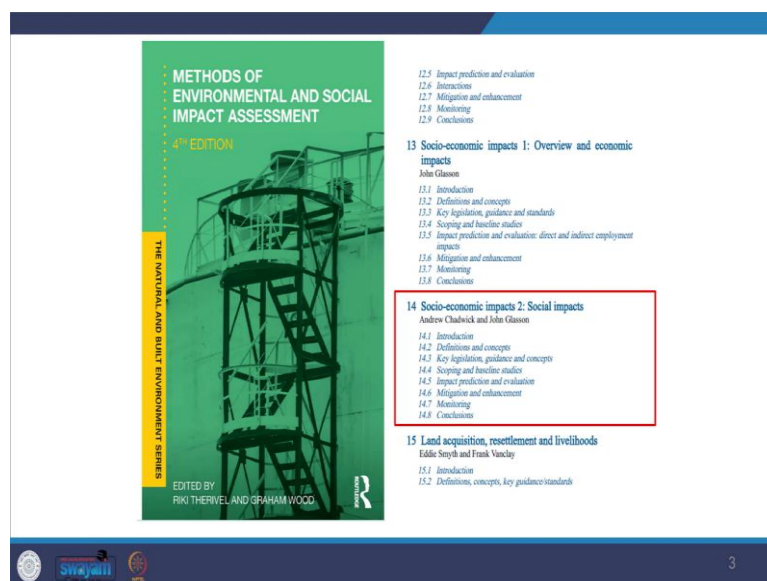


Environmental Impact Assessment
Professor. Harshit Sosan Lakra
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Indian Institute of Technology, Roorkee
Lecture 50
EIA Methods- Socio-Economic Impacts (SIA)
Part II

Welcome to the course Environmental Impact Assessment and today's lecture, we are going to continue with our coverage on socio-economic impact assessment. And we are going to today especially look at the social aspects of impact. We had previously looked into the economic impacts and the kinds of calculations we undertake within that. So today, we are going to look at various aspects of the social impacts related to the project and related to the EIA.

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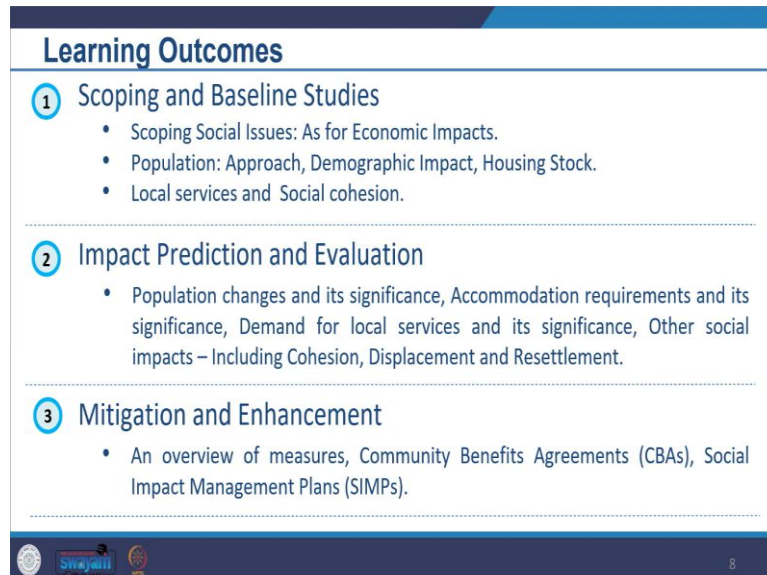
So, our key reference for this is chapter 14, which deals with socio-economic impact number 2, part 2, so, you can this course book which we are referring to by Therival and Wood. So, we are well aware that many, many kinds of social impacts occur because of the major developments and they also occur because of various direct and indirect economic impact that takes place.

So, we also see that, whenever the workforce is involved in the construction of a project and its operation, they also exert impact or like, they will be increasing the population because there will be a lot of people who will be coming into the site in and around to the site of different age, gender, language culture and they will also exert pressure in the host community.

And then you would also see that there is an increase in demand of like there will be increasing demand for housing and then also increase in demand for local services for example, there will be an increase in demand for education requirements for all the migrants who will be coming to the site like there will be a requirement for more schools or more space in the school and then more health facility, recreational facility, so it is going to exert pressure on the existing infrastructure.

Likewise, you will see that there might be changes in the local crime rates and there might be other issues also coming up. And then it might also link with a lot of community stress on how the host community or the other communities can cope with the change. So, it might also lead to stress and there might be other kinds of impact as well related to health. So, we have already seen Health Impact Assessments and you might also see impacts related to displacement and resettlement which we are going to see in the next lecture as well.

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Learning Outcomes

- 1 Scoping and Baseline Studies**
 - Scoping Social Issues: As for Economic Impacts.
 - Population: Approach, Demographic Impact, Housing Stock.
 - Local services and Social cohesion.
- 2 Impact Prediction and Evaluation**
 - Population changes and its significance, Accommodation requirements and its significance, Demand for local services and its significance, Other social impacts – Including Cohesion, Displacement and Resettlement.
- 3 Mitigation and Enhancement**
 - An overview of measures, Community Benefits Agreements (CBAs), Social Impact Management Plans (SIMPs).

So, accordingly, given this context, the second part of the lecture will include will look into what we cover in terms of scoping and baseline studies when we deal with social impact assessment and then how what are the different key issues agendas which you might have to look into while doing undertaking the scoping. And then what approach do you need to adapt to look at the impact on the population to look at the impact on the local services and then other kinds of impact like social cohesion, also like stress and all that, what kind of considerations what might be different types which you might encounter.

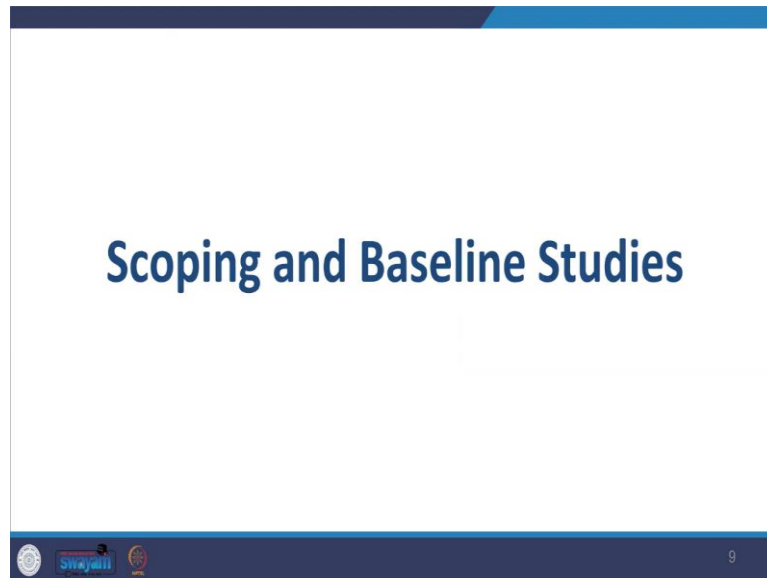
Then in this coverage, you would also look at the impact prediction and evaluation. So, what are the different methods which are available to look at the population changes? How do you look at whether the changes are significant or not? And how do you also look into the accommodation requirements and their significance? And then how do you look at the demand for local services, its significance, and other social impact on cohesion, displacement, and resettlement?

Then we will cover the mitigation and enhancement aspects where we will look at what kind of measures are usually taken. We will also familiarize ourselves with the concept of community benefits agreements CBAs and then we will also look into social impact management plans, what are they, and what they are through those that you are required to prepare and present.

So, that will be our coverage, and out of that the expected learning outcome is that you should be able to identify the key purpose of scoping while you are dealing with socio-economic impact assessments and then identify key elements that you might have to deal with. And then different approaches you might adopt.

Likewise, you should be able to identify different elements of impact prediction and different tools and methods of evaluation. Then you should be able to review the different mitigation and enhancement measures that are available to you. And then also discuss and define community benefits agreements and social impact management plans.

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So, moving on we will look into scoping and baseline studies. So, looking at the key purpose, what you are required to undertake when you are dealing with scoping and baseline study is that you must understand the characteristics of the host society. So, wherever the project is going to come, you must understand how the host society is because the impact and the significance of impact would vary a lot depending on the host society.

So, you must identify how is society. So, you need to create the profile of the society that is going to be likely to be affected because of the kind of development that will take place. It is needed that you draw a conclusion or you build a profile based on the data that you get as well as on the attitudes. So, not only just on the data, but also the attitude aspects like how is their attitude about receiving certain things or how would they deal with it, what is their history, what kind what would be their reactions, or acceptance level.

