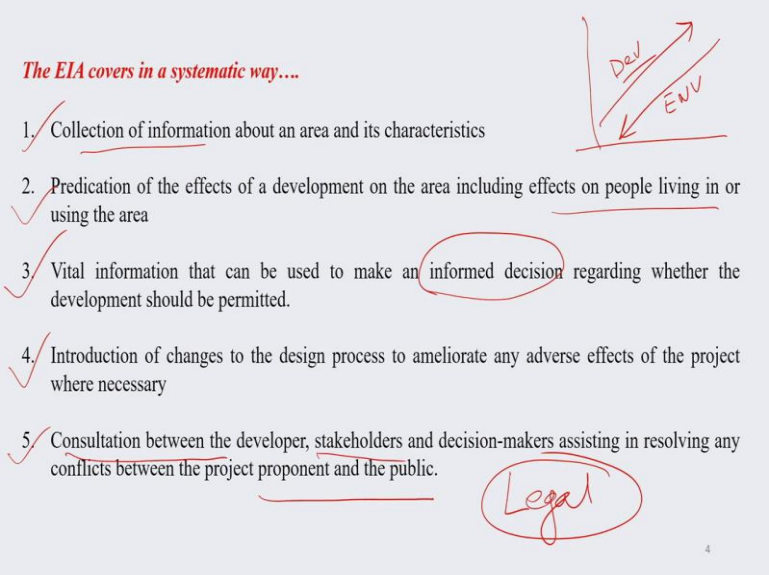

So, in this premise the importance of EIA came into picture and today almost every project has to go through this particular exercise. EIA covers certain you know important aspect in a very systematic manner. It helps in collections of information about an area and it characteristics, because if we do not know the area where the project is going to takes place and also what kind of flora, what kind of fauna what kind of soil or what kind of that micro environment is, how can you actually implement or start a project?

EIA also as I mentioned in previous slide that it helps in prediction of the effects of any development activity on the area including the effects on people living in or using that area.

EIA also provides vital information that can be used to make an informed decision. This is very important for such kind of activity. You need to make an informed decision regarding whether the development that you are actually thinking is going to help people whether it also will take care of environment because if you only go for development and on the other hand if your environment goes down then actually you do not win this particular initiative.

So, your development you are going up but environment is going down. So, basically we lost. So, the best part is that how to find out a balance and EIA helps you to decide. It also helps in introducing the changes in the design processes when you plan the project and to emulate any adverse kind of effects of the proposed project on the environment. So, as I said that it helps like a kind of a early warning.

EIA also promotes facilitates consultant, consultation between developer, various stakeholders, decision makers, the users for whom actually everything is being done in resolving any kind of conflict between the project proponent and the public. If this is taken care of at the very beginning then you can actually avoid complicated legalities. Which may actually you know push your project backward you may not able to start even. So, the relevance of a particular project if it gets postponed by a month or six months, a year you understand the relevance of that project is almost lost.

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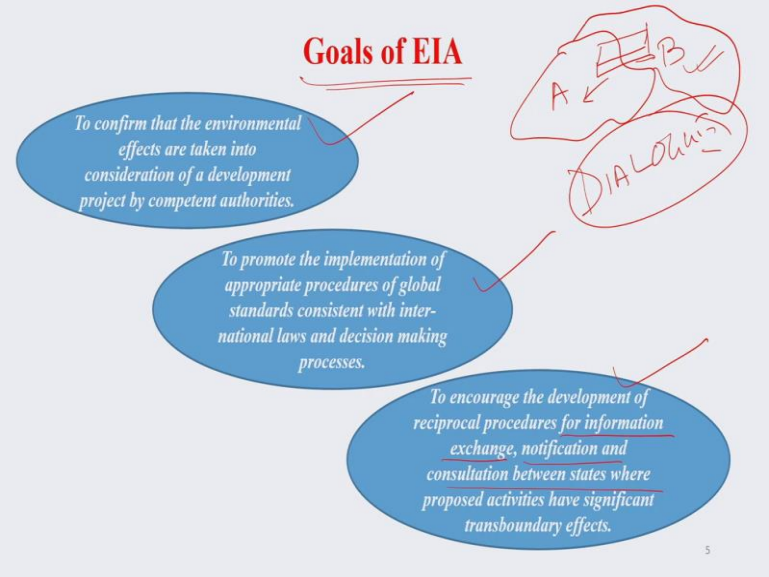

