

Environmental Impact Assessment
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Lecture 08
EIA Impact Areas, Current and Emerging (Part II)

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Coverage	
①	Socio-Economic Impact
②	Health and Safety
③	Emerging impact Areas Equality/deprivation, Indigenous peoples Rights and traditional Areas, Culture and Language, Land Acquisition, resettlement and livelihood, Climate change, Ecosystem Services.
④	Wider Impact Consideration Risk, Resilience, Cumulative Impact.

Welcome to the course Environmental Impact Assessment. In the previous part of the lecture, like we did part one, we covered biophysical impact. And in part two, we will look at the other form of impacts, so we will be looking at socio-economic impact. We will also look at the health and safety then we will look at some of the emerging impact areas where we have started looking into equality, deprivation.

Indigenous peoples rights and traditional areas, we will look at culture and language, how we have started looking into it and then land acquisition, resettlement, and livelihood and also look at the Climate change, Ecosystem services which I had mentioned. And then, we will also look at some of the wider impact considerations such as risk and resilience.

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Learning Outcomes

- 1 Able to Discuss Socio-Economic Impact
- 2 Able to Discuss Health and Safety
- 3 Understand Emerging impact Areas
 - Equality/deprivation, Indigenous peoples Rights and traditional Areas, Culture and Language, Land Acquisition, resettlement and livelihood, Climate change, Ecosystem Services
- 4 Review Wider Impact Consideration
 - Risk, Resilience, Cumulative Impact

Swajali 6

Further according to this the learning outcome which is expected from you that you should be able to discuss the concept, purpose, significance and pattern of socio-economic impacts, you should be able to talk about the concept of health and safety then further you should be able to discuss about the emerging impact areas, you should review in what context we are talking about why we are talking about and how the EIA process is improving here. So, you would be required to reflect a lot with and connect with the previous week's lectures here.

And further we will look into the, you will be able to review synthesize, what kind of wider impact considerations we are making like the risk, resilience and cumulative impact. So, the key reference for this chapter is 10 from EIA impact areas current and emerging from the book, Introduction to Environmental Impact Assessment by John Glasson and Riki Therivel.

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Socio-Economic Impacts

- **Economic Impact** – Job creation (Direct and Indirect), Multiplier impact.
- **Social Impact** – Quality of Life, Well Being, Community Participation, Human Rights and Environmental Justice, Change in demographics.
- **Health Impact** – Health of the receiving community and adaptive capacity

(Glasson and Therivel, 2019, Pg. 262 - 264)

Swajali

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So, looking at the socio-economic impact, there are no standards for socio-economic assessments, mostly the projects have considerable positive economic impact and are quantifiable the impacts like may include job creations at different levels. So, you can have jobs which are like directly coming from the development activity which you are taking and there are certain jobs which come indirectly as many of these have multiplier impacts.

For example, requirement for one activity would require support services to come in, then there might be a training activities, the capacity building activities, so, or the entire community would get benefit from that. So, that is usually considered in this domain.

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Socio-Economic Impacts

- **Economic Impact** – Job creation (Direct and Indirect), Multiplier impact.
- **Social Impact** – Quality of Life, Well Being, Community Participation, Human Rights and Environmental Justice, Change in demographics.
- **Health Impact** – Health of the receiving community and adaptive capacity

(Glasson and Therivel, 2019, Pg. 262 - 264)

Swajali

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There can be numerous social issues related to the quality of life and well-being such as they can be crime level with any activity coming in, it can go down or it can go up and then can there can be community stress and conflict also. So, there can be serious concerns about community participations, all these things are also considered here and there can be concerns for human rights and then also for environmental justice. So, whether the human rights have been violated, the participation, their concerned has been taken for any kind of change happening there. So, these issues can vary a lot as per the acceptance of the new development by the local community.

So, what is really their acceptance level. So, within this domain, one looks at the population change. So, any kind of development activity, if it will happen, that would lead to the population change. And while studying this we create and analyze causal link of population change to the area.

So, what kind of population change would happen and then what kind of further change it would lead to and based on that change, review is done of the basic services and the quality of life in that particular area. These impact can be of concern when changes like increase in population are higher than the threshold capacities of the environment in which they are set up and creates pressure on the local resources. So, that can be a concern, and also when the local community is not able to cope up with the change in the population that demographic change in that particular place.

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Socio-Economic Impacts

- **Economic Impact** – Job creation (Direct and Indirect), Multiplier impact.
- **Social Impact** – Quality of Life, Well Being, Community Participation, Human Rights and Environmental Justice, Change in demographics.
- **Health Impact** – Health Impact Assessment, Health of the receiving community and adaptive capacity. (Positive and Negative Health Impacts)

(Glasson and Therivel, 2019, Pg. 262 - 264)

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So, now moving on looking at the health and safety concern. We see that there is increasing in this particular domain, we look into Health Impact Assessment also. So, we are going to learn about the methods involved in this. So, Health Impact Assessment is emphasized a lot now, health, when we talk about health, we cover the socio-economic culture and physiological well-being of the receiving community, and their ability to adapt to the projected change in the daily life.

So, what kind of change will happen and whether they will be able to adapt to this particular change or not. So, we look at the health and not just the absence of disease, but then also like adaptability of all the changes which are going to take place there. So, there are negative as well as positive health impacts.

Health impacts refer to change in the existing health status of a population within a defined geographical area over a specified period of time. So, that is how we define this health impact. And when we do Health Impact Assessments, where we have a range of procedures and methods which can be adapted. And these methods and procedures can help us to improve the policy, then it can also help us to plan the project and then also to align various programs with it. So, it is a very important area, which we are looking at.

And then the assessment can really help us to modify a lot of things, improve lot of things. In many countries, Health Impact Assessment is very established and is progressive. So, it is also evolving, such as you can see in Canada, Netherland, Australia and UK, you will see that they have very set procedures to undertake that and through Health Impact Assessments, it is possible to review how there can be various impact of the policy or the projects, not just the project the physical component, but you can also review the policy on the population.

Or you can also look at certain subgroups of the population like you can look at what impact it will have in women, what impact it will have on elderly or children or so on. So, looking at the emerging impact area, so that was about the socio-economic impact areas. Now we look looking, going to look into what are the various emerging impact areas.