So, you need to look at those aspects and when you look at these, this allows a very meaningful understanding of the host community. So, keep in mind that when you are undertaking scoping, especially for the social issues, you need to understand the host community and you need to build their profile as well you need while you are building the profile, you need to look at both the aspects of the data aspect as well as the attitude aspect of the host community.

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Stakeholders Identification

- People Living In Surrounding Whose Livelihoods May Be Affected;
- Construction Workers Who Migrate Into The Area Of The Development;
- People Living Near Where The Migrant Construction Workers May Reside;
- Plus A Whole Range Of Agencies And Developer And Supply-chain Links (IAIA 2015).



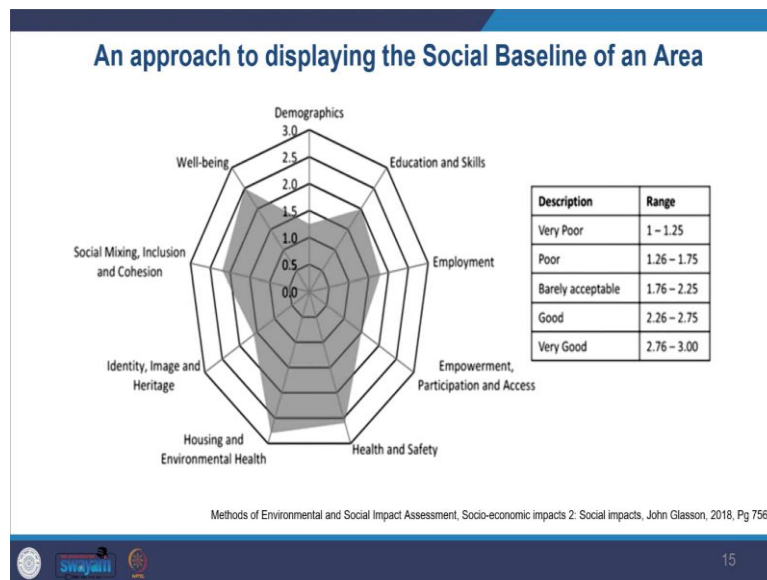
Further in this stage, you also need to identify various stakeholders. So, who are the different people who will be affected by your project? So those, for example, can include people living in the surrounding of your project area. So, that is the simplest way to identify people who are living in the surroundings, then it might also include the construction workers who would migrate into the area of development. So, who would be coming to your site because of the construction work that will take place and then it would also include people living near where the migrant construction workers may reside?

So, not only the construction migrants but the people also living in and around where the migrants would be settling in temporarily or permanently plus, you also need to look at a whole range of agencies and developers and supply chain links. So, what kind of economic activity will take place, what kind of activities will take place and who will be involved, who will be at the disadvantage, who will be at the advantage, and then what kind of activities might go on in that place?

So as a professional, when you are preparing the social impact assessments, you need to identify all these ranges of stakeholders. Further, you also need to identify the socio-political context of the host communities. So, it is just not the data or the attitude but the economic part of it you would also be required to look into the political context like looking into the history and looking into like how people might react to it and what the acceptance level or what kind of disadvantage the people have been in that particular locality.

So, depending on how they are likely to respond to your proposal and what kind of trust they have in the government because given the political context, there might be situations where people distrust the government and also developers, so, that can cause a lot of delay that can also cause a lot of stress on the people. So, those all past experiences have to be taken care of.

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So, in this figure, you can see this is from one of the cases you can see how they are providing the social baseline information for the particular area and they are aligning it with the national standards and you can see how the performance ranges from very poor to very good, you can see how the profile of the people have been created, you can see that how the housing and health as they are and then as per the national standards, you can see it is going a little on the higher side housing and the environmental health which is almost touching 3. Likewise, you can see identity image and heritage ratios considerably low 1.5.

Similarly, you can see social mixing and inclusion and cohesion which is going about 2, well-being which is nearly touching 2.5, and education and skills can see it is just 2. Employment is again under 2 and then empowerment, participation, and access are again 1.5, and health and safety is 2.5. So, you see that scale, how we are trying to understand the context of the people and then their environment, who are living, and then the project sites influence the site of the project.

We can see from another example, how these profile buildings are done, this is not exactly from the AIR report, but I have taken it how the social profiles are built.

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I have taken the example from the Mumbai Metropolitan Regional Plan 2016 to 2036. So, you can see from here how the profiles are built and how different graphs and numbers data are used to understand the characteristics of the community and host community.

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Population Growth of Mumbai

Sl. No.	Unit	Census				CAGR				
		1971	1981	1991	2001	2011	71-81	81-91	91-01	01-11
5	Palvel	26,602	37,073	58,906	1,04,058	1,80,020	3.37	4.75	5.84	5.63
6	Pen	11,734	14,772	21,388	30,101	37,852	2.31	3.87	3.41	2.28
7	San	12,416	15,168	17,775	23,251	30,439	1.84	1.60	2.72	2.73
	Rajad Dist. Councils	98,857	1,24,745	1,84,589	2,46,340	3,74,251	2.35	4.00	3.73	3.46
	Sub-Total (B)	1,76,361	2,57,201	3,62,544	5,68,092	8,01,952	3.85	3.49	4.59	3.51
	Census Town									
	Thane District	23,707	42,149	68,080	1,54,468	2,09,351	5.93	4.91	8.54	3.09
	Rajad District	54,334	77,467	1,29,997	2,14,168	4,21,490	3.61	5.31	5.12	7.00
	Sub-Total (C)	78,041	1,19,616	1,98,077	3,48,656	6,30,841	4.36	5.17	6.41	5.52
	Urban MMR (A+B+C)	72,67,439	1,04,31,976	1,37,29,889	1,82,10,018	2,13,32,059	3.68	2.79	2.86	1.59
	Rural (MMR)									
1	Thane	6,137	7,111	10,723	34,391	15,623	1.48	4.19	13.00	-8.11
2	Ambernath	30,047	36,631	61,524	84,899	1,25,011	2.00	5.32	3.27	3.95
3	Kasai	8,883	17,782	49,022	78,227	93,145	7.19	10.67	4.78	1.76
4	Kalyan	30,734	37,853	45,811	1,47,708	2,83,192	1.88	2.14	12.42	6.73
5	Shirurath	1,11,294	1,39,522	1,79,464	2,29,431	2,77,646	2.23	2.56	2.48	1.93
	Thane District Rural	1,87,745	2,38,099	3,46,744	5,76,656	7,94,617	2.40	3.83	5.22	3.26
1	Milbaug	69,153	83,337	89,824	1,05,590	1,12,162	1.88	0.75	1.63	0.61
2	Karjat	50,041	58,736	69,673	80,888	94,449	1.62	1.72	1.50	1.56
3	Shilpigar	26,121	33,736	42,091	51,144	57,344	2.41	2.42	2.36	0.76
4	Palvel	93,325	1,21,827	1,50,736	1,92,070	2,45,769	2.48	2.15	2.45	2.50
5	Pen	41,250	53,770	60,849	69,849	77,107	1.29	1.25	1.39	0.99
6	Urban	29,197	54,450	62,842	77,232	90,828	6.43	1.45	2.08	1.63
	Rajad District Rural	3,09,287	4,05,256	4,76,055	5,78,795	6,77,679	2.74	1.62	1.97	1.59
	Rural (MMR)	4,97,032	6,49,355	8,22,799	11,55,451	14,72,296	2.61	2.49	3.45	2.45
	Total (MMR)	77,64,471	1,10,75,331	1,45,52,688	1,93,65,469	2,28,04,355	3.62	2.77	2.90	1.65

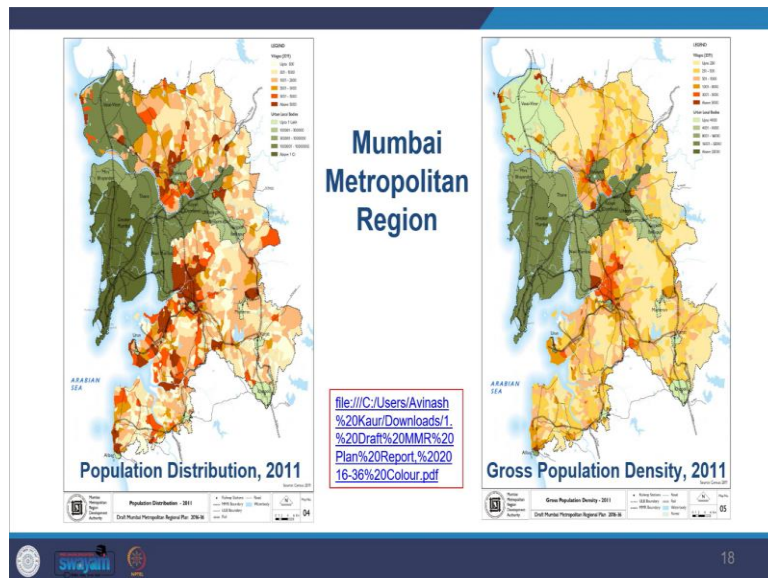
Note: Calculated on the basis of current boundaries (2011) of the Corporations, Councils, Census Towns and Villages

