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# Sustainable Development of India: Challenges & Remedies

## Prologue

India is a developing country. Extensive poverty is found in the country. In order to eradicate the poverty from the country, the industrial development is done with a very high speed in the country. We allowed the unscientific river-bed mining, we constructed big dams on the hills, we constructed the wide roads, we also constructed the sky-scrappers, and we cut down the so many trees in the name of establishing industries and development. Along with it, we forgot that for the survival of the human being the natural resources and clean environment is also required. The economic development and clean environment are two important aspects for a developing country like India. There is a call of time that a trade off between these two should be made. In other words, economical development should be done protecting the environment or sustainable development should be done.

Today, sustainable development has become a global concern. Sustainable development is the development to meet the needs of present generation without compromising the needs of the future generation. The manner in which we are using the natural resource is neither good for the present generation nor for the future generation.

If today we are not aware of this problem, we and our coming generation has to suffer a lot. One recent example of it is before us that is cloud bursting of Uttarakhand in June, 2013. This calamity swept away thousands of homes, schools, hotels and other buildings built too close to collapsing river banks, while landslides sent mud and boulders hurtling down steep mountainsides, burying buildings and breaking up roads. Around 200 bridges have been washed away, nearly 5,000 roads damaged, connectivity to 4,300 villages snapped -- electricity and water supplies disrupted, telephone lines collapsed.

Now, in such a situation, there is a giant question before us – can we protect this earth and provide a good environment for the next generation. If yes, what we have to do for it. Keeping this in mind an endeavor is made in this direction to get the solution for the problem by calling the papers from the experts, academedicians and researchers from different parts of the country and bind them in the shape of a book. We hope that it will be useful and enable us to adopt a right and effective approach for the preservation of Himalayas, and redevelopment of devastated areas of the Uttarakhand. Following su-themes are included in the book:

1. Problem of Sustainable Development and Industrial Development in India
2. Disaster Management Issues in Uttarakhand
3. Problem of Migration from Hills to Plains in Uttarakhand
4. Problem of Sustainable Development of Uttarakhand after 2013 Disaster
5. Eco-Tourism
6. Environmental Degradation, Education & Protection
7. And other relating Issues.

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# Renewable Energy and Green Buildings an Exploration

1

Sohina Singh\*, Meenakshi Mital\*\*, Puja Gupta\*\*\*  
Matt Syal\*\*\*\*

## Abstract

*The present study aims at assessing the Energy and Atmosphere category under LEED NC. It focuses on the strategies and technologies used to attain the credits under Energy and Atmosphere category and hindrances and catalysts associated with renewable energy credits (on-site/off-site).*

*The study was undertaken in three buildings, two certified under USGBC LEED NC and the third registered under IGBC LEED NC. Case studies were developed for the same. Project managers, chief engineers and consultants associated with the three buildings were interviewed to gather data. In addition, six LEED NC consultants were interviewed which had provided consultancy to the buildings which have implemented or are implementing renewable energy systems to take their perspective on the hindrances and catalysts associated with Renewable Energy credits (on-site/off-site).*

*On analyzing the strategies and technologies being used in the three buildings, it was seen that some of the technologies have been adopted by all three buildings indicating these may have been easier to comply with than others. Some of the technologies were not adopted by any of the buildings, indicating that they were comparatively difficult to be achieved.*

*The study also showed catalysts and hindrances behind Renewable energy credits (on-site/off-site). The hindrances which have emerged from the study can be worked upon so that more and more buildings can take up renewable energy credits (on-site/off-site) as compared to the present scenario.*

**Keywords:** *Green building, Renewable energy, on-site, off-site, sustainable development*

## 1. Introduction

Energy is a basic requirement for the existence and development of human life. There has been an excessive reliance on the use of fossil fuel resources like coal, oil and natural gas to meet the power requirement of the country which is not suitable in the long run due to limited availability of fossil fuel as well as the adverse impact that they have on the environment and ecology (MNRE Annual report, 2010). Building construction and operation have extensive direct and indirect impacts on the environment. Buildings use resources such as energy, water and raw materials, generate waste (occupant, construction and demolition) and emit potentially harmful atmospheric emissions.

Encouraging renewable energy systems in buildings has tremendous potential to contribute to the energy needs of the building by providing a clean source of energy without affecting the environment (Rana, 2009). Building rating systems are a popular tool to bring momentum in achieving energy efficiency and sustainability in buildings. Buildings are given ratings of platinum, gold, silver, or certified, based on green building attributes (UNEP, 2009). The Leadership in Energy and Environmental Design (LEED) Green Building Rating System provides a suite of standards for environmentally sustainable construction. There are seven

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categories under LEED NC and from all of those categories; the most important is the Energy and Atmosphere.

The Energy and Atmosphere credits under LEED NC comprise a large component of the total credits needed for the certification and it give good opportunity to organizations to achieve large number of points under this category. Hence it was considered important to investigate the technologies and strategies being used to implement the Energy and Atmosphere credits, especially renewable energy credits (on-site and off-site) and assess the catalysts and hindrances in implementing these credits. Not many buildings have gone for renewable energy credits in India. In addition even certified green buildings have not gone in for renewable energy criteria in a big way. The present study therefore investigates the hindrances and catalysts, towards implementing the energy and atmosphere credits with specific reference to renewable energy credits (on-site/off-site) under LEED NC.

### **1. Review of Literature**

Development of renewable energy sources, which are indigenous and distributed and have low marginal costs of generation, can increase energy security by diversifying supply, reducing import dependence, and mitigating fuel price volatility. The Government is promoting construction of Energy-efficient solar buildings based on the techniques of solar passive design with a view to provide comfortable living and working conditions, both in winter and in summer. These buildings can be integrated with renewable energy and energy conservation devices and systems, and can save over 30% to 40% of conventional energy that is used for lighting, cooling, or heating (Kumar and Tripathi, 2009).

However, if we look at the data, not many buildings have gone for Renewable energy systems. In addition even certified green buildings have not gone in for renewable energy criteria in a big way. The present study will therefore investigate the hindrances and catalysts, towards implementing the energy and atmosphere credits with specific reference to renewable energy credits (on-site/off-site) under LEED NC.

If we look at the Energy and Atmosphere credits under LEED NC, we can see that it comprises a large component of the total credits needed for the certification. Hence, it gives a good opportunity to organizations to achieve large number of points under this category. Also, Energy is a very important component in any building structure, as practically nothing works without energy consumption. Energy has a direct impact on the atmosphere as it is directly proportionate to the carbon emissions and buildings in India accounts for 30-40% of green house gas emissions and 25-45% of the total energy use (Roy and Gupta, 2008). Hence it was considered important to investigate the technologies and strategies being used to implement the Energy and Atmosphere credits, especially renewable energy credits (on-site and off-site).

Review of literature showed that very few studies of this nature and focus have been carried out. This study therefore would add to the body of knowledge regarding Energy and Atmosphere credits, especially renewable energy credits (on-site and off-site) under LEED NC and their implementation.

### **2. Objectives**

- To make a profile of the selected green buildings in terms of LEED NC
- To take a detailed account of the technologies and strategies used to implement the Energy and Atmosphere Credits under LEED NC in selected buildings
- To study the catalysts and hindrances related with Renewable Energy systems in the selected buildings

### **3. Methodology**

The study was carried out in three buildings; two were certified under USGBC LEED NC and the third one was registered under IGBC LEED NC. The certified buildings were Institute of Rural Research and Development (IRRAD) (Gurgaon) and ITC Green Centre (Gurgaon) and the registered building was Eco-commercial building (ECB) (Noida). These three buildings were developed as case studies. The project manager/chief engineer and

consultants associated with these three buildings were interviewed to gather data on strategies and technology used to implement EA credits and to understand hindrances and catalysts associated with renewable energy credits (on-site/off-site). Apart from this, six LEED NC consultants were taken as the sample to gain insight into the hindrances and catalysts in the implementation of renewable energy credits.

Questionnaire was used as the tool for data collection. Questionnaires were designed to sketch a profile of the buildings in terms of LEED NC and to know about the technologies and strategies used to implement the EA credits under LEED NC. Also, it was used to gather information regarding the catalysts and hindrances encountered while going for RE credits (on-site/off-site). A checklist was an intrinsic part of the questionnaire for making a profile of the buildings in terms of LEED NC credits. It covered various aspects related to the credits taken under LEED NC in general and Energy and Atmosphere in particular.

The data collected from the three buildings was developed in the form of case studies. The data was analyzed quantitatively and qualitatively keeping in mind the objectives of the study. The responses obtained from the consultants were coded and tabulated and inferences were made. Conclusions and inferences were drawn as per the objectives of the research.

#### 4. Analysis and Interpretation

The first building taken for the study was IRRAD. It holds USGBC LEED NC version 2.1 Platinum rating. IRRAD is the third building in Gurgaon to receive this esteemed distinction. IRRAD building has been operational since 2008.

The second building taken for the purpose of the study was ECB (Noida). It is the first emission neutral office building in Asia which draws 100 percent of its electricity from photovoltaic plant, needs 50 percent less power than comparable buildings in the region.

The third building was ITC Green Centre. It got the certification in the year 2006. It is one of the first buildings in India to get platinum rating under LEED NC category.

Different strategies and technologies used or not used by the three buildings are compiled and analyzed. The responses on catalysts and hindrances in the implementation of RE credits by project manager/chief engineer, building specific consultants and LEED NC consultants are also.

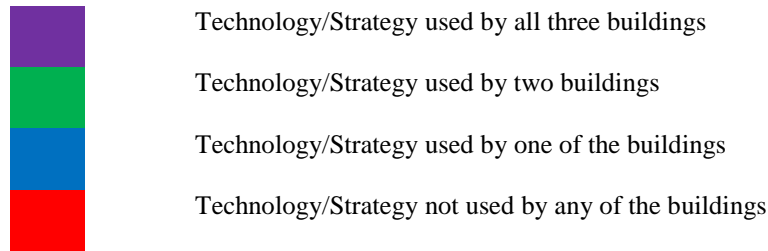
#### 5.1 Compilation of analysis of Strategies and Technologies used/not used by IRRAD, ECB and ITC Green Centre

The compilation of details of the three buildings has been presented in the following table:

**Table 1 (A): Compilation analysis of Strategies and Technologies used/not used by IRRAD, ECB and ITC Green Centre for credits under E&A category**

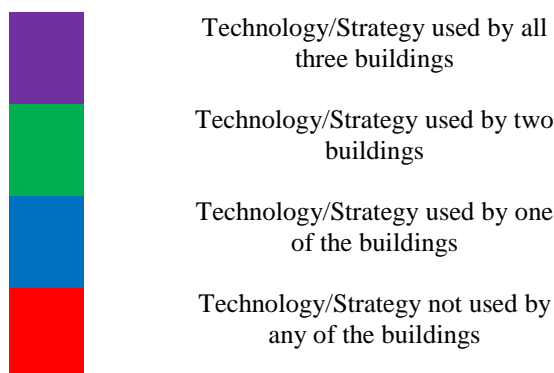
Energy and Atmosphere Credits under LEED NC	Strategies and Technologies used/not used
Optimise Energy Performance	<ul style="list-style-type: none"> <li>• Complies with ASHRAE standard 90.1-1999 appendix G</li> <li>• Complies with ASHRAE standard 90.1-2004 appendix G</li> <li>• Reduce design energy cost by 50% New/ 40% Existing</li> <li>• Reduce design energy cost by 38.5% New/0% Existing               <ul style="list-style-type: none"> <li>• Building envelop improved</li> </ul> </li> <li>• Suitable day lighting techniques incorporated               <ul style="list-style-type: none"> <li>• Lighting power density and usage reduced                   <ul style="list-style-type: none"> <li>• Double glazed windows</li> </ul> </li> </ul> </li> <li>• Insulation in walls and roofs provided               <ul style="list-style-type: none"> <li>• Makes use of Solar passive design</li> <li>• Solar heating technologies utilised</li> </ul> </li> <li>• Provision of renewable energy generation               <ul style="list-style-type: none"> <li>• HVAC system design improved</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Motor efficiency increased</li> <li>• Water consumption flow rate reduced</li> <li>• Energy recovery technologies incorporated</li> </ul>
Renewable Energy	<ul style="list-style-type: none"> <li>• Using 20% of renewable energy from solar photovoltaic cells</li> <li>• Using 7.5% of renewable energy from solar photovoltaic cells</li> <li>• Using Wind, geothermal, biomass, hydro, and bio-gas Strategies</li> </ul>



**Table 1 (B): Compilation analysis of Strategies and Technologies used/not used by IRRAD, ECB and ITC Green Centre for credits under E&A category**

Additional Commissioning	<ul style="list-style-type: none"> <li>• Appointed a commissioning authority</li> <li>• Provided owner with a manual</li> </ul> <p><b>List of all commissioned systems*</b></p> <ul style="list-style-type: none"> <li>✓ HVAC</li> <li>✓ Pumps</li> <li>✓ Pumping Control Systems</li> <li>✓ Air handling unit (AHU)</li> <li>✓ Cooling/Heating thermostat</li> <li>✓ Ventilation fans</li> <li>✓ Fresh air treatment unit</li> <li>✓ Variable air volume (VAV) units                     <ul style="list-style-type: none"> <li>✓ Water systems</li> <li>✓ Electrical systems</li> <li>✓ Fire alarm system</li> <li>✓ Plumbing/ fire fighting</li> </ul> </li> </ul> <p><i>*One building did not provide the information regarding the commissioned systems</i></p>
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Ozone Depletion	<ul style="list-style-type: none"> <li>• Zero use of CFC based refrigerants in HVAC&amp;R systems</li> </ul>
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**Table 1 (C): Compilation analysis of Strategies and Technologies used/not used by IRRAD, ECB and ITC Green Centre for credits under E&A category**

Measurement and Verification	<ul style="list-style-type: none"> <li>• The measurement and verification plan is based on Option D: Calibrated simulation as specified in the International Performance Measurement and Verification Protocol (IPMV)</li> <li>• Comply with the long term continuous measurement of performance as stated in Option B: Methods by Technology of the US DOE’s International Performance Measurement and Verification Protocol (IPMVP)             <ul style="list-style-type: none"> <li>• Metering system provided for the following end uses:                 <ul style="list-style-type: none"> <li>✓ Lighting systems and control</li> <li>✓ HVAC</li> <li>✓ Potable water supply</li> <li>✓ Air handling units</li> <li>✓ Heat recovery wheel</li> <li>✓ Constant and variable motor loads</li> <li>✓ Sewage treatment plants                     <ul style="list-style-type: none"> <li>✓ PV systems</li> </ul> </li> <li>✓ Variable frequency drive (VFD) operation                     <ul style="list-style-type: none"> <li>✓ Boiler efficiencies</li> </ul> </li> <li>✓ Indoor water risers and outdoor irrigation systems</li> </ul> </li> </ul> </li> </ul>
Green power	<ul style="list-style-type: none"> <li>• Provide at least 50% of the building’s electricity from renewable sources i.e. solar, wind, geothermal, biomass, or low-impact hydro sources</li> <li>• Engage in a two year contract to purchase power generated from renewable sources that meet the Centre for Resource Solutions (CRS) Green-e products certification requirements</li> </ul>



- Technology/Strategy used by all three buildings
- Technology/Strategy used by two buildings
- Technology/Strategy used by one of the buildings
- Technology/Strategy not used by any of the buildings

**5.2 Responses regarding implementation and documentation of EA Credits**

**Table 2: Responses regarding Implementation of EA Credits**

Credits	Rating the credits in terms of difficulty in implementation Total Responses (N=8)						Reasons
	6*	5*	4*	3*	2*	1*	
Optimize Energy Performance	3	0	0	5	0	0	Installation of innovative energy conservation measures and technologies requires high cost, payback period is long
On-site Renewable Energy	5	0	0	3	0	0	High installation cost and space constraints
Enhanced Commissioning	0	0	0	4	1	3	Hiring a third party is expensive
Enhanced Refrigerant Management	0	0	0	0	0	8	Easy credit to procure. Strategy technology needed is simple and not expensive
Measurement and Verification	0	0	1	3	1	3	Installation of metering equipments are expensive and hiring a third party is expensive

Green Power	8	0	0	0	0	0	Unsupportive state laws, high cost and requirements needed to fulfil the credit is difficult
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**6 – Very difficult, 5 - difficult, 4 – somewhat difficult, 3 – average, 2 – somewhat easy, 1 – easy**

Optimize Energy Performance credit was perceived as very difficult by three consultants as it involves installation of innovative energy conservation measures and technologies which is expensive and also the payback period is long and sometimes does not give the required output. On-site renewable energy credit was rated difficult by majority of the consultants as the cost pertaining to RE systems are high, buildings are not aware of the incentives and payback period is long. In addition to this, lack of space in buildings to install RE systems is a major problem. Enhanced commissioning credit was reported as average in terms of difficulty level in implementation. Some consultants felt that hiring a third party is expensive. Enhanced refrigerant management was reported as an easy credit to procure as a refrigerant system free of CFC has to be installed in the building, which is simple and not expensive. Installation of metering equipments and hiring a third party makes measurement and verification credit are somewhat difficult to implement. And lastly Green power credit was reported as the most difficult credit by all the consultants as the requirements needed to procure the credit are difficult to implement. Also the consultants felt that the state laws are not supportive and it is a cost intensive process.

**Table 3: Responses regarding documentation of EA Credits**

Credits	Rating the credits in terms of difficulty in documentation Total Responses (N=8)						Reasons
	6*	5*	4*	3*	2*	1*	
Optimize Energy Performance	0	0	0	6	1	1	Once implementation is complete, documentation does not consume time
On-site Renewable Energy	3	0	1	2	0	2	Technical details of renewable energy systems are needed and documentation is time consuming
Enhanced Commissioning	0	0	0	2	2	4	Procuring data from the third party is a task but documentation is not time consuming
Enhanced Refrigerant Management	0	0	0	1	0	7	Easy credit to document, the name of refrigerant used is needed
Measurement and Verification	2	0	0	3	3	0	Procuring data from third party is a problem
Green Power	8	0	0	0	0	0	Details about power being green power to satisfy interstate laws need to be procured, documentation is time consuming

**6 – Very difficult, 5 - difficult, 4 – somewhat difficult, 3 – average, 2 – somewhat easy, 1 – easy**

Optimize energy performance credit was reported average in terms of difficulty level in documentation as once the implementation is complete documentation does not consume time. On-site Renewable energy credit was reported as being very difficult to document by three consultants as the technical details of the renewable energy systems installed need to be procured which is a very time consuming process. Enhanced Commissioning credit was reported as easy by four consultants, as it was felt that procuring the documents once the implementation is complete is easy. Measurement and Verification credit was considered to be difficult by two consultants as the credit involves a third party and procuring the data from them is a problem faced by the consultants. All the respondents felt that the documentation

process involved for the credit Green Power is very difficult and time consuming as details about the power being green power is needed to be procured to satisfy interstate laws.

### 5.3 Catalysts and Hindrances in the process of implementation of renewable energy credits (on-site/off-site)

Apart from the rating, the consultants also gave their inputs on the catalysts and hindrances in the process of RE credits

**Table 4: Catalysts in the Process of Implementation of Renewable Energy Credits (on-site/off-site)**

Catalysts for Renewable energy credits (on-site/off-site)	Total (N=10)		Reasons
	Major	Minor	
Prestige and image	10	0	Prestige and image increases in the market, building's social corporate image is enhanced
Cost savings	1	9	RE systems reduce dependence on fossil fuels, save 30%-40% energy and shows pay back
Social responsibility	5	5	Competition motivates buildings to take RE credits, buildings want to show their responsibility towards environment
Better rental value	1	7	Greater control over the pricing strategy

All the respondents felt that implementation of renewable energy credits (on-site/offsite), result in improving the prestige and image of the organization. All the respondents felt that this acts as a major catalyst for the building owners to go for renewable energy credits. Cost savings was reported as a minor catalyst as RE systems reduces dependence on fossil fuels, save 30%-40% energy and shows pay back. Half of the respondents also reported that the social responsibility of the organisation is another big catalyst in taking the renewable energy credits. This is because the buildings account for major green house gas emissions thus, encouraging the use of renewable energy systems will help encounter the problem of carbon emissions. All the respondents felt that better rental value is a minor catalyst for the building owners to go for renewable energy credits. The rent value of the building increases by taking RE credits and also renewable energy is one of the most sustainable options present over fossil fuels, which in a way improves organisation value.

**Table 5: Hindrances in the Process of Implementation of Renewable Energy Credits (on-site/off-site)**

Hindrances for Renewable energy credits (on-site/off-site)	Total (N=10)		Reasons
	Major	Minor	
High installation cost	7	2	Payback period is long, not aware of incentives, cost of the RE systems is high
High maintenance cost	0	7	Finances are limited, cost acts as a hindrance
Lack of space	7	2	Unavailability of space for installing RE systems in buildings

Lack of technology	2	7	Unavailability of advanced technology in India, cost of available technology is high
Improper orientation to Sun	0	7	Inappropriate orientation leads to battery backup which is a conventional source
State Laws	2	0	Laws that allow green power transmission are not supportive
Hiring a third party	5	1	Cost intensive and time consuming
Documentation	1	7	Time consuming

Apart from the catalysts, there are also some hindrances in this process as per the respondents. Majority of the respondents felt that the high installation cost and lack of space are the major hindrances for renewable energy credits (on-site/off-site). Cost of the renewable energy system is very high. Also, unavailability of space is an issue, as the buildings lack space to install renewable energy systems to get the required energy. All the respondents felt that improper orientation to sun is a minor hindrance. Majority of the respondents felt that the documentation of the renewable energy credits (on-site/off-site) is a complex process, and pose a hindrance. Some consultants felt that lack of technological advancement in the field of renewable energy technology is also one of the minor hindrances faced by the buildings that limit the implementation of renewable energy credits (on-site/off-site). Two consultants felt that for green power credit, unsupportive state laws and hiring of third party to acquire this credit is expensive and act as constraints for the buildings to take up this credit.

## 5. Conclusion

India as a country suffers from significant energy poverty and pervasive electricity deficits. In recent years, India's energy consumption has been increasing at a relatively fast rate due to population growth and economic development, even though the base rate may be somewhat low. With an economy projected to grow at 8-9% per annum, rapid urbanisation and improving standards of living for millions of Indian households, the demand is likely to grow significantly (Akshay Urja, 2009).

Energy is an important input for economic development and the world's energy supply is largely based on fossil fuels. However with global warming and climate change emerging as major threats that have the potential to disrupt ecological balance governments around the world and industries across the nations are thinking seriously about generating and utilising alternative sources of energy (Renewable Global Status Report, 2010).

The energy use in buildings, especially in India is growing due to rapid urbanization. In India the real estate and construction sector, growing at a rate of about 10%, represent the best and most effective opportunities for reducing energy demand (Shorey, 2009). Encouraging renewable energy systems in buildings has tremendous potential to contribute to the energy needs of the building by providing a clean source of energy without affecting the environment (Rana, 2009). However, not many buildings have gone for Renewable energy systems in the country. In addition even certified green buildings have not gone in for renewable energy criteria in a big way. The study investigates the hindrances and catalysts, towards implementing the energy and atmosphere credits with specific reference to renewable energy credits (on-site/off-site) under LEED NC.

The study was carried out in three buildings, two were certified under USGBC LEED NC and the third one was registered under IGBC LEED NC. These three buildings were developed as case studies. The units of enquiry were project managers, chief engineers and building specific consultants who were involved in the process of LEED certification of the

selected case studies. In addition, six other consultants were included as the units of enquiry who had worked on other LEED NC projects which had taken the renewable energy credit (on-site/off-site). It was done to gather a wider perspective of the hindrances and catalysts faced in the process of getting the renewable energy credits (on-site/off-site).

The study focuses on the EA technologies and strategies being used by the LEED NC buildings. It gives an insight into the possible ways to implement the credits under EA category. It also showed that some of the strategies and technologies used by all three buildings, giving an impression of them being easier to implement while some were not being used by either of them showing that they were more difficult to implement. The study has thrown light on some of the major catalysts and hindrances faced while going for RE credits (on-site/off-site). The study also indicates some of the areas which need to be worked on, to overcome the hindrances associated with RE credits. Some of these are high installation cost, lack of space, state laws, lack of technology and high maintenance cost.

Thus, the hindrances which have been shown through the study can be worked upon so that more and more buildings can take up renewable energy credits (on-site/off-site) as compared to the present scenario.

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## Problem of Migration from Hills to Plains in Uttarakhand

2

Bhavendra Chandra

### Abstract

*Uttarakhand is facing a very big problem of migration from hill to plains not from now but from a long time before. According to so many surveys there is a rapid increase in migration. The population of district of Almora and Garhwal (Pauri) has shown negative growth by -1.73% & -1.51% respectively. While the state's population increased by over 19% in the decade preceding 2011. In contrast, population of the three plain districts of the state, Dehradun, Haridwar and U.S.Nagar increased by about 33%. It can't be just poverty and unemployment because some of other hill districts are as poor, says Yogesh Dhasmana, former journalist and director of Nehru Yuva Kendra. "Education could be one of the reasons- both Pauri and Almora have better facilities for higher education. Educated youth do not want to waste themselves in low paying jobs in the hills". There are lot of reasons for this migration problem. One of the main reasons is number of natural disasters and natural calamities. Eco sensitive zone or natural disaster plays a negative or vital role in development and growth of these hilly regions in continuous duration. There is no stability in growth or development of hilly regions of Uttarakhand. Another problem is, rural areas don't have basic facilities like- road, hospital, education, some of hilly areas don't have electricity & even some of hilly areas are far away from basic daily needs or facilities. Among this one of the biggest problems is job. Due to lack of industries in hilly areas and lack of work opportunities persons are migrating to plain areas in search of job. Even educated youth do not want to waste themselves in low paying jobs in the hills. Once they find job in plain areas they try to settle down in plain areas because here life is quite easy. In this paper I want to discuss the problem faced by the persons of hilly areas of Uttarakhand and also want to give some ideas how to stop or prevent from migration problem. Even this problem of migration from hill to plain will cause damage to our ecological system and even can disbalance the density of population and even one of the negative impact is that our customs, art, culture, literature, language basically resides or live in villages. Due to migration these heritages or legacy of Uttarakhand will extinct or die out, if we will not take a big step to stop it.*

### Introduction

Problem of migration from hill to plain is one of the biggest problems faced by Uttarakhand. There were lot of reasons behind migration problem. Some of them are small but they create big problems. One of the biggest problems is natural disasters at continuous level. Because of these natural disasters there is no stability in the growth and development of hilly regions of Uttarakhand. Even every year these natural disasters used to take lives of innocent people and even damage them financially. Even some time these disasters swept away houses, agricultural land and life with them. These disasters cause heavy damage to our state fund and to our environment. As we all know that one of the biggest reasons behind migration is that rural areas are far away from basic facilities that all want in their life. People usually migrate to plain areas because life is quite easy at plains and we have not to go far away to fulfil our basic needs. If we want to stop migration then we have to provide facilities in hilly areas and job opportunities in hilly areas. If we want to save our heritage and culture then we have to work hard to stop migration from hilly areas. Our culture basically resides in villages of Uttarakhand. This migration problem can cause damage to our art, literature and customs. Because if no one live in these hilly areas then who will take care of our culture, customs, language and our natural heritage.

## **Problems faced by Persons of Hilly Areas of Uttarakhand**

### **Natural Disaster or Natural Calamities**

Continuous natural disaster in regular duration is causing unstable growth to Uttarakhand. Due to these natural disasters some lost their families or persons, some lost their wealth, some lost their houses, some lost their agricultural land or even some lost their own life. These disasters even damage the development of the area. In my opinion at some place we are also responsible for these natural disasters. The way we are hurting our natural resources or playing with it and damaging it for our personal use and profit, it is going to hurt our natural resources and is causing natural disasters. The way we are changing paths of rivers for our own profit, it is also one of the main reasons. The way we are cutting trees for our own profit (like: Cutting trees to construct something on that land or to sell these trees). It is causing a fatal damage to our eco-system. Constructing building on river corners or edges by cutting mountains or land is also causing a big problem to river edges. Collection of stone, boulders and other minor minerals (reta, bajri and boulders) from the river bed in an unsystematic way or more than the permission given to the persons for mining. It is also causing a big problem to our nature.

### **Roads**

Roads play an important role in the development of an area. But some of our rural areas are not connected to roads. They are connected to roads with the help of footpaths. Some of these footpaths are having 3 to 4 feet width. And distance connecting these footpaths to roads at some place is 2 to 3 km long. These footpaths are more risky or dangerous. A wrong step or slip may cause fatal or serious injury or even can cause death. Conditions of roads are among one of the biggest reasons why industrialists are not interested in opening their industries in hilly areas of Uttarakhand.

### **Hospitals**

Healthcare or hospital is also among one of the problem behind migration. Lack of better healthcare facilities is also among the problems faced by the persons of hilly areas. Hospitals are not having good infrastructure. Some of them don't have sufficient doctors. Some of the hospitals are having facilities for basic treatment. Some of the hospitals are not well equipped. Some villages are far away from hospitals.

### **Education**

Education is one of the important necessities of a child. But children of hilly areas are far away from quality education. There were lot of reasons, some of them were: Schools are far away from villages. It is hard for children to reach schools during rainy seasons or disasters. During rainy seasons at some places heavy landslide occur due to that so many villages lost their connectivity from the outer world. So it is hard for them (children) to reach school. Some reach school by putting their life in stake or risky. Some govt. schools don't have basic and quality education. Conditions of buildings of some schools are not so good. These buildings are in so bad shape that it can anytime cause any big damage to children's life or can cause injury to anyone. Some schools don't have sufficient teachers. Some don't have teachers of every subject.

### **Job**

Job is also among the one of the main reason behind migration. As we all know that for a family or a person job plays an important role to live his livelihood. Hilly areas have lack of job opportunities due to lack of industries and unskilled workers. If a person is not able to get job how will he survive or earn his bread or butter. So in the search of job persons migrate to plain areas. Plain areas are full of industries and there is lot of other work. Once

they get job in plain they try to settle down at plain. And when they are financially powerful they try to bring their family to plain and settle down at plain.

### **Basic Infrastructure**

One of the main problems of migration is basic infrastructure. So many villages are far away from basic infrastructure. Some are far away from roads and are connected to roads through footpaths; some villages don't have safe drinking water, sanitation facility and gas for cooking. So many villages don't have electricity facility. These are the important need of a person living in hilly areas. If they will not get basic infrastructure it is going to hard for them to survive and they will migrate to other places in the search of basic infrastructure. We should provide them basic infrastructure so that they will stay at hilly areas.

### **Plan to Stop Migration from Hill to plain in Uttarakhand**

#### **Solution of Natural Disaster**

Natural disasters are the biggest trouble of Uttarakhand now a day. We should create strong rules and regulations for the safety of natural resources. And strict actions should be taken against the persons those will hurt our natural resources. Only fear of punishment or awareness can make people not to harm our natural resources and give respect to our natural resources. No permission of building houses will be given to persons at the river bank.

#### **Solution of Road problems**

All villages should be connected by pucca road. So that village persons can get basic facilities and can be connected to every place. Every remote village of the state should be connected by all-weather roads and all major cities and tourist destinations connected through multi-lane highways and major airports. Road connectivity to all inhabited villages will strengthen road network in urban areas & up grade the national highways.

#### **Solution of Healthcare problems**

Ensuring universal and affordable healthcare with special focus on preventive healthcare prevention of diseases is needed. Access to specialty healthcare at district level through specialty hospitals and medical colleges should be developed. Special focus on providing maternal and child healthcare, especially, in remote areas should also be developed.

#### **Solution of Education problem**

Free, compulsory, quality primary education should be provided to all children. Access to job oriented vocational training facilities. Setting up institutions of higher learning having focus on research for solving local problems. Provide quality education in schools. Must provide best infrastructure and school building facility to students.

#### **Solution of Job problem**

To Stop migration we have to put more focus on creating job opportunities. Govt. should work for providing job opportunity in local areas, villages, towns or districts of hilly areas. We and govt. can create job opportunities with the help of MSME (Micro Small and Medium Enterprises) schemes, Self-help groups and financial institutions. To be the world leader in green energy by leveraging the state's hydropower potential. Promote micro and small enterprises. To encourage only green and environment friendly industries in the state. Uttarakhand also had great capacity in tourism sector. To put the state on the global tourist destination map through leveraging it's spiritual, cultural, natural and adventure tourism potential. If person of hilly regions will get job in locality there will be a decrease in migration and even it is going to give growth and development to hilly regions of Uttarakhand state.

#### **Solution of Basic Infrastructure problem**



All villages to be connected by *pucca* road: major cities to be connected by multi-lane highways. Provision of safe drinking water, gas for cooking,, sanitation and waste disposal facilities, across the entire state. Harnessing hydro power potential for ensuring 100% electrification and to position the state as a leading supplier of power to other states.

### **Conclusion**

Uttarakhand is facing a very big problem of migration from hill to plains not from now but from a long time before. According to so many surveys there is a rapid increase in migration. There are lot of reasons for this migration problem like; natural disasters, lack of basic facilities or infrastructure, worst condition of road, even some villages are not connected to roads, not best qualities hospitals, not enough industries, not good quality schooling facility. Natural disasters are one of the biggest problems in hilly regions of Uttarakhand. We should stop playing with the natural resources. We human beings waste or hurt or misuse natural resources for our personal use. Govt. should take strict action or make rigid rules so that no one can misuse our natural resources in wrong way. If someone caught hurting or wasting or misusing our natural resources they should get harsh punishment by the government with the help of rules and regulations formed by them. Only fear of punishment or awareness can make people not to harm our natural resources and give respect to our natural resources. If we have to stop migration from hill to plain then we have to solve or rectify these problems and provide facilities to the persons living at hilly regions and even we have to bring industries to hilly regions and should promote Micro Small Medium Enterprises and should work for Self Help Group at village level to provide job opportunities. Hilly areas also have scope in agricultural sector. Improving yield and quality of agricultural products by providing access to latest agri technology and irrigation facilities. Support mixed forestry which can play an important role towards sustainable agriculture in the hills. And even our state is full of tourism destinations and full of natural heritage but then also we are not able to utilise or get full profit through utilising our resources. Tourism also has scope in development and bringing job opportunities in hilly regions of Uttarakhand. Setting up art and culture centres at all major tourist destinations. Organising events to promote and preserve the state's art & culture and also for promoting tourism. Become a role model for promoting green economy by focusing on environment friendly sectors where the state has a competitive advantage e.g. IT, agriculture, tourism, hydropower and education. Even this problem of migration from hill to plain will cause damage to our ecological system and even can disbalance the density of population and even one of the negative impact is that our customs, art, culture, literature, language basically resides or live in villages. Due to migration these heritages or legacy of Uttarakhand will extinct or die out, if we will not take a big step to stop it. We have to save our heritage and culture by stop migration. We have to work hard for the people of hilly regions of Uttarakhand. And come over through a plan for the people of hilly regions of Uttarakhand because they also deserve a better life and facilities nearby their locality.

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## Creation of Sustainable Environment for Next Generation

3

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### Abstract

*Sustainable development involves maintaining our current rate of development whilst leaving suitable resources behind for future generations to continue to develop while we are misusing the resources in a very vital manner, which is not good for the present generation and as well as to the future generation. In this context then, environmental problems must be tackled by considering their relationship with the state of the economy and the wellbeing of society. In this paper we focus on strategies for sustainable development which are necessary for survival of and our present generation as well as coming generation. In fact, the environment, the economy and society taken together, include everything that we need to consider for a healthy, prosperous and stable life.*

**Keyword-***Sustainable Development, Environmental Issues, Next Generation.*

### Prologue

The industrial revolution was started in the late 18<sup>th</sup> and early 19<sup>th</sup> centuries in Britain, then it spread around the world. Fossil fuels as coal, oil and gas offered levels of energy production previously undreamed of, leading to shifts towards factory-based systems and the mass production of goods such as cotton. Fossil fuels, principally coal at the beginning of the Industrial Revolution, were primarily used to generate steam power and electricity, but their applications were vast, with many industries becoming automated, hence increasing their output. In the search for a better standard of living, many people moved from the countryside to the cities to find work in the new factories. The burning of fossil fuels led to a massive increase in urban air pollution, although most people felt that such a disadvantage was not significant in the context of their new found prosperity.

In addition to urban air pollution however, other impacts of industrialisation were felt. There were drastic changes to land use with the construction of new buildings, including factories and houses for employees, and transport facilities, including new roads and rail tracks. Areas of countryside were destroyed and replaced by industrial developments. In order to make best use of the remaining land, agricultural machinery was modernised to make the production of food more efficient.

Today, industrialisation continues in the under developed areas of the world like Asia. We have gradually become aware that there are many environmental impacts as a consequence of industrialisation, and that we have the ability to take the appropriate action. The main impacts of concern are pollution, resource consumption (including energy resources) and population growth.

### Growing Population

The growth in population has increased the pressure on the environment. Larger population required more resources, which involved a greater intensification of farming and industry. In addition, the rapid population growth associated with industrialisation during the last two centuries, has led to considerable depletion of fossil fuels. It means more raw materials was extracted from the Earth. Furthermore, as we consume more and more resources, we are accumulating waste at an alarming pace.

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Today, the world's population stands around 6 billion. This is expected to almost double within the next 50 years. Most of this increase is due to occur in the developing world. One in five people alive today are desperately poor and every year 40 million die from malnutrition and diseases related to poverty means more than 100,000 per day. Such a large population can be sustained only when food resources are properly managed and distributed and the environmental impacts of agriculture and housing are minimised. Through sensible planning and suitable modern technology population growth and industrial development can be sustained. Agenda 21 [of UN](#) (an action programme spanning the next 100 years) recognises that to achieve sustainable development throughout the world, population must be managed and controlled by a process of "demographic dynamics".

### **Definition of Sustainable Development**

In order to continue the growth of development for society, it is necessary to pay more attention to our environment. How this is best achieved is often a matter of opinion rather than fact, dependent upon different perspectives of the environment and views of nature. Recently, a concept has emerged that has attempted to bring together the best aspects of these different viewpoints, and to harmonise the development of mankind with the protection of nature. This is the concept of "Sustainable Development".

Sustainable development involves maintaining our current rate of development whilst leaving suitable resources behind for future generations to continue to develop. In this context then, environmental problems must be tackled by considering their relationship with the state of the economy and the wellbeing of society. In fact, the environment, the economy and society taken together, include everything that we need to consider for a healthy, prosperous and stable life.

Although sustainable development is about integrating the environment, society and economy, the economy, and in turn society exist within the wider context of the environment. The economy exists entirely within society, because all parts of the human economy require interaction among people. However, society is much more than just the economy. Happiness, pleasure and well-being of the society is not stem solely from financial growth. Friends and families, culture, religion and ethics are important elements of society that are not primarily based on exchanging goods and services, but contribute to the overall quality of life. Society, in turn, exists entirely within the environment. Our basic requirements - air, food and water - come from the environment. We depend on the products of environment which provide us wood for housing and energy. Protection of the environment, therefore, resides at the core of Sustainable Development. In the 1980s, increasing demand about the effects of economic development on health, natural resources and the environment led the United Nations to release the Brundtland Report. This defines sustainable development as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs."

### **Sustainable Principales**

The guiding principle of sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. Sustainable development recognises the interdependence of environmental, social and economic systems and promotes equality and justice through people empowerment and a sense of global citizenship. Whilst we cannot be sure what the future may bring, a preferable future is a more sustainable one.

### **Need of Sustainable Development**

Now a question arises why we should adopt sustainable development. Securing economic development, social equity and justice, and environmental protection are the goals of sustainable development. Although these three factors can work in harmony, they are often found to conflict with one another. During the latter half of the 20<sup>th</sup> century economic development for a better standard of living has been instrumental in damaging the environment. We are now in a position whereby we are consuming more resources than ever, and polluting the earth with waste products. More recently, society has grown to realise that we cannot live in a healthy society or economy with so much poverty and environmental degradation. Economic growth will remain the basis for human development, but it must change and become less environmentally destructive. The challenge of sustainable development is to put this understanding into practice, changing our unsustainable ways into more sustainable ones. The aim of sustainable development is to balance our economic, environmental and social needs, allowing prosperity for now and future generations. Sustainable development consists of a long-term, integrated approach to developing and achieving a healthy community by jointly addressing economic, environmental, and social issues, whilst avoiding the over consumption of key natural resources.

Sustainable development encourages us to conserve and enhance our resource base, by gradually changing the ways in which we develop and use technologies. Countries must be allowed to meet their basic needs of employment, food, energy, water and sanitation. If this is to be done in a sustainable manner, then there is a definite need for a sustainable level of population. Economic growth should be supported and developing nations should be allowed a growth of equal quality to the developed nations.

Today we have recognised four objectives for Sustainable Development. These include social progress and equality, environmental protection, conservation of natural resources and stable economic growth. Everybody has the right to a healthy, clean and safe environment. This can be achieved by reducing pollution, poverty, poor housing and unemployment. No one, in this age, or in the future should be treated unfairly. Global environmental threats, such as climate change and poor air quality must be reduced to protect human and environmental health. The use of non-renewable resources such as fossil fuels should not be stopped overnight, but they must be used efficiently and the development of alternatives should be encouraged to help phase them out. Everybody has the right to a good standard of living, with better job opportunities. Economic prosperity is required if our country is to prosper and our businesses must therefore offer a high standard of products that consumers throughout the world want, at the prices they are prepared to pay. For this, we need a workforce equipped with suitable skills and education within a framework to support them.

### **Measures for Sustainable Development**

We can do a bit for sustainable development. Using the car less for unnecessary journeys, walking, cycling, using public transport, being more energy conscious and recycling waste can all help make the environment a cleaner place. Being fit and healthy, through a good diet and adequate exercise, is also beneficial to our society and our economy. Some of them are explained under :

#### **1. Avoid Cars**

Over the past century, the car has become a part of everyday life, a symbol of freedom for many. Unfortunately, because of poor public transport and bad planning decisions, the car is all too often the only way of getting around. As a result, our towns and cities are becoming increasingly congested and polluted, whilst the countryside remains under threat from further

road building, with many communities being divided by busy roads. Transport is the fastest growing energy-consumption sector in the world and the number of cars on the road may double by 2025. Road transport is also the fastest growing source in the world of carbon dioxide, the main gas causing global warming. It is therefore an area that requires great attention to reduce fuel consumption and hence pollution.

Transport pollution is emitted at ground level from a mobile source, and is therefore a larger problem than other pollution sources. As an alternative to driving the car, walking, cycling or using public transport where it is suitable and safe to do so is a better option, particularly for short trips where using the car is not really necessary and alternatives exist. Where walking or cycling is impractical, people can consider taking public transport if it is available and convenient to use. A bus full of passengers is more than twice as fuel-efficient as a family car. In addition, car sharing is an option to consider if you and your friends drive to work along similar routes.

## **2. Maximum use of Public Transport**

Public transport is the alternative modes of transport to the private motor car. It includes public transport, trains, trams and buses, can relieve traffic congestion and reduce air pollution from road transport. The use of public transport must be encouraged if a sustainable transport policy is to be developed. Railways are efficient forms of transport that use existing tracks, and therefore use less land than roads. One commuter train may hold hundreds of passengers which may otherwise have travelled to work by car. Although trains can reduce road congestion, it is important to remember that they still contribute to air pollution both directly and indirectly. Diesel engines produce a large amount of particulates. Electric trains do not release air pollutants directly, but their electricity produced "upstream" by power stations can contribute to acid rain and global warming if they use fossil fuels.

Buses are generally recognised as an eco-friendly form of transport, particularly in relation to the number of car journeys needed to carry the same number of passengers. A double-decker bus carries the same number of people as 20 fully occupied cars. A bus uses less fuel per person carried, and hence less fuel than the number of cars needed to replace it. However, buses do contribute to air quality problems, particularly in cities. There has been a resurgence in the use of transport such as trams and light railway, which have a lower environmental impact than buses. Trams use smaller vehicles and tighter rail tracks than conventional trains, which enables them to be constructed within existing built-up areas. They also run at a lower cost than trains, and they can easily be expanded to accommodate increases in passengers. Public transport should form part of a wider integrated sustainable transport strategy. However, the cost and convenience of use of public transport needs to be lowered to encourage people to use this as an alternative to personal vehicles.

## **3. Use of Cycling and Walking**

Cycling is often the quickest way to make short journeys. It also has the advantage that it does not release air pollution to the atmosphere, unlike motorised forms of transport. Cycling has been popular in many European countries with excellent cycle lanes segregated from main road traffic routes. In the UK, cycling has declined in popularity during the last 20 years, and now accounts for only 1% of all distance travelled by road users. The provision of cycle and pedestrian routes, segregated from road networks, may encourage an increase in the number of short journeys being made by bike or foot. This could be assisted by improving cycle parking facilities at convenient locations and improving pedestrian access to and within public transport facilities.

Walking is a sustainable mode of transport that is available to all at no cost. The safer the walking environment the better, and hence the introduction of pedestrianisation to city centres in the UK has increased the number of people that travel on foot. York and Cambridge are good examples of cities where improved conditions for pedestrians have brought an increase in pedestrian traffic. In the UK it has been found that 50% of all journeys are under two miles, and therefore are ideal for cycling or walking. Walking and cycling are also extremely healthy modes of transport, as they increase physical fitness. 10% increase in the number of people cycling regularly would lead to a 4% reduction in the number of people with heart disease. Cycling or walking briskly for half an hour a day can halve the risk of heart disease that is as little as a 2 mile walk or 5 mile bike ride.

#### **4. Efficiently use of Energy**

We can all effectively bring about a reduction in energy consumption. As saving of energy is generating of energy and on the other side, using less energy also means savings on fuel bills. Heating (space and water) accounts for approximately 25% of UK energy use. On average 55% of fuel bills are spent on space heating, but in an uninsulated house about half of this heat escapes through the walls! Water heating can account for up to 20% of the average fuel bill but we are often wasteful of this resource. Energy use in these two areas can be cut whilst still providing the heating that you require. Energy-saving light bulbs are now widely available in supermarkets and electrical stores. The initial cost of energy saving light bulbs are relatively high compared to standard light bulbs, but the lower running costs and longer lifetimes mean that the initial cost can be recouped within a couple of years. The energy use and efficiency of household appliances, such as fridges, freezers, cookers, washing machines and televisions depends on the age, model and manufacturer. In the UK 20% of electricity is used by domestic appliances. Retailers in Europe are required to label all new fridges and freezers with an eco-label.

The cumulative energy reductions by individuals would reduce the need for energy consumption, conserve stocks of raw materials such as coal, oil and gas, and bring about a reduction in pollutant gas emissions.

#### **5. Recycling of Wastage**

Recycling helps the environment because it saves space in landfill sites, and it can reduce pollution substantially, along with innumerable other benefits. We also know that recycling saves energy and raw materials. Recycling aluminium cans, for instance, saves the tropical rainforests from further devastation because these areas are often mined for bauxite (the ore used to make aluminium). Most scientists believe that recycling will go a long way to slowing down global warming. So you can be confident that any recycling you initiate will play a vital role in preserving the Earth's natural resources.

We can help to reduce the consumption of energy and raw materials used in manufacturing, by reducing the amount of waste we produce, re-using products, and recycling them where possible. At present, consumers produce millions of tonnes of domestic rubbish each year in a country. Currently most of this waste is dumped into landfill sites. Landfilled waste produces the second most important greenhouse gas, methane. The Government should try to increase the amount of waste that is recycled. Examples of materials that can be recycled include paper, glass, plastics, clothing, aluminium cans and organic materials such as waste food for composting.

#### **6. Proper Consumption of Resources**

The ever-increasing demand for products and services is creating a pressure on the environment. Exploitation of resources and manufacturing by-products are increasing stresses on the natural world.

The reductions in consumption for countries are largely based on the premise that they should consume no more than their fair share of resources - a premise that recognises that it is inequality that drives environmental destruction and conflict. Consumption reduction is a challenge that the world has to face in order to achieve sustainable development.

As consumers, we often use too much, for example energy or water. Sometimes we produce too much, for example food or waste products. Using too many natural and sometimes non-renewable resources (like fossil fuels) today means fewer will be available for future generations. There are many ways we as individuals can reduce the amount we consume. Have a look at the other sections on energy efficiency, waste recycling and water consumption to find out how.

We often take the availability of water for granted. Water is a renewable resource, but its availability in a form readily usable for drinking and other domestic and industrial purposes is being placed under increasing stress as we use more and more. During periods of drought in particular, groundwater and reservoir supplies can become significantly diminished. The following points illustrate just how much water we consume, and how we could attempt to reduce this level of consumption.

- ❖ We use around 155 litres of water each day on average, which is 70% more than 30 years ago. That's around 1600 pints of water a week each.
- ❖ Running the tap can use 10-14 litres of water a minute - which would give enough for a small bath in just 5 minutes.
- ❖ Make sure we mend any dripping taps, and turn off taps when not in use.
- ❖ Turn off the tap when brushing our teeth.
- ❖ Take showers, not baths and save enough water each week for 1000 cups of tea.
- ❖ A garden sprinkler uses 1,000 litres of water an hour - that's nearly one pint for every 2 seconds it is in operation.
- ❖ Once a week is all the water our lawn needs even in the hottest weather. Over-watering can weaken our lawn by encouraging roots to seek the surface.

## **7. Spread of Environmental Education**

Education is essential to spread the awareness of sustainable development. Education can give people an environmental and ethical awareness; it can develop the values and attitudes, the skills and behaviour needed for sustainable development. To achieve this, education needs to explain not only the physical and biological environment but also the socio-economic implications and human development. The United Nations emphasises in its "Agenda 21" (adopted at its 1992 Conference on Environment and Development) the urgency of improving such awareness. The UN recommends the need to:

- ❖ make environment and development education available to people of all ages.
- ❖ introduce environment and development concepts, including those of population, into all programs, with assessment of major causes and issues. Decision makers need special attention.
- ❖ involve schoolchildren and communities in local and regional studies on environmental health, including safe drinking water, sanitation, food and the environmental and economic impacts of resource use.

- ❖ encourage all sectors of the society including industry, universities, governments and community organisations to cooperate in training people in environmental management.

We can all try to learn a bit more about our environment and about the way our society interacts with it. There are many sources of environmental learning and education, including this encyclopaedia and the Internet links which it contains.

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## Eco - Tourism in Sunderbans : A Life Line for Local People And The Ecology

4

**Moushumi Banerjee\***  
**Priya Shiva\*\***

### Abstract

*India offers diversity in topography, natural resources and climate. There are land locked mountainous regions , lush green valleys and plains, arid desert regions, white sandy beaches and islands. Central India has many wildlife sanctuaries with countless varieties of flora and fauna. The country has cultural diversity, a Kaleidoscope of races, languages, religions, customs and traditions. The geographical diversity of India provides opportunities for wealth of outdoor and adventure sports activities. There is something for all tourists from the “soft” adventure to fast-paced thrills, and there is something for every level of experience. The price of tourist products is highly competitive in global market.*

*Environmental concern is an integral part of human society which can be traced to the practices of the old civilization. In old civilization it was believed that the existence of human race is inseparably linked with the grace of surrounding environment. **Industrial revolution** gradually brought a change in this perception. Advanced technological knowledge, man started to think that he can modify the environment according to his command. Now, need based development of the pre-industrial era have been replaced by **greed based development** which is marked by the thoughtless consumption of resources by the society. This resulted in ugly and degraded environment. This is crucial moment where in one hand man is making rapid progress in technological progress whereas in the other hand environment is left to degrade at an alarming rate. Nature has been vanquished at the cost of human progress, thereby putting the very existence of human society at stake. Forests have become the most vulnerable area on the earth’s surface because of human trespassing in terms of sustainable **forest exploitation, clearing the forest for various types of crops, mining, industrial development, construction of dams etc.***

*The largest inter-tidal mangrove forest in the world and the home of the majestic **Royal Bengal Tiger**, Sundarban is also no exception from this lunatic destruction. This region criss-crossed by innumerable water channels or rivers. It’s high time to conserve this fragile ecosystem of **Sundarban**. Conservation steps put to an end to forest exploitation but it creates another problem. The local community which depended entirely on the forest is now in utter poverty. Their sustenance will be at stake if conservation steps fail to create alternative employment for the local people. Ecotourism has been the savior of conservation efforts of this delicate ecosystem as well as provide employment opportunity to the local people.*

*Ecotourism has come out as a development tool, aiming to protect the natural environment and cultural diversity by attracting the ecotourists and generating a source of income for the local people without harming the nature. This has been supported by various global strategies. Ecotourism includes specific services which are compromised of different social systems and which promotes the regional product and small scale industries.*

*These intend to resolve the various serious problems related to the local community, their ownership rights and conservation of natural resources and recognition of the strong ethical dimensions and survival spirit of the local community in a changing world where Ecotourism can prove life supporting apparatus as it works at local scale incorporate*

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*landscape and people- scape in particular. This paper emphasizes on the concept of ecotourism, different issues related to promote **local economy, socio-cultural changes and life style** of the people settled in and around the tourist locations, challenges related to opportunities and weakness of ecotourism as well its impact on development of socio economic condition of the socially challenged regions.*

**Key words:** *Ecotourism, Socio-cultural changes, Exploitation, Economy*

## Introduction

Ecotourism has transformed over the past decade from unique to mainstream status. All travel professionals is buzzing the term "ecotourism". Since the early 1900's when an environmentalist, while visiting a shooting range in Africa, had a pioneering realization - sometimes more economic value can be derived from leaving a place of natural beauty intact for all to enjoy, instead of using the land for agriculture, mining, or commercial development. One hundred years or so later, ecotourism has come to be known as an ecologically, morally and ethically preferred form of tourism that, if done correctly, optimizes cultural and ecological benefits, while providing the tourist with an inspiring experience and the ecotourism provider with more economic benefit as cited by Jen Boulden, Ramon Escudero, and Bradley Weiss (2003).

### Ecotourism has six main characteristics these are:

- a) Ecotourism involves travel to relatively undisturbed natural areas and/or archeological sites,
- b) Focuses on learning and the quality of experience,
- c) Economically stabilize the local communities,
- d) Ecotourists enjoy viewing rare species, spectacular landscapes and/or the unusual and exotic,
- e) Ecotourists do not harm resources but sustain the environment or help undo damage to the environment.
- f) Ecotourists appreciate and respect local culture, traditions, etc.



One important contribution in the ecotourism framework came from Community-based Ecotourism of Kersten (1997) who defined **Community-based Ecotourism** as a kind of nature tourism wherein the local community maintains full (or major) control over the management and the profits of the project. The emphasis of this strategy is community development and participation of the marginalized sector (including indigenous groups) rather than on regional or national development. **It also has the following aims:**

- To help preserve ecosystems and natural areas (usually already within protected areas) with a high tourism potential;
- To cultivate environmental consciousness among the local population by educating them about the dangers of overexploiting resources and unrestricted number of tourists;
- To promote new economic incentives, e.g. selling of local (environmentally safe) products, crafts, and cultivated medicinal plants thereby create some entrepreneurial skills;

- To ensure communal ownership and control, and that part of the profits flow into community development programs rather than into personal enrichment; and
- To foster a feeling of pride and community through a revival or preservation of "traditional" practices and cultural techniques.

### Objectives

- ❖ Is to sensitize the tourists about conservation of nature and natural resources
- ❖ To opening up avenues for employment opportunities and various other economic activities of income generation for the local community. This will benefit the local community by bringing about socio-economic development in the area
- ❖ The guarantee of environmental security less dependence on ecology for income.

Sundarban is a tourists' paradise. Every year thousands of tourists flock to this mangrove tiger-land. The name ecotourism is already well known in Sundarban. This study analyses the strengths, weaknesses, opportunities and threats (SWOT) of the existing tourism/ecotourism condition in Sundarban and how it can be improved in accordance to the National Ecotourism Policy and Guidelines (1998).

### Demography of Sunderbans

Sundarbans have been named after the Sundari trees (*Heritiera fomes*). Sundarban is spread across both South and North 24 Parganas district of West Bengal. Sagar, Namkhana, Kakdwip, Patharpratima, Kultali, Mathurapur-1 & 2, Jaynagar- 1&2, Basanti & Gosaba blocks fall under South 24 Parganas district whereas Hingalgunj, Hasnabad, Haroa, Sandeshkhali- 1 & 2, Minakhan block fall under North 24 Parganas. The states of West Bengal are comprised of 19 districts including Kolkata. It lays between 21°55' N lat. to 26°50' N lat. & 86°30' E long. to 89°58' E long. respectively with an area about 88,752 sq km where the coastal stretch of West Bengal extends from the mouth of the river Subarnarekha on the West (bordering the state of Orissa) to the mouth of river Haribhanga on the east (bordering Bangladesh) between longitude 87°30' E and latitude 21° 37.012' N to 89°30' E. and latitude 21°40.849' N respectively with a length about 350 km comprises the two districts-East Midnapore and South 24 Parganas. The long coast line of West Bengal along the Bay of Bengal is dominated by Ganga Delta which occupies around 60% of this coast line.

