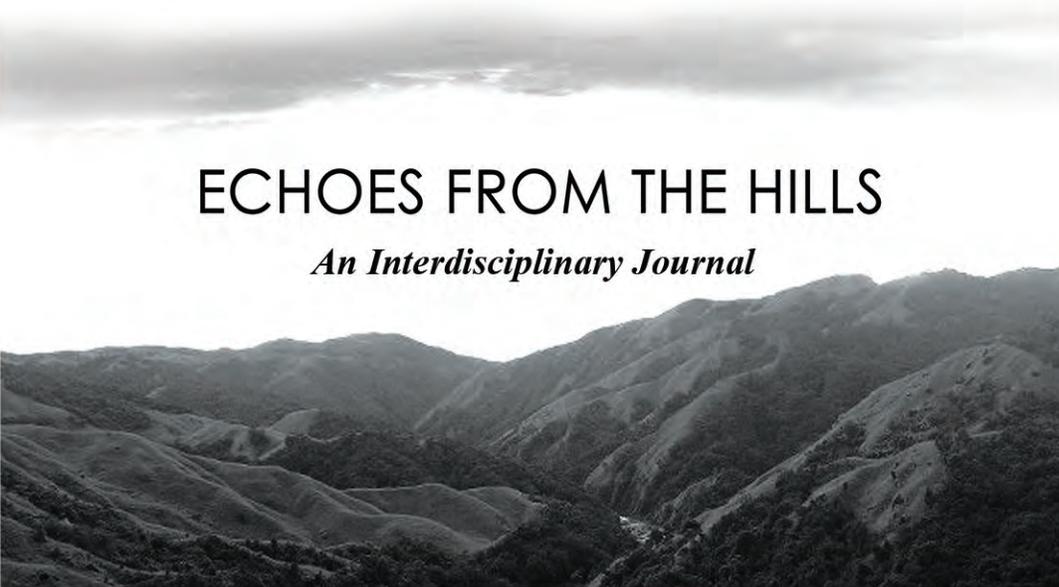


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# ECHOES FROM THE HILLS

*An Interdisciplinary Journal*

SHILLONG COLLEGE  
2018

*“Echoes from the Hills” is an interdisciplinary peer reviewed, annual academic journal. The term “interdisciplinary” connotes improved communication across disciplines that foster mutual understanding. This, in turn, advances our understanding of the deeply complex issues that underpin contemporary society. Acknowledging the need for diversity and integrity in speaking to these issues, Echoes from the Hills publishes manuscripts from a wide range of disciplines and encourages approaches to topics that use multiple and mutually supporting forms of analysis. The journal is committed to showcasing and publishing innovative scholarly writing from established and emerging academicians and professionals around the world with a hope to promote dialogue, reflection, inquiry, discussion, solutions and action. The Annual academic journal which is Interdisciplinary in nature will focus on a theme to allow a holistic representation of works from different aspects.*

*The Theme of this Second Volume :*

***“Modern Environments: Emerging Trends”***

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**NOTE FROM THE PRINCIPAL, SHILLONG COLLEGE**

It gives me immense joy and satisfaction that the college is able to come up with the second volume of the interdisciplinary journal; “Echoes from the Hills”. We live in an evolving society where new developments and progress occur in almost every sphere and aspect of social, scientific and economic frontiers. The concept of “change” resonates in all realms of environment. These social changes occur due to many reasons and factors. To keep ourselves abreast and well informed of such changes is necessary in order to gain a holistic understanding of the direction that our society is headed to.



Keeping in mind the growing need to examine the changes in our society, the second volume of the journal dedicates itself to the theme; “Modern Environments: Emerging Trends”. This volume dwells upon the trends that are reshaping businesses, driving new technologies, shifting talents needs, changing human behaviour and so on.

I congratulate the Editorial Board whose enthusiasm and tireless efforts have come to fruition with this second volume. The articles included in this volume will immensely benefit the readers. This volume should inspire future editions to further seek out themes of societal relevance that are pioneering and insightful.

My best wishes to all the authors and contributors of the journal.

**Dr. K.D. Ramsiej**  
**Principal**

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**NOTE FROM THE EDITOR**

Change is a universal phenomenon and the challenges of change articulate our collective concern. They affect both the individual and society. In this context, there is a need to deeply reflect on these problems and to reorganize ourselves to meet these challenges. We therefore have to examine as how far the forces of change have a liberating effect on society.

The social effect of the new emerging trends is instrumental, symbolic and intrinsic in triggering new responses from other sections of society which are manifested at the levels of our social, economic, political, environmental and cultural life.

This second issue on the theme “Modern Environments: Emerging Trends” contains 10 (Ten) papers drawn from various multi-disciplinary spheres weaving an intense academic discourse that are of local, regional and national importance. This issue contains discussions and deliberations of diverse nature ranging from green economy, globalization and public administration, sustainable development and renewable energy resources. Besides this, issues relating to culture, history, education and tourism have been explored in this volume.

The publication of this journal would not have been possible without the efforts of several people. I express my gratitude to all the contributors for their submission and especially for their commitment. The thought provoking papers in this volume is expected to generate not only curiosity but promote an understanding of the various issues.

It is hoped that this Volume will ignite the minds of the readers resulting in a comprehensive discussion that will promote a well-planned strategy for overall, dynamic and sustainable development.

Without doubt the timely completion and success of this second issue of the multi- disciplinary journal “Echoes from the Hills” goes to the untiring support of the Principal, Dr. K. D. Ramsiej, Vice Principal, Dr. M. Dey, Vice Principal Professional Course, Shri. K. D. Roy, Internal Quality Assurance Cell, Co-ordinator, Dr. (Mrs.) E. Kharkongor, all Editorial Board Members of the Journal.

**Dr(Mrs.) S. Khyriemujat**  
**Editor,**

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## Green Economy

Dr. Natalie West Kharkongor

### *Abstract*

*The paper talks about the significance of a green economy. It also reveals the importance of green economics as a sine qua non to achieve a green economy. The paper also draws a distinction between ecology sustainability and environment sustainability. Green financing is also explained in the paper which countries need to promote to become green economies. The paper also mentions a new measurement of GDP which economies need to adopt to be a green economy.*

**Keywords: Green Economy, Green Economics, Ecology, Environment, Financing, Bonds, and GDP.**

### **Green Economy**

Green Economy is defined as an economy that aims at reducing environmental risks and ecological scarcities and that it also aims for sustainable development without degrading the environment. A green economy not only protects ourselves and our planet, but can provide millions of jobs as we develop and install new technologies, rebuild and retrofit buildings, as well as devise new processes and modes of production. The term ‘green economy’ was first coined in a pioneering 1989 report for the Government of the United Kingdom by a group of leading environmental economists, entitled Blueprint for a Green Economy (Pearce, Markandya and Barbier, 1989). In 2008, UNEP championed the idea of green stimulus packages to accommodate financial crisis and global recession concerns (Atkisson, 2012).

In October 2008, UNEP launched its Green Economy Initiative to provide analysis and policy support for investment in green sectors and for greening environmentally unfriendly sectors. In June 2009, in the lead up to the UN Climate Change Conference in Copenhagen, the UN released an interagency statement supporting green economy as a transformation to address multiple crises. The multiple crises facing humanity based on a global green economy.

In February 2010, Ministers and Heads of Delegation of the UNEP Global Ministerial Environment Forum in Nusa Dua acknowledged in their declaration that the green economy concept “can significantly address current challenges and deliver economic development opportunities and multiple benefits for all nations.” It also acknowledged UNEP’s leading role in further defining and promoting the concept and encouraged UNEP to contribute to this work through the preparatory process for the UN Conference on Sustainable Development in 2012 (Rio+20). In March 2010, the General Assembly agreed that green economy, in the context of sustainable development and poverty eradication, would form one of the two specific themes for Rio+20 (resolution 64/236).

In the 2016 Global Green Economy Index (GGEI), Sweden is the top performing country, followed by Switzerland, Germany, and Austria. Developing countries in Africa and Latin America, which includes Ethiopia, Zambia, Brazil, and Costa Rica also perform well in this new GGEI edition, ranking in the top fifteen for performance. No country in Asia ranks well for performance on this new GGEI, with the exception of Cambodia, which was the most improved country, as compared to the last edition, rising 22 spots to 20th overall. China, India, Indonesia, Japan and South Korea do better on the perception side of the GGEI, but continue to register concerning performance results. The United Kingdom’s GGEI performance continues to lag behind its EU peers, ranking 25th of the 80 countries covered. While the UK does very well on both the perception and performance side of the Markets & Investment dimension, inconsistent policies supporting renewable energy and green growth continue to hurt the UK on other parts of the GGEI. The United States ranks near the top of the GGEI perception survey and it is widely viewed as a vital market for green investment and innovation. Yet overall, the U.S. continues to have mediocre performance results, ranking 30th of the 80 countries covered. However, the GGEI found that U.S. company-level initiatives to green supply chains and reduce carbon footprints are accelerating (2016, GGEI Report).

## **Green Economics**

Green Economics is derived from a Greek word “okionomia”, which means “household management”. Adam Smith defined Economics as a Science of Wealth. Alfred Marshall says Economics is the study of mankind in the ordinary activities of life, how man gets his wealth and how he utilizes it. All evolve in how man tries to get wealth to satisfy his needs. As time passes, economics has emerged as how to make man get wealth not only to satisfy his needs but also to satisfy his greed. With limited resources, satisfying someone’s greed is to deny someone’s need. Apparently, economics is driving man to go to any extent just to satisfy his greed.

The global economy witnessed a high degree of imbalance in terms of extraction and usage of resources. The state of nature and its natural resources, like the quality of water and air are on a downward spiral and have reached an alarming point. A recent report shows that eight materials, including plastic and aluminum, are responsible for 20 percent of global greenhouse gas emissions. Implementing circular economy principles for these materials can help address climate change, water scarcity and land-use issues in profoundly comprehensive and effective ways (Better Business, Better World Report, 2017).

It is not just about environment, it is about efficiency in economics. It focuses more on diversity, sustainability, caring and benefits sharing. Green Economics reclaims economics from purely quantitative measurement and the assumptions of a “homo economicus” perspective. Its long term outlook reflects the evolution of societies within paleontological time frames, which provides better tools for understanding problems such as climate change and not just trade cycles (Miriam Kennet). Green Economics is the creation of wealth and assets while at the same time enriching the mother earth, for instance green investments. It talks about development and growth and making green profit. In Green Economics, ‘profit’ is still vital, but it is treated as a means to an end and not an end in itself (N W Kharkongor).

Green Economics methodology “brings new perspectives to conventional economic tools. It advocates reusing, reducing, repairing

and recycling rather than global expansion of corporations. It also re-incorporates political economy and the moral and transformational aspects of the economics of Adam Smith (1776), while offering new solutions to ‘managing the commons’; which has been often restricted to game theoretical models and exercises based on the prisoner’s dilemma or voting issues.”

Green Economics are: providing for the needs of all people everywhere, other species, nature, the planet and its systems (Miriam Kennet, Jeff Turk and Michelle S. Gale de) Green Economics focuses on value – in – use and not only on value – in – exchange, and gives importance to regeneration of individuals, communities and ecosystems. Green Economics has a broader scope and includes man and environment. It also embraces new concepts like green thoughts, green mindset, green lifestyle, green business, green profit, green subsidy, and green tax. Green Economics with all its values and objectives is expected to correct the current imbalanced global economy. It can bring about inclusive global economic growth by bridging the gap between the rich and the poor. It will transform the ‘extractive economy’ into a ‘generative economy’ leading to a green economy.

### **Ecology Sustainability and Environment Sustainability**

The ecological sustainability of human settlements is part of the relationship between humans and their natural, social and built environments. Also termed human ecology, this broadens the focus of sustainable development to include the domain of human health. Fundamental human needs such as the availability and quality of air, water, food and shelter are also the ecological foundations for sustainable development addressing public health risk through investments in ecosystem services. This can be a powerful and transformative force for sustainable development which, in this sense, extends to all species.

Environment sustainability concerns the natural environment and how it endures and remains diverse and productive. Since natural resources are derived from the environment, the state of air, water, and the climate are of particular concern. The IPCC Fifth Assessment Report outlines current knowledge about scientific, technical and socio-

economic information concerning climate change, and lists options for adaptation and mitigation. Environment sustainability requires society to design activities to meet human needs while preserving the life support systems of the planet. This, for example, entails using water sustainably, utilizing renewable energy, and sustainable material supplies (e.g. harvesting wood from forests at a rate that maintains the biomass and biodiversity).

An “unsustainable situation” occurs when natural capital (the sum total of nature’s resources) is used up faster than it can be replenished. Sustainability requires that human activity only uses nature’s resources at a rate at which they can be replenished naturally. Inherently, the concept of sustainable development is intertwined with the concept of carrying capacity. Theoretically, the long-term result of environmental degradation is the inability to sustain human life. Such degradation on a global scale should imply an increase in human death rate until population falls to what the degraded environment can support. If the degradation continues beyond a certain tipping point or critical threshold, it would lead to eventual extinction for humanity.

### **Green Financing**

Green financing refers to financial support for green growth which reduces greenhouse gas emissions and air pollutant emissions, leading to job creation and income generation. Green finance is defined as financial products and services under the consideration of environmental factors throughout the lending decision making, ex-post monitoring and risk management processes, provided to promote environmentally responsible investments and stimulate low – carbon technologies, projects, industries and businesses (PWC 2013). Green finance includes operational costs of green investments not included under the definition of green investment. Most obviously, it would include costs such as project preparation and land acquisition costs, both of which are not just significant, but can pose distinct financial challenges (Zadek and Flynn 2013).

‘Green finance’ refers to financial investments flowing into sustainable development projects and initiatives, environmental products and policies that encourage the development of a more sustainable economy. Green finance also refers to a wider range of other

environmental objectives, for example industrial pollution control, water sanitation, or biodiversity protection. Mitigation financial flows refer to investment in projects and programs that contribute to reducing or avoiding greenhouse emissions, and adaption financial flows refer to investments that contribute to reducing the vulnerability of goods and persons to the effects of climate change (Hohne, Khosla, Fekete, Gilbert 2012). Green Finance is any market-based investing or lending program that factors environmental impact into risk assessment, or utilizes environmental incentives to drive business decisions (SIDBI, India).

The Government of India launched the India Innovation Lab for Green Finance which selected three new ideas for green finance. The three areas are: solar investment trust to attract more capital at a lower cost to small – scale residential and industrial rooftop solar projects; the matchmaker service to match qualified investors with a pipeline of climate – related investment opportunities for cities in India; and solar agro – processing power stations to use off-grid systems for agro – processing in villages. The lab has been endorsed by the Indian Ministry of New and Renewable Energy. It is hosted and funded by Shakti Sustainable Energy Foundation and David and Lucile Packard Foundation and the Oak Foundation. Climate Policy Initiative in Delhi serves as the Secretariat and analytical provider. The Reserve Bank of India is also working on standardization of green finances.

Green finance is now shaping the international policy and driving the allocation of billions of dollars in investment. The Chinese mainland has launched the Green Finance Study Group, co – chaired by UK, with UN Environment as the Secretariat to strengthen policy signals, improve market capacity, encourage cross - border flows and deepen risk management. Hongkong is also responding. In May 2016, the Financial Services Development Council (FSDC) published a paper entitled Hong Kong as a Regional Green Hub. Green finance also exist in Bangladesh, Sri Lanka, Indonesia and Cambodia. Singapore, after much, deliberation has decided to join the green finance bandwagon under the leadership of Temasek Holdings and GIC. According to the study on Green Finance Needs in Asean The study, Green Finance

Needs in Asean, undertaken by DBS and the UN Environment Inquiry into the Design of a Sustainable Financial System, finds that US\$3 trillion in green investment is needed between 2016 and 2030. This represents a new Asean green investment market 37 times the size of the global 2016 green bond market (Nov, 2017, The Business Times). Climate smart finance is critical to fighting poverty and meeting development goals. In addition, concessional climate finance is critical to supporting developing countries to build resilience to worsening climate impacts and to catalyzing private sector climate investment.

### **Green Bond**

Green bond is a tax – exempt bond issued by federal qualified organizations or by municipalities. Green bonds are created to encourage sustainability and the development of brownfield sites. More specifically, green bonds finance projects aimed at energy efficiency, pollution prevention, sustainable agriculture, fishery and forestry, the protection of aquatic and terrestrial ecosystems, clean transportation, sustainable water management, and the cultivation of environmentally friendly technologies. The tax-exempt status makes purchasing a green bond, a more attractive investment compared to a comparable taxable bond, providing a monetary incentive to tackle prominent social issues such as climate change and a movement to renewable sources of energy.

In 2016, green bond issuance soared to a record high, accounting for \$93.4 billion worth of investment worldwide, according to the latest report from ratings agency Moody's. Green bond issuance is expected to surge to more than \$200 billion in 2017, Moody's estimates. As recently as 2012, green bond issuance amounted only to \$2.6 billion. The surge was attributable largely to Chinese borrowers, who accounted for \$32.9 billion of the total, or more than a third of all issuances. But the interest is global, with the European Union and the United States among the leaders.

The World Bank is a major issuer of green bonds. The institution has been very active through 2016, especially in the United States, where its issuances total over \$500 million in U.S. dollars, and in India, where its issuances total over \$2.7 billion Indian rupees. World Bank green bonds finance projects around the world, such as India's Rampur Hydropower Project, which aims to provide low-carbon

hydroelectric power to northern India's electricity grid. A green bond is like any other regular bond but with one key difference: the money raised by the issuer are earmarked towards financing 'green' projects, i.e. assets or business activities that are environment-friendly. Such projects could be in the areas of renewable energy, clean transportation and sustainable water management.

Green bonds enhance an issuer's reputation, as they help in showcasing their commitment towards sustainable development. It also provides issuers access to specific set of global investors who invest only in green ventures. With an increasing focus of foreign investors towards green investments, it could also help in reducing the cost of capital.

Green bonds were launched for the first time in 2007 by few development banks such as the European Investment Bank and the World Bank. Subsequently, in 2013, corporates too started participating, which led to its overall growth. In India, Yes Bank was the first bank to come out with an issue worth Rs 1,000 crore (10000 million) in 2015. Following this, few other banks too had green bond issuances. CLP India, was the first Indian company to tap this route. So far, Rs 7,200 crore (72000 million) has been raised via green bonds. Green bonds annual issuance rose from US \$40 million in 2014 to US \$ 150 million in 2017 (Climate Bonds Initiative). Trillions of dollars of green investment in the next decade to combat climate change, and approximately about US \$90 billion is the estimated global investment to combat climate change. HSBC is committed to playing its part – enabling investors to make informed choices and encouraging the green bond market to grow. HSBC has also pledged to provide USD100 billion in sustainable financing and investment by 2025. The goal is one of five new commitments that HSBC is making to tackle climate change and support sustainable growth in the communities it serves. The bank will intensify its support for clean energy and lower-carbon technologies, as well as projects that support the implementation of the United Nations' Sustainable Development Goals.

Green bonds are often identical in structure, risk, and return to traditional bonds, except that capital raised from a green bond

funds clean energy, energy efficiency, low carbon transport, smart grid, agriculture & forestry, natural resource mitigation or similar projects/ initiatives/ programs. Green bonds are marketed as “green” at the time of issuance. Issuers are expected to provide a description of projects to be funded at the time of issuance, ensure segregation of project funds, and provide post-project reporting or verification about how the funds were used. Green bonds typically fund large-scale, capital-intensive green infrastructure projects such as energy efficiency projects, transit, or renewable power, among others, that can be repaid from steady, modest, long – term cash flows.

The World Bank launched the “Strategic Framework for Development and Climate Change” to help stimulate and coordinate public and private sector activity to combat climate change in 2008. The World Bank Green Bonds is an example of the kind of innovation the World Bank is trying to encourage within this framework. The World Bank Green Bond raises funds from fixed income investors to support World Bank lending for eligible projects that seek to mitigate climate change or help affected people adapt to it. The product was designed in partnership with Skandinaviska Enskilda Banken (SEB) to respond to specific investor demand for a triple-A rated fixed income product that supports projects that address the climate challenge. Since 2008, the World Bank has now issued over USD 10 billion equivalent in Green Bonds through more than 130 transactions in 18 currencies. World Bank Green Bonds are an opportunity to invest in climate solutions through a high quality credit fixed income product.

### **Green GDP**

The green gross domestic product (Green GDP) is an index of economic growth with the environmental consequences of that growth factored into a country’s conventional GDP. Green GDP takes into account the value added to the ecology as well as the cost to the ecology.

The externalities of economic growth that are not factored into the conventional GDP numbers have a massive monetary value. A study by the World Bank estimates that in 2013, India suffered a loss of over \$550 billion, or 8.5% of GDP, just as a result of air pollution.

The economic cost of other impacts, such as water pollution and land degradation, among several others, would be much more. One such example comes from the WWF's 'Living Planet' report, which finds that "25 per cent of India's total land is undergoing desertification, while 32% is facing degradation." This has a direct impact on the future food production capacity of our agrarian economy as the country could see a 10-40 per cent loss in crop production by the end of the century.

Societies should be able to see how market consumption affects the consumption of public goods like beautiful views, clean air, and clean water. After all, consuming fewer manufactured products now in order to ensure more access to natural goods and services later, may be in society's best interest. Another reason to measure green GDP is that environmentalists want to track the provision of nature's benefits over time, either to hold governments accountable or to compare their environmental conditions with those of another country.

Thus, there arises a need for the economic indicators to start factoring in what can only be termed environmental income. For instance, in many states that have seen rapid development at the cost of the environment, indigenous people have become poorer because they lose income from non-timber forest products and are deprived of clean drinking water that once used to flow in forest-rivers. This ecological poverty is spreading across India. Environmental metrics are not fads. GEP, when used in association with GDP, may present a true economic (and environmental picture).

If a country is dependent on its natural resources then the measurement of saving rate is obscured because the depletion of natural resources does not occur in traditional GDP accounting frameworks. 'Adjusted Net of Genuine Savings' is a better measure of Savings because it takes into consideration the depreciation and depletion of natural capital. Economic policy makers must consider the sustainability of projected consumption and production patterns. Thus, green accounting is of paramount importance. The role of natural resources in poor countries is highlighted because their citizens depend on natural capital for subsistence and a source of developmental finance.

### **Variables to be Included in Green GDP**

Similar to conventional GDP, Green accounting should be about the end product serving benefits to people. In order to prevent double counting of these products, intermediate services should not be taken into consideration. This method of defining the unit of account makes the development and application of green accounting cost-effective and well defined.

- In order to characterize and track the benefits of nature over time, the units need to be clearly defined, ecologically and economically defensible, and consistently measured. The units should be counted in such a way that they can be distinguished by space and time.
- The benefits of nature include various forms of recreation, aesthetic enjoyment, and commercial and subsistence harvests. These benefits also include damage avoidance, human health, and enjoyment of life's diversity. Ecosystem services are the aspects of nature that society consumes to experience such benefits. They are the end products of nature yielding human well-being.
- In order to arrive at green GDP, one must therefore count (and eventually weight) only the contributions of nature to recreation: lakes, mountains, trout populations, and so on. For the purpose of counting, ecosystem services should be isolated from non-ecological contributions to final goods and services. Once the ecosystem services are combined with other inputs, such as human resources and capital, they cease to be identifiably "ecological." The aim is to count nature on an equal footing with what GDP is already counting.

### **The formula to calculate Green GDP would be**

$$\text{GDP} = \text{C} + \text{I} + \text{G} + (\text{X} - \text{M}) + (\text{ER} - \text{EE})$$

Where,

- ER = Ecology-related revenue
- EE = Ecology-related expenses

The basic Green GDP, thus, calculated will require proper data about ecology-related revenue and expenses. However, it can pave way for calculation of Green GDP in the broader sense by

the government. The addition of another metric to assess the value added to the economy and the ecology by a country each year would necessitate changes to be made in the way national accounts have been computed so far. To measure ecology-related revenue and expenses a change in the mindset is needed not only at the level of the ministries but also at the level of the common man who would then understand the economic value of taking care of the ecology.

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## **OF PHILOSOPHY AND PERCEPTION OF NATURE: THE JAINTIA STANCE**

Dr. S. N. Lamare

### ***Abstract***

*Going by the oral tradition, the Jaintias were known to have a close interaction with their natural environment and their survival also depended much on their understanding of the same. Their occupations, customs, traditions, belief systems and their responses to the limited resources that were available within their own geographical space would throw light on their survival skills, adjustments and adaptation. Like any other indigenous societies, the Jaintias too would acknowledge nature in their day to day life and reverence is being shown to both animate and inanimate objects around them. The close proximity that the people were having with nature had also helped them to relate to many things and also to search for answers from these occurrences.*

*This paper will make an attempt to understand the kind of consciousness that had been there with the people in the pre-colonial period and how this had change with the passing of time.*

### **Of Philosophy and Perception of Nature: The Jaintia Stance**

The creation parable of the Jaintias subscribes to the idea that the people were sent by God to a place that was specially created by him for them. This became part and parcel of their belief system and their cultural expression was fashioned around this kind of thinking process. The legend of *U Lakriah* provides an allegory to the above assertion. The legend offers that God after creating the earth send his people to live in a particular place and to take care of what was handed over to them. It was expected of the people that they will have to use their knowledge and wisdom to work and prosper in the natural world and not to suppress or to do otherwise, so as to harm or damage what was being handed over to them. Stress was given on the idea of mutual growth and existence. It was made clear to the people through *U Lakriah*, the messenger of God that the other living creatures were also created by God and that humans were placed on a higher hierarchical order. As a follow up of the idea of creation the reference to the goddess that governs, referred to as *Ka Blai Synchar*

or the goddess that rules, would provide another explanation about their perceptions about nature. This tradition offers that God after creating the earth instructed the goddess to go down to earth and to reside there. She on the other hand pointed out that it would not be possible for her because the earth was covered with huge slabs of stones and boulders. To this effect God caused a serious tremor out of which rivers, lakes, mountains, valleys and arable lands were formed, which made it possible for the growth and survival of different flora and fauna. With all these in place the goddess came to reside on earth, to help and guide the people in their everyday life.

Going by the contemporary discourse, the Jaintias are not the indigenous inhabitants of these hills but have migrated from outside the region. Their original home and their racial stock (Mongoloid race) to which they belong is something which is still being speculated upon. The Jaintias of the upland region are being identified with the *Kiratas of Pragjyotisha* which would include the people of Tripura, the Kacharis, the Garos, Nagas and also the Chutias (Sen 1993:21-29). Clear cases of them being influenced by other people during the course of their migration speak much as to how this particular group of people was influenced by the Austro-Asiatic group and adapting to that particular language (Singh 1983:22).