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Emerging Impact Area

- Equality / Deprivation
- Culture and Language
- Land Acquisition, Resettlement and Livelihoods
- Climate Change
- Ecosystem Services

(Glasson and Therivel, 2019, Pg. 264 - 273)

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So, as we all know that our understanding in EIA is continuously increasing. So, I had said that, that whenever we studied the subject, we have to understand it from the perspective that it is constantly evolving. So, therefore, there are some emerging and important criteria we see in EIA.

So, we see areas such as equality, deprivation, culture and language where we are reviewing then we are also looking at land acquisition, resettlement and livelihoods, we are also looking at now climate change. And then ecosystem services, which I talked to in the previous classes as well.

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Emerging Impact Area

- Equality / Deprivation
- Culture and Language
- Land Acquisition, Resettlement and Livelihoods
- Climate Change
- Ecosystem Services

(Glasson and Therivel, 2019, Pg. 264 - 273)

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So, reflecting upon equality and deprivation. So, it is usually noted that any developments, when we talk about, think about any kind of development that does not have blanked impact. So, what does that mean? That means that if there is a benefits for one, then it might not be same benefit for everyone. And it is not, it might not be true that all might be benefited, there might some might be at a loss because of that particular development or similar.

And then the impact varies a lot from people to people, from community to community, some people group might benefit like they will have increased livelihood options, their income might increase, whereas some might have loss in income due to change in the landscape or their access to their livelihood might be blocked, and some might be displaced for the larger public benefits. So, the impact can really vary and can be drastic in nature. So, because of such variations, there are rising concerns of equality.

So, we are really concerned about equality and concerns about certain section, areas of community receiving increasing environmental burdens. So, some of the segments of people have been constantly being displaced or have been at loss and have been in under risk and becoming trapped in the vicious cycle of declines.

So, that is the, that is the problem which we are encountering. So, mostly we have been reading, hearing about displacement of indigenous people for many of the projects and also we see fragmentation of their resources that no longer they are able to access the resources they used to access before.

So, the key sectors typically considered like we see under these, which have larger impact include age, gender, race, ethnicity, religion, disability and sexual orientation, although other dimension could also include rural versus urban, poor versus rich or people with, with or without cars. So, what could really happen if they have mobility or they do not have access to mobility.

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Frameworks to Review Equality / Deprivation

Department for Communities and Local Government

Equality Act 2010

CHAPTER 15

CONTENTS

PART 1

SOCIO-ECONOMIC INEQUALITIES

- 1 Public sector duty regarding socio-economic inequalities
- 2 Power to amend section 1
- 3 Enforcement

PART 2

EQUALITY: KEY CONCEPTS

CHAPTER 1

The English Index of Multiple Deprivation (IMD) 2015 – Guidance

This guidance note is to aid interpretation of the Index of Multiple Deprivation. It expands on the information provided in the [introduction](#). A full list of the data files and supporting documents available for the Indices of Deprivation 2015 is provided in the [appendix](#) at the end of this note.

All of the data files and supporting documents are available from: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015>

What is the Index of Multiple Deprivation 2015 and how can I use it?

The Index of Multiple Deprivation 2015 is the official measure of relative deprivation for small areas (or neighbourhoods) in England.

The Index of Multiple Deprivation ranks every small area in England from 1 (most deprived area) to 32,844 (least deprived area).

(Equality Act 2010; IMD, 2015; Glasson and Therivel, 2019, Pg. 264)

There are also legal framework such as now you have equality act in UK, which makes provision to review differently abled people while reviewing the impact. So, these frameworks are available now. There is also Index of Multiple Deprivation. So, IMD is also available to review such kind of things.

So, also infringement, like, infringement, meaning action of breaking law of human rights, is of strong concern in EIA, so human rights are like, it is wide ranging. But especially when we concern, we are concerned about EIA. It is linked with labor, land, property and freedom from discrimination. And they are seen as of particular significance in impact assessment.

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Human Rights Impact Assessment of the Marlin Mine, Guatemala

HUMAN RIGHTS ASSESSMENT of Goldcorp's Marlin Mine

Commissioned on behalf of Goldcorp by the British Columbia Office of the Director of Human Rights Assessment of the Marlin Mine

Prepared by: Environmental Assessment Consultants, Vancouver, BC, Canada

May 2010

MEXICO

BELIZE

HONDURAS

GUATEMALA

San Marcos Department, Guatemala

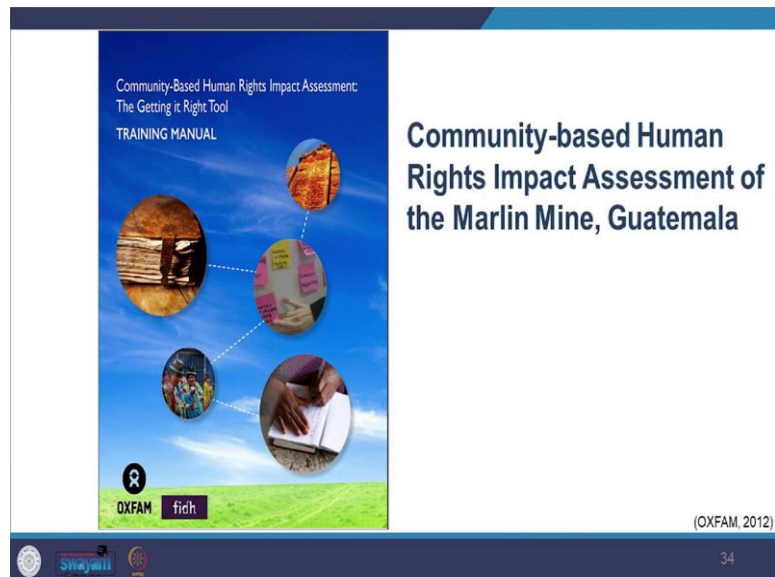
Marlin Mine, the nation's first large mining project in the post-civil war period, was established in San Marcos. As a result, the first community consultation focused on mining development took place in that department.

The Diocese of San Marcos has taken a leadership role opposing mining in Guatemala or expanding current projects in San Marcos. Environmental concerns cross all sectors (communities and indigenous population; local, regional and national governments; civil society and religious organizations; and local-to-international non-governmental organizations).