### Physiographical, the Entire Coastline may be Subdivided into three Principal coastal Zones, such as

- From the mouth of Harinbhanga river to the mouth of Hugli river, known as the **Sundarban Delta Zone” (Eastern sector)**;
- Saline tidal regime of the Hugli river, stretching upto Kulpi Point and the Haldia Port (**Central Sector**);
- Digha-Junput coastal plain along the sea (**Western Sector**).

But areas for intensive **coastal tourism** in West Bengal could be distinctly divided into two major zones, such as –

- Digha-Shankarpur zone in Purba Medinipur - District (Destination:-Digha / Shankarpur/ Tajpur /Mandarmoni/ Junput/Gopalpur), and
- Sundarban in South 24 Parganas District (Destination: - Sagar Island / Haribhanga Island Bakkhali / Frazerganj / Henrys Island / Jambu Island / Kolas Island etc

- The extent of mangrove reserve forest in **Sundarban is around 4260 sq. km, out of which 55 % is under land vegetation cover & balance 45 % is under water body / inter tidal zone. Nearly 40 % of the reserve forest area has been brought under Protected Area networks (PA) as follows:**
  - ✓ Area of **Sundarban National Park** : 1330 sq.km.
  - ✓ Area of **Sajnekhali Wildlife Sanctuary**: 362 sq.km.
  - ✓ Area of **Lothian Wildlife Sanctuary** : 38 sq.km
  - ✓ Area of **Haliday Wildlife Sanctuary**: 6 sq.km.

## Major Attractions of Sunderbans Ecology

### ❖ Mangrove Forests of Sunderbans

The study was conducted in the Indian part of Sundarban. The deltas of Sunderban and its mangrove forests showcases highest mangrove diversity. **This is also the only mangrove tigerland of the planet.** Due to both natural and anthropogenic reasons the Indian Sunderban has shrunk a lot during last 200 years. The mangrove ecosystems of Indian Sunderban contribute greatly towards coastal fishery of eastern India, apart from its immense tourism value. Thus it has become important to understand this mangrove ecosystem under changed conditions and take steps for sustainable use of this valuable resource. Sunderban is endowed with a rich flora and fauna. This mangrove forest has about **64 plant species** which has more than 90% of Indian mangrove species. The core area of Sunderbans mangrove forest area is also conserved as **"World Heritage Site"** as designated by the IUCN in the year of 1989. The main trees and big shrubs of the area are "Bain", "Keora", "Garan", "Garjan", "Genwa", "Khali", "Bakul", "Karkra", Dhundul", "Pasur", "Sundari", Hental", "Golpata"



### ❖ King of Sunderbans – Royal Bengal Tiger

60% of total Indian mangrove area which supports the maximum number of tigers in a single patch among the tiger reserves of the country. The amphibian **tiger population**, which is estimated to be over **260 in number** here, has distinct behavioral patterns and this makes **Sunderban Tiger Reserve** special from the other tiger reserves of the country. The Royal Bengal Tiger is the king of this forest and it occupies the pinnacle of both the terrestrial and aquatic web. There are also **Cheetal, Wild Boar, Rhesus Macaque, Fishing Cat** etc.

### The Aquatic Fauna

The creeks of Sundarban form the home of **estuarine crocodile**, the only surviving member of the Jurassic time. The aquatic fauna includes **Gangetic Dolphin, River Terrapin (Batagur Baska), Olive Ridley Turtle, Green Turtle, Hawk's turtle, and different species of crabs, prawns, lobsters and fish.**



### Arial Majesty

To add to colour and melody there are birds like **Rose ringed Parakeet, Crow Pheasant, Pied Myna, Drongo, Bulbul, Tailor Bird, Magpie, Robin, Brahmini Kite, Spotted Dove, Adjutant Stork** etc.

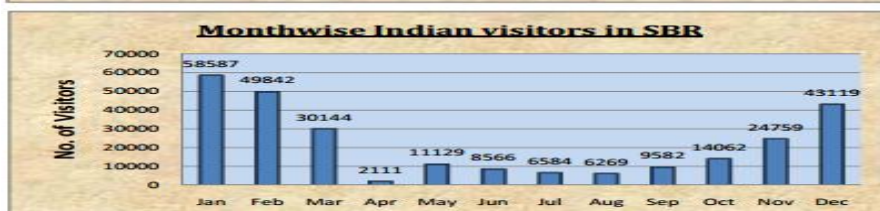
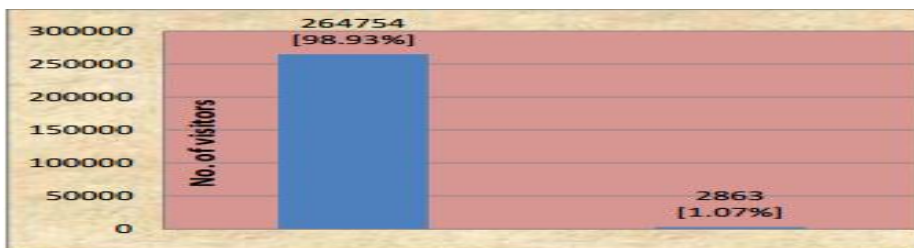


Tourism Directorate; \*2003-2004

**TOP 10 TOURIST SITES**

Reserve	Numbers of tourists (2004-05)	Revenue (Rs lakh)
Panna	36,404	
Sariska	49,451	28
Bandipur	51,986	
Sundarbans	60,000	
Kanha	70,464	52
Kalakad-Mundanthurai	70,807	
Corbett	95,220	
Ranthambhore	111,375	167*
Satpura	162,785	
Periyar	415,373	180

The majority of tourists are only Indian compared to foreign tourists contributing only 1% of total visitors.



### **Impact of Local Economic Conditions on Ecolog**



The Sunderbans are a **very remote and underdeveloped area**. The people use the natural resource like paddy straw, mud and wood to build their houses. Electricity, sanitation and communication are non-existing, but slowly the **situation is improving**. For example the footpaths, which are very muddy during the rainy season, have now been paved. But still important infrastructure is lacking in many places, medical treatment for example still mostly is provided by herbal doctors.

### **Tradional Livelihood – Threat for Ecosystem**

The traditional livelihood of the local people is mainly fishing or prawn catching. The Sunderbans are the **main source of fishery products** for Eastern India. Agriculture yields only one crop per year due to saline conditions. Thus people are depending directly on the forest or forest based resources, what means **severe threats for**



**the fragile ecosystem.**

### **Methodology of Study**

The methodology used for this study was secondary research in the form of questionnaire survey of tourists, tour operators, Forest Department officials and local people. Analysis also includes group discussions, secondary data collection from Forest Department, hotels and lodges as well as by direct observation.

### **Constitution of India Ensure the Protection of Environment, Forest & Wildlife**

#### **The Relevant articles for Preserving nature Through Sustainable Development:**

<b>Main Occupation (as % of total workers)</b>	<b>Island-blocks around forest boundary</b>	<b>Other Sundarban Blocks</b>
Cultivators (own + leased land)	34	20
Agricultural and other daily physical labour	48	55
Self-employed rural artisans / hawkers (those who do not employ others)	5	8
Labour oriented regular job in rural unorganized sector	5	7
Other occupations	8	10
<b>Total</b>	<b>100</b>	<b>100</b>

*Source: Rural Household Survey 2005, Office of the District Magistrate, South 24 Parganas.*

**Part N - Directive Principles of State Policy - Article 48** An states that **Protection and improvement of environment and safeguarding of forest and wild life**

**Part IVA -. Fundamental duties - Article 51A (g) - To protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures.**

2. Indian Forest Act, 1927.
3. Indian Forest (West Bengal Amendment) Act, 1988.
4. Wildlife (Protection) Act, 1972 with its 1991 amendment.
5. Forest (Conservation) Act, 1980 with 1988 amendment.
6. The Environment (Protection) Act, 1986
7. Coastal Regulatory Zone Rules.
8. Rules & regulations of Environment Deptt. Regarding environmental pollution.
9. Fisheries Act of West Bengal Govt

### **Jungle Camps-A Promotional And Conservational Tool for Ecotourism to Reduce Man-Tiger Conflict in Sunderbans**

The Sunderbans Tiger Reserve Management and the WWF India West Bengal State Office has taken special steps to find out ways and means for sustainable development of the village of Bali with the help of local dynamic young men. **Help Tourism**, an organization working for development of **Community Tourism** that supports the process of conservation has also joined hands. A demonstration project - **Sundarbans Jungle Camp** – a low cost tourism infrastructure involving local people is developed to be replicated by other villagers. Help Tourism followed the strategy to offer **exclusive accomodation in ethnic style and good local food and service**. Local staff is trained accordingly and a concept for an eight bungalow resort was developed. Initially the land for the demonstration project was given by **Bali Nature and Wildlife Conservation Society**, who is also a partner of the project. The money for the establishment of the ecotourism infrastructure was provided by Help Tourism. The company invested more than **50,000 USD**, a part of this amount was support, soft loans or donations from patrons, friends and well-wishers. So far six of the eight cottages have been finished; the camp started operating in 2002. Additionally to the camp a boat had to be purchased to provide transfer and excursions to the National park for the guests. This has turned Bali into a tourist destination. The model will gradually be picked up by the other villages, thus supporting a large tourist inflow to the world's largest mangrove forest.

**The effort is not just to develop a tourism destination but to allow villagers an alternative source of income so that intrusion into the forest declines. It will have a direct impact on the forest as well as local villagers will turn protectors rather than poach.** Visitors to this destination will have the opportunity to experience this unique forest with its rich diversity of life. This will also help **preserve local culture**. Here villagers will be the owners who will manage their property.. The management of Sunderbans Tiger Reserve has confirmed to give permission from the adjoining Bidya Range office to set up a jetty, a sweet water source. A manual boat will also be provided to venture into creeks to see wildlife.



**Jungle Camps, an initiative to slow the process of 'Climate Change'.**



❖ This was followed by Manas Tiger Reserve, a National Park in peril and a 'World Heritage Site in Danger' as declared by UNESCO, holding the local people responsible.

❖ With time 08 Jungle Camps were established across the east



## Himalaya & Indo-Burma Biodiversity Hotspots.

❖ Unlike conventional conservation organizations, Protected Areas with maximum human pressure were the target.

### The concept of the Jungle Camps

This is one of the best places to stay in Sunderban. Generally a package is offered to the customers which include transport from Kolkata to camp and back, stay, all meals, boat safari to the mangrove forest, village walk and birding, cultural performance, entry fee, camera charges, guide charges, naturalist (on demand) charges etc. It's always advisable to opt for the package as traveling to Sunderban on your own will be tricky affair otherwise. A separate vehicle will be provided for a group. Similarly, a separate boat for the group.

The camp is on Bali island and is very close to the Sajnekhali island where the entry permits are obtained from. Stay is in comfortable mud huts, which are ecologically sustainable. Rooms are neat and clean and the wash room too. Mosquito nets are provided for every bed. **Local towels (called "gamcha")** will be provided to each member of the group. Rooms generally have a double and a single bed but 3 in a room might feel cramped, unless traveling on a shoe-string budget. Food is awesome. **Local cuisine** is encouraged and freshly caught fish / prawn / crabs will be in the menu. Options are equally good for both vegetarians and non-vegetarians. Food is served in a dining space if you are at camp, otherwise on the boat if you are on a cruise. The boats provided for the jungle cruise are basic yet comfortable. The boatman and guide do have the extensive knowledge of the local flora and fauna, and not to mention, the weather. Each group will be provided a separate boat so serious wildlifers can be rest assured that they can have a peaceful and productive cruise. **A trained naturalist** is also provided if the group is looking for some serious wildlife viewing. Always remember that most of the travel is on the water and we (the outsiders) do not understand the head and tail of it, considering the tidal effects. So rely on them, they will do their best to provide you the experiences of this mangrove forests single bed but 3 in a room might feel cramped, unless traveling on a shoe-string budget. Food is awesome. **Local cuisine** is encouraged and freshly caught fish / prawn / crabs will be in the menu. Options are equally good for both vegetarians and non-vegetarians. Food is served in a dining space if you are at camp, otherwise on the boat if you are on a cruise. The boats provided for the jungle cruise are basic yet comfortable. The boatman and guide do have the extensive knowledge of the local flora and fauna, and not to mention, the weather. Each group will be provided a separate boat so serious wildlifers can be rest assured that they can have a peaceful and productive cruise. **A trained naturalist** is also provided if the group is looking for some serious wildlife viewing. Always remember that most of the travel is on the water and we (the outsiders) do not understand the head and tail of it, considering the tidal effects. So rely on them, they will do their best to provide you the experiences of this mangrove forests.

### Tourists Paradise in The Lap of Nature



## Results and Discussions

### ❖ Infrastructure

The basic requirement for any tourism destination is proper infrastructure. The questionnaire survey as well as observation showed that hotels, guest houses or tourists lodges are present in good numbers. Records from the hotels, lodges and guest houses revealed that **even during the peak season the occupancy rate is slightly more than 80%**. That means the basic infrastructure for lodging is adequate in Sunderban. Apart from these, there are tour packages where the **stay is entirely on the boats or launches** where no stay in hotels or lodges is involved. Only a few tourists responded that the toilet facilities need improvement in a few of the hotels and lodges in terms of bathing water.

### Role of Jungle Camps for Visitors

- To 'deurbanize' them and to help them appreciate & adopt '**BIODIVINITY**', the oldest religion of mankind in this world.
- To help them to undertake activities which is in tune with the local people's life &



livelihood, like understanding walks, bicycles & other forms of local transport. Visiting the carbon free & fair trade practicing 'traditional local weekly markets' called 'Haat. Participating 'traditional' local cultures & event etc.

- Contributing in creating RT destinations by participating in developing community support institutions and community capacities

for meaningful livelihoods.

- Helping in rediscovering the real 'I' through authentic engagement with rich local resources.

### ❖ Ecosystem

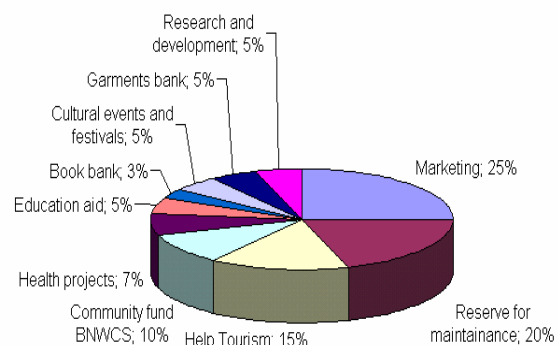
Tourists come to Sunderban to see the beauty of nature as well as the wilderness in serenity. So, in order to make this destination a sought after destination for the tourists, maintenance of healthy ecosystem for Sunderban is of prime importance. The ecosystem of Sunderban is very delicate. Rise in the sea level has taken its toll on this delicate ecosystem, causing a rise in salinity. As a result the low salinity tolerant mangrove species have gradually shrunk in number. Only the high salinity tolerant species are surviving well. Rise in salinity has also resulted in a drop in the fresh water table. The Forest department is taking adequate measures by **digging up pot holes** so that wild animals can get drinking water. Moreover, driven by poverty more than **2 lakh people** resort to tiger prawn seed collection. The collection process is very harmful for the natural regeneration of the mangroves as it destroys the mangrove seeds alongwith other species. All these are responsible for putting the Sunderban ecosystem under threat.

### Steps for Human Ecology Harmony

- The idea of the 'tourist centre' was included and additionally this was used to create 'local communities as stake holders in conservation, thus creating green human buffer around the PA'S.

- In the first phase the habitat or PA's with critically endangered species were selected in consultation with the local people and the Forest Departments.
- The Jungle Camps have been established with the help and partnership of local people to confirm their empowerment and participation in protection of the nature and traditions that helps to to keep the micro-climate of the area intact to a large extend and change their roles, which reduces the tendency of villagers to consume/exploit forest produce.
- Accordingly, with time adjoining villages have been included in the tourism and conservation network to confirm the continuity of regional biodiversity conservation by the people.

To clarify the potential benefits of a touristic engagement and to **create a strongbacking** inside the local communities the benefits of the camp have to be spread as wide as possible. The diagramme shows how the revenue of the camp after the deduction of the costsis spent for **community development activities**. Here the differing business economicalunderstanding has to be regarded. For example marketing and reserves for maintainance areincluded in this amount, in Europe this would be considered costs. I don't want to go intodetails about the percentages but instead focus on concrete examples. The quotation is givenby one of the managing directors of Help Tourism



### ❖ Livelihood Generation for Local People Through Camps

Tourism is a seasonal activity in Sunderban. The local communities cannot solely depend on tourism as the only livelihood option. The income from tourism for the local people is mostly from working as cooks and guides. Apart from this, local people also get **25% of the revenue** collected from tourists as the entry fees to the National Park. A tourism project is embedded in a social environment. In the Sunderbans outsiders and especially foreigners are very seldom and earlier encounters with them have not always been positive. Thus it was obligatory to **raise maximum acceptance of the local people** for the camp. The benefits of the camp had not only to be given to the employees but to a maximum number of people. Already for the construction local staff was engaged to the largest possible extend. So far more than **3,000 man days** have been created for construction. Due to the family structure roughly some 2,000 people from 7 villages have been benefiting. 70 % of all materials used for the camp have been purchased locally. Regarding that many furnishings like for example sanitation systems are not available in this remote area, this number is equal to maximum extend. **Direct beneficiaries** of the camp are the local staff, receiving regular payroll for their activity in **service, housekeeping, gardening or maintainance**. Food is largely purchased locally. However beverages mostly have to be bought from outside. The camp is a **socio-cultural meeting point**, unfortunately as yet only during the absence of paying guests. Discussions and community development procedures take place here as well as spare time activities like card playing.



The **local goods** produced by the self-help groups are partly sold in the camp. The landphone and the boat ensure **safety** in cases of emergency. Additionally they allow **networking** in conservation initiatives and on time preparation for the arrival and transfer of new guests.

By engaging guides for village walks, wildlife and mangrove tours **additional income** is given to local people after they have been trained accordingly. Young fishermen are hired for rowing tourists on country boats into the mangrove creeks.

To create entertainment facilities for tourists the **age old culture of Bono Bibi Yatra** has been brought back. A big number of local theater actors are earning additional income with every booked

performance.



### Role of The Jungle Camps in The Villages Adjoining to Protected Areas

The Jungle Camps are always in the fringe



villages adjoining to important **Protected Areas (PA's)**

- They help the area to act as an extension of the PA and facilitate easy passage and migration of wildlife.
- The camps act as hub for alternatives livelihoods, social and cultural activities for the local people and a window to the world.
- Facilities like water, approach roads and electricity often follows to destinations after establishment of the Jungle Camps.
- The camps often enhance the basic facilities like **medical , education, waste management and livelihood training through volunteer visitors.**
- The process has helped not only to retain youths in villages but has helped to bring back several of them to their villages.
- This has helped to bring back a lot of local cultural traditions.

### Projects Started by Help Tourism

A **medical camp** is held for the local people. A doctor, originating from the Sunderbans, but now working in a Kolkata hospital is voluntarily providing examinations against a very reasonable price



of 10 Rupees per patient. **Medicine is distributed free**, summing up to a volume of more than 10,000 US-Dollar. These camps bring benefits in two ways. The patients benefit from the medical supply, and supporting staff by additional income for their work. **More than 10,000 people from 15 local villages** have been treated.



An **education project** named 'adopt a poor student' is financing the higher education of meritorious pupils. A **book bank and donation programme** is supporting some 60 students with necessary literature, which for many locals is unaffordable. A **non-formal school** is under construction where the drop outs and poor village children will get free education.

The initial idea of the Sunderbans camp was **nature protection**; the former poachers are passionate conservationists. Wounded animals are nursed, prawn seed catching has decreased significantly. The locals are contributing to various researches and monitoring activities. One important step of tourism development is on the way. A new guesthouse is constructed for offering **homestay facilities** to tourists. With the installation of solar panels **public lighting** is provided in the surroundings of the camp.

#### ❖ Enabling Eco-Tourism Project Models for Sustainable Development

Sustainable development is a permanent process. Help Tourism and ACT are working on the realisation of new projects and self-help groups. For an alternative livelihood development the implementation of **organic farming, medical plant or mushroom cultivation, local crafts and repairing shops** for small plants and machineries are planned. Additionally various **health service enterprise models** are suggested for self-help groups. To improve the **sanitation facilities** of the community currently different development agencies are requested for funding. The maintenance of these facilities could be organised by self-help groups against the collection of nominal fees. Another challenge is the creation of a **health insurance system**. Here different approaches are discussed with the community. A great contribution to an improved livelihood would be the existence of a **mobile swimming hospital**. By enlarging the area of operation resident doctors and nurses could be justified and attracted. The technical equipment would allow for example the cold storage of anti-venom for snake bites.



**Commercial Tour Operator Registered N.G.O.**



**Help Tourism and the NGO ACT-Association for Conservation and Tourism came in 2000**

#### ❖ Tourist Satisfaction

The success of any tourist destination lies in the satisfaction of the tourist after visiting the place. This is manifested in the number of tourists visiting the place, their feedback, duration of stay as well as their desire to make repeat visits. The number of tourists visiting Sundarban is increasing on a year on year basis. However, most of the tourists are not satisfied since tiger sightings in the wild are rare and destinations are over-crowded. As a result they did not want to make a repeat visit to Sundarban.

### **Target the tourists-Abroad and Domestic**

If we look at Sunderbans from the tourism point of view, the number of travellers visiting Sunderban

is approximately **100000** per year (**The Telegraph, 2008**). Out of these only about **3000-4000** are foreign travellers and out of the **100000** the remaining **96000** are from India. Statistics also show that out of these **96000** tourists, around **60%** tourists come from Kolkata and its suburbs and so the remaining **40%** are from other parts of India. Out of these above **60% travellers** from Kolkata, approximately around 30% are from the main city of Kolkata. So, clearly our target would be to increase the reach of Sunderbans to the domestic Indian markets as well as to the foreign markets.

### **Positive Effective of Ecotourism**

- The local people strongly supporting the need of ecotourism in this region.
- Status of Biosphere Reserve and World Heritage Site of Sundarban.
- Good number of domestic and foreign tourists visiting this destination.
- Unique culture of the local people.
- Already existing tourism infrastructure.
- Social mobilization through JFMs, SHGs, EDCs etc.
- Proper ecotourism package development involving local people in decision making and planning so that there is a larger involvement of the local people.
- Diversification of ecotourism products like stay in country boats, trail walks etc. which will help in retaining majority of the income generated with the local people.

### **Negative Effective of Ecotourism**

- Lack of coordination among local people.
- Low involvement of local people in tourism.
- Little incentive for the local people from tourism in terms of income generation.
- Migration of extremely poor landless people to Kolkata in search of job opportunities.
- Potential negative environmental impacts (damage to mangrove vegetation due to rise in salinity, loss of species due to tiger shrimp cultivation etc)
- Pollution by sewage, dumping of the wastes in river.
- Increase in biotic pressure due to increase in mass tourism.
- Lack of proper management causing negative impact on this fragile ecosystem.

### **Conclusion**

Sensitization about the environment as well as environmental education is best achieved through ecotourism. The livelihood opportunity component of ecotourism is considered to be a means of poverty alleviation of the local people. Focus should be on more involvement and participation of the local people in ecotourism. This will help in maintaining a social balance in terms of income generation of the local people. This will also reduce their dependence on

the forest to a great extent thereby aiding the conservation process. Only then will the local people get an impetus to conserve the environment.

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# Predicable Disaster in Uttrakhand due to Constructions of Huge Lakes, Tunnels and Roads Through the Help of Outdated Technology

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## Abstract

*Uttarakhand is one of the States of India, located near Himalayas, China border. State is catered by the hills and typical roads. In the half of June, 2013 and August 2012, severe rains lashed the Uttarakhand of the Himalayas, causing devastating in their wake. In June 2013 the thousands died in major landslides at a Kedarnath and Gangotri Region of Uttarakhand state. A Month later, the entire state Uttarakhand suffered from uncounted frequent landslides born tragedy of numbers of markets, lands, villages and well established points were swept away. The death toll, 10000(Approx) included pilgrimage, local person, Govt. servants, hotels / road workers, tourist porter, members of the border road organization(BRO), Uttarakhand police etc. Thousands of houses and other infrastructures were demolished by the torrential rains that had also hampered rescue efforts.*

**Key Words:** - Disaster, Tunnels, Land Slides, Mines, Huge Lakes

Garhwal Himalaya is as much known for its sylvan, serene and mundane environment, as for amazingly diverse natural grandeur and vividly varied and colourful cultural landscape. Owing to its strategic location in the mightiest mountain range of the planet earth, marked contrast in the biotic, geo-morphological as well as meteorological aspects are obviously inherent here. It seems as if the Mother Nature had used her best of the creativity in designing this enchanting piece of land, richly studded with so many of snow peaks, black mountains, glaciers, spectacular vales and dales, stupendous water falls, crystal clear lakes, swift cascading gurgling, tumbling falling foaming streams and rivers, daunting gorges, spurs and escarpments and, fabulous varieties of forest types inhabited by equally diverse fauna, including many a unique and rare species (Kandari and Gusain, 2001).

Unprecedented growth of human population during recent decades has necessitated the evaluation of production potential of various ecological systems, both natural and man-modified throughout the world. Emphasis has been placed on the efficiency of energy capture and the accumulation and dissipation of energy at different trophic levels (Singh and Misra, 1968).

Apart from whole villages like Sumgarh (2010) and Jaunpur and Raipur-Kaligad (August 2011), Gangori Uttarkashi (August 2012 ) and June 2013 swept away by the flood waters and cloud bursts out, life for the rest of the people have become more and more tenuous with the environmental deterioration of the Himalayas. Large-scale deforestation, largely attributable to construction of huge hydro projects, roads for their equipments through the help of power dynamites, machines by commercial contractors, has ravaged the hills. During the rainy season (June - September) the entire hill part of Uttarakhand state become land slide zone. Maximum those parts were come to contact with landslide zone which were constructed from the help of dynamites. It was observed during disaster by us that the we covered 105 Kms through walking within three days during June 2013 Kilometers from Chamba to Uttarkashi District (105 Kms Approx.) when maximum rain fall and disaster occurred in Uttrakhand State. We also covered 65 Kilometers (Rishikesh- Chamba) by bus, that road was made in 1970 by manual techniques, no any mines, modern machines and dynamites were use for that road construction , and that road was not blockade where as 10

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years newly constructed road were blockade at 43 sites from Chamba to Gangotri (202 Kms.) because that road were made by the help of dynamite, created through modern machines and blasting or explosive , so that the blasting affected area became more sensitive rather than old constructions through natural manual methods.

**Summary of the losses occurred in Uttarkashi:-** The Overview of damages in Uttarkashi-16-17 June-13 is as followings

- 43 human losses- 11 dead, 13 missing, 19 injured
- 135 villages are affected, 25 are worst affected.
- 2192 families have lost their domestic utensils, food materials, cloths etc.
- 1288 houses are damaged- 156 – completely, 268 - severely and 864 - minor damaged
- In Bhatwari block total 399 houses are worst hit - 88 Completely, 82 Severely and, 229 Minor Damaged
- In Barkot total 294 houses are worst hit- 30 Completely, 34 Severely and 230 Minor Damaged
- 176 primary and upper primary schools affected. 70 are completely damaged.
- 14 Aganwadies are completely damaged- 8 Purola, 4 Bhatwari & 2 in Mori block.
- 101 persons (23 families) are still in govt. relief camp.
- 103 villages are identified sensitive for land slides & erosion.
- Total 168 village, block & district connecting roads were damaged which serves to 435 villages
- 30 motor & 21 foot over bridges were damaged
- 157 cattle / domestic animal have lost
- More then 50 thousand pilgrims were stacked from Uttarkashi to Gangotri
- Schools were closed for more then 2 months
- Supply of Food grain and other daily needs was highly affected
- Health services were fully affected
- More then 500 acr. Agriculture land has washed which affected to 8132 families of the district
- Cash crop and other agriculture produce were also affected
- Village & school connecting foot-paths damaged
- Drinking Water lines and irrigation system has also highly affected

We can say the machinery use as well as modern techniques of roads making are more showing worst effects and responsible for huge landslides and erosion of the hills. So it is to suggest developing or using the safer techniques for cutting hills for making paths for human ease. Certain other causes are also mentioned below are the base of Climate Change as well as affecting human lives -

- 1- Deforestation at mass level and plantation at lesser level.
- 2- Hyper use of motor vehicles like motor bikes, cars, others; if there are 5 members in a family all are having different types of vehicles.
- 3- Excessive origin of the factories and mills and they do not fulfill the criteria of pollution control.
- 4- All kinds of constructed should be ban on newly constructed roads till 10 years and road should be constructed maximum distance from rivers.
- 5- Drainage of waste water in the rivers.
- 6- No safer disposal of the excreta, garbage and other things such as plastic; as high level of use of plastics.
- 7- Human are not using e-bills, e-services etc. for saving plants.

### **Conclusion:**

After this disaster ,we have learn so , faced, seen so many good,bad, unplanned, selfish activities so the conclusion of my study are as followed

- I. We should mobilize our resources to generate the required funds, food packets, bottled water, blanket, tents, medicines and other relevant requirements to the victims based on the data available with us.
- II. We should organize health camps and blood donation camps across the State or Country through collective/individual efforts to ensure fulfillment of blood requirements to the injured at different locations at no cost basis. To make it sure and should appeal through media channels/news papers indicating the venue and time or it can also be done through the mobile vans at different locations of the city (whichever is convenient).
- III. We should aware for uncivilized activities and inform timely police, should watch unsocial persons and outside labor, worker etc.
- IV. We provide proper food supplements not only food ,should given balance food i.e spices salt, oil, vegetable etc.
- V. We should provide relief priority basis and approach those location where the difficult to approach where no body can approach

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# Sustainable Development through Horticulture in Uttarakhand

6

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## Abstract

*Horticultural crops play an important role in human nutrition, preventing diseases as well as the nation's development and prosperity. Fruits, vegetable, flowers, spices are not only grown in large quantities on a commercial scale but also within home ground. This study focus on the potential of horticulture, throw light on problems faced by grower and bring forth some suggestion for the development of horticulture in uttarakhand. The present study is based on the analysis and evaluation of secondary data. The information is obtained from the reports of Department of Horticulture & Food Processing and Directorate of Horticulture, Uttarakhand. Although grassroots problems are still present such as road connectivity, lack of information, storage facilities but by establishing cooperative societies, easy loans, encouraging citizen for home gardening will not only help in sustainable economic development but also in environment stability.*

**Keywords:** *Horticulture, Economic Development, Environment, Sustainable.*

## Introduction

Horticultural crops play an important role in human nutrition, preventing diseases and contributing to the nation's sustainable development and prosperity. Fruits and vegetables are rich source of vitamins, minerals, proteins and carbohydrates that are essential in human diet. Flowers and ornamental crops enhance aesthetic value of our environment while medicinal crops yield pharmaceutical constituents. Thus, horticulture assumes great importance in food and nutritional security, general health and well -being of our population and also helps in self-dependency.

Horticulture crops form a vital part of the Indian agricultural production. India is the second largest producer of fruits and vegetables in the world. Cultivation and processing of these crops generate significant employment opportunities for the rural and semi-urban population. In addition, marketing creates employment prospects for the urban poor which in turn ensure better livelihood security. In literature, importance of horticulture in improving productivity of land, economic conditions of the farmers and entrepreneurs, enhancing exports and above all, providing nutritional security to common masses is widely acknowledged.

Horticultural sector including fruits, vegetables, spices and flowers with a share of about 6 per cent in total cropped area contributed maximum (32 per cent) to the total value of crop production in 2011-12. Moreover, gross value of fruits and vegetables grew at an annual rate of 5.6 per cent that was higher than growth of any other crop between 1995-96 and 2011-12. This achievement is commendable since growth in their contribution was one of the lowest (2.9 per cent) between 1981-82 and 1995-96 (BIRTHAL *et al.*, 2008). It would be useful to point out that production of horticultural crops in India has increased from 97 million tonnes in 1991-92 to 250 million tonnes in 2011-12. Area expansion and growth in yield are responsible for this success.

Food security, nutritional security, sustainability and profitability are the main focus of present and future agricultural development. The high value horticulture, particularly horticultural crops are the catalysts for the next wave of growth in the farm sector. The statistical evidences point out that share of cereals and pulses in the per capita food expenditure has reduced from 40 to 28 per cent between 2000 and 2011 while that of high value products including fruits and vegetables rose from 36 per cent to 42 per cent during the

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same period. Therefore, future of agriculture and food sector will rest on crop diversification towards high value crops and higher value addition. In addition, increase in horticulture sector's share in the export pie will also come from this sector. Despite the overwhelming importance of horticultural sector and Uttarakhand being the leading producer of fruits and vegetables, available statistical evidences are scant.

### **Review of Literature**

Wadia (1974) have been pointed out the reasons for slow growth of horticulture and highlighted various factors which retard the horticulture growth, have conclude that various agronomic for example improper upkeep of orchards, lack of properly trained personnel, non-availability of certain critical inputs etc, were listed as major factors for slow growth of the horticulture sector.

Azad (1989) analyzed the techniques of optimizing fruit production in European countries, and revealed that by establishment of Super Market in European nations on the one hand and producer's cooperatives on the other, the monopolistic tendencies of the wholesalers had reduced so he stressed the need to develop supply organizations of our produce on cooperative lines.

Shastri (1990) made an assessment of horticulture resources in U.P. hills and concluded that a rising output in state alone could not be ensured a success in case of horticulture produce unless efforts were made to solve the problems related with the production of horticulture crops, such as providing road links, progeny orchards, community canning-cum-training centers, grading and packing centers, cold storage and rope-ways for easy transport.

The study conducted by Sati (2000) discussed the problems and promotion of the horticulture in the Alaknanda Basin (Uttarakhand) in which, the problems were divided into five groups viz.-small and scattered holdings, high initial investment of orchards, transport and marketing of the produce, high cost of processed product and lack of receptiveness of growers to scientific methods of cultivation. The study conclude that a sizeable proportion of geographical areas in devoted to fruits and land from cereal crops is shifted to horticulture, it will help in maintaining better standard of living of rural people as well as restoration of environmental balance, through soil conservation and better utilization of cultivated wasteland.

Sharma *et al.* (2006) emphasized on improving the availability of quality fruits and vegetables to markets and processing units. Strategies to be adopted at production, harvesting and post harvest levels appropriate to Indian scenario are suggested in the study. Mechanical injury, infestation and poor handling of fruits and vegetables reduce the market price drastically as also processed product quality. It is thus imperative to develop and follow certain strategies to minimize these injuries to fruits and vegetables for supply to markets and processing units. Horticultural produce needs special attention on two accounts i.e. protection from sunlight and hygiene in the compound and the need of terminal markets is therefore highly necessary.

Indian horticulture is dominated by small and marginal farmers. According to the Agricultural Census, 2001, 81.9 per cent of holdings were less than or equal to 2 ha and had an average size of 0.59 ha. Among horticultural crops, vegetables are more pronounced on small farms, while fruits and spices occupy a larger share on large farms. These differences are expected. Vegetables generate quick returns, require low capital and relatively higher labour input, which match resource endowments of the small farmers. Since fruits and spices require higher initial capital and have a long gestation period; these do not suit to small farmers who are capital constrained. Therefore, small farmers generally diversify towards vegetables because of surplus labor and liquidity constraint (BIRTHAL *et al.*, 2008).

Horticulture can be promoted as a means of agro-diversification for the second green revolution in India, providing the much-needed impetus to the growth of agricultural sector, through increase in trade, income and employment. The Indian horticulture is diversifying towards production of high value commodities along with increasing role of small farmers (Surabhi Mittal, 2009).

With 90 million tonnes of vegetable production in 2003-04, India ranked as the highest producer of vegetables. In the world, India occupied first position in the production of cauliflower, second in onion and third in cabbage (Ramesh Chand *et al.* 2008). The per hectare share of output of horticultural crops is more than 6 times that of cereals. As such, horticultural industry should focus on targeted commodities and raise output to trigger agricultural productivity in leading sub-sectors, which show potential.

Most of horticultural commodities are sold in raw form at low prices, especially when there is a glut. Higher income could be generated through value addition by processing which reduces post-harvest losses and lengthens shelf life. Solution to overcoming challenges and unlocking potential of the horticultural sector lies in forming strong producer groups, producer-marketing alliances and producer-researcher working groups. There is a need for substantive investment in irrigation, biotechnology, plant breeding, post harvest technology, fertilization, pest and disease management and food safety to enhance growth (Prakash Ojha, 2010). The horticulture production per unit of area is significantly higher as compared to cereals. Since one or other crop will always remain in field or at maturity, manpower can be judiciously used in the field and even crop failure will not be a serious setback to the growers. The yield of rice or wheat is 3 to 4 tonnes per hectare as compared to 15-20 tonnes yield of cabbage or potato.

Indian Roads and Transport development association, Bombay (2010) made a study on Effective Marketing of Fruits, and made some suggestion to achieve it (a) through the development of rural roads, (b) through dispensing with the need to apply for permits for inter-state operation for vehicles of 7 1/2 tonnes load and below, (c) through designing slotted angel racks or similar arrangements in the body of vehicle chassis to spare the basket in each row, (d) through allotting adequate foreign exchange for the import of refrigeration equipment for trucks, (e) through rescuing inter-state road transport from overlapping taxation.

Veram (2011) analyzed year-wise production and exports of various fruits from Himachal Pradesh and also worked out that due to higher returns from fruits there has been a significant shift in area towards fruits from field crops particularly in temperate zone. Various infrastructural facilities and dependency of horticulture sector on forest had been studied. It was also observed that fruit farming was more remunerative than field crops. The future of horticulture was discussed in detail by author keeping in view the present status of horticulture in state.

This review of literature reveals that the horticulture could be a mean of sustainable development in the hill region and also offer more research possibilities. Studies have been on the scope of horticulture in hilly area and especially on Himachal Pradesh, Jammu and Kashmir but less work was done on Uttarakhand and horticulture potential in Uttarakhand is also untouched.

### **Objectives of the Study**

- To analyze the present scenario of Horticulture in Uttarakhand.
- To access the potential and prospects of horticulture in Uttarakhand.
- To determine the problems and constraints for horticulture in Uttarakhand.
- To bring forth some suggestions for sustainable development through horticulture in Uttarakhand.

### **Research Methodology**

The present study is based on the analysis and evaluation of secondary data. The information was obtained from the reports of Department of Horticulture & Food Processing, Directorate of Horticulture, journals, books, magazines, unpublished thesis and websites. The collected information was analysed and compiled within the purview of sustainable development of Uttarakhand through horticulture.

### **Composition of Horticultural Crops in Uttarakhand**

Horticultural crops comprise a large variety of crops including fruits, vegetables, spices, and flowers, medicinal and aromatic plants. In view of the large genetic base available, crops adapt to diverse conditions of soil and climate. Table 1 presents share of individual crops in total area and production of horticultural crops in Uttarakhand. This scenario is dominated by fruits. The share of fruits in area and production of horticultural crops was as high as 73.12 and 53.61 per cent respectively. Vegetables occupied second rank with 22.65 per cent share in area and 41.04 per cent share in production. A higher contribution in production indicates better productivity of vegetable crops in the state. Spices are well known as appetizers. These are also considered essential in the culinary art all over the world. Some of the spices possess anti-oxidant properties and others are used as preservatives. India is the largest producer as well as consumer of spices in the world. Even in Uttarakhand, there is no cuisine without addition of one or more spices. Spices formed around 3.73 per cent of area under horticultural crops and contributed 4.95 per cent to total production. The higher contribution in production could be due to good yield.

**Table 1**  
Share of Fruits, Vegetables, Spices and Flowers in Total Area  
Production & Yield of Horticultural Crops in Uttarakhand during 2011-12

S.NO.	ITEM	AREA(HA)	% SHARE	PRODUCTION (MT)	% SHARE	YIELD (MT/HA)
1.	Fruits	198169	73.12	792077	53.61	3.99
2.	Vegetables	61392	22.65	606508	41.04	9.88
3.	Spices	10107	03.73	73101	04.95	7.23
4.	Flowers	1346	00.50	5869	00.40	4.36
	<b>TOTAL</b>	271,005	100	1477,555	100	5.45

*Source: Horticulture Production Data (From 2002-03 to 2011-12), Department of Horticulture & Food Processing, Uttarakhand.*

In Uttarakhand, floriculture is also getting popular among the farmers. These are being grown near the places of pilgrimage and semi-urban areas. Around, 0.50 per cent of area under horticultural crops was devoted to flowers and thus, a marginal share of total area under horticultural crops was devoted to them. The floriculture contributed 0.40 per cent in production of horticultural crops. The yield of flowers in Uttarakhand was 4.36 MT/ha during 2011-12 which is below the national average. The district wise area, production and yield is shown below in table form.

**Table 2**  
*District-wise Area, Production and Yield of Horticultural Crops in Uttarakhand during 2011-12.*

S.No.	District	Area (Ha)	% Share	Production (MT)	% Share	Yield (MT/ha)
1.	Nainital	34,719	12.81	190,606	12.90	5.49
2.	Udham Singh Nagar	13,867	05.12	113,327	07.67	8.17
3.	Almora	29,315	10.82	226,993	15.36	7.74
4.	Bageshwar	5,507	02.03	29,705	02.01	5.39
5.	Pithoragarh	21,704	08.01	122,428	08.29	5.64
6.	Champawat	15,489	05.71	37,115	02.51	2.40
7.	Deharadun	35,765	13.19	182,746	12.37	5.11
8.	Pauri Garhwal	26,207	09.67	58,621	03.97	2.24
9.	Tehri Garhwal	29,108	10.74	97,192	06.58	3.34

10.	Chamoli	18,614	06.86	130,115	08.81	6.99
11.	Rudraprayag	4,252	01.57	12,121	0.82	2.85
12.	Uttarkashi	16,957	06.27	109,042	7.37	6.43
13.	Haridwar	19,503	07.20	167,545	11.34	8.59
<b>TOTAL</b>		271,005	100.00	1477,555	100.00	5.45

Source: *Ibid*

Table 2 presents overall scenario of horticultural crops during 2011-12. Dehradun, Nainital, Almora and Tehri Garhwal are the major districts growing horticultural crops in Uttarakhand during 2011-12. These districts together shared 48 per cent of total cultivated area of horticultural crops in the state. The contribution of these districts in production was almost the same. In addition, Pauri Garhwal accounted 9.67 per cent share in total area but its contribution in production was only 3.97 per cent due to dismal level of productivity. The per hectare productivity of horticultural crops in Uttarakhand is 5.45 MT/ha. Haridwar, Udham Singh Nagar, Almora, Chamoli and Uttarkashi registered yield level above the state. Rudraprayag, Champawat and Pauri Garhwal showed extremely poor yield and hence, all efforts are needed to improve productivity in these districts.

### Horticulture Potential in Uttarakhand

Uttarakhand have immense potential for development of horticultural crops and almost all types of fruits, viz. apple, pear, plum, peach, almond, apricot, guava, litchi etc. are being grown successfully in valley areas and foothills. This region also offers a good potentiality for growing certain specialized crops such as mushrooms, olive, spices (like ginger, turmeric etc.), ornamental flowers (gladiolus, tuberose, lilies, tulips, dahlias etc.) which not only hold commercial value but also have export potential as well. These horticulture crops not only increase per unit area productivity but also help in protecting and improving the environment. It is important to note that physiological conditions of the state are suitable for the fruits and vegetable production of both temperate and subtropical production. The fruit production is bringing better return to the growers in the state. Horticulture is not only an important source of income of the people, but also provides employment to sizeable section of society.

Now we are going through with some important fruits and vegetables cultivation locality and potential in Uttarakhand.

**Table 3**

*Important Fruit crops, varieties, months of availability and important Localities of cultivation in Uttarakhand*

Name of Fruit with important varieties	Months of availability	District wise important localities of cultivation
<b>Apple:</b> Faany, Benoni, Golden delicious, Rymer etc.	June To October	Almora: Lamgara, Saharfatak, Tarikhet Nainital: Ramgarh, Dhari, Paharpani. Tehri: Chamba, Dhanuly. Dehradun: Chakrata.
<b>Plum:</b> First Plum, New Plum, Mariposa	May To June	Almora: Lamgara, Tarikhet Pithoragarh: Didihat, Champawat Pauri: Khirsu, Pauri.
<b>Citrus:</b> Eureka lemon, Kagzi lime, Hill lemon	November To December	Uttarkashi: Purola, Naugao Chamoli: Joshimath, Ghat Pithoragarh: Didihat, Champawat
<b>Litchi:</b> Early large red, calcuttia, Rose Scented	May To June	Nainital: Ramgarh, Halwani Dehradun: Dun valley Pauri: Kotdwar, Srinagar.

Source: *S.P.Sati & M.C.Sati, uttarakhand statehood, 2011.*

**Table 4**

*Important vegetables and their varieties, months of availability and important Localities of cultivation in Uttarakhand*

<b>Name of vegetables with important varieties</b>	<b>Months of availability</b>	<b>District wise important localities of cultivation</b>
<b>Pea:</b> Azad P-1, arkel, uphar	Round the Year	Dehradun: Doiwala, Doon pant valley, vikasnagar Nainital: Garampani, vetalghat, suyalbari, bhowali, bhimtal, talla ramgarh, Padampuri Tehri: Chamba-Mussoorie belt, pratapnagar, narendranagar
<b>Cauliflower:</b> P.S.B. 16, pusa ketki, pusa deepali, pant subhra, Himani	May to June September to October	Dehradun: Doiwala, Doon valley, mussoorie, Sahia Nainital: Garampani, vetalghat, suyalbari, bhowali, bhimtal, talla ramgarh, Padampuri
<b>Okra:</b> pusa sawani, pusa makhmali, Punjab padmini	April to September	Dehradun: Doiwala, Doon valley, vikasnagar, mussoorie, Sahia Puri: Pauri, jaharikhal, khirsu, Srinagar, satpuli, kotdwar, khandusian Nainital: Garampani, vetalghat, suyalbari, bhowali, bhimtal, talla ramgarh, Padampuri
<b>Brinjal:</b> pant samrat, pusa basanti, pusa purple long, pusa H-4	April to May August to January	Dehradun: Doiwala, Doon valley, vikasnagar, mussoorie, Sahia Puri: Pauri, jaharikhal, khirsu, Srinagar, satpuli, kotdwar, khandusian Nainital: Garampani, vetalghat, suyalbari, bhowali, bhimtal, talla ramgarh, Padampuri Almora: Dawrahat, ranikhet, bamseon, bhujan, majkhali, hawalbagh, bageshwar dunagiri.

*Source: S.P.Sati & M.C.Sati, uttarakhand statehood, 2011.*

Uttarakhand region is ideally suited for production of fruits and different vegetables. To improve the economy of farmers in remote hill areas horticulture production offers good scope. Due to low volume, high value and non-perishable nature of (if properly dried and packed) vegetable, production can be made popular in the areas where transportation problem prevent the production of high volume low value horticulture corps.

On an average, the net income per hectare off-season vegetables ranges from 8000 to 15000, Singh M. (2005). In favourable locations, the vegetables are grown twice or thrice in a season and the profit get multiplied accordingly. Vegetable growing in hills, therefore, is highly remunerative and has immense scope for improvement of economy of the hill people. By extending and improving the cultivation of off-season vegetables quicker economic gains can be achieved than from those fruit trees, though the vegetables certainly do not provide the ecological and environmental benefits and other advantages that come from the fruit plantations. With the population of 1.01 crore (census 2011) and a total geographical area of 5.35 million ha in which 4.6 million ha (86%) is hilly area and 0.74 million ha (14%) is plain area. There is a high potential of horticulture development.

**Table 5**

*Year to Year Percentage Change in Area, Production and Yield of Horticultural Crops in Uttarakhand during 2002-03 to 2011-12.*

<b>Year</b>	<b>Area (Ha)</b>	<b>Production (MT)</b>	<b>Yield (MT/Ha)</b>
2002-03	116708	889823	7.62



2003-04	103350 (-11.44)	847101 (-4.80)	8.2 (7.61)
2004-05	213345 (106.42)	1092607 (28.98)	5.12 (-37.56)
2005-06	240512 (12.73)	1201151 (9.93)	4.99 (-2.53)
2006-07	247252 (2.80)	1292903 (7.63)	5.23 (4.80)
2007-08	255012 (3.13)	1354733 (4.78)	5.31 (1.53)
2008-09	258905 (1.53)	1379482 (1.83)	5.33 (0.38)
2009-10	323341 (24.88)	1358147 (-1.55)	4.2 (-21.20)
2010-11	271004.5 (-16.19)	1477555.27 (8.79)	5.45 (29.76)
2011-12	275195.67 (1.54)	1505289.66 (1.88)	5.46 (.18)

*Source: Horticulture Production Data (From 2002-03 to 2011-12), Department of Horticulture & Food Processing, Uttarakhand*

So far, we have analyzed area, production and yield of horticultural crops at one point of time in Uttarakhand. The importance of year to year percentage change in area, production and yield of horticultural crops has over whelming importance for analyzing development of these crops. Table 5, illustrates year to year percentage change in area, production and yield of aggregate horticultural crops from 2002-2003 to 2011-12.

The table shows wide variations in percentage change from year to year in fruit production Uttarakhand during this period. It was as high in 2004- 05 over 2003-04 while, it was observed negative in 2003-04 over 2002-03. The lowest change was observed in 2009-10 over 2008-09. The year to year percentage change in production of fruits in Uttarakhand also indicates significant variations. It was found highest in 2005-06 over 2004-05 while, it was recorded negative in 2009-10. The year to year percentage change in yield of fruit crops in Uttarakhand during 2002-2003 to 2011-12 was found mixed. The maximum increase in yield was observed in 2005-06 over 2004-05 whereas, it was found negative in 2009-10 over 2008-09 and in 2004-05 over 2003-04. There were decline in yield of fruits during the second year. It could be due to severe change in climate related factors.

Table 5 also depicts year to year percentage change in area, production and yield of total vegetable crops in the state during the above stated period. Like fruits, year to year percentage change in these parameters in case of vegetables is significant. The highest positive change in area was observed in 2004-05 over 2003-04. This year also recorded significant increase in production of vegetables due to acreage expansion but yield declined. A negative change in area, production and yield was recorded during 2005-06 over 2004-05 and 2003-04 over 2002-03. The yield increased at differential rates in these years and the highest positive change was observed during 2003-04 over 2002-03.

Having analyzed year to year percentage change in area, production and yield of fruits and vegetables in Uttarakhand, we analyze the same for spices which indicate wide variations in these indicators. The percentage change in acreage under this group was as high in 2009-10 over 2008-09 while; it was recorded negative in 2003-04, 2004-05 and 2010-11. The yield also indicated huge year to year variations. The maximum positive change was observed during 2010-11 while it was negative during the previous year.

The cultivation of flowers has picked up well in Uttarakhand after the new millennium. As a result, area has significantly increased from in 2004-05 to 2011-12. The highest percentage change in area could be noticed in 2005-06 over 2004-05. The rising trend in production

since 2006-07 was due to area expansion and yield increase. The maximum increase in yield of flowers was recorded in 2006-07 while, it was found negative in 2005-06.

An examination of year to year percentage change in area, production and yield of horticultural crops in Uttarakhand between 2002-03 and 2011-12 indicates wide variations like individual groups. The highest change in acreage could be noticed in 2004-05 over 2003-04 and negative in 2010-11 over 2009-10. The yield has also shown negative as well as positive variations which affected production. The highest positive change in production of horticultural crops was observed during 2004-05 over 2003-04. However, it was recorded negative in some years.

### **Problems and Prospects of Horticulture in Uttarakhand**

We have already discussed that horticulture is an important sub-sector of agriculture in the hilly areas of Uttarakhand. It provides much needed opportunities for diversification towards high value crops which yield higher income in comparison to traditional crops and thereby improve livelihood security of the farmers in hilly areas where non-farm sources of income are extremely limited.

- Villages are situated in considerable distance from the road head ranging from 3-6 km. In rainy season orchards face the problem of delivery of their products to market.
- One of the main problem of this sector is that is maximum portion of production is affected by scab disease.
- Problem faced by the farmers are late information, information available for limited market only, inadequate information, misleading information, has adverse effect on their product price.
- Generally, growers are having small land holdings, which are ranging from 20-25 nales (One hectare is equal fifty nales). The consolidation of land is prevailing in case of fruits, whereas in case of vegetable it is lacking.
- Despite of importance of irrigation growers of the area cannot afford the expensive system of irrigation like canals, wells, pond; therefore, the irrigation is totally depends on rain.
- There is generally a shortage and high packing boxes and material. The non-availability of packing material in time, cause unnecessary delay and high marketing cost.
- There is not even a single cold storage in the area; hence, producers are bound to sell their produce just after picking, bearing a heavy financial loss.
- Presently no cooperative society is existing in the area.
- Producers have poor bargain in terms of price fixation, as they are unorganized.
- Middlemen are getting the highest share in consumer's price, while grading and packaging is contributing the maximum cost in total marketing cost.
- Despite immense horticulture potentiality, government does not seem to be serious for the development of horticulture in the region. The efforts carried out by government are little in view of requirement.

Hence these factors together affect productivity negatively and reduce returns from cultivation of these crops which in turn influence farmer's decisions in area allocation. However, recent policy measures for development of horticultural crops in Uttarakhand helped in area expansion but productivity of most of the horticultural crops still remains low in the state in comparison to the all India level. Indeed, Uttarakhand has great advantage of agro-climatic diversity for growing a large variety of horticultural crops. This natural advantage should be exploited to the benefit of farmers.

### **Suggestion for Sustainable Development through Horticulture in Uttarakhand**

Development of horticulture in Uttarakhand needs some critical management inputs particularly that of supply chain management- collaboration among various stakeholders along with efficient vertical and horizontal integration. The horticulture sector in particular has to prioritize development of research in the issues of genetics, biotechnology, integrated and sustainable production systems, post-harvest handling, storage, marketing and consumer education.

Diversification offers an attractive option and a major source of pushing up growth of horticultural sector. While technological up-gradation and associated institutional changes are identified as thrust areas for future development of the horticulture sector, exports are considered to be most important for the growth of the sector. Uttarakhand can look forward to emerge as a major producer of horticultural products and thus secure reasonable market access for its agro exports, which are largely dependent on the competitive technologies that will help in enhancing export potential. This development will also help in overall growth of the economy through generation of extra foreign exchange, creating employment opportunities and also upliftment of the small and marginal farmers, with definite positive implications on income and employment. Apart from above following suggestion would be helpful for sustainable development of horticulture in Uttarakhand:

- A gap was observed in the share in production and area in case of fruits. Therefore, there is an urgent need to augment productivity of fruit crop in state. Increase in productivity has to come from improvement in technology.
- Provision should be made for fixing **electricity supply rates** per unit at par with the agricultural crops.
- Provision should be made for the availability of enhanced supply of **canal irrigation** water to horticultural crops.
- Provisions should be made for **subsidies @ 75% and 50%** for the establishment of large and small scale post harvest management and processing infrastructures respectively. In order to save the farmers from distress sale of horticulture produce in case of glut situation.
- Provision should be made for production of **disease free** and hybrids quality planting material should be used. To improve the orchard efficiency the rejuvenation of old and unproductive, senile plantations can be made through substitution of old varieties with improved high yielding.
- Provision should be made for **reduction in cost of production** by reduction in cost of fertilizer by determination of plant needs through leaf nutrient standards and applying only required quantities.
- Provision should be made for the **full utilization of area** through inter-cropping /mixed cropping in existing orchards, though identification of synergic crops e.g. growing of crops in vacant space, growing of shade loving crops in grown up orchards.
- Provision should be made for creation of **small scale market outlets/auction yards**, storage of produce and marketing infrastructure for the easy marketing of horticultural produce, specially Medicinal and Aromatic plants so that farmers may be motivated towards the cultivation of these crops.

- Provision should be made for improvement of **research and development support** for production technologies. Necessary arrangements should be made to provide the benefits of the research to the growers.
- **Value added products** are now attracting more markets hence development of new value added products in horticulture need to be developed and popularized. For which the processing capacity of existing units needs to be argued and modernized.
- **Roadside marketing** can also be a suitable alternative to the growers of the area, which involves product selling from the back of a truck or from a roadside stand. The growers transport the products to a strategic spot and display them in the back of the truck in containers arranged nearby.
- **Processing unit** of spices, Medicinal/aromatic plants may be established within the approach of farmers so that the farmers are not compelled to sell the produce as raw material.
- Provision of various back ended capital **subsidies and financial assistance** to provide broader base.
- Provisions for a special **channel on television** highlighting the issues related to strengthening of horticulture sector for creative awareness among the farming community.

### Conclusion

Improving infrastructure and removing bottlenecks hindering growth of productivity of horticultural crops hold prime importance for achieving the desired level of horticulture development in the state. The easy availability of planting material including region specific improved variety of seedlings needs urgent attention in policy.