In trying to understand human relationship to their natural surrounding it is generally agreed that the environment and everything living within it would interact with one another and that culture and religion develops accordingly with the situation that they are being exposed to and are one inseparable unit. However, with time and the emergence of new ideas, supported by secular ideals, the notion that humans were created to dominate all other living creatures or organisms gained ground thereby bringing a change in the perceptions of the people towards the environment. Going by the oral tradition, the Jaintias were known to have a close interaction with their natural environment and their survival also depended much on their understanding of the same. Their occupations, customs, traditions, belief systems and their responses to the limited resources that were available within their own geographical space would throw light on their survival skills, adjustments and adaptation. Like any other indigenous societies, the

Jaintias too would acknowledge nature in their day to day life and reverence is being shown to both animate and inanimate objects around them. The close proximity that the people were having with nature had also helped them to relate to many things and also to search for answers from these occurrences. The tell-tale signs from the plants, flowers, insects, animals and even from weather conditions had helped them to have a better understanding of the ecological system. It is the belief of the people that life is everywhere and that their culture is intricately interwoven with their thoughts as reflected in their religion *ka Niam-Tre*. This had made the people to respect the natural world and the philosophy of their religion have originated with the kind of importance that they have attached to the environment around them or at least to seek answers from the powers of nature like that of the sun, moon, thunder, lightning, river, streams, mountains and others.

Their reverence to all these have also led to the personification of these elements with an understanding that they have immense powers either to help or to destroy humans and, therefore, a proper adoration is required to be followed so as to seek the blessings from the gods or goddesses who dwells on them. It is a way of life for the people and as part of their faith, the people would pray for their wellbeing to the creator who is again the architect of all, and would address him as *U Tre-Kirot*, *U Blai Wa-Booh Wa-Thoo* and is the guardian of all. In this sense, since the belief is inherent to the community, anyone showing disrespect to nature or doing anything otherwise, so as to harm or damage that belief would invite adversity on the individual or the community. This kind of attitude shown towards the surroundings has served as a beautiful bond between man and environment.

The people believe that God is omnipotent, omnipresent and omniscient and adulation in the form of rites, rituals and sacrifices are also carried out in the wide open spaces or in the sacred groves or sometimes in any other places which they consider to be appropriate. There is a strong belief with the people that God can be worshipped anywhere and by anyone and one way of addressing the ultimate is through sacrifices which is being offered to *Ka Rym-Aw* or mother earth. This again can be traced to the oral tradition of the people which speaks about *U Lakriah* and the commandment that was given to him

by God with specific instructions, one of which was the reverence to be shown to nature and that the people should not bury anything that would rot and decay as this would pollute mother nature (Lamare 2005:61). This is still being considered as an important philosophy to be practised upon and nothing would be done so as to desecrate mother earth. This again will explain as to why the Jaintias do not bury their dead but the mortal remains have to be cremated, extending the concept of purification by fire. This in clear term would indicate that much of their social and religious practices have come about through their understanding of the ecology around them. The Jaintias believe that much of their living histories are written in nature. The streams, rivers, mountains, flora and fauna speak volumes about their very existence. All these for a trained mind can serve as an important historical source to understand a group of people where nothing is said about them in writing. These information's derived from the oral traditions can provide an alternative understanding to the other available sources if any.

It is equally important to acknowledge the fact that mankind has interfered and manipulated his immediate surroundings in order to meet his needs and requirements. The understanding about the power of fire and the knowledge to domesticate the same have helped man throughout ages to use fire in clearing thick forest areas and also to keep himself and his family safe from predators. Apart from the role of the individuals, natural calamities in its own ways have altered the ecology and in the process shaped man's relationship with the environment around him. As much as they would understand the blessings of nature, the power of the elements in the form of natural disaster which had been overwhelming them was also known to be narrated and handed down from one generation to the other. The occurrence of these natural phenomena, which in the earlier times would evade their power of thinking and reasoning were later understood as an act to benefit mankind and much of the destruction caused was intended to annihilate the untamed animals that had affected their economic activities or the insects or pestilences that might have ruined their agricultural production. These developments have molded the beliefs and actions of the community especially when they tried to rationalise

many of the unanswered questions about the different phenomena that were happening in and around them. In this context it can be said that the long relationship that the people were having towards their own environment, in many ways reflects their understanding of the forces around them and how it has affected and influenced their religion in time.

The ability to understand nature is not something of the recent past, but had come down from one generation to the other by words of mouth right from the time the people have inhabited these hills. It was more about adaptation to the surrounding rather than domination. It was through their interaction and experiences that this knowledge has come about and today it is an important area of study especially with the kind of environmental changes that are taking place which maybe caused due to human interventions or at times naturally induced. In the past much of the social, economic or even political organisations had developed as a response to which the people were adapting towards their environment. The oral narratives of the people provides information about their perception towards their land, the kind of crops to be cultivated for a good harvest, their knowledge about birds, animals, plants and medicinal herbs. To the people all animate objects are considered to be important component of the entire ecological system and proper care was taken so as not to disturb the same, even though if there was a need for intervention at times.

The act to conserve their natural habitat can be seen through their religion. Nature has always been considered to be sacrosanct and in order to maintain the purity of the same, rivers, streams, hills or even stones would be personified as gods and goddesses. In this case references to *Ka Myntdu*, *Ka Kupli* as river goddesses and also the four stones deities located at four different parts of Jowai town like that of *U Moo-Khai*, *U Moo-Ralong*, *U Moo-Tong* and *U Moo-Sniang* to protect the town from any unforeseen calamities are clear examples for the above assertions. It is the general belief of the people that the rivers, streams, rocks, stones and trees have always served as the minders of the village and its people. In addition to the above the commune does have a rich collection of expressions which comes in

the form of similes drawn up from nature. Importance is also being given to land and its fertility and this can be seen through the *Laho* Dance of the people. The different types of *Laho* dance like that of *Ka Laho* for *Ka Puh Hali* or ploughing, *Ka Puh Kper* or relating to the gardens, *Ka Choh Kba* or thrashing of the paddy, *Ka Kit Kba* or the carrying of grains are clear indicators about the reverence shown towards nature and their occupation as agriculturists. With time their contacts with the others during their process of migration and their proximity to the plains have helped them to use other materials as their tool for daily activities and this had led to the manipulation of their ecology. Perhaps the knowledge of smelting iron had come through this process and this speaks in no mean measures about their relationship with their environment. In order to smelt iron and to produce iron tools and implements meant for cultivation, the felling of trees to produce charcoal is an important process. Likewise the method of hunting also underwent a change and this had an impact on the fauna around them. The ever expanding cultivation had led to the domestication of plants and animals meant for consumption. These technological changes brought about new ideas to the people and especially in their relationship towards their environment.

Today there is a lot of resentment on the part of the environmentalists regarding the random exploitation of the natural resources and the manner in which the ecology is being manipulated by the capitalist groups in their race to become rich quickly. In the case of the Jaintias the extraction of coal and limestone are being carried out in a manner with total disregard to the impact that it can have on the people and the environment. Signs of uneasiness with the new trends are fast emerging in the form of lack of proper drinking water in the coal mine areas, the destruction of rich cultivable lands because of the careless dumping of extracted minerals, different kinds of sickness and the migration of people from those areas to others for better living opportunities. These are clear indicators that things are no longer the same and that there is something which is terribly wrong in the manner in which the environment is being tampered upon.

As mentioned in the beginning, not very long ago there was a belief with the people that their relationship with the environment was

close and intimate and every step was taken to protect and preserve the same as their very existence as a community depended much on what is available from nature. There was a great deal of respect that was shown and all these got reflected in the cultural and spiritual expression of the people. The oral narratives, myths and legends of the people do share a lot of information about these connections that the people were having towards nature. It was more of an element of reverence and acknowledging the power of nature which was also marked by their fear for the unknown that had prevented the people from abusing their natural surroundings. This belief which was strong at one time started to show signs of decay when the people came under the influences of other ideologies, both inherited and acquired, unmasking the mystery of nature by answering many of their unanswered questions from the past, making belief that man was created over and above all creatures and to control and dominate his natural surroundings. These ideologies created havoc when the people started to show disrespect to whatever they believed in earlier as silly superstitious beliefs of the unlettered people. This kind of thinking process got compounded further with the needs of the economy where the philosophy of life and the peoples' perception of nature started to take a back seat and the market forces were just too strong to be challenged by a community which is struggling for its very own existence.

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## Tourism and Human Resources

Dr. Benjamin F. Lyngdoh

### *Abstract*

*The tourism sector is one of the most attractive and potent sectors worldwide highlighting relationships with economy, society, environment and culture. However, the aspect of tourism and human resources presents as an interesting research gap deeming evaluation. Accordingly, an inquiry into this subject-matter through the medium of tourism-related microenterprise is the crux herein. The study is scoped in Meghalaya, India and applies a quasi-experimental comparison methodology, namely propensity score matching (PSM) and difference-in-difference (DinD). PSM ensures a matched sample set from the experimental group (EG) and control group (CG) on a sound scientific base and the DinD derives the human resource outcomes. As such, the sample size of 400 comprises of the EG and CG of 200 samples each across human resource indicator variables namely, mobility, recognition in community, social networks, self confidence, communication skills, team building skills, leadership skills and empowerment. The observations are that tourism in Meghalaya is a potent means of transformation and in the context of tourism-related microenterprise; the entrepreneurs have shown a marked improvement on their human resource development outcomes.*

**Keywords: Tourism, Human Resource**

### **Introduction**

The creation of national wealth depends upon the competitiveness and capabilities of its entrepreneurs (Cuervo, Ribeiro, & Roig, 2008). In addition, entrepreneurship is the phenomenon associated with entrepreneurial activity (Ahmad & Seymour, 2008) and it is a dynamic function under management discipline (Busenitz et al., 2003). In keeping with the myriad range of economic activities, entrepreneurship presents itself under agriculture, manufacturing and services. Conversely, one form of such entrepreneurship under the service sector as per classification of ‘focus and operation’ is tourism-related entrepreneurship practiced through microenterprise.

In the tourism sector, all microenterprise focused upon tourist clientele can be classified as tourism-related. It is a phenomenon that is flourished by current economic, social and political conditions (Aghapour, Hojabri, Manafi, & Hosseini, 2012). Tourism-related microenterprise includes activities related to operating a legal tourist enterprise and refers to those businesses that seek to satisfy the needs of tourists. As such, persons and businesses that hawk goods or services such as arts and crafts to tourists are tourism entrepreneurs (Koh, 1996). They are identified as essential actors for creating jobs and economic growth (Taskov, Metodijeski, Dzaleva, & Filipovski, 2011) with continuous efforts on innovations (Hjalager, 2002). In general, it manifest in the form of guide services, small spa and massage facilities, specialized bakery and pastry shops, coffee shops, souvenir trading and crafts shops, travel agencies, small tour operators, small lodges, small hotels, larger restaurants, recreation businesses, bus companies and so forth (Sterren, 2008).

Globally, the tourism sector is dominated by microenterprises (Indian Institute of Tourism and Travel Management, 2010; Oldbell3, 2007). This is because tourism primarily involves providing services which can be handled by microenterprises (Tourism and Transport Consult International, 2011). In general, they have been identified as the most viable business structure to fight poverty and kick-start sustainable development (Manyara & Jones, 2007; Shen, Hughey, & Simmons, 2008). As such, tourism-related microenterprise encompasses tourism-oriented economic activities as epitomized by ‘the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes’ (World Tourism Organisation, 1995).

Contemporarily, tourism has experienced continued expansion and diversification with the potential to provide numerous jobs. It is basically a labour-intensive, quality-driven service profession which depends crucially on the skill level and professionalism of the workforce (World Travel and Tourism Council, 2006). As such, tourism is seen as an activity which affects society in many ways and has a profound impact on social, cultural and economic life (Coetzer, 2001/02). It has a direct and secondary effects on the economy, particularly in

gross domestic product, tax revenue and sales value (Fayissa, Nsiah, & Tadasse, 2007; Flecha, Fusco, Damiani, & Amaral, 2010) provides employment opportunities, generates supply of foreign exchange, increases income, improves infrastructure, creates favorite image of the country, provides recreational facilities for residents as well as tourists and so forth (Kim, 2002). Traditionally, the impact of tourism was measured in terms of gross national product and employment created (Jamieson, Goodwin, & Edmunds, 2004) and the impacts of tourism are sorted into seven general categories namely, economic, environmental, social and cultural, crowding and congestion, services, taxes and community attitude (Kreag, 2001). Overall, these influences and impacts of tourism through tourism-related microenterprise effectively contribute towards human resource development of the stakeholders. This further has externalities for transforming the society and masses as a whole.

In relation to the above, tourism exhibits impacts through creation of small business opportunities which provide employment, earnings, development of collective benefits and so forth (Jamieson et al., 2004). It brings about a positive impact on the local economy and entrepreneurial development (Ashley, Roe, & Goodwin, 2001; Othman & Rosli, 2011). The poor are involved in all the initiatives as individual producers, employees, casual labourers and operators of microenterprise (Ashley et al., 2001; Awang, Aziz, & Samdin, 2012). As such, tourism creates opportunities for tourism-related microenterprise because start-up costs and barriers to entry are relatively low (Othman & Rosli, 2011; UNESCAP, 2005). Accordingly, the local people and including the poor have opportunities to earn additional income by selling produce or offering services directly to tourists (UNESCAP, 2005). Consequently, the tourism-related microenterprise contribute to raising productivity, dispersal of economic power base through industry ownership, creating employment, commercialising innovative products and creating new markets (Awang et al., 2012). On sustainable practice of business, the impacts are mainly seen in socio-economic domains (Kreag, 2001).

Similarly, the passion to achieve positive outcomes is a driver in the practice of tourism-related microenterprise (Rola-Rubzen et

al., 2011). They impact upon livelihood strategies through changes in employment and earnings, capacity building, education and health, community recognition, increased pride and self confidence (Ashley, Brine, Lehr, & Wilde, 2007; Jamieson et al, 2004). It results in appreciation in financial assets for investment, physical assets like life-stock and agriculture, human skills like communication and coordination, social capital through trust and networks and empowerment through independent decision-making and gaining of recognition (Ashley, 2000). Accordingly, the present study aims at evaluating tourism (from the purview of tourism-related microenterprise) and human resource development by considering Meghalaya as a case.

### **Data and Methods**

In the study, a contemporarily evaluation technique; namely, propensity score matching (PSM) and difference-in-difference (DinD) are applied. They represent a comparison between the tourism-related microenterprise (experimental group [EG]) and non-tourism-related microenterprise (control group [CG]) on a systematic and scientific base.

As such, PSM and DinD is applied for analyzing the performance of the EG (comprising of 200 samples) as against the CG (comprising of 200 samples) across human resource related variables such as mobility, recognition in community, social networks, self confidence, communication skills, team building skills, leadership skills and empowerment over a period of five years spanning from 2011 to 2016. Accordingly, the derivation of propensity scores and DinD values and their consequent application are highlighted as follows –

Identification of covariates – Table 1 highlights the variables found suitable for application as covariates which comprises of age, literacy level, number of children, enterprise type, enterprise nature, coded current investment, source of finance, people employed, coded revenue per month and coded profit per month. The more the number of covariates, the smaller is the matched sample set and vice versa. However, the larger the number of covariates, the better it is. Hence, there is a need to find the optimum number. As such, the variables ranging from one per cent to 25 per cent statistical level of significance are considered and applied as covariates (highlighted in bold). In

particular, literacy level, enterprise type, coded revenue per month and coded profit per month is statistically highly significant. In total, 10 variables are used in the analysis so as to match the two groups and generate a meaningful and quality matched sample set. Consequently, these covariates are used to derive the logit (z) values.

**Table 1: ANOVA on Covariates**

| Variable                            | F – Calculated Value | P – Value   |
|-------------------------------------|----------------------|-------------|
| Gender                              | 0.27                 | 0.60        |
| <b>Age</b>                          | <b>2.50</b>          | <b>0.11</b> |
| Literacy level                      | 26.77**              | 0.00        |
| Marital status                      | 0.08                 | 0.78        |
| <b>Number of children</b>           | <b>5.86*</b>         | <b>0.02</b> |
| Family type                         | 0.34                 | 0.56        |
| <b>Enterprise type</b>              | <b>13.27**</b>       | <b>0.00</b> |
| <b>Enterprise nature</b>            | <b>3.85</b>          | <b>0.05</b> |
| <b>Coded current investment</b>     | <b>1.30</b>          | <b>0.25</b> |
| <b>Source of finance</b>            | <b>2.41</b>          | <b>0.12</b> |
| <b>People employed</b>              | <b>1.46</b>          | <b>0.23</b> |
| <b>Coded revenue per month</b>      | <b>15.21**</b>       | <b>0.00</b> |
| <b>Coded profit per month</b>       | <b>11.36**</b>       | <b>0.00</b> |
| Records kept of business activities | 0.33                 | 0.57        |

(Two tailed table value @5%, @1% (df = 1, 398) = 5.06, 7.97 respectively)  
 (\*\* significant at 1%, \* significant at 5%)

**Deriving the logit (z) values** – Estimation of ‘z’ involves application of ‘qualitative response regression models’. In such models, the dependent variable is always qualitative in nature and carries a dichotomous characteristic. Logit, probit and tobit are a few of such models. ‘Logit’ is a more popular model and is accordingly adopted in the analysis. Hence,  $y$  (dependent) = 1/0, where ‘1’ signifies the samples from the EG and ‘0’ the samples from the CG and  $x$  (independent) = covariates; where  $x_1$  is age,  $x_2$  literacy level,  $x_3$  number of children,  $x_4$  enterprise type,  $x_5$  enterprise nature,  $x_6$  coded current investment,  $x_7$  source of finance,  $x_8$  people employed,  $x_9$  coded revenue per month and  $x_{10}$  is coded profit per month. These covariates form the balanced socio-economic profile of the EG and CG clients. It provides the best platform for a valid and reliable estimation of ‘z’.

Now,  $y = f(x)$ , provides running a logistic regression for  $n = 400$  ( $1 = 200, 0 = 200$ ) samples. This determines the extent to

which the covariates can predict whether an entrepreneur is in one group or the other and provides an indication of the degree to which the groups are balanced on the covariates i.e. it predicts the probability of an event by fitting data to a logistic function. This derives the value of the coefficients for each and every covariate (Table 2). Of the covariates, age, literacy level, coded current investment and coded revenue per month are statistically highly significant as depicted by Wald test and form an integral part of the model. In addition, the small standard error of the covariates reflects upon the large sample size applied in the model. Through the process 400 'z' values were estimated for all the samples that form the EG and CG. Statistically, the 'z' values vary from  $(-) \infty$  to  $(+) \infty$ . This signifies that if 'z' is positive, with the increase in the value of the regressors, the odds that the regressand equals '1' increase and vice versa.

**Table 2: Logistic Regression Results**

| Covariate                           | Coefficient (b) | Wald Value | Standard Error |
|-------------------------------------|-----------------|------------|----------------|
| Age ( $x_1$ )                       | -0.53**         | 16.95      | 0.13           |
| Literacy level ( $x_2$ )            | -0.54**         | 15.88      | 0.13           |
| Number of children ( $x_3$ )        | 0.32*           | 6.28       | 0.13           |
| Enterprise type ( $x_4$ )           | 0.43            | 3.76       | 0.22           |
| Enterprise nature ( $x_5$ )         | 0.25            | 1.32       | 0.22           |
| Coded current investment ( $x_6$ )  | 0.86**          | 30.91      | 0.15           |
| Source of finance ( $x_7$ )         | 0.17            | 0.26       | 0.32           |
| People employed ( $x_8$ )           | -0.11           | 0.41       | 0.17           |
| Coded revenue per month ( $x_9$ )   | -0.46**         | 9.54       | 0.15           |
| Coded profit per month ( $x_{10}$ ) | -0.20           | 1.73       | 0.16           |
| Constant ( $b_0$ )                  | 1.23            | 3.42       | 0.67           |

(\*\* significant at 1%, \* significant at 5%)

**Computation of propensity scores** – Consequently from the above, the 'logistic function' of 'z' is derived by the relation (inverse logit)  $e^z/1+e^z$  where 'e' is the base of the natural logarithm with the constant value 2.718. This logistic function is the 'propensity score' (PS) and its value ranges from '0 to 1'. Thus, propensity scores are extracted for the 400 samples.

**Matching of EG and CG** – On matching of the EG and CG on the basis of propensity scores, 338 matched samples were established

spread over 58 different scores. Here, the full-matching technique which is widely considered to be the most appropriate is applied.

**DinD** – Through the matched sample set the tourism impact is computed through a DinD score. Symbolically, it is represented as  $[(EG_1 - EG_0) - (CG_1 - CG_0)]$  where 1 = current year and 0 = base year]. Accordingly, the propensity score based average DinD (average effect or impact) is computed and arranged in ascending order for the purpose of analysis. This converts the matched sample  $n = 338$  into  $n = 58$ . Moreover, the socio-economic DinD scores are statistically tested through comparison of means by application of t – test at five per cent and one per cent (two tailed)  $df = 57$  level of significance.

### Results and Discussion

The human resource outcomes as highlighted in Table 3 depict an interesting outcome. It records a positive DinD score across all the variables. As such, the EG experienced a better impact on the human resource continuum as compared to the CG. The tourism-related microenterprise has a positive impact on the outcomes and brought about a positive change in the human resource status of the entrepreneurs. In total, three of the eight variables are statistically significant namely, recognition in community (0.26\*\*), self confidence (0.25\*\*) and communication skills (0.23\*). On the other hand, the lowest impact is seen in terms of empowerment and team building skills with a score of 0.12 and 0.09 respectively.

The engagement in the tourism sector through the practice of tourism-related microenterprise has acted as a focal point and a pivot for the entire spectrum of human resource development. It has contributed meaningfully towards the well-being and capacity building of the entrepreneurs as compared to the CG. The mobility of the entrepreneurs in the locality/village and beyond is propelled further on account of business activities which call for frequent movements to different places. This mobility is an important indicator as it also reflects upon the ability of the entrepreneur to decide for themselves and play a critical role in the formulation and implementation of strategy(s). In addition, it improved recognition in the community. The entrepreneur is able to contribute to the household more visibly which further leads to the acknowledgement of the business practices. The entrepreneur creates jobs and engages in product development

thereby leading to their recognition in the community as a whole. The community knows them and looks up to them. This also bears upon the creation of social networks on account of continuous interaction with suppliers, host communities and the tourist. Overall, this ultimately leads to new acquaintances and relationships that improve market visibility which is holistically productive for social and business growth.

In addition, the tourism-related microenterprise improves the entrepreneur's personality traits. They experienced an improvement in their soft skills. There is an impact upon their self-confidence. They develop a positive outlook towards life and this instills a new sense of belief and endeavor. As such, they become bolder in voicing their concerns and making themselves heard. Their communication skills become better on account of interactions through business activities and operations with customers. Moreover, through the employment of some form of labour (skilled/semi-skilled/unskilled), it provided an avenue to test and master on their team building skills. The entrepreneur mobilized people to work together towards a common goal. This also instilled and embedded into it the practice of leadership skills. Lastly, it enabled wider sharing of information at community levels. This increased the sensitiveness to government schemes and subsequently results in their participation. The entrepreneurs have a hold in their life in terms of decision making and selection of choice in relation to social aspects. This is the very epitome of empowerment.

**Table 3: Tourism and Human Resources**

*(Average)*

| PS   | Variable                 | DinD   | T value |
|------|--------------------------|--------|---------|
| 0.49 | Mobility                 | 0.14   | 1.35    |
|      | Recognition in community | 0.26** | 3.76    |
|      | Social networks          | 0.15   | 1.51    |
|      | Self confidence          | 0.25** | 2.94    |
|      | Communication skills     | 0.23*  | 2.29    |
|      | Team building skills     | 0.09   | 0.90    |
|      | Leadership skills        | 0.18   | 1.76    |
|      | Empowerment              | 0.12   | 1.32    |

(Two tailed table value at 5% (df = 57) = 2.00, \*\* significant at 1%, \* significant at 5%)

### **Observations**

Tourism is one of the most important sectors in Meghalaya. It is next to agriculture. The intrinsic features of tourism fit the geography of Meghalaya. It is filled with natural resources which form the epitome of nature-based tourism and attractions. At the outset, tourism has the potency to transform the socio-economic status thereby leading to economic growth and development. For this to be achieved, an effective framework for tourism development is a must while covering strategic aspects of aviation, road transport, accommodation, food, hospitality, recreation and so forth. Moreover, there is a need for ensuring an even spread of tourism resources across the eleven districts of the state with a critical focus on 'sustainability and sustainable business practices'. The criticality arises as tourism Meghalaya is primarily 'environment-based'. This being true, tourism is not a panacea; but in general, it has the means to uplift the livelihoods of the majority if appropriately administered.

In relation to the above, tourism in Meghalaya has not been tapped to its utmost potential. What has been tapped is just the tip of the ice-berg. The crux is that any future tapping of tourism resources and development of attractions need to be effectively planned within the sustainable framework of tourism development. The failure to do so will further lead to a skewed trend of tourism development while endangering the environment. In addition, the tourism business environment needs to be streamlined towards ensuring benefits to the local livelihoods at the grassroots. It must impact the socio-economic status of the underprivileged. This is significant in keeping with the high poverty levels at the rural areas. Importantly, this local livelihoods transformation can happen through the initiation of tourism-related microenterprises. For this to transpire, adequate awareness capacity building of human resources is required while holistically nurturing a business environment that provides space for the masses to exploit the tourism opportunities.

Despite the above macro-level observations, where a number of challenges are highlighted; at the micro-level, a number of tourism-related microenterprises have made headway in Meghalaya. As detailed in the results and discussion section above, the tourism-related

microenterprise has a favourable and meaningful impact on the human resource outcomes of the entrepreneurs. It provided a medium to the entrepreneurs to build upon their socio-economic standing and social capital through a holistic change over time. Overall, it instilled a sense of social assertiveness and social belonging through the positive impacts. This is the hallmark of human resource development. Moreover, these outcomes are significant. This is because these are compared outcomes against the CG which comprises of non-tourism-related microenterprise. As such, these results cannot be sidelined as being redundant. Importantly, they depict the potency of tourism towards transforming the capabilities and abilities of the entrepreneurs involved. For future interventions, a wider-scale initiation of tourism-related microenterprise within the purview of 'sustainability tourism' may result in even bigger and wider human resource outcomes.

### **Conclusion**

The tourism sector is an untapped sector by and large. This presents as an opportunity for better socio-economic outcomes and human resource development. Nonetheless, currently the tourism sector is a growing sector with meaningful impacts across all stakeholders. In the context of tourism-related microenterprise, the entrepreneurs have shown a marked improvement on their human resource outcomes. This portrays that 'tourism does contribute towards human resources of Meghalaya'. However, this has scope for even better outcomes spread across the state in future. This can be achieved through a holistic sustainable framework of tourism development invested over a period of time.

