

## Editorial

### Assamese script and UNICODE

*Wrong explanation regarding Assamese script by UNICODE has created great concern among the Assamese people. UNICODE organized a meeting regarding this matter recently in London with the representatives of “Asom Sahitya Sabha”*

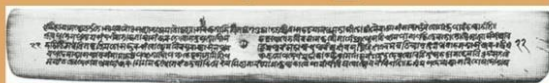
*(Assam Literary Association) where it*

*remained unresolved. Actually Assamese script is nothing but Kamrupi Script. The ancient name of Assam was Kamrupa. The originality of Kamrupa Script is proved by the word ‘wa’*

*and ‘Ra’ which were used as it is in ‘Charyapada’ thousand years ago by the ancient Kamrupa poets. The evidences of this Script are there in Rock, Metallic Plates, Sanchi Pat, Tula Pat. Plam Leaf, Manuscript etc, UNICODE should provide justice by recognizing this Script otherwise it will be an Irony for the people of Assam.*



## Charyapada



<https://en.wikipedia.org/wiki/File:Charyapada.jpg>

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# Role of Information and Communication Technology in higher Education: A study with special references to North East India

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Dist. - Dhubri, Assam

## Abstract:

*Information and Communication Technology (ICT) is basically an umbrella term that encompasses all communication technologies such as internet, wireless networks, cell phones, satellite communications, digital television etc. that provide access to information. During the past few decades, ICT has provided society with a vast array of new communication capabilities and has fundamentally changed the way we live now. We find a world of difference in the practices and procedures of various fields such as medicine, tourism, banking, business, engineering, etc. as they operate now in comparison to how they operated two decades ago. In contrast, the impact of ICT on education in India, however, has been far less and slow. Scientific knowledge and technological skills play a significant role in shaping the contemporary world scenario. These advancements are a consequence of higher education leading to the genesis of what is known as a Knowledge Society. Information technology brought about a contraction of spatial dimensions molding the knowledge society to a global village. Geographical and national boundaries of modern world are fast getting erased with flashing of information at an unimaginable rate and accuracy. Man is now better equipped in understanding the genesis of the universe. Medical science achieved the prolonging of life and the threshold of creation of life artificially is not far away. Higher education evidently exerts a profound influence on all these aspects leading to social changes. The North-Eastern region of India being characterized by the simultaneous existence of diverse, unpolluted distinct and highly specific tribal cultures, has its own unique identity. The role of higher education in bringing about social change in the North-Eastern region is to be critically examined in such a milieu. . In this paper an attempt would be made to explain the reasons for the development of higher education in North east through Information and Communication Technology (ICT).*

## Introduction:

Higher education systems have grown exponentially in the last five decades to meet the demands of quality education for all. This aspect has further gained momentum due to swift advancements in Information and Communication Technology (ICT). Demand for skilled and competent labour is ever increasing in the contemporary globalised society. In this backdrop, access to quality in higher education for all has emerged as determining factor of economic growth and

development. In order to increase the access to higher education and improving its reach to the remotest parts of the country contribution of open and distance learning facilities is on the increase. In addition, it is catering to life-long learning aspirations and that too at affordable cost. The last two decades have witnessed the inclusion of developments in ICTs in higher education systems around the world. The North Eastern Region of India makes headlines for countless insurgencies and ethnic battles, although it would hardly represent the series of varied issues these states need to address. Education, which is one of the core features of any state or country's infrastructure, is inadequate in these states. Every year hundreds and thousands of students have to go out of their homes to other states in the country to be able to achieve standard higher education (HE). While it is a matter of pride for any institute to have students from different corners of the country, the trend itself points out to the fact that the existing colleges in some regions are failing to fulfill the academic and professional aspirations of the young scholars in their region. The census of 2004 – 2005 show that the seven sister states in India's North Eastern Region (NER) have as many as three hundred and twenty degree colleges in the state of Assam, and as less as only Three colleges in Sikkim, with other states having varying but small number of degree colleges suggesting that the development of education has been starkly uneven from state to state in the region.

### **The ICT Concept:**

Information Communication Technologies (ICT) consists of computer hardware, software, Internet and other communication networks, and media used to collect, store, process and transmit information in the form of voice, text, data and images. In short, ICT deals with the use of electronic computers and computer software to convert, store, protect, process, transmit and retrieve information. ICT revolution is the result of integration of computer technology and communication technology. ICT industry includes all companies that are engaged in production and marketing of hardware, software, services and networking. ICT offers flexibility of time and space. These attributes make ICT a valuable resource for women especially in developing countries who suffer from limited availability of time, social isolation, and lack of access to knowledge and productive resources. In this connection, Information and communication technologies (ICTS) which include radio and television, and the Internet - have been touted as potentially and powerful enabling tools for educational change and reform.

### **ICT enabled Education: an Overview:**

The Information and Communication Technology (ICT) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer, and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. When such

technologies are used for educational purposes, namely to support and improve the learning of students and to develop learning environments, ICT can be considered as a subfield of Educational Technology. ICTs in higher education are being used for developing course material; delivering content and sharing content; communication between learners, teachers and the outside world; creation and delivery of presentation and lectures; academic research; administrative support, student enrolment etc.

In the current information society, people have to access knowledge via ICT to keep pace with the latest developments. In such a scenario, higher education, which always plays a critical role in any economic and social growth of a country, becomes even more important. Education not only increases the productive skills of the individual but also his/her earning power. It gives them a sense of well being as well as capacity to absorb new ideas, increases their social interaction, gives access to improved health and provides several more intangible benefits. The various kinds of ICT products available and having relevance to education, such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counseling, interactive voice response system, audiocassettes and CD ROMs have been used in education for different purposes.

### **Objectives of the study:**

1. To highlight the major barriers in the access of ICT tools in rural areas vis-a vis in urban areas for higher education.
2. To explore remedial measures that can contribute in the access of ICT for the higher education in North east especially in backward areas .
3. To find out suitable solutions to overcome those loopholes and to enhance quality in higher education.

### **Methodology:**

The paper is totally based on secondary data. The data was drawn from various sources which have been duly acknowledged. The data for the proposed study have been collected from secondary sources using different books, journals, articles and different web sources. Various issues related to ICT and higher education in North east India has been obtained by consulting the websites concerned.

### **Examples of ICT-based activities**

The following is a brief guide to some of the most common uses of ICT in teaching and learning.

## **Finding out**

Students can use ICT to find out information and to gain new knowledge in several ways. They may find information on the Internet or by using an ICT-based encyclopedia such as Microsoft Encarta. They may find information by extracting it from a document prepared by the teacher and made available to them via ICT, such as document created using Microsoft Word or a Microsoft PowerPoint slideshow. They may find out information by communicating with people elsewhere using email, such as students in a different school or even in a different country.

## **Processing knowledge**

Students can use ICT as part of a creative process where they have to consider more carefully the information which they have about a given subject. They may need to carry out calculations (eg. by using Microsoft Excel), or to check grammar and spelling in a piece of writing (perhaps using Microsoft Word), or they may need to re-sequence a series of events (for example by re-ordering a series of Microsoft PowerPoint slides).

## **Sharing knowledge**

Students can use ICT to present their work in a highly professional format. They can create documents and slideshows to demonstrate what they have learned, and then share this with other students, with their teacher, and even via email with people all around the world.

## **Access and Equity in Higher Education**

Presence of ICT in education sector is increasing steadily. In spite of the fact that education is a social enterprise and teachers are the traditionally mainstay of teaching learning process, ICTs are very powerful tool for diffusing knowledge and information, a fundamental aspect of the education process. ICTs can play enormous role for improving access and equity in education sector in general and higher education sector in particular.

11<sup>th</sup> Plan proposed to achieve the target of 15 percent GER by 2012 through the increase in institutional capacity and increase in 'intake capacity' of existing educational institutions. These efforts are also experiencing the push created in this direction through the consistent rise in enrolment at elementary level and secondary level. The demand for higher education is expected to rise steeply in the forthcoming years under these influences. ICTs lend themselves as an ideal mechanism to bridge this gap by complementing both formal education system as well as distance learning systems. E-learning is emerging as an important strategy to provide widespread and easy access to quality higher education. E-learning is a generic term referring to different uses and intensities of uses of ICTs, from wholly online education to campus-based education and through other forms of distance

education supplemented with ICTs in some way. Although, presently the initiatives for development of e-learning in India are continuing in a sporadic manner, UGC is advocating and making efforts to enhance the quality of higher education by framing policy guidelines for their integration in classroom and other activities.

