

RESEARCH JOURNAL OF SOCIAL AND LIFE SCIENCES

HALF YEARLY, BILINGUAL (English/Hindi)

A REGISTERED REVIEWED/REFEREED RESEARCH JOURNAL
Indexed & Listed at: Ulrich's International Periodicals Directory®,
ProQuest, U.S.A (Title Id: 715205)

Volume- XXVIII-II English Edition Year- 14 june, 2019

UGC
Journal No. 40942
Impact Factor 3.928



JOURNAL OF

Centre for Research Studies

Rewa-486001 (M.P.) India

Registered under M.P. Society Registration Act,
1973, Reg. No. 1802, Year-1997

www.researchjournal.in

RNI NO. MP BIL 01034/12/1/2005-TC

ISSN 0973-3914

Research Journal of Social and Life Sciences

A Registered Reviewed/ Refereed

UGC Journal No. 40942, Impact Factor 3.928

Indexed & Listed at: Ulrich's Periodicals Directory ©, ProQuest

U.S.A. Title Id: 715205

Volume- XXVIII-II

English Edition

Year- 14

June, 2019

Chief Editor

Prof. Braj Gopal

Honoured with Prestigious Bhartendu Harishchand Award

profbrajgopal@gmail.com

Honorary Editor

Dr. Akhilesh Shukla

Honored with Prestigious Pt. G.B. Pant Award Government of India 1997,

1998 and Bhartendu Harishchand Award

Professor, Department of Sociology & Social Work

Institute for Excellence in Higher Education

Government T. R. S. College, Rewa (M.P.)

akhileshtrcollege@gmail.com

Dr. Sandhya Shukla

Professor and Head

Department of Political Science

Institute for Excellence in Higher Education

Government T. R. S. College, Rewa (M.P.)

drsandhyatrs@gmail.com

Dr. Gayatri Shukla

Additional Director, Center for Research Studies

shuklagayatri@gmail.com

Dr. R. N. Sharma

Retired Professor, Rewa (M.P.)

rnsharmanehru@gmail.com



Journal of Center for Research Studies

Rewa (M.P.) India

Registered under M.P. Society Registration Act, 1973, Reg.No. 1802, Year, 1997

www.researchjournal.in

Subject Experts/ Advisory Board

1. ***Dr. Pratibha J Mishra***
Professor, Department of Social Work, Guru Ghasidas University,
Bilaspur (C.G.) pjmlndn@gmail.com
2. ***Dr. B. K. Sharma***
Associate Professor, Department of Pathology, Bundelkhand Medical
College, Sagar (Madhya Pradesh) bk_drsharma@rediffmail.com
3. ***Dr. N. Sundaram***
Professor, School of Social Sciences, VIT University,
Vellore- 632014 (Tamilnadu) nsundaram@vit.ac.in
4. ***Dr. Chandrashekar. E.***
Associate Professor, Department of Sociology (ACEEFO), Kuvempu
University, Shankaraghatta-577451, District- Shimoga, Karnataka.
chandru22@yahoo.co.in
5. ***Dr. B.C.M. Patnaik***
Associate Professor, School of Management, KIIT University, Bhubaneswar
(Odisha) bcmpatnaik@gmail.com
6. ***Dr. Yogambar Singh Farswan***
Department of History & Archeology, H. N. Bahuguna Garhwal University,
Srinagar, Garhwal -246174 Uttarakhand farwanys@yahoo.co.in
7. ***Dr. Vijay Agarwal***
Professor, A.P.S. University, Rewa (M.P.) apsvka57@gmail.com
8. ***Dr. Urmila Sharma***
Professor, Government Girls P.G. College, Rewa (M.P.).
urmilabks@gmail.com
9. ***Dr. P. Malyadri***
Principal, Government College Patancheru, Hyderabad-502 319 (A.P)
drpm16@gmail.com
10. ***Prof. Safiqur Rahman***
Assistant Professor, Department of Geography, Guwahati College
Bamunimaidam, Guwahati-21. safiq.rahman@rediffmail.com
11. ***Dr. M. Razaullah Khan***
M. Razaullah Khan, Associate Professor, Maulana Azad College
Aurangabad.drzaullahkhan@gmail.com
12. ***Padmegowda. A. T.***
Assistant Professor, Dept. of Economics, Sahyadri Arts & Commerce
College, Shimoga SHIMOGA- Karnataka. padmegowda1965@gmail.com

13. **Dr. Umesh Shukla**
Department of Zoology, Agra College, Agra (U.P.)
drumeshshukla13@gmail.com
14. **Dr. Minaxi Mansukhbhai Patel**
Director of Physical Education, Shree Jasani Arts & Commerce College,
Rajkot, Gujarat. minaxi.sports.598@gmail.com
15. **Dr. A.P. Mishra**
Retd. Professor of Zoology, Rewa (M.P.) drakhandmishra@gmail.com
16. **Dr. George Abraham**
Department of Physical Education and Sports Sciences,
Annamalai University, Tamil Nadu profgeabraham@gmail.com
17. **Prof. A. P. Onkarappa**
Associate Professor, Department of Political Science, Kuvempu University,
Shankarghatta, Shimoga, Karnataka omkarshila26@gmail.com
18. **Dr. O.P. Parmeswaran**
Assistant Professor, Govt. College for Girls, Sector-11 CHANDIGARH-
160011 (U.T.) parameswaranop@gmail.com
19. **Dr. Monika Kannan**
Head, P.G Department of Geography, Sophia Girls' College Ajmer,
Rajasthan
kannanmonika@gmail.com

Guide Lines

- **General:** English and Hindi Editions of Research Journal are published separately. Hence Research Papers can be sent in Hindi or English.
- **Manuscript of research paper:** It must be original and typed in double space on the one side of paper (A-4) and have a sufficient margin. Script should be checked before submission as there is no provision of sending proof. It must include Abstract, Keywords, Introduction, Methods, Analysis Results and References. Hindi manuscripts must be in Devlys 010 or Kruti Dev 010 font, font size 14 and in double spacing. All the manuscripts should be in two copies and in Email also. Manuscripts should be in Microsoft word program. Authors are solely responsible for the factual accuracy of their contribution.
- **References :** References must be listed cited inside the paper and alphabetically in the order- Surname, Name, Year in bracket, Title, Name of book, Publisher, Place and Page number in the end of research paper as under- Shukla Akhilesh (2018) Criminology, Gayatri Publications, Rewa : Page 12.

- **Review System:** Every research paper will be reviewed by two members of peer review committee. The criteria used for acceptance of research papers are contemporary relevance, contribution to knowledge, clear and logical analysis, fairly good English or Hindi and sound methodology of research papers. The Editor reserves the right to reject any manuscript as unsuitable in topic, style or form without requesting external review.

© Center for Research Studies

Single Copy Rs. 500

Membership fee

Term	For Individual	For Institutional
One year	Rs. 2000	Rs. 2500
Two years	Rs. 3500	Rs. 4000

Mode of payment-

- The amount may be deposited in the account number 30016445112 of GAYATRI PUBLICATIONS, SBI Rewa City Branch (IFS Code: SBIN 0004667, MICR Code 486002003). In this case please add Rs. 75 as bank charge. Please inform on Mobile (7974781746) after depositing money.

Publisher- Gayatri Publications

Rewa (M.P.)

Laser Composing- Arvind Vyas

Rewa (M.P.)

Editorial Office

**S.S.D.-4, "Gokul", Vindhya Vihar Colony, A.G. College, Road,
opposite Durga Mandir, Rewa- 486001 (M.P.)**

Mob- 7898086013

E-mail- researchjournal97@gmail.com

researchjournal.journal@gmail.com

www.researchjournal.in

Opinions expressed in this journal do not reflect the policies or views of this organization, but of the individual contributors. The authors are solely responsible for the details and statements in their Research papers. The Judicial Jurisdiction will be Rewa(M.P.)

Editorial

We are living in a digital age at the moment, where information is transmitted at lightning speed. The scope of discussion in the city-to-village crossings has now become endless. The misuse of this growing scope is now being done to see and read unwanted content, now our society has gradually started to take 'love instead of porn'. Impatience, lack of direct communication, social crimes are increasing. Thoughtless messages are carried forward, in which sometimes child theft and other religious, political or planned hysterical rumors are spreading, which makes the crowd furious and go off without a thought. The biggest reason for this is the smartphone that has made its place in every palm, the disharmony spread on social media. It is noteworthy that most of the rumors like child theft spread on WhatsApp. Have you noticed why the administration first places a ban on the Internet when there is tension in an area. Many such incidents have come to light that such inflammatory messages and rumors only become the hero of the crowd through WhatsApp or any social media platform. These social messaging apps, especially videos and hate messages on WhatsApp, are forwarded without knowing the truth of the incident.

At present, a horrendous threat has emerged in India too, "Moblinking" means a mob attack by a mob. Recently there have been incidents of mob lynching in many places across the country. Due to false rumors, many people have been killed by the mob. After all, how suddenly so many people gather together for one purpose. The psychology of the crowd has been a small part of social science. This is a strange and old method, whose relevance has come to an end after stability in society and trust in law and order. The discussion on the psychology of mob began as a different phenomenon when we considered the mob of the French Revolution or the racial mob of the Ku Klux Klan as an example. Then the old issue of killing a black person by a mob of white people was a topic of discussion in the psychology of the crowd. The incidents of frequent mob lynchings in India in the last few years are forcing us to wonder whether the 'anarchy of mobocracy' is prevailing in our country now ..? In the name of saving the cow, Asha Khan and Rakbar Khan (whose death actually happened in police custody?) Are killed in the name of Cow, and then in the absence of Goumant, Mohamed Akhilak is killed in Noida, sometimes love-jihad So, due to the rumor of 'child thieves' on the social media, the crowd is coming out to make 'justice' on the lines of the decision on the spot.

The major incident of mobs lining was brought out in Maharashtra, where on 1 July 2018, the crowd beat and beaten five people in Ranpada village of Dhule. These people were accused of being child thieves. On 9 June 2018, two youths were beaten to death by a mob after a rumor of a child thief gang spread on social media in a remote area of Assam's Karbi Anglong

district. On April 28, 2018, a Hindi-speaking laborer was beaten to death by a Hindi-speaking laborer in Vellore district, in June, 2018, local people in Chennai's Tenampet area badly beat two migrant laborers in the suspicion of being a child thief. On 15 June 2018, a software engineer was allegedly beaten to death by a mob and 3 people were seriously injured by a mob on WhatsApp in Muraki of Bidar district, Karnataka. On July 21, Khetaram Bhil was allegedly beaten to death by 12 men on charges of illicit relations with a Muslim woman in Barmer district of Rajasthan, bordering Pakistan. On 24 July 2018 In Jalpaiguri district of Bengal, the crowd allegedly attacked four women and left two of them suspected of being a thief and disarmed two of them. There were 2 such incidents in the same month. In 2017 itself, 16-year-old Junaid was killed in Ballabgarh, Haryana, in a minor dispute over a seat in a train. On 22 June 2017, security officer in Kashmir Mohammad Ayub Pandit was beaten to death by the local people because he was taking photographs of people outside the mosque.

Overall, a lot of such incidents have occurred in the whole of India in this decade. The Supreme Court has strongly reprimanded the government for failing to curb the rampant mob and rumors circulating on social media, calling it a 'sinister act of monocracy' on the cases that are continuously coming up.

Another sad aspect of these incidents is that political and social organizations take up these incidents more according to their 'facilities'. In such a situation, his opposition is more 'political' rather than real, which also makes it light.

The country's largest court is also very strict about incidents of mob lynching. During the trial of Tehsin Poonawala case, the Supreme Court has issued the guidelines for the central government and state governments to prevent the occurrence of lobbying. During this time the Supreme Court had said that it is the duty of the government to protect the life of every citizen. Article 21 of the constitution gives every citizen the right to life and without the process established by law, one's life cannot be taken away. This means that if someone has committed a crime, he will be punished only by bringing it under the purview of the law.



Professor Akhilesh Shukla

Editor

01 June 2019



Professor Braj Gopal

Cheif Editor

CONTENTS

1.	Comparative Constitutional Analysis of South Asian Constitutions with Special Reference to Afghanistan Aparajita Kumar	09
2.	India's Security Issues and Doval Doctrine Chandni Saxena	29
3.	Globalisation and Its Effect on Labour Laws in Rajasthan Premod Kumar Sharma R. S. Solanki	39
4.	Water Scarcity in Geetanagar Chayanika Borah	44
5.	Action Research in Classroom (Innovative Implementation) Surabhi Misra	51
6.	Water Scarcity in Impact of child rearing practice on intelligence Geetanagar Kumari Anamika	55
7.	Is Disaster an Equalizer? Homolata Borah	58
8.	A study of Problems faced by MSME's in Madhya Pradesh Vivek Sharma Neha Agrawal	62
9.	The 21st Century Learning Environment: Emerging Challenges for an ODL Educator and the Policy Options Bhaskar Sarmah	70
10.	History, evolution and present socio- economic scenario of the folk crafts in Betul region, M.P. Srishti Umekar Sukanta Majumdar, Soumik Halder	81
11.	Measuring Asset Accumulation among Tea garden labourer in Undivided Sonitpur district of Assam Dipshikha Buragohain	103
12.	"Spend time in Nature" Exploring the effects of nature on well being Mitika Kanwar	108
13.	Study of Ecology and Biodiversity of Doha River of Siwan (Bihar) with respect to Pollution Kumari Shilpi	127
14.	Geo-environmental impact on settlement pattern: a case study of Bongaigaon district Ananda Das, Sikhajyoti Das Dhiren Sarmah	133
15.	Study of Life Skill Component Problem Solving on the Students of NCC and NSS Archana Gomasta, Kavita Verma	139

16.	A Study of caste and education of Muslims on attitude towards female education Md. Javed	146
17.	Hati System of Barpeta Town Gopesh Kumar Sarma Mridusmita Goswami	150
18.	Buddhism and Nature Asha Parvin	155
19.	The Concept of Sexism and its impact on Assamese Language Nipom Kalita	159
20.	Post-Sankardeva Bhakti Movement in Assam & the Rise of Sectarian Development: Damodardeva vs. Madhavdeva Anurag Borah	166
21.	Foliar Epidermal Characters and Petiole Anatomy of Two Species of <i>Phlogacanthus</i> Nees (Acanthaceae) from Assam, India Barnali Dutta Namita Nath	173
22.	Fungal endophytes and their antibacterial activities isolated from <i>Curcuma longa</i> L., grown in Greater Guwahati Prabhali Doley Bandana Nabis Das	181
23.	Effects of the Anabolic Steroid Stanozolol on Growth of Channel Catfish, <i>Ictalurus punctatus</i> , and Goldfish, <i>Carassius auratus</i> Umesh Shukla	189
24.	Monitoring airborne mycoflora of chilli (<i>Capsicum annum</i> L.) during the crop season in Baksa District of Assam Ramesh Das	192

Comparative Constitutional Analysis of South Asian Constitutions with Special Reference to Afghanistan

* Aparajita Kumar

Abstract- *The field of comparative constitutional law has suddenly acquired renewed prominence in the twentieth century. Its importance and utility are being increasingly acknowledged. Comparative studies of different legal systems bring into light universalistic as well as particularistic features of varied legal systems. This paper is an attempt to conduct a small scale comparative analysis of the South Asian constitutions with reference to certain specific features of the Constitution of Afghanistan. All the countries comprising of South Asia have been under the, direct or indirect, control of colonial rule at some point or the other in history. Thus, regional juxtaposition is not the only common factor among the South Asian countries; oppressive imperial rule has had an equally profound bearing on them and their constitution making and constitutional provisions. Before analysing the constitutions it is necessary to consider the troubled history of Afghanistan, as its Constitution is profoundly affected by its tumultuous past. Five universalistic features have been analysed in the course of this paper. The Preamble is the first feature which is being analysed, as it is the charter of a Constitution of a State. The next feature is sovereignty, as different South Asian constitutions have found different sources of ultimate authority. Separation of Powers is the third principle to be analysed, as it is one of the most essential concepts for the proper working of any polity and is being incorporated in constitutions worldwide. Judiciary is the fourth feature which has been evaluated in the course of the paper, as its of utmost significance in the course of all legal discussions. Lastly, fundamental rights have been analysed, as every modern constitution has to guarantee the basic rights of the people and has to uphold them as well.*

Key Words- Constitutional law, Legal systems, Juxtaposition

Introduction: The shackles of colonial rule constrained the continent of Asia for the major part of its history. British, French, Portuguese and Dutch colonial empires were deeply entrenched in the Asian continent and are often held responsible for the delayed and haltering growth of the continent. Post World War II, yielding to the wave of self-determination, colonial forces retracted from the continent. The decolonization of Asia and Africa since WWII appears

* Former Assistant Professor, Symbiosis Law School, Pune. LL.M. from Indian Law Institute, New Delhi

at once as a novel and yet banal historical process. *On the one hand, it was an intensified moment of state-building and frenzied constitutional activity. As the Western empires crumbled, they left behind a multitude of nascent states each seeking to institute a new constitutional order.* The number of these new states, and especially its impact upon the configuration of the global political map, is staggering. In 1910 there were 56 independent countries in the world. By 1970, after the first major wave of decolonization, the number had increased to 142. In 1973 the constitutional scholar Ivo D Duchacek thus noted that “Over two-thirds of the [world’s] existing national constitutions were drafted and promulgated in the last three decades.” *On the other hand, there is also a sense in which decolonization, and the postcolonial constitutions it spawned, marked something more banal—less a historical change than continuity. For like the anti-colonial nationalism which Partha Chatterjee [1993] has theorized, the independence constitutions of Asia and Africa have been haunted by the spectre of looking unoriginal.* According to existing scholarship, the independence constitutions of Asia and Africa were little else than imitations of Western constitutions. More specifically, they appear to have been dysfunctional duplications of the constitutions of the former imperial master. *R. N. Spann has made similar claims about some of the independence constitutions of Asia: they bear the unflattering “mark of uninventiveness” [Spann 1963: 10].* It would seem that the more things change the more they stay the same. Postcolonial constitutions may have marked an historical novelty by their sheer number but, according to the existing literature, they merely imitated and thereby reproduced the constitutional models of the former colonizing power. South Asia or Southern Asia is the southern region of the Asian continent, which comprises the sub-Himalayan countries and, for some authorities, adjoining countries to the west and east. Out of the 8 core countries, Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, constituting South-Asia, there is not a single country which has not felt the sway of colonial rule, directly or indirectly. They have either been under the colonial rule or they have been engaged in skirmishes with the colonial powers. India, the largest of the South Asian countries, was under colonial rule till 1947. Pakistan was carved out of British ruled Indian sub-continent in 1947. Bangladesh was born out of East Pakistan. Both Bhutan and Nepal, although never under direct colonial rule, were engaged in border wars with the British India Company. Maldives experienced the colonial bondage till 1965, Afghanistan till 1919 and Sri Lanka till 1948. *Thus, regional juxtaposition is not the only common factor among the South Asian countries; oppressive imperial rule has had an equally profound bearing on them and their constitution making and constitutional provisions.* This article is an endeavour to analyse the Constitution of Afghanistan, one of the South Asian countries which has been wrecked by internal and external aggression and has, thus, witnessed a colourful constitutional history, in the light of other

South Asian constitutions.

Afghanistan: a “China vase” among “Iron vases”

“Afghanistan has had both too much and too little experience with constitutions in the past eighty years.”

Afghanistan officially the **Islamic Republic of Afghanistan**, is a landlocked country located in Central Asia and South Asia. It has a population of around 31 million people, making it the 42ndmost populous country in the world. It is bordered by Pakistan in the south and east; Iran in the west; Turkmenistan, Uzbekistan, and Tajikistan in the north; and China in the far northeast. Its territory covers 652,000 km², making it the 41st largest country in the world. The political history of the modern state of Afghanistan began with the Hotaki and Durrani dynasties in the 18th Century. In the late 19th century, Afghanistan became a buffer state in the “Great Game” between British India and the Russian Empire. Following the 1919 Anglo-Afghan War, King Amanullah and King Mohammed Zahir Shah attempted modernization of the country. A series of coups in 1973, 1978, and 1979 was followed by a Soviet invasion and a series of civil wars that devastated much of the country.

Afghan leaders have written five constitutions since 1923, each of which has attempted to hold this delicate country together but none of which has managed to stave off the collapse of the Afghan State because both of internal tensions and of the “iron vases”, the strong powers, that surround this unfortunate country. Twentieth century Afghanistan witnessed a rapid parade of constitutions. One compilation contains nine documents promulgated between 1923 and 1992, including the foundational laws issued by President Noor Mohammad Taraki of the People’s Democratic Party of Afghanistan (PDPA) in lieu of a formal constitution. Most significant are the constitutions issued in 1923 by King Amanullah; in 1931 by King Nader Shah; in 1964 by King Mohammad Zahir Shah; and in 1977 by President Mohammad Daoud. The first three embodied constitutional monarchies, in which the king wielded near total authority, while the final one simply shifted this authority to the president. The subsequent documents were products of governments that never exercised significant control of the Afghan hinterland, and that between 1977 and 1992 were bogged down in fierce and unsuccessful counter-insurgency efforts.

Afghanistan’s previous founding documents have consistently suffered from two flaws. First, they reflected basic flaws in the underlying political architecture, flaws that often precipitated the fall of regimes. Secondly, they invariably failed to translate into practice. *According to Afghanistan scholar Sayed Asker Mousavi, “The first people to disobey the constitution are the government”.* Without public pressure to conform to constitutional norms and enforce constitutional rights, repeated Afghan governments failed to respect the very documents they had drafted. 10 If the first constitution of the

twenty-first century is to succeed, Afghans and the UN must learn from past mistakes, without falling into the trap of facile, but inaccurate historical analogy. Perhaps the most fertile grounds for historical insights are the 1923 and the 1964 constitutions, two attempts to accelerate sclerotic social change.

The 2004 Constitution:

The 27-year period between Daoud's Constitution of 1977 and the most recently ratified 2004 constitution was a period that nearly crumbled all of the institutions of the state. This included 10 years of Soviet military occupation, nearly 6 years of Taliban rule and 11 years, here and there, of utter political dysfunction by political elites hungry for power. The fall of the Taleban regime has brought new hopes for Afghanistan's future. The promulgation of a new constitution has been awaited since the 2001 Bonn Meeting, which laid the basis for the provisional Afghan government. A commission of experts, named by the Afghan president Hamid Karzai and by the United Nations, secretly prepared a draft. Pressure from the Islamic radicals, who wanted a clear reference to the sharia, was enormous but there were also attempts to give recognition to some ethnic realities. The distribution of powers was also contested by some military and political power groups in Afghanistan but Karzai threatened to withdraw as a candidate from the forthcoming elections for head of state unless the constitution provided for a strong presidential republic rather than a decentralised federalism which was the dream of some local governors. *In the end, commission member, professor Muhammad Amin Ahmadi, presented the new document with a telling phrase: "This is a moment for Afghanistan to ensure its survival or go back to the darkness"* An emergency session of the Loya Jirga, the traditional Afghan assembly made up of more than 502 members, met on 10 December last in Kabul to discuss the draft constitution. On the 4 January last, the year 1382, according to the Muslim calendar, former president Sibghatullah Mujaddedi called the vote on the constitution in Afghan style: "I invite you to stand as a sign of approval of the new constitution". Not everyone stood but a clear majority approved a document written to bring to a close a quarter of a century of invasions, civil wars, and fundamentalist obscurantism that almost destroyed the country.

Constitutional Analysis of 2004 Constitution Vis-À-Vis Other South Asian Constitutions

1. The Preamble:

The importance and utility of a Preamble has been stressed repeatedly. Though, by itself, it is not enforceable in a Court of law, the Preamble to a written constitution states the objects which the Constitution seeks to establish and promote and also aids the legal interpretation of the Constitution where the language is found to be *ambiguous*.

A. Afghanistan

"In the name of God, the Merciful, the Compassionate
We the people of Afghanistan:

1. With firm faith in God Almighty and relying on His mercy, and Believing in the sacred religion of Islam,
2. Observing the United Nations Charter and respecting the Universal Declaration of Human Rights,
3. Realizing the injustice and shortcomings of the past and the numerous troubles imposed on our country,
4. While acknowledging the sacrifices and the historic struggles, rightful Jihad and resistance of the Nation, and respecting the high position of the martyrs for the freedom of Afghanistan,
5. Understanding the fact that Afghanistan is a single and united country and belongs to all ethnicities residing in this country,
6. For consolidating national unity and safeguarding the independence, national sovereignty, and territorial integrity of the country,
7. For establishing a government based on the people's will and democracy,
8. For the creation of a civil society free of oppression, atrocity, discrimination, and violence and based on the rule of law, social justice, protection of human rights, and dignity, and ensuring the fundamental rights and freedoms of the people,
9. For strengthening political, social, economic, and defensive institutions of the country,
10. For ensuring a prosperous life and sound environment for all those residing in this land,
11. And finally for regaining Afghanistan's deserved place in the international community,

Have adopted this constitution in compliance with historical, cultural, and social requirements of the era, through our elected representatives in the Loya Jirga dated /1382 in the city of Kabul.”

An analysis of the 162 articles of the constitution shows that the legislators took inspiration from the 1964 document, promulgated by King Nadir Shah, bringing its contents into line with today's needs. The result is a constitution which provides a bridge between the traditional Islamic world to which Afghanistan is still attached and the principles of the Western world. “In the Name of God, the Merciful, and the Compassionate” is the verse from the Koran that begins the preamble which is made up of 12 chapters. It is an untypical preamble containing interesting subsections such as number 3, according to which the constitution is approved: “While acknowledging the sacrifices and the historic struggles, rightful Jihad and just resistance of all people of Afghanistan, and respecting the high position of the martyrs for the freedom of Afghanistan”. The reference to the mujahidin is to the millions who died in the holy war against the Soviet invaders and to the “martyrs” who died for freedom in the war against the Taleban. Paragraphs 5 and 8, on the other hand, contain the first important reference to the respect for basic human rights (5. “Observing the United Nations Charter and respecting the

Universal Declaration of Human Rights (...) 8. For creation of a civil society free of oppression, atrocity, discrimination, and violence and based on the rule of law, social justice, protection of human rights, and dignity, and ensuring the fundamental rights and freedoms of the people (...)).

B. India: The preamble of India reflects the ideals of its founding fathers. The Preamble to our Constitution serves, two purposes:

- (a) it indicates the source from which the Constitution derives its authority, i.e., “We the People of India”,
- (b) it also states the objects which the Constitution seeks to establish and promote.

The fundamental principles on which the Constitution revolves are socialism, secularism, democracy, sovereignty, justice, liberty, equality, fraternity, dignity of the individual and the unity and integrity of the nation.

2. Sovereignty:

The first purpose that constitutions serve is as the highest expression of a country’s law and political system. A constitution defines what the state *is*, and from what source it draws its *sovereignty*, meaning supreme political power (popular sovereignty, for example, is the doctrine that government is created by and subject to the will of the people). All laws must emanate from the constitution, since it is the highest law of the land. When writing a new constitution, drafters must consider the source of sovereignty in the new government and how that affects its structure. For instance, does sovereignty lie in the people? God or religion? A particular ruling family?

A. Afghanistan:

Article Four established that, “national sovereignty belongs to the nation...and was manifested through its elected representatives”. Elected representatives are present in the assembly and in the Loya Jirga. Therefore, sovereignty is manifested at two levels within the government apparatus, first the national assembly and second the Loya Jirga.¹⁷⁸ This two-tiered hierarchal approach to national sovereignty was very similar to the 1977 Constitution where the Loya Jirga was characterized as representing the highest will of the people. The important difference here is that the assembly codified in the 2004 Constitution is an entirely representative electorate of the provinces in which they are elected. Since there is no single-party establishment and no requirement for Party membership, full representation of the populace is more attainable. On the other hand, the Constitution specifically delineates between the will of the people and the will of God. This means, again going back to Oleson’s models of state legitimation, that as long as the will of the people is compatible with the will of God then there is no contradiction to the exercise of sovereignty within its constitutional limits. This is compatible with the language that established the constitution’s superior status. That is, as long as it is compatible with Islam, it is therefore sovereign and binding. The major assumption is that the assent of a majority will respect this and not infringe

upon the rights of individuals.

B. India:

The Constitution of India is not a gift of the British Parliament. It is ordained by the people of India through their representatives assembled in a sovereign Constituent Assembly which was competent to determine the political future of the country in any manner it liked. *The words- 'We the people of India...adopt, enact and give to ourselves this Constitution', thus, declare the ultimate sovereignty of the people of India and that the Constitution rests on their authority.*

C. Sri Lanka:

In the Republic of Sri Lanka sovereignty is in the people and is inalienable. Sovereignty includes the powers of government, fundamental rights and the franchise.

The Sovereignty of the People shall be exercised and enjoyed in the following manner:-

- (a) The legislative power of the People shall be exercised by Parliament, consisting of elected representatives of the People and by the People at a Referendum;
- (b) The executive power of the People including the defence of Sri Lanka, shall be exercised by the President of the Republic elected by the People;
- (c) The judicial power of the People shall be exercised by Parliament through courts, tribunals and institutions created and established, or recognized, by the Constitution, or created and established by law, except in regard to matters relating to the privileges, immunities and powers of Parliament and of its Members, wherein the judicial power of the People may be exercised directly by Parliament according to law;
- (d) The fundamental rights which are by the Constitution declared and recognized shall be respected, secured and advanced by all the organs of government, and shall not be abridged, restricted or denied, save in the manner and to the extent hereinafter provided; and
- (e) The franchise shall be exercisable at the election of the President of the Republic and of the Members of Parliament, and at every Referendum by every citizen who has attained the age of eighteen years, and who being qualified to be an elector as hereinafter provided, has his name entered in the register of electors.

D. Pakistan:

The preambles of all regular constitutions of Pakistan (1956, 1962 and 1973) assign sovereignty all over the universe to God Almighty. The people exercise this authority as a sacred trust within the limits prescribed by Him. This exercise of power and authority is to be done through the chosen representatives. This means that authority and power of the state is located in the elected parliament, making it the salient institution as compared to the bureaucracy, the military and the judiciary, although these institutions

have their domains of authority under the constitution and law. In Pakistan, the theoretical formulation and location of sovereignty has caused controversies for two major reasons. First, at the operational level the supreme political power and authority has been used by different institutions. Second, there is a widespread tendency among the political class to view sovereignty as a textbook concept and it is often employed for advancing partisan political agendas. Historically speaking, sovereignty was located in the constituent assembly and national assembly during 1947-58 and different political parties and key officials competed with one another to strengthen their hold over power of the state. During the periods of four military rules, the chief martial law administrator and his top brass controlled the sovereign authority of the state because their words were law and the people generally accepted their commands. During Zia-ul-Haq's military rule, Zia and his close military associates co-opted orthodox religious clergy. The orthodox clergy and militant Islamic groups gained a lot of power and authority during the years of Zia's military rule. Sovereignty returned to elected parliament during civilian elected rule. However, since 2009, the elected parliament and the executive are facing a challenge to their authority from the Supreme Court. This is in addition to the traditional pressures from the military.

3. Separation of Powers:

In the words of the great constitutional law writer, Dr. Durga Das Basu, "So far as the courts are concerned, the application of the doctrine (the theory of separation of powers) may involve two propositions: namely, that none of the three organs of Government, Legislative Executive and Judicial, can exercise any power which properly belongs to either of the other two; and that the legislature cannot delegate its powers."

A. Afghanistan:

The 2004 Constitution of Afghanistan is based on the 1964 Constitution, adopting a separation of powers doctrine by dividing power between three branches of government. One difference between the 1964 and the 2004 constitution with serious implications for Afghanistan is the scope of the chief executive's power. The 2004 Constitution combines the powers of the King and the powers of the Prime Minister under the 1964 Constitution, and gives them both to the president. This means that the 2004 Constitution gives the president the authority not only to head the executive branch, but also responsibility to maintain the function of the state of Afghanistan as a whole. The Constitution of Afghanistan adopts a presidential system rather than a parliamentary system. The National Assembly, established in Articles 81-109, has the authority of, among other things, "ratification, modification or abrogation of laws or legislative decrees." The President and the Government (the executive branch), described in Articles 60- 80, have the duty, among others, to "execute the provisions of [the] Constitution, other laws, as well as the final decisions of the courts." The Judiciary, laid out in Articles 116-135,

is entrusted with, among other things, “consideration of all cases filed by real or incorporeal persons,” and “reviewing the laws, legislative decrees, international treaties as well as international covenants for their compliance with the Constitution and their interpretation in accordance with the law” and in accordance with specific procedures. Cases can be brought before the Supreme Court at the request of either the Government or the lower courts. The 2004 Constitution includes another check on power through the Loya Jirga, established in Articles 110-115, which can convene to “decide issues related to independence, national sovereignty, territorial integrity as well as supreme national interests,” “amend provisions of the Constitution,” and “impeach the President.” This additional body, charged with making decisions on issues of the utmost importance, provides an additional constraint on the power of the other three branches. The Loya Jirga only convenes periodically to address certain issues and so it does not play the same consistent role the separation of powers that the other three branches do.

B. India:

The doctrine of separation of powers has no place in strict sense in Indian Constitution, but the functions of different organs of the Government have been sufficiently differentiated, so that one organ of the Government could not usurp the function of another. The role of separation of powers in India is simple. The three organs of the Government viz. the Legislature, the Executive and the Judiciary are not independently independent but inter-dependently independent. On a glance at the provisions of the Constitution of India, it appears that the doctrine of Separation of Powers is accepted in India. Under the Indian Constitution, executive powers are with the President, legislative powers with the Parliament and judicial powers with the Judiciary - Supreme Court, High Courts and subordinate courts. Although the tasks of governance cannot be put in watertight compartments, the Indian Constitution respects the comity amongst these great institutions (legislature, executive and judiciary) by laying down that the courts cannot inquire into the validity of the proceedings of the legislatures (Articles 122 and 212), the legislatures cannot discuss the conduct of a judge of the High Court or the Supreme Court except in matters of impeachment (Articles 121 and 211), and the President and Governors enjoy immunity from court proceedings (Article 361).

C. Bhutan:

The 2008 constitution establishes a separation of powers, and indeed calls for the most effective separation of power in Bhutan to date. The residual authority and prestige of the monarch also serves as a power centre. With the legislature currently dominated by the DPT, it will be difficult for it to act as an effective balance to the executive. A Supreme Court has been established, tasked with upholding the constitution and ensuring the effective separation of powers, but there is as yet no indication as to how assertively it will play

this role. Under the Judicial Service Act of 2007, the independence of the judiciary was firmly and explicitly established. Prior to the 2007 Act, the judiciary had established its independence by means of a series of decisions in the 1990s.

D. Pakistan:

The concept of separation of powers has never really worked in Pakistan. It has been the executive which has been the decision making authority. Pakistan has been an executive dominated state in presidential as well as parliamentary setting. Decision making and power most of the time has been concentrated in the hands of one person whether under military or civilian rule. Thus no matter what the constitution says, separation of powers has never existed in Pakistan in practice, nor have the checks and balances system prevailed in the country. Pakistan's founding father declared that the country would have a parliamentary form of government, but at various times in the country's history executive power has either been vested in the office of the head of state or the head of government. The 1973 constitution and the 13th, 14th and 18th amendments to it, empowered the prime minister whereas the 8th and 17th amendments shifted executive power to the president. Thus, the seesaw between presidential and parliamentary forms of government has complicated the situation regarding the separation of powers. Pakistan has had long stretches of military rule: from 1958-1969 led by Ayub Khan, from 1969-1971 under General Yahya Khan, from 1977-1988 headed by General Zia-ul-Haq and from 1999 October to August 2008 led by General Pervez Musharraf. In the remaining years, civilian governments have fumbled through their respective tenures, unable to prove their ability to govern firmly and honestly. The legislature and the judiciary have been merely rubber stamps or acquiescent institutions for most of Pakistan's history.

E. Bangladesh:

The Constitution of Bangladesh has distributed executive, legislative and the judicial authorities of the country to three branches of the government. Separation of power featured the Constitution in a sense that no branch can go beyond its scope set out in the Constitution. It was not a separation of powers of the type practised in the American jurisdiction. The Constitution states that there should be Separation of Powers. Legislation, Judicial and Executive powers must all be autonomous and free from any dominant influence amongst themselves.

F. Sri Lanka:

The powers of government belong to the people as part of their sovereignty. Since all powers of government are vested in the people, to that extent there is a concentration of powers. However, the Constitution clearly demarcates how governmental power must be exercised and thereby brings about an organic separation by creating three separate institutions to carry out the powers of government, namely the Parliament exercising legislative

powers, the President, his Cabinet of Ministers and the public service performing executive functions, and the Judiciary dispensing justice. To that extent there is an organic separation. The judicial power of the people is to be exercised by Parliament. At first glance there seems to be a fusion of judicial and legislative power. However, the reference to parliamentary privileges, where the Parliament would exercise the judicial power by itself implies that in all other circumstances the Parliament would exercise the judicial power of the people *through* Courts, tribunals and other institutions established for the administration of justice. Furthermore, the 1978 Republican Constitution deals in three distinct and separate chapters the powers of the executive, legislature and judiciary, more fully clarifying the intention of the framers of the said Constitution to incorporate the doctrine in the chapters of the Constitution.

4. Judiciary:

A. Afghanistan: While the Constitution gives a brief overview of the organization of the judiciary, it leaves much to be determined through legislation. Article 123 declares that additional “statutes related to the formation, authority, as well as proceedings of courts and matters related to judges, shall be regulated by law.” Accordingly, in 2005, the National Assembly passed the Law on the Organization and Jurisdiction of the Courts (LOJC). Article 116 gives a rough outline of the judicial branch, codifying several important concepts using the word “shall,” an imperative command. Therefore, it can be concluded (1) the judiciary will be “an independent organ,” (2) it will have one Supreme Court, Courts of Appeals, and several lower courts, and (3) the Supreme Court will be the head of the judiciary. Many of the details, such as how many Courts of Appeals and what types of lower courts are left to the LOJC.

The highest organ of judicial power, the Supreme Court, the Stera Mahkama, is made up of 9 members nominated by the president for 10 years with the approval of the Wolesi Jirga. The Islamic radicals, who are going all out for control of the supreme court, will be a very strong presence in the House of Representatives of the People According to article 121: “The Supreme Court upon request of the Government or the Courts can review compliance with the Constitution of laws, legislative decrees, international treaties, and international conventions, and interpret them, in accordance with the law”. The problem lies in the interpretation because of legislation of lacking “the courts’ decisions” will hold sway and “shall be within the limits of this Constitution in accord with the Hanafi jurisprudence (art. 130)”. Chapter 7 deals with the Shia sect, an Islamic minority of roughly 10 per cent in Sunni Afghanistan. Article 131 declares that. “Courts shall apply Shia school of law in cases dealing with personal matters involving the followers of Shia Sect in accordance with the provisions of law”.

B. India: Under our Constitution there is a single integrated system of

Courts for the Union as well as the States which administer both Union and State laws, and at the head of the entire system stands the Supreme Court of India. Below the Supreme Court stand the High Courts of the different States and under each High Court there is a hierarchy of other Courts which are referred to in the Constitution as 'subordinate courts', i.e., courts subordinate to and under the control of the High Court (Articles 233-237). The organisation of the subordinate judiciary varies slightly from State to State.

C. Pakistan:

Pakistan's judicial system stems directly from the system that was used in British India. The Supreme Court has original, appellate, and advisory jurisdictions. The president of Pakistan appoints the justices. Each province has a high court, the judges of which are also named by the president. Below the high courts are district and session courts, and below these are subordinate courts and village courts on the civil side and magistrates on the criminal side. There are no jury trials in Pakistan. The British tradition of an independent judiciary has been undermined in Pakistan by developments over the last 50 years. In May 1991, for example, the National Assembly adopted legislation which incorporated the Islamic legal code, the *Shari'ah* into Pakistan's legal system. A Federal *Shari'ah* Court has the power to nullify any law it finds repugnant to Islam. The Constitution of Pakistan deals with the superior judiciary in a fairly comprehensive manner and contains elaborate provisions on the composition, jurisdiction, powers and functions of these courts. The Constitution provides for the "separation of judiciary from the executive" and the "independence of judiciary". It entrusts the superior courts with an obligation to "preserve, protect and defend" the Constitution. The qualifications of judges, their mode of appointment, service conditions, salary, pension, etc. are also laid down in the Constitution. The remuneration of judges and other administrative expenditures of the superior courts are charged on the Federal/Provincial Consolidated Fund, which means it may be discussed but cannot be voted upon in the legislature. In Pakistan, the Judiciary has, by and large, remained weak vis-à-vis the Executive; it has been undermined, influenced and manipulated by the Executive since independence. Some of the causes of the Judiciary's weaknesses were addressed in the Constitution when it was first made in 1973, but later through amendments, its powers were trimmed to suit the Executive. For example, the separation of the Judiciary and Executive was identified by the 1973 Constitution as being necessary for the independence of the former. For this, a period of five years was set, which was extended to fourteen years by the Eighth Constitutional Amendment. Earlier, the Fourth Constitutional Amendment, passed on November 25, 1975, reduced the powers of the High court's regarding the granting of bail to the detained. The Fifth Constitutional Amendment further curtailed the powers of the Supreme Court and the High Courts regarding the passing of the orders in the cases of preventive detention,

releasing on bail of any person, etc. The amendment further laid down that a High Court judge could be transferred to another High Court without his consent and without consulting the chief justices of the courts concerned. A judge who was transferred from the High Court to the Supreme Court was bound to accept the transfer; otherwise he had to retire. In the last three decades, the Judiciary was subjected to reconcile with 'extra-constitutional' measures like the PCOs, promulgated after every military takeover. Judges were asked to take oath on these orders or else relinquish their offices.

D. Bhutan:

The judicial authority of Bhutan is vested in the Royal Courts of Justice comprising of the Supreme Court, the High Court, the Dzongkhag Court, the Dungkhag Court and such other Courts and Tribunals as may be established from time to time by the Druk Gyalpo on the recommendation of the National Judicial Commission. (Article 21) The Druk Gyalpo appoints the Chief Justice of Bhutan for a period of five years from among the Drangpons (*Judge or Justice of a Royal Court of Justice*) of the Supreme Court or from among eminent jurists. The Chief Justice, appointed for five years and four Drangpons, appointed for a period of ten years form the Supreme Court, the highest appellate authority to entertain appeals against the judgments, orders, or decisions of the High Court. Besides, the Druk Gyalpo may seek the opinion of the Supreme Court in cases of public importance. The Bhutanese legal system has a four-tier court system, Supreme Court, the High Court, the Dzongkhag Courts, the Dungkhag Courts. The Supreme Court is the highest in the hierarchy, followed by the High, Dzongkhag and Dungkhag Courts. There are no courts or tribunals of special jurisdiction in Bhutan. The Supreme Court is the highest court of law in Bhutan and is presided over by the Chief Justice of Bhutan. It has appellate, advisory and extra-territorial jurisdiction. Where a particular case is not covered or is only partially covered by any law in force and is not otherwise excluded from adjudication, the Supreme Court has original jurisdiction over it. The Supreme Court is a court of record and is the guardian of the Constitution and the final authority on its interpretation. (Article 1, the Constitution of Bhutan, 2008). Under the present Constitution, the Chief Justice and three associate Justices of the first Supreme Court of Bhutan were administered the oath of office and secrecy on 21st February 2010.

E. Bangladesh:

The People's Republic of Bangladesh is a sovereign country in South Asia. The Legal system of the country is a mixed legal system of mostly English common law and Islamic law. However, unlike other common law jurisdictions, Bangladesh's Supreme Court has the power to not only interpret laws made by the Parliament, but to also declare them null and void and to enforce fundamental rights of the citizens. The acts of legislation of Bangladesh take a statutory form, which are enacted by the legislature branch and

interpreted by the higher courts of the country. The roots of the Bangladeshi legal system go back to ancient times on the Indian subcontinent. The system developed gradually, passing through various stages in a continuous historical process. The process of evolution has been partly indigenous and partly foreign. The current legal system emanates from a “mixed” system in which the structure, certain legal principles, and specific concepts are modelled on both Indo-Mughal and English law. Bangladesh became an independent and sovereign nation on December 16, 1971. In order to ensure legal continuity, the Laws Continuance Order of 1971, effective as of March 26, 1971, legalized and made effective all the existing laws inherited from Pakistan, subject to the Proclamation of Independence of 1971. Thereafter, Presidential Order No. 5 of 1972 set the judiciary of the country in motion with the appointment of the judges of the High Court. Subsequently, Presidential Order No. 91 of 1972 established the Appellate Division. According to the Constitution of Bangladesh,(2) the apex of the judiciary is the Supreme Court, which comprises the Appellate Division and the High Court Division. The Chief Justice of the Supreme Court, who is appointed to the Appellate Division, is constitutionally known as the Chief Justice of Bangladesh. The Bangladeshi court system is based on the British model. The judicial system consists of a Lower Court and a Supreme Court, both of which hear civil and criminal cases (Chapters I, II, and III of Part VI, Constitution of Bangladesh). The Lower Court consists of administrative courts (magistrate courts) and session judges. The Supreme Court’s High Court Division hears original cases and reviews decisions of the Lower Court, and the Appellate Division hears and determines appeals of judgments, decrees, orders, and sentences of the High Court Division. The highest court of appeal is thus the appellate court of the Supreme Court. At the level of local government, the country is divided into divisions, districts, sub-districts, unions, and villages. The Supreme Court serves as the guardian of the constitution and enforces the fundamental rights of citizens. It consists of a Chief Justice and a number of other judges, all appointed by the president. A judge can remain in office until the age of sixty-five. The Chief Justice and the Judges appointed to the Appellate Division sit only in that Division; other judges sit in the High Court Division. The High Court Division superintends and controls all subordinate courts (at the administrative levels of district and thana) and functions as the Appellate Court. In addition, it superintends a number of special courts and tribunals, such as the Administrative Tribunal, Family Courts, Labor Tribunal, Land, Commercial, Municipal, and Marine Courts. At the district level, the district court is headed by a District and Sessions Judge, who is assisted by additional District Judges, subordinate judges, assistant judges, and Magistrates.

5. Fundamental Rights:

A. Afghanistan:

Article 22 is the foundation stone of the new Afghanistan. The second

paragraph declares that “The citizens of Afghanistan – whether man or woman – have equal rights and duties before the law”. The initial draft spoke only generically of “citizens” but the delegates of the Loya Jirga, assisted by the United Nations and pushed by Karzai managed to insert the specific reference “whether man or woman”. This is an important step forward from the dark days of the Taleban even if a rigid, conservative and limiting vision of the role of women continues to pervade. Chapter 3 of article 44 counters to this, announcing that “The state shall devise and implement effective programs for balancing and promoting of education for women (...)”.