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## **Tribal Women and Natural Resource Management: The Khasi Women of Meghalaya in India**

Dr. Rekha M. Shangpliang

### *Abstract*

*The role of women in natural resource management has acquired a new dimension with the increasing focus on decentralization of community resources specially in developing nations. In recent times due to changes in human-nature relationship and increasing pressure on land and other resources, there is invisibility of women's livelihood strategies, marginalization of women's rights over NTFP's (Non-Timber Forest Products) and other resource base leading to 'feminization of poverty'. Amongst the matrilineal Khasi of Meghalaya, women are known to have heavy familial and nurturing roles besides being the basic providers of subsistence needs. Their indigenous ecological wisdom of edible and medicinal plants and herbs, water conservation, maintenance of sacred groves, village forests etc. has for centuries enhanced their roles as 'resource managers'. However in recent years, issues such as pressure of population, development, land acquisition and alienation, legislative policies of the Government, have undermined the role of Khasi rural women in resource management thereby denying access to, control over and decision making power in livelihoods. This paper discusses the indigenous natural resource knowledge of Khasi rural women and at length attempts to examine their problems with regard to poverty and forest livelihood interventions.*

**Keywords: Natural Resource Management, Ecological Wisdom, Khasi women, Matriliney, Livelihood.**

Natural Resources such as land, forest, agricultural crops, water, timber, wildlife, mineral resources form the most basic needs of a large majority of the world's population and are the driving force behind economic development, industry and Gross Domestic Product (GDP) in any country. Of late there has been a growing trend of focusing thrust areas of development towards decentralization of community resource management. This trend was visible in the early 80's in the whole of South Asia in particular when state and governmental agencies including development practitioners were moved by the

changes taking place in the environment-man relationship. Depletion of the resource base, livelihood strategies of rural folk, centralised system of resource management and the counter attack of communities through social movements were some of the issues that called for a deeper understanding of the resource management systems.

Women's centrality to resource management can hardly be underestimated. The traditionally demarcated roles that women perform in their domestic domain such as washing clothes, collecting firewood and farming, tending animals, growing vegetables and collecting NTFP(Non Timber Forest Products) are considered 'natural' and as such contribute greatly to resource conservation. The conserving and sustaining roles that women perform has been glorified in the pages of history to the extent that women are valorised as 'resource managers'. No one can forget the historic Chipko Movement that took place in 1973 in Mandal, a small hamlet at Chamoli district of Garhwal (India) where women activists staged protests against tree felling by literally 'hugging' the trees. That was the starting point of a conservation endeavour that was 'pro-poor' and above all 'women-centred'. What message did the Chipko movement have for its forerunners? Firstly, the word 'Chipko' itself which means 'to hug' in Hindi evoked pathetic images of poor village women desperately trying to protect their forests from the axes of greedy contractors, by hugging the trees which was their only means of economic survival. Secondly, Chipko has become an environmental icon to the world today that inspired 'eco-feminism' with a strong message 'Our lives before our trees'.

To many of us, the landmarks of the Chipko movement may have left behind a legacy of a well fought battle, a women-centred movement for natural resource conservation, but today 42 years after its inception, questions remain: What role do women have in natural resource management today? What are the challenges that constraints them from their accessibility to forest resource? Let us start first by understanding the inextricable link between natural resources and rural livelihoods, in particular the increasing role of tribal women as household providers in declining rural economies. Tribal economy is inextricably linked with forest livelihood wherein a major source of

their income is derived from dependency on forest related activities. However what is distinctive about tribes in India is their poor socio-economic condition. Poverty has been one of the most serious problems plaguing the country. Studies have also revealed that dependency on forests and common property resources increases as a tribal household becomes economically marginalised. And there is no denying the fact that as poverty increases, the tasks of women become more prominent in ensuring the survival of households by assuming greater responsibility to provide resources from forests and common lands. The importance of women in collection of forest produce is borne by data from almost every country in Asia, Africa and Latin America. For instance a study in North West Frontier Province of Pakistan showed that 78 per cent of morel mushrooms are collected by women and children, which have supplemented their daily requirements for food and other basic necessities. Similarly in west Bengal, tribal women gather Sal (*shorea robusta*) leaves for six months in a year and earn about Rs. 72 per month under the best circumstances. Like most of the tribal Indian women many Naga women depend on the forest and its resources for their livelihood, spending most of their labour and time tending their agricultural field and foraging the forest to meet the subsistence needs of their families and also for income. They have a very close relationship with the environment they live in and can be called the “guardians of their biodiversity” and caretakers of most agricultural and livestock resources (Nagaland Environment Protection and Economic Development and International Institute of Rural Reconstruction, 1999, p. 168).

### **Khasi women in a matrilineal Society**

The Khasi are a matrilineal tribe inhabiting the Khasi Hills in the North Eastern state of Meghalaya in India. While there are many interpretations of the origin of the Khasi race, the term ‘Khasi’ is believed to have derived its meaning from the terms ‘*kha*’ meaning ‘*born of*’ and ‘*si*’ meaning ‘*ancient mother*’, which when interpreted means ‘*born of the mother*’; thus bringing out the matrilineal character of the Khasis who trace their descent from the mother. The Khasi follow the principles of matrilineal descent where ancestral property is passed from the mother to the daughter, preferably the youngest daughter or

the '*khadduh*'. The matrilineal Khasis of Meghalaya believe in the ideology- '*Long jait na ka kynthei*' which means 'From the woman sprang the clan'. This ideology is so deeply rooted in the Khasi ethos that it has brought to light the role of women in perpetuating the clan from one generation to another. Descent line in a Khasi family is reckoned only from the mother's clan or '*kur*' as a result of which the children belong to the descent group of the mother. Therefore it is customary for them to speak of a family of brothers and sisters who are great grandchildren of one great grandmother, and identify themselves as '*shi-kpoh*' which literally means 'one womb' 'that is the issue of one womb'. Significantly, the Khasi ideology of human reproduction describes the father as the provider of stature and form (*U kpa uba ai ka long rynnieng*), while the mother contributes flesh and blood (*ka kmie ka ba ai iaka doh ka snam*) to the child. This filial bond between the mother and the child is strongly reflected even in familial relations and kinship ties where the term *parakur* (mother's kins) is used more significantly than the word *Bakha* (father's kins).

A woman is central to the family in Khasi ideology. She has the responsibility of nurturing and continuing the matrilineal descent line through reproduction. The Khasi woman has numerous familial and kinship roles to perform. Besides being the custodian of family property the '*Khadduh*' or youngest daughter's role is all the more heavy and burdensome. She has to look after the aged members of the family, and other members of the matri-kin, she inherits the family property and continues tradition of carrying out the religious rites and ceremonies from time to time although with the help of her mother's male relatives. The Khasi belief in the saying '*Ka kynthei ka bat ia ka niam*' meaning, 'It is the woman who holds the religion' which signifies her responsibilities in the religious domain. However the exclusion of Khasi women from having any say in village durbars and meetings is noteworthy. They are not allowed to speak aloud in public meetings and village council meetings perhaps because of her domesticated role and nurturing skills she is expected to confine her duties to the home and family matters, leaving the others to the male.

The Khasis have a deep rooted affinity with nature. The earth which is symbolized as 'mother' or '*meiramew*' is looked upon as the

caretaker of all the natural resources. Thus forest holds an important place in the social, economic and religious life of the Khasis. It is looked upon, as a well loved home, a game sanctuary and an abode of worship all rolled into one, around which their social, cultural and religious activities revolve. It is a familiar sight to see women and children setting off into the woods to collect edible fruits and roots. A typical day out for an average Khasi village woman would be best described as follows:

‘She carries her baby on her back, climbing the hills she sets off for the woods with a *ja-song* (cooked rice packed in a leaf) salt and some dry fish (*ktung*). Going to the forest virtually takes her the whole day so besides collecting twigs and fuel wood and other forest products, she also spends the day washing clothes on the riverside in the foothills’.

As nurturer of family line, Khasi women have had a significant role to play in the domestic sphere (Uberoi, 1993, p.180). Her familial roles are well defined and her ‘glorifying status’ as a mother has furthered her roles and responsibilities towards meeting the immediate needs of the family. These roles include some burdensome duties and responsibilities which are part of their household chores such as carrying water, fetching firewood, washing clothes, collecting twigs and edible plants and roots which are carried out in the jungle skirting the village. This has partly been borne out of the fact that women have had a closer interaction with nature and this has enhanced the emotional bond with nature since it has helped them cope up with a number of economic hardships.

### **Khasi rural women and Indigenous Ecological Wisdom**

From a gendered perspective it is a well known fact that women’s indigenous knowledge of eco-systems has contributed to ecological sustainability, and is illustrative of the strength of their eco-system-based learning and commitment to non-violative uses of nature (Wickramasinghe, 2004, p.183). A cursory glance over the Khasi rural eco-system reveals the extent of relationship between women and ecological sustainability. Their wisdom and knowledge about certain species of edible and non-edible plants, food culture and regenerative process of soil fertility has been extremely instrumental

towards judicious use of the resources. A study conducted by the author in 'Lawbyrwa village of Ri-Bhoi District of Khasi Hills revealed that 80 per cent of the time spent by the women of this village in a day was mainly to fulfill the subsistence needs of their family and these activities included collecting fuel wood, water, edible roots and tubers, broom shrubs and other NTFP (Non-Timber Forest Products). Since most villages are located in the forested regions and fringe forest areas they have properly defined gendered work patterns and responsibilities. While men are actively involved in agriculture, daily wage labour and farming activities, women are seen to spend more time in the woods and are the main providers of basic needs such as fuel wood, food, medicinal and Non-Timber Forest Products to the family.

There are many Khasi folktales, and legends that have played a very important role as narratives in focusing the close relationship between women and nature. The Khasi folklore and legends, '*Khanatang bad Puriskam*' are mostly woven around the various forces of nature such as the hills and vales, rocks and caves, the flora and fauna. These elements of nature are personified in the legends as the mother and son, husband and wife and friend and foe according to their natural behaviours, their love, hate, jealousy, pride and vanity which are projected out before the listeners with the sole purpose of teaching moral and spiritual values. The ecological wisdom of the Khasis is a wisdom that is solidly based on 'experience' and they depend on this knowledge to fulfill most of their day to day needs (their economy). Through agriculture, hunting, fishing and gathering a huge range of forest foods and materials with which they make most of their articles of daily use, from houses to ploughs, baskets to leaf-plates. Majority of the Khasi households are built with thatch roof, plank floor, bamboo or stone walls which are all obtained from the forest. Fire always keeps burning on a stone hearth in the centre while the smoke finding its exit as best as it can. The amount of firewood burnt by each family is anonymous. They possess an ancient lore of herbal medicine as well as knowledge about many aspects of nature and human life. Much of this ancient wisdom is today the result of oral tradition. Forest wisdom has enabled the Khasis to live in harmony

with nature besides elevating them to such a high pedestal that no animal or living creature could compete with.

It is also interesting to note the use of simple objects of nature in their day to day activities that reflect the importance of nature in their cultural and religious life. The naming ceremony of a new born infant '*Ka jer ka thoh*' is an important occasion for the mother and the whole family where the pounded rice flour is placed on a bamboo winnowing tray called '*Ka prah.*' When an expectant mother delivers her baby, a sharp splinter of bamboo is used to cut the umbilical cord. No metal objects or even a knife can be used on this occasion. When the umbilical cord, after being tied falls off, a ritual is performed by offering worship to certain water deities or '*Ka Blei Sam Um*'. Singing and dancing form an important component of Khasi culture. There are many Khasi traditional dances that are of ecological significance—harvest dances that are performed during harvesting, another well known dance is '*Ka Shad Kynthei*' where only women take part in the religious dance invoking God and thanking him for a good harvest. There are also dances exclusively meant for women connected to fertility. It is called '*Ka shad Nohsakyriat*' which is performed by the women folk who spin themselves on a traditional pole round and round in order to symbolize their strength and femininity of motherhood.

### **Forest Livelihood and Khasi rural women**

Like most tribal communities, land and forest are the two most important natural resources to the Khasi. However they have to be dealt as separate entities. Land locally known as '*Ri*' by the Khasis has a deep attachment to their pattern of social organization and permeates every aspect of their socio-economic life. Land to the Khasis is a 'gift of nature' that belongs to the community, therefore access to land not only ensures economic security for the individual, but control over it symbolizes territorial integrity for the community as a whole (Nongbri, 2003, p. 25).

One of the most important source of livelihood of the Khasis is the forest which is their well-loved home, an abode of worship and a store-house of their daily necessities of life, like food, water, fodder and fire-wood. The Khasis assign a deep sense of awe and reverence to the different elements of forest in their natural abode, which conjure up

to them as matters of life and death. This symbiotic relation between the Khasis and the nature has been appropriately defined by a Khasi author H. O Mawrie in the following words – ‘*U Khasi u im bad ka mariang, bad ka mariang ka im bad u*’, (Mawrie, 1978, p. 78) which means – A Khasi lives with nature and nature lives with him. The Khasi rural women venture out into the forests and engage themselves everyday cutting fuel-wood, and collecting fruits, vegetables, broom grass etc., drying and processing them and, at the fall of the day, return back home with heavy bundles on their heads. The hill slopes and deep gorges remain, throughout the year round, covered with wild banana trees, cane and bamboos, innumerable varieties of edible and non-edible mushrooms, varieties of tubers and succours etc. The tender bamboo shoots are one of the tribal delicacies consumed as a curry or pickle after processing with mustard oil and spices. Every Khasi stall located along the Shillong- Guwahati National Highway, sell these bamboo shoots and other wild fruits and vegetables gathered from the forests. The Khasi Hills forests are home to many unknown plants and herbs of great medicinal value with which Khasis have developed an indigenous system of medicine that is widely used among them as an alternative to the costly allopathic medicine. The wild grown broom grass collected by the Khasi women and children are bound into bundles of broom-sticks and sold locally or exported out of the state which fetch Rs 20 to 50 per each broomstick depending on the market and the quality of workmanship. Some of the NTFPs gathered from the forest of Khasi Hills such as cinnamon, sandal wood, pepper, fruits and plants and herbs are of very high economic and medicinal values in the nearby urban markets.

### **Women Involvement in Forest Management**

Of late, the Government of India has introduced a number of schemes through which regeneration and development of degraded forest are sought to be rejuvenated for the augmentation of the forest resources and development of environment. It is imperative that the institutions responsible for forest management for creating livelihood opportunities must work closely with women, since the womenfolk in Meghalaya are major players in this aspect. While it is understood that the strength of the village community among the Khasi is their

‘social capital’, where all members of the family are actively involved in building up subsistence economy, the women play a singular role as gatherers of NTFPs . Thus the policy framework must give an emphatic thrust on the involvement of women in planning, implementation, monitoring and review of any activity (Darlong et. al., 2008, p. 43). However, the fact of the matter remains that during the past five decades of Indian planning, women have been thoroughly marginalized in the process of development, implementation and reorientation. Needless to say, the constraints faced by the women in controlling and managing land and forest resources have to a certain extent deprived them of their claims on sustainable livelihood. The scenario in respect of the Khasi women who claim to belong to matrilineal society is no better either. Though in principle the matrilineal rule of female inheritance and descent is followed, their customary practices and usages are certainly not gender egalitarian. The overall administration and superintendence of the domestic matters are vested in the mother’s brother. The Khasi women inherit property but lack the power to manage it. The woman is the central figure in the household organization but when it comes to the allocation of the rights over land, a sharp distinction is maintained between ‘ownership’ and ‘control’. While ownership of land is transmitted through women, control invariably lies with men (Nongbri, 2003, p. 34).

In the case of community forests (*Khlaw Raid and Khlaw Adong*) greater autonomy in management and control of forests lies with the traditional institutions, clans and authorized individuals. In matters relating to forest up-keepment and decision making the Khasi women have no right whatsoever. The village council (*Durbar shnong*) which is traditionally empowered to deal with the overall development works of the village does not recognize a woman as its member nor does it entertain any views or opinion from her. Problems faced by women are mostly voiced through the adult male members of their households.

The following Table 1 throws some light on the indigenous strategies evolved by Khasi women in various areas of social ,economic and cultural life that have indirectly contributed towards natural resource management.

**Table 1: Distribution of work between male and female in forest related activities**

| Sl. No. | Activities                      | Sex    | Number of Persons Engaged | Percentage to Total | Remarks |
|---------|---------------------------------|--------|---------------------------|---------------------|---------|
| 1.      | Cultivation and labour etc.     | Male   | 41                        | 22.78%              | 45%     |
| 2.      | Making Charcoal                 | Male   | 40                        | 22.22%              |         |
| 3.      | Collecting Firewood             | Female | 37                        | 20.50%              | 55%     |
| 4.      | Collecting NTFP                 | Female | 31                        | 17.25%              |         |
| 5.      | Selling Vegetables/ Fruits etc. | Female | 31                        | 17.25%              |         |
|         | <b>Total</b>                    |        | 180                       | 100.00              | 100%    |

**SOURCE:** Ph.d. Research Work, 2007.

The above table shows that approximately 55 per cent of the rural Khasi Womenfolk are engaged in forest activities while 45 per cent males are engaged in non-forest activities. This reveals the preponderance of Khasi women engaged in forest as their primary source of livelihood.

### **Khasi Rural Women and Forests: Interventions between Forest Rights and Management**

In the matrilineal Khasi society the issue of equitable distribution of benefits in indigenous management system has often been challenged. Though in principle the matrilineal rule of female inheritance and descent is followed, but customary practices are not gender egalitarian, as authority is vested in the mother's brother (maternal uncle). Women can inherit property such as land but they lack the power to manage it. The woman is the focal point of the household organization but when it comes to the allocation of rights over land, a sharp distinction is maintained between 'ownership' and 'control'. While ownership of land is transmitted through women, control invariably lies with men (Nongbri, 2003, p.199)

Making the plight of women worse is the system of forest management operating in the Khasi Hills. Here, the management of forest lands falls under three (3) agencies: -

1. Autonomous District Council (Green blocks, Protected forests, unclassed forests, private forests owned by clans, domestic groups, individuals and organizations)
2. State Government (Reserved Forests or National Parks)
3. Community (*Khlaw Raid* or community forests and *Khlaw Adong* or community protected forest).

The diarchical form of control and management of forest in Meghalaya by the State Forest Department and the Autonomous District Councils has contributed to dual forest policies, lack of co-ordination and division of accountability. Both the authorities formulate their own forest policies and follow a separate set of forest rules and regulations in their respective areas of operation. The main reason for such a diarchy is that, while the State Forest Department maintains a well-qualified team of skilled technical staff, it has a comparatively meager area of 1127.23 sq.km of forest under its jurisdiction. The district Council on the other hand, has a large forest cover of 6250.68 sq. km under its management and control and yet it suffers from inadequate technical manpower which has resulted in the lack of enforcement of rules. Forest being the principal source of revenue the District Councils could not afford to stop forest operation under prevailing fund constraints. The private forest owners who own substantial areas of forests indulged freely in sale of timber from their forest. A cursory glance at the available statistics of Meghalaya shows a steep rise in the process of forest exploitation resulting in sharp fall in the area under forest cover. Out of Meghalaya's total geographical area of 22,429 sq.km(23,06,069 hectares) she now has only 9,41,823 hectares of forest area which comes to barely 42.03 per cent (2001 Census). These issues have had a serious impact on people's livelihood thereby leading to infringement on their traditional rights over forest resources.

In the case of Community Forests (*Khlaw Raid* and *Khlaw Adong*) greater autonomy in management lies with the traditional institutions, clans and individuals. As per customary practices, only

the permanent residents of the villages have the right to access and use of community forests and other common property resources. They can collect fuel wood, cut trees for construction of houses, collect wild vegetables, orchids and medicinal herbs and quarry sand and stones from permitted sites (Nongkynrih, 2006, p. 55).

It is here that one finds an invisibility of women's role in forest management and decision making. Although women shoulder heavy economic responsibilities and spend long and tedious hours toiling in the field, trudge large distances through rugged forests in their struggle to meet the survival needs of the family, they have little to say in village administration or in the management of their natural productive resources. Many times women become silent observers of the changes around them with little or no voice in decisions taken at the council meetings. Their problems are mostly voiced through the adult male members of their household. Added to this is the problem of infringement of land ownership. There has also been an unhealthy trend of gradual shift over of *Ri-raid* (community land) to *Ri-Kynti* (private ownership) as large tracts of land and forest has been taken over by a significant decline in the quality of communal land and forest but also marginalized women's role in the use of common property resources.

While delving on the issue of the decline in the quality of communal land and forest, Supreme Court Order on Timber Ban has also had an effect on women and forest livelihood. On December 12<sup>th</sup> 1996, the Supreme Court passed its historic judgments on the ban of felling of trees, removal of timber and wood based activities in the region. However the judgments had a conservationist aim in mind, it caused unexpected miseries to the tribal population who were totally dependent on forest livelihood. The effect of the ban fell heavily on women by imposing an additional burden on them to meet the economic needs of the family and increased their domestic chores manifold (Nongbri, 2003, p.1898).

Agriculture and sale of forest produce used to be the mainstay of the rural Khasi economy. Over the years, with the decline of forest cover, the Khasi rural women have been forced into local and migrant wage employment. Livelihoods today have to be balanced between

availability of forest produce, landownership and wage employment. As forests have dwindled, women still depend upon the remaining forests as supplementary source of livelihood for survival, especially in the lean summer months. They have to walk longer distances to the forest for collection and carrying back the produce as head loads. For marketing these products, they are bound to depend on bus services which are quite irregular and poor due to inaccessible roads to the interior villages. This leaves the marketing and sale of produce to the men folk. This has reduced the women's transport burden and time pressure but the negative consequence is that they have lost control over the income from selling the firewood and NTFP that they collected. This is further compounded by the fact that the women are primarily involved only in the lower stages of the value chain such as collection, cleaning, processing and sorting of forest produce but they lack access to or control over marketing of the produce which is mostly monopolized by men. Despite their important role in the value chain, men's marginalization has led to an increase in the burden of economic hardships thereby bearing upon the brunt of poverty.

### **Conclusion**

The conflict of interest between the Government and the tribals over the forest wealth that was begun by the Colonial rule continued unabated long after India's independence. The Government of India tightened up its grip over the control and management of forest through introduction of a new set of laws and rules while the traditional tribal rights over land and forest of the Khasi was slowly eroded. This impacted on the Khasi rural women who were the main actors in the field.

While it is a fact that customary laws with regard to land and forest and the working plan of the government have all come in the way of women, it would not be wrong to conclude that women in particular and indigenous people in general have seriously been affected by a number of issues which revolve around the use of resources and the struggle for rights over these competing issues. The conclusive evidence thus highlights the following harsh realities faced by the Khasi rural women who are dependent on forest livelihood.

Firstly, there has been a visible transition in Khasi society with regard to the state of dependence on forest resources like food, fodder and shelter to other means of living. The depletion of land and natural forest cover which was an important base for their primary economy has resulted in paucity of forestlands for livelihood. It is interesting to note here that the worst victims are women who not only have to bear the brunt of depleting natural resources but also the subordination of their gender.

Secondly we find an invisibility of women's role in forest management. This is largely due to prevailing Khasi customary laws where women have little to say in village administration or even management of their natural productive resources. Added to this is the unhealthy trend of a gradual shift over of *Ri-raid* (community) forest lands to *Ri-kynti* (private) land owners thereby marginalizing women's role in the use of the CPR's or Common Property Resources.

Thirdly we are often lead by the 'self-perception 'that women are merely 'helpers' and not 'workers 'when it actually comes to demarcating the flow of work within and outside the household. Activities like collection of NTFP, cleaning, sorting processing of forest products are often considered to be part of their household chores' and therefore they are not 'work' at all. In many remote villages women still lack access to marketing and sale of the produce which is mostly monopolized by men thereby leading to an increase in the burden of economic hardships and losing control over the income.

Fourthly, with the current rate of 64 per cent literacy in Meghalaya and the meager economic development that has so far been achieved, the world view of the women folk in rural areas of the state has remained as traditional as in the past.

All this leads one to agree that the environment today is facing a crisis amidst stringent legislations of the Government coupled with problems of development and conflict over resource base, there has been a gradual shift in women's role as basic providers of subsistence needs and resource utilization thereby leading to invisibility of their livelihood strategies and marginalization of their rights over NTFP.

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## **The Reality of Global Warming, Sea Level Rise and Climate Change: The Need for a North-East Response.**

Bennathaniel H. Diengdoh

### ***Abstract***

*Global warming, sea level rise and climate change are issues with impacts that affect all regions of the world, including North-East India. With recent findings indicating a continuing rise in global temperatures, it is highly probable that the rate at which glacial and polar ice are melting will continue to accelerate, in turn accelerating and exacerbating sea level rise. Global warming is likely to facilitate climate change and its associated impacts. In light of these issues, it is vital that appropriate responses be devised in the context of North-East India. To this end, this paper elucidates the evidence for the issues of global warming, sea level rise and climate change, their documented and projected impacts in various parts of the globe, as well as the North-East. The paper also discusses possible avenues by which affected populations in the region can adapt to, or address said impacts, with the ultimate aim of contributing to research that may facilitate and aid in future mitigation efforts in the region.*

### **Introduction**

In light of recent trends of global warming and climate change, it is vital to assess and project the likely impacts these world changing phenomena will have, and in the context of North-East India, what effects they will bring about. Global warming induced climate change is arguably the most pressing global phenomenon facing us today. The IPCC Special Report on Global Warming of 1.5°C (IPCC SR15, 2018) states that if global warming continues at the rate it is rising at present, temperatures will rise to 1.5°C above pre-industrial levels during the period of 2030-2052. As temperatures rise and atmospheric conditions change, alterations in weather patterns will lead to inter alia, the increase in the incidence of extreme weather events. Global warming will also continue to cause the melting of glaciers and ice caps, which will exacerbate sea level rise. As global warming and climate change continue to manifest, the effects will be observable throughout the world, including North-East India. It is imperative that

these impacts be elucidated and expounded in order to facilitate the conception of methods to mitigate their impacts. To this end, it is the aim of this paper to put forth an outline of current conditions, future projections and implications for the Northeastern region. Thus, the paper has been divided into the following sections:

1. The Current Milieu: Climate Change and Sea Level Rise Today
2. Present and Future Impacts
3. The North-East Scenario
4. The Need for a North-East Response
5. Conclusion.

### **The Current Milieu: Climate Change and Sea Level Rise Today**

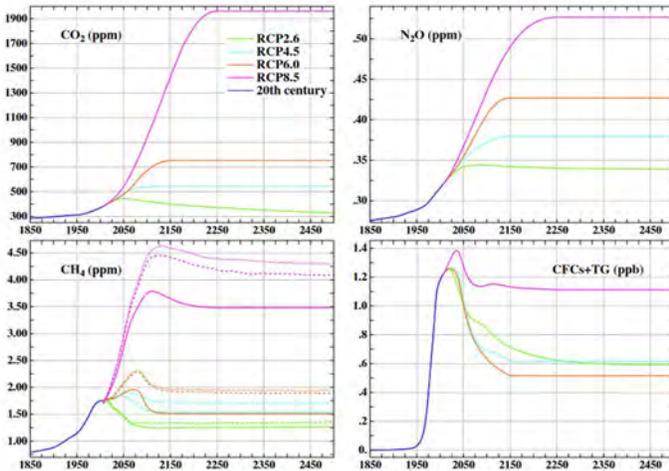
Global warming and climate change are at the forefront of all current issues today and their impacts encompass various spheres, ranging from the biological, the ecological to the socioeconomic and cultural. The global warming problem we face today is inextricably linked to the increases in the production and thus the atmospheric concentration of atmospheric greenhouse gases (GHGs) over the past two centuries. In fact, on account of human activities alone, the concentration of atmospheric carbon dioxide has gone up by 35% since the year 1750, and as of August 2018, is at 405.04 ppm (NOAA, 2018). According to the IPCC SR15(2018) human beings must be prepared to make drastic alterations across the spectrum of what falls within the boundaries of what is conventionally defined as society, if limiting of global warming to within the 1.5°C threshold is to be possible. As per Moss et al., (2008), four predictive trajectories for atmospheric Greenhouse gas concentrations, known as Representative Concentration Pathways (RCPs) have been put forth: RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5<sup>1</sup>. Identified by the Integrated Assessment Modeling Consortium (IAMC) (Weyant et al., 2009), each pathway charts the projected increase in global temperature and corresponding SLR, depending upon the concentration of GHGs in the atmosphere. Fig 1.1, the work of Nazarenko et al., (2015) shows the projected increase in the concentrations of various GHGs under the 4 RCPs, as the 21st century progresses, while Table 1.1 shows the projected increases in temperature due to global warming for the 21st century under the different Representative Concentration Pathways.