### **Benefits/Advantages of ICT in Higher Education in North East India**

ICT encompasses all those gadgets that deal with the processing of information for better and effective communication. In education, communication process takes place between teachers, students, management and administrative personnel which requires plenty of data to be stored for retrieval as and when required, to be disseminated or transmitted in the desired format. The hardware and software like OHP, Television, Radio, Computers and related software are used in the educational process. However ICT today is mostly focused on the use of Computer technology for processing the data in North East India. In this context, advantages of ICT in education can be listed down as follows:

**1. Quick access to information:** Information can be accessed in seconds by connecting to the internet and surfing through Web pages. It helps for those students who are studying in distance Education.

**2. Easy availability of updated data:** Sitting at home or at any comfortable place the desired information can be accessed easily. This helps the students to learn the updated content. Teachers too can keep themselves abreast of the latest teaching learning strategies and related technologies.

**3. Catering to the Individual differences:** ICT can contribute in catering to individual needs of the students as per their capabilities and interest. Crowded class rooms have always been a challenge for the teacher to consider the needs of every student in the class.

**4. Wider range of communication media:** With the advent of ICT, different means of communication are being introduced in the teaching learning process. Offline learning, on line learning, blended learning are some of the resources that can be used in educational institutions. Collaborative learning, individualized learning strategies can enhance the quality of group as well as individual learning. with the real society. This can ensure the applicability of knowledge.

**5. Wider learning opportunities for pupils** Application of latest ICT in education has provided many options to the learners to opt for the course of their choices. Many Online courses are available for them to select any as per their aptitude and interest for North East students. Students

can evaluate their own progress through different quizzes, ready to use Online tests. This can ensure fulfillment of the employment required in the job market thus minimizing the problem of unemployment. It can also provide more efficient and effective citizens to the society as per the changing needs.

**6. Facilitating the acquisition of basic skills.** The transmission of basic skills and concepts that are the foundation of higher order thinking skills and creativity can be facilitated by ICTs through drill and practice. Educational television programs such as Sesame Street use repetition and reinforcement to teach the alphabet, numbers, colors, shapes and other basic concepts. Most of the early uses of computers were for computer-based learning (also called computer-assisted instruction) that focused on mastery of skills and content through repetition and reinforcement.

**7. Enhancing teacher training.** ICTs have also been used to improve access to and the quality of teacher training. For example, At Indira Gandhi National Open University, satellite-based one-way video- and two-way audio-conferencing was held in 1996, supplemented by print-materials and recorded video, to train 910 primaryschool teachers and facilitators from 20 district training institutes in Karnataka State. It also helps for students for I.D.O.L (Gauhati university) & Krishna Kanta Handiqui State Open University, (KKHSOU) so on

### **Benefits for students**

1. Higher quality lessons through greater collaboration between teachers in planning and preparing resources .
2. More focused teaching, tailored to students' strengths and weaknesses, through better analysis of attainment data
3. Flexibility of 'anytime, anywhere' access.
4. Students found learning in a technology-enhanced setting more stimulating and student-centred than in a traditional classroom
5. Opportunities to collaborate on assignments with people outside or inside institutions.

### **Benefits for parents**

1. Easier communication with teachers
2. Higher quality student reports – more legible, more detailed, better presented
3. Increased involvement in education for parents and, in some cases, improved self-esteem
4. Increased knowledge of children's learning and capabilities, owing to increase in learning activity being situated in the home
5. Parents are more likely to be engaged in the school community.

## **The Constraints and its effects in the access of Information and communication Technology for higher Education in North Eastern India:**

ICT as a modern technology that simplifies and facilitates human activities is not only advantageous in many respects, but also has many limitations. Many people from inside and outside the education system, think of ICT as “Panacea” or the most important solution to school problems and higher education improvements for students of North East India. However, many conditions can be considered as limitations of ICT use in education. The limitations can be categorized as teacher related, student related, and technology related. All of them potentially limit the benefits of ICT to education.

1. Teachers’ attitude plays an important role in the teaching-learning process that utilizes computers and internet connections. Although teachers’ attitude towards use of these technologies is vital, many observations reveal that teachers do not have clarity about how far technology can be beneficial for the facilitation and enhancement of learning. Of course, some teachers may have positive attitudes to the technology, but refrain from using it in teaching due to low self-efficacy, tendency to consider themselves not qualified to teach with technology.

2. Another important drawback to using ICT in schools is the fact that computers are expensive. According to the IT learning exchange (2011), in most schools ICT will be the single largest curriculum budget cost. This may be seen as a good thing but on the other hand there will be little money left over for other significant costs.

3. Many teachers may not have the required IT skills and feel uncomfortable, nor do they have trainings needed to use the technology in their teaching. Unless teachers develop some basic skills and willingness to experiment with students, ICT use in education is in a disadvantage.

3. ICT use in higher education is related to student behaviour. Appropriate use of computer and the internet by students have significant positive effects on students’ attitude and their achievement. Nonetheless, it is very common to observe limitations related to student behaviour. Students tend to misuse the technology for leisure time activities and have less time to learn and study.

4. Use of face book, chat rooms, and other communication channels as perceived drawbacks of ICT use in education, because, students easily switch to these sites at the expense of their study. Internet access at home, for instance, may be a distraction because of chat rooms and online games, reducing the time spent in doing assignments and learning. Therefore, the impact of availability of ICT on student learning strongly depends on its specific uses. If ICT is not properly used, the disadvantage will outweigh the advantage.



5. The other limitation of ICT use in education is technology related. The high cost of the technology and maintenance of the facilities, high cost of spare parts, virus attack of software and the computer, interruptions of internet connections, and poor supply of electric power are among the technology related limitations of ICT use in education.

6. The new technology comes at a financial cost, which hinders its penetration to the individual and sometimes even at the community level. The problem is even more compounded by the fact that women in North east region have little control over the household income and do not have the decision-making power to invest in these technologies.

7. Ironically, much of the knowledge present in the global pool is in the English language, which is not understood by the poorest communities mainly in Hill areas. There is very little content in the global pool in the vernacular language of non-English speaking communities. This makes the amalgamation of local knowledge of women with the global knowledge a difficult task.

### **Remedial Measures: Needs Attention:**

The coming up of information and communication technology has advanced the traditional life of the students in North East region. The mobile phone connectivity has enhanced the life of the rural people especially the women like GPRS, 3G, WI-FI so on. The modern technologies have helped the students to access modern trade facilities and updated market information.

1. The sophistication of any ICT infrastructure introduced into any environment becomes meaningless if students don't have the skills to operate the system and use it to their best advantage. This implies that the government and the NGOs need to focus on interventions, which lead to skill development and a rise in educational levels among women. It could be done through imparting of technical education on the use of ICT as a part of both formal and informal educational systems and initiating distant-learning and vocational courses on the same.

2. Training programmes should be offered free of charge to rural people or, in fact, be considered a 'job', in that participants are paid a certain salary as an incentive to participate and increase their education and qualification level.

4. It is important to view ICT as a tool to meet women's development needs and accordingly all forms of ICT should be considered to determine which are more appropriate in a particular setting and for a particular programme. It is our responsibility to make technology work for the people and in many cases, this requires a gradual transition in ICT usage. To make ICT more useful and meaningful, particularly for rural and poor women, relevant information and tools need to be provided to address women's needs and demands. Multimedia can be developed to provide information both in spoken and written language.

7. The civil society, including the NGOs and educational organizations, and the media should come forward in helping the Government to bridge the digital divide which can go a long way in fostering peace and prosperity in the North East region.

8. Education policies have to reflect alternate and new teaching paradigms that ICT can offer in terms of providing a more effective, relevant, and flexible mode of learning for the underprivileged and the general masses.

9. Policies must take into account the retraining of teachers incorporating use of ICTs in education. Teachers should skillfully redesign learning environments so that students can transfer their newly gained ICT skills to other applications to use in an ICT rich environment.

### **Conclusion:**

It is universally accepted that ICT offers immense opportunities for the comprehensive social and economic development of both rural and urban students in North East region. Without its adoption, there is little chance for countries or regions to develop. ICT has been considered as a tool for attaining knowledge and development by everyone. The strategy to encourage the participation of the rural women in the digital revolution is expected to reduce the gap in digital and gender divide in this state. The increasing use of information and communication technologies (ICTs) has brought changes to teaching and learning at all levels of higher education systems (HES) leading to quality enhancements. Traditional forms of teaching and learning are increasingly being converted to online and virtual environments. There are endless possibilities with the integration of ICT in the education system. The use of ICT in education not only improves classroom teaching learning process, but also provides the facility of e-learning. ICT has enhanced distance learning. The teaching community is able to reach remote areas and learners are able to access qualitative learning environment from anywhere and at anytime. It is important that teachers or trainers should be made to adopt technology in their teaching styles to provide pedagogical and educational gains to the learners. Successful implementation of ICT to lead change is more about influencing and empowering teachers and supporting them in their engagement with students in learning rather than acquiring computer skills and obtaining software and equipment. ICT enabled education will ultimately lead to the democratization of education.