With regard to rights and duties of citizens, the new constitution has absorbed western principles about presumed innocence and the right to a fair defence: Article 25 states that “Innocence is the original state. An accused is considered innocent until convicted by a final decision of an authorized court.” while article 31 states that “The confidentiality of oral, written or telephonic communications between an advocate and his accused client are immune from invasion”. Article 34 underlines the right to freedom of expression: “Every Afghan has the right to express his thought through speech, writing, or illustration or other means, by observing the provisions stated in this Constitution”. Although it is not expressly stated, life is considered “a gift of God” while a door is left open to the possibility of a law providing for capital punishment (“No one shall be deprived of this right except by the provision of law”). Article 35 states the rules for political parties which must not be contrary to the Muslim religion. Whatever monies they possess must be made public and cannot be given to foreign parties. Above all “The party does not have military or paramilitary aims and structures” while the “Formation and functioning of a party based on ethnicity, language, Islamic school of thought (mazhab-i fiqhi) and region is not permissible”. These rules contradict the actual situation in the country where the mujahediin’s established movements and the emerging parties grow out of military formations and are usually based on ethnic groupings or radical Islam. Articles 49 prohibits forced labour and seeks to protect children, who, in rural areas and orphaned by war, are often reduced to slavery. Special protection is guaranteed “to descendants of those who were martyred or are missing, to disabled or handicapped, and their active participation and reintegration into society” (Art. 53), another sad inheritance from the wars that have wrecked the country. Article 58 repeats the need for human rights to be respected and provides for the formation of a commission to this end. (“The State, for the purpose of monitoring the observation of human rights in Afghanistan, to promote their advancement (behdud) and protection, shall establish the Independent Human Rights Commission of Afghanistan. Any person, whose fundamental rights have been violated, can file complaint to the Commission”).

B. India:

The makers of our Constitution adopted Fundamental Rights, to

safeguard individual liberty and also for ensuring (together with Directive Principles) social, economic and political justice for every member of the community. The provisions of Part III of our Constitution, which enumerate the Fundamental Rights are more elaborate than those of any other existing written constitution relating to fundamental rights, and cover a wide range of topics. The Constitution itself classifies the Fundamental Rights, under 7 groups as follows:

- a) Right to equality,
- b) Right to particular freedoms,
- c) Right against exploitation,
- d) Right to freedom of religion,
- e) Cultural and educational rights,
- f) Right to property (omitted by the 44th Amendment Act) and
- g) Right to constitutional remedies.

C. Pakistan:

The essential function of a constitution is to mediate between the state and society. It ensures the rights and privileges of the citizens and provides an institutional structure to fulfill its commitment to the citizens. The state is the collective embodiment of these institutions. In almost all constitutions, therefore, the details of this institutional set up and the functions and duties of these institutions are preceded by the very corpus of the rights that the institutions of state are obliged to safeguard. The 1973 Constitution of Pakistan devotes two separate chapters to the fundamental rights and the principles of policy. The fairly long chapter on fundamental rights includes the rights pertaining to security of the person; safeguards as to the arrest and detention; prohibition of slavery and forced labour, etc.; the protection against retrospective punishment, and double punishment; the safeguarding of inviolability of the dignity of the individual; freedom of movement, assembly, and association; pursuing of trade; speech; professing of a religion; protection of property; equality of citizens; non-discrimination in respect of public places; safeguards against discrimination in services; etc. The 'Principles of Policy' lays down those fundamental ideals to which the state of Pakistan is committed. These principles are: promotion of the ideals of Islam, discouragement of parochial and other prejudices, full participation of women in national life, protection of minorities, promotion of social justice and eradication of the social evils, promotion of local self-government, promotion of social and economic well-being of the people, participation of people in the armed forces, strengthening of bonds with the Muslim world, and the promotion of international peace.

Conclusion:

The conclusions that can be deduced from the above analysis are plenty. ***Majority of the South Asian countries are theocracies (Pakistan, Bangladesh, Maldives, Nepal, Bhutan and Afghanistan) and therefore,***

religion has had a deep impact on their constitutional provisions and institutions. From preamble to sovereignty to fundamental rights, religion occupies a prominent place in all these concepts and functions as the ultimate authority limiting governmental powers and citizen rights. The U.S. Commission on International Religious Freedom (USCIRF) has long highlighted the link between freedom of religion or belief and a country's political and social stability, as well as its national security. Simply put: Countries that ensure the right of their citizens to peacefully practice any faith or none tend to be more stable and prosperous. While the U.S. government often pays much strategic attention to the Middle East and North Africa, one cannot forget that South Asia is another region where religion plays a major role in society and governance, and violent religious extremism is a daily reality. Pakistan stands apart from the other countries in South Asia due to the astonishing scale and severity of abuses to religious freedom. Similar to past reports, USCIRF again concluded that Pakistan has the worst religious freedom situation among nations the U.S. government has yet to designate as "countries of particular concern" (CPC) under the International Religious Freedom Act. Chronic sectarian- and religiously-motivated violence targeting Shiite Muslims, but also Christians, Ahmadis, and Hindus continued throughout the past year. While Pakistan's religious freedom record is the region's worst, India's is just as troubling given its status as a secular democracy with a pluralistic and robust civil society. USCIRF has long listed India among its "Tier 2" countries, the category for countries not warranting a CPC recommendation but still violating international standards of religious freedom. The most disconcerting finding of this year's report was the allegations from NGOs and religious leaders, including from the Muslim, Christian, and Sikh communities, that some Indian politicians used religiously divisive language to shore up their voting base in the lead-up to the general election. More than just rough and tumble electioneering, their statements incited violence. In Afghanistan, religious freedom challenges continue for dissenting Sunni Muslims, as well as Shiite Muslims, Hindus, Sikhs, Christians, and Baha'is. The Afghan constitution falls short, lacking individual protections for freedom of religion or belief. Elsewhere in South Asia, developments in the last year in Bangladesh and Sri Lanka are increasingly troubling. In both of these countries, government officials and local police allegedly fomented religiously-motivated violence and harassment of religious minority communities. The countries of South Asia should view their religious diversity as a strength, and demonstrate to the rest of the world how to balance religious identity and nationality. Yet if growing limitations on the free practice of religion continue to be imposed and attacks on the religious "other" increase in frequency, South Asia will struggle to prosper and find durable stability.

Further, it can be submitted that stability is not a virtue of the South Asian polities. All the countries, except India and Bangladesh, have had

multiple constitutions. Nepal is still undergoing constitutional transformation. Afghanistan has had four and Maldives has had 13 constitutions till today. All the constitutions provide for all major Western concepts and principles but they have not been successfully implemented. Ivor Jennings had said that constitution is worked by men. Unfortunately, to the lament of South Asian countries, they haven't been able to find virtuous men to work their constitutions. Their constitutions have been worked by its men to suit their avarices and needs. India emerges as the winner among all the South Asian countries. It's the only country which has been able to sustain its constitution and to a very large extent, implement it successfully. Afghanistan, on the other hand, is a country rising out of shambles and the viability of its current constitution depends much on the ability and virtue of its men to abide by it.

References :

1. Julian Go, "Modelling the State: Postcolonial Constitutions in Asia and Africa", 39(4) *Southeast Asian Studies* (March 2002)
2. The World Bank : South Asian Countries, *available at* : <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/>
3. International Crisis Group, *Afghanistan: The Constitutional Loya Jirga* 3 (Dec. 12, 2003)
4. Fausto Biloslavo, "The Afghan Constitution between Hope and Fear", II(1) *Cemiss Quarterly* (Spring 2004)
5. 56th International Crisis Group Asia Report , *Afghanistan's Flawed Constitutional Process*, 2 (12 June 2003)
6. Although the Russians located their forces across a limited "strategic" area composed of "the northern plains from Shibergan to Kunduz, the strategic road from Termez to Kunduz and from Kabul to Jellalabad, the capital and its immediate environs as far as Logar," Kabul was "the only area where the Russians exercise[d] satisfactory control". Olivier Roy, *Islam and Resistance in Afghanistan* (Cambridge, 1986), pp. 189, 192.
7. International Crisis Group interview, 21 December 2002.
8. *supra* note 6
9. Zoe Bernadette Sherman, *Afghanistan's Constitutions: A Comparative Study And Their Implications For Afghan Democratic Development*, (March 2006) (Master's Thesis, Naval Postgraduate School, California)
10. *supra* note 6
11. *A.K. Gopalan v State of Madras* (1950) SCR 88.
12. *Re Berubari Union*, AIR 1960 SC 845.
13. Dr. D D Basu, *Introduction to the Constitution of India* 21 (Wadhwa, Nagpur, 20th edn., 2011)
14. Preamble, The Constitution of the Islamic Republic of Afghanistan, 2004.
15. *supra* note 6
16. *supra* note 14
17. Article 4 of the Constitution of the Islamic Republic of Afghanistan
18. *supra* note 10
19. *supra* note 14
20. Article 3 of the Constitution of the Democratic Socialist Republic of Sri Lanka

21. Article 4 of the Constitution of the Democratic Socialist Republic of Sri Lanka
22. Dr Hasan Askari Rizvi, "Who Is Sovereign In Pakistan?", *available at*: <http://www.pakistantoday.com.pk/2012/08/01/comment/columns/who-is-sovereign-in-pakistan/> (Visited on 8/10/2014)
23. K KVenugopal, "Separation Of Powers – Drawing The Dividing Line", 5th Durga Das Basu Memorial Lecture, West Bengal National University Of Juridical Sciences, Kolkata, *available at*: www.nujs.edu/news/speech-delivered-by-shri-kk-venugopal.pdf (Visited on 10/10/2014)
24. Article 90(1) the Constitution of the Islamic Republic of Afghanistan
25. Article 75(1) the Constitution of the Islamic Republic of Afghanistan
26. Article 120 of the Constitution of the Islamic Republic of Afghanistan
27. Article 121 of the Constitution of the Islamic Republic of Afghanistan
28. Article 111 of the Constitution of the Islamic Republic of Afghanistan
29. Rose Leda Ehler et al, *An Introduction to the Constitutional Law of Afghanistan*, Afghanistan Legal Education Project 46-47 (Stanford Law School, 2013).
30. Tej Bahadur Singh, "Principle of Separation of Powers and Concentration of Authority, *IJTR Journal* (March 1996)
31. Manzoor Elahi, "Rule of law and Separation of Power", *available at*: http://www.academia.edu/3342994/Rule_of_Law_and_Separation_of_Powers_and_Whether_Judiciary_encroaching_upon_the_powers_of_the_Parliament_in_light_of_Judicial_Activism (Visited on 8/10/2014)
32. Rajeev Dhavan, "Separation of Powers", *The Hindu*, March 18, 2005.
33. Bertelsmann Stiftung, *BTI 2010 — Bhutan Country Report* (Gütersloh: Bertelsmann Stiftung, 2009)
34. Tasneem Sultana, "Montesquieu's Doctrine of Separation of Powers: A Case Study of Pakistan", 28(2) *Journal of European Studies* 69-70 (July 2012)
35. Md Tabarak Hossain Bhuiyan, "Supremacy of Constitution", *The Financial Express*, August 17 2013.
36. Shakeel Ahmed Ibne Mahmood, "Bangladesh: The Role Of Public Administration", 10(4) *Public Administration and Management* 325 (2005)
37. Althaf Marsoof, "The Doctrine Of Separation Of Powers And The Independence Of The Judiciary In The Modern Constitutional Setting Of Sri Lanka", *available at*: http://www.thekamalasabaysonfoundation.com/uploads/The_Doctrine_of_seperation_of_powers_and_the_independence_of_the_judiciary_in_the_modern_constitutional_setting.pdf (Visited on 8/10/2014)
38. *supra* note 25 at 152-153
39. *supra* note 5 at 72
40. *supra* note 14 at 299
41. Pakistan- Judicial System, *available at*: <http://www.nationsencyclopedia.com/Asia-and-Oceania/Pakistan-JUDICIAL-SYSTEM.html> (Visited on 8/10/2014)
42. Dr. Faqir Hussain, "The Judicial System of Pakistan", *available at*: <http://www.supremecourt.gov.pk/web/page.asp?id=594>
43. PILDAT, "Overview of the Constitution of Pakistan", 17th *Briefing Paper PILDAT* (August 2004)
44. Ershadul Karim and Chhime Tshoke Dorjee, "Research Guide to the Legal

-
- System of the Kingdom of Bhutan”, *available at*:
<http://www.nyulawglobal.org/globalex/Bhutan.htm> (Visited on 8/10/2014)
45. Bangladesh Legal System, *available at*:
<http://lawi.asia/bangladesh-legal-system/> (Visited on 8/10/2014)
46. *supra* note 5 at 68-69
47. D.D. Basu, *Human Rights in Constitutional Law* (Prentice-Hall of India, 1994)
48. *supra* note 43 at 18
49. Knox Thames, “Shrinking Religious Freedom in South Asia”, *available at*:
http://southasia.foreignpolicy.com/posts/2014/04/30/shrinking_religious_freedom_in_south_asia (Visited on 8/10/2014)

India's Security Issues and Doval Doctrine

* Chandni Saxena

Abstract- *Since the past two decades, India has been facing acute challenges thrown on its internal security. It has become all the more worrisome since the beginning of 21st century as the issue of Kashmir has been incessantly raked up by Pakistan. And it is not just Kashmir. Pakistan is waging a covert war against India on all fronts- be it internationalization of Kashmir issue or terrorist attacks in different parts of the country or now, even train accidents. So far, India has been facing these attacks quite passively. It has not responded as aggressively as the belligerence of Pakistan needs. India's policy of peace and non-violence has led Pakistan to further escalate its nefarious activities. Not only Pakistan, but China and even a miniscule country like Myanmar have also dared to challenge India's policy of peace and non-violence. All this and more has led to India's loss of prestige at global level. AjitDoval, the present National Security Advisor challenges India's political stand towards these countries and has advocated the policy of offensive defence which is today popularly known as 'Doval Doctrine'. This doctrine has led India to shift its policy away from its traditional one towards its foes and the country is now facing a more supple and mellowed-down Pakistan.*

Key Words- Internal Security, Internationalization, Political stand

“Pakistan is duty bound, morally bound, politically bound and constitutionally bound to provide concrete, substantial support to the ongoing freedom struggle on the terroritory of Kashmir. And, if Pakistan provides this support, there is a great chance of a nuclear war between the two powers.”

**-Syed Salahuddin
Head,HizbulMujahideen
08.08.2016, 0924 hrs ANI'**

This warning, coming from one of the top terrorists on Pakistani soil, reflects some significant points. One, there is a sign of fear in Pakistan. The military and civilian governments in Pakistan have been at loggerheads since late 2014 over nuclear policy towards India. The military felt that Nawaz Sharif was diluting the nuclear deterrence against India. After Kargil war and Parliament attack, India adopted Cold Doctrine i.e., to it turned a cold shoulder

* Associate Professor, Department of History, Juhari Devi Girls' P.G. College Chhatrapati Shahuji Maharaj University, Kanpur (U.P.)

towards Pakistan—no matter how much loss India incurred. It continued its commitment towards No First Use Doctrine and refused to act unreasonably. This led Pakistan to adopt tactical nuclear strategy against India. It wanted to keep India on the edge and provoke it to act in an unreasonable manner. The contumacious Pakistan has become more and more bold, vis-a-vis the patience of India. But, since late 2014, there is a tactical shift in India's policy towards its adversary. It has adopted the policy of "offensive defense" which advocates no full-fledged war with Pakistan but nonetheless, a hard retaliation and an equally hard strike at its vital installations in case of violation of ceasefire, attack or attempt to cause unrest. This doctrine has led the Pakistani military to urge Sharif not to dilute the nuclear resistance against India. Today, Salahuddin, a terrorist, has been given a platform in Pakistan to issue a nuclear threat against India.

A senior official explains "Pakistan does follow the first use of nukes policy. However, they must also know that if India is hit, then it will not hesitate in putting in all our might against the Pakistanis. They are extremely suspicious of Narendra Modi. Hence, the statement by Salahuddin is a way of issuing a threat of nuclear weapons. The army cannot do it officially and hence it has used its stooge....."²

Two, there is a tactical shift in India's policy towards its overtly belligerent neighbor. It has taken a long time (70 years to be precise) to understand that notwithstanding the Kashmir issue, Pakistan will never hesitate to bleed our country endlessly. Even if Kashmir issue is resolved, it will dig out some other pretext to stab India on its back. The problem lies not in Kashmir, but in the very origin and existence of that country. A nation, whose roots lie in hatred and fanaticism, cannot be expected to offer a white rose to that very country from which it sought vivisection and achieved it by way of unprecedented bloodbath. Kashmir is just a byproduct of that hatred whose embers have not yet cooled down and are still simmering. The last 70 years have rarely displayed any speck of peace or understanding from Pakistan towards India. Today, after innumerable gestures of bridging the gaps, India—a non-violent and peace-loving country—finds itself questioning the viability of these very tenets which proved so legitimate during its struggle for freedom from colonial rule. After a long soul-searching and self-contemplation, India today adopts a stand whose punch line is "**offensive defense**". It is coined by the present National Security Advisor of the country—Ajit Doval, and the doctrine which thus, came into existence is known as "**Doval Doctrine**". Although the Doctrine applies unequivocally and uniformly to all those countries who dare to raise an eyebrow towards India, this research paper contains itself to the analysis of its application on Pakistan as that country needs India's reprimand and admonishment the most. Before plunging into the analysis of this doctrine, I wish to put forth the following data for perusal:³

Fatalities in Terrorist Violence in Jammu and Kashmir 1988 - 2017

Year	Incidents	Civilians	Security Personnel	Terrorists	Total
1988	390	29	1	1	31
1989	2154	79	13	0	92
1990	3905	862	132	183	1177
1991	3122	594	185	614	1393
1992	4971	859	177	873	1909
1993	4457	1023	216	1328	2567
1994	4484	1012	236	1651	2899
1995	4479	1161	297	1338	2796
1996	4224	1333	376	1194	2903
1997	3004	840	355	1177	2372
1998	2993	877	339	1045	2261
1999	2938	799	555	1184	2538
2000	2835	842	638	1808	3288
2001	3278	1067	590	2850	4507
2002	NA	839	469	1714	3022
2003	NA	658	338	1546	2542
2004	NA	534	325	951	1810
2005	NA	521	218	1000	1739
2006	NA	349	168	599	1116
2007	NA	164	121	492	777
2008	NA	69	90	382	541
2009	NA	55	78	242	375
2010	NA	36	69	270	375
2011	NA	34	30	119	183
2012	NA	16	17	84	117
2013	NA	20	61	100	181
2014	NA	32	51	110	193
2015	NA	20	41	113	174
2016	NA	14	88	165	267
2017	NA	10	10	32	52
Total*	47234	14748	6284	23165	44197

*Data till March 19,2017

This data sheet is prepared by South Asia Terrorism Portal which is one of the largest, most authentic and indispensable resources to seek information, data, critical assessment and analysis on terrorism in South Asia. The figures show that since 2014, civilian fatalities register a declining trend while terrorists are exterminated more. There can be several explanations contributing to this data and no one factor can be said to play a detrimental role in this outcome. But the contribution of Ajit Doval, who assumed the post on 31st May 2014, cannot be undermined.

Modi's choice of Doval sent a message that his administration puts a strong priority to India's internal security before addressing global challenges. With the exception of Pakistan and China, the Modi administration appears to be rather inward looking when it comes to security matters. To balance out Doval's relative inexperience in international matters, Modi has appointed S. Jaishankar as Foreign Secretary of India since January 2015.

Ajit Doval joined IPS in 1968 in Kerala cadre. He was actively involved in anti-insurgency operations of Mizoram and Punjab. In 1980's, the Mizoram National Front was breaking India's back with insurgency. Doval is renowned to have infiltrated the underground Mizo National Front, weaned away half a dozen of its top commanders and all but broke the back of MNF.

He was in Golden Temple in the days leading up to the Indian Army's Operation Blue Star. He posed as Pakistani spy, gained the militants' plans, their intelligence, reinforcements available to them and various other valuable information which led to the successful culmination of the operation.

In Kashmir, Doval persuaded prominent militants like Kukkay Parey and turned himself and his colleagues into moles in the terrorists' outfits. He then pacified these anti-India outfits and turned them peaceful.

Recently, he was involved in rescuing 45 nurses from Iraq when the nation was under fire from ISIS.⁴

On June 4, 2015, Doval was responsible for the surgical strike in Myanmar when Naga militants killed 18 Indian soldiers in an ambush in Chandel area. The strike was carried out by a crack team of 70 commandos of Indian army who finished the operation within 40 minutes, leaving 38 Naga insurgents dead and seven injured.⁵

And the most recent, hard-hitting and phenomenal success was the surgical strike in Pak occupied Kashmir on the intervening night of September 28th and 29, 2016. The strikes, co-ordinated by Doval and planned by director-general of military operations (DGMO) Lt. Gen. Ranbir Singh, were carried out in Bhimber, Hot Spring, Kel and Lipa sectors. The special forces responsible for the strike inflicted 'significant casualties' on the terrorists preparing to infiltrate from PoK into India.⁶

What needs to be highlighted here is that the phenomenal success of Indian defense forces in executing and ending these strikes with meticulous precision finds no parallels in recent history of India. Let us not forget that our forces always had the competence and know-how of such strikes. But it could not execute them before 2016. Why? Because unlike Pakistan, Indian forces never meddle in politics and are constitutionally bound to take orders from their political heads for whom national security takes a backseat when vote-bank politics comes into play. Had this not been the case, these surgical strikes would not have been the first against Pakistan or, for that matter, Myanmar. When political will emerged, strikes happened. Now, with policy shift, Modi is moving away from defensive accommodation to offensive hawkishness. And this shift can largely be attributed to Doval who has now become the driving force of India's policy towards the terrorist state of Pakistan. India is moving away from the policy of strategic restraint and is fast adopting that of offensive defense. Its first sign came on Oct 7, 2014, when as NSA, Ajit Doval summoned the BSF Director General and asked him to respond to Pakistan's cross border firing with 'full force' even on slightest provocation.

Doval bluntly told the BSF brass that they were free to 'fire at will' on Pakistani Rangers and systematically destroy their infrastructure until ceasefire violations from the other side stopped. He told them that "For one bullet fired by them, you respond with two". He also asked BSF not to seek any flag meetings with the Pakistani Rangers or its army in such situations.⁷ The, then defense minister, Manohar Parrikar, also made it clear that while India would not violate 2003 ceasefire agreement between India and Pakistan, if provoked, it would react with twice the force. Parrikar said that his instructions to the BSF were simple. "I would say, don't agitate, react appropriately but without holding yourself back. When something happens retaliate with double the force." This is Doval's offensive defense strategy which is now increasingly becoming popular as 'Doval Doctrine'. This Doctrine refuses the weak-kneed and pointless pusillanimity of Manmohan Singh years. India will not accept any provocation lying down in order to signal its peaceful intentions. While some peaceniks think that this is fine, the fact is that it is giving our neighbors the impression that we have no spine. It has in fact, emboldened them to indulge in more brazen provocations. To answer them in their own language has now become mandatory. "Effective Deterrence" is the key to peace. Hence, the 'Doval Doctrine'.

To understand this Doctrine, it is important to understand its root cause. Doval believes that for too long India's response to Pakistani terror was purely defensive, "like *Chowkidars*". They came, they shot, they killed, we shot back, they ran away and we got back to our normal lives. But, not any longer. This purely *chowkidar*-like defense mechanism has led to nothing but ever-increasing vociferous and obstreperous expeditions by Pakistan. At the same time, any all-out offensive response may lead to the possibility of nuclear war. None of these two options are therefore, viable. Defensive offence is when you go and attack the place where the offence is coming from. The surgical strikes by India on terrorist camps across the line of control (LoC) in Pakistan were a perfect example of defensive offence. "There is no nuclear war involved in that. There is no engagement of troops. They know the tricks, we know the tricks better", said Doval about Pakistan.⁸ The tricks were brought to execution on September 29, 2016 with surgical strikes ending successfully in a short four hours. Doval's offensive defense dictated Indians troops to go inside LoC, destroy terrorists and their camps and return with no loss of life. Doval knew that "Pakistan's vulnerability is many times higher than that of India's. Once they know India has shifted to defensive offense, they will find it unaffordable for them. ***You do one Mumbai, you may lose Balochistan***".⁹

Towing this line, PM Modi launched India's Balochistan campaign and in his blistering speech on Independence Day 2016, he said "The time has come when Pakistan shall have to answer to the world for the atrocities committed by it against people in Balochistan and PoK (Pak occupied Kashmir)".¹⁰

Doval doctrine passionately questions all those tenets which so far have been governing the socio-political framework of India. Universal Brotherhood or “VasudhaivKutumbakam” is one such tenet. He says, *“Universal brotherhood has always been a sublime force which has kept humanity together. But it has always been challenged by such fratricidal wars which have involved one’s own brothers as killers.....so, is it that the real problem is that the message of universal brotherhood has not travelled sufficiently and that is the cause of our strife? ... let us identify the real problem....Brotherhood is not sufficient... Fratricide takes place because there are extraneous vicious pollutants which affect the mindset of generations and people.... What is it that vitiates it?when world dharma—the path of righteousness, is challenged by a few or anyone, the conflict is inevitable.....unless the evil is fought and vanquished the peace...tranquility...development will not come....You have got to stop, fight, kill, conquer...if you succeed, universal brotherhood will prevail.. If you fail, this planet will continue to suffer.”*¹¹

This brings to challenge another very sublime principal which has been governing the Indian mindset since ages—Non-violence. It is closely associated with universal brotherhood as the latter seeks its existence via former. But, ‘Doval Doctrine’ asserts that today’s world is a theatre of power-play. Only those actors can exist here who are strong and enjoy the might of vanquishing their foes. *“In the game of power, the ultimate justice lies with the one who is strong. If you are strong, it is immaterial whether you are right or wrong....this is power game, if it is not here, the world is, over....the thing is that if you have got to be a power player.....you have got to internalize(this fact)... when you are in government, you are in army, you cannot be non-violent, that is not your duty...you cannot undermine national security interests and talk about ideologies and philosophies which may undermine the nation’s vital interests”.*¹²

These two tenets—‘VasudhaivKutumbakam’ and non-violence—have been the bedrock of India’s foreign policy, its international relations and diplomacy and the mindset of its people and leadership. It has therefore, been perceived as docile, humble and soft state which can be manipulated as and when desired—even by such non-actors on world stage as Pakistan. The leadership of the country has further complicated the situation. Doval describes this mindset—*“Let me give you some snippets of this mindset. Ignore the problems till they hit you on your face, delay the decisions, particularly the hard decisions, avoid the reality, take the reality and access (it) as you wish it to be and not as it exists on the ground.....It has been most manifest immediately after India attained independence and Nehru’s government came to power....How did this mindset...(and) our policies start working? Not sure of ourselves that we have been invaded in 1947 and we have got the military might to vacate our land and go and settle it and vacate the whole*

of it, we thought of going to the United Nations—thinking that our high moral position will give comfort— a psychological comfort which our government always wanted to have—a weak government always wants to have that. Implication was – the Kashmir problem got internationalized ... It is the product of this mindset. Presuming that under a different mindset India would have said we have been attacked—firstly we are going to lever what belongs to us and then we are going to punish the aggressor....If that was the mindset, what would have happened? Could there be a Hurriyat, could there be a demand for plebiscite....”¹³

This mindset has further been vitiated by another one. “Pay the price to anyone who raises the eyebrows. If anybody shows you the adverse and negative side, shows you the strength and the muscle power, try to appease (that) brow beat bright. Follow the policy of appeasement. Now, how did it manifest itself? You brought in Article 370 of the constitution. It is the product of our mindset—the mindset of appeasement. Why 370 for them and not for other princely states which merged with India. Why one constitution for India and a separate constitution for Kashmir? Why India has got Indian Penal Code and Kashmir has got Ranbir penal code. Once you have accepted that position that they are different, you have sowed the seeds of separatism. It is not Hurriyat which is responsible for separatism, we sowed the seeds of separatism. We told them you are different. You can have a different constitution....flag... penal code...article 370.... We will give the money, we will do the development, we will do everything... and it did not stop at 370... Thereafter, it started a process, andprecedence and a recurrence which continues and the price kept on compounding with every coming development, with every coming generation.”¹⁴

Over the years, this mindset has eroded not only India’s global position but also its self-confidence. Decades have seen India working within the framework of this mindset. It went ahead to work with those principles which were outlined by this mindset. They emanated a sense of security and the country could never come out of it. These principles are low risk principles.i.e if we are attacked, we will defend or protect ourselves, but once the attack was finished, the war is over. That allowed Pakistan to choose the timing, the terms and the place of engaging India in peace, covert, proxy or regular war. When Pakistan wanted to talk, India talked. When they did not want to talk, we too never talked. They invaded India, committed terrorists acts and we always followed the policy of defensive defense. The terms and conditions were always Pakistan’s and India, despite having superior military might, became its puppet. This implored on Pakistan that it could dictate the terms and conditions of war and peace with India and if it over-does, there will not be any serious price to pay. It is not afraid that India will undertake an action which can undo the very state of Pakistan.

India needs to understand that in today’s world of power-dynamics, no

state can ever achieve a respectable position on global platform by being on defensive defense. It will bleed as India is bleeding today in the hands of Pakistan. Offensive defense is the need of the hour. India has to send a strong message to one and all that if anyone tinkers with India's security, he will have to pay a heavy price. 'Doval Doctrine', which emerged from two important lectures Ajit Doval delivered on national security—Nani Palkiwala Memorial Lecture at Shastra University, Tanjore in February, 2014¹⁵ and Lalit Doshi Memorial Lecture on 'State Security, Statecraft and Conflict of Values' at Mumbai in August 2015,¹⁶ advocates precisely this. It pervades the current government policy on Pakistan and China and is marked by three themes—**Irrelevance and insufficiency of morality, of extremism freed from calculations and calibrations and Reliance on military**. Pakistani terrorism against India is a tactic to achieve ideological and political advantages. Doval argues that an enemy can be engaged in three ways: **defensive, offensive defense or offensive mode**. So far, with Pakistan, India has been on defensive mode and it is suffering the results. Offensive mode may lead to a full-fledged war between two nuclear powers which may prove disastrous. This leaves the mode of offensive defense which requires going into Pakistan and tackling the problem where it originated. His famous phrase, "You do one Mumbai; you may lose Balochistan" is the endorsement of this mode only. Doval believes that terrorist organizations could be bought with money, weapons and manpower. This can be supplemented with the use of high technology and intelligence-driven covert operations. This is the crux of 'Doval Doctrine'—either Pakistan give up terrorism against India as state policy or India will make it bleed with the Taliban.

Regarding Kashmir unrest, Doval says "Do not over-react, it will pass off as they cannot sustain beyond a point". This reiterates Doval's belief that appeasement will not work and if these people in the valley do manage to sustain beyond a point then there will be a price to pay. 'Doval Doctrine' thus makes no bones about the use of power and what may be called aggressive defense against adversaries.

While it is too early to say what Doval Doctrine will culminate into, there is little doubt that the old policy of previous regime was a failure. It was screaming for policy shift. And when this shift came it attracted a fair bunch of critics. Aroon Purie, the Editor-in-Chief of India Today warned that we are "playing with fire". He said in his editor's note that, "shelling across the border is not going to bring any long-term resolution to the Kashmir conflict; a solution can only be reached through sustained dialogue, however frustrating that may sometimes be. The sooner we can sit across the table, the better." Purie's idea smells of rotten old policy of previous governments. India has lost the count when it has tried to resolve the matter bilaterally i.e. across the table and we are nowhere near the solution. Aroon Purie is not alone. Praveen Swami, a former Firstpost editor and now with Indian Express reflects

the same ideas. “Machismo has never worked as a plan with Pakistan.....”¹⁷

It is obvious that any change is unsettling for the security-wallahs and peaceniks who could breast-beat when India did nothing but stare into the dead-wall when dealing with its pugnacious neighbor. They could then say that India needs a more robust policy on terror and border management but could never suggest how or what. Now when there are signs of genuinely robust policy-making on our part, they are fretting about the consequences.

To sum up the study, Doval Doctrine is in testing waters. It may either escalate the tensions between India and its neighbors or can prove to be a stepping stone towards the final solution to its problems. Either way, atleast we will not regret that we did not act on our wisdom.

References :

1. “HizbulMujahideen head Syed Salahuddin threatens nuclear war against India over Kashmir issue”, www.dnaindia.com/india/report-hizbul-mujahideen-head-syed-salahuddin-threatens-nuclear-war-against-india-over-kashmir-issue-2242415#, retrieved on 15th March 2017, 1715 hrs.
2. “Is Pakistan Scared of the Doval doctrine”, www.newsroompost.com/304801/is-pakistan-scared-of-the-doval-doctrine/2/, retrieved on 16th March 2017, 2025 hrs.
3. http://www.satp.org/satporgtp/countries/india/states/jandk/data_sheets/annual_casualties.htm , retrieved on 20th March 2017, 1810 hrs.
4. www.youthconnect.in/2015/06/27/ajit-doval/, retrieved on 20th March 2017, 1847 hrs.
5. www.thehindu.com/news/national/myanmar-operations-70-commandos-finish-task-in-40-minutes/article7302348.ece , retrieved on 20th March 2017, 1856 hrs.
6. “India’s surgical strike: Let us answer all your questions”, article in indianexpress.com/india/india-news-india/Indias-surgical-strike-all-details-3056623/, retrieved on 21st March 2017, 1925 hrs.
7. Chauhan.Neeraj, “The Man Behind India’s Policy Shift: NSA AjitDoval”, article in timesofindia.indiatimes.com/India/The-man-behind-indias-policy-shift-NSA-Ajit-Doval/articleshow/54596441.cms, retrieved on 21st March 2017, 1305 hrs.
8. Neelakantani.Shailaja, “When NSA AjitDoval outlined India’s new Pak Strategy-defensive-offence-perfectly”, timesofindia.indiatimes.com/india/when-NSA-Ajit-Doval-outlined-indias-new-Policy-of-defensive-offense-perfectly/articleshow/54670600.cms, retrieved on 22nd March 2017 at 1030 hrs.
9. *ibid.*
10. PM NarendraModi’s Independence Day Speech on 15th August 2016,<https://youtu.be/RqMoJTXd0sl>
11. <https://youtu.be/5ZzqpC40714>, retrieved on 22ndMarch 2017 at 1920 hrs.
12. <https://youtu.be/d14WKvbbTNM>, retrieved on 22nd March at 1940 hrs.
13. <https://youtu.be/kemBOtUUexw>, retrieved on 22nd March 2017 at 1930 hrs.
14. *ibid.*
15. <https://youtu.be/v4RaCJrT51w>, retrieved on 23rd March 2017 at 1800 hrs.

16. https://youtu.be/_z17AJY7AP0, retrieved on 23rd March 2017 at 1830 hrs.
17. Jagannathan.R., “Double the Force: Parrikar takes Modi-Doval-hardline-on Pak-firing-further”,<https://www.google.co.in/amp/www.firstpost.com/india/double-the-modi-doal-hardline-on-pak-firing-further-1768509.html>/ amp retrieved on 24rd March, 2017 at 1530 hrs.

Globalisation and Its Effect on Labour Laws in Rajasthan

* Premod Kumar Sharma

** R. S. Solanki

Abstract- *In the year 1990s there has been a shift in the economic policy of the state of India from internal to Liberalisation, Privatisation and Globalisation. With this there have been many changes in the industrial structure of the nation. The proposal of globalisation has brought rapid integration of domestic market but also imposes the duty on the government to protect the worker from being misused. The labour laws are open for both central as well as state government. The contribution of the state of Rajasthan in labour law reforms would be the subject of this paper.*

Key Words- Globalization, Labour, Economic Policy

Introduction: The labour law and recognition of their rights has been a subject and can be traced back to the history from the date of 19th century, in England. The world war and struggle of ILO headquarters is a quest ever pondering. With the concept of globalisation and making the world a global market with constant export and import of the commodities, it has brought a significant change in cultural and social integrations. With this boon for a constant blooming economy, the nation needs to prevent the rights of its workers and small scale industries.

The centre has made many laws for protecting the union, mother rights as well as the right to stay in the healthy environment. Labour law as a subject is open for both centre as well as state. The state of Rajasthan has the largest acres of land and principally an agricultural economy. The state has enormous potential for electrical energy production through renewable energy sources and blustery weather power. Rajasthan is an appropriate place for investments in sectors viz. cement, IT, ceramics, tourism, automotive and agro-based industries, primarily because of the accessibility of natural resources, beneficial plan incentives, planned location and workable infrastructure.

With all these benefits it has attracted many FDIs and is a centre with yielding of capital. There has been many SEZ which provides the platform for the place of ease of doing business. There have been constant amendments in the labour law stand today and these changes will be more and more.

* Assistant Professor, Faculty of Law Banasthali Vidyapith, Rajasthan

** Associate Professor, Faculty of Law Banasthali Vidyapith, Rajasthan

Introduction to Globalisation:

Globalisation is the boon for enhancing a country's economy. It is the funding or investing in the business from different foreign markets. It is a step to connect municipal markets of the world and make the nations interdependent. It is the traditional, ethnic and cultural exchange beyond the domestic markets of the world. It is primarily the integration of global markets and is also known as socio-cultural integration. It is the free movement of people, goods and services across the boundary. It is an emphatic step and can bring a bloom to the domestic as well as international market.

In India, Dr. Manmohan Singh, proposed a global liberalization proposal, in 1990s during his reign as finance minister. Since then, nation is constantly moving ahead in the direction of becoming a supreme economy in the world. With this revolution many goals are achieved- rise in employment, improves standard of living, surge in compensation and better purchasing power. Even, the ancient texts of vashudhev kutumbkam(the whole world is one family) and sarve bhavantu sukhinah(may all be prosperous and happy) . These all add up to the concept of globalisation policy of the India.

Globalisation has added to the national labour law movements in India. It has reduced the poverty of India up to a large level, though still challenging. It has given new employment and the rights to the labour to switch from one establishment to another as per their self interest. However, it has also posed many threats to the labour laws. There has been a threat of surge of new entrants in the corporate sector. It is the state responsibility to protect the workers and industries from the competition. It has generally increased the employer's bargaining power by allowing the entry of new commercial giants in the market. The expansion of trade flows has not always been homogenous to all individuals. There has been a constant technological innovation in the establishment, which day by day discards the previous method of production.

Globalisation is the progressing phenomenon marked by increasing interaction among people across the country and rapid interactions among them. It has brought many emphatic changes in the Indian structure. It has bloomed the economy but the labour law portion seems to be protected by the state.

Globalization Effect in Rajasthan Labours Laws:

"Obedience to the law of bread labour will bring about a silent revolution in the structure of society."-Mahatma Gandhi

Rajasthan is the prime State of India; in excess of the last five years (FY11-FY14), the State has registered a normal GSDP growth of 8%, with a strong services segment which has made it a beautiful state for business and investments. Rajasthan is an appropriate place for investments in sectors viz. cement, IT and ceramics, tourism, automotive and agro-based industries, mainly because of the availability of natural resources and planned location. It is also blessed with its traditional small scale cultural products. Hence

marks the state of equal contribution of renewable and non renewable energy. It also has the source of immense use of renewable energy like solar or wind energy.

The acquisition of land for large scale industries, mining and establishment of special economic zone like Sitapura etc. have marked the introduction of the revolution of globalisation to Rajasthan. With globalisation, the people with highly skilled technical knowledge have switched from primary to secondary and tertiary sector. This all has given rise to the livelihood insecurity of the economically backward and less privileged people.

With globalisation marked the era of women entering into the industries. During early phases, women rights were not protected. The laws were enacted but rare implementation of them could be seen. The Maternity Benefit Act, 2017, before the amendments of 1995 was hardly implemented. It ensured compulsory 26 weeks leave to the mother. It offers crèche facility and nourishing break as per the Maternity Benefit Act. It has given a great enjoyment of right and sense of security to the women that due to their pregnancy, their job won't get exhausted. It was a great matter of concern as women had no protection earlier, and their job was terminated due to their pregnancy. It has brought a revolution as with new industries emerging, the competition is getting cut throat. There has been a constant fire of the employees by the employer. Hence, state has protected minimum fundamental living right of the women. Labour law are mentioned in the concurrent list giving both federal and the union government to make reforms. The centre has enforced many Acts and states have done amendments to it as per their need and necessity. The recent changes in the labour laws that has been done by the state of Rajasthan are as follows-

1. The Industrial Disputes Act, 1947:

- Industrial establishments having 300 workers can now be retrenched, lay off or closure would require prior permission from the government which currently runs as 100 workers.
- No need of 3 months notice i.e. complaint can be raised after it also.
- Trade union can be formed only if 30% of total workers are registered against 15% which runs currently.

2. The Factories Act, 1948:

- Increase the threshold limit of employment for factories operating without power from 20 to 40 and from 10 to 20 for factories operating with power.
- Complaints against the employer about violation of this Act would not receive cognizance by a court without prior written permission from the state government.

3. The Contract Labour Act, 1970:

- Applicable only to companies that employ more than 50 workers, against the current 20.

4. The Apprentice Act, 1961:

- Get skilled workers and generate more opportunities for the state's youth.
- Fix the number of apprentice-training related seats in industry and establishments.
- The stipend for apprentices will be no less than the minimum wage.

The state has done these reforms after the 1990s after the LPG model which brought TNCs and others to bring FDI in the economy and making domestically integrated markets. These labour law reforms were done to protect the employees from being fired out. But, a survey was done by PHD chambers in 61 firms and it was found out that 70% of the respondents didn't know about the labour reforms that were being enforced. The 16% of people who were aware were not enthusiastic about the laws as they are not fruitful and do not represent their skilled labour force. About 14% believed that these reforms only helped in retrenchment of workers.

The laws that were enacted were proved of no use. Globalisation in technology is a must and it also affects the political will of the state. With globalisation, employers tend to look for people with low labour cost and people with less job security. There is seen a labour flexibility and dynamic shift in collective bargaining.

Pollution Havens:

With globalisation, the transnational companies (TNCs) constantly keep shifting from one place to another where economic policies and taxes are less levied. With the ease of doing business from one locality to another, there has been a constant shift or transfer of industries from one place to another. These TNCs have hence made these places as "pollution heaven". The TNCs do not respect the environmental standards to survive and the cut throat competition but fund as per the economic ease of doing business. The government has been constantly attracting new TNCs as to introduce much more of foreign direct investment.

The laws that govern them are being controlled by the National Green Tribunal Act, 2010:

The Air (Prevention and Control of Pollution) Act, 1981

The Water (Prevention and Control of Pollution) Act 1974

The Environment Protection Act, 1986

The Hazardous Waste Management Regulations

It is the duty of State pollution control board to monitor and check the pollution and waste management of the industries. With the Companies (Amendment) Act, 2017 there is a duty imposed on every industry that is the corporate social responsibility u/s 135 of the Act. It is the duty of every occupier towards the society to maintain a healthy and prosperous environment for the citizens as well as the industry people to live. In the field of mining, Rajasthan government has denied many projects in obtaining environmental clearances.

Conclusion: The Rajasthan government has not done any much contribution to the labour law reforms. The reforms have done even depict the general security of labours but not personally the laws that were made to curb the problems of globalisation. Maternity benefit rights, labours rights and environmental clearances norms are to be followed by the occupier before establishment of an industry, prior permission from the state government is necessary. The main objective of globalisation is to protect the workers from being getting exploited. The Centre has made many laws in relation to it. Labour law, being in concurrent list is a subject for both federal as well as state government. Hence, it is open for both. With respect to Rajasthan, the state has done reforms to the labour laws but they don't clearly represent the labour rights with respect to globalisation, as a critical analysis.

Acknowledgement: Great many people made the effort of doing this research paper possible. This formal piece of acknowledgement may not be sufficient to express the feeling of gratitude and affection for those who were associated with this research paper and without whose cooperation and guidance this research could not have been conducted properly.

We are thankful for the support and encouragement of numerous people including well wishers, friends, colleagues, and various institutions and to all those who contributed in many ways to the success of this research paper and made it an unforgettable experience.

God has been kind to bless me to carry this work despite various hurdles.

Sincere thanks to friends and colleagues for motivating and supporting in this research paper work.

Abbreviations:

1. U/s.....under section
2. ILO.....International labour Organisation
3. FDI.....Foreign Direct Investment
4. SEZ.....Special Economic Zone
5. GSDP.....Gross State Domestic Product
6. LPG.....Liquid Petroleum Gas
7. TNC.....Transnational Company
8. PHD.....PHD Chambers of Commerce and Industry
9. IT.....Information Technology

References :

1. <https://ijeera.com>
2. <https://researchgate.net:labour laws in the context of globalization of economy>
3. <https://ilo.org>
4. <https://vasundraraje.in>
5. <https://rasrep.com>
6. <https://phdcci.in:Impact of labour reforms on industry in Rajasthan, a survey study>.

Water Scarcity in Geetanagar

* Chayanika Borah

Abstract- *Scarcity of water has become an issue of concern for the people of Guwahati. Guwahati is under the supervision of Guwahati Municipal Corporation (GMC) which consists of 30 wards. After 69 years of Independence, GMC could provide piped water supply connections to only 14 wards which are also not sufficient as these areas are not getting 24/7 hour water. Areas like- Geetanagar, Kahilipara, Khanapara etc. do not have any water supply connection from GMC. Geetanagar is one such area in the eastern part of the Guwahati city which is facing acute scarcity of water where there is no potable water supply connection from GMC. Geetanagar (falls under ward no 21 and 24 under GMC), under Dispur Legislative Assembly Constituency, has been selected on the basis of random sampling through lottery method from the areas which face acute scarcity of water in Guwahati city. In this context this paper will focus on water scarcity in Geetanagar which has caused immense hardship for the people.*

Key Words- Water, Scarcity, Geetanagar.

Data source and Methodology:

The study is based on Analytical method. Data for the study are collected both from primary and secondary sources. The primary data has been collected from interviews conducted with the residents of Geetanagar. Hundred respondents (50 from each ward) were selected on the basis of simple random sampling for the purpose of collection of data. Interviews were conducted with Abu Ahmed, Executive Engineer, PHED, Sub Div- ii, Guwahati, on 11th June, 2015. In an Interview with Sasanka Deka, the Present Councilor of Ward no 21 on 19.04.2016 data have been collected. The secondary data has been collected from various books, journals, reports of international organizations, newspapers, Assam Legislative Assembly Debates, the Assam Gazette and Statistical Handbook of Assam etc.