**Table 1.1 Projected Change in Global Mean Surface Temperature for the mid and late 21st century relative to the reference period of 1986-2005.(°C)**

| Time Period | RCP 2.6 |              | RCP 4.5 |              | RCP 6.0 |              | RCP 8.5 |              |
|-------------|---------|--------------|---------|--------------|---------|--------------|---------|--------------|
|             | Mean    | Likely Range |
| 2046-2065   | 1.0     | 0.4-1.6      | 1.4     | 0.9-2.0      | 1.3     | 0.8-1.8      | 2.0     | 1.4-2.6      |
| 2081-2100   | 1.0     | 0.3-1.7      | 1.8     | 1.1-2.6      | 2.2     | 1.4-3.1      | 3.7     | 2.6-4.8      |

Source: IPCC, 2013 p23

Figure 1.1: GHG mixing ratios in the RCP scenarios. Green line RCP 2.6 (van Vuuren et al., 2011), light blue line: RCP 4.5 (Thomson et al, 2011) Orange line RCP 6.0 (Masui et al. 2011), and pink line: RCP 8.5 (Riahi et al., 2011). The blue line shows past observations (Hansen & Sato, 2004.) The dotted lines denote methane emissions from TCAD and TCADI experiments encompassing methane feedback from wetland ecosystems and chemistry.

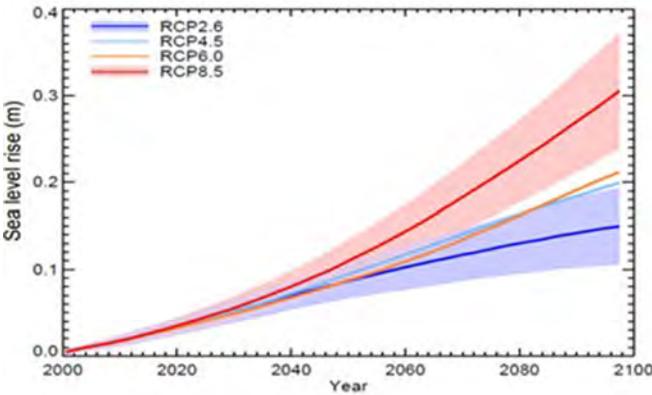


Source: Nazarenko, L., et al. 2015.

A great number of researchers indicate that sea levels have been on the rise due to human activities. Fig. 1.2. shows the projected SLR trends for the 21st century along each of the RCPs. Church et al. (2006a) collated data on changes sea levels and their findings indicate that sea levels have been experiencing annual average increment of  $1.7 \pm 0.3\text{mm}$  since the year 1950 with recent satellite data shown in the work of Ablain et al.,(2009) to demonstrate a rise of  $3.3 \pm 0.4\text{mm}$

per year from 1993-2009<sup>2</sup>. Church et al., (2006b) studied Sea level rise (SLR) in the Pacific and Indian Oceans and the impact on islands in each region, They found that SLR rise in the Western Pacific and Eastern Indian Ocean averaged almost 30mm per year, for the period 1993-2001 while sea levels fell in the eastern Pacific and western Indian Ocean by about 10mm per year and upon studying SLR data from 1950-2001, they found the average SLR for the longest tide-gauge records to be 2.0 mm per year after taking into account glacial isostatic adjustment and atmospheric pressure.

**Fig. 1.2 Projects for thermal expansion and SLR under the RCPs.**



**Source:** Gregory, J. (2013). Projections of sea level rise. *Climate change*. IPCC AR5 WG1.

Though the findings vary, many, as indicated above, have arrived at a general consensus that sea level rise is presently occurring and that it will have wide reaching impacts on the environment and human life.

Global warming is likely to incur and exacerbate changes in the long term atmospheric conditions of or entire countries and regions. For example, it is theorized that the frequency of ‘extreme weather’<sup>3</sup> events is also going to rise. Trenberth (2005) compares NOAA hurricane season data from 1970-1994 to data for the period of 1995-2004 and found that the earlier 25 year period averaged 8.6 tropical storms, 5 hurricanes and 1.5 major hurricanes per year while the 10 year period averaged 13.6 tropical storms, 7.8 hurricanes

and 3.8 major hurricanes per year. The work of Emanuel (2005) and Webster et al., (2005) both indicate that the destructiveness of hurricanes has been on the rise since the 1970s, with the Webster et al., (2005) making the notable discovery of an increase in the number of cyclones reaching the more destructive categories (4 and 5) especially in the North and Southwest Pacific and Indian oceans. Such an increase is likely to give rise to more severe impacts such as destruction of property, damage to crops and infrastructure, loss of life and incur greater financial losses and expenditures. A number of sectors ranging from tourism and hospitality to agriculture are likely to be highly affected. It must be stated however, that climate change and its impacts vary depending on such factors as location, altitude, topography, vegetation type, population, socioeconomic stratification, development and disaster management readiness, as well as the political scenario among others.

### **Present and Future Impacts**

The plethora of changes discussed above is projected to have dire impacts on the environment and human life. Climate change exacerbated by recent global warming trends is likely to manifest itself as an increasing irregularity in regional weather patterns, seasonality, and in the incidence of extreme weather events. Such variations will affect precipitation in various parts of the world, giving rise to changes in the domain of 5-10% from the normal and possible decreases in wheat and corn crop yield ranging from 5-15% for every °C of increase in temperature (NRC, 2011). The increase in the frequency of extreme weather events, and their destructiveness will also incur greater loss of life, property damage and corresponding increases in financial expenditures as a result of remedial measures that will have to be undertaken such as disaster management. Rising sea levels will also lead to the inundation of areas close to the sea, and islands, including a number of prominent cities and nations. Coastal areas and low lying nations are projected to be the most affected by SLR. Dasgupta et al., (2007) have found that sea level rise is likely to have devastating impacts on land area in countries such as Vietnam, and the Bahamas, while the populations of Vietnam, Egypt and Mauritania will be the most impacted. Mimura (1999) posits that island nations such as

Tonga are particularly threatened by the impacts of SLR supporting his statement with contour data showing the elevation range of one of the islands, Tongapatu, and the capital city Nuku'alofa, which, would suffer a loss of land area amounting to 10.3 sq.km (3.9%) should SLR reach 1m, impacting 14.2% of the population of the island. Karim & Mimura (2008) state that for a rise in sea surface temperature of 2°C and SLR of .3m, storm surges would increase the size of the flood risk area by 15.3% and the depth of flooding by 22.7% in Bangladesh as far inland as 20km away from the coast. Such increments are likely to severely impact residents living in the area. Residents of low-lying coastal areas and islands such as Kiribati, Tuvalu and the Maldives will be faced with dire choices, either to remain behind as water levels rise, or migrate away to areas of higher altitude.

It must be noted however, that not all studies conducted in regions that are considered vulnerable show distinctly negative impacts with regard to SLR. Webb & Kench (2010) in their study found that a startling 86% of the islands in their selected area showed either minimal impact or a growth in size in spite of a detected SLR of 2mm per year occurring across the Pacific Ocean with the majority of the islands that served as their study sites were shown to be negligibly affected, with 43% remaining stable, another 43% increasing in area, while the comparatively minute remainder showed a decrease in island area.

Faced with rising sea levels, and changing climate conditions, affected individuals may elect to migrate away to less affected regions. It must also be noted that while environmental factors such as SLR and climate change may play key roles in the decision of a family or an individual to migrate, they seldom act in isolation. Other factors also influence migration: socioeconomic change, political and civil upheaval, in addition to disasters such as earthquakes, floods, and long term changes such as sea level rise can decrease of habitability of a region to such an extent as to necessitate migration, or even bring about forced displacement of large numbers of people. Other environmental issues such as a decline in availability of natural resources such as land (for residence and/or cultivation), water, and forest (for forest dependent communities) also serve as push

factors for migration. For example, Reuveny (2007) elucidates the work Brown et al., (1994), and Collier (1994) and Renner (1996) to highlight environmental push factors such as the loss of forests and the degradation of land in conjunction with socio-political factors such as persecution and conflict in Guatemala as causal factors for the migration of 280,000 people within Mexico, and from Guatemala into Mexico over a period of approximately 30 years from the 1960s to the 1990s. In such cases, possible destination regions are viewed as far more hospitable in terms of safety, availability of basic amenities and resources etc. Once the home conditions including (but not limited to) environmental scenarios, socioeconomics and political status are deemed as unacceptable by potential migrants, they may elect to depart for a destination they perceive to be more suitable. Reuveny (2007:658) holds that individuals will elect to migrate if the “net benefit (total benefit minus total cost) from migrating is larger than that from not migrating”. The work of Massey, et al., (2010) in Nepal indicate that motivations for movement affected men and women differently and had the less impact on high caste Hindus than on low caste and non-Hindu communities residing in the Chitwan region, thus elucidating that gender, religion, ethnicity and socio-economic stratification may serve as hidden dimensions in the interplay between environmental change and migration. SLR working in tandem with socio-economic, political and other environmental factors<sup>4</sup> may influence future migration of populations, and a number of other scholars have considered environmental phenomena among the key factors that influence migration (Petersen, 1958; Wolpert, 1966; Speare, 1974; Zelinsky, 1971; De Jong & Fawcett, 1981; Gardner, 1981; Richmond, 1993).

Whenever large scale migration occurs across not only international boundaries, but also cultural and ethnic divides, the possibility of conflict between host and migrant populations arises. This conflict may take place over issues such as ethnicity, religion, employment opportunities, natural resources, land and occupancy issues. Reuveny (2007) opines that large scale migration induced by environmental change will give rise to conflict if at least two of the ‘channels’ he has mentioned are observable i.e., if there is conflict

between host nation residents and migrants over valuable resources; if the two populations hail from different ethnic groups, especially those that already have a history of tension or conflict, or if a sense of distrust is fostered between the two populations, or, the nations involved in the migration event. He also elucidates the possibility of migration arising along pre-existing areas of distinction between hosts and migrants, particularly with regards to socioeconomic status, which he calls 'socioeconomic fault lines'(p659). Unrest and conflict are probable outcomes of climate change or SLR induced migration subject to the local, environmental, socioeconomic and political conditions.

The impacts of climate change reach beyond the socioeconomic and political however, climate change will have an adverse impact on agricultural productivity the world over. A study conducted by Moore et al., (2017) indicates a decline in the yield and production of staple diet crops: rice, wheat, maize and soy with increases in temperature, with the greatest changes being detected in areas that are already experiencing high temperatures.<sup>5</sup> Knox et al., (2012)<sup>6</sup> conducted a meta-analytical study comparing the findings of over 50 previous research publications conducted in the field of climate change impacts on crop production and predict a steady decline in yield of wheat, maize, millet and sorghum in Africa and South Asia over the course of the 21st century. However, it must be noted that the relationship between climate change and agricultural productivity is nuanced, and does not operate independently of such factors such as topography, altitude, soil type, soil chemistry, crop type, crop variety, agricultural practices etc. Sultan (2012) cites the work of Roudier et al., (2011) and Challinor et al., (2007), the results of which point to the significant uncertainty with which any relationship between regional climate change and crop yield predictions can be made. What is certain however, is that as the global population continues to increase, so too will the demand for food, and other resources as well. According to Collomb (1999) food demands will increase fivefold in Africa, and double in Asia by the middle of the 21st century, and food production, supply and distribution must increase commensurately, both in quantity and efficiency if the needs are to be met. Climate

change plays a critical role in the interplay between food production and population growth.

### **The North-East Scenario**

Comprised of 8 states (Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim), with a total area of 262, 179 sq. km., North-East India, is a major biodiversity area, home to two major hotspots, is not only a region of great biological diversity, but also great ethnic and cultural diversity as well. Two major river basins: the Brahmaputra and the Barak basins exist in the region. The region falls in two hotspots: the Eastern Himalaya and the Indo-Burma, and boasts biodiversity with an estimated  $\pm 5000$  species of flowering plants found in Arunachal Pradesh alone, followed by Sikkim and Meghalaya with approximately  $\pm 4500$  and  $\pm 3500$  species of flowering plants respectively (Chatterjee et al., 2006).

As per the 2011 Census, North-East India is home to 45.6 million people (Census 2011) with Assam being the most populous state in the area. A large number of tribal communities and ethnic groups reside in the area including the Khasi, Jaintia and Garo peoples of Meghalaya, the Meiteis and Tangkuls of Manipur, the Biata, the Mizos of Mizoram, the Sema and the Ao of Nagaland. Agriculture is one of the major vocations in the region and over 60% of the area under crop cultivation is dependent on precipitation (MoEF, 2004). North-East India is a region of great biological, ethnic, and cultural diversity, all of which stand to be affected by global warming, climate change and their impacts.

### **Implications for the North-East**

The issues discussed above – global warming, sea level rise, climate change – encompass the entire world in their implications, and as such, are inclusive of the North-East as well. Climate change is likely to incur changes in the weather patterns, seasonality and precipitation over the North-East. These changes have implications for agriculture, biodiversity, socioeconomic and political conditions as well as for demographics.

With a majority of crop land being fed by the annual seasonal precipitation, changes in weather patterns are likely to have adverse

impacts on agricultural regimes. Even should overall precipitation in the region increase or experience minimal change, variations in the seasonality of rain, may have considerable impacts on agricultural productivity in the region. However, as stated earlier, the interplay between climate change and agricultural productivity in the region is also subject to other factors such as existing agricultural inputs, arable land, socioeconomic conditions etc. Dikshit & Dikshit (2014) state that only 16% of land in the region is being used for cultivation and that rice cultivation takes up 85% of this land. Ravindranath et al., (2011) state that food production in the region is 'highly subjective based on climate variability' (p388-389) and that climate change would exacerbate existing conditions and place stress upon an already tenuous productivity, thus affecting food security in a region where, according to them, agriculture is plagued by problems including inter alia issues regarding land tenure, access rights and ownership, a lack of access to scientific agricultural technology, poor connectivity and under developed irrigation systems. The dependence of local farmers on shifting 'jhum' cultivation, with its adverse impacts on forest cover and the land degradation that may arise would contribute to the above issues. Climate change is likely to further exacerbate the impacts of the above. Ravindranath et al., (2011) state that their findings (subject to additional factors such as availability of agricultural facilities such as fertilizers and irrigation) as indicated by Agricultural Vulnerability Index (AVI) showed notable variation, with greater AVI values observed in the northern part of the North-East. Their study goes on to elucidate a projected decrease of up to 10% in rice production for 43 districts under the IPCC SRES A1B<sup>7</sup> scenario with the highest projected decrease being in the district of North Sikkim; it must be noted that rice yield was projected to increase in 21 districts in the region as well. Changes in agricultural productivity are likely to impact the local economy, and the livelihoods of the largely subsistence farming population. (Singh & Singh 2017) in evaluating the AVI of Manipur show that the state exhibits insignificant changes in vulnerability. They also concur with Ravindranath et al., (2011) in stating that input levels play a vital role in influencing AVI. However, further modelling is required under the four RCPs elucidated by the IPCC AR5 (2013).

According to the State of Forest Report by the Forest Survey Indian (FSI, 2017) an estimated 171,306 km<sup>2</sup> constituting 65.34% of the total land area of the region is covered by forests. Forests in the region are not exclusively under the jurisdiction of the Govt. of India. Indigenous forms of government such as the Autonomous District Councils and traditional institutions such as village *durbars* exercise authority over significant expanses of forest in the region with up to 80% falling under their jurisdiction in Meghalaya alone (Singh et al., 2008). Activities sanctioned by local traditional institutions such as timber and firewood harvesting, hunting, jhum cultivation, mining and quarrying have adverse impacts on forests. IBIS vegetation modelling showing forest cover change modelling indicate an 8.2% change in forest cover by the year 2035 under the SRES A1B<sup>7</sup> scenario, described by the Indian Network for Climate Change Assessment as demonstrating ‘least vulnerability’ to climate change, with the Himalayan region being the most vulnerable, with modelling predicting a 56% change in cover. Ravindranath et al., (2011) state that forests occupying southern parts of the North-East will be the most vulnerable to climate change, and they attribute this to the fact that forests in the southern areas are more fragmented and suffer more from the effects of disturbance. While climate change is predicted to have comparatively minimal effect on forest cover in the North-East, it may however, exacerbate the factors mentioned above. For example, climate change, along with shortening cycles of shifting cultivation and a need to compensate for losses in agricultural productivity may lead to further forest degradation and have negative impacts on biodiversity as well.

Though the states of North-East India are landlocked, they border Bangladesh which is a low lying nation. Reuveny (2007) cites the work of Hafiz & Islam(1993), Lee(2001), and Shelley(1992) as documentation of the mass migration of approximately 600,000 Bangladeshis from low lying coastal areas, rural areas and islands between the 1970s and 1990s due to a variety of factors including environmental issues such as droughts, floods, water scarcity, storms and desertification. Alam (2003) puts forth issues associated with environmental change, rapid population growth and uneven distribution

of resources as causes for migration from Bangladesh, while natural disasters such as cyclones and floods are a significant issue with floods covering up to 36% of the total land area, and 60% of the arable land. The findings of Datta (2004) indicate that rapid increases in population coupled with development that cannot keep abreast of the growth, along with poverty, the absence of industrialization, and job opportunities, land grabs as well as religious inequality especially in the context of the relations between the Muslim majority and the Hindu minority are motivating factors for migration from Bangladesh into West Bengal. Panda (2010a) opines that continued migration in from Bangladesh into India is likely to have adverse impacts in the area, weakening social, economic, political and environmental stability in the area. Diengdoh & Lyngdoh (2016) elucidate the implications cross border migration from low lying Bangladesh into Meghalaya, brought about, in part by global warming induced sea level rise. Porous borders, border protection that leaves much to be desired, lower living standards, lack of employment opportunities are among the factors contributing to migration from Bangladesh into India. With environmental changes set to intensify over the course of the 21<sup>st</sup> century, it is reasonable to posit that the resulting migration and corresponding conflicts and tension arising there-from is likely to become exacerbated as well. The IPCC (2001) states that a rise in sea-level rise of 45cm would cause enough inundation in Bangladesh to cause the displacement of 5.5 million people, a significant number of which would, according to Barnett (2001) move to neighbouring nations, the closest of which is India, a trend which Swain (1996) opines has, in the past, proven to play a key role in influencing tensions and violence in the area. As such it is reasonable to posit that future increments in migration following similar patterns will continue to serve, to facilitate and exacerbate conflict in the region.

### **The Need for a North-East Response**

Climate Change Mitigation Mechanisms: A Viable Option? In light of what possible impacts global warming, SLR and climate change may have on the North-East, the question arises of whether the North-East is equipped to address the issues that have been elucidated in this paper. With pre-existing challenges such as the need for the

development of infrastructure, inadequate connectivity, unemployment, and a comparative lack of industrialization, the North-East has a host of issues that cannot go unaddressed in addition to climate change. However, the reality of climate change and its accompanying issues cannot be ignored and must be addressed. To this end, a multi-pronged approach is required to mitigate the impacts of climate change.

First and foremost, the author opines that a comprehensive climate change vulnerability profile of the North-East is required in order to accurately project future impacts of climate change and their corresponding outcomes. In this regard, the work of Ravindranath et al., (2011) has proven a significant step in the right direction, which may serve as a foundation upon which further research may build.

Climate change mitigation mechanisms (CCMs) such as those put forth under the Clean Development Mechanism (CDM) and Reducing Emissions from Deforestation and forest Degradation (REDD/REDD+) may be possible avenues for responding to addressing climate change, combating carbon emissions while conserving forests, facilitating development and catering to local needs for employment and livelihoods as well. Afforestation/ Reforestation (A/R) projects carried out under the banner of CDM may aid in increasing carbon sinks and forest cover in the region. One of the justifications given behind the focus of CDM on projects in developing countries is that it is more inexpensive and thus cost effective to achieve emissions reductions in developing countries, than to do so in developed countries (Grubb et al., 2004).

The establishment of monoculture A/R plantation projects (often with the assistance of foreign “northern” stakeholders) under CDM with the aim of generating Certified Emissions Reductions (CERs) or Verified Emissions Reductions (VERs) also known as carbon credits, may, while aiding the efforts of wealthy, developed “northern” nations to reduce their emissions, have undesirable effects upon local, often rural, indigenous stakeholders in the host countries such as land-tenureship issues, land grabs; and marginalization of local communities, resulting in a form of what Bachram (2004) calls ‘carbon colonialism’, whereby, in the absence of adequate safeguards and regulations, local land may become the *de facto*, if not *de jure* property of said foreign

stakeholders, such that the authority and rights of local stakeholders over said land may be infringed upon by the former. Land-tenureship is thus particularly one of the most critical issues that arise with the implementation of a CCM mechanism, especially involving foreign stakeholders hailing from northern countries providing support for the initiation or establishment of projects in southern nations.

CDM associated programmes involving renewable energy or alternative modes of transport may find scope in not only mitigating climate change and but also in creating livelihoods for local communities and in development. However, if said projects involve any form of property acquisition by project proponents, then the aforementioned land tenure and use right issues would likely arise in the event of the implementation of such a project.

Programs such as REDD/REDD+ prioritize avoided deforestation, can incentivize the act of conserving forests (e.g. through activities as assisted natural regeneration of forests, prevention of fire lines and prohibition of timber harvesting from natural forests) and by extension, the biodiversity found therein, serving as livelihood alternatives or supplements to jhum agriculture, hunting of wildlife etc. Efforts to achieve sustainable development while aiding in climate change mitigation have been made through such projects as the Khasi Hills Community REDD+ Project (Poffenberger, 2012, 2014, 2015) which has encouraged local communities in the project area to conserve their forests while generating revenue which said communities can then use for various activities from the creation of new modes of employment and establishment of self-help groups to the creation of infrastructure and permanent assets. This is achieved through the incentivized conservation of forests as carbon sinks, and through the Payment for Environmental Services (PES) mode, the carbon sequestered and conserved as biomass of has been quantified, certified and put up for sale on the international carbon market(.ibid. 2014, 2015). The Northeastern region, being less developed and industrialized compared to the rest of India has the opportunity to bypass conventional development and opt for sustainable development as the major mode of development.

While climate change mitigation mechanisms have been conceived with the aim of reducing and ameliorating the impacts of global warming and climate change, they exhibit notable caveats such as issues of land tenure, additionality<sup>8</sup>, permanence<sup>9</sup> and leakage<sup>10</sup>. Ultimately, though these mitigation mechanisms have been devised to lessen and reduce the impact of human activities on the surrounding environment, mainly by ameliorating climate change, it is evident from their design that the intended primary beneficiary is not the natural environment, nor the biota that populate it, but human beings, whether existing as part of polluting Annex-1 based organizations and interest groups looking to achieve reductions in carbon emissions or local communities living in less developed countries that CCM proponents seek to involve. Moreover, even under the umbrella of ‘benefits to humans’, the above mechanisms evidently exhibit the potential to serve as media for a shifting of ‘climate change responsibility’ from the primary polluters that have by and large in the past been Annex – 1 nations to less developed countries, while simultaneously acquiring *de facto* permission to continue generating GHGs, chiefly carbon dioxide, and thus keep polluting, and even make a profit while doing so.

As Bachram (2004:3) opines, in the system of emissions trading, “it pays to pollute”. And she goes on to explain how this is achieved by stating that under the Kyoto Protocol’s emissions trading system, a polluter which has reduced more than the amount of GHG reductions mandated by the Protocol can either “bank” them for future reduction or sell them to other parties. If the polluter has produced emissions in excess of its stock of emissions reductions it may purchase from other parties and thus reduce its carbon footprint. Also, polluting parties can earn emissions reductions by investing in associated projects in other countries such that any credits achieved will be attributed and credited to them.

It is highly debatable, in light of the above, whether CCMs will prove effective in achieving their mandate of reducing carbon emission levels, especially in light of the current stance of the IPCC SR15 (2018) regarding the extent of alterations that must be made to the mode of human existence if global warming is to be maintained

within the 1.5°C threshold. It is the opinion of the author that CCMs have the potential to help in increasing forest cover in the North-East region, to generate revenue and create livelihoods for local communities but any impacts they may have on carbon emissions, global warming and climate change are unlikely to be significantly observable in the near future.

### **Agriculture: Adapting to Foreseeable Changes**

The implementation of several large scale modern agricultural techniques and technology such as use of organic fertilizers, irrigation, and modern agricultural technology (ideally supplied at a subsidized rate or on lease by Govt. agencies) may help to encourage fixed plot agriculture and deter farmers from practicing shifting cultivation, thereby decreasing the pressure on nearby forests, and allowing degraded areas to undergo regeneration (naturally or assisted). However, industrialized agricultural methods are not without disadvantages and environmental considerations of their own, the discussion of which is beyond the scope of this current paper. Moreover, topography and seasonality of precipitation are important factors in determining whether or not irrigation is viable as an option. Moreover, the Water Vulnerability Index (WVI) for the North-East (Ravindranath et al., 2011) indicates that 55 out of a total of 78 districts will show either no change or a reduction in WVI in the near future as per IPCC SRES A1B<sup>7</sup> scenario.

The implementation of sustainable agricultural practices may prove viable as an adaptation mode for future impacts. The implementation of CCMs may provide revenue which can be used to fund and sponsor sustainable practices. In addition, revenue from CCMs may also be used to fund more environmentally friendly livelihoods and vocations such as ecotourism, and alternatives such as selling of groceries, brick making etc. Fixed plot agriculture is required to discourage jhum cultivation and thus decrease its impacts on forests. The industrialization of agriculture may put a strain on the primarily rain-fed water resources as well as the land resources of the area. Without Govt. aid and subsidy, it is highly unlikely that the primarily jhum cultivating subsistence farmers of the region would be able to afford the machinery and agrochemicals that would come part

and parcel with industrialized agriculture. The socioeconomic status of local farmers, land tenure issues, crop selection, and topography play pivotal roles in whether or not changes in agricultural practices can be brought about. If farmers engage in activities that supplement their income, it may help them tide over unfavourable events that may negatively impact the productivity of their land such as cyclones and floods. If cyclone intensity increases and as global warming and climate change progress over the course of this century, the likelihood of crops being decimated is likely to rise as well. In light of this, coupled with the already low productivity (Dikshit & Dikshit, 2014) it is imperative that farmers be encouraged to pursue livelihood alternatives.

