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RESEARCH ARTICLE

**THE ROLE OF HIGHER EDUCATION IN AWARENESS OF CLIMATE CHANGES,
A CASE STUDY OF NORTH-EASTERN STATES**

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ABSTRACT

North-East has considerable expertise and experiences in climate science through collaborative research between independent research institutes and their external partners. The key step forward will be how to unite this expertise with the expertise of North-East universities to eventually build a bottom-up regional community of connected educators, researchers, students, practitioners, policymakers and local groups for climate change adaptation. To upgrade the public awareness, there is a need to increase public sensitivity to the environment, development problems, involvement in their solution, and a sense of personal responsibility, greater motivation and commitment towards sustainable development. Many environmental problems are caused by the absence of awareness like the unwise use of resources, all sorts of pollution, imbalance between population growth and available resources, the spread of diseases, and the destruction of land and its abuse. The main objective is to promote broad public awareness as an essential part of education efforts to strengthen attitudes, values and actions, which are compatible with sustainable development. Mass media offers some activities in this area but without any organized plan. The press is doing very little to promote public awareness as shown by various studies. Mosques, Churches, Clubs, industry, unions etc.....are doing little in fostering awareness among the public.

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INTRODUCTION

Climate is the average pattern of weather of an area and weather means the day-to-day atmospheric condition, such as temperature, rainfall, humidity, wind, intensity of light, cloud etc. Such weather conditions which average over a long period of time, at least over 30 to 40 years, is called climate. Climate change is the statistically significant variations in the mean state of climate or in its variability over an extended period. In other words, climate change is a term used to express unexpected changes in climate such as rising temperature, changes in rainfall pattern, increased droughts, extreme colds etc. Climate change is a complicated subject. Data measurement networks are sparse and there is a great deal of uncertainty associated with our scientific understanding of climatic processes. Nevertheless, there is a near unanimity that the climate is indeed changing in significant ways. At the home of one of the oldest civilization on the planet, N.E. concern about global climate change and its consequences on sustainable development comes as no surprise.

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Scientific evidence and climate records have sharpened the focus on the relationship between the concentrations of green house gases in the atmosphere and the rise in global temperature. Adaptation to climate change has emerged as one of the most important concerns in the global development agenda today. Changes to, and variability of the climate and ecosystems are already being observed by scientists and local communities. In N.E with its diverse natural environment and social systems, these changes are affecting different areas in different ways. This poses significant implications for developmental planning. How N.E, adapts, and the solutions it creates to overcome adverse climate change risks, must be developed locally, while being supported by regional and global knowledge and experience. Key to this is an educated and technically skilled labour force that can conduct the necessary research and develop the effective solutions to eventually create a truly adaptive and resilient society. North East already has a vast pool of human talent; such human capacities can be further cultivated and sustained through dynamic scientific and technical educational institutions. The contributions that the higher education sector can make for climate change adaptation are substantial. It will be N.E universities that will produce the highly skilled human capital and the knowledge needed for tomorrow's climate risk society.

Climate change scenarios and synthesis of key vulnerabilities

N.E is a typical example of a developing state in India. This is highly vulnerable to climate change and faces numerous threats to its economic, social and environmental sustainability including energy, water and food security. This causes enormous fundamental pressures on N.E's competitiveness, and presents a growing threat to national security. These threats are fueled by a growing population and rising associated demand, coupled with the constraints of a finite resource base. These pressures include:-

i) Energy Security: - Unsustainable use of energy resources is one of the major reasons for environmental degradation and climate change. The consequence is energy scarcity and rising energy prices which increase poverty, strain national budgets and jeopardize N.E's competitiveness for the future.

ii) Water Security: - Global warming results in sea-level rise due to the melting of glaciers and arctic ice. Consequently, the world's fresh water resources decline while salt water introduces into underground reservoirs.