Now, goals of EIA. What are the different goals? It helps to confirm that environmental effects are taken into consideration of a development project by the competent authorities this competent authority could be private as well as government entities. These also promote the implementation of appropriate procedures of international standard which are consistent with

laws, international laws and decision making processes. Today India is a country we cannot play in isolation; any product or development that we plan to do it has to be of world standard.

Then only our products will have a market, unless we have a market then producing more and more will not fetch us anything. EIA also encourage the development of reciprocal procedures for information exchange. Suppose in some project you are going to implement and there are couple of stakeholders who are also involved in this exercise or in that area where actually you are going to start they may seek some information.

So, there has to be a kind of reciprocation between project proponent and also the other stakeholders. Notification and consultation between states where proposed activities have significant transboundary effects needs to be taken care of. Suppose you know there are two s state A and state B. Now, you have a project which actually has the boundary or right at the perhaps half of that project is in this state and half goes into other state.

It could be a watershed project; it could be anything. So, in such condition it is important that the project proponent if is this state A must talk with state B as well the bordering state the key is dialogue. So, through dialogue you actually before the implementation of the project you address all the issues that could prop up otherwise in future and that will delay or stop your project. So, these are the goals of EIA is not to stop any project, rather EIA you know protects your project from various unwanted expenditure, unwanted threats, legalities etcetera.

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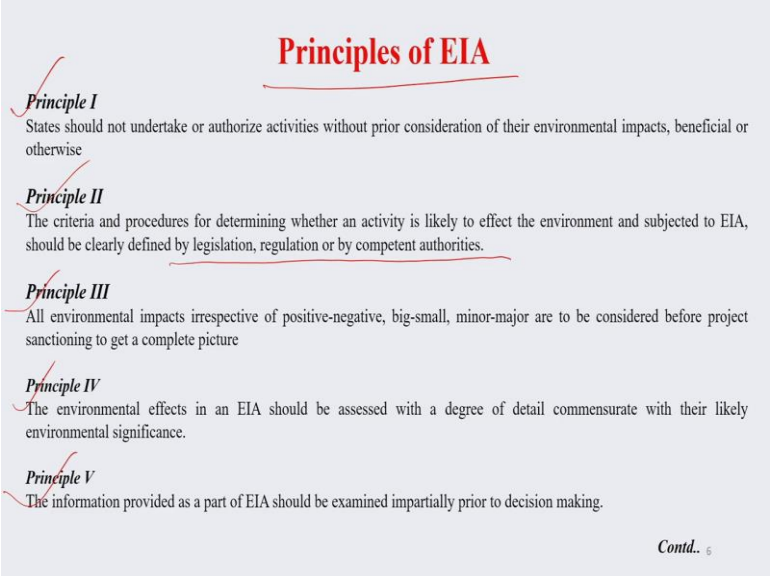

Now, let us know on about the principles of EIA, like any other you know tools or any other approaches, EIA also follows certain principles. First states should not undertake or authorize activities without prior consideration of their environmental impact, beneficial or otherwise. Whatever whether negative or positive impact but it must be considered before the project has been undertaken.

Principle number 2; the criteria and the procedures for determining whether an activity is going to affect your environment that has to be seen through EIA and it should be clearly defined by legislation, regulation, by competent authorities. Again this is not to stop your project but to give your project a kind of a safety net which otherwise in future you might face something which can totally you know jeopardize your project.

Principle number 3, all environmental impacts irrespective of positive or negative big or small minor or major has to be considered before project sanctioning to get a complete picture. You cannot do this carry out this exercise once you actually sanction the project or implement it there is no use. In certain cases you may have certain example that EIA and the implementation is going side by side. No, ideally that should not happen.