Scarcity of water has become an issue of concern for the people of Guwahati. Guwahati is under the supervision of Guwahati Municipal Corporation (GMC) which consists of 30 wards. After 69 years of Independence, GMC could provide piped water supply connections to only 14 wards which are also not sufficient as these areas are not getting 24/7 hour water. Areas like- Geetanagar, Kahilipara, Khanapara etc. do not have any

* Research Scholar, North-Eastern Hill University, Shillong

water supply connection from GMC. Earlier people were dependent on their own sources of water like- tube well, ring well etc. Due to depletion of ground water level these sources of water prove inadequate. These have caused immense hardship to people. Taking that into account, in 2009 the Government of Assam passed an Act namely 'Guwahati Metropolitan Drinking Water and Sewerage Board Act' to fulfill people's need of water. But the promises by the government to provide 24/7 hour running water to people have not become a reality till today and sufferings of the people are continued. Geetanagar is one such area in the eastern part of the Guwahati city which is facing acute scarcity of water where there is no potable water supply connection from GMC. Geetanagar (falls under ward no 21 and 24 under GMC), under Dispur Legislative Assembly Constituency, has been selected on the basis of random sampling through lottery method from the areas which face acute scarcity of water in Guwahati city. In this context this paper will focus on water scarcity in Geetanagar which has caused immense hardship for the people.

Geetanagar is under Guwahati Municipal Corporation where people are facing acute water scarcity. The area of Geetanagar is under ward no 21 and 24 of GMC, with an estimated population of 7,000-10,000 and 1500-2000 households. The people in this area are dependent on their own sources of water like- tube wells, ring wells, bore wells etc. and till now there is no water supply connection from GMC and others except one satellite programme namely 'Geetanagar Pipe Water Scheme' which has covered 250 houses under PHED, was started in 1990's, the oldest scheme and it has been maintained by the user's committee by collecting revenues. Through all these initiatives, small portion of population has been covered, most of these sources are not able to supply sufficient amount of water to the people regularly and particularly these have proved in dry season ineffective.

In order to get a proper understanding of the situation of scarcity of water in Geetanagar, responses of the people have been recorded which were collected through interviews. The questions asked to them, were divided into four categories- sources of water, scarcity of water, availability of water and expenses on water.

To the questions related **the scarcity of water**, 94 percent respondents replied that they are facing scarcity. Only four percent respondents were not facing any scarcity of water as they were content with their own sources of water. The scarcity of water in Geetanagar is different for each and everyone as there are variations in the pattern of scarcity. From the study it came to notice that almost everyone faced the problem with differences. Some respondents are facing scaring scarcity throughout the year as these people do not have any personal sources of water or their sources of water have dried up permanently. Some other section are facing scarcity only in dry seasons as during this season their sources of water remains dry. In hilly parts respondents do not have personal source of water as water level has depleted.

For those respondents staying in rented houses face different kind of scarcity as these section of people have to pay extra money to get a limited amount of water from their owners. Further residents of apartments have to face scarcity as the boring facilities of these apartments could not extract much water to fulfil the need of all the residents. For these common factors respondents are facing scarcity of water in Geetanagar with various characteristics. In order to understand the seasonal variations of scarcity of water another set of question was asked to the respondents.

As far as **seasonal variation** is concerned the data collected from the field shows that 32 percent are facing scarcity throughout the year and 68 percent respondents are facing seasonal scarcity, which usually begins from November lasts till April. This picture clearly reveals that majority of people in Geetanagar are facing scarcity of water though the pattern is not similar. More than half of the respondents face scarcity in the dry season.

Though Geetanagar is under Dispur Legislative Assembly, Capital of Assam, there is no piped water supply connection in Geetanagar from GMC and other authorities till now except one scheme under PHED which covers 250-300 houses. The people of this area are primarily dependent on either their own **sources of water** or on the private water supply sources. The field survey reveals that 53 percent respondents have personal sources of water and only seven percent have access to PHED water supply connection. 10 percent of the respondents have access to common boring system where as 30 percent respondents are completely dependent on private water supply sources. Though some respondents have access to personal or PHED sources of water but these sources could not provide adequate water throughout the year. On a query to find out how the residents are doing to get are the shortage of water, it was found that people are buying water

Another set of questions were asked to find out whether **people have to buy water** or not on regular basis. 83 percent of the respondents informed that they are buying water. Among these 30 percent are found to be buying water throughout the year as they do not have any personal source of water. 53 percent are buying only in dry seasons as they get water in other seasons from various other sources.

As the study reveals that more than 80 percent respondents have to buy water, it is important to know about the financial burden of people on account of purchase of water. Questions were asked and it was found that some respondents buy water every day whether some buy water once or twice or thrice in a week. 11 percent respondents have to buy water everyday paying Rs.100-200. Other 25 percent people need to spend Rs. 100-300 in a week where as 18 percent respondents are spending Rs. 600-900 in a week. 29 percent are spending Rs. 200- 600 in a week. The data shows that scarcity of water affects all though magnitude is not same. The respondents stated they have to spend on an average Rs. 50-100 a day which amounts to Rs. 500-

3000 per month and Rs. 6000- 36000 per year. This shows that the respondents are spending huge amount of their hard earned money on water. Whereas people connected to GMC water supply have to pay water prices at a fixed rate which is very less compared to people of Geetanagar. During interview one respondent mentioned that even if sometimes they can't manage to buy vegetable but they have to buy water. From this one can come to the conclusion that affordability of water has also become a question of livelihood for the people of Geetanagar. The quantum of water supplied is a mismatch between demand and supply which compels the people of Geetanagar to buy water regularly from many private agencies and this situation become worse during the dry winter season. This scarcity has helped in unprecedented growth of private water supply agencies and over extraction of ground water has completely dried up the sources water of the nearby houses. Therefore most of the respondents are buying water regularly from private sources. They are spending huge amount of money in buying water to meet their basic need. The condition is so pathetic that the poor people in this area can't afford to take bath with a full bucket of water daily. Amulya Barman, a shopkeeper in that area, said "we are having our own sources of water like tube well and ring well, but during winter it almost becomes dry and we have to depend on private water supply sources." These are only few instances of water scarcity in Geetanagar which hampered the day to day activities of the people to a great extent. Moreover it has become a question of livelihood for the people living below poverty line.

In order to understand the extent or magnitude of scarcity of water, some questions was asked to the respondents regarding the **quantity of water** they get every day. Regarding questions related to amount of water the respondents are getting from personal or private or government sources, 18 percent respondents are getting on an average daily less than 100 litres of water and 43 percent are getting 100-200 litres daily where as 26 percent are getting 200-500 and only 13 percent respondents are getting above 500 litres of water daily. With this amount of water the respondents have to fulfill drinking, domestic work i.e. bathing, washing utensils, cooking, cleaning the house. In comparison what one finds there is a mention in GMC reports that GMC provides water supply to the people connected to GMC water supply which varies from 500-2500 litres (on an average 1500) litres of water. Another issue which has come to the light is that in some areas people are making huge profit out of the scarcity of water. For example the respondents in Kanya Mahabidyalaya Path (a by lane in Geetanagar) has mentioned that a person has provided piped water connection to nearby houses (around 10-15) from his own deep boring. He controls the supply of water on the basis of demand from those households. On an average people have to spend Rs. 100 to get 150-200 litres of water. This sort of business over water is leading to the drying up of water sources in nearby houses. It may be noted that 'The Indian

Laws confers on the owner of the land, the right to collect and dispose, within his own limits, all water under the land which does not pass a defined channel.' (Planning Commission, Yojana Bhawan, 2007)

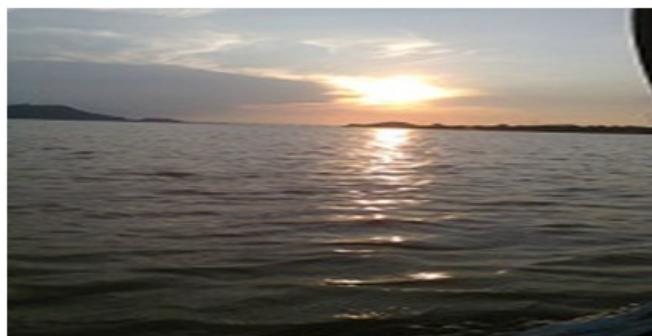
Thus Indian laws confer full control to the owners of the land to collect and dispose water beneath his land property. This legal provision in a way has come to the way of enjoyment of Right to Water of the people. As the law supports extraction of ground water, people are using more and more ground water for person use and also for making profit and thereby contributing to the problem of scarcity.

This clearly reveals the problem of Geetanagar that if there were connections from GMC than people wouldn't have to face that much of problem in terms of financial expenditure and availability of water. The Government's role in that light may be termed as inadequate in ensuring quantity and quality water to people of Geetanagar.

The Guwahati city, namely Kamrup Metropolitan District is presently served by piped water supply in specific areas with limited capability. The present water supply institutions have failed to cover not only the entire city but also fails to fulfill the standard of per capita requirement laid down by WHO. Scarcity in Guwahati is not a new problem. Almost each and every part water scarcity has made life measurable. Water as a natural resource is available in Assam in comparison to the other states in India as the river Brahmaputra flows by the city. But improper utilization of resources and lack of infrastructure and proper water purification method has led to a crisis situation. Though Guwahati is full of water resources but the people are not enjoying any water rights and they are suffering a lot for this. Almost for 20 years in every election the contesting candidates from the city are making the promise that the shortage of water of people will be taken thereof but nothing fruitful has happened. Inadequate water supply has left many families at the mercy of alternative sources.



Vehicles Carrying Water in Guwahati



River Brahmaputra

As far as Geetanagar is concerned PHED water supply scheme in Geetanagar is only for a few households which could not meet the demand of all in Geetanagar. Lack of availability and accessibility of water has made many people in Geetanagar depend on private water supply sources. This has made water a commodity and water supply has become a business now a days. This business of water supply encourages more and more extraction of ground water so that people can earn more profit. The study also shows that as people have no other option and have to depend on private water supply sources, it has led to monopoly of private water supply market and the people have to pay huge money to get water. The Government of Assam in 2010 has taken one water supply project for Geetanagar. Due to slow pace of work this is running behind the schedule compelling the people to continue to suffer.

The empirical data collected from the field study led to the conclusion that majority of the respondents in Geetanagar are facing acute scarcity of water. If one contextualise the problem of Geetanagar within the definition of Right to Water that everyone should have access to sufficient, available, affordable water, one derives the fact that Geetanagar is far behind. Further, if the situation of Geetanagar is seen from the perspective of Right to Water within the framework of Right to Life which has been envisaged under Art. 21 of the constitution of India, it may be derived that people do not enjoy Right to Water. Most of the respondents of Geetanagar do not have physical access either to personal sources of water or Government sources of water. In case of availability of water, to some respondents, neither the personal source nor Government source could fulfil the need. At times availability is below the required amount as mentioned by World Health Organisation standard. Therefore to conclude, it may be stated that Geetanagar is such an area in the city where people are suffering a lot due to scarcity of water. People of Geetanagar are expecting that their problem will be solved with the completion of the new water supply projects of the Government of Assam, but so far the situation remain grim.

=====

References :

1. Assam Legislative Assembly Debates,
2. Statistical Handbook of Assam,
3. The Assam Gazette Extraordinary,
4. Voter list of Assam Legislative Assembly,
5. “Report on the Expert Group on Ground Water Management and Ownership,”
Planning Commission, Yojana Bhawan, 2007

Action Research in Classroom (Innovative Implementation)

*** Surabhi Misra**

Abstract- *Research simple described is systematic objective and to some extent scientific method to find solution to an already existing problem or to search new facts in the branch of knowledge, action research in one of the most effective type of methodology implemented to address an existing problem and to respond to prejudiced comments and at the same time to find a compatible, practical and working solution to the problem. It has been widely used in classroom teaching by teachers of primary and secondary education and has proved to be a big success. As the bond between a teacher and a student is not limited to classroom teaching only, the present paper is an effect to discuss the use of action research as a means of professional development, its benefits, collaborative process, possible applications and implications etc.*

Key Words- Action Research, Innovations, Qualitative / Quantitative methods.

Research is an art of scientific investigation i.e. “ it is a careful investigation or inquiry specially through search for new facts in branch of knowledge”.

“Research is a systematic effort to gain new knowledge”. It is a movement from the known to the unknown (Fred N. Kerlinger, 2018)

“Research comprises defining and redefining problems, formulating an hypothesis or suggested solutions; collecting, organising and evaluating data; making deductions and reaching to conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis”.

Clifford Woody

In short, research is the search for knowledge through objective and systematic method finding solution to a problem .

Objectives of Research:

- It is always directed towards identifying and solution of a problem.
- It is always based on observable evidence.
- It involves accurate description.
- Selecting reliable / valid instruments for data collection.
- Use of statistical measures or collected data.

* Associate Professor, Juhari Devi Girls P.G. Collage Canal Road, Knapur (U.P.)

- Accurate description of results obtained.

(Mike Anderson, 2016)

Action Research:

Originally defined in the mid 1940's by KURT LEWIN, research developed and carried out to address a social problem, results of which are used to improve the situation. (For ex exploring the most effective way to respond to prejudiced comments).

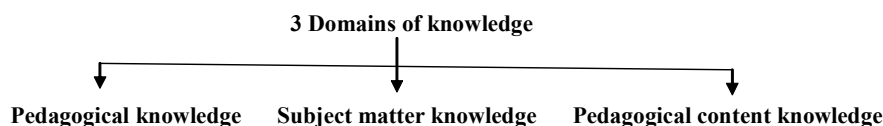
It Aims Towards:

- Hitting a practical goal.
- Improvement in a particular process or system.
- Systematic collection of data providing feedback.
- Taking actions to improve on the basis of feedback.
- Evaluating the results of these actions.
- Moreover, it may further be defined that ACTION RESEARCH, is either research initiated to solve an immediate problem or a reflective process of progressive problem solving led by individual, group or a community.
- It targets and improves the way people approach towards issues and solve problem.

(Mike Anderson, 2019)

Teacher Oriented Action Research (Toar):

It is a method for educational practitioners to engage in the assessment and improvement of their own practice.



Action research is a formative study methodology commonly practiced by school teachers.

Teachers learn to develop a practical quick and effective solution to an immediate problem.

Main purpose of the research is to improve educational programs within schools.

Action research in education involves collecting information regarding current educational program and outcome, analyse information, develop a plan to improve, observe and tabulate change after innovative plan implementation drawing conclusion regarding improvement.

Broadly it may be categorised into 4 types.

Types of AR (W. Lawrence Newman, 2010)

1. Individual Research.
2. Collaborative Research.
3. School wide Research.

4. District wide Research.

1) **Individual Research:**

Research of this type is conducted by one teacher or staff member, generally to analyze a specific task (for e.g., group discussion in a class may improve potential per student, improve their expressive skills etc) After AR is performed the teacher analyses results. Implement changes or discards the method if the program fails.

2) **Collaborative Research:**

A group of people or team work on a specific topic (introduction of a new program) Student from more than one class may be involved).

Sometimes teachers, principals, non teaching faculty etc is also collaborated, Joint research is often more beneficial than individual research.

3) **School Wide Research:**

Problem traced out and researched within entire school. The entire school staff, including the stake holders work on it.

Problem may be such as

- Lack of student attention, participation and support.
- Decreasing attendance.
- Lack of parental involvement .
- Alarming fall in performance leading to poor results.
- Non scientific approach of stake holders in providing student support services.

4) **District wide Research:**

This type of research has a much wider spectrum. It works usually on the sick and so called poor fabricated system or organisational problem within the entire district.

Staff from each school in the district collaborates to find ways and effective solutions in solving the problem.

Steps for Conducting AR:

1. Selecting an area of research (Which group of students).
2. Collecting Data.
3. Organising Data.
 - Tabulation.
 - Graphical representation.
 - Analyze data objectively and unbiasedly.
4. Analysis and interpretation of data.

Taking Action:

- Short list the suitable / feasible and appropriate actions.
- Draft short term and long term plans.
- Implement plan.
- Assess the implementation of plans.

Evaluation Result:

- Assess effect of intervention to see whether desired results are obtained.

- If improvement is visible, positive results show success of action planes.
- If vice versa, then improvise it, reformat it or change the plan entirely.

Goal of Innovative AR (John Abbott and Terry Ryan, 2001)

- Congenial, fear free, and non directed teaching class room environment.
- Teachers should adopt amicable communication and support with students.
- Teachers may present themselves as thoughtful educators and investigate self selected issues in class.
- Specific pedagogical practices.
- Dealing research as a systematic professional.
- Work on reflection and analysis of consistent student performance and progress.
- Ensure success for all students.
- Confront classroom challenges.
- Trauma faced by students whether individually or collectively.
- Traumatic experiences within school premises or even outside should be attended and dealt promptly.
- Reconstruct professional educational system.
- Collective efforts brought about by faculty members helps students improve his / her performance both individually & in groups.
- Innovations introduced to unfold hidden talent of students in co-curricular and extracurricular acuties.

References :

1. Abbott, John and Ryan Terry, The unfinished Revolution, Learning, Human Behavior and Political Paradox (2018)
2. Anderson Mike, Learning to choose, choosing to learn. The key to student motivation and Achievement (2016)
3. Kerlinger, Fred N. Foundations of Behavioral Reasearch. 2nd Ed. (2018)
4. Anderon Mike, Teacher talk to improve student teacher behavior (2019)
5. W. Lawrence, Newman. The social Research Methods. Qualitative and Quantitative Approach Peasson 7th Ed (2010).

Water Scarcity in Impact of child rearing practice on intelligence Geetanagar

* Kumari Anamika

Abstract- *In this present research 100 samples collected from different families to assess the intelligence of children which influenced by parenting. Hypothesis had been formulated that child rearing practice of the family will have significant effect on the development of children's intelligence. t test employed and analyzed data. The hypothesis is retained.*

Key Words- Parenting, development, children

Introduction: 'Parenting' may be defined as purposive activities aimed at ensuring the survival and development of children. It derives from the Latin verb 'parere' - 'to bring forth, develop or educate'. The word 'parenting', from its root, is more concerned with the activity of developing and educating than who does it (Clarke & Stewart)(1). The connotation of the word is, the parenting is a positive, nurturing activity. Thus, parenting is an activity that normally involves the children, parents and other family members in lifelong interaction. Home influence probably outweighs the effects of all other environmental impacts combined in determining the fundamental organization of children's behavior. According to psychoanalytic theory, social values and controls are largely interiorized made an integral part of the child's superego on the basis of early parent child interactions. The foundations of children's social attitude and skills are obviously laid in the home. Patterns of dependence-independence, ascendance-submission, cooperation competition, and conservatism-liberalism have their genesis in early parent-child interactions within the home. Warm or affectionate tendencies which are so important to psychological adjustment in adult life are dependent on the nature of parent-child relationships. Researchers agree that genetics and environment interact to influence intelligence, Gottlieb et al (2). For most people, this means that modifications in environment can change their IQ scores considerably. Although genetic endowment may always influence a person's intellectual ability, the environmental influences and opportunities we provide children and adults do make a difference, Ramey (3), Sternberg(4). Child rearing is not a technical term with precise significance. It refers generally to all the interactions between parents and their children. These interactions include

* J.P.University, Chapra

the parental interest, expression of attitudes, values, and beliefs as well as their care and training behaviour. Child rearing is a continuous process. Each moment of a child's life that he spends in contact with his parents has some effect on both of his present behaviour and his potentialities for future action. This process of child rearing is generally influenced by the two characteristic ways of thinking, feeling and acting, prevalent in the cultural group to which the family belongs.

Intelligence has been defined in many different ways including as one's capacity for logic, understanding, self-awareness, learning, emotional knowledge, planning, creativity, and problem solving. It can be more generally described as the ability to perceive information, and to retain it as knowledge to be applied towards adaptive behaviors within an environment or context.

Intelligence is most widely studied in humans, but has also been observed in non-human animals and in plants. Artificial intelligence is intelligence in machines. It is commonly implemented in computer systems using program software.

Within the discipline of psychology, various approaches to human intelligence have been adopted. The psychometric approach is especially familiar to the general public, as well as being the most researched and by far the most widely used in practical settings.⁽⁵⁾

In the field of cognitive development of children one urgent problem is to determine the extent to which family background factors influence the growth of creativity and intelligence of children. Creativity is, beyond doubt, a national asset and hence its quantum should be known and properly assessed. Parents, teachers and authorities should be aware of the contribution of familial factors on growth of mental potentials such as creativity and intelligence so that they might provide proper opportunities for the proper growth of these potential. So, the present study seems justified especially in Indian culture which is highly complex having varied familial structures.

Purpose and Hypothesis:

The objective of the present study was examined the effect of child rearing practice on creativity and intelligence of the respondents. The purpose was to compare between different types of child rearing practice of the respondents in terms of intelligence.

Hypothesis:

Child rearing practice of the family will have significant effect on the development of children's intelligence.

Methodology:

In view of the nature of the present research problem was used in the present study. The research work was conducted on 100 children in the age 10-13 years belonging to Urban and Rural areas of saran district. Half of the sample consisted of children belonging to small family and the other half to large family. Similarly half of the sample comprised children belonging to

single family and the other half comprised children belonging to joint family

Tools:

1. PDS
2. Mohsin General Intelligence Test (GIT)
3. Akhter's parent child relationship scale (1979):-

Result: Effect of child rearing practice on intelligence:-

Attempt were made to determine the effect of child rearing practice on intelligence of the subject Mohsin general intelligence test was administrated for measuring intelligence. The finding relating to the effect of child rearing practice on the intelligence of the subject were reduced in table-1

Table No.-1

Variable	Group	N	M	SD	SE	t	df	P
Intelligence	Rejecting parents	200	96.45	8.56	.60	9.01	398	.01
	Loving parents	200	102.85	7.14	.50			

From the table no-1 it is apparent that the difference between two means was found significant at .01 levels. The findings might be interpreted on the relational that the children of loving attitude of parents have better interaction and exposure with external world and gives strength and support to them.

Conclusion:

In the light of findings of the present study all the hypothesis formulated by the present researcher were fully retained. The impact of child rearing practice on intelligence is also observed it is found that the child rearing practice have significant effect on the development of children's intelligence.

References :

1. Clarke-Stewart, A. (2006). What have we learned: Proof that families matter, policies for families and children, prospects for future research. In A. Clarke-Stewart & J.Dunn (Eds.), *Families Count*. New York: Cambridge University Press.
2. Gottlieb, G., Wahlsten, D., & Lickliter, R (2006). The significance of biology for human development: A developmental psychobiological systems view. In W. Damon & R. Lerner (Eds), *Handbook Of child psychology* (6th ed.) New York: Wiley.
3. Ramey, C.T., Ramey, S.L., & Lanzi, R.G. (2006). Children's health and education. In W. Damon & R. Lerner (Eds), *Handbook of child psychology* (6th ed). New York: Wiley.
4. Sternberg, R.J. (2006). *Cognitive psychology* (4th ed.). Belmont, CA: Wadsworth.
5. Neisser, U.; Boodoo, G.; Bouchard, T. J. , J.; Boykin, A. W.; Brody, N.; Ceci, S. J.; Halpern, D. F.; Loehlin, J. C.; Perloff, R.; Sternberg, R. J.; Urbina, S. (1996). "Intelligence: Knowns and unknowns". *American Psychologist*. 51 (2).

Is Disaster an Equalizer?

* Homolata Borah

Abstract- *The paper outlines the differential impact of disasters sowing to societal processes, economic forces, cultural, environmental, political scenarios which hinder disaster risk management strategies. Most of the outcome based policies and international agreements have slippages in identifying differential disaster impacts. The paper entails the limitations of global disaster database. The paper also proposes capturing disaster data - on both tangible and intangible aspects - at a level of disaggregation that helps understand the differential impact of disaster in a large variety of contexts. The paper secondly contextualizes the inequality framework at a local level, Majuli Island, Assam. Further undertaking the 'ability of communities to cope with disasters' which is determined by a combination of factors: traditional knowledge, social capital, diversity of livelihood options, income levels, access to remittances, location on the island etc. These inequalities are highly context specific. Thirdly focuses on the solutions unpacking the need of designing a holistic inclusive framework accommodating issues of social, economic, cultural and political.*

Key Words- Inequality, disaster impacts, disaster database, traditional knowledge, inclusive framework.

Contextualizing disaster data in an inequality framework: Over the last twenty years, disaster risk reduction has emerged as a core development issue. There is now a widespread recognition that unless we reduce disaster losses, sustainable development will remain a pipedream. This recognition has influenced the three major international policy frameworks – the Sustainable Development Goals, the Sendai Framework for Disaster Risk Reduction and the Paris Agreement on Climate Change – adopted in 2015. (Paris Agreement, 2015; UNISDR, 2015; United Nations General Assembly, 2015). However, the policy discourse – whether global or local – seems to implicitly assume that a disaster is an equalizer. This approach suggests that all sections of society are equal before the “acts of nature” such as earthquakes and cyclones. To reduce the impact of disaster on communities that have minimum resilience we need to understand the different aspects of disaster losses. This process can be exercised through comprehensive data collection and through a holistic trans-disciplinary approach to disaster risk reduction.

* Research Scholar, Centre for the Study of Regional Development, Jawaharlal Nehru University

The global disaster database EMDAT shows that over the period 1900 to 2017, India was affected by 1,439 disasters. These disasters directly caused more than 91 lakh deaths. In addition, due to these disasters, cumulatively, more than 237 crore people were affected in terms of injuries, displacement, loss of houses or loss of livelihoods. This last figure represents double the country's current population. Since disaster impacts are concentrated in specific areas (e.g. Indo-Gangetic plains for flood, northwestern states for drought, Himalayan states for earthquake, and coastal belts for cyclone), this implies that in these areas many people get affected by disasters more than once – perhaps several times – in their lifetime, while people living in less disaster prone areas may not directly experience a disaster for a couple of generations. The impacts are highly unequal across geographies.

The global disaster data has two principal limitations. First, it captures only those disasters where the losses exceed a certain threshold. Hence it does not capture the story that the cumulative impact of 'small' disasters might tell us. Second, the global disaster data captures only tangible losses on a few parameters. There are many other intangible losses – loss of social capital, erosion of local institutional mechanisms, mental health impacts, loss of cultural heritage etc. – that are hard to capture in a global database. There is anecdotal evidence that if local and national disaster databases address these limitations, they would reveal an even starker picture of inequality of disaster impacts.

A holistic perspective of disaster is important for risk assessment and risk reduction processes. Its understanding suffers from undocumented, often intangible losses during disasters. To construct the understanding of disaster framework, a comprehensive set of indicators of disaster risks have to be identified. The process of identification of such indicators has been popularly practiced through natural sciences, engineering and economic approaches, but knowledge accumulation, understanding of social processes, social interventions, social challenges needs incorporation in the umbrella framework of understanding 'disaster' as a concept. Capturing all disaster elements is challenging due to lack of understanding of the differential impact of disaster.

We understand the differential impacts in different sectors of societal processes but we lack an accurate approach for study. This gap of understanding can be bridged by developing a holistic approach wherein all disciplines come together to study disaster risk along with development of data documentation processes from micro to macro level to provide empirical support.

Inequalities in disaster impacts at the local level: case of island of Majuli

Patterns of inequality of disaster impact also exist at the local level, even within a highly disaster prone region. According to census 2011, with more than 1,50,000 people Majuli district in Assam is the largest inhabited river island of the world. The island gets flooded by the river Brahmaputra at least

twice a year. Owing to its unique river morphology, there is constant erosion of the island. Over the last hundred years, the island has lost massive amount of its landmass. In addition, the threat of a significant earthquake always looms large. Even in such a concentrated zone of high disaster risk, there are huge inequalities in disaster impacts. The ability to cope with disasters is determined by a combination of factors: traditional knowledge, social capital, diversity of livelihood options, income levels, access to remittances, location on the island etc. These inequalities are highly context specific. No single factor, such as income level, can be isolated as the sole determinant of people's vulnerability or resilience. For example, households in Mishing tribe may have low income but they have a highly evolved house structure that is capable of withstanding floods for long periods. Similarly, some agricultural households may be barely above the poverty level but may be resilient to floods due to highly adaptive agricultural practices involving traditional paddy varieties that can withstand floods.

Weaving Solutions:

The international and national discourse on disaster risk management does not take into account these inequalities. For example, the Sendai Framework, as its first targets calls for "significant reduction in mortality per 100,000 population". In other words, if the disaster mortality remains high among the poorest households, and declines among the rest such that the total disaster mortality declines, we will still meet the target. The target, while laudable, fails to explicitly focus on the most vulnerable. The same "inequality-blindness" permeates through the other loss reduction targets under the Sendai Framework – reduction in number of affected people, reduction in economic losses, reduction in infrastructure losses. In fact, the target on economic losses is even more problematic. If by 2030, the world succeeded in reducing economic losses amongst the richest sections of society and during this period the economic losses increased marginally for the poorest, the world will still have achieved the target of reducing economic losses from disasters. The poor have less to lose in absolute terms but relative to their household income the losses may be catastrophic.

Similarly, the Disaster Management Act of 2005 makes perfunctory mention of "vulnerable groups" but it fails to provide anything substantial for those who are repeatedly affected by disasters. It doesn't even recognize the need for understanding differential vulnerability to disasters.

While it is too late to address this anomaly in the Sendai Framework, India has the opportunity to address this in its own policy discourse and its own approach to the implementation of Sendai Framework.

The two suggested specific way forward: First, as the government mulls over the amendment of the Disaster Management Act of 2005, there is an opportunity to evaluate all proposals for amendment through this single most important criteria: how will the amended Act address the needs of those who

are affected by disasters repeatedly and those who bear the disproportionate impacts.

Second, it is high time that a national system is set up to capture disaster data – on both tangible and intangible aspects – at a level of disaggregation that helps understand the differential impact of disaster in a large variety of contexts.

Both the above actions will be highly challenging but, underpinned by multi-disciplinary research on disasters, have the potential to set the disaster risk management practice in the country on a path that will help reduce losses across the board, even for those who live in the most disaster prone areas and are most vulnerable.

References :

1. Paris Agreement. (2015). United nations framework convention on climate change. Paris, France. <https://doi.org/10.1017/s0020782900004253>
2. UNISDR. (2015). Sendai Framework for Disaster Risk Reduction 2015 - 2030. Third World Conference on Disaster Risk Reduction, Sendai, Japan, 14-18 March 2015., (March), 1–25. <https://doi.org/A/CONF.224/CRP.1>
3. United Nations General Assembly. (2015). Transforming our world: The 2030 agenda for sustainable development. <https://Sustainabledevelopment.Un.Org/Content/Documents/7891Transforming%20Our%20World>. Pdf, (1), 1–5. <https://doi.org/10.1007/s13398-014-0173-7.2>
4. <https://www.emdat.be/> Accessed on 23rdSeptember, 2018.
5. <http://www.censusindia.gov.in> Accessed on 23rdSeptember, 2018.

A study of Problems faced by MSME's in Madhya Pradesh

* Vivek Sharma
** Neha Agrawal

Abstract- *In developing countries like India MSME's play a vital role in the development of economy. As per the population of India this sector has a wide scope. MSMEs are the backbone of the Indian economy and have become engine of economic growth in India. If MSME's are developed other problems of economy can be dissolved automatically. But in completion with other large scale industries these have to face so many problems. If efforts are taken these problems can be solved and this sector can help in the development of India.*

Key Words- Micro Small and Medium enterprises, growth rate, Problems.

Introduction: Indian Micro Small and Medium Enterprises (MSME) area has developed as a very energetic and dynamic segment of the Indian economy in the course of the most recent five decades. SMEs not just assume urgent job in giving substantial work openings at similarly bring down capital expense than extensive enterprises yet in addition help in industrialization of provincial regions. MSMEs are reciprocal to substantial businesses as auxiliary units and this area contributes colossally to the financial improvement of the nation. In spite of their high excitement and inalienable abilities to develop, MSMEs in India are likewise confronting various issues like imperfect size of activity, mechanical oldness, inventory network wasteful aspects, expanding residential and worldwide rivalry, working capital deficiencies, not getting exchange receivables from vast and multinational organizations on time, lacking gifted labor, change in assembling methodologies and violent and indeterminate market situation.

Objectives: The main objectives of the present study are:

- To study the growth and performance of MSME's.
- To analyse the problems of micro small and medium scale industries.

Research Methodology: The Data required for the study has been collected from Primary and secondary sources.

The primary data is collected through questionnaire. The Secondary Data Collection includes (i) Annual Reports of Ministry of Micro, Small and Medium Enterprises, Government of India, (ii) Various Websites related with

* Director, C. Rajagopalachari Institute of Management, Barkatullah University, Bhopal
** Research Scholar, Barkatullah University, Bhopal, India

the relevant information of MSMEs (iii) Papers from Journal's (iv) Articles and (v) other published sources for MSMEs.

Limitations of Study: 1 Incomplete Information:

Study is completed with the help of available information from the questionnaire and secondary data only. **2 Limit of Time:** Study has completed in given time period.

Definition of MSME:

Definitions which have been operationalized for the purpose of study are as follows: According to the provision of *Micro, Small & Medium Enterprises Development (MSMED) Act, 2006* the Micro, Small and Medium Enterprises (MSME) are classified in two Classes:

a) Manufacturing Enterprises:

The enterprises engaged in the manufacture or production of goods pertaining to any industry specified in the first schedule to the industries (Development and regulation) Act, 1951 or employing plant and machinery in the process of value addition to the final product having a distinct name or character or use. The manufacturing enterprises are **defined in terms of investment in plant and machinery.**

b) Service Enterprises:

The enterprises engaged in providing or rendering of services and are **defined in terms of investment in equipment.** The limit for investment in plant and machinery / equipment for manufacturing / service enterprises, as notified, are as under:

Definition of MSME

Classification of MSMEs	Manufacturing Enterprises – Investment in Plant & Machinery	Service Enterprises Investment in Equipments
Description	INR	INR
Micro Enterprises	up to Rs.25 Lakhs	up to Rs.10 Lakhs
Small Enterprises	above Rs.25 Lakh & up to Rs.5 Crores	above Rs.10 Lakh & up to Rs.2 Crores
Medium Enterprises	above Rs.5 Crores & up to Rs.10 Crores	above Rs.2 Crores & up to Rs.5 Crores

Analysis of Performance And Problems of MSMEs:

It is clear from the below table that MSME has shown constant growth in number of MSMEs every year. It was 14300 in the year 2007-08 which is increased to 18660 lakhs registered MSMEs in 2013-14, 19385 in 2014-15 till 206142 lakhs in 2017-18 which has shown impressive growth trend of increasing registered MSMEs. Madhya Pradesh's MSME sector has also attracted significant investment which presents the confidence of investors in the state of Madhya Pradesh.

The surge in growth of MSME Industry in Madhya Pradesh has generated a significant level of employment for Madhya Pradesh over the years.

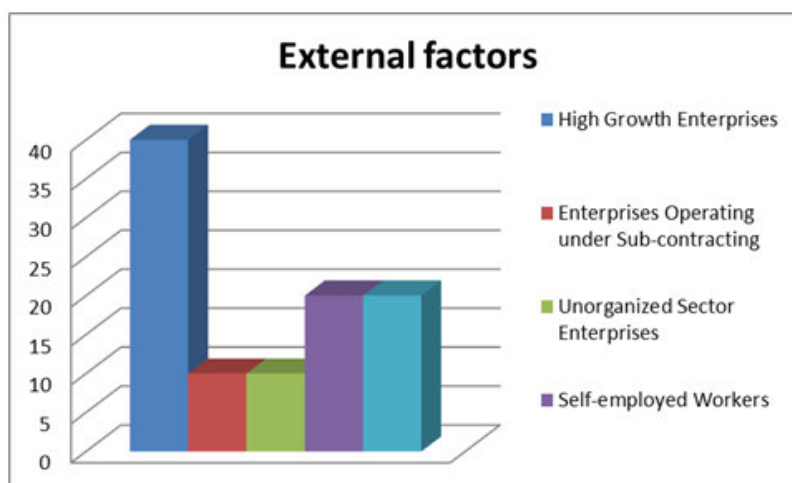
Table
Growth and performance of MSME's

Sr. No.	Year	Registered MSME	Investment (in crore)	Employment
1.	2007-08	14300	110.89	15680
2.	2008-09	14890	186.97	25083
3.	2009-10	15219	220.65	31074
4.	2010-11	15765	320.90	36987
5.	2011-12	16240	455.01	38000
6.	2012-13	17910	550.40	40760
7.	2013-14	18660	620.49	45007
8.	2014-15	19835	750.04	51571
9.	2015-16	48179	5171.45	194761
10.	2016-17	87071	9547.32	363812
11.	2017-18	206142	14401.67	596990

Problems or Challenges Affecting Working of MSMEs Externally:

The below chart mentions the problems that are faced by the firms in conducting their businesses. The survey for this is done by considering external and internal challenges which influence the working of MSMEs.

As per given ranks to different problems calculations are done the details of which are mentioned below:



a) High Growth Enterprises :- These incorporate MSMEs in segment like textiles and garments, leather items, auto segments, medications and pharmaceuticals, food processing, information technology(IT) equipment and gadgets, paper, chemicals and petrochemicals, telecom equipment and so forth.

One of the significant requirements in development of such endeavors is access to equality capital. Directly, there is relatively negligible stream of equity capital into this area notwithstanding the way that generally speaking such capital inflow has seen huge increment in the ongoing years. There is, along these lines, a need to advance inflow of equity capital into this segment

by giving appropriate incentives to MSMEs-centered angel/venture capital and also by setting up of MSME's Exchanges/Platforms.

b) Enterprises Operating under Sub-contracting : Promotion of sub-contracting has been one of the important ingredients of the policy envisaged for the development of MSMEs in Madhya Pradesh. However, in view of the dependent relationship of such enterprises with the large enterprise, they also face several problems. Some of the major problems include the following:

1. Delays in payments.
2. In case of rejection, the small firms end up with practically no option but to dispose off their products.
3. Linkages such as financial and supply of raw material are seldom provided by the buyer enterprises.
4. Buyer enterprises are not bothered to ensure that such enterprises operate with minimum working conditions or comply with various regulations related to their working.

c) Unorganized Sector Enterprises : Unorganized sector enterprises are commonly settled through own-funds got through non-institutional sources. They need administrative transmission capacity, don't have built up channels for promoting and are based on a solitary customary technology.

The workers in the unorganized economy are plainly the staggering extent of the workforce and the greater part of these experience the ill effects of different types of insecurities and vulnerabilities. It pursues that approaches need to concentrate on enhancing their conditions.

A considerable extent of wage laborers in agriculture and non-agriculture are either landless or land poor. Independently employed in agriculture have better to land proprietorship. Unorganized workers have the most reduced dimension of training and proficiency. Scheduled Castes (SCs), Scheduled Tribes (STs) and Muslims are overwhelmingly concentrated in the unorganized part and in independently employed exercises to meet their livelihood needs.

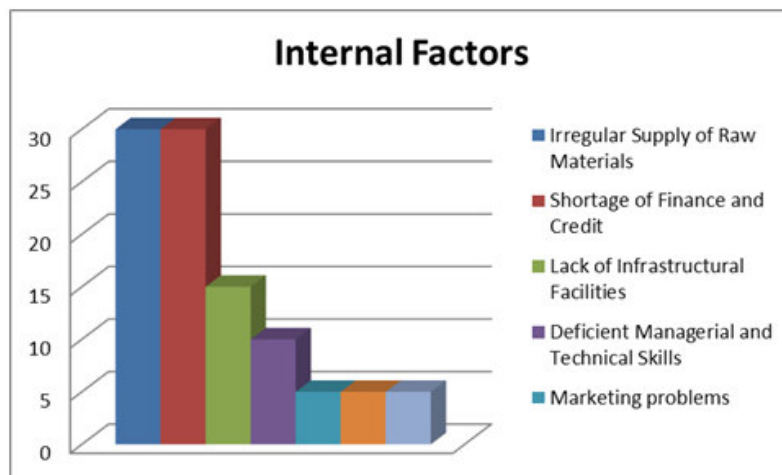
d) Self-employed Workers: In agriculture, the self-employed are the different classifications of minor, little and large agriculturists. In non-agriculture, greater part of the self-employed are own account specialists, i.e. engaged with little ventures regularly with the assistance of family labour or one or two outside laborers. Weak presence or even absence of authoritative capital is a basic issue.

An essential portion of the self-employed laborers are the road sellers/peddlers in India who manage insignificant exchange. The street vendors interact with different segments of urban population and have a specific role in urban society and space. However, lack of recognition of their role culminates in a multitude of problems faced by them: obtaining license, insecurity of earnings, insecurity of place for hawking, gratifying officers and musclemen, constant eviction threat, fines and harassment by traffic policemen

e) Social Security Concerns for the Unorganized Workers : Laborers

in the informal economy are barred from the systematized social security cover. Health security is a prime worry for the informal division laborers. Studies have shown that diminished public health expenditure use can have adverse impact on the workers and their families. Diseases requiring hospitalization could be cataclysmic for poor laborers. The health related vulnerabilities referenced above can be aggravated, particularly for the poor family units, because of the way that there has been a lofty ascent in the expense of treatment for human services in Madhya Pradesh in recent years.

Problems and Challenges Affecting the Working of MSMEs Internally:-



a) Irregular Supply of Raw Materials: MSME's for the most part rely upon nearby local sources of raw material. They need to buy raw material in little amounts and regularly on credit. Evidently, they can't rival large scale enterprises in the obtainment of raw material. In many cases, the raw material is a imported. Frequently, small enterprises need to pay a more expensive rate for sources of inputs and suffer uncertainty in their acquisition.

Non-accessibility of quality raw materials like colors and yarn (particularly for handlooms and powerlooms), crucial data sources like power (for powerlooms, crafted works, other mechanical MSMEs) and proper packaging facilities keep on being major bottlenecks. MSMEs confront intense raw material issues as far as accessibility requirements, budgetary imperatives to buy them and price instability, where they are compelled to take the brunt.

b) Shortage of Finance and Credit: Shortage of fund is a noteworthy impediment in the advancement of small enterprises. The capital base of the small entrepreneur is typically weak and frequently he needs to get credit at a high rate of interest. Troubles in documentation for bank credits and absence of insurance security are more serious issues in India than in the majority of other developing nations in Asia. An arrangement of incorporated credit ought to be advanced to meet the long term and short-term credit prerequisites of the small enterprises at reasonable rate of interest.

c) Lack of Infrastructural Facilities: Many small industries in backward areas are still deprived of infrastructural facilities like power, transport, and communication services. This has hampered their proper and efficient working thereby retarding their development.

d) Deficient Managerial and Technical Skills: The improvement of the small scale sector has been hampered because of the deficiency of trained and experienced administrative and supervisory work force. Arrangement of technical services is expected to animate beneficial effectiveness and new product offerings.

Most MSMEs don't have cash to put resources into statistical surveying and can't complete plan and specialized upgrades to stay aware of market requests. In contrast to huge organizations, they can't put resources into promoting and bundling. This restricts their capacity to tap markets and attract consumers. MSMEs, particularly those relating to conventional livelihood, are accordingly, progressively being compelled to depend on middlemen, negligible merchants and large organizations to advertise their items. This has decreased numerous to the status of daily workers, acquiring not exactly the minimum wages.

e) Marketing problems: Access to marketing is a noteworthy imperative for enterprises in unorganized sector. This segment creates a substantial extent of industrial output in the economy but then the division turns out to be quickly helpless because of unpredictable, divided and moving interest that is normal for National and International markets today.

Advertising issues of MSMEs are particular from those that the organized sector faces. Most importantly, there is no unmistakable idea of publicizing, as the client base is the neighborhood populace or broker. On not very many events is the maker really thinking as far as focusing on a market and building advertising systems around that. By and large, the organized markets as accessible in the urban communities or towns are too far the maker in the organized division to be in a situation to impact it or target it intentionally.

f) Technological Obsolescence: The technique of production used in numerous small enterprises like weaving and wood cutting is outdated. This has prompted high generation cost and output of inferior quality products. Henceforth, modernization of innovation is critically required to make small enterprises proficient. Technology is a standout amongst the most basic components in the development of the smaller sector. In any case, small enterprises in Madhya Pradesh are losing their aggressive edge in the worldwide markets because of absence of modern technology. Because of outdated technology, cost of assembling is a lot higher than in the other developing nations in Asia. Tending to these issues to guarantee a lively MSMEs sector is fundamental for continued and comprehensive development.

g) Challenges of Globalisation: Because of advancement and opening up of the economy, MSMEs are confronting solid rivalry from imports and

need technological upgradation to deliver better quality items at cheap rates. They ought to have the capacity to get to generation supply units around the globe through the internet. Information dissemination about accessibility of recent technologies, literature on current hardware, contact subtleties of providers and so on is fundamental.

Numerous fragments of MSMEs particularly the conventional segments, think that its hard to contend with forceful advertising by the huge local and worldwide players. Road sellers, negligible brokers, handloom and powerloom weavers, locally established food processing units, Khadi organizations, zari specialists and provincial craftsmans, huge numbers of whom have even lost jobs and work environments because of developmental works, are the most noticeably bad influenced. There is a need to advance a productive reaction to this circumstance. As these segments utilize the most underestimated, our indigenous/customary ventures ought to be offered chances to tap both the domestic and global markets.

Suggestions from the Study: The following are some suggestions based on the analysis.

1. The Government should find a way to teach the business people with respect to different plans, motivations and different endowments and all the Government support should reach the entrepreneurs on time and when required.
2. The infrastructural offices in the industrial domains ought to be improved in request to motivate the business entrepreneurs to make progress toward better efficiency and performance.
3. Indian firms ought to be empowered to get to the most recent innovation over the globe. Indigenous innovative work of creative strategies should be empowered.
4. The Government and monetary organizations ought to present measure for build/recovery of potentially viable sick MSME units.
5. The business, research foundations and academicians ought to be encouraged and urged to work in cooperation so as to improve industry abilities. The linkage between the MSMEs and the educational foundations ought to further improve.

Conclusion:

The MSME sector in India and especially in the State of Madhya Pradesh has undoubtedly witnessed significant growth from the year 2008-09. The facts and figures clearly show the number of registered units both in India and in Madhya Pradesh has increased, which has also led to substantial growth in investment and employment. The State is blessed with considerable nationalized financial institutions and private banks which have approached to stretch out monetary help to the MSME division. Without their help, this rate of development would not have been conceivable. The promotion of MSME's is vital in developing any economy to achieve economic self-

dependence & development of entrepreneurs. To empower the small scale sector it is necessary to support the MSMEs, educate and aware them to make optimum utilization of the limited resources, both human and economic, to achieve satisfactory success. In spite of the significance of the MSMEs in Madhya Pradesh's monetary development, the segment is confronting difficulties and seeks help from the concerned Departments, Banks, Financial Institutions and Corporates which is turned out to be an obstacle in the development way of the MSMEs. The SSIs required to get awarded, educated and supported to acquire skills which is necessary to keep pace with the global developments.