Food-Security:- Limited water and agricultural land coupled with population growth and other factors are creating mounting pressure on N.E's ability to provide food for its people in the future.

iii) The Financial Crisis: - The continuing impact is being felt around the world hitting national budgets hard also impacting the availability of investment capital and development aid.

Companies are very much affected by the scarcity of available resources and they cannot survive in the future if they cannot predict and adapt to major trends like climate change.

Green Transformation in North-East

Existing national strategies in N.E across the sectors and ministries reveal a remarkable awareness of the value of a "Green Transformation" to N.E. competitiveness and future development prospects. The Green Transformation consists of an integrated package of technologies, policies and behaviour changes designed to promote greater innovation, efficiency, cost-reduction, shock resilience, and job-creation by focusing strategic attention and investment on the following areas: Water conservation, Energy efficiency, Renewable energy, Sustainable agriculture, Eco-cities, Eco-villages, Eco-tourism, Green-industry, Green-transport, Waste to energy, Poverty alleviation programs, Programs to increase equity. Many strategy documents include "Green" elements such as water conservation, renewable energy or eco-tourism. However, these existing strategies do not cover the need for a more integrated approach that puts a Green transformation at the center of planning for economic competitiveness. N.E's strategic priorities in the area of Green Transformation should not be framed in terms of marginal savings or efficiency improvements. They need to be framed in terms of job creation, climate resilience, energy independence, poverty reduction, and other major national goals for these are the benefits that Green Transformation approaches are now known to deliver.

A Green Transformation approach should be seen as a modern, strategic response to N.E's needs today in an ever more demanding global economic arena, and in the era of global climate change. N.E still has the opportunity to be a regional and even global leader in the race to create efficient, competitive, "green" economies. In fact, if it does not choose this path future prospects for the country are difficult to put into optimistic terms. These are some of the consequences of N.E will face if it continues down a conventional development road without integration a "Green Transformation" approach into its national strategy for competitiveness:

- Loss of energy independence
- Inevitability of conflict over water
- Vulnerability to climate change
- Lost/locked in capital investment (into non-green assets).
- Threats to key industries such as tourism.

The establishment of a national strategy for Green Transformation must begin with a vision just like many companies have a vision or organizational culture. Key decision makers as well as ordinary citizens must be continuously encouraged to imagine a better, greener more competitive future for the nation. Good vision needs to be specific and N.E's vision should include clear objectives tied to visible and credible strategic pathways for achieving those objectives. They should also include extra-financial indicators for success. The entire program should be supported by continuous public education and communication. Every possible channel and creative means should be employed to keep the vision of a Green Transformation present in the public eye.

Climate-change education

Effective climate change education have an empowering effect on learners, which will give them confidence in their learning and enhance engagement with their chosen discipline through seeing the clear links between their subject and what is seen as one of the most important and pressing topics for society. An understanding of climate change and sustainability issues can enhance the employability of graduates. Increasingly students studying non-overtly "environmental" subjects have the opportunity to engage in climate change, sustainability related education, which is seen by some as an important development in sustainability education. Not only are environmental/sustainability issues of relevance to everybody but there are also increasing employment opportunities within the sustainability sector, which learners may become aware of through an effective climate change education.

Emphasis on the emerging opportunities within the environmental sector may also help to engage learners who are more resistant to studying environmental topics. Climate change/sustainability curriculum developments, which focus on practical aspects and strategies to move towards a more sustainable society through the application of sustainability skills and knowledge within industry, have the potential to engage learners who are not normally interested in environmental topics. This in turn will enhance these learners' environmental awareness which may become a

transformative process leading to behavioral change. Ideally, higher education institutions are well-placed to:

- Conduct applied postgraduate adaptation research in close partnership with implementing government and non-government agencies, as well as local communities.
- Produce specialists with considerable expertise and knowledge in downscaling global forecasts to the local scale, and can produce impact assessments, and conduct climate modeling and forecasting.
- Monitor the changes and collect adequate data over sufficiently long periods of time in order to calibrate and validate climate models and research.