Fortunately, solutions are at hand. The availability of bank credit for infrastructure related projects can bridge the gap in much needed finance. Often, projects get stuck at various levels of implementation due to regulatory hurdles such as delay in environment clearance and associated problems. These problems fall under the policy and administrative realm and therefore, it is the responsibility of the government to resolve them. In fact, these should be taken up by the government on project to project basis. Resolving the inputs and infrastructure conundrum will definitely make the difference to horticultural development not only for the future but even the present.

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# Sustainable Management from Operations Management View: A Study on Select Indian Companies

7

D. Ghosh

## **Abstract**

*In the first changing business operations companies are competing with each other to win the market share. In order to stay in the competitive market the companies are producing the superior quality products with latest features. Thus innovation is vital concern for the firm. The innovation may be in the way of product innovation or may be in the light of process innovation. The innovations actually place the firms in better zone of operations. The manufacturing firms always depend on the vendors for raw materials, fuels and other natural resources. The raw materials, fuel & other natural resources need for production are scarce in nature. The optimum utilization of scarce resources is basically the key operations of the firms. The operations of green supply chain management, reverse logistics & optimization techniques are the vital approach to manage the natural resources. The current paper will discuss the different techniques of green supply chain management, reverse logistics, optimization approach for managing the natural resource. The paper also made an attempt to focus on few real life case studies of Indian Companies for managing the natural resource and also will suggest some concrete strategy for the management of natural resource. The objective of the paper is to find out the best operations strategy for managing the natural resources. The Research Methodology adopted is basically the exploratory type, where secondary sources of information are collected. Findings are impressive in the fields of green supply chain management, reverse logistics, optimization approach.*

**Keywords:** *Green Supply Chain, Reverse Logistics, Optimization, Innovation & Competition*

## **Introduction**

With the fast changing business environment the business firms are competing with each other to have better market share. The competing firms are offering customers the products that are with competitive cost and quite differentiable from the competitors. The main focuses of the firms are to add value to the products. The continuous effort from the firms is to ensure better business practices so as to form sustainable operations.

The central theme of the competition is to practice innovations in every aspect of the business activities like manufacturing, distribution, procurements etc. The efforts are in the areas of product innovations as well as in process innovations. The product innovations brings new features, shape, applications into the existing product and thereby try to ensure better position into the market where as process innovations takes care of the processes that are responsible for manufacturing products. The process innovations deal with the designing of the new methods as well as applications for the process. Innovations are responsible to bring better products into the market& designing more sustainable business processes.

## **Review of Literature & Conceptual Framework**

Through the process of innovation the firm achieves the zone of success. In the process of production raw materials are procured from the vendors and the manufacturing activities are undertaken at the manufacturer's locations, thus the Supply Chain Management comes into the picture. The Supply Chain Management ensures better movement of the products throughout the links operated from the point of vendor to the retailers or customers. The availability of the product is ensured in the Supply Chain also there is a possibility of tracking the products in the chain. The business firms now-a-days practising the green supply

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chain as well as reverse logistics in their operations so as to ensure better sustainability in their business operations. Following sections made an attempt to discuss the green supply chain and reverse logistics.

## 2.1.Green Supply Chain

The Green Supply Chain ensures the practice of supply chain and purchasing by considering the environmental issues. It consists of the purchasing function's involvement in activities that include reduction, recycling, reuse and the substitution of materials. It is the Integrating environmental thinking into a supply chain management, including product design, material resourcing and selection, manufacturing processes, delivery of the final product to the consumer as well as end-of-life management of the product after its useful life. Study conducted by Sang M. Lee, Sung Tae Kim, Donghyun Choi, (2012) focused on effect of GSCM (Green Supply Chain Management) efforts and other organizational factors on firm performance of small and medium enterprises (SMEs) that serve as suppliers to large customer firms in the electronics industry. This study indicated that business performance can be improved when GSCM enhances operational efficiency and operational efficiency.

Aref A. Hervani, Marilyn M. Helms, Joseph Sarkis, (2005), discussed various issues related to environmental (green) supply chain management performance measurement. They provided an integrative framework for study, design and evaluation of green supply chain management performance tools.

During the recent times number of contribution came from different thinkers about the product life cycle during material selection (Kaiser et al. 2001), impact of green purchasing on a firm's supplier selection (Zhu and Geng 2001), waste management (Theyel 2001), packaging and regulatory compliance (Min and Galle 2001), greener manufacturing and operations (Sarkis 2001), study of the environmental management system (EMS) implementation practices (Hui et al. 2001), selection of environmental performance indicators (Scherpereel et al. 2001), relationship between environmental and economic performance of firms (Wagner et al. 2001), focus on third-party logistics providers (Krumwiede and Sheu 2002; Meade and Sarkis 2002), overview of management challenges and environmental consequences in reverse manufacturing (White et al. 2003) and extended producer responsibility (Spicer and Johnson 2004), including OEM, pooled and third-party take-back. The corporate sectors are adopting all the practices to improve their performance.

Benita M. Beamon, (1999) highlighted on: (a) the environmental factors leading to the development of an extended environmental supply chain; (b) the elemental differences between the extended supply chain and the traditional supply chain; (c) the additional challenges presented by the extension; (d) performance measures appropriate for the extended supply chain; and (e) a general procedure towards achieving and maintaining the green supply chain.

Remko I. van Hoek, (1999) focused on green steps to take, and green supply chains to make in practice, as a step up to lowering the ecologic footprint of supply chains.

### 2.1.1 Traditional Versus Green Supply Chain

While the scenario in traditional supply chain is basically straight forward, where the products flows in unidirectional and linear, lack of collaboration between the links of the supply chain, lack of emphasis on environmental issues. The different supply chain links has limited information regarding, for example, the carbon footprint and greenhouse gas emission of the other links. Hence, each player may be concerned about his own footprint and may try to reduce this, irrespective of the impact on upstream and downstream supply chain.

Green Supply Chains on the other hand takes into account the environmental effects of all processes of supply chain from the stage of raw materials to the final delivery of products.

The supply chain partners influences each other to go Green and provides the necessary information, support, and guidance, for example, through supplier's development programmes or customer support. Environment objectives and performance measurement are then integrated with financial and operational objectives.

The Green Supply Chains achieves what any individual organization on its own could not possibly achieve: like minimized waste, minimized environmental impact while assuring maximized consumer satisfaction, and value addition with profits. From the consumer perspectives the consumers have become more aware of environmental issues, such as global warming, they seeking information about the products they are purchasing. Nowadays, corporates routinely face queries about how Green their manufacturing processes and supply chain are, how wide the carbon footprint is, how wasteful their packaging is, and how they recycle. Thus overall the competition in the market is very turbulent.

### 2.1.2 Recent Business Trends

The situation in front of the corporate is very challenging. The Chemical firms faced strong regulatory pressure to manufacture in a more environmentally-friendly manner. Electrical and electronics companies typically produced most of their component parts by themselves and were therefore under less pressure to green their supply chain. They also appeared to face less pressure from consumers, since they have a lower carbon footprint compared with the automobile and chemical industries. Automobile and electrical and electronic industries typically employed specialist staff responsible for environmental issues and regulations, making it easier to adopt GSCM methods. In contrast, businesses in the chemical and textile sectors without specialist environmental management found it more difficult because they lacked the necessary expertise (L., Mathiyazhagan. K., Govindan, K., *et al.* 2013.).

The different mechanisms to ensure green supply chain management are as follows:

- Visionary Leadership: To survive in the competitive era organizations need to innovate continuously and also need to ensure quality of the product which they are delivering into the market, by following all the environmental norms. The success in this approach becomes much more fruitful by the support of the top management. As it is the top management which can provide the requisite directions (Yeung et al. (2003).
- Quality and Cost: While manufacturing the products the manufacturers must keep an eye on the quality of the products. Quality becomes the utmost important factor in the products. Simultaneously the cost needed to bring down by the manufacturers.
- Environmental Performances: Environmental performance is defined as the environmental impact that the corporation's activity has on the natural background (Sharma and Vredenburg, 1998). Environmental performance indicators are OPI (operative performance indicators) and MPI (management performance indicators): OPI are related mainly to materials' consumption, energy management, waste and emission production, and evaluation of real environmental aspects of organizations, whereas MPI mainly concerns the administration's efforts, measures, and contribution to the overall organization's environmental management . GSCM stresses more than just improving



environmental performance; the implementation of green supply chain management can ensure that the corporation itself and its suppliers conform to environmental regulations.

- **Green Marketing:** Green marketing consists of environment-friendly packaging, distribution and so on. They are all initiatives that might improve the environmental performance of an organization and its supply chain. Management of wastes in green marketing such as reverse logistics and waste exchange can lead to cost savings and enhanced competitiveness (Rao,2003).
- **Recycling:** Production activities need to ensure recycling process also as to optimally utilize the resources. Thus, recycling is the process of taking a component material and processing it to make the same material or useful degraded material. The useless product or waste product cannot recycle always.

## 2.2 Reverse Logistics

Logistics are the important component of any business. Thus, logistics is responsible for effective movement of products in both inbound side as well as in the outbound side. The different logistics activities are the transportation facilities, warehouse facilities, inventory management, information systems and procurement. In normal as well as forward logistics goods are moved in the unidirectional way. But in order to serve the business in a better way there is a requirement of reverse movements of the goods, so as to handle repair, remanufacturing etc. Thus all those activities like transportation, warehouse management, and inventory management also needed to be activated in the reverse direction called the reverse logistics.

Thus, reverse logistics is the journey of the product from the consumer to the manufacturer, for re-use or proper disposal. Consumer demand for clean manufacturing and recycling is increasing, many times leading to legislation as well. Research shows that reverse logistics may be a worthwhile proposition even in the contexts where regulatory and consumer pressures are insignificant. Product recalls by various supply chain stakeholders is gaining interest worldwide. Establishing a well-managed reverse logistics system can be a value-adding proposition for organisations and supply chains. It can not only provide important cost savings in procurement, recovery, disposal, inventory holding and transportation, but also helps in customer retention which is very important for organisational competitiveness.

### 2.2.1 Recent Business Trends

Many corporates in consumer durables' and in automobile sectors have introduced exchange offers to capture customers who already own such products mainly from marketing perspective. The different activities under the reverse logistics are reuse, resell, repair, recycle, refurbish, and remanufacturing. Maruti Suzuki India Limited was the first mover with its True Value initiative. Till today it covered 358 outlets in 210 cities and is continuously growing.

The Indian market has relatively few reverse logistics specialists to reduce the associated time and costs. Wipro and Future Group have their own in-house reverse logistics operations. Companies like RT Outsourcing, Aforeserve.com Ltd., Yantra Solutions Pvt. Ltd., Allcargo Global Logistics Ltd, Reverse Logistics Co., are making their presence felt.

Reverse logistics is capable of becoming a major route to cost optimisation with the growth of the Indian economy. Currently, Indian reverse logistics market is estimated around Rs 800 billion and is expected to grow rapidly. Efforts should be undertaken to strengthen and expand industry coalitions and link with logistics service providers.

#### **2.2.1.A.. Case of HP:**

HP used a company-wide Supply-Chain Council to sponsor its green supply chain programs. This senior leadership in green programs was a key component of HP's success and ensured green initiatives were closely tied to the overall supply chain business strategy. The senior leadership was accompanied by product stewards who worked with design teams to ensure green requirements were included in the product. vi Timberland, likewise, has an environmental stewardship group that acts as an internal consultant to support project ideas from the business, incubate the ideas, and then fully implement them.

The step includes measuring the success of a company's green programs. Companies should select the metrics that would illustrate green progress and success, and then set aggressive targets. HP has set specific packaging reduction goals and product content targets, and it's working with the Carbon Disclosure Project to measure supply chain carbon footprints.

Although removed from the producer, the environmental impacts from product use and disposal are very important. Green companies should keep in mind that their products may go through several customers after they sell it and should work that into their impact assessments of the product's total life cycle.

#### **2.2.1.B. Case of XEROX:**

Xerox identified components in its copiers that could be reused in new machines. By designing products to take advantage of these components, Xerox avoided purchasing new components and saved several hundred million dollars a year. They also instituted a take-back program for old machines to guarantee a source of supply for used components. This had the added benefit of saving customers the burden of disposing of older machines, which earned Xerox higher customer loyalty.

### **3.Objective of The Study**

The study primarily focuses on the objective:

- To know the sustainable operations strategy.
- To study the operations of companies regarding the treatment of wastage.

### **3. Methodology and Data**

The study is basically exploratory in nature, where the attention was on exploration of the facts. The data source was secondary sources, obtained from the annual reports of the companies, and other periodicals. The study was based on the Case Study drawn from the Company Tata Motors.

### **4. Case Study Tata Motors**

The automobile industry over the years has contributed immensely in improving the quality of life of millions of people by providing access to efficient and cost effective modes of transport. The industry has also come under the radar for issues related to environment and safety.

Tata Motors Limited is India's largest automobile company with significant international presence. In the operations area it has incorporated number of steps to prove the sustainable operations.

**Supply Chain Management:** In the areas of Supply Chain Management the performance is excellent. The procurement of appropriate raw materials and spare parts at the right time is their main focus. Their supply chain has an equal understanding of their sustainability vision and strategy.

**Optimization in Materials use:** Material optimization is the focus area of Tata Motors operations, with an aim of reducing consumption of virgin material and increasing recycle and reuse of waste. The Engineering Research Centre (ERC) has a dedicated focus on reduction and elimination of usage of toxic materials like hexavalent chromium, lead, asbestos, arsenic, ozone depleting substances etc. Material substitution also helps to contribute towards reducing the weight of the vehicles, thereby directly impacting fuel consumption and related greenhouse gas emissions.

**Table I Waste Management** (Hazardous waste)

Hazardous waste disposed	FY 2008-09	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
Sludge <sup>6</sup> (tonnes)	4,536.28	4,299.25	4,812.81	5,763.35	5,281.62
Used Batteries (tonnes)	32.14	37.76	198.19	164.44	187.59
Used Oil <sup>7</sup> (tonnes)	150.93	168.00	497.68	510.36	212.67
Oil Contaminated materials <sup>8</sup> (tonnes)	44.83	23.56	55.31	230.49	155.75
Other Hazardous waste <sup>9</sup> (tonnes)	209.97	402.15	936.65	1,495.33	2,296.76
Other Hazardous waste <sup>10</sup> (KL)	131.24	121.66	231.90	441.07	739.80

*Source: Corporate Sustainability Report of Tata Motors various years*

*Sludge<sup>6</sup> includes paint sludge, phosphating sludge, grinding sludge, salt bath sludge, ETP sludge, chromium hydroxide sludge*

*Used Oil<sup>7</sup>: density of used oil assumed to be 0.9*

*8Includes cotton rags, scrap oil filters, oil soaked saw dust*

*9Includes solid hazardous waste like containers of acid, scrap asbestos, etc.*

*10Includes liquid hazardous waste like spent coolants, waste thinner, etc.*

**Table II Waste Management** (Non Hazardous waste)

Non Hazardous waste disposed (tonnes)	FY 2008-09	FY 2009-10	FY 2010-11	FY 2011-12	FY 2012-13
Plastic waste	142.26	89.70	204.33	246.44	284.19
Metallic scrap	15,669.67	10,869.79	8,002.15	25,601.96	37,991.19
Other waste (cartons, jute bags, wood waste, rubber waste, canteen waste, sand etc)	100,692.05	90,049.21	66,565.12	99,128.31	50,902.75

*Source: Corporate Sustainability Report of Tata Motors various years*

## 5. Analysis and Findings

The waste management practices in Tata Motors focused on reducing waste generation, reusing / recycling the waste generated and disposing waste in an environmentally sound manner. Paint sludge is one of significant hazardous waste generated in automobile industry. Tata Motors took significant efforts to reduce and reuse / recycle paint sludge which is being recycled through an authorized re-cycler into recycled primer paint and is re-used in-house as well as at vendors end for application on castings.

The hazardous and non-hazardous waste generated at their plants is segregated at source through the use of standardized colour coded bins. The hazardous waste is disposed off in an environmentally sound manner adhering to pollution control board norms. The non-hazardous waste, primarily wood and metallic scrap is sold to recyclers. The organic waste generated from their canteen facilities at Jamshedpur and Lucknow plants is converted to manure through organic waste convertors. The canteen waste at Pune plant is recovered and the biogas generated is used to operate pumps in ETP.

In the areas of water management Tata Motors constant endeavour to reduce the water footprint, through the implementation of water recycle and reuse systems and checking the leakages in the processes. Tata Motors also implemented rain water harvesting systems in their plants, which has proven beneficial in reducing the water usage costs and as back up water supply in times of water shortages.

## 6. Conclusion and Recommendations

For most companies, the path to sustainability begins with the supply chain. After all, the supply chain is where companies move things; make things, store things, and throw things away. It is a crucial part of an organization's environmental footprint. Green supply chain management-the integration of both environmental and supply chain management-is a proven way to reduce a company's impact on the environment while improving business performance.

Greening the supply chain takes a long-term commitment. Even for companies that have an environmentally focused culture, green supply chain implementation is a multi-year program, requiring significant resource investment.

Successful green supply chain programs are integrated within the corporate green strategy and, ultimately, the overall business strategy. Without this alignment, a company risks wasting resources on efforts that don't deliver business value. As such, defining the green strategy shapes product and supply chain requirements.

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# Sustainable Tourism Practices- An appraisal and Consequences

8

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## Abstract

*This paper focuses on sustainable tourism practices in the supplementary accommodation sector in India. The supplementary accommodation sector includes all the guesthouses, bed-and-breakfast establishments and self-catering accommodation establishments, which collectively constitute this sector. The primary purpose of the paper was to examine the factors that inhibit the supplementary accommodation sector from embracing the adoption of sustainable tourism guidelines as set out by the Indian government. The awareness and implementation of sustainable tourism principles is critical for the tourism industry as it serves as an indicator as to whether this sector can contribute toward sustainability in reducing its carbon footprint. The reduction in the carbon footprint could then lead to less strain on the environment, including aspects such as climate change. From this study, it can be inferred that for government, especially at the local level, momentous efforts will have to be made to ensure that the supplementary accommodation sector fully comprehends the principles of sustainable tourism. This would ultimately benefit the tourism industry, as it will lead to more sustainable practices adoption in tourism sector.*

**Key words:** Sustainable Tourism Practices, Appraisal and Consequences, India.

## 1. Introduction

The tourism industry is one of the fastest-growing industries; however the impacts that result are wide-ranging and controversial (Evans, Campbell & Stonehouse, 2003). The Earth Summit of 1992 in Rio de Janeiro, Brazil, included sustainable tourism on the agenda. It was highlighted at the summit that special attention to the relationship between environmental conservation and protection was necessary, in order to have a sustainable tourism industry. The conference concluded that the tourism industry needed to be aware of the negative impacts, and that it was necessary to encourage the adoption of more sustainable-tourism behavior in the future in order for tourism to be a sustainable industry.

In response to this and the democratization of India, the 1996 White Paper on “Development and Promotion of Tourism in India” was drafted. The then Indian Department of Environmental Affairs and Tourism (DEAT) published a book outlining Sustainable tourism practices Guidelines (DEAT, 2002). This provided information on the ethics and codes of practice that would be expected from the tourism industry in the future. The first conference on sustainable tourism practices was hosted in Cape Town in 2002, prior to the 2002 World Summit on Sustainable Development (WSSD). This conference led to the “Cape Town Declaration” where sustainable tourism practices was defined as a three-tiered approach, namely social, economic and environmental.

Globally, India is seen as being at the forefront of sustainable-tourism initiatives (Frey, 2008). Despite this, there seems to be limited awareness or participation in sustainable-tourism practices. This paper focuses on sustainable-tourism practices in the non-hotel accommodation (NHA) sub-sector (guesthouse and bed-and-breakfast establishments and backpacker lodges) in Doaba region, India.

## 2. Review of Literature

The implementation of sustainable tourism practice is considered a major challenge. Tourism practitioners and tourism product owners are challenged with understanding the concept, as well as the implementation of sustainable-tourism practices. In a study conducted by Van der Merwe and Wocke (2006) about sustainable-tourism practices within the hotel industry in India, serious reservations were raised about what the concept means and the

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initiatives related to sustainable-tourism.

According to Goodwin (2009), there is a major gap between the definition of this concept and the way it is used and abused by practitioners. Thus, the issue of sustainable-tourism, specifically the confusion around the concept and implementation is not necessarily restricted to India. On the positive side, however, it would seem that consumers, including tourists, may have a better grasp of the concept of sustainable-tourism. However, this study focuses on tourism-product owners, specifically the owners and managers of non-hotel accommodation (NHA) establishments.

Sustainable tourism practices strives towards minimizing the negative impacts on the environment, society and economy, and facilitating respect and benefits to the tourists, hosts and the destination. Therefore, sustainable-tourism, in essence, is based on the “triple bottom line,” which would include three pillars, namely the economy, society and the environment. It is the interplay between economic responsibility, social responsibility and environmental responsibility on which tourism must be hinged in order to create a more sustainable tourism industry.

## **2.1. Three Pillars of Responsibility**

### **2.1.1. Economic Responsibility**

The tourism industry is seen as a good job creator and labor-intensive industry that can create direct employment in restaurants, at attractions and accommodation establishments. It is also able to create indirect jobs in the agricultural sector. Tourism in India is already considered to be an important contributor to employment and wealth creation, with a huge flow-through effect, impacting on many sectors of the economy. According to Business Day, tourism contributed 3 percentage points to the GDP in 2005 (Business Day: India Tourism’s Contribution to GDP in Focus, 2009). According to the same report, the accommodation sector was a key contributor to this figure, contributing 22 percent.

The White Paper of 1996 proposes sustainable tourism practices as the guiding principle for tourism development in this country. It also implies that a proactive approach by the principals of the tourism industry, which includes the non-hotel accommodation sector, be developed to market and manage this industry in a responsible manner (White Paper, 1996). This means that government and businesses involve local communities, provide employment, revise investment policies and relations with investors, decrease economic leakages and develop meaningful economic linkages by supplying local agricultural produce to non-hotel accommodation establishments. Indian Tourism is the official destination-marketing organization for India. In its mission, SA Tourism highlights sustainable economic and social empowerment for all Indians and strives to make tourism the leading sector in the economy. As part of their mission, they also want to increase dispersal of visitors across India, thereby spreading economic benefits and encouraging development. To successfully achieve these goals, Harris, Griffin and Williams (2002) stress that local communities usually only benefit from tourism if it is planned together with investor communities. By adopting a responsible economic approach, positive contributions to the economic development of a region will outweigh the negative impacts, thereby leading to a more sustainable future.

### **2.1.2. Social Responsibility**

Social responsibility emphasizes greater recognition in the interests of the host community and stresses the negative impacts that tourists and their activities can have on the destination (Bennett, 2000). An observation can be made that the Indian tourism industry has been slow to adopt the principles of social responsibility. Van der Merwe and Wocke (2007) researched the level of social tourism with a focus on the hotel industry. Their findings indicated that although the percentage of awareness and implementation were initially encouraging, further results from subsequent research revealed that socially sustainable tourism practices actually has a low level of practice. For example, HIV/AIDS policies are

not in place in many establishments (Frey, 2008), and safety and security issues remain problematic. Besides the importance of reducing inequality within the tourism industry, there should be an obvious interest in following socially responsible principles, and adopting more open and transparent business practices. The rationale behind this approach is that if the business should increase the involvement of communities in tourism developments, and subsequent benefits have a positive impact, support for the tourism enterprise will increase, crime levels will decrease and employee morale will be improved. The aims of corporate social responsibility should be to deliver sustainable value to the industry for the long-term benefit of both hosts and tourists. This can be achieved by building mutually beneficial partnerships where opportunities can be provided and fair-price policies can be implemented. As stated by Tearfund (2002), investing in socially sustainable tourism practices ethics has benefits for the business and the community; it improves business performance, reduces poverty, unemployment, and returns on investments are usually positive.

### **2.1.3. Environmental Responsibility**

Central to environmental responsibility is the lifecycle of an enterprise or product. This applies to managing the business, and integrating the establishment with environmental management. All tourism enterprises can make significant contributions to environmental sustainability, for example, by supporting producers of local products and advising guests how to make responsible purchase decisions (DEAT, 2002). Establishments must seek to minimize energy requirements, limit noise, light and air pollution, and consider the business neighborhood by minimizing any negative transformation of the environment, for instance, by planting indigenous vegetation and non-invasive species. All resources should be used in a sustainable fashion, meaning waste and over-consumption should be avoided. Establishments should encourage visitors to behave in a manner that respects natural heritage.

## **2.2. Who is Adopting Sustainable-tourism Ethics?**

Businesses are displaying a growing trend to look, not only after their financial success, but also after the environmental and social dimensions of their business activities and performance (UNISA: Understanding Corporate Citizenship, 2008:1). However, Frey (2008) mentions that the tourism industry has been strongly criticized for its lack of transformation. Government policies have been developed, and social marketing campaigns have been aimed at trying to influence management policies, but non-hotel accommodation establishments have not embraced the sustainable-tourism ethic in a way that will contribute to making the industry sustainable. This does not appear to only be a Indian problem. Van der Merwe and Wocke (2006), there seem to be very few tourism companies participating in globally sustainable tourism practices initiatives. It was stated that the trend to adopt responsible business ethics, both locally and internationally, has grown significantly, and corporate citizenship has been introduced to describe a more balanced way of doing business; however, compared with other industries, tourism has been slow in adopting these ethics (UNISA, 2008).

## **2.3. Consumer Demand: The Only Hope for Sustainable Practice**

Consumers might not be realizing that they are beginning to practice sustainable-tourism. There is a growing culture to travel and enjoy more authentic experiences. Tourists are beginning to request local restaurants where they can enjoy traditional food and meet the local people. Local guides are being requested, particularly for certain areas such as township tours (McGrath, 2004).

### **Objectives:**

- To ascertain the degree of sustainable-tourism awareness among non-hotel accommodation establishments.
- To determine how members within the non-hotel accommodation sector interpret and understand the term “Sustainable Tourism.”
- To investigate the level or degree of sustainable-tourism implementation at identified establishments.
- To understand which factors encouraged and motivated non-hotel accommodation



establishment to practice sustainable tourism.

- To explore whether the non-hotel accommodation establishments supported local communities.

### **3. Methodology**

The study area for this project was chosen Doaba region of Punjab which is rich in agriculture and allied field or Punjab state of India. In order to address the primary purpose (main problem) of the paper, a questionnaire was designed and emailed to respondents in the Doaba region area. This was followed by personal interviews with NHA establishments, where they had not completed the emailed questionnaires. The survey was conducted over a two-month period. A sample of 120 NHA establishments was targeted and a response rate of 24 percent was obtained.

### **4. Analysis & Interpretation**

#### **4.1. Level of Awareness of Sustainable Tourism**

The intention was to establish the actual level of awareness within the non-hotel accommodation industry. Fifty-two percent had some sort of policy guidelines in place regarding sustainable-tourism, although only 7 percent were aware that there was an official handbook available. Ninety-three percent had therefore never heard of the handbook before. Probing questions led the researcher to understand that “policy guidelines” were practiced according to knowledge gained through the media; advertising, such as “save-water” campaigns; and various levels of one’s own conscience. All respondents seemed to recognize the need to employ some sort of sustainable-tourism practice, but the motivation is largely due to strategic business reasons rather than simply the “feel-good factor” that was rated at 28 percent.

Only 3 percent of respondents indicated that they were members of a sustainable organization. There was no evidence to suggest any non-hotel accommodation owner or manager had made any effort to investigate the criteria necessary to belong to any sustainable organization.

#### **4.2. Understanding Sustainable Tourism Practices**

There appears to be confusion amongst the NHA establishments regarding the understanding of sustainable-tourism. Forty-nine percent strongly believed that sustainable tourism practices is about creating sustainability for the future. A significant proportion, 32 percent, understood it to signify service delivery. The minority (19%) of respondents had no thoughts or ideas on the subject, and this is indeed cause for concern.

#### **4.3. Implementing Sustainable Tourism Practices**

According to Goodwin (2009:1) there appears to be a major gap between the definition of the sustainable-tourism concept and the way it is used and abused by practitioners. Van der Merwe and Wocke (2006) confirmed this perception in their research conducted on sustainable-tourism practices within the hotel industry, when they explored reasons “for the limited uptake of sustainable tourism practices despite India being regarded as a leader in the field of sustainable-tourism policy.”

In the survey, 69 percent viewed the level of importance regarding the implementation of sustainable tourism practices as personally important, while 62 percent deemed it the right thing to do. Fifty-nine percent felt that implementing sustainable tourism practices is necessary for future sustainability of the industry, linked strongly with the fact that it is also important for business. The sustainability concept appears to have different interpretations, and it is with this in mind that 48 percent of respondents felt that the environmental factor was the most important. It is significant that most of the respondents felt that implementing sustainable tourism practices for environmental reasons is necessary.

The same level of importance was, however, not attached to improving relationships with the local community. This could be because the managers and owners have not yet considered the vital part that the local community can play in the future success of their non-hotel accommodation establishment.

Thirty-eight percent were motivated to implement sustainable tourism practices due to the cost-saving factor.

It would appear from the collected data that the guest-influence factor plays a minor role in implementation practices. This could indicate that guests are not adopting a culture of responsibility by demanding good-practice ethics.

#### **4.4. Motivation for Sustainable Tourism Practices**

Tourism is a high-impact industry. It is also considered to be an industry that can make significant contributions to solving environmental and social problems; however, survey results indicate that the most important factors that contribute to the practice of sustainable tourism practices were not widely known by non-hotel accommodation owners and managers.

Environmental needs, specifically related to waste and water management (ranked the highest), and cultural needs (ranked second) were deemed to be the most important factors that influence the practice of sustainable-tourism. Environmental needs pertaining to the flora and fauna of Doaba region, humanitarian and community needs had a very low ranking by comparison.

This shows that there is a fairly large awareness level regarding waste disposal and water management. The cost of these environmental factors is carried by each particular non-hotel accommodation establishment and therefore has a direct bearing on their financial resources. These factors are deemed to be more important than those that do not directly affect the bottom line.

Although 59 percent of respondents encouraged positive guest behavior, almost all had never thought about influencing supplier's behavior. In other words, they were of the view that they had limited influence on the existing relationship between suppliers and themselves.

#### **4.5. Supporting Local Communities**

The researcher was attempting to investigate the level of sustainable tourism practices on a social level that might be practiced within the non-hotel accommodation industry. They could choose any of the descriptions provided, and there was an option to provide any additional information in writing.

Sixty-six percent do not support any type of community initiative, which equates to 19 of the 29 respondents. Seventeen percent of respondents supported a local school, and one respondent supported a clinic in a nearby disadvantaged community. This was because their chef's family lived in the area, and he had brought this clinic's plight to their attention. Seventeen percent responded "other."

The findings suggest that the lack of enthusiasm and commitment in terms of implementing sustainable tourism practices is primarily due to limited awareness, and additionally, a lack of understanding regarding the sustainable-tourism concept. It is disconcerting that although there are certain awareness campaigns and initiatives in place, so many within the non-hotel accommodation sector of the tourism industry appear confused about the concepts and demonstrated this lack of understanding. This is likely to impede any adoption of sustainable-tourism guidelines, and could be the reason for the non-hotel accommodation industry's slow response in the adoption of these principles

None of the non-hotel accommodation establishments had set any targets or objectives for implementing any sustainable-tourism guidelines; however, gauging from the responses, all the accommodation establishments practiced some form of sustainable-tourism, albeit at various levels. It was noted that these particular activities were providing definite cost-saving benefits to the establishment.

The primary factor that appeared to motivate a non-hotel accommodation establishment to practice any form of sustainable tourism practices was the cost-reduction benefits. Most non-hotel accommodation establishments were adopting some form of sustainable-tourism practice in the form of energy-saving light bulbs, switching off appliances when not used and practicing water-conservation methods.

In previous literature, it was suggested that the degree of sustainable tourism practices that is practiced could be consumer-driven. One accommodation establishment, in particular, was very pro-active in socially sustainable-tourism. Guests contacted the owner prior to their arrival requesting information regarding historically disadvantaged communities and they became involved making positive contributions. Although this was not the initial intention of this particular accommodation establishment, it remains a fact that their social-responsibility program has brought more business and therefore more financial benefits to all those involved. It was noted that this particular accommodation establishment was a larger one, and had been operating in the industry for a number of years. The owner of this establishment indicated that they were thriving during this time of economic recession, and were increasing the size of their business.

A viewpoint often expressed by the respondents was that the associations that they belong to show a lack of any supportive policy or planning framework.

## 5. Conclusion

This study has offered a snapshot view of the present status, constraints and success factors regarding sustainable-tourism ethics and implementation within the non-hotel accommodation industry in Doaba region of Punjab. As this industry continues to grow, there is a need to develop a better understanding regarding sustainable tourism practices and what it entails, before policy can be implemented. This fact will remain the largest inhibiting factor that will affect progress in the adoption of the sustainable-tourism principles. Further study with a larger sample to gain a better understanding for the reasons regarding lack of awareness is necessary. In present era media also playing very significant role to educate local community through TV channels or special program i.e. satyamev jayate.

Sustainable tourism practices has not entirely been embraced by the non-hotel accommodation industry, and there are serious shortfalls in the training of those who are able to implement change. The reason appears to be a lack of awareness and knowledge regarding how to move forward and embrace the guidelines as set out by the 2002 Sustainable tourism practices Handbook and the government policy document, namely the 1996 White Paper on the Development and Promotion of Tourism in India. Once tourism is managed responsibly, positive impacts will be felt in economic, social and environmental areas. Education is one of the key factors that limit the positive impacts. There is scope for further research in this particular field and it is highly recommended. The research could immediately identify areas where differences can cause maximum change affecting all sectors in the tourism industry in a positive manner.

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## Responsible Tourism: An Approach towards Building Destination Image

9

Vikrant Kaushal

### Abstract

*Responsible tourism finds their trace in the seventy's where it was contemplated as a solution to negative consequences of tourism. Destinations located in the lap of nature provide tourists a perfect escape from bustling cities and towns. It offers them a good break from mundane chaos of daily life. Although tourism flourishes when tourists flock in these pristine surroundings. However, researchers, locals and environmentalists tend to gauge the impact of tourists presence in these sensitive areas. It is essential that the touristic activities in the attraction region do not affect negatively due to their very presence and usage of the destination facilities. This paper examines the concept of responsible tourism and attempts to propose a conceptual framework to use it in building destination image. The study can be further developed to associate with the tools to effective marketing of a destination and may have implications in destination planning.*

**Keywords-** *Responsible tourism, tourism, conceptual framework, destination image*

### Introduction

Any individual traveling to, intending to visit or who has taken the trip can develop image towards the destination. The image of a destination is the summation of the psychological perception he holds about that the destination. Lawson and Baud Bovy (1977) define the concept of destination image as the expression of all objective knowledge, prejudices, imagination and emotional thoughts of an individual or group about a particular location. Other authors define the image as the sum of all beliefs, ideas and impressions that people associate with a destination (Crompton, 1979:408; Kotler, Haider and Rein, 1993).

Tourists demonstrate a range of priorities, including a desire to show respect for local communities, to share the economic benefits of tourism directly with local people, and to mitigate the environmental impact of their holidays (Fennell, 2008:3; Weeden, 2008). Responsible tourists also demonstrate trade-off behaviour for reasons of convenience, price and quality (Budeanu, 2007:499), all of which are evident in ethical consumer decision-making (Chatzidakis, Hibbert, & Smith, 2007:89; Memery, Megicks, & Williams, 2001:399; Szmigin, Carrigan, & McEachern, 2009:224).

With the increasing number of terms in tourism it is important to realise the concept of responsible tourism, and also what it does for the destination and various stakeholders. According to the Department of Environmental Affairs and Tourism's National Responsible Tourism Guidelines (DEAT, 2002), the economic benefits of tourism should be directed towards communities. Relevant responsible tourism guidelines indicate that:

- Locals should have the opportunity to take part in decision-making, be employed,
- Trained and empowered, and become owners of tourism products;
- Local goods and services should be procured;
- Local entrepreneurship and small business development should be promoted;
- Local cultures should be respected and protected;
- Natural, cultural and heritage resources should be preserved; and
- Developments should be sensitive to the environment.

Frey and George perceived new concepts in recent tourism literature, driven by swelling Research Scholar, Central University of Himachal Pradesh, Email - vikrant.kaushal@hotmail.com

international pressure to address issues of global warming, social inequality and waning natural resources, are pro-poor tourism and responsible tourism, and they observe that as the tourism industry matures there would be an increase in demand for unique, authentic and meaningful holidays (Frey & George, 2008:113)

## **Review of Literature**

Substantial literature related to concepts of branding and brand image, the paper however contemplates literature pertinent to the study being done. The image of the destination will be based on historical, political, economic and social information which, in turn, will shape the image that the person already held (Echtner & Richie, 1991:2). Dobni and Zinkhan (1990:110) gave definitions of brand image in context of its symbols, personification, cognitive or psychological meaning and messages. Definition with emphasis on meanings and messages refers to the underlying (psychological) meaning that consumers ascribe to a product, for instance, meaning can be interpreted as the manifest behaviour in which the subject sees and manipulates real objects, and meaning can also result from verbal and cognitive behaviour in which the subject manipulates symbols as representations of reality (Dobni and Zikhan, 1990:110). New guidelines for Tourism Marketing admit that the development of the image of a tourist destination is based on the consumer's rationality and emotionality, and as the result of the combination of two main components or dimensions (Moutinho, 1987:5, Gartner, 1993:191; Baloglu and Brinberg, 1997:11; Walmsley and Young, 1998:65; Baloglu and McCleary, 1999:11; Dobni and Zinkhan, 1990:110; Lin, Duarte, Kerstetter and Hou, 2007:183)- Perceptual and cognitive; there is a primacy of the importance and value given to each attribute of tourist destinations. In other words, the destination image is evaluated by the attributes of its resources and attractions (Stabler, 1995:133) which motivate tourists to visit that destination (Alhemoud and Armstrong, 1996:24, Schneider and Sönmez, 1999:539; Gallarza, Saura and Garcia, 2002:56; Beerli and Martín, 2004:623; Govers and Go, 2005:1).

Heritage and cultural tourism is growing faster in popularity than most other tourism segments, and certainly faster than the global tourism growth rate, according to the United Nations World Tourism Organization (UNTWO) (TKZN, 2008). Heritage and cultural tourism products attract tourists who visit destinations to enrich their cultural perspectives of the host community and its environment (TKZN, 2008). "Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large" (AMA, 2007). Marketing is perceived to be an approach that opposes the sustainability of a place, because of its core reason for coming in being is increasing the tourist arrival at a destination. Marketing concepts are driven towards converting tourism products as commodities (Buhalis, 2000:97).

## **Objectives**

The study aims to first examine the concept of responsible tourism, and further goes toward realizing the notion of destination image. A conceptual framework suggesting the dimensions of responsible tourism has also been proposed.

## **Methodology**

The sources of information for the study are secondary. The earlier studies on responsible tourism and destination image are being used to get insight and further to derive and develop symbiotic relationship among them. Similarly, secondary sources are foundation to the conceptual framework pertaining to the responsible tourism.

## **Responsible Tourism**

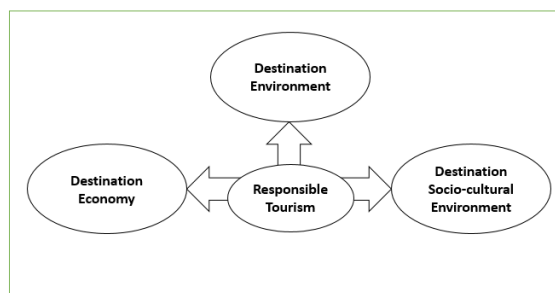
Becken (2007) examined tourist responsibility with regard to sustainability from the point of carbon offsetting and individual responsibility for greenhouse gas emissions. The results indicated that tourists were segmented into five groups (green tourists, skeptics, resisters, uninformed willing and undecided), reflecting different levels of awareness and willingness to accept responsibility, as tourists, for the environment (Becken, 2007:351).

A large number of countries depend on tourism for their basic survival. These countries have a limited capabilities of other dependable production or have limited resources. They often possess the natural heritage that distinguish them from other places which often act as tourist generating areas for them. These destinations have an onus of sustaining themselves for repeat business, making the exploitation of touristic resources in the most appropriate ways. While the core product is nature gifted attractions, which has the potential to grab tourist's attention and it is their unique selling proposition for marketing, their usage should be in most acceptable limits.

### Analysis & Interpretation

The destination image building is oriented towards the promotion of these destinations with highlighted offerings. The tourists can recall the destination with the images it creates about it before, during and after travelling. The image usually follows branding, so it is vital to have the best offerings of the destinations to the prospective tourists.

Word of mouth is considered as an important factor in influencing the decisions of the tourists. Destinations are substitutable and market competition has become increasingly intense. With this thought, marketing the destinations, which to some extent control the behaviour of the tourists may be counterproductive. Responsible tourism practices are often linked with tourism policing, or constraining the tourist's behaviour. Convincing a tourist who understands his role at the destination is comparatively easier, than other tourist who is ready to splurge and expects the return to his money spent on the destination in the way he feels most suitable. Marketing wishes to tap every possible prospect to be converted in to a tourist to a destination may commit a mistake by sending the latter type of the tourist to a tourist destination that restricts his behaviour, although for a novel reason.



(Adapted from Weeden 2011)

A conceptual framework for marketing for a destination with the ethics being a priority may be narrowed down to the tourists that consider themselves to be ethical, and sensitive towards the people, culture, economy and environment of the destination. Firstly the objectives of the type of image that it intends to leave on prospective and experienced tourists have to be made clear. Secondly the segmentation of the market is necessary for determining the tourist clusters that fit the objective. Thirdly, the holistic marketing and experience provision at the destination should be worked out. Here an individual entity would not be successful in delivering the needed representation of the destination. A common resonance in the marketing efforts, stakeholders approach, destination facilities should have a common agenda i.e. to make tourists feel at ease and relish the tourist offerings, however remaining in the decided environmental, cultural and societal peripheries.

The terminologies of tourism give space to concepts like sustainable tourism and ecotourism perplex readers, and multitude of point of references and definitions have been provided in these contexts. A responsible tourism is often contemplated to have an ethical treatment of tourists of the destination may it be the environment, local culture or the local economy, the attitude of the tourist is expected to be congenial and conscious. The values consumers give to their destination experience also plays a significant role in the creation of destination image consequently impacting their choice of holidays.

## Conclusion

The attempt of all the destinations remain to be sustaining and profitable by provision of unique experience to the tourists in the highly competitive market. The image of the place is very crucial at decisions of a tourist to return to a destination or to take up the trip in the first place. Responsible tourism is an evolving concept of tourism that aims at behavioural orientation of the tourists. It is viewed in various contexts and often mixed with the concepts of ecotourism and sustainable tourism. Thin lines divide these concepts and have key role to play in the creation of destination image. In contemporary marketing ideas the branding precedes image, so the tourists would have to be cautious of the places they intend to visit, which may need to constrain their behaviour at a destination. A framework for creation of a positive destination image would start from the objective of the destination marketing organisations while they send out the attributes of a destination to prospective visitors. Segmentation of clusters of ethical tourists followed by their pleasant stay at the destination may help in the creation of positive destination image of the place. This is a new concept in tourism which runs parallel to the sustainable tourism, as the intentions are same-to sustain the destinations in its original form and offer a pristine experience to the future tourists, meanwhile contributing to the local settings in a fair and deserved manner. Further research may add value to the existing knowledge and models that could be designed based on the field work may contribute towards better practices on the similar concept.

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## Legal Dimensions of Corporate Social Responsibility towards Environmental Sustainability

10

Navtika

### Abstract

*The voluntary acquiescence of social and ecological responsibilities of companies is called corporate social responsibility (CSR). The CSR is basically a notion whereby the companies decide voluntarily to contribute to a healthier society and a cleaner environment. The corporate social responsibility is represented by the assistance undertaken by companies to society through its business activities and its social savings. This is also to connect the notion of sustainable development to the company's level.*

*In India there are an existent but small number of companies which carry out CSR. This obligation of the Indian economy concentrates mainly on a few old family owned companies, and commercial giants such as the Tata and Birla group companies which have led the mode in making corporate social responsibility an inherent part of their business policies. These companies have been deeply concerned with social development initiatives in the communities adjacent their facilities. Jamshedpur, is one of the very good example and one of the prominent cities in the northeastern state of Bihar in India, is also known as Tata Nagar and stands out at a inspiration for other companies to follow.*

*Environmental sustainability is one of the chief responsibility which has to be taken care, the Environmental Sustainability include recycling, waste management, utilizing reusable resources, water management, using renewable energy sources creating 'greener' supply chains, using digital technology instead of hard copies, developing buildings according to Leadership in Energy and Environmental Design (LEED) standards, etc. The initiative taken by Denmark is one of the very profound one, where they contain a law on CSR, and on 16 December 2008, the Danish parliament adopted a bill making it mandatory for the 1100 largest Danish companies, investors and state-owned companies to include information on corporate social responsibility (CSR) in their annual financial reports. The recent study of UN Commission on Human Rights correlates, the economic, political and social influence of corporations to the increasing ability and influence on the dynamic society. There are different ways to put a check and balance on this CSR, the Watchdogs and Advocates in a Civil society plays a Vitol role in constraining corporate behavior that reduces social welfare, and different nonprofit organizations and movements provide a accent for a wide variety of social, political, ethnic, environmental, cultural and community interests. The Rainforest Action Network, for example, is an organization that agitates, often quite effectively, for environmental protection and sustainability. Its website states, "Our campaigns leverage public opinion and consumer pressure to turn the public stigma of environmental destruction into a business nightmare for any American company that refuses to adopt responsible environmental policies." It is the high time to put the responsibility to the big money houses, not only towards their business but also towards the society.*

**Keywords-** *Corporate social responsibility, Environmental Sustainability, Ecological responsibility, Legal dimensions, Sustainable development.*

### Introduction

“Earth provides enough to satisfy every man's need, but not every man's greed”

**‘M.K. Gandhi’**

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One of the modes of implementing Human Rights, of two segments i.e. labor and environment standards, the corporate social responsibility (CSR), has been long discussed remedy. The corporate social responsibility is represented by the assistance undertaken by companies to society through its business activities and its social savings. This is also to connect the notion of sustainable development to the company's level.

“Corporate social responsibility is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and the society at large”

### ---The World Council for Sustainable Development

In **India** there are an existent but small number of companies which carry out CSR. This obligation of the Indian economy concentrates mainly on a few old family owned companies, and commercial giants such as the Tata and Birla group companies which have led the mode in making corporate social responsibility an inherent part of their business policies. The Hon'ble Supreme Court is referring to CSR when it talks about the duties and responsibilities towards the society, the Article 297 of the Constitution of India, vests the natural resources in the Union of India and the article 39 (b), requires the distribution of resources to serves the purpose of common good, not even this the Companies Act had a provision regarding the fulfillment of CSR, and if the company fails to do so, it shall have to specify the reason for the same.

Environmental sustainability is one of the chief responsibility which has to be taken care, the Environmental Sustainability include recycling, waste management, utilizing reusable resources, water management, using renewable energy sources creating 'greener' supply chains, using digital technology instead of hard copies, developing buildings according to Leadership in Energy and Environmental Design (LEED) standards, etc. The protection of environment is the need of the day and the non implementation of different mechanism like, the Environment Protection Act, 1986 was felt by the Apex Court in the case of Indian Council for Enviro Legal Action v. Union of India, that” Even though, it is not the function of the court to see the day-to-day enforcement of the laws, that being the function of the executive, but because of the non-functioning by the enforcement agency, the courts as of necessity have had to pass orders or direction to the enforcement agencies to implement the law for the protection of the fundamental rights of the people”. In the leading case, R. L. & E. Kendra, Dehradun v. State of UP (AIR. 1985 S.C. 652), popularly known as the Doon Valley case, was the first case of this kind which involved the different issues relating to environment, where court ordered to close the number of limestone quarries, and also discussed about the unemployed workers and said “this would undoubtedly cause hardship to them, but it is a price that has to be paid for the protecting and safeguarding the right of the people to live in healthy environment with minimal disturbance of ecological balance and without avoidable hazard to them and to their cattle, homes and agricultural land and undue affectation of air, water and environment.

Therefore there should be a balance, the balance between development and environment, neither the development can be neglected nor the environment can be ignored, and the CSR is the mechanism which can maintain this sustainable development.

### Review of Litration

The Corporate Social Responsibility is the combination of three words, but they are not mere words they themselves provides the affiliation between the business house and the society, as the word corporate represent to business houses, the word social is towards society, and the last but the pertinent one, it is responsibility which denotes the obligation of the corporation. The word CSR can be better judged by these definitions which were

discussed by the different nations: the UK Government defines “The Government sees CSR as the business contribution to our sustainable development goals. Essentially it is about how business takes account of its economic, social and environmental impacts in the way it operates – maximizing the benefits and minimizing the downsides.”

The European Union states that the CSR is a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis.”

The Kennedy School of Government (Harvard University) defines the CSR Initiative as “The term [CSR] is often used interchangeably with others, including corporate responsibility, corporate citizenship, social enterprise, sustainability, sustainable development, triple-bottom line, corporate ethics, and in some cases corporate governance. Though these terms are different, they all point in the same direction: throughout the industrialized world and in many developing countries there has been a sharp escalation in the social roles corporations are expected to play.”

These definitions state that the CSR is an obligation which has to fulfill by the money makers. As Bowen also observes that “CSR refers to the obligations of businessmen to pursue those policies to make those decisions or to follow those lines of relations which are desirable in terms of the objectives and values of our society.”

The CSR implies some sort of commitment, through corporate policies and action. This operational view of CSR is reflected in a firm’s social performance, which can be assessed by how a firm manages its societal relationships, its social impact and the outcomes of its CSR policies and actions (Wood, 1991). Social reporting and social audits are examples of how firms can assess their social performance. In 1960’s Keith Davies argued that CSR refers to ‘the firm’s consideration of, and response to, issues beyond the narrow economic, technical and legal requirements of the firm’ (Davies, 1973). Frederick 1960 stated ‘Social responsibility means that businessmen should oversee the operation of an economic system that fulfils the expectations of the people. And this means in turn that the economy’s means of production should be employed in such a way that production and distribution should enhance total socio-economic welfare’ (Fredrick, 1960). Thus, the definitions of CSR in 1960’s were an attempt to link the society and businesses. The Universal Declaration of Human Rights, 1948, the Stockholm Conference on the Human Environment, 1972, the agenda 21 of the Rio Declaration on Environment and development, 1992, the Environment (protection) Act 1986, the Constitution of India, the Indian Penal Code, 1860 are some of the instrument which are related to environmental sustainability and directly and indirectly putting an obligation on the shoulders of business houses.

### **Objectives**

- To judge the corporate accountability v. environment sustainability.
- Whether a corporation can be liable towards society.
- Till what extent the corporation is responsible.
- The legislation upon CSR is appropriate or not.
- The role played by Judiciary.

### **Methodology**

The methodology of concerned research is doctrinal, where different articles and judgments can be used for the outcome of this research.

### **Corporate Accountability v. Environmental Sustainability**

The Universal Declaration of Human Rights, 1948, the Stockholm Conference on the Human Environment, 1972, the agenda 21 of the Rio Declaration on Environment and development, 1992, the Environment (protection) Act 1986, the Constitution of India, the Indian Penal Code, 1860 are some of the instrument which are related to environmental sustainability and directly and indirectly putting an obligation on the shoulders of business houses. The current trend of globalization has made the firms realize that in order to compete effectively in a competitive environment they need clearly defined business practices with a sound focus on the public interest in the markets (**Gray, 2001**).

In India, like any other developing country there has been environmental deprivation due to over exploitation of resources, industrialization, urbanization, depletion of traditional resources, and population explosion. Right from mother's womb everyone needs unpolluted air to breath, unadulterated water to drink, nutritious food to eat and healthy and hygienic conditions to live in, these elements are mandatory (*sine quo non*) for the sound development of human personality. Therefore not to die away with this right of development of a man is the major responsibility of a corporation, and this lead to a new concept i.e. environmental jurisprudence. The enactment of so many laws at almost regular intervals, the eyes of judiciary and the mechanism of enforcement of environmental rules and policies in such a manner which not only helped in protecting environment but also promoting sustainable development, are some of the example for the protection of this right to development.

The problem of environmental degradation is a social problem, the growing awareness and the impact of environmental degradation on the society in regard there to, the law courts should have to rise up to the occasion to tackle with the situation as to feel the gap between the corporate accountability and environmental sustainability. As it was observed in Doon Valley case that to maintain the balance, if some price has to be paid like unemployment of some of the employees, is can be tolerable, rather than a big loss like Uttrakhand disaster happened on 16, June, 2013 is not at all bearable. The primary need is concerned with the different environmental issues like recycling, waste management, utilizing reusable resources, water management, using renewable energy sources creating 'greener' supply chains, using digital technology instead of hard copies, developing buildings according to Leadership in Energy and Environmental Design (LEED) standards, etc. should get the first priority, which is important to maintain the balance between the corporate accountability and environmental sustainability.

### **Role of judiciary towards CSR**

Corporations do not just move to fill up the vacuum created by the state's renunciation of social responsibilities in the neoliberal era; they in fact assist to create that vacuum. And it is a vacuum in which philosophy like social entitlements are things of the past. The smooth functioning of a country is depends upon the legislative, executive and judiciary. The first is for the enactment of different laws, rules and policies, the second one would have to ensure the implementation of these rules and policies, and the last one is only for them who are not fulfilling their responsibility, but the last obligation on judiciary sometimes even lead to the other functioning like the implementation and enforcement of any rule and policy. In the case of Indian Council for Enviro Legal Action v. Union of India, the Supreme Court stated that "Even though, it is not the function of the court to see the day-to-day enforcement of the laws, that being the function of the executive, but because of the non-functioning by the enforcement agency, the courts as of necessity have had to pass orders or direction to the enforcement agencies to implement the law for the protection of the fundamental rights of the people". Therefore it can be stated that the role of judiciary is harmonious to create a relationship between the corporation and environment. There are so many environmental issues which had been decided by different law courts for maintain this balance. The issues like quarrying, mining, stone crushing, tree felling. In National Textile

Worker's Union vs. P.R. Ramakrishnan, the Apex Court held that the traditional view that a company is the property of the shareholders is an exploded myth. According to the new socio-economic thinking, a company is a social institution having duties and responsibilities towards the community in which it functions.

The responsible development and ecological balance can be maintain through different measures, as one of the measure suggested by judiciary in the Doon Valley case, where it was submitted by court that the least price can be paid rather than a big loss that is even recoverable, the court further observed:

“we are not oblivious of the fact that the natural resources have got to be tapped for the purposes of the social development but one cannot forget at the same time that tapping of resources have to be done with requisite attention and care so that ecology and environment may not effected in any serious way”.

In *Kinkri devi v. State*, (A.I.R. 1988 H.P. 4), the Himachal Pradesh High Court held that, if a just balance is struck between the development and environment by proper tapping of natural resources, there will be a violation of Article 14, 21, 48-A and 51-A (g) of the Constitution. The court issued an interim direction to State Government to set up an internal committee to examine the issue of proper granting the mining lease and the necessity of granting leases keeping in view the protection of environment. Therefore it can be said that the judiciary is taking care of the rights of society with the industrial development, the industrial development is also necessary and it can even not be overlooked, in the other important pronouncement i.e. *A. R. C. Cement Ltd. v. State of U.P.* (1993 Supp. 1 SCC 57) the Supreme Court held that an alternate site should have to provide for the cement factory, which is not permitted to operate in Doon Valley where the mining operation had been stopped. The mining in Reserved Forests cannot be done is another welcome step which was held in the case of *Tarun Bhagat Singh v. Union of India*, (1992 Supp 2 SCC 448), the environmentalist Mr. M. C. Mehta had played a distinguished role for the protection of environment, in on the case filled by him, it was observed by the court that the mining activities in the vicinity of tourist resorts were bound to cause severe impact on the local ecology and therefore, the mining activities should be stopped within 3 Kms of such tourist resorts. In another case of *M. C. Mehta* in the year 1992, the Supreme Court issued directions for stopping mechanical stone-crushing activities in and around Delhi, and it should have to shift to the new “crushing zone” i.e. Pali village of Harayana. The court also suggested the government to set up “Ecological Science Group” for the dissemination of information and the need to set up “environmental courts” to deal with environmental cases.

