

# Seminar on “Contemporary Environment Issues and Concerns”

12<sup>th</sup> March, 2018

North-Eastern Hill University (NEHU), Shillong

A Seminar on the theme “*Contemporary Environment Issues and Concerns*” organised by ENVIS RP Centre, NEHU, Shillong and National Service Scheme (NSS) Unit, NEHU, Shillong was held at Science Seminar Hall, NEHU, Shillong, on 12<sup>th</sup> March 2018, at 10.00 A.M. to 4:30pm. There were two Technical Sessions where different topics related to the theme were delivered and discussed. 116 participants from NEHU and from other colleges of Shillong which including Faculty, Students and Research Scholars, attended the programme.

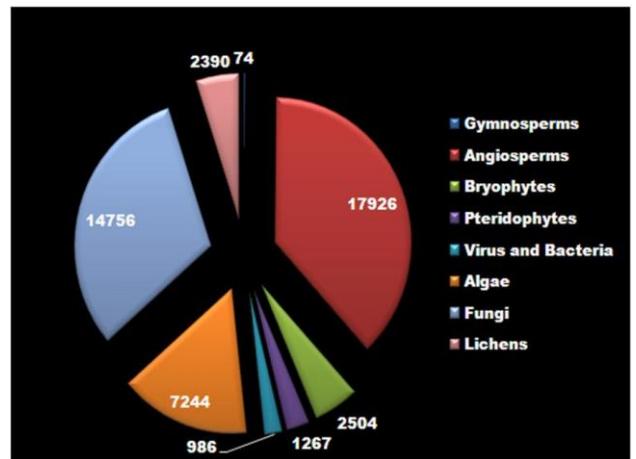
One of the topics discussed, was on “*Environmental Issues and Concerns with Special Reference to North-East India*” which was delivered by the Assistant Professor of Basic Sciences and Social Sciences Department, NEHU, Shillong, Dr. K. Upadhaya.

He delivered a presentation on the main factors that lead to “*Loss of Biodiversity*” in North Eastern (NE) India. The following were discussed.

The biological wealth of the earth has been declining rapidly.

## Plant Diversity Status of North East India

- The north east occupies about 7.7% of the total geographical area of the country and it is estimated that of about 17,926 flowering plants species in India approximately 50% ( $\approx$  8500)
- Forest cover in different states of northeast India 66% of the total geographical area
- 730 orchids out of 1229
- 65 bamboo species out of 130
- North East India is one of the richest repositories of Medicinal and Aromatic plants (MAP).
- 53 Forest subtypes out of 221 subtypes in India.



## Deforestation

The NE region is suffering from destruction of forests that is threatening permanent loss of biodiversity.