Figure 1: Graph showing Island City's Declining Share of the MMR population

Figure 2: Population Growth of Municipal Corporations in MMR excluding Greater Mumbai (1971-2011)

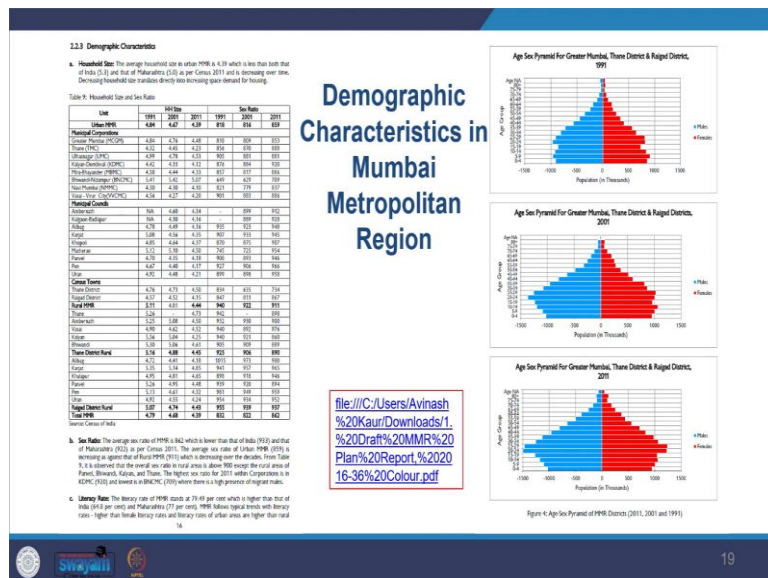
So, you can see here, so, the graph showing the city's declining share of the population, how the population is declining, you can see population within different areas, how this areas are and then how these tables and these graphs are used to communicate and also understand it.

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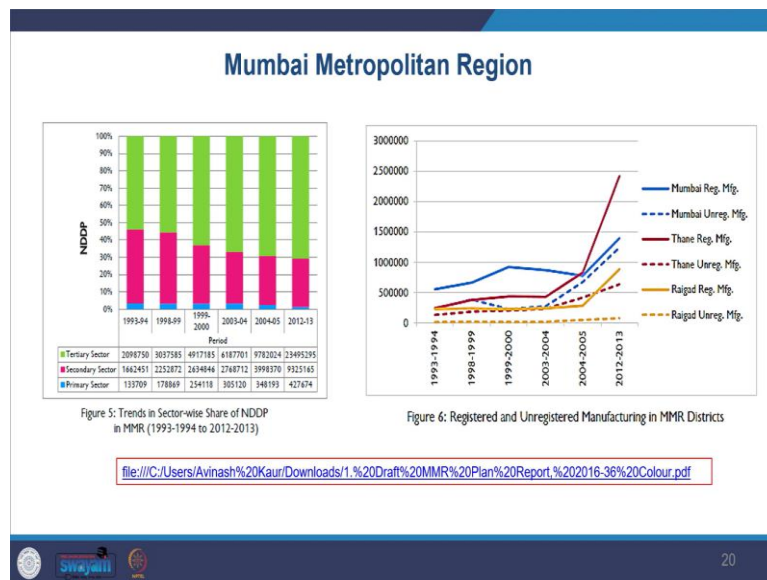
At the same time, you can see they have used GIS maps to indicate the population distribution, you can also see the population density distribution here. So, you can see how with the legend, if you read how the population is from 500 being the lighter color to dark green being about one crore, so, you can see how the population distribution is and then how the density is likewise you can see the light color showing density up to 250 to about 32,000. So, you can see that density here and all this data is taken from census 2011 which you can see here.

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And further you can see the demographic characteristic here again. So, you can look at the table on the left-hand side and all the how the data has been presented so that you understand the profiles. You can age pyramids of greater Mumbai how it is. So, they are showing it for different periods. So, you can see 1991, 2001, and 2011 for Thane district and Raigarh district. So, you can see how the male population is expanding the blue side is going on increasing rapidly compared to the red side which indicates the female. So, that helps you to understand what is happening because of all the activities that are going on in that place.

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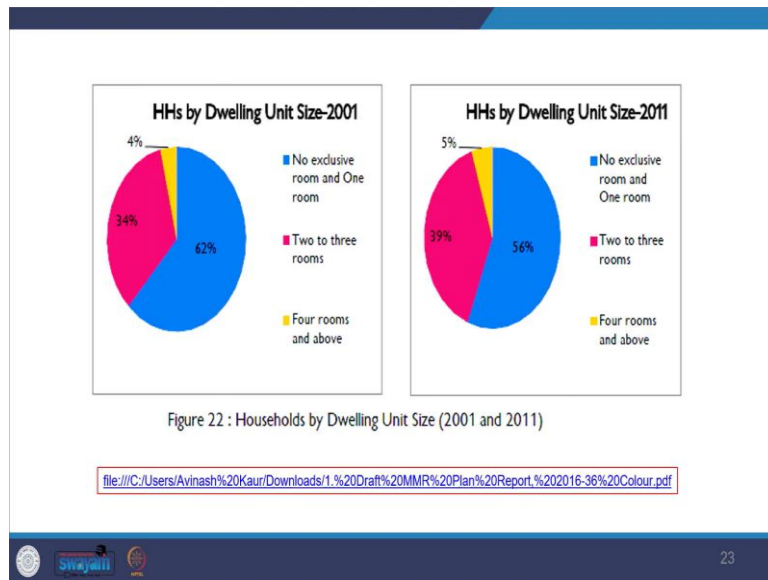


Likewise, they are I am showing you so that you understand how the different socio-economic data and the community profiles are indicated here. So, here understand the economic profile, you can see here on the left-hand side figure taken from the report, you can see the tertiary sector, pink or you can see secondary sector and then in blue you can see the primary sector.

So, you see the composition. These kinds of graphs help you to understand the proportion itself you can see that there are lots and lots of people who are involved in the tertiary sector. And since it is showing into timeline 93-94, 98-99, 99-2000, and so on till 2013. So, you can also see that the secondary sector is declining and the tertiary sector is increasing. So, you can also understand what is going on within the host community.

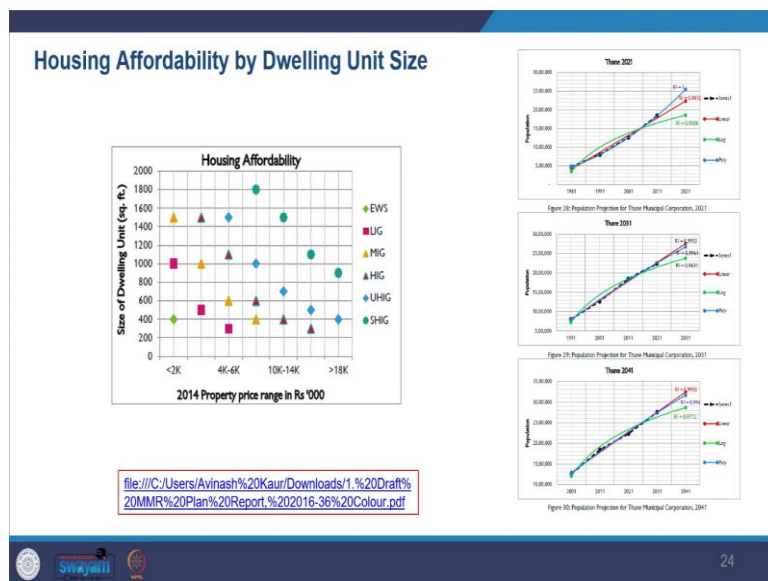
And then, on the right-hand side, you can see registered and unregistered manufacturing in the district. So, all these profiles are presented, you can see the employment growth sector-wise.

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And then likewise, you can see household by dwelling unit size here how which has been indicated by the pie diagram.

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Likewise, you can also see again housing affordability, which they have analyzed and then you can also see the population projection for the Thane area on the right-hand side for 2021. Thane, you can see it for 2031 and 2041. So, how the population will increase, and then they have done in three methods and they have seen in the red line indicates the linear methods, you have a green line which is done by the log method and then you have a poly method here. So, all three methods have been used to indicate the projection.

So, the population is an important part of the social assessments and you need to see how geographical what kind of geographical extent you have to undertake to understand the social impact. So, during the scoping stage, you will also see the geographical extent of how much population has to be taken and to what extent the population has to be taken. You will be identifying the impact area and you will look at the residential locations of immigrant workers and their families.