### **Addressing Climate Change Induced Migration**

The Northeastern region has yet to put into force a framework for addressing the issue of environmental change/climate change induced migration from neighbouring nations (especially Bangladesh). The porosity of international borders, laxity with regards to vigilance at said borders (on the part of agencies involved), vote bank politics and the lack of documentation of migrants are all contributing factors that have in the past expedited migration, and which will, if not addressed, continue to exacerbate the issue in the future. Conflict between host and migrant populations is a high probability occurrence, for which frameworks and strategies for prevention and conflict resolution must be devised. The proposed Amendment to the Citizenship Bill of 1955(2016) which aims to allow immigrants belonging to a number of religious groups such as Hinduism, Christianity, Sikhism, Buddhism and Zoroastrianism, hailing from the neighbouring nations of Bangladesh, Pakistan and Afghanistan who have entered India illegally to apply for citizenship within the borders of the state provided they fulfil the stipulated criteria, stands to expedite the process by which past migrants become naturalized. In light of the huge impacts climate change and sea level rise are expected to have in the future, it remains to be seen what the impact such an Act of Legislation can have on climate change induced migration in the region. Also, the National Register of Citizens(NRC) programme carried out in Assam has met with hurdles as an estimated 40 lakh (4 million) were left out of the initial draft, out of which approximately 3.5 lakh (350,

000) are claiming to be Indian nationals(The Indian Express, 2018). Moreover, Govt. authorities cannot confirm the exact population of illegal Bangladeshi migrants living in the country. (Das & Bose, 2018) If migration intensifies on account of climate change and its related phenomena, it is reasonable to posit that efforts to repel migrants, and document those found within Indian borders will be met with increasing difficulty on account of financial, infrastructural and logistical factors, among others. The fostering of amicable relations between hosts and migrants must also be encouraged to expedite the integration process if migrants' asylum is granted by the host state so as to avoid violent interactions and provide a milieu conducive to the peaceful conflict resolution. In the past, many migrants in Meghalaya would find employment in the informal sector as daily wage labourers, and those employed as miners in the coal mining areas would become long term if not permanent residents. However, with the National Green Tribunal's (NGT) ban on coal mining in the state, an important source of employment has slowed down significantly, which in turn might cause many to either find other sources of income, or resort to illegal mining, violating the stipulations of the NGT ban. In an article in *The Telegraph*, Andrew W. Lyngdoh (2017) states that then Chief Minister Mukul Sangma elucidated that the ban has severely affected the livelihoods of an estimated 5000 miners. Mizoram, Nagaland and Arunachal Pradesh employ the Inner Line Permit (ILP) system whereby non-residents of the state must obtain the ILP document and produce it before they are allowed entry into the states concerned, for a stipulated interval of time. The ILP may provide an added hurdle which migrants must circumvent in order to gain access to the states of the region. However, it is debatable whether or not ILP can help stem future tides of climate change induced migration, especially if it leads to an increase in the rate and scale of migration as well as the number of migrants. The creation of additional forms of documentation which migrants into each state may be required to obtain and produce may serve to aid in deterring migration as well as document existing and future migrants. Devising a digital database for migrants, akin to the Aadhaar card database championed by the Unique Identification Authority of India (UIDAI) may aid in documentation, however, the implementation of such a database is fraught with issues and caveats,

the discussion of which goes beyond the scope of this paper. Of the total number of documented illegal Bangladeshi migrants who made their way into Meghalaya from 2008-September 2013, numbered nearly 18951 individuals, 94.8% were repelled while prosecuted under the law (Lyngdoh, 2013). It is quite evident that, as climate change and SLR continue to manifest as the century progresses, increased securitization is required along international borders. Border fences may also be a deterrent to migration but there arises the issue of the feasibility of fencing up the 4096.7 km long border India shares with Bangladesh, 1880km of which runs along the states of North-East India (the remaining 2216.7 being shared with West Bengal).

### **Conclusion**

Global warming, climate change and sea level rise are a reality that can no longer be ignored, and the phenomena and issues that arise as consequences are global in scope, far reaching, and have implications across the spectrum of human existence, ranging from the socioeconomic and political, to those of habitat degradation and biodiversity loss. North-East India is not exempt from the impacts of and issues arising from the above phenomena. Global warming and climate change are bound to bring change to agricultural productivity in the region, affecting livelihoods. Sea level rise is likely to further intensify cross border migration from Bangladesh into India. Development and industrialization are required in the area, but in light of the current environmental scenario, community oriented sustainable development activities must be encouraged in the region. A strengthening of traditional institutions and the framing of an action plan (to be adapted for the specific conditions of each state) for addressing future migration is required. State governments and local forms of government arrive at a consensus and a common strategy for dealing with the current illegal occupants and preparing for future migrants chiefly from neighbouring Bangladesh, as sea levels rise through the century. The North-East must embrace sustainable development across the spectrum of sectors ranging from tourism to agriculture in order to adequately prepare for future climate change and its impacts. Infrastructure and connectivity must be improved to help speed up the development process. Agriculture must be developed beyond the subsistence focused

shifting cultivation in order to increase and stabilize productivity across the North-East, with the devising of frameworks to anticipate and adapt to projected climate change impacts. CCM mechanisms, while potentially beneficial for forest cover and local livelihoods may nevertheless be subject to the addressing of the caveats discussed in this paper before seeing any widespread implementation. More research is required to achieve clarity with regards to the impacts that global warming, climate change and SLR are likely to have on North-East India.

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**Footnotes-**

1. The IPCC (2007:4) refers to RCPS “as pathways in order to emphasize that their primary purpose is to provide time-dependent projections of atmospheric greenhouse gas (GHG) concentrations. In addition, the term pathway is meant to emphasize that it is not only a specific long-term concentration or radiative forcing outcome, such as a stabilization level, that is, of interest but also the trajectory that is taken over time to reach that outcome. They are representative in that they are one of several different scenarios that have similar radiative forcing and emissions characteristics”.

See: *IPCC Expert Meeting Report, Towards New Scenarios For Analysis of Emissions, Climate Change, Impacts, And Response Strategies, IPCC 2007 p4.*

Available at: <https://www.ipcc.ch/pdf/supporting-material/expert-meeting-ts-scenarios.pdf>. accessed 21.11.2018

2. See: Nicholls, R. J., & A. Cazenave. (2010). “Sea-level Rise and its Impact on Coastal Zones.” *Science*, 328 (5985), 1517-1520.
3. Extreme weather refers to natural weather phenomena of unusual intensity, scale and destructive force such as cyclones, tornadoes, heat waves, cold waves etc.
4. Anthony Richmond (1993) has put forth a comprehensive framework elaborating upon the interplay between different factors in causing or necessitating migration wherein he highlights that said factors seldom function in isolation but work in tandem, for example, environmental factors such as floods, droughts, deforestation often act along with socio-political issues such as ethnic divisions, civil unrest, war, conflict, underdevelopment as well as economic problems such as unemployment, either resulting in forced displacement of people, or the choice of said individuals to migrate to other regions.

See: Richmond, Anthony H. “Reactive migration: Sociological perspectives on refugee movements.” *Journal of Refugee Studies*, 6 (1): 7-24.

5. However, they note that the impacts are most significant for rice and soybeans (once the soybeans are subjected to higher levels of warming).
6. Knox et al., however do state that yield reductions vary according to regions, with areas in Africa projected to experience up to a 40% loss while no such changes in yield could be predicted for India.

7. The SRES A1B is a scenario included in the IPCC Special Report on Emissions Scenarios which envisions a future characterized by a rapidly growing economy, constant technological advancement, a global population that declines post 2050 and a balanced dependence on all energy sources.

See: <https://www.ipcc.ch/ipccreports/tar/wg1/029.htm>.

8. Additionality is the term used to describe the issue of whether or not the carbon emissions reductions achieved by the implementation of a project would have been arrived at even in the absence of said project
9. Permanence refers to the issue of whether a carbon sink will continue to be protected over an extended period of time in to the future
10. Leakage refers to the issue of whether or not emissions reductions achieved by protection of forests as carbon sinks in one site, may be offset, and thus 'leaked' away by deforestation or wood extraction activities at another site in the same area, usually outside the protected project zone.

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## **Development of Renewable Energy Resources: An Emerging Trend for Solving Long Lasting Energy Problems with Special Reference to Solar Energy Use in Meghalaya**

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### ***Abstract***

*Energy is an indispensable commodity for the functioning of our economy and society. Changing lifestyle and rapid industrialization have widened the gap between supply and demand of energy for most developing countries. Fossil fuels, especially oil which is the main source of energy is depleting at an alarming rate. As the world faces an impending dearth of fossil fuels, there is a need for some sustainable and feasible alternative energy sources for electricity generation. Emergence of renewable energy sources like wind, solar, hydro, biomass, tidal, geothermal, and so forth have potential to provide solutions to the longstanding energy problems mainly faced by developing countries of the world. Of these, solar energy emerged as one of the most viable options as it is most eco-friendly and readily available across the world. North-East India has vast potential of renewable energy but most of them are still to be tapped. Using available secondary data, the paper attempts to document the development of Renewable Energy Resources for solving energy problems in the region. In the state of Meghalaya, 79% of energy generation is hydro based which is entirely dependent on availability of rain. Only recently solar energy in the state has gained momentum. The paper also tries to summarise the scenario of solar energy in the state of Meghalaya.*

**Keywords: Renewable Energies, Energy Scarcity, Solar Energy Systems, Potentials, Applications.**

### **Introduction**

Energy is an essential commodity that enables socio-economic development. We are so dependent on energy that continuous access to it is a prerequisite for the functioning of our economy and society. According to Energy Information Administration (EIA) estimates, the world at present uses a total of 568 EJ (exajoules) of energy over

the period of a year. Almost 90 percent of the energy used comes from fossil fuels, two-fifths of total energy is derived from crude oil, and about one quarter each from coal and natural gas. Nuclear and hydro-power each contribute around six percent, while renewable energy from all sources, wind, wave, geothermal, wood, solar, etc. amount to less than one percent (Rhodes, 2010). The current energy situation in the world as of now is characterized by a rapid increase in energy demand. Factors such as urbanization, rapid population growth and economic growth all add to rising energy demand. The world is heading towards an unprecedented large and potentially devastating global energy crisis. The fossil fuels which supply majority of energy requirements are depleting at an alarming rate and the continuous use of these also results in emission of greenhouse gases, which are detrimental to the environment. As the world faces an impending dearth of fossil fuels, most immediately oil, renewable sources of energy like solar, wind, biomass, geothermal, which are indigenous, widely distributed and have low marginal costs of generation, is the most sought for alternative. These can increase energy security by diversifying supply, reducing import dependence, and mitigating fuel price volatility (Sharma et al., 2012). These resources have vast potential, but as of now we have not been able to fully tap the energy from these resources.

India too is facing an acute energy scarcity which is hampering its industrial growth and economic progress. Out of 177 GW (gigawatt) electricity generated in the country, only about 11% is from renewable energy sources which includes wind power of 14,550.6 MW (megawatt), small hydropower of 3,105.6 MW, biomass power of around 2,787.6 MW, and around 39.6 MW Solar Power (MNRE, 2017). However, India is growing towards renewable energy day by day and it is envisaged that the renewable power capacity in the country will cross 87,000 MW by 2022.

North East India is endowed with an extremely rich resource base in the form of biomass, hydro, solar and of course mineral resources. Currently, renewable energies like solar and wind have very little penetration in India's north-eastern states — even though there is a huge potential to meet a majority of the region's energy

demand from solar, wind and small hydropower. As of 31.12.2016, only 263.72 MW of renewable sources of energy have been installed in the Region (Table 1). According to North Eastern Electric Power Cooperation Limited (NEEPCO) Chairman and Managing Director, A. G. West Kharkongor, NEEPCO also plans to generate at least 1,500 MW from non-conventional sources of energy such as solar and wind power in the next five years (The Economic Times, 2017).

**Table 1 Renewable sources of energy installed in North Eastern Region States till 31.12.2016**

| Name of state     | Biogas Plant (Nos.) | Solar Energy Capacity (MW) | Small Wind Hybrid System (Nos.) | Small Hydro Project capacity (MW) |
|-------------------|---------------------|----------------------------|---------------------------------|-----------------------------------|
| Assam             | 5610                | 11.18                      | 5380                            | 34.1                              |
| Meghalaya         | 0                   | 0.01                       | 0                               | 31                                |
| Mizoram           | 78                  | 0.1                        | 270                             | 41.5                              |
| Nagaland          | 0                   | 0.5                        | 0                               | 30.7                              |
| Sikkim            | 0                   | 0.01                       | 130                             | 16                                |
| Tripura           | 60                  | 5.02                       | 120                             | 52.1                              |
| Arunachal Pradesh | 5                   | 0.27                       | 0                               | 104.6                             |
| Manipur           | NA                  | 0.01                       | NA                              | 5.5                               |

*Source:* Renewable Energy in North Eastern States, Annual Report 2016-2017

### **Solar Energy: A promising and attractive renewable energy source**

Solar Energy, a clean renewable resource with zero emission has got tremendous potential of energy which can be harnessed using a variety of devices. This energy source is attractive because it is abundant and offers a solution to fossil fuel emissions and global climate change. With recent advances and progress in technologies, solar energy systems are easily available for industrial and domestic use with the advantages of minimum maintenance (Srivastava and Srivastava, 2013). Most of the developed countries are switching over to solar energy as one of the prime renewable energy source. Solar electricity supply system has grown at very rapid pace in India

during the last few years. A total of 1047.84 MW of grid connected photovoltaic projects and 160.8 MW of off-grid systems have been commissioned under different policy mechanisms between January 2010 and November 2012 (Gupta and Anand, 2013). India is located in the equatorial sun belt of the earth, where sunshine is available for longer hours per day and in great intensity. Solar energy, therefore has great potential as future energy source (GOI, 2008). Similarly, North-East India has a combined potential for installation of almost 60 GW of solar power. It currently has installed only 5.27 MW of capacity, primarily in Tripura under the Renewable Energy Certificate Scheme (CSE, 2017).

Meghalaya, one of the hilly states of North-East India was once a state with surplus electricity but as of today it is facing shortage of power to even meet the minimum power requirement within the state. Hydro energy generation which is the major energy generation source in the state may severely be affected in case of less rainfall, resulting in power deficit which has greatly affected Meghalaya's economy. In such situations, it is essential to tackle the energy crisis through judicious utilization of other abundant the renewable energy resources, such as Biomass Energy, Solar Energy and Wind Energy. There is a wide array of interesting solar projects emerging from the North-East including Meghalaya. Therefore, this paper attempts to summarize the current status, strategies, major achievements and future potential of solar energy options in Meghalaya.

### **The energy problem in Meghalaya**

Meghalaya was carved out of Assam as an autonomous state on 2<sup>nd</sup> April 1970 and as a full-fledged state on 21<sup>st</sup> January 1972. It is comprised of 11 districts. The economy is primarily agrarian with about 80 percent of its total population depending entirely on agriculture for their livelihood. The extent of industrialization is very low in the state (Nayak, 2013). During the last decade, the population of Meghalaya has grown from 23,18,822 in 2001 to 29,66,889 in 2011 at a decadal growth rate of 27.95 which was highest amongst the states of India in the same decade.

Meghalaya previously has surplus power generation which was supplied to the neighboring states including Assam. However,

as of today Meghalaya is ironically facing the crunch to even meet the minimum power requirement within the state. As of 2011 census, there are still 2,15,601 un-electrified households in the state. At a Conference on Energising North East, Power Minister Comingone Ymbon stated that there is power shortage in the state as the average annual energy demand is much higher than the energy generated.

The total installed capacity in Meghalaya as on 31<sup>st</sup> March 2015 is 492.47 MW (Table 2). Hydro based capacity constitutes about 79% of total capacity followed by gas based 21.2%. In addition to the above capacity, unallocated power from Central Generation System at the disposal of Central Government is allocated to Meghalaya from time to time (Anonymous, 2015). According to the Central Electricity Authority report 2016-17, the energy requirement in Meghalaya was 1832 MU (million units) against the 1724 MU energy generated, resulting in the actual power shortage of 5.9 per cent (Anonymous, 2017). The state still has a long way to go in terms of self-sufficiency as far as power generation is concerned. Since the state seems to depend entirely on hydro energy generation, less rainfall may severely affect the electricity generation resulting in power deficit which has greatly affected Meghalaya's economy. In such situations, therefore it is essential to tackle the energy crisis through the judicious utilization of other abundant renewable energy resources, such as Biomass Energy, Solar Energy and Wind Energy.

**Table 2 Source of power generation and average power in MW**

| Source   | Power generated<br>(in MW) | Power generated<br>(in %) |
|--|----------------------------|---------------------------|
| Availability within State (Own Generating Stations)      |                            |                           |
| Hydro  | 282.00                     | 57.26                     |
| Small Hydro  | 32.70                      | 6.63                      |
| Total  | 314.70                     | 63.9                      |
| Availability outside State (Central Generating Stations) |                            |                           |
| Gas  | 104.47                     | 21.2                      |
| Hydro  | 73.30                      | 14.9                      |
| Total  | 177.77                     | 36.1                      |
| Grand Total  | 492.47                     | 36.1                      |

### Solar energy scenario in Meghalaya: Potential and Installed Capacity

While the solar electricity supply system in India has grown at a very rapid pace during the last few years, in Meghalaya this energy source is still to be tapped. Meghalaya as most other parts of India experience clear sunny weather for about 250-300 days in a year. The solar resource map released by National Renewable Energy Laboratory (NREL) recently, shows that the state of Meghalaya has direct normal irradiance (DNI) of about 4-4.5 kWh/m<sup>2</sup>/day. According to the Ministry of New and Renewable Energy (MNRE), the state has solar potential of 6 GW. Despite having a huge potential for solar energy, it is only during the last five years with the implementation of National Solar Mission phase II that solar energy generation starts to take shape in the state. As of 31.12.2016, solar power of 0.01 MW has been installed and there are many solar projects that have been approved in the state. Keeping in view the solar annual insolation, solar power could therefore easily address the state's long-term power requirements.

### Solar energy systems in Meghalaya

Different kinds of solar photovoltaic (SPV) devices for individual purpose mainly for home lighting as well as for community purposes such as street lights, community hall lights, solar pumps, etc. have been installed in the state. There has been an increase in number in most of the solar energy devices installed in the state from the year 2016-2018 (Table 3). Solar thermal technologies such as solar water heating system (SWHS) are being promoted and currently 54300 LPD (litres per day) are installed in the state.

**Table 3 Details of SPV systems and SPV power plants installed in Meghalaya**

| Sl. No | Solar Photovoltaic Systems     | As of<br>31.12.2016 | As of<br>31.3.2018 |
|--------|--------------------------------|---------------------|--------------------|
| 1      | Lanterns (Nos)                 | 24875               | 25000              |
| 2      | Home Lights (Nos)              | 7844                | 4850               |
| 3      | Street Lights (Nos)            | 1273                | 13700              |
| 4      | Pumps (Nos)                    | 19                  | -                  |
| 5      | Stand Alone power plants (KWp) | 884.5               | -                  |
| 6      | Solar water heating (LPD)      |                     | 54300              |

The NSM Phase-II had aimed for achieving higher targets of 100 GW and the Ministry has planned all possible options for implementation of the Mission. Selection of capacity for Phase-II, grid connected projects is being done via different schemes such as Bundling, Generation Based Incentive (GBI), Viability Gap Funding (VGF), etc. (MNRE, 2017). Other related schemes/projects such as solar parks, Grid connected Rooftop Solar Power, Offgrid solar PV Programme have been proposed and approved in the state. A 20 MW capacity solar park will be install in West Jaintia Hills and East Jaintia Hills districts, Meghalaya by the Power Generation Corporation Ltd (MePGCL). Under the Grid connected Rooftop Solar Power scheme, Electricity Regulatory Commissions of Meghalaya along with other north eastern states have notified regulations for feed-in-tariff. During 2016-17, the Ministry have sanctioned 5 nos. of 50 kWp SPV power plant and 1000 nos. of SPV Street Lighting Systems (LED) in Amlarem Sub Division, West Jaintia Hills District, Meghalaya under the Offgrid solar PV Programme.

### **Best examples of solar energy application in the state**

Solar energy technologies can be used for diverse purposes in homes, community, institutions and others. According to Meghalaya Non-Conventional and Rural Energy Development Agency (MNREDA), as many as forty one institutions in the state have opted for solar power. Important departments, offices, market places, villages have also installed solar power devices to meet their energy needs. Some of the best examples of energy use in the state are given below:

#### ***Institutions***

Loyola College, Williamnagar is a leading example for utilizing the renewable energy and making efforts to reduce the carbon footprint. The institution encourages clean and green energy by tapping the solar potential for using in its campus in the district headquarters of East Garo Hills. Since February 2016, the institute has been self-reliant in energy. A solar power unit with a capacity to provide 10 KW of electricity has been powering the main academic block. The solar power generation unit provides a renewable, sustainable and perpetually free source of energy, and furthermore, it is used to provide enough power to supply the electricity requirement of the college. It is the first of its

kind in the state of Meghalaya and serve as a great example to other institutions as well in making use of renewable energy resources.

Shillong College, one of the premier institutions in Shillong, has also installed solar energy unit of 25 KW capacity to complement existing power sources. The hybrid solar power unit in the College was installed on June 2017 under the MNREDA scheme. This system has so far supported the lighting and computer load for the classrooms, laboratories and offices within the college.

### ***Recreation***

Maple pine Farm is a farm house cum tourist lodge located near Mawphlang Village about 25 Km from the Shillong city. The entire little settlement was constructed by James Perry and ran mainly on solar energy, where a 3.6 KW solar panel was installed in 2011. The farm house cum tourist lodge depends entirely on the solar and wind energy for the power supply. The cottages have 24 hrs. power supplies from solar energy and run all the modern amenities with the renewable energy.

An approved and ongoing solar project in Nongkhnum Island, the biggest river island in Meghalaya and the second biggest river island in Asia is located 103 km from Shillong is on its way to completion. Being located in a remote area of the District there is no grid connection and supply from local electricity distribution at site. The site is surrounded by a cluster of approximately thirty households of the village, which also do not have access to any grid connection for electricity. A preliminary assessment of the requirement indicates an approximate load of 52 KW, in addition 30 KW for nearby households at village through the solar energy.

### ***Village street lighting***

Many villages located in the remote areas of Meghalaya face a very erratic electric power system. Any technical snag takes hours or even days to restore the power cut. These villages are a tourist spot with tourist coming from various parts of the world as well as domestic tourist. In many of the tourist villages, there is a need to set up street lights to attract tourists and to extend their day-time visits to night stays.

Solar Street lights have been installed in Mawlynnong, the cleanest village in Asia, located at the southern slope of Meghalaya in the East Khasi Hills districts. The Solar street light project at Mawlynnong was successfully completed with the installation of 30 solar street lights of 50 Wp (watt peak) capacity and was inaugurated on 23<sup>rd</sup> May 2015. Now, with the Solar Street Lights in the village and lighting up of public spaces, tourists would be encouraged to spend the night in the village and experience the local culture, which would significantly improve the livelihood of the villagers.

The latest example is that of 16 KW solar street lighting project, at Garobadha, in South West Garo Hills. The Solar street lights project is aimed at demonstrating use of new as well as renewable energy for people living in Meghalaya. As part of the Solar street lights project, 37 street lights have been installed at the Garobadha market.

### **Problems and barriers of development of solar energy**

The absence of reliable and adequate database of the resources, weather and other environmental parameters in the region is a main problem in the implementation of the solar energy schemes and poor technical performance of the systems after they have been installed (Palit, 2003). As of now, the capital cost of solar PV system is more as compared to coal based power plant. Solar power unit production cost is much higher than the production cost unit power by other sources. There is a need to apply latest technologies to bring down the cost of solar production for common use (Ramana et. al, 2015). There is lack in adequate maintenance of infrastructure and this is one of the major reasons for failure of majority of the systems in the region. Additionally, poor user training combined with the absence of effective servicing and maintenance networks, has resulted in the loss of confidence in the solar energy technologies even due to minor maintenance problems. No attempts have been made by government to support the development of local manufacturing and/or assembling facilities for Renewable Energy Targets (RETs) including solar devices in the region. Consequently, the entire system is imported, adding to increased cost with no accountability for system performance by the supplier.

**Conclusion**

Solar energy technology is one of the most promising renewable energy sources to meet the future global energy demand. It is being used economically in many advanced countries for both domestic and commercial purpose such as water heating, water, distillation refrigeration, drying etc. However, though developing countries have very high potential, yet they have not been able to fully tap the energy from this resource. Solar energy generation in the state of Meghalaya is very much in the nascent state, a lot more needs to be done to make use of this resource in solving the long lasting energy problems in the state. In order to diversify the energy supply and to achieve self-reliance and meet the energy demands, efforts have to be made to tap the energy sources for domestic and institutional purposes. The solar street lighting systems can be easily carried to remote areas making these more efficient and handy solutions to lighting problems. Awareness has to be spread for the importance of the solar energy and assistance need to be provided for the installation and operation of this renewable resource.

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## **Towards Sustainable Industrial Development**

Badaiahunlang Mawkhiew

### ***Abstract***

*The paper examines the role of industrial sector for uplifting the economy and the negative impacts that are the consequences of unplanned and non-strategic industrial development. Further, it also mentions about the sustainable industrial development, which is a part of the wider concept of 'Inclusive and Sustainable Industrial Development (ISID)', i.e. one of the Sustainable Development Goals of the UNIDO and how that can be achieved in a developing country. The second part of the paper explores the status of industrial development as well as government policies (both of Central and State governments) in Meghalaya. At this point of time, industrial development is vital for the state in employment and income generation. The paper tries to point out the significance of prioritising environment protection in the industrial policies or schemes of the Government to ensure that the state would not be in the same pitfall that other states of the country have been.*

**Keywords: Industrial Sector, Developing Country, Sustainable Industrial Development, ISID, Meghalaya**

### **The Role of Industry**

The tendency to consume more goods and services keeps on increasing all around the world. At the same time, in order to meet the increasing consumption demand, there is also a rise in the generation of wastes, pollution and a continuous depletion of the world's limited resources. In fact, the production as well as production process (depending on the technological level) to meet the increasing need differ among countries especially between the developed and developing countries. As a result of that, there are differences in income level, inequality, level of poverty and quality of the environment. In all these happenings, the industry has been the centre, being the main producer of goods and services.

Studies reveal that industrial development has been a major driver in the economy of many countries like the US, the European countries, Korea, Japan and China and in the process it has helped

to reduce poverty effectively. ‘In fact, there is not a single country in the world that has reached a high stage of economic and social development without having developed an advanced industrial sector’ (Inclusive and Sustainable Industrial Development: Creating shared prosperity, Safeguarding the environment, LI Yong, Director General, UNIDO, 2014: 2).

According to UNIDO report 2016, the manufacturing industry can be relied as a base for fostering development of developing countries and plays a key role for long-term structural change thereby creating many productive, formal jobs at an early stage of development. This is the sector which can absorb labour force as well as contribute towards country’s GDP especially in the developing nations. At the same time, it has the capability for inducing technological innovation and thus change economic structures from labour intensive to capital and technology intensive raising the demand for skilled labour, which could enable a virtuous circle of education, innovation and economic growth.