### **Strict Liability to Absolute liability**

The principle of strict liability develop in the English case i.e. *Rylands v. Fletcher*, provides for strict liability of the corporation towards society, but this liability even was rejected by the Supreme Court and evolved a new principle of liability, i.e. the principle of absolute liability, in which the enterprise is permitted to carry on the hazardous or inherently dangerous activity for its profit then the law must presume that such permission is conditional on the enterprise absorbing the cost of any accident arising out of such activity, the enterprise has to discover and guard against such hazards and dangers and to provide warning against potential hazards. The protection of life and limb of people even vests with the corporation as a matter of corporate social responsibility, it was observed by the then Chief Justice of India Ranganath Mishra in the case of *Union Carbide Corpn. V. Union of India* (1991, 4 SCC 594) that this is the worst industrial disaster in human history, in the year 1984, on the horrific night of December, from the Union Carbide plant in Bhopal, Madhya Pradesh, India, more than 40 tons of the deadly gas, methyl is escaped from the pesticide factory. Approximately half a million people were exposed to the gas and 20,000 have died to date as a result of their exposure. More than 1, 20,000 people continue to suffer from severe health ailments because

of the accident and its contamination, it is committed to the principles of Sustainable Development and its approximately 50,000 employees seek to balance economic, environmental and social responsibilities. The Vedanta case is the another example where Saxena Committee's suggestion and recommendations were consider and the Environment Impact Assessment reports submitted by the Vedanta were failed to take into account the impact of mining. The considerable effect came in the year 2010 in the form of Green Tribunal which is itself an authority to protect the environment and create a check and balance mechanism, in respect of failure of any corporation towards their corporate social responsibility.

### **Conclusion**

As of now, India is silent and not ready for a substantive law for the enforcement of CSR. However, the different judicial pronouncements are a positive indication that the country is slowly getting ready for such a law. The preliminary obligations fulfilled by some of the enterprises are the welcoming step on the part of a corporation; the steps taken by these corporations for the fulfillment of their CSR, some of them are:

- (i) Lupin India Ltd, India's third largest manufacturer of pharmaceuticals has started a project for providing sustainable development in 154 villages across Rajasthan.
- (ii) CIPLA, another Indian pharmaceutical major has found a novel approach to fulfil its corporate social responsibility obligations by offering to sell a cocktail of three anti-HIV drugs. This offer has to lead to a significant decrease in the prices of these drugs.
- (iii) BHARAT ELECTRONICS LTD built cyclone proof houses for the victims of the super cyclone in with the help of the victims themselves so that the houses are built according to their needs.

The welcome step for CSR is the Section 135 of the Companies act, 2013, which has the effect that CSR becomes the responsibility, which could affect the companies name and respect. These are some of the magnificent examples for performing the CSR, in the profit making society where everyone is thinking about their benefits at least these business houses giving an approach towards the society where they are living. Here, everyone has to take their responsibility and they would have to take care of environment, society, people etc. not for this day but for the tomorrow which can be beautiful, but we to create it, as much good we all can.

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## Elitist Tag or Tool for Development: An Empirical Analysis for Tourism Marketing Strategy in Sikkim

11

Debasish Batabyal

### Abstract

*Since time immemorial tourism in hill areas were considered and confined to be leisure centric and recreation oriented. This demand led orientation was a mere perception of the tourists and supply means and ways were largely ignored. Tourism in hill areas is believed to have been a mean of spending from disposable and discretionary income mostly for non-essential activities. This old and stagnant idea has been changing drastically. Today's tourism is not only essential but imperative as well to provide new avenues for income and jobs. This article has dealt with the modern economic environment in the backdrop of essential and available demand (or marketing) and supply (or destination) parameters.*

### Introduction:

Sikkim is a small hilly state, bounded by vast stretches of Tibetan plateau in the North, the Chumbi Valley and the kingdom Bhutan in the East, the kingdom of Nepal in the west and Darjeeling (West Bengal) in the South. Its latitude is  $27^{\circ}30'$  north and the longitude is  $88^{\circ}30'$  east. Sikkim is famous for scenic valleys forest, snow clad mountains, magnificent Buddhist culture and heritage and peace-loving people. Though small, the environmental, social and cultural diversities are not so. Some scholars believe that the word Sikkim involves Nepalese dialect and it refers to a 'now place' or the term has been derived from a Sanskrit word which means a 'mountain crest'. The people of Sikkim have ethnic diversity. The Bhutias came from Tibet, the Lepchas were the aboriginal community and the Nepalese came from Nepal. When Sikkim was an independent state it faced many invasion by its neighboring countries and the king took the help of the British India and, later, gifted some of its region including Darjeeling to the British India. Now this 22<sup>nd</sup> Indian State (joined Indian Union in 1975) has Over 81% of the total geographical area under the administrative managerial control of the Ministry of Environment and Forest, Government of India. Over 45% of the total geographical area of the state is under tree cover and nearly 34% of the geographical area is set aside as protected area network in the form of national park and wildlife sanctuary. The basic statistics of flora and fauna are given here under.

**Table 1: Flora and fauna of Sikkim**

Mammals	144 species
Birds	550 species
Butterflies and Moths	650 species
Reptiles	33 species
Frogs	16 species
Orchids	550 species, 95 Genera
Rhododendrons	36 species, 45 varieties
Flowering Plants	Over 4000 species
Ferns and Allies	300 species
Conifers	9 species
Medicinal plants	Not enumerated

**Source:** Economic Survey 2006-07, Govt. of Sikkim

The maximum summer temperature  $28^{\circ}\text{C}$  and minimum winter temperature is  $0^{\circ}\text{C}$ . Sikkim has a variety of mineral resources including coal, limestone, iron ore, graphite, pyrite etc. The temperature in the bottom of the valleys (up to 600 meters) situated at lower elevations, particularly during summers, are similar to the monsoon type of climate. The temperature starts falling between 600 meters to 2000 metres above sea level enjoys cool temperature

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Climatic conditions and further up (2000 meters to 3000metres) it is cold temperate climate. Arctic type of climate is found above 5000 meters. Sikkim is ecologically a fragile region. The state has the responsibility to conserve its rich biological diversity that includes coexistence and protection of over 5000 *species of angiosperm (one third of the total national angiosperms)*. Again this place has multi-ethnic communities. So the need for ecological, cultural and social diversities is not only essential but imperative as well. The people of Sikkim have ethnic diversity. The Bhutias came from Tibet, the Lepchas were the aboriginal community and the Nepalese came from Nepal. When Sikkim was an independent state it faced many invasion by its neighboring countries and the king took the help of British India and, later, gifted some of its region including Darjeeling to the British Indian Govt. Now this 22<sup>nd</sup> Indian State (joined Indian Union in 1975) has over 81% of the total geographical area under the administrative managerial control of the Ministry of Environment and Forest, Government of India. Over 45% of the total geographical area of the state is under tree cover and nearly 34% of the geographical area is set aside as protected area network in the form of national park and wildlife sanctuary. After becoming 25<sup>th</sup> state of the Union Government of India in the year 1975, the rapid development activities ushered in a new era of tourism in Sikkim. Increased accessibility by roadways and air transport, rapid socio-economic development, competitive advantage both from the point of view of the destination and geographical proximity to tourist generating states contributed to the development of tourism in Sikkim. Recognizing the increased tourist arrivals, accommodation units were set up in Gangtok and a few towns mostly by outsiders without proper land use planning and architectural design.

Ever increasing tourist arrival and increasing dependence on tourism as a powerful industry and employment generating source, restoration of peace and harmony, hospitable people, plenty of diversified natural and cultural resources, a typical interest of the people of India to discover the unknown hidden Sikkim brought about a new dimension for the development and marketing of tourism in Sikkim. Development and adoption of marketing approach extensively include a demand –supply equilibrium and as such takes into account tourism system. Destination marketing is unlike a marketing of essential consumables as it considers and move towards the characteristics of services. Again, in many cases the adoption and control is not fully devolved upon corporate sectors. As a service marketing sphere, it includes customer relationship management, internal marketing (with respect to a destination where all stakeholders are part of the product and contribute to the image and identity), increased importance of strategic alliances/ linkage etc. Destination marketing should be a part of destination management but in Indian destinations the concept is not in vogue and very often management and marketing are wrongly conglomerated with each other. There are very few destinations well managed by scientific research and background analysis. Sikkim has poor quality database and only in few cases the available data have been scientifically analyzed and interpreted as majority of destination planners and government officials are not from tourism background. So, an understanding of the demand for Sikkim as a destination and the capacity levels (physical, biological, social, psychological, financial) largely contribute to the overall marketing strategy. The government of Sikkim is one of the very few Indian states trying to optimize benefits from tourism for their local people. The recently adopted policy to project the state as an Ultimate Ecotourism Destination was really a committed responsibility towards sustainable development. Next to this is rural tourism and adventure tourism. Almost all these tourism facilities will contribute to the alternative tourism development in the state and the changes in types and forms of tourism will automatically have an impact on the activities of the tourists, duration of stay, the number of tourist arrivals and the tourism industry as a whole. So a proactive environment friendly approach has already been adopted in the marketing mix and Unique Selling Proposition (USP) of Sikkim though there are many things still remaining. The major task for the government is how to coordinate and control interest of all participants and infuse the idea of sustainable practices in the state. The priority area is really confusing as

there is a traditional clash between development and conservation. The destination marketing should not only increase the arrival of tourists but also be proactive in selecting target groups and introduce sustainable practices including mass awareness for environmental conservation.

### **Literature Review:**

In their book “The Tourism System: An Introductory Text”, Mill R.C., & Morrison A.M. (1986) described that tourism planning process were designed to produce goals, strategies, and objectives for the destination area related to tourism development marketing, industry organization, and awareness, and to other support services and activities while tourism development plan normally provided overall guidelines for development, outlines broad development concepts, and identified individual development opportunities worthy of in-depth analysis (through feasibility studies and/or cost-benefit analyses). According to their opinion, while moving with tourism development the destination area would first find it necessary to establish overall development guidelines to ensure that when development occurred it complied with the area’s economic, environmental, social and cultural policies and goals. They also explained that the destination, going for development were needed to draft more specific guidelines describing the basic characteristics of development that it wishes to encourage. According to their interpretations of strategy and models for strategy formulation in tourism most of those were prescriptive and there was a need for further empirical research about patterns and processes that accompany tourism strategies other than planning (Mintzberg 1994) According to the Mürstaja H (2003) the best destination development plans were worked out in cooperation with private, public and non-profit sector. Following the opinion of the author, one could win through cooperation and improvement and not through inner competition and division (Godfrey, Clarke 2000). Organizing and coordinating were the activities with the key meaning of development. An ideal variant would be if someone took the whole responsibility for tourism development, but still a better solution would be formation of a holding enterprise that would represent and coordinate different local groups.

The Tourism Policy 1997 exhibited a belief that the potential of the tourism would be determined by the income levels of inhabitants and was basically a leisure industry not requiring the attention of the planners and administrators. According to this Policy, this belief was based on an information gap that systematically constrained the development of tourism in India over the years. National Action Plan for Tourism presented in the Parliament on 5th May 1992. It proposed to achieve different types of tourism products, continual growth of tourism infrastructure, effective marketing and promotional efforts in the overseas markets and removal of all impediments of tourism. The Action Plan could not specify the infrastructural requirements and the investments needed to meet the targets and the sources of funding for the same. The Tourism Synergy Program consisting the activities and infrastructural components to be provided by the various agencies including the private sector and State Governments was thus prepared in 1993. It was further modified and converted into a ‘National Strategy for the Development of Tourism’ during 1996. These documents were evident for realizing the importance of tourism and ensuring a consensus on the developmental needs. It also contributed positively to all the infrastructural departments in a coordinated manner and ensure higher plan allocation and introduction of new innovative schemes for accelerated development and growth of tourism.

According to Porter (1980), ‘tourism strategy can take the three forms’. These were-(i) lower costs where production efficiency led to value added to both consumer and producer matching market prices with greater profitability or being able to offer lower prices while maintaining average profits. (ii) Differentiation, where additional value was created for the consumers through adding value that allowed a greater price to be commended e.g. branding, product features or additional benefits or support. (iii) Focus, relating to the breath of market, scope, focuses referring to targeting specific niche markets or product ranges. Porter also

opined that the essence of strategy formulation was coping with competition where competition in an industry is rooted in its underlying and competitive forces.

In their article, “Environmental Economics of the Khangchendzonga National Park in the Sikkim Himalaya, India”, Maharana, I., Rai S.C., Sharma, E.( 2000, September), show the application and relevance of Contingent Valuation Method (CVM) to measure Willing to Pay (WTP) important part of Polluter Pays Principles (PPP). Using a random survey, the average WTP was 8.84 USD for foreign visitors per visit, followed by 6.20 USD per household per year and 1.91 USD per domestic visitor. The WTP was strongly influenced by age, education and income.

Cambridge Tourism Strategy (2001-2006) exhibited that the strategy for a region generally revolved around five key principles. These were partnership, quality, sustainability, competitiveness, and accessibility. It exuberated that a strategy document usually addressed broad themes (again, in contrast to a plan which was more concerned with specifics) like the framework within which tourism could flourish, development of the spreading quality and encouragement of the wise growth of tourism. It also enunciated that tourism strategy created and evolved more strategies e.g. Country Cultural Strategy, Community Strategy etc.

**Objectives:** Tourism in hill stations are traditionally for leisure and recreation and found to be isolated from the mainstream important economic activity that contribute to the common people and expands thereby. The prime objective of this study was to identify whether tourism is really an effective tool or activity of the rich people for the other rich people from outside. So, the only hypothesis tested here is given here under.

**H0 : Tourism in Sikkim is the activity for rich people and by rich people mainly for leisure and recreation and not for community development with sustainable orientation.**

A total of 475 customers were contacted, and the overall response rate was 42.32% (201 completed, usable questionnaires). A total of 585 Community members of the different areas of Sikkim were contacted and the overall response rate was 16.92 % (99 completed, usable questionnaires).

To analyse the primary data Kendall’s Coefficient of Concordance, a non-parametric test is used. It determines the degree of association among several (k) sets of ranking of N objects or individuals. It is considered an appropriate measure of studying the degree of association among three or more sets of rankings. This descriptive measure of the agreement has special applications in providing a standard method of ordering objects according to consensus when we do not have an objective order of the objects. The basis of this test is to imagine how the given data would look if there were no agreement among the several sets of rankings, and then to imagine how it would look if there were perfect agreement among all the sets. In our study, the consistency of ranks (Maximum disagreement=0 and Minimum is 1) were tested several times with the appropriate P value. While computing Kendall’s Coefficient of Concordance (W), the mean of rank (R<sub>j</sub>) was taken into note of with the appropriate consistency.

Here,  $s = \sum (R_j - \bar{R}_j)^2$

$$W = \frac{s}{12k^2(N^3 - N)}$$

k=no. of sets of rankings i.e. the number of respondents

N=number of objects ranked

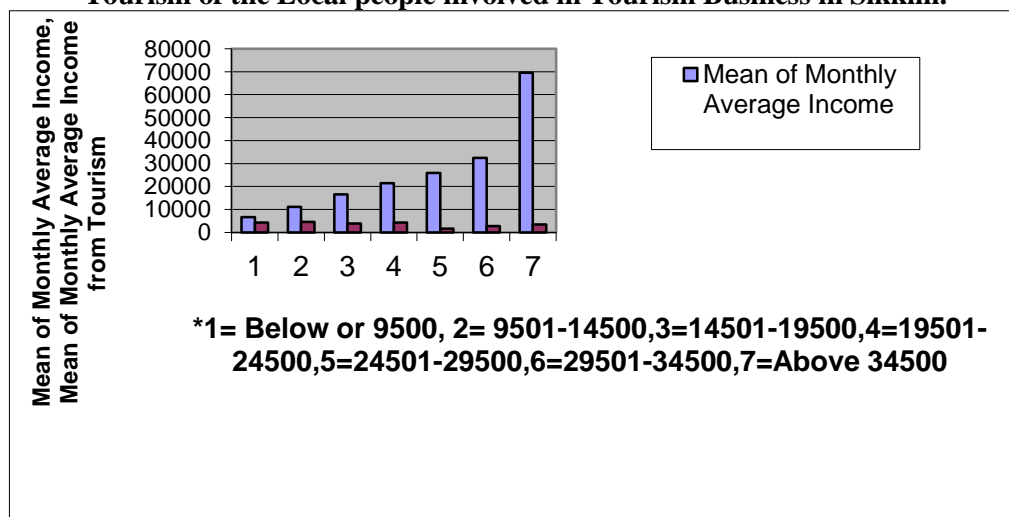
$\frac{1}{12k^2(N^3 - N)}$  = maximum possible sum of square deviations i.e. the sum s which would occur with perfect agreement among k rankings.

Apart from this, the collected data was analyzed by using different statistical tools like percentage, means, etc. and the computer packages like SPSS and Excel were in use .

### Data Analysis and Discussion:

To raise the supply side aspect from within the destination, one of the major demographic factors with respect to monthly income and monthly income from tourism among the people of Sikkim is taken into consideration. The economic viability is measured to notify which section/s is/are earning as well as depending more on tourism, households in Sikkim were divided into seven important or viable slabs keeping in view their already available demographic profile. Thirty eight per cent (38%) of all respondents were found to be associated with tourism business in Sikkim and the range of monthly average income was less than 9500 to above 34500 while the same was from Rs.500 to more than 9500.

**Figure 1: Mean of Monthly Average Income and Mean of Monthly Average Income from Tourism of the Local people involved in Tourism Business in Sikkim.**



Source: Field Survey 2009-10

**Note: Statistical analysis has been made using Excel**

The above chart is showing the distribution of mean income and mean income from tourism in the State. Seven important slabs are set along the x axis while the mean income and mean income from tourism are measured along the y axis. The result exhibited was interesting as the percentage increase in mean income was always less than that of the mean income from tourism. The mean incomes from tourism have experienced a depression unlike the ever increasing trend of mean income. These two types of mean incomes indicate that the income groups belonging to the fifth and sixth slabs are earning less from tourism though the trend is increasing thereafter for higher income groups in Sikkim. As an important aspect of tourism demand a set of questions are asked to tourists. They are requested to rank simply for twelve infrastructural and/ or super structural<sup>1</sup> variables in which one was considered to be the most important variable. A non-parametric Kendall's W rank Test was conducted to test whether ranks put by all respondents were consistent (H0) or not (H1). Here ranks were found to be

<sup>1</sup> Tourism infrastructure is called superstructure

consistent as the P value was greater than 0.10 and mean of ranks ( $\bar{R}_j$ ) for each variable was used and compared for further ranking to measure importance. Following was the mean of ranks showing the importance of different variables here under.

**Table 1: Table Showing Mean of Ranks for the Important Factors Influencing Future Visit**

**Source: Field Survey 2009-10**

**Note: Statistical analysis has been made using SPSS statistical Package**

Majority of tourists visiting Sikkim are price sensitive except their foreign counterparts. Foreign tourists did not prioritize 'better income opportunity' to be the second important criterion for future travel to Sikkim unlike their domestic counterparts. Most of the foreigners travelling to Sikkim are alternative/ adventuresome/ special interest tourists but advocated to or emphasized on basic infrastructure such as 'availability of accessible vehicles for travelling in or around Sikkim' (ranked two), availability of effective communication aids

Factors	All Tourists		Domestic Tourists		Foreign Tourists	
	Mean of ranks	Ranks	Mean of ranks	Ranks	Mean of ranks	Ranks
Better income opportunities	3.16	1	3.38	1	4.38	4
Reasonably priced tourist products	3.67	2	3.72	2	3.84	2
Change in attitude of local people towards tourists	8.59	10	8.32	10	9.72	12
Trained staff and their friendly treatment	6.82	7	6.80	7	7.66	9
Information about availability of aids/ equipments at attractions	6.05	5	5.95	5	6.58	6
Safety support system	6.64	6	6.66	6	6.97	7
Availability of accessible vehicles for travel	4.03	3	3.93	3	3.59	1
Accessible pathways at attraction premise	7.66	9	7.60	9	7.56	8
Clear signage at all major points	9.27	11	9.33	11	8.50	10
Ramp & elevators at attractions	7.20	8	7.32	8	6.31	5
Effective communication aids	5.19	4	5.37	4	3.88	3
Easily accessible tour operators	9.72	12	9.63	12	9.02	11

like better telecommunication facility, postal services, cyber café, information kiosk etc. (ranked three) and ramps & elevators at attractions (ranked five). Instead of diluted super structural or tourism related infrastructural facilities they expected little more infrastructural facilities along with the moderate fulfilment of their associated derived demand for tourism products and services.

## Conclusion

The preoccupied notion of thinking tourism only to be an elitist tag is found to be perception of hosts as clients or tourists are richer than the common local people ever. The study has promulgated the further scope for analysing the socio-economic conditions of guests and hosts and their combined effects on ever changing marketing environment of Sikkim. Again, majority of tourists visiting Sikkim are found to be price sensitive, seeking more income opportunities for future visit with more spending and asking for better communication. Except price consciousness, that is evident among all leisure tourists everywhere, almost all are asking for basic and moderate infrastructure and basic super structural facilities oriented particularly for tourism. It can also be said that tourism development in Sikkim has rightly started following important principles of sustainable tourism development. So, tourism development strategies should broadly incorporate more sustainable orientation for the future by offering alternatives tourism, alternative tourists, and alternative infrastructural development.

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# Education for Sustainable Development: Assessing Knowledge and Skills of Urban Adolescents towards Efficient Energy Management

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## **Abstract**

*Sustainable Development stands for meeting the needs of present generations without jeopardizing the ability of future generations to meet their own needs (United Nations Development Programme) [UNDP], 2013. Energy Conservation is one such tool, which guides us on our journey towards the goal of Sustainable Development and combating Climate Change. It is important that more and more of our citizens become aware about the available choices and the impact of each of these choices on our environment and fellow human beings. To target adolescents is to target a majority with core values of revolution and influence; it is an affective direction to reach maximum masses with minimum input, future generations, future policies, and ultimately our future developmental direction will be influenced.*

*The present paper on, "Education for Sustainable Development: Assessing Knowledge and Skills of Urban Adolescents towards Efficient Energy Management", brings out the prevalent knowledge and skills of adolescents towards energy conservation and efficiency. The paper also discusses the strategy used for developing a capacity building program to generate awareness and skills amongst adolescents regarding energy conservation. The sample constitutes students from Public school, Government and students from colleges of selected Universities in Delhi.*

**Keywords:** *Adolescents, Energy Management, Capacity Building, Climate Change, Sustainable Development.*

## **1. Introduction**

Sustainability is the ability to maintain balance of a certain process or state in any system. Resources such as water, energy, forests, mineral etc. are backbone of every economy and provide two basic functions – raw materials for production of goods and services, and environment services. Recycling, reducing waste generation, and conservation of valuable resources are our best hopes so that our ecosystems will still be capable of providing for the generations to come (European Commission, 2002). Energy is central to sustainable development and poverty reduction efforts. It affects all aspects of development -- social, economic, and environmental -- including livelihoods, access to water, agricultural productivity, health, population levels, education, and gender-related issues (United Nations Development Programme [UNDP], 2013). It is the prime mover of economic growth and is vital to the sustenance of a modern economy. Future economic growth crucially depends on the long-term availability of energy from sources that are affordable, accessible and environmentally friendly (Ram & Selvaraj, 2013). The global demand for energy is rising fast as the population increases and developing countries such as China and India are undergoing dramatic economic growth. The world's energy needs are estimated to be 50% higher in 2030 than they are today (EIBaradei, 2008).

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### Problem being faced by India's energy sector

- **Shortage of fossil fuels** Commercial primary energy consumption in India has grown by about 700% in the last four decades (Indian Chamber of Commerce, 2012). Mathur, Lamba, Bhuyan & Sharma (2010) assert, that coal will continue to occupy centre-stage of India's energy production. Further, as per the Planning Commission report (2012) 'it is expected that demand for coal will rise to around 937 million tonnes by 2021-22 and to more than 1415 million tonnes by 2031-32' (as cited in Garg, 2012, p.7).
- **Energy related emissions:** The challenge now is twofold because Energy crisis is being caused not because we might run out of energy, but because we are using it in the wrong way (Browne, 2013). Kaygusuz (2012) states, "energy related CO<sub>2</sub> emissions are estimated to increase globally from 27.1 Gt CO<sub>2</sub>/year in 2008 to 40.4 Gt CO<sub>2</sub>/year in 2030. The
- **Rising Demand for electricity:** The Ministry of Power (2012) stipulated that the per capita consumption of electricity has increased substantially from 15.6 units in 1950 to about 1000 units per annum in 2012. In order to meet the increasing requirement of electricity, massive addition to the installed generating capacity in the country is required.

Increasing prices and unavailability of fossil fuels has prompted the government to turn to energy conservation regime and renewable energy sources to mitigate this problem. To address the current energy crisis, energy conservation and energy efficiency coupled with renewable energy are dual goals of national energy strategy (Garg, 2012). Several renewable energy plants have been delayed due to various reasons and thus deficiencies in power availability exist. Pointing out the shortfalls in renewable energy development in India, Chakrabarti, & Das, (2012) assert that the country's poor power infrastructure remains one of the largest threats to the ability of alternative energy to fulfill its potential. India lacks the transmission and distribution infrastructure to fully integrate renewables and many projects are already struggling to get connected to the national grid. Energy conservation is important from many different perspectives and not just because saving energy means saving our money by lowering our monthly energy bills (the economic importance of energy conservation) (Haluzan, 2013). Ministry of Power (n.d) asserts, "Energy efficiency and its conservation is the least cost option to augment the gap between demand and supply. Nearly 25,000 MW of capacity creation through energy efficiency in the electricity sector alone has been estimated in India" (para. 1). The Integrated Energy Policy of government of India lays emphasis on energy conservation and efficiency; particularly through demand side management and estimates 15% saving of energy is possible by such interventions (Garg & Tondon, 2012). In India residential sector, at 39% of final energy consumption, is the second largest contributor to demand and possibly the largest contributor to peak demands in the system. BEE & National Productivity Council (2009) carried out study on electrical energy conservation potential in India. Domestic sector emerged as second after agriculture with energy conservation potential of nearly 25%.

Adolescents" is best understood as a period of transition from the dependence of childhood to adulthood's independence and awareness of our interdependence as members of a community. They are the main stakeholders, future policy makers and a major resource group playing an important role in taking up responsibilities, revolutionizing the other stakeholders, acting as a catalyst for bringing about change. These future leaders have immense potential to mobilize the masses, be adaptable and a link education and action, besides being responsible consumers (Centre for Environment Education, 2005). The participation of youth in environmental protection can be sought at levels and locations



ranging from grass-roots activism and participation in conservation projects to policy-making bodies and NGOs.

Education for sustainable development is a dynamic concept that utilizes all aspects of public awareness, education, training and capacity building to create or enhance an understanding of the linkages among the issues of sustainable development (Centre for Environment Education [CEE], 2005). For building momentum towards energy management movement, it thus becomes imperative to build capacity of masses so that they are capable of making decision and taking appropriate steps towards the implementation of suitable energy efficiency measures. According to the Population Council in India, (2012), “India is a young nation with 30% of the country’s population being adolescents”. High proportion of a young population, could work in India's favour of emerging as one of the four major economies of the world by the year 2020. Their energy and enthusiasm must be guided into productive work. Their ideas and innovations should be tapped for the betterment of the society (President of India Forum, 2010). Building capacity of adolescents may help to reach next four generation, the message to conserve and protect the nature. Thus, towards this end present research ‘*Education For Sustainable Development: Assessing Knowledge And Skills Of Urban Adolescents Towards Efficient Energy Management*’ has been undertaken. The research may have a multiplier effect;

- Firstly, by building capacity of adolescents and adolescents towards energy management and sustainable development. Such initiatives will assist adolescents and adolescents, who would take on the roles of future business owners and policy makers, in addressing sustainable development in responsible manner through efficient energy management and conservation.
- Secondly, by serving as a tool for knowledge and skill enhancement for energy management among other stakeholders as well. Such capacity building efforts may be duplicated by various organizations striving towards energy management among individuals to appreciate and include the concept of energy management to their lives.
- Thirdly, the capacity building programme may prove to be a framework for furthering initiatives in training and research in the field of energy management and sustainable development.

## **2. Review of Literature**

Future economic growth crucially depends on the long-term availability of energy from sources that are affordable, accessible and environmentally friendly. India ranks sixth in the world in total energy consumption and needs to accelerate the development of the sector to meet its growth aspirations (Raghuraman, & Ghosh, 2003). Sargsyan, Bhatia, Banerjee, Raghunathan & Soni, (2012) assert that renewable energy development can also be an important tool for regional economic development within India. Even with the aggressive push towards renewable energy, India would still need to have to import coal at a peak level of ~200 MT and crude oil of ~300 MT between now and 2030 (TERI, 2010). Sargsyan et. al. (2010) asserts that apart from financial barriers owing to high upfront capital cost, renewable energy technologies are also facing substantial nonfinancial barriers. Electrical India (2012) reported “A better solution to this energy crisis would be to utilize the available capacity more efficiently by better conservation and management of electricity. A great potential for significant savings exists in the secondary distributing network in cities and urban areas” (p. 39).

Energy efficiency technologies are commercially viable today and offer some of the most cost-effective solutions for reducing greenhouse gases. Energy efficiency solutions present

opportunities for both carbon reduction and energy cost savings (Quibell, 2010). Energy Conservation may be achieved by any or all of the following approaches (Diwan & Dwivedi, 2009).

- (a) **Technical Measures:** imply a change in the type of machinery tools or implements with which energy is being used.
- (b) **Structural Measures:** A task can be performed by different modes and the amount of energy required by different modes differs. Therefore, using the more energy efficient mode in place of less efficient one will naturally increase the efficiency of the system as a whole.
- (c) **Social and Behavioral Measures:** As Kenneth Building once remarked, “Conservation is just thinking before using energy”. The people may be persuaded to change their lifestyles for reducing the energy consumption. The steps for this may be educating people and making them aware of the potential advantages of energy conservation (Diwan & Dwivedi, 2009).

Youth constitute some 222 million and represent 30% of the Indian population (Population council of India, 2013). According to Hungerford and Volk's (1990) youth who were involved in school programs gained practical application were far more likely to continue using responsible environmental behavior in the future. Cornelius, Armel, Hoffman, Allen & Robinson (2009) asserted in their study that many adolescents are already more motivated than adults to make energy- and GHG-saving behavior changes, possibly because they are more likely to believe they will be significantly impacted personally by climate change and energy security problems in their lifetimes. Evidence from consumer behavior research also supports the role of children in influencing family behaviors (Beatty and Talpade 1994; Belch et al. 1985; Foxman et al. 1989). Donald and Lal (1996) assert, “there is a need for a coordinated, cohesive, structured and sustained capacity building programme to assist developing countries with economies in transition to develop and effectively implement legal and institutional responses at both international and national levels to the new challenges for achieving environmental management for sustainable development”(p.3).

### **3. Objectives**

- To understand the scenario of energy in India and contribution of adolescents towards efficient energy management.
- To assess the knowledge and skillsof adolescents towards energy management
- To develop a validated capacity building programme towards energy management for adolescents.

### **4. Methodology**

The sample constitutes students from Public school, Government and students from colleges of selected Universities in Delhi. Delhi being a metropolitan city is the educational capital of the country and houses a number of private and government universities attended by students with myriads of background, coming from all over the country and even nationals of other countries and cultures. The knowledge-testing questionnaire was administered to the students to understand their knowledge level. The tool covered the knowledge testing of respondents regarding the following concepts; sustainable development, climate change, energy conservation and energy audit. The data procured was coded, scored and tabulated in accordance with a pre-decided pattern; this was done to calculate scores and comparative data to lead to results and conclusions. The data was analyzed using Microsoft Excel Software. Mean and standard deviation were also used to support the analysis. Pie Charts and Graphs were used to represent the study findings.

### **5. Analysis & Interpretation**

### 5.1 Knowledge level of Participants:

Knowledge is defined by the Oxford English Dictionary as awareness or familiarity gained by experience of a fact or situation. Establishing existing knowledge and measuring the changes can help in estimating understanding of a subject with the ability to use it for a specific purpose (Bereiter, 2002). The sample was tested for their existing knowledge on the energy and related issues. .

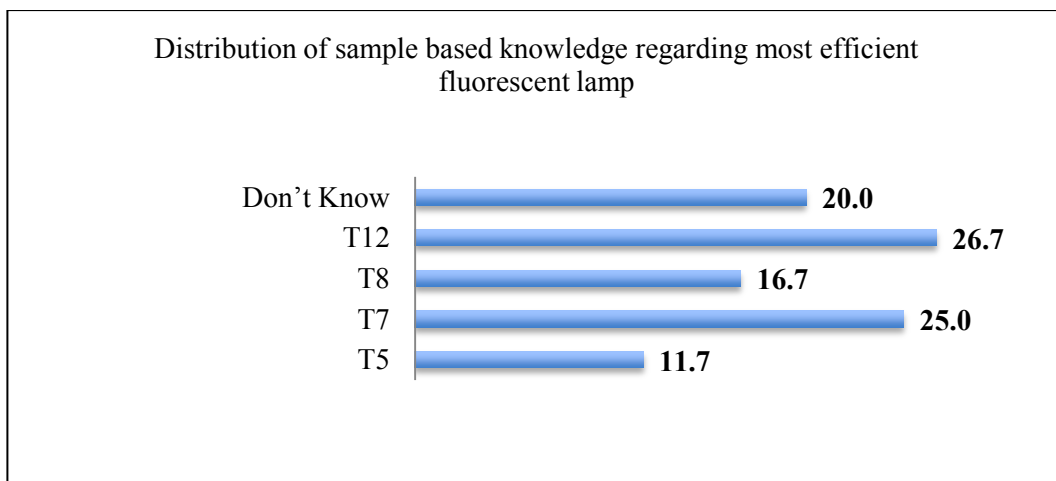
**Definition and Differentiation between energy Conservation and Efficiency:** It was observed that respondents had fairly good idea of the term energy conservation (82%) of the respondents could identify the correct meaning of energy conservation as indicated by Fig 3.1. The participants were asked to classify the given actions in to energy conservation and energy efficiency. It was seen, in pre test 88.3% correct responses were obtained for ‘Switching off lights when not in use’ identifying it as energy conservation. For rest of the categories less than one third (33%) correct answers were obtained. It was observed although participants knew the meaning of energy efficiency and energy conservation; they could not differentiate between both the terms. In pre test percentage of correct response in each action was low

#### **Demand side Reduction**

The knowledge of adolescents was also assessed towards sector with maximum saving potential. In pre test more than one third (38.3%) of the respondents identified industrial sector with maximum demand side reductions. However, less than one third (31.7%) of the sample indicated residential sector.

#### **Energy Efficient lights**

Respondents were asked to identify the most energy efficient fixture. In pilot testing single largest category (56.7%) opined CFL to be the most energy efficient. It was surprising to know that most of the students were not aware about LED. Some also opined that it was very expensive as compared to other lighting fixture.



**Figure 2: Distribution of sample based knowledge regarding most efficient fluorescent lamp**

The respondents were not aware about the tubular fluorescent lamp terminology. Most of them did know that commonly used tubelights in households is called T12. Pre-test revealed more than one fourth (26.7%) thought T12 to be the most energy efficient. One-fourth identified T7 to be most energy efficient and merely 11.7% could identify the correct answer.

Also, 20% indicated that they did not know which was the most energy efficient fluorescent lamp as indicated by Fig 2.

**Table 1: Distribution of sample based knowledge regarding saving energy consumption by replacing incandescent lamp with CFL**

Options	Percentage
Higher Wattage	20.0
Same Wattage	16.7
Lower Wattage	43.3
Don't know	20.0

**Saving energy by replacing existing appliances:** In order to apprehend the application and understanding of participants, they were asked to identify what level of wattage of CFL can replace an incandescent bulb. In pre test it was seen that less than half (43%) could identify 'lower wattage' as indicated by Table 1. However 20% and 16% opined 'higher wattage' and 'same wattage' respectively. Another 20% indicated that they did not know the answer. The participants were also asked what level of wattage of LED could replace a CFL. In pre test largest category (63%) identified that a higher wattage of LED can replace CFL. Only a small section (21.7%) could identify the correct option. This was probably because most of the participant did not that LED is more energy efficient than CFL.

**Table 2: Distribution of sample based on knowledge regarding automatic controls in lighting system**

Options	Percentage
Dimmers	5.0
Occupancy sensors	0.0
Daylight sensors	8.3
Adjustable task lighting	10.0
Don't know	76.7

### Automatic Controls

In pre test largest category (71%) opined that automatic controls lead to reduction in automatic controls. However when they asked to identify some types of automatic controls, merely 10 % could name adjustable task lighting and another small section 5% and 8.3% indicated dimmers and daylight sensors respectively. Majority (76.7%) did not answer the question and indicated they did not know the answer as indicated Table 2. This suggests that even if the sample was aware of the fact that automatic controls help in reducing energy consumption, but they could not ascertain what were these automatic controls.

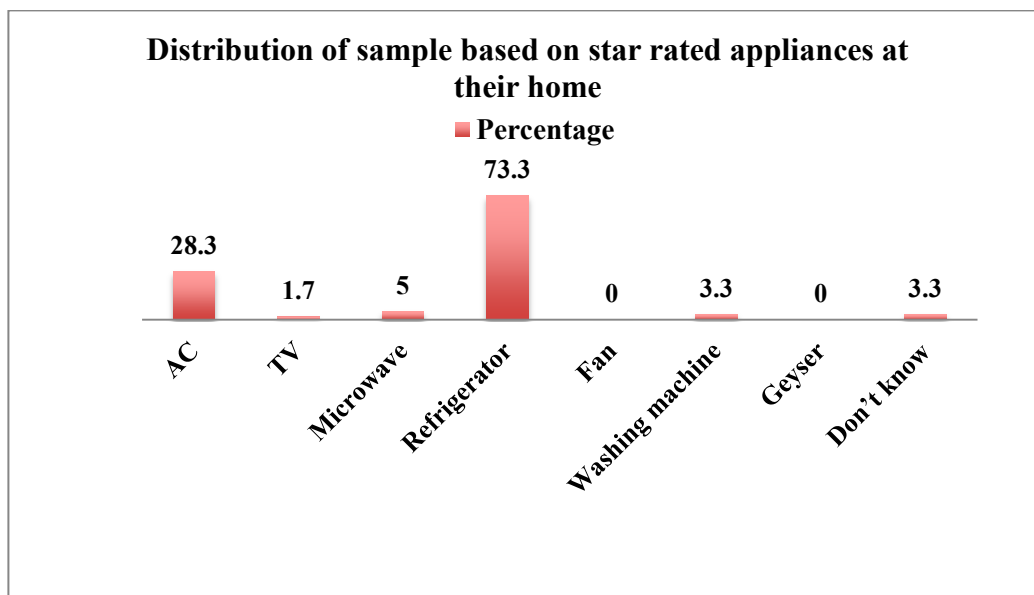
In pretest largest category (36.7%) identified one kilowatt to be the unit of electricity. Another section (28.3%) knew the correct answer and a considerable section (21.7%) indicated they did not know the answer.

**Price of Electricity in Delhi :** It was seen respondents were not very much aware about the electricity rates in the city. Nearly one third (35%) of the respondents identified Rs. 1.5 to be the current minimum rate of electricity and another section (20%) indicated Rs. 3.8. However only a small section (16.7%) could ascertain the correct minimum price of electricity in Delhi. Similarly for maximum rate only 13.3% could ascertain the correct answer in pre test. It is seen that largest category (61.7%) indicated Rs. 6 to be the maximum price.

**Sanctioned load:** In pre test only 30% opted the right answer. The participants expressed they had not heard this term earlier.

**Star rating of Appliances:** Pre-test revealed large section (58.3%) of respondents could identify 'Bureau of Energy Efficiency' as the organization that gives star rating to appliances. Although a large category (51.7%) expressed that they had star rated appliance at home, but some of them said that they had never read the labels properly and did not know which organization gives the star rating. It is observed that nearly cent percent (90% and 91.7%) of the respondents knew that star rated refrigerators and AC are available in market respectively. This is in conjugation of the data represented by Figure 2 where in nearly three fourth (73.3%) of the respondents indicated that they have star rated refrigerators at home. The respondents expressed they did know tubular fluorescent lights and ceiling fans were also star rated, only 1.7% and 18.3% responses were obtain for the same in pre test. Also, respondents seemed to have less awareness regarding star rated television in pre test with 36.7% responses. The respondents also had fairly good knowledge about star rate AC and star rated geyser with 70% and 61.7% responses in pretest. Large number of responses (75%) were obtained for star rated microwaves, however star rates microwaves are not available in market. The students expressed that microwaves should be star rated since they bid energy guzzlers in a home. The participants expressed that they were not aware regarding star rated TV and TFL because their energy efficient substitutes were more popular in market like: LED television, CFL, T5 tubelights and LED lights.

Figure 3 reveals that nearly three fourth (73.3%) of the respondents indicated that they have star rated refrigerator at home and 28.3% expressed they have star rated AC. In earlier section it was revealed that nearly cent percent of the respondents had awareness regarding star rated refrigerators and star rated AC. This indicates towards the possibility that adolescents today are aware about the some energy efficient appliances available in market but are not taking appropriate steps to adopt them in their daily lives.



**Fig 3: Distribution of sample based on star rated appliances at their home**

Respondents were also quizzed about the mandatory star-rating scheme of BEE. Table reveals that in pre test 80% of responses were obtained for refrigerators. In pre-test none of the respondents could identify that star labeling is mandatory for Tubular Fluorescent Lights. This is conjugation of the data earlier where only one respondent knew star rated TFL were available in market in pre test. Respondents expressed that they star rated TFL were not popular in the market since other energy saving lights like CFL and LED were available.

Participants were also asked to identify star rating was mandatory for which type of refrigerator and AC. In pre test 38.3% respondents identified the right option for refrigerator.

**Energy Conservation measures:** An attempt was made to understand the knowledge of respondents with respect to energy conservation measures for electrical appliances. Respondents were asked what should be the distance between the wall and refrigerator for energy efficiency, in pretest less than one third (31.7%) of the respondents answered correctly. Respondents were asked to how much energy an AC would consume, if the difference between indoor and outdoor temperature were small. In pre test largest category (40%) indicated that the energy consumption would remain same. Equal numbers of responses (30%) were obtained for energy consumption will be high and energy consumption will low as indicated by Table 3.

**Table 3: Distribution of sample based on knowledge regarding energy conservation measure for AC**

Options	Percentage
Higher the energy consumption for air conditioner	30.0
Lower the energy consumption for air conditioner	30.0
Energy consumption will remain the same for air conditioner	40.0

**Energy auditing:** Respondents were asked to identify the meaning of term energy auditing. In pre test only 16.7% respondents identify the correct meaning. Half (50%) of respondents indicated energy auditing involved checking of energy efficient appliances in a building. Another section (23.3%) comprehended energy auditing to be purchasing energy efficient appliances. Some respondents expressed they had never heard of the term. Some of the science students in school indicated that they had calculated energy consumption as a part of an activity but did not know how to calculate the bill.

**Climate change and Sustainable Development:** Build up green house gas is also one of the very important concepts under the wide array of global warming which leads to increase in the average temperature of the earth's atmosphere. Table indicates that nearly half (45%) of the respondents associated global warming with increase of ultra violet rays in the atmosphere. It was observed majority of participants associated global warming with ozone layer depletion. The burning of coal, natural gas, and oil for electricity and heat is the largest single source of global greenhouse gas emissions (Intergovernmental Panel on Climate Change, 2007). Table indicates in pretest largest category (60%) of respondents answered that transportation led to maximum carbon emissions. A small section (8.3%) considered energy supply to be the sector with most carbon emissions. In pre test it was seen that respondent had fairly good idea of the term sustainable development. In pre test single largest category (41.7%) could identify its correct meaning.

**India's energy crisis:** India is facing energy crisis, there is huge mismatch between energy demand and supply. Table reveals in pre test 41.7 % responded that the gap

between supply and demand 4%. One fourth (25%) of the respondents indicated that the gap was 2% and another small section (11.7% and 10%) expressed the mismatch was 8.5% and 40% respectively.

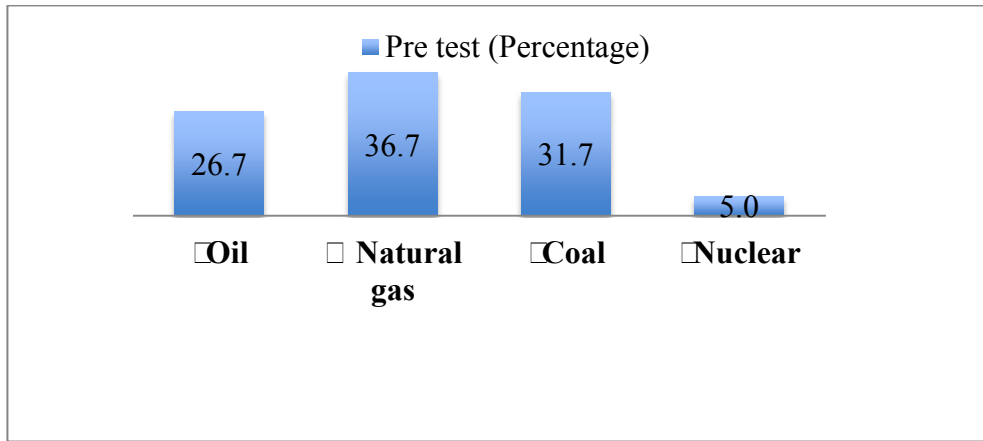


Fig 4: Distribution of sample based on knowledge regarding fuel dominating India’s energy mix.

Fig 4 indicates in pre test more than one third (36.7%) of respondents answered that natural gas was the main source of energy in India and less than one third (31.7%) answered coal.

**Pre test Knowledge Scores:** The pretest was designed to understand the prior knowledge of participant regarding the subject of training. Knowledge test of each respondent was scored such that each individual had a particular score for their knowledge in pre-test. Categories were created and scores were arranged under these categories to determine the number of respondents scoring high or low in pre-test.

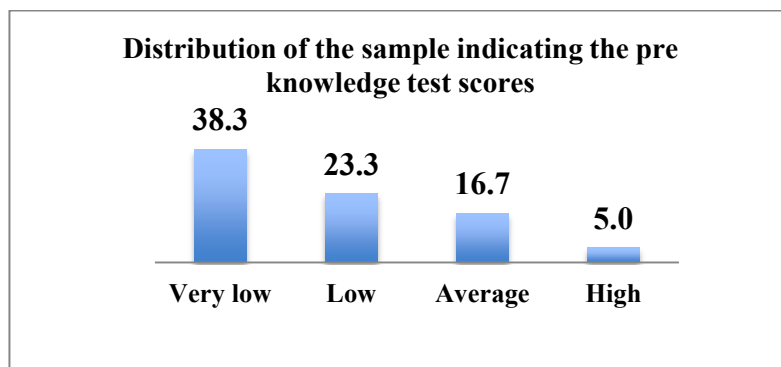


Fig 5: Distribution of the sample indicating the pre knowledge test scores

The knowledge of adolescents adolescents regarding energy management is tested using a knowledge-testing questionnaire. Table indicates, in pre test largest category (38.3%) of the respondents scored very low on the knowledge test and another section of respondents (23.7%) scored low. It was seen a small section (16.7%) scored average on the knowledge test. Only three participants scored high score in the test.

**5.2 Skill level of participants**

A skill-testing questionnaire was used to understand the skills of the sample towards energy management. Several skill-building activities such as: - energy auditing, calculating energy consumption and electricity bill, identifying BEE labels, calculating energy saved by installing energy efficient appliances, will be done during intervention

Table 4: Distribution of sample based on skills for energy auditing activity

Skill Testing (Part 1) (Existing Appliances)	Percentage
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Electricity Consumption in a day	6.7
Monthly Electricity Consumption	3.3
Electricity Bill	0.0

**Energy Auditing Simulation:** Energy Auditing is a skill aimed at conserving energy and therefore, the application of this concept in the sample's aptitude is of paramount importance. To test the skills of the participants towards energy auditing they were given a situation where they were required to calculate energy consumption of a room, and its electricity bill. Table reveals that in pre test very few respondents (6.7%) could calculate the electricity consumption of the room. None of the respondents could calculate the electricity bill as indicated by Table 4. The participants revealed that they were excited to learn energy audit calculations and was keen to experiment with more and more sample studies to find solutions for energy savings. They also expressed they had never done such interesting activity earlier. In order to further enhance the skills of sample towards energy auditing, they were asked to calculate the energy consumption of the room and its electricity bill with energy efficient appliance. In pretest a very small section (3.3%) was able to calculate the energy consumption. Respondents were also asked to calculate the amount of electricity and money they saved by installing in energy efficient appliances which none of the participants could calculate.

**Identifying Energy efficient appliances:** Respondents were asked to identify energy efficient appliances for appliances. In pre test the response was seen to considerable low indicating that respondent had no skills and very less knowledge regarding energy efficient appliances.

**Reading electricity bill and BEE labels:** Skills of respondents were also checked for identifying BEE labels. In pretest the response was low with only 10% responses obtained which correctly identified star rating and logo of the label. Respondents were asked to identify BEE labels of various appliances. Table indicates in pretest the response was considerably low with only a small number of responses (21.7% and 16.7%) correctly identifying geyser label and refrigerator respectively.

**Skill test scores of sample:** Skill test pre-test scores were calculated to understand the skill level of sample before intervention. In pre test cent percent (100%) of the respondents scored very low. This indicated towards the fact that energy-auditing skill were quite low amongst the sample as indicated by Table 5

**Table 5: Distribution of the sample indicating the pre skill test scores**

	Test Scores	Pre- Test	Pre Test (%)
Very low	0-4	60	100
Low	5--9	0	0
Average	10--14	0	0
High	15-20	0	0

### **5.3 Training Programme**

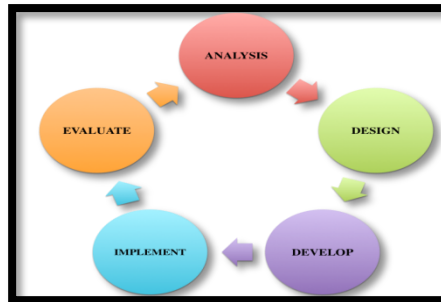
Intervention will be a capacity building programme, consisting of awareness raising training modules, which will be assisted with comprehensive tools. The training programme developed is discussed with respect to its content design strategy and delivery.

#### **5.3.1 Design Strategy**



Based on the pre assessment results and review of literature the capacity programmes have helped the researcher to identify the following strategy.

The ADDIE model is a systematic instructional design model consisting of five phases: (1) Analysis, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation.



**Fig 6: AIDDE Model**

- Analysis: During analysis the learning problem, the goals and objectives, the audience's needs, existing knowledge, and any other relevant characteristics will be identified. Analysis will also considers the learning environment, any constraints, the delivery options, and the timeline for the project.
- Design: Detailed prototypes will be prepared and field-tested. Also, suggestions will be sought from experts on the same.
- Development: The actual creation (production) of the content and learning materials will be done in this phase
- Implementation: During implementation, the plan is put into action and a procedure for training the learner and trainer is developed. Materials are delivered or distributed to the student group. After delivery, the effectiveness of the training materials will be evaluated.
- Evaluation: Appraisal of the capacity building programme will be done.

### **5.3.2 Delivery of training programme**

The training program will be framed into 3 elements.

- Introduction – The respondents were made familiar with the subject matter though informal discussions and presentations.
- Content – the subject matter was delivered using various tools which include
  - Presentations and videos
  - Session summary Handouts
  - Pamphlets
  - Training manual
- Recapitulation – Recapitulation was recognized an essential part of training programme. It was administered with purpose to help respondents to recapitulate the content at the end of each session. For this, recapitulation exercises were developed for each session.

## **6. Conclusion**

The present study dealt with assessing the awareness amongst adolescents regarding energy conservation with a goal to design and validate the capacity building program, which can be used as a tool to train adolescents across the country. Adolescents are the winds of change, influential stakeholders, and future policy-makers as well as policy followers. India is a young nation and the adolescents of the country assumes many varied roles, to make decisions, to influence those who make decisions and assume responsibility for decisions made; therefore, adolescents is targeted to reach the maximum density of population and bring about desired change with minimum input.

The study involved designing and implementation a knowledge and skill questionnaire for adolescents targeting issues of paramount importance i.e., sustainable development, climate change, energy conservation and energy audit, the ultimate aim was to comprehend the knowledge and understanding of students towards energy conservation and energy auditing. The paper presents the prevalent awareness and application level of the sample, which was found to be inadequate, and is seen as the first roadblock to overcome as change in behavior can only be based on existing knowledge and understanding in the group. Based on this criteria capacity building and training programme can be developed to generate awareness not only among adolescents, but also other stakeholders. Energy Conservation both supply side and demand side is dependent on acceptability by the consumers and a adolescents base which is aware about the implications of the choices will act as an asset for reaching the goal of sustainable development through energy conservation; by increasing demand and affecting supply side conservation in the near future. There is need to incorporate energy conservation in the value system of the country and capacity building of adolescents towards energy conservation and related concepts will be a leap towards the right direction.

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## **Eco - Tourism an Approach to Nature Conservation & Poverty Reduction**

**Mukesh Shekhar\***

**D.S.Negi\*\***

**Abhinav Mishra\*\*\***

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### **Abstract**

*Mark Twain said "India is the cradle of the human race, the birthplace of human speech, the mother of history, the grandmother of legend and the great grandmother of tradition.*

*The international Eco-tourism Society defines eco- tourism as "responsible travel to natural areas that conserves the environment and improves the well being of local people."*

*In short, ecotourism can be define as a tourism programme that is - "Nature suited, Ecologically balanced sustainable development, where education and awareness is a major constituent and where localities are benefitted.*

*India has some of the most beautiful and diverse landscapes in the world: pristine beaches, majestic mountains, thick-timbered forests, expansive plains, multiple rivers and lakes, rich delta regions. Within each of these environments is a thriving community of flora and fauna. Until recent population encroachment - a worldwide problem - these areas have been essentially undisturbed. It is our hope to promote a responsible program for the protection of India's natural areas for tomorrow while managing necessary use of the resources today. This management includes the availability of natural areas for eco-tourists.*

Eco-tourism is more than a catch loving travel and recreation. Eco-tourism is consecrated for preserving and sustaining the diversity of the world's natural and cultural environments. it accommodates and entertains visitors in a way that is minimally intrusive or destructive to the environment and sustains & supports the native cultures in the locations it is operating in. responsibility of both travellers and service providers is the genuine meaning for Eco-tourism also endeavours to encourage and support the diversity of local economies for which the tourism related income is important. with support from tourists, local services and producers can compete with larger, foreign companies and local families can support themselves. besides all these, the revenue produced from tourism helps and encourages governments to fund conservation projects and training programme.

Tourism has the potential to reduce poverty for a number of reasons including that:

- Eco-Tourism is a diverse industry, which increases the scope for wide participation, including the participation of the informal sector.
- The customer comes to the product, providing considerable opportunities for linkages (e.g. souvenir selling).

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- Eco-Tourism is highly dependent upon natural capital (e.g. wildlife, scenery) and culture. These are assets that some of the poor have, even if they have no financial resources.
- Eco-Tourism is labour intensive, therefore it can create a plenty of jobs from unskilled to highly skilled ones.
- Compared to other modern sectors, a higher proportion of Eco-tourism benefits can go to women (e.g. jobs, direct sale to tourists, small businesses, etc.).some of the steps should be taken to start the process of a Eco-tourism awareness program, and plans for future programs are in the planning stages. These could include:
  - One, educating ourselves about our natural areas and how we may best protect the our environment for future generations.
  - second sustainable development is very necessary for the eco-tourism
  - third Refuse, Reuse & Recycle the product.
  - fourth Community involvement, as they are key players to protect the environment
  - Tourism is a diverse industry, have valuable role to play.
  - look for green energy.

today the "Green Laws of conservation are making people aware of how man and the environment can live symbiotically for more time to come and eco-tourism is the only way to maximise the economic, environmental and social benefits of tourism.

### **Introduction**

Tourism is one of the world's fastest growing industries as well as the major source of foreign exchange earnings and employment for many developing countries.

World tourism demand continues to exceed expectations, showing resilience against extraneous factors. According to the UNWTO World Tourism Organization

- International Tourist Arrivals grew up 5% in 2013

Tourism is vital to the well being of many countries, because of the income generated by the consumption of goods and services by tourists, the taxes levied on businesses in the tourism industry and the opportunity for employment and economic advancement by working in the industry. Eco tourism is directly dependent on the sustainable development of the region or the destination. Sustainable tourism development is meeting the needs of present without compromising & damaging the needs of future. It is important to improve our living standard by conserving environment, nature, natural resources, etc. Sustainable development is to ensure that whatever we decide as citizens, consumers, tourists & governments contribute to an excellent quality & standard of life. It requires policies & rules by the government in order to take required action at all levels in order to maintain & sustain it. To make sustainable development a reality, there must be cooperation & coordination among governments, businesses & communities around the world. At the same moment it is the moral & social responsibility of the citizens of the country to keep it up.

Development is essential & integral part for the future but it should not be at the cost of environment degradation in the form of water pollution from populated areas, industry & agriculture; chemical & radiation pollution due to industrial waste; deforestation, land

degradation & noise pollution etc. Therefore with sustainable development, we should be wise to implement developmental policies & planning in such way that environmental problem can be minimized. Eco tourism is a combination of ecology and tourism. Ecology which is directly linked to the nature & tourism is dependent on the natural resources. Both the terms are interdependent & inter-related. Ecology has various dimensions including forests, mountains, rivers, oceans, deserts, animals, birds, fishes, etc. These are directly or indirectly tourism products, which attracts the tourists to the destination. The natural resources have been used by the tourists & locals, but the rapid usage & misuse leads to the depletion of it. It means the sustainability of these products keep the tourist's inflow.