(Human Rights Assessment of Goldcorp's Marlin Mi, 2010)

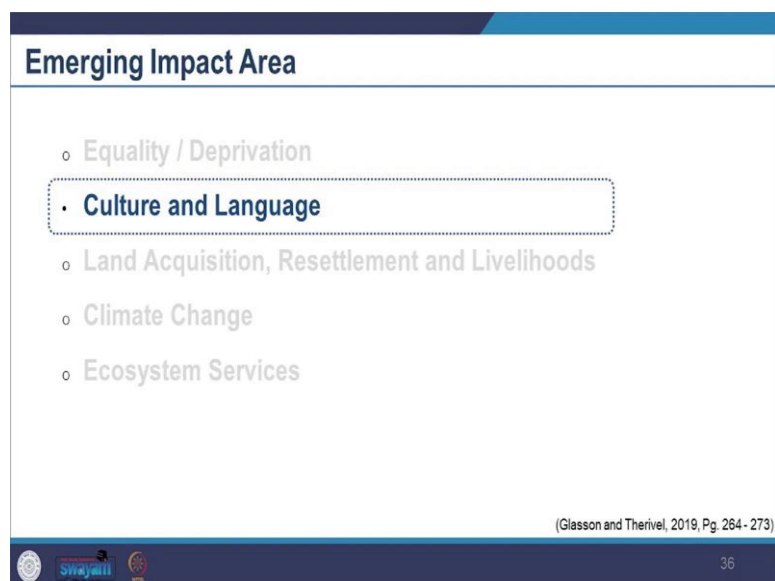
So, one of the project example of human rights impact assessment is Marlin gold mine development in Guatemala, where human rights assessment was undertaken. However, such cases are limited. So, not many and many cases, this is done, the link to the report is provided to you for detailed study, if you are interested.

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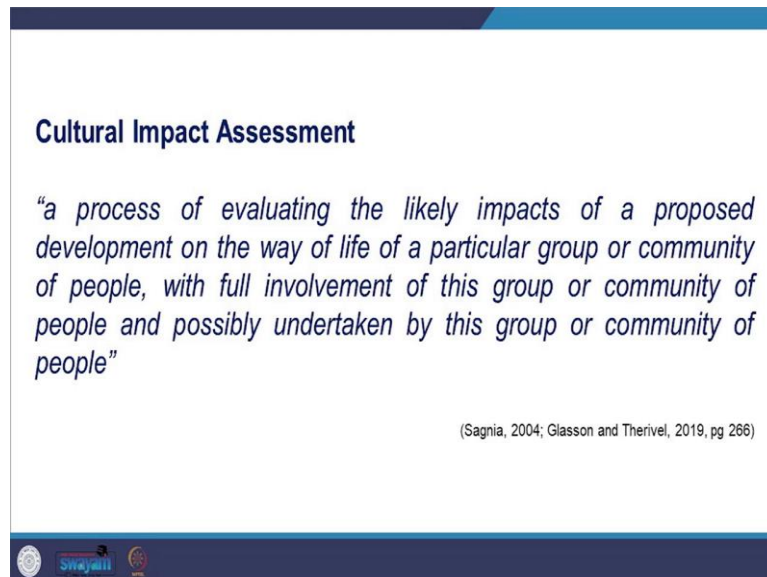
You may also find web-based tools there are tools which are available to like, really work out the community based, community based human rights impact assessment. And this, you can get it with the training manual, I have provided the list for you here community based human rights impact assessment, so that is another area.

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Now, moving forward, we see that culture and language is also increasingly covered with an EIA. So, we are even considering this not just the biophysical aspect, but also looking at the culture and language impact assessment. So, when we look at cultural impact assessments, what do we really mean by that?

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So, it is said to be a process of evaluating the likely impact of a proposed development on the way of life. So, culture is a complex subject here, way of life of a particular group, or community of people with full involvement of this group or community of people and possibly undertaken by this group or community of people. So, the way of life, what is that, we will look into and how the proposed development is going to influence that.

So, when we review culture, we see that the culture is both tangible and intangible elements and when we say that it is tangible, where we see clothing, building elements, instruments and so on. And, intangible where we see languages, oral tradition, performing arts and so and so. So, culture has these both tangible and intangible components, and while doing impact assessments. We generally see the Historic Environment, we evaluate the monuments, we evaluate the heritage building and sites and so on.

And we also like while seeing the intangible, we look at the values, belief system, customary laws and so on. But it impacts, it is seen that mostly, the tangibles are reviewed more compared to the intangible. And we may also see that the CIA, the Cultural Impact Assessment review is made for both positive and negative impact. So, it can have both negative as well as positive impact.

So, many of the recent work on cultural impact assessment is regarding the indigenous communities. So, a lot of work has been done in that and in it especially potential impacts are identified over the major resource development project, and especially in cases like mining, energy generation and processing as well as for the dam project. And we see that countries have developed guidelines for it. So, you may find guidelines and examples in like Canada, Australia, New Zealand.

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For reference you can find Canadian Mackenzie Valley Review Board guidelines developed for evaluation purpose and this like I have provided for you here. So, you can see all the guidelines which are available to see the impact assessment.

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So, you will also find guidelines provided by New Zealand government guide, guidance on cultural impact assessment under the Resource Management Act. So, that is also given to you here.

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The slide features a map of the Browse Basin in Western Australia, outlined in red. The map includes a legend with symbols for 'James Price Point', 'Browse Basin', 'Browse Basin', and 'Browse Basin'. To the right of the map is a small inset map of Australia. Below the map is a text box with the following information: 'Browse LNG Precinct', 'Browse Liquefied Natural Gas Precinct', 'Strategic Assessment Report (draft for public comment)', 'December 2010', and 'PART 1 Executive Summary'. At the bottom right of the slide, it says '(Department of Agriculture, Water and the Environment, 2022)'. The slide number '47' is visible in the bottom right corner.

So, we also look at a case study the link which I have given you. Assessment report is on the, like the case which we are seeing here is on the liquefied natural gas processing plant in browse basin in Kimberley region of Western Australia. I have given you the link here. So, here the regional, aboriginal the indigenous people land organization was responsible for addressing indigenous impacts.

So, they were responsible for undertaking that and they specifically saw how the, that kind of development was impacting the indigenous people as part of the overall impact assessment process. So, we find other upcoming examples of cultural impact assessment in other parts of the world also, so we get to see that also and we are also seeing that language is also being taken up more and more. So, people are also taking a language impact assessment. So, language is considered to be very important indicator of a culture. So, if the language survives the culture survive.