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# Impact of Poetry on Society

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## Abstract:

*Speaking and singing their dreams, commercial or otherwise, to a people who are as eager as ever to hear them and take what comfort there is to be found in them. That we seem to be returning to a more oral tradition that the written one we have been enjoying for the past century does not worry me. It appears obvious that poetry is still playing a major role in our society. That the literary elite decry the lack of quality in this age is inconsequential. The idea of "formal" or "classical" poetry is an artificial one with limited usefulness; I think this is not to say that classical forms should be abandoned. But at the same time, poetry is about the "now". Poetry proceeds as much from the bowels and the loins as from the brain. Poetry has an important role and function in society, just as poets do. It can be o illuminate people with regards to universal logic and "deeper" truths that make up the profoundness and meaning of their own lives.*

**Key Words:** Poetry, society and roles.

## Introduction:

Poetry is a literary work in verse writing of high quality, great beauty, a piece of art, with emotional sincerity or intensity, a graceful expression showing imagination and deep feeling with beautiful and elegant quality. It is a profound insight that enables a poet to idealize reality and to see the things or situations in a particular way, to express his feelings of his own accord and to represent them in such a way as to delight the readers.

Compared to the writing of poetry, few other human activities take place so widely, at least in America, absent even a tacit consensus. When we read a lot of contemporary poetry, we discover that the presumed or stated, implicit or explicit, social function of poetry varies wildly with the poet. Rae Armantrout's poetry, for example, seeks—at times, it seems to despair of finding—a social function we might identify as the inculcation of skeptical thinking. That's a social function in the sense of "social good," even of "social policy." James Merrill's poetry has a social function in the sense of "social event": it tries to produce—often,

in the face of mortality, or dejection, or bodily ills—a sense that the poet has friends who get his jokes, who share his sense of things, who respond in kind. Late Merrill—the Merrill of "Self-Portrait in Tyvek Windbreaker"—wonders whether his poetry might resound beyond that social group. Both poets want to say something about a society, and both poets want to do something we might call "social"—to imagine, and to cause, some sense of relations that extend beyond one-on-one intimacy—but they differ in what they want to do, and in why. To speak usefully about the social function of poetry, we need to decide what—or whose—poetry we intend.

It is the quality of a great poetry through which the creeds and the system of human values are discussed that a reader may ultimately be enlightened and rejoiced. Poetry is also a good source of freeing somebody from ignorance, misdeeds or evils while it inspires and encourages us; instills in us noble thoughts by dealing very much with the ways we live in.

A poet is a possessor of unusual sensitivity or insight. He is able to express things in a beautiful and romantic way. He is an imaginative, a creative and artistic person. High perception and imagination with profound insight is what that differentiates between a poet and a layman. A multicolored arc in the sky is just a rainbow to a layman but a poet has greater capacity to receive sense impressions about it to express his powerful feelings. The great poet Wordsworth was such an individual whose heart leapt up with joy on beholding a rainbow and he expressed his feelings of his own accord about the rainbow.

### **Result and Discussions:**

Poetry's social function comes not from what it means but from what it is. Its utility is to shake us out of our standard American buy-stuff-and-watch-TV half life. A poem's content matters very little to that utility. The phrase "social function" particularly in terms of politics, Plenty of things need to happen in this country, like impeaching George Bush, nationalizing health care, legalizing same-sex civil union, and bringing the troops home now. Poetry can make none of these happen. Anne Winters's "The Mill-Race," about office workers in lower Manhattan, contains virtuoso description of the urban scene: workers, weather, light, limos of the bosses, buses of the employees. Though its subject matter and politics are both clear and attractive, content has very little to do with why the poem is extraordinary. Poetry is very economical; it's very compress. So we like that and we need that double meaning.

The art or the skill of writing poems in a particular language or form is a natural gift or it may be acquired ability by which a poet deals with the reality of life. . One should turn to poetry to interpret life and to console himself that the poetry relates to our personal life.

The function of poetry is that it does not have any function beyond its own construction and being-in-the-world. For this reason, poetry makes everything happen, especially in a consumer society prone to assessing and dispensing value to everything from lap dances to teachers' salaries. Whether as a form of witness, as a medium which dignifies individual speech and thought, as a repository of our cumulative experiences, or as a space where we "purify" language, poetry, like all imaginative creations, divines the human enterprise. This is poetry's social value.

Poetry binds solitudes. It enacts a central human paradox: we exist as singular selves, yet can only know them through our relations. A poem creates a presence that is so physically, emotionally, and intellectually charged that we encounter ourselves in our response to it. The encounter, which occurs in language, preserves and enlarges our solitude and points out our connections. Pyrotechnic poets, such as Walt Whitman, Langston Hughes, and Adrienne Rich, set a charge that reverberates among multitudes, changing the shape of our social relations and, inescapably, our individual and collective consciousness. Poetry is filtered and guided and heightened experience. Our role as poets is to communicate as immediately and intimately as possible from one person to another. The role of poetry is not to persuade although poetry that flows directly from the heart may well do that. That is the role of rhetoric. Rhetoric can be powerful and moving. The role of poetry is first of all intimacy. It requires the courage to journey into the unknown.

### **Conclusion:**

Certainly many poems—one might say all good poems—have this effect. So do many objects and events which are not poems. Would it be nonsensical to say that by building houses with Habitat for Humanity, through the hard work of hammer and nail, on the one hand, and the contemplation of poverty, on the other, might encounter and come to know both society and himself. Poetry increases and guides our awareness to immediate experience and to the generalizations that can be made from immediate experience.

There are a lot of poems of great poets available to read and interpret what they have tried to convey. The message of poems about life and the state of affairs may be understood and are to be applied in our personal life. In this way, poetry teaches us the lessons about how to live life providing the meaning of life.

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5. K. A. Fareed (Fareed Siddiqui) Writer, Author, Software Developer

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# Synthesis, Characterization of MCM-48 Molecular Sieve

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## Abstract:

*High quality MCM-48 was hydrothermally synthesized using different silica source – fumed silica and TEOS. A hydrothermal post synthesis method was used to increase the structural stability of the MCM-48. A comparison of the XRD pattern of the pre- and post treated samples clearly shows the definite well ordered structural pattern in the post treated MCM-48 samples. This is also confirmed from the SEM image of the samples.*

**Keywords:** Mesoporous MCM-48

## Introduction:

The rapidly growing number of publications about the synthesis, modification and characterization of MCM-48 reflects the growing interest in these mesoporous silica amongst scientist and technologists. These mesoporous materials (MCM-48) discovered by Mobil and designated as M41S has cubic structural lattice and belongs to the space group *Ia3d*. However compared to MCM-41 with one dimensional hexagonal array of pore channels, MCM-48 has three dimensional pore networks. The unique pore size (2nm-4nm) and high surface area (1000-1500m<sup>2</sup>/g) make these mesoporous materials attractive to study adsorption, separation, ion- exchange, and size and shape selective catalysis and as host structure for nanowires and nanomaterials. As catalyst MCM-48 has more advantage over MCM-41, because of the presence of three dimensional pores which allow faster diffusion through the channel and makes it more resistant towards pore blocking. The principal difficulty of MCM-48 as reported is the structural instability. However it has been reported recently that post treatment can increase its structural stability of the MCM-48. Further incorporation of small amount of transition metal does not affect its structure but increases its catalytic property. In view of the above properties of MCM-48, we have attempted to synthesize MCM-48 using different silica source and carried out post synthesis hydrothermal



treatment to increasing structural stability. We have also successfully synthesized Mn-MCM-48 by post synthesis ion- exchange method.

## MATERIALS AND METHODS:

**Materials:** The MCM-48 were synthesized using fumed silica (Aldrich 99.8%), Tetraethylorthosilicate (TEOS) (Merck 98%), N-Cetyl-N,N,N-trimethylammoniumbromide (CTAB) (Merck), Sodium hydroxide (Merck) and Ammonium hydroxide (Merck). The IR spectra of the compounds were taken in KBr pellet with a Perkin Elmer RX I FT-IR instrument. The XRD of the powder samples were recorded between  $1^{\circ}$  -  $12^{\circ}$   $2\theta$  values with a BRUKER powder diffractometer with  $\text{CuK}\alpha$  radiation. The SEM image of the samples was recorded with a LEO (Carl Zeiss) Microscope. EPR were recorded with a ZEOL instrument.