Tourism industry has been the largest industry of the world, in terms of employment provider as well as revenue generator. Many of the other industries are based or related to the tourism. Tourism industry includes the transportation, accommodation, fooding, sight - seeing, etc. It is the hospitality industry which keeps the rotation of the tourists up at the destination. Sustainable tourism is based upon the conservation of the natural resources & maintaining the ecological balance. There is a growing awareness of the impact of changes on tourism & environment, to make people aware about the ecology & know them how to sustain & conserve it. The large consumers of water & electricity which generates large volumes of waste. The tourism industry is dependent on the quality of environment, on the clean air, bountiful water & its sufficient supply & availability of fauna & flora.

According to Victor T.C.Middleton & Rebecca Hawkins : -

***Sustainable tourism means achieving a particular combination of numbers & types of visitors, the cumulative effect of whose activities at a given destination, together with actions of the servicing businesses, can continue into the foreseeable future without damaging the quality of the environment on which the activities are based.***

Development means different things to different people. It is a combination of differing values, both material & ethical. It covers the present & the future, but uses the past to show the way to compare & evaluate the nature of social change that includes economic & technological changes as well as the cultural & geo political context of change. Consequently there has not only been a debate on the nature & structure of development, but approaches suggested on how to measure tourism & its impacts & also to create perspectives that express the evolution of balance, development & growth.

There should be a threshold point in order to sustain the equilibrium between the tourism & nature in order to make & keep it sustainable. In the way to do it the maintenance & upkeep of the resources to meet out the tourism demands. Tourism activity has long lasting socio-economic impacts on the host economy and community. The employment impact of tourism goes beyond employment in sectors in which tourists directly spend their money, such as hotels, restaurants and airlines. The emerged picture of tourism potential and related employment coupled with the identification of gaps in planning, provision, positioning and marketing of tourism point towards the requisite interventions at macro as well as micro level. Macro interventions are related with macroeconomic policy framework in which tourism industry operates in

the country. On the other hand, micro interventions are related with spatial planning, efficient provision and marketing of tourist destinations. Above observations coupled with timely and efficient implementation of programs and plans outlined in the tourism policies of respective States can catalyze the growth of tourism industry in the country resulting in creation of more tourism related jobs.

To sum up, Indian tourism has vast potential for generating employment and earning large sums of foreign exchange besides giving a fillip to the country's overall economic and social development. Much has been achieved by way of increasing air seat capacity, increasing trains and railway connectivity to important tourist destinations, four-laning of roads connecting important tourist centres and increasing availability of accommodation by adding heritage hotels to the hotel industry and encouraging paying guest accommodations. But much more remains to be done. Since tourism is a multi-dimensional activity, and basically a service industry, it would be necessary that all wings of the Central and State governments, private sector and voluntary organizations become active partners in the endeavour to attain sustainable growth in tourism if India is to become a world player in the tourist industry. According to an International Labour Organization, ILO, report international tourism was affected by the global economic crisis but is projected to grow significantly over the coming decade. The United Nations World Tourism Organisation (UNWTO) is expecting the sector's global economy to provide 296 million jobs by 2019. These challenges for the tourism industry will be discussed at the ILO's Global Dialogue Forum on New Developments and Challenges in the Hospitality and Tourism Sector next week in Geneva. The meeting will be opened by ILO Director-General Juan Somavia and the Secretary-General of UNWTO, Taleb Rifai.

"Tourism has the potential to become a major generator of jobs after the crisis", ILO Director-General Juan Somavia said before the meeting, adding that "social dialogue between governments, employers and workers can ensure that the jobs generated will be decent. Such dialogue is particularly important for a service industry like tourism, where success depends so much on service quality, which, in turn, goes hand in hand with a skilled and motivated workforce".

The tourism sector suffered a decline that began in the second half of 2008 and intensified in 2009 after several consecutive years of growth. A sharp reduction in tourist flows, length of stay, tourist spending and increased restrictions on business travel expenses led to a significant contraction of economic activity in the sector worldwide. Despite the crisis, global employment in the tourism industry increased by about 1% between 2008 and 2009, the report says. The report shows, however, significant regional differences with respect to the crisis impact on employment in hotels and restaurants. While the Americas suffered a 1.7% decrease in employment, employment in Asia and the Pacific region remained resilient and gained 4.6%.

- **Results**

Tourism is not only a growth engine but also an export growth engine and employment generator. According to the Economic Survey 2011-12 presented in Lok Sabha today, the sector has capacity to create large-scale employment both direct and indirect, for diverse sections in society, from the most specialized to unskilled workforce.

It provides 6-7 per cent of the world's total jobs directly and millions more indirectly through the multiplier effect as per the UN's World Tourism Organization. In India, the tourism sector has witnessed significant growth in recent years. Hotels and restaurants is an important component of the tourism sector. As on 31 December 2011, there were 2,895 classified hotel having a capacity of 1,29,606 rooms in the country. Availability of good quality and affordable hotel rooms play an important role in boosting the growth of tourism in the country. The share of the hotel and restaurant sector in overall economy increased from 1.46 per cent in 2004-05 to 1.53 per cent in 2008-09 and then decreased to 1.46 per cent in 2010-11. However, if the contribution of this sector only in the service sector is considered, its share decreased from 2.75 per cent in 2004-05 to 2.64 per cent in 2010-11 as other service sectors grew faster than this sector. Its CAGR was 8.44 per cent during 2004-05 to 2009-10 and the growth rate in 2010-11 was 7.7 per cent. Health tourism, the new entrant in the sector is a niche area where India has good potential.

As is natural, with the growth of this sector, components like air travel and hotel stay have been included under service tax. The Economic Survey 2010-11 has listed the major policy decisions taken in recent years. However, a lot more needs to be done to make India a major tourist destination. Some of the problem areas in this sector include the following. States impose luxury tax ranging from 5 per cent to 12.5 per cent. In some cases, the luxury tax is applicable on printed room rates whereas actual hotel rates offered to guests are much lower. With a view to rationalizing luxury tax on hotels, the Government of India has requested the states to work towards rationality and uniformity of taxes so as to make their destinations more competitive. They have been also requested to exempt room tariff below Rs. 2500 from luxury tax and charge luxury tax at a uniform rate of 4 per cent on actual tariff. Construction of hotels is primarily a private sector activity which is capital intensive and has a long gestation period. A Hospitality Development and Promotion Board has been set up at central level. The main function of the Board will be to monitor and facilitate clearances/approvals for hotel projects both at central and state government levels. The Board will be a single window for receiving applications for various clearances, approving/clearing hotel projects in a time bound manner, and reviewing hotel project policies to encourage the growth of hotel/hospitality infrastructure in the country. State Governments have also been requested to set up similar boards under the Chairmanship of their Chief Secretaries. So far Mizoram, Manipur, and Maharashtra have set such boards. Other measures in this sector could include rationalizing the fees for entry to monuments and using the fees for their maintenance; focusing on safety of tourists; and promoting wellness tourism.

- **Discussion**

Tourism has often been supported by government agencies on the basis that it is capable of generating incomes and jobs in areas where there is a shortage of both. This article offers some indication of the veracity of such claims in Britain. In so doing it attempts to demonstrate what the tourist industry is, reviews the nature of the jobs created, and assesses peoples' attitudes to such jobs, in an attempt to suggest how tourism compares with other activities in generating employment.



Ignorance, politics & economics seem to work contrary to the attainment of the goal of sustainable development as far as tourism is concerned.

Tourism is a global activity which is based completely on the local environment of the destination. The massive movement of tourist's world over & the economic transformation that is taking place because of tourism are the features of tourism. The rapid growth of international & domestic tourism has also brought rapid changes in terms of economic growth as well as decline in the environment quality. Analysing the impacts of tourism at a global level is a very crucial & sensitive issue.

The most important economic feature of activities related to the tourism sector is that they contribute to three high-priority goals of developing countries: the generation of income, employment, and foreign-exchange earnings. In this respect, the tourism sector can play an important role as a driving force of economic development. The impact this industry can have in the different stages of economic development depends on the specific characteristics of each country. Given the complexity of tourism consumption, its economic impact is felt widely in other production sectors, contributing in each case toward achieving the aims of accelerated development.

A major difficulty in defining the boundaries of the tourism sector is to ascertain what investment costs should be ascribed to the development of tourism. Although heretofore not treated by international agencies as a "sector" in national accounting terms, tourism entails a collection of goods and services that are provided specifically for visitors and would not have been provided otherwise.

Because of its interdependence with other sectors of the economy, it is difficult to analyze and plan for tourism. The lack of reliable statistical data hampers identification of the mechanisms by which tourism generates growth, as well as its potential for development. Yet, in those instances where analysis has been carried out and research has preceded planning, tourism's priority in competing for scarce investment funds has been established. In these cases, long-term programs for tourism development have been designed.

Nowadays tourism has been a topic of discussions at national & global forums.

- **Conclusion**

The hotel industry incurs the risk of customer dissatisfaction, whose expectations have risen during the past ten years, even if the demand for green hotels is not yet explicit. It is otherwise rather difficult to define the type of customer behaviour with regards to one's environmental policy. It does not stop environmental preoccupation from becoming a marketing tool for certain customer targets. In this way, the Canadian group Fairmont developed an Eco Meeting concept: flipcharts made from recycled paper, organic kitchen, etc for its hotels located in National Reserve Parks.

“In the beginning, this attracted mostly environmental agencies, managers of ethical funds. This was not as popular as we thought, but it began to see an increasing demand”, observes Lyle Thompson, Environmental director of the Fairmont group.

However, sooner or later problems await those who do not apply the 3 R rule

- Reuse
- Reduce
- Recycle

Using renewable materials & energy, limit the consumption of water & electricity, & optimize & sort waste for better processing.

“A company that does not participate in this long term process will lose customers”, Predicts Serge Ragozin, Director of horizontal management of the group ‘Accor’, persuaded of the terrible consequences that will affect to one’s brand image.

Like the groups independent hoteliers are not resting with their arms crossed & are also involved in a policy of “sustainable development”. After a ‘slowdown’ in the tourism activity in 1997, the hoteliers of the Tourism committee of the French development of ‘Var’ looked for ideas in order to improve their product. In anticipating the demands of tomorrow, we will gain time & market shares. By playing on the long term, we are playing on the short term as well, & for a just cause. It is pure & simple marketing combined with real philosophy.

In order to attract customers that are mostly Swiss, Dutch & Nordic, the hoteliers from the Var have begun tri selection, collection of used oils, highlighting the green spaces representatives of the Mediterranean flora.

Likewise, the Ecoroom of ‘Scandic’, a brand of the group ‘Hilton International’, is in for the long run. Easier to recycle, it has a longer life cycle than that of the traditional budget cycle.” It comes out of a reflection of the materials used, how much energy, water, & chemical products are regularly consumed”. This type of room of the same characteristics is added during renovations; wooden floor, energy saving lights, renewable fabric & not synthetic, no plastic floor in the bathroom, high quality shower that consumes little water. The purchasing cost is higher, but if we take into consideration the Time Variable, it ends up being less expensive as its real price.

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- *incredibleindia.org*

## **Tourism Education: Challenges and Constraints With Special Reference to Gwalior**

14

Amit Kumar Uppal

### **Abstract**

*Tourism Education in a country plays an important role in order to support tourism development and ensuring the continuous supply of skilled and quality human resource to meet the industry requirements. Tourism industry is widening its scope day by day with the increasing involvement of state & central governments with the multifaceted objective of economic & social growth. The prevailing scenario indicates a marked scanty status of tourism career awareness among students. Despite the increase in the demand of tourism graduates, the tourism education institutes and vocational training schools are unable to fulfill industry requirements. Students are not opting the tourism courses as they opt for other courses as their primary preferences like engineering, medical, business studies etc. The tourism courses are facing difficulties in terms of getting popularity among the students. The paper is an empirical study of containing primary data collected through structured questionnaire. The sample size is 200 students of Gwalior. It discusses the reasons of less popularity of tourism studies in Gwalior. It is an attempt to suggest ways that could be implemented in order to enhance the awareness among students so as to make avail a large pool of tourism human resources.*

**Keywords:** *Tourism Education, Tourism Career, Gap, Tourism Curriculum, Employability Skills.*

### **Introduction**

The dynamic growth in the provision of tourism courses since the late 1980s bears witness to the rising profile of tourism, primarily as an economic factor, and the needs of those organizations involved in promoting and responding to the demand for tourism (Parson & Cave, 1991; CNA, 1993; Middleton & Ladkin, 1996).

As the tourism is rising in India, tourism education is equally getting importance in order to create the balance between the supply of human resource in order to feed demand of the tourism. Interest and demand from the public and private sectors impelled rapid growth of tourism studies, and the development, and establishment, of departments of travel and tourism at institutions of higher education in addition to technical schools (Butler, 1999).

Economic impacts of tourism have been a dominant theme for government, business and academics. Early academic studies focused on economic impacts of tourism development, but in early 1970s, social, cultural, political and environmental implications have also become prominent as research topics. The academic field "...has been ahead of the industry in emphasising the social and environmental impact of tourism and the need for sustainable development" (Morgan, 2004: 97).

The tourism industry is a labor-intensive service industry, dependent for survival (and at best, competitive advantage) on the availability of good quality personnel to deliver, operate, and manage the tourist product. The interaction between the tourist and tourism industry personnel is an integral part of the total tourist experience.

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## Review of Literature

It has been concluded that the role of the individual lecturer and concerns about academic respectability (seen in the continuing tension between an academic and a vocational focus for the subject) are the two influences which have, according to lecturers, had the greatest impact on the subject's development.(stuart, 2000).

Botterill and Tribe (2000:8) have suggested that two distinct types of curriculum have emerged, one which is essentially vocational and designed around industry needs, and an 'academicist' curriculum which 'brings an awareness of a wider set of activities which constitute tourism's wider society and world'.

The hierarchy of tourism education and training does not correspond to the tourism career path which is specified by individual needs of tourism students or trainees and the general demand of the industry (Jiang, 1998).

Most degree programs of tourism education are dominated by non-tourism related disciplines, such as geography, business administration, social sciences, foreign languages and other humanities disciplines. It may indicate that the scope of tourism education programs is limited and that they cannot meet the sophisticated and specific requirements of the industry.(Lam, T., & Xiao, H. ,2000). Sociological and philosophical perspectives should be addressed in curriculum development at the university level(Inui, Y., Wheeler, D., & Lankford, S.,2006)

Tourism development and marketing have the potential to reinforce ideological images of the sites and result in stereotyped gender roles. In pursuit of sustainable tourism development, epistemological inquiry should play an increasingly important role in future of tourism education.( Inui, Y., Wheeler, D., & Lankford, S.,2006).

If tourism education is implemented with little policy guidance, then there will be a constant tug-of-war between education providers and the tourism industry and environment, as each seek to satisfy their own aims. Policies can definitely help give a focus and direction to present and future tourism education(Amoah, V. A., & Baum, T. ,1997)

The students are very enthusiastic about careers in tourism, and that they fully expect the degree to qualify them for attractive managerial jobs in Sweden and, to a lesser extent, abroad.( Hjalager, A. M.,2003).

The United Nations World Tourism Organization (UNWTO) has singled out tourism (higher) education as holding a potential to achieving customer satisfaction and also improving the competitiveness of tourism businesses and regions if specific education and training are guaranteed (Fayos Solà 1997).

## OBJECTIVES

The study emphasis on achieving the following objectives-

- To evaluate the factors for non-preference of tourism studies among students
- To find out the ways to make tourism studies popular to opt as a preference
- To suggest the measures to make studies more productive
- To find out the ways to generate the quality human resources to feed the tourism demand.
- To suggest the ways to enhance awareness

## METHODOLOGY

A structured questionnaire with five point likert scale was used to determine the factors, which are responsible of student's less preference in opting tourism studies as their undergraduate courses. The sample size is 200 and the respondents are undergraduate students of five different institutes of Gwalior. This is an empirical study focusing on determining the factors and determinants responsible for not opting for tourism studies.

### Analysis and Interpretation

On the basis of the data collected from the respondents, four major factors have been identified, which are responsible for the less attraction of the students toward possessing the tourism education as their graduate course (refer Table No.1). They have been discussed below

**Table 1: Showing Results of factors analysis of the constraints in Tourism Education**

Factor Name	Eigen values		Variable convergence/statement	Loadings
	Total	% variance		
Job & Opportunities	2.138	21.384	3. Job Opportunities	0.784
			2. Job Security	0.695
			6. Career Awareness	0.607
Social and Economic Orientation	1.337	13.369	5. Course Cost	0.712
			8. Support from Friends and Family	0.704
			7. Social Status	0.546
			10. Job of Travel	0.504
Government Aid and Scope	1.159	11.590	9. Government Involvement	0.798
			1. Industry Scale	0.620
Curriculum and Learning	1.036	10.362	4. Curriculum Standard	0.787

### Job and Opportunities

Jobs and opportunities play a vital role while choosing a course for the further studies after higher secondary certification. As per the factor analysis, jobs and opportunities is the highest concern and the major respondents proved it too through their responses. Job security is one of the important aspects in one's career and tourism doesn't fulfill it completely. The job is vulnerable in nature which gets affected by the tourist influx which is even fragile. This fragility is the result of natural calamity, political instability, technological change etc. Lack of job opportunities and the low pay scales act as a hurdle in the popularity of the tourism education.

### Social and Economic Orientation

As per the table shown the social status and the monetary security are the other concern of the students. They feel that the social status is lesser than the other industry, in tourism industry. It has been felt that that the social value and social security are the main cause of non-popularity of tourism education. It has also been observed that even family and friends do not support the students to opt such a perilous course because they don't see it viable for the long run. Some also found the course expensive enough to opt as compared to the other courses such as business, commerce and science.

### Government AID and Scope

Some respondents also believe that government is not concerned about the tourism industry in India. The initiative taken by central and state government is not up to the mark in tourism industry which is becoming deterrent in gaining attention from the common people who just think about becoming engineer and doctor. Tourism industry is also considered as a small

scale and unorganized industry which is not as vast as other industry. People find it dicey to get into such a small and unorganized industry especially when their whole career is concerned.

### **Curriculum and Learning**

Tourism is the amalgamation of other courses too like geography, history, management, accountancy etc. So people believe that there is a lot of things to study in tourism courses. They feel that in tourism, they not only have to go through the knowledge of destinations but, also cover the other aspects of the course too in which they are not actually interested

### **Suggestions and Implication**

On the basis of the study, following points can be suggested-

- As job is the main concern among the students, therefore public private partnership should be encouraged in order to create ample jobs with handsome pay scale to attract the youngsters toward the tourism industry which will assure the sustainability of the growth of the industry and will create the large pool of human resource available for tourism sector.
- Policy makers play active role in the growth of a sector. Thus, the tourism policymakers and education policymakers should combine to form strong policies to be followed in order to make the tourism education a robust sector to be possessed.
- Provision of On-Job-Training should be introduced in the graduate and postgraduate programs as a compulsion to make the students worth for the industry.
- Practical aspects should be included in the curriculum to make the course interesting and fruitful to match the needs of the industry.
- Seminars and workshops should be organized in order to create awareness among the people, especially for the higher secondary class students and their parents. This will help in eradicating the ignorance towards the tourism industry in terms of jobs and opportunities aspect.
- Government should release the vacancies for the state and central tourism boards so as to create the pool of government jobs to assure the job opportunities and security among the people in government sector.
- Government should have subsidized course to enchant the lower middle class students to opt this course because many of the students want to go for tourism studies but take their steps back as they find it expensive.
- The travelling and education should be promoted as one, no matter what the course is. This will change the mindset of the people toward travelling as they take it hectic and difficult for them to survive in the industry all because of higher need of travelling.

### **Conclusion**

Tourism is a vast industry and there is great scope of tourism in the future. But lack of awareness and lack of job opportunities are proving it to be a weak and small scale industry. Just identifying the thrust of this sector is not enough; it needs the proper 360 degree attention. Awareness for the escalation of the popularity of the course to be possessed is highly desired. By keeping the above mentioned suggestions in mind and taking the steps toward the development of the industry, we can make it all time green and highly desired course to be opted, among the students.

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## Natural Disaster Management in India

15

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### Abstract

*The present study is related with the Natural Disaster Management in India. The study is based on the intensive secondary data collected from different sources like National Disaster Management Authority, UNEP, Books, Newspapers and Magazines, Journals and Research Papers etc. For this works, analysis of natural disaster management in India were selected parameter and to access the natural disaster impact and their management in India. Natural disasters are natural phenomenon and occur without any intention while man-made disasters are events which, either intentionally or by accident cause severe threats to public health and well-being. Because their occurrence is unpredictable, manmade disasters pose an especially challenging threat that must be dealt with through vigilance, and proper preparedness and response. Disasters affect almost every part of the world. Disaster is defined as 'Catastrophic situation in which the normal pattern of life or ecosystem has been disrupted and extraordinary emergency interventions are required to save and preserve lives and or the environment'. The main objectives of the study are: To know about the present condition of the Natural Disasters in the country and Promoting a culture of prevention and preparedness by ensuring that Disaster management receives the highest priority at all levels.*

**Keywords:** *Natural Disaster, Natural Disaster Management, Mitigation and Prevention of Natural Disasters, Geospatial, Disaster cycle.*

### Introduction

***Building culture of prevention is not easy. While the cost of prevention had to be paid in the present, its benefits lie in the distant future. Moreover, the benefits are not tangible; they are disasters that did not happen***".

*Kofi Annan, UN Secretary General, 1999*

Disasters affect almost every part of the world. (According to a World Bank report titled 'natural hazards, unnatural disasters'). Disaster is defined as 'Catastrophic situation in which the normal pattern of life or ecosystem has been disrupted and extraordinary emergency interventions are required to save and preserve lives and or the environment' (Ministry of Home Affairs, 2011). Disaster management, which is also known as emergency management, can be defined as dealing with and avoiding both natural and man-made disasters. Disaster management involves preparedness before disaster, rebuilding and supporting society after natural disasters such as, earthquakes, drought, tsunami etc. Nowadays, both government and non government organizations work in the field of disaster management. In public sector, it may be defined as civil defence or emergency services. On the other hand, in the private sector, it is generally

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referred to business continuity planning. Disaster management planning should be used as daily work along with establishment and management of local facilities and resources. There are several principles of disaster management, which include the right use of resources for the day-to-day purposes, coordination between various organizations, efforts of individuals, focus of large scale events, right knowledge of geographical location and nature of the society etc. In India, there are many areas, which are often affected with natural calamity or man-made disasters. They have become top priority for the Ministry of Human Resource Development, Government of India. As a result, the study of disaster management has been included in the curriculum of many private and government-run institutes in India.

### Database and Methodology

The study is based on the intensive secondary data collected from different sources like National Disaster Management Authority, UNEP, Books, Newspapers and Magazines, Journals and Research Papers etc. For this works, analysis of natural disaster management in India were selected parameters and to access the natural disaster impact and their management in India.

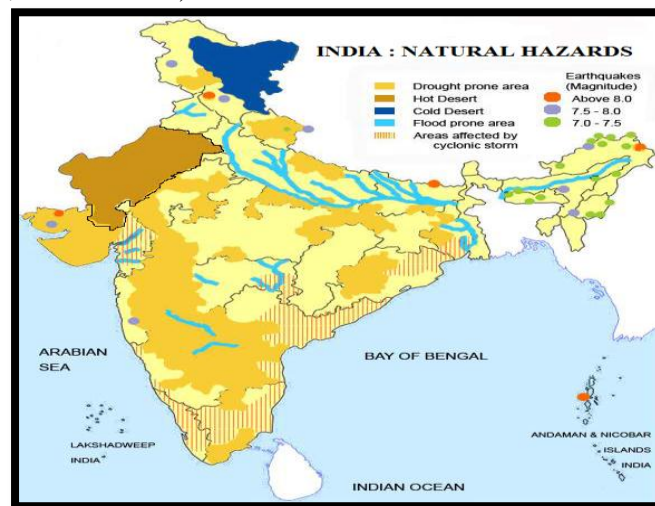
### Objectives

The main objectives of the study are:

- To know about the present condition of the Natural Disasters in the country.
- To know about the role of the government in conserving the Natural Disaster Management.
- Promoting a culture of prevention and preparedness by ensuring that Disaster management receives the highest priority at all levels.
- Undertaking recovery to bring back the community to a better and safer level than the pre-disaster stage.

### Analysis of Natural Disasters in India

Natural disasters are natural phenomenon and occur without any intention while man-made disasters are events which, either intentionally or by accident cause severe threats to public health and well-being. Because their occurrence is unpredictable, manmade disasters pose an especially challenging threat that must be dealt with through vigilance, and proper preparedness and response. (Yojana, March 2012)



India has been traditionally vulnerable to natural disasters on account of its unique geo-climatic conditions. Floods, droughts, cyclones, earthquakes and landslides have been recurrent phenomenon. Out of 35 States and Union Territories (UTs) in the country, 27 are disaster prone. Almost 58.6% landmass is prone to earthquakes of moderate to very high intensity; 12% land is prone to flood and river erosion; out of 7,516 km. coast line, 5,700 km. is prone to cyclones and tsunamis; 68% of the cultivable land is vulnerable to drought and hilly areas are at risk from landslides and avalanches. Fire incidents, industrial accidents and other manmade disasters involving chemical, biological and radioactive materials are additional hazards, which have underscored the need for strengthening mitigation, preparedness and response measures.

### **India's Major Disasters**

<b>Name of Event</b>	<b>Year</b>	<b>State &amp; Area</b>
Drought	1972	Large part of the country
Cyclone	1977	Andhra Pradesh
Drought	1987	15 States
Latur Earthquake	1993	Latur, Marathwada region of Maharashtra
Orissa Super Cyclone	1999	Orissa
Gujarat Earthquake	2001	Rapar, Bhuj, Bhachau, Anjar, Ahmedabad and Surat in Gujarat State
Tsunami	2004	Coastline of Tamil Nadu, Kerala, Andhra Pradesh and eastern islands
Maharashtra Floods	2005	Maharashtra State
Kashmir Earthquake	2005	Mostly Pakistan, Partially Kashmir
Kosi Floods	2008	North Bihar
Cyclone Nisha	2008	Tamil Nadu
Drought	2009	India's Major Disasters
Leh Cloudburst	2010	Leh, Ladakh in Jammu & Kashmir
Sikkim Earthquake	2011	North-eastern India with epicenter near Nepal Border and Sikkim

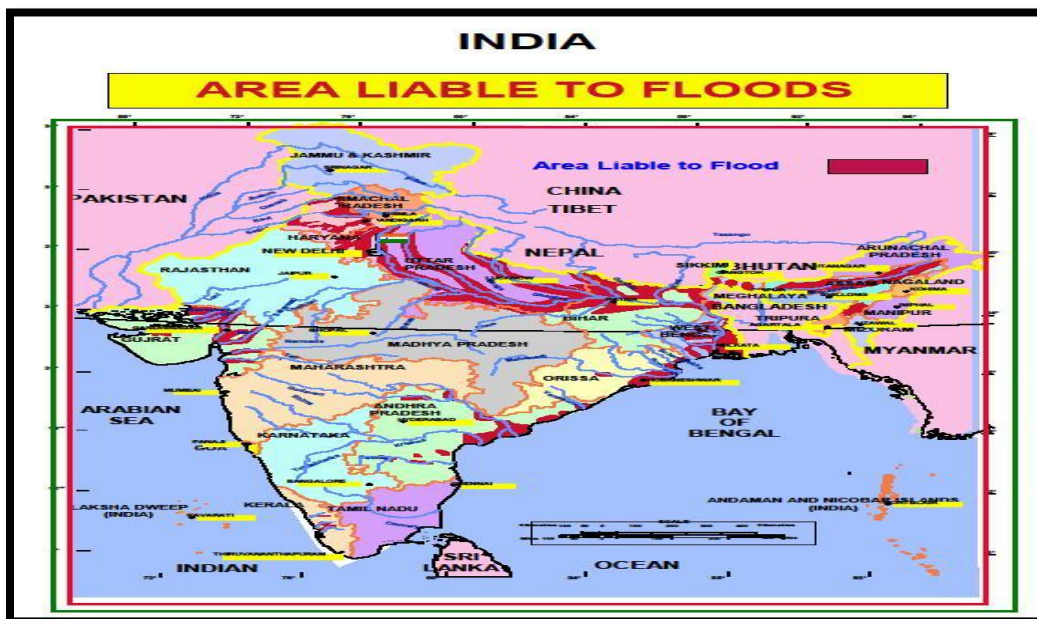
Source: Yojana, (March 2012)

### **Floods**

Floods in the Indo-Gangatic Brahmaputra plains are an annual feature. Seventy five percent of rainfall is concentrated over four months of monsoon (June - September) and as a result almost all the rivers carry heavy discharge during this period. Brahmaputra and the Gangetic Basin are the most flood prone areas. The other flood prone areas are the north-west region of west due to overflowing rivers such as the Narmada and Tapi, Central India and the Deccan region with major eastward flowing rivers like Mahanadi, Krishna and Cauvery. The average area affected by floods annually is about 8 million hectares while the total area in India liable to floods is 40 million hectares in which Uttar Pradesh has 21.9 percent, Bihar (12.71 percent), Assam (9.4 percent), West Bengal (7.91 percent), Orissa (4.18 percent) and other states have 43.9 percent flood prone area. An analysis of data of different states for the period of 1953-2009 reveals that average annual damage to crops, houses and public utilities in the country was around Rs. 1649.77 crore and maximum reported 8864.54 crore was in the year of 2000. On an average, an area of about 7 million hectares (17.50 MHA maximum in 1978) was flooded, of which, on average crop area affected was of the order of 3.302 million hectares (10.15 MHA in 1988). The floods claimed on an average 1464 human life and 86288 heads of cattle dead every year.

*The details of the flood prone areas as a percentage area of the states and as a percentage area of the total floods prone area of the country is as tabulated in Chart.*

Sr.N.	States	Flood Prone areas as % of total area of state	Flood Prone area of the state as % of the total flood prone area of the country
1.	Uttar Pradesh	32.61	19.4
2.	Bihar	55.22	13
3.	Assam	50.14	9.8
4.	West Bengal	37.42	8.1
5.	Orissa	10.34	4
6.	Other States	6.92	45.7
	Total	12.17	100



Source: NDMA ( National Disaster Management Authority)

## Drought

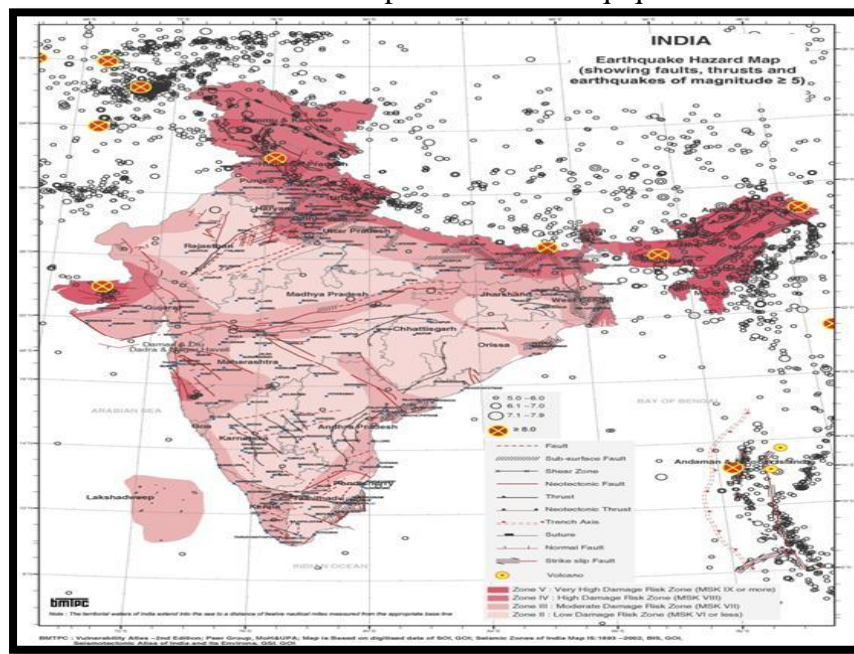
In India, 16% of the country's total area and 68% of total sown area is drought prone, leading to approximately 50 million people being affected annually by droughts. The distribution of the sown area of the country under various ranges of rainfall is as under.17

a) 33% -	Low Rainfall region	-	750 mm.
(b) 35% -	Medium Rainfall region	-	751-1125 mm.
(c) 24% -	High Rainfall region	-	1125-2000 mm
(d) 8% -	Very High Rainfall region	-	> 2000 mm

Most of the drought prone areas identified by Government of India lie in arid, semi-arid and sub-humid areas of the country. The prominent drought affected areas include Gujarat, Rajasthan and adjoining parts of Punjab, Haryana, Western Uttar Pradesh and western Madhya Pradesh, interior Karnataka Rayalseema, south Telangana, parts of Tamil Nadu, parts of Orissa, small portions of north west Bihar and adjoining Uttar Pradesh and south west Bihar.

## Earthquakes

The Himalayan mountain ranges are considered to be the world's youngest fold mountain ranges. The subterranean Himalayas are geologically very active. In a span of 53 years four earthquakes exceeding magnitude 8 have occurred in this region. The peninsular part of India comprises stable continental crust. Although these regions were considered seismically least active, earthquakes, which occurred in Latur in Maharashtra on September 30, 1993 of magnitude 6.4 on the Richter scale and Gujarat 2001 of magnitude 6.9 on the Richter scale caused substantial loss of lives and damage to infrastructure. India has a large part of its land area liable to wide range of probable maximum seismic intensities where shallow earthquake of magnitudes of 5.0 or more on Richter Scale have been known to occur in the historical past or recorded in the last about 100 years. The Himalayas frontal that are flanked by the Arakan Yoma fold belt in the east and the Chaman fault in the west constitute one of the most seismically active regions in the world. In the below map show the earthquake hazards on India.



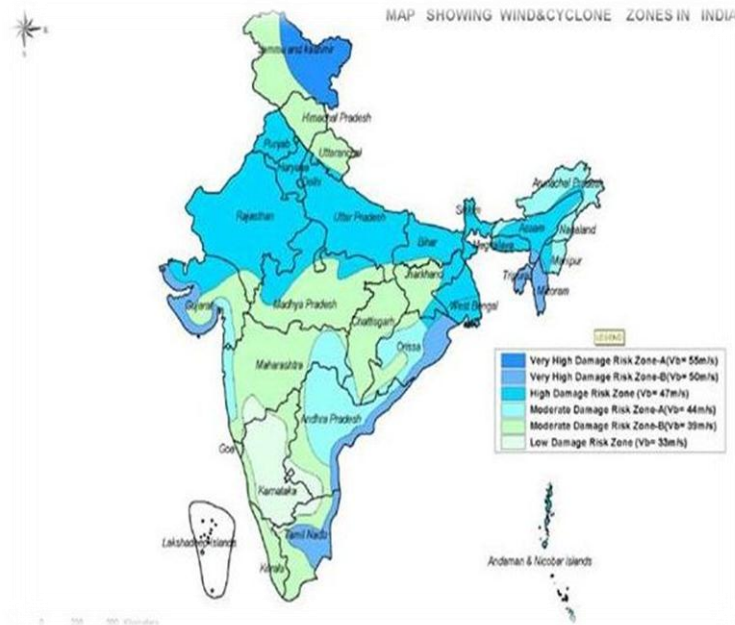
Source: NDMA ( National Disaster Management Authority)

## Cyclones

The World Meteorological Organisation (WMO) uses the term “Tropical Cyclone” to cover weather systems in which winds exceed “gale force” of 34 knots or 63 kmph. India has a long coastline of approximately 8,000 km. There are two distinct cyclone seasons: pre monsoon (May-June) and postmonsoon (October-November). The impact of these cyclones is confined to the coastal districts, the maximum destruction being within 100 km from the centre of the cyclones and on either side of the storm track. Most casualties are caused due to coastal inundation by tidal waves, storm surges and torrential rains. The occurrence of tropical cyclone is almost a common natural phenomenon. The Indian Ocean is one of the six major cyclones-prone regions of the world. In India, cyclones from Indian ocean usually occur between April and May, and also between October and December. The eastern coastline is more prone to cyclones than the western coast. About 80 percent of total cyclones generated in the region hit the eastern coast. Out of approximately six cyclones formed every year, two to three may be severe.

The following segments of the east coast of India are most vulnerable to high storm surges.

- (a) *North Orissa and West Bengal coasts.*  
 (b) *Andhra Pradesh coast between Ongole and Machilipatnam.*  
 (c) *Tamil Nadu coast, south of Nagapatnam.*



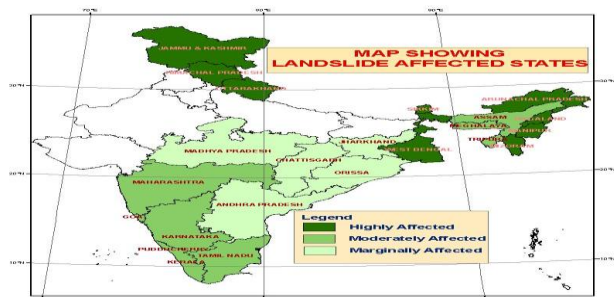
Source: NDMA ( National Disaster Management Authority)

## Landslides

The Himalayas, the Northeast hill ranges and the Western Ghats experience considerable landslide activity of varying intensities. River erosions, seismic movements and heavy rainfalls cause considerable landslide activity. Heavy monsoon rainfall often in association with cyclonic disturbances results in considerable landslide activity on the slopes of the Western Ghats. The Himalayan, the north-east hill and the Western Ghats experience considerable land-slides activities of varying intensities. The rock and debris carried by the rivers like Kosi originating in the Himalayas cause enormous landslide in the valleys. The seismic activity in the Himalayan region also results in considerable landslide movement. The Government of India is collaborating with a wide range of Indian academic institutions

## Effect of Natural Disasters on Human Resource Development

According to an estimate by the World Bank direct losses from natural disaster are upto 2 percent of the India's GDP. More importantly, the impact of most of the disasters is disproportionately high on the poor. For a long time the cause and effect relationship



between disasters and social and economic development was ignored. Ministries of Planning and Finance and other development planners did not concern themselves with disasters. At best, development planners hoped that disasters would not occur and, if they did, were most effectively handled by relief from donor countries and relief organizations. Development programs were not assessed in the context of disasters, neither from the effect of the disaster on the development program nor from the point of whether the development programs increased either the likelihood of a disaster or increased the potential damaging effects of a disaster.

***Year-wise damage caused due to floods, cyclonic storms, landslides, etc. during last ten years in India***

<b>Year</b>	<b>Live Lost human (in No.)</b>	<b>Cattle Lost (in No.)</b>	<b>Houses damaged (in No.)</b>	<b>Cropped areas affected (in Lakh hectares)</b>
2001-02	834	21,269	3,46,878	18.72
2002-03	834	21,269	3,46,878	18.72
2003-04	834	21,269	3,46,878	18.72
2004-05	834	21,269	3,46,878	18.72
2005-06	834	21,269	3,46,878	18.72
2006-07	834	21,269	3,46,878	18.72
2007-08	834	21,269	3,46,878	18.72
2008-09	834	21,269	3,46,878	18.72
2001-03	834	21,269	3,46,878	18.72
2002-04	834	21,269	3,46,878	18.72

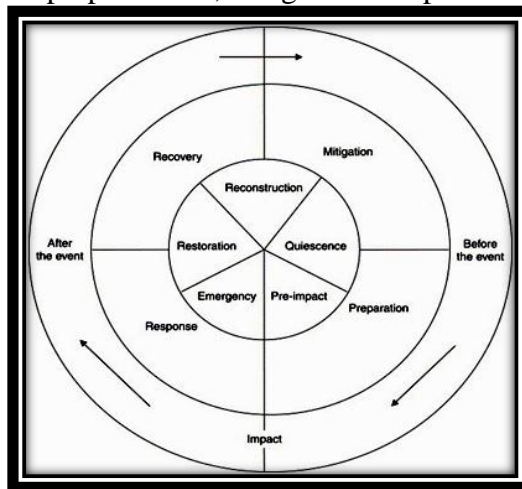
Source: Ministry of Human Affairs (MHA)

The natural disasters directly impact economies, agriculture, food security, water, sanitation, the environment and health each year. Therefore it is one of the single largest concerns for most of the developing nations. Different natural hazards because varying levels of physical damage to infrastructure and agriculture with implications for their indirect and secondary impacts. Drought causes heavy Crop and Livestock losses over wide areas of land but typically leave infrastructure and productive capacity largely unaffected. Floods and Cyclones cause extensive whereas damage to both infrastructure and agriculture, depending on their timing relative to the agricultural cycle. While earthquakes have little impact on standing crops excluding localized losses but can cause wide spread devastation of infrastructure and other productive capacity over relatively large areas. The precise cost of the disaster in terms of loss of lives, property, loss of development opportunities, etc. cannot be clearly assessed, counted or scaled. The costs of disaster are clearly inequitable, falling heavily only on the few. Disasters result not only in loss of shelter but also create hardships, lack of food availability and temporary loss of livelihood and disrupt socio-economic activities. Some of the losses may be redeemable and compensated for through disaster relief and insurance. However, apart from economic dimension, such disturbances have their psychological and social

dimensions as well, which need to be studied, and documented besides developing appropriate mitigation strategies.

### **Preparedness, Mitigation and Prevention of Natural Disasters in India**

Disaster Preparedness minimises the adverse effects of hazard through effective preventive & mitigation actions, response, recovery and rehabilitation on ensuring timely, appropriate and effective organisation and delivery of relief and assistance following a disaster. Disaster preparedness has been defined by United Nations Disaster Relief Office (UNDRO) as “A series of measures designed to organise and facilitate timely and effective rescue, relief and rehabilitation operations in cases of disasters. Measures of preparedness include among others, setting up disaster relief machinery, formulation of emergency relief plans, training of specific groups and vulnerable communities to undertake rescue and relief, stockpiling supplies and earmarking funds for relief operations”. In the following cycle diagram draw by Alexeder in 2002. And show in the cycle of preparedness, mitigation and prevention of natural disasters.



Source: Disaster cycle (Alexander, 2002)

### **Governmental institution and programmes**

The institutional and policy mechanisms for carrying out response, relief and rehabilitation have been well-established since Independence. These mechanisms have proved to be robust and effective insofar as response, relief and rehabilitation are concerned.

### **National Disaster Management Act 2005**

The Parliament of India has enacted the National Disaster Management Act in November 2005, which brings about a paradigm shift in India's approach to disaster management. The centre of gravity stands visibly shifted to preparedness, prevention and planning from earlier response and relief centric approach. The Act provides for establishment of:

- ***National Disaster Management Authority (NDMA)***
- ***State Disaster Management Authority (SDMA)***
- ***District Disaster Management Authority (DDMA)***

The Act also provides for -

- ***Constitution of Disaster Response Fund and Disaster Mitigation Fund at National, State and District levels.***
- ***Establishment of NIDM and NDRF.***

- *Provides penalties for obstruction, false claims, misappropriation etc.*
- *It states that there shall be no discrimination on the ground of sex, caste, community, descent or religion in providing compensation and relief.*

#### **National Disaster Management Authority (NDMA).**

NDMA has been constituted in accordance with the provisions of the Disaster Management Act, 2005 on 27 September 2006 under the chairmanship of the Prime Minister with a Vice Chairman and eight members. The NDMA has the responsibility of laying down policies, plans and guidelines for Disaster Management and coordinating their enforcement and implementation for ensuring timely and effective response to disasters.

#### **State Disaster Management Authority (SDMA).**

At the state level, the SDMA, headed by the chief minister will lay down policies and plans for Disaster Management, approve the state plan in accordance with the guidelines laid down by NDMA, coordinate implementation of the state plan, recommend provision of funds for mitigation and preparedness measures, review developmental plans of different departments of the state to ensure integration of prevention, preparedness and mitigation measures and lay down guidelines for standards of relief provided to persons affected by disaster in the state. As on date 20 states have established state Disaster Management Authorities under the Act.

#### **District Disaster Management Authorities (DDMA)**

Every state will constitute a DDMA for every district with the district magistrate as the Chairperson, elected representative of the local authority as co-chairperson and up to six other members. The DDMA will be responsible for preparation of District Disaster Management plan in consultation with local authorities and in accordance with the national and state plan. It will act as the planning, coordination and monitoring agency for implementation of all policies and plans up to district level and to ensure that guidelines for prevention, mitigation, preparedness and response measures as laid down are followed. 17 States, UTs have constituted DDMA in their respective states as per the Act 2005.

#### **Other Institutions and Programmes**

- *National Disaster Response Force (NDRF)*
- *National Institute of Disaster Management (NIDM)*
- *National Policy on Disaster Management (NPDM)*
- *National Crisis Management Committee (NCMC)*
- *National Disaster Mitigation Resources Centres (NDMRCs), etc.*

#### **Geospatial Techniques and Natural Disaster Management in India**

There has been many fold increase in the occurrence of natural disasters and extreme events and related threat to life and property in India. These disasters are caused either by climatological events such as cyclone, flood and drought or by geological phenomena such as earthquakes, volcanoes, and landslides. The intensity and duration of disasters vary over space and time. The occurrences and magnitudes of many natural disasters are often unpredictable and vary over time-space domains. It is imperative to have a disaster management plan prepared for such events at any time. In order to be prepared for any kind of the natural disasters in an area it is essential to understand the vulnerability of the area to different kinds of disasters and their possible magnitude. This article discusses the ways in which GIS and remote sensing techniques can be employed for disaster management.

The geospatial technologies have an important role in developing strategies for disaster reduction as well managing the disasters. It can be broadly classified into remote sensing based technologies and Geographical Information System (GIS). The remote sensing can be either



space or aerial based. The space born remote sensing technology, that is satellite remote sensing, is more apt for disaster management owing to its temporal repetitively.

### **Role of Satellite remote Sensing**

The Earth observation satellites provide synoptic and temporal coverage of large areas in near real time. The repetitive images enable the continuous monitoring of Earth surface features and phenomena. It facilitates the detection and early warning of disasters, especially those of meteorological origin. Besides, the different spatial resolutions of the satellite images enable us to choose images according to the area coverage of disaster prone areas. The forest fires can be detected early and their spread can be monitored. The images enable the mapping of flood affected areas and also track the direction of movement of tropical cyclones. The satellite images also assist in mapping the drought and floodstricken areas and forest fire affected areas. The magnitude of the drought and flood can be assessed using the temporal images of the affected area.

### **Socio-Economic Assessment**

The success of disaster management depends upon the development of demographic (no of people, age-sex groups etc.) and economic conditions of the vulnerable groups of the affected area in the geospatial domain.

### **Satellite Communication**

The development of telecommunication technology using satellites allows transmission of disaster warning even to remote and inaccessible areas. Further the availability of mobiles enhances the capability to locate isolated people by disaster.

### **Geographic Information System**

An effective and real time disaster management programmes requires the spatial data from various sources which should be collected, manipulated, analyzed, and displayed in an organized manner. GIS provides a set of tools and techniques to accomplish these tasks. A successful, practical and real time disaster preparedness and management needs an up-to-date geographically tagged database. Disaster preparedness to a large extent are spatial in nature. A sound GIS provides the tools to collect, overlay, analyze, and display these geospatial information and help in taking informed decisions.

### **Role of Local Bodies**

The Constitution 73rd and 74<sup>th</sup> Amendments paved the way for a constitutional status for local governments - Urban Local Bodies and Panchayati Raj institutions, to play a greater role in matters of immediate concern. While they have started taking active interest and initiatives in most of the subjects under their jurisdiction, disaster management is a topic that has not captured their attention so far. Local governance institutions, with their grass-root level contacts with the common people, can make a substantial contribution to the process of spreading awareness and ensuring an active people's participation in disaster mitigation activities. They are the ideal channels for NGOs and other agencies that conduct any disaster management programme, right from relief, recovery and rehabilitation to planning for mitigation and prevention.

### **Conclusion**

Hazards cannot be avoided, however their disastrous consequences can be minimised through pro-active use of a variety of planning measures, support infrastructure and implementation of risk transfer mechanism. To this end India is going through a phase of intensified preparedness for all disasters. Concerted efforts have been and are being made to formulate appropriate policies and guidelines for ensuring effective and synergized disaster management at all levels. According to Vice Chairman NDMA, the biggest challenge will be to

implement, monitor and coordinate multi sectoral efforts. The National Vision 2020 is of building a safer and disaster resilient India by developing zero tolerance to avoidable deaths and minimal loss to property through sustained collective effort, synergy of national capacities and peoples participation. The government has adopted a multidisciplinary and proactive approach of putting in place institutional and policy framework, disaster prevention, mitigation and preparedness. The community, civil society organisations and media have a key role to play in achieving the nation's goal of moving together towards a safer India. The task is not easy to achieve keeping in view the vast extent and population of the country, the multiple natural hazards vulnerability and functioning of the country's administrative set up.

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## A Study on Carbon Sequestration Potential of Some Dominant Tree Species in Forests of Garhwal Himalaya

16

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### Abstract

The pre-industrial atmospheric concentration of CO<sub>2</sub> from 280 ppm has reached to 385 ppm today and is presently increasing at 1.7 ppmv yr<sup>-1</sup> or 0.46% yr<sup>-1</sup>. Carbon dioxide is the most important of the green house gases that are increasingly trapping solar heats and warming the global climate. Increasing the atmospheric CO<sub>2</sub> concentration stimulates the photosynthetic rate of trees and can result in increased growth rates and biomass production. The present study was carried out in district Tehri Garhwal at an elevation ranging from 600 m to 2300 m amsl. Biomass estimation, and thus the carbon sequestration potential of the dominant tree species of the forest were carried out. Biomass of the dominant tree species were estimated by first calculating the bio volume which was then multiplied by the wood specific gravity or the density of the wood species. Carbon sequestration rate of the selected tree species were carried out by taking half the annual gain in biomass. On the basis of annual increment in bole biomass *Pinus roxburghii* showed the dominance at higher elevations followed by *Quercus leucotrichophora* at middle region and *Shorea robusta* at lower region. *Mallotus philippensis* showed the lowest value of the carbon sequestration rate among all the dominant tree species. Thus it becomes clear that extra care should be taken to protect the Oak and Pine forest of the Garhwal Himalaya at middle and higher region and that of *Shorea robusta* at lower region, so that the ecosystem services of the forests particularly that of the carbon sequestration and climate regulation may be utilized so as to maintain ecosystem stability and sustainable development of all organisms.

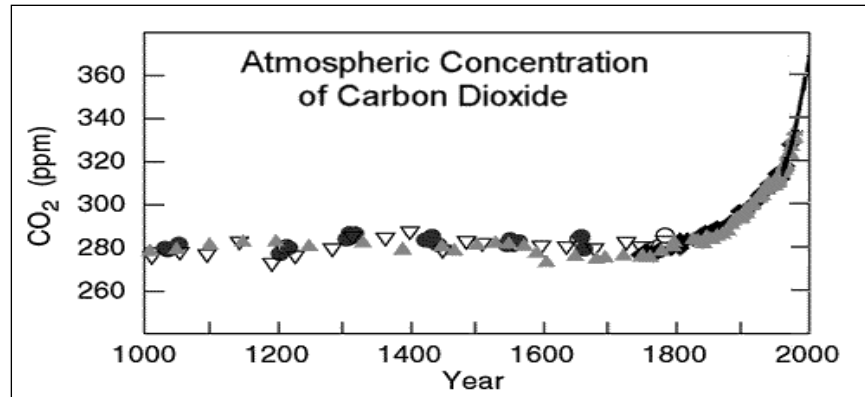
**Key words:** carbon dioxide, carbon sequestration, biomass, bio-volume, wood density.

### Introduction

Ice ages are the periods in the earth's history when a significant, extended cooling of the atmosphere and ocean takes place. The earth has evidenced four glacial –interglacial ages. The high-quality measurements of the CO<sub>2</sub> record from the Vostock ice core give us clear-sighted vision of the past four glacial cycles, over a period of 420 Kyr and results show atmospheric CO<sub>2</sub> concentrations varied between 180 and 300 ppm, with lower values during glacial epochs (Petit *et al.*, 1999; Fischer *et al.*, 1999).

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**Figure 1: showing increase in carbon dioxide concentration over a period of year 1000 to 2000 (Source: [www.scientificpsychic.com/etc/timeline/timeline.html](http://www.scientificpsychic.com/etc/timeline/timeline.html))**

The global atmospheric concentrations of CO<sub>2</sub>, has increased from a pre-industrial value of about 280 to 385 ppm by the end of 2008, and continues to increase at a rate of about 1.7 ppm yr<sup>-1</sup> to 2 ppm year<sup>-1</sup> or 0.46% yr<sup>-1</sup> (Tans *et al.*, 1990; WMO, 2006; IPCC, 2007). Carbon is cycled between the atmosphere, oceans, and terrestrial biosphere. There are five main carbon stores, which are, in decreasing order of size, the geological, the oceanic, the terrestrial, the atmospheric and the biotic reservoirs. The pedologic and biotic C pools together are called the terrestrial C pool. The largest natural exchanges occur between the atmosphere and terrestrial biota, and between the atmosphere and ocean surface waters. Latest predictions of the IPCC suggest that by 2100 the globally averaged surface air temperature will increase by 1.4 – 5.8°C and the average sea level will rise to between 8 and 88 cm, leading to major disturbances for human settlements and natural ecosystems (IPCC, 2001). Clearing of forests for other than forestry purposes releases radiatively active trace gases such as CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O in to the atmosphere which shows both local and global effects. The rise in global temperatures has been attributed to emission of greenhouse gasses, notably CO<sub>2</sub> (Schimell *et al.*, 1996). CO<sub>2</sub> is one of the more abundant greenhouse gases and a primary agent of global warming. It constitutes 72% of the total anthropogenic greenhouse gases, causing between 9 - 26% of the greenhouse effect (Kiehl and Trenberth, 1997). During productive season, CO<sub>2</sub> from the atmosphere is taken up by the vegetation (Losi *et al.*, 2003; Phat *et al.*, 2004) and stored as plant biomass. For this reason, the UNFCCC and its Kyoto Protocol recognized the role of forests in carbon sequestration.

Carbon sequestration can be defined as the removal of CO<sub>2</sub> from atmosphere (source) and secure storage into other long lived C pools where it can be stored indefinitely (Watson *et al.*, 2000). The storage of carbon on land is partitioned between soil and vegetation. Soil is a large carbon pool in all biomes, whereas the major carbon stocks in vegetation are found in the forest biomes (Bolin and Sukumar, 2000). Plant photosynthesis creates the forest biomass and is therefore the major C input into forest ecosystems (Warring and Running, 2007). Forest ecosystems cover large parts of the terrestrial land surface and are major components of the terrestrial C cycle and store approximately two-thirds of Earth's terrestrial carbon (Brown *et al.*, 1993; Harmon and Marks, 2002). In total terrestrial carbon store of the forests, about 85% is contributed by above ground carbon and 74% is contributed by the below ground carbon (Robinson, 2007; IPCC, 2001). In forests, trees sequester 80% of C (Richter *et al.*, 1999) within trees stem wood contains the largest C-pool.

## Review of Literature

Worldwide numerous ecological studies have been conducted to assess carbon stocks based on carbon density of vegetation and soils (Ajtay *et al.*, 1979; Olson *et al.*, 1983; Saugier and Roy, 2001). Biomass is one of the most important factors to understand the role of forests in atmospheric carbon harvest. Several approaches have been followed to estimate the forest biomass which may be grouped into two approaches: (i) destructive (conventional method), and (ii) non-destructive approach. The destructive approach involves felling of trees for the development of empirical equations to estimate biomass of different components of the tree. The height and diameter at breast height (dbh) relationship to estimate biomass is most important and well formulated (Kira and Ogawa, 1971). Chaturvedi and Singh (1987) studied on biomass estimation by developing the species specific regression equation for various tree species of the Central Himalaya. Dadhwal and Nayak (1993) and Lal and Singh (2000) both used standard expansion and conversion factors as prescribed in the IPCC guidelines for preparing national greenhouse gas inventories (IPCC, 1995) while Ravindranath *et al.* (1997) and Chhabra *et al.* (2002) used phytomass densities and biomass expansion factors (BEF) for their estimates, and Manhas *et al.* (2006) used growing stock data and specific gravity to estimate the wood biomass.

## Objectives

The present study aims to estimate the total bole biomass and the annual increment in bole biomass for dominant tree species of the study area so as to identify the species most efficient in carbon sequestration under the prevailing climatic conditions. Biomass estimation were carried out by employing non-destructive method in which the bole biomass is estimated first by calculating wood bio-volume, which is multiplied by wood specific gravity or density. Annual gain in bole biomass for different tree species is converted to carbon by multiplying it with a carbon fraction of dry matter. For the present study it was estimated by taking 50% of the biomass as carbon following Ravindranath *et al.* (1997); IPCC, (2006). The tree species which gained the highest biomass and thus the carbon on an annual basis were considered most efficient in carbon sequestration.