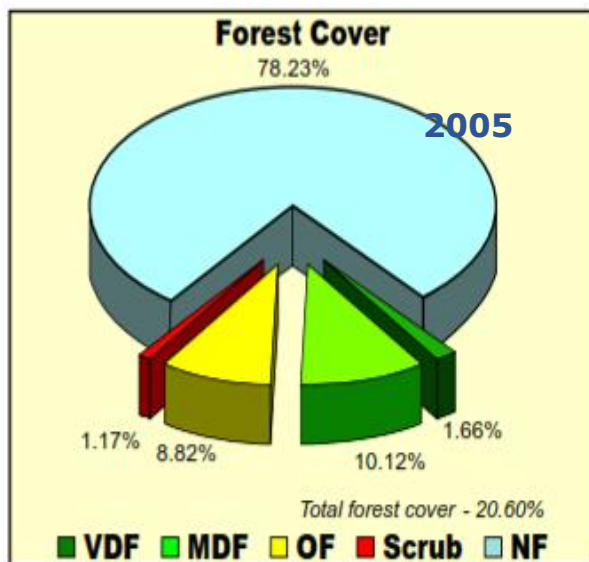


Figure 2.2: Forest Cover of India

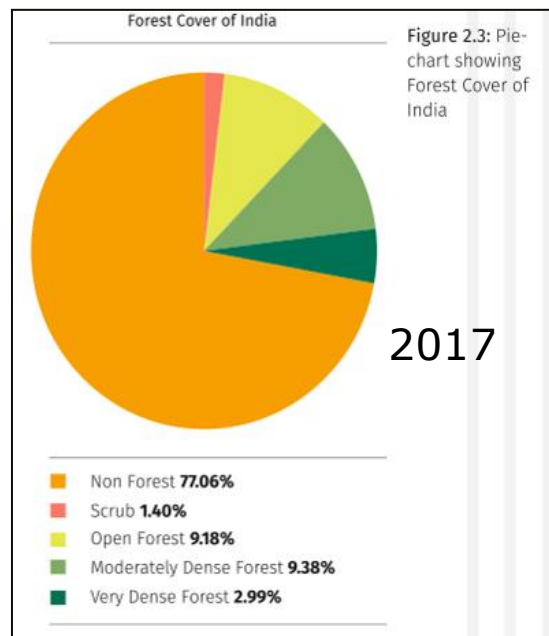
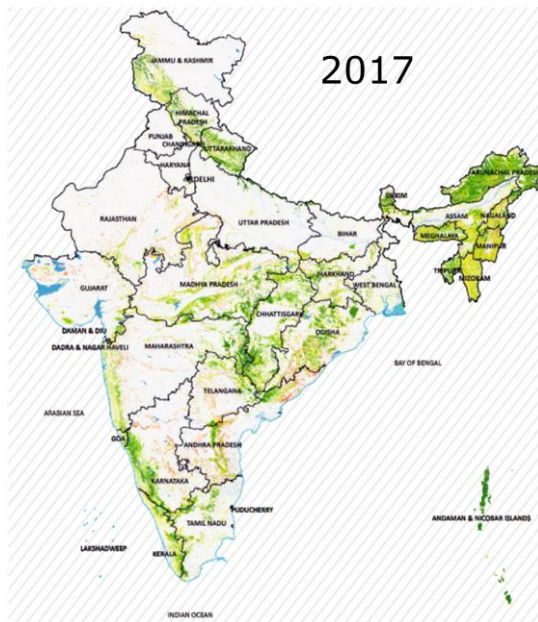
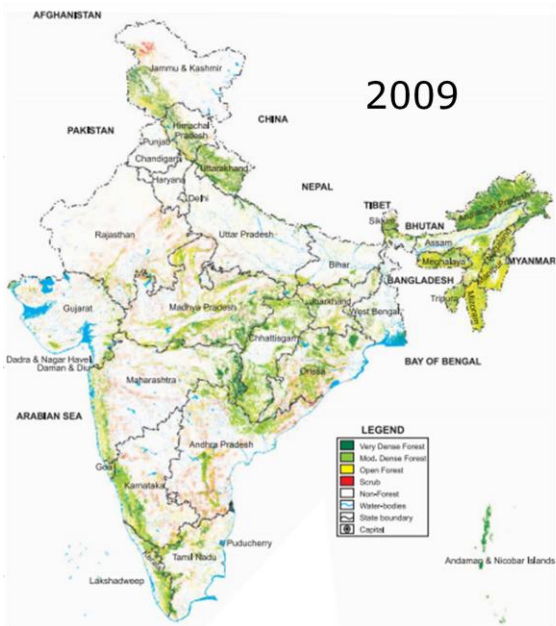
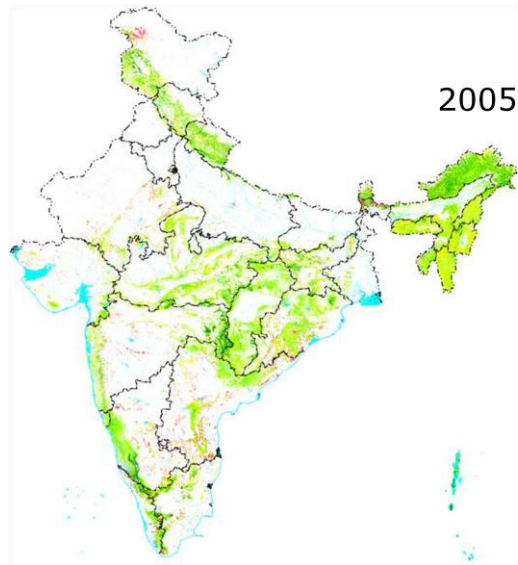
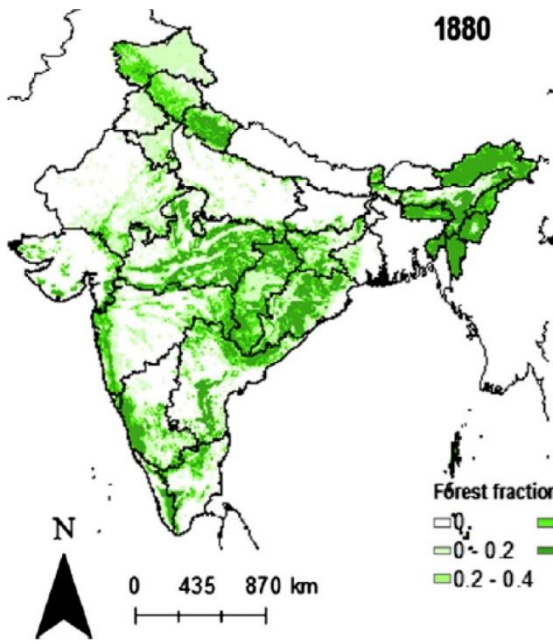