**Methods:** The required amount of surfactant- CTAB, sodium hydroxide and ethanol were stirred in distilled water at  $300^{\circ}\text{K}$  for 30min, then the weighed fumed silica was added under constant stirring condition. The molar ratio of the synthetic gel was maintained at  $\text{SiO}_2$ :  $\text{NaOH}$ :  $\text{CTAB}$ :  $\text{Ethanol}$ :  $\text{H}_2\text{O}$  = 1: 0.025: 0.12: 3: 60. The stirring was continued for 3 hours and then the gel was transferred into a Teflon lined autoclave and heated for 70 hours at  $423^{\circ}\text{K}$ . The solid product so obtained was washed thoroughly with distilled water and air dried at room temperature. A part of the product was calcined at  $753^{\circ}\text{K}$ . The Mn-MCM-48 was prepared by ion-exchange of 0.1g as-synthesized sample with  $20\text{cm}^3$  of 0.05 molar  $\text{KMnO}_4$  for 4 hours. The product was filtered, washed and calcined at  $753^{\circ}\text{K}$ .

A similar synthesis was carried out replacing fumed silica with TEOS with a gel composition of  $\text{TEOS}$ :  $\text{CTAB}$ :  $\text{H}_2\text{O}$ :  $\text{Ethanol}$ :  $\text{NH}_4\text{OH}$  = 1: 0.4: 174: 54: 125: molar ratio. However after stirring for 5 hours at  $423^{\circ}\text{K}$  the white gel was filtered, washed with water and dried at room temperature in a desiccator. A part was dried at  $393^{\circ}\text{K}$  for 3 hours and calcined at  $753^{\circ}\text{K}$  for 10 hours (Primary). The other part was stirred with 2% CTAB and heated at  $473^{\circ}\text{K}$  in the autoclave for 48 hours (secondary).

## RESULTS AND DISCUSSION:

The IR spectra of the MCM-48 samples shows stretching vibration of silanol Si-OH at  $3444\text{cm}^{-1}$  and the bending vibration of  $\text{H}_2\text{O}$  at  $1629\text{cm}^{-1}$ , the asymmetric and symmetric vibrations of Si-O at  $1099\text{cm}^{-1}$  and  $804\text{cm}^{-1}$ , respectively. In the as synthesized sample in

addition there are bands due to C-H stretching and bending at  $2919\text{cm}^{-1}$  and  $1480\text{cm}^{-1}$ , respectively from the template.

The XRD of the sample were shown in the Fig.1. The samples show the typical low-angle  $hkl$  reflections characteristic of the cubic lattice  $Ia3d$ . The XRD pattern of the MCM-48 shows that formation of network for cubic array has started but lacks long range order and may be of non crystalline nature. However, the post treated secondary MCM-48 shows single crystalline phase. The same is true for the MCM-48 prepared from fumed silica. The peak intensity of (211) reflection is high and increases with post treatment indicating increase of long range order. The other reflections at (420) and (332) are also observed. The  $d_{211}$  spacing of the MCM-48(secondary) obtained from fumed silica and TEOS is 3.74nm while that of MCM-48(primary) is 3.64nm, indication slight increase of unit cell parameter on post treatment.

The SEM of MCM-48 (Fig.2) shows that the particles are free standing with some aggregation. The particles are nearly spherical shaped of size 660-840nm. The SEM image of the secondary MCM-48 (Fig.3) shows non agglomerated uniform and spherical particles. A closed look reveals the unique crystalline morphology. TGA plot of MCM-48 is shown in figure-4. The thermal stability of the sample can be explained by TGA curve. There are three observable weight loss regions. The first 2% weight loss take place at  $134.5^{\circ}\text{C}$  which may be due to break up of hydrogen bonded network. The second 14.5% weight loss takes place in the region of  $134.5^{\circ}\text{C}$  to  $245^{\circ}\text{C}$ , which may be due to the removal of adsorbed water by the pores. Thirdly 23% weight loss takes place in the region of  $245^{\circ}\text{C}$  –  $497.2^{\circ}\text{C}$  which may be due to the removal of organic functional groups or may be decomposition of alkyl trimethyl ammonium surfactant.

The SEM image of the Mn-MCM-48 also shows crystalline morphology (Fig.5). The room temperature EPR (Fig.6) of the Mn-MCM-48 shows a signal centered at  $g=2.0$ . The six well resolved hyperfine line originate from  $\text{Mn}^{2+}$  coupled to its own nuclear spin ( $^{55}\text{Mn}$ ,  $I=5/2$ ) and because of significant zero field interaction the sextet lines are not equal in spacing and line height. The manganese atoms may be present at extra framework sites in octahedral symmetry. This is in conformity with results reported by others.

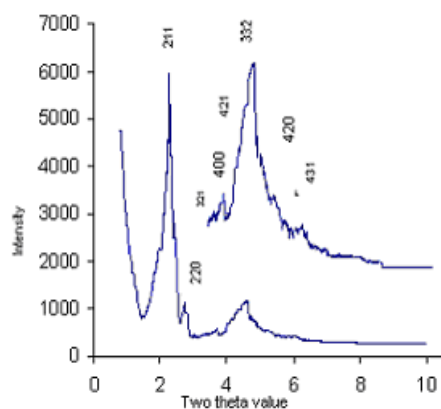


Fig.1. XRD of MCM-48

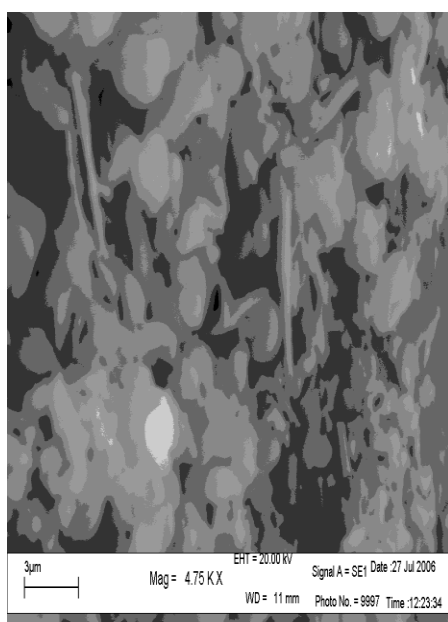


Fig.2. SEM of MCM-48 (primary)

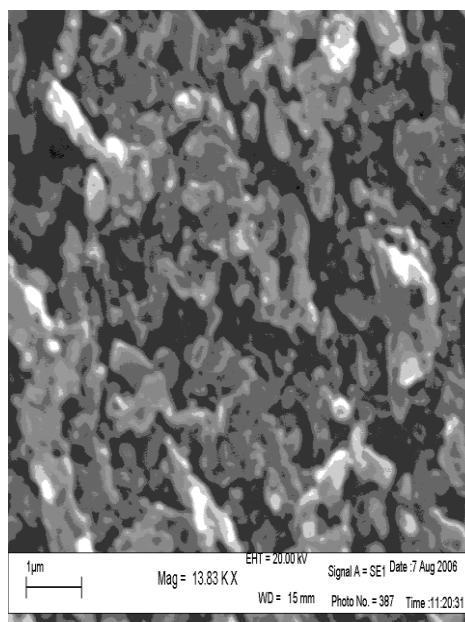


Fig.3. SEM of MCM-48 (secondary)