## Methodology

The present study was carried out in district Tehri Garhwal at an elevation ranging from 600 m to 2300 m amsl. Ten sample plots of 10 m X 10 m each were systematically laid out on each stand of a particular research zone to represent the entire elevational gradient of a particular forest type. Plants having dbh  $\geq 10$ cm only were considered as trees on the basis of the method given by Mueller-Dombois and Ellenberg (1974). Tree species having highest value of IVI for a particular site were considered dominant.

Biomass estimation of dominant tree species was carried out by first calculating the bio-volume which was then multiplied by the specific gravity or density of the tree species.

$$\text{Bio-volume (V)} = (r^2 H) \times f$$

Where

(r) = radius of the tree species at CBH i.e. 130cm above the ground surface.

(H) = Height of the tree species.

(f) = the artificial form factor, which is a ratio of diameter at half the total height ( $d_{0.5}$ ) and diameter at breast height ( $d_{1.3}$ ).

Measurement for height of the individual tree species were carried out by following the trigonometric method. The Haga altimeter with range finder is used to measure the heights of trees. The instrument makes the trigonometry of height measurement simple.

Biomass (B) = Bio-volume (V) X Specific Gravity (SG) or Density (D) of the tree species.

$$\text{SG (specific gravity or density)} = \frac{\text{Oven dry weight of wood (g)}}{\text{Green volume of wood (cm}^3\text{)}}$$

$$\text{Carbon} = \text{Biomass} \times \text{carbon \%}$$

### Construction and Installation of Dendrometer Bands

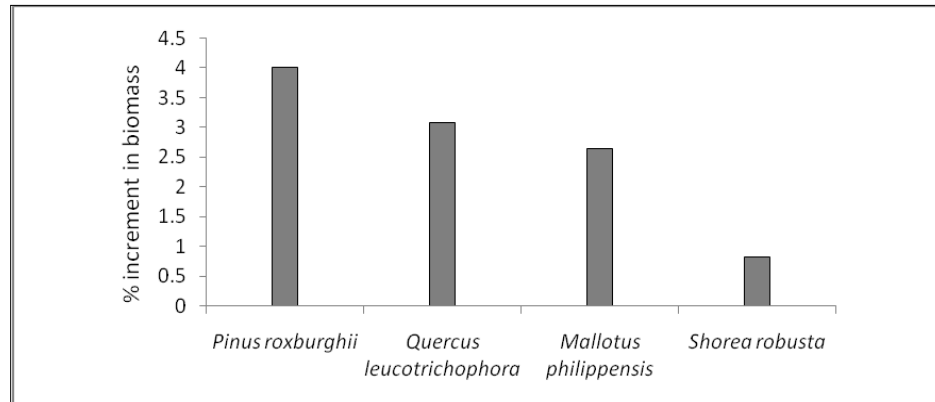
Annual increment in circumference or girth for individual tree species was carried out with the help of dendrometer bands. The dendrometer band consists of strap of metal that is permanently wrapped around the tree trunk and secured back to itself with a spring. As the tree grows the spring allows the band to move with the circumference of the trunk. Therefore, repeated measurements are more accurate when measured by dendrometer compared to those taken by others instruments like calipers or diameter tapes. The dendrometer bands were constructed according to Keeland and Young, (2006), which consists of one stainless steel band (0.10 mm thick and nearly 15.00 to 30.00 mm wide) placed around the trunk, with one end passed through a collar and then connected back to itself with a stainless steel spring. As the tree grows the spring allows the band to move with the circumference of the trunk.



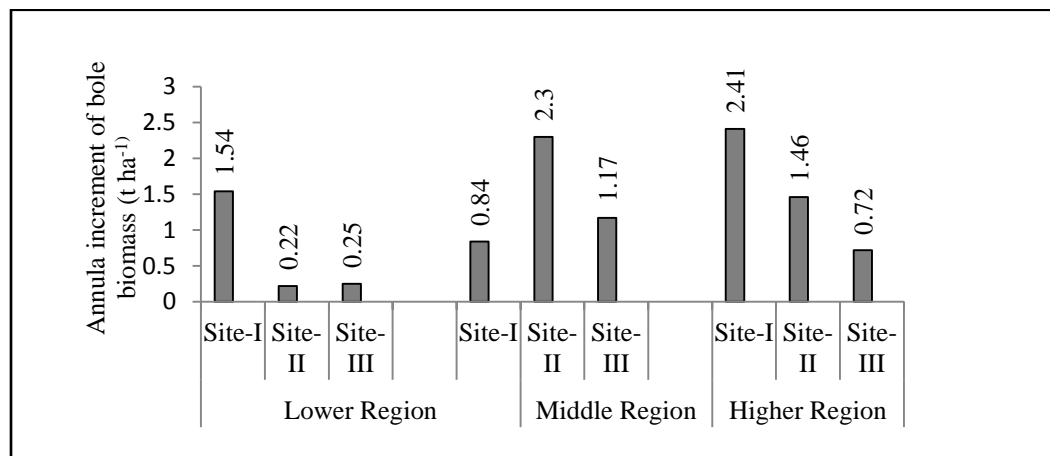
**Figure 2: (A) showing dendrometer bands and (B) dendrometer bands tied over the trees.**

## Analysis and Interpretation

The phytosociological study of the region showed that *Shorea robusta* and *Mallotus philippensis* were the dominant tree species at lower region and were distributed over vast areas up to 1200 m above sea level. *Quercus leucotrichophora* and *Pinus roxburghii* were the dominant tree species at middle and higher region respectively. The study indicates that on an annual basis *Pinus roxburghii* showed the highest percentage of increase of the initial bole biomass (4.0 to 4.05%) followed by *Quercus leucotrichophora* (3.08 to 3.24%), *Mallotus philippensis* (2.64 to 2.66%) and *Shorea robusta* (0.82 to 1.1%).



**Figure 3: showing % increment in initial biomass of the bole for dominant tree species.**



**Figure 4: showing annual increment of bole biomass (t ha<sup>-1</sup>) for the dominant tree species of Lower, Middle and Higher Regions.**

When the rate of carbon sequestration of all the tree species studied, were compared *Pinus roxburghii* showed the precedence at higher elevations (0.73 to 1.20 t C ha<sup>-1</sup> yr<sup>-1</sup>), whereas *Quercus leucotrichophora* at Middle Region (0.58 to 1.15t C ha<sup>-1</sup> yr<sup>-1</sup>) and *Shorea robusta* at Lower Region (0.42 to 0.77t C ha<sup>-1</sup> yr<sup>-1</sup>). *Mallotus philippensis* showed the lowest value of the carbon sequestration rate (0.11 to 0.12t C ha<sup>-1</sup> yr<sup>-1</sup>). In a study on sub-tropical forest of Garhwal Himalaya, Shiekh and kumar, (2010) have reported that maximum carbon was stored by *Pinus roxburghii*. Negi *et al.*, (2003) have also reported that the maximum carbon was stored by

conifers trees particularly *Pinus roxburghii* followed by deciduous trees, evergreen trees and bamboos. Thus conifers are more efficient in carbon sequestration especially *Pinus roxburghii*.

## Conclusion

As per the report of Indiastate of forest report 2011, forest survey of India the recorded forest cover of Uttarakhand is 34651 km<sup>2</sup> which constitute 64.79% of the total geographic area of the state. The predominant forest types of Uttarakhand are Himalayan moist temperate forest and Himalayan sub-tropical pine forest which occupy a total of 65.96% forest area of the state. These forest types are dominated by Pine and Oak species, as Uttarakhand is among top five states of India which occupy forests on more than 60% of total geographic area. Forest fire during summer season is a common phenomenon in forests of Uttarakhand. Every year forest fire causes great loss to the forest ecosystem and removes a huge amount of sequestered carbon back to the environment thus, it becomes clear periodic monitoring of forests should be carried out by employing modern techniques such as geographic information systems and remote sensing so as to provide extra care to protect the Oak and Pine forest of the Garhwal Himalaya at middle and higher region and that of Sal forest at lower region.

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## **Ensuring Sustainable Development of Indian Economy: Importance and Challenges to the Sustainable Agriculture Sector in India”**

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### **Abstract**

Despite the reasonable growth witnessed by the Indian industrial sector, India is an agrarian economy. Amidst the fast growth of various sectors in India, agriculture sector is still a backbone of Indian Economy, with the absorption of a large chunk of population in it. There are evidences of negligence and discrimination against agriculture to promote industries. The growing concern over sustainable development is one of the most important phenomena of the last century. So far as the sustainability of economic development in India is concerned, this discrimination against the agriculture sector can reduce the growth rate of economy and technological advantages of industrial sector. Therefore it is imperative to bring back the sustainable development first to the agriculture sector in order to ensure the overall sustainable economic development. In this backdrop this paper aims at focusing on the role that agriculture sector can play to promote the sustainable development in India and addressing the problems and challenges towards the sustainability of Indian Agriculture sector and their possible solutions. In this context an attempt is also made to peep into the possible solutions to the problems of migration from hills of Utrakhnad state through agricultural activities.

**Keywords:** *Agriculture Sector, Sustainable Development, Industrial Sector, Horticulture, Migration.*

**JEL Classification: Q 10, O13**

### **Introduction**

In the recent times sustainable development has been the most sought issue. After extreme exploitation of natural resources, it is now felt globally that the future generation should not left empty handed. Sustainable development involves replenishment of the natural resources so that the future generation would not lack natural resources. Sustainable development ensures security of present and future generations as well. It is a collective term comprising economic and social development and conservation of environment and natural resources. The term sustainable development was initially coined by the world commission on environment and development appointed by the UN. It is also known as Brundtland Commission named after the chairman of the commission. Sustainable development is the way of fostering present development in such a way that it does not hamper the ability of future generations to grow and develop.

The concept of sustainable development has been emerged when the world started thinking that about the degradation of environment and that the natural resources led industrial progress cannot be perpetual since there is a limit to the resources. Then came the concept of conservation of nature and natural resources. The mile stone in this context was United Nations conference on environment and development held in Rio de Janeiro in 1992. In this conference the world addressed the issue of environment and has come out with a plan named Agenda 21 for

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the conservation of environment. Then came Johannesburg Summit in 2002 showing concern about the removal of various barriers to the sustainable development in the present time. The need of creating a balance between economic development and environment was felt. The present work is divided into following sections. Section two gives glimpse of review of literature, objectives and methodology and Importance, problems and remedies of Indian Agriculture. At the end we have given some suggestions for new ways of agriculture activities as possible solution to the problems of migration.

## **2. Review of Literature**

Sustainable development has highly been discussed in the academia in the recent years. There prevails the consensus on the role that agriculture sector can play in order to ensure the sustainable economic development of the Indian Economy.

Webb (2009) has concluded that the agriculture sector has to be strengthened only then the increasing demand of food grains for ever increasing population at global level. Brown and Funk (2008), in their study have claimed that the required agriculture research systems and support are lesser. They also have exposed the forthcoming problems of agriculture created by climate change. Coming down to Indian Agriculture at particular Shiva (1993), has explored the causing factors of green revolution in India. She also explored that the Green Revolution was based on the assumption that technology is a superior substitute for nature, and hence a means of producing unrestrained growth, unrestrained by nature's limits. Where almost everyone has admired the outcomes of green revolution in India, Zwerdling (2009) has declared in his study the dark aspects of Green revolution in India.

Kumar, Mittal, and Hossain, (2008), in their study has explored that India has ensured growth by increasing agricultural area and yield, but future growth will need to increase yield with sustainable and improved management of shrinking land and freshwater resources. With respect to the problems of Indian agriculture Singh (2008), highlighted regulatory, infrastructural and institutional challenges. There are problems to export of Indian agriculture produce. Umali-Deininger and Sur (2006) has witnessed that small farm size, lack of education, and credit constraints cause problems in front of Indian farmers and prevents undertaking the needed investments in process improvements, storage, and certifications to meet quality and safety requirements. Ghosh (2000), identifies failures on the part of government for paying the significant amount to the farmers' produce. He also explores the lack of an effective system for distributing these reserves, as the public distribution system reaches only a small percentage of the poor who could benefit from it, and the higher MSPs result in higher food prices even within the PDS.

Banerjee & Duflo (2007), has given another important issue of availability of insurance facilities to the Indian farmers. Farmers are lacking life insurance and health insurance facilities. In addition to this Jain & Trehan (2010) has shown that unresolved health problems result in lost productivity and lost income, driving farmers into indebtedness. They also have raised the issues of dependence on farmers on money lenders and farmers sufferings on this count. Agoramoorthy (2008) shows that the expansion of Indian agriculture market and strengthening of storage facilities can improve situations. Deshpande and Naika, (2002), has suggested that MSP announcement should be done before the start of agriculture activities for every crop cycle. Moreover Bhattacharyay, (2010) has suggested that the financial inclusion to poor farmer has to be provided.

There are various other studies that have been explored and looked into while formulating this paper.

### **Objective and Methodology**

The present work is an exploratory work based on the secondary data. For which we have surveyed the secondary work of various researchers. The source of all the secondary data happened to be the published work on various journals and magazines. The present paper has the following objective-

- Exploring the role of agriculture for promoting sustainable development.
- Analyzing the problems of Indian Agriculture and their possible remedies.
- Tracing out the contribution that agriculture can provide for reducing migration of youth from the hill areas of Uttarakhand state.

The remaining sections of the paper are formulated as per the objectives.

### **Role of Agriculture for Ensuring Sustainable Industrial Development**

Importance of agriculture sector in promoting sustainable development lies in the fact that there lies a clear linkage between agriculture sector, industrial sector and even with service sector. In order to stimulate a wholesome growth of Overall economy all the sectors have to grow equally. Research found in their study that highest linkages (interdependence) is more essential to stimulate a more rapid growth of production, income and employment than alternative allocations of resources (Hirschman, 1958 and Polenske and Sivitanides, 1990). This interdependence has been recognized as crucial factor for providing substantial contributions towards for future sustainable economic development.

The agriculture sector lays the basic foundation for sustainable industrial development in number of ways. Firstly, agriculture supplies food grains to industry to facilitate absorption of labour in the industry sector. Secondly, agriculture supplies the inputs like raw cotton, jute, tea, coffee etc. needed by the agro-based industries. Thirdly, industry supplies industrial inputs, such as fertilizer, pesticides, machinery etc. to the agriculture sector. Fourthly, agriculture influences the output of industrial consumer goods through demand. Fifth, agriculture generates surpluses of savings, which can be mobilized for investment in industry, and other sectors of the economy. Sixth, fluctuations in agricultural production may affect private corporate investment decisions through the impact of the terms of trade on profitability (Ahluwalia, 1986 and Rangarajan, 1982).

Agriculture sector impacts both the supply side and production side demand side. The production linkages basically arise from the dependence of the sectors for meeting the needs of their productive inputs. There are many industries like agro based industries and even others, which takes their input and raw material from the agriculture sector. Thus the growth of agriculture sector is stepping stone for the promotion of these industries. Secondly the demand side dependence arises when agriculture sector absorbs the final output of the industries and increases the overall consumption. Thus Agriculture sector creates a pull and push effect for the sustainable promotion of industrial sector.

Nonetheless there is another term of trade effect (TOT effect) as coined by Rangarajan, which again explains the role of agriculture sector. The effect of an increase in food prices on the demand for non-food items by different expenditure groups in rural areas can be broken into two parts. First, there is the negative cross elasticity of demand, and second, there is the positive income effect, which depends on the increase in total expenditure from a rise in prices and on the expenditure elasticity of demand for non-food items of that expenditure group (Rangarajan, 1982). Further, given the contrasting forces between that low food price being good for industrial supply and high food prices being good for industrial demand, it is the TOT between agricultural and industrial products that provides the equilibrating mechanism ensuring that supply and

demand grow at the same rate in each other. If the prices of agricultural products are „too“ high in relation to the industrial products then industrial growth is either demand constrained or supply constrained (Ahluwalia, 1985 and Rangarajan, 1982).

Thus as against the allegation that the agriculture sector has no significant role now for sustainable development due to its shrinking share in the total GDP of India. It is clear from the above discussion that agriculture sector accounts for approximately one-fifth of national income and supports more than 52% of the population in the country. It still plays an important role in determining the overall growth of the economy and therefore it is almost impossible to make the dream of sustainable development come true with an ignored agriculture sector.

### **Problem to the Sustainability of Indian Agriculture Sector**

Sustainable development can be ensured by promoting the agriculture sector in India. Presently the world agriculture is facing three major problems namely Ecology or technological issues that raise the transition from chemical based farming to genetic engineered farming or ecological farming which can ensure better productivity and economic prosperity to the farmers. The second issue is the threat to the survival of Developing countries' farmers led by IMF-World Bank policies and regulation towards developing countries. These rules and regulation pressurized poor countries to remove subsidies given to their farmers and agriculture sector while liberalize food imports. At the same time the same agreement enables rich countries to raise their subsidies and set up high tariffs on their import. This is a clear punishment to the poor farmers of the developing countries. The third and important issue is the unequal distribution of agriculture land. These three issues should be addressed in an integrated and interrelated manner so as to bring sustainable development to agriculture. Apart from the above three problems that are faced by the global level, Indian agriculture sector is also facing the following problems:

#### **5.1 Some Basic Issues: Small Land holding and problems of Basic Infrastructure:**

Indian agriculture sector is suffering from the basic problems such as small and fragmented land holding, good quality inputs like seeds, manure, irrigation facilities etc. The average size of holdings was 2.28 hectares in 1970-71 which was reduced to 1.82 hectares in 1980-81 and 1.50 hectares in 1995-96. The size of the holdings will further decrease with the infinite Sub-division of the land holdings. The problem of small and fragmented holdings is more serious in densely populated and intensively cultivated states like Kerala, West Bengal, Bihar and eastern part of Uttar Pradesh where the average size of land holdings is less than one hectare and in certain parts it is less than even 0.5 hectare. Seed is a critical and basic input for attaining higher crop yields and sustained growth in agricultural production. Distribution of assured quality seed is as critical as the production of such seeds. Unfortunately, good quality seeds are out of reach of the majority of farmers, especially small and marginal farmers mainly because of exorbitant prices of better seeds. Similar is the situation for manure, fertilizers and other biocides. Irrigation facilities are also poor. It is seen that the input cost for the farmers increases tremendously.

#### **5.2 Dark Side of Green Revolution**

The concept of green revolution has introduced in India for attaining the self sufficiency in terms of food grain production ensuring the supply of food grains to the large population base of India. The Green Revolution was based on the assumption that technology is a superior

substitute for nature, and hence a means of producing unrestrained growth, unrestrained by nature's limits". The Green Revolution promised food abundance and the resolution of India's food crisis. (Shiva 1993). The advocates of Green revolution praise it for it increased the food grain production of India up to a great extent. Indian form being dependent on other countries for its food grain requirement, has experienced record grain output and turned into one of the largest agriculture producer in the world. Yield of agriculture land has also increased significantly upto the year 1979-1980. India has been the most successful in context of large scale experiment of Green revolution among the countries where it has been applied (Ganguli).

However the micro level critical analysis of the consequences of green revolution over the time, has revealed many despairing facts. It establishes that Green revolution has brought destructions to the environment and hampered sustainability of Indian agriculture. The ill consequences of green revolution includes erosion and degradation of land resulting from the cropping patterns of the Green Revolution, based on repeated planting of soil depleting crops like rice and wheat. The introduction of genetically modified high yielding seeds caused farmers to be dependent on agrichemical and seed corporations heavily. This also destroyed genetic diversity, making crops much more vulnerable to new pests and diseases (Shiva, 1993). These HYV seeds increased requirement of various costly inputs resulting farmers going into debt traps. Moreover crisis of ground water due to heavy irrigation, endangered health of humans, plants and animals due to intensive use of chemicals are some other repercussions of green revolution. Soil toxicity has also increased and there is a threat of fertile land turning into dessert. Many Indian agricultural experts find agriculture to be unsustainable and unprofitable, and some predict a rapid decline in agricultural output in the future (Zwerdling, 2009).

### **5.3 Lesser Productivity**

Another problem is the low productivity of Indian Agriculture. With the ever increasing population, at national level the demand for the food grain is always on the rise whereas the farm productivity per unit is getting difficult to be maintained. In the past, India has ensured growth by increasing agricultural area and yield, but future growth will need to increase yield with sustainable and improved management of shrinking land and freshwater resources (Kumar, Mittal, and Hossain, 2008). Meanwhile, the lack of investment in agricultural research and technology development in India over the last two decades has slowed the rate at which new ways to increase yield are discovered (Kumar, Mittal, and Hossain, 2008).

Where at the macro level we are facing the problem of less productivity causing food shortage, at the micro level, the extremely small size of Indian landholdings restricts total output (Murthy, Sudha, Hegde, and Dakshinamoorthy, 2009; Fuwa, Edmonds, and Banik, 2007). The small size of plots is obviously reducing the productivity and efficiency. Researchers have found that small farms, 80% of which have less than two acres of land, were significantly less efficient than larger farms (Foster and Rosenzweig, 2010). Apart from that farmers are not well knowledgeable about what to be grown at what time according to their farm size so as to ensure maximum profitability. Surplus labour is another problem of Indian agriculture. Thus for the sustainable agriculture output, informed and locally adapted use of high-yield variety seeds and pest, disease, and nutrient management technologies can be used (Murthy, Sudha, Hegde, and Dakshinamoorthy, 2009) and the small size of land holding has to be tackled.

### **5.4 Issues of marketing and export of agriculture produce.**

Barrier related to sales and export is about production and processing of safe and high quality agricultural products. There is a lack of the required infrastructure for processing. India's national market is giving increasing value to the quality and safety of foods and despite India's tremendous share of global food production, India contributes only 1.5% of exports of processed food (Singh, 2008; Kumar, 2008). In order to meet this India's farmer will require infrastructural and regulatory facilities for the same. There is a need of increasing the export of processed food which has remain insignificant so far. Certain policies like state's requirement that all agricultural commodities flow through regulated markets, poor infrastructure, waste management, and pest control at wholesale markets and limited access to warehouses also reduce food quality and safety and lead to food wastage and poor quality.

Moreover the Small Scale Industry Reservation permits processing of certain commodities only in the small-scale sector, restraining enterprises' capacity to make the needed investments to meet domestic and international food safety standards. The laws governing the processed food sector are extremely confusing, as they are enforced by eight different ministries that sometimes prescribe differing or even contradictory standards. Small farm size, lack of education, and credit constraints among farmers impede them from undertaking the needed investments in process improvements, storage, and certifications to meet quality and safety requirements (Umali-Deininger and Sur, 2006). Meanwhile, the government has not been proactive in working to meet international food safety standards, instead viewing them as unfair trade barriers not based in science (World Bank, 2006).

#### ***5.5 Issue of cost coverage and profitability of agriculture activities.***

Even though the minimum support price has been steadily and significantly increased MSPs for certain crops there are certain problems in this context. As per the world bank report , in 2005 benefits accrued to large farmers as a result of the MSPs were 13 times larger than those to a marginal farmer in the same state and 95% of procurement of wheat, for which there was a high MSP, occurred in only three states (World Bank, 2005). Sometimes the government has been reluctant to support its announced MSP, failing to purchase at this price from farmers seeking to sell to them for lack of a better price elsewhere (Meenakshi and Banerji, 2004).

In the recent time due to the improper management of the food grains and piling up stock of it government has some has sometimes failed to purchase crops. The wrecked public distribution system will have to be strengthen for solving this problem. Another thing is there is that for some crops, the MSP has become unsustainably high which creates an incentives to keep more people involved in agricultural activity than should be and leads to high prices for food sold by the government to the poor in the public distribution system, thereby hurting the impoverished farmers who rely on this system for their food (Basu, 2010; Ghosh, 2000).

In addition to that the prevalence of middleman creates another problem who buy food grains at lesser price than MSP due to farmer's ignorance or other complications. Furthermore, the few buyers at the markets regularly collude to obtain farmers' products at well below the market price; farmers' poverty also contributes to their exploitation because they cannot afford to search for other buyers (Jain, Trehan, & Trehan, 2010).

#### ***5.6 Risk Coverage and financial support***

Insufficient irrigation facilities, dependence on the monsoon and lack of finances and crop insurance are some other lacunas of Indian Agriculture. Unpredictable monsoon and climate shocks causing crop failure and drastic reduction to farmers income is an important feature of Indian agriculture. This will be on a rise in future due to global warming. Indian agriculture sector lacks access finances at reasonable interest rates to overcome these losses. The security of

insurance is also very rare among farmers. Many of the poor farmers even lack the saving accounts in banks.

## **Possible Solutions to The Problems of Indian Agriculture Sectors**

### **6.1 Organic Farming**

In order to preserve the and strengthen ecological systems and natural resources the traditional organic farming has to be adopted back. Organic farming can produce the following benefits - organic farming offers an alternative that is eco-friendly and protects human health, but principal challenges include financial viability, availability of organic inputs, and teaching of skills required for productive organic farming. Organic farming is particularly promising in dryland regions, where climatic variability makes it advantage to grow a diversity of crops. However, there is currently no government support for conversion to organic farming, and the conversion period will result in yield loss. Organic farming has received little attention in research and policy thus far (Reddy, 2010), so as conversion to organic farming occurs at a slow rate, benefits and negative consequences should be carefully measured and assessed. Such evaluation will enable optimal use of organic farming in agriculture in the future. Large-scale conversion to organic farming is impractical in the short-term, however.

### **6.2 Introducing technological innovations and improving inputs**

The long term adverse effect of green revolution has taught that there is currently a strong need for research to generate location-specific farming technologies and to assess their effectiveness. Once these technologies are identified, their deployment should be accompanied by skill development training programs and efforts to ensure that all needed inputs are available to farmers (Huelgas et al., 2011). Since the technologies will need to be adopted widely to have their full impact, research on adoption of these technologies is also crucial. Investments in research, beside investments in rural infrastructure and education, have been shown to promote agricultural growth more effectively than subsidies to inputs such as fertilizer and irrigation (Fan, Gulati, and Thorat, 2008). Investment in agricultural research and development has also been one of the most successful ways to alleviate hunger and poverty (Alston, 2002). There is great potential for innovative agricultural technologies and inputs to improve farmers' yield sustainably, but solutions will need to be specific to local conditions.

### **6.3 Strengthening of rural infrastructure and empowerment of farmers**

For the sustainable agriculture it is imperative that farmers would be literate and educated. This is crucial for increasing their living standard. It will help them in rational decision making with regard to advantageous choices in crop selection, use of agricultural inputs and technologies, and distribution and sale of their produce. They can be provided with training program which will immensely help them. Rural Infrastructure like agriculture market need to be expanded and improvement of storage facilities is sought. Investments in transportation infrastructure will help farmers get fair prices of their agricultural products and will help preserve food safety and quality (Agoramoorthy, 2008).

### **6.4 Providing the food processing facilities**

With post-harvest losses, especially of fruits, vegetables, and other perishables, amounting to over Rs 1,00,000 crore annually (Goswami, 2010), there is great need for increased investment in food processing infrastructure. In order to leverage export opportunities and meet the demands of a growing population increasingly concerned with food quality and safety, food



processing facilities should be build in compliance with national and international food safety standards. The much needed expansion of India's food processing industry would help diversify and commercialize agriculture by extending product shelf-life, adding value to produce, and increasing farmers' income, and would also generate employment and foreign exchange earnings for India (Singh, 2008).

### ***6.5 Favorable pricing policy for the farmer***

For removing the discrepancies regarding MSP there is a need of periodic, transparent, and thorough review of MSP practices eliminate large differences across crops for the value of the MSP in comparison to the market price. The MSP must also be announced earlier, before farmers have sowed their seeds, so that it can effectively influence supply and thus price. Institution of state and local level monitoring of prices and markets would help ensure that farmers receive benefits from the MSP (Deshpande and Naika, 2002). Policy must give added focus to dissemination of pricing information and markets for sale at the MSP.

### **6.6 Better financial facilities to the farmers**

There is a dire need to provide the farmers with increased access to financial and insurance services. Unfortunately many financial programs have been made without sufficient research and therefore could not have produced the desired result. The programs created to resolve problems can instead magnify existing problems and generate new ones if not implemented with a very thorough understanding of the context (Harper, 2011). In this context the primary agriculture societies have to expand their reach to even land less and marginal farmers. Microfinance programs have to be enriched with loans of sufficient amount at lesser interest rate. So far the interest rates charged on microloans has been high enough (Dongre & Deshmukh, 2010). Another financial help that was in the form of loan waivers could not have lived up to the expectation. A massive loan waiver issued by the Indian government in 2008 at a cost of \$15 billion has already backfired, leading to a large increase in farmers defaulting on debt. The waiver also has failed to reach the poorest farmers because it does not encompass debts with moneylenders (Harper, 2011).

The rural banking network should be expanded to facilitate financial inclusion of rural poor farmers for ensuring higher bank accessibility to the poor , and lesser transaction costs , lesser complexities in account opening and loan approval, and for providing flexible financial products (Bhattacharyay, 2010).

### **Solution of Problem of Migration and Sustainable Development of Uttrakhand through Agriculture.**

The economy of Uttrakhand state is basically an agrarian economy. Even though its share in the national production is very less but at state level agriculture sector contributes almost 23% to the state GDP. The 75-78% of the total population is dependent upon agriculture for their livelihood. Uttrakhand is facing a problem of migration of youth form the hill areas in search of their livelihood. It is so because they do not find sufficient income earning opportunities into their local areas. Thus the very simple solution to the problem of migration and sustainable development is enrooted through agriculture and other agro based means of livelihood earnings and their proper marketing. Since the in the hills areas there are topographical constrained in the development of large-scale industrialization. Also the lack of infrastructural development poses a barrier to the development of service sector.

Thus the only hope for the growth and development of the hill area is the agriculture sector. For sustainable development, a renovative approach is required with additional investment. The

development policies for the agriculture sector of the state in particular have to be oriented towards marginal and small landholders. The agriculture system of hills of Uttarakhand has to be developed in such a manner that it provides a better livelihood option and makes the population dependent on it move from subsistence farming to a well-knit higher-income farming system and alternatives to the farming system in a diversified manner. Efforts should be made in order to create the employment opportunity through agriculture and its allied activities. This could be done by diversifying the agricultural pattern so as to create alternative income and better living standards. The alternative areas of diversification are towards horticulture crops, spices and condiments, tea plantations, and herbal and medicinal plants. Development of organic farming is another option for agriculture-based hill regions. Development of animal husbandry and forest resources are already a part of hill livelihood, which has limitations on its further expansion.

### **7.1 Horticulture**

The hill areas of Uttarakhand district has the capacity to get indulged into the production of condiments and chilies, ginger, garlic and other spices. Area like Champawat, Almora etc has good chances side. Almost all the areas have the capacity to be developed as fruit belt specially Utrkashi and Chamba area. There is great potential for diversification into oilseeds like rapeseed, mustard and soybean and that will also contribute towards increasing income in the hill regions.

### **7.2 Herbal and Medicinal Plants**

Another area that can be made the basis of livelihood for the native of Uttarakhand hill, is the cultivation of aromatic and medicinal plants. Cultivation of this crop can provide the farmers with higher returns than the traditional farming. For more profits farmers can intercrop these with the main food grains they grow.

Cultivation of aromatic plants has the capacity of generating the employment opportunity and increased income to even the marginal farmers. There are evidences for this.

**Table : Market Value of the oil extracted from various medicinal Plant**

<b>Name Of Plant</b>	<b>Rate For Oil (Per Kg.)</b>
Lemon Grass	Rs. 345
Germanium	Rs. 3200
Rose	Rs 30 per litre for rose water
Tulsi	Rs. 250
Stevia	Rs. 100
Chamomilla	Rs. 12000
Patcholi	Rs. 2500
Palmarosa	Rs.500

**Source: Tripathi, Mittal and Sethi (2008).**

The main problem on this front is that processing cost and marketability of these crop. Government has come at the fore for this. Farmers should be provided with subsidy for the processing of this crop and also provided market for this produce. In the cities the demand for this can be generated. In absence of government initiative, the long term plantation of various medicinal plant and trees like amla. Tejpata, harad, bhagera has been discouraged even though

there is a vast scope for this. Extract of these plants is heavily used in Auyurvedic medicine and various other health care products. It is therefore that the can generate a good income to the farmer. There is need to educate the farmer about what is the proper way to grow these plant and encourage them for this by providing subsidized processing and market for their produce. There is a great deal of potential for the development of these crops in the hill regions without much heavy investment.

### **7.3 Floriculture**

Floriculture has the capacity to provide a handsome income to the rural farmers. The growing demands of flowers in the domestic as well as the export market can form a strong foundation for the growth this activity in the hills of Uttrakhand these areas have great potential for that. However a concerted effort on the part of the government is required on scientific lines. Paying attention to the input needs, better resource management and making various policies entrepreneur friendly would lead to a balanced growth of the industry. This will help the poor of Uttrakhand hill areas to take up floriculture as a sustainable livelihood income generating activity to mitigate poverty and migration.

### **7.4 Organic Farming**

Yet another weapon in this context is the organic farming. With the ever adulterated food supplies and increasing knowledge of adverse effect of adulterated food, the demand for the organic food is on rise. Thus the organic farming can be encouraged in the hill areas of Uttrakhand and the produce can find market in the native areas and it can also be distributed to the urban market. Organic Farming also helps in increasing the yield level of the agriculture.

By agriculture activities diversified through organic farming can help the farmer in various manners like it can increase farm productivity, soil health and even the product can be sold at the higher prices. All these will increase the income of the farmers. There is a need to organize and increase the market for the organic product strategically to induce rapid development of this hill area of the state.

The prices for organically grown koda, jhangora, and various pulses like gahat, soyabeen, tor etc are very high in the market. Farmers can be benefitted by this. Government has to provide exclusive market for this. Marketing of these product locally and even globally is required. In this context collective organic farming or collective marketing under a single name is essential for reaping maximum benefits. Government has to take initiative in this regard.

## **7. Conclusion**

In this paper, we have put an attempt to throw lights to the importance of agriculture sector in ensuring sustainable development. The problems of agriculture sector and their solution have been proposed. Conclusively the agriculture activities helps in respect of food securities, rural development, ensuring adequate income to various people engaged in this sector and at the same time without destroying the environmental. It also forms basis for the promotion of the industrial sector. Continuously degrading situation of Indian agriculture and Indian farmer due to ignorance of government and discrimination against industry sector necessitates special care to be taken. In India the destination of sustainable development is enrouted through agriculture sector. There are various problems in Indian agriculture sector that need an address. Serious and sincere attempts should be made for Investments in farmer capacity building, strengthening rural infrastructure promoting research activities in this area.

Promoting capacity building programs to farmers and strengthening of rural infrastructure will help them to gain new knowledge, skills, and opportunities which enable them increase their farm yield and income thereon. It will also help in reduction of wastage. Promotion of agricultural research activity on the other hand will help in finding ways, methods, technologies and strategies to improve agriculture production, quality of the produce and farmers income. Also in the context of the sustainable development of the Uttarakhand state Agricultural and agro based activities would help in great context. Promotion of horticulture, floriculture, cultivation of medicinal plant and trees and organic farming are some alternative ways to generate good income to the rural youth. This can also put an stoppage to the burning problem of migration from the hill areas.

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## Migration a social Problem: A Study of factors Responsible for Migration from Hills of Uttarakhand

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Chirag Singhal\*\*\*

18

### Abstract

*Migration has become a universal phenomenon in modern times and it has been discussed frequently as a cause or consequence of development. This paper tries to study the various factors that are responsible for migration in Uttarakhand and the initiatives that are being taken to control it. Uttarakhand, as a newly formed state, is undergoing the problem of migration. Because of lack of basic amenities, natural disaster and unemployment, males and young individuals from hills are shifting not only to plain regions of Uttarakhand but to other states also. The areas with geographic proximity not always promise a bright chance to grow but even then individuals are migrating to those areas and this is a serious concern for the economy of this state. Although several steps have been taken by Government under various schemes since the formation of the state but the gain is at a slower pace.*

**Key words:** Migration, Development, Economy and Schemes

### **Introduction**

Uttarakhand lies in the Northern part of India amidst the magnificent Himalayas and dense forests. Borders with Himachal Pradesh in the North West is separated by river tons, and Nepal in the east by river Kali, Foot-hills in the south are bound by Uttar Pradesh and sharing its international border with China. Uttarakhand became the 27th state of the Republic of India on 9 November 2000.

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## State Profile

S.No.	Background Characteristics	State
		Number
1-	Geographic Area (in Sq. kms)	53,484 sq. kms
2-	Number of blocks	95
3-	<b>Size of Villages (2011 Census)</b>	
	Number of villages • 1-500 • 501-2000 • 2001-5000 • 5000+	16826 • 13460 (80 %) • 2679 (17%) • 426 (2.7 %) • NIL
4-	Number of towns	31
5-	<b>Total Population (2011)</b> <b>1,01,16,752</b> • Male 5,154,178 • Female 4,962,574,	<b>1,01,16,752</b> • 5,154,178 • 4,962,574,
6-	<b>Sex Ratio (F/M*1000)</b>	
	Population Sex Ratio	963
	Child Sex Ratio	886
7-	Decadal growth rate	19.17
8-	Density- per sq. km.	189
9-	<b>Literacy Rate (+6 Pop)</b>	<b>79.63%</b>
	• Male • Female	• 88.33% • 70.70%
10-	<b>% SC/ST population</b>	
	• SC	15.17
	• ST	2.56

Source: Government of Uttarakhand Department of Medical Health & Family Welfare.

Out of the 13 districts of the State, 3 are plain districts and the remaining 10 are hill districts. Geographically the state can broadly be divided into three zones, namely—

### Upper hills

Uttarkashi, Chamoli, Rudraprayag, Pithoragarh and Bageshwar

### Middle hills

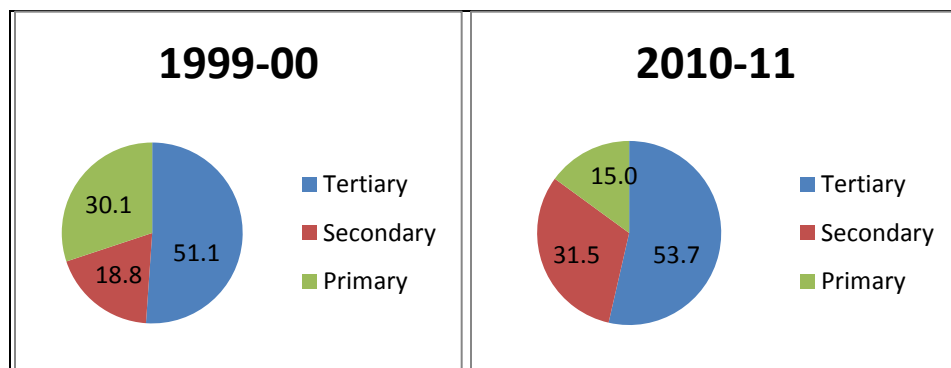
Tehri-Garhwal, Garhwal, Almora, and Champawat, the hill regions of Nainital and Chakrata tehsil of Dehradun

### Foothills

The remaining area of Dehradun, Haridwar, Udham Singh Nagar and the remaining area of Nainital

During the last decade (2001-2011), the population of Uttarakhand grew at 19.17 percent which is higher than the national average of 17.6 percent. Though there has been a rapid increase in population, the density of population is 189 per sq/km which is below the national average of 382 per sq/km. The State comprises 13 Districts out of which four Districts are in the plains and the other nine are in the hills and Dehradun is the capital of the State. A higher proportion of population resides in rural areas (68.84 percent) than urban areas (31.16 percent). The Gross State Domestic Product (GSDP) of Uttarakhand at current price has increased from Rs.14,501 crore for the financial year 2000-2001 to Rs. 87,350 crore during financial year 2011-2012 highlighting a healthy growth over the years. The share of agriculture in the primary sector is on decline, whereas that of secondary and tertiary is rising.

### Sectoral distribution of GSDP in percent



The primary dependence of the population of Uttarakhand is on agriculture for livelihood and about 70% of the population is engaged in agriculture. Only 14.02% area is under cultivation out of total reported. The landholdings of residents are small and scattered. The average land holding is around 0.68 ha (that too is divided into many patches) in the hills and 1.77 ha in the plains. There is hardly any other major source of livelihood deriving from the secondary or tertiary sectors in the hills. Poor development of these sectors is primarily because of inaccessibility and vulnerability of mountain regions. Although almost 70% of the population is dependent on the primary sectors, the contribution of this sector of the GDP/NDDP is only 37.5 resulting in insufficient income levels to the people of the state. This subsistence nature, which leads to low incomes and irregular incomes, which in turn lead to a significant out-migration of male members that leads to only women headed families behind, and making the role of women in the household economy more important. After attaining statehood in 2000, the economic progress of Uttarakhand has been rapid, with its economic growth rate increasing from just over 3% per annum to 11% per annum. However, this rapid growth has been accompanied by undesirable impacts on the local ecology, thus making the incorporation of sustainable development practices into the State's overall development strategy an imperative. Water, agriculture, forestry and energy, among other issues, are central to the State's inclusive strategy for future growth. Most of the people of this state are dependent on their natural environment, with over three fourths of the total population dependent on agriculture for their livelihood.

The livelihood strategies of rural peoples in Uttarakhand are in transition. The regional disparities in development between hilly and plain regions have historically led to a general flow of people from the hills to the plains. Increasing awareness about employment opportunities in the cities and growing migrant networks have enthused many youths to leave their villages.



However, in an era of trade liberalization in India, these regional differences have grown hugely as metropolitan regions were favored in policies across India. Additionally, the line between rural and urban is blurred as the consumer market enters previously self-sufficient agricultural systems. The traditional subsistence based hill economies are being integrated into the vast national and global economic network of India. This involves a process of livelihood transition, often resulting in out migration to meet the balance of payment issue between villages and cities. The results have profound implications for the traditional hill agricultural system, the culture, and the rural peoples in the HKH regions of India.

Since time, immemorial migration from one area to another in search of improved livelihood has been a key feature of human history. While some regions and sectors fall behind in their capacity to support populations, other move ahead and people migrate to access these emerging opportunities. Migration has become a universal phenomenon in modern times. Industrialization widens the gap between rural and urban areas, including a shift of the workforce towards industrializing areas. In most countries, it has been observed that industrialization and economic development has been accompanied by large-scale movements of people from villages to towns, from towns to other towns and from one country to another country.

There is extensive debate on the factors that causes populations to shift from those that emphasize individual rationality and household behavior to those that cite the structural logic of capitalist development. As a policy issue, migration is seen as significant in the context of an ageing population, future labour supply and the prospects for economic growth as well as for its social and environmental impacts.

### **Review of Literature**

From the demographic point of view, migration is one of the three basic components of population growth of any area, the other being fertility and mortality. But whereas both fertility and mortality operate within the biological framework, migration does not. It influences size, composition and distribution of population. More importantly, migration influences the social, political and economic life of the people at the origin as well as at the destination.

Indian constitution provided each individual with basic freedom to move to any part of the country, right to reside and earn livelihood of their choice. Thus, migrants are not required to register either at the place of origin or at the place of destination. A number of economic, social, cultural and political factors play an important role in the decision to move.

Analysis of migration is important to understand the people's movement within the country as a response to changes in economic, political and cultural factors (Singh, 1998).

In India, permanent shifts of population and workforce co-exist with the circulatory movement of populations between lagging areas and developed regions and between rural and urban areas, mostly being absorbed in the unorganized sector of the economy.

Internal migration is now recognized as an important factor in influencing social and economic development, especially in developing countries. Indian censuses record that in 2001, 309 million persons were migrants based on place of last residence, which constitute about 30% of the total population of the country. This is nearly double the number of internal migrants as recorded in the census of 1971 (159 million).

Migration is defined as a move from one migration defining area to another, usually crossing administrative boundaries made during a given migration interval and involving a change of residence (UN 1993). The change in residence can take place either permanent or semi-permanent or temporary basis (Premi, 1990).

Seasonal and circular migration is an integral livelihood strategy for poor people in India (Deshingkar and Start 2003).

As a result of unequal growth, people from agriculturally and industrially less developed states migrate to more developed states in search of job opportunities -- for example from the eastern part of Uttar Pradesh, Bihar, the southern part of Madhya Pradesh, western Orissa, and southern Rajasthan to states like Punjab, Gujarat, and Maharashtra (Deshingkar and Akter 2009). For a large number of migrants, New Delhi is a much favoured destination, due to the abundance of job opportunities.

Among the four types of domestic migration (rural-to-rural, rural-to-urban, urban-to-rural, and urban-to-urban), rural-to-rural migration was highest in 2001, accounting for 54.7% of total domestic migration (Mitra and Murayama 2008). However, the share of rural-to-rural migration has declined over the past few decades, while that of rural-to-urban migration has gradually increased (from 16.5% in 1971 to 21.1% in 2001) (Mitra and Murayama 2008). Among the inter-state migrants, the majority (37.9%) migrate from rural to urban destinations (Mitra and Murayama 2008). However, intra-state is more common than inter-state migration. Women migrants outnumber men; they account for more than 60% of the total migration flows within the country.

Since agricultural fields are located on terraces in the hilly region and are generally very small, modern agricultural implements cannot be used. As a result, agricultural work becomes highly time-consuming, thus increasing women's workload tremendously. Men prefer to do less time-consuming work which requires less labor, and generates more and quick money. They do not show much interest in routine agricultural work because it requires hard labor and is less productive. Therefore, instead of sharing the work with women, they prefer to migrate to urban areas (Nautiyal, 2003).

These migrants have been making significant financial contributions to their families in their places of origin. There are no accurate data available on the volume of internal money transfers, but international remittances to India amounted to US\$ 17.4 billion in 2003 (World Bank 2009).

Moreover, migrants make significant contributions to the national economy by providing human capital in sectors such as textiles, hospitality, construction, mining, brick-making, and small industries (Deshingkar and Akter 2009).

Migration in the Hindu Kush-Himalayas (HKH), as in other mountain areas of the world, is not a new phenomenon. People have been on the move since time immemorial. However, in recent years, global change has increased migration considerably. Also, mountain people are now, more than ever before, aware of opportunities elsewhere. Better communication technologies and falling transportation costs have enabled previously immobile people to migrate. The economic upturn in the region's urban centers and the demand for cheap and flexible labour, particularly in the Gulf and Southeast Asian countries, focus the spotlight on migration as a livelihood strategy. For the International Centre for Integrated Mountain Development (ICIMOD), international migration is a major mountain development issue, posing opportunities and challenges for both migrant sending and receiving countries. In the next decade, migration will continue to grow in the HKH and other mountain areas of the world, driven by the global financial crisis, food insecurity, climate change, globalization, and escalating income disparities. Migration can be an effective strategy for livelihood adaptation and can contribute to the sustainable alleviation of poverty in mountain areas. Results from macro-economic studies suggest that, on average, a 10% increase in per capita official international remittances leads to a 3.5% decline in the proportion of people living in poverty (Adams and Page 2005).

Social remittances are those benefits beyond the effects of financial flows. Migrants acquire new ideas, skills, perceptions, and technologies, which they carry back to their home country and which act as powerful forces for modernization and social change. However, although there is a large development potential from labour migration and remittance flows in the HKH region, the awareness of this potential and action to exploit it remain weak.

In general, little attention is paid to the challenges and opportunities that must be faced to harness the potential of migration and reduce the negative effects for mountain societies. One of the main reasons for this is the lack of information and knowledge on migration and remittance patterns and volumes. Before developing strategies that can help people benefit more from the migration that is taking place, it is important to understand more about the process, the way it affects and is used by society, and the flows of remittances. As mountain migration is a highly engendered process, with mostly men leaving and women staying behind, it is of particular importance to better understand the effects of this mostly male outmigration in order to develop (gender) sensitive solutions to improve the development relevance of remittances.

Although migration has been always a part of the problem, in recent years the loss of able bodied men has left villages with only women, children and the old and disabled, in an increasingly degraded landscape. Apart from the labour and time spend, the carrying of heavy loads over long, rough and difficult terrain cause numerous physical and health issues which plague women in the mountains.

#### **Objective of the study**

1. To study the various factors responsible for migration in Uttarakhand.
2. To study the initiatives taken by the Government of Uttarakhand to control migration.

#### **Migration in Uttarakhand**

Migration in India is both a historical and present phenomenon. Although there is paucity of District level data, but review of literature showed that there is greater migration taking place in the State than the national average. Studies show that the nature of migration may not be categorized as 'distress migration' but the rate of migration has increased. Some studies show that migration is higher among those with higher literacy levels than those with less or no literacy. Men and women, mostly the former, usually migrate to seek employment opportunities in other Districts or other States (Delhi, Mumbai, Chandigarh and Ambala). Employment opportunities are not keeping pace with the demand generated. Large numbers of migrants get employment as cooks, wash boys, waiters, peons, domestic servants, messengers, drivers and helpers.

A study of Migration and Workforce Participation in the Himalayan States by R. Lusome and R.B.Bhagat shows that with the exception of Jammu & Kashmir, the proportion of migrants is higher in the three Himalayan States i.e. Himachal Pradesh, Sikkim and Uttarakhand.

Another study on 'Employment, migration and livelihoods in the Hill Economy of Uttaranchal' by Rajendra P. Mangain, Jawaharlal Nehru University, States that the percentage of migrant population is more among upper caste, lower income groups and interior areas. It is less among lower caste groups and agriculturally developed households. Individuals from lower income groups migrate who have low asset base migrate for their survival whereas those from better income households migrate for better opportunities in their career. Within State higher proportion of individuals migrate within the District, when compared to the national figures (Uttarakhand 33 percent in comparison to India 17.1 percent).

Development in Northern India has thus far been primarily concentrated in the plains of India, inspiring migrants to leave the geographically more inaccessible regions of India for cities in the

plains. Thus, the most fertile land in India, the Indo-Gangetic plains, is the land being developed the most for non-agricultural purposes. As this outmigration occurs in the mountainous regions of the world, land is often abandoned in the process. Abandonment of agricultural land has been a commonly observed trend in rural mountain areas in many parts of the world since the 1940s (Walther 1986; Garcia-Ruiz and Lasanta-Martinez 1990; Harden 1996; Kamada and Nakagoshi 1997; MacDonald et al 2000; Romero-Clacerrada and Perry 2004; Khanal, N. R., & Watanabe, T. 2006). Considering these trends, the state of Uttarakhand and indeed India itself may face food insecurity issues as fertile land is paved over in the plains and fertile land is abandoned in the mountains.

Migration in the Hindu Kush-Himalayan region is intra-regional (i.e., from remote rural locations to developed urban centres in the hills) as well as inter-regional (i.e., from the hill regions to the developed plains). Seasonal, rural-urban, and international migration are the predominant types of migration in Uttarakhand (Jain A. , 2010). According to the Census of India (2001), the number of migrants from Uttarakhand in 2001 was 3.07 million: 2.06 million women and 1.01 million men, with 55% being non-workers. The total population of the state in 2001 was 8,479,562. Female migrants mostly migrated for societal reasons; 66% for marriage and 19% moved with their families, with only 2% migrating for employment related reasons. Among male migrants, 39% moved for employment, 27% moved with their household, and 4% migrated for reasons related to education. More recent data shows a growth in similar these trends. The Pauri and Almora districts witnessed negative rural population growth rates. Among the Tehri Garhwal and Rudrapraya districts, population growth was near zero, and among the Chamoli, Bageshwar, and Pithoragarh regions, growth rates were low. This is coupled with the rural population of Uttarakhand only increasing a total of 11.34 %, while the urban population increased a total of 41.86 %. Depopulation of the two districts, namely, Garhwal and Almora and the significantly low population growth rates of other districts can only occur due to a movement of peoples. This conclusion is reached after considering that while child population growth rates have declined, they did not decline significantly enough to reduce population growth so dramatically. Given the respective growth rates of rural and urban populations, it can be safely concluded that much of the low population growth in the hills is the result of rural to urban migration. However, much of this migration cannot be accounted for with preliminary 2011 Census of India demographics since migrant flows are inter-state and international as well.

### **Analysis and Interpretation**

#### ***Factors responsible for migration:***

#### **Declining agricultural productivity and disillusionment with subsistence farming:**

Agriculture fields in the hills are producing less as they previously used to. This is also affirmed strongly in other research done on migration from mountain regions (Khanal & Watanabe, 2006; Grau & Aide, 2007; Jain A. , 2010). Majority of youth in hills believe that agriculture is not a financially sustainable option, as declining agricultural productivity; they believe that it's highly risky to have business as primary source of income and they have genuine reason for their perception as their fields are at high altitude on mountains, so they are dependant completely on rain. Education has emerged as an important push factor among those disillusioned with agricultural work. Even young people with only an intermediate education feel that there are better livelihood opportunities for them outside their villages and are reluctant to take up agricultural work. There is also a strong feeling among young people that agriculture is not meant for the literate; it is seen as a 'demeaning' occupation, only pursued by illiterate and less educated people. This perception is a major accelerator for population shifts towards urban

centres and the plains. Perhaps, the current societal value system and the educational system are partly responsible for this trend, in which agriculture is being tagged as a socially demeaning occupation.

### **Shrinking land Holdings**

Shrinking land holdings, due to the continued subdivisions of land within families. The marginalization of small land holdings as these land subdivisions scatter individual land holdings around the village was an observed and frequently mentioned issue. The landholdings of residents are small and scattered. The average land holding is around 0.68 ha (that too is divided into many patches) in the hills and 1.77 ha in the plains.

### **Shift from Joint Family Structure to Nuclear family Structure**

Shift in the joint family structure to the more nuclear family structure, as well as a change in the dynamics of the household as a result of absent family members who had migrated. Traditionally, joint families are better able to manage collective resources, such as cattle, due to the availability of labor (Jain A. 2010).

### **Lack of Employment Opportunities**

People are not able to find employment due to absence of industry in the hills; industries don't find it logical to set their business in the hills area as it will adversely affect their profitability, only cottage industries can be seen in these regions, and they don't have the capacity to provide employment to a good number of people, with suitable wage rate. Industries available in these regions are mainly those manufacturing food products and beverages, handicrafts, manufacturing of wood and wood products and their requirement of manpower is very less.

Lack of local opportunities is a strong factor in the rising migration numbers, particularly among mountain youth. Greater awareness of outside prospects through radio, television, and education are increasingly attracting mountain youth to migrate, as options for local growth and investment seem limited. A general fatigue with the hardship and lack of facilities in mountains was observed and an attraction to city life. In Uttarakhand, lack of employment in villages emerged as the strongest motive for migration among the respondents (90%) (Field Study India in Jain 2010). Alternative employment opportunities are limited by the lack of industrial development in the hill and mountain areas of the western HKH. The influence of migrant friends and relatives is another significant determinant for migration (66%), closely followed by low agricultural productivity (47%), and a lack of interest in working in agriculture (43%). Several migrants complained of lack of basic facilities in villages (44%) and cited better prospects in cities (Field Study India in Jain 2010) as other reasons for migrating.

### **Lack of Education**

Education contributes directly to the human resource development and quality of life. Uttarakhand being a state with high literacy rate, still finds problem with providing education to the people residing in hills, reason being shortage of infrastructure, teacher, and resources. The availability of educational infrastructure is somehow limited to urban areas or the plain areas of the state. Findings emphasize the importance of higher education, in which Uttarakhand is yet to focus attention in the hill areas. Education is particularly important because the present state of agriculture is not found to be income enhancing in the hills. Another point to note is that there is significant disparity in the returns to education between urban and rural areas. This is a matter of concern as it could only result in more out-migration, discouragement and above all injustice to rural people. This disparity, which is more conspicuous for higher education, could come from the lack of opportunities consistent with the education available in the villages and from the poor

quality of education in these areas. The lower returns to higher education can be corrected by redesigning the education system in line with the region's economic prospects and by an integrated approach in planning development. This will also facilitate economic growth. At the regional level such disparities appear in the hills but the plains demand an emphasis on the spread of education. A focus on both urban and rural development merits attention.

### **Educational Infrastructure- FY2009-10**

<b>Type of Institution</b>	<b>Number</b>
Basic/ Secondary Education	
Schools/ Colleges	22379
Number of Students	2381594
<b>Higher Education</b>	
Higher education institutes	122
Degree/ PG Colleges	106
Central Universities	1
State universities	6
Deemed Universities	4
Private Universities	5
Number of Students	163996
<b>Vocational and Technical Education</b>	
Industrial Training Institutes	106
Polytechnics	37
Distt.Instt. Of Educ. Training	13

*Source: PHD Research Bureau, compiled from Directorate of Economics and Statistics Uttarakhand.*

### **Lack of Medical Facilities**

The subject matter of Health of the People of Uttarakhand is not being given the importance it deserves. The people in the hills are very poor and it is very difficult for them to afford the modern health care facilities. There is no denying the fact that the wealth of a country depends on the health of its citizen. The health of the citizen is directly proportionate to the country's capability for productivity. Public health service run by Government is overburdened and collapsing. Hilly geographical size, increase population density, lack of transport, inaccessibility, illiteracy, poverty, poor nutritional status, diversity in food habit and life style are various impediments. Government priorities for providing health service to rural areas are yet to be fulfilled. At this stage, low budget from state for health, lack of funds and coordination have triggered downtrend in health services in rural and hilly areas.