Figure 2.3: Pie-chart showing Forest Cover of India

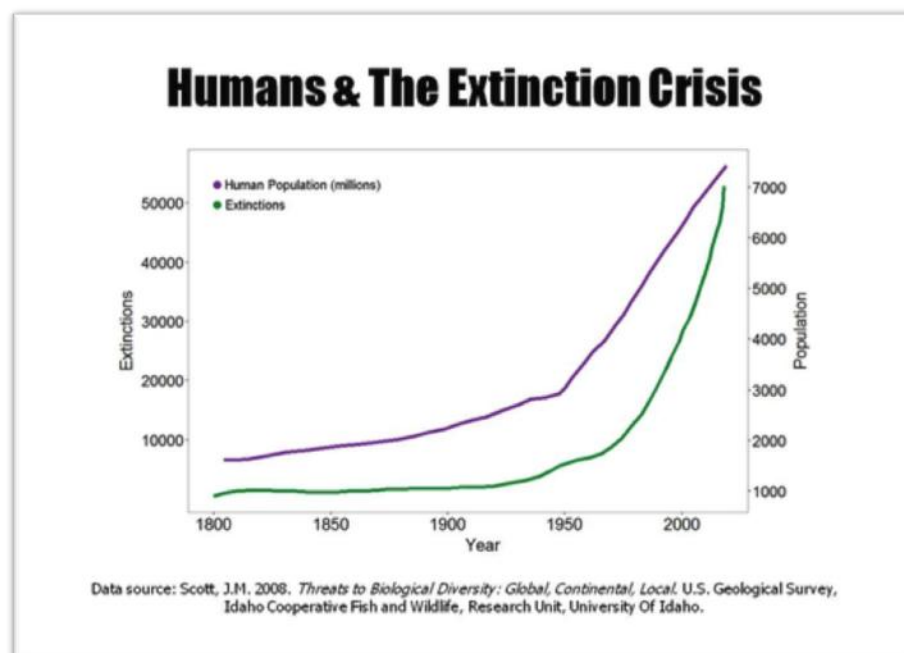
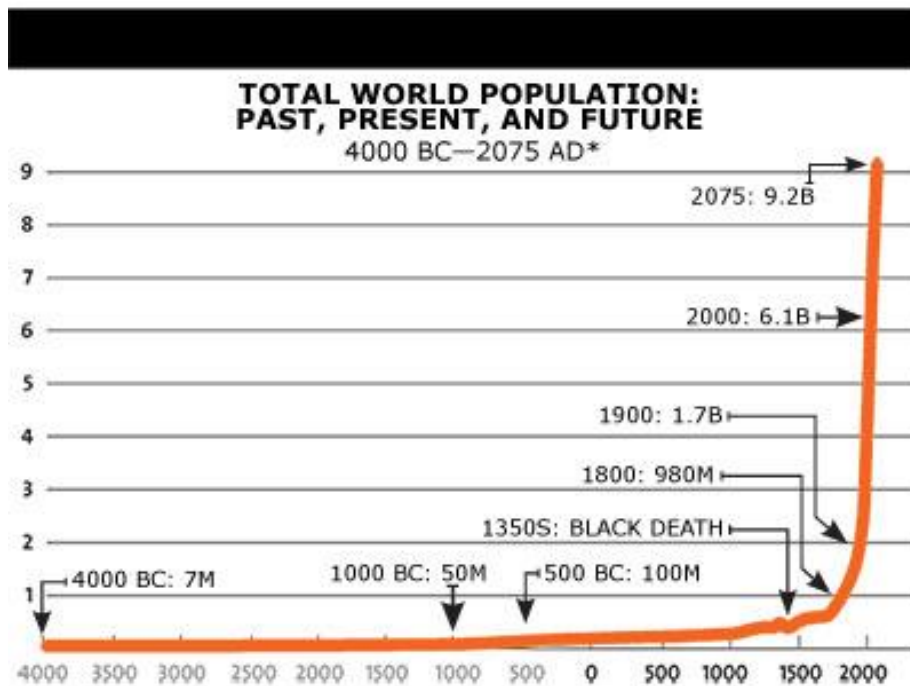
# Deforestation: Forest cover change INDIA