References :

1. Das, K. 'SMEs in India: Issues and Possibilities in Times of Globalisation' 2008.
2. Divyang Kiritkumar Vyas, Growth and Performance of Indian Micro, Small and Medium Enterprises (MSMEs) in the Post Globalization Period, May 2013, Indian Journal of Research, volume 3, Issue 4, ISSN:2250-1991.
3. Ishu Garg, Suraj Walia, Micro, Small and medium enterprises (MSMEs) in post reform India: status and performance, 2012, International Journal of Latest Trends in Engineering and Technology (IJLTET)
4. KD Raju, "Small and Medium Enterprises (SMEs): Past, Present and Future in India", January 2008, PHDCCI Working Paper.
5. RAJIB Lahiri, Problems and prospects of micro, small and medium enterprises (MSMEs) In India in the era of globalization.
6. Reddy T. Koti- "Problems & Prospects of Small Scale Industries in India"
7. Vaibhav Jain, "MSMEs in India: It's Growth & Problems", 2013, Indian Multidisciplinary Research Journal Volume 1, Issue.II, ISSN:2320-7434.
1. www.msme.org.in
2. www.shodhganga.inflibnet.ac.in

The 21st Century Learning Environment: Emerging Challenges for an ODL Educator and the Policy Options

* Bhaskar Sarmah

Abstract- *The last score of years have recorded impressive growth in information and communication technology and mobile technologies. The present Generation named as Generation Alpha or iGeneration are tech-savvy. A life with gadgets and apps are beyond imagination for Generation Alpha. As a result, the delivery of education has also to change to accommodate the use of technologies in the delivery of education. This paper makes an attempt to highlight the challenges faced by a higher educational institute in general and an open and distance learning ((ODL) provider in particular. Particular attention has been laid on discussion the emerging challenges faced by an ODL educator. Towards the end, certain policy measures have been suggested to cope up the challenges brought about by the extensive use of technologies in the delivery of education through the open and ODL mode.*

Key Words- Android apps and devices, Information and Communication Technology, Learner support services, Mobile learning, Social networking.

1.0 Introduction: Distinctive Features of the Current Generations:

It was Mark McCrindle, a social researcher in Australia who first coined the phrase *Generation Alpha* to describe the generation born between 2010 and 2025. Interestingly, McCrindle has advocated a shorter span of 15 year for *Genration Alpha*, basically on the argument that the rapid technological changes and shifting societal values, such a shrink in the generational boundaries does make sense (AdAge, Jan 22, 2019). Generation Alpha has also been called as *iGeneration* and as the first generation of the millennial has been termed as the most influential generation of the 21st century (Fourtané, S., December 22, 2018).

McCrindle has estimated that by the year 2025, the last year Alphas, a population of over 2 billion Alphas will be there in the globe. Again, by that time, there will be a population of around 1.8 billion people of *Generation Z* (which McCrindle defines as people born between 1995 and 2009) in the globe. The rest of the population living in that period would belong to the other preceding generations. (AdAge, Jan 22, 2019)

* Assistant Professor in Economics, Krishna Kanta Handiqui State Open University Assam.

1.1 *Distinctive life styles of the Alpha Generation:*

Owing to the advancement in ICT and mobile technologies, a few distinctive features has emerged that distinctively position *Generation Alpha*. These include:

- ***A device- and app-based life:***

Interestingly, Generation Alpha coincided its birth year with the launch of the i-phone in 2010. As many argue, Generation Alpha use smartphones and tablets naturally. Children of this generation were born along with iPhones, iPads, and applications. A life was without devices and applications is beyond their imagination. Unlike the previous generations, Generation Alpha are not afraid of technology or touching buttons to learn what those buttons do. Alphas learn by doing. (Fourtané, S., December 22, 2018). Obviously, the biggest want of this generation are devices and screen time (AdAge, Jan 22, 2019).

- ***Bigger role in decision making:***

Generation Alpha today acquire more bargaining power in family decision making than ever before. As indicated by Jeff Fromm, one of the researches in Generation Studies, the power of Generation Alpha extends well beyond technology. According to Fromm, “The family unit is more democratized than ever before,Kids are influencing many purchases: big expensive trips, eating out—they’re included more in the conversation.” (*Ibid*). This could happen probably because the Generation Alpha being gadget savvy, could collect important information much easily at a fraction of second. This put them ahead of others in gathering the necessary information for decision making in a given situation.

2.0 **Significant Changes in the 21st Century Learning Environment:**

McCrindle (AdAge, Jan 22, 2019) has said: “Generation Alpha will be the most formally educated generation ever, the most technology-supplied generation ever, and globally the wealthiest generation ever.” Similarly, other researchers also has indicated that Generation Alpha too a great extent will be ‘self-learner’. They would gather information themselves, filter the information and process them as per need.

While talking about the 21st century learning environment, we must remember that Generation Z is also forms an active populace of this learning environment. The children of Generation Z born in the later part of Generation Z are also equally technology savvy. However, the children born in the early phase of Generation Z may not be that tech savvy, compared to the Generation Alpha children.

Let us briefly view the different educational media and technologies a 21st century learner could use today. Some of these technologies are age old, yet they are still functional in use.

Table 1: List of Educational Media¹ and Educational Technologies²

Sl	Educational Media	Educational Technologies & Tools ¹
1	Audio	Storytelling, Lectures, Debate, Radio, Audio Tapes, Audio CDs, Camera, Sound Mixtures
2	Text	Blackboards, Books, Journals, Newspapers, Magazines, Letters and Correspondences, Reports, Archival Records
3	Graphics, Imaging and Basic Mechanisation	Statistical Graphs, Pictures, Abacus, Educational Toys and Games, Calculators, Other basic educational tools (Scale, Geometry Tools, Colour pencils, Prism, Globe, Laboratory Equipments etc.)
4	Video	Televisions programmes, Video CDs, Motion Pictures and Cinema, Documentary, Digital Video Discs (DVDs), Digital Video Camera, Projectors
5	First Generation Computing	Computers, Laptops, Web 2.0, Internet, Emails, Video Conferencing, Online Chat
6	Second Generation Computing	High Performing Computers, Laptops, Social Networking, Web 3.0, Blogs, Online Learning, Open Educational Resources, Learning Management Software (MOOCs etc), Tele-Conferencing.
7	Mobile Communication, Mobile Apps	Mobile phones, Smart phones, Tablets, Laptop, Tablet PCs, Wireless Dongles, I Pads, Android Apps

2.1 Some of the recent educational technologies in the field of higher education: Sarmah, B. (2017) presented a list of all the recent available educational technologies under four major heads, viz., e-Learning, Social Learning, Lesson Planning and Tools and Other Useful Tools. Six examples in each category was presented. It has been reproduced in Table 2.

Table 2: Some of the Recent Educational Technologies and their Uses in Higher Education

Category	Name of the Technology	Description and Uses	Web source.
e-Learning	Khan Academy	Khan Academy was created in 2006 by educator Salman "Sal" Khan with the aim of providing a "free, world-class education for anyone, anywhere". Many teachers use this excellent collection of math, science, and finance lectures and quizzes to supplement their classroom materials.	https://www.khanacademy.org/
	Knewton	Knewton was founded in 2008 by Jose Ferreira. It is an adaptive learning company that offers a platform to personalise educational content.	https://www.knewton.com/
	MIT Open Courseware	MIT OpenCourseWare (MIT OCW) initiative was undertaken by the Massachusetts Institute of Technology (MIT). The project was announced on April 4, 2001 and uses Creative Commons Attribution-Noncommercial-Share Alike license. It aimed at bringing all educational materials from its undergraduate- and graduate-level courses online, freely and openly available to anyone, anywhere.	http://ocw.mit.edu/index.htm

	NPTEL	The National Programme on Technology Enhanced Learning (NPTEL), is a project funded by the Ministry of Human Resource Development (MHRD). It provides e-learning through online Web and Video courses in Engineering, Sciences, Technology, Management and Humanities. This is a joint initiative by seven IITs and IISc Bangalore.	http://nptel.ac.in/
	Open Education Consortium (OEC)	OEC is a non-profit, social benefit organization registered in the United States and operating worldwide. It is a global network of educational institutions, individuals and organizations. Its approach to education is based on openness, including collaboration, innovation and collective development and use of open educational materials.	http://www.oecconsortium.org/
	StudySync	StudySync is a fully-featured tool for teaching and learning that can be a big help in the classroom. It is rich with a digital library, weekly writing practice, online writing and peer reviews, Common Core assignments, and a large number of multimedia lessons.	http://www.studysync.com/
Social Learning	Edmodo	One of the most innovative tools of the recent times, Edmodo was founded by Nic Borg and Jeff O'Hara in 2008. Edmodo enables teachers to share content, distribute quizzes, assignments, and manage communication with students, colleagues, and parents..	https://www.edmodo.com/
	EduBlogs	An edublog is a blog created for educational purposes. Edublogs archive and support student and teacher learning by facilitating reflection, questioning by self and others, collaboration and by providing contexts for engaging in higher-order thinking.	http://edublogs.org/
	ePals	One of the benefits of the Web is being able to connect with anyone, anywhere. ePals does just that. It primarily focuses on helping students to learn languages and understand cultures different from their own.	https://www.epals.com/
	Grockit	Grockit was founded in 2006 by Farbood Nivi, and in 2013 was acquired by Kaplan Inc. Grockit prepares students for the SAT, ACT, GMAT, LSAT and GRE standardized exams. Students can take practice tests while collaborating online with other users. This also enables the teachers to connect the students with each other.	https://grockit.com/

	Skype	Skype was first released in 2003 by Niklas Zennström and Janus Friis. Skype is an application that provides video chat and voice call services. Users may exchange such digital documents as images, text, video and any others, and may transmit both text and video messages. It allows the creation of video conference calls. It can also be used for keeping in touch with other educators or even attending meetings online and can help teachers to connect with other classrooms in other countries.	www.skype.com
	Quora	Quora was co-founded by two former Facebook employees, Adam D'Angelo and Charlie Cheever. It is a question-and-answer site where questions are asked, answered, edited and organized by its community of users.	https://www.quora.com/
Lesson Planning and Tools	Google Docs	Through Google Docs, teachers can create and share documents, presentations, or spreadsheets with students and colleagues as well as give feedback on student-created projects.	https://www.google.com/docs/about/
	MasteryConnect	Through MasteryConnect's Mastery Tracker, teachers can effectively assess core standards, monitor student performance, and report student mastery to parents and administrators.	https://www.masteryconnect.com/
	Mentor Mob	MentorMob is a website that presents media (videos, pictures, files) from the internet and groups them as "learning playlist." Users can create a "learning playlist" based on a selected topic and share it over the internet. It also allows collaboration similar to a Wikipedia. The high-quality materials in Monitor Mob can be easily used to study a specific concept.	https://www.mentormob.com/
	Planboard	Planboard helps a teacher to get organized and reduce your classroom preparation time. It is accessible from anywhere. A teacher can plan lessons, add curriculum sets, and manage class schedules with ease.	https://www.planboardapp.com/
	Quizlet	Quizlet is a place where everyone can share knowledge in any subject, at any level and gain confidence as a learner. All the content in Quizlet is created by the users themselves. Quizlet makes it easy for teachers to create study tools for students, especially flashcards that can make memorizing important information at much ease.	https://quizlet.com/
	YouTube	YouTube is an American video-sharing website located in the United States. The service was created by three former PayPal employees in February 2005. In November 2006, it was bought by Google.	https://www.youtube.com/?gl=IN

		YouTube allows users to upload, view, rate, share, and comment on videos, and it makes use of WebM, H.264/MPEG-4 AVC, and Adobe Flash Video technology to display a wide variety of user-generated and corporate media videos.	
Other Useful Tools	DonorsChoose	DonorsChoose.org is a US-based nonprofit organisation. It was founded in 2000 by former public school teacher Charles Best. DonorsChoose.org was among the first civic crowdfunding platforms of its kind. It allows individuals to donate directly to public school classroom projects.	https://www.donorschoose.org/
	Google Earth	From geography projects to learning about geological processes, Google Earth can be an amazing and fast way to show students anywhere in the world.	https://earth.google.com/
	MOOCs (Massive Open Online Courses)	The first MOOC emerged from the open educational resources (OER) movement. A MOOC is an online course aimed at unlimited participation and open access via the web. In addition to traditional course materials, many MOOCs provide interactive user forums to support community interactions among students, professors, and teaching assistants.	https://www.mooc-list.com/
	SlideShare	Slideshare was launched in 2006. The website is considered to be similar to YouTube, but for slideshows. LinkedIn SlideShare is a Web 2.0 based slide hosting service. Here, Users can upload files privately or publicly in the following file formats: PowerPoint, PDF, Keynote or OpenDocument presentations.	www.slideshare.net/
	Twitter	Twitter was created by Jack Dorsey, Evan Williams, Biz Stone, and Noah Glass in 2006. It is an online social networking service that enables users to send and read short 140-character messages called "tweets". Registered users can read and post tweets, but those who are unregistered can only read them. There are so many ways Twitter can be used in education. Teachers can connect with other educators, take part in chats, share their ideas, or even use it in the classroom to reach out to students.	https://twitter.com/?lang=en

Source: Reproduced from Sarmah, B. (2017, pp. 58-63.)

A scan of Table 1 and 2 indicates the vast resources available to the learners in the 21st century. Many of such technologies, particularly presented in Table 2 were hardly available at least prior to the last score of years. Under such circumstances, the role of a today's teacher become that of a facilitator and mentor for guiding these students with respect to their curriculum of study.

2.2 How can a HEI face the challenges?

Again, to keep in pace of the present days' changing technological environment and its impact on the field of education, Saavedra and Opfer (2012) laid down a few criteria a higher educational institute should follow. Those include: (1) offering only a relevant curriculum, (2) practical component

should be given the prime importance to the extent possible, (3) thinking skills should be developed, (4) transfer of learning should be encouraged, (5) students should be trained with self-learning skills, (6) any misunderstanding or misconceptions should be addressed directly, (7) teamwork should be encouraged, (8) students should be trained in proper use of technology to support their learning and (9) creativity should be fostered.

3.0 Effects of Using Technologies on the Delivery of Open and Distance Learning:

Unlike traditional mode of education, open and distance learning has to primarily depend on a host of technologies to deliver its course materials. Such supportive technologies are broadly termed as learners support services (LSS). Provision of LSS try to meet a few objectives. First, LSS are offered such that the learners can fulfil the want of a regular teacher. Secondly, use of technology in ODL facilitate learning: (by) Anyone, (from) Anywhere, and (at) Any time. These 3 As provide the philosophical foundation of ODL. Dr. Desmond Keegan (n.d.) has rightly put the necessity and use of technologies in the following words:

[One of the major manifestations of the use of technology in education is distance learning. This is because in conventional education technology is a supplement to the teacher and used by the teacher to make the content of the course more persuasive. In distance education, however, technology is a substitute for the teacher (and not just a supplement). The essential of distance education is that it replaces the interpersonal communication between the teacher and the taught and replaces it with apersonal form of communication mediated by technology.]

Further, Dr. Desmond Keegan (*ibid*) has pointed out that today, distance education has emerged as a rich and complex concept to deliver education and training in five major fields. These include: (a) *Distance education*: this includes education and training offered in distance mode by the Open and Distance Teaching Institutions/Universities and directorates of distance education of conventional institutions. (b) *E-learning*: this includes education and training provided via the World wide web (WWW) for students basically through the use of Learning Management System (LMS) (or virtual learning environments) like Moodle, WebCT and Blackboard. (c) *Synchronous e-learning systems*: This is similar to E-learning. However, here, the student study mainly in groups using LMSs like Centra or Horizon Wimba. (d) *WWW substitute for traditional lectures*: Here, the traditional lectures are supplemented by lectures through the WWW. Sometimes, traditional lectures may be substituted by WWW lectures. (e) *Mobile learning*: This is the latest in the list. This means education and training are provided through mobile or PDA (personal digital assistant), viz., smart phones, mobile phones, i-pad, palmtops, note pads etc.

There are still many innovative uses of technological gadgets in distance

education. For example, when the University of Leicester's had launched a new distance learning MSc in security, conflict and international development, many of its learners had to face with some unconventional challenges compared to an average distance learner. For example, some students had to spend weeks, working in a refugee camp in post-conflict countries with no access to internet. It became a challenge for the University to ensure that at such remote places, its learners had everything they needed to carry out their studies. Learners were unlikely to carry huge carriage of printed study materials. As Professor Adrian Beck put it: "It struck us that we needed to find a way for them to transport our materials that is highly flexible but low-weight, and gives them access to all the material they will need while on the go." The University of Leicester's came up with a digital solution: it offered the students a free iPad, in which they could download an App and all the course materials. (Thomas, K., February 18, 2013).

The University of Leicester's is not an exception. Many ODL provides are using virtual learning environments to enable its learners to study online, contact with tutors, submit assignments or coursework, or engage in discussion with peers through the use smartphones, iPads, Kindles etc. This reflects that the ODL providers are responding to learners' demand to access the study resources as well as a communication networks from their mobile devices. For example, Open University (UK) has come up with an App 'OU Anywhere', which enables its learners to download all the course materials they need on to their mobile devices. (*Ibid*). Studies also have shown that use of technologies in distance education has offered remarkable success in many countries like Japan and Europe (Albrechtsen, K et al., 2001). Similarly, Chukwunonso F. et. al. (2013), while studying the impact of internet and WWW on distance and collaborative learning came up with the finding that the use of Internet and WWW had a number of benefits, viz., (a) wider access to education, (b) increased integration for differently abled, part-time, and working students, especially in continuing education, (c) enhanced student-student and student-teacher interaction and collaboration, (d) promoted self-paced learning and independent problem solving by learners, (e) promoted the acquisition of ICT knowledge and development of ICT skills through usage of computers and web-based tools.

4.0 Challenges faced by an Open and Distance Learning Educator:

Many researchers have pointed out some key challenges faced by an educator (or teacher) particularly in the use of technologies. For example, Lee Watanabe-Crockett (September 14, 2014) highlighted six key challenges faced by an educator while dealing with technology. These include: (a) continuous professional development, (b) resistance to change, (c) handling MOOCs and other new models of teaching, (d) delivering informal learning, (e) failures of personalised learning, and (f) failure to use technology to deliver effective formative assessments.

Prof. Vimala Veeraraghavan (Directorate of Distance Education, Pondicherry University, 2016.) listed five key issues faced by a distance educator. These include: (a) instructor's enthusiasm, (b) organisation of the different materials, (c) strong commitment to student interaction, (d) familiarity with the technology, and (e) effective use of technology need support from other staff. Kebritchi, et. al. (2017) had undertaken a literature review to come up with the issues and challenges that emerge for teaching successful online courses in higher education. With respect to instructors (or educators), the study highlighted certain key issues. These include: (a) *Changes in faculty role*. The study found that instructors had to undertake four different roles of pedagogical, social, managerial, and technical responsibilities, (b) *Transition from face-to-face to online*. Here, the role of an instruction changed considerable: now interactions are between student and faculty, student and peers, and student and technology. (c) *Communication barriers*. Communication challenges faced by a distance educator include the effectiveness of faculty communication with language barriers and communication via various technological modes, (d) *Student versus faculty focus classes*. In accordance with the changing role of the faculty is the focus from face-to-face instructor-focused and led classrooms to the more student-led or student-focused classrooms in the online environment, (e) *Instructors' lack of interest in online courses*. Many instructors who generally taught in the face-to-face environment feel discomfort to handle the technological environment. (f) *Instructor preparation programs and the online medium*. Studies indicate that the instructors are following their traditional styles of teaching to online, which has been found ineffective. (g) *Teaching styles*. To be effective, teaching style in the online mode should be different from that of the traditional mode of education.

5.0 Policy Options to face the Challenges:

While talking about the 21st century learners, it must be remembered that unlike traditional mode of education, the profiles of the learners in distance education are more non-homogeneous. While in case of traditional mode of education, only Generation Z and Generation Alpha are expected to be its present participants, in case of ODL, even a centurion belonging to Generation Y or the Baby boomers or even prior to those, can be its learners. As a result, a distant education must be able to offer customised learning solutions to the varied category of learners. In a way, unlike traditional mode of education, one size does not fit all in ODL. We must keep it in mind while making the policy prescriptions.

To meet the challenges in the 21st century learning environment, an ODL educator must be able to cope up the challenges brought about by today's technology-based learning environment. Kebritchi, et. al. (2017) has mentioned a few principles for effective online teaching. These include: (a) a good faculty–student interactions, (b) setting expectations for interactions, (c) effective

communication (d) use various e-learning methods and strategies, such as dynamic presentations, laboratory tutorials, simulations, conceptual discussions, (e) interaction and collaboration with students to support their activity, (f) exploration, and (g) knowledge development.

In addition to the above, the following policy measures are suggested:

- (1) Continuous training and professional development of the faculty members should be undertaken.
- (2) Faculty members should be encouraged to undertake collaborative project work with faculty members of other universities outside the region or country.
- (3) Faculty exchange programme with other advanced countries should be undertaken.
- (4) The University should encourage creativity and innovation within and across the campus.
- (5) Proper promotion of usage of the up-to-date technological gadgets within the campus should be undertaken.
- (6) Motivational training to use latest technologies in the delivery of course contents should be arranged.
- (7) Practical workshops on use and preparation of MOOCs, OERs should be organised.

References :

- (1) AdAge. (Jan 22, 2019). *MOVE OVER GEN Z, GENERATION ALPHA IS THE ONE TO WATCH*. Retrieved from: <https://adage.com/node/1005091/printable/print>
- (2) Albrechtsen, K., Mariger, H., & Parker, C. (2001). Distance education and the impact of technology in Europe and Japan. *Educational Technology Research and Development*, 49(3), 107–115. doi:10.1007/bf02504920
- (3) Cavanaugh, T. W. (n.d.). Defining Instructional/Educational Technology. Retrieved from: https://www.unf.edu/~tcavanau/projects/research/aet/define_IT.htm
- (4) Chukwunonso F., Ibrahim, R. B., Selamatet, A. B., Idama, A., & Gadzama, W. A. (2013). The Impact of the Internet and the World Wide Web on Distance and Collaborative Learning. *IARIA*. Retrieved from: https://www.researchgate.net/publication/258117974_The_Impact_of_the_Internet_and_the_World_Wide_Web_On_Distance_and_Collaborative_Learning
- (5) Directorate of Distance Education, Pondicherry University. (2016). Proceedings of the Two-day National Conference on Distance Education in India: Emerging Challenges and Prospects. *Keynote address by Professor Vimala Veeraraghavan*. pp. 7-34.
- (6) Fourtané, S. (December 22, 2018). *Generation Alpha: The Children of the Millennial*. Retrieved from: <https://interestingengineering.com/generation-alpha-the-children-of-the-millennial>
- (7) Kebritchi, M., Lipschuetz, A & Santiago, L. (2017). Issues and Challenges for Teaching Successful Online Courses in Higher Education: A Literature Review. *Journal of Educational Technology Systems*.46(1). pp. 4-29.

- (8) Keegan, Dr. D. (n.d.). The impact of new technologies on distance learning students. Retrieved from: <https://eleed.campussource.de/archive/4/1422>
- (9) Saavedra, A. R. & Opfer, V. D. (2012). Learning 21st-century skills requires 21st-century teaching. *Kappan*. 94(2). Retrieved from pdk.sagepub.com.
- (10) Sarmah, B. (2017). Educational Technologies of the 21st Century: Imperatives to the practice of Teaching in Higher Education. *Christ Journal of Education*. 02(02). Bhopal: Christ College.
- (11) Thomas, K. (February 18, 2013). Students stuck in remote parts? There's an app for that. *The Guardian*. Retrieved from: <https://www.theguardian.com/education/2013/feb/18/distance-learning-through-technology>
- (12) Watanabe-Crockett, L. (September 14, 2014). *6 Technology Challenges Facing Education*. Retrieved from: <https://www.wabisabilearning.com/blog/6-technology-challenges-facing-education>

History, evolution and present socio- economic scenario of the folk crafts in Betul region, M.P.

* Srishti Umekar

** Sukanta Majumdar, **** Soumik Halder

Abstract- Kochhar. R, in his study has classified the folk crafts broadly under three individual categories: (i) Formation and establishment of wealth and trade or skill (agricultural and animal husbandry tools, carpentry or smithy paraphernalia etc.) (ii) Lifestyle or routine and regime requirements (textiles, kitchenware, pottery, recreation, etc.) (iii) Belief systems, rituals, social values and creative urges etc. (Kochhar. R 2011, pp 1-9).

The craft clusters of Betul that is Dhokra craft, Terracotta craft, Bamboo craft each fall in different aforementioned category as follows:

- The Dhokra craft falls into the first, second and third category. The craft has a reputation across state and nation.
- The terracotta craft falls primarily into the second category however it also spreads into third category as well. The craft is known locally as well as in nearby districts and regions.
- The bamboo craft falls into the first category. The craft is locally known within the region.

The history of a craft plays a strong role towards the formation of its identity. It provides a story, may be a character and dignity to the craft and its practitioners. The identity of the craft becomes the soul of the cluster in other words it plays a big role towards the branding and recognition of the cluster. In the three mentioned craft clusters in Betul region history definitely have played a role in evolving their identity although differently.

The evolutionary transition of the three crafts being practiced in Betul has been diverse over the years. The article also reflects the present socio-economic scenario of the folk craft clusters. The objective was also to do analysis of past and present organizational model in terms of craftsmanship as an art activity, product comparison and their value in terms of market acceptance.

Key Words- Craft, Craft Cluster, Dhokra, Terracotta, Bamboo Craft, Betul

* Assistant Professor, Department of Management Rabindranath Tagore University, Bhopal, Madhya Pradesh, India,

** Assistant Professor, Department of Architecture School of Planning and Architecture Neelbad Road, Bhauri, Bhopal

*** Assistant Professor, Fashion and Lifestyle Accessory Department National Institute of Fashion Technology NIFT Campus, Bhoj Open University Campus Kolar Road, Bhopal-462016, Madhya Pradesh, India

Introduction: Betul is one of the southern most districts situated in the Satpura Plateau of Madhya Pradesh. The district is bordered by Hoshangabad district to the north, Chhindwara to the east, Amravati of Maharashtra to the south and Khandwa and Harda to the west.

The ancient history of Betul is a mystery. Many historians are of the opinion that Satpura plateau have gone through several dynastic rules after the Mauryan realm. During the Medieval period, Betul was a part of Gondwana Kingdom. King Narsingh Rai the founder of Gondwana kingdom established the capital in Kherla which is very close to present day Betul. The Gonds along with Korkus are still the major tribes inhabiting in this region. There are numerous tribal rituals and culture which have stood the test of time signifies the region's deep and historical relationship with Gond kingdom (<http://betul.mponline.in/History-of-Betul>, 2017).

There are three different crafts being practiced in clusters in the district. They are the Dhokra in bell metal (*Bharevashilp*), Bamboo Craft (*Baanskaam*) and Terracotta (*Mitti kala*). The importance of handicraft to the region's economy lies in employment potential and earnings through various market and fairs mostly within the state (<http://shodhganga.inflibnet.ac.in/bitstream>, 2017).

The bell metal craft of Cire Perdue traditionally known as *Dhokra* and locally known as *Bharevashilp* has a vivid history of over thousands of years. One of the earliest known lost wax artefacts is the dancing girl of Mohenjodaro in third millennium BC (Acharya and Pattnaik 2014, pp 103- 113). The *Dhokra* people belonged to western most part of Bengal i.e. Purulia, Bankura, Bardhaman and Midnapur and of Orissa, Jharkhand, Chhattisgarh, Andhra Pradesh and Madhya Pradesh (Kochhar. R 2011, pp 1-9). The regions were either part of or close to the region which later formed Gondwana Kingdom (14A.D. to 18A.D).

The name *Dhokra* originated from the name of the tribe DhokraDamar the traditional practitioners of the craft in West Bengal. Tribes practicing the craft spread into places mentioned above are distant cousins of each other. They developed ceremonial and religious figures, ornaments and domestic utility objects as well as accessories for their animals (Chandrashekhar. M 2017). They found patrons within their community practicing same social values and rituals. Their creative urge also found patrons in local affluent and rulers maintaining social status and recognition. There are many folk stories about the evolution of the craft. One of them says, around three hundred years ago, the ruler of Bastar, Bhan Chand gifted with a neckpiece of *Dhokra* craft for his beloved wife. This caught his awareness and interest in the craft. Bhan Chand bestowed the craftsman with the title of Ghadwa to honour him. Ghadwa is derived from the word ghalna, which means to melt and work with wax (Jain, Jyotindra 1988).

It is this endurance of traditional practice, coupled with the rich history and liveliness of the art form which provides Dhokra products fair dignity. Terracotta craft is an ancient form of art which had its existence since Indus Valley Civilization. The word terracotta means baked earth in Italian language (<https://www.britannica.com/art/terra-cotta> 2017). During various excavations at Mohenjodaro and Harappa numerous terracotta figures and figurines have been unearthed (http://www.indianetzone.com/49/terracotta_art_india.htm 2015).

In Madhya Pradesh, the crafts persons practicing terracotta craft caters to lifestyle as well as rituals especially in agrarian rural society. Districts like Alirajpur, Jhabua, Betul, Indore, Ujjain, Gwalior, Bhopal, Jabalpur, Betul and Seoni are well known for the craft. It has always been a highly skill based craft catering with limited number of products to the society or particular segment of the society. The patronization of the craft by particular community or segment of the society has seen layers of transition over ages in the society due to the onslaught of alternative products.

Bamboo craft and basketry is a folk craft which is being practiced in several districts in Madhya Pradesh e.g. Mandla, Shahdol, Balaghat, Jhabua, Bhopal, Betul etc. in the form of guilds. It is largely because of the availability of resource and the acceptance by the society rather particular segment/s of the society. The state's total area of 308252 km², over twenty percent is covered under bamboo plantation. (https://nbm.nic.in/grow_bamboo.html, 2015). Bamboo Craft is being practiced in various districts in the state like Mandla, Shahdol, Balaghat, Jhabua, Bhopal, Betul etc. After the North Eastern states combined together Madhya Pradesh is the major producer of bamboo. It shoulders over ten percent of the total bamboo forest in the country (Trivedi. S 2016). These clusters primarily thrive on the resources that are available in local forests catering to agricultural and household needs with limited products since time immemorial.

The history of a craft plays a strong role towards the formation of its identity. It provides a story, may be a character and dignity to the craft and its practitioners. The identity of the craft becomes the soul of the cluster in other words it plays a big role towards the branding and recognition of the cluster. In the three mentioned craft clusters in Betul region history definitely have played a role in evolving their identity although differently. It is as follows:

- *Dhokra* craft cluster has a reputation across the state and nation.
- Terracotta craft cluster is known locally as well as in nearby districts and regions.
- Bamboo craft cluster is locally known within the region.

Methodology:

A visit to the villages practicing the crafts of *dhokra*, terracotta and bamboo mentioned in Table- 1, Table- 3 and Table- 5 respectively, was made with the purpose to identify the cause and effect of the backwardness and

deteriorating handicraft sector in the region. It is also to map the freedom of actions, decisions and actual opportunities that the crafts persons have in various craft clusters of Betul district.

Visit and detailed interactions with various Governmental offices like TRIFED i.e. Tribal Cooperative Marketing Development Federation of India Limited, State handicraft corporation i.e. SantRavidas Madhya Pradesh HastshilpEvamHastkarghaVikas Nigam (MPHSVN), Madhya Pradesh Matikala Board, State Bamboo Mission office and Indira Gandhi National Museum of Man.

History and evolution of *Dhokra* in Betul region...

The Cire Perdue method traditionally known as *Dhokra* in India, is popularly known as *Bharevashilp* in Betul region. The reason behind the name *Bhareva* is because it is primarily practiced by *Bhareva* community. While doing primary survey in eleven villages spread across six tehsils, with interview process it is established that the craft travelled from present day Chhattisgarh in between 1650-1720 AD. The ancestors of this community belonged to Gond tribe and they were distant relatives of the Ghasia and Ghadwa community in Chhattisgarh. The craftsmen used to make products associated with the lifestyle, rituals and social values of Gond tribe like figures of their deities, *ghungroo* (bells) for farm animals, *diya* (oil lamp), jewellery etc.

The craftsmen in Betul region do associate themselves with the craft practitioners of the same craft in Orissa, Jharkhand and Bardhaman. They claim that their ancestors might have been distant relatives.

The craftsmen of *Bharevashilp* in Betul region believe that their ancestors had to travel extensively towards establishing the acceptance of their craft in a particular region and tribe. They used to cater with products of ritual importance, social values and lifestyle amongst the tribes. The craftsmen always faced competition within the community towards recognition and sustenance which made them to travel.

According to a legend there used to be twelve brothers who used to work with their father in a farm. The youngest of them never got interested in farm work. He used to sit under a tree and develop beautiful clay forms. He got intrigued in it. But as the clay forms dried they started to show cracks on the surface and this became a cause of worry to him. He tried different ways to avoid the damage to his creation. Finally he ended up pouring molten metal in between two layers of clay to achieve the form that doesn't get damaged (Gehlot. A, et al 2001-02).

Presently the craft in Betul region is no more confined to *Bhareva* community which is a progeny of Gond tribe. People from different communities have learnt the craft and practicing it to earn their living. There are more than three hundred artisans and ninety families engaged in the practice of the folk craft in groups as well as individually in eleven villages and across

six tehsils. The villages where the craft still find its existence is mentioned in Table -1.

Table- 1.Name of the villages in Betul district and the Tehsils they are located, where Dhokra craft is practiced

Sl. No.	Village in which the craft is practiced in Betul district.	Name of the Tehsil in which the village is located.	Number of Craftspersons (approx.) in each of the villages in respective tehsils.
1	Kalmeshwari or Kalmesara	Amla	There are 3- 5 families where in 10-12 craftspersons practice the craft.
2	Sarni		There are 13- 15 families where in 50-54 craftspersons practice the craft.
3	Sitakamath	GhodaDon gri	There are 4- 6 families where in 22-25 craftspersons practice the craft.
4	SirajGaon	Bhaisdehi	There are 4- 6 families where in 16-20 craftspersons practice the craft.
5	Koylari		There are 2-3 families where in 10-12 craftspersons practice the craft.
6	Fongria	Chicholi	There are 10-12 families where in 48-52 craftspersons practice the craft.
7	ChunaHajuri		There are 5- 7 families where in 15-18 craftspersons practice the craft.
8	Barkhed	Athner	There are 4- 6 families where in 20-22 craftspersons practice the craft.
9	Tigariya, Khedi	Betul	There are 11-14 families where in 35-38 craftspersons practice the craft.
10	TamyaGarh, Kolgaon		There are 11-14 families where in 35-38 craftspersons practice the craft.
11	MandaiBujurg	Shahpur	There are 2-3 families where in 8-10 craftspersons practice the craft.

The craft is presently in a situation which may be termed bottle neck. There are a number of craftsmen and craftswomen practicing the craft in the region who have either inherited the craft practice or learnt it from regular practitioners as mentioned above. The work or income distribution amongst the craftsmen in all the eleven villages is inconsistent. That creates dissonance between income and motivation for crafts persons eventually leading them to alternative profession like farm labour, brick kiln labour, daily wage labour in construction site etc.

There are a couple of government organizations like TRIFED i.e. Tribal Cooperative Marketing Development Federation of India Limited, state handicraft corporation i.e. SantRavidas Madhya Pradesh Hastshilp EvamHastkarghaVikas Nigam (MPHSVN) who took initiatives in showcasing the developed products in their respective showrooms. There are a few other government bodies like Development Commissioner of handicrafts, SantRavidas Madhya Pradesh HastshilpEvamHastkarghaVikas Nigam (MPHSVN) and National Institute of Fashion Technology who took initiatives in organizing Product development workshops and also orient the artisans towards design development. District Panchayat take initiatives with intent

to form self-help groups. But this whole activity of intervention of government bodies is not uniform over all the eleven villages and rather restricted to few craftsmen or cluster/ village only.

As per the information shared by the office of the state handicraft corporation i.e. SantRavidas Madhya Pradesh Hastshilp Evam HastkarghaVikas Nigam (MPHSVN), it caters with various plans and projects (*yojna*), which are as follows:

- a. *ShilpiKalyanYojna*(Craftsmen welfare plan): Through this scheme the Corporation organises health camp and subsidised health insurance. It also provides tricycle for specially abled artisans and education to daughters of artisans and women artisans.
- b. *SoochnaProudhogikiYojna*(Information technology plan): This scheme aims towards forming common facility centres and computer aided design centres for self-help groups and weavers cooperative societies. Individual craftsmen and cooperative societies are facilitated with computer with a subsidy of 75%.
- c. Marketing support: The Corporation has 23 emporiums by the name Mrignayanee, out of which ten of them are outside the state. It purchases the craft products with benchmarked quality from the crafts persons at an amicable rate and displays it in its emporiums. It also organises exhibitions and fairs (*mela*) in various districts especially during the festive seasons. Crafts men can directly participate and sell their products in the same.
- d. *RajyaStariyaVishwakarmaPuraskarYojna*(Plan for state level honour policy for craftsmen): It prioritises on awarding the crafts persons to motivate.
- e. Skill upgradation programme and design development workshops: The Corporation works with institutions like National Institute of Design, National Institute of Fashion Technology, Gandhinagar, Mumbai and Bhopal. The artisans are paid wage loss compensation as per the directives by the government on unskilled and semiskilled labour respectively.

The beneficiaries till 2017 from the aforementioned schemes (*yojna*) as provided by the office of the SantRavidas Madhya Pradesh HastshilpEvamHastkarghaVikas Nigam in Bhopal, is handful and repetitive which is condensed to particular few clusters/ villages i.e. Tigariya.

TRIFED i.e. Tribal Cooperative Marketing Development Federation of India Limited, caters with few programmes. As per the information shared by TRIFED office, the programmes are as follows:

- a. Primary level training: The programme is for unskilled artisans wherein in skill upgradation workshop is conducted for 15 days. The artisans are paid wage loss compensation as per the directives by the Government of India Organization.

- The aforementioned programmes are yet to be implemented in Betul, Dhokra clusters.

The terracotta craft in Betul district is practiced hereditarily by the Prajapati community primarily. The community has a mythological history associated with it. According to legend prevalent among potters once Lord Brahma divided sugarcane and distributed it amongst his sons. Each one of them ate their share except for one who was a potter. He was deeply engrossed in his creations and forgot to eat his share which soon grew into a sugarcane plant. Later when Lord Brahma enquired about the sugarcane pieces with his sons all of them could only appreciate the taste of it except for the potter. He offered a full grown plant to his father Lord Brahma. Pleased by his devotion and the ability to create and form Lord Brahma honoured him with the title Prajapati. It means Lord of subjects and humankind in Sanskrit. He was thereafter known as Daksh Prajapati. He was also the father of Goddess Parvati. The present day Prajapati community are descendants of Daksh Prajapati (<http://www.prajapati4prajapati.com/history-prajapati.html> 2018). There is also a myth that Daksh Prajapati was highly scholar and always maintained solidarity. Pleased with his son's virtue once Lord Brahma honoured him with an esteemed rank. Daksh Prajapati felt conceited and organized a *MahaYagna* to celebrate the honour and he invited all brahmins, saints and Gods. When he entered the stage of *MahaYagna* everyone stood up in respect of him except for Lord Shiva and Lord Brahma. He was not impressed and said, "Shiva is my son-in-law, but he doesn't know how to respect me, so I would not allow him to take part in *Maha-Yagna*". Lord Shiva and everyone remained calm. But Nandi couldn't bear the insult and cursed Daksha Prajapati that his descendants being holy brahmins will not be known and respected as one in *Kaliyug*. They will be lower castes (<http://www.prajapati4prajapati.com/history-prajapati.html> 2018 and <https://www.prajapati4prajapati.com/history-prajapati.html> 2018).

prajapatiandkumawat.wordpress.com 2016). According to group interview process with many crafts persons in Potouhapura, Betul and Neempani, thousands of potters migrated from Rajasthan during and after the great famine of 1896 to 1901. They initially settled in various villages in Malwa region in search of livelihood. Slowly with time many of the migrants relocated themselves in other areas of central India including Betul.

During 1950s the scenario was such that the Prajapatis i.e. the potters were well settled in Potouhapura and Neempani in Betul. However they were less in numbers. So each family were allocated respective nearby villages by the community head to do their trade (with barter system). The potters used to develop their products carry them on bullock carts to their allocated villages and in return they used to get food grains as exchange. The number of villages allocated to a particular family depended on the number of male practitioners of the craft thereby the family size as well as the influence of the family over the community.

In the late 1970s traders from Nagpur, Indore and Bhopal got attracted towards the cluster and the water pitchers developed by throwing and beating technique. It was primarily because of the location of the cluster which is on National Highway 46, connecting Bhopal and Nagpur. Trade blossomed. The potters started to rely on trader's pre-summer orders. The product line was restricted to limited number of products like Water pitchers and Deepawali lamps (diya) because of the orders the potters received. Few other products required in the local lifestyle or routine and rituals were also made.

Presently there is a village market (*haat*) which happens in Shahpur, Betul every Tuesday and Wednesday which is also visited by traders. In the present scenario the orders from existing traders has decreased. The craftsperson opt for alternative source of earning as farm labours (especially during monsoon), daily wage labours in construction and brick kiln site.

Table- 2. Name of the villages and town in Betul district and the Tehsils they are located, where Terracotta craft is practiced.

Today there are more than two hundred terracotta artisan families engaged in the practice of the folk craft in three different tehsils of Shahpur, Ghodadongri and Betul. The villages and town where the craft still find its existence is mentioned in Table -2.

Sl. No.	Village or Town in which the craft is practiced in Betul district.	Name of the Tehsil in which the village is located.	Number of Craftspersons in each of the villages in respective tehsils.
1	Potuahpura	Shahpur	There are 160-165 families where in 450-460 craftspersons practice the craft.
2	Neempani	GhodaDongri	There are 20-24 families where in 80-85 craftspersons practice the craft.
3	Betul	Betul	There are 10-12 families where in 35-40 craftspersons practice the craft.

There is a skill upgradation programme by the name “Sfurti” in Patouhapura, which is being implemented by Government organization- Khadi and Village Industries Commission. A Common Facility Centre has been initiated for the same. The non-government organization- Sathiya Welfare Society which is the implementing agency of Khadi and Village Industries Commission, is taking initiatives towards developing self-help groups within the cluster.

Keeping production into consideration the craftsmen are oriented towards techniques like press moulding and slip casting in the Common Facility Centre as a part of skill upgradation programme

The craftsmen are yet to cater to any orders with these techniques. They are unaware of the market to be catered with these techniques. They are also not too sure about their identity of quality pitcher makers that they have developed over decades, if they would be able to sustain it for long.

In the year 2008 the state government formed Madhya Pradesh Matikala Board. It came into operation in the year 2010. The board caters with various plans (*yojna*). As per the information provided by the office of Madhya Pradesh Matikala Board the plans are as follows:

- a. *SreeYadey Mati Kala Yojna* (SreeYadey clay craft plan): This scheme started in 2010. Through this scheme the government offers a loan to the artisans. Maximum loan amount in this scheme is Rs 1 lakh wherein Rs 50000/- is considered as margin money/ subsidy.
- b. *MukhyaMantriSwarojgarYojna* (Chief Minister self- employment plan): The scheme started in August 2014. Aiming towards the economic upliftment the government offers loans with subsidies. The subsidy for scheduled tribe, scheduled caste, minority and females is 30% to maximum upto two lakhs. The subsidy for unreserved category is 15% to maximum upto one lakh. The interest rate for these loans is kept at 5%.
- c. *AarthikKalyanYojna* (Economic welfare plan): The scheme started in August 2014 especially for the economically weaker section. People belonging to below poverty line category and hold Antyoudaya Card are facilitated with an offer of Rs 50000/- maximum loan with a subsidy of Rs 15000/-.
- d. *MatikalaPrasikshanYojna*(Clay craft training plan): The scheme is for semiskilled artisans wherein in skill upgradation workshop is conducted for fifteen days in the premises provided by BhausahebBhuskute Trust, Govind Nagar, Bankhedi, Hoshangabad. An amount of Rs 250/- is paid per day to each artisans as wage compensation loss. At the end of the workshop they are also provided with electric potter’s wheel.
- e. *Kaushal VikasYojna* (Skill development plan): The scheme is for unskilled artisans wherein in skill upgradation workshop is conducted for 30 days. The artisans are paid wage loss compensation as per the

directives by the government on unskilled labour.

- f. *PracharPrasarYojna* (Promotion and expansion plan): It focuses on the publicity through print and electronic media. Awarding artisans in the state is the second priority of the scheme. Last but not the least organizing haat and fairs to promote the craft.

The terracotta crafts persons in Betul district are yet to be benefitted through these schemes.

History and evolution of Bamboo craft in Betul region...

The craft of bamboo basketry in Betul district is predominantly practiced by Gond and Korku tribes and Banskar community. Gond and Korku tribe people practice the craft especially in villages. They largely inhabit in villages in Tehsils: Shahpur, Amla, GhodaDongri, Chicholi, Betul and Bhaisdehi. Whereas the Banskar community people largely inhabit in aforementioned towns (tehsils) or in close proximity of the same.

Table- 3. Name of the villages and town in Betul district and the Tehsils they are located, where Bamboo craft is practiced by three different communities.

Presently there are more than thirty four hundred and twenty artisan families with over nine thousand and three hundred craftsmen from three different communities/ tribes, engaged in the practice of the bamboo folk craft in different villages and town and across eight different tehsils. The practice of the craft is spread across all the tehsils and in numerous villages largely because of the availability of the resource from the forests. The villages and town where the craft find its major existence is mentioned in Table -3.

Sl. No.	Village/ town in which the craft is largely practiced in Betul district.	Name of the Tehsil in which the village/s is located.	Number of Crafts persons (approx.) in each of the tehsils.
1	Bhayawadi	Shahpur	There are over 23 Basod families where in over 70 crafts persons practice the craft. There are over 670 tribal families (Gond and Korku) where in over 1900 crafts persons practice the craft.
2	Baretha		
3	Deshawadi		
4	Kundi		
5	Bhoura		
6	Silpati		
7	Phandka	GhodaDongri	There are over 180 Basod families where in over 475 crafts persons practice the craft. There are over 640 tribal families (Gond and Korku) where in over 1750 crafts persons practice the craft.
8	Khamalpur		
9	Khairwani		
10	Khokra		
11	Loniya		
12	Dangwa		
13	Jangda		
14	Belond		
15	Jamkhodar	Amla	There are over 140 Basod families where in over 370 crafts persons practice the craft. There are over 374 tribal families (Gond and Korku) where in over 880 crafts persons practice the craft.
16	Awariya		
17	Borikhurd		
18	KhidkiKhurd		
19	Pipriyadeu		
20	Bhayawadi		

21	Ladi		
22	Ratedakala		
23	Bichchhukhan		
24	ChunaHuzuri	Chicholi	There are over 18 Basod families where in over 50 craftspersons practice the craft. There are over 410 tribal families (Gond and Korku) where in over 1050 craftspersons practice the craft.
25	Bhimpur	Bhaisdehi	There are over 37 Basod families where in over 110 craftspersons practice the craft. There are over 575 tribal families (Gond and Korku) where in over 1650 craftspersons practice the craft.
26	Tikari		
27	Bhainsdehi		
28	Bajpur		
29	Bodna		
30	Gyaraspur		
31	Ratanpur		
32	Rathipur		
33	Khandara		
34	Baghwad		
35	Chikhlar		

The Gond tribe is one of the largest tribal populations in the world. They are primarily known as hill people as they traditionally have been associated with hills and uplands in Deccan peninsula. Gonds began to settle in the uplands of Gondawa between ninth and end of thirteenth century AD. By 13th century A.D. they started to gain in control a large part of Deccan which extended to the Satpura range, Vindhyan range and Kaimur hills. Gond dynasties reigned in four kingdoms - GarhaMandla (1300 AD. to 1789AD), Deogarh (1590 AD to 1796AD), Chanda (1200 AD to 1751 AD) and Kherla (1500 AD to 1600 AD) in the central India. They have the reputation of being warriors (<http://www.ecoindia.com/tribes/gonds.html> 2008).