And this would also have an impact on the accommodation, things like that. Usually, the approach that is taken while you are dealing with the population is especially when you are trying to find out the boundary, you usually take the fixed distance or a radius like you also saw in those maps how the radius has been taken.

So, you can take a certain radius from the project site and sometimes you can also take administrative or the political areas which is easy to maintain and easy to get data on those political lines, administrative lines from the local authority, health authority or so school and other areas. So, all that data can be collected and you can take it as per the fixed distance or as per the administrative boundary. So, that can be one way and then the other way could be the footprints and like how much the project is influencing based on that footprint you can also identify the area.

Further, apart from the population and the geographical extent, you also need to look at what kind of impact it might have on the population itself, the demographic impact.

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Demographic Impact

- Depend on project-related changes in population in relation to the existing population size and structure in the impact area.
- Necessary to establish the existing population baseline in the impact area.
- The most useful source of population data in many countries will be the national census or equivalent.

Methods of Environmental and Social Impact Assessment, Socio-economic impacts 2: Social impacts, John Glasson, 2018, Pg 756

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So, well all these kinds of changes will depend upon what kind of changes your project is likely to bring on the population and the characteristics of the population existing like what is the size of the existing population, what is the structure, and what kind of changes your project is going to bring into that particular area among the people. So, it is very important to establish the existing population baseline in the impact area in terms of size, gender, age, and profile.

So, you already saw the example from the reports, how those profiles are built, how those tables are built and then there can be many sources of information, you saw that it was built from the census. So, from all those data sources, it can be built and they can be very interesting in communicating interesting ways of easy way of communicating those profiles to the decision makers.

So, looking at different sources of data, so, one of the major sources of population data and many countries is the national census or similar, anything similar to that and you would also find another source of data that includes population estimates where the local or regional governments have been doing estimates. So, you can also take like you might not really need to make your estimates you can adopt from any secondary study that has been done and you can also use proxy data.

You can also use various market analyses or studies that are available in that particular study area. And whenever whichever country you are dealing with whichever context you are dealing with, if you do not have access to data, then you might have to undertake the survey. So, as I showed you the population projection from the Mumbai Metropolitan regional plan.

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Population Projections and Forecasts

- Produced by national and local authorities
- Projections for smaller areas tend to be less reliable than those for larger areas.
- Net migration is usually a more important determinant of population change for smaller areas;
- Migration flows are much more difficult to predict than the number of births and deaths.

7.5.1. Population Projection

Planners are concerned with population projections which form the basic framework for setting targets expected to be achieved within a specified time frame, be it for land use, services or facilities. Most of the important decisions about land use and services are derived from population estimates: the demand for water, power and waste disposal facilities, housing, open spaces and schools, the supply of labour, spending power available for the retail trade, the numbers of private cars to be expected, possible recreational demands – all can be estimated from the projected population.

The section describes six methods of population projections etc.

1. **Mathematical and Simple Methods:** These are simple or direct methods of estimation based on the past population records. Different progression is involved when past data suggest that population is changing by a constant rate. The figures are placed on plain paper (conveniently with y = population and x = time) which results in a straight line. This straight line is extrapolated for projecting the future population. However, normally population changes according to geometric progression, in such a case semi-logarithmic paper is to be used to plot a straight line for extrapolation. If the past data does not follow a definite progression, then a best fit equation can be derived by method of least squares and this may be extended to provide projection.
2. **Empirical Methods:** These methods are used for short-term projections, particularly when demographic changes show cyclic trends. Such methods should be used for projecting up to 10 years in urban situations and 5 years where population change is more volatile.
3. **Employment Method:** This method assumes that there is a very strong inter-relationship between population and employment and facilities such as residential population can be estimated with some population to paid employment relationship. This method of reliability is low and should not be used for long-range population forecasting.
4. **Ratio Methods:** These methods rest on the assumption that changes in any geographical area is a function of those experienced in wider area. Thus population of a city is held to be a function of its region and region held to be a result of the function of that nation. To make estimate the population of the second largest area (say, for example) is plotted against that of the parent area (the nation). A curve is obtained by fitting a line to the two points. Thereafter it is extrapolated by best square regression method, to estimate the proposed value for the parent area for the target year.
5. **The components of each projection are three series of population for the areas to be used in the analysis and a forecast rate of demand for the target area. These methods are useful for longer periods and smaller areas, but are useful for such and other forecasting in certain range (up to 10 years) for areas not less than a whole metropolitan area or a city region.**

MOEFY Guidelines, 2014, Ministry of Urban Development

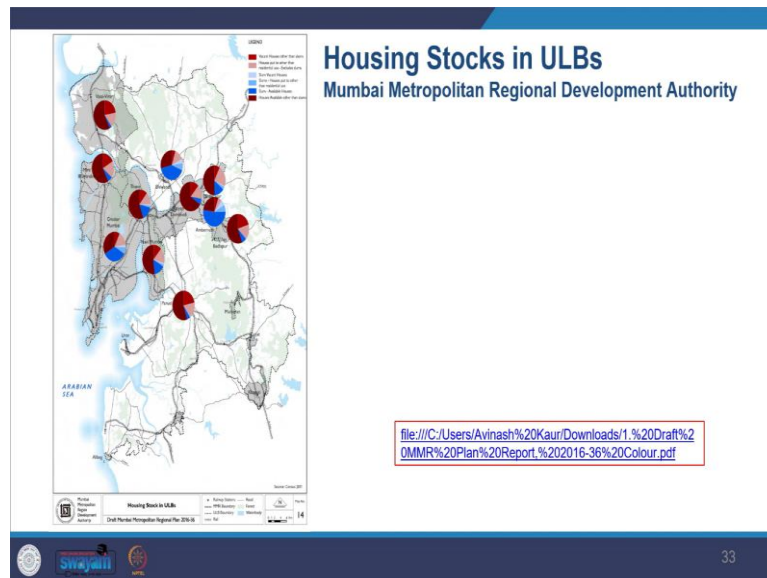
<https://mohua.gov.in/upload/upicoffices/files/URDPFI%20Guidelines%20Vol%201.pdf>
 Methods of Environmental and Social Impact Assessment, Socio-economic impacts 2. Social impacts, John Glasston, 2018, Pg 756

So, you also need to undertake population projection and forecast what will happen in years, and decades to come. So, usually, those are done by national and local authorities input and then you could also see the land use planning work and other estimates which are done for different levels of schools and infrastructure. So, you can look at that and generally, usually, for the small area projections are not usually undertaken and it is not said to be reliable as well. So, you can also look at the URDPFI guidelines which also provide certain population projection methods.

So, all these methods are available for population projection. So, further, like we said socio-impact also includes impact on the housing stock. So, all the population data will imply how much housing is available in that area and how much pressure it will create you also need to understand what kind of tenure is there, are the owners occupied or are they privately rented, rented with a job or business rented from a government body.

So, all that understanding has to be developed for a bigger project whether there can be larger implications or, a larger impact on the project, and when you are looking at these housing requirements, you are required to look at all the requirements at various stages. So, not only just one cumulative requirement but you will be required to look at how much housing would be required or how much pressure would be created at the construction stage. And what kind of pressure would be created during the operational stage and what will happen when the project is decommissioned.

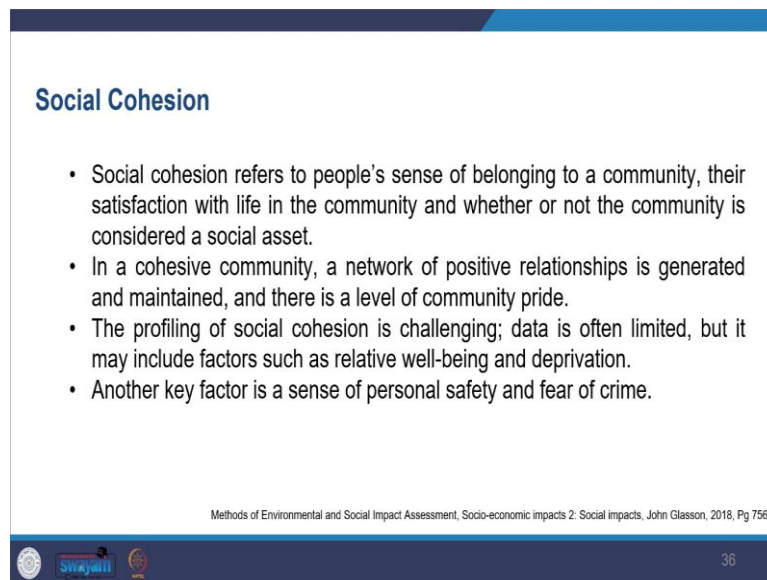
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So, here in this, you can again revisit how this Mumbai Metropolitan Regional Development Authority is indicating the housing stock in various urban local bodies. So, if you are doing AIA in the nearby area, you can also use these sources for your reference. And you can adopt these methods as well. And then similarly, you have to look at the local services.