The mentioned report also reveals a more or less declining share of manufacturing industry in GDP among the developed countries during the past decades. Whereas developing countries’ stable manufacturing share varies among regions, and is essentially being reflected as increasing in Asia and declining in other developing regions (United Nations Industrial Development Organization, 2015, 30-32).

On the other hand, in both developed and developing countries, manufacturing employment shares in total employment are different. It is observed that there is a declining trend of employment share of this sector in the developed countries, likely due to de-industrialisation. On the other, employment shares in developing countries indicate that manufacturing has so far been the source of relatively high-productivity employment. This is especially happened in Asia as –‘it still has a more than 20 percent manufacturing employment share, the highest among all regions, including developed countries’ (ibid: 32-33). In fact, manufacturing employment share for the past four decades has been concentrated in Asia. Moreover, ‘South-East Asia had the largest increase in manufacturing share—more than 7 percentage points’ (ibid: 32).

Hence, in terms of value added and employment, it can be said that the role of manufacturing in economic development continues as being significant and that the prospect of manufacturing expansion for developing countries has not diminished in recent years, especially in Asia.

### **Inclusive and Sustainable Industrial Development - The Concept**

The concept of 'Inclusive and Sustainable Industrial Development (ISID)' was adopted by the Lima Declaration of UNIDO's Member States in December 2013. It stresses on the role of industrialization as a driver of development. The term 'Inclusive' means that industrial development must include all countries, all peoples, the private sector, civil society organizations, multinational development institutions and all parts of the UN system, with equal opportunities for and an equitable distribution of the benefits of industrialization to all stakeholders' (Towards Inclusive and Sustainable Industrial Development, Yong Li, 2017:448) On the other hand, the term 'sustainable' addresses the need to decouple the prosperity generated from industrial activities from excessive natural resource use and negative environmental impacts (ibid).

According to the Industrial Sustainable Development Report, 2016, the concept of ISID of the United Nations Industrial Development Organisation has three elements-

- i. sustain industrialisation as a driver of economic development- which is a long term strategy.
- ii. socially inclusive industrial development and society offering equal opportunities and equal distribution of benefits.
- iii. environmental sustainability which include decoupling the prosperity generated from industrial sector from excessive natural resource use and negative environmental impact.

(United Nations Industrial Development Organization, 2015,2)

Every country, regardless of development stage, is therefore required to make efforts on all three equally important aspects, i.e., sustained economic growth, social inclusiveness and environmental sustainability and to be capable to manage the trade-offs among them. It is then only that a country can progress towards 'Inclusive and Sustainable Industrial Development'. While for low-income countries

the challenge is more how to sustain the process of industrialization, for middle-income countries, it is environmental sustainability and for high-income countries, it is continued employment generation and inclusive industrial development. In any of these categories of countries, skill development, technological change and innovation continues to be very significance for successful industrialization (ibid: 21).

### **How can a developing country achieve Sustainable Industrial Development or Green Industry?**

For achieving sustainable industrial development, a paper on “Green Industry for a Low-Carbon Future” by UNIDO (2010) mentioned about the role of the industry, the government and that of the development aid community. Their roles are given in brief below:

- I. **Industry Role:** The industry itself plays a critical role as it is the prime manufacturer of goods & services that societies consume. For achieving green industry, we can have a look at how can enterprises-(a) *decouple* resources consumption from production, so that output continues to grow while alongside minimizing growth in their inputs of materials and energy; and (b) reduce impacts on the local environment. This can be done by:
  - adopting “three Rs” strategies – **Reduce, Recycle, Reuse**. This include maximising the efficiency with which enterprises use their energy and raw materials, adopting cleaner production, pollution prevention, green productivity or similar approaches.
  - switching from non-renewable to renewable sources of energy and materials. For instance, this may come about when the electricity-production sector shifts to renewable sources of energy and offers the rest of industry green electricity.
  - maximising the recycling and reuse of the wastes they generate.
  - redesigning their products so that they contain fewer materials (dematerialization) and consume less energy, less water, etc. during their use.
  - relinquishing the idea of themselves being sellers of services instead of sellers of products. This is because a person is not interested in the product he or she purchases, say, a washing machine, but in the service that the product renders for him/

her, i.e., the service of washing his/her clothes by the washing machine. This approach ‘can diminish the number of products manufactured and the consumption of resources during their use, and it can increase the amounts of the products that are recycled at the end of their useful lives’ (ibid:12).

- adopting a corporate social responsibility approach, to embrace all aspects of environmental (and social) impacts.
- minimising their excessive waste and pollution or neutralizing their environmental impacts and if this cannot be done, at least the industries should dispose of the wastes or release the pollutants without harming the environment (Green Industry for a Low-Carbon Future, A green footprint for industry, Opportunities and challenges of sustainable industrial development, UNIDO, 2010: 10-12)

**II. Government Role:** The government role in achieving green industry is equally significant; this can be in the form of:

- assisting enterprises by supporting awareness-raising, capacity-building, the development and transfer of more efficient production technologies, and the creation of specialized industry support institutions.
  - creating the market conditions so as to enable the renewable-energy industry to grow.
  - creating a vibrant market in recycled materials. In this case, the government can support awareness-raising, capacity-building, development and transfer of recycling technology, entrepreneurship development and creation of a proper regulatory structure for storage, transport and processing of recyclable wastes.
  - raising awareness in industry about the importance of product design.
  - procuring policies that favour goods manufactured with the least environmental impact.
  - creation of the necessary accreditation and certification bodies.
  - enacting and enforcing the necessary laws and regulations for reducing industry’s impacts on the local environment
  - invest directly in publicly owned waste-management and pollution-control infrastructure.
- (ibid: 10-13)

**III. Development Aid Community:** Though the Government is the main body for ensuring sustainable industrial development, more often it lacks the skills, as well as funds that would ensure proper discharge of its responsibilities. Here, the development aid community can play an important role by supporting governments in eliminating gaps in the normative framework related to the various initiatives mentioned above under 'government's role'. Moreover, the development aid community can also support government:

- in creating science and technology framework for enterprises that encourages green innovation as well as the transfer, development and adaptation of cleaner process technologies, recycling technologies, renewable-energy technologies, and other environmentally sound technologies.
- in framing zoning laws and other land management laws so as to encourage patterns of siting of enterprises that would encourage green investments and green patterns of operation.
- in allowing enterprises to obtain certifications of compliance with environmental standards locally.
- for ensuring that national stakeholders can take an active part in the development of the international standards that would be suitable for the developing countries as well.
- to make entrepreneurs aware of the opportunities that exist for new green businesses
- in assisting entrepreneurs to build up the technical and commercial skills that they require to be able to take advantage of the opportunities in green businesses.
- in putting the banking sector in the position to be willing and able to support green investments by the private sector, or to invest directly in required infrastructure such as waste-water treatment plants and waste-management plants.
- in building up the knowledge and skills in enterprises throughout the industrial sector.

(ibid: 14-17)

### **Some examples of negative impacts of industrialisation in India**

The strategy for furthering industrial development in India began since after independence and with the economic reforms that took place in the country during the 1990s onwards, much progress has taken place in the field of industries, particularly that of the private sector. However in the process, India's environment has deteriorated immensely because of industrial activities causing hazardous effects on health and endangering the existence of flora and fauna. Its situation has been made worse due to the increasing population, thereby inducing pressure on land, water (both surface and groundwater), etc. This is also most likely accompanied by rapid and unplanned industrialisation, an uncontrolled, inadequate and unsystematic management of waste.

In South India, Puducherry, the largest among the four regions of the Union Territory of Puducherry has attracted a large number of industries due to the easy availability of land, water, labour, power and various incentives and concessions given by the government. By mid-2016 the Union Territory of Puducherry had about 8562 diversified industries. (Rasmi Patniak, 2016: 2). However, the pollution inflicted by industrial sector is at an alarming rate degrading the air quality in the region. 'By the end of the eighteenth century, Puducherry received 499 tons of suspended particulate matter, 2.88 tons of sulphur dioxide and 1.99 tons of nitrogen dioxides per year' and these hazardous emissions have increased by 10-15 fold by the end of the 19<sup>th</sup> century. The emissions of the hazardous substances have caused negative impacts not only on the local people but also the flora and fauna, endangering their existence in the region (ibid: 4-5).

In India, water pollution generated by industrial sector is mainly in the form of toxic wastes and organic pollutants. Out of that, 40%–45% is contributed by the processing of industrial chemicals. More often, lesser attention has been made for abating waste by the small scale industries like chemical, textiles, food processing and tanneries thereby further contaminate the nearby water system. 'States which has over a lakh registered small-scale industries are Andhra Pradesh, Gujarat, Madhya Pradesh, Punjab, Tamil Nadu, Uttar Pradesh, and West Bengal. Among them, only a few have opted for CETPs (Common Effluent Treatment Plants) to control water pollution

though most of these CETPs either do not function at all or cannot treat effluents to the desired quality' (Singhal, 2000: 7-8).

Also, some solid wastes generated by industries are categorised as hazardous because they contain substances that are toxic to plants and animals or are flammable, corrosive, explosive or highly reactive, chemically. 'The major industries that produce hazardous solid wastes include metals, chemicals, drugs and pharmaceuticals, leather, pulp and paper, electroplating, refining, pesticides, dyes, rubber goods and so on'. If such industries have not taken enough efforts to dispose of or treat the hazardous wastes, they would have, in one way or the other, caused an adverse impact on ecosystems including the human environment (ibid: 13-14).

In another study, the Taloja industrial area, one of the most rapidly developing and heavily polluted industrial belts of Mumbai (Maharashtra), is spread over 863.18 hectares of land and consists of about 600 large and medium scale industries like engineering units, steel processing industries, chemical units, paints, pharmaceutical units, textile industries etc. It has been found that the industries in Taloja utilizes about 45,000 m<sup>3</sup>/day (cubic meter per day) of fresh water. However 'the treated and un-treated effluent discharge amounts to 28,750 m<sup>3</sup>/day...' This has a tremendous impact on the health of the locals as well as contaminating the nearby water system (Ram S. Lokhande, Pravin U. Singare, Deepali S. Pimple: 2).

The city of Kanpur (Uttar Pradesh) has been famous for its leather industry, meeting national and international demands for superior quality leather. It has also been able to generate employment opportunities at large thereby becoming a source of income for many. However, the industry has led to a lot of hazardous pollution. Whereas the tanneries pump out about 30 crore litres per day of polluted water into the adjacent Ganges river, the city's water treatment unit has a capacity of treating only 17 crore litres per day. The excessive pollution has contaminated not only surface but ground water sources as well. As a result, there has been an increasing deformities among new born babies and toxication of nearby agricultural fields. (Aljazeera, Oct 6, 2013)

Recently the World Health Organization's (WHO) reported that out of the 10 most polluted cities in the world, nine are in India. The report was based on a comparison of the average amount of PM<sub>2.5</sub> (particulate matter like small particles of soot, dust, etc.)— 'a particle considered so small that it can enter the lungs and cause serious health problems'. The nine cities are –Kanpur (U.P), Faridabad (Haryana), Varanasi (U.P.), Gaya (Bihar), Patna (Bihar), Delhi, Lucknow (U.P), Agra (U.P), Muzaffarpur (Bihar) (CNBC, May 3, 2018).

The major sources of air pollution from PM include industry, besides inefficient use of energy by households, industry, agriculture and transport sectors, coal fired power plants, sand and desert dust, waste burning and deforestation (The Hindu, May 2, 2018)

From above we can understand that although our country's industries are under strict regulations of the Central Pollution Control Board (CPCB) or similar boards, the implementation of such guidelines are far from being satisfactory. In fact, that the industries themselves are not being able to comply with the required management or treatment of waste might be basically because of lack of -technology, research and development, corporate social responsibilities, proper strategy for safeguarding environment, unskilled workers, etc. Another reason might have been the poor enforcement of Government environmental legislation.

### **Industrial development in Meghalaya**

Located in the north eastern part of India, Meghalaya has so far become one of the destinations for industrial investment due to its huge potentialities with availability of resources. It is where the setting up of mineral based industries, horticulture and agro-based industries, electronics and information technology, export oriented units, tourism and besides the recent service sectors on customer service, real estate's etc. is ideal (Department of Commerce and Industries, Govt. of Meghalaya) . Therefore, from time to time both the Central and State Governments have undertaken a number of initiatives in order to bring about industrial development in the state.

Already Meghalaya, being a part of North-East, have been able to avail several incentives from the Government of India for

its industrial development. These incentives have been announced in the various industrial policies for the North eastern states of the country, namely, the New Industrial Policy and other concession in the North Eastern Region, 1997, **North East Industrial and Investment Promotion Policy (NEIIPP), 2007** and recently the North East Industrial Development Scheme (NEIDS), 2017. In all these policies, several incentives have been included which are in the form of tax exemption, capital investment subsidy, interest subsidy, transport subsidy etc. in order to encourage establishment of more industries in the region (New Industrial Policy and other concession in the North Eastern Region, 1997, **North East Industrial and Investment Promotion Policy (NEIIPP) 2007**, North East Industrial Development Scheme (NEIDS) 2017).

In Meghalaya particularly, the 1st Industrial Policy was framed in 1988 and the 2nd Industrial Policy in 1997. The Industrial Policy of 1997 functioned since its inception till 2012, i.e. basically around 15 years. During this period of 15 years or so, a lot of investment in industrial sector was made, especially by investors from Jammu & Kashmir, West Bengal, Jharkhand, U.P. and Assam etc. Also a number of power intensive industries like Steel & Ferro Alloys, Cement Industries etc. have been set up. The third industrial policy in Meghalaya was the Meghalaya Industrial and Investment Promotion Policy, 2012 (Meghalaya Industrial and Investment Policy (MIIP) 2012:2).

Later on, in pursuance of this said policy of 2012, the Government of Meghalaya announced the Meghalaya Industrial & Investment Promotion Scheme, 2016 with a view to accelerate the industrial development and other investments in the State and thereby creating employment avenues (Meghalaya Industrial & Investment Promotion Scheme (MIIPP) 2016: 1).

The above mentioned policies and scheme of the Meghalaya Government have separate package incentives for large, medium, micro, small industries etc., such as the employment subsidy, Training Subsidy, Power Subsidy, capital investment subsidy, the Development Subsidy, interest subsidy, sales tax exemption, pollution control measures subsidy, the quality control measures subsidy, border area

subsidy etc. (Industrial Policy 1988, Government of Meghalaya; Industrial Policy, Government of Meghalaya, 1997; MIIP, 2012 and MIIPS, 2016).

Some information about the status of the industrial development can be observed from the following tables. Table 1 shows that from the year 2005 to 2007, the number of registered factories along with the employees remained constant. It was later on since 2008 till 2015 that there was an increase both in the number of registered factories as well as the total employees (Statistical Handbook Book, Meghalaya, 2017:103)

**Table 1**  
**Employment in Registered Factories**

| Year | No. of Registered Factories | Employees |
|------|-----------------------------|-----------|
| 1    | 2                           | 3         |
| 2005 | 118                         | 7071      |
| 2006 | 118                         | 7071      |
| 2007 | 118                         | 7071      |
| 2008 | 120                         | 7626      |
| 2009 | 120                         | 7626      |
| 2010 | 133                         | 8467      |
| 2011 | 141                         | 9320      |
| 2012 | 146                         | 9814      |
| 2013 | 629                         | 2401      |
| 2014 | 629                         | 2401      |
| 2015 | 506                         | 2059      |

*Source: Chief Inspector of Boilers and Factories, Meghalaya. Statistical Handbook Book, Meghalaya, 2017:103*

*NB: The term “factory” is defined in Section 2(m) of the Factories Act, 1948. It means that in any premises if 10 or more workers are engaged in a manufacturing process with aid of power or if 20 or more workers are engaged in the manufacturing process without aid of power such premises will be covered under the Factories, 1948 (Labour Department, Government of Meghalaya).*

Moreover in Meghalaya, the Micro Small and Medium Enterprises (MSME) (which according to the MSME Act 2006 of the Government of India, includes both manufacturing and services) has played a vital role in providing large employment opportunities, industrialization

of rural and backward areas and thus contributing immensely to the development of socio-economic development of the State and our Country (website of the Department of Commerce and Industries, Govt. of Meghalaya). The table below shows different figures regarding the registered small scale industries along with the persons employed and the investment levels in between 2004-05 to 2014-15. In table 2, it can be observed that the number of registered small scale industries increased from 5132 in 2004-05 up to 6842 in 2008-09. However, from 2009-2010 up to 2014-15, the number of such industries declined from 1040 to 506 respectively. The number of persons employed during the same years, i.e., from 2004-05 up to 2008-09 increased from 28894 to 37656 respectively. Later on, from 2009-10 up to 2014-15, the same declined from 4199 to 2059 respectively. The investment in plant and machinery kept on changing during the same period, i.e., from 2004-05 to 2014-15.

Overall, it can be seen that both the number of registered small scale industries and the number of persons employed in them have declined in the recent years. Most likely, therefore, the present Chief Minister of Meghalaya, while attending the Meghalaya Conclave of the National SC-ST Hub under the Ministry of Micro, Small and Medium Enterprises at State Convention Centre, mentioned that there is a lack of financial support towards the MSMEs in spite of them having a lot of potential for enhancing economic growth in the State (Shillong Times, Oct 29, 2018).

**Table 2**  
**Employment in Small Scale Industries**  
**Registered with the Directorate of Industries**

| Year /District | No. of small scale industries | No. of Persons Employed | Investment in Plant and Machinery (Rs in lakh ) |
|----------------|-------------------------------|-------------------------|---|
| 1              | 2                             | 3                       | 4   |
| 2004-2005      | 5132                          | 28894                   | 6613.8  |
| 2005-2006      | 5591                          | 31467                   | 7974.95   |
| 2006-2007      | 6107                          | 34158                   | 9034.14   |
| 2007-2008      | 6511                          | 36193                   | 10282.71  |
| 2008-2009      | 6842                          | 37656                   | 12175.1   |
| 2009-2010      | 1040                          | 4199                    | 3253.956  |
| 2010-2011      | 748                           | 3236                    | 1921.42   |
| 2011-2012      | 573                           | 2434                    | 2102.82   |
| 2012-2013      | 641                           | 3057                    | 3585.65   |
| 2013-2014      | 629                           | 2401                    | 4141.316  |
| 2014-2015      | 506                           | 2059                    | 5143.63   |

Source: *Statistical Hand Book, Meghalaya, 2017: 104-105*

Another observation on the achievement of the Micro and Medium Enterprise (MSME) in Meghalaya can be from the following diagram whereby the total units registered under MSME is 1345, the total investment made (in Rupees lakhs) is 11456.16 and the employment generation is about 5754 during the year 2013-14 to 2016-17.

**(Achievements are from 2013 - 2014 to 2016 - 2017)**  
**Under Micro Small and Medium Enterprise (MSME)**



Source: *Department of Commerce and Industries, Govt. of Meghalaya*

From the above data, it can be said that the already mentioned policies and schemes (both of central and state governments) have no

doubt helped in harnessing the available potentialities and therefore enabling more generation of employment in the state. However, there is still a need to initiate new ideas and policies which could open up more opportunities for the MSMEs to grow far and wide in the state of Meghalaya.

### **Conclusion**

Industrial development has been considered and will be still considered imperative for economic development. At the same time, it can cause inflictions on the environment. Therefore, in Meghalaya particularly, it should be a concern that whether the stated industrial policies have given enough significance to safeguarding of the environment and the promotion of social inclusiveness (if one goes by the ISID goal of UNIDO)? Do the enterprises prioritise research and development, innovation, technological development, corporate social responsibility, waste management, etc. by which green industry can be achieved? Is the development aid community functional, in the sense of supporting the government? Generally, the failures to safeguard the environment in most of the industrially advanced cities in India are two- fold. One is the efforts made and capabilities of industries to mitigate their negative impact on the environment and another is that of the implementation of the environmental laws. At this point of time, a proper study is (or studies are) necessitated to find out whether the adopted policies or schemes etc. of the State of Meghalaya will be capable to achieve sustainable industrial development so that our state will not fall in the same pitfall as the other industrialised states of India.

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## **Contesting Spaces: Changing Paradigm of Normative Roles in Khasi Family**

Suzanne R. J. Khongwar

### *Abstract*

*Forces of modernity have brought tremendous changes in the attitudes and values of the people within Khasi society in the last few decades which have far reaching implications for the cultural and structural aspects. The article explores the redefinition of the traditional normative roles within the family organization as a result of the social changes that has consumed Khasi social milieu. Further, the paper examines gender roles and gender relations within Khasi society dominated by norms and values as well as cultural ideology that clearly define the status, role and duties of a man and a woman in the capacity of a father, husband, uncle, wife, mother, and sister. Social norms reflect ideals or expectations and in the context of a society, these idealistic models may change according to economic turns, cultural adaptation and individual adjustment.*

**Keywords: Roles, Family, Gender Roles, Tradition, Social Change**

Modernity without doubt has penetrated every aspect of social existence. As an inherent mechanism of the society and a schema of activity, it unfolds itself not only in the economic operation and administrative management, but it permeates into the behavior and activities of the individual and the group in the form of social practices and cultural orientations. The process of change in the social structure is an inevitable universal social reality that has encouraged a necessitated re-visitation and reexamination of the Khasi social and cultural aspects as well.

Like any other, Khasi society is a normative society in which norms are established on the basis of cultural expectation. Normative patterns of behavior embedded within the social structures are manifested in the formulations of roles distinguishing the patterns of behavior for men and women in the society. 'A norm is a shared expectation of behavior that expresses what is considered culturally desirable and appropriate, while a role is a set of norms attached to a social position (Marshall: 1994). Social norms are reinforced through customs, laws and everyday practice.

Khasi Society is best known for its system of matri-clans and lineage in which matrilineal practices are firmly established. Though the society has undergone tremendous change as a result of modernization, yet the practice of matrilineal descent remains coherent and intact. Khasi social organizations still function under the system of customary laws deriving their sanctions from cultural injunctions.

An essential premise based on the customary matrilineal practices is that kinship structures determines and defines people's position and connections or affiliations. The Khasi matrilineal system clearly constructs traditional gender roles which create and maintain an existence of two polar gender identities. The very idea of 'role' implies a recognizable and accepted standard of behaviour. Khasi social world is organized around a pervasive differentiation between men's role and women's role, roles that are internalized by all individuals. Recognizable and accepted standard of behaviour of a prescribed role assumes a consistent and uniform set of social expectations about men and women which is universally shared within a society (Segal, 1990:69, Connell, 1987:195).

Normative gender roles within Khasi social life corroborates the androcentric paradigm where cultural integrity is foisted on the woman by the milieu. Women are considered the keepers of culture and the primary vessels for transmitting cultural values and traditions to the next generation apart from the obligation of the reproductive role which she assumes for perpetuating the matriline. Khasi cosmology itself endows the female with a position of centrality and distinctive responsibility which finds expression within the structural organization of the matrilineal descent group. From a woman springs forth the clan, a unilineal (matrilineal) descent group which is, by definition, a unit of primary social orientations and loyalties for its members, as well as a group periodically engaged in decisive and coordinated activity. (Schneider, 1961: 21-23). Such a cultural conception implicates the centrality of the woman within the milieu which surmises the perception that she holds a position of advantage in relation to that of the man.

However, a discrepancy arises, because matriliney does not make women rulers of their family nor does it bestow to women a

position of equivalence to that of men. A point highlighted by Rosaldo emphasizes that though women may be characterized with a position of importance, power, influence, yet they are denied 'recognized and culturally valued authority' (1974:22). This observation resonates within the matrilineal society of the Khasi as well, a point noted by Nongbri (2000: 75-77) who expounds in her analysis of Khasi matriliney, that the pivotal position held by a woman within the family organization is embedded with contradictions, since the cultural ideology abjures the woman from exercising any power or authority, within both the domains of the domestic and the public. The paradox of women as both important yet marginalized suggests a strong patriarchal ideology.

Underlying Nongbri's (*ibid*) analysis is the dominant mode of patriarchy which permeates the everyday life of the people. Consequently, there is an established bias within the Khasi ideological construct which justifies and supports male dominance. Within this context the Khasi ideology justifies and supports male dominance. The established conceptualization of the males' structural position is exemplified with the creation of the *Kñi* – the maternal uncle or mother's brother - an all-powerful venerated figure of great authority who embodies the stereotypical aspects of a definitive male role - that of a sentinel on whom all powers pertaining to decision-making is predominantly conferred. No aspect of Khasi culture or institution is immune from the hegemonic impact of the male role. The interpretation of roles in relation to agreed-upon definitions of gender constructs is rooted in the concept of '*doing gender*' which emphasizes that both men and women are assessed and held accountable for on the basis of gender in everyday life (West and Zimmerman, 1987). This corroborates the fact that gendered performance is a social phenomenon whereby the normative patterns of values and roles are acquired and internalized and in turn reproduced through everyday interactions.

The normative pattern of role performance finds the most visible expression within the family organization. Since the most significant relationships for an individual are those between oneself and members of one's family. It is undoubtedly true that the locus of permanently established relations among individuals is the domestic unit. Within Khasi social organization, the nucleus of structural

arrangement is *ĭing* - a functional domestic unit (Nongkynrih, 2018) in which the individuals interpersonal relations are most visible. Nongkynrih, espouses that interactions in any given social situation tend to adhere to the conventional societal norms (ibid). It is within the domestic unit -*ĭing* that the conspicuous cultural idioms relating to role ascription characterized within the patterns of division of labour and structure of power reflects the normative expectations embodied in gender ideology.

The traditional ethics embedded within the family organization stipulates a gendered division of labour wherein men exercise their role of providers and women are ascribed the role of 'family-carer'. This reasoning invariably attributes men with economic responsibilities thereby legitimizing their engagement in the public sphere. Women on the other hand, are subjected to the domestic space, assuming the responsibility of a custodian of family property and a trustee of family traditions. However, 'she does not possess authority commensurate with her duties and responsibilities' (Nongbri, 2000). As an inference from this fact, Khasi matrilineal principles of family organization provide the ideological support of endowing men with power and authority. In concordance with this ethos the boundaries of role expectations are clearly stipulated as per the established norms derived from kinship organization, the implication being that the male matri-kins are conferred with a greater role that gives them absolute control in the domestic space, which is otherwise acknowledged to be a forte of centrality for a woman. Furthermore, as a consequence of the woman's dependence on her male kinsmen, the system accords a greater role than other family systems to the maternal uncle or *Kñi* and not to the woman's husband, whose role is simply that of a progenitor deprived of any potestal authority as well as decision making power.

Against the backdrop of the firmly entrenched principles of matriliney and its definitions of ascribed role expectations, this paper explores the fundamental changes that have affected the Khasi family system and the implications these changes might have in terms of challenging the traditional normative role expected from men and women.