Each of the four kingdoms evolved and declined through three phases, which are as follows:

- Expansion and consolidation.
- Upholding the relation with Mughal emperors or their subordinates with enough allegiance.
- Internal dynastic struggle leading to Maratha intervention and eventually the decline of the Gond kingdoms.

Finally all four of them were annihilated and governed by British forces (Sil, J.N 1917, pp. 63).

In Madhya Pradesh the majority of the tribe is presently settled in rural areas and dependant on agriculture and daily wages. However the tribe maintains gender equality and is rich in their culture and folk art forms like folk music, dance, wood carving, bamboo basketry, Gond art to name a few (<http://www.everyculture.com/wc/Germany-to-Jamaica/Gonds.html> 2018). They are divided into various communities like Raj-Gonds, Khatola-Gonds, MadiaGonds, DhurGonds, DadveGonds, MokasiGonds, GaitaGonds, and

Koyas etc. (Koreti. S. 2016, pp 288-291).

The Korku tribe is concentrated in the districts of Chhindwara, Hoshangabad, Khandwa and (<http://www.chhindwara.net/korku-tribe/> 2015). The word Korku means 'men', *koru* being their term for a man and *ku* a plural termination (Russel. R.V and Hira Lal.R.B, 1916). Korku tribe inhabiting in forest and uplands of Madhya Pradesh is regarded as the sub tribe of Munda tribe and its etymological connections are with the Korwa tribe in Madhya Pradesh (Shailaja, D 2006, pp 47-51). However there is no documented evidence of the origination of the tribe. Korku regard themselves as decendants to Ravan. According to a legend they were created by Lord Shiva. Once Lord Shiva created two clay sculpture of a man and woman. He named the male as Mula and the female as Mulai. Who went on to become the earliest couple in this tribe (Yadav, N 2016, pp 1-6).

The Korku people are rooted to their tradition and culture. They do hone their skills right from an early age in various folk art forms like dance, music, art and various crafts (Yadav, N 2016, pp 1-6).

The Banskar community who are also known as Basor, Basod or Bansphor are craftsmen who are traditionally dependent on bamboo for their livelihood. They have been marginalized owing to the fact that they are considered to be low in caste. They inhabit predominantly in districts like, Jhabua, Alirajpur, Betul, Chhindwara, Bhopal to name a few. The name of the community is derived and twisted from hindi word *Bans* which means bamboo (www.peoplegroupsindia.com/profiles, 2018).

Ethnologist William Crooke (1896) described the Basors as a tribe who used to inhabit only in Bundelkhand region. They used to be regarded low as a sub- caste of the Dom (cremators). Slowly they started to migrate to Mirzapur and other nearby towns and started practicing bamboo basket weaving. They used to reside in the outskirts of the town. According to a legend the Basor or Banskar trace their origin from King Benu of Damoh. The king was piously religious and he did not take any taxes from his subjects. He used to work to earn a living by making and selling bamboo fans. He never had an army to protect his kingdom, because of the magical powers he used to possess. It is believed that he could destroy his enemies just by breaking a bamboo fan (<http://www.peoplegroupsindia.com/profiles/basor/> 2018).

Traditionally the Gond and Korku tribe make granaries for animal fodder and food grain that they grow marginally in fields. They slice dry bamboo into thick slivers and weave into mats for the purpose. The granaries are coated with clay and then cow dung at the exterior. Then these granaries are decorated with traditional folk art depicting animals and rituals of the tribe. Whereas the Basor or Banskar community people traditionally weave smaller baskets by slicing green bamboo into thin slivers. It is the availability of plentiful resource which has a predominant influence on the craft. However urbanization has resulted in a great deal of change in the craft's economy. Metal granaries and

plastic baskets have found their place in every house hold. Owing to the same, presently the craftsmen are engaged as daily wage labourers as alternative source of earning to meet their ends.

In the year 2006-07 Government of India took the initiative and started National Bamboo Mission. As per the information shared by State Bamboo Mission office, it was proposed that the funding for the same would be done by central government and state government at a ratio of 60% and 40% respectively. The Madhya Pradesh State Bamboo Mission started in the year 2013. Few of the objectives of the mission are as follows (https://nbm.nic.in/guideline_2014.html#%20Mission%20Objectives):

- To increase the bamboo plantation areas in potential regions with various species having better physical features.
- Bamboo and bamboo based handicrafts to be promoted.
- Create dignified employment opportunities.

However in 2014-15 the funding from central government got discontinued. It resulted in the objectives to be shelved till funds are released.

Result:

Existing scenario and problems identified with each of the craft clusters: A number of visits to the villages practicing the crafts of *dhokra*, terracotta and bamboo mentioned in Table- 1, Table- 2 and Table- 3 were made with the purpose to identify the cause and effect of the backwardness and deteriorating handicraft sector in the region.

There is no fundamental way to measure the socio-economic and physical condition of an artisan and compare those aspects among different segments of communities. Also, in an egalitarian economy, no method is available for the distribution of resources equally among these communities (Sen. A, 1999). As mentioned by Sen, freedom is interpreted in the form of human capabilities which embroils freedom of measures or actions and choices or decisions and the factual hope that people have, given their personal and social scenario. Therefore the intention should be to ideally care and hone towards the development of capabilities of people to lead the kind of subsistence they respect and feel dignified with and have reason towards the same. Capability in the form of freedom represents an individual's skill to practically and successfully function (for the welfare) with alternative combinations (Sen. A, 2000).

The objective of the visit to the *dhokra*, terracotta and bamboo craft clusters in Betul was also to do historical analysis of past and present in terms of craftsmanship as an art activity. It is observed during the visit that the three crafts i.e. *dhokra*, terracotta and bamboo craft practiced across many villages in Betul district mentioned in Table-1., Table-2. and Table-3. retain the craftsmanship. But there is a momentous difference in the behaviour of the market with changing lifestyle with regards to what used to be before. The growth in communication, technology and transportation has paved ways for

the industrially produced alternative products to serve consumers in large groups even in far remote places in the country. The craftsmen lacked in their environmental management perspective and above that there is no significant improvisation on the craftsmanship or redefinition of products in context to different or changing lifestyle. The scenario is such that the socio- economic welfare in respective craft clusters is in difficulty.

A majority of craftsmen in Betul, in all different respective craft clusters have been found engaged in alternative profession as daily wage labourers or farm labour. The economic and social opportunities along with the primary goods resting in their respective societal environment is found wanting. The inadequacy in earning of an individual or a family influences their competence and is often a major cause of deprivation

Existing scenario, problems and reasons of backwardness identified with Dhokra craft in Betul district...

Dhokra craft is practiced in eleven different villages spread across seven different blocks in Betul district as mentioned in Table- 1. The craftsmen practice the craft at their home and sell locally in nearby villages and fairs. The Bhareva community which largely practice the craft, develop products as per the requirement of local tribes, primarily Gonds (*Gadhwa*). The product line is age old and limited, which includes cow bells, goat bells, Jingling anklets for goat (*Painjan*), Lord Shiva idols (*Gorakhnath and Shiv Parvati and also Naraindev*), Wedding rings (*Angoothi*) etc. There is no significant change in the product line and the nature of craft practice including the tools used.

The demand for the products is gradually decreasing because of urban influence in the society. The raw material cost in the craft is one of the influencing factors. Brass is expensive. It is bought at Rs 350/- per kg from scrap dealers by the craftsmen. Bee wax is largely sourced at a price Rs 350/- to Rs 400/- from Chicholi by the craftsmen. These two materials coerce the crafting cost up. The socio- economy is such that other than products of traditional or religious importance the local people opt for products in alternative materials which are relatively inexpensive.

It is observed that the craftsmen in all the villages possess inherited skills with limited infrastructure. But the skill and the craft couldn't add to more number of products harmonizing the lifestyle of the locals over the years. Lack of education, awareness and enterprising skill amongst the Craftsmen prevented them from identifying alternative market by themselves. The folk craft of *dhokra* lacks attention of governmental and non-governmental bodies in the roots as observed. There are only a few groups of craftsmen in Betul block especially from Tigariya village who receive governmental support whatsoever. The senior craftsmen in Tigariya village have initiated few products after getting in touch with the Chhattisgarh and Orissa dhokra craftsmen. This is to primarily target the urban market that they come to interface through the Governmental bodies. Few of the products are plaques

depicting tribes and tribal lifestyle, hanging lamps (*diya*), Lord Shiva's ox (*Nandi*), Lord Ganesha, pen holder and turtle. The financial benefits doesn't get trickle down easily from Tigariya to other clusters/ villages practicing the same craft even on mutuality of interest of craftsmen. The craftsmen who get support prioritise their self-sustenance over community development. This leads to most of the craftsmen population thriving on the dwindling local market.

The prosperity of a region and the quality of life of its inhabitants cannot be established only by Gross National Product (GNP) per capita because it is also required to be known about the method of distribution of resources and how development of capabilities of the populace is fostered towards their quality of life (Nussbaum. M.C. et al, 1993). Arneson comprehended that equality of opportunity for welfare may also be perceived as development of capability approach (Arneson. R 1989).

Existing scenario, problems and reasons of backwardness identified with Terracotta craft in Betul district...

Terracotta craft locally called *Mati kala* craft is practiced in three different villages spread across three different blocks in Betul district as mentioned in Table- 3. The craftsmen practice the craft at their home and sell locally in make shift shops outside their houses or in the local haat. The Prajapat community which largely practice the craft, predominantly develop water pitchers locally called *matka*. The core product line of water pitchers, fire place and cooking utensils is age old but lately there has been significant transition in products that is being made and sold.

However there are a number of products which are being sourced from traders of other places e.g., Nagpur, Gujrat and Indore and added to their existing line of products. The products which are sourced are wind chimes, lantern, cooking utensil press moulded (*Tawa*) with metal frame and painted toys. The craftsmen who live by the road side do display their products in make shift shops outside their house.

It helps in achieving two things which are as follows:

- There are approximately 42 shops put up on both side of National Highway 46. They together send a clear and sound signal regarding the existence of the terracotta cluster. They are strong enough to attract passers-by. The craftsmen working on wheel or beating are also a treat to watch.
- They form a parallel economic support system for the craftsmen.

However these shops don't benefit all the potters' families in the three villages. The craftsmen who do not live by the roadside are deprived of this extra advantage. They are largely dependent on the local *haats* and seasonal trader's orders. The economic wellbeing of these terracotta craft clusters cannot be established unless the prosperity is motivating and evenly shared by all. It is due to the craftsmen's skill of developing water pitchers in large scale over the years that fetched them local recognition. The craft has not evolved

in context to adding individuality to its product line. Moreover the craftsmen added onto their already existing traditional product line by sourcing terracotta and plaster of paris products from Gujrat and Maharashtra.. Demand for the terracotta water pitchers, cooking utensils and fire place is gradually decreasing because of urban influence in the society. Water purifiers with multiple virtues have been successful in replacing the terracotta water pitchers slowly. The craft cluster has been unable to change with the transition of the socio-economic system of the society. These clusters should ideally have fostered to discern areas of potential advantage with new offerings. With timely and innovative offerings they could have gained strategic advantage over their competitors, eventually establishing a strong identity of the craft and the craft clusters. The craftsmen should have valued consumer satisfaction by its products, channels, promotion and optimum price. The market leader that it used to be (even though locally) decades back in the region need to challenge the market as market challenger with product-market expansion grid encompassing opportunities in existing and alternative market, product development and diversification.

It is also observed that the craftsmen got carried away developing a few products as for decades. Periodically indigenous redefinition of their products befitting the changing lifestyle with time required awareness, environment management and education amongst the Craftsmen, which has always been lacking. It is the vicious cycle where in lack of quality specialized education doesn't help in forming rationale and analytical skills thereby most often resulting in lowness of income, and lowness of income prevents qualitative and specialised education eventually resulting in economic insecurity (Sen. A, 2000).

The raw material cost in this craft practice is eighteen hundred rupees for clay per tractor trolley. The clay is procured locally. The clay is prepared and approximately 450 to 500 water pitchers of varying sizes can be made out of it.

The skill upgradation programme by the name "Sfurti" in Potouahpura initiated by Khadi and Village Industries Commission is a strategy to develop the cluster as a production hub. Priority is given towards the income of the craftsmen and thereby raising the economy of the cluster in the region. But it is being done by inducting industrial techniques where in skill is not required. The question is are the craftsmen ready to sacrifice their skill set of throwing and beating which over the decades have earned them recognition whatsoever. A particular thing that needs to be clarified is that in this whole approach of developing a production hub, there may be dissonance between income per head and motivation (freedom) of individuals. The crafts persons would like to have the freedom of self-interest maximization and deciding on what to produce with their skill rather than to earn more with the un-freedom of being a skilled labour. Relevance of development cannot be formed only with

industrialization and contributing towards Gross National Product (GNP) per capita. The happiness or motivation quotient in a societal environment cannot be sacrificed for that (Sen. A, 2000).

Existing scenario, problems and reasons of backwardness identified with Bamboo craft in Betul district...

Bamboo craft is practiced in over thirty five villages spread across the total district of Betul with primarily two different species of bamboos which are available in abundance i.e. *Bambusabalcooa* (Local Name - *Katang* Bamboo) and *Dendrocalamusstrictus* (Local Name - *Vyaparik* Bamboo). The population involved in this craft practice is over nine thousand and three hundred. The craft is practiced by three different communities i.e. Gond, Korku and Banskari. The approach and perception towards the craft is very different from the three communities which shows in the outcomes in products developed.

Gond tribe people practice the craft largely to suffice self-need or at the most their close ones in the village. They make granaries, big baskets for storage and animal feeding (*daliya*), fencing, roofing structure and bullock cart piling. They perceive it as a skill to support their lifestyle which is primarily dependant on agriculture. The crafts persons may be provided with a reason to value their basic liberties comprising, opportunities, freedom of exchange and transaction.

Korku tribe people make the same kind of products as well, sufficing self-need. They also depend on farming for their livelihood. But unlike Gonds, the Korkus are open to sell their products in nearby local *haats* or as per local demand. The crafts persons have allowed themselves towards the opportunities that they have, given their personal and social circumstances.

Banskari community craftsmen make relatively smaller baskets with thinner slivers. A good number of them also make bamboo furniture. They depend largely on this craft to earn their living. They only work to sell in local *haats* or from their houses. They thereby have relatively finer weaving skills. However their access to advantage in functioning (towards welfare) is limited due to options crowding the market as competitors.

It's been decades the craftsmen belonging to Gond and Korku tribes and Banskari community have been engrossed in the craft and sticking to age old products. The craft is being practiced by both male and female members in the family in aforementioned tribes and community using either axe or a heavy cutting knife (*dao*). Lack of education and awareness in the clusters kept the craftsmen in dark regarding the transition in demands. The craftsmen didn't even explore to expand their limited product line. Due to urbanization the local village haat are overflowed by alternative products or similar products in alternative material. The economy of bamboo clusters is in distress. The craftsmen especially from Korku tribe and Banskari community have been severely hit.

The craftsmen who are in plenty supported by the natural resource which is their raw material never really evolved particular weaving techniques. They have always been focussed on addressing need only. Their weaving techniques as well as product structure lack variation and uniqueness.

The Gond and Korku tribes inhabit in forest uplands generally at a distance from towns. They maintain a practice of cutting bamboo by themselves from nearby forests as and when required. However their consumption of raw material is limited. That is why they don't face significant hindrance from the forest officials. The Banskar or Basod community people stay in town or outskirts of town. They are not allowed to cut bamboo from forest area. The forest department has chalked an agreement with the craftsmen that every craftsmen family shall be sanctioned over 1200 bamboos at a rate amicably fixed which is rupees 15 per bamboo. However the forest department has always been restricting the sanction for the number of bamboos per family. Presently a crafts person family receive at an average one hundred and fifty bamboo per year at the mentioned rate. At an average a craftsmen family do require over 1500 bamboo per year to sustain depending upon the size of the family. The rest of the required raw material is sourced from local fields of locals at approximately rupees 40 per bamboo.

With the deterioration of demand in local market and increase in cost of raw material the Banskar community craftsmen are left with no other option but to get engaged as labourers in brick kiln, farm lands construction sites etc. The craft practice is slowly taking the shape of secondary occupation. There is no governmental support whatsoever towards the long term sustenance of the craft practiced by Gond and Korku tribes and Banskar community craftsmen.

It is observed that the conscience amongst the crafts persons towards quality of life needs to be built. For that, qualitative specialized education, awareness and self-experience plays a big role (Nussbaum. M. C. et al, 1993). Capability exploration is another vital area in the bamboo craft clusters where in need towards absorption of skills is largely felt in the area of self-interest (crafts) of the crafts persons. It may be noted that with the strength of the crafts person's population practicing the craft if motivated with conscience and skill, new marketing opportunities can be strategized.

Discussion:

The purpose of the study was to do a detailed study of history of each of the three folk crafts namely Dhokra, Terracotta and Bamboo craft. Data collection from various governmental offices was done to identify the governmental assistance towards the socio-economic development and long term sustenance of the crafts. Effort has been made to depict a clear picture of the nature of the three crafts and their backwardness and the reasons behind the same.

The study may contribute towards redefining the data in various

governmental offices related to crafts and its sustenance. It may prove to be helpful for governmental and non- governmental interventions towards the establishment of an entrepreneurial model. It may be of significance for individual entrepreneurs as well as in academic institutions especially in the area of design while doing a diagnostic study in Madhya Pradesh.

The scenario of craft clusters in Betul is such that the craftsmen practice the craft on adhoc basis. In all the craft clusters the product line that is traditionally practiced is limited. There has not been any product redefinition or innovation suiting the changing lifestyle of the locals with urbanization. Lack of higher and specialized education and awareness amongst various tribes and communities practicing the crafts in Betul is apparent. This kept them unprepared to tackle the alternative products which overflowed the market as a result of globalization and thereby urbanization. John Rawls's classic analysis states that, "primary goods" in a societal environment helps people uphold their life with rights, freedom, opportunities, steady earning, and the social bases of dignity and self- confidence (Rawls. A 1971). There is a limitation observed in the functioning of governmental bodies and non-governmental bodies. It is observed that there is a lack of uniform assistance from the bodies to the crafts persons practicing dhokra, terracotta and bamboo craft in Betul. While coming in interface with the crafts persons these bodies are stuck with a number of crafts persons or people in a particular village. They expect the crafts persons from other villages to come and contact them.

Conclusion:

The question is, what makes life good and under what circumstances for the crafts persons who lives it? To have a conscience to answer the question the crafts persons should have the substantive specialized education, awareness and experience by themselves. The conscientious governmental bodies whose duty is to act in the interest of the crafts persons and the craft clusters may put in efforts towards developing the conscience amongst the crafts persons uniformly to all clusters. The crafts persons should be given the liberty to decide on what would make their life. However it may also be noted that it is not only the crafts person's state of consciousness but also the developments and occurrences elsewhere in the country and the world if brought in interface with the crafts persons may impact their life.

There is a limitation observed in the functioning of governmental bodies and non-governmental bodies. It is observed that there is a lack of uniform assistance from the bodies to the crafts persons practicing dhokra, terracotta and bamboo craft in Betul. While coming in interface with the crafts persons these bodies are stuck with a limited number of crafts persons in a particular village. They expect the crafts persons from other villages to come and contact them.

Craft for the crafts persons is not only a means of livelihood but their dignity as well. They do have a strong sense of belonging with the techniques

they apply and the craft they practice.

It is essential to take a comprehensive and multi-faceted approach. Complementing each other the various approaches would help counter the difficulties in the process and help achieve success. The multiple approaches would require a balancing role of the government, social- academic institutions, reinforcement of socio- economic management and functioning of markets amongst the crafts persons. The application of a comprehensive development framework instead of a compartmentalized view of the process development would shoulder the problems together and help in develop a conscience towards a living that the crafts persons ideally should.

There is a scope to promote various institutions with a cohesive intention towards specialized education and thereby conscience, ability towards economy management and freedom of choice as well as entrepreneurship in all the three craft clusters. Socio-academic and institutional models in this scenario may require compassion, flexibility, the ability to reach out to the crafts persons, the strategy towards developing identity for respective craft clusters and freedom for actions for the crafts persons pertaining to their skills.

Acknowledgements: The authors are thankful to the following Institutions:

- SantRavidas Madhya Pradesh HastshilpEvamHastkarghaVikas Nigam, Bhopal.
- SantRavidas Madhya Pradesh HastshilpEvamHastkarghaVikas Nigam, Betul.
- Madhya Pradesh Matikala board, Bhopal.
- State Bamboo Mission, Bhopal.
- National Institute of Fashion Technology, Bhopal.

The extended help towards sharing the information by the aforesaid Institutions is obliging.

The authors are deeply gratified to all crafts persons practicing the crafts of Dhokra, Terracotta and Bamboo craft, in different villages spread over the eight blocks of Betul district. They have been very cooperative in sharing information and knowledge. A special thanks to the nodal persons in various craft clusters in Betul. Their help have been instrumental throughout the journey. They are:

- a) Mr. BaldevBaghmare (43), Bell metal Dokra Artisan in (Tigariya) Betul.
- b) Mr. Sanjay Sankre (36), Sitakamath (Betul).
- c) Mr. JeetenPrajapati (39), Terracotta artisan in Potouhapura (Betul).
- d) Mr. Mahesh Prajapati (41), Terracotta artisan in Neempani (Betul).
- e) Mr. Narendra Yaduvanshi (46), JagritiGramotthanSamiti NGO, (Betul).
- f) Mr. SukhdevKumeti (42), Baretha (Betul).
- g) Mr. Bhoura (42), Belond (Betul).

Bibliography:

1. Kochhar, R 2011 'Dhokra the traditional art of metal casting', Publisher:

- Chitrolekha International Magazine on Art and Design, Vol. 1, No. 2, pp. 1-9, [25th December 2017].
2. Acharya, S and Pattnaik, S 2014 'Man in Society, The journal of Anthropology Department', Vol-21, ISSN: 2347-1530, Publisher: Postgraduate Department of Anthropology, Utkal University, Bhubaneswar, pp. 103-113, [29th December 2017].
3. Chandrashekhar. M October 2017 'Cultural Heritage of India, Dhokra Tribal Craft of India', Available from: <http://sanskriti.blogspot.in/2017/10/dhokra-tribal-art-of-india.html>, [29th December 2017].
4. Jain, Jyotindra 1988 'The Absent Form: Tribal Bronzes of India', New Delhi: Crafts Museum [29th December 2017].
5. Saha, A 2015 'Bamboo Craft Documentation', pp. 5-18, **Submitted to SantRavidas Madhya Pradesh HastshilpEvam Hast KarghaVikas Nigam**, [25th December 2017].
6. Trivedi, S April 2016 'MPGovt for Bamboo revival', Publisher: Business Standard, India, Available from: http://www.business-standard.com/article/current-affairs/mp-govt-for-bamboo-revival-116040800049_1.html, [27th Apr 2018].
7. Gehlot, A 2001-02, 'Craft Documentation of lost wax casting in Betul region of Madhya Pradesh', Indian institute of Crafts & Design (IICD), Jaipur, Through: <http://www.craftrevival.org/Monograph/003397.htm> [30th December 2017].
8. Kochhar, R 2003 'Dhokra: The Traditional Art of Metal Casting', New Delhi: NistadsDhokra Museum [30th December 2017].
9. Koreti, S 2016, 'Socio-Cultural History of the Gond Tribes of Middle India', International Journal of Social Science and Humanity, Vol. 6, No. 4, pp 288-291 [30th December 2017].
10. Sil, J.N 1917, 'History of the Central Provinces and Berar, Calcutta: BabuJogendraNathSil', from Seoni, C.P., pp. 63 [15th January 2018].
11. Russel, R.V, Hira Lal, R.B 1916, 'The Tribes and Castes of the Central Provinces of India', Macmillan and Co., Limited St. Martin's Street, London, pp. 523-570, [19th January 2018].
12. Shailaja, D 2006, 'Vaidarbhiya Adivasi', Publisher: MangeshPrakashan Nagpur, pp. 47-51, [15th February 2018].
13. Yadav, N September 2016, 'Adivasi "Korku" ki kala EekkiwiShatabdikepariprekshmein', A E- Journal of Creative Art & Literature Volume I, September 2016, pp. 1-6 [15th February 2018].
14. Sen, A 2000, 'Development As Freedom', Publisher: Oxford University Press (Oxford India Paperbacks), ISBN-13: 978-0-19-565526-1, ISBN-10: 0-19-565526-5, pp. 14- 296.
15. Sen, A 1981, 'Poverty and Famines: An Essay on Entitlement and Deprivation', Publisher: Clarendon Press Oxford, Oxford University Press.
16. Rawls, A 1971, 'A Theory of Justice', Publisher: Belknap, ISBN – 0-674-00078-1, pp. 60- 102.
17. Nussbaum, M. C, Sen, A 1993, 'The Quality Of Life', Publisher: Oxford University Press, New Delhi, pp. 9- 442.
18. Arneson, R 1989, 'Equality and Equality of Opportunity for Welfare', Publisher: Springer Vol. 56, No. 1 (May, 1989), pp. 77-93 (17 pages) [15th September 2018].

19. Arrow, K, Hahn, F, "General Competitive Analysis", Imprint: North Holland, 1983, Copyright: © North Holland 1971, **ISBN:** 9780444854971, pp. 14- 296.

References :

1. 2017, <http://betul.mponline.in/city-guide/History-of-Betul>, [3rd May 2017].
2. 2017, http://shodhganga.inflibnet.ac.in/bitstream/10603/7144/12/12_chapter%203.pdf, [4th May 2017].
3. 2018, <http://knowindia.gov.in/culture-and-heritage/> [27th February 2018].
4. 2017, <https://www.britannica.com/art/terra-cotta> [27th February 2018].
5. 2015, http://www.indianetzone.com/49/terracotta_art_india.htm [26th December 2017].
6. 2015, http://nbm.nic.in/grow_bamboo.html [25th December 2017].
7. 2017, <https://en.wikipedia.org/wiki/Prajapati> [2nd January 2018].
8. 2018, <http://www.prajapati4prajapati.com/history-prajapati.html> [2nd January 2018].
9. 2016, <https://prajapatiandkumawat.wordpress.com> [15th January 2018].
10. 2008, <http://www.ecoindia.com/tribes/gonds.html> [12th February 2018].
11. 2018, <http://www.everyculture.com/wc/Germany-to-Jamaica/Gonds.html> [12th February 2018].
12. 2015, <http://www.chhindwara.net/korku-tribe/> [12th February 2018].
13. 2018, <http://www.peoplegroupsindia.com/profiles/basor/> [20th February 2018].
14. https://nbm.nic.in/guideline_2014.html#%20Mission%20Objectives [3rd May 2018].

Table Reference :

1. Table: 1, 'Name of the villages in Betul district and the Tehsils they are located, where Dhokra craft is practiced', Source: Baldev Waghmare, State Arwardee Dhokra Craftsman, Tegaria, Betul, Craftsman Anil Baghmare in Tigaria, Craftsman Sandeep Sankre in Fongria, Craftsman Sanju Rawte in Sitakamath [12th March 2018].
2. Table: 2, 'Name of the villages and town in Betul district and the Tehsils they are located, where Terracotta craft is practiced', Source: Craftsman Jeetendra Prajapati and other Terracotta Craftsmen, Shahpur, Betul [15th April 2018].
3. Table: 3, 'Name of the villages and town in Betul district and the Tehsils they are located, where Bamboo craft is practiced', Source: Narendra Yaduvanshi, Craftsman and Director of NGO "Jagriti Gramotthan Samiti", Betul [17th March 2018] and www.censusindia.co.in [27th March 2018].+

Measuring Asset Accumulation among Tea garden labourer in Undivided Sonitpur district of Assam

* Dipshikha Buragohain

Abstract- Development economist has increasingly advocated asset indices to replace income and expenditure base measure to examine socio economic welfare as well as standard of living. To extent our understanding of complexities prevailing among Tea garden labourer, this paper construct a household base Asset Index. The area of study undivided Sonitpur district of Assam is selected purposively because in this area the number of Tea garden labour community is highest among the other community in the district. It is known to all and also various research papers rightly proved that Tea garden labourer is most vulnerable and exploited labour class more or less in every part of region. Accumulation of Asset is most challenging job within the structure of tea management. Tea garden management provides various statutory and non-statutory benefits to the tea garden labourer. Providing land, water facilities, sanitation, construction of house, school are various securities provided by Tea garden management body. Within this situation it is utmost important to examine various asset accumulation among Tea garden labourer which will tell us the true picture of standard of living. This paper derived Asset indices from Principal component analysis using 148 sample household in the study area. The study used both primary and secondary data. Asset composite Index for Tea garden Labourer found to be 0.604.

Key Words- Development, Income, Expenditure, Economic welfare

Introduction: Economist often used income and expenditure to measure the well-being of people and wealth of household but both income and expenditure data has limitation as both accuracy and measurement. For instance-for people living in informal labour markets, income are often highly variable. In case of Tea garden labourer also, income and consumption can be seasonal because at the high time of plucking, temporary workers tend to earn income more than Permanent worker. Temporary workers work for a period of nine months in a year. Furthermore tea garden worker may be engaged in barter and non-monetary forms of trade. In all these cases there are high possibility for error in data based on the recollection and value of all sources of Income. Furthermore, same difficulty in income also applies to expenditure. Work done for oneself such as improvement of house (provided by Tea management)

* Research Scholar, Department of Economics, Dibrugarh

also tends to be missing from expenditure. Therefore these means income and consumption data itself does not necessarily provide a reliable measure of well-being.

By considering the above mentioned limitation of Income and consumption expenditure to measure well-being of tea garden labours, the study tried to construct Household Asset Index as Asset may provide a better picture of long-term living standards than income snapshot because they have been accumulated over time and last longer.

Area of study:

Undivided Sonitpur district of Assam is selected for the purpose of study. The main reason behind selecting Sonitpur district as an area of study is that the Tea-labour community is the largest community among all other communities in the district with over 6, 00,000 which is about 31.12 per cent of the total population in the district.¹ The total number of Tea Garden is 62 including world largest Tea-Gardens, Monabarie. Undivided Sonitpur comprised of Biswanath, Tezpur and Gohpur Sub-division.²

Objectives of the study:

1. To examine the socio-economic status of Tea Garden Labourer in Undivided Sonitpur District of Assam.
2. To construct a composite index to measure household accumulation of asset among Tea garden Labourer in Undivided Sonitpur District of Assam.

Research Questions: The study attempts to address the following questions-

1. What is the status of asset accumulation among the Tea Garden Labourers of the study area?
2. What is the appropriate methodology to examine asset accumulation of household based study?

Methodology used in the construction of Asset Index:

It is expected that household consumption is affected by household owned Asset. PCA becomes a useful variable reduction technique when the objective of the analysis is to present a huge data set using a fewer number of one dimensional variables. It reduces the number of observed variables to a smaller of principle components which account for most of the variance in the observed variables. Of the various linear combinations, the first Principal Component, is the one which accounts for the maximum possible proportion of the variance in the original dataset. The weights are termed as loadings and depict how relevant the variable is in construction of the principle component because the weights are based on the relationships among the variables. The aim of the method of PCA is construction of a set of variables, P_i , called Principal Component ($i = 1, 2, \dots, k$) out of a set of variables. Each Principal component is a linear combination of the X 's;

$$\begin{aligned}
 P_1 &= a_{11}X_1 + a_{12}X_2 + \dots + a_{1n}X_n \\
 P_2 &= a_{21}X_1 + a_{22}X_2 + \dots + a_{2n}X_n \\
 &\dots \quad \dots \quad \dots
 \end{aligned}$$

$$P_m = a_{m1}X_1 + a_{m2}X_2 + \dots + a_{mn}X_n$$

The method of Principal component can be applied by using the original values of the X_j 's or the standardized variables Z_j defined by

$$Z_j = (X_j - \bar{X}) / \sigma_j$$

The coefficients are called loading of the principal components, satisfy the following two conditions- (i) Principal Component are orthogonal (uncorrelated), (ii) The first principal component has a larger variance as possible. The second principal component is then chosen in such a way that it absorbs the maximum of the remaining variations in X s after allowing for the variation accounted by the first principal component and so on. A weighted average of the principal components helps in constructing the composite index.

However, application of standard linear PCA in this analysis is to derive the infrastructure and performance indices is not suitable as PCA assumes liner relationship between the variables and definition of variables quantitatively at interval or ratio scale. As against this, variable selected this analysis are defined in ordinal and nominal scale. In cases when variables defined in ordinal scale, the non-linear (categorical) PCA is a suitable solution (Linting et al., 2007).

The categorical PCA is equivalent standard PCA reduces the observed values of the variables to a number of uncorrelated principal components. The most important advantages of nonlinear over liner PCA are that it incorporates nominal and ordinal variables and it can handle and discover non-liner relationships between variables. Also, nonlinear PCA can deal with variables at their appropriate measurement level; for example it can treat *Likert-type scales* instead of numerically. Every observed value of a variable can be referred to as a category. While performing nonlinear PCA converts every category to a numeric value, in accordance with the variables analysis level, using optimal quantifications. Optimal quantification replaces the category labels with category quantifications in such a way that as much as possible of the variance in the quantified variables is accounted for. Just as continuous numeric variables, such quantified variables possess variance in the traditional sense. Then, non-liner PCA gives same results as liner PCA for quantified categorical variables.

As variables considered to measure the Asset index are defined in ordinal and nominal scale, therefore, the study applies the categorical PCA in order to derive principal component.

Description of variables in constructing Asset Index:

For constructing a Household Index a set of variable is selected first. The detail definition of variables are provided by following Table:1. For each of the eight consumer durables, an indicator is created with two possible values: Value 'one' if household own a specific durables and value 'zero' if household do not own respective durables. Whereas the number of total room in a house is measured with three categories- 'zero or one room, two rooms,

three or more rooms’.

Table:1
Description of variables for Asset Index

Asset Index Categories	Index Components	Values
Housing	Number of Room	
Consumer Durables	Television	Yes=1, No=0
	Radio	Yes=1, No=0
	Watch	Yes=1, No=0
	Almira	Yes=1, No=0
	Two wheeler	Yes=1, No=0
	Three Wheeler	Yes=1, No=0
	Jewellery	Yes=1, No=0
	Mobile	Yes=1, No=0

Source-Primary Survey

After selecting appropriate variables and giving values for each indicator Principal Component Analysis method was applied using SPSS and derived Weights and coefficient Matrix which are mentioned as follows:

Table: 2
Asset Weights for Asset Index

Index Components	Weights	Coefficient	Eigen value
Number of Room	0.0004	0.043	0.043
Television	0.042	0.423	0.427
Mobile	0.079	0.583	0.583
Two wheeler	0.09	0.646	0.646
Radio	0.11	0.716	0.716
Almira	0.12	0.733	0.73
Watch	0.135	0.763	0.763
Jewellery	0.136	0.766	0.766
Three Wheeler	0.15	0.808	0.808

Source: Author's calculation

After assigning respective weights for each indicator we multiply indicators values with their respective weights and summed up all values to get Asset Index for each 148 households. Furthermore to get a composite Asset Index of the study area following formulae is applied-

$$\text{Composit Index} = \frac{\sum_{i=1}^n \text{Asset Index}_i}{\sum_{i=1}^n \text{Weight}_i}$$

Here

i = signify number of Household.
= 1, 2, 3, 4.....n

Using the above formulae the study found that the value of composite Index for Tea garden Labourer is 0.604. which was moderate.

Conclusion:

Most research so far has only used PCA and its related techniques to model ownership of a single type of asset, usually a variant of wealth. It was very challenging for researcher because household assets may be of different

types. There may be quality wise differences among the asset belonging to different household which leads to the problem of assigning under or overestimation of weightage. For example a researcher is interested to ask whether to have a television or not to household but some household have colour TV and others may have Black and White TV. So there may be arise quality wise differences in collecting asset data among the household. But still as compared to other methods used in construction of composite index of wealth, Principal Component Analysis is better method than others. There is a lot of scope to developed household based asset index in near future.

=====

References :

1. Bhattacharjee, P. R. (1990). In B. R. Sabastian Karotemprel, *Tea Garden Labourers of North East India* (pp. 103-110). Shillong: Vendrame Institute.
2. Caroline Moser, Andrew Felton. (2007). *The construction of an Asset Index Measuring Asset Accumulation in Ecuador*. Washington: The Bookings Institution-Global Economy and Development.
3. D.Carrol, C. (2006). Consumption and Savings: Theory and Evidence. *National Labour Bureau of Economic Research*.
4. K.C Rana and K.N Verma. (2015). *MACRO ECONOMIC ANALYSIS* (Vol. 11). Jalandhar, India: Vishal Publishing.
5. Nicholas Apergis, Chistina Chiston. (2012, February). Dependency Rate and Saving: A African Evidence with Panel Data. *International Journal of Business Management*.

Footnotes:

1. Source- www.sonitpurgov.in
2. Biswanath District is newly created district in the year by 2015, declared by Assam chief Minister on 15 August, 2015.

"Spend time in Nature" Exploring the effects of nature on well being

*** Mitika Kanwar**

Abstract- *The current research paper is an extensive review exploring therapeutic effects of nature. In today's fast paced world, a lot of disconnection has been observed between man and nature. Café culture, technology, mobile phones and social media has definitely contributed to lack of time being spent out in the gardens or parks. This paper explores reasons why one needs to study the variable of connection with nature and some mental benefits related to it. Implications of the findings have been further discussed. There is a dire need to proactively inculcate the love for nature in the upcoming generation.*

Key Words- nature, well being, biophilia, mental health

I remember admiring a beautiful tree with bright red flowers right outside my house during spring time. One day, I woke up to see that the tree was cut down. It felt as if they had cut down a part of me. This feeling alone is an evidence of an instinctive bond we humans share with other living beings. Interests such as gardening, need to travel, our innate connection with animals, and fondness for natural scenery are some of the examples that provide evidence for *biophilia* or our urge to affiliate with nature.

Harvard University biologist, Wilson popularized the term *Biophilia* in 1984. According to the *biophilia hypothesis*, other living things support our health and survival. Therefore, learning about them and appreciating biodiversity has been embedded in our genes (Ulrich, Kellert & Wilson, 1993). For reasons related to survival, man had no other option but to understand nature's mechanisms, pick up its cues and be finely attuned to its pleasant as well as unpleasant processes, all at the same time (Capaldi, Doplo & Zelenski, 2014).

In the following quote, Jiddu Krishnamurti equates nature with temples or spiritual activity, thus highlighting the role of natural environments in bringing about spiritual transformation or calmness within oneself:

"when man loses the deep intimate relationship with nature, then temples, mosques and churches become important"

The role of connection with nature in forming a well-integrated mind has been explored since the beginning of mankind's civilization and can be

* Assistant Professor, Department of Psychology, Post Graduate Government College for Girls, Sector - 11, Chandigarh, India

found across spiritual philosophies as well. However, this connection only began to be empirically explored in psychology a few years ago (Fromm, 1972; Adhemar, 2008). Large number of studies have been conducted on traumatic events caused by nature while little research has focused on positive transformational influences of nature (Naor & Mayseless, 2017).

Rationale:

There is a dire need to focus on the construct of connection with nature in today's times because modern lifestyle has played a big role in disconnecting humans from nature and its wonderful mechanisms. Researches have shown that disconnection from nature can have consequences both for physical and mental health (Naoufal, 2016). In fact the most affluent families are paying tremendous amount of money for psychotherapy, physical health issues, drug or alcohol abuse and trying to fill their inner void with modern solutions (Alexander, 2008).

Searles (1960) made an observation that "when humans ignored the connection between their psyche and nature, it endangered their psychological well being." Fromm (1972) said that human beings have a psychological orientation towards everything that is alive and vital. But this orientation is being least explored in today's internet obsessed society (Taylor, 2017).

Another need for studying this construct is the fact that all across the globe, children have started spending less time in outdoor activity. The current generation of children spends not even half the time that their parents used to spend playing outdoors (Larson, Cordell & Green, 2011). Nowadays, more time is being spent watching TV, playing video games and sitting indoors. Not only has their connection with nature declined but studies have shown that internet and social media obsession has resulted in significant reduction in empathy as well (Valkenburg, Peter & Schouten, 2006; Carrier et al., 2015). I was walking by some beautiful parks in my city (Chandigarh, India) and I noticed that the kids playing on the swings were the ones from lower income families, whereas kids from affluent families were seen to be confining themselves to screen time at home. This observation has been validated by researches that also showed a negative relationship between time spent outside in nature and *socioeconomic status*. Larson et al. (2011) found that children with lower family incomes spent more time outside even on weekdays compared with children from higher family income groups.

Alarming statistics reveal that 40% of kids do not even go out to play in recess time at school. In the entire day, they spend less than an hour outside. In the past 30 years, the rate of child obesity has also tripled (Klasky, 2014). Parents also seem to be forgetting that direct play in nature is critical for overall physical and mental development, especially during middle childhood (Kellert, 2005). Outdoor experiences may also contribute to positive attitudes toward outdoor recreation (Bixler, Floyd & Hammitt, 2002; Thompson et al., 2012) and act as significant predictors of environmentalism later in life (Larson

et al., 2011; Wells & Lekies, 2006).

Research survey has also shown that nature-related activities, such as, hiking, camping, bird watching or wildlife viewing were not reported to be the most preferred activities by children of today's generation as much as sports, hanging out with friends and using electronic devices outdoors were (Klasky, 2014). The consequences of this discrepancy could be problematic. Such statistical findings evoke us to be cautious and proactively inculcate love for nature at an earlier stage of life.

Depression, cardiovascular disease, and other physical problems were responsible for 38 million or 68% of the world's 56 million deaths in 2012. Out of this, more than 40% were premature deaths under 70 years of age (WHO, 2014; Gelsthorpe, 2017). The reasons for these deaths were related to physical inactivity, poor diet and chronic stress, which is commonly found in urban areas. On the other hand, people who live in green spaces were found to be 24% more likely to be physically active and healthy (Blanck et al., 2012).

Definitions of Connectedness with Nature:

Despite our innate tendency to establish a bond with nature, there are individual differences in how some of us connect with it. Therefore, some psychologists have viewed nature connectedness as a trait-like or a state-like disposition (McKechnie, 1977; Nisbet & Zelenski, 2013).

Kals, Schumacher and Montada (1999) described connectedness with nature as involving emotional affinity. They also defined nature connectedness as involving pleasant feelings of oneness and love. Mayer and Frantz (2004) defined connectedness with nature as "a measure of individual's trait levels of feeling emotionally connected to the natural world."

According to Mayer and Frantz's (2004) conceptualization, individuals who report connection with nature, exhibit higher levels of environmental concerns, ecological behaviors and dispositional perspective taking.

Dutcher, Finley, Luloff and Johnson (2007) defined connectedness to nature "as a sense of sameness between the self, others and nature."

Nisbett, Zelenski and Murphy (2009) viewed the construct as multidimensional, which includes affective, cognitive and physical relationship with the natural world.

According to RSPB (2013), connection with nature may be defined as "caring for the environment and having a sense of awe and wonder for nature."

Nisbet and Zelenski (2013) opined that nature relatedness is not just the superficial enjoyment of the pleasant aspects of nature but also involves a deeper understanding of its unpleasant or not so aesthetically pleasing facets. The construct of nature connection has also been classified in the field of *positive psychology as character strength* under the broader virtue of Transcendence, postulated in Peterson and Seligman's VIA Classification of Strengths (2004). The character strength of *appreciation of beauty and*

excellence has been defined as “the ability to perceive and appreciate beauty, virtue and talent in the physical and social worlds; and involves the experience of self-transcendent emotions such as, awe, elevation and admiration” (Haidt, Keltner, Peterson & Seligman, 2004; Martinez-Marti, Hernandez-Lloreda & Avia, 2016). This can be found in qualitative accounts of participants’ personal experiences in nature wherein they often use the word “breath taking” (Taylor, 2017).

Factors influencing Connectedness with Nature:

Factors such as, parenting, education and cultural background (Cheng & Monroe, 2012) influence nature relatedness. One major factor such as *physical proximity* or closeness to environment also influences nature affiliation. One of the earliest studies showed that having emotional affinity towards nature and having interest in participating in outdoor activities, predicted pro-environmental behaviors (Kals et al., 1999). Wells and Evans (2003) found that children who had their homes closest to nature, experienced less stress and knew how to cope in a better way in comparison to children who lived away from natural environments. Being out in nature further leads to a holistic and an ecocentric perspective (Hart, 2010).

Another important factor contributing to connection with nature was found out by Allen and Ferrand (1999) in their study on 121 undergraduates in New York. In their study, *Sympathy* was found to be playing an influential role and further mediated the relationship between environment friendly behaviors, self-esteem and personal control. The finding implied that sympathy helps in motivating one to actively care for nature. *Empathy* also plays a positive role in enabling one to take the perspective of animals being harmed, trees being cut or natural elements being exploited in general (Hinds & Sparks, 2008).

Researchers who view connectedness with nature as a personality trait assert that this trait is shaped by one’s *childhood experiences*, such as, the extent to which parents expose their young children to natural surroundings (Unsworth et al., 2012). As a consequence, those who are high on their subjective connection to nature would seek out more opportunities to reap psychological benefits associated with nature exposure (Capaldi, Dopko & Zelenski, 2014).

How does Nature Connectedness influence well being?

Research shows that natural environments contain chemical and biological agents that are beneficial for overall physical health. For instance, plants give off *phytoncides*, which reduce blood pressure and boost immune functioning (Li et al., 2009). Fresh air in mountainous areas also contains higher levels of negative air ions, which have been found to reduce depression (Goel et al., 2005).

The sights and sounds of nature also play a significant role in reducing sympathetic nervous system’s activity. These sounds of birds chirping or

running water are often used in relaxation therapy or music therapy to reduce stress response. In a study conducted by Alvarsson, Wiens and Nillson (2010), listening to natural sounds on the headphones was found to increase parasympathetic activation or in other words, induce the state of relaxation (El-Sheikh, Erath & Baghley, 2013). Kaplan and Kaplan (1989) developed a model that explains how *urban environments lead to cognitive fatigue* due to constant stimulation. This concept of constant stimulation is called *hard fascination or direct attention*. It involves voluntary attention and is fatigue-prone. On the other hand, natural environments provide the benefit of *soft fascination or indirect attention*, which refers to a combination of pleasantness and alert attention at the same time. Soft fascination helps in restoring depleted mental functioning and meets the three components required for a restorative experience i.e., a feeling of being away, rich and coherent environment and compatibility with one's personal interests or needs (Kaplan & Berman, 2010; Pearson & Craig, 2014).