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Language Impact Assessment (LIA)

Involves the systematic criteria-based assessment of the likely impacts of a development or project on language and community.

(Glasson and Therivel, 2019, pg 266)

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So, language impact assessment involves like a very systematic criteria based assessments of the likely impact of development or a project on the language and the community.

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Wylfa Newydd Power Station Project at Anglesey in North Wales

Ynys Môn
THE ISLE OF
Anglesey

Welsh Language Impact Assessment for Wylfa Newydd: Supplementary Planning Guidance

Assessment Report

www.ynysmon.gov.uk
www.anglesey.gov.uk

United Kingdom

Isle of Man

Anglesey

Wales

England

London

Sheffield

Manchester

Birmingham

Leeds

York

Cardiff

Bristol

Southampton

Brighton

London

Wales

England

United Kingdom

Welsh Language Impact Assessment

- Anglesey lies at the heart of Welsh-speaking Wales, with almost 60% of the population able to speak the language (compared to less than 20% for Wales as a whole).

(YNYS MON, 2022)

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So, you can see the current example in relation to the proposed nuclear power station developed in Wales. So, one of the case examples shared with you is in Wylfa, Newydd Anglesey in North Wales, Anglesey in North Wales, it is one of the nuclear power station build for the UK. And, Anglesey lies at the heart of the Welsh, speaking Welsh. So, it is about the Welsh speaking area. And you see that here almost 60 percent of the population speaks this language and then there are very less proportionately, very less people who are non-native speakers here.

There was a concern by the local authority about the potential impact of the project's workforce on the local Welsh language and what kind of impact it would have on the lifestyle in general. So, the local planning authority was really concerned about it and it also highlighted the significance of the language to its social and cultural fabric and not only for the region, but also for the country.

So, the local authority here came up with supplementary planning guidance that explores potential impact via set of questions. Eventually project like what was the outcome of this impact assessment, the project was considered important to reduce the out migration of the island residents there. And it was also because of the process followed, it was instrumental in enhancing community's facility and services and including those facilities which were used for promoting the language.

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So, that was about the culture and language. Now, we look into another key element in, now considered in EIA, that is land acquisition, resettlement and livelihoods. So, are you reflect and think of number of people who are displaced because of numerous development projects such as displacement from mining project, hydropower dams, so how many people or the villages have to be shifted or relocated. So, mostly displaced people are the low income people or the vulnerable community often it happen, it happens because of the weak governance and legislation as it is noted in literature.

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Displacement of People due to Development Projects

- Voluntary resettlement
- Involuntary resettlement

Types of Displacement -

- Physical displacement (Relocation or Loss of shelter).
- Economic displacement (Loss of access to assets that leads to the loss of income sources and other means of livelihoods).

(Glasson and Therivel, 2019, Pg. 267)

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Resettlement involves the planned relocation of people and communities between locations. So, this kind of resettlement can happen both voluntarily or involuntarily. So, whenever voluntary resettlement takes place, meaning when we say voluntary resettlement, we mean where people are willing to shift by their choice. And whenever this happens, it is less problematic. Also, care has to be taken for like, free prior informed consent so that the people know what is going to happen with them, and what is really happening on the place, then they should not decide or give you consent under like hidden information.

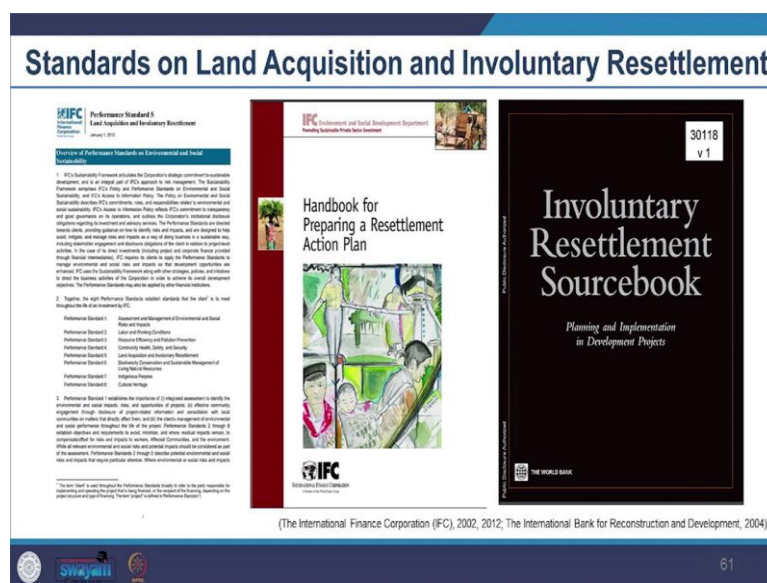
So, they should have all the information plus, they should be free to choose, and they should not really choose under pressure, and they should have sufficient time to decide upon it. So, it is important that free prior and informed consent is taken. And we see it, say it involuntary settlement when there is lack of consent. So, when people have not given consent, and still they are displaced when it is called involuntary resettlement, or when there is refusal for the settlement. So, displacement can be two types.

So, when displacement happens, it is just not the physical relocation, but it can be of through nature. One, the physical displacement, so where relocation, the people are relocated, or there is loss of shelter, so they have to leave their home and then build a home in some other place. And another economic, another kind of displacement is economic displacement. So, in that loss of access to assets, so wherever from wherever they were generating their livelihood, they are no longer able to access it. And this can happen because of the prohibition or there is something coming in between, so there can be economic displacement as well.

So, these are the two kinds of displacement which you see. So, displacements, like why it really happens, displacement can happen because of like lawful expropriation, which means legal taking away, so the government can take it legally for the larger purpose, larger public purpose. And that taking can happen both like for the temporary reason or for the permanent reason. And displacement can also happen due to restrictions of the rights, so you might protect certain areas and you would not allow people to use it. So, that also leads to a displacement.