Due to hilly areas, lack of infrastructure, low per capita income, diseases and illiteracy, it is felt that nearly 70% of vulnerable populations are in the villages and out of reach. Government is even facing problem in retaining doctors at its hospitals, as majority of doctors are not willing to work in these areas.

### **Summary of Health Indicators**

Infant Mortality Rate *	41 per 1000 live births
Total Fertility Rate (2008)	3.3 children born per woman
Per Capita Health Expenditure NHA-04-05	Rs 818
District Level Hospitals*	12
Primary Health Centres (PHC)*	250
State Allopathic Hospitals*	322
Beds in Govt. Hospitals*	8075
Ayurvedic Hospitals*	540
Unani Hospitals*	5
Homeopathic Hospitals/Dispensary*	107

Source: PHD Research Bureau, Compiled from Annual Report to People on Health, September 2010 and Directorate of Economics and Statistics Uttarakhand, \*data pertains to 2009-10.

### **Lack of Infrastructural Development (Basic amenities)**

Rural urban interactions can be defined as linkages across space and between services. It involves various dimensions of social as well as physical, infrastructural sharing and impact each other in more ways than one. In the following deliberation, an attempt is made to highlight some of the emerging problems in the urban areas of the State.

In many cities and towns, urban services are commonly inadequate to meet even the basic needs of the inhabitants. Population growth and a steady stream of rural migrants only add to the already existing problems. Infrastructure is about delivering the essential services that people need to maintain basic standard of living: water supply, sanitation, electricity, roads, transport and telecommunications, health care, education, market and financial institutions. These in turn lead to improvements in health, access to education, economic opportunities and more. Another recurring infrastructural problem associated with urbanization is with regard to housing and related social issues. Housing is not just about shelter but involves sufficiency of space as well as scope for socializing and sanitary facilities. Residents of hills have to work hard for fulfilling water requirements as water supply is not supported with proper system.

### **Delayed progress of Government Policies for hilly Areas**

The state has gone through a tough time recently, and the reason being the ignorance of government towards hills. Government proposed several policies for the hill areas, but somehow there was delay in majority of initiatives, the reason being Red tapism, lack of infrastructural facilities, local agitation and game of throwing responsibilities between state government and the central government

### **Fear of Natural Calamities**

The hill slopes are prone to land slides, landslips, rockslides and soil creep. These hazardous features have hampered the over all progress of the region as they obstruct the roads and flow of traffic, break communication, block flowing water in stream and create temporary reservoirs and also bring down lot of soil cover and thus add enormous silt and gravel to the streams. These are of two types, first as slides due to natural factors (These slides are mainly due to geological, tectonic (Thrust, Fault, Seismic Zone, Joints and Fracture Zone and Sheer Zone), additional moisture percolation, surface water percolation and slopes more than 35°.) and second as slides induced by man and his activities (These are induced by human activity in the form of engineering constructions, massive deforestation and erroneous agricultural practices on barren hill slopes, road building, unscientific quarrying etc. A few land slides of the district e.g., Satpuli, Banghat, Patal, Kaliasaur, Lansdowne Landslides are a result of these practices.

In the Alaknanda River and its tributes, major land slides and floods have been known to occur every ten or twenty years. According to available information, the river Nandakini was blocked for three days in 1857 A.D. Later on, breaching of its temporary lake caused devastation in the Alaknanda valley. Similarly a massive land slide fell into Godiyar Tal, one of the feeders of Birahi river in year 1868 A.D. and it drove out half of the lake, instantaneously causing the river to over flow and even flooding the Alaknanda. Again in September 1893, the Birahi River was blocked by a gigantic landslide and rockfall. On August 1894 A.D. when a part of this rockfall breached, the flood caused damage to the old Srinagar town and villages along the Alaknanda valley. There was a devastating flood in Alaknanda River on July 1970. Its impact extended from Hanumanchatti near Badrinath to 320 km. downstream at Haridwar. After 1970, damage due to floods and landslides in the catchments of Alaknanda area a recurring phenomenon.

Because of the increase in the population and the constructional activities, the frequency of landslides and lands subsidence has increased. Heavy construction work coupled with the lack of planning for water outlet; increase water seepage culminating in the land slides. Huge amount of explosives used in construction works of road have adversely affected the ecosystem of the region and the stability of stabilized mountain slopes.

On June 2013, a multi-day cloudburst centered on Uttarakhand caused devastating floods and landslides in the country's worst natural disaster since the 2004 tsunami. As of 16 July 2013, according to figures provided by the Uttarakhand government, more than 5,700 people were "presumed dead." This total included 934 local residents. Destruction of bridges and roads left about 100,000 pilgrims and tourists trapped in the valleys leading to three of the four Hindu Chota Char Dham pilgrimage sites. Landslides, due to the floods, damaged several houses and structures, killing those who were trapped. The heavy rains resulted in large flashfloods and massive landslides. Entire villages and settlements such as Gaurikund and the market town of Ram Bada, a transition point to Kedarnath, have been obliterated, while the market town of Sonprayag suffered heavy damage and loss of lives. Pilgrimage centres in the region, including Gangotri, Yamunotri, Kedarnath and Badrinath, the hallowed Hindu Chardham (four sites) pilgrimage centers, are visited by thousands of devotees, especially after the month of May onwards. Over 70,000 people were stuck in various regions because of damaged or blocked roads. People in other important locations like the Valley of flowers, Roopkund and the Sikh pilgrimage centre Hemkund were stranded for more than three days. National Highway 58, an important artery connecting the region was also washed away near Jyotirmath and in many other places. Because summers have more number of tourists, the number of people impacted is substantial. For more than three days, stranded pilgrims and tourists were without rations or survived on little food. The roads were seriously damaged at more than 450 places, resulting in huge traffic jams, and the floods caused many cars and other vehicles to be washed away and the after effects of the tragedy left locals with the long lasting fear of losing their loved ones, so majority of people residing in hills decided to migrate.

### **Controlling Migration: An approach to prosperity**

One of the effective methods to control migration is to provide more opportunities for the people who are more likely to migrate due to lack of enough live saving and sustaining support systems. The generation of employment opportunities can pave the way for controlling the migration. Every able person must utilise his resources in the productive manners. Most of the Indians are more saving oriented people than investment oriented people. Being a labour intensive economy the people in India are more inclined towards opening up some venture and as a result providing employment to other individuals also. It will also be beneficial for Uttarakhand if there is a dream of every individual to become an entrepreneur rather than waiting for government jobs. This can always lead to employment generation and hence citizens of Uttarakhand can be benefitted out of it.

MNREGA is doing a good but not sufficient job to control the migration. Some regular attempts have been made by the state government to provide such facilities under various schemes but only few have been implemented and fulfilled. Every citizen of this country has the right to move and live anywhere in the country which makes the basis for migration.

Rural economy is a healthy one. The only thing is to harness the potential to the fullest. Major pillar being agriculture is now an area of concern. Uttarakhand state's major source of income, agriculture, tourism and industries, are focused by Government but the only issue that remains is migration. Better educational and health facilities if provided in rural areas can help in the socio



and economic upliftment of the state. Although after the formation of the Uttarakhand as a state there came immense job opportunities in areas like Dehradun, Rudrapur and Haridwar but that was again a result of migration from hilly region to plain region.

This state is still under natural shock. Uttarakhand government has identified 300 odd villages as unsafe after the Kedarnath disaster which is a topic of serious concern. Because of poor infrastructure facilities people are forced to leave their place. What remains with them is a dream to survive in these odd situations. The mass with some financial resources have moved to plain regions leaving behind agriculture which was their profession and the rest are struggling for their lives with no money with them as their coffers are empty.

### **Conclusion:**

The livelihood strategies of rural peoples in Uttarakhand are in transition. The regional disparities in development between hilly and plain regions have historically led to a general flow of people from the hills to the plains. Increasing awareness about employment opportunities in the cities and growing migrant networks have enthused many youths to leave their villages. There is hardly any other major source of livelihood deriving from the secondary or tertiary sectors in the hills. Poor development of these sectors is primarily because of inaccessibility and vulnerability of mountain regions. Permanent solution is the need of the hour for the factors responsible for migration viz. declining agricultural productivity and disillusionment with subsistence farming, shrinking land holdings, shift from joint family structure to nuclear family structure, lack of employment opportunities, lack of education, lack of medical facilities, lack of infrastructural development, delayed progress of government policies for hilly areas, fear of natural calamities.

Uttarakhand being a newly formed state can grow at a good pace only if the resources are utilized to the fullest. Migration can lead to severe outcomes in this state. Government can assist individuals in this regard but with the change in political party the preference changes. The topic that needs justification is facilities in rural areas of the state as majority of the population is still engaged in agriculture in rural area. Basic facilities like sanitation, health and education still lack in Uttarakhand. In this regard the people should also take active participation.

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## Sustainable Development

19

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### **Abstract :**

The term ‘**Sustainable Development**’ is a broad concept and there are a number of definitions available. The World Commission on Environment and Development (the Brundtland Commission, 1987) defines it as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. This definition is perhaps the easiest and most acceptable one. Sustainable development recognizes the interdependence of environmental, social and economic systems. It promotes equality and justice through people empowerment. In the political aspect it demands broad based participation and democratic processes.

The answer to the question that why sustainable development is important lies in the fact that by providing a new framework for decision-making, issues are considered from a multi-dimensional point of view. Success is measured not simply by the profit generated, but by the triple bottom line of economic prosperity, environmental stewardship and corporate social responsibility. Besides simply making good common sense, adhering to the principles of sustainable development fulfills compelling business needs as well, including reducing costs and liabilities, enhancing brand image and reputation, increasing customer loyalty, encouraging innovation and stimulating growth and strengthening with our communities (www.dow.com 1995-2004). The principles of sustainable development include fulfillment of human needs for peace, clean air and water, food, shelter, education and useful and satisfying employment. Environmental issues are important, such as ecological integrity through careful stewardship, reduction of wastes, and protection of diverse species and ecological system.

**Keywords:** *Sustainable development, climate variability, development, adaptation, efficiency*

### **Introduction:**

Sustainable development focuses on local people through public involvement in the definition and development of local solutions to environmental and development problems. Achievement of equity is attained through the fairest possible sharing of limited resources among contemporaries and between our generation and that of our descendents. In the literature there are two concepts of sustainability: weak sustainability and strong sustainability. However, operationally it is the concept of weak sustainability that is used. It is not inconsistent with the experience of evolutionary process of human society. Sustainable development requires the maintenance of natural capital. By natural capital we mean natural resource stocks, land and ecosystem. If any pattern of development continues to deplete natural capital, then that development is not sustainable. The question that arises here is whether natural capital can be substituted by other forms of capital or not. The two conflicting views regarding the degree of substitutability between natural capital and other forms of capital are the weak and strong sustainability issues. Weak sustainability allows depletion of natural capital stock, so long as this depletion is offset by increase in the stock of other forms of capital. It assumes that all forms of capital are substitutes of one another. Strong sustainability, on the other hand, requires all forms

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of natural capital to be maintained independently of one another as it assumes that different forms of capital are complimentary to each other.

### ***I. Indicators of Sustainable Development***

To set sustainable development as an achievable goal, it is important to recognize the indicators of the same. A lot of effort has been given in this direction in the past decade. In 1992, governments of 178 countries met at Rio de Janeiro, Brazil, for the United Nations Conference on Environment and Development (UNCED). The Earth Summit, as UNCED was also known, was convened to address urgent problems of environmental protection and socio-economic development.

The Commission of Sustainable Development (CSD, December 1992), which grew out of the Rio Summit, initiated a programme on sustainable development indicators in 1995. The programme resulted in a working list of one hundred and thirty four indicators (134) indicators. In order to assess the validity of these, twenty-two (22) countries from all over the world volunteered to test these indicators in an initiative that began in 1996. The indicators were tested according to individual countries own priorities and goals for sustainable development and implemented on the basis of common guidelines for national testing developed by the division for sustainable development in consultation with its indicators expert group. These countries subsequently met in 1999 to discuss experiences and best practices.

In March 2000, under the direction of the Division of Sustainable Development and Department of Economic and Social Affairs (DSD/DESA), a small group of experts met to draft the final CSD framework. As a result of the meeting, a draft list of 58 indicators was selected and distributed to all testing countries for approval. Though not one of the testing countries, India recognizes the importance of indicators and the work done by the Commission of Sustainable Development. It is to be appreciated, however, that the concepts, definitions and methodology underlying the well-known indicators vary, sometimes significantly, from country to country and overtime within countries. There is also difference amongst countries in the way information is collected.

(TERI 2000) The principles of sustainable development underpin all government policies and in particular those on the economy, health, education, welfare, employment, social exclusion, transport, agriculture and the environment. Here comes the need for sustainable development indicators that present a balanced set of measures that will allow sustainable development to be assessed. But there is no international consensus yet on sustainable development indicators and no recommended shortlist of indicators although UNCED has published a menu of about one hundred thirty five indicators that is being piloted by a number of countries.

### ***II. Why need an indicator?***

An indicator helps to understand direction and enables to know the distance from the target. The indicator may point to an issue or condition. Faced with problems an indicator helps to determine what direction to take to address the issue. Indicators of a sustainable society point to areas where links between economy, environment and society are weak. We need indicators that give people an idea of whether or not their economy is getting worse or better. Indicators act as signals on development pathways to decision-makers so that the paths of unsustainable development can be avoided. While the idea of developing sustainable indicators is appealing, it is clear that the concept of sustainable development is broader than the measures used to describe it. Common to all research on sustainable development indicators, is the problem of identifying what to measure and how. Obviously the information for the indicators must be available. Similarly, the indicators that are developed must both be informative and revealing if

sustainable development is being achieved, and act as an effective guide to policymakers. A good indicator may be considered to have the following properties:

- i) easy to understand
- ii) something that can be measured
- iii) measure something believed to be important or significant in its own right
- iv) the information it is calculated from should be readily available
- v) there should be only a short time lag between the state of affairs referred to and the indicator becoming available
- vi) based on information which can be used to compare different geographical areas or states.
- vii) unit free to facilitate comparison over time and space
- viii) one single value to provide unambiguous conclusion or guideline

#### **Characteristics of Sustainability Indicators**

1. Parsimony
2. Internal or external validity
3. Understandability by various user groups
4. Interconnectivity among different subsystems
5. Gender sensitivity

#### **Social Indicators**

1. Percent of population living below poverty line
2. Gini index of income inequality
3. Unemployment rate
4. Ratio of average female wage to male wage
5. Nutritional status of children
6. Mortality rate under five years old
7. Infant mortality rate
8. Life expectancy at birth
9. % Population with adequate sewage disposal facilities
10. Population with access to safe drinking water
11. % Population with primary health care facilities
12. Immunization against infectious childhood diseases
13. Contraceptive prevalence rate
14. Children reaching grade five of primary education
15. Adult secondary education achievement level
16. Adult literacy rate
17. Floor area per person
18. Number of reported crimes per thousand population
19. Population growth rate
20. Sex ratio
21. Crude birth rate
22. Population of urban formal and informal settlements TERI (2000)

#### **Economic Indicators**

1. GDP per capita
2. Investment share in GDP
3. Balance of trade in goods and services
4. Debt to GNP ratio
5. Official development assistance TERI. (2000) (ODA) given or received as % of GNP

6. Fiscal deficit
7. Intensity of material consumption
8. Annual energy consumption per capita
9. Share of consumption of renewable energy sources
10. Energy use per unit of GDP (energy intensity)
11. Energy use per unit of GDP (energy intensity) by sector (commercial, services, manufacturing, transportation and residential)
12. Intensity of energy use: transportation
13. Energy imports (proposed)
14. Distance traveled per capita by mode of transport

#### **Environmental Indicators**

1. Emissions of greenhouse gases
2. Consumption of ozone depleting substances (ODS)
3. Ambient concentration of air pollutants in urban area
4. Arable and permanent cropland
5. Per hectare food grain production (proposed)
6. % Of gross cropped area irrigated (proposed)
7. Use of fertilizers
8. Use of agricultural pesticides per unit of agricultural land area
9. Forest area as a % of land area
10. Wood harvesting intensity
11. Land affected by desertification
12. Area of urban formal and informal settlements
13. Algae concentration in coastal waters
14. % Of total population living on coastal areas

#### **Institutional Indicators**

1. National sustainability development strategy
2. Implementation of ratified global agreements
3. Number of internet subscribers per 1000 inhabitants
4. Main telephone lines per 1000 inhabitants
5. Expenditure on R&D as a % of GDP TERI (2000)

The article Sustainable Measures: Indicators of Sustainability; What is an Indicator of Sustainability? (2000) states that sustainability indicators reflect the reality that different segments of society are interrelated. Sustainability requires integrated view of the world - it requires multidimensional indicators that show links among community's economy, environment and society.

#### **Review of literature:**

Quite a large number of literature concentrate on sustainability indicators' concepts and its types. A brief review of the existing literatures on sustainability indicators study will lead the way towards understanding the relevance and objective of the present study. There is no intention to refer to all the study relating to the present context rather, only selected references are being covered, choice being governed by the variety of objectives and importance of the findings towards understanding the relevance and objective of the present study. In the literature there are two concepts of sustainability: weak sustainability and strong sustainability. However, operationally it is the concept of weak sustainability that is used. It is not inconsistent with the experience of evolutionary process of human society. Sustainable

development requires the maintenance of natural capital. By natural capital we mean natural resource stocks, land and ecosystem. If any pattern of development continues to deplete natural capital, then that development is not sustainable. The question that arises here is whether natural capital can be substituted by other forms of capital or not. The two conflicting views regarding the degree of substitutability between natural capital and other forms of capital are the weak and strong sustainability issues. Weak sustainability allows depletion of natural capital stock, so long as this depletion is offset by increase in the stock of other forms of capital.

**Objective of the Study and data source:**

From a brief review of the existing literature on indicators of sustainable development, we see that the multiplicity of sustainability indicators can be grouped into two types, which may be environmental and non environmental. The environmental indicators are those that provide an overall assessment of the environment and they may also point to the environmental stresses caused by anthropogenic and other factors. The non environmental indicators comprise of the social and economic indicators. The social indicators reflect various human development aspects and they provide the yardstick for progress of human life. In the emerging paradigm of development these are all indispensable without which attainment of sustainability is impossible.

**In this article our objectives are to:**

- (1) suggest a methodology to construct a single index, namely the 'Composite Sustainability Index' (CSI)
- (2) apply the suggested methodology to evaluate the performance of the states and union territories of India in their progress towards sustainability.
- (3) trace the movement of the states and union territories on the sustainable development pathway. As part of the empirical test of our indicator analysis we have collected statistical data from various secondary sources. We have referred to various statistical abstracts, census reports, human development reports and a host of other reports, journals and periodicals pertaining to different years for the states and union territories of India.

**Changing Unsustainable Patterns of Consumption and Production**

With increasing purchasing power, wasteful consumption linked to market driven consumerism is stressing the resource base of developing countries further. It is important to counter this through education and public awareness. In several areas, desirable limits and standards for consumption need to be established and applied through appropriate mechanisms including education, incentives and legislation. Several traditional practices that are sustainable and environment friendly continue to be a regular part of the lives of people in developing countries.

These need to be encouraged rather than replaced by more 'modern' but unsustainable practices and technologies. Development decisions regarding technology and infrastructure are a major determinant of consumption patterns. It is therefore important to evaluate and make development decisions which structurally lead to a more sustainable society. Technologies exist through which substantial reduction in consumption of resources is possible. Efforts to identify, evaluate, introduce and use these technologies must be made.

**Analysis and Interpretation :** Sustainable development is achieved through optimizing gains from several variables, rather than maximizing those from a single one. This requires government departments, by convention sectorally organized, to work together, or in some cases as a single multi-disciplinary authority. For this joint planning transparency and coordination in implementation are

Required. The richness of skills available in society must be harnessed through partnerships involving institutions in civil society, such as NGOs, CBOs, corporate (including private) bodies, academic and research institutions, trade unions, etc., which must be made an integral part of planning and implementation for sustainable development.

### **Conclusion:**

There is both a need and a scope for regional and global cooperation in sustainable development. Some of the areas of common concern are marine and riparian issues, trans-boundary environmental impacts and management of bio-resources, technology sharing and sharing of sustainable development experiences. Efforts must be made, especially by developing countries, to work towards synergizing experiences and raising shared regional concerns as a strong united front in international forums. Mechanisms must be put in place to facilitate such international exchange of domestic and global experiences in sustainable development. There must be mechanisms for monitoring the compliance of countries to their obligations under various environmental agreements. Currently there is a multiplicity of institutions with fragmented responsibilities. A better governance regime is required to ensure cooperation and compliance.

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## Role of Tourism in Sustainable Development & Well being of Society

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### Abstract

If we consider the economic growth of a country then we found tourism is playing a vital role to promote and develop a countries economy by its multiplier effects. In reality as well as in a significant sense, tourism has emerged as most instrumental phenomena in the economic and social development of society. There is hardly any other economic activity which is capable of generating as much added value, employment and hard currency (foreign exchange) and that also at such a low cost as tourism.

With the development of tourism and economy of a country we should think also about the sustainable development as it takes care about the environment and local community. The well being of a society depends on their development of economy, culture, and environment and so on. But if we go for development in tourism without considering sustainable development then it resulted in various types of damages and destruction to the local communities and environment. So, in future we will find there is nothing except the damages of environment & nature will never forgive us. She will take revenge as we behave with her. Human being can fight with himself and take measure of their benefits but when nature is our opponent then we are helpless we can't fight with her as we don't have so much power as well as equipments. We develop for what? For our good future, for a better environment, for a better future for our children and long term benefit which will give fruit to the local people, to a particular region, country , nation and whole world also.

**Key Words:** *Sustainable Development, Economic Development of local Community, Role of Tourism.*

### Introduction:

Tourism means the movement of people from once place to another place apart from his / her residential place for a specific purpose and staying there for at least 24 hrs. or more than one night in a rented accommodation. Travel and tourism is the second largest global industry with daily international revenues of approximately US \$ 02 billion, and investments of 12 percent of world GDP. Tourism is a dynamic and exchange process, involves a direct and reciprocal relationship between users and producers of the tourism product. An economic impact assessment can become a useful tool for a community to use in working out what is most economically effective considering the goals for family income, distribution of benefits and costs, fiscal impacts, benefits over time etc. The approach to setting up such a study will depend on the situation, the community, and the analyst's judgment. In case of tourism it is playing a vital role to promote and develop a countries economy by its multiplier effect. There is hardly any other economic activity which is capable of generating as much added value, employment and hard currency (foreign exchange) and that also such a low cost as tourism. But if we think only the development on the basis of infrastructure like Road, Accommodation, Shops, Restaurant, Parks etc and try to promote tourism as much as possible then we can see various type of damages in society. Development of tourism may harm environment, local flora & fauna,  
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local culture and affect the society also. So, in future it may be the cause of destruction of a particular region or society. On the other hand we will have to promote tourism for the development of a particular region or society because it helps development by its multiplier effect. So, we should think for the society, culture and environment or should think for the development at any cost?

To come out from this problem the new concept has emerged which is known as Sustainable Development means the development should take place without harming the environment, local flora & fauna, community and culture. Also the benefit comes by development should go to the local people. Here again we have got another form of tourism i.e. Sustainable tourism. Sustainable tourism embraces all segments of the industry with guidelines and criteria that seek to reduce environmental impacts, particularly the use of non renewable resources, using measurable benchmarks and to improve tourism's contribution to sustainable development and environmental conservation.

#### **Review of Literature:**

“Travelers not only learn about the destination, they learn how to help sustain its character while depending their own travel experiences. Residents learn that the ordinary and familiar may be of interest and value of to outsiders”. (Sustainable Development and Tourism, Romila Chawla, 2003).

Travel business do their best to employ and train local people, by local supplies, and use local services by which the benefit goes to local people and if we consider these way on sustainable way then it will be long term beneficial for both the local people and travelers also.

The principle of sustainable tourism shows that an integrated approach to tourism planning and management is required to achieve sustainable tourism. Earlier there was no reorganization of combining the needs of traditional urban management (transportation, land use planning, marketing, economic development, fire and safety etc.) but now it has been recognized. The most important principles of Sustainable Tourism include:

- ✓ Tourism should be initiated with the help of community inputs and community should maintain control of tourism development.
- ✓ Tourism should provide quality employment to its community residents and a linkage between the local business and tourism should be established.
- ✓ Training should be given in all level – national, regional and local on the basis of international standards. Guidelines for tourism operations, impact assessment, monitoring of cumulative impacts and limits to acceptable change should be established.
- ✓ Provide proper education to the local to improve and manage resources.

On the other hand when we think for the Economic Development of a particular region / community then an economic impact assessment can become a useful tool for a community to use in working out what is most economically effective considering the goals for family income, distribution of benefits and costs, benefits over time etc. The study is not the final word on whether a particular choice should be made; it simply presents alternatives and their effects.

#### **Objectives:**

The objectives of this study were to investigate the role of Tourism in Sustainable Development and Well Being of Society. And the tourism scenario & Sustainable Development policy of West Bengal as an Eco-Tourism spot and how it benefitted to the local community.

#### **Methodology:**

To establish the above objectives, the study was conducted in one phase and on the basis of secondary data. To establish the relation between tourism, sustainable development and its effect in society I have chosen a particular state, West Bengal.

### **Income Multiplier:**

We can find out the Income Multiplier, it may be defined as the increase in income resulting from each dollar injected into the economy of a region.

### **Marginal Propensity to Consume (MPC)**

If we take an example and assumed that 80 percent of the income was represent in each round and on the other way we can say that in the region being considered, 80 paise of each rupees of increased income was spent. This proportion (80 percent) is called Marginal Propensity to Consume and is defined as the fraction of each dollar of increased income that is spent. A simple relationship exists between the Multiplier (M) and the Marginal Propensity to Consume (MPC):

$$M = \frac{1}{1 - MPC}$$

Given the MPC of an area, the multiplier can be readily computed from this formula and the impact of tourism expenditures on local income can be examined. For example if the MPC is 75 percent the multiplier is

$$M = \frac{1}{1 - MPC} = \frac{1}{1 - 0.75} = \frac{1}{0.25} = 4$$

$$M = 4$$

Now if MPC is 75 percent then what happens to the other 25 percent of increase income? It can be either saved or spent on purchasing imports. In both case, the money is removed from circulation, money removed from circulation is termed "leakage".

Savings eventually find their way into investments which increase the productive capacity of an area. This is desirable. Thus any action to increase the value of the multiplier should focus on imports. If we consider that the 25 percent of income not spent is disposed of as follows:

07 percent is saved and 18 percent goes to pay for imports.

### **Generation of Employment:**

While we think for tourism then we have to think for investment in infrastructure and once we think for that, it provides employment for large numbers of semi-skilled people. Each dollar / Rupees invested in the tourism industry creates more jobs than each dollar / rupees invested in.

### **Tourism Stimulates Investment:**

The tourist industry has a unique structure. It is characterized by and in fact is an agglomeration of a large of very small units, covering variety of different service trades like, small restaurants, motels, guest houses, laundries, arts and crafts shops and others. Thus investment in infrastructure and sometimes expensive superstructure by the government stimulates investment in numerous smaller businesses. Because of the small size of these businesses, capital requirements are relatively low and investment generally proceeds at a rapid pace.

**Tourism- Redistributing Wealth:**

When a tourist earns income in one region and spends it in another for travel purposes, a redistribution of wealth has taken place.

Here we can say, income “leaks” out of the origin area and is “injected” in the destination area.

**Benefits a Broad Cross Section of the Host Population:**

We know that tourism is characterized by the existence of a large number of very small businesses that support and are ancillary to the industry. The benefit of tourism share by entire community.

**The following chart illustrates how quickly tourism receipts seep through the economy and the diversity of the business that benefit from it.**

Visitor spend for	Travel Industry Spends for	Beneficiaries
Lodging	Wages & Salaries Tips & Gratuities	Accounts Advertising & Public Relation Appliance Stores Architects Arts & Crafts Producers Automobile Agency
Food	Payroll Commissions	Bakers Boys Butchers Carpenters Cashiers Charities Clerks Clothing stores Clubs
Beverages	Music and Entertainment Administrative and general Expenses	Confectioners Contractors Cooks Culture organization
Entertainment	Legal and Professional services. Purchase of Food & Beverages Etc.	Dairies Dentists Department stores Doctors Dry Cleaning Establishments Farmers Fisherman Freight Forwarders
<b>Visitor spend for</b>	<b>Travel Industry Spends for</b>	<b>Beneficiaries</b>

Gifts and Souvenirs	Purchase of Materials & supplies.	Garages & Auto repairing Gardeners Gift Shops
	Repairs and Maintenance	Government Government Education Health Roads and Rail Road Development & Others
Personal Care Drugs & Cosmetics.	Utilities – Electric, Gas, Water	Green grocers Grocery stores
Internal Transportation	Transportation	Financiers Furniture stores Importers Insurance Agencies Land Lords
Tours & Sightseeing	Licenses	Agents Government Officials
Miscellaneous	Rental of Premises and Equipment	Night Clubs Office Equipment Suppliers Painters Petrol Stations Plumbers Porters Publishers
	Replacement of assets	Real estate Broker Developers Restaurants Room Maids Share Holder Sporting Events Return to Investors Transportation Travel Brokers Taxi Hire Car service Unions Wholesale Establishment

Source: Romila Chawla, 2004, Economics of Tourism & Development.

### **Brief of the state:**

West Bengal now proposed to be renamed as Paschim Bangla is located in the Eastern part of India and the nation's fourth most populous state. It surrounded on the north by Sikkim & Bhutan, on the East by Assam & Bangladesh, on the south by the Bay of Bengal and on the west by Orissa, Bihar & Nepal. The state stretches from the Himalayas in the north to the Bay of Bengal in the south. West Bengal adjoins three international borders viz. Bangladesh, Nepal & Bhutan.

The state is spread over an area of 88,752sq.k.m. and a population of 80.18 million as per 2001 census. There are 19 districts, 341 blocks and 40782 villages.

The capital and largest city of the state is Kolkata, the third largest urban agglomeration and the fourth largest city in India. Siliguri, Asansol, Durgapur and Burdwan are key Metropolitan cities. Other major cities and towns in West Bengal are Howrah, Raniganj, Haldia, Jalpaiguri, Kharagpur, Darjeeling, Midnapore, Tamluk, Malda and Cochin Behar.

### **Brief History:**

Bengal has a rich cultural heritage and historical past. The region has played a significant role in the Indian history, both in the ancient and medieval ages. The British first started their colonization through the East India Company. West Bengal has given birth to a large number of well known philosophers, scientists, patriots etc. Such as Sri Aurobindo, Rabindranath Tagore, Netaji Subhash Chandra Bose, Swami Vivekananda and many others who played crucial role in the political as well as spiritual reformation in the nation.

### **Tourism Scenario in West Bengal:**

The state has all the diversities of nature and is to that extent a tourist's dream. Except desert, the state has Mountain, Hill, Beach, Forest, Heritage, Cultural significance.

The snow capped peaks of the Himalayas, Darjeeling, referred by many as the Queen of Hill Stations. Darjeeling Himalayan Railway declared as a world heritage site, the state has another world heritage site Sunderban famous for its Mangroves & Royal Bengal Tiger. Apart from that it has vast Tea Estate Covering Darjeeling, Dooars and so many historical landmarks.

The land has developed long unending beaches with gentle rolling sea lined with casuarinas forest which offers the tourist an opportunity to experience nature by a number of sea resorts viz. Digha, Shankarpur, Junput, Bakkhali, Sagardwip etc.

### **West Bengal Tourism – Objectives & Policy:**

- Tourism has been declared as an Industry by the state in 1996. The Government has taken an effort to promote the state as a tourism hub with a number of schemes.
- The West Bengal Tourism Policy 2008 lays down the broad policy and plan for the state in the tourism sector.

### **Basic objective of the Tourism Policy of West Bengal:**

- To improve the market share of West Bengal in the inbound tourism segment and a remarkable share in Domestic tourism market also.
- To promote responsible and sustainable tourism through the integrated development of the infrastructure and not sporadic stand alone and fragmented development.
- To develop tourism products by its unique ecological, historical, cultural, religious, wildlife, sports, shopping, health care, educational and human asset.

- To facilitate tourism by all segments, particularly the middle and lower income tourists, by making the tourist spots in the state more easily accessible through single window facility at the state capital and at the district head quarters and or the internet.
- To grade the direct and indirect economic benefits of tourism by its tourism activities, which can be done by creating more employment opportunities and by dispersing tourism into the hinterland which will further the socio-economic goals of the Government.
- To develop (Public-Private-Partnership model) to take advantage of complementary capital and intellectual assets to promote tourism.
- To increase the revenue earnings of the state and the foreign exchange reserves of the Country.

#### **Trends of visitors to the Stage Comparing to the National Data:**

<b>Year</b>	<b>Domestic Tourist (Lacs)</b>	<b>Foreign Tourist (Lacs)</b>	<b>Total (Lac)</b>	<b>Total Domestic (India)</b>	<b>West Bengal Share</b>	<b>Total Foreigner (India)</b>	<b>West Bengal Share</b>
1996	44.40	1.83	46.32	1401	3.18%	50.03	3.66%
1997	45.77	1.94	47.71	1598	2.86%	55	3.5%
1998	46.45	1.95	48.4	1682	2.76%	55.4	3.52%
1999	47.03	1.99	44.02	1906	2.47%	58.3	3.41%
2000	47.37	1.98	49.35	2201	2.15%	58.9	3.36%
2001	49.43	2.84	52.27	2364	2.09%	54.41	5.22%
2002	88.44	5.29	93.73	2669	3.31%	51.6	10.25%
2003	113.01	7.05	120.06	3090	3.66%	67.1	10.51%
2004	123.80	7.76	131.56	3662	3.38%	83.6	9.28%
2005	135.67	8.96	144.63	3919	3.46%	99.5	9.01%
2006	156.00	8.86	164.86	4623	3.37%	117.5	7.54%
2007	185.80	11.54	197.34	5265	3.53%	132.7	8.70%
2008	193.14	11.33	204.47	5629	3.43%	141.12	8.03%
2009	205.28	11.8	217.08	5630	3.65%	142.12	8.30%
2010	210.72	11.92	222.64	5631	3.74%	143.12	8.33%

Source: IL&FS Infrastructure, April, 2012.

From the above data we can say that the state has been receiving around 3-3.7% of the domestic tourist. The position with foreign tourists is a little improved with West Bengal accounting for over 8% of the foreign tourists.

**Destinations & Products:**

The Government of West Bengal wish to promote the state as an ideal tourist spot to the tourist and aims at developing specialized tourism products with unique opportunity, such as:

- Coastal & Beach Tours – Digha, Sagar Island etc.
- Netaji Museum – Home of Netaji –Subhas Chandra Bose.
- Jorasanko – Home of Rabindranath Tagore
- National Museum
- Agri – Horticulture Garden at Alipore
- Botanical Garden – Shibpur line with Kew Gardens, London.
- Cruise on the river Ganges
- Pilgrimage Tourism – Dakshineswar, Furfura Sharif, Bandel Church, Tarapeeth, Gutia Sharif, belurmth, Jairambati, Jai Chandipur, Tarakeswar, Nalhati, Kali Ghat and other important places.
- Eco Tourism – Centres of Folk dance and Drama across the state.
- Educational Heritage & Culture – Shantiniketan and Bishnupur.
- Himalaya Tourism (Darjeeling & surrounding areas) Trekking, white water rafting, adventure tourism.
- Tea Tourism – Darjeeling & Dooars.

**Sustainable Tourism Plans:**

West Bengal is a state rich in resources and bio diversity which can be utilized to promote sustainable tourism and as per the state tourism policy the state is going to focus on below mentioned products.

**Nature Based Tourism:** West Bengal has everything except desert and rich in its resources. Some of the assets are unique like Sunder bans Delta, Tea Plantations, Beaches, and Mountains & Wildlife. These are giving competitive advantage to the West Bengal.

**Cultural Tourism:** West Bengal is the cultural capital of India. It has constantly produced thoughts, ideas and events which have brought forth freshness and rejuvenation in the society



both in India & the World. The specific components of cultural tourism which will be focused upon will include Fairs, & Festivals Tourism, Heritage Tourism, Arts & Crafts Tourism, Cuisine Tourism, Film Tourism, Family, Relatives and friends Tourism and Rural tourism.

**The number of projects and amount sanctioned under the Five year plan for the state of west Bengal is provided in the following table:**

2008 - 2009		2009 - 2010		2010 - 2011	
No. of Project	Sanctioned (INR Crs)	No. of Project	Sanctioned (INR Crs)	No. of Project	Sanctioned (INR Crs)
10	37.94	07	28.37	08	22.02

Source: India Tourism Statistics' 2010.

### **Sustainable Tourism and Development with Stake Holders:**

State Government, State Tour & Travel Operators and other representatives have been identified the following Circuits / Projects:

**Circuit 1 – Beach Tourism Circuit in Purba Medinipur:** Digha – Shankarpur – Tajpur – Junput – Mandarmani.

**Circuit 2 – Pilgrim Tourism Circuit:** Ganga Sagar – Birbhum – (Tarapeeth – Bakreshwar – Nalhati-Fullura-Saithia – Kankalitala) Furfura Sarif.

**Circuit 3 – Nature Tourism:** Dooars & Darjeeling Circuit.

**Circuit 4 – Sunderban Circuit:** Gadkhali, Jharkhali, Kohikhali, Frazer Island.

### **Mega Tourism Park:**

It is proposed that the Tourism Park shall be developed at Gajoldoba in Jalpaiguri District. Gajoldoba is just 25 k.m. south east from siliguri, the busy business hub and within the district of Jalpaiguri. The area is located on the important corridor of Nepal, Bhutan, Bangladesh and other N.E. States. Bagdogra airport and New Jalpaiguri Rail head are just out skirt of the town and very well connected to almost all major cities of India.

The place is very close to the existing popular tourist destinations of the state – Chapramari Wildlife Sanctuary and Gorumara National Park.

The beautiful site provides grand view of Teesta River, Himalayan Peaks, and adjoining Baikuntapur Forest. The site has already become very popular amount the local tourist and bird watchers for migratory birds including Brahmini ducks, Bar headed goose, Pintails, Black Ibis, Cormorants and ducks etc.



**Strength of this site is as follows:**

- Unparallel natural beauty by the side of the barrage and the forest.
- Vast water reservoir of Teesta Barrage.
- Availability of huge government land.
- Ideal place for the migratory birds.
- Absence of any comparable product in the district.

The site has tremendous potential for developing as a Mega Project site for national as well as international tourists. The project includes development of 3 to 5 star resorts for high budget tourists, lodges for mid budget tourists. There may be a Golf Course, River sports and Trekking Tracks etc.

**Rural Tourism:**

The Government of West Bengal also proposed to develop Rural Tourism keeping in mind Puralia Rural Cluster & Nadia Music Cluster.

**Carrying Capacity:**

Since the Ministry of Tourism, Government of India aims to promote sustainable tourism development it was deemed essential to establish the sustainable Carrying Capacity of the priority Tourist Circuit.

Tourism Carrying Capacity is defined as “the maximum number of people that may visit the tourist destination without causing destruction of the physical, economic and socio cultural environment and an unacceptable decrease in the quality of visitor’s satisfaction”. (Alvin Chandy, 2009).

Assessment of Tourism Carrying Capacity is based on three major indicators: Physical – Ecological, Socio – Demographic and Political- Economic.

**Physical and Ecological Indicators** are based on fixed components and flexible components (Infrastructure systems like water supply, electricity, transportation etc.)

**Socio – Demographic Indicators** refer to social and demographic issues and importance to local communities, as they relate to the presence and growth of tourism.

**Political – Economic Indicators** refer to the impacts of tourism on local economic structures activities etc.

The objective is to be improving the quality and quantity of tourism infrastructure at tourist destination / circuit in a sustainable manner. Hence priority should be given to the physical and ecological indicators. It is expected that improvement in physical infrastructure at destinations / circuits would translate into improvements in the socio – demographic and political – economic conditions of these places.

#### **Town Wise Carrying Capacity Assessment in West Bengal:**

Tourist Town	Existing Load	Carrying Capacity	Available Capacity	Estimated Load	Available Capacity
	2010			2020	
New Digha	11917	14480	2563	29862	- 15382
Shankar Pur	7942	26480	18538	18164	8316
Tajpur	7654	9680	2026	9632	48
Mandarmani	7450	31200	23750	10739	20461
Junput	89499	114400	24901	103425	10975

Source: IL&FA Infrastructure, April, 2012.

#### **Destination Wise Carrying Capacity Assessment in West Bengal:**

Destination	Existing Daily Load 2010	Carrying Capacity	Available Daily Capacity 2010	Estimated Daily Load 2020	Available Daily Capacity 2020	Measure	Enhanced Capacity
Digha Beach	8250	3000	- 750	26506	-12164	Setting up of Parks, Art & Culture, Village & Water Parks etc.	1036
Shankarpur Beach	1111	4000	8889	3570	4115	-	4115
Tajpur Beach	417	2500	5833	1339	3143	-	3143
Mandarmani Beach	1021	3500	7729	3280	3501	-	3501
Junput Beach	111	2500	6139	357	3772	-	3772

Source: IL&FA Infrastructure, April, 2012.

From the above table we can see that the available capacity to hold the tourists at the destinations of West Bengal till 2020. Apart from Digha Beach which does not have capacity to hold the tourist even in 2010. Thus to avoid the excess load of tourist from Digha Beach and undue stress

and degradation, some measures have been proposed by the authority. Proposals of an Amusement Park, Art and Culture, Water Sports activity etc can carry load of 13,200 persons per day to reduce such load from Digha. Not only should that Government take step to promote circuit and other nearby destinations also.

### Employment Generation:

Expected Employment Generation	
Digha	1,13,763
Shankarpur	41,574
Tajpur	43,212
Junput	21,762
Mandarmoni	11,934

Source: IL&FA Infrastructure, April, 2012.

From the above table of Expected Employment generation we can say that tourism generate a huge amount of Employment. As Digha generate maximum tourist the employment generation of Digha also high approx 1, 13,763. Relatively Shankarpur, Tajpur, Jujput, Mondarmani also generate employment as per the tourist demand.

### Conclusion:

Tourism is the second largest industry in the world and generates maximum employment by its multiplier effect to a country. It helps a country to develop, not only that it contributes countries, development of infrastructure, culture, cuisine, education, history, environment and so no. It also helps a country to earn Foreign Exchange. It generates employment in different sector by its Direct & Indirect effect. Tourism helps a region to develop and the benefit goes to the local people / society / community. It creates the opportunity to conserve the environment and wild life also. The multiplier effect of tourism give benefits to the difference sector of people and is a good option of earning. Government can earn Foreign Exchange and taxes from this industry.

So, we should think for the development of tourism in future and try to promote as many as destination in the national level & international level and try to generate more employment for the economic development of a country. But we will have to go for sustainable development and think for the well being of society and long run benefit. Because if we don't respect nature and go for development without any concern about nature then one day will come when we will be held responsible for the destruction of globe by our own. So, we need to respect the nature and follow her command. And go for sustainable development by which we can enjoy the bless of nature for a long time and give a good moment to our future generation also.

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## Sustainable Development and Industrial Growth in India

21

Dr. Jaswant Saini

*"I have faith that the next generation of Indians, and the generation after that, will eliminate the scourge of poverty and make India rich. Then, the poor country would have deserved its inheritance".*

– P. Chidambaram

### Introduction

India is the new global buzzword. The economy growing at a phenomenal rate, combined with a flourishing democracy is making people sit up and take notice across the world. Yet, it is at cross-roads today. It is far from reaching its true potential. The country remains shackled in corruption, red tape, age old social barriers and a puzzling lack of transparency. Growth is not uniform across sectors; and large cross-sections of the population remain outside its purview. Several social, political and economic factors need to be tackled for sustaining a high rate of growth, as well as to make this growth inclusive. Elimination of child labour, women empowerment, removal of caste barriers and an improvement in work culture are just a few of the things the Indian society needs to introspect on. Tackling corruption in high places, removing the ills of the electoral system, evading politics of agitations and keeping national interest above petty politics may not be too much to ask of the country's policy makers. Rapid growth in the rural economy, well planned and targeted urban growth, infrastructure development, reforms in education, ensuring future energy needs, a healthy public-private partnership, intent to secure inclusivity, making all sections of society equal stakeholders in growth, and above all good governance will ensure that India achieves what it deserves.

Of the eight richest people in the world four are Indian, but the irony still remains that there's a marginal farmer in the interior of Maharashtra, who is struggling to feed his five children, the youngest of whom is a son, uneducated and unemployed, with four sisters, all of marriageable age, whose marriage the farmer cannot afford. Try telling the farmer that the economy is growing at a handsome nine percent per annum, hardly consolation for the empty stomachs his children go to bed every night<sup>2</sup>.

Sustainable Development is a modern fashionable phrase which is frequently used in social, economic, scientific, legal, business and political circles. The critics of the phrase aver that the term 'sustainable development' is not capable of any precise, brief or final meaning of universal acceptance. It conveys different meanings to different people. An environmentalist would interpret it as ample heritage for future generations. A legal scholar would describe it as balanced synthesis of environmental and developmental imperatives. An economist would view it as economic growth which can be sustained for generations. A businessman might interpret it  
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<sup>2</sup>Approach Paper To Eleventh Five-Year Plan m(2007-2012) H.P.Planning Department Government of Himachal Pradesh ,Shimla.

as sustainable profits. Politicians find their vote bank in the phrase and adopt it in their election campaign.

Sustainable Development is the process in which development can be sustained for generations. It means improving the quality of human life while at same time living in harmony with nature and maintaining the carrying capacity of the lift supporting eco-system. Development means increasing the society's ability to meet human needs. Economic growth is an important component but cannot be a goal in itself. The real aim must be to improve the quality of human existence to ensure people to enjoy long, healthy and fulfilling lives.

### **Historical Development**

The idea of sustainability came out of the 1972 UN Stockholm Conference on the Human Environment, which was the first UN meeting that discussed the preservation and enhancement of the environment. It proclaimed that:

*"The protection and improvement of the human environment is a major issue which affects the well-being of peoples and economic development throughout the world; it is the urgent desire of the peoples of the whole world and the duty of all Governments."*

The concept of sustainable use of earth's resources is an ancient one. Without the principles of sustainability as a way of life, humans would not have survived in the twentieth century. The principle of sustainable development received impetus with the adoption of Stockholm Declaration in 1972, World Conservation Union (IUCN) with the advice and assistance of the United Nations Environment Programme (UNEP), World Charter for Nature of 1982, Report of the World Commission on Environment and Development under the chairmanship of Geo Harlem Brundtland (Brundtland Report), Our Common Future of 1987, the document Caring for the Earth : A strategy for the Sustainable Living developed by the second world conservation project comprised of the representatives of the IUCN, UNEP and the Worldwide Fund for Nature. The concept of sustainable development is the foundation stone of the Montreal Protocol for the Protection of Ozone Layer of 1987 and the instruments adopted at the UN Conference on Environment and Development<sup>3</sup>.

### **Definition**

The Brundtland Report defines, 'sustainable development' as '*development that meets the need of the present generation without compromising on the ability of the future generations to meet their own needs.*' The report emphasizes that sustainable development means integration of economics and ecology in decision making at all levels.

The Caring for the Earth document defines 'sustainability' as 'a characteristic or state that can be maintained indefinitely' whereas 'development' is defined 'as the increasing capacity to meet human needs and to improve the quality of human life.' This means that sustainable development would imply improving the quality of human life within the carrying capacity of the supporting ecosystems.

The concept of sustainable development rejects the old notion that development and environment are synthesis of each other. Both are complimentary are mutually supportive.

### **Elements of Inclusive Growth**

According to Prime Minister Sri. Manmohan Singh, the key components of the inclusive growth strategy included a sharp increase in investment in rural areas, rural infrastructure and agriculture surge in credit for farmers, increase in rural employment through a unique social safety net and a sharp increase in public spending on education and health care. The five interrelated elements of inclusive growth are:

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<sup>3</sup>(World Summit) held at Rio in 1992

1. Poverty Reduction and increase in quantity and quality of employment.
2. Agriculture Development
3. Social Sector Development
4. Poor quality delivery systems
5. Achievement of 119th rank among 170 countries on Human Development index.
6. Social indicators are much lower for scheduled castes and scheduled tribes.
7. Undernourishment among children is one major problem.
8. Since BPO brought the multi culture environment in India, this sector is facing under rescuer pressure due to global recession.

Social advancements in India are still at lower growth due to the strong influence of culture and regional disparities.

### **Need For Inclusive Growth in India**

The following factors encouraged the India to concentrate more on inclusive growth.

1. India is the seventh largest country by area and second by population. It is the twelfth largest economy at market exchange rate and fourth largest by PPP. Yet, India is far away from the development of the neighbourhood nation, i.e., China.
2. The exclusion in terms of low agriculture growth, low quality employment growth, low human development, rural-urban divides, gender and social inequalities, and regional disparities etc. are the problems for the nation.
3. Reducing of poverty and other disparities and raising of economic growth are the key objectives of the nation through inclusive growth<sup>4</sup>.
4. Political leadership in the country plays a vital role in the over all development of the country. But, the study has found that politicians in India have a very low level of scientific literacy.
5. Studies estimated that the cost of corruption in India amounts to over 10% of GDP. Corruption is one of the ills that prevent inclusive growth.
6. Although child labour has been banned by the law in India and there are stringent provisions to deter this -inhuman practice. Still, many children in India are unaware of education as they lives are spoiled to labour work.
7. Literacy levels have to rise to provide the skilled workforce required for higher growth.
8. Economic reforms in the country are besieged by out dated philosophies and allegations by the politicians and opposition parties in India.
9. Achievement of 9% of GDP growth for country as a whole is one of the boosting factor which gives the importance to the Inclusive Growth in India.
10. Inclusiveness benchmarked against achievement of monitorable targets related to (i). Income & Poverty, (ii) education, (iii) health, (iv) women & children, (v) infrastructure, (vi) environment.
11. Even at international level also, there is a concern about inequalities and exclusion and now they are also taking about inclusive approach for development

### **Sustainable Development and International Law**

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<sup>4</sup>Centre for Budget and Governance Accountability (CBGA) (2009) 'How Inclusive is the Eleventh Five-Year Plan?' People's Mid-Term Appraisal. New Delhi: Centre for Budget and Governance Accountability.



International Law is an increasingly important mechanism in the quest for sustainable development. International customary law as well as conventional law contain provisions which deals with the protection and promotion of the environment. The maxim '*sic utere tuo ut alienum laedas*' insists on the use of property in such a manner so as not to injure another's property. The maxim requires that developmental activities should take place in such a manner that property of others is not damaged.

In 1972, the UN Conference on Human Environment was held at Stockholm where a wide range of resolutions were adopted which formed an action plan for international co-operation on environmental matters. It produced Stockholm Declaration consisting of 26 principles which opened the floodgates for subsequent developments in the area of environmental protection. The United Nation Environmental Programme was also established under the auspices of the Stockholm Conference. The conference agenda was divided into six main areas. Development and environment appears as the fifth main area of the conference agenda. The Conference was also witnessed, at initial stages, altercation between developing and developed states over the impact of environmental protection and development. However, the confrontation was later reconciled. It was recognized that the new international environmental order could be constructed only on the foundation of international co-operation. The Conference projected the fact that the precondition for building new international environmental order is international co-operation and not confrontation. This led to the adoption of the Stockholm Declaration which makes references to development and environment.

To achieve sustainability, the Vienna Convention to Prevent the depletion of Ozone Layer was adopted which served as a framework convention and laid down broad guidelines. The Convention was followed by Montreal Protocol which came up in 1987. The protocol witnessed various adjustments and amendments from time to time. These instruments aim at restricting and regulating developmental activities in a manner that ozone depleting substances are gradually phased out.

In June 1992, the UN Conference on Environment and Development (UNCED) was held at Rio de Genero wherein more than 170 governments participated. UNCED's mission was to put the world on a path of sustainable development which aims at meeting the needs of the present without compromising on the ability of the future generations to meet their own needs. UNCED heralded a new global commitment to sustainable development premised on the interrelatedness of human activity and the environment. UNCED produced five documents, viz. Rio Declaration on Environment and Declaration, Convention on Climate Change, Convention on Bio- Diversity, Forest Principles and Agenda 21. In addition, the UN Commission on Sustainable Development was also established.

#### **Status of Sustainable Dvelopment in India**

Indian Judiciary has demonstrated exemplary activism to implement the mandate of sustainable development. In the past, Indian Courts did not refer expressly to sustainable development but implicitly gave effect to it. In Rural Litigation and Entitlement Kendra, Dehradun v. State of UP<sup>5</sup>, the SC was faced with the problem of the mining activities in the limestone quarries in Dehradun-Mussoorie area. This was the first case of its kind in the country involving issues related to environment and ecological balance and brought into sharp focus, the conflict between development and conservation. In this case, Supreme Court emphasised the need for reconciling development and conservation in the largest interest of the country. This

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<sup>5</sup>AIR 1985 SC 652

exercise was done by the Himanchal Pradesh HC in *Kinkri Devi v. State*<sup>6</sup> and also in *General Public of Spoon Valley v. State*<sup>7</sup>.

In *Vellore Citizen Welfare Forum v. UOI*<sup>8</sup>, it was found that a number of tanneries in Tamil Nadu discharged untreated effluents into agricultural fields, roadsides, water-ways and open lands. The untreated effluents were finally discharged into river which was the main source of water supply to the residents. The Supreme Court held that the concept of 'Sustainable Development' was accepted as a part of the customary international law to strike a balance between ecology and development. It was further held that the 'precautionary principle' and the 'polluter pays principle' constituted essential features of 'sustainable development'. Justice Kuldip Singh referred to the environmental principles of the international environmental law and stated that the 'precautionary principle', 'polluter pays principle' and the special concept of onus of proof have merged and governs the law of our country, As is clear from Articles 47, 48A and 51A(g) of the Indian Constitution and that in fact various environmental statutes incorporate these concepts impliedly. In view of the constitutional and statutory provisions, the Supreme Court held that the 'precautionary principle' and the 'polluter pays principle' are a part of the Indian Environmental Law.

Moreover, SC also directed the Central Government to establish an authority under Section 3(3) of the Environment Protection Act 1986. The authority so established shall implement the 'precautionary principle' and the 'polluter pays principle'. Hon'ble Justice Kuldip Singh also criticized the in action of the Central Government to establish such and authority and also observed that an authority headed by a retired judge of the High Court and an expert in the field of environmental protection must be constituted. Since then, Government has issued notifications for the establishment of an authority and for environment impact assessment.

In *A.P. Pollution Control Board v. MY Nayadu*<sup>9</sup>, the Supreme Court affirmed that the 'precautionary principle' and the 'polluter pays principle' are a part of the Indian Environmental Law. This case involves the grant of consent by the pollution board for setting up an industry by the respondent company for the manufacturing of hydrogenated castor oil. The categorization of the industry in the red, orange and green was made and the respondent industry was included in the red category. The company applied for seeking clearance to set up the unit under Section 25 of the Water (Prevention Control of Pollution) Act. The board rejected the application for the consent on the ground that the unit was a polluting unit and would result in the discharge of solid waste containing nickel, a heavy metal and also hazardous waste under Hazardous Waste (Management and Handling) Rules 1989. The respondent company appealed under Section 28 of the Water (Prevention Control of Pollution) Act, 1974. The appellate Authority decided that the respondent industry was not a polluting industry and directed the Board to give its consent for establishment of the respondent industry on such conditions as the board may deem fit. In writ petition filed in the HC, the division bench directed the Board to grant consent subjected to such condition as might be imposed by the board. It was against the said judgement that the Pollution Control Board filled various appeals in Supreme Court. The Supreme Court discussed the evolution of the principle 'precautionary principle' and explained its meaning in detail.

The Supreme Court expressed approval of the Vellore judgement and treated "precautionary principle" as a part of Indian Environmental Law.

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<sup>6</sup>AIR 1987 HP 4

<sup>7</sup>AIR 1993 HP 52

<sup>8</sup>AIR 1996 SC 2715

<sup>9</sup>AIR 1999 SC 812

The above quoted judgements have significant impact on the specialised environmental legislations in India. The judgements are a pointer for Pollution Control Board to grant consent for setting up industrial units on the basis of the 'precautionary principle'.