Attention Restoration Theory suggests that exposure to nature can restore prefrontal cortex-mediated executive processes and refresh our lower level executive attentional systems (Atchley, Strayer & Atchley, 2012). In this manner, nature enhances our well being by helping us to temporarily forget the daily stressful demands of life and get back to its pressures with healthy coping mechanisms and focused attention (Berman, Jonides & Kaplan, 2008).

Positive Correlates of Nature Connectedness:

Research on connection with nature and well-being offers ideas to be implemented in *health psychology*. Neuroscience reveals that being out in green spaces leads to easier recovery from illness because it reduces cortisol secretion in the body (Thompson, Roe et al., 2012; Kuo, 2015). A study conducted by Maas et al. (2009) on 345,000 people found that the risk for physical illness was 20% higher among individuals living in less greener spaces. This effect was found to be true even after controlling for socioeconomic status. According to Kuo (2015), time spent in nature leads to an experience of physiological and psychological states, which further boost the immune function and lead to better health outcomes. An interesting research by Kuo and Taylor (2004) also showed that people living in green residential areas showed less symptoms of ADHD than people living in structured areas, which are full of buildings. Based on this finding, Taylor and Kuo (2009) made 7-12 years old children diagnosed with ADHD walk in a city park and well-developed urban setting. After each walk, their concentration level was measured. Children with ADHD performed better on concentration task after 20-minute walk in the park as compared to children who walked in urban settings. Therefore, "dose of nature" might serve as a safe, inexpensive and widely accessible tool in managing symptoms of hyperactivity and inattention.

Taylor et al. (2015) found that doctors prescribed fewer antidepressants in urban areas with more trees on the street. Park and Mattson (2008) also found that patients who were recovering from surgery, recovered at a faster rate when assigned to rooms furnished with flowers. They also experienced less pain, fatigue, anxiety and lower systolic blood pressure in comparison with patients who were confined to normal hospital rooms without greenery or flowers.

Korpela, Borodulin, Neuvonen, Paronen and Tyrvaainen (2014) suggested that a “favorite place prescription” must be given in counseling or public health services so that individuals can experience recreational walking and satisfaction by being out in nature. They found that these positive relationships between time spent in nature and emotional well being lasted for minimum four weeks. Therefore, once to twice a month visit to natural surroundings must be made mandatory for patients suffering from physiological or mental health problems. Dutton (2009) also suggested that the ability to experience beauty and appreciate nature enhances the chances of living longer.

Richard Louv (2005) introduced the term “nature deficit disorder” in his book *The Last Child in the Woods* and described the term as a sense of suffering that comes from disconnection with nature and its healing powers. It results in a culture of fear and reluctance to explore the outside world (Naoufal, 2017). To proactively control this problem of nature-deficit disorder, Ben Klasky (2014) has developed an outdoor learning center for kids near Seattle, U.S.A. He found that kids who played outside showed more positive moods and less levels of stress and anxiety in comparison to control group of kids who spent all their time indoors. Moreover, children who stay indoors are more likely to turn out to be less healthy and have a lower quality of life (RSPB, 2013; Glesthrope, 2017). In her research, Sandry (2013) observed that due to more hours being spent indoors, every little insect is being seen with disgust and fear. There was a time when children used to hold ladybugs in their hands and dig or squish their hands in the soil, smell flowers and explore nature to their fullest potential. But nowadays, families take their children for games to the malls and theme parks instead of playgrounds or forests.

Connection with nature also brings along with it a *sensitivity for other living beings*. According to Schultz et al. (2004), the more connected people are to nature, the more aware they are of their actions and the more sensitive they are towards other living things. Nature connectedness has been found to be associated with *less egoistic concerns* and greater concern for the larger environment and earth in general (Dutcher et al., 2007). Nature also impacts our willingness to be generous, kind and helpful towards others. In one study, researchers showed participants some beautiful nature scenes and asked them to play two economics games – the Dictator game and the Trust game.

Participants who were exposed more to beautiful scenery, acted *more generously* and *more trusting* in these games and showed prosocial behaviors (Weinstein, Przystalski & Ryan, 2009). A recent research by Naor and Mayseless (2017), showed “peak experiences” to be emerging when in contact with nature. In-depth interviews with the participants revealed a *transformational shift* in their perspective from personal-oriented value system to values of connection and service to others.

As per the survey of ‘Public Attitudes and Behaviors Towards the Environment’ (2011), having access to green spaces *improved quality of life* and was linked with reduced negative thoughts (Zelenski & Nisbet, 2014; Keniger et al., 2013). Saraglou, Buxant and Tilquin (2008) showed that exposure to a nature-oriented film boosted levels of positive emotions, such as, enjoyment and wonder among participants (Howell, Dopkso, Passmore & Buro, 2011). Nisbet, Zelenski and Murphy (2011) showed that nature connectedness is significantly associated with autonomy, personal growth, purpose in life and positive affect. Mayer and Frantz (2004) also found a significant positive correlation between trait nature connectedness and psychological well being.

According to Howell et al. (2011), aspects of well being which emphasize “feeling good” are less reliably related to nature connectedness in comparison to aspects of well being which emphasize upon “functioning well.” Howell et al. (2011) attempted to examine the relationship between nature connectedness and *mindfulness*; and between nature connectedness and emotional, psychological and social scales of Keyes’ (2005) measures of well-being. Results revealed significant positive relationship of psychological and social well being with nature connectedness. These aspects of well being are *eudaimonic* in nature thus implying that connection with nature is associated with meaningful aspects of well being. But surprisingly, mindfulness scale’s sub dimension of *acceptance* was not found to be significantly related with connection with nature but the dimension of *awareness* was found to be positively related.

Those who are highly connected with nature may also derive a sense of meaningful existence from *engaging* more with it, which in turn also leads to *spirituality* (Saraglou et al., 2008). Aspinwall, Mavros, Coyne and Roe (2013) found that individuals who walked in natural environments reported less frustration, more engagement, higher arousal and higher meditation when compared with individuals who walked in urban environments. While interviewing several participants regarding their personal account of nature, most of them reported a feeling of *self-transcendence* and belonging to something larger than themselves (Howell et al., 2012). Another study showed that people from busy cities and populated countries who can not afford to find natural scenery around, experienced improvements in mental health by just spending some time in urban green spaces (White, Alcock, Wheller &

Depledge, 2013).

Prior researches have found a positive association between connection with nature and well being but what variables moderate this relationship was not really explored until Zhang, Howell and Iyer (2014) attempted to do so. In their study, they found that the relationship between connectedness with nature and life satisfaction was highly determined by the mediating variable of *engagement with beauty*. Therefore, active engagement with natural environment enhances life satisfaction and not just appreciation of its beauty alone.

Similarly, Nisbet and Zelenski (2011) found that individuals who participated in a nature walk reported more levels of life satisfaction than individuals who walked indoors.

The manner in which the construct of happiness has been defined also influences its relationship with connection with nature. As it is well known by now that “well being is not just the absence of pain, discomfort and incapacity. It requires that basic needs are met, that individuals have a sense of purpose, and that they feel able to achieve important personal goals and participate in society....” (Newton, 2007).

Sometimes connection with nature may not essentially lead to feelings of well being but instead; it may lead to the opposite. *Eco anxiety* is a term that indicates concern and worry about our environment. People who are highly connected with nature have the tendency to feel irritable and anxious when thinking about how humans are damaging the environment, such as global warming or large scale cutting of trees (Nobel, 2007). Therefore, nature connectedness may not always lead to well-being and an experience of pleasant emotions but also make an individual guilty or distressed about destruction and pollution of nature.

Certain aspects of nature like water or trees induce different kinds of affective states. For instance, a study conducted by Barton and Pretty (2010) studied levels of well being in various natural settings which included urban green spaces, countryside or farmlands, forests and woodlands, waterside and wild habitats. Meta analysis of ten studies revealed that presence of water generated maximum levels of well being. White et al. (2013) also found that *aquatic environments* lead to more levels of happiness because they can afford activities like swimming or water sports. For this reason, visiting coastal environments such as, beaches are more associated with feelings of rejuvenation in comparison to visiting a place full of urban buildings and structure. This effect has been found to be significant even after controlling for demographics and visit characteristics (e.g., duration, presence of others, etc). Playgrounds and playing fields were found to be least associated with rejuvenation (White et al., 2013). Kinker (2012) studied the emotional effects of rock climbing. Participants described the experience as involving “joyous levels of concentration” or *flow*, which they were eventually able to transfer

in other aspects of life.

Atchley et al. (2012) studied hikers on a four-day backpacking trip on *creativity*. Hikers who completed their hike were able to solve puzzles 47% better than the control group. Therefore, nature plays a beneficial role in creative thinking. McDonalds and Schreyer's (1991) also concluded that wilderness experience "creates combination of extreme states of consciousness and sensory acuity" (Naor & Mayselles, 2017). Studies show that when one keeps the gadgets aside and goes solely for the purpose of walking or enjoying nature, it allows the prefrontal cortex to recover (Bratman, Hamilton, Hahn, Daily & Gross, 2015).

Another correlate or a consequence of spending time in nature is *vitality*, which is a positive emotion associated with both calmness and higher level of pleasant arousal (Ryan et al., 2010). Especially during middle-aged years, hectic daily schedule requires one to visit natural environments for the sole purpose of stress reduction and restoration of depleted emotional and cognitive resources (Blanchflower & Oswald, 2004). It is not just the physical visit or presence of these natural surroundings that induces happiness but also different kinds of physical activities associated with them such as, nature walk or nature related sports. Other psychological effects of being in nature are experiences of awe and wonder (Shiota, Keltner & Mossam, 2007), increased levels of vitality and zest (Ryan et al., 2010) and attention restoration or improved cognitive functioning (Berman et al., 2008; Kuo, 2015).

Nature also brings along with it the benefit of *reflection*. Fuller et al. (2007) found that areas such as dense forests or areas where there was more plant biodiversity were highly related to reflection. Cheng and Monroe (2012) also found a few correlates of connection with nature that enable one to achieve higher levels of well-being. Empathy, healthy coping mechanisms, rejuvenation through nature and positive emotions were one of the few correlates explored in their study.

Solitude allows time and space for self-reflection within a nonjudgmental environment provided by nature. This theme of reflection has also been found in a variety of studies among participants involved in states of wilderness immersion via hiking, nature walks and canoeing leading to critical reflection, reconnection to self, alteration of existing beliefs, attitudes and behaviors (Coburn, 2006; Wood, 2010; Wilson, 2011).

Berto (2014) also found that being in natural environments or short term visits to nature areas reduced salivary *cortisol* level compared to children who visited built up environments only. It has been found that young adults begin to find nature more and more restorative as they get older. But those aged 16-24 years did not necessarily feel restoration due to their focus on socializing with friends or increased social media addiction. Studies have found that urban dwellers who strolled for 20 minutes in an urban park in Finland, reported more stress relief than those who strolled around in the city

center (Lanki et al., 2017). Natural environments evoke positive moods such as *peacefulness*, *energy* and *tranquility* and reduce negative moods such as anger, sadness and fatigue.

Studies have also found the effect of having a companion when travelling or being out in nature. Johansson, Hartig and Staats (2011) found that travelling alone in nature was more related to revitalization in comparison to travelling with someone in nature. This might be due to the solitude of nature that can be enjoyed silently without anyone else's company. On the other hand, revitalization was experienced more when walking in an urban area with a friend versus walking without a companion in an urban area. Parents also report feeling greater levels of restoration when traveling without children because spending time with children and looking after them may not necessarily be the most restorative activity but also a bit stressful (White & Dolan, 2009).

Nisbet and Zelenski (2013) found nature relatedness scale to be positively related with both hedonic measures of well being viz. emotional experience of fascination, vitality, positive mood, and eudaimonic measures of well being, such as, personal growth, autonomy and purpose in life. But the causation is not very clear whether happy people are more connected with nature or does nature connection lead to happiness (Brown & Kasser, 2005). This could be explored further in future research.

Cervinka, Roderer and Hefler (2012) also found a positive association of nature relatedness with eudaimonic aspects of well being, such as, meaning in life and vitality, and negative correlation with materialism (Diessner et al., 2008). In another finding, subjects who were instructed to immerse themselves in a natural environment reported greater intrinsic aspirations and purpose in life than those who were instructed to immerse themselves in a non-natural environment (Weinstein, Przybylski & Ryan, 2009). Studies show that nature elicits the process of mirroring, confronting oneself and even pushing one's boundaries to discover unknown aspects of self. It acts as "an active agent" in the process of personal growth. Some travelers have reported an episode of *peak experiences* and insight into a meaningful personal issue when in contact with nature (Naori & Mayseless, 2017).

Being out in natural environments also reduces one's tendency to brood or *ruminate*. In one study, Bratman, Hamilton, Hahn and Gross (2015) assigned 60 participants to a 90-minute walk session in an urban setting or a natural setting that involved oak woodlands. Pre test and post test scores showed a significant difference on emotional and cognitive measures. Those who walked in nature, reported less anxiety, less tendency to focus on negative aspects or rumination, less negative affect and more capacity for short term memory. This is because nature increases the activity of prefrontal cortex in the brain, which fights depression and anxiety (Bratman et al., 2015).

Various scales have been developed in psychology which measure

connectedness to nature and its various aspects. For instance, Davis, Green and Reed (2009) have developed a scale measuring *Commitment to Nature*. Dutcher et al. (2007) gave the *Connectivity with Nature Scale* and Schultz (2002) focused on *Inclusion of Nature in Self Scale*. This scale measures the extent to which an individual includes nature within his or her cognitive representation of self (Capaldi, Dopko & Zelenski, 2014).

Kengier et al. (2013) have summarized some of the benefits of connecting with nature represented below (Gelsthorpe, 2017):

BENEFIT	DESCRIPTION	EXAMPLES
Psychological Well Being	Positive effect on mental processes	<ul style="list-style-type: none"> • Increased self esteem • Improved mood • Reduced anger / frustration • Psychological well being • Reduced anxiety • Improved behavior
Cognitive	Positive effect on cognitive ability or function	<ul style="list-style-type: none"> • Attentional restoration • Reduced mental fatigue • Improved academic performance • Increased education/ learning opportunities • Improved ability to perform tasks • Improved cognitive function in children • Improved productivity
Physiological	Positive effect on physical function and / or physical health	<ul style="list-style-type: none"> • Reduced stress • Reduced blood pressure • Reduced cortisol levels • Reduced headaches • Reduced mortality rates from circulatory disease • Faster healing • Addiction recovery • Perceived health/well being • Reduced cardiovascular disease, respiratory disease, long term illness • Reduced occurrence of illness
Social	Positive social effect on an individual, community or national scale	<ul style="list-style-type: none"> • Social interaction • Social empowerment • Reduced crime rates • Reduced violence • Interracial interaction • Social cohesion • Social support

Spiritual	Positive effect on individual religious pursuits or spiritual well being	<ul style="list-style-type: none"> • Increased inspiration • Increased spiritual well being
Tangible	Material goods that an individual can accrue for wealth or possession	<ul style="list-style-type: none"> • Food supply • Money

Conclusion and Implications:

These findings of nature's influence on mental well being need to reach city planners (Bratman et al., 2015). According to Pearson and Craig (2014), if the causal relationship between natural environments and mental health is correct, then increasing accessibility to well maintained green spaces; and developing programs that encourage people to interact with nature should be implemented at a greater level.

Future research is needed to identify the exact elements that make some properties of nature restorative. Can the same be simulated in buildings and architecture? Because at times, it is not the natural environment alone that induces positive emotions, but also some buildings with their specific architecture or ambience. When asked to describe their favorite places, children have often described places like "a cottage with trees around," which indicates that some structured buildings amidst nature can also promote well being in the same way as natural scenery does (Pearson & Craig, 2014).

Another conclusion to be drawn from the plethora of researches is that nature connectedness alone is not sufficient as a trait to enable a feeling of wholeness and restoration, but the act of immersing oneself into nature is further more important. Although, connectedness with nature and engagement with nature appear to be the same but one is simply a proxy of the other (Zhang, Howell & Iyer, 2014).

It is clear so far that nature connection has valuable implications. The trait must be inculcated at a younger age so that children grow up to have a connection with their environment and are well equipped to deal with environmental issues if they may arise (Cheng & Monroe, 2012).

One practical application of nature connection is seen in *Ecotherapy*. Ecotherapy is an attempt to merge human mental health with nature in a therapeutic way and regains a lost relationship with nature. In the earlier times, when our contact with nature was more immediate and frequent, we could easily reset our bodies and minds and restore our cognitive faculties (Nesbit & Lem, 2015).

Society is beginning to realize that material goods and isolation from nature, lead to grief, anxiety, depression, dissatisfaction and addiction (Fisher, 2006). Ecotherapy can be usefully applied in bridging the gap between

demands of society and the need to connect with nature (Goleman, Barlow & Bennett, 2010). Ecotherapy supports disadvantaged, disabled or marginalized people to work with nature in a therapeutic way. The form of the work varies from horticultural practices and green space conservation, to nature walks and excursions.

Whether an individual suffers from PTSD, isolation, loneliness, depression or anxiety, the mainstream coping mechanisms and treatments are not changing the root cause of such maladies nor are they always going to promote optimal outcomes. We must incorporate modern therapeutic approaches with traditionally understood nature-based approaches in order to heal people and promote mentally healthy ways of daily living (Naoufal, 2017).

In organizational psychology, such researches need to happen in order to increase employee productivity and levels of energy at work. Many job companies offer vacation time to allow employees to rejuvenate and perform better at work. However, the frequency of vacation is usually a month or two weeks in a year. Looking at the review, one can infer that this once a year connection with nature is not enough for anyone to release the stresses of urban work life. Therefore, more studies can be conducted to see how frequently do we need to organize nature trips in order to increase employee satisfaction without also affecting the performance and time required to invest at work (Naoufal, 2017).

Thus, this variable has wider applications ranging from clinical psychology (such as, dealing with depressed patients) to health psychology (e.g., helping patients in hospitals recover from illnesses) to positive psychology (e.g., ensuring that normal individuals optimize their well being by being outdoors in nature).

We must wonder whether children are losing the ability to create their own games? Are teachers providing hands-on experience with the natural world to children at schools? Are we adults becoming desensitized towards our natural environment? Is the next generation going to have decreased appreciation of the natural world since they themselves have been victims of being cocooned (Louv, 2010). These are a few questions that evoke concern and motivate us to work towards saving ourselves from this disconnect from nature in the coming times.

Nature is a free resource. You just need to access it!

“...that marvellous movement of the sea and yourself. And if you have no relationship with that, how can you have relationship with another. If you don't perceive the sea, the quality of the water, the waves, the great vitality of the tide going out and coming in, how can you be aware, or be sensitive to human relationship? Please, it is very important to understand this, because beauty is not merely in the physical form, but beauty in essence is that quality of sensitivity, the quality of observation of nature.”

On Nature and the Environment (pp 84-85), Jiddu Krishnamurti

References :

1. Adhémar, A. J. (2008). *Nature as clinical psychological intervention* (Doctoral dissertation). Institute of Psychology, University of Århus, Denmark.
2. Alexander, B. K. (2008). *The Globalization of Addiction: A study in poverty of the spirit*. Oxford: Oxford University Press.
3. Allen, J.B., & Ferrand, J.L. (1999). Environmental locus of control, sympathy, and proenvironmental behavior: A test of Geller's actively caring hypothesis. *Environment and Behavior*, 31, 338-353.
4. Alvarsson, J. J., Wiens, S., & Nilsson, M. E. (2010). Stress recovery during exposure to nature sound and environmental noise. *International Journal of Environmental Research and Public Health*, 7(3), 1036-1046.
5. Aspinwall, P., Mavros, P., Coyne, R., & Roe, J. (2013). The urban brain: Analyzing outdoor physical activity with mobile EEG. *British Journal of Sports Medicine*, 1-6.
6. Atchley, R. A., Strayer, D. L., & Atchley, P. (2012). Creativity in the wild: Improving creative reasoning through immersion in natural settings. *PloS One*, 7(12), e51474.
7. Barton, J., & Pretty, J. (2010). What is the best dose of nature and green exercise for improving mental health? A multi-study analysis. *Environmental Science and Technology*, 44(10), 3947-3955.
8. Berman, M. G., Jonides, J., & Kaplan, S. (2008). The cognitive benefits of interacting with nature. *Psychological Science*, 19(12), 1207-1212.
9. Berto, R. (2014). The role of nature in coping with psycho-physiological stress: a literature review on restorativeness. *Behavioral Sciences*, 4(4), 394-409.
10. Bixler, R. D., Floyd, M. F., & Hammitt, W. E. (2002). Environmental socialization: Quantitative tests of the childhood play hypothesis. *Environment and Behavior*, 34(6), 795-818.
11. Blanchflower, D. G., & Oswald, A. J. (2004). Money, sex and happiness: An empirical study. *The Scandinavian Journal of Economics*, 106(3), 393-415.
12. Blanck, H. M., Allen, D., Bashir, Z., Gordon, N., Goodman, A., Merriam, D., & Rutt, C. (2012). Let's go to the park today: The role of parks in obesity prevention and improving the public's health. *Childhood Obesity (Formerly Obesity and Weight Management)*, 8(5), 423-428.
13. Bratman, G. N., Hamilton, J. P., Hahn, K. S., Daily, G. C., & Gross, J. J. (2015). Nature experience reduces rumination and subgenual prefrontal cortex activation. *Proceedings of the National Academy of Sciences*, 112(28), 8567-8572.
14. Brown, K. W., Kasser, T. (2005). Are psychological and ecological well-being compatible? The role of values, mindfulness and lifestyle. *Social Indicators Research*, 74, 349-368. Google Scholar, Crossref, ISI
15. Carrier, L. M., Spradlin, A., Bunce, J. P., & Rosen, L. D. (2015). Virtual empathy: Positive and negative impacts of going online upon empathy in young adults. *Computers in Human Behavior*, 52, 39-48.
16. Capaldi, C. A., Dopko, R. L., & Zelenski, J. M. (2014). The relationship between nature connectedness and happiness: a meta-analysis. *Frontiers in Psychology*, 5, 976.
17. Cervinka, R., Röderer, K., & Hefler, E. (2012). Are nature lovers happy? On

- various indicators of well-being and connectedness with nature. *Journal of Health Psychology*, 17(3), 379-388.
18. Cheng, J. C. H., & Monroe, M. C. (2012). Connection to nature: Children's affective attitude toward nature. *Environment and Behavior*, 44(1), 31-49.
 19. Coburn, M. J. (2006). *Walking home: Women's transformative experiences in the wilderness of the Appalachian Trail* (Doctoral Dissertation). Institute of Transpersonal Psychology, California, United States of America.
 20. Davis, J. L., Green, J. D., & Reed, A. (2009). Interdependence with the environment: Commitment, interconnectedness, and environmental behavior. *Journal of Environmental Psychology*, 29(2), 173-180.
 21. Diessner, R., Solom, R. D., Frost, N. K., Parsons, L., & Davidson, J. (2008). Engagement with beauty: Appreciating natural, artistic, and moral beauty. *The Journal of Psychology*, 142(3), 303-332.
 22. Dutcher, D. D., Finley, J. C., Luloff, A. E., & Johnson, J. B. (2007). Connectivity with nature as a measure of environmental values. *Environment and behavior*, 39(4), 474-493.
 23. Dutton, D. (2009). *The art instinct: Beauty, pleasure & human evolution*. New York: Oxford University Press.
 24. El-Sheikh, M., Erath, S. A., & Bagley, E. J. (2013). Parasympathetic nervous system activity and children's sleep. *Journal of Sleep Research*, 22, 282-288. doi: 10.1111/jsr.12019
 25. Fisher, A. (1996). Toward a more radical ecopsychology: Therapy for a dysfunctional society. *Alternatives Journal*, 22(3), 20.
 26. Fromm, E. (1972). Humanistic planning. *Journal of the American Institute of Planners*, 38(2), 67-71.
 27. Frumkin, H. (2001). Beyond toxicity human: Health and the natural environment. *American Journal of Preventive Medicine*, 20, 234-240.
 28. Fuller, R. A., Irvine, K. N., Devine-Wright, P., Warren, P. H., & Gaston, K. J. (2007). Psychological benefits of greenspace increase with biodiversity. *Biology letters*, 3(4), 390-394.
 29. Goel, N., Terman, M., Terman, J. S., Macchi, M. M., & Stewart, J. W. (2005). Controlled trial of bright light and negative air ions for chronic depression. *Psychological Medicine*, 35(7), 945-955.
 30. Goleman, D., Barlow, Z., & Bennett, L. (2010). Forging new norms in New Orleans: From emotional to ecological intelligence. *Teacher Education Quarterly*, 37(4), 87-98.
 31. Gelsthorpe, J. (2017). Disconnect from nature and its effect on health and well being: a public engagement literature review. *Natural History Museum: Learning and Audience Research Department*.
 32. Haidt, J., Keltner, D., Peterson, C., & Seligman, M. E. (2004). Appreciation of beauty and excellence. *Character Strengths and Virtues*, 537-551.
 33. Hart, R. A. (2013). *Children's participation: The theory and practice of involving young citizens in community development and environmental care*. Routledge.
 34. Hinds, J., & Sparks, P. (2008). Engaging with the natural environment: The role of affective connection and identity. *Journal of Environmental Psychology*, 28(2), 109-120.
 35. Howell, A. J., Dopko, R. L., Passmore, H. A., & Buro, K. (2011). Nature connectedness: Associations with well-being and mindfulness. *Personality and*

- Individual Differences*, 51(2), 166-171.
36. Johansson, M., Hartig, T., & Staats, H. (2011). Psychological benefits of walking: Moderation by company and outdoor environment. *Applied Psychology: Health and Well Being*, 3(3), 261-280.
 37. Kals, E., Schumacher, D., & Montada, L. (1999). Emotional affinity toward nature as a motivational basis to protect nature. *Environment and Behavior*, 31(2), 178-202.
 38. Kaplan, R., & Kaplan, S. (1989). *The experience of nature: A psychological perspective*. CUP Archive.
 39. Kaplan, S., & Berman, M. G. (2010). Directed attention as a common resource for executive functioning and self-regulation. *Perspectives on Psychological Science*, 5(1), 43-57.
 40. Kellert, S. (2005). *Building for life: Designing and understanding the human-nature connection*. Washington: Island Press.
 41. Keniger, L. E., Gaston, K. J., Irvine, K. N., & Fuller, R. A. (2013). What are the benefits of interacting with nature? *International Journal of Environmental Research and Public Health*, 10(3), 913-935.
 42. Keyes, C. L. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology*, 73(3), 539.
 43. Kinker, S. T. (2012). *Rock climbing, flow theory, and yoga*. (M.A., Prescott College). ProQuest Dissertations and Theses (1283371538).
 44. Klasky, B. (2014, January). *Ben Klasky: Getting hooked on nature* [Video File]. Retrieved from https://www.ted.com/talks/ben_klasky_getting_hooked_on_nature
 45. Korpela, K., Borodulin, K., Neuvonen, M., Paronen, O., & Tyrväinen, L. (2014). Analyzing the mediators between nature-based outdoor recreation and emotional well-being. *Journal of Environmental Psychology*, 37, 1-7.
 46. Kuo, F. E., & Faber Taylor, A. (2004). A potential natural treatment for attention-deficit/hyperactivity disorder: evidence from a national study. *American Journal of Public Health*, 94(9), 1580-1586.
 47. Kuo, M. (2015). How might contact with nature promote human health? Promising mechanisms and a possible central pathway. *Frontiers in Psychology*, 6, 1093.
 48. Larson, L. R., Green, G. T., & Cordell, H. K. (2011). Children's time outdoors: results and implications of the national kids survey. *Journal of Park and Recreation Administration*, 29(2), 1-20.
 49. Lanki, T., Siponen, T., Ojala, A., Korpela, K., Pennanen, A., Tiittanen, P., ... & Tyrväinen, L. (2017). Acute effects of visits to urban green environments on cardiovascular physiology in women: A field experiment. *Environmental Research*, 159, 176-185.
 50. Leary, M. R., Tipsord, J. M., & Tate, E. B. (2008). Allo-inclusive identity: Incorporating the social and natural worlds into one's sense of self. In H. A. Wayment & J. J. Bauer (Eds.), *Decade of behavior: Transcending self-interest: Psychological explorations of the quiet ego* (pp. 137-147). Washington, DC, US: American Psychological Association.
 51. Li, Q., Morimoto, K., Kobayashi, M., Inagaki, H., Katsumata, M., Hirata, Y., et al. (2009). Visiting a forest, but not a city, increases human natural killer activity and expression of anticancer proteins. *International Journal of*

- Immunopathology and Pharmacology*, 21, 117-128.
52. Louv, R. (2005). Last child in the woods: Saving our kids from nature deficit disorder.
 53. Maas, J., Spreeuwenberg, P., Van Winsum-Westra, M., Verheij, R. A., Vries, S., & Groenewegen, P. P. (2009). Is green space in the living environment associated with people's feelings of social safety?. *Environment and Planning A*, 41(7), 1763-1777.
 54. Martínez-Martí, M. L., Hernández-Lloreda, M. J., & Avia, M. D. (2016). Appreciation of beauty and excellence: Relationship with personality, prosociality and well-being. *Journal of Happiness Studies*, 17(6), 2613-2634.
 55. Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology*, 24(4), 503-515.
 56. McDonald, B. L., & Schreyer, R. (1991). Spiritual benefits of leisure participation and leisure settings. In B. L. Driver, P. J. Brown, & G. L. Peterson (Eds.), *Benefits of leisure* (pp. 179-194). State College, PA, US: Venture Publishing.
 57. McKechnie, G. E. (1977). The environmental response inventory in application. *Environment and Behavior*, 9(2), 255-276.
 58. Naor, L., & Mayseless, O. (2017). How Personal Transformation Occurs Following a Single Peak Experience in Nature: A Phenomenological Account. *Journal of Humanistic Psychology*, 0022167817714692.
 59. Naoufal, A. C. (2016). *Mending the Human-Nature Relationship Through Therapy* (Doctoral dissertation). City University of Seattle, Seattle, U.S.A.
 60. Newton, J. (2007). *Wellbeing research: Synthesis report*. London: DEFRA.
 61. Nisbet, E. K., & Zelenski, J. M. (2011). Underestimating nearby nature: Affective forecasting errors obscure the happy path to sustainability. *Psychological Science*, 22(9), 1101-1106.
 62. Nisbet, E. K., & Zelenski, J. M. (2013). The NR-6: a new brief measure of nature relatedness. *Frontiers in Psychology*, 4, 813.
 63. Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2009). The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behavior. *Environment and Behavior*, 41(5), 715-740.
 64. Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2011). Happiness is in our nature: Exploring nature relatedness as a contributor to subjective well-being. *Journal of Happiness Studies*, 12(2), 303-322.
 65. Nisbet, E., & Lem, M. (2015). Prescribing a dose of nature: modern medicine is rediscovering the simple healing power of being outdoors. *Alternatives Journal*, 41(2), 36-40.
 66. Nobel, J. (2007). Eco-anxiety: Something else to worry about. *The Philadelphia Inquirer*, 9.
 67. Park, S. H., & Mattson, R. H. (2008). Effects of flowering and foliage plants in hospital rooms on patients recovering from abdominal surgery. *HortTechnology*, 18(4), 563-568.
 68. Pearson, D. G., & Craig, T. (2014). The great outdoors? Exploring the mental health benefits of natural environments. *Frontiers in Psychology*, 5, 1178.
 69. Pearson, D. G., & Craig, T. (2014). The great outdoors? Exploring the mental health benefits of natural environments. *Frontiers in Psychology*, 5, 1178.
 70. Peterson, C., & Seligman, M. E. (2004). *Character strengths and virtues: A*

- handbook and classification* (Vol. 1). Oxford University Press.
71. RSPB. (2013). Giving nature a home. Retrieved September 22, 2013 from <http://homes.rspb.org.uk>
 72. Ryan, R. M., Weinstein, N., Bernstein, J., Brown, K. W., Mistretta, L., & Gagne, M. (2010). Vitalizing effects of being outdoors and in nature. *Journal of Environmental Psychology*, 30(2), 159-168.
 73. Sandry, N. (2013). Nature deficit disorder. *Educating Young Children: Learning and Teaching in the Early Childhood Years*, 19(2), 32.
 74. Saroglou, V., Buxant, C., & Tilquin, J. (2008). Positive emotions as leading to religion and spirituality. *The Journal of Positive Psychology*, 3(3), 165-173.
 75. Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. In *Psychology of sustainable development* (pp. 61-78). Springer, Boston, MA.
 76. Schultz, P. W., Shriver, C., Tabanico, J. J., & Khazian, A. M. (2004). Implicit connections with nature. *Journal of Environmental Psychology*, 24(1), 31-42.
 77. Searles, H. F. (1960). The nonhuman environment.
 78. Shiota, M. N., Keltner, D., & Mossman, A. (2007). The nature of awe: Elicitors, appraisals, and effects on self-concept. *Cognition and Emotion*, 21(5), 944-963.
 79. Taylor, V. R. (2017). *Unplugging: A Parent's Handbook for Children's Technology Use*. Honors in the major thesis, 243. <http://stars.library.ucf.edu/honorsthesis/243>.
 80. Taylor, A., & Kuo, F. E. (2009). Children with attention deficits concentrate better after walk in the park. *Journal of Attention Disorders*, 12(5), 402-409.
 81. Thompson, C. W., Roe, J., Aspinall, P., Mitchell, R., Clow, A., & Miller, D. (2012). More green space is linked to less stress in deprived communities: Evidence from salivary cortisol patterns. *Landscape and Urban Planning*, 105(3), 221-229.
 82. Ulrich, R. S., Kellert, S. R., & Wilson, E. O. (1993). The biophilia hypothesis. *Biophilia, biophobia, and natural landscapes*, 73-137.
 83. Unsworth, S. J., Levin, W., Bang, M., Washinawatok, K., Waxman, S. R., and Medin, D. L. (2012). Cultural differences in children's ecological reasoning and psychological closeness to nature: evidence from menominee and european American children. *Journal of Cognition and Culture*, 17-29. doi: 10.1163/156853712X63390
 84. Valkenburg, P. M., Peter, J., & Schouten, A. P. (2006). Friend networking sites and their relationship to adolescents' well-being and social self-esteem. *CyberPsychology & Behavior*, 9(5), 584-590.
 85. Weinstein, N., Przybylski, A. K., & Ryan, R. M. (2009). Can nature make us more caring? Effects of immersion in nature on intrinsic aspirations and generosity. *Personality and Social Psychology Bulletin*, 35(10), 1315-1329.
 86. Wells, N. M., & Evans, G. W. (2003). Nearby nature: A buffer of life stress among rural children. *Environment and Behavior*, 35(3), 311-330.
 87. Wells, N. M., & Lekies, K. S. (2006). Nature and the life course: Pathways from childhood nature experiences to adult environmentalism. *Children Youth and Environments*, 16(1), 1-24.
 88. White, M. P., & Dolan, P. (2009). Accounting for the richness of daily activities. *Psychological Science*, 20(8), 1000-1008.
 89. White, M. P., Alcock, I., Wheeler, B. W., & Depledge, M. H. (2013). Would

- you be happier living in a greener urban area? A fixed-effects analysis of panel data. *Psychological Science*, 24(6), 920-928.
90. White, M. P., Pahl, S., Ashbullby, K., Herbert, S., & Depledge, M. H. (2013). Feelings of restoration from recent nature visits. *Journal of Environmental Psychology*, 35, 40-51.
 91. World Health Organization. (2014). Management of Substance Abuse Unit. *Global Status Report on Alcohol and Health*, World Health Organization.
 92. Wilson, E. O. (1984). *Sociobiology (1980) and Biophilia: The Human Bond to Other Species*.
 93. Wilson, H. F. (2011). Passing propinquities in the multicultural city: the everyday encounters of bus passengering. *Environment and Planning A*, 43(3), 634-649.
 94. Wood, R. (2010). *Psycho-Spiritual transformation experienced by participants of modern wilderness rites of passage quests: an intuitive inquiry*. Institute of Transpersonal Psychology.
 95. Zelenski, J. M., & Nisbet, E. K. (2014). Happiness and feeling connected: The distinct role of nature relatedness. *Environment and Behavior*, 46(1), 3-23.
 96. Zhang, J. W., Howell, R. T., & Iyer, R. (2014). Engagement with natural beauty moderates the positive relation between connectedness with nature and psychological well-being. *Journal of Environmental Psychology*, 38, 55-63.
 97. Zhang, J. W., Piff, P. K., Iyer, R., Koleva, S., & Keltner, D. (2014). An occasion for unselfing: Beautiful nature leads to prosociality. *Journal of Environmental Psychology*, 37, 61-72.

Study of Ecology and Biodiversity of Daha River of Siwan (Bihar) with respect to Pollution

* Kumari Shilpi

Abstract- *The paper deals with the study of effects of pollution on ecology and biodiversity of River Daha flowing through the district of Siwan, Bihar. The river gets periodically exploited due to addition of sugar factory wastes and distillery effluents. Such pollutants have brought about changes in the biotic components of water as a result of which some species might have disappeared and others reappeared thereby transforming the biological profile of the river. Since the river is unique in its biodiversity and its water is used for various purposes like irrigation, bathing, fishing and ablution this river has been selected for study with regards to its Ichthyofauna, Entomofauna and physiochemical characteristics. Accordingly physiochemical factors like Temperature, PH, Turbidity, Conductivity, Total Dissolved Solids (TDS), Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Hardness, Ca^{++} , Mg^{++} , PO_4^{2-} , NO_3^- and Cl^- were studied and reported. The Ichthyofauna study revealed 9 orders, 15 families and 31 species of fishes whereas the Entemofauna study revealed 26 species of insects.*

Key Words- Ecology, Biodiversity, Pollution

Introduction: Daha River having its source in River Ghaghra and flowing through the districts of Gopalganj and Siwan has become much polluted due to its exploitation by human beings for a considerable length of time. The three districts namely Chapra, Siwan and Gopalganj came into existence by splitting of old Saran district that is fed by rivers Ganga, Gandak and Ghaghra the latter two being the tributaries of River Ganga. River Daha used to receive some of its water through river Gandak before erection and completion of embankment that is now 100 ft wide in Siwan that is characterized by presence of sand bars (locally known as Diara) in its bed.

Biodiversity of this river was not studied till the present one and this study has been conducted to assess the ecology and biodiversity of River Daha with respect to its pollution.

For the study of River Daha with respect to the pollutants and sewage received three sites were selected along the course of the river at the following three spots:

* Chitragupta Nagar, PO- Siwan, Dist- Siwan, Pin- 841226, Bihar

Site – I Located at Tarwa on pollution free reservoir

Site – II Located away from Site-I within the town of Siwan that receives sewage from adjoining places and is polluted

Site – III Located downstream on the river away from sewage discharge and is slightly polluted

Materials and Methods:

Water samples from these three sites (I, II, III) were collected and analyzed for physiochemical factors along with its biotic fauna specially Ichthyofauna and Entomofauna. All the physiochemical parameters were estimated as per standard methods (APHA 1975).

The specimens of fishes were collected with the help of different kinds of fish catching appliances and devices that were then preserved with fixed 8% formalin. Smaller fish specimens were directly put into formalin while medium sized ones prior to fixation were given a longitudinal incision along the abdomen whereas large specimens were fixed by injecting 10% formalin in the muscle and abdomen. Fixed specimens were kept in containers with proper labeling and the tail pointing upwards to avoid damage to caudal fins (accordingly from P.K. Verma 1976).

Insects were sampled by means of ordinary hand pond nets with netting cloth of 6 meshes/cm (15/inches) on a pole of 1.2 meter long stick (according Crisp, 1962). On each sampling date 5 sweeps were made at each station. For each study of nymphs finger meshes net (25/cm) were employed. An ordinary hand pond net of conventional design and diameter was used. The insects' samples were brought to the laboratory and preserved in 5% formalin and then identified. Some of the identification was confirmed with the help of Zoological survey of India Publications.

Result and Discussion:

The physiochemical characteristics of River Daha are given in Table-I, list of Ichthyofauna reported from River Daha are given in Table-II and list of Entomofauna reported from River Daha are given in Table-III.

The temperature remained low at Site I and Site III and slightly high at Site II. Decrease in temperature was observed immediately after rain. This temperature however rose considerably after the rainy period was over due to dust free atmosphere. TDS, turbidity and conductivity changes according to the type of pollutant and sewage discharge. They showed seasonal variation on all the three study points.

DO levels were found to increase with water current moving away from polluting sources thereby establishing that self-purification occurs. DO level decreased during summer and increased during winter and rain.

BOD pollution free sites exhibit low BOD while others exhibit high BOD. BOD values also declined gradually as the water moved away from the polluting sources. BOD values were held in inverse relationship with DO level of water.

The pH values were found to be consistent at all sites suggesting that water at all sites was well buffered.

COD value increases with increasing pollutants and was low only in pollution free places.

The hardness of water at the polluted site was high due to sewage and at other places seasonal impact on total hardness could be observed.

Levels of Calcium, Magnesium, Sulphate, Chloride and Nitrate were found to be low at pollution free sites and high at polluted sites. Pollution free sites showed low nitrate and phosphate that increased at other sites due to pollution or sewage discharge. Phosphate level increased during summer and decreased during rain due to dilution of water.

The result of this study revealed that water near source remained acceptable whereas at places away from source was slightly to moderately polluted.

The Ichthyofauna and Entomofauna observed in the river are given in Table II and Table III respectively.

The Ichthyofauna and Entomofauna study revealed a high variety of fish and aquatic insects present in this river. Biodiversity of this river is very good.

Among Ichthyofauna 9 orders, 15 families and 31 species were identified. Some of the orders are Clupeiformes, Cypriniformes, Beloniformes, Symbranchiformes, Perciformes and Mastcembeliformes. Among Ichthyofauna 1 species in order Clupeiformes, 15 species in order Cypriniformes, 1 species in order Baloniformes, 1 species in order Symbranchiformes, 2 species in order Perciformes, 3 species in Anabontiformes and 3 species in order Mastcebeleformes were studied. Most of the species of fish studied are of fresh water whereas some are of muddy water. Ichthyofaunas are indicators of the levels of water pollution.

Among Entomofauna 26 species were reported that belong to 7 orders like Coleopteran, Odonate, Trichoptera, Plecoptera, Hemipter, Diptera and Ephemeroptera. Among Entomofauna 1 species in Ephemeroptera, 2 species in Odonata, 1 species in Plecoptera, 9 species in Hemiptera, 1 in Trichoptera, 7 in Dipteradna, 5 species in Coleoptera were found. Ephemeroptera, Odonata and Trichoptera were found present in places with abundance of oxygen. Hemiptera, Coleoptera and Trichoptera were found present in both fresh and polluted water whereas Diptera and few families of Coleoptera were found present in polluted water. Tanypodinae among Diptera family were ubiquitous in nature while Heleidae among algae and Hydrophicidae among coleoptera were found present in thick vegetation. Thus it was found that insect is also parameter of pollution indicator of water.