So, all these immigrants come from different economic backgrounds for different purposes from construction to operation, they would have certain requirements for local services and they would come with families or come individually but then they would have requirements for education, health, recreational, the safety issue, fire and social kind of social services all that would be required. So, you might have to look into that as well.

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Social Cohesion

- Social cohesion refers to people's sense of belonging to a community, their satisfaction with life in the community and whether or not the community is considered a social asset.
- In a cohesive community, a network of positive relationships is generated and maintained, and there is a level of community pride.
- The profiling of social cohesion is challenging; data is often limited, but it may include factors such as relative well-being and deprivation.
- Another key factor is a sense of personal safety and fear of crime.

Methods of Environmental and Social Impact Assessment, Socio-economic impacts 2: Social impacts, John Glasson, 2018, Pg 756

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And then there might be concerns about social cohesion also. So, if we understand the term social cohesion, it refers to the sense of belongingness to the community and their satisfaction with life in the community and whether or not the community is considered a social asset or not. So, there have been also studies where development projects and rapid urbanization, a lot of construction and real estate projects, and a lot of immigrant people coming, people have started losing a sense of belongingness and have people started feeling a lot of stress in many of the areas.

So, you also need to understand, but it also depends on country-to-country context-to-context how much important significance they give to social cohesion. So, in a cohesive community, if we try and understand the cohesive community, our network of positive relationships is generated and maintained. So, they trust each other, they are positive and happy about it and they have a sense of belongingness and have a sense of pride in the community.

So, it is important that you profile the social cohesion but it is also said that at the same time, it is very challenging. Often data is limited and often you have to rely on a lot of surveys which can again be challenged for its authenticity. So, its main and such kind of study may include wellbeing and deprivation and sense of personal safety and fear of crime and so on. So, you use it for estimating such kinds of things as social cohesion, or the OECD guide also provides guidelines for measuring subjective well-being and national studies such as the UK Index of national well-being.

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OECD Guidelines on Measuring Subjective Well-being (OECD 2013)

OECD
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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OECD Home > Database > Indicators > Subjective Well-being > OECD Guidelines on Measuring Subjective Well-being

OECD Guidelines on Measuring Subjective Well-being

OECD aims to measure and monitor quality of life in a comprehensive manner across the spectrum of countries. There is no national administration that regularly collects information on an individual's happiness levels. The challenge is to design and conduct a survey that is able to capture the richness of quality of life. The OECD has produced guidelines which provide advice on the collection and use of measures of subjective well-being. These Guidelines have been produced under the OECD Policy on Quality of Life, Governance and Well-being (2017).

Published in March 2013

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EXPAND

PUBLISHED MATERIALS

OECD releases the comprehensive guidelines on measuring subjective well-being every decade.

OECD Guidelines on Measuring Subjective Well-being (PDF)

How to Measure Happiness and Well-being (Infographic)

OECD work on measuring well-being and progress

RELATED WORK

Well-being and Policy Report commissioned by the European Council

Subjective Well-being: Measuring Happiness, Culture, and the Dimensions of Economic Well-being for the National Research Council

Link:
<https://www.oecd.org/wise/oecd-guidelines-on-measuring-subjective-well-being-9789264191655-en.htm>

OECD Better Life Initiative

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So, you can also look at these studies and you can see how this social cohesion can be measured and can be adopted in your case.

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The UK Questionnaire-based Studies:

- How satisfied are you with your life nowadays;
- To what extent do you feel the things you do in your life are worthwhile;
- How happy did you feel yesterday; and
- How anxious did you feel yesterday?

Answer scale of 0 to 10, where 0 is "not at all" and 10 is "completely". The data can be disaggregated down to local authority areas, and year-on-year trends can be identified.

Methods of Environmental and Social Impact Assessment, Socio-economic impacts 2: Social impacts, John Glasson, 2018, Pg 780

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So, when we look at the study, UK-based study, it looks into four key questions how satisfied are you with your life nowadays? To what extent do you feel the things you do in your life are worthwhile and how happy did you feel yesterday? And how anxious did you feel yesterday, so you see how it is very subjective and very qualitative in terms and then the record of what they make is from zero to 10, where zero is not at all and 10 is the completely happy satisfied. So, that kind of thing. So, I have given you a link to these guidelines. You can see here the OECD measuring subjective well-being you can see here.

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UK Index of National Well-being (ONS 2015).

census2021 Data and analysis from Census 2021.

Home > People, population and community > Well-being > Measuring national well-being: Life in the UK

Measuring national well-being: Life in the UK: 2015

A snapshot of life in the UK today across the 10 domains of national well-being

This is not the latest release.

[View latest release](#)

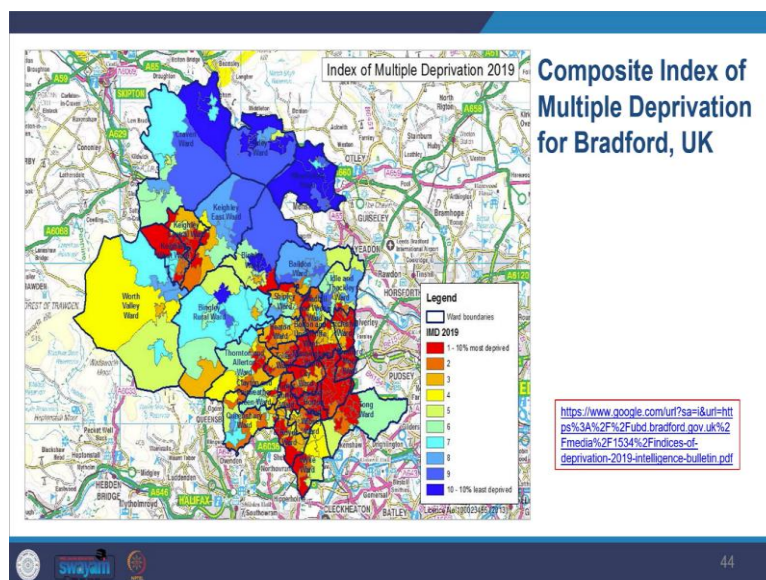
Contact: Joanne Evans | Release date: 25 March 2015

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuringnationalwellbeing/2015-03-25>

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As well as you have also linked to the index of national well-being by the UK.

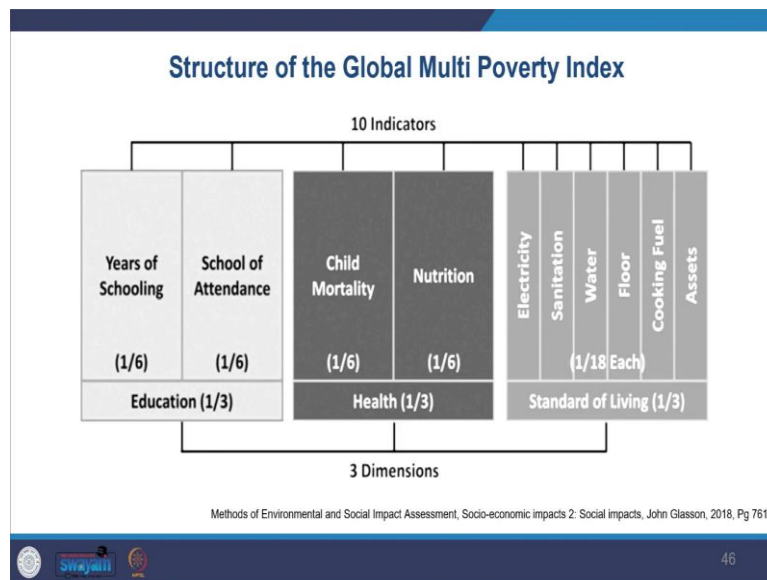
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Then you can also look at deprivation indexes, where you have it help you with social profiling you can see another good example from England and the Index of Multiple Deprivation IMDs so we had spoken about it before as well. You can see the example here of the composite index of Multiple Deprivation IMD at lower layers super output area LSOA of Bradford in the UK.