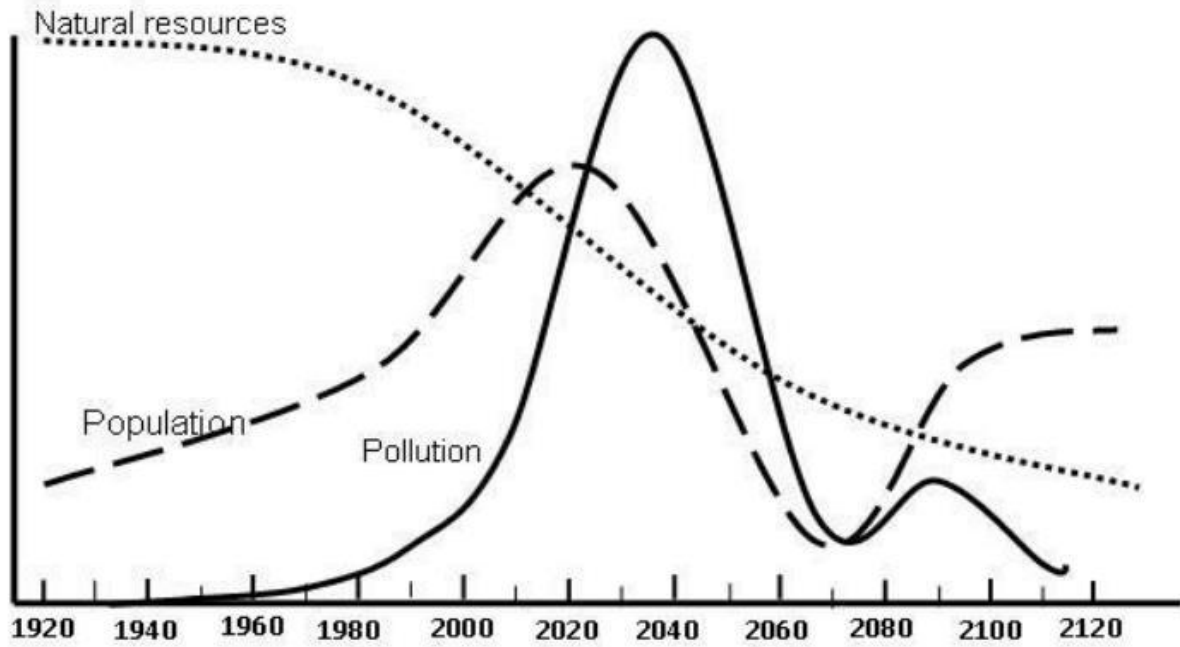
## Population Increase

The human population explosion is the root cause of all the environmental problems and issues. It was estimated to have reached 7.6 million in the year 2017.