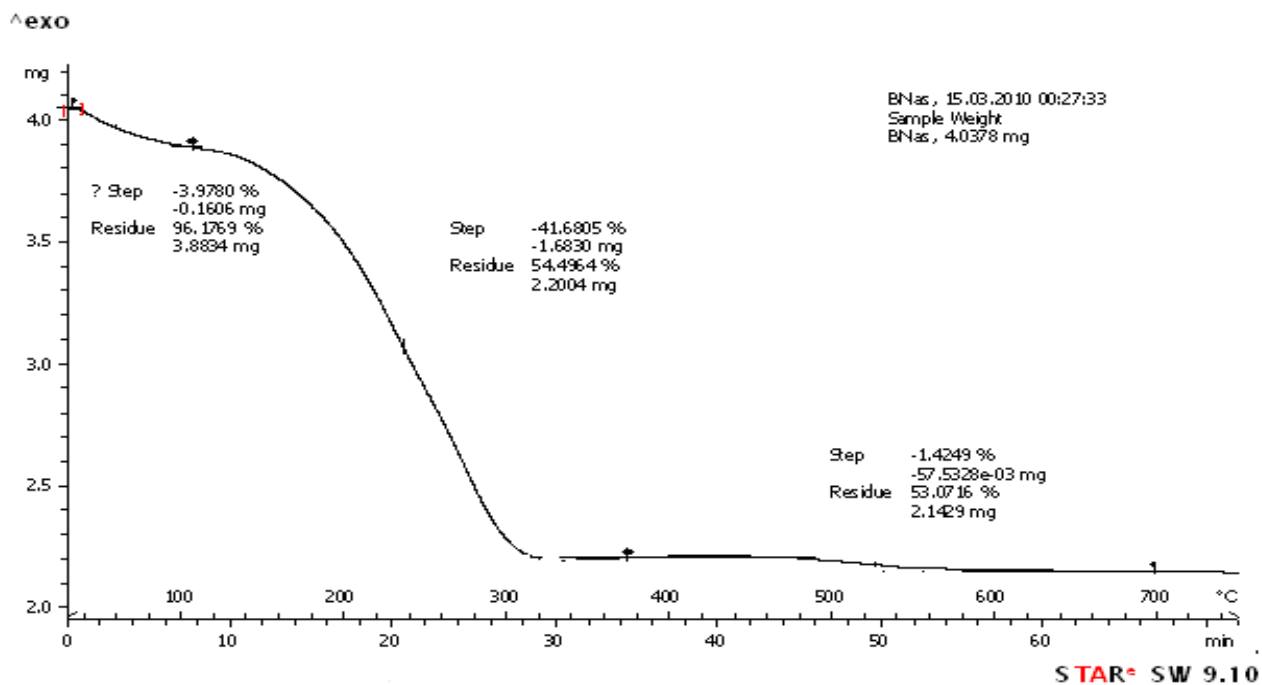


Figure-4

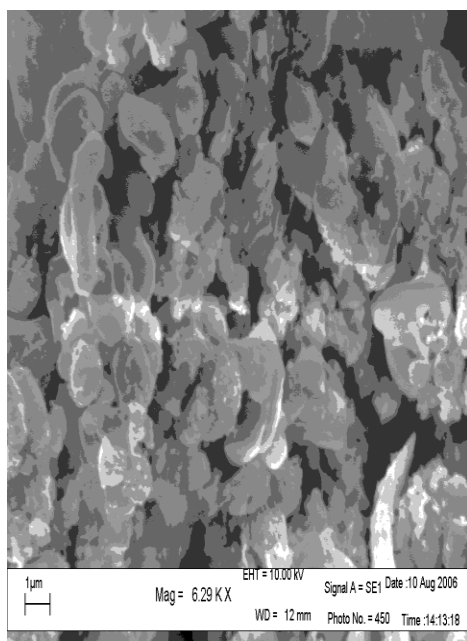


Fig.5. SEM of Mn-MCM-48

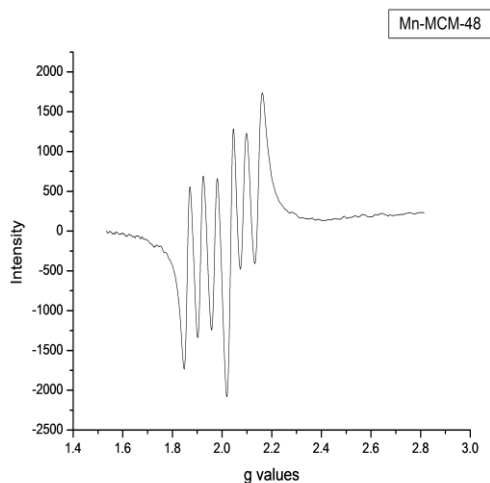


Fig.6. EPR of Mn-MCM-48

**CONCLUSION:**

High quality MCM-48 and Mn-MCM-48 can be synthesized with fumed silica as well as TEOS. Hydrothermal post synthesis treatment can enhance the structural stability of the MCM-48.

**ACKNOWLEDGEMENTS:**

The authors are grateful to Center for Nano-technology and Central Instruments Facilities, IIT Guwahati for the record of XRD, SEM and EPR of the samples.

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# “Local Fish” Culture and Prospects of “Fish Marketing” in Dhubri District of Assam: Conservation of Biodiversity Vs Expansion of Job Opportunities

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## Abstract:

*Once upon a time Dhubri district was very famous for various types of local fishes such as Rouh, Kaoi, Puthi, Mirika, Borali, Garoi, Kholihona etc. A section of the society (popularly known as Massmoria or Fishermen) catches and earns their livelihood through the marketing of local fishes in the markets. The North Eastern region is rich in aquatic bio-resources and among them it is dominated by the fish species. A number of endemic fish species have been recorded from this region, therefore, recognized as the hotspot of freshwater fish biodiversity in the world. Fish is one of the most popular food items of the people of the entire North Eastern region. The present study focuses on the status and diversity of the freshwater fish species of Dhubri district of Assam with special reference to Hakama Beel under Bilasipara Sub-Division. The main objectives of the said study to examine the threats to local fishes of Dhubri district and how to use these renewable resources to create job opportunities in the district.*

**Key Words:** fish culture, fisheries and fish marketing.

## 1.1. Introduction

Biodiversity and its conservation are regarded as one of the major issue of enabling sustainable use of natural resources. Biodiversity is a sum of all the different species of animals, plants, fungi and microbial organisms living on earth. According to the definition of the convention on Biological Diversity, biodiversity is the variability among living organisms of all sources, including terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part, this includes diversity within species between species and ecosystems. Aquatic biodiversity can be defined as the variety of ecosystems that make up the freshwater, tidal and marine regions of the world and their interactions. Aquatic biodiversity encompasses freshwater ecosystem, including lakes, ponds, reservoirs, rivers, streams, groundwater and wetlands. It also consists of marine ecosystem, including oceans,

estuaries, salt marshes, sea grass beds, coral reefs, kelp beds and mangrove forests. Aquatic biodiversity includes all unique species, their habitats and interaction between them. It consists of phytoplankton, zooplankton, aquatic plants, insects, fish, birds, mammals and other. The fish fauna is selected for the present study because fish fauna is one of the most important members of the aquatic food chain which connect the link between vertebrates and invertebrates food web pyramid, through them some toxicant reached human being. The north eastern region is rich aquatic bio-resources and among them it is dominated by fish species. A number of endemic fish species have been recorded from this region, therefore, recognized as the hotspot of freshwater fish biodiversity in the world.

### **1.2. Importance of Aquatic Biodiversity:**

Aquatic biodiversity has enormous economic value. Human beings have long depend on aquatic resources for food, medicines and materials as well as for recreational commercial purposes such as fishing and tourism economy of any society or nation is closely interlinked with the biodiversity. Every economic action can have some effect on the biodiversity and every biodiversity change can have an impact on the economy. By “*the economy*”, we refer to the population of economic agents, the institutions they formed and the interlinkage between agents and institutions, such as markets. As for example, let us consider the fish markets development and expansion of the fish market depends on the existence of the aquatic resources of the locality. Available aquatic resource such as fish provides both permanent and temporary livelihood to the local people. On the contrary, the human productive actions have some impacts on the aquatic resources. Thus both are interlinked with each other.

### **1.3. Statement of the Problem:**

Dhubri district is one of the most important border districts of Assam. The district is located on the globe between 89.42 to 90.12 degree east longitude and 26.22 to 25.28 degree north latitude. The district is situated at 30 meters above sea level on average. General topography of the district is plain with patches of small hillocks like Tokrabandha, Dudhnath, Chanderdinga, Boukumari, Baropahar, Chakrasila etc. All these are situated in the north eastern part of the districts. Mighty river Brahmaputra is flowing through the district from east to west with its tributaries like Champabati, Gaurang, Gadadhar, Gangadhar, Tipkai, Sankosh, Silai and Jinjiram.

Dhubri is endowed with vast fishery resources not only for pisciculture, but also having great potential and prospects for the development of the fisheries sector. The district has vast water resources, with its major river Brahmaputra, besides wetlands, low-lying areas and derelict water bodies, which all add up, to its vast potential for fish production covering an area 18113 hectares. In 2014-15 there were 156 numbers of Beel fisheries, 21636 ponds and tanks and 283 numbers derelict water bodies swamps in the district (Statistical Handbook, Assam 2015) There are 10 private hatcheries in the district which produced 9.51 million fish seeds and 15130 ton fish in the year 2014-15 (Economic Survey, Assam, 2015-16). In the same time period the district imported 480 tons fish from other states. There total 8 registered fish market in this district. The district has, so far a record of 69 species of fishes belonging to 49 genera, 24 families and 11 orders (Koery Anita, 2013). However, though the district has abundance water resources; it has yet to tap the potential area for inland fish production. Among the fish farming environment prevalent in the district, the most dominant system practiced is semi-intensive polyculture. Basically aquaculture in the district is carp-oriented and the contribution of other species is marginal. Fish culture is an important type of farming culture of the district fish is also highly preferred and consumed item as fresh fish is an important part of the daily meal. Fisheries development is also important for the district's economic development, as a livelihood issue for the provision of the required nutrition, employment and income to its people being interlinked in their everyday life.