Principle number 4, the environmental effects in an EIA should be assessed with a degree of detail commensurate with their likely environmental impact or significance.

Number 5 the information which are provided as a part of EIA should be examined impartially prior to the decision making. So, friends as you see that the benefit of EIA will only be achievable if you do it prior to implement, prior to taking the decision, prior to the sanction of the project.

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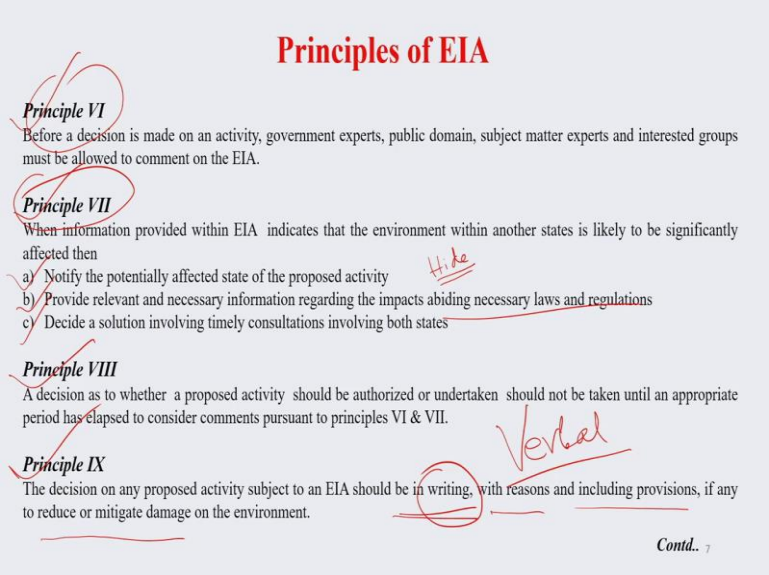

Number 6 principle, before a decision is made on an activity, government experts, public domain, subject matter experts, interested groups, potential beneficiaries they must be allowed to comment on the EIA exercise that is being carried out. In a sense this exercise has to be taken in a very democratic manner there should be considerable amount of transparency.

Principle number 7, when information is provided within EIA it indicates that, the environment within another state is likely to be significantly affected then what should we do A; we should notify the potential effective state of the proposed activity. Often there, there is a tendency to hide it we should never do it.

So, notify the potential effect to the neighboring states; provide relevant and necessary information regarding the impacts which are avoiding necessary laws and regulation; decide a solution involving timely consultations involving not only the state that you are implementing but both the states or the states whichever is affected by the potentially going to be affected by the project.

Number 8, a decision as to whether a proposed activity of your project should be authorized or undertaken must not be taken until an appropriate period has crossed to consider the comments pursuant to principle 6 and 7. So, in a sense you must not hurry it up; give some significant amount of time to the people, to the neighboring states to study the EIA report or outcome and give comment; then you take a decision.

Number 9, the decision on any proposed activity subject to EIA should be in writing no verbal communication is encouraged because that does not have any record. So, with reasons

and including provisions if anyone to reduce or mitigate the damage on the environment has to be given in written form.

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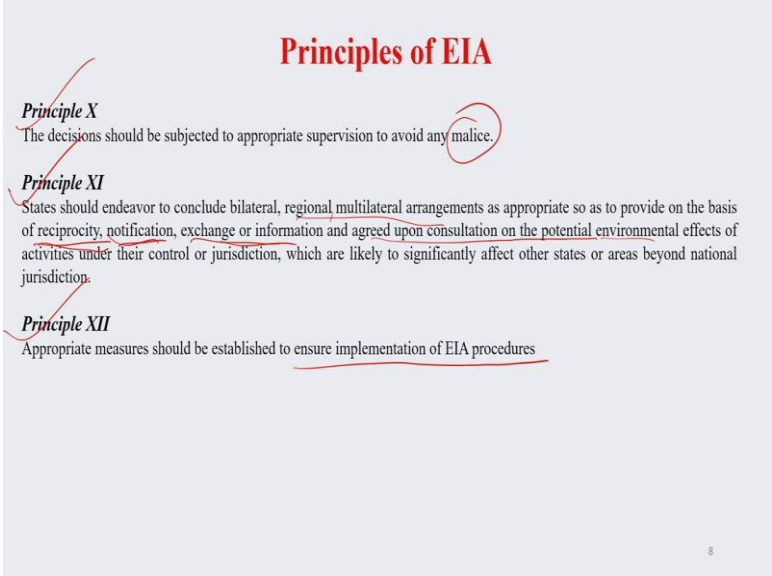