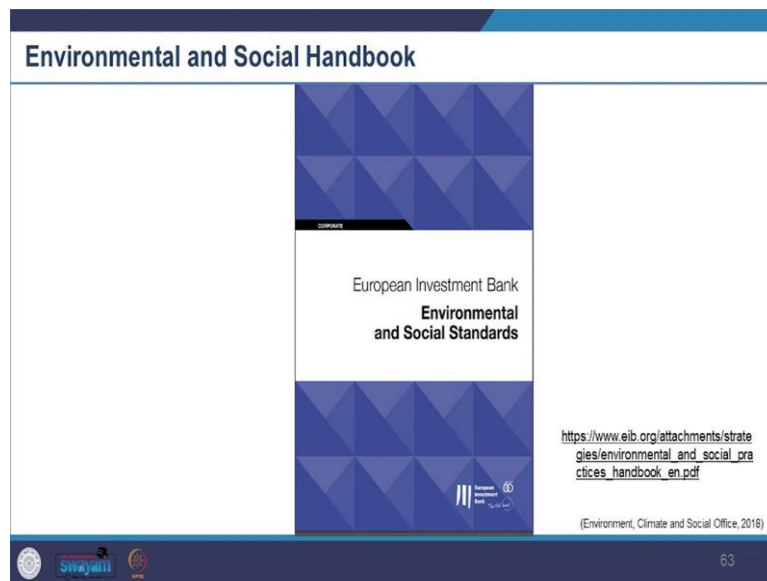
So, that can also happen, you could restrict the use of land for the original owners, you could buy that land or you can just restrict that land. It is important to manage like when such kind of things happen, it is important to manage the resettlement properly as it can have damaging long-term impact on the resettled communities. So, there is a lot of negative impact which could happen and could happen for generations.

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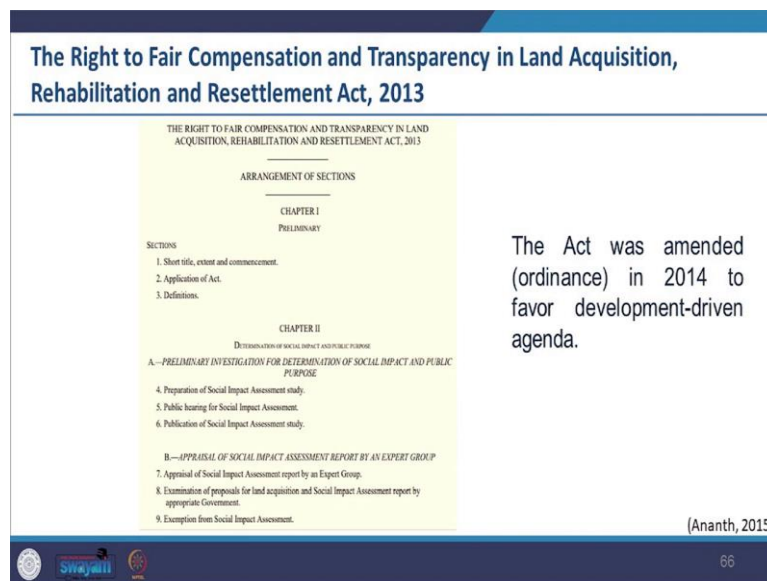
So, uh, you may find IFC World Bank standards on land acquisition and involuntary settlements. You would also see IFC handbook for preparing the resettlement action plan, you would also see the World Bank's Involuntary Resettlement Sourcebook. And in all of these lot of emphasis is laid on community consultation. So, it is very important that the community is consulted throughout the project lifecycle not just during the design process or the project implementation time, but during the lifecycle of it. And they also play a central role in preparing the resettlement action plan. And it is suggested that good planning and consultation is beneficial for both the developer and for the community.

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We also see that European Investment Bank Environmental and Social handbook also focuses on this you can look at chapter six, the link is provided to you for this to have a deeper look into it.

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In India, we have a right to fair compensation and transparency land acquisition and rehabilitation resettlement act 2013.

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Application of the Act

Provisions of this Act concerns:

- Land acquisition
- Compensation
- Rehabilitation
- Resettlement



(Ananth, 2015; Internet, 2022)

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So, this Act makes provision for land acquisition. How they have to be compensated? What, How the rehabilitation has to happen and how the resettlement plan has to be prepared?

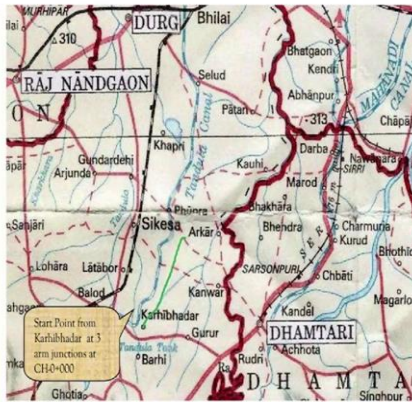
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Case Study: Chhattisgarh Road Connectivity Project

Resettlement Plan

January 2019

India: Chhattisgarh Road Connectivity Project
Upgrading of the Existing State Highway Section of Karhibhadar - Jangson Road (Package B14)



Prepared by Public Works Department, Government of Chhattisgarh for the Asian Development Bank.

(Public Works Department, Government of Chhattisgarh for the Asian Development Bank, 2019)

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So, I have provided you with the example case study here Chhattisgarh road connectivity project. This was prepared by public works department government of Chhattisgarh for Asian Development Plan, Asian Development Bank.

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Emerging Impact Area

- Equality / Deprivation
- Culture and Language
- Land Acquisition, Resettlement and Livelihoods
- **Climate Change**
- Ecosystem Services

(Glasson and Therivel, 2019, Pg. 264 - 273)

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So, another emerging impact area, if you look into that, that is the climate change. So, in our initial first week, we had talked about this, and how do we really assess the impact in this domain.

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Climate Change (Cumulative Impact) - Consideration in EIA

- **Mitigation-** Minimize a project's greenhouse gas emissions
- **Adaptation-** Resilient of the project to climate change

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So, there are two key areas. Whenever we talk about climate change, we assess the impact. So, we talk about mitigation and adaptation. So, while considering mitigation, you look into how to minimize the project's greenhouse gas emissions. So, mitigation majorly concerns with reduction of the greenhouse gas emissions. Whereas when you look at adaptation, when you, when we talk about adaptation, you ensure that the project will be resilient to the impact of the climate change.

So, whatever it happened will come, the project will be able to cope up with those kinds of changes, you may know that climate change is ultimate cumulative impact. So, it is a form of a cumulative impact. It is not just happening with one project, or one kind of activity, but with numerous projects and numerous activity coming together. And you may look back and think of all the drivers of environmental change we talked about in our previous week.