### **Changes in Family Patterns**

Khasi society has been greatly affected by modernization and in particular, the development of a capitalist economy and the influence of Christian ideology, all of which have had an impact on the family system, which in turn has altered relations within the family and the patterns of family life in general. The intrusion of capitalism with its world-wide ramifications created new economic opportunities which have called for restructuring old social relations. Consequently, this has affected matrilineal relationships since the new developments favour the welfare of the conjugal family, thwarting the durability of the matrilineage as a viable social or economic unit. These changes ascribed to the development of modern pressures with emphasis on individualism, are a radical departure from the ideal family form, which is the matrilineage. Adapting to the changing scenario, the nuclear family as a basic unit of production and consumption has been progressively inducted into the milieu resulting in the manifestation of egalitarian values and the ideology of liberal individualism. These trends have been paralleled by changes in gender roles, especially in the expansion of the female role to include economic provision for the family, and lately also the transformation of the male role - a departure from the rigid role prescription of the traditional concepts of hegemonic male image.

Broadly, the conceptual framework of role has been used to analyse the difference between the social positions of women and men and to explain how they are shaped for those positions in a matrilineal context, to explore the changes and conflicts that have occurred in and about those positions as society adapts to change.

#### **Redefining the traditional male role:**

Numerous anthropological literature substantiate that within the matrilineage family, authority is predominantly, if not exclusively, vested in males. Schlegel (1972:6) in her typology of matrilineal societies postulates that, “we can take it for granted that authority in the descent sphere is of necessity in the hands of the men of the matrilineage, the brothers and the mothers’ brothers of the women”. As an ideal construct, the family and lineage system of the Khasi affirms Radcliffe-Brown’s notion of ‘mother-right’, for the matrilineal

institution is organized around the woman and she is warranted to retain her unison with her matri-kins as well as retaining the rights of possession of children and property with the implication of conferring on the male kins (brothers) the jural authority. The woman's dependence on her male kinsmen is emphasized, for the system accords a greater role to the maternal uncle, a constitutive element of Khasi matrilineal system. *Kñi* as the center of authority and economy, the pivot around which the family revolves, is a highly venerated personage of vast importance upon whom the decisive and unhindered authoritative role is exclusively vested. Moreover, the rules relating to rights over property and the pattern of inheritance which is rooted in the kinship system puts the maternal uncle in a position of power and control over the lineage property where women are simply custodians and trustees of such property. This arrangement effectuates the economic implication that is attached to the maternal uncle's role, constituting him as the undisputed supreme authority in the family.

Coupled with the economic power that the *Kñi* is endowed with by the system is also his influential role within the domain of religion. As the fundamental principle of Khasi indigenous religion/belief system - is based on clan, concomitantly the sibling group must come together in ritual matters, and the mother's brother/maternal uncle acts as the counselor and guide in religious matters for the household (Nongbri, 2011). Evidently, the maternal uncle's power is strengthened by his role which is embedded in ritual responsibilities.

The family as a social structure is a dynamic entity that has undergone changes as a process of adaptation to the socio-economic and accompanying ideological changes. The advent of colonialism with its powerful agents, western education and Christianity (Nongbri, 2011) coupled with the development of capitalist economy has greatly affected the Khasi family system and such changes has led to a radical departure from the ideal family arrangement as defined by culture. This change is evidently observed in the altered relations within the family and the pattern of family in general. The erstwhile cultural practices entrenched within the family system, in which the well-defined roles are interpreted, have significantly been transformed in accordance with

the changing reality. Adapting to the modernizing changes prompts the increasing importance of the conjugal family over the *ġing* which consequently reconstructs the relations of power, authority and decision making process in which the power of the avunculate can no longer be assumed to be the central feature of khasi matrilineal family. In this adaptation to change, conjugal based households have elevated the position of the father, in which case, the authority which used to be otherwise wielded by the maternal uncle (*Kñi*) has ostensibly been transferred to the father/husband.

The father/husband in matriliney is considered to have a merely biological role, wherein he propagates his wife's matrilineage. He is excluded from his wife's and children's matri-family. Though uxorilocal marriage merges him into his wife's family, yet he remains an outsider to his wife's and children's lineage. 'As a husband (*u shongkha*), a man is regarded as another family's son (*u khun ki brierw*), (Nongbri: 2000) deprived of ritual status and economic authority in his marital family notwithstanding the lack of potestal authority over his children. As a stranger in his uxorilocal marital residence, he cannot aspire for a higher status but is subjected to the overriding authority of his wife's brother in all aspects concerning the family. Though the arrangement indicates that a man, as a husband and a father, remains an outsider to the matri-family, yet it is anticipated that it is his responsibility to provide economically for the upkeep of his wife and children. This pattern of role obligations inevitably generates tension and conflict between the mother's brother and the father. The jural authority vested with the maternal-uncle and the ideology of the providing husband and supporting father implicit in the marriage rule is an index of conflict between the two dominant males in the family.

Forces of change have apparently transformed the society in general and the family is not immune from the impact of the social, political and economic changes. In the present situation, the astounding importance of the father's role is evidently recognized; a contestation to the matrilineal relationships, since the new developments propelled by modernization facilitates the welfare of the conjugal household. Conjugal household emphasizes on the intimate relations shared by

the wife and her children with the progenitor (*U Kpa*) who bears the responsibility for their wellbeing. The result is that the father's influence has grown correspondingly and as an important member of the family, he can wield important influence over his wife and children. Potestal authority which was traditionally exercised by the *kñi* has been appropriated by the father, for the adoption of new ideologies encourages the active role of the father towards the welfare of his children. A genitor is believed to have given literal substance to life, a notion conveyed in the dictum '*u kpa u ba ai ka longrynieng*', thus supporting the basis that it is only natural and deemed proper that potestal authority is conferred on the father, an authority consisting of rights and obligations which the father somehow fulfills more readily and willingly towards his children than the maternal-uncle. This has undermined the role of the avunculate in the conjugal household of his sister, a role which is firmly embedded in the Khasi matrilineal principles of family organization.

One of the distinctive determinants that have made the conjugal family a viable option in the modern context, resulting in the elevation of the father's role, is the issue of economics. Economic conditions have made the family totally individualistic having implications for the unity of the sibling group as a corporate entity. According to the customary practices, the domestic unit functions as a corporate body in which men and women of the sibling group (excluding the husband/father) owns considerable wealth administered by the *Kñi* in the form of productive property held in common by lineage members. Constituted as the centre of authority in relations of production, the *Kñi* holds a coveted position, effectively controlling the labor of both male and female members of the matrilineage. Economic cooperation and joint ownership of property necessitates the close ties shared by members of the domestic unit, ameliorating the role of the *Kñi*. This is not to say that *U Kpa* is scant of an economic role in his marital home. The social norms warrant his economic provision which is imperative in sustaining the livelihood of his conjugal family. Furthermore, the magnitude of *U Kpa* stature in the domestic sphere is reflected in Khasi symbology where the father is depicted as akin to '*U Khaw*' (rice).\* The significance of the father in Khasi family

is testified by the restriction of patrilateral cross cousin marriage, a form of marriage which is abhorred. The repugnance to such an alliance is captured in the vernacular apothegm which reads as “*ai khaw kylliang*” and translates to “returning of rice”, where ‘rice’ figuratively symbolizes the father/husband. The symbolism of rice encapsulated in the apothegm emphasizes the economic role of the man towards his conjugal family besides his biological obligations, ‘which can never be repaid or returned’, for which patrilateral cross cousin marriage is proscribed (Nongbri: 2011).

Today, the corporate activities of the *ĭing* have been much reduced since the domestic unit in the present situation no longer includes production. The shift from a subsistence economy to market economy has immensely played a role in the gradual disintegration of the domestic unit as a corporate entity, where it appears that the collective wealth which was jointly held by the matri-kins as ancestral property has been divided into individual shares, a fact which has rendered the continuance of the corporate entity irrelevant and has intensified the conjugal family as a unit of economic cooperation. The strength of economic ties in the nuclear family outweighs the matrilineal affiliations, since the woman and her children are bound to the man -(husband, father, provider)- by economic motives as well as residential cohabitation. In a climate of intense individualistic economic effort, Khasi matriliney emerged the outmoded system of economy. The social sanction which prescribes for the significant role of the *Kñi* in the management of ancestral property has consequently become outmoded.

The extensive Christianization of the community that transpired on account of colonialism has also had varying implications which subsequently transform the traditional tenets of family pattern. Christian ideologies on family system come into conflict with certain matrilineal notions. These include that of the relationship between husband and wife, responsibility for children and, most importantly, the view of the husband as the head of the family. The acceptance of Christian teachings on marriage entails a rejection of certain matrilineal principles which obviously undermine the power of the avunculate, even as it elevates the position of the father to that of a figure of unmitigated

authority which surpasses that of his wife or her guardians. Influenced by the Christian principles, which is an antithesis to the customary injunction, the matrilineal affiliations of the *Īing* bound by ritual unity, pertinent to *Niam Khasi* (Khasi indigenous faith) is no longer an inherent essence within the Christian nuclear family framework. In conjunction with the distortion of sibling unity tied by religion, ancestral property has lost its significance and deemed incompatible with the new framework which supports the autonomy of the nuclear family.

The role of the *Kñi* has diminished in the context of a changed society. Though the honorific title *Kñi* connotes a figure of authority and reverence, in the present context, it is the father who is the arbiter in all matters pertaining to his conjugal family. The *Kñi* is allocated a subsidiary role to that of the father concerning potestal authority, though he still retains a revered position and is called upon to carry out certain duties in family affairs, especially in matters related to the marriage of his nieces and nephews where he takes the role of the *Ksiang* (mediator). Even families who have adopted Christianity as their faith still uphold the tradition of appointing the *Kñi* to execute his obligations, as was done in the past, a role which calls for him to represent his matri-family. The observance of the role of *ksiang* in the present scenario is simply a customary usage which calls for his participation especially in the marital brokerage (engagement) of his nephews and nieces. Laxity in exercising his role on the part of the *Kñi* today and Christian principles on paternal responsibility are some of the factors that have contributed towards diluting the role of the *Kñi* in Khasi family.

### **Gender roles in Transition:**

Fundamental economic, social and cultural changes that have altered the family life course have reinterpreted the patterns of role allocation rooted in cultural constitution of family norms. These changes have not only redefined the traditional distribution of responsibilities, obligations and authority incorporated into the male role in the domain of family, but have initiated a re-examination of the cultural definition of a woman's role within the family dynamics. Deviations from the customary sanctioned male ascribed roles in the

context of family is paralleled by changes of gender roles, for change in one aspect in a relationship signals a change in the other thereby perturbs assumed positions and undoes given identities.

Khasi matriliney lays emphasis on the centrality of a woman's position within the organization of family, leading to the general assumption that authority and power within the framework of family relations is invariably possessed by her. Such an impression is erroneous, for the dominant gender ideology which finds lucid expression in the context of matrilineal structuring principles legitimately sanctions men with power and authority. Nongbri's distinction between 'conquering sons and dutiful daughters' articulates the gender dynamics in a Khasi matrilineal society where the man is clearly favoured with a position of supremacy, while the woman being characterised as the weaker sex, stands in need of a male kinsman and hence is obliged to submit to the control of her brother and the protection and support of her husband/father. The cultural ideal of a khasi woman is that of a keeper (*ka nong-ri nong-kdup*) of the domestic household. Her position within the family organization is based upon her being the perpetuator of the Khasi kinship and traditions. She bears the responsibility for the continuity and maintenance of solidarity of the domestic household (*Iing*) at the lowest level, and the clan solidarity at the larger social level. It is through the woman that members are affiliated and acquire an identity in the social realm.

Traditional Khasi gender worldviews proliferates the idea pertaining to the inherent inadequacy of a woman to be entrusted with the power that entails 'decision making' within the domestic sphere (concomitantly preventing her participation in the public sphere), an incontestable space appropriated by men, due to a perception that women are less gifted intellectually and more prone to emotions. The overwhelming emphasis on the traditional gender differentiation highlighting the ubiquitous ethos of male supremacy and female subservience embedded in the decree of ethical social conduct, solicits a woman's passive role whereby her freedom and autonomy are circumscribed. An explicit admonition constituted in the didactic text *Ka Jingsneng Tymmen II-XLII* (Teachings of elders) which reads—*“don't give a woman too much freedom, For worldly wise she can*

*never become.....don't give her too much liberty.....*”, - reverberates a patriarchal ethos culturally enshrined and sanctioned patriarchal ethos which defines a woman's capacity and responsibility limited to the domestic sphere, devoid of any authoritative connotations. This restriction is explicitly articulated in the social conduct directives stipulating that women should be subdued and compelled to enact those roles as sanctioned by social norms.

A woman's family role in Khasi matrilineal society encompasses a complex collective of responsibilities. Within the domestic setup women are allocated reproductive, economic and religious roles constructed on the basis of the norms and values inherent in the cultural norms and values. Her reproductive role assumes cultural importance in maintaining the coherence of the matrilineal descent group. Division of labour within the family unit engenders a woman with the responsibility of child-bearer and childcare, homemaker and nurturer entrusted with the task of caring for the family members, an obligation sans authority. The woman as a mother is accountable for imparting and cultivating etiquette, respect and propriety in her children, a duty of utmost significance, for morality and ethics takes precedence in the Khasi social world.

The woman's economic role in the family is, at most, one of a custodian of family property bereft of any control, a contradiction to the rules of inheritance. The customary rules devise women to inherit ancestral property, the bulk of which is disbursed to the youngest daughter (*Khadduh*) conforming to the practice of ultimogeniture. Nonetheless, entitlement to ownership of property does not connote privileges to administer or to dispose at will for she possesses only a token authority. It is the mother's brother who wields such privileges. The woman's space within the religious domain is no different from her role within the economic domain. Organised around the *Ĵing*, Khasi religion designates women as trustees of family rites that require her to prepare and initiate them but it is the male matri-kin who execute the rituals. The arrangement portrays the ambivalence of a woman's central position in the domestic sphere, for gendered division of labour within the family clearly upholds men as authoritative overseer.

The elements of modernization has significantly affected the traditional Khasi family structure with implications for family dynamics which challenge the normative pattern of role obligations and expectations, resulting in a departure from the traditional female gender role as prescribed by customs. Transition in the context of economic, social and cultural change in the last few decades, have led to the increase of nuclear family set-ups bringing about new dimensions and significance for a woman's role in the family. This initiates a re-negotiation of the taken-for-granted assumptions regarding women's inherent inabilities to assume positions which connotes power and influence in decision making.

The disintegration of *Ka ĩing* as a functional production unit has given women relative autonomy from the obligations bound by customary norms which otherwise confine her role to the domestic sphere. Intensification of the conjugal family as a unit of economic cooperation has led to families operating not as members of the *Ĩing* in a social structure in which economic activity is in many ways embedded in social behaviour, but as individual agents in a market economy. Correspondingly, it has led to increased women's participation in the labour market which in turn incorporates dimension of economic independence and a more or less equal participation and contribution to the economic provision of the family. Alternatively, the adoption of western ideological values (egalitarianism and liberal individualism), has challenged the clichéd stereotypical role of a man as the breadwinner and provider and a woman as the childcare and care taker of the family. This has promoted a flexibility and negotiability in distribution of responsibilities between the spouses within a conjugal family, allotting more space in decision making for women.

Given the profound changes that have systematically reconstructed the gender dynamics in the domestic front, the general perception towards women's primary role has, however, remained unchanged. Established norms that define a woman's position within the domestic space may have evolved. On account of economic independence and egalitarian values, yet contradictions and inconsistencies between the cultural and structural dimension of the relationship between the sexes persists. The cultural ideal that women are 'keepers' (*nongri*

*nongkdup*) justifies a woman's obligation to maintain the customary female roles on which the integrity and coherence of the family is dependent. Furthermore, the structural importance of matriliney for lineage and inheritance binds a woman to maternal connections with implications for duties and responsibilities towards her matri-kins. A woman as a *khadduh* in the family has to bear the responsibility of caring for aged parents, her divorced and unmarried siblings and children of her deceased sisters, retrospective of her role sanctioned by customary norms. On the other hand, the *Kñi* is not obliged to shoulder such conventional responsibilities or maintain his allegiance to the conjugal family in the changed social environment. Such perpetuity of female gender role expectation as configured by norms exposes Khasi matrilineal women to contradictory roles and puts them in a quandary, caught between traditional expectations and a more empowering modern role. Apropos a woman's role in the conjugal family, there is ambivalence about egalitarian gender division of labour. With the increase in women's paid employment, expectations should ideally culminate in equal sharing of domestic tasks. However, women are still expected to fulfil this gendered role which has remained relatively unchanged. Culturally ingrained gender distinctions are most likely to materialise in the division of responsibility of household chores. The kitchen is still strongly held to be the realm of the woman and all other tasks within this space is a woman's burden. The changing patterns of family formation, the rise in women's participation in the labour market coupled with the ideology of equitable gender relations, have not necessitated the relinquishment of certain privileges still attached to the male role. The idea of female empowerment obscures the reality that a woman encounters within the domestic space where she is encumbered with the added responsibility of providing and managing the family combined, with the unpaid domestic tasks, notwithstanding her obligations as a personage who propagates the lineage and maintains its cohesion.

Negotiations in the context of a woman's role within the lineage and marital relations are complicated rather than resolved by the influence of modernity.

### **Conclusion:**

The emergence of the conjugal household as the primary site of family relations is an adaptation to the substantial transitions that have touched the core values of Khasi society. Household (nuclear family) is the basic unit of society where individuals cooperate for resources, a place where individuals confront and reproduce societal norms, values, power and privilege. In adapting to the changing environments, household members often redefine prescribed gender roles. These actions are influenced by the broader institutional environment in which the household exists and interacts.

It becomes apparent that the prescribed roles of both men and women have undergone radical changes. Transition from the *ĭng* into a nuclear set-up as a family form has brought exponential changes in gender roles.

Khasi families today depict a trend where the male figure as *U Kpa* has assumed the pivotal role with regards to the affairs of the conjugal household. The recognition of the father's status and supremacy in the family sanctions him to exercise more authority and encourages greater responsibilities towards his wife and children. Correspondingly, the role of the *Kñi*'s has diminished and reduced to that of a symbolic figure rather than an established decisive institution.

In the present context, it is observed that the role of a man in Khasi society has undergone a paradigm shift. The Khasi man's position as *U Kñi* has taken a setback while his position as *U Kpa* is exalted to a decision maker in the conjugal household.

Furthermore, the exercise of authority by the male figure in the family is largely influenced by the economic and social status of the individuals concerned. In a family where the father's income status is sizable, space for intrusive authority by the maternal uncle is limited as the wife and the children are dependent on his beneficence for their welfare. However, there are contributing elements in which, *U Kñi* is 'favored with a pronounced role' and conferred jural authority freely exercised by him, such as an affluent economic status and a distinguished *kyrdan* (social standing) in the society. It is clear that the *Kñi* will not exercise a day-to-day jural authority such as the father

appears to possess, but this does not exclude the probability that he may also exercise authority to some degree and in particular situations. Both possess jural authority though probably not in identical fashions.

The equation in interrelations within the family matrix between male and female has also undergone a transformation. Though the matrilineal principles of descent reckons a woman to be the pivot on which the cohesion of the lineage oscillates, the social expectations regarding the ideal role of a woman in the domestic space have been rendered incompatible with the modern family structure. The changes in cultural values which have developed partly in harmony with economic demands have promoted a more equal distribution of responsibilities for the economic provision of the family and have diminished the entrenched identities of men as sole breadwinners and decision-makers.

Furthermore it has been observed that financial autonomy has inevitably affected women's position within the family elevating them to a position of greater power and influence in decision making negotiations, a development that challenges the traditional distribution of power. Egalitarian gender ideologies between the spouses have become increasingly common in domestic relations in which a more democratic consultation on matters of family importance takes place. Conversely, the progressive move towards egalitarianism has pushed women to actively engage in tasks beyond the limits of wifely domestic femininity into a space which was hitherto defined as a man's exclusive domain.

The changes that have prevailed over Khasi society bring their own contradictions, tensions and added responsibilities in the context of a woman's role in the family. Despite the ideological support for empowerment and equality, ambivalence about egalitarian perceptions in the ambit of the household echoes the entrenched ideology of male superiority. The changes have not apparently been sufficient to alter strongly-held and functional beliefs about the basic social category of gender in the ambit of the Khasi household. While improvement in women's status is visible in terms of educational attainment and participation in the labour market and consequent financial independence, the division of household tasks and family decision

making are still largely dictated by traditional gender norms and expectations. A few stray cases reveal that when spouses hold more egalitarian attitudes, the household is characterized by equitable gender relations and equal distribution of unpaid work in the domestic sphere. Nevertheless, the well-established canons of matrilineality sets the framework, facilitating the cultural injunction underpinning the normative expectations foisted upon women. Social norms are remarkably tenacious for even in the domestic sphere, where relations are being contested and negotiated these terms relegate men and women in particular identities and expectations that still prove difficult to tackle and negotiate in modern society.

The complex nature of modern life brings new demands from men and women in a world where traditional norms have proven to be tenacious giving rise to tensions conflict and contradictions. Therein lays the problem in finding ways to renegotiate and reallocate a new set of roles that would fit into the new mould even as it proves fair to both sexes without straying too far from established norms and conventions. This will ensure the continued survival of our unique matrilineal ethos. The secret is in finding such a balance, whether we succeed, only time will tell.

## **Glossary**

*Ultimogeniture*: a system of inheritance by which the youngest child (daughter in khasi society) succeeds the family property

*Īing*: household/ domestic unit

*Kpa*: father

*Kñi*: mother's brother / maternal uncle

*U kpa ba ai ka long-rynieng*: the father who not only gives stature but also form

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## Globalisation and its Impact on Public Administration

Amina Marbaniang

### *Abstract*

*The objective of the paper is to study the theoretical aspect of Public Administration with regards to the impact and changes that Globalisation has brought to the field. An attempt is also made to study the challenges faced by Third World Countries in adapting themselves to the changes posed by Globalisation in the field of Public Administration.*

**Concept of Globalisation:** Globalisation is a major trend in the contemporary world. Not a new phenomenon, its roots can be traced back to the massive flows of goods, ideas and people of the Silk Route trade era, or perhaps even earlier. However, unlike those times, globalisation in the modern era, has had maximum effect by changing the role and functions of public administration.

These are the various definitions of Globalisation:

According to the World Health Organisation, “Globalisation or the increased interconnectedness and interdependence of people and countries, is generally understood to include two interrelated elements: The opening of borders to increase fast flow of goods, services, finance, people and ideas across international borders; and the changes in institutional and policy regimes at the international and national levels that facilitate or promote such flows. It is recognised that globalisation has both positive and negative impacts on development”. (WHO, 2001)

The International Monetary Fund defines globalisation “as the growing economic interdependence of countries worldwide through increasing volume and variety of cross-border transactions in goods and services, free international capital flows, and more rapid and widespread diffusion of technology”. (IMF, 2008)

Meanwhile, The International Forum on Globalisation defines it as “the present worldwide drive toward a globalised economic system dominated by supranational corporate trade and banking institutions that are not accountable to democratic processes or national governments”. (IFG, 1994)

Thus, from the above definitions, it is obvious that globalisation is primarily economic in nature. The link between Nations and their economies is deeply intertwined. Nations need their economies to flourish. Economies need their nations to nurture them. Therefore any change in the economic scenario is bound to echo changes in the political scenario as well. This is the main crux of globalisation.

In fact, the current trend of globalisation has been identified with three different phases of development which is known as LPG, i.e. Liberalisation, Privatisation and Globalisation. <sup>(1)</sup> It remains clear that the main thought encapsulated in the term refers to a general state of affairs where goods, markets, people and ideas are crossing boundaries and gradually uniting into one single trend of thought. Governments across the world have been forced to recognise this phenomenon. Whether grudgingly or not, most have had to conform their functions (especially in relation to public administration) to a generally accepted world-view of what the norm should be. This perhaps, is the biggest impact on political thought and action.

### **Historical trends in the concept of Public Administration:**

**Feudal Systems** - Prior to the twentieth century, patrimonial and feudal systems of administration were followed which had a number of defects such as rampant favouritism, nepotism, corruption, ignoring of public interests etc.

**Reformed Systems** - By the late nineteenth century, a counter movement was born, whereby these systems were sought to be reformed and there emerged a change in the perception of public administration. Most of this can be credited to the ideas of Max Weber who based his concept on the twin principles of **hierarchy** <sup>(2)</sup> and **meritocracy** <sup>(3)</sup>. These two principles greatly influenced a change in the structure of public administration. This new approach had a number of new, distinctive features. It relied on centralized control, set rules and guidelines, separated policy-making from implementation, and employed a hierarchical organizational structure. The watchwords were ‘efficiency’ and ‘effectiveness’ in the management of budgetary and human resources.

This system stressed on separation between administration and appointed administrators; administration as a continuous, predictable and rule-governed process; qualified and trained administrators; functional division of labour, and a hierarchy of tasks and people. Resources belong to the organization, not to the individuals who work in it; public servants who serve public rather than private interests.

This “command and control” approach to public administration was very common among (Commonwealth) colonial and post-colonial countries. This approach worked well in a number of countries, for example, in Singapore, this helped to develop a high quality and efficient civil service. A similar approach was followed in China in the context of a one-party state. However, many other post-colonial states experienced a decline in the quality of governance and the effectiveness of public administration in subsequent years as neo-patrimonial pressures asserted themselves, and state resources and public appointments were subject to the personal influence of political leaders and their followers.

**Globalisation Influenced System** - The onset of Globalisation brought about a paradigm shift in the nature and scope of public administration. It completely demolished the old system and sought to create a freer, more flexible, transparent and liberal type of public administration. To cope with such changes, many countries have had to change their structures, procedures and attitudes.

**Structure** – The structure of public administration has undergone a sea change, i.e. from a state controlled and bureaucratically managed type of administration to a more flexible, market based administration. Contrary to Weber, globalisation- induced administration reposes maximum faith on decentralisation of authority, flattening of hierarchies <sup>(4)</sup>, slimming of bureaucracy and so on. Transparency is given high importance in administration. Top-down administrative decision-making gives way to bottom-up model with increasing participation of local people.

**Procedures** – Procedures have changed with emphasis on leasing/contracting out services, outsourcing, quality service delivery and performance measurement.

**Attitude** - The biggest impact of globalisation is at the psychological and mental level. Previously, the common public was not considered to be so important in the post-colonial administrations. They generally received lackadaisical service from the bureaucracy. With globalisation, the common man has been put in the forefront of governance. Hence the talk of 'people friendly' and 'grassroots' democracy. Public service has become the central focus of public administration infused with 3Es- Efficiency, Economy and Effectiveness.

### **Impact of globalisation on the state and nature of public administration**

In responding to challenges posed by globalisation and liberalisation, a number of strategies have been adopted by scholars and practitioners in the field of public administration. These need to be discussed in terms of the paradigm shift that is tending to change the nature and character of public administration. The impact of globalisation is observed in many areas: Srivastava (2009) lists these areas as:

**1. Public Service Reforms:** Adoption of the free market economy in the 1980s in the West and 1990s in India, compelled public service reforms in these countries. Known by different names, viz., New Economic Policy, Structural Adjustment Programme, privatisation, liberalisation, deregulation etc.; it brought about a perception that private is good and public is bad. Free market reforms brought about changes generally described as the new way of governance, government by the market, reinventing government, new public management, sharing power, slimming of state, hollowing out of state and so on.