Number 10, the decision should be subjected to appropriate supervision to avoid any kind of wrongdoing or malice. See if you go through if anyone goes through these principles even before taking a EIA exercise, I am 100 percent sure there will be no mistake. So, there will be no room for any kind of wrong or incorrect practices because this principle clearly states that how one should actually follow the EIA activity.

Number 11, the involved states must endeavor to conclude bilateral, regional, multilateral, arrangements as appropriate so as to provide on the basis of reciprocity this is very important reciprocity. Things should be notified in advance exchange of information and one should agree for consultation on the potential environmental effects of any activity under the proposed project.

The last principle number 12, appropriate measures should be established to ensure implementation of EIA procedures. We have all those things in paper but unless until this is implemented in a stringent manner then the purpose of having these principles the rules, regulation, system has no meaning.

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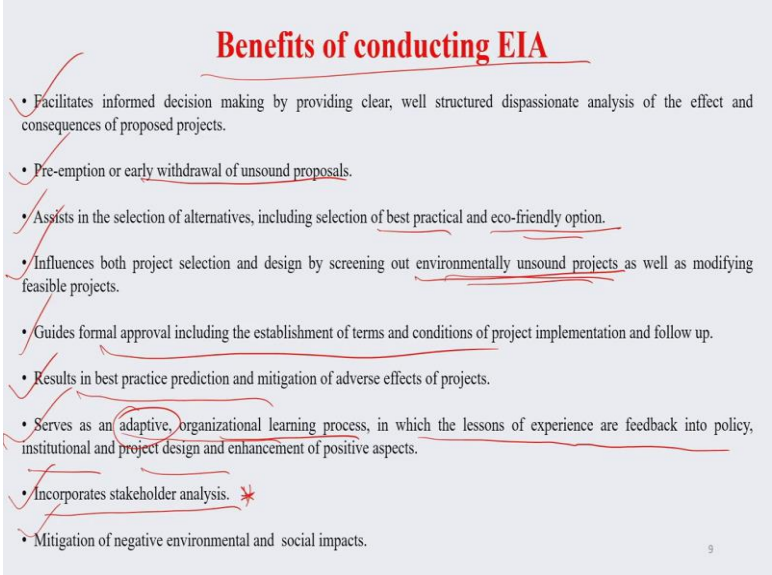

Benefits. Why do we actually do EIA? there has to be some benefits right and what are those it facilitates informed decision making by providing clear cut information analysis of the effect of various activities and consequences of the project. It gives a kind of a predictions or opportunities for early withdrawal of unsound proposals or activity. If there are certain activity which has a negative impact if you are able to see it from the EIA exercise then why should you go for that and if you go for that then one has to be ready also to face the consequences.

EIA also assist us in the selection of alternatives including the best practical and eco-friendly option. EIA also influences both project sanction and design by screening out environmentally unsound project as well as modifying feasible projects. So, if you have certain you know proposals for two or three projects, EIA will help you to identify the projects which are going to impact your environment so remove them.

EIA guides formal approval including the establishment of terms and conditions of implementation of project and then follow-up. It also results in best practice prediction and mitigation of adverse effect of the project. This also serves as an adaptive organizational learning process, in which the lessons of experience are feedback into your policies, institutionS or project design or also in enhancement of positive aspects.