So, when we say that it is a cumulative impact, meaning it is not happening because of one project, but all the development work together, including our activities. So, there are practical constraints in the areas like pertaining to timeframe of EIA versus timeframe of climate change, there are also issues about uncertainty. And there are a lot of interdependent factors and which really makes the evaluation very complex. However, inclusion of climate change in EIA has been promoted a lot through regulation guidelines and also training and also by public engagement.

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The screenshot displays the IEMA website's page for the 'IEMA EIA Guide to: Climate Change Resilience and Adaptation (2020)'. The page layout includes a navigation menu at the top, a main heading, a descriptive paragraph about the guide's purpose, and a 'Latest Posts' section listing recent publications. A footer note references the European Union (2013) and IEMA (2022). The page number 77 is visible in the bottom right corner.


So, we see that EU has published guidance on how to integrate climate change and biodiversity which we go into further see in the method section also, I have provided you the link here, then you also see the Institute of Environmental Management and assessment has also published guidance on climate change.

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Emerging Impact Area

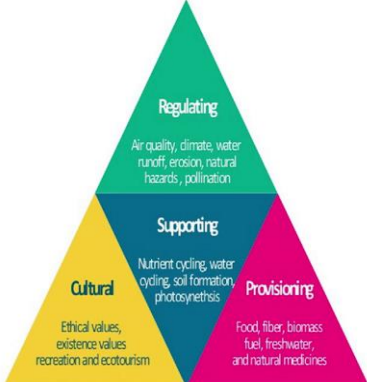
- o Equality / Deprivation
- o Culture and Language
- o Land Acquisition, Resettlement and Livelihoods
- o Climate Change
- **Ecosystem Services**

(Glasson and Therivel, 2019, Pg. 264 - 273)



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Categories of Ecosystem services




Regulating
Air quality, climate, water runoff, erosion, natural hazards, pollination

Supporting
Nutrient cycling, water cycling, soil formation, photosynthesis

Cultural
Ethical values, existence values, recreation and ecotourism

Provisioning
Food, fiber, biomass, fuel, freshwater, and natural medicines

(Earthwise Aware Inc., 2022)



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So, now, moving on to another, another emerging impact area, we see ecosystem services. So, conceptually, just to reinforce you have seen this before also. So, conceptually, ecosystem services are the services provided by environment to people. So, what kind of services environment gifts to us, we had seen this in the previous week, lecture 2, they are typically divided into provisioning services like that, like they provide food, water, minerals and other products.

Then you have regulating services such as carbon sequestration of water purification, cultural services like recreational or cultural experiences and then supporting services like you have production nutrient cycle all these are provided majorly for typologies you see as per the Millennium Ecosystem Assessment.

So, ecosystem services are often treated as commodity so in this concept, you treat this as a commodity, we look at the demand and also quantify the services we get. So, we see that how much we really require this. Sometimes even monetary value is placed on to the services and review of ecosystem services considered as comprehensive and meaningful way of communicating with public and influencing stakeholders. So, it is been effective in a way.

However, the concept is also said to be human centric. So, it is more like looking at like what benefits we get and breaks down the component of environment into number of benefits. So, ecosystem services have been acknowledged and addressed. Like we see the International Finance Corporation IFC Performance Standard PS 6 on biodiversity.

Then performance standard requires general avoidance of impact on ecosystem services where possible, and identification of protection of priority ecosystem services. So, it is been highlighted by IFC. Likewise, you also see the European Bank for reconstruction and redevelopment and then also the draft of EC, EIA directors, also you see they have also provided the guidelines.

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Emerging Impact Area

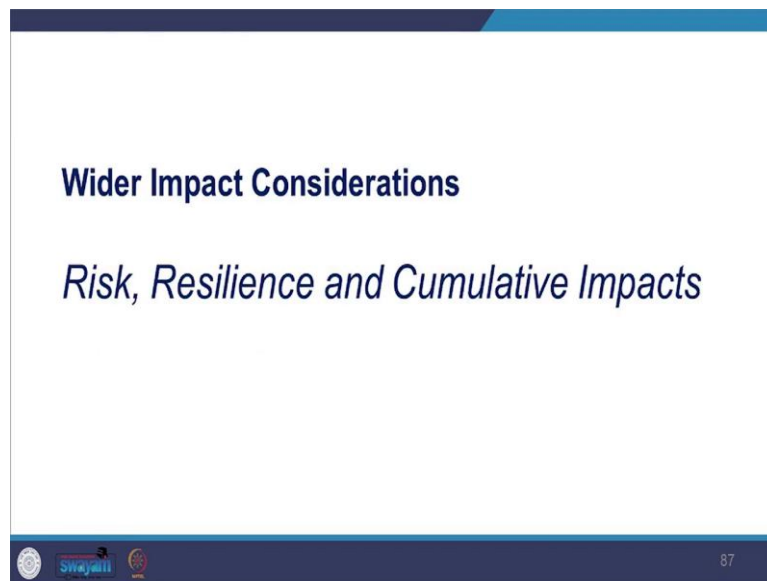
- Equality / Deprivation
- Culture and Language
- Land Acquisition, Resettlement and Livelihoods
- Climate Change
- Ecosystem Services

(Glasson and Therivel, 2019, Pg. 264 - 273)

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So, these were the, all the emerging impact areas where which we see. Like, we had seen equality, we saw the culture language, we saw the land acquisition, resettlement and livelihoods, climate change, ecosystem services.