Universities' role of serving society

Aiming to narrow the gap between science and society through outreach, informal education and capacity building. North East has launched a science and society initiative. It will support university staff and scientists in transferring knowledge to society with the goals of stimulating a knowledge based society, promoting development and fostering innovation and creativity among youth, science and society stresses the important of universities providing solutions to the needs and demands of civil society through initiatives that are different from the usual university industry technology transfer programmes. The initiative includes setting up an online data base of educational resources and using television programmes, the internet and printed publications, as well as science festivals and special events, to increase public understanding of science and help scientists communicate about their work and its historical, cultural and economic significance.

In light of the changes and the rapid global transformations, higher education represents great importance to the level of progress and growth of societies. There is a general agreement prevails in literature related to university education, locally and globally that the university is entrusted by the three main functions, namely: teaching, scientific research and community service. Although the function of community service occupies the third rank in this category, but there is a trend to go to it must become the primary function and even lead to university education. It is worth to mention that there are main elements help universities to perform their various functions in general and their society service functions in particular. One of these elements is university autonomy. There is no doubt that, when university enjoys increased autonomy, it can be more effective and flexible in achieving its aims, and performing its functions. Therefore, the university function of society service may be the most one that is related to its autonomy, as its requires more interaction with society.

Public Awareness in the initial National Communication in North-East

The following recommended actions and needs were identified:

- Organization of national campaigns for public awareness on climate change for different sectors.

- Writing and producing specialized radio and T.V programs addressing climate change issues.
- Close co-ordination and co-operation with NGOs working in the field of the environment.
- Co-operating with international organizations, networks and other national focal points for the purpose of exchanging information, material and promotional items.
- The National Environmental, Economic and Development Study (NEEDS) Recommendations: To provide sufficient fund for raising the awareness with climate change impacts and mitigation options, as well as cross cutting issues such as capacity building, new and renewable energy and energy efficiency technology.

Media and Publications

Many public awareness programs were implemented through audio and visual media means plus publishing series of books, posters and scientific articles in magazines on the phenomenon of climate change.

- There are now weekly environmental pages in several national daily news-papers such as "The Assam Tribune", "The Dainik Assam", "The Asomiya Pratidin" etc.
- There are several specialized T.V. and Radio programs addresses environmental problems and community participation in solving such problems.
- A number of training courses were given to journalists to help in shaping the thought of civil society towards activating policies and making decisions in this area.

ISRO Chief concerned over climate challenges

The alarming phenomenon of climate change was no longer a scientific curiosity but a great challenge that would affect the economy, livelihood, health, agriculture and many other dimensions. People must now ensure that for our immediate and short-term gains, we must not cause irreparable damage to the environment. "Climate change is amongst the most concerning issues being discussed across the world. Shifting weather patterns, threat to food production through increased unpredictability of precipitation, rising sea levels contaminating coastal freshwater reserves, increasing risk of catastrophic flooding, and a warming atmosphere aids the pole-ward spread of pests and diseases once limited to the tropics. It is known that most of the designs and innovations in science and technology are inspired by something in nature. Engineers in various industries the world around are turning to nature for inspiration as they try to design products with better performance and lower energy consumption. Nature is full of viable ideas for how to do things. "All we need is to simply see and listen to nature, its language, laws and ways to understand it." "Whenever we adopt a new technology for our advantage, we have to look at both sides of the coin... we have to find out whether it can indirectly create a condition or a situation in which man may find himself trapped." It is just possible that for our immediate and short-term gains, we are causing irreparable damage to our environment. Living harmoniously with nature, our ancestral civilizations left negligible adverse impact to the environment. The consistent digression in quality in which human beings use the natural resources they are

provided with, is alarming. Emphasizing that sustainable growth was the organizing principle for preserving finite resources necessary to provide for the needs of future generations on the planet, the scientist said there was a requirement to implement environmentally-friendly technologies without ignoring traditional wisdom and knowledge.

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