**Table (1): Production of fish (in Tonne)**

Year	Dhubri	Assam
1999 – 2000	9429	159768
2004 – 2005	10986	186314
2005 – 2006	9326	187378
2008 – 2009	13718	206700
2009 – 2010	13718	218824
2011 – 2012	16598	243869
2012 – 2013	13350	254270
2014 – 2015	15130	282700

The above table (1) reveals that the production of fish has increased from 9429 tonne in 1999-2000 to 15130 tonne in 2014-2015. In the same time period the production of fish in



Assam has increased from 159768 tonne in 1999-2000 to 282700 tonne in 2014-2015. The main traditional varieties of fish which are available for commercial purposes include rohu, mrigal, hilsha, etc and exotic varieties like grass carp, common carp and silver carp. Moreover, air breeding varieties such as Magur, Singhi and Garoi, etc. are also found in Beels and Swamps. In Dhubri, the demand for fish has been continuously increasing in recent years. Due to deficiency in production, the price of fish recorded a rapid increase. In order to meet such short all in domestic supply, the district is importing a huge quantity of fish from other states like Andhra Pradesh, West Bengal, Orissa, Bihar etc.

The present study focuses on the status and diversity of the freshwater fish species of the hakama Beel. The main objective of the study is to find out the problems and prospects of fish production and marketing in the study area.

#### **1.4. Sample Area and Methodology:**

The study was conducted in the western part and a border district of Assam i.e., Dhubri district. The sample area is Hakama Beel. It is a wetland within the vicinity of Bilasipara Town of Bilasipara Sub-Division under Dhubri district of Assam.

In the next stage, we have done the activity mapping work, here information have been collected from village headmen, however for reliability of the data, cross checking has been made with the discussion with few elite persons in the villages like school teacher, NGO workers, BDO Officials, local politicians and social workers etc. We have identified total 51 numbers of persons in the neighboring locality who have been engaging in the fish culture or a long time in other words, catching and selling fish is their permanent occupation. Among them 14 persons are the fish producers and 37 persons are fish sellers (there are some fish seller who catches fish occasionally). They are selling their fishes in Beltolee market, Bilasipara market, Bangalipara market, Bania para market and other small market in Bilasipara town areas. The study is based on both primary as well as secondary information. A district level data have been collected from the Economic Surveys and Statistical Handbooks of Assam of different issues. After identifying the key sectors of the fish culture of the study area a primary survey has been conducted information on the habitat and economic importance was collected from fishermen and local fish retailers.

### 1.5. Threats to Aquatic Biodiversity (Zoological Findings):

1. **Over exploitation of fish:** Over exploitation of fishes affects the loss of genetic diversity and the loss in the relative species abundance of both individual and for groups of interacting species. The population size gets reduced because of disturbance in age structure.
2. **Fishing Practices:** The study reveals the act that the fish catching practices of the fishermen is very defective. The fishermen use the fishing net. Due to which during rainy seasons when fishes lay their eggs in shallow water bodies, most of them are captured by these very fine size net of different gears. Due to which day by day the number of fish population is going to decline and the list of threatened species of fishes are going to increase.
3. **Habitat modification:** Physical modification of habitat may lead to species extinction. This is mainly caused due to deforestation and diversion of water resources for irrigation in the adjoining areas. This affects are breeding ground of fishes.
4. **Pollution Load:** Many detached water body show indicating the presence of agricultural debris carried by rain water. It is worth mentioning that farmers of this area have adopted transplanting system of “Aus” cultivation using a high dose of synthetic chemical fertilizers. It can be mentioned that many of them use a lot of synthetic pesticides which are already declared as banned by the government of Assam. Some of these are BHC, Aldrin, etc. Some cases of death of large number of fishes had been found in many occasions which may be due to pesticide poisoning also. The study indicates that water quality and food of fishes is being depleted due to continuous discha\*\* house hold wastes especially polythene bags and agricultural wastes which are directly thrown into the water without any pretreatment. Food poisoning is also one of the causes which often used for catching fishes in the locality.

### 1.6. Fish Marketing:

To make fish available to consumers at the right time and in the right place requires an effective marketing system. In the rural areas there are –

- a) **Primary Market:** Markets located in villages on the road sides are considered as primary markets. They are usually near areas where fishes are caught. Fishermen bring a variety of fishes (dominated by small fish from both open water capture and

ponds) in these markets. Such markets are held regularly or daily. Most of markets are open during morning and evening time and are attended by a relatively large number of sellers and buyers.

- b) Secondary Market:** The sellers take the fish from the fishermen (producers) or stockiest (wholesalers) to the nearest Bilasipara town market or fisheries by roads and sell them in different local markets.

**Table (2): Market Analysis**

Respondents	Fish farmer		Fish Seller	
	14(27%)		37(73%)	
Local fishes	Sale in the locality		Exported in other Market	
Moya,Kholisha,foli, chitol,Bhokua,Mirika Rohu,Bahu,Borali,pavo, Magur,Singi,Cheng,garoi,Sal,Sol,kaoi, Kuchiya	65%		35%	
Price Scale(local market)	Satisfactory		Not satisfactory	
	57%		43%	
Business Prospects	Excellent	Good	Average	Bad
	20%	37%	38%	5%

The table (2) shows the market analysis. The study reveals the facts that 65 percent of the respondents sale their fish in the local market (with in Bilasipara Sub-division) and 35 percent sale in the outside market. The exporters are the middle men who collected the fishes from the original farmers. The study also reveals that 57 percent of the respondents are satisfied with the prevailing price level in the local market but remaining 43 percent are not satisfied and revealed the facts that due financial hurdles they could not able to export the fish in the outside markets where the price level is very high. Regarding the business prospects about 20 percent said excellent, 37 percent said good, 38 percent said average and remaining 5 percent were not at all satisfied with their fish business.

### **1.7. Problems of the Fish Market (Economic finding):**

1. Original fish farmers are deprived of due prices of their product due to defective marketing system available in the locality. Middlemen take away a major portion of profit, paying a very minimum price to the original farmers. They export the local fishes in Coochbihar, Tufanganj, Bongaigaon and Dhubri town market where the prices of such fishes are very high.

2. There is absence of productive investment in fishery sector as the investment in agriculture and other productive activities is found to be very attractive. Due to low investment the fish farmers could not able to modernize the productive sector.

3. Most of the local fish markets are unorganized in nature where there are no permanent infrastructural facilities are available, such as marketing shed, running water, electricity, store house etc.

4. Most of the fish sellers or retailers even the stockiest or wholesalers are poor people. They are low educated and illiterate, so they did not know anything about the modern fish production and selling practices. Lack of conciseness is responsible for the depletion of many local species in this locality.

### **1.8. Policy Implication or Suggestions:**

The study revealed that if we are allow going this in the same way then in the near future most of the fish species is being threatened. To check this following step should be necessary:

1. Public awareness may help to conserve fish diversity.
2. Proper vigilance as far as possible from Government as well as from NGO's.
3. Bio-organic farming instead of bio-chemical.
4. Marketing arrangements should be developed.
5. Technological and financial assistance should be provided to the fish farmers.

## 1.9. Conclusion:

Fish is important water born resource. A considerable proportion of rural people in Dhubri, belonging to landless and economically backward section particularly are meeting their own requirement of fish by own catch. Moreover a small section of population has accepted fishery activities on commercial basis and also earns a good amount of income from fishery. But unfortunately, the huge volume of fishery resources of Dhubri largely under utilized. The introduction of scientific management practices on these huge fishery resources is very much essential in the present day context. In such scientific practices can be introduced them Dhubri will be able to boost the production fish within the shortest possible time. It is our duty to conserve fish diversity by controlling ill practices, such as bending the use to tiny size net gears and stop to introduce exotic fishes in our water bodies instead of which we should introduce maximum indigenous fishes and try to increase the number of threatened fish species by improving natural breeding zone and as well as by introduced breeding techniques. In spite of having a huge fishery development potential the district is lagging behind some other similar place in respect of production of fish. Under such a situation, Department of fishery, Assam should take adequate steps to modernize the fishery sector by adopting scientific practices through its various schemes. The Government of Assam has already taken various schemes to develop the fishery sector in these district and local educated youths should come forward to develop this fishery resources of the state on a commercial basis.