So, essentially it helps you to develop an adaptive system which can actually adjust with certain changes in the system. It also incorporates stakeholder analysis; very important because you know that before any project especially the project which is going to utilize natural resources of an area EIA is must and stakeholder analysis or discussions which actually EIA gives you the opportunity is one of the best thing. Then mitigation of negative

environmental and social impact this is also is another important benefits of conducting EIA in an area where you are going to propose a project.

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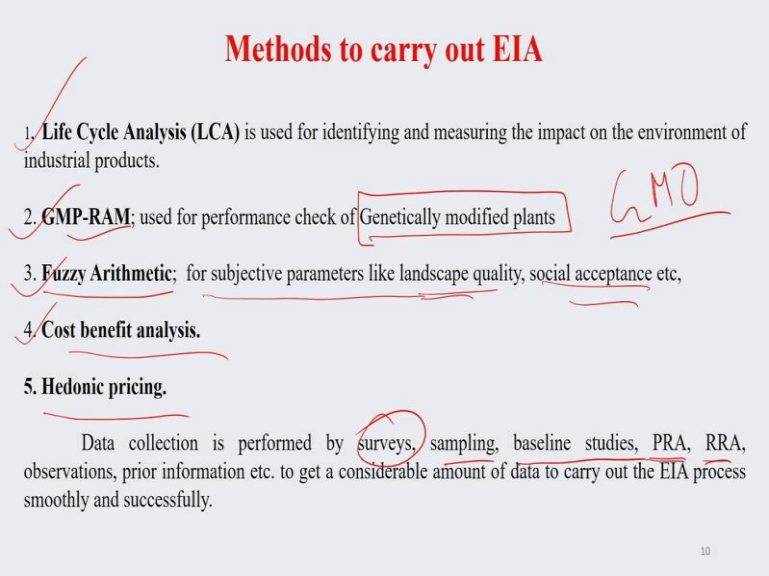

Now, let us see the methods which actually we use to carry out EIA. There are various methods I will go one by one certainly, in this one lecture it will not be over. So, I will follow it up with upcoming lectures. So, what are the methods. The first Life Cycle Analysis, LCA. I am sure most of you might be knowing about LCA. some of you are professional may be using it also.

LCA is used for identifying and measuring the impact of any activity on the environment GMP-RAM this is used for performance check of genetically modified plants GMO. It is hot topics in the last 10 years we have heard lot of you know deliberations, nationally regionally, internationally about genetically modified organisms plant is one of that.

Fuzzy Arithmetic; these are actually method for subjective parameters like landscape quality, social acceptance means you are going for a project whether that project is socially accepted by the peoples residing there. So, that kind of analysis; Fuzzy Arithmetic method will help you. Cost benefit analysis you know that for that project how much you are going to spend and how much you will going to earn and also ecological cost benefit you need to also analyze.

Hedonic pricing; this also helps to find out the impact of an project on the environment. The data collections in EIA method largely performed by surveys, sampling, baseline studies and PRA, RRA. I hope you recall that a few you know lectures back we have discussed in great

detail about Participatory Rural Appraisal and Rapid Rural Appraisal. So, these all are know exercises or tools which actually can be used for carrying out a successful EIA exercise.

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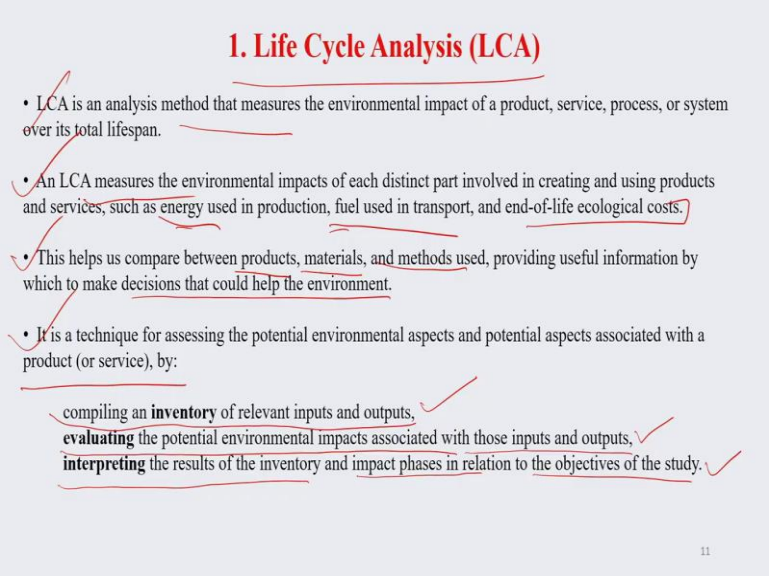