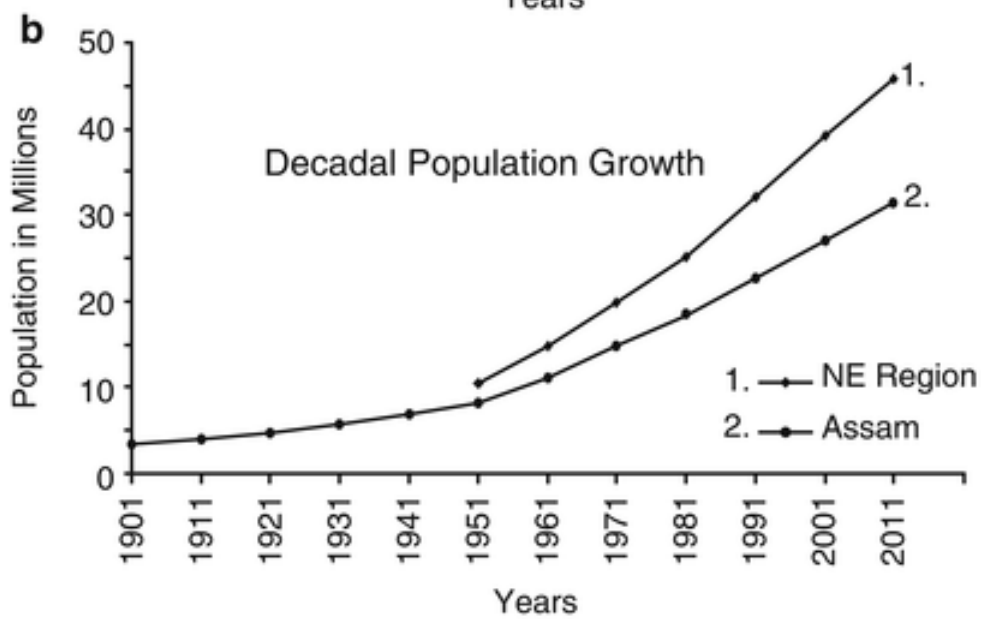
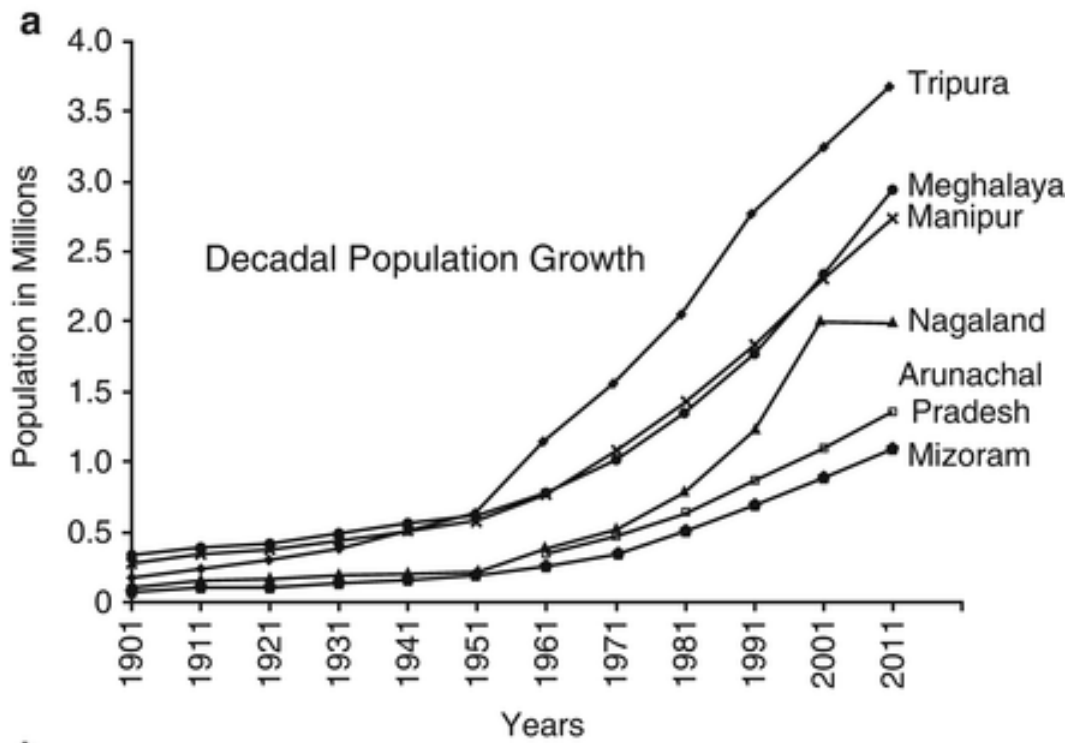
As the human population continues to increase exponentially, more land is needed for food, shelter and energy. Along with population growth, over-exploitation, pollution and climate change results to many species becoming threatened or/and endangered at an alarming rates.



## The effect of high population growth on the environment (depletion of resources and increased pollution)



Source: <https://www.slideserve.com>

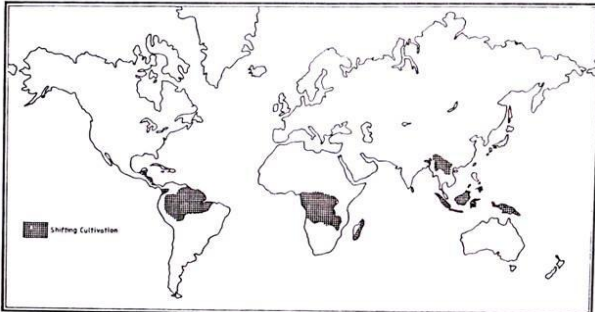


Dikshit K.R., Dikshit J.K. (2014) Population of the North-Eastern States of India.  
 In: North-East India: Land, People and Economy. Advances in Asian Human-Environmental Research.  
 Springer, Dordrecht.

## Shifting cultivation

Increase in population and pressure on agricultural land has also brought huge forest under shifting cultivation leading to loss of biodiversity.