Along with these Ichthyofauna and Entomofauna, Crustacean annelids and molluscs were also found present. These biotic fauna are both of clean and polluted water and have been labeled as bio-indicators. Some species

Table – 1, Physiochemical Properties of water collected from three spots of River Daha

	TDS (mg/l)			PH			DO (mg/l)			BOD (mg/l)			COD (mg/l)			Conductivity (us/cm)			Turbidity (NTU)			Temperature (°C)		
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
JAN	200	216	200	7.5	7.6	7.6	7.6	7.7	7.9	1.9	2.0	2.1	10	9.0	9.5	232	215	210	16	18	15	14	14.2	14.5
FEB	215	230	238	7.6	7.7	7.8	7.2	7.5	7.4	2.3	2.1	3.5	13	11	14	200	245	289	18	18	16	15	15.2	16
MAR	186	189	198	7.6	7.8	7.8	8.2	7.8	7.4	2.3	2.0	2.5	7.4	8.0	7.9	345	367	300	40	18	15	18	21	18.2
APR	142	208	198	7.9	7.7	7.9	7.7	7.5	7.3	2.1	2.2	2.2	7.8	9	8.0	349	365	315	10	45	44	21	25.6	23
MAY	238	249	239	8.1	8.3	8.2	7.5	6.9	6.8	2.5	2.9	1.8	5.9	8	9.0	389	356	323	15	45	46	24	30.3	29
JUN	235	300	263	7.5	8.1	8.0	7.9	6.0	6.2	1.8	2.0	2.5	8.0	7.9	7.6	300	355	333	14	46	45	29	32	33
JUL	168	198	178	8.1	7.7	7.9	5.8	5.7	5.9	2.0	2.2	2.4	5.6	5.5	6.7	245	345	342	17	44	46	27	28	29
AUG	180	195	183	7.6	7.8	7.9	5.3	5.2	5.6	2.2	2.5	1.9	5.7	5.6	7.8	300	300	345	45	55	56	29	30	32
SEP	193	205	245	7.6	7.7	7.8	5.8	5.4	5.8	2.4	2.5	2.0	6.7	12	13	358	289	300	35	55	60	27	28	28
OCT	190	225	210	7.6	7.7	8.1	5.8	5.7	5.6	2.5	2.6	2.6	5.6	13	12	300	345	298	30	59	67	19	23	19
NOV	178	220	203	8.0	7.7	7.8	6.0	5.2	5.0	2.4	2.5	3.0	5.7	13	12	389	386	390	20	60	58	20	20	19.5
DEC	198	223	213	8.0	7.9	8.0	7.0	7.2	7.9	2.5	3.0	3.0	6.0	13	12	389	345	399	21	65	68	20	20	19
Avg	193.58	221.5	214	7.75	7.80	7.90	6.81	6.48	6.56	2.49	2.37	2.37	7.28	9.58	9.057	316.3	326.08	320.3	23.1	44.7	44.3	21.9	23.94	23.35

Table – 1 (Contd.) Physiochemical Properties of water collected from three spots of River Daha

	Total Hrdness (mg/l)			Ca Hardness as CaCo ₃			Ca ⁺⁺ (mg/l)			Mg ⁺⁺ (mg/l)			No ₃ (mg/l)			So ₄ ⁻			Po ₄ ⁻³			Cl ⁻ (mg/l)		
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
JAN	178	179	180	120	115	135	50	55	52	11	12	14	0.25	0.23	0.25	15	25	28	0.08	0.09	0.02	4.12	6.11	8.12
FEB	182	184	195	112	102	110	54	55	52	12	13	15	0.26	0.28	0.25	15	16	33	0.09	0.10	0.02	3.99	7.17	8.55
MAR	229	235	239	89	88	102	58	65	45	12	11	14	0.25	0.22	0.28	23	32	34	0.08	0.09	0.07	5.32	6.11	8.12
APR	158	168	170	102	110	105	55	56	67	13	12	15	0.22	0.23	0.26	33	32	33	0.06	0.06	0.06	5.22	7.11	9.42
MAY	156	173	171	110	89	88	56	58	59	11	13	15	0.24	0.28	0.29	23	25	29	0.08	0.09	0.05	6.22	5.61	8.62
JUN	80	175	170	120	121	119	45	50	54	11	14	15	0.25	0.27	0.25	20	26	30	0.08	0.09	0.04	5.12	7.11	8.72
JUL	93	160	155	134	124	115	55	80	80	12	14	16	0.26	0.28	0.25	23	27	31	0.08	0.07	0.03	6.15	5.16	9.32
AUG	98	130	125	100	134	123	50	88	89	14	14	16	0.22	0.24	0.29	19	28	30	0.06	0.08	0.05	5.12	6.18	8.14
SEP	102	112	108	123	133	120	68	98	90	13	14	16	0.25	0.23	0.28	25	28	32	0.08	0.09	0.04	6.11	7.21	9.11
OCT	128	130	125	125	100	90	65	90	90	12	13	15	0.27	0.25	0.25	23	26	31	0.05	0.06	0.05	5.12	7.11	9.22
NOV	146	185	175	90	90.8	120	60	95	90	13	15	17	0.15	0.33	0.27	24	30	32	0.06	0.09	0.06	4.18	6.23	9.12
DEC	166	236	201	88	89	110	87	80	95	12	13	18	0.15	0.33	0.28	25	32	35	0.08	0.06	0.08	4.12	7.11	9.17
Avg	143	172.25	167.83	109.4	107.98	110.6	58.58	72.5	71.9	11.3	13.1	16.7	0.21	0.26	0.26	22.3	27.2	31.5	0.08	0.08	0.04	6.005	7.35	8.80

Table – II
List of Ichthyofauna (fishes) identified from River Daha, Siwan

	Order	Family	Genus & Species	Common Name
1.	Clupeiformes	Notopteridae	Notopterus Nopopterus	Patra
2.	Cypriniformes	Cyprinidae	Amblypharyngodon Mola	Mola Carplet
			Aspidoparia Jaya	Jaya
			Chela Aptar	Chelwa
			Oxygaster Bacaila	(Ham) Largerazorbelly Minnow
			Chela Labuca	Indian Glass barb
			Puntius Chrysopterus	
			Puntius Cosuatis	Barb
			Puntius Conchoniis	Rosy Barb
			Puntius Phutinis	Dwarf barb
			Puntius Sopheore	Spot fine barb
			Puntius Ticto	Two spot barb
		Botiidae	Botia Lohachata	Y loach (Nakati)
		Nemachelidae	Namacheliis Botia	Mottled zipper loach
3.	Cyprinodontidae	Aplocheilidae	Aplocheilus Panchax	
4.	Siluriformes	Siluridae	Wallago Attu	Bola
		Bagridae	Mystus (Mystus) cavasius	Tengara
			Mystus (Mystus)	Tengara
			Mystus (Mystus) Vittatus	Stripped dwarf catfish
		Calariidae	Claris Batrachus	Mangur
5.	Beloniformes	Balonidae	Xenenthodon Cancila	Garfish
6.	Symbranchiformes	Amphiprionidae	Amphipnoos Cuchia	Mud eel
7.	Perciformes	Centropomidae	Chana baculis	Indian glass fish
		Channidae	Chana ranga	Indian glossy fish
8.	Anabontiformes	Anabantidae	Colisa Chuna	Gaurami
		Osphronemidae	Colisa fascitus	Stripped Gaurami
			Colisa lalius	Sunset Gaurami
9.	Mastcembeliformes	Mastcembelidae	Macroganathus aculeatus	Spotted eel
			Mastacembelus armatus	Spily eel
			Mastacembelus Pancalus	Stripped Spiny eel

Table – III
List of Entomofauna (Insects) identified from River Daha, Siwan

	Order	Family	Species
1.	Ephemeroptera	Baetidae	May Flies
2.	Odonata	Coenagrionidae	Damsel Flies
		Anisoptera	Dragon Flies
3.	Plecoptera	Capriidae	Stone Flies
4.	Hemiptera	Pyrhocoridae	Dysdercus
		Gerridae	Gerris or Water Spider or Pond Skaters
		Notonectidae	Back swimmers
		Pleidae	Neoplea or Pigmy Back Swimmers
		Nepidae	Water Scorpion (1) Neta (2) Ranastra
		Corixidae	Corixa "Water Boatman"
		Belo Stomatidae	Belo Stoma "Giant Water bug"
5.	Trichoptera	Phryganeidae	Caddis Flies (Case-bearer)
6.	Diptera	Culicidae	Culex larva
		Chironomidae	Chironomous larva
		Simuliade	Black Flies Simulium
		Heleidae	Ceratopogon (Sand fly)
		Ephydriidae	Shore flies (Ephydra)
		Syrphidae	Flower Flies
		Tabanidae	Tabanus (Horse Flies)
7.	Coleoptera	Dytiscidae	Dytiscus (Hydrophorous)
		Gyrinidae	Gyrinus "Whirling Beetles"
		Hydrophilidae	Hydrophilus or Laccophilus
		Gyrinidae	Dineutus
		Halipidae	Halipus

Conclusion:

The present studies reveal that River Daha is moderately polluted though the pollution load keeps varying at different sites selected for studies. The extent of pollution is threatening as regards the ecology of the river and its impact on the surrounding population is concerned. Hence remedial measures for restoring its health are suggested and accordingly two suggestions are made viz **(a) biodiversity of the river should be conserved and (b) its over exploitation should be checked**. So it is necessary to develop methods for efficient utilization and sustainable development of River Daha as well as all other rivers since water after air is the most precious natural resource indispensable for survival of all living beings be it human, animals, plants or any other organism.

References :

1. APHA (1998): Standard Method for the Examination of Water and Waste Water, American Public Health Association, Washington DC, USA.
2. APHA: AWWA; WPCF (1985): Standard Method for Examination of Water and Waste Water Analysis, 16th Ed., American Pub. Hlth. Associ., Washington DC, pp 1268.
3. Ansari A.A. (2004) : Study on the Role of Selected Household Detergent in the Fresh Water Ecosystem, Ph. D. Thesis, Aligarh Muslim University.
4. Dutta Munshi, J.S. and Srivastava, M.P. 1988, Natural history of fishes and systematic of freshwater fishes of India. Narendra Pub. House, Delhi, 402 p.
5. Ahmad and Singh (1987 b) : Seasonal Fluctuation of Primary Production and Fish Yield in Mangle's Tank Patna City, Bihar, Geobios – 14-62-66.
6. Ahmad and Singh (1987 a) : A Seasonal Variation of Bottom Macroinvertebrate and Water Quality In Mangle's Tank, Patna Cityh, Environment and Ecology, 5(2) : 288-290.
7. Agrawal, D.K.: Gaur, S.D. Tiwari : J.C. Narayanswami, N. and Marwah S.M. (1979) : Physio – Chemical Character of Ganga River at Varanasi, Indian Journal of Environment Hlth, 18(3) : 201-206.
8. Bhowmik, H.K. (1970) : The Gryllid Fauna (Orthoptera – Insecta) of Great Nicobar Island, Indian J. Zool. Soc. India, 22 (1 & 2) : 69-86.
9. Bhowmik H.K. and Halder (1984) : Preliminary Distribution with remarks on little known species of Acrididae (Orthoptera – Insecta) from Western Himalaya, H. Pradesh, Rec. Zool. S. of India 81 (1&2) : 167-191.
10. Biswas, S.; Mukhopadhyay, P. and Saha, S.K. (1995) : Insecta : Coleoptera : Adephaga : Family Gyrinidae and Family Haliplidae, Zool Survey of India, Fauna of W.B., State Fauna Series 3 (part-6a) : 121-141.
11. Dr. John C. More (2007) : Aquatic Insects are pointers to pollutants, Ecomagazine, kerala.
12. Dutta, Munshi; J.S. and Srivastava, M.P. (1988) : Natural history of fishes and systematic of fresh water, fishes of India, Narendra Pub. House. Delhi 402 p.

Geo-environmental impact on settlement pattern: a case study of Bongaigaon district

* Ananda Das, ** Sikhajyoti Das
*** Dhiren Sarmah

Abstract- *Settlement pattern is concerned mainly with the temporal and spatial variation in the process of setting on the earth's surface for knowing the cultural advancement of the human beings and the man-land relationship to the natural environment. Characteristics grouping of population into occupancy units together with the facilities, such as houses, water, streets etc, which serve the inhabitants of specific regions are the elementary references to its settlements. People's mode of living and site and nature of the physical environment have a great influence of these facilities. Settlement pattern was mainly concerned with urban settlement before the turn of the twentieth century. But since more than about two thirds of the world's population and about 98 percent of the total settlements occupy rural areas, hence the rural settlements as well as the problems attached with environmental aspects in the rural areas. Therefore, a proper study of settlements requires explanation of site and situation, building materials, forms, architectural style, functions, types, and patterns and characteristics. Another important aspect, here, is that presenting a significant matter, the regional variation and spatial patterns of settlement has a great link with that of analyzing its sequence of change. The interrelationship between the physiography and man, the erosional and depositional processes that conspicuously intensified by copious rainfall and its dominant role, the characteristics of the rivers and their effects, road density-shape index relation and the sown area-shape index relation to examine the role of physiography, drainage, agricultural fields on settlement pattern in the present study area. .*

Key Words- settlement pattern, man-land relationship, physiography, environmental aspect.

Introduction: The settlement system, which has been shaped out by spatial organization patterns and relationship among them and by the all existing socio-economic situations contingent factors and forces of the physical and cultural environment, as well as of socio-economic situation. Both the visible and invisible forces of the physical and cultural environments operative in the space settlement relationship are reflected by various aspects of spatial

* Associate Professor, Department of Geography, Sonapur College
** Assistant Professor, Department of Geography, Sonapur College
*** Associate Professor, Department of Geography, Abhayapuri College

distributional characteristics of settlements in the organizational system. The temporal modification of rural settlements, depending on their growing cultural and economic activities serves the cause of growing urban settlement. Playing the role of functional and physical entity, the settlements particularly, the urban settlements from systems with a definite degree of functional wholeness in a region which contributes to the evolution of its distinct identity. As the rural and urban settlements are functionally interrelated, it is a useful approach of studying settlement, to see the morphological structure and functional transformation of the rural habitational units under the framework of urban settlement system, with which the rural the framework of urban settlement system, with which the rural communities have conspicuous functional association.

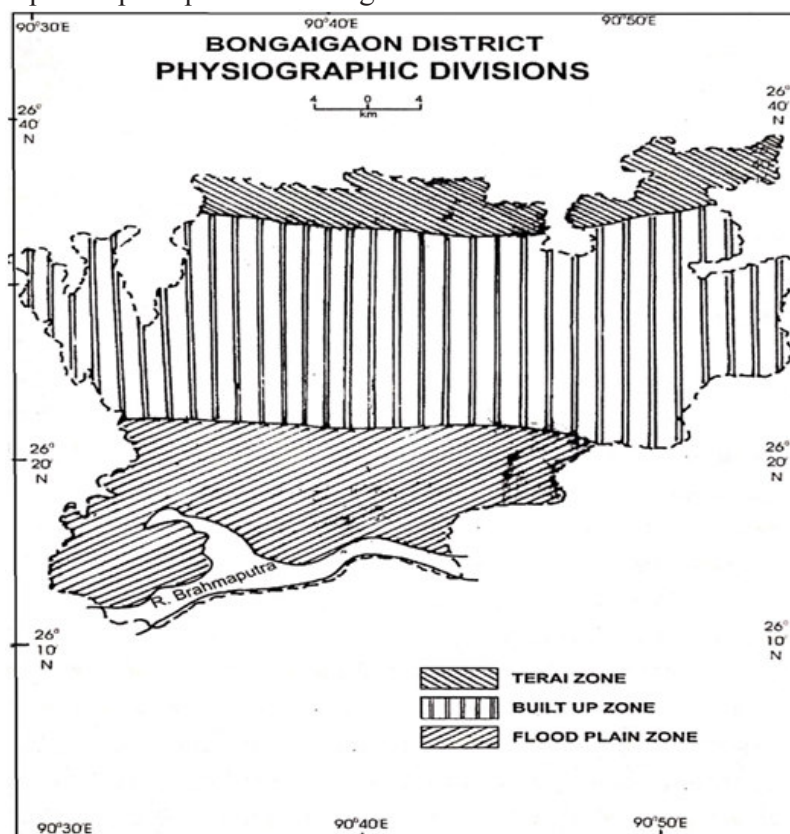
Physiographically the Bongaigaon district is almost a plain area except a few hills. The mighty Brahmaputra, the Manas, the Aie, and the Champamoti are the main rivers of the study area with a number of other small tributaries. The district comprises mostly an alluvial zone in its northern part and a vast flood plain in the south. A number of natural depressions, locally termed as 'beels', marshy lands forests and charlands are also there in the district. The study area with some minor resource potentials needs speedy manpower and socio-economic developmental programs and for this reason, the settlement organizational planning should be served, as base point. The process of urbanization in the study area is recent and slow. Hence it is maintains a very limited scope for a detail study of the urban phenomena, as major controlling forces for rural settlement organization. The transportation of the rural agrarian society and economy under the impact of urban influence, is also slow in the district.

The settlement pattern of Bongaigaon district located in the western part of the Brahmaputra valley of Assam. The area is one of the oldest under developed settlement region of the state. However, the late growth of a few large, minor and moderate industries, development of agriculture, growth of different service centers and development of transport and communication systems etc. all these together have been adding a new dimension to the present pattern of settlements of the region. In this systematic study of the settlement behavior of the heterogeneous population in the area, consisting of a number of general, scheduled caste, and scheduled tribe groups and immigrant population, besides, many other local communities have been experienced. Here and attempt has been made to study and delineate some of the most salient perspective features of the settlement pattern, which includes rural and urban landscape, origin and growth of settlement, characteristics features of settlement sites, dispersion and concentration and distribution of settlement and spatial locational arrangement and relation to one another with respect to environmental affinity of rural settlements, their important geographical analysis, impact of some physio cultural factors on settlement pattern and

some spatial relations pertaining to socio-economic status and socio-cultural characteristics of existing landscape of the study area.

Study area:

Bongaigaon district is situated at the latitude of $26^{\circ}48''\text{N}$ and longitude of $90^{\circ}21'15''\text{E}$ with the district occupies an area of 2510 sq. km. at present. The population of Bongaigaon district is 7.33 lakhs and density of population is 355 person per sq.km. according to 2011 census.



Map 1 : physiographic map of Bongaigaon district

Objective of the study: The main objective is –

1. To examine the environmental impact of settlement pattern and the physiographic control over it.
2. To study the influence of agricultural fields on the settlement pattern.
3. To find out socio-economic and cultural development of the study area.
4. To study the impact of some physio cultural factors on settlement pattern.

Sources of data and methodology:

The study has been carried out on the basis of primary and secondary data. The firstly investigate settlement pattern and their effect on environment ,collected of the household survey through the questionnaire, used for further analysis, both questionnaire and interview held.

Secondary data, included various research paper and publications, some

books, journals, statistical handbook and other relevant websites i.e. retrieved from internet. The data are analyzed and interpreted into the maps and diagrams such as pie graph, bar graph etc.

Results and discussion:

The distribution of rural settlements in Bongaigaon district is affected with variation in the development of its pattern in different part of the district. It may be due to some factors like topographical complexity, lack of knowledge of land utilization, transformational and functional gaps etc. to remove such disparities, the study area requires a radical planning of its different occupancy units. Therefore, should be given to develop some explicit strategy for a renewed dressing of the rural scenario of the study area with proper settlement planning.

The physiographic conditions of a region have considerable impact on the settlements. Physical forces like relief, drainage, soil, climate, natural vegetation etc. have guided men in selection of their settlement sites. A complex geologic and physiographic make up the study area is bordered on the north by the Bhutan Himalaya, on the south by the mighty river Brahmaputra, on the east by the river Manas and on the west by the river Champamoti. The alluvial deposition takes place due to erosion of the higher surfaces by rivers and flooding in the district. The erosional and depositional processes conspicuously intensified by copious rainfall and it plays a dominant role in shaping various physiographic units of the study area. There is a built up zone in the upper middle area and a flood plain in the southern part of Bongaigaon district. The higher areas lie to the central and north-west part up to an elevation of around 500 metres. Some dispersed settlements are found in the forest areas of these high elevations. A large area of Bongaigaon district is covered by forest without any forest village. The study area has several rivers, of which river Brahmaputra is the largest one. All the settlements in the flood affected areas are therefore, grown in raised lands or on artificial mounds made by the affected people to protect themselves from the flood. Thus the settlements of these flood affected areas represent circular, hexagonal and elongated shapes. On the other hand, some temporary and new isolated settlements take place in the newly silt deposited areas. Most of these settlements represents generally, elongated, circular and triangular to rectangular shape.

Being a well-defined physiographic unit, the present study area is almost a levelled alluvial plain spotted with a number of low hills and hillocks. The changes of course and the resultant devastations are the acute negative role of the rivers and tributaries in the study area. The rivers of the Brahmaputra plain have been changing their courses through different magnitude and intensity of change in different part of the state.

Table 1: The proportion of area covered by the rural settlements in Bongaigaon District

Population	No. of rural settlement	P.C. to total rural settlement
below 200	79	14.11
200-499	104	18.57
500-999	164	29.28
1000-1499	103	18.39
1500-1999	65	11.61
above 2000	45	8.04
Total	560	100

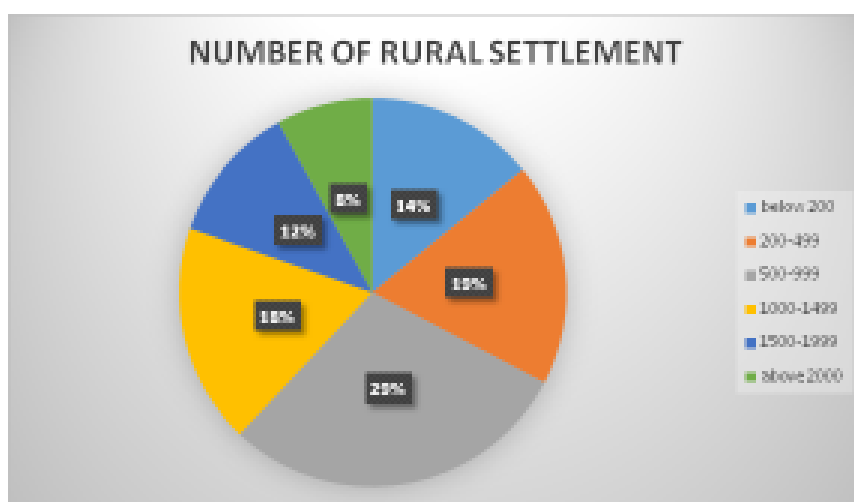


Fig 1: Number of rural settlement in Bongaigaon District.

Agriculture is the main occupations of the people of Bongaigaon district. The study area is suitable for paddy and jute cultivation and here, a large number of people settled in the cultivable areas. The agricultural fields have impact on the socio-cultural life of the rural people here. The agricultural fields have a controlling tendency on the settlement pattern of Bongaigaon district. Due to the land division into agricultural plots, most of the villages in around all the Gaon Panchayats, show triangular to square shape. Showing mainly the influence of agricultural fields, 50.76 per cent rural settlement of the district represents triangular shape and 24.61 per cent settlement bears square shape. It is the representative of agricultural economy of most of the villages in the present study area are constructed near the agricultural field and a considerable part of the agricultural area are located in the low lying flood plains, hence a section of farmer villages are grown and arranged along the principal road-sides keeping close proximity with that of agricultural fields. All the villages having triangular to hexagonal shapes that observed in the present study area are under the cumulative influence of agricultural fields, trade and commerce, residential places, roads, cross roads, topography and drainage system. But it is true that the agricultural fields show a controlling

tendency to shape the settlement pattern of the study area.

=====

References :

1. Das A. 2006- "Dynamics of Slum Formation in Selected Towns of Western Assam". Ph.D., thesis Guwahati University(unpublished)
2. Murya S.D. 1985- Urbanization and Environmental Problems, Chugh publications, Allahabad, India
3. Zhang Qiang, Liu Chan-ling, Zhu Cheng, Jiang Tong, 2004- "Environmental change and its impacts on human settlement in the Changjiang River Delta in Neolithic age", Chinese Geographical Science, vol. 14 pp 239-244
4. Sarmah, Dhiren, 2012- "Settlement Pattern of Bongaogaon District: A Geographical Analysis"
5. Bhattacharjya, N.N. 1981- "Mophology of the Towns of Assam with Special reference to the City of Guwahati "
6. Das,H.P., 1969- "The Brahmaputra Drainage System", A Journal of the North-East India Geographical Society, Vol.I Nos.1 and 2.
7. Singh, R.L. 1975- " Meaning, Objective and Scope of Settlement Geography", in R.L. Singh and K.N. Singh(ed.), Reading in Rural Settlement Geography, The National Geographical Society of India, Varanasi,,p.6.
8. Marsh, W.M. and Jr. G.J. 2005 - "Environmental Geography, Science, landuse and Earth systems", 3rd Edition. John Wiley and Sons, INC.

Study of Life Skill Component Problem Solving on the Students of NCC and NSS

* Archana Gomasta

** Kavita Verma

Abstract- *The aim of this research is to study the life skill component problem solving on the students of NCC and NSS. As a sample for this study 600 students studying at the graduation level in government and non-government colleges of Raipur city which are member of any of these two organization, have been selected by non-proportional level trainee candidates. Selfmade questionnaire based on the life skill component problem solving was used as tool to collect the data's. Obtained data was analyzed using 2x2x2 factorial design by using dissemination analysis (ANOVA F - Ratio) result was drawn. The results obtained from this study that the life skill component problem solving were superior in government college students and NCC students were better than NSS students in problem solving skill and also boys are better than girls in respect of gender.*

Key Words- N.C.C., N.S.S, Life Skill, Problem Solving Skill

Introduction: There will hardly be a person in the world, Who has never faced any problem at some point in his life. Every person faces some problem in his or her day to day life. Even if it is too small and normal or complex and more serious than other. The person is very fortunate if he/she has special or amazing skill of problem solving. According to Oxford Dictionary (1995) "The problem is a questionable or difficult object that needs to be solved." Problems are difficult, cannot be understood, cannot be fulfilled, which cannot be treated. For effective problem solving finding simple reasons is a useful step, because it is impossible to get rid of all problems without any difficulty. According to Veron (2006) the problem solving involves efforts of various auxiliaries or it involves choice, so that, the desired goals can be achieved. If we look at the levels of problem solving firstly to know the problem, identify it, get the structure of it, view at possible solutions, to make the right decision related to the problem, to apply the decision, get to know the opinion of people and to monitor it. According to Beating and Williams (1984) problem solving is the contemplation procedures to overcome the obstacle and reach to the

* Research Scholar & Assistant professor (Education Department) Durga Mahavidhyalya, Raipur (Chhattisgarh)

** Assistant Professor (Department of Education) Kalyan Post Graduate Mahavidyalaya, Bhilai Nagar (Chhattisgarh)

goals. Knowing the basics of problem solving is not just important but useful also. Miller (2007) in the scientific study of consciousness related to problem of discrimination constitution concluded that scientist and philosopher analysis and debate to find out the solution of their problem. Tambychik et al (2010) studied about difficulties of problem solving in mathematics. In the conclusion they found that lack of mathematics skill causes problem solving in mathematics. Brad (2011) studies the problem solving activity of high school students of strategy and self regulated. In this study he concludes that due to lack of Meta cognitive ability student defects. Which is necessary and it should be taken care of. Auersperg et al (2011) studied the tools and methods of problem solving in multi axis norm paradigm in new Caledonia. Chaudhary and Rasool (2011) have done case studied the capability of problem solving in the graduate student of computer science, in conclusion they said that problem solving skills can be measured and this can be improve by practices. Erozkhan (2013) has studied the effect of communication skill and problem solving skill on social self actualization and concluded that communication skill and problem solving skill are related to social self actualization. Wismath et al (2014) has studied the methods of problem solving in students. In this study he concluded that problem solving skills can be developed by causes of study. Sharma (2015) studied the flexibility and social problem solving skills in Indian adolescent who are flexible and more capable of social problem solving skills. Kannan et al (2011) studied the mathematic problem solving skill in class 9th students of Dindigul district, in which he found that students have average level of mathematics problem solving capability. Kim et al (2018) studied the role of capability of problem solving on innovative behavior and opportunity recognition, In the conclusion of this study he said that problem solving capability plays a positive role on innovative behavior and opportunity recognition.

It seems from the related research review that, the life skill component problem solving researcher have done short-sighted or even equal to nothing on the NCC and NSS students. The study presented will help to reduce this shortfall to some extent and will present solutions to educational and practical questions. The result obtained from research in the study will be important for the guidance of the teachers, school students and educational directors.

Objective of the study:

The purpose of the study is to find the main and interactive effect of the college type, student organization group and gender on component of life skill behavior problem solving of college students.

Hypothesis:

Component of life skill behavior problem solving of college students will not be found to have independent and interactive effect of college type, student organization group and gender.

Limit:

For studying, graduate level students, studying in government and non – government colleges of Raipur city NCC and NSS have been taken.

Methodology: Survey method was used for the research.

Sample: For research study 600 students were selected by the non – proportional stratified random traints. In which 300 were NCC and 300 were NSS students such as 150 NCC and 150 NSS students were from government colleges and 150 NCC and 150 NSS students were from non - government colleges.

Tools: In this present study the researchscholer has used a self made tool based on the problem solving component of life skill. This test was found to be fully or ideal and valid whose correlated coefficients were found between .79 to .82, which were meaningful statistical experiment.

In present research study from data obtain were analyzes, mean and standard deviation were known by null hypothesis. Analysis of receipts received for interactive hypothesis was obtained by using 2x2x2 factorial design, by the dissemination analysis ANOVA (ANOVA F - Ratio)

Result and discussion:**Table No:1**

Summary Of Various Analysis Of Life Skill Behavior Component Problem Solving

Sr. No.	Source of variance	Sum of squares	Category of independence	Mean square	F - Ratio
1	Type of college (A)	29.04	1	29.04	1.05 Ns
2	Organization group of student (B)	620.27	1	620.27	22.42**
3	Gender (C)	294.00	1	294.00	10.63**
4	End effect I First Task				
A	A x B	29.90	1	29.90	1.08 Ns
B	A x C	77.76	1	77.76	2.81 Ns
C	B x C	50.37	1	50.37	1.82 Ns
ii	Second Task A x B x C	458.56	1	458.56	16.58**
5	Error	16637.02	592	27.66	
	Modified Total	18196.92	599		

*Significant at 0.05 level **Significant at 0.01 level NS – Not Significant

Independent Effect:

Type of College: By careful observation of table it is clear that the type of college does not have significant effect on life skill behavior component problem solving. Because the value of F – Ratio of this degree of freedom factor is 1.05 (df = 1/592) is not significant at 0.05 level. It can be said that type of college does not effect life skill behavior component problem solving significantly. Therefore, the concept of life skill behavior problem solving of college type was not found independent effect on college students.

Again whether the component of life skill behavior on college type of

college students has a negative effect on problem solving? For this purpose, the mean of the life skill behavior on college type was compared to the mean. The mean values are presented in the following table.

Table No – 2

Mean value of Score on the basis of College Type on Component of life skill behavior Problem Solving

College Type	N	M	SD
Government	300	33.98	5.24
Non – Government	300	34.42	4.89

From the above table presenting the mean value of score of life skill behavior component problem solving of (M=34.42) non – government students are significantly superior than government (M=33.98) college students. That is component of life skill behavior problem solving in non – government college students were found better than government college students.

Organization Group of Student:

It is clear from the variance analysis table that the dimension of student organization group's have a significant effect on life skill behavior component problem solving, because the F – ratio value 22.42 degree of freedom (df = 1/592) is not significant at 0.01 level. In this way it can be said that effect significantly the dimension of life skill behavior problem solving. Therefore, hypothesis is accepted that there is no independent effect of organization group of student on the life skill component problem solving.

Again to ascertain whether the organization group positively imparts the diminishing effect of the life skill component problem solving of the students. For this the mean score of the two levels of organization groups has been compared. The mean value are presented in the following table.

Table No - 3

Mean Value Of Score On The Basis Of Students Organization Group On Component Of Life Skill Behavior Problem Solving

Student Organization Group	N	M	SD
N C C	300	35.2667	4.69
N S S	300	33.1832	5.41

It is clear from the above table that, the life skill component problem solving in NCC students (M – 35.2667) is significantly superior than NSS students (M – 33.1832). That is component of life skill behavior problem solving in NCC students where found better than NSS students.

Gender:

What is the effect of the gender on the component of the life skill behavior problem solving in college students? For this by variance analysis we get to know that F –ratio value on gender 10.63 degree of freedom (df = 1/592) is significant at 0.01 level. It is evident from the fact that component of the life skill behavior problem solving of college students is based upon gender factor

is visually visible. Therefore independent effect of gender will not be found in graduation level college students on component of life skill problem solving, thus Hypothesis is rejected.

Table No – 4

Mean Value Of Score On The Basis Of Gender On Component Of Life Skill Behavior Problem Solving.

Gender	N	M	SD
Boys	300	33.98	5.14
Girls	300	34.42	5.03

Form the above table it is clear that component of life skill behavior problem solving is superior in Girls ($M = 34.42$) than in Boys ($M = 33.98$). That is component of life skill behavior problem solving in Girls where found better than Boys.

Interactive Effect: Dual Skepticism's Combine Unforeseen Effect

College Type x Student's Organization Group:

To study the combine effect of college type and student's organization group on component of life skill behavior problem solving, it is clear from the observation of table 1 that the impact of college type and student's organization group is not significant as the value of F – factor [1.08 (1/592)] is not significant at 0.05 level. From this it is clear that college type and student organization group is responsible for variability in life skill behavior component, problem solving. So that interactive effect of college type and student organization group will not found in life skill behavior component problem solving, thus Hypothesis is accepted.

College Type x Gender:

To study the combine effect of college type and gender on component of life skill behavior problem solving, it is clear from the observation of table 1 that the impact of college type and gender is not significant as the value of F – factor [2.81 (1/592)] is not significant at 0.05 level. From this it is clear that college type and gender is not responsible for variability in life skill behavior component, problem solving. So that interactive effect of college type and gender will not be found in life skill behavior problem solving, thus Hypothesis is accepted.

Student's Organization Group x Gender:

To study the combine effect of student's organization group and gender on life skill behavior problem solving. It is clear from the observation of table 1 the impact of student's organization group and gender is not significant as the value of F – factor [1.82 (1/592)] is not significant at 0.05 level. From this it is clear that student organization group and gender is not responsible for variability in life skill behavior problem solving. So that, interactive effect of student organization group and gender will not be found component of life skill behavior problem solving, thus Hypothesis is accepted.

Triarical Influence Effect:

College Type x Student Organization Group x Gender:

What is the combined effect of the three factors that is college type, student organization group and gender on problem solving component of life skill behavior of college students? By observing table 1 it is clear that factor of problem solving component of life skill behavior of college student is not triarical effected by college type, student organization group and gender because the F – value of these factors in combine 16.58 degree of freedom (1/592) is not significant at 0.01 level. From this it is clear that college type, student organization group and gender is not responsible for variability in life skill behavior component problem solving. So that interactive effect of college type, student organization group and gender will not be found in problem solving component of life skill behavior, thus Hypothesis is accepted.

Conclusion:

The main objective of the study is to develop those qualities in students by which they can face problems of life happily. Working organization in education field such as N.C.C., N.S.S., scout, guide first duty is to develop such characters behavior and qualities in the students by which they can make the path of their life easier. If the capacity of problem solving develops in students than every difficult work will become easier for them. This study was done to take a step toward this direction that the problem solving quality develops in NCC and NSS students. Therefore this organization should be made compulsory for students in academic curriculum.

References :

1. Auersperg, A.M.I., Bayema A.M.P., Gajdon, G.K., Huber, L., And Kacelnik, A. (2011). "Flexibility In Problem Solving And Tool Use Of Kea And Nero Caledonian Croos In A Multi Access Box Paradigm". File://H:/studies2.
2. Brad, A. (2011). "A Study Of The Problem Solving Activity In High School Students: Strategies And Self Regulated Learning." *Acta Didactica Napocensia* .4(1) 21 – 29.
3. Chaudhary, N.G And Rasool, G. (2012). "A Case Study On Improving Problem Solving Skills Of Undergraduate Computer Science Students." *Worlds Applied Science Journal*.20 (1)34 -39.
4. Erozkhan, A. (2013). "The Effect Of Communication Skills And Interpersonal Problem Solving Skills On Social Self Efficacy." *Educational Science: Theory & Practice*.13 (2) 739 – 745.
5. Kim, J.Y., Choi, D.S., Sung, C.S., And Park, J.Y. (2018). "The Role Of Problem Solving Ability On Innovative Behavior And Opportunity Recognition In University Students." *Journal Of Open Innovation : Technology, Market and Complexity*. <https://doc.org/10.1186/s40852-018-0085-4>
6. Kannan S.B., Sivapragasam, C., And Senthilkumar , R.(2016). "A Study On Problem Solving Ability In Mathematics Of IX Standard Students In Dindigul District." *International Journal Of Applied Research*.2(1)797-799.
7. Miller, S.M. (2007). "On The Correlation / Constitution Distinction Problem (And Other Hard Problem) In The Scientific Study Of Consciousness." *Acta*

- Neuropsychiatric* 19:159-176.
8. NCF (2008). "National curriculum framework "National Council Of Educational Research And Training." New Delhi Shree Arvindo Marg, Vajeepura.
 9. Sharma, B. (2015). "A Study Of Resilience And Social Problem Solving In Urban Indian Adolescents." *The International Journal Of Indian Psychology*.2 (3)70-85.
 10. Tambychik, T., Subahan, J. And Meerah, M. (2010). "Students Difficulties In Mathematics Problem Solving: What Do They Say? *Science Direct Procedia – Social And Behavior Sciences*. 8, 142-151.
 11. Wismath, S., Orr, D.,And zhong, M.(2014). "Student Perception Of Problem Solving Skills." *wismaths@ulet.ca*.7(3)1-17.

A Study of caste and education of Muslims on attitude towards female education

* Md. Javed

Abstract- 200 Muslims of different age groups residing in rural and urban areas of Saran district area of Bihar state have been chosen for the purpose of the study. The age of the subjects ranges from 18 to 60 years. Two hypotheses were formulated for empirical study regarding caste and education. First hypothesis was retained and second hypothesis was rejected.

Key Words- Attitude, caste, education

Introduction: Ever since liberation, the Government of India has concentrated a lot on education. Yet in spite of many efforts, the inequality among different groups in education has not been eradicated. Muslims are the largest religious minority in India and constitute 14.4 percent of the population as per the Census 2011. They are also the most retrograde group in terms of education. The Muslim literacy rate is lowermost among all the religious minorities and Hindus as well, as per the Census of 2011. Almost 48.1% of Muslim women are still uneducated. The backwardness of Muslims with regard to education, specifically girl child education, has constantly been a serious concern.

The role of Muslim Ulema is also liable for the backwardness of girls' education. During the pre-independence age, Ulema had a degenerating attitude towards English education. It is unquestionable that many old-fashioned Indian Muslim Ulema carry on to regard women's space as being restricted essentially to their homes. They consider that a woman's principal obligation is to take care of her children and her husband. They believe that if women step out of their homes, it would lead to misdemeanor or trouble and disorder in society and this would extremely damage their devotion and their Islamic ethics and uniqueness. Conversely, over the last few spans, there has been substantial transformation in this attitude. In the earlier few decades, a number of efforts have been made to fetch transformative modifications in education, specifically for Muslim girls. But there is a necessity to work on this subject more vigorously and with good intents. Muslim girls should obtain like education as Muslim boys and for this, Muslim frontrunners, especially Ulema, should come forward for upgrading of education of Muslim girls for the reason that without educating girl, the community cannot evolve. Education

* Research Scholar, J.P.University, Chapra

is generally divided formally into such periods as preschool or kindergarten, primary school, secondary school and then college, university, or apprenticeship. A right to education has been accepted by some governments and the United Nations. In most regions, education is obligatory up to a definite age.

Female education is a catch-all word of a compound set of topics and discussions surrounding education for girls and women. It comprises areas of gender parity and access to education, and its association to the lessening of poverty. Matters of single-sex education and religious education are also involved, in that the division of education along gender lines as well as religious teachings on education has been usually prevailing and are still extremely pertinent in modern debates of educating females as a worldwide deliberation. In India, the model and process to empower women has started recently as compared to other western countries. (Chadha, 2017). The situation of women in India has significantly transformed in modern Indian society. Indian women undergo enormous sufferings due to lack of acceptance from the male dominant society. Maximum number of Indian women is uneducated. Male is prominently esteemed and valued in Indian society. On the other hand, women get very little admiration.

According to the 2006 report of Sachar Committee, among younger members of scheduled castes and scheduled tribes, the committee testified three times the proportion of graduates as in older scheduled castes and scheduled tribes. Among Muslims, the committee found double the amount of graduates among younger Muslims compared to older ones, “a widening gap between Muslim men and women compared with ‘All Others’, and an almost certain possibility that Muslims will fall far behind even the SCs/STs, [scheduled castes and scheduled tribes] if the trend is not reversed”.

It is a well known statement that the change is the law of nature. So is the nature of human being. In the same way, on the subject of change, the Muslim women cannot be overlooked. It is generally believed that Indian Muslim has failed to survive the change that is taking place in Indian society at large (Sharma, 2015). All women undergo gender based discriminations in matrimony, independence and freedom of movement across communities, Muslim women fare lower than the national average in assured important areas. These contain socioeconomic status, occupational distribution, labour force participation and education. (Hassan and Menon 2004). The studies by Nayer (2007), Hussain (2009) and Jafri (2010) also specify that Muslim women are noticeable with plain educational backwardness. Many studies and literature have given standpoints on the different causes and issues behind the educational backwardness of Muslim women.

Hypotheses:

1. There is a significant difference between high educated and low educated Muslims on attitude towards female education.

2. There is a significant difference between high caste and low caste Muslims on attitude towards female education.

Sample:

200 Muslims of different age groups residing in rural and urban areas of Saran district area of Bihar state have been chosen for the purpose of the study. The age of the subjects ranges from 18 to 60 years.

Tools:

PDS:- A personal Data sheet was prepared by the researcher himself.

Attitude scale for female education

This scale was developed by Dr. R.D.Rai and Dr. Feroz Ahmad (2017) for measuring attitude towards female education. Hindi version of an attitude scale has been used to measure attitude towards female education.

Attitude and level of qualification:

It was hypothesized that there will be significant difference between high educated and low educated Muslims on attitude towards female education. ASFE was administered on both groups which were high educated and low educated group and then obtained scores were collected and treated. After calculating of Mean, SD and SE score t test was applied and t calculated and find out significance of difference between means.

Table No.-1

Variable	Group	N	M	SD	SE	t	Df	P
Attitude towards	High educated	100	115.56	4.65	.465	29.06	98	.01
Female education	Low educated	100	98.76	3.46	.346			

From the table no one it is apparent that high educated group of respondents showed positive and favourable attitude towards female education. Low educated group of respondents showed negative and unfavourable attitude towards female education. The mean value of higher education respondents was 115.56 and lower education group of respondents was 98.76

High educated group of respondents showed attitudinal superiority on low educated group of respondents in respect of female education.

It was hypothesized that there is a significant difference between high educated and low educated Muslims on attitude towards female education. Respondents with low level of education do not support female education. The finding might be interpreted in terms of lack of confidence, inferiority complex, lack of boldness, introversion, anger, unawareness of importance of knowledge and withdrawal from socialization process. Thus, the third hypothesis is confirmed.

Attitude and Caste:

It was hypothesized that There will be significant difference between high caste and low caste Muslims on attitude towards female education. ASFE was administered on both groups which were high educated and low educated group and then obtained scores were collected and treated. After calculating of Mean, SD and SE score t test was applied and t calculated and find out

significance of difference between means.

Table No.-2

Variable	Group	N	M	SD	SE	t	df	P
Attitude towards	High caste	100	94.12	4.24	.424	29.06	98	NS
Female education	Low caste	100	92.98	4.18	.418			

From the table no two it is apparent that high caste group of respondents showed unfavourable attitude towards female education. Low caste group of respondents showed also unfavourable attitude towards female education. The mean value of higher caste respondents was 94.12 and lower caste group of respondents was 92.98.

High caste group of respondents doesn't show attitudinal superiority on low educated group of respondents in respect of female education.

It was hypothesized that there is a significant difference between high caste and low caste Muslims on attitude towards female education. The caste of a person does not matter if the person has a clear understanding of women's rights and importance of education. Hence, the fourth hypothesis was rejected.

Conclusion:

There is a significant difference between high educated and low educated Muslims on attitude towards female education in terms of lack of confidence, inferiority complex, lack of boldness, introversion, anger, unawareness of importance of knowledge and withdrawal from socialization process in case of less educated or uneducated respondents. Thus, the third hypothesis is confirmed.

There is a no difference between high caste and low caste Muslims on attitude towards female education in terms of clear understanding of women's rights and importance of education. Hence, the fourth hypothesis was rejected.

References :

1. Chadha, S. K. (2017) Women Empowerment in India: Rationale and Present Status. International Journal for Environmental Rehabilitation and Conservation, VIII [1] 160 – 167.
2. Sharma, Y. (2015) Educational Status of Muslim Women in India. International Journal of Advancement in Engineering Technology, Management and Applied Science, 2(9), 88-93.
3. Hasan, Z. and Menon, R. 2005a. Educating Muslim Girls A Comparison of Five Indian Cities. New Delhi: Women Unlimited.

Hati System of Barpeta Town

* Gopesh Kumar Sarma

** Mridusmita Goswami

Abstract- Barpeta an erstwhile sub-division of Kamrup district was elevated to a district in the year 1983, comprising entirely the earliest geographical boundary of the old Barpeta sub-division with the head quarter at Barpeta town. Barpeta has the unique destination of carrying traditional culture by its honourable possession of the kirtanghar (prayer house) the biggest namghar (prayer house in village level) of entire Assam. Barpeta though financially better off amongst the districts of Assam, lacks entrepreneurial skill for industries and enthusiasms. This is because of adherence to prove business like transport by the richer section of the town called the mahajans (merchant) who prefer 'a bird in hand is better than two in the bush'. The whole geographical area of Barpeta district comprises of nine revenue circles, 12 community development blocks, 150 gaon (village) panchayat covering a total of 885 villages. The towns of the districts are - Barpeta, Barpeta Road, Sorbhog, Howly, Pathsala, Sarthebari, Kalgachia and Bahari. Barpeta town and Barpeta Road are under municipal Board and remaining towns except Bahari are under Town Committees. Bahari is a census town. Barpeta town is divided into 22 hatis (cluster of settlements) (Roy, 2012: 63). Mathuradas Burha Ata (first satradhikar of Barpeta satra)'s grand plan aiming at organizing the society of Barpeta satra into 22 hatis brought about consolidation of the society in a way, which still remains relevant. He also clearly delineated the functions of different hatis and castes in different rites and rituals connected with different functions of the satra (Pathak, 1959: 5). The economy of Barpeta during medieval period was simple commodity producing economy and social division of labour was limited. The use of money was also limited. In the villages, barter was the prevailing mode of exchange among the peasants. From expansion of trades and commerce, the use of money and credit should be extensive. Since the circulation of money was limited, trades did not expand considerably. People fulfilled their reciprocal needs by means of barter. Thus there developed the self sufficient village economy. Money was in use only in the case of foreign trade, within this limited periphery, a trading class was formed at Barpeta. Since Barpeta is surrounded almost on all sides by perennial rivers and mighty Brahmaputra is not far away, it was possible to reach different destinations including different places of Bengal from Barpeta easily through

* Associate Professor, Department of History, Madhya Kamrup College, Chenga

** Assistant Professor, Department of Anthropology, Madhya Kamrup College, Chenga

mercantile boats. At one time, Barpeta became the hub of commercial activities. Even during the easy part of British rule in India, when there were no railway lines connecting Assam with the rest of India, rivers were the chief means of transport (Raychoudhury, 2000: 168). This study is an attempt to highlight the *hati* system of Barpeta town.

Key Words- Traditional Culture, Kirtanghar, Namghar

Area of Study: Barpeta is the head quarter town of the district of the same name. We selected the three *thul* (principal) *hatis*, eg- Dakshin *hati*, Na *hati* and Uttar (Brinavan) *hati* as our study area.

Objectives: The objective that has been formulated for the study is to know about the *hati* system of Barpeta town.

Methodology: The study is based on both primary and secondary sources of information. For the collection of primary data, we have applied personal interview and observation method to collect information on the studied problem. Secondary data consisted of relevant books and articles etc.

Hati system of Barpeta Town: Sites of cloisters for monks within the main enclosure of a *satra* and outside this enclosure for married clerics have been known from the earliest times as *hati* or *bhakatar hati*, 'Rows or sets of huts or rooms for the monk'. A *hati* is "a row of houses attached to a religious constitution or school or the residence of disciples or students" and Hemchandra Barua seeks to connect the word with Assamese *haat* (Skt. *hatta*). Sankaradeva himself seems to have used the term in the sense of a row of houses in his *Bali-Chalana*' (Neog, 1965: 324). At Barpeta there are 22 *hatis* where general people reside. An individual *hati* has got its own organization covering social, political as well as economic aspects. The relation of each *hati* with the *satra* is analogous with the relation of each state with the parliament, taking each *hati* as a state and the *satra* organization as the parliament. Now the details of *hati* system are discussed below-

No clear account of the origin of *hatis* can be made out from the early group of *caritas*; but the idea of *cari hatis* has always been associated in the later detailed accounts with whatever institutions Sankaradeva, Madhabdeva and other saints established during their long stays in different places. The four were and still are referred to the east, west, north and south *hatis*. These sets of cloisters are manned by ascetics and no house holders (married folks) who liked to stay in a *satra* are given place in a *hati* outside the inner *hati*. Such *hatis* are called *bahir hati*. When a widow seeks to serve a *satra*, she could be accommodated with somebody else in the householder's *hati*. There are raised barricades of bamboo between the inner and the outside *hati* (Neog, 1965: 325). The number of *bhakatas* in the inner and outer *hatis* may vary from time to time. Madhvadeva had 180 *bhakatas* to work at Patbausi for Sankaradeva's wife (Neog, 1965: 325). As late as 1851, E.T. Dalton found

157 monks in the inner *hat*is of Barpeta *satra* (Neog, 1965: 325).