So, the first method is Life Cycle Analysis. Now, LCA is an analysis method that measures the environmental impact of a product or service, process or system in total lifespan in area. And LCA measures the environmental impacts of each distinct part that is involved in creating and using the products and service. Say for example energy used in production, fuel used for transportation and end-of-life ecological cost that all we should not forget when we calculate the cause of fuel energy.

We must also learn to calculate the value the ecosystem services or the ecology or environment. LCA also help us to compare between products, materials, methods which are used and which are utilized for providing useful information through which we can actually make decision and finally which could help to keep our environment intact. Life Cycle Analysis is a technique for assessing the potential environmental aspects and potential aspects which are associated with a product or surveys by compiling an inventory of relevant inputs and output, evaluating the potential environmental impacts associated with those inputs and outputs, interpreting the results of the inventory and impact phases in relation to the objectives of your study.

So, as you see that LCA basically help you to get a picture of the entire sphere of impacts of a project in a particular area. It looks not only in a particular point of time how it impacts but it also looks at for a in a longer time span throughout the life of that projec, how it is going to impact the environment and this gives a reasonably good idea to the decision makers that.

How a particular project implementation is going to impact the environment, the natural resources and the society all together.

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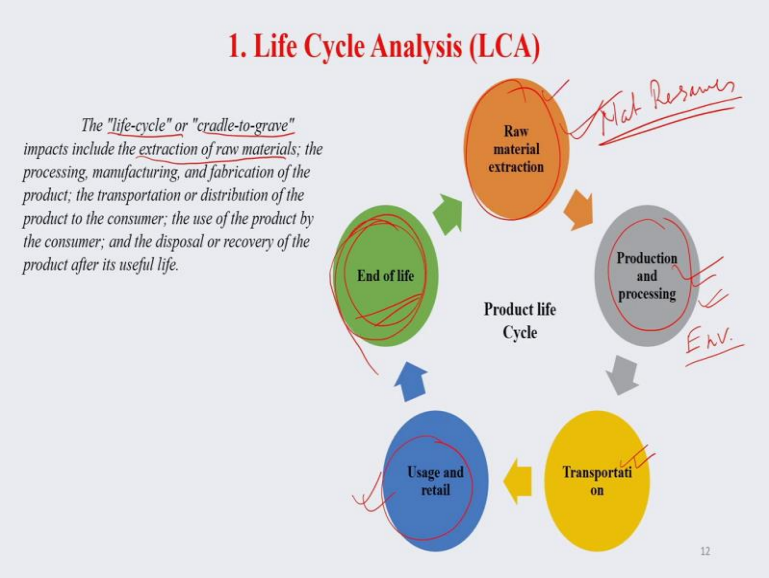

In LCA, there are few stages people call it life cycle or cradle to grave. These impacts include extraction of raw materials then production and processing. So, when we say raw material these are largely natural resources I hope all of you understand that. So, once you extract then you go for production and processing and during this process there is a chance that you are going to impact the environment.

So, this particular phase need to be looked at very carefully. Transportation; once the product is developed certainly you need to transport from production site to the delivery side. Then it goes finally to users or retail shops where your product will be sold to the people and then people will take it is a food material and then will eat and that is the end of your total life cycle of a particular project or product life cycle. So, it starts from the raw material extraction and end here at the users, you or me.