Figure 5.3  
World: Shifting Cultivation



Distribution of Shifting Cultivation in South-East Asia

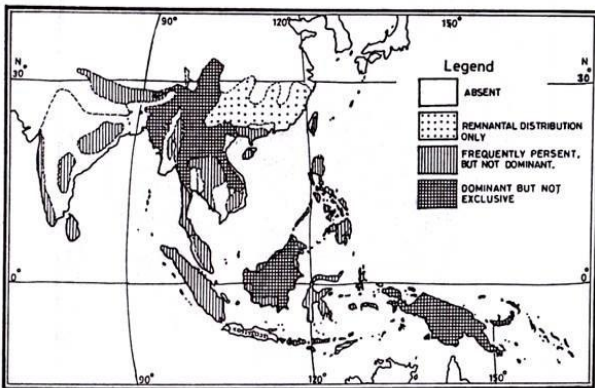
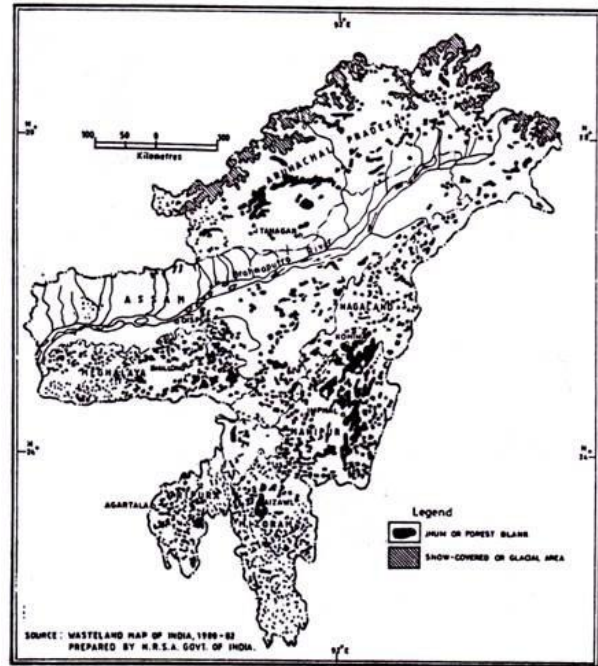


Figure 5.5  
North-East India—Jhuming or Shifting Cultivation



Forest cleared and burned for cultivation in Garo Hills, Meghalaya

### Shifting Cultivation in North-East India

State	Annual Area Under Shifting Cultivation (Sq. Km)	Fellow Periods (Years)	Minimum Area under Shifting Cultivation one time or other(Sq. Km)	No. of Families practicing Shifting Cultivation
Arunachal Pradesh	700	3-10	2100	54000
Assam	696	2-10	1392	58000
Manipur	900	4-7	3600	70000
Meghalaya	530	5-7	2650	52290
Mizoram	630	3-4	1890	50000
Nagaland	190	5-8	1913	116046
Tripura	223	5-9	1115	43000
Total	3869	-	14660	443336

Source: Basic Statistics of NER 2002<sup>12</sup>

**Table 2.05 Loss of Forest Cover due to Shifting Cultivation in N-E States**

(Area in km<sup>2</sup>)

State	Dense Forest	Open Forest	Total
Assam	272	337	609
Arunachal Pradesh	663	262	925
Manipur	125	730	855
Meghalaya	141	543	684
Mizoram	351	336	687
Nagaland	321	1,011	1,332
Tripura	221	163	384
<b>Total</b>	<b>2,094</b>	<b>3,382</b>	<b>5,476</b>

## Mining

The National Green Tribunal (NGT) ban against rat-hole coal mining in Jaintia Hills, Meghalaya, 2014.

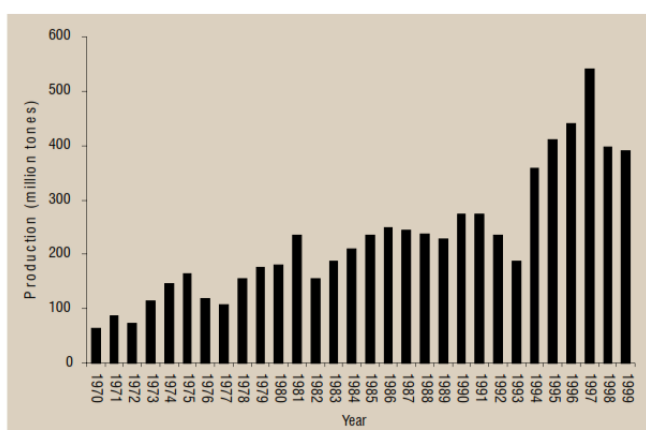


Fig. 26: Limestone production in Meghalaya during 1970-1999.