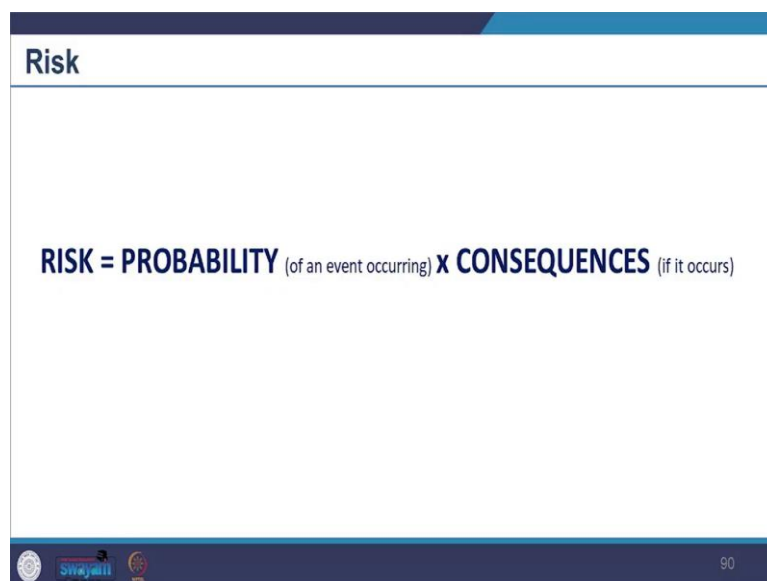
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So, now we will look at broader impact concentration risk, resilience and cumulative impact. So, when we look at risk, what we are really concerned off. We look at what risk in events are such as like floods or earthquakes can pose to the project, so, what risk they pose on the project.

So, when we consider the risk at the EIA level, we see that what if, what if such kind of things happen, what will happen to the project. So, we find out like, apart from that, we find out what risks are there if any changes happen to the political by people's activity, which will adversely impact the project and increase other form of risk. So, we also look into that.

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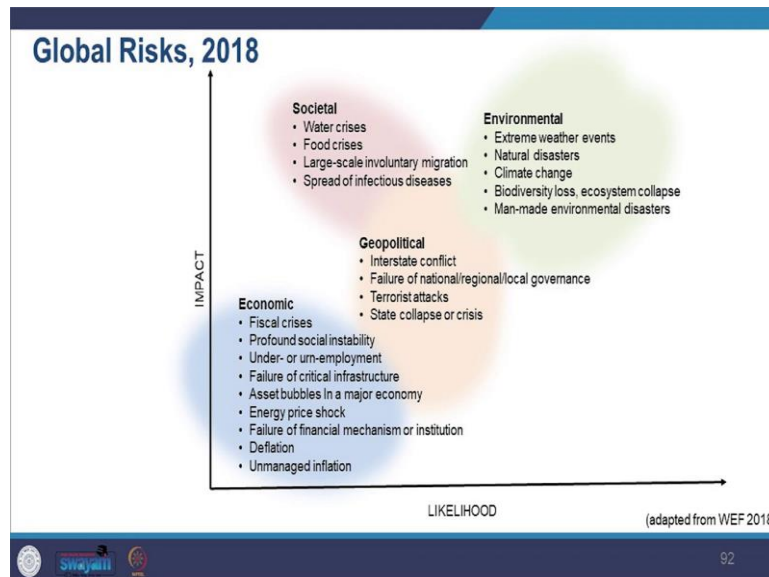


So, when we try to understand the term risk. Risk is the probability of an event occurring into consequences if it occurs. So, the probability and the kind of impact so that together gives us indication of risk.

And then trying to understand the probability, likelihood and usual normal project like if we think about sugar industry, and its construction and operation phase, the probability of some impacts are high such as like noise is going to happen and dust is going to be generated, but their impact may be temporary or then it would be less.

Whereas the chances of accidents would be lower, but if it happens, the impact would be very high. So, that is what we try to understand to the probability and its relationship with the risk and the consequences.

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So, in the image here published by World Economic Forum, you can see the global risk, you see example of perceived economic risks, geopolitical risks, societal risk and environmental risk, on the x axis, you see the increasing likelihood and on the y axis, you can see increasing impact, you see the environmental risk has high likelihood and high impact. So, you can see it here.

And then we also see what kind of risk what a project can pose to environment and people. So, by itself, like what it has, what risk it has from the outside, as well as what the project itself has risks to the environment and people and such if any kind of accident happens. So, you may also know that different stakeholders, people in different contexts would interpret risk in different ways. So, this would also vary from country to country context to context and

like some, for some what kind of casualty would be would be considered intensive enough and which would be acceptable for some other context and country.

So, IFC performance standard one and EC directors, they all promote, like identification and management of environment and social risk. So, now, we will look into the impact on resilience. So, that was about the risk now we will move on to resilience. So, usually, we plan we presume, and we plan we presume that changes will be slow.

So, it will happen gradually, and we can, we can predict. So, we are assuming that whatever is going to happen we are going to predict it but in realistic in real life, how disasters like flood, volcanic eruption, pandemic, economic downturn, power, outrageous all have been happening very suddenly.

So, we have not been able to predict well in advance, and it has happened suddenly, not really gradually. So, so, resilience when we talk about resilience, it is about developing the ability to deal and cope with such abrupt changes rather than being very protective about it. So, we would be required to familiarize ourselves with the principles of resilience, like how we really cope up with these kind of changes and sudden changes. So, we also need to understand the importance of threshold or tipping point.

So, our systems like trying to understand the tipping point here, so our systems have certainly ability to recover from any kind of impact or any kind of changes, which happens any disturbance, which happens we usually recover from that, but we, but when it crosses a certain threshold, so when it happens at a certain limit, then the system reaches to a new state, and it is quite possible that that change would be very difficult and it might be not possible to go back. So, that is what we really mean by tipping point.

Further, we need to understand slow variables. So, like climate, soil, global economic systems, or social network, these are all slow variables, which like change slowly in due course of time, but they also protect our other faster moving variables such as habitat, species, communities, and individuals. So, they protect them. So, when these variables are damaged, then the other system which we are talking about the environment, that that really gets damaged, so our protective cover is ruined.

So, we need to understand these terminology when we talk about slow variables and when we are talking about the tipping point. So, as a planner, or some project proponent or a community, it is important for us to have like when we are talking about resilience, it is

important for us to have variety, diversification in every aspect, so that we can cope up with any kind of sudden change, drastic change. And it is important that we build redundancy and duplicates to allow one failure to be recovered by another system and through another section.

So, resilience alliance has also developed a Resilience Assessment Framework. So, that was about the resilience. Now, coming to the last point, we will look into the cumulative impact. So, we did talk about this term before so think how much impact of one project would make and how all the projects together put in a larger time period collectively make. So, what kind of impact would happen? Because of the collective impact, the impact would be significant, whereas it would be insignificant when we consider in the individual case.

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Cumulative Impacts - Definitions

'The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions' (40 CFR §1508.7).