### **Problems before Inclusive Growth Strategies in India**

For a developing country like India, the need of inclusive growth is vital to achieve the over all progress of the country. Though it is positive for macro-economic stability, financial year of 2008-09 resulted in slow down growth, mostly from the spillover effects of the weakening of the global economic momentum and volatile financial markets. The following problems are the major concerns for developing countries like India to achieve the inclusive growth. They are:

#### **1. Poverty:**

Percent of population living under the poverty line, which is 356.35 rupees or around \$7 a month in rural areas. The World Bank estimates that 456 million Indians<sup>10</sup> now live under the global poverty line of \$1.25 per day (PPP). This means that a third of the global poor now reside in India. However, this also represents a significant decline in poverty from 60 percent in 1981 to 42 percent in 2005, although the rupee has decreased in value since then, while the official standard of 538/356 rupees per month has remained the same. Income inequality in India is increasing<sup>11</sup>. On the other hand, the Planning Commission of India uses its own criteria and has estimated that 27.5% of the population was living below the poverty line in 2004–2005, down from 51.3% in 1977–1978, and 36% in 1993–1994.<sup>12</sup>

The source for this was the 61st round of the National Sample Survey (NSS) and the criterion used was monthly per capita consumption expenditure below Rs. 356.35 for rural areas and Rs. 538.60 for urban areas. 75% of the poor are in rural areas, most of them are daily wagers, self-employed householders and landless labourers.

A proportionally large share of poor is lower castes. Many see the caste system as a system of exploitation of poor low-ranking groups by more prosperous high-ranking groups. In many parts of India, land is largely held by high-ranking property owners of the dominant castes that economically exploit low-ranking landless labourers and poor artisans, all the while degrading them with ritual emphases on their so-called god-given inferior status.

According to William A. Haviland, casteism is widespread in rural areas, and continues to segregate Dalits. Others, however, have noted the steady rise and empowerment of the Dalits through social reforms and the implementation observations in employment and benefits.

#### **2. Employment**

Employment considered as one of the huge problems for inclusive growth in India. Raising population at a great speed after independence showed its impact on employment. The unemployment became the big worry to the development of the country. Since poverty is much higher than unemployment, employment is the only source to eradicate poverty. The quality and quantity of employment in India is very low due to illiteracy and due to over dependency on agricultural employment. The quality of employment is also a problem.

Unorganized employed people in India are around 85%. Workers in this sector do not have social security. The generation of productive employment for labour force in the economy, as employment is a key to inclusive growth is the harder task for the country. The country is also facing in employment generation in all sectors, regions and for all socio economic groups

<sup>10</sup>42% of the total Indian population

<sup>11</sup>Gini coefficient: 32.5 in year 1999- 2000

<sup>12</sup>Kalirajan, K., Shand, R.T. and Bhide, S. (2010) Strategies for Achieving Sustained High Economic Growth. New Delhi: Sage.

particularly for poorer sections of population, backward regions, lagging sectors and SC/ST/OBC/women etc.

### **3. Agriculture**

Traditionally, India is considered as the agricultural based country. As the majority of Indians are engaged in agriculture for employment, the recent developments in the other sectors decreased this major sector's growth. Some of the problems in Indian agriculture are:

- a) Long term factors like sharp decline in per capita land availability, shrinking of farm size
- b) Slow reduction in share of employment
- c) Low labour productivity in agriculture and the gap between agricultural and non-agricultural is widening.
- d) Decline in yield growth due to land and water problems, susceptibility to world commodity prices, farmer's suicides.
- e) Disparities in growth across regions and crops, i.e., growth rate declined more in rain fed areas.
- f) Thus these problems became the hurdles in the key area for the economic development of the nation, i.e., agriculture.

### **4. Problems in Social Development**

Social development is also one of the key concern in inclusive growth. The social development became the hot criteria in the recent past in India. Social development also facing some problems which is making the path critical to inclusive growth in the country.

The vision of inclusiveness must go beyond the traditional objective of poverty alleviation to include equality of opportunity, as well as economic and social mobility for all sections of society, with affirmative action for SCs, STs, OBCs, minorities and women. There must be equality of opportunity to all with freedom and dignity, and without social or political obstacles. This must be accompanied by an improvement in the opportunities for economic and social advancement. In particular, individuals belonging to disadvantaged groups should be provided special opportunities to develop their skills and participate in the growth process.

This outcome can only be ensured if there is a degree of empowerment that creates a true feeling of participation so necessary in a democratic polity. Empowerment of disadvantaged and hitherto marginalized groups is therefore an essential part of any vision of inclusive growth. India's democratic polity, with the establishment of the third layer of democracy at the Panchayati Raj Institution (PRI) level, provides opportunities for empowerment and participation of all groups with reservations for SCs, STs, and women. These institutions should be made more effective through greater delegation of power and responsibility to the local level.

### **5. Regional Disparities**

Regional disparities are also a major concern for India due to different culture and traditions. Traditional cultures, caste system and the rich & poor feelings favoured some specific groups as a result, the regional disparities raised in India before and after independence. And also, due to the development in agriculture and industrial sector some regions in India developed fast and some other places still are facing the scarcity. Some of the regional disparities problems are:

- a. Per capita income is highest at Rs.16,679 in Punjab and lowest per capita income is at Bihar with Rs.3557.
- b. Female infant mortality varies from 12 in Kerala to 88 in Madhya Pradesh.
- c. Female literacy varies from 33.6% in Bihar to 88% in Kerala.
- d. Richer states grew faster than the poorer states

### **Proposed XIIth Five Year Plan and Inclusive Growth**

As India's government prepares to submit its approach paper for its 12th five-year plan<sup>13</sup> (a plan which covers years 2012 to 2017), the Planning Commission's focus on instilling "inclusive growth" is making headway. The plan is expected to be one that encourages the development of India's agriculture, education, health and social welfare through government spending. It is also expected to create employment through developing India's manufacturing sector and move the nation higher up the value chain. Prime Minister Manmohan Singh, however, warned that maintaining fiscal discipline is important as well.

The commission will likely strive to enact policies that will achieve somewhere around a 10 percent growth rate in factories and a 4 percent growth rate in farm produce, though Prime Minister Singh has asked the plan to set the nation's growth rate firmly at 9 percent to 9.5 percent.

Come May, a view into the implementation of these goals should be apparent. A question that India's government will have to fight with, much like that of any emerging market, is whether to continue to focus on GDP growth in the face of soaring food prices and economy-wide inflation. An important aspect of generating "inclusive growth" is shifting the target of government aid to rural areas. Typically, large projects such as power generation, roads whereby freight can travel, and airports receive the lion's share of government subsidies, while rural infrastructure receives comparatively little.

As indicated from the planning commission's presentation to the prime minister, the quantitative metrics known thus far in the early stage of the five-year plan are:

1. A target of GDP growth in the 9 percent to 9.5 percent range
2. An increase in literacy rates to 100 percent between the plan's period from 2012 to 2017
3. An increased expenditure on health from 1.3 percent to 2.0 percent of GDP<sup>14</sup>.

In a gain for industry, the planning commission indicated that it aims to have industry and manufacturing-related activities grow by 11 percent over the next five years, contrasted to 8 percent over the previous 11th five-year plan. It also aims to undertake somewhat unclearly defined, but certainly well-intentioned, structural and regulatory reforms to facilitate investment.

To address that increase in demand, the planning commission recommended that all methods of current energy production and distribution be developed, from coal to nuclear energy to solar and wind, and proposed that existing taxes on electricity should not be raised.

The Basic objective as stated in the Planning Commission presentation is "Faster, More Inclusive and Sustainable Growth"<sup>15</sup>. It was said that the priority areas in 12<sup>th</sup> Five Year Plan would be Betterment of Farmers, Small Industries, Cottage Industries etc. It is asserted by the Planning Commission that for growth to be more inclusive we need:

- a) Better Performance in agriculture .
- b) Faster Creation of Jobs, especially in manufacturing.
- c) Stronger Efforts at health, education and skill development.

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<sup>13</sup>Krishna, A. (2010) *One Illness Away: Why People Become Poor and How They Escape Poverty*. Oxford: Oxford University Press.

<sup>14</sup>Mehta, J. and Venkatraman, S. (2000) 'Poverty Statistics.' *Economic & Political Weekly* 35(27),1-7 July;

<sup>15</sup>Planning Commission (2006) 'Report of the Steering Committee on Rapid Poverty Reduction and Local Area Development for the Eleventh Five- Year Plan (2007-2012).' New Delhi: Planning Commission;

- d) Improved effectiveness of programs direct aimed at the poor.
- e) Special programs for socially vulnerable groups.
- f) Special programs for disadvantaged or backward regions.

The objectives and targets of the Proposed twelfth Five Year Plan put emphasis on the achievement of Inclusive Growth but it is still a burning question that whether this time India would be able to achieve all the targets decided for the achievement of Inclusive Growth or like 11<sup>th</sup> Five year Plan it would lag behind and the Inclusive Growth will be seen only in papers.

### **Conclusion**

Sustainable development ties together concern for the carrying capacity of natural systems with the social challenges faced by humanity. As early as the 1970s, "sustainability" was employed to describe an economy "in equilibrium with basic ecological support systems." Ecologists have pointed to the time of growth, and presented the alternative of a "steady state economy" in order to address environmental concerns.

The concept of sustainable development has in the past most often been broken out into three constituent parts: environmental sustainability, Economic sustainability and socio political sustainability. More recently, it has been suggested that a more consistent analytical breakdown is to distinguish four domains of economic, ecological, political and cultural sustainability. This is consistent with the UCLG move to make 'culture' the fourth domain of sustainability. Other important sources refer to the fourth domain as 'institutional' or as 'good governance.'

Realization of sustainable development and sustainable production and meeting the related requirements cause massive challenges for the manufacturing industry. Hence we can conclude that better understanding of the different aspects of sustainable development helps the companies to adapt more sustainable practices. The results in this study are presented in a framework consisting of six categories. For each category the challenges, means and motivation for realization and objectives are presented. The obtained results provide further and in depth information of sustainable development and sustainable production within the manufacturing industry for both the industry and academia.

## ECO-Tourism

22

Komal Pawariya

### Abstract:

*Uttarakhand is traveler's paradise. People love to come here to watch and explore natural heritage. Tourism is one of the most important industries in Uttarakhand on which the states economy thrives.*

*The state has 12 national parks and wildlife sanctuaries which covers almost 14% of the total area of state. Also the state is adorned with world heritage sites of Nanda Devi Biosphere and valley of flowers national park. State is blessed with the 1'st national park of the Indian sub continent-the Corbett national park.*

*There is a great need to preserve and conserve this heritage. In this direction we often talk about sustainable tourism. Eco tourism is a type of such tourism which is sustainable and economically viable.*

*Basically, ecotourism deals with living parts of the natural environments. Ecotourism focuses on socially responsible travel, personal growth, and environmental sustainability. Ecotourism typically involves travel to destinations where flora fauna and cultural heritage are the primary attractions*

*This type of tourism minimizes negative impacts of conventional tourism, which may result in disaster as well. It helps in building environmental awareness and provides financial benefits for conservation. It also involves respecting local culture, empowerment of local people and supports human rights. Conservation of biological diversity and cultural diversity comes under its ambit.*

*It helps in minimizing damage caused by tourism. Ecotourism strives to minimize the adverse affects of hotels, trails, and other infrastructure by using either recycled materials or plentifully available local building materials, renewable sources of energy, recycling and safe disposal of waste and garbage, and environmentally and culturally sensitive architectural design.*

*Ecotourism helps raise funds for environmental protection, research and education through a variety of mechanisms, including park entrance fees, tour company, hotel, airline and airport taxes and voluntary contributions. Ecotourism promotes the involvement of local community in tourism industry .it ensures financial benefit of local communities and preservice of their culture.*

*More importantly, if ecotourism is to be viewed as a tool for rural development, it must also help shift economic and political control to the local community, village, cooperative, or entrepreneur. Ecotourism is not only 'greener' but also less culturally interfering and exploitative than conventional tourism.*

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*Whether called nature tourism or ecotourism, recreational and educational travel based on natural attractions is a promising means of advancing social, economic, and environmental objectives in developing countries. It offers countries new opportunities for small-enterprise investment and employment and increases the national stake in protecting their biological resources.*

*Recently, Uttarakhand witnessed a great disaster last year, besides the natural causes there were several other causes which were directly or indirectly man made. excess of population in hilly areas during pilgrimage time exploitation of natural resources cutting of mountains, technology intensive tourism were among some main causes behind this scene. Ecotourism seems to be a correct tool to improve tourism and improve sustainability of nature .there is a need to make and implement proper policies regarding ecotourism in a state like Uttarakhand which is rich in its natural and cultural diversity.*

**Key Words:** World tourism organization, International ecotourism society, Flora, Fauna, Sustainable development.

## **Introduction**

**Rig Veda**, the most ancient of the scriptures says, **“there is no happiness for him who does not travel. The fortune of him who is sitting sits, it rises when he rises, it sleeps when he sleeps, it moves when he moves.**

**Therefore, Wander”.**

Thus in India since ancient times travelling is considered as a great pleasure which recreates and rejuvenates a person with immense peace and fulfillment. There are several places in India which are considered as good tourist spots, out of which Uttarakhand really justifies the tagline of Indian tourism i.e. “incredible India”.

Uttarakhand is traveler’s paradise. People love to come here to watch and explore natural heritage. Tourism is one of the most important industries in Uttarakhand on which the state’s economy thrives. Since the ancient times state has remained as the symbol of peaceful residence. Saints used to come in the valleys of this great place to perform ascetic rituals. It was not a coincidence that after his first visit to Uttarakhand Mahatma Gandhi could not restrain himself from alluding the region as **‘the Switzerland of India’**. Pilgrimages to these heights dating back to more than 1500 years are found recorded in authentic documents and Uttarakhand still attracts millions of devout people who come here with the chaste objective of spiritual emancipation and revelation.

A major portion of human history has been created by travels - treatises and historical accounts are filled with stories of men who travelled to conquer, to convert, to trade, to plunder and most importantly to quench their curiosity. Every mountain and ocean stimulated human curiosity to see and know beyond the mundane. This unremitting beckoning upset his sleep and logic but invigorated his fancy. The obsession for the unknown was an indivisible element of that fancy. And men, as always, have been known to live and die for their fancies. Now, in the changed



circumstances of the 21st century men still travel mostly when they get tired of routine circumstances or to put it more starkly whenever they find spare time from their demanding and hectic routines.

### **Objective:**

State is blessed with a rare bio-diversity, almost 175 rare species of aromatic & medicinal plants are found in the State. The climate is also suitable for a variety of commercial opportunities in horticulture, floriculture and agriculture. It has a vast tourism potential in adventure, leisure, and eco-tourism.

The State is rich in mineral deposits like limestone, marble, rock phosphate, dolomite, magnesite, copper, gypsum, etc. There is a great need to preserve and conserve this heritage. In this direction we often talk about sustainable tourism. Eco tourism is a type of such tourism which is sustainable and economically viable.

Ecotourism helps raise funds for environmental protection, research and education through a variety of mechanisms, including park entrance fees, tour company, hotel, airline and airport taxes and voluntary contributions. Ecotourism promotes the involvement of local community in tourism industry .it ensures financial benefit of local communities and preservice of their culture.

More importantly, if ecotourism is to be viewed as a tool for rural development, it must also help shift economic and political control to the local community, village, cooperative, or entrepreneur. Ecotourism is not only 'greener' but also less culturally interfering and exploitative than conventional tourism.

### **Analysis and interpretation**

Uttarakhand was formed on 9th November 2000 as the 27th State of India. It was carved out of northern Uttar Pradesh. Located at the foothills of the Himalayan mountain ranges, it is largely a hilly State, having international boundaries with China (Tibet) in the north and Nepal in the east. It's neighboring state are Himachal Pradesh and Uttar Pradesh. It is rich in natural resources especially water and forests with many glaciers, rivers, dense forests and snow-clad mountain peaks. The state is enshrined with Char-dhams, the four most sacred and revered Hindu temples of Badrinath, Kedarnath, Gangotri and Yamunotri is truly known as Dev Bhumi. Dehradun is the Capital of Uttarakhand. It is one of the most beautiful resort in the sub mountain tracts of India, known for its scenic surroundings. The town lies in the Dun Valley, on the watershed of the Ganga and Yamuna rivers.

The state has 12 national parks and wildlife sanctuaries which covers almost 14% of the total area of state. Also the state is adorned with world heritage sites of Nanda Devi Biosphere and valley of flowers national park. State is blessed with the 1'st national park of the Indian sub continent-the Corbett national park. The oldest national park on the Indian sub-continent, Jim Corbett National Park, is a major tourist attraction. The park is famous for its varied wildlife and **project tiger** run by the Government of India. In addition the state boasts Valley of Flowers

National Park and Nanda Devi National Park in Chamoli District, which together are a UNESCO World Heritage Site.

Whether called natural tourism or ecotourism, recreational and educational travel based on natural attractions is a promising means of advancing social, economic, and environmental objectives in developing countries. It offers countries new opportunities for small-enterprise investment and employment and increases the national stake in protecting their biological resources.

With levels of literacy higher than the national average, the State has abundant availability of quality human resources. Within a short span of its existence, Uttarakhand has emerged as a significant destination for investments in manufacturing industry, tourism and infrastructure. Emphasis is on stimulating all three sectors of its economy (agriculture, industry and services), to their fullest potential in tandem with the geographic profile of the state. The Government of Uttarakhand has undertaken several policy measures and incentives in order to encourage inflow of investment into the various sectors of its economy including tourism sector.

There could be scores of other motives as well. Whatever may the motivation be, it is a truth that every journey does detune and retune one's intimate self. A whole lot ensues between embark and disembark. Some strings get tightened and some get loosened.

the state of Uttarakhand open up countless inconceivable dimensions of travel that might never even have occurred to you.

The Uttarakhand experience might leave you stranded for words, when someone asks you to define the simple word 'beauty'. Beauty is so inherent to almost all things Uttarakhand stands for – the magnanimous Himalayas, the holiest of the rivers, the spiritual mystery, stunning landscapes, the incessantly colorful play of nature, enchanting history carved in ancient stones, a mesmerizing floral and faunal plethora and the simplest of the people. Myths, anecdotes and stories are part of every visual that unfolds itself to the eyes of the beholder.

Today, these mountains are no longer restricted to the religious or the spiritual – as a traveler one can get pleasure from mountaineering, trekking, mountain biking, rock climbing or simply strolling amongst the highest mountainous terrains in the world.

The streams that originate in the deepest hideaways of the glorious Himalayas of Uttarakhand flow on to feed rivers which have nourished a civilization that has been born and brought up in the Indo-Gangetic soil of the country. These rivers are not just water bodies of enormous proportions, but are also impressive streams commanding worship and reverence with their source in the holy crevices where gods and goddesses reside. The water of the holiest of all Hindu rivers, the Ganga, is believed to wash away and purge the body, mind and soul of all impurity.

The lush green forests of this region are home to an astounding multiplicity of flora and fauna, some of which fall into the category of endangered species. The wildlife bursts with hundreds and thousands of species, making an exploratory trip to Uttarakhand even more exciting, in the light of the fact that many species are yet to be discovered.

World-renowned mountain and wildlife institutes, national parks and forest reserves in this region pursue scientific research putting in enormous efforts to preserve and protect the land's bounty, encouraging people to participate in this noblest of causes.

A description of the charismatic beauty of Uttarakhand would be incomplete without the mention of people who inhabit this blessed country – simple, willing to help and hardworking people of the state are as diversified as the elements of nature. Several indigenous tribal groups peacefully co-exist with others, simultaneously keeping their distinct cultures alive. Apart from being a unique tourism destination, Uttarakhand is a goldmine for anthropologists, historians, ornithologists, linguists, geologists ... you name the discipline and the state has something on offer.

Culture and people are very closely associated with each other. All social units develop a culture. Thus it is the inhabitants of a specific region that collectively contribute to form that extraordinary cornucopia of life we call culture.

In case of Uttarakhand, the Land of Gods, natural diversity and the element of the Himalaya's unparalleled beauty and sanctity add a new dimension to the word 'culture'. The people of the state are as diverse as the landscape. The ancient cultural traditions of Uttarakhand are deep rooted primarily in religion. Music, dance and arts are a manifest for the firm religious bonds of the people.

All the local traditions of the state are determinedly attached to nature and its bounty. No legends or myths are complete without nature, seasons or the Himalayas being integral part of them. The people spare no opportunity to celebrate this bountiful natural, social and religious diversity.

These fairs have now become remarkable stages for all sort of uncluttered social, cultural and economic exchange. Visitors from far and wide are drawn to these events in multitudes.

The state offers journey-options to both – the religious and the spiritual.

Several indigenous tribes and communities flourish in this state today maintaining their distinct cultural heritage and traditions. The several fairs and festivals celebrated by the tribes such as Bhotias (Shaukas), Tharus, Buxas and Jaunsaris are opprtunies for the locals and the visitors to witness these events as opportunities to keep the traditional modes of life and art alive apart from providing them the recognition they so strongly deserve.

Botanical gardens come heritage centers and themes are being established in this direction in order to highlight the biodiversity of Uttarakhand. Integrated tourism packages are also being developed and established and steps have been taken to promote eco friendly tourism activities like jungle safaris, nature walks mountain treks, campaigning etc. In a manner that also promotes awareness and sensitivity towards environment conservation.

Tree plantation as a tourism related activity should be given special attention. Action should be taken in planned manner to deal with the problem of non biodegradable wastes. The various fairs and festivals traditional life styles and customs dress and food habits of the people of

Uttarakhand should be given wide publicity so that tourist and visitors can get a chance to see of the rich and varied culture of Uttarakhand.

Efforts should be made to develop the local fairs and festivals into tourism events and attractions .action will also be taken for preservation of buildings and places of archaeological interests.

Uttarakhand has a rare diversity of flora and fauna .this makes it an ideal area for developing eco tourism, Projects and activities. All these activities have to be conducted in a manner that promotes awareness of environment and help maintain fragile ecological balance.

The tourism policy makes an attempt to analyze the tourism potential and strengths of uk along with the weaknesses and challenges which lie ahead.

Expenditure on the schemes for tourism development and promotion in Uttarakhand has progressively increased.In 5'th five year plan of state 8600 lakh rs have been allocated to this sector. which is more than 10 times what it was in a1980- 1985 .

The state has always been a destination for mountaineering, rock climbing and hiking in India. A recent development in adventure tourism in the region has been whitewater rafting in Rishikesh. Due to its proximity to the Himalaya ranges, the place is full of hills and mountains and is suitable for trekking, climbing, skiing, camping, rock climbing, and paragliding.

Complete range of resources for village, tribal culture, nature, leisure, resort and soft and hard adventure tourism. Uttarakhand is indeed a unique destination of India with almost unlimited resources for all sorts of tourism. There are however a number of pre Conditions to be met before the full potential of the many unique resources can be utilized for both Domestic and International Tourism.

Improvement in public private cooperation and partnership in the state within all sectors of the tourism system.

The primary aim should be to provide sustainable livelihoods and, in particular, to empower women and other disadvantaged groups. To support and continue this some Government agencies and leading officials of Uttarakhand have launched a campaign under the slogan **“10,000 rooms in 1000 villages”**.

Village tourism activities promoted by the Endogenous Tourism project include setting up common facilities for crafts persons, village art centers and, where appropriate, rest houses constructed in the local style using local materials to provide services to international standards. Communities are being trained in different aspects of hospitality such as reception, lodging, cuisine and housekeeping.

Despite the world renowned of the Himalayan mountains and the huge capacity of the natural environment in Uttarakhand to develop tourism based on nature appreciation and intepretation, ecotourism is relatively poorly developed in the state. This may be due to a lack of awareness of what ecotourism actually is and a limited understanding of its enormous potential to attract high quality and responsible tourists that can bring significant environmental, conservation, social and economic benefits to all sectors of the society. Attention should be drawn to provide a strategy to develop and optimize the benefits of ecotourism in Uttarakhand. This will provide a framework to progressively expand ecotourism (both in terms of its spatial coverage and product type) over time, therefore helping to build up a new significant sector of the economy that can improve livelihood opportunities for local people.

the definition of ecotourism is not widely understood by operators. therefore, it is necessary to develop an appreciation of ecotourism at all levels, including Government, tourist operators and the general public, and specifically those local communities in which ecotourism products can be developed.

Various definitions of ecotourism have been proposed by different organizations. **The International Ecotourism Society (TIES)** defines ecotourism as:

“responsible travel to natural areas that conserves the environment and sustains the well being of local people”.

**The World Conservation Union** provides a detailed description which is:

“environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature”.

**The World Tourism Organization (WTO)** defines ecotourism as:

“All forms of tourism in which the tourists’ main motivation is the observation and appreciation of nature, that contributes to the conservation of, and that generates minimal impacts upon, the natural environment and cultural heritage”.

.A more concise definition was made at the **World Ecotourism Summit in Quebec** in 2002 organized by the WTO and the United Nations Environmental Programme

(UNEP). It recognized that “ecotourism embraces the principles of sustainable tourism but holds specific characteristics that distinguish it from this wider concept, namely that it contributes actively to the conservation of natural and cultural heritage; includes local and indigenous communities in its planning, development and operation, Contributing to their well-being”.

Generating clear economic benefits that can make people realize that conservation and Care of the environment can be financially rewarding: There is seemingly a low awareness among the local population, as well as among many operators, that larger numbers of higher spending tourists would be attracted to Uttarakhand if the environment is better protected, managed and kept clean.

Providing alternative employment and income opportunities for local Communities: many of the areas of Uttarakhand which are most suited to ecotourism, namely the more isolated mountain areas, are also those where there is the greatest poverty and least job opportunities. The development of ecotourism in these areas would provide greater local opportunities in the mountains for young people, and help supplement incomes for the rural poor.

Increasing awareness towards conservation by both locals and tourists: ecotourism is an excellent conduit for attracting and educating responsible and ethical tourists that seek to make an active contribution to the environmental and social conditions of the localities they visit. In similar manner operators that are encouraged to implement and manage ecotourism products also become aware of conservation issues in their respective areas.

By its definition, ecotourism helps protect and improve the environment (unlike other forms of nature tourism which may in some cases cause harmful impacts) this form of tourism is considered to be most appropriate for Uttarakhand.

There should be focus on specific products which reflect the strengths of the available resources, notably sustainable use of wildlife; specialist ecotourism trekking; specialist wildlife observation; cultural tourism; village based tourism.

The diversity of the environment in terms of the geographical spread of landscapes and natural features, as well as the relative degrees of hardships that these present for tourists wishing to access products, means that a range of different types of ecotourists may be targeted. These may be divided into the following categories:

**General eco-tourists:** tourists with a general interest in nature who are drawn by the allure of the Himalayas and who would wish to experience the landscapes, major fauna and flora, and cultural attributes of the region (often in combination). They can include different age groups and have varied spending power according to age.

**Ecotourists Interested in Biodiversity:** these are tourists specifically interested in wildlife, both on a general basis and as specialist enthusiasts such as birdwatchers. One particular animal or habitat would usually attract both groups. Tiger or leopard viewing for example would probably attract tourists with no particular specialist knowledge but who are attracted by the exotic nature and rarity of these mammals.

The combination of ecotourism products with trekking can potentially increase the size and viability of this market. The market can consist of budget trekkers as well as higher spending tourists, the latter being potentially major contributors to conservation initiatives.

It is undertaken as part of the activity. The development of camping sites on river beaches is one example of a product that can easily be turned into ecotourism. This is also a potentially important market as ecotourism can easily be combined with other forms of nature tourism. As well as the financial benefits of introducing a new market to this tourism product, such an initiative can also have important environmental benefits. Adventure and sports tourism can sometimes have negative impacts on the environment, which could be mitigated by the introduction of an ecotourism element in the product. For example special routings for mountain biking could be introduced where the intention is to combine the sport with nature interpretation. Here environmental considerations can be taken in the selection of routes that have the least adverse impact on the environment and/or the choice of tracks that minimize soil erosion. It should also be recognized that many tourists visiting Uttarakhand will undertake different forms of tourism to which ecotourism can be an add on attraction or be combined to improve the quality of products such as rafting, trekking or cultural appreciation.

The Uttarakhand government has started promoting eco-tourism as part of the ten-year 'Green India' plan. The eco-tourism wing of the Uttarakhand government has been created to promote eco-tourism activities especially in the forest areas of the state. The eco-tourism wing seeks to draft policies and provide funds for various eco-tourism projects and provide a framework for the promotion and development of eco-tourism in the state. The plan is divided into six to seven phases, according to an ANI report.

"Ecotourism is being promoted with the help of the Chief Minister of Uttarakhand and is under the 'Green India' mission and the 'National Plan of Action and Climate Change'. Among the activities undertaken, the Uttarakhand State Forest Department has developed a cactus garden and a bamboo hut at the Himalayan Botanical Garden on Kaladhungi Road in Nainital. The newly developed cactus garden, inaugurated recently, displays a unique collection of 90 varieties of rare cactii. Besides, there are plans to construct a butterfly park, herbarium, library and a fern house, along with other facilities.

According to environmentalists, Leh, Ladakh and Uttarakhand are all favourable spots for Ecotourism. "Uttarakhand is very rich in flora and fauna. Uttarakhand are places where Ecotourism can boom.

An amalgamation of religious customs, richness of wildlife heritage, exotic mountains makes Uttarakhand a perfect representation of Indian cultural tradition. The culture of Uttarakhand, is curbed out by its wealth of music and dance. Festival, cuisine and lifestyles too have largely contributed in its enrichment.

### **Conclusion**

Basically, ecotourism deals with living parts of the natural environments. Ecotourism focuses on socially responsible travel, personal growth, and environmental sustainability. Ecotourism typically involves travel to destinations where flora fauna and cultural heritage are the primary attractions.

This type of tourism minimizes negative impacts of conventional tourism, which may result in disaster as well. It helps in building environmental awareness and provides financial benefits for conservation. It also involves respecting local culture, empowerment of local people and supports human rights. Conservation of biological diversity and cultural diversity comes under its ambit.

It helps in minimizing damage caused by tourism. Ecotourism strives to minimize the adverse affects of hotels, trails, and other infrastructure by using either recycled materials or plentifully available local building materials, renewable sources of energy, recycling and safe disposal of waste and garbage, and environmentally and culturally sensitive architectural design.

During the year 2000 111 lakh tourists visited Uttarakhand whereas the population of the state is 82lakhs only. this clearly shows large number of tourist turnout in state. In this condition it becomes necessary to conserve the natural beauty of the state and altogether promoting tourism without any hampering effects.

Recently, Uttarakhand witnessed a great disaster last year, besides the natural causes there were several other causes which were directly or indirectly man made. Excess of population in hilly areas during pilgrimage time exploitation of natural resources cutting of mountains, technology intensive tourism were among some main causes behind this scene. Ecotourism seems to be a correct tool to improve tourism and improve sustainability of nature .there is a need to make and implement proper policies regarding ecotourism in a state like Uttarakhand which is rich in its natural and cultural diversity.

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## Impacts and Mitigation Measures

23

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 R. S Rana\*\*\*

### Abstract

*Disasters are as old as human history, due to exponential increase in the population and its limitless wishes, resources have become limited. Globe is increasingly vulnerable to the hazard that causes disaster. The increased vulnerability is reflected in current disaster trends. The dramatic increase and damage caused by disaster in current past have become a cause of national as well as international concern. According to "IASC and ISDR (2000)" during past 20 years, the number of recorded disaster has doubled from approximately 200 to more than 400 per years. Recently, in June 2013, heavy rainfall has caused devastating flood and landslide across north India, especially in the state of Uttrakhand. There were a great loss of health and wealth in this disaster. Hilly states like Uttrakhand is highly prone to landslides, earthquakes, forest fire, flash flood because climate, vegetation and community status greatly vary with elevation. It is difficult to conclude what exactly has lead Uttrakhand to such a scale of denudation. The principle causes can be summed up as obstruction to the natural courses of rivers by shifting their natural flow, deforestation for roads construction, mining and hydel projects, seismotectonicity of the area, focus and mind set of peoples. A state like Uttrakhand which is vulnerable to such threats should therefore be well equipped and prepare to meet such eventualities for effective management of disaster. Therefore this study is made to take stock of the efforts of Human being on disaster management issues and mitigation measures for a safe and secure life.*

**Keywords:** *Disaster, Disaster Trend, Effective Disaster Management, Disaster Management Issues, Mitigation Measures.*

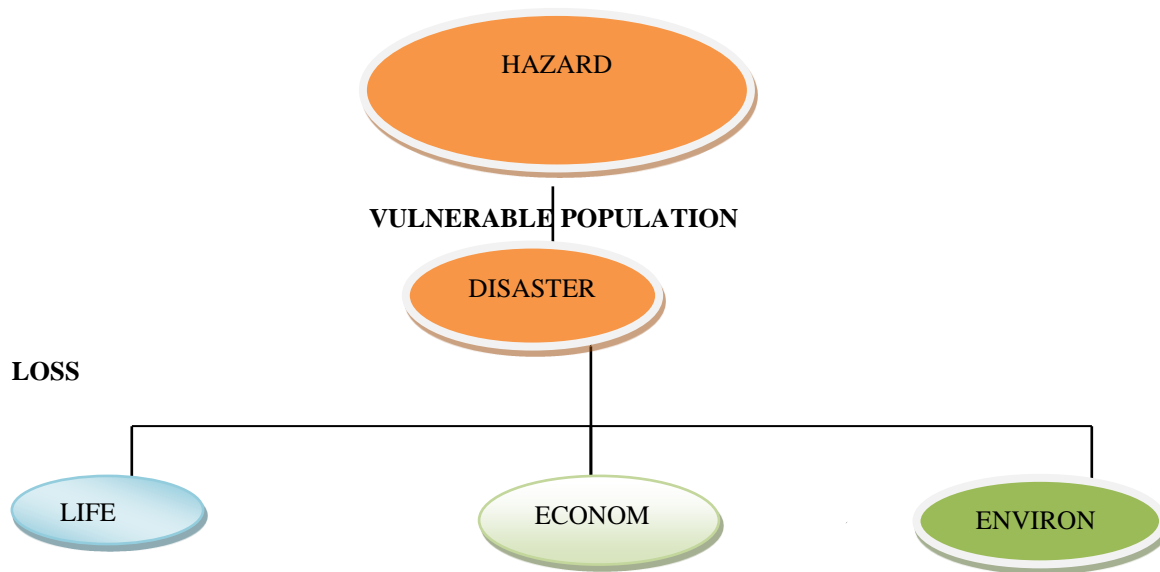
### 1.1. Introduction

Disasters are deteriorating environment which bring misfortune for the human being and other stake holders. Disasters are natural as well as man-made that negatively impact vulnerable population which destruct the structure of society. Natural disaster includes tornadoes, forest fires, floods, glaciers surge, tsunami, snow storm, earth quake, landslides etc and air pollution (smog), heat waves, epidemics, water contamination, nuclear accident, toxicological accident, building collapse are some examples of man- made disasters. Hazard lead to disasters, when a hazard affect vulnerable population, it result into massive loss of life and economy.

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### Cause and Consequences of Disaster

A hazard will be disastrous only when it affect the life and property of the people. When hazard intrudes into vulnerability, it results into disaster. But if people, environment and various elements have capacity to face the disaster, impacts of hazards can be reduced. So disasters have three components namely Hazard, Vulnerability, Capacity. We need to understand these components for proper management of disasters. The word Hazard is taken from Latin word which means luck or chance. **Hazard** is an extraordinary event, which have potential to cause harm to life and damage to property and environment. Hazards can be natural and man-made hazard. Natural hazards are natural in origin i.e. biological, meteorological and geological (flood, tsunami earthquake etc) and man-made hazards are induced by human beings such as chemical accidents, industrial accident, nuclear accidents etc. To what extent a community, structure and area can be affected by various hazard is **vulnerability**. **Capacity** is the strength of households and society to face, mitigate and recover from the disaster. Capacity is an important phenomenon for effective disaster management.

Uttarakhand is a mountainous shrub land. It has a hilly topography and nature has blessed it with all the beauties and resources. Uttarakhand is known as “Dev Bhumi” which means land of God. Uttarakhand is highly prone to landslides, earthquakes, forest fire, flash flood because climate, vegetation and community status greatly vary with elevation. The demand for a separate state Uttarakhand gained momentum in 1990 with the hope that the new state would pursue a path of development compatible with the socio economic need of the people. But, even after more than 13 years of statehood, the state leadership has succumbed to the conventional model of development with monetary wealth as the sole criteria, without any regard for the delicate eco system and the mountainous character of the state. Even the most fragile region of the state have been blindly subjected to such developmental activity as bridges, tunnels, roads, hydropower projects and high rise buildings. The deluge that ravaged most part of the state in 2013 can in no case be termed as a “freak”. The famous three weather related events in succession such that Odisha “Super cyclone in 1999, torrential rains in Mumbai in 2005 and now Uttarakhand downpour in less than 15 years , each causing massive destruction can hardly be justified “freak” weather events. It can be rightly said, “A state created to safeguard the hill people, has become a graveyard of pilgrims and local aspirations in just over a decade.”

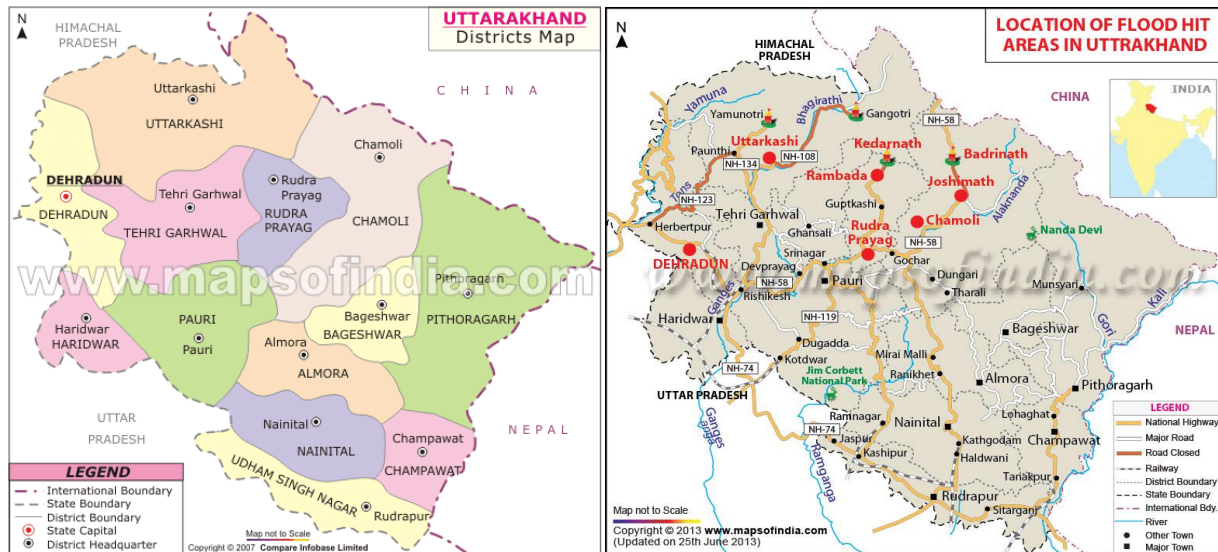
In such circumstances, every Government has the responsibility to plan on issues, strategy, etc., for ensuring the well being of its citizens. As such there is a need for the nation to plan on issues, strategy, etc., for ensuring the well beings of people in the country. As such there is a need for a policy to ensure coordination among various stake holders and also to provide Disaster Management Plans (DMP).

### Major disasters in Uttrakhand since 2000

Sr.No.	Nature of Disaster	Place	Dated	Causality/Loss
1.	Cloud Bursts	Chamoli	06.07.2004	At least 17 persons were killed and 28 injured when three vehicles were swept into the Alaknanda river by heavy landslide triggered by a cloudburst that left 5000 pilgrims stranded near Badrinath shrine area in Chamoli district.
2.	Cloud Bursts	Nachni area Munsiyari in Pithoragarh	07.08.2009	38 lives were lost in a land slide resulting from a cloudburst in nachni area near Munsiyari in Pithoragarh district.
3.	Cloud Bursts	Almora	15.09.2010	Cloud burst in Almora had swept away villages one of them being Balta, leaving a few people alive and rest entire village dead and drowned.
4.	Landslide	Bhatwari	2010	Due to heavy machines plying everyday on the Kutchra roads had weakened it, and landslides occurred more often. In this 28 shops were wiped out by land slide and about 25 others houses were destroyed completely.
5.	Landslide	Devprayag	19.06.2010 & 21.06.2010	Accident occurred near Devprayag Uttrakhand
6.	Landslide	Khula Gangotri National Highway	01.07.2011	Land slide blocked traffic on Khula Gangotri national Highway
7.	Landslide	Badrinath National Highway	08.07.2011	Heavy rainfall and landslide blocked the Badrinath National highway for 11 hours. The debris halted the traffic on the route of five different locations, leaving thousands of pilgrims stranded
8.	Landslide	Gangotri & Yamunotri National Highway	23.08.2011	Heavy rainfall, landslides blocked gangotri, Yamunotri highway leaving thousands of pilgrims and tourist stranded
9.	Cloud Bursts	Rudraprayag	14.09.2012	There was a cloudburst in Rudraprayag district killing 39 people
10.	Cloud Bursts	Kedarnath and Rambada	15.06.2013	A cloudburst was reported in Kedarnath and Rambada region. death toll may rise to 10000 and more.

### 1.2. Area of study

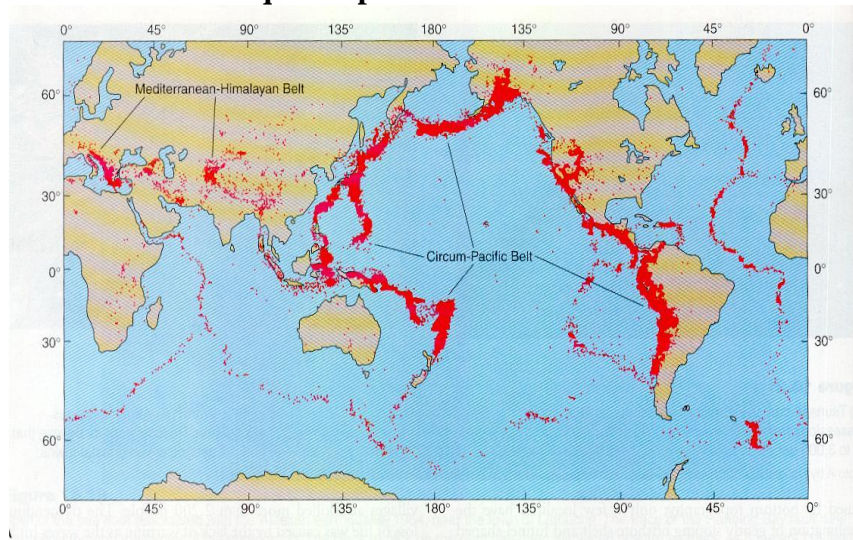
Uttarakhand lies in the lap of Himalayan ranges, in the north –west of India. It occupies 1.73% of India's total land area with 51,125 sq. km. It has a population of 10,116,752 as per 2011 census. The population density is 189 per sq. km. The state borders Tibet, Nepal, Himachal Pradesh and the UP plains districts. Dehradun, the state' capital is about 240 km away from India's capital, New Delhi. There are 13 Districts in Uttarakhand: Pithoragarh, Almora, Nainital, Bageshwar, Champawat, Uttar Kashi, Udham Singh Nagar, Chamoli, Dehradun, Pauri Garhwal, Tehri Garhwal, Rudraprayag and Haridwar (Urban) (Maps of India).



### 1.3. Disaster Management and Global scenario:

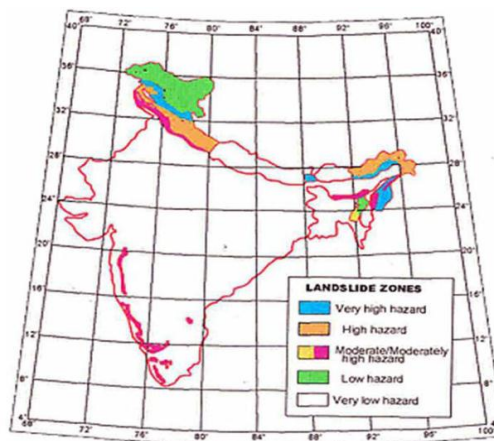
Recent events have shown that there is no country that does not stand the threat of disaster, though they may be threatened at different level. Therefore disaster management is no longer a choice. It is mandatory irrespective of where one lives. The Asian Disaster Preparedness Centre (ADPC) is a non- profit organisation supporting the advancement of safer communities and sustainable development through implementing programmes for relief and disaster prevention that reduce the impact of disaster upon countries and communities in Asia and Pacific. In 1988, UN had established Intergovernmental Panel on Climate Change (IPCC) to collect and analyse the evidence on global warming. In 1992, UN Earth Summit had set up Frame work convention on climate change and in 2009 declared climate change treaty. Asian Development Bank (ADB) has been in forefront of recognising the adverse impact of disaster on the development and promoting the incorporation of disaster reduction in development and planning. The internationally agreed agenda for reducing disaster risk and losses, the Hyogo Framework for action 2005-2015 is subtitled “Building the Resilience of Nations and communities to disaster. International Federation of Red Cross and Red Crescent society have made strategy for disaster related area. Inter-Agency Standing Committee (IASC) is the main co-ordination mechanism that brings together international actors on humanitarian issues.

### Earthquake- prone Area of the World



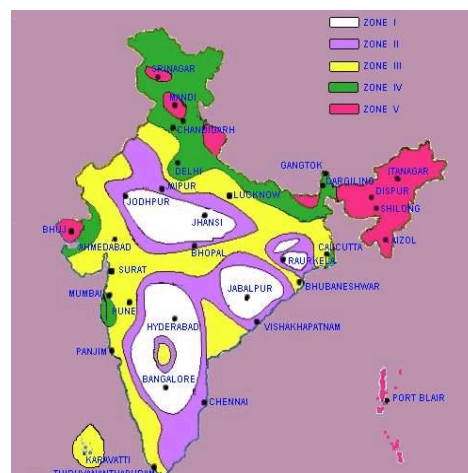
#### 1.4. Disaster Management and Indian scenario:

In India, disaster management act was enacted in 2005. This act has shifted the scenario from post relief approach to multi-disciplinary and holistic approaches that incorporate mitigating measures and involve NGOs and community participation. National Disaster Management Authority (NDMA) was created as a follow up of Disaster management Act, 2005 which itself was enacted in the aftermath of 2004 Indian Ocean Tsunami. The NDMA is responsible for formulating guidelines on responding to various disasters but the body is devoid of powers or infrastructure to enforce them, evaluate their effectiveness or conduct relief operations that Disaster Management is a state subject. Therefore the following issues require to be addressed for effective management of disaster. In 2006, the SAARC centre was set up at New Delhi to conduct research and capacity building on disaster management in South Asia and rest of world.



Landslide Hazard Zones in India

Source: <http://www.gsi.gov.in/Indside/lhs.htm>



### Earth-quake prone Area India

#### 1.5. Disaster Management and Issues:

The National Disaster Management Authority (NDMA) which is an Apex body of Govt. is entrusted with the task of preparedness for natural and manmade disasters. The body is headed by the Prime minister. However, policies and preparedness as formulated by NDMA are to be implemented by the state body in the name of State Disaster Management Authority which formulate suitable state disaster management plan. The Uttarakhand tragedy has tested the efficacy of disaster response mechanism. The sad part of story is that even after facing a devastating disaster Uttarakhand has not yet sent any disaster management proposal for clearance and comments of NDMA. The state authorities has not so far made any rules, regulations, policies and guidelines which is a preliminary step for the authority to have any functional meaning. All states need to be proactive in preparing disaster management, as only comprehensive planning will help at the time of any disaster.

As revealed by officials of NDMA following the Uttarakhand catastrophe, “many states do not even have separate department to handle disaster preparedness and related work. There is an urgent need to change the focus and mindset of the people and the Government machinery towards disaster management and disaster preparedness. Our approach to such eventualities should not be limited to rescue and relief operations but preparedness to handle it. Recently our worthy Prime Minister Dr. Manmohan Singh said that important lesson should be learnt from Uttarakhand rain flood tragedy which has put a scar on our disaster response mechanism.

During the last thirteen years since the State attained statehood, the leadership of the state pursued the conventional model of development with the single minded goal of creating monetary wealth with utter disregard for states mountain character and its delicate and fragile ecosystem. Successive state governments have blindly pushed roads, bridges, tunnels and unsafe buildings even in most fragile regions. In the process denuded mountains remained deforested, roads endangered human lives, tunnels made by blasting has weakened fragile slopes, hydropower projects have destroyed rivers and ecosystem, hotels and colonizers have encroached on river banks, Such activities in fragile “Himalayan environment” invited disasters. Eco sensitive development is more sustainable and equitable one in such areas where although the monetary growth is low.

Heavy influx of tourists and wrong tourism practices are stressing the hills. Majority of people in the valley earn their livelihood on Yatra routes during the tourist season. They run dhabas along the yatra routes, sell raincoats, umbrellas, canes, walking sticks, soft drinks, homemade snacks etc. They carry children, the old and infirm on their back. Now with the impact of this tragedy, the yatra is not likely to be resumed in the very near future. Till the revival of yatra, they will remain unemployed or forced to migrate somewhere else. The Uttarakhand disaster has not only spelt a doom for thousands of household economies but also dealt a grievous blow to the states lucrative tourism industry. The misery from this deluge and its aftermath will linger on public memory making the revival of tourism doubtful in the foreseeable future. Through Community participation in eco-tourism, the hill people may actually be benefited. By eco tourism communities can be more caring for their natural environment.

Several reports from the Intergovernmental Panel on Climate Change (IPCC), have repeatedly warned that extreme weather incidents will become more frequent with global warming. We are already riding the global warming curve; we will have to take into account the likelihood of frequent weather events, when planning for development, especially in fragile Himalayan region, where crumbling mountains become murderous. In India disaster management framework, the

India's metrological department (IMD) is the nodal agency for gathering information from the concerned agencies and issuing disaster related warnings. The IMD warned the state govt. of the likely heavy rainfall in region at least 48 hours in advance. The warning of flooding is generated by Central Water Commission (CWC). Besides timeliness, a disaster early warning suffered from two pitfalls: One of clarify and interpretation and the second from last minute dissemination to the citizens. The state govt. admitted of having received the IMD warning on rainfall but not of cloud bursts, flash floods and landslides. The interpretation of early warning in relation to its implications and prevailing local conditions of soils, river flow is the responsibility of local disaster management officials. An appropriate warning would have saved life and property of citizens.

Another critical area is that of communication both between government agencies and between the citizens themselves. Though the mobile communication survived the devastation by flash floods but went out of order with power supply cut off putting the area out of communication. Availability of cellular communication would have aided in relief and rescue. This is another grey area in disaster management framework. Guideline by the department of communication to telecom companies for disaster proofing of their infrastructure and taking measures for their early restoration of communication network.

The indiscriminate rollout of roads boosted unregulated construction across the state. Very few people follow construction codes in urban areas. In rural areas tourism centre have become death traps. A study by IIT Roorkee has found that traditional low rise light weight timber buildings performed extremely well. But to accommodate the growing number of tourists, Uttarakhand's traditional construction give way to unplanned multi-storeyed buildings on columns and beams. This resulted in unbearable load on the mountains. With this lopsided burden alongside rivers prone to flash floods, it was only a matter of time before the overhanging structures were swept away.

The construction boom, on the other hand fuelled illegal mining of sand and other minor minerals. Such extraction changed the slopes of rivers beds making the flow restabilize itself, causing the rivers to change its course. With construction right up to the banks, the disaster consequences were bound to happen. The SC order of restriction on construction up to 200 meter of river bed was never honoured. The connivance of local officials resulted in the mushrooming growth of buildings all over the state.

Articulating the national policy on management in national and international forum is the responsibility of disaster management division of Home ministry, which should have been disseminating information on how the disaster was being responded to. As for information dissemination the disaster management division should have a functional Emergency Operations Centre (EOC) in communication with state EOC. The state EOC is entrusted with the task of providing situational awareness to all functionaries of Government and the public at large to aid coordinated response. In Uttarakhand it was only NDMA which issued bits and pieces of information through National Disaster Response Force (NDRF). The EOC is also supposed to coordinate relief operations at the National level "ensuring suitable responses by various Ministries such as railways, defence, food and civil supplies etc. The EOC of Uttarakhand was expected to perform similar functions at the state level. However, it is pity that all through these years adhocism remained the bone of disaster management in India.

Heavy influx of tourists and wrong tourism practices are stressful to hills. Eco tourism can facilitate the safety and health of environment. These tourism practices are to be adopted by hill states like Uttarakhand. Unluckily Uttarakhand has no well defined state tourism policy.

Uttarakhand faced the worst disaster in the living memory. The pilgrimage centres in Uttarakhand are situated in selected region of the state. The State Govt has not bothered about the evaluation or examination of carrying capacity in terms of how much tourism pressure the states overcrowded destinations can withstand. This can be made possible by a proper survey of available facility likes lodges, hotels, sarai and guest houses.

The population density of Uttarakhand is 189 per square kilometre. More than 90 % of land is mountainous and 64 % is protected forests. Mushrooming development projects are further elbowing out the hill. While the Tourism board and numerous private players are hoarding land. The dams and the reservoirs are eating in to agricultural land. The impact of the floods on Uttarakhand leads to larger questions of what kind of development Himalayan State should pursue. This weather related event which caused a massive destruction or dislocation can hardly be called freak event. To pursue development without concern for the fragile Himalayan Environment amounts to inviting disasters. We have to sacrifice monetary consideration in favour of sustainable development.

#### **1.6. Recommendation:**

- ✓ It is important to look at multi-hazard zone in terms of possible combined effect. The probability of having two events such as cyclone and earthquake could be very rare where as heavy rain can cause flood and landslides if the ground condition favour.
- ✓ Engineers should design structures to improve the building and construction quality to face disastrous condition.
- ✓ Volunteers need to be kept in red alert at all the time because these disasters are sudden and erratic in time and reliable warnings are difficult to implement.
- ✓ Govt. has the responsibility to plan on issues, strategies etc for ensuring well being of citizens.
- ✓ Management plans need to be consulted with the local area society for disaster management and mitigation.
- ✓ Cooperation and involvement of a large number of citizens, local disaster group and NGOs is important in disastrous situation.
- ✓ Hazard zone area should be mapped and restrict the construction in that area.
- ✓ Densely populated residential area should be separated far away from industrial area. A buffer zone should separate the industrial and the residential zone.
- ✓ Several disasters are seasonal in nature, effective methods to combat them is to develop seasonal cycles of preparedness.
- ✓ Encourage long term investment such as forest reserves, education and training of village health workers etc. It involves management planning among community.
- ✓ Strengthen social and organizational support structure to establish cooperation and management planning.
- ✓ Research should conduct to understand the nature of vulnerability in different social, political, economic and hazard-prone area.
- ✓ Disaster reduction programmes need innovative, multi-dimensional and inter-sectoral approach for mutual support.



- ✓ Rumours should be seriously stopped and for that strong punitive actions should be taken.
- ✓ Land use practice such as natural existing vegetation in good condition should be preserved. Upper slope should be forested with suitable tree species.
- ✓ People should use natural resources in judicious manner for the sustainable development.
- ✓ In construction of roads, irrigation canals etc. proper care is to be taken to avoid blockage of natural drainage.

### 1.7. Conclusion:

Hazards can threaten anyone and may be tackle by adopting global approach by involving individuals and communities towards achieving the goals of reducing the loss of lives, the socio-economic setbacks and the environmental damages caused by disasters. After the announcement of NDMA the suitable strategy formulated to tackle the problems. Some guidelines are given to state by the authority but the State Authorities did not act as per the norms or guidelines. In spite of actual implementation of the schemes, focus limited only on indoor meetings. In most cases, authorities wake up after the occurrence of disasters. In such cases Military and Para military forces have to come forward to save the precious lives and National Property. Based on the perusal of weather related happening since 2000 no lesson has so far learnt by the state govt. A lesson should be learnt in interaction with other countries confronted with such calamity at the national level and findings conveyed to concerned state authority. As it evident the haphazard activity in hill region may turn the ecology of Himalayan region in concrete jungles. The unscientific and unsystematic mining has changed the natural course of rivers and streams resulting into erosion of river bed and substituent distraction. Earthquakes, cyclones, and floods caused extensive damage to buildings, resulting in an overwhelming loss of life and property. Buildings prone to such disasters are the single most important cause of such loss. Therefore, vulnerable houses and other structures made of mud or stone or brick, which are common among the hills, must be adequately strengthened to withstand such disasters; and, even more important, existing buildings need to be strengthened or retrofitted to ensure that they are relatively safe. For the new construction on hilly terrain, the findings of IIT Roorkee should take care of. Mitigation measures in the form of retrofitting could significantly reduce the chances of structural damage and casualty. In the aftermath of disasters, sanitation and waste management are placed next only to food and medical supplies. The maintenance of appropriate sanitary conditions and hygienic waste disposal are critical because these efforts have a direct bearing on the health of disaster victims. So, to attain the goal of “Environmentally sustainable and economically development”, modern and traditionally techniques improvised with scientific knowledge may be helpful to overpower deteriorating environment.

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