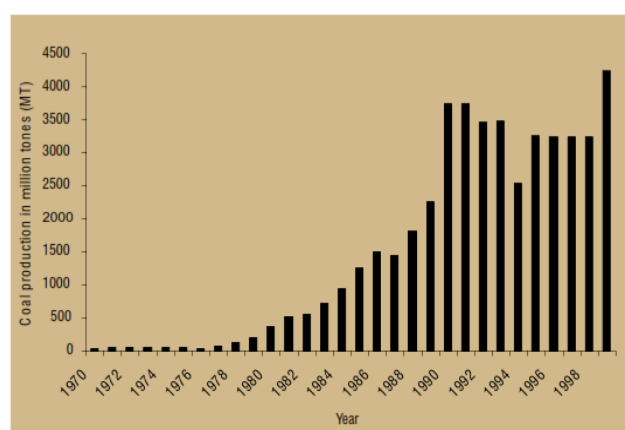
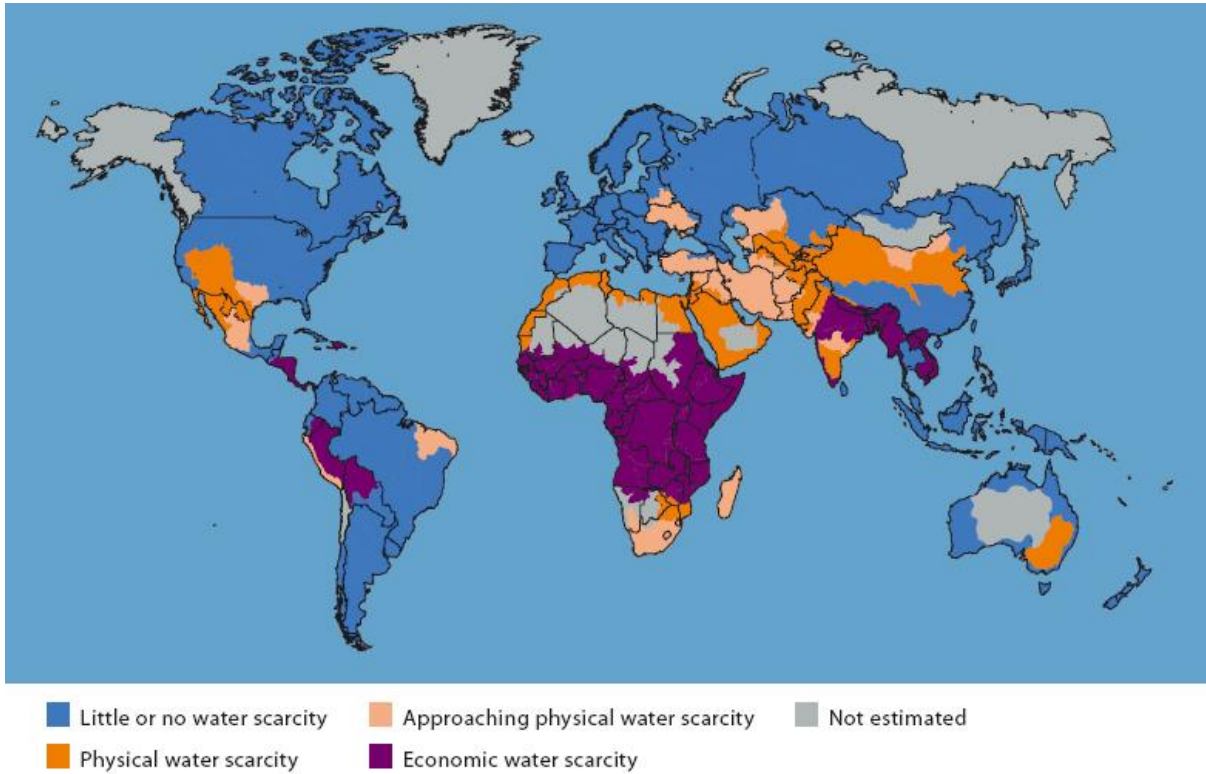


Fig. 24: Coal Production in Meghalaya between 1970-1999

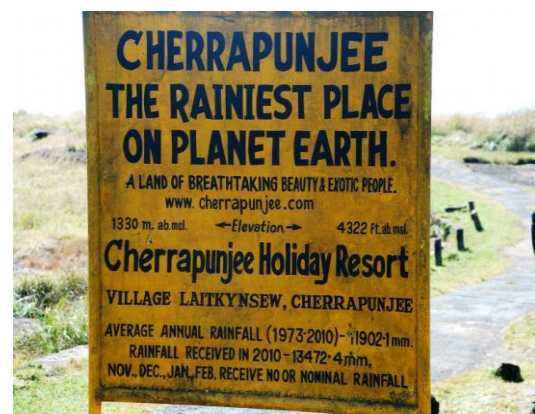
## Water Scarcity

- Physical water scarcity occurs when and where there is not enough water to meet both human demands and those of ecosystems to function effectively.
- Economic water scarcity is caused by a lack of investment in water infrastructure or insufficient human capacity to satisfy the demand of water in areas where the population cannot afford to use an adequate source of water.