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## Pesticides contamination of wetlands of Assam and health hazard -- A case study

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### **Abstract:**

*Assam is a land of river and wetlands. Almost 11 lacs hectare area of Assam is covered by more than 3000 wetlands. Most of them are surrounded by agricultural land because economy of Assam is an agricultural based one. During rainy season, the agricultural waste along with all the fertilizer residue and pesticides are carried to these wetlands by heavy rain. So there is an increase in the contaminating particle in each & every year.*

*In recent years, a marked development in the production of agricultural and horticultural yield is seen. Dhubri district also occupied a prestigious place in the list of agricultural income. But such results, though satisfactory as far as economy is concerned, originate a threat to our health due the unscientific use of Chemical pesticides. Considering the importance of the matter we have taken the topic - 'Pesticides contamination of wetlands of Assam and health hazard created by this (Hakama Beel -- A case study)' for our study.*

*Hakama Beel( a wet land within vicinity of Bilasipara town of Bilasipara subdivision under Dhubri District of Assam) is a horseshoe shaped wetland. In spite of its moderate size, it is of great importance in the map of Bio-diversity of Assam. A large number of migratory birds of different species come to this beel every year. It is already declared as "Proposed PakshiAvayaranya" (Proposed Bird sanctuary) by the Forest Department. Like many beel of Assam, it is also surrounded by an agricultural fields and a large number of residence of surrounding villagers. It can be easily understand that this poor villagers due to their ignorance, use this beel as a easy source of water for their daily life, and creating no less peril to their health due to the chemical contamination of the beel. Moreover, poor people of this locality depend on fishes of the Beel for their source of protein and for vegetables also. So, any type of pollution, specially from synthetic chemical pesticides will create a great*

*damage. However, our study reveals that the condition is not so bad till date, though it is alarming and needs keen observation on the future.*

Key words - Wetland, Pesticide contamination.

## **Introduction:**

*The introduction of synthetic pesticides has revolutionized the production technology and with the help of it most of the pest population can be control effectively in very short period. The pesticide either kills or repels insect pest by their properties of chemical action. They can be formulated in various ways, like - dusts, granules, solutions, wet table powder, emulsifiable concentrates, concentrate liquid, fumigants, mixed formulation etc. In order to achieve a high yielding so that we can meet up the demand of people for food, insect pest control is very important. A pesticide may be stomach poison, contact poison, systemic poison in nature but their mode of action is very quick and effective. So, the farmer used these pesticides to protect their crops and thus get a better production.*

But excessive application of pesticides causes health hazard to all plant, animals and human being. Synthetic organic pesticide like DDT, BHC (Lindane), Parathion, Phosphates etc. can act on nerves, respiratory organs, protoplasm, kidney, liver etc. The lethal doses of pesticides are very potential and it may be danger to men and other vertebrates also. Pesticides may cause acute and chronic anomalies in man and other animals. They may cause widespread death of fish commonly in river and beel.

Assam is a land of river and wetlands. Almost 11 lac hectare area of Assam is covered by more than 3000 wetlands. Most of them are surrounded by agricultural land because economy of Assam is an agricultural based one. During rainy season, the agricultural waste along with all the fertilizer residue and pesticides are carried to these wetlands by heavy rain. So there is a increase in the contaminating particle in each & every year.

In recent years, a marked development in the production of agricultural and horticultural yield is seen. Dhubri district also occupied a prestigious place in the list of agricultural income. But such results, though satisfactory as far as economy is concerned, originate a threat to our health due the unscientific use of Chemical pesticides. Considering the importance of the matter we have taken the topic - 'Pesticides contamination of wetlands of Assam and health hazard created by this (HakamaBeel -- A case study)' for our study.

Hakama Beel (a wetland within the vicinity of Bilasipara town of Bilasipara subdivision under Dhubri District of Assam) is a horseshoe shaped wetland. In spite of its



moderate size, it is of great importance in the map of Bio-diversity of Assam . A large number of migratory birds of different species come to this beel every year. It is already declared as “Proposed Pakshi Avayaranya” (Proposed Bird sanctuary) by the Forest Department. Like many beel of Assam, it is also surrounded by an agricultural fields and a large number of residence of surrounding villagers.

### **Objective :**

The main object of our paper is to study about the, “Pesticide contamination at Hakama Beel of Bilasipara Subdivision and health hazards due to this.” Thus creating awareness among both the locality of the area and scientific world about this. However our paper does not include the study of all the different types pesticides present in the beel and effect of these on human health.

### **Methodology :**

We have made several visit at the said area to find out what kind of pesticides are used by the farmers, any case of effect of poisoning in and around the beel, name of diseases commonly suffered by the adjacent people, to collect water sample to find out if any pollutant in the water body in and around the beel. However, no estimation is done by us during our study.

### **Discussion and Results :**

Hakama beel, like many beel of Assam, is also surrounded by an agricultural fields and a large number of residence of villagers. This beel is connected to the nearby agricultural field through two canals popularly known as ‘MolandubirDara’ & ‘PhutkibarirDara’ and there is a overflow Canal named as ‘HakamarDara’. These canals remain detached to the beel during winter season and carry all the agricultural wastes from a large field through which they flow to the beel. It may be mentioned here that, this beel unlike any other beel (probably) of Assam is gaining a deeper depth each and every year. This is the result of the current of the canals mentioned earlier. So, it is clear that these canals played a major role in the contamination of the beel in discussion. The activity of the surrounding people also effects the beel directly. Besides the farmers of surrounding area other dwellers also may contaminate the beel through their kitchen gardens as they apply pesticides in that too. Annual spray of DDT, as a part of malaria eradication program, is also responsible for the contamination.

During our study we cannot trace the presence of any pesticide in the main water body of the beel. This is because we have not adopted any special test to trace out the

presence of pesticides which are in very minute quantity. Non availability of laboratory within our vicinity for such test and cost of testing in a far situated laboratory barred us from doing so. But during our study we found some alarming data about the contamination of pesticides in the beel which compelled us to go for some awareness program also, though the result of such programs are not satisfactory till date as far as result is concerned.

We have gone through some simple chemical testes in the samples collected from the said canals also during winter that is when the water bodies get detached from the main beel. All the three canals show positive result in some tests. These are (1) Presence of chlorine, (2) Presence of some heavy metals like Cu, Hg & Pb (which may come from fertilizers also).

Form the above result found in the detached water bodies one can easily understand that, as these are the feeder canals for the said beel they will keet the pollutant carefully during the winter to carry these to the beel when heavy rain will favour them to find the course towards the beel. Presence of Chlorine can be taken as an indication of presence of BHC or DDT in the water body or it may be due to use the Bleaching powder by the nearby people. Whatever may be the reason it is a well-known fact that this Chlorine may form secondary pollutant when this will reacts with other organic compound present in the water body.

We will like to cite some findings during our observation. (1) Many detached water body show eutrophication indicating the presence of agricultural debris carried by rain water. It is worth mentioning that farmers of this area have adopted transplanting system of "Aus" cultivation using a high dose of synthetic chemical fertilizers. It also can be mention that many of them use a lot of synthetic pesticides which are already declared as banned by the Govt. of Assam. Some of these are BHC, Aldrin etc. But as expected, they are not ready to disclose the source from which they have collected such chemicals, which proves that they are not doing this due to their ignorance, at least some of them, though not all the farmers. (2) Some cases of death of large number fishes had been found (in detached water bodies only) in many occasion, which may be due to pesticide poisoning also. (3) Several cases of livestock poison is also recorded but it does not confirms the presence of pollutant in the beel because it may be a case of direct poisoning from the source itself, however poisoning due to the pollutant in the beel may be a cause of this. (4) People within the vicinity of the beel reports us that they feel itching sensation on their skin when they remain for a long time in the water for fishing etc. But such type of problem does not happen during the rainy season. It also may be due to the synthetic pesticides as many of them show such type of effect at

very beginning of toxic effect. It can be easily understand that this poor villagers due to their ignorance, use this beel as a easy source of water for their daily life, and creating no less peril to their health due to the chemical contamination of the beel. Moreover, poor people of this locality depend on fishes of the Beel for their source of protein and for vegetables also. So, any type of pollution, especially from synthetic chemical pesticides will create a great damage. However, our study reveals that the condition is not so bad till date, though it is alarming and needs keen observation on the future.

Pesticides have adverse effect on both agro-ecosystem and human being. The chlorinated pesticides (like DDT, BHC) and their metabolites usually get stored in fatty tissues of the body of man and other mammals. DDT being carcinogenic and mutagen in man (Haynes” 1971) alkylating agents can produce dominant lethals causing death of the embryo, sterility etc. longer exposure of DDT; BHC may cause liver disorders and peripheral neuritis among the farmers. Many of these act as pseudo hormones in human body, especially in case of female causing some anomalies like early menstruation etc..

Considering all these, we are going through some awareness campaign within the people of the locality. Some scientists of ‘Krishi Vikas Kendra’ of Dhubri district also participated in some program. But local people are still not ready to adopt Bio-organic cultivation due to the fear that they will lose a major part of income if they do so.