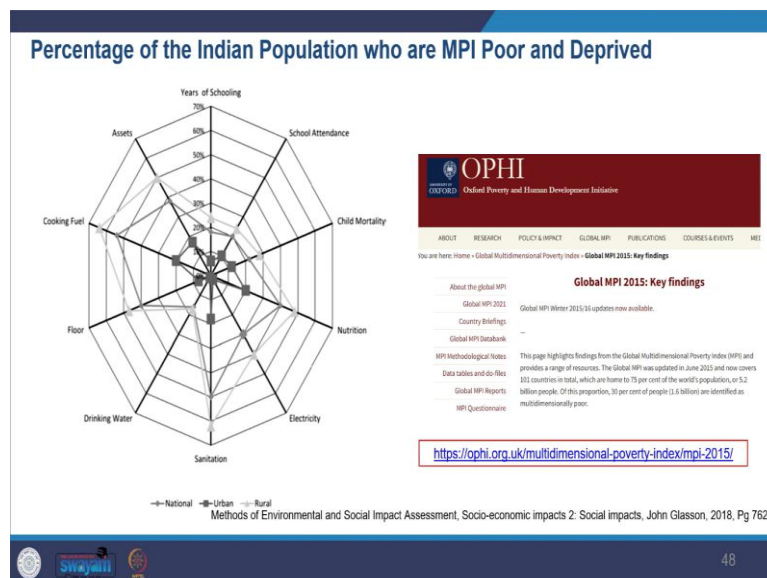
So, you can see the composite index of Multiple Deprivation here. So, you can see the legend when we leave the legend, we see that number one is the most deprived 10 is the least deprived the most deprived is the darker color, and to least deprived is the lighter shade. So, you can see here and see how the deprived areas are in this particular map you can see that.

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So, you also have an international-level example of the deprivation index which is provided by the global multidisciplinary poverty index MPI. So, the global MPI has three dimensions and 10 indicators. So, you can see the 10 indicators here in the diagram of the global multi-poverty index. And so that you can see the year of schooling, school of attendance, child mortality, nutrition, electricity, sanitation, water, floor, cooking fuel assets, and so on, like health, education health, and standard of living. So, within these, you can see.

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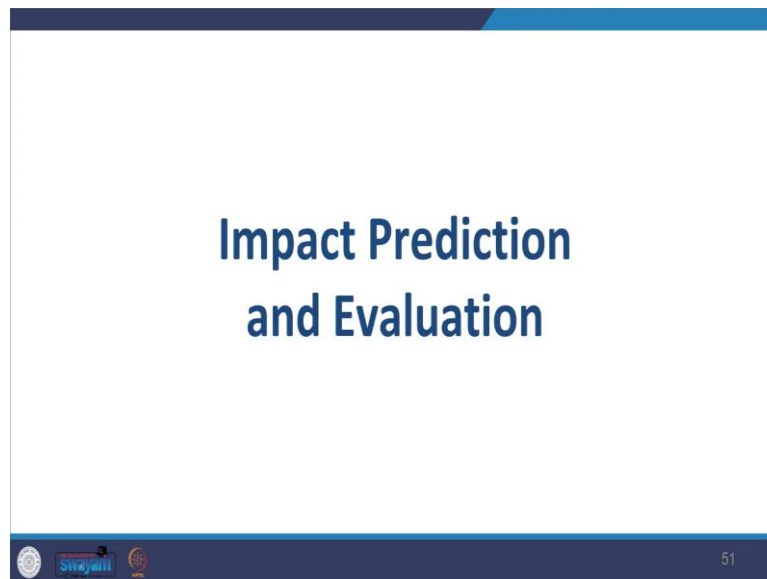


Further, you see in this particular that every dimension is equally weighted. And it provides an example of how you can apply it in India. So, you can see that OPHI here another example from the Indian context, you can see the percentage of the Indian population who are where we are looking at the multi-dimensional poverty index MPI. So, here you see different aspects of sanitation, drinking water, floor, cooking fuel, assets, year of schooling, school attendance, child mortality, nutrition, and electricity.

So, all that you can see here, so, you can look at this source OPHI for this. So, you can also look at crime and freedom, how people feel and then that is a major concern in many countries. And though it has been very, very less covered in the case of impact assessments, it is there, and this is a major concern, but it is mostly not covered, you can see examples like when you have young male migrants coming, then it creates a

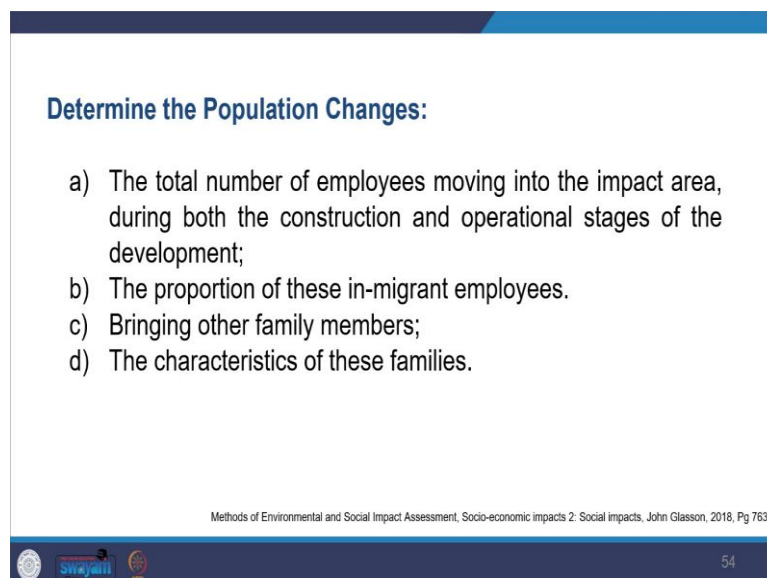
lot of issue about crime and behavioral issues in the host locality. And you can have lots of sources for these kinds of data, you can look at crime data, fear of crime data, all these you can get from the police authority and this can act as a valuable source. So, that is about the scoping.

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Now, looking at the impact prediction and evaluation. So, how do we look at what kind of population change is happening and whether it is significant or not? So, you saw that population change can happen. So, population change is caused by the major projects that come up and it can have both direct and indirect change in the population the direct increase is the input in migration which is happening, because of the project the people who are directly getting hired in all the stages of the project and the family members, which come out along with them.

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Therefore, you have an easy way to calculate is to come up with the estimation for this is the total number of employees moving into the impact area, the proportion of these immigrants employing other family members, and then the characteristics of these families. So, that can be derived population change can be calculated from the project design itself. And then there can be an indirect way of calculating also.

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The significance of population changes

- (a) The existing population size and structure in the impact area;
- (b) The geographical distribution of the immigrant population;
- (c) The timing of the population changes.

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So, first, look at the significance of population change. So, how do you look for whether this kind of population change is significant or not? So, the significance of project-related population change will be what are the factors that guide that? So, looking at these three main factors, the existing population size and structure in the impact area. So, what is the existing population size whether it is small or it is big enough to observe those populations?

So, it will depend on that and then it will also depend on the geographical distribution of the immigrant population. So, how are they distributed geographically in that particular location? And then, it will also depend on the timing of the population change. So how, and when does that happen? And how much is one variable or what susceptible of how susceptible this population is about the changes? So, it would vary a lot with the age, gender, social characteristics, and how it is.

So, they are all one needs to look at. So, the very first step in assessing the significance is to express the estimated project-related population increase as a percentage of the baseline population in the impact areas. How much as per the current population, how much change do you expect in terms of percentage, that is the very simplest way of explaining the significance of the population change.

Then you also need to provide the predicted data age structure in migrants also would be compared with the baseline age structure. So how big is that percentage, it will all depend. Another step would be to look at the geographical distribution of the immigrants, how population change would impact the local people, and how it is going to influence how it is going to display certain people.

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“Gravity Model” Approach:

The number of employees moving into a particular settlement would be a positive function of that settlement's size and a negative function of its distance from the project site.

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And then there is another very simple way of doing it, there is a gravity model which is an approach that estimates the number of employees moving into a particular settlement that would be a positive function of that settlement size and a negative function of its distance from the project site. So, you also adopt this gravity model.

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Gravity Model - Mathematical Formula

$$F = G \frac{m_1 m_2}{r^2}$$

Where,

- G is a constant equal to 6.67×10^{-11} N-m²/kg²
- m₁ is the mass 1
- m₂ is the mass 2
- r is the radius or distance between the two bodies

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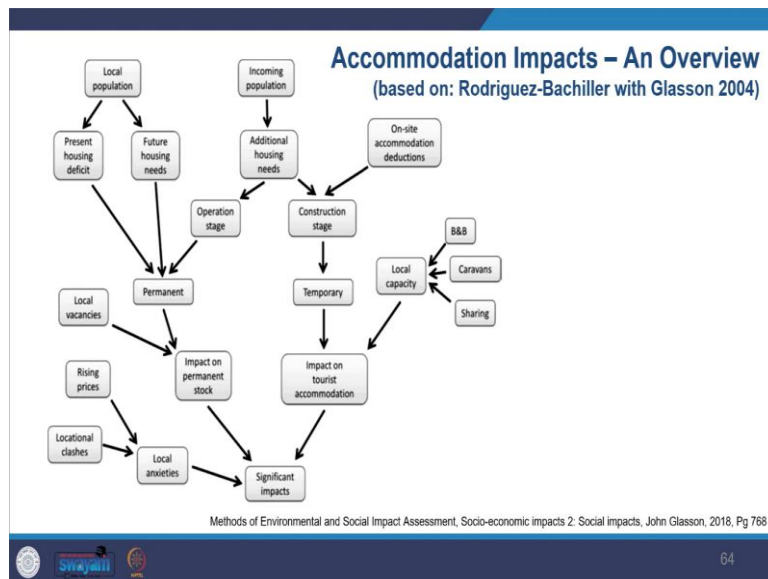
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So, looking at the gravity model is the mathematical formula based on regression analysis and probability theory that takes into consideration relevant push what will happen, pull, or economic factors into consideration when suggesting how the distribution would happen. So, you can see the formula here, gravitational model. For example, a gravity model, the goal of the gravity model is to let the readers know about like what will be the number of influencing forces.