Water deficits and contamination of existing water supplies threaten to be critical environmental issues in the future for agriculture production as well as domestic and Industrial uses

1 billion people lack access to clean water or adequate sanitation



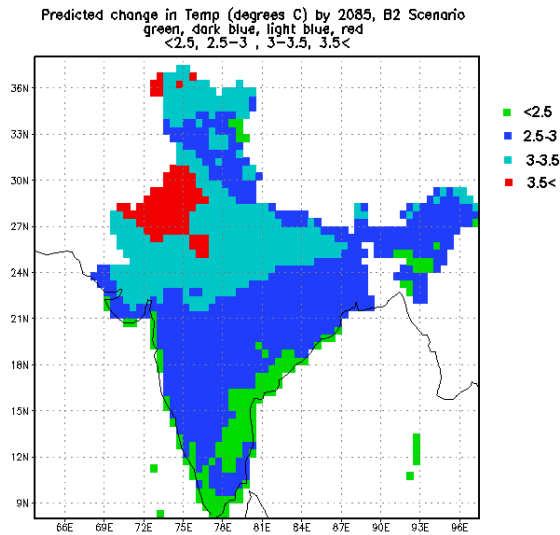
Water deficits and contamination will be one of the expensive problems in near future.



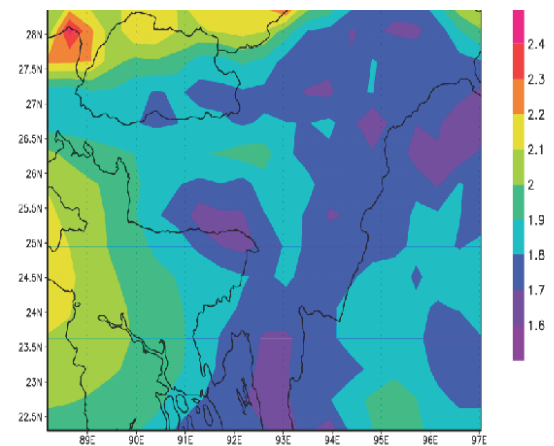
## Climate Change

It is the root cause of many of the disaster in near future.

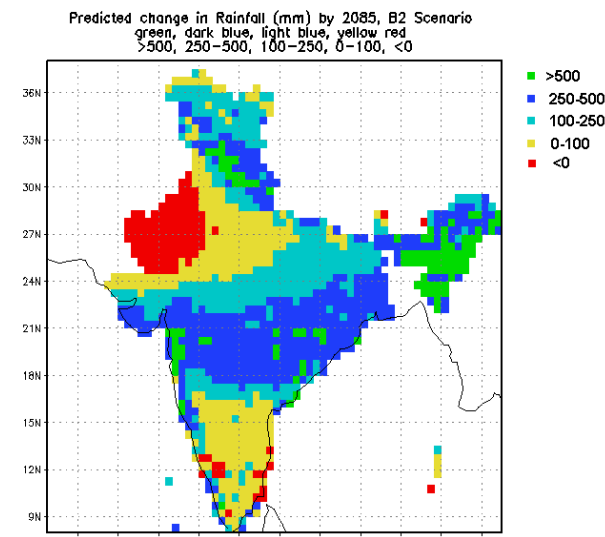
- Since climate is a major determinant of vegetation pattern, change in climate would alter the structure and function of forest ecosystems.
- Even with global warming of 1-2° C, most ecosystems and landscapes will be impacted through changes in species composition, productivity and biodiversity.
- These will impact millions of people's livelihood who depend on forest resources.



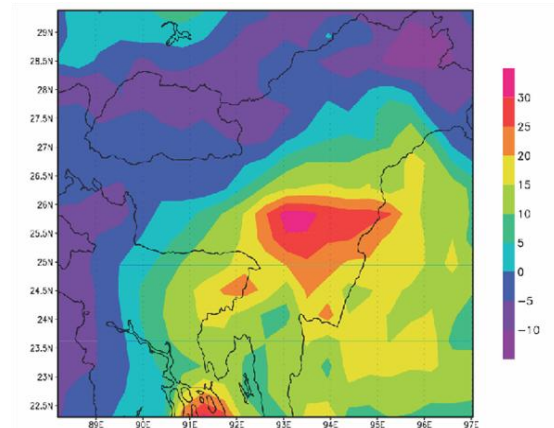
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Increase in temperature (°C) for midterm (2021-2050) compared to baseline (1975)



2004-10-20-16:09



Increase in rainfall (%) for midterm (2021-2050) compared to baseline (1975).

## Trends in climate change

- The warming trend observed ranges from 0.01 to 0.06<sup>0</sup>C/yr and annual mean temperature is expected to increase by 2.9<sup>0</sup>C by the middle of the century.
- The region is also predicted to experience milder winters with increase in precipitation (Sharma and Tsering 2009).

## Expected changes of climate change

- Shift in forest types due to climate change - drier forests to wetter forests due to increased precipitation
- Vegetation ingression was noticed to higher altitudes areas that were previously under snow and ice (Panigrahy 2010)
- Increase in net primary productivity

The north east India being the Himalayan and Indo-Burma hotspots are vulnerable to climate change because they are rich in endemic species with restricted distribution. Such species are likely to be more affected than other.

## Photos of the Seminar