We realize that, a detail study may throw a new light on the subject. As there is a possibility of similarity of cases in most of the beels of Assam. Through this paper, we well-come the entire scientific world to go through a detail study and some awareness programs to save the kidney of nature for the sake of longer live of Assam

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6. We are thankful to -

(a) Those farmers of the said are who have supplied data of pesticides & fertilizers use by them.

(b) Those retail agrochemical shop owner who shared their view about the use of pesticides & fertilizers during Aus cultivation.

(c) People of the locality for their cooperation during the study & said campaigns.

(d) We are very much thankful to the Deptt. of Chemistry Bilasipara College for doing some chemical test to detect the presence of pesticides & heavy metals during our study.

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# Effect of Brick Kilns on Plant Vegetation Around Bilasipara Subdivision of Dhubri District of Assam -A Case Study

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## Abstract:

*There are numbers of brick fields in the Chirakutta, Hatipota, Sonamukhi areas of Bilasipara Subdivision of Dhubri District of Assam. These brick fields has created huge pollution in the area and effected on plant vegetation. The Study has reflected the problem,*

## Introduction:

Primary data were collected from a case study of Chirakuta, Tilapara, and Hatipota villages. This is situated near chapar police station where many brick kilns are established under Bilasipara sub division. Many toxic pollutants which effected on plant vegetation and health hazards.

Bilasipara sub division is under Dhubri district of Assam is agriculture based one. Due to communication backwardness only a few industries are established which are brick industries and these has created an industrial belt. In comparison to other areas of the country Bilasipara sub division as well as Chirakuta, Hatipota, Tilapara gaon panchayat area are facing acute problem of pollution from these industries.

Brick kilns have created pollution but on the other hand it also have some economical aspects. Bricks are used to built the decorative and secured buildings . Brick industry is a seasonal industry with a seasonal opportunity for employment. More than 20000 people are engaged in various purposes.

The important aspects of this paper are directed towards two purposes.

1. To know the impact of air pollution caused by brick kilns on plant vegetation.
2. To identify the pattern of human health caused by brick kilns in the surrounding of the brick fields.

## **Discussion:**

Here effect of brick kilns on the plant of Angiosperm, Bryophyte, some of pteridophyte and some of the herbaceous plant will be discussed

### **Smokes of Brick kilns have a direct effect on the plant in that area:**

On the seedling period, it cannot grow in normal speed in many cases may died because the area is highly covered with smoke of brick kilns. This type of effect is clearly seen in the paddy seed beds. Most of the plants are retarded the growth or kill them before transplanted to the main field where they have been cultivated.

As the dust or smoke covered the leaves of the plants of surrounding area suffer from a loss of carbohydrate production which has a direct effect on the growth of a plant.

The local people have expressed their anxiety for the loss of vegetation. According to them the loss of vegetation is occurred due to 1.smoke of Brick kilns 2.over grazing 3.abnormal draught and heavy rain.

The dust of Bricks having a PH 10-12 showed that it contains a number of metals and bisulphate which have a direct toxic effect on vegetation.

Survey of visibility—In some Angiospermic plants the effects of brick kilns have been observed. Among these the mango trees are available in this area. In the time of inflorescence the typical tip burns and necrosis on leaf margined. The plants are catagorised according to the forms and symptoms visible leaf injuries. The Mango, Tomato, maize were severely damaged in the brick kilns area. The extents of injury of the leaves of this plant are catagorised according to different places.

	plants	NO injury	Little injury	Significant injury	Severe injury
CHIRAKUTA	maize	yes			
	mango			yes	
	tomato	yes			
TILAPARA	maize	yes			
	mango			yes	
	tomato			yes	
HATIPOTA	maize			no	
	mango	no			
	tomato				yes

Brick kilns also effect on some Mosses

For brick production, top soil is removed from the lands and it takes between 20 to 25 years for those lands to be fertile as earlier. The period can be longer if vast quantities of toxic substances such as in the form of carbon monoxide and sulphur oxide mixture mix into the land become more sterile.

On average each kilns burn 500 tones of wood a year as well as coal. So the kilns have devastating effect on the forest. Brick kilns remove on an average of 2000 mt of soil per year.

Burning soil decrease the soil P<sup>H</sup> making it acidic, increase sand, decrease the clay content. It has serious impact on physical, biological and chemical properties of soil resulting sharp declination in soil fertility and productivity. Moreover it remove organic matter and makes the soil unfit for crop cultivation. Local farmers have already express that their visibility reduces for brick kilns pollutions.

To save their life and plant vegetation new technology should be adopted as soon as possible. They are facing low food production and scarcity of ground water also.

Brick kilns also effected on some pteridophyte which are common in that area such as pteris species, dryopteris species etc. Their spore formation retarded due to deposition of dust particle of brick industries. Some of the lichens also effected by the smoke of brick kilns specially growing on tree that is Usneaspecies.

Some of epiphytic plants for example species of orchidaceae family effected by the smoke of brick kilns of this area.

Some of the pollutant mixing with rain water can cause high acidity which ultimately effect on some aquatic algae like Anabaena species, Spirogyra sps, Ulothrix sps .

Brick kilns also effected on grass land. Some of the herbaceous plants are extensively effected by the smoke of brick kilns and dust of bricks.

### **Conclusion:**

It is clearly visible that brick kilns operations in this area are in leading position for air pollution which ultimately adversely effect on plant vegetation. The formal studies at a glance reveal that the health conditions of local people are going to in danger.

It will be a challenge for local inhabitant surrounding the brick field to survive with a handful of food in a day due to the pollution occurred by brick kilns.

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# Mathematics in daily life

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## Abstract:

*Maths has become an inseparable part of our lives and whenever we work at home or office, each one of us uses maths as a part of our everyday life. No matter, whenever we are doing something, maths is always there whether we notice it or not. Those who feel anxious about using mathematics, there is a list of daily activities that involve the use of mathematics. Mathematical application in everyday life from the time one gets up from bed till one goes to bed in the night. An attempt is being made to illustrate some of these instances in this paper.*

Key Words: Mathematics, Everyday Life.

## Introduction:

Now –a-days in our society is depending on mathematics at every step. Today’s development of science and technology depend upon the theories of mathematics. Mathematics is a subject whose knowledge is needed for the whole life of a person. So, mathematics occupies a very important and unique position in the society. Therefore, mathematics is a compulsory subject from primary to tenth standard level. Therefore, we say that except our mother tongue there is no subject that is more closely related to our everyday life as mathematics. Any person ignorant of mathematics may be easily cheated.

## Use of Mathematics in Everyday Life:

Regarding the uses of the subject mathematics in our daily life, we see that when we get up from the bed till to bed at night, it is related with every works we do. Hence we say that in our daily life, mathematics is as mixed to the oxygen in the air.

Hence we give some particular examples which are in front of the society to make realize the presence of mathematics in everyday life is given below:-

1. When we get up from bed early in the morning, we see the time of walking to verify whether we have enough time to attend to various responsibilities.
2. When we brush our teeth, the life of brush (months and days), its cost, the paste and its available quantity to get new one come to one's mind. In this connection use of water (quantity) is also to think.
3. When we going to wearing our dresses, we count the number of shirts-pants, etc.
4. Taking food as breakfast or lunch or dinner needs clear knowledge of proportion for preparation and which involves calculation. Wrong calculation of foods in kitchen room makes quarrel in dining room.
5. If we want to know our age, address, house number, street number, pin code, telephone number, body weight, height, etc. all these are application of mathematics.
6. Bank is the place where math is used more than anywhere else. Going to bank means that we need to have proved accounts of the money that we want to withdraw, deposit, etc. No one without basic knowledge about math can do any things in the bank properly.
7. When we plan to go outside the home, we need to know the distance. We have to travel as well as estimate gallons of fuel that we need to use. Those who travel via aero plane need to know the arrival and departure times of their flights. Even people who travel by train need to know distance remaining after each station and the arrival/departure times.
8. This is probably the most common use of mathematics in which we make a list of things, we need to buy as well as make payments in the end.
9. While we play various games like cricket, football, badminton, tennis, etc. we use numbers, distances, etc. Moreover to running on the playground we have enough idea of measurement.
10. Mathematics is closely associated with different activities in the college or school. Such as college or school timing, number of periods, ringing of bells, calling roll number, lesson number, page number, number of students in the classes, etc.

**Conclusion:**

This paper concludes by saying that a man cannot live properly as a perfect man without the help of mathematics. So we can say that development of mathematics is the development of world and therefore we should encourage the people of our society to generate more Ramanujan's from our students or educational institutions.

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