So, what will be the distance, and cost of living affecting migrations or movement of a large number of entities of the same type and like people, what will happen to them and what kind between people also between groups of people how things will move, so it is going to look at the influencing forces, it is going to look at the number of entities which it is going to affect and then it is going to give you a number and then it

will also tell you what is the probable distribution of all these things going to happen. So, that is about the gravity model.

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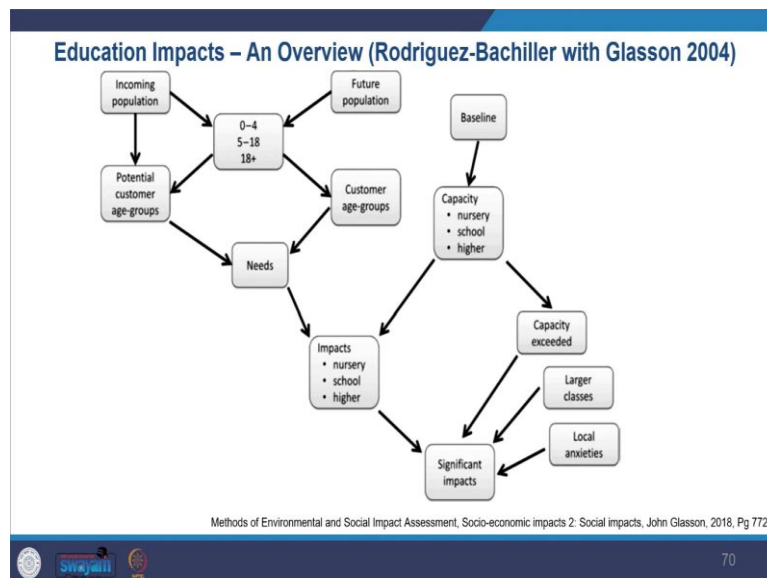


So, moving on, we can also look at the accommodation requirements and how that has to be taken care of while taking the social impact assessment. So that has to be seen in the impact prediction. So, the total amount of accommodation required the determined by the size of the immigrant workforce how that has to be provided, and what kind of impact it is going to have on the overall housing stock.

So, you can see here in the network diagram, you can see the local population and how what is the present housing deficit, future housing needs, and then how there will be incoming population which will add additional housing needs and there will be an operation stage and then there will be a permanent population and what kind of local vacancies will be created an impact on the permanent stock and then how you look at the significant impact. So, that is how you can look at different aspects, different stages, and then how it can be like how much changes are happening.

So, you need to look at the significance of accommodation requirements. So, while looking at the significance of this, you look at the net change due to the project. So how much change is happening and again, you look into the percentage you can tell from the baseline what kind of additional requirements will happen. So, that is a very basic way of calculating, and then you will see what all will be the different providers and then they can be increased in the from the tourism sector as well and then how from where all those stocks will be provided.

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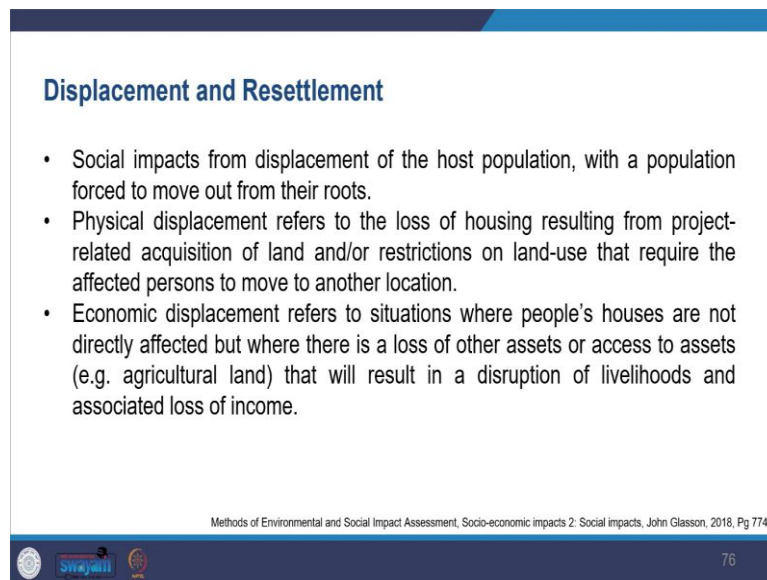


Then look at the demand for local services. So, as I had already explained in my rent employees and their families will have pressure on the services which are there. So. here you can see another network diagram that shows the education impacts. So, you see that incoming population, potential customer age group, and then what will be their needs and what new the future population, how they will have impact nursery school higher and then what's the baseline here based on that what is the current scenario and then all that to add it together and then how significant that change would be.

So, you would be showing it in this way trying to understand what kind of different factors will play and whether that change is going to be whether that pressure is going to be significant or not, in terms of percentage. So, you will be looking at the significance of demand and services.

So, the important indicator of the significance of local services is again, the capacity threshold. So, what is the capacity, and how much it will be able to take more pressure when the demand is increased, that all understanding has to be developed. And then there can be other social impact what we talked about cohesion and other things. So, that also needs to be taken care of in this.

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Displacement and Resettlement

- Social impacts from displacement of the host population, with a population forced to move out from their roots.
- Physical displacement refers to the loss of housing resulting from project-related acquisition of land and/or restrictions on land-use that require the affected persons to move to another location.
- Economic displacement refers to situations where people's houses are not directly affected but where there is a loss of other assets or access to assets (e.g. agricultural land) that will result in a disruption of livelihoods and associated loss of income.

Methods of Environmental and Social Impact Assessment, Socio-economic impacts 2, Social impacts, John Glasson, 2016, Pg 774

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The other key aspects are the displacement and resettlement. So, we will be looking in the next lecture. So, there are some which we have partially covered when we dealt with the concept. So, there will be the physical displacement, and economic displacement, conceptually which we have covered before. But just to look at where you physically rehabilitate people and economic displacement when their sources of employment are impacted by the kind of project you are doing. So, that was about the impact significance.

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Mitigation and Enhancement

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Now, we are looking at the mitigation and enhancement of how you can undertake that. So, when you are looking at mitigation and enhancement, you adopt several approaches, to how you can mitigate the impact on the population. So, the most basic would be to encourage maximum recruitment of labor. So, you employ absorb them as much as possible within the daily commuting distance of the project site and so on. But in many cases, it has been seen that it is not feasible to employ a lot of local people because of the training and capacity.

So, also training and capacity and other infrastructure has to be provided there. And then also a certain quality of life can all be improved by improving the local services level and then looking at the community

benefit, they can be also provision for community benefit funding by the developer and they can also take care of it and then some of the countries do that.

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Scottish Government
Riaghaidh na h-Alba
gouv.scot

Search site

Home > Policies > Renewable and low carbon energy >

Renewable Energy Schemes in Scotland

Directorate Energy and Climate Change Directorate
Part of Energy, Assessment and Climate Change

Local and small-scale renewables

Overview: We have a number of initiatives designed to make it easier for businesses and communities to invest in local and small-scale renewables:

- Community and Renewable Energy Scheme (CARES)
- Resource Efficient Scotland
- Home Energy Scotland Loan

<https://www.gov.scot/policies/renewable-and-low-carbon-energy/local-and-small-scale-renewables/#cares>

Community and Renewable Energy Scheme (CARES)

We established our Community and Renewable Energy Scheme (CARES) to encourage local and community ownership of renewable energy projects across Scotland and to help maximise the benefits of renewable energy systems, whether commercial or community owned.

energy saving TRUST

Community and locally owned renewable energy in Scotland at June 2019

A report by the Energy Saving Trust for the Scottish Government

January 2020

Prepared by Andreas Grillanda and Prabha Khantal
Energy Saving Trust

<https://energysavingtrust.org.uk/sites/default/files/Community%20and%20local%20owned%20renewable%20energy%20in%20Scotland%20and%202019%20Report.pdf>

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You can see the example from Scotland's renewable energy schemes where they have them. So, looking at the Community Benefit Agreements. So, if we see that community benefits agreements CBAs are also becoming very popular in terms of the elements that are covered in the assessment process and the development process in the major projects, and especially, it has been done a lot in the energy projects.