Residential houses at Barpeta are arranged along both sides of a road. Each area consisting of such rows of houses separated by narrow alleys is called a *hati*. *Hati* carries the same meaning as the Assamese words- *para*, *tola*, *kuchi* etc. It is to be noted that the *hati* system is not prevalent in other *satras* of Assam except Barpeta. These *hat*is of Barpeta carry on their activities as per guidelines of the *kirtanghar*. Mathuradas Burha Ata the first *ad*hikara of Barpeta *satra* was credited with the creation of the *hati* system of residence (Nath, 2001: 33). Barpeta *satra* is situated almost at the middle of Barpeta town. The *hat*is covered almost one and half square kms from the *kirtanghar*. *Hat*is were named taking into consideration of the *sewait* (dedicated) activities performed in different *hat*is, profession, direction as well as *Janasruti*. Disciples of the *satra* coming from outside are provided with lodging facilities in houses adjoining the *kirtanghar*. This way later on named as *kewoliya* (celibate) *hati* and this was the first *hati* of Barpeta (Pathak, 1959: 4). It seems that Mathuradas Burha Ata planned the *hati* system of residence of the householder devotees, for which he arranged the houses along both sides of a road in line with the cloistral design of the *satra* compound. Mathuradas Burha Ata in order to smooth running of the various activities of the *satra* the three adjoining *hat*is- Dakshin *hati*, Uttar *hati* and Na-*hati* made *thul hat*is (principal *hati*), the other *hat*is were named as *sakha hat*is (branch *hati*) (Pathak, 1959: 71-72). Apart from these another such *hat*is are- Da *hati*, Isswapur *hati*, Kewaliya *hati*, Galiya *hati*, Mukhi *hati*, Bilortari *hati*, Khataniyar *hati*, Joganiyar *hati*, Bar *hati*, Pathak *hati*, Rangpur *hati*, Major *hati*, Fata *hati*, Gayan *hati*, Palangdi *hati*, Kumar *hati*, Dola *hati*, Ghoramara *hati*, and Ambari *hati* (Pathak, 1959: 72). The names of the *hat*is are given on the basis of topography of the place or direction from the *satra* or the functions of the inhabitants to be performed in the *satra* etc. (Pathak, 1959: 73). Although the topography of the place has changed in course of time, the old name of the *hat*is is still continuing. For example- the present Bilortari *hati* is situated along the bank of a *beel*, so it was named Bilortari *hati*. Galiya *hati* represents the old Galaya *beel*. The *hati* where the *pathak* (reciter) live was named Pathak *hati*; the *hati* where the *gayan* (singers) and *bayan* (drummers) live is known as Gayan *hati*; the *hati* where *Kumar* (potters) live was known as Kumar *hati*; the name Ambari *hati* was because of abundance of mango trees; Isswapur *hati* was named because it was a center of prayers of God; *Ghoramara hat*i was named as such because people of that place were derived to *vaisnava* thought. The place where the *dola* (palanquin) bearers of God live was named as Dola *hati*; the area to the west of *Chinpora Bhithi*, where Sankaradeva had lived for six months was known as Palangdi *hati*. The place where the traders paid their taxes was known as Fata *hati*; the *hati* where the theatre hall of the *satra* situated was known as Rangpur *hati*. Where celibates were lived was named as Kewaliya *hati*: where lime worker are reside named

as Mukhi *hati*. These 22 *hatis* are not caste units as these are not formed on the basis of caste alone. People of different castes and creed live in the same *hati*. These *hatis* may be considered as organized system on the basis of division of labour. Each *hati* having its own share of works to be perform in the *satra* context. An individual *hati* has got its own organization covering social, political as well as economic aspects. The relation of each *hati* with the *satra* is analogous with the relation of each state with the parliament, taking each *hati* as a state and the *satra* organization as the parliament.

In each *hati* there is a common conference hall for all the members of the *hati* is known as *haitarghar* (community hall), located at a central place. The *haitarghar* is generally a two roofed Assam type building with C.I sheeted roofs. It is kept open without side walls but with wooden railings. In many of the *hati*'s *haitarghar*, recitation of certain religious books like- Bhagawata, Mahabharata, Ramayana etc. are held in the evening and some elderly men and women assembled there to listen to it and also to take part in the religious discussions which go on along with recitation.

Habitation Pattern in a Hati: Resident in *hatis* lives in compact blocks. Very often the individual houses are constructed in such a manner that the roofs of one house touch the roofs of another house. In a row, one single wall separating two families. Two such rows of houses are arranged on two rows of houses serves as passage to individual houses as well as common courtyard for household works. Due to thickness of population and scarcity of space the atmosphere within the *hati* is noisy. Occasional quarrels among co-inhabitants take place leading severance of relationship. Such atmosphere is also uncongenial to the development of personality.

Conclusion: All the *hatis* have the place of popular gathering which is very significant in the socio-cultural and socio-religious life of the people of Barpeta. Now the town has been extended and due to dearth of residential space people originally living in the *hatis* prefer to shift their residences to such areas where they can construct their houses in a spacious plot of land. It is now a general tendency of the people to shift their residences towards the town from villages for various amenities. Generally people living in joint families prefer to have new establishments for their own families. Due to such tendencies of the people, new localities have grown up on the outskirts of the township. People having new establishments on these localities also maintain their allegiance to the *hatis*, where they originally lived. In this way there has been a necessity for organizational change of the *satra*. In this respect the *satra* authority as well as the public should come forward to take necessary steps.

References :

1. Nath, U. (2001), *Barpetar Sanskritik Buranji*, Bina Library: Guwahati.
2. Neog, M. (1965, reprint 2008), *Early History of The Vaisnava Faith and Movement in*

3. *Assam, Sankaradeva and His Times*, Lawyer's Book Stall: Guwahati.
4. Pathak, G. (1959, reprint 2006), *Barpeta Satrar Itihas*, Amar Desh prakashan: Barpeta.
5. Raychoudhury, A. (2000), *Asomor Samaj Itihasat Naba Vaisnavbad*, Puberun Prakash: Guwahati.
6. Roy, N (2012), Barpeta Jila Ek Abalokan in R. Gogoi (ed) *Barpeta*, 32-63 Tathya Aru Jansangjyog: Oxom

Buddhism and Nature

* Asha Parvin

Abstract- *It would not be an exaggeration if we claim that present day environmental crisis is an alarming one. So we need to minimize it, otherwise environment together our lives as well as our future generation are endangered. But how can we minimize it as all the first order solutions have proved unsuccessful. The present paper made an attempt to highlight on the great teaching of Buddha. Buddha's teaching envisages the cordial relationship between man and nature. In Buddha's vision a respectful, reverential, caring and loving attitude towards nature by man is an amicable solution to overcome present day environmental crisis. Buddhism is a dogma free religion based on true wisdom, i.e., self-realization. Nobody can deny that all human species and non-human species are interdependent and survive via the natural predator relationship is really a matter of self realization. Here is the relevance of Buddhism. Buddhism advocates kindness, true respect towards all living communities. In short, Buddhism claims care for a-biotic world and self-realization for oneness with the greater self. When individuals gradually develops a feeling for oneness with all living communities of the environment, his attitudes towards natural environment gradually changes from an ego centric to an eco centric one which ultimately revamp the lost of ecological balance, otherwise not.*

Key Words- eco-centric, ego-centric, nature, man, self-realization.

The role Buddhism in solving environmental degradation is of great importance. Buddhism as religion based on wisdom in the true sense of the term. Buddhism intends to make human sorrow and suffering free human. In this regard the rules and principles advocated by Buddha for decrease of human sorrow or sufferings are of great importance in 21st century environmental studies. Buddhism says, "When humanity is demoralized through greed, famine is the natural outcome; when moral degradation is due to ignorance, epidemic is the inevitable result; when hatred is the demoralizing force, widespread violence is outcome."¹ What it reveals that the picture of environmental degradation. The earth needs to be saved from this environmental devastation. Human beings are rational beings and members of the biotic community and so humans are primarily responsible for ways

* Ph.D. Research Scholar, Department of Philosophy, Raiganj University, Uttar Dinajpur, West Bengal

and means for maintaining ecological balance between human and non-human. According to Buddha, the cause behind human sorrow is desire. By regulating one's desire one can minimize suffering. Buddha's teaching insists on maintenance of one's mental balance. Because if a state of mental balance is attained from individual to universal level, then ecological problem can be tackled in an easier way. In this regard, self-realization through self regulation is necessary. For Buddha self-realization from individual level to universal level will certainly bring down environmental problem. It is possible via *feeling of oneness with others and identification of oneness with other living beings*. Thus, we the rational beings should love and respect other non-human beings, i.e. plants, animals and nature as a whole for protection of environment.

Buddha or Buddhism propounded harmonious living of rational beings with the rest of nature or environment. Perhaps, this is the reason why Buddha, like ancient saints, selected green forest areas or nature with its full purity as places for meditation and attainment of liberation. Buddha realized that while living with nature humans should not be misunderstood flora and fauna around them. Nature needs to be protected or cared for in that animals and men (moral agents) can live by acquiring his basic needs, i.e., food and shelter etc. from nature. In short, nature offers its various products to all natural communities including human species. Even it supplies huge oxygen is vital for our life. Thus, nobody can deny, nature is useful for man from various points of view. Natural world deserves respect from moral agents via love and gratitude towards nature by prohibiting cutting down of plants and trees for the satisfaction of man's greedy and luxurious need according to Buddha. Respect for nature is called moral commitment of moral agents. Like moral agents, all other living beings do have the right to live their own sake and so any attempt to extinct natural species by moral agents is morally bad. Here it can be said that the ultimate attitude of moral agents should be an attitude of respect for natural world. Now the question arises: how shall one justify this attitude of respect towards nature? Here is what Taylor said that "...in order to justify the attitude, then, we must show that the whole ethical system that embodies it is a valid one. How can this be done? The only way is to set forth the belief system that underlies and supports the attitude and show that it is accepted to all who are rational, faculty informed and have a developed capacity. In the case for the attitude of respect for nature, this involves examining the way of looking at nature and the place of humans in it which makes intelligible and taking of that attitude. We must then show why every rational being who is factually informed and open to the reality of life would accept the outlook as a part of their own total world view."²

Teachings of Buddha envisage maintenance of nature or ecological balance for sound life of all living beings. Buddha considered human beings as part of nature and thereby advocated the very notion of modest life with a minimum necessity. Buddha denied human superiority or mastery over nature.

Buddhism leaves no room for human propensity to conquer nature that tends to extinct a harmonious life within the biotic species. Instead of human superiority over non-human nature or subjugation and domination of one species by another community, Buddhism is closely associated with intrinsic value of all living communities and thereby promotes coherent association of all living species. This makes the sense to say that Buddhism is a cry against men-centric ethics where human beings alone are supposed to be the legitimate moral agents. Man-centered ethics hinges greedy attitude of individuals and encourages consumerism, materialism, scientiism as a result we have the present global environmental crisis. Instead of anthropocentric outlook, Buddhism advocates non-anthropocentrism which is associated with intrinsic or non-instrumental value of nature. It may therefore be said that Buddhism as a religion pleads for an ethics of love, care and mutual co-operation among all living species will gradually bring down the present global crisis.

The key concept of Buddhism is Ahimsa. Ahimsa or non-violence hinges abstain from killing in any form, i.e., birds, animals, insects etc. Here Buddha recommends only vegetarian diet and thereby develop bio-ethical ideal of living non-violently. Equally, he considers the right of others life. According to Buddha the use of natural resources beyond one's basic need is a kind of theft is immoral. In short, Buddha condemned misdeeds in any form. Buddhism expressed love and compassion in a number of ways for Buddhist monks and recluses "who are advised to remain within the monastery particularly during the rainy season since their footsteps may cause injury to the newly grown lush green grass and small insects numbering in that season. The monks are even forbidden to harm or destroy even a single leaf or plant without necessity."³ It clearly reflects that Buddha was fully aware of the importance of nature and its utilities in human life. He realizes that unless nature is safe, we are in danger or unsafe. Even ecological crisis is more alarming for the future generation. This is where the relevance of conservation of forest and preservation of bio-diversity advocated by Buddhism.

For Buddhism we care nature by practicing four cardinal virtues such as loving kindness, compassion, emphatic joy and equanimity. Loving kindness claims equality, compassion hinges happiness to all, emphatic joy makes others happy and equanimity indicates calmness or peace. There is no question of doubt that nature looks loving (for example: rose) and makes you and others happy and enjoyable (for example: natural scenery and fruits of trees etc.). It looks peace and it gives us pleasure, for example: beauty of nature, fresh air and shade of trees when climate is hot. Thus, human beings through strict meditation of four cardinal virtues ought to realize that jealousy; hatred, greed; violence or exploitation of nature and its species is immoral, unethical and unjust. For Buddhism rational beings are an integral part of nature as man utilized nature for his benefit and his life totally depend on nature. 'The natural world was not understood as something apart from man...'⁴

We think that the present day environment is plagued environment is highly alarming and threatening to the very existence of life on earth. Therefore it is high time to find out an amicable or proper solution to overcome the present day environmental problems. We have already mentioned above that the first order solutions in the form of environment protection acts of different social groups, environmental laws etc. are not enough to revive the lost of ecological balance. Therefore, nobody can deny that there is a need of a philosophy of life based on symbiosis, i.e., cordiality between man and nature advocated by Buddha. Buddha advocates an ethical approach towards nature based on the percepts of *ahimsa*, *love* and *compassion* guide individuals to restrain themselves from satisfaction of greed. Buddhist way of life surely is an amicable solution to overcome present day ecological crisis. According to Buddha, earth can be saved from environmental catastrophe via changing human attitude towards nature, i.e., from an *ego-centric* to an *eco-centric* one, based on *love*, *non-violence*, *forgiveness* and *compassion*. Here is what Buddha nicely outlines or compares collection of nectar by bees with man's utilization of nature for his need. Buddha observes that bees accumulate nectar from flowers and convert it into sweet honey without disturbing the beauty and fragrance of the flowers. He, therefore, advised like bees, rational beings utilize nature and accumulate wealth. We think that human ought not to inflict harm nature. As protective utilization of nature via change of human attitude towards nature can be narrowed down the gap between man and nature and thereby ensure a healthy environment where all living communities can lead a sound life on the one hand and minimize environmental degradation on the other hand. This is, in brief, how many ways a harmony between man and nature can be realized according to Buddhism.

References :

1. Rhys Davids, T. W. and Stede, W. ED. (1970-71). *Digha Nikaya*, London, PTS, Vol. iii, p. 80.
2. Taylor, W. P. (2002). "The Ethics of Respect for Nature", in *Environmental Ethics* by David Schmidly and Elizabeth Willot, OUP, p. 83.
3. Das, A. D. (2013). *Modern Environmental Ethics: A Critical Survey*, New Delhi, Kunal Books, p. 53.
4. Subbarao, S. (1985) *Ethics of Ecology and Environment* new Delhi, Rajat Publication, p. 251.

The Concept of Sexism and its impact on Assamese Language

* Nipom Kalita

Abstract- Sexism is the result of the second stage of feminism movement and it implies the concept of the expression of human behaviour based on sex. This concept of sexism has been focused through some particular use of typical language and it also implies the nature of the society and its outlook as a totality of human behaviour. The norms of a society is highly depend upon the expression of ideas of a particular human being based on the sex. From the experience it is seen that the female sex has been always victimised in different situations either in work place or in household perspectives for which the social workers vocal about sex has been demanding to use words which is common to both the sex or it implies human entity. This paper aims at use of words which does not mean only female sex, but for common human being with required examples.

Key Words-Sexism, Feminism movement, Human behaviour

0.1 Purpose of the study: The aim of this study is to highlight about sexism which is a new concept in Assamese literature. The sexist language, though it is used in different context, the author tries to focus it on the light of social justice, whether it preserves inequality on the basis of sex. It also suggest to use words bearing silence of sex in everyday life.

0.2 Importance of the study: Due to the improvement of science and technology, the communication among people has been becoming rapid and as such both man and women has been taking place in social development. Not only education and learning, but also due to the rapid growth of massmedia and information technology, the society has been changes days by day. The traditional social system which lays importance on the male-dominated society which basically dominates the hopes and aspirations of the women in general. I feel that the use of sexist language also responsible for this occasion.

0.3 Research Method: Analytical method has been used to study about the theme of the proposed topic and as such library material as well as the internet materials are also used for using into conclusion of the same.

2.0 The main theme: Sexism is a concept or faith which is used to highlight a particular sex in comparison with the other sex which is generally seen particularly among the manfolk towards the womenfolk. This type of concept

is so widespread that is available in majority of the world literature.

Sexism reflects the ideology of the male dominate society towards the womenfolk in response with physical as well as verbal behaviour. This concept shows that women has been shown comparatively weak or backward than the man itself. It is the concept based on male dominated society which always neglect the personal qualities of women and tries to give importance of man. The freedom of women, the personality of women, their creativity etc. are totally neglected and it also influence to women to think accordingly.

The sexism is an English word and its Assamese term is 'Lingabád'. This word consists of two different words i.e. sex+ism and formed the sexism. Poulin M.leet.Prof of Franklin and marshal college first use the term in 18th November, 1965 in the student teacher forum(<https://academichelp.Net/samples/academics/essays/definition/sexism.html>).

It came into print media after three years i.e, 15th November, 1968. This word was first used to express the concept of harasment upon the girl-child or women, but later on its was eleborately used to focus on the misdeed about man, homosexuality as well as the transgender i.e., third sex.

2.1 Definition of Sexism: Accordingly **Oxford English Dictionary** the word Sexism means–

Prejudice or discrimination, esp. Against women on the grounds of sex. (Edited by Judy pearsall and Bill Trumble, 1st Indian edition 2008, p.1238)

The Modern English Dictionary denotes Sexismas –*Belief That men are superior to women; Systematic discrimination against women in Law, Social Position wages etc.* (Cmplied by - G.N. Garmonsway with Jacquulence Simpson, Page-663)

Accordingly to Encyclopedia Britannica –*Sexims as prejudice or discrimination based on sex or gender, especially against women and girls.* (Online Academic Edition, 2011)

Carly kayder faster remarks– *Sexism both man and women can experience, but sexism against women is more pervasive.* (The encyclopedia of Ploitical Science, 15 ISBN-9781608712434).

From the above defination it may easily be understood that sexism is an uneven behavior to a particular person based on sex. Such type of behaviour shows a particular sex higher above the other sex comparatively. It is particularly approved in case of the women. Sexism indicate the duty and responsibility of boys or girls based on their sex.

After the birth of a child it becomes the permanent inhabitant of a particular society, which is being created either by men or by women. If it is male child, it continues to follow the instruction of male dominated society and both the society is quite different irrespective od sex. This is for the reason for which the sexism concept has been grown with the society. Therefore people tries to follow some particular social behaviour within their society.

India as a male dominded society has been deeply influenced by the

thought of sexism and the children has been to follow the same since they were very young. This results their growth among the peer groups, as a result of which they formed a particular habits and customs of sex related social infrastructure and thereby develops their personality within the society.

2.2 Sexist Language:

The existence of sexist language is due to sexism in society. As a social phenomenon, language is closely related to social attitudes. (Journal of language and linguistics, Vol-5. No-1, 2006)

Few centuries back women were confined surroundings the boundary of their own house. They were controlled by male dominated society. Their duty was limited to the household duties along with their service to husband and other family members. Even in the western societies the same sexist ideology has been followed though they have been getting proper education. That means education and learning could not able to change the traditional habits and customs of western society which is basically man dominated. Women, being regarded as the weaker section of the society, they didnot get equal opportunity with man. Even there are examples of injustice on the status of women in the western society till date.

According to scholars view the sexist language may be defined in the following way. *Sexism creates, constitutes, promotes and exploits any irrelevant as impertinent making of the distinction between the two sexes. A sexist statement refers to someone when gender is not relevant.* (Quoted by vettering braggin as published in Amar Asom, 28th March, 2017)

Form the above defination it is very clear that the sexist language refers those elemeat of language where words, phrases and idioms tries to focus a particular sex in comparrison to either sex and try to dominate the other sex. In this context the opinion of xialon lei is remarkable. He wrote–*Sexist language is that express bias in favour of one sex and thus treats the other sex in a discriminatory manner. In most cases the bias is in favour of men and against women.* (Journal of Language and Linguistics, Lot-5, 2006)
In our society we use sexist language consciously or unconsciously. This nature of our society is responsible for the repression of women into a great extent. As far socio-linguistic is concerned, the statement which clearly mentions the difference between the either sex may therefore be described as sexism.(Samaj Bhasabigyan-P-63), Such speeches of contemporary society reflects the traditional outlook of our stereotype society.

The Sexist language is use to shows the women are comparatively weaker than man and thus they cannot step forward equally with man; So the society has already allot a particular duty for women, they were found to do the same according to the demands of the society.

On the other hand, society cannot be changed without proper development of women. It is the common duty of everyday though the genuine qualities of women were not given preference in real sense. As a result women

were always neglected in true sense. For example–

- (a) *How many generation have you been living here;*
(*Tomaluke iyat keipurush dhoru bosobas kori asa?*)
- (b) *Our grand-parents were living here generation after generation.*
(*Amar purbapurush atijote kamrupor basinda asil.*)

Both the examples it is clearly emphasis the man and disappeared the women. The world of today has been aware above the personality of women and thus words which denotes only women has been changed and turned it into common words for both the sexes.

Traditional words	Present Change
<i>Men</i>	<i>Human being</i>
<i>Mankind</i>	<i>Humankind, humanity</i>
<i>Men Power</i>	<i>Work force, human energy, human resources.</i>
<i>Men achievement</i>	<i>Human achievement</i>
<i>Fireman</i>	<i>Fire Fighter</i>
<i>Business man</i>	<i>Business Manager</i>
<i>Cameraman</i>	<i>Photographer</i>
<i>Policeman</i>	<i>Police, Police Officer</i>
<i>Salesman</i>	<i>Sales assistant</i>
<i>Spokeman</i>	<i>Spoke person</i>
<i>The common man</i>	<i>Ordinary people</i>
<i>House wife</i>	<i>Home maker</i>
<i>Sports man</i>	<i>Athlete, Sports women</i>
<i>Head master (m)</i>	
<i>Headmistress (f)</i>	<i>Head teacher, Head</i>
<i>Actor/actress</i>	<i>Actor</i>
<i>Manager (m)</i>	
<i>Managress (f)</i>	<i>Manager</i>
<i>Poet (m)</i>	
<i>Poetess (f)</i>	<i>Poet</i>
<i>Waiter (m)</i>	
<i>Waitress (f)</i>	<i>Waiter</i>

Presently, there is a worldwide change in the words which was used to denote in occupation, related with jobs and activity. This concept of equality of status in respect of either sex has been empowering and encourage the women. But our traditional agro-based society is not accustomed with the use of common words in respect of either sex and always emphasis on sexist language. This type of conventional social system may be changed by proper education and training. The feminist critique always emphasis on the equal rights among the people irrespective of sex and they emphasised on the use of common words for every cases.

In our regional language we find the use of different words and phrases related with sexist language. Sexist Language always target the women and

try to find out the loopholes of their activity either at home or in the workplace. In order words, sexist language prefers the negative aspect of the society. It is therefore utmost necessary to use sexless common words in every social context.

May proverbs has been found which clearly indicates the sexist language. Assamese literature depicts examples from the very beginning. This type of sexist language is always purposeful and its motive is to dominate the opposite sex. The place of women in the society is highly depend upon the motive of man and thus there are many words to be use on behalf of them which is very rare in case of women. For example, there are many words to express the illicite behaviour of women but it is quite silent in case of man. The common words bearing both the sex doesn't implied for women and preference has always been given to man itself. This is of course due to the traditional social system which gives much importance on the responsibility of man itself.

In this context, as the changing society demands keep in mind that social empowerment of women may only be possible if we come with an open mind. It is the time to change the mindset of the traditional society and bring harmonious development within the sexist ideology. We must give due honour to the either sex for the proper growth and development of the society. From the above discussion are may summaries the main theme in the following words :

- (a) *It will encourage the women and increase their faith.*
- (b) *Sex-difference will be minimised and social progress will be possible.*
- (c) *It will give the conciousness of internal existence of their personality as a human being.*
- (d) *Indentation among women will be minimised*
- (e) *It will improve the status of women.*
- (f) *It will help them to think independently.*
- (g) *It will encouraged them to be socialised themselves.*
- (h) *It will empowered responsibility to take proper decision for the human welfare.*
- (i) *It will develop the creative aspect of their life.*
- (j) *It will enable them to think logically and act accordingly.*
- (k) *It will influenced the new generation for stepping right path in the society.*
- (l) *It will influence the society and develop their work spirit.*
- (m) *It will develop the spirit of social service as well as leadership quality.*

3.0 Conclusion :

Language reflects the mental development of a particular society while it is policed, soft and democratic, it will not hamper to any people in their life. Women has been taking major responsibilities in the society, either in house or in workplace and they have shown their capability in any field where they have been engaged. It is the time for us to change our old outlook about the women as weak, incapable helpless and unreliable.

The existence of women has becoming a worldwide pride for their voice as half of the sky (Ardhaakas) and thus they have been trying to united their voice against the undemocratic ethics of the male dominated society.

As the society demands for justice and equality, we cannot deny the fact that is the democratic right of the women to get equal opportunity in every walks of life. As the education and learning has been increasing, the voice of women has been growing higher and higher and in such cases the government has been forced to focus on the basic needs of the women, their protection from sexual harassment, ill-treating and injustice either at home or in workplace. In such cases, we must give importance in the developments of sympathy. Coordination and the use of words for sexist ideology should be banned from the society. This is the fact of an uniform and balanced society, where no language of sexist ideology is used to underestimate the either sex and empowered due respect and honour everyone on the basis of their status in the society. It will automatically bring empowerment among women in the society and will give justice to them.

References :

English :

1. Beantor, David. *The Second Sexism Discrimination Against Men and Boys*, Blackwell publishing, 2012.
2. Braggins, Mary Vetterling (Ed.). *Sexist Language A Modern Philosophical Analysis*. Library of Congress Cataloging in Publication Data, 1981.
3. Mills, Sora. *Language and Sexism*. First Published in Print Formet Cambridge University Press. 2008.
4. Lakoff, Robin Tolanach. *Language and women's place*. Edited by Mary
5. Bucholtz Oxford University Press, Ince, 198 Madison Avenue, New York.

Assamese :

1. Adhikary, Sukadev (ed). *Naribad aru Asomiya Sahitya*, Guwahati: SDN Prakashan, 2015. Published.
2. Bora, Juna . *Linga Baisamiya*, Dharmaji: Book Stall, 2004. Published.
3. Das, Biswajit. *Samaj Bhasabijyan*, Nagaown: Ajants Press, 2015. Published.
4. Deka, Sarkar Alpana . *Unabingsha Satikar Patabhumit Asomiya Nari*. Guwahati: Asom publishing company , 2016. Published.
5. Devi, Sandhya . *Nari aru Navajagaran*. Guwahati : Students stores, 2014. Published.
6. Duwara, Sapon . *Bhasa Aru Samaj*. Guwahati: Students stores, 2002. Published.
7. Gogoi, Dipankar . *Unabingsha Satikar Asomiya Nari*. Guwahati: Purbanchal Prakash, 2016. Published.
8. Mahanta, Arpana. *Naribaad*. Dibrugarh: Dibrugarh University press, 2018. Published.

Dictionary :

1. Garmonsway, G.N. Simpson, Jacqueline, *The Modern English Dictionary*. Golley Press, 1987.
2. Guralnik, David B. *Webster's New World Dictionary*. Second Indian Reprint, 1976.

3. Pearsall, Judy. Trumble, Bill. *Oxford English Reference Dictionary*. Newyork, Oxford University Press. 1st Indian edition, 2008.

Article :

1. He, Guimei. *An Analysis of Sexism in English*. Journal of Language Teaching and Research, Vol.I, No. 3, pp 332-335, May 2010.
2. Lei, Xiaolan, *Sexism in Language*. Journal of Language and Linguistics Vol. 5 No.1, 2006.
3. Nath, Arup Kumar. *Reflection of Sexism and Gender Inequality in the Assamese Language*. Communication Studies and Language Pedagogy. Vol.-2, No. 1-2, Jan-Dec, 2016.

Newspaper :

1. Nath, Arup Kumar, *Asomiya Bhasat Lingabad aru Aamar Somaj*, Aamar Axom, Guwahati, Tuesday, 28th March, 2017

Internet :

1. <https://www.thoughtco.com/what-is-sexism-3529186>
2. <https://academichelp.net/samples/academics/essays/definition/sexism.htm>
3. <https://en.m.wikipedia.org/wiki/sexism>
4. <https://www.britannica.com/topic/womens-movement>

Post-Sankardeva Bhakti Movement in Assam & the Rise of Sectarian Development: Damodardeva vs. Madhavdeva

*** Anurag Borah**

Abstract- *The neo-vaishnavism movement that led by Srimanta Sankardeva in medieval Assam was a unique phase of socio-cultural history of the land. As a part of the mainstream Bhakti movement, it revolutionised the entire face of the life of the people of medieval Assam and led the formation of a broader culture (Assamese) uniting the diverse tribal communities through the path of Bhakti-the extreme devotion to one's supreme God. But the death of Sankardeva immediately created an atmosphere of distrust and mutual jealousy between his successors and a race for power and position took place which ultimately resulted in emergence of the Samhatis or sects in the plot one by one. Sankardeva during the close of his life nominated his dearest disciple Madhavdeva to the seat of headship which was done almost in private, not even knowing his eldest son Ramananda. Madhavdeva's pontifical tenure however got interrupted when Damodardeva, a Brahman disciple of Sankardeva, seceded away, disowning Madhavdeva's leadership and organised and propagated a different schism which ultimately led to the beginning of sectarian development. This paper deals with these aspects and tries to peep into the scenario of post Sankardeva Bhakti Movement giving special attention to Damodardev and Madhavdeva's ideological cum psychological differences.*

Key Words- Bhakti Movement, Assam, Sectarian Development, Damodardeva, Madhavdeva etc.

Introduction: The neo vaishnava movement of Assam of the 16th century is associated with the name of Sankardeva who gave Assam Vaishnavism a new interpretation and its distinctive character. But after the passing away of Sankardeva the Vaisnavas of medieval Assam were split into schisms, known as 'Samhatis'. The term 'Samhati' is employed in the sense of 'groups of Assam Vaishnavism' of the main order. We find the use of the word only in the post Sankardeva period and it was probably derived from the word 'Sanghattana'.¹ Sankardeva, the founder of neo-vaishnavism, nominated Madhavdeva for the headship almost privately that even Ramananda, the eldest son of Sankardeva got to know the fact in the last days of his father.² All biographical works maintain that both Madhavdeva (1498-1596) and

* Assistant Professor, Rangia College, Assam

Damodardeva (1488-1596) came into immediate clash after the death of Sankardeva who died at Koch Behar in the year 1568 AD. It has been said that Damodardev's ambition to the headship of the order after the death of Sankardeva was the main driving force that led him to organise and propagate a different sect known as 'Damodariya'. Damodardeva then declining Madhavdeva's leadership built a separate satra and within short time he popularised his own sect in such a pace that Madhavdeva was left without any choice but to pay attention to uplift the official order too. Moreover, ideological and psychological differences between the two played the role of a catalyst in the scenario resulting in further division by encouraging other aspirants of the headship to form their own sects too. This paper deals with these aspects and tries to peep into the scenario of post Sankardeva Bhakti Movement giving special attention to Damodardev and Madhavdeva's personal complications and ideological differences.

Methodology:

This study is mainly based on secondary data. The sources of the data are based on various Books, Edited Hagiographies, Publication, and Journals etc. Due care has been taken to make interpretations rational and scientific.

Neo Vaishnavism movement in Assam and Sankardeva:

Among all the founders of the religious sects or as a propagator of Bhakti Movement in India Sankardeva enjoys a unique and honorable place. Srimanta Sankardeva was the guiding spirit for the initiation and development of *Neo-Vaishnavism* in Assam who charged a fresh wave of reformation and renaissance in 15th and 16th century medieval Assam through his neo vaishnavism movement that provided the people of Assam a simple religion based on monotheistic Bhakti cult. Born of a *Kayastha* family in 1449 A.D. at Alipukhuri near Bardowa of the present district of Nagaon, he was educated in the mediaval Sanskrit lore known as '*tol*' and settled down as a member of the *Baro Bhuyan* family of his legacy.³ After the death of his first wife, he went for his first pilgrimage all over India for a period of fourteen years. It had a lasting influence on his mind that finally brought a unique cult of religion which became known in history as Neo-vaishnavism as it had its origin in the cult of vaishnavism, but interpreted to fit the occasion in the north-eastern part of India.⁴ The unique quality of his faith lies in his deep rooted conviction on *Lord Krishna*, the creator of the universe and the simplistic form of worship which he calls 'sravana-kirtana' - the listening and recitation of the glory of Lord Krishna.⁵ This creed of neo-vaishnavism came to be known as *Eksarana-nam-dharma*, a slave form of devotion that involved absolute submission to only one deity who is none other than Krishna.

However the religion, known as Neo-Vaishnavism cum *Eksarana-nam-dharma* cum *Mahapurushiya Dharma* in Assam, developed by Sankardeva, got divided into four independent sectarian groups called "*Sanghati/Samhati*" after the death of Sankardeva. The process started immediately after

Sankardeva's declaration of Madhavdeva as the successor in his religious order. Damodardeva, a Brahman disciple of Sankardeva, who did not like to see Madhavdeva as the head of the order, seceded from it establishing his own order, making inclusion of all Brahmanical practices (karma-kanda) which the founder of the sect had rejected as meaningless. Thus with Damodardeva, a Brahmanical section came out undermining the original ideals of Sankardeva's bhakti religion and allowing Brahmanical ideals to filter back into the religion.⁶

The personalities of Damodardeva and Madhavdeva:

At that point, after the death of Sankardeva, the extraordinary figures who by their towering identity, religious enthusiasm and arranging limit made Vaishnavism an overwhelming cult in Assam, are Madhavdeva and Damodardeva. According to the tradition, Madhavdeva outlived Sankardeva by 28 years and after the death of his guru Madhavdeva started his pontifical career as prescribed by his guru. As per the charitas of the Mahapurusiya order dealing with the lives of Sankardev and Madhavdeva and articles of Lakshminath Bezbaroa, Deva-Damodara was a poor man and very nearly poor Brahmin who earned his living just for six months by means of his hoe as he could not manage to maintain ploughman and plough with his bulls.⁷ He was therefore, called 'Kur Damodara'. At the same time, the biographies of Damodardeva written by disciples of his order portray him as an extremely learned individual having sound knowledge in Sanskrit language. Therefore the character of Damodardeva or Deva Damodara is itself a questionable marvel as we discover clashing depiction of the figure by the essayists of the opponent groups. Thus, in the whole phenomenon when we locate an imperative occurrence or turnover of things to focus the genuine situation of the specific period the references are found continually clashing which makes it intense to objectify things.

According to the traditional account prevalent amongst the followers of Damodardeva's sect, he was born in 1598; although two earliest biographies namely 'Gurulila' by Ramaraya and 'Damodara Charita' by Nilakanta Dasa have made no mention of the year of his birth or his death. According to 'Gurulila' of Ramaraya, Damodardeva was expelled by Parikshitnarayana from his kingdom for an allegation brought against him by some interested parties that he had preached against the Brahmanical creed and as a result, Damodardeva took refuge in the kingdom of Lakshminarayan of western Koch kingdom. However, the accounts of Sankardeva collectively affirm that Damodardeva was a pupil of previous. Every one of them repeats the same story that Damodardeva was a poor agriculturist who on his way to the field used to listen to the religious discourses of Sankardeva.⁸ At that point one day Sankardeva urged him to dedicate himself whole heartedly to the quest for religion by surrendering his agrarian side interest. Damodardeva accordingly became a disciple of Sankardeva and was given the task to propagate the cult

of devotion amongst the Brahmins. Biographies of Damodardeva, on the other hand, while acknowledging the help rendered by Sankardeva, assert that Damodardeva received initiation from Caitanyadeva of Bengal which is out and out rejected by the scholars today. As indicated by Satyendra Nath Sarma, neither Sankardeva nor Caitanyadeva was his sacramental Guru rather it was Vasudeva Misra of Orissa as certified by the proof supplied by Ramananda Dvija and Maniram Barabhandar Barua and may be Damodara kept it as a secret from his followers.

Madhavdeva, one of the various supporters of Sankardeva is emphatically the most popular amongst all. Sankardeva instead of nominating his son or any of his Brahmin followers named Madhavdeva as the spiritual successor who moved with him as a shadow in the preaching exercises. It is described in the biographies of Sankardev that when his son Ramananda approached his demise bed looking for profound direction, the holy person is said to have coordinated his child to approach Madhavdeva on whom all his spiritual strength and energy devolved. It is recorded that at the moment when Ramananda asked his father for the initiation when the saint was almost at the last hours of his life, the latter is said to have told Ramananda that all authorities of his order had been bestowed upon Madhavdeva; and that if Ramananda was at all interested in having initiation, he would have to approach Madhavdeva for that. According to the tradition, Madhavdeva outlived Sankardev by 28 years and amid this period he carried on the proselytising activities. At the time of Sankardeva's passing away in Koch Behar in 1568, Madhava was still residing at Ganakkuci and he occasionally went to Patbausi to see Sankara's wife and family.

The conflict and historiographical contest:

Like mentioned above, all biographical works keep up that both Madhavdeva and Damodardeva, came into conflict quickly after the passing of Sankardeva. When the master passed away, Madhavadeva arranged his first annual 'sraddha' ceremony and Damodardeva refused to attend the same. Damodardev seceded from the main order declining to accept the authority of Madhavdeva as the head of the order and built a separate satra, initiated disciples and become its acharya i.e. the *adhikar*, sheltered refugees from the satra of Madhavdeva.⁹ It is further expressed that in an up close and personal level headed discussion between the two disciples, Damodardeva not just rejected the authority of Madhavdeva as the leader, he likewise stated that he had no commitment even to Sankardeva as he was not settled by him as the leader of the order.¹⁰

In the heat of the debate Damodardeva even rejected the authority of Sankardeva's philosophical work Bhakti Ratnakara and Sridharaswami's commentary on the Bhagavata which Sankardeva had approved for his followers.¹¹ Records from the biographical works show that Damodardeva built his satra in such a extravagant way that soon his satra turned into a focal

point of fascination for many, even followers of Madhavdeva it turned into an object of jealousy to such an extent that they (namely Narayan Thakur) influenced Madhavdeva to build his satra (Barpeta Satra) too to finish well with the splendour of Damodaradeva's satra at Patbausi. It is narrated in the biographies that Damodardeva did certain modifications to accommodate *smartta* rituals in the Vaishnavism of Sankardeva and even accepted in his fold a few persons who were expelled from the order by Madhavadeva. When Madhavdeva called for an explanation, Damodardeva is said to have replied: "Though I have deviated a little from Sankardeva, I have not thereby deviated from the original preachings of the Bhagavata. I consider the Bhagavata to be more authentic than Sankardeva. Further, I do not owe any explanation to you (Madhavdeva) as I am not a member of your order."¹² Upon this unpleasant reply Madhavdeva is said to have detached all connections with Damodardeva. However, Damodariyas don't agree with the sudden disassociation between Madhavdeva and Damodardeva and according to them if Madhavdeva insulted Damodardeva in the 1st monthly funeral ceremony of Sankardeva by throwing Damodardeva's offerings into the water which created a full stop to their relationship as narrated in the biographies then why Damodardeva was invited in the annual *sraddha* ceremony of the saint again.¹³ In the same tune the early biographers of Damodardeva, namely Nilakantha speaks in his 'Damodara Carita' that Sankara, Madhava and Damodardeva are identical and there is no distinction between them and even he calls the place Barpeta the second Vaikuntha as Sankara, Madhava and Damodara resided there.

The conflict that surfaced quickly after the passing of Sankardeva speaks enough about the personal elements of the conflict between the two senior leaders of the order. The flat refusal by Damodardeva to accept the authority of Madhavdeva and even that of Sankardeva, although for the sake of debate, that the reason for Damodardeva's deviation was no other than purely personal. S.N.Sarma opines that the main cause that led to the division was Damodardeva's ambition for the headship and when his expectation was belied by the nomination of Madhavdeva he found it difficult to regard Madhvdeva as his superior.¹⁴ Emphasis on beautification of the Satra and other material aspects too point to the same direction. There is no controversy in the fact that Damodardeva disowned the leadership of Madhavdeva for sure and came out of the orthodox Mahapurushiya order to start a new sub sect claiming complete independence of the sect founded by Sankardeva. Behind this what appears is ideological factors also as opined by Dambarudhar Nath that can be evident from the fact that Damodardeva had not only rejected the authority of Madhavdeva to head of the order, but also that of Sankardeva by alleging that Sankardeva had nothing of his own; even his translation of the Bhagavata based on the commentary of Sridharaswami was not acceptable to him, and the Bhakti Ratnakara, the essence of the Bhakti religion advocated by Sankardeva was simply based on the Puranas.¹⁵ Building of a Satra as

gorgeously as possible and being an acharya therein go against the primary ideas of Sankardev's Bhakti. Ramcharan Thakur, nephew of Madhavdeva, has recorded that by putting bhakti to pay the second fiddle, Damodardeva instituted puja i.e. ritual worship of the image and thereby rejected Sankara's ideological stand.¹⁶ It cannot be denied that Madhavdeva's uncompromising attitude towards *smartta* rituals alienated a section of Vaishnavas, particularly the Brahmins, who could not altogether shake off a Brahmanical bias for such rituals.¹⁷

Ramarai.

But it was the psychology of Damodardeva which stroked him to visualise that the wholesale abolition of Brahmanical rites and rituals would not only pull apart the sympathy of the Brahmins but the opponents of the Bhakti movement would make a capital of it by interpreting the movement as a revolt against the Vedas. He therefore did not prohibit nitya (daily) and naimittika (occasional) duties of the Brahmins and Madhavdeva's uncompromising attitude to accept this as an ardent follower of non-castism altogether set the plot for the sectarian development.

Conclusion:

When we have to infer the history of a particular point of time depending on narratives i.e. here hagiographies or 'Charit Puthis, that are written much later of the incident and carries conflicting ideas then historical objectivity naturally goes down to zero. Moreover, the mutual jealousy and race for popularity of the later phases of gurus of different sects which resulted in producing plethora of hagiographical literature further fuels this process. Therefore it is very much difficult to provide a twenty four carat exact picture of the whole phenomenon. Damodardeva's jealousy and ambition for the headship was merely a personal factor of the division as ideological elements too played a huge role in it. After Sankardeva's death Madhavdeva adding a new element completed the '*cari bastu*' and eliminated image of the deity along with rituals like nitya and naimittika where he replaced the image by a sacred scripture in the holy alter. Madhavdeva's uncompromising attitude towards *smartta* rituals alienated a section of Vaishnavas, particularly the Brahmins and Damodardeva here turned out to be a messiah for them. Damodardeva, a Brahmin by caste, had instituted all Brahmanical elements in his division creating the Satra at Patbausi in a grand style and attracted people by leaps and bounds which also tempted Madhavdeva to follow his footsteps. However, Madhavdeva's attitude was much egalitarian and way closer to Sankardeva that carried the real spirit of Bhakti in its essence form. He constantly reminded his followers of the simplicity and single hearted devotion that were to be observed by a true Vaishnava. He successfully carried out the mission of his guru and intensified the movement although after his death there was claim from many corners to the successorship and within the main body of the order, three more sub-groups have originated at last.

References :

- 1 Goswami, Kesvananda Dev. *Post Sankardeva Vaishnava Faith And Culture of Assam*. Delhi: Sri Satguru Publications, 1988.
- 2 Neog, Maheswar. *Guru Charit Katha(Ed)*. Guwahati: Guwahati University, 1986.
- 3 Raj Mohan Nath, *The Background of Assamese Culture*, Shillong, 1948.
- 4 Amalendu Guha, *Vaishnavbadar Para Mayamara Bidrohalai*, Guwahati, 1993.
- 5 Neog, Maheswar. *Socio-Political Events in Assam Leading to the Militancy of the Mayamariya Vaisnavas*, Calcutta, 1982.
- 6 Nath, Dambarudhar. "The Mataks and their Revolt against the State in 18th Century Assam Searching for Ethno-Religious Roots" *Political Roles of Religious Communities in India*, Jayanta Kumar Ray, Arpita Basu Roy (Ed), Kolkata, India, January 16-17, 2008.
- 7 Bezboroa, Laksminath. *Sri Sri Sankardeva Aaru Madhavdeva*. Guwahati: Bani Mandir, 2003.
- 8 Goswami, Kesvananda Dev. 1988. *op.cit*.
- 9 Thakur, Daityari. *Mahapurush Sri Sankardeva aru Sri Madhavdeva Charit* . Edited by Hali Narayan Dutta Barua. Guwahati, 1989.
10. *loc. cit*
- 11 Nath, Dambarudhar. "Sectarian Development in Neo Vaishnavism: The Ideological Background and Emergence of the Mayamara Sect." *Journal of Historical Research*, 2013.
- 12 Maheswar Neog. *Sankaradeva and His Times: Early History of the Vaishnava Faith and Movement in Assam*, Gauhati, 1965
- 13 "Madhavdev Aru Dev Damodar Gurur Manumanilya." In *Dev Damodara Guru*, edited by Sunpoti Dev Sarma. Guwahati: Deva Damodar Guru Prakashan Parishad.
- 14 S.N.Sarma. *The Neo Vaisnavite Movement and The Satra Institution of Assam*.Guwahati, 1999.
- 15 Thakur, Daityari, 1989, *op.cit*.
- 16 Thakur, Ramcharan. *Guru Charit*. Edited by Hari Narayan Dutta. Guwahati.
- 17 Ramarai. *Guru Lila*. Edited by Mohan Ch. Chaudhury. Calcutta, 1886.

Foliar Epidermal Characters and Petiole Anatomy of Two Species of *Phlogacanthus* Nees (Acanthaceae) from Assam, India

* Barnali Dutta

** Namita Nath

Abstract- The leaf epidermal and petiole anatomical studies of the two species of *Phlogacanthus* Nees viz. *P. tubiflorus* Nees and *P. jenkinsii* C.B. Clarke were carried out with the aim of establishing and documenting their foliar epidermal and petiole anatomical characters. The adaxial surface of leaf epidermal features includes the pentagonal and hexagonal epidermal cell margin; presence of glandular trichomes; absence of non-glandular trichomes and calcium oxalate crystals in both the species. The abaxial surface includes the presence of diacytic stomata, presence of glandular trichomes and calcium oxalate and absence of non glandular trichomes. However the presence of calcium carbonate crystals measuring 30-100µm in the adaxial surface of *P. jenkinsii* C.B. Clarke and calcium oxalate crystals measuring 10-15µm in the abaxial surface of *P. tubiflorus* Nees distinguishes both the species. Petiole anatomy revealed that the outline is more or less circular with slight adaxial wings in both the species. The oval and slightly curved vascular system of *P. jenkinsii* C.B