The US Council on Environmental Quality

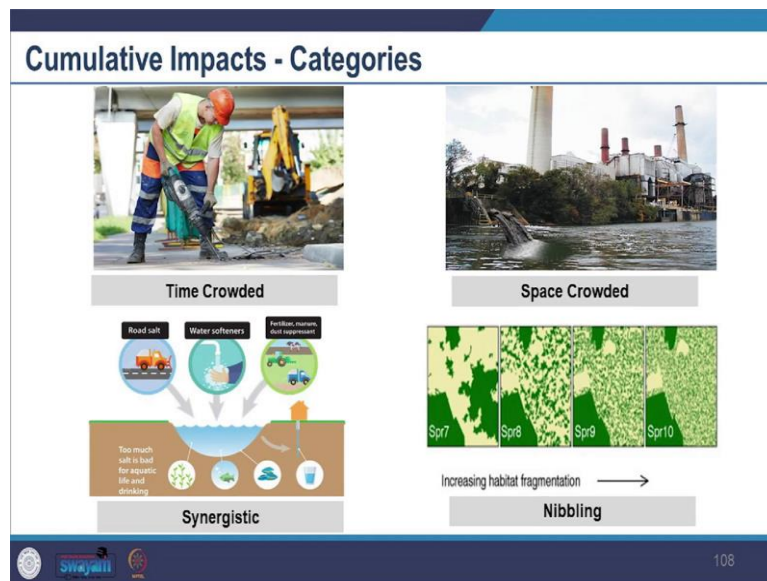
'Changes to the environment that are caused by an action in combination with other past, present and future human actions.'

The Government of Canada, 2016

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So, looking at some of the given definition as defined by US Council of Environmental Quality, cumulative effects is the impact on the environment, whereas results from the incremental impact. So incremental, you may pay attention to this, which happens gradually of the action when added to the other past, present and also of the future. And other example we see, definition we see is the from government of Canada, where changes to the environment that are caused by an action in combination with other past, present and future human activities, actions. So, that is what about the cumulative impact.

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And, then we see that cumulative impacts are categorized in these types, you can see that there can be time crowded, which means when impact are so close in time like they are happening very quickly, that effects, effect of one is not really, the effect is impact is removed, before the next one comes. So, then the recipients sensitivity is damaged.

Further, we see that it is this space crowded can be a space crowded type, where impact of various activities are too close to each other. So, then the impact of one and the other is all concentrated. So, for example effluent from multiple factories into one stretch of river, so river is taking very waste from one but then many other factories are also, so that impacts the health of the river, cumulative health of the river is affected by that.

Then we have to see, when we see other category which is synergistic, where different types of impact interact to produce qualitative and quantitatively different impact. So, when two impacts come together, it produces another kind of impact. So, for example, you see the two pollutants interact make more harmful third pollutant. And, the other categories is nibbling, which is like the incremental erosion of a resources until there is a significant change.

So, continuously something is getting lost and then the significant change happens, like habitat fragmentation where the habitat gets divided and divided, and then it is totally lost and the loss of green fields from the urban areas so all these things, it is like in bits and pieces happen and then eventually it makes a significant change.

So, we had seen that there are numerous activities like agriculture, fishing, which have high impact in terms of scale at global level, but do not fall in the ambit of EIA. So, entire first

week when we talked about we saw lot of things, which really do not come under EIA. So, all those things can be, when we really look at cumulative impact assessments can be covered in this. Also, there has been emphasis to include even cultural impact assessment as a cumulative impact while reviewing cumulative impact.

Cumulative impacts have been introduced in many countries legally such as you can see in New Zealand and Canada. We look at some of the useful methodologies and also discusses limitation in the method sections. We will be covering this part as well. So, in these two parts, like we saw the part one of this lecture, and two parts, we discussed range of impact areas addressed through EIA process. And depending on EIA systems, some or all of these impacts may require analysis and evaluation.

And like you are seeing that health, social and other non-biophysical impacts are either in the process considered, not at all considered or inadequately considered, so that there is a change in like what we study in the theory and now what really goes in the practice.

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Summary

- 1 Discussed Socio-Economic Impact
- 2 Discussed Health and Safety
- 3 Reviewed Emerging impact Areas
Equality/deprivation, Indigenous peoples Rights and traditional Areas, Culture and Language, Land Acquisition, resettlement and livelihood, Climate change, Ecosystem Services.
- 4 Reviewed Wider Impact Consideration
Risk, Resilience, Cumulative Impact .


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So, summarizing, what we cover today. So, in this lecture, we cover the range of impact areas addressed through the EIA process. And in the previous week, we have seen all the status, environmental status. So, you see that what all we are able to cover, how we are able to cover and what we are not able to cover, what is the restriction of it and how the process itself is evolving. So, we discussed the socio-economic impact, health and safety and then we reviewed the emerging impact areas then we also looked at the wider impact consideration.

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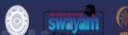
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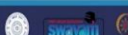
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Suggested Watch and Read




after the flood
pictures of a catastrophe

https://www.youtube.com/watch?v=8ylikOISW0&ab_channel=I2Wdocumentary




ICE MOTION

https://www.youtube.com/watch?v=OR_gaG9yikab_channel=KubaWitek%E2%80%93Advnrture filmmaker




FORESTS COVER ABOUT 30% OF THE PLANET

https://www.youtube.com/watch?v=icJ6hcSKa8&ab_channel=NationalGeographic



The Tipping of Civilization: Climate Change: The Facts (BBC Earth)


https://www.youtube.com/watch?v=BSFw4P4EY8&ab_channel=BBCEarth



Rains are not only to Kerala, the gateway for the monsoons to be industries.

Thiruvananthapuram: A documentary on the environmental issues of the Western Ghats


https://www.youtube.com/watch?v=TV-5G2ayQM&ab_channel=TheHindu



EIA FALLS UNDER THE ENVIRONMENT PROTECTION ACT OF 1986

What is EIA and why is it still relevant in India?

https://www.youtube.com/watch?v=Uwh3MxOyDis&ab_channel=TheHindu


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So, these were the references for today and there are also the suggested watch and read for you to delve deeper into the subject. And in any case studies if you wish to please feel free to ask questions. Let us know about any concerns you have, do share your opinion, experiences and also share your suggestions. Looking forward to interacting and co-learning with you while exploring the subject of Environmental Impact Assessment. Thank you.