So, in this kind of agreement, CBA provides a range of benefits offered to compensate for specific project local impact. So, it recognizes it involves the community in perceiving what is the national interest and then it also covers the objectives and then it also indexes these special local needs, and then it creates a plan accordingly.

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Community Benefits Agreements (CBAs)

The types of benefits include:

- Financial incentives** – annual payments, lump sums, or both;
- Social benefit measures in kind** – including additional transport improvements, affordable housing, village halls, sports facilities, improved telecoms and training schemes.

Methods of Environmental and Social Impact Assessment, Socio-economic impacts 2: Social impacts, John Glasson, 2016, Pg 777

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So, the type of benefits that are given are financial incentives like annual payments, lump sum, or both. And then also social benefits in kind like additional transport improvement, affordable housing, village-like

community centers, and other sports facilities, improved telecom and training facilities, and all these kinds of benefits are given to the community.

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IAIA (2015) notes six ways in which a company can contribute local benefits to a host community, including:

1. Social investment funding;
2. Local content (especially employment, as discussed in the previous chapter);
3. Shared infrastructure;
4. Capacity building;
5. Supporting community initiatives;
6. And payment of royalties to local land owners or local authorities.

Methods of Environmental and Social Impact Assessment, Socio-economic impacts 2. Social impacts, John Glasson, 2018, Pg 777

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So, you can also see that IAIA also provides six ways in which company the projects can contribute local benefits to the host community. You can have social investment funding they can create, they can also create local content, especially employment and then you can also have shared infrastructure then you can have capacity building training support, supporting community initiatives, funding for that community initiative, and payments of like other royalties to the local land owners or local authorities making them as also shareholders in the project.

So, the social investment may also go into the specially managed Social Investment Fund, for community infrastructures, you can look at the schools and hospitals, and then also might have microfinance schemes and so on. So, that was about the CBA.

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The Queensland Government's (2012) Guidelines to Preparing a Social Impact Management Plans (SIMP)

“establish the roles and responsibilities of proponents, government, stakeholders, and communities ... in mitigating and managing social impacts and opportunities ... of major resource development projects.”

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Now looking at the social impact management plans, this is provided by IAIA. So, it highlights that it is very important to have social impact management plans and it is the need for social impact management plans is growing and large bodies and governments have been recognizing it.


So, you will see examples from Queensland which created the Environmental Impact Statement process and a social impact management plan is an integral part of the EIA process itself in that particular country. So, you can find the guidelines for preparing this social impact management plan. So, this guideline is provided to you and then you can also look at this guideline.

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Monitoring Example
Example of key 'vehicles/procedures' for Monitoring Information Collection

Vehicle' Procedure	Details/timing	Issues for consideration
Induction procedures; code of conduct sign-off	Employment requirement: captive audience; very useful for collecting much relevant data on: <ul style="list-style-type: none"> • worker name; • age; gender/ethnicity etc; • accompanying family members (if any); • address; accommodation type; • previous address (if not local); • occupation category/trade; • former economically active status; • training: apprenticeship etc; • likely duration of job; • rate of pay; • characteristics of travel to site (e.g. mode; shared; etc.). 	<ul style="list-style-type: none"> • Should be able to capture information for all workers. • May be premature to capture some information at induction stage (e.g.: new address - if moving into area [may have temporary address]; mode of travel [ditto]).

Methods of Environmental and Social Impact Assessment, Socio-economic impacts 2: Social impacts, John Glasson, 2018, Pg 784


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Further moving on to the monitoring. So, we can see the monitoring examples like how we can monitor the social impact assessment monitoring is very important because we project a lot of things like what kind of impact positive impact is going to happen, so, whether it is happening or not. So, looking at that, you can see how they have in this table, you can look at what kind of procedure they have adopted, the how or when the monitoring has to be taken care of, and what kind of issues have to be checked for.

So, like, we are saying the employment will be generated and the local people will be involved. So, induction procedure, code of conduct of sign off, so you need to check that and you need to check it when the employment requirements are coming, captive or like, you need to look at the worker's name, gender, ethnicity, and their addresses and then you can check whether that employment local employment has been created for the local people or not. So, those kinds of things can be taken care of.

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Monitoring Example
Example of key 'vehicles/procedures' for Monitoring Information Collection

Vehicle' Procedure	Details/timing	Issues for consideration
Specific post-induction workforce surveys	Full or sample surveys of workforce; useful for capturing information on: <ul style="list-style-type: none"> • Worker expenditure on food, drink, fuel, entertainment etc.; • Use of local services (e.G. Sports facilities; libraries); • Use of local social services (e.G. Medical facilities; schools attended by any accompanying children); • Updating of some of induction data (e.G. On accommodation). 	<ul style="list-style-type: none"> • Need to distinguish between local and nonlocal workforce. • Make completion of post-induction survey a requirement at induction; questionnaire could be handed out to workers then, to be returned after, say, three months (with reminder, and incentives). • Consider e-version response. • To be organized on a regular reporting basis.

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Then specific post-induction workforce surveys can be done and they can be regularly reported by different agencies also.

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Monitoring Example
Example of key 'vehicles/procedures' for Monitoring Information Collection

Vehicle' Procedure	Details/timing	Issues for consideration
Others (e.g. regular reporting by relevant agencies)	Could, for example, include: <ul style="list-style-type: none"> • Developer weekly returns on workforce on site; • Developer monthly returns on contracts awarded; • Main contractor monthly data on sub-contracts awarded; • Local authority traffic flows monitoring on key access routes to site; • Police data on incidents/crimes; • Survey of community perceptions of local impacts (annual?). 	<ul style="list-style-type: none"> • To be organized on a regular reporting basis.

Methods of Environmental and Social Impact Assessment, Socio-economic impacts 2: Social impacts, John Glasson, 2018, Pg 785

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So, like this, you can also monitor what kind of commitment is in terms of the level of services in terms of employment terms of housing, how they are proposing, and how those things are monitored. So, that was about the social impact assessment.

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Summary

- 1 Scoping and Baseline Studies**
 - Scoping social issues: As for economic impacts
 - Population: Approach, Demographic impact, Housing stock
 - Local services and Social cohesion
- 2 Impact Prediction and Evaluation**
 - Population changes and its significance, Accommodation requirements and its significance, Demand for local services and its significance, Other social impacts – including cohesion, Displacement and resettlement.
- 3 Mitigation and Enhancement**
 - An overview of measures, Community Benefits Agreements (CBAs), Social Impact Management Plans (SIMPs).

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So, summarizing what we covered today. So, we looked at the scoping and baseline studies stage, we looked at what all you need to take care of what the possible impacts happen, and how you collect data for that.

And then we looked at impact prediction and evaluation, how you really evaluate the significance of any kind of change which you see, and then we looked at mitigation and enhancement methods and then also looked in that we looked at the Community Benefit Agreements and social impact management plans and then also looked at the example of monitoring.

(Refer Slide Time: 48:33)

References


- 1 Therivel, R., & Wood, G. (2018). Methods of Environmental and Social Impact Assessment.**
<https://lccn.loc.gov/2017010184>
- 2 Environmental Impact Assessment Guidance Manual for Highways, 2010**
http://environmentclearance.nic.in/writereaddata/form-1a/homelinks/highways-10_may.pdf
- 3 EIA Training Resource Manual, UNEP, 2002**
https://wedocs.unep.org/bitstream/handle/20.500.11822/26503/EIA_Training_Resource_Manual.pdf?sequence=1&isAllowed=y

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So, that was all that we covered today and these were the references for this particular session.

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Suggested Watch and Read



https://www.youtube.com/watch?v=rdN_yC3GRw&ab_channel=OutreachNetworkforGenderDriveResearch

https://www.youtube.com/watch?v=3AcW_apesm0&ab_channel=WorldBusinessCouncilforSustainableDevelopment



https://www.youtube.com/watch?v=kC3VTg-8f8s&ab_channel=UnitedNationsESCAP

- Marlin Gold mine Development in Guatemala - <https://www.bu.edu/eci/files/2019/11/marlinemine.pdf>
- Ok Tedi Copper and Gold mine in Papua New Guinea - http://pdf.wri.org/wr2002_case_oktedi_papua.pdf

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And you can also see certain suggested watch and read in this.




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 Please feel free to ask Questions. 

Let us know about any Concerns you have

Do share your Opinions, Experiences and Suggestions.

Looking forward to Interacting and Co-learning with you while exploring EIA



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So, winding up, please feel free to ask questions related to the subject. Let us know about any concerns you have. Do share your opinions, experiences, and suggestions. Looking forward to interacting and co-learning with you while exploring AIA. Thank you.