**2. Reinventing Government:** The policies of developed and developing countries are being increasingly influenced by New Public Management (NPM) and the reinventing of governmental functions. These are: privatisation and deregulation, establishing market-based mechanisms, decentralisation and de-bureaucratisation. Recent thinking revolves around the concept that business principles need to be introduced and adopted in conducting public business. It is felt that the government should not only adopt the techniques of business administration, but also adopt the values of business. The basic principles for reinventing government are: steering rather than rowing, empowering rather than serving, injecting competition into service delivery, transforming

rule-driven organisation, meeting needs of the customers and not the bureaucracy, and a shift from hierarchy to participation and leveraging change through the market.

Therefore there is renewed focus on efficiency, performance, appraisals etc. in government departments which had not been seen earlier. The move is to convert public bureaucracies into agencies which can deliver designated services to the public. There is adoption of quasi-market mechanisms and contracting out to foster competition. The new style of management aims to cut cost, reduce public expenditure and a style of management which emphasises on output, providing monetary incentives to increase performance and empowering managers.

**3. Entrepreneurial Government:** If a government is to run like a business, it must necessarily become entrepreneurial in character. Innovation, efficiency and productivity are the hall-marks of entrepreneurial government which resulted due to the constant pressure of globalisation. Public sector organisations are now under worldwide pressures to enhance their productivity by increasing efficiency. Along with cutting down waste and increasing output, public bureaucracies are trying to simultaneously facilitate new and better delivery of services.

**4. Reduced Role of Bureaucracy:** Economic liberalisation in its basic conceptual form seeks to reduce government intervention in the economic sector, thus implying a reduced role for the bureaucracy. With the switch-over to globalisation, liberalisation and privatisation, the bureaucracy will have to play the role of a catalyst, a helper, an accelerator, a booster for development and not be the primary mover by itself.

**5. Good Governance:** “Governance” deals with the capacity of the government to design, formulate and implement policies and, in general, to discharge its functions. Good governance means to bring the government closer to the people through people oriented mechanisms of functioning. Mentioned in a World Bank report on Sub-Saharan Africa (1989), good governance was defined as “a public service that is efficient, a judicial system that is reliable and an administration that is accountable to the public”. Therefore good governance means an efficient, effective development-oriented administration which is

committed to improvement in quality of life. In simple words, good governance can be considered as citizen friendly, citizen caring and responsive administration.

**6. E-Governance:** A lean, simple and fast administration will have to look for alternative mechanisms of delivery. Since 1980s, many scholars have been advocating privatisation as well as E-Governance - which is the application of Information Technology (IT) to the process of government functioning to bring Simple, Moral, Accountable, Responsive and Transparent (SMART) governance. The speed and transparency associated with E-Governance has the potential to make public administration more responsive and efficient.

**7. Empowering Citizens:** Globalisation has also witnessed the rise of grass-roots, people's active participation at the local level in areas such as women's empowerment, education for all, human rights, including the rights of the poor, consumer rights, environmental protection and decentralisation. Thus, empowering citizens has been a key component of recent reform wave surrounding public administration.

### **Challenges of Globalisation in Public Administration- Third World Perspective**

Globalisation is perceived as the spread of liberalisation on a universal scale. Liberalisation essentially means withdrawal of the state from many areas of the economy and administration. The state thus focuses only on core areas like defence. All other sectors are left to private interests. Private and non-state actors such as NGOs have come to play an important role in fulfilling these erstwhile functions of the state. While western countries have adopted this new system easily, it must be remembered that they already had historical, educational and cultural backgrounds that eased the change. Their governmental systems were well established and entrenched. Further, better developed systems of checks and balances are/were already prevalent in those countries. <sup>(5)</sup>

For third world countries though, the transition has not been easy. The processes of LPG have brought far reaching changes to such countries. They have succeeded well in some areas but have failed spectacularly in others. For example, some entities in the Third

World have evolved into powerful multinationals with massive global reach. On the other hand, poverty alleviation could not be influenced much by globalisation. In fact, it is perceived that globalisation has increased disparity between the rich and poor. There appears to be increasing exploitation of natural resources without thought of future generation needs. The now popular view is that globalisation is merely a growing trend towards blatant capitalist subjugation of the globe in the garb of neo-liberalism.

Third World countries generally have a relatively new history of democratic institutions and therefore, may not have matured enough to be able to check the excesses of capitalism. Therefore, for a third world country, the main issue is to change the character of the state so that there is a shift from the bourgeois-feudalistic-bureaucracy combine to a genuine people's democracy. A direct photocopy of the Western Model may not be apt for countries where the basics do not exist.

Institutions would need to be built and developed first and the government is best suited to do so. Therefore, contemplating zero roles by the government may not yield the best results. The government would be required to provide the basics to the people – food, clean air and water, housing, protective justice, health care, basic education etc. The Third World perhaps, needs an altogether different model of development that will assure general welfare of the masses and an equalitarian social life, free from exploitation and deprivation.

### **Conclusion**

Globalisation in its current form, has shaken the very foundations of public administration. Some scholars have gone far enough to say that globalisation has brought about the end of public administration. However, in reality this is not true. Public administration does not show any signs of receding any time soon, especially with the special circumstances of third world countries. The shift from direct provider to facilitator has not diminished the importance of public administration but has breathed new dimensions into its functions.

***Footnotes:***

1. The terms Liberalisation, Privatisation and Globalisation are commonly interpreted as simultaneous, interdependent processes that accompany the new trend of governance-

Liberalisation – refers to the trend of freeing or liberating countries' economies from the 'shackles' of license, quota, controlled economy to that which is driven by free market pressures.

Privatisation – refers to the trend where governments are increasingly handing over erstwhile governmental functions to private entities for e.g. –building of infrastructure education, health etc. This is a necessary corollary to the above point where the government should withdraw from direct participation in the economy.

Globalisation – refers to the increasing flow of goods, ideas and people across national boundaries. This has led to a more unified world in terms of products, markets and hopefully, political thought – in the form of democracy.

2. Hierarchy means a division of the administration into various levels of responsibility with orders emanating from the top and actual delivery (to the public) being performed by the bottom rung.
3. Meritocracy means by virtue of merit. It can be claimed as an ancient oriental concept, starting with the competitive exams of the early Qin and Han dynasties, discontinued only in the early 21<sup>st</sup> century; but whose concept still lives on in competitive exams such as IAS, IES conducted in India till today.
4. Refer the efforts of the current Modi led government in India, to pay subsidies directly to the bank accounts of the intended recipients, completely removing all levels of governance in between.
5. Many systems that are slowly being adopted in public administration in the developing world found their origins much earlier in the West. Concepts such as the Right to Information (Sweden, circa 1776), Right to Recall (Switzerland, since 1846 in some Cantons), Direct Democracy etc., were birthed and developed in European countries.

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## Second Language Teaching and Testing: Bridging the Gap

Sonita Khongwir

### *Abstract*

*Teaching and testing are inseparable components of language study. They constitute classroom practices and the former usually precedes the latter. Lado (1961) asserts that “what the student has to learn constitutes the corpus of what we have to test” (p.20). It is observed that much of language testing is of poor quality and language tests without validity may have a detrimental effect on teaching and learning and do not measure what is intended to be measured (Hughes, 2003). However, there may be beneficial effects as well. The influence or effect of testing on teaching and learning is known as ‘washback’ or backwash.’ These two terms are used synonymously. If a test is regarded as a high-stakes test whose consequences have far-reaching effects, then the preparation for it can govern all teaching and learning exercises. This will lead to teaching to the test. If the test content and testing procedures are at odds with the aims and objectives of the course, it will result in a gap between what is taught in the classroom and what is tested at the end of the course. The Secondary School Leaving Certificate (SSLC) and the Higher Secondary School Leaving Certificate (HSSLC) examinations conducted by the Meghalaya Board of School Education (MBOSE) are high-stakes tests. This paper aims to examine the discordance between teaching and testing of English as a second language at the secondary and higher secondary levels in Meghalaya.*

**Keywords: Teaching, Testing, Validity, Washback, High-Stakes Testing.**

### **Introduction**

Teaching is the process of imparting knowledge on given subjects or disciplines that are accepted as valid and not contested. It is the activity that helps students to achieve the objectives of the lesson, syllabus or curriculum. Testing aims to ascertain the level of knowledge acquired by the learner. It allows teachers/testers to understand if the learners have achieved the requisite objectives. Testing is one of the procedures that can be used to assess learners’

performance. A test must have validity and this refers to the degree to which a test measures what it claims to measure.

Teaching and testing are two components of classroom practice used by language teachers. This only reiterates Lado's assertion that what the student has to learn establishes what has to be tested (1961). Tests are powerful tools and are assumed to have an impact on the teaching and learning practices that goes on in the classroom (Wall and Alderson, 1993; Cheng, 1997). In an ideal situation, testing becomes a teaching strategy. In a worst case scenario, teaching and testing are administered as separate, unrelated entities. Consequently, teachers initially use the teaching syllabus in the first half of the academic year. The latter part of the year is devoted to the examination syllabus.

The teaching of English as a second language refers to teaching the language to learners whose first language is not English. Learning a second language is a conscious process and takes place after the first language has already been acquired. In Meghalaya, English is taught as a second language and is introduced at the entry level in schools. It is the medium of both instruction and examination. While it is evident that learners are exposed to the English language at an early stage, it has been observed that not many of them are proficient users of the language. The student-teacher ratio in the classroom is abysmally low. The teacher has no time to give individual attention to the weak learner or the prodigious student. This hinders learners' potential growth.

A pilot study was conducted to investigate the effect of the English test on the ESL (English as a Second Language) teaching at the Secondary and Higher Secondary level of schools following the MBOSE syllabus. The participants comprising one hundred and ten students from Class IX and Class XI from selected schools following the MBOSE syllabus were specifically chosen as they will be appearing in the high-stakes SSLC and HSSLC examinations. Twenty teachers from both urban and rural schools participated in the study. The findings of this study is expected to contribute valuable information to improve the testing system so that it can facilitate the goals and objectives of the language teaching programme and thus promote second language learning.

## **Relationship between Teaching and Testing**

It is generally accepted that tests have a compelling influence on language learners and language teachers. While tests may have the prerogative to select, inspire and reward, they can also be used as instruments to bar, de-motivate and penalize. Introduction of new tests can have an impact on teaching. Based on what the learners will be tested on, the syllabus may be redesigned, new books introduced and teachers may possibly restructure their teaching methods. It is desirable that testing should support good teaching and where needed, work as a remedial effect to inadequate teaching.

Tests are useful tools for teachers as they can use test results to assess suitable teaching materials and identify potential issues in the classroom. Tests can also help the teacher establish the pace of instruction in the classroom. The relationship between teaching and testing essentially comprises two competing goals: an immediate goal and a long term goal. The immediate goal is to achieve a certain test score. The long term goal is to increase language proficiency. In order to achieve the desired test score, the learners may focus their attention on only the topics that are included in the test or examination and the teachers may “teach to the test.” This phrase is best understood in the context of Buck (1988) who maintains that “there is a natural tendency for both teachers and students to tailor their classroom activities to the demands of the test, especially when the test is very important to the future of the students, and pass rates are used as a measure of teacher success. This influence of the test on the classroom (referred to as washback by language testers) is, of course, very important; this washback effect can be either beneficial or harmful” (p.17).

Some tests are regarded by stakeholders as being influential. Consequently, these high stakes tests will drive many factors like content and methodology of teaching programmes. The impact of a test on teaching and learning is commonly referred to as the ‘washback effect.’ Alderson and Wall (1993) proposes a series of washback hypotheses which may possibly play a role in the washback effect. Some of the hypotheses related to testing and teaching are listed below:

1. A test will influence teaching
2. A test will influence how teachers teach

3. A test will influence what teachers teach
4. A test will influence the rate and sequence of teaching
5. A test will influence the degree and depth of teaching
6. A test will influence attitudes to the content, method etc. of learning/teaching

From the above, we can assume that teaching is one variable. Learning is a separate though related variable. Other variables comprise test content, teaching content and learning content. Henning (1987) states that language tests are most commonly used to determine strengths and weaknesses in the abilities of the learner. In a state like Meghalaya where problems such as limited teaching staff and facilities are routine, these tests are important because they help in deciding a learner's suitability to participate in a particular course of instruction (Harris & McCaan, 2004). These tests also guarantee that only those who are most likely to benefit from such a programme may gain access to it. The Secondary School Leaving Certificate (SSLC) and the Higher Secondary School Leaving Certificate (HSSLC) examinations conducted by the Meghalaya Board of School Education (MBOSE) are considered high stakes tests as they have far-reaching consequences for the learners' futures. Accordingly, these tests are seen to have a big impact on the society and educational institutions. This is evident from the effort and resources spent by the concerned stakeholders in helping learners perform well in these tests. They adapt their learning styles and activities to the requirements of the test. Similarly, teachers tailor their efforts to deliver the prescribed syllabus. They take recourse to notes and past question papers from several years to provide practice for their students. Thus, teachers "teach to the test" and as Luke Prodromou (1993) argues, "When the market calls on teachers and institutions to produce quantifiable results, it usually means good *examination* results. Sound teaching practices are often sacrificed in an anxious attempt to 'cover' the examination syllabus and to keep ahead of the competition" (p.14). This only serves to justify the hypotheses illustrated above.

### **Positive and Negative Washback**

Positive washback takes place when tests become a teaching-learning activity. Tests become tools which can bring about change

in syllabus and teaching methodology. They prompt teachers to cover their subjects and complete the syllabus within the prescribed time limit. Tests motivate students to work harder to have a sense of accomplishment and thus enhance learning. Pan (2008) maintains that good tests can be devised and utilized as activities that are beneficial and constructive to the teaching-learning process.

There is negative washback when the focus is on achieving high scores. This encourages teachers and learners to omit tasks and activities that do not contribute directly to pass the test. Laying stress on topics that are likely to be included in the test will lead to a memorization approach with reduced emphasis on critical thinking. In high-stakes testing, preparation for the test may govern all teaching-learning to the detriment of proficiency in the target language. As the focus is on high scores, the learners may achieve the desired score without any real language learning taking place.

### **Discrepancies between Teaching and Testing**

- It is observed that while the teaching syllabus covers a lot of reading skills, the questions in the examination deals only with a few sub-skills
- There is no emphasis on enhancing communicative competence
- Teachers feel that not all the skills taught are tested
- Learners belonging to different ability groups are given the same questions in the examination
- Since the focus of the test is on elements within the language rather than on the whole language and real language performance, communicative competence is hindered
- Examination questions mainly tests questions whose answers are to be found in the reading text
- Classroom activities are to a large extent student-centred while examination situation is different
- The higher order thinking skills are not tested
- Since the purpose of testing is mainly to assign marks and grades, students resort to memorization to earn good scores to the detriment of real language learning
- Findings of the Pilot Study

- Findings of the Students' Questionnaire:
- Teaching input is based on a working syllabus
- Most learners emphasize on the study of only items included in the syllabus
- Certain sections of the syllabus that are unlikely to be tested are not taught
- Learners from both classes do not rely fully on test-related materials
- Remedial coaching on the basis of test scores is seldom made available to weak students or those who are above average
- Rural students claim to benefit from mock tests
- Learners regard tests to be of pivotal importance and consider test scores indicators of their proficiency in English.
- Learners are not aware of the connotations of the four skills
- The comparative test scores of Class IX students in the Board and school examination are dissimilar.
- For Class XI students, the two test scores are complementary
- Learners believe that reading storybooks, newspapers and magazines in English will help them develop their language proficiency
- More rural learners feel that their Board examination score is nearly similar to their school examination score
- A poor or average score will motivate students to work hard so that future performance will improve
- Scoring well in English tests will embolden them to face more tests so that they can examine their aptitude and competence
- Learners practice the activities and tasks that are not directly tested at home, possibly to save time
- Learners from both classes and backgrounds have cultivated the habit of reading the text more than once for better understanding
- At the secondary level, more students prefer to discuss the text with the teacher
- The red marks and teachers' comments on the answer scripts appear to be the yardstick by which learners at the secondary level gauge their mistakes

**Findings of the Teachers' Questionnaire:**

- A sizable section of teachers appear to have had no exposure to teacher training or training in test preparation
- Teachers feel that test items should be related to the syllabus
- Teachers express a positive attitude towards Comprehensive and Continuous Evaluation
- Teachers believe that students are dependent on test-related materials like test papers of previous years and model/sample questions.
- Teachers favour completion of the whole text and also use supplementary materials to enhance students' comprehension
- Teachers modify their lesson plans after a review of students' performance
- Reflection on their teaching methods also compels them to modify their lesson plan to suit the learners' needs
- Doubt-clearing sessions are encouraged in the class
- Teachers focus more on mistakes
- Remedial coaching to weak students is seldom given

**Suggestions**

As testing is an integral part of teaching, it is important that assessments reflect the concepts and skills that the teacher emphasized in the classroom. The test results must provide learners with important feedback on their learning progress and help them identify learning problems. Test results can also help teachers identify what they taught well and what they need to work on.

To bridge the gap between teaching and testing and to ensure that optimal language learning takes place, the following points may be taken into consideration:

- Skills specified in the teaching syllabus must be tested in the examination
- An oral component can be introduced in the syllabus
- Since higher level thinking skills are dealt with during teaching sessions, these skills can be included in the test paper
- Language activities and exercises formatted in the textbooks must

correlate to items in the examination paper

- The text book must be the test book
- Textbooks should also contain the type of questions used in the examination paper
- Test tasks and activities should necessitate equivalent authentic, interactive language use fostered in the classroom so that what is taught complements what is tested
- A balance between teaching and testing must be maintained by teachers in the classroom

### **Conclusion**

The ESL tests in the SSLC and HSSLC examinations are conventional paper and pen tests. Class time is spent in exercises and drilling and dealing with grammar and pronunciation. In the teaching of the four basic skills of Listening, Speaking, Reading and Writing, listening and speaking were relegated to the background. The reason is because these components are not included in the test. In the present situation, good listening and speaking skills have become very important and language teaching should cater to the practical needs of learners and make them competent to interact with people around them.

The aim of teaching English is to enable learners to understand, speak, read and write in English. The English test (ET) administered by MBOSE ignores communicative language competence and concentrates on learners' reading and writing abilities. Thus it limits teaching methods. So it becomes the responsibility of the teachers to make their classes interesting and motivate their students so that fruitful learning of the language takes place. However, this becomes an onerous task as teachers are forced to work under extenuating circumstances. Teaching to the test becomes the order of the day and negative washback takes place. Ultimately, the curriculum is narrowed down to what is included in the test. Consequently, the aims of teaching a second language are not realized.

Teaching and testing are inextricably linked with each other. They complement each other to promote effective learning. It is important that policy makers and test designers work together to

incorporate the format of the test with the format and content of the teaching that goes on in the ESL classroom. This will go a long way in reforming and improving instruction to promote language learning and enhance communicative competence among ESL learners.

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**Appendix - I**  
**QUESTIONNAIRE FOR STUDENTS**

The purpose of this questionnaire is to study the effects of English testing at the secondary and higher secondary level of the Meghalaya Board of School Education (MBOSE). The questionnaire consists of two parts- Part I and Part II. Each part has 8 questions. The information given by you will be kept confidential and meant only for research purposes. Your cooperation is earnestly sought. Thank you.

Name.....

Age.....

Language spoken at home.....

Medium of instruction at school/college.....

Name of the school/college (IX/XI).....

Current class and year.....

Board of Examination.....

Marks scored in English Language in Class VIII/ X Board Examination  
.....

**PART-I**

In Part I, there are 8 statements and five options which show your opinion. Choose your answer indicating your opinion by writing the number of your choice in the bracket.

- Strongly Agree -I strongly think so (5)
- Agree -I think so (4)
- Undecided - I cannot tell for sure (3)
- Disagree -I don't think so (2)
- Strongly Disagree - I don't think so at all (1)

1. The present Secondary/Higher Secondary English syllabus helps you learn English. ( )
2. While studying for the test in English, you study only items included in the syllabus. ( )
3. Certain sections in the syllabus are not taught in the class because those sections are not likely to be directly tested in the examination. ( )

4. Your learning of English only relies on solving English test papers of previous years, practicing model questions and studying their available solutions. ( )
5. The teacher conducts mock tests before the examination. ( )
6. Your scores in English tests indicate your strength and weakness in English. ( )
7. Your scores in English test papers in the Board/Home Examination clearly reflect your ability to use the four skills i.e. listening, speaking, reading and writing. ( )
8. Your Board examination score in English is nearly similar to your score in English in the school examination. ( )

### PART-II

Part II comprises 8 statements with five options as answers. Choose your option which you feel is the most appropriate one and tick (✓) in the given brackets.

1. To develop your proficiency in English, you only
  - a. study your English textbooks ( )
  - b. read storybooks, newspapers and magazines written in English ( )
  - c. listen to English news and other programmes in English ( )
  - d. read English test-related materials ( )
  - e. read class notes ( )
2. If your score in English tests is poor or average, the score
  - a. motivates you to do better in the subsequent tests ( )
  - b. makes you afraid of English tests ( )
  - c. makes you lose interest in English ( )
  - d. forces you to memorize more question-answers ( )
  - e. does not have any effect on your learning ( )
3. If your score in English tests is high or above average, the score
  - a. motivates me to do better in the subsequent tests ( )
  - b. increases my interest in English ( )
  - c. increases my willingness to face more tests in English to judge my preparation ( )
  - d. forces me to memorize more question-answers ( )
  - e. does not have any effect on your learning ( )

4. Some activities and tasks given in the English textbook are not directly tested in the examination. You practise them
- a. always in the class ( )
  - b. sometimes in the class ( )
  - c. at home ( )
  - d. neither in the class nor at home ( )
  - e. only when you score less marks in the English test and the teacher tells you to practise them at home ( )
5. In your institution, extra coaching is given to the weak students
- a. once a week ( )
  - b. once in 15 days ( )
  - c. once a month ( )
  - d. only before the annual/Board examination ( )
  - e. never ( )
6. In your institution, extra coaching is given to the above average students
- a. once a week ( )
  - b. once in 15 days ( )
  - c. once a month ( )
  - d. only before the annual/Board examination ( )
  - e. never ( )
7. For better understanding of the English lessons, you
- a. read the textbook more than once ( )
  - b. discuss the text with your teacher ( )
  - c. discuss the text with your classmates ( )
  - d. discuss the text with people at home ( )
  - e. read help books ( )
8. After the class test/First Terminal/ Half Yearly Examination, when you receive your evaluated answer scripts, you understand the defects in your answers
- a. when you individually discuss the paper with your teachers ( )
  - b. when you discuss the paper with your friends who have scored better ( )

- c. through your teachers' written comments in the answer scripts ( )
- d. when you discuss the paper with your private tutors or family members ( )
- e. only by looking at the red mark on the answer script ( )

**Appendix - II**  
**QUESTIONNAIRE FOR TEACHERS**

The purpose of this questionnaire is to study the effects of English testing at the secondary and higher secondary level of the Meghalaya Board of School Education (MBOSE) and how the testing will affect the teaching of English at these levels. The questionnaire consists of two parts—Part I and Part II. Part I has 9 questions and Part II has 8 questions. The information given by you will be kept confidential and meant only for research purposes. Your cooperation is earnestly sought. Thank you.

Name.....

Designation .....

Academic qualification.....

Professional qualification .....

No. of Orientation Courses / In-service training programmes attended .....

No. of years of experience in Test Preparation.....

Are you a Board Examination evaluator - **Yes /No**

Name of your Institution.....

Teaching Experience-(Please tick ✓the relevant answer)

- a. 1-5 years [ ]      b. 6-10 years [ ]      c. 11-15 years [ ]
- d. 16-20 years [ ]      e. 20+ years [ ]

**PART-I**

In Part I, there are 9 statements and five options which show your opinion. Choose your answer indicating your opinion by writing the number of your choice in the bracket.

|   |     |
|---|-----|
| Strongly Agree -I strongly think so         | (5) |
| Agree -I think so                           | (4) |
| Undecided - I cannot tell for sure          | (3) |
| Disagree -I don't think so                  | (2) |
| Strongly Disagree - I don't think so at all | (1) |

1. You are aware of the objectives of the syllabi for English Language course at the Secondary/ Higher Secondary level.( )
2. The four skills, i.e. reading, writing, speaking and listening are given equal importance in classroom teaching.( )
3. The four skills, i.e. reading, writing, speaking and listening are given equal importance while testing learner's proficiency in English.( )
4. Certain topics in the textbook are omitted, as they are not likely to be included in the examination. ( )
5. You feel that test items must be related to the contents of the syllabus. ( )
6. You feel that Comprehensive and Continuous Evaluation (CCE) facilitates the testing of the learners' ability to use the English language better. ( )
7. Students depend on additional materials, namely previous years' test papers and model/sample questions to prepare for the test in English. ( )
8. The impact of an English test can indirectly reflect the learners' reaction to the course content and syllabus. ( )
9. In-service training and workshops on test design and test preparation are prerequisites for all the teachers of English. ( )

**PART -II**

Part II comprises 8 statements with five options as answers. Choose the option which you feel is the appropriate one and tick(✓) the relevant bracket. You may choose more than one option.

1. While teaching the English textbook in the class, you
  - b. leave out the easy parts ( )
  - c. complete the whole text( )
  - d. omit those parts which are unlikely to be tested( )
  - e. dictate notes on the difficult parts( )
  - f. use additional props for better understanding( )
2. You modify your lesson plan
  - a. after receiving feedback on your performance in the classroom ( )
  - b. after reviewing students' performance in the test( )
  - c. on students' demand ( )
  - d. on the demand of the authorities( )
  - e. after reflecting on your teaching( )
3. You encourage students to ask questions to clear their doubts in the classroom
  - a. all the time ( )
  - b. sometime( )
  - c. after the completion of the course( )
  - d. only before the examination ( )
  - e. only on difficult areas( )
4. You prepare your students for English tests with the help of additional materials
  - a. always( )
  - b. frequently( )
  - c. rarely( )
  - d. on students' demand( )
  - e. on parental request ( )

5. Less time is spent in the teaching of Grammar as
  - a. other components of the syllabus require more time to be completed ( )
  - b. students are expected to have some basic knowledge of grammar( )
  - c. the grammatical test items in the test paper are allotted little marks. ( )
  - d. students learn grammar automatically while learning the textbook in English. ( )
  - e. grammar is not separately tested( )
6. Before the terminal/half-yearly examination, you make sure that
  - a. students practise questions from the text book( )
  - b. students study the whole textbook( )
  - c. students study selective questions( )
  - d. doubt-clearing sessions are held( )
  - e. mock tests are conducted( )
7. After the checking of English answer scripts in the First terminal/half yearly examination, you
  - a. discuss the whole paper in the classroom offering probable solutions. ( )
  - b. discuss the mistakes made by the students ( )
  - c. only give answers to those questions in which majority of the students score poorly ( )
  - d. do not give any oral explanation because you have given comments in the answer scripts ( )
  - e. dictate the correct solutions of the whole paper to the students ( )
8. You give extra coaching to the weak students
  - a. once or twice a week ( )
  - b. whenever you have time( )
  - c. cannot offer it due to lack of time ( )
  - d. only before the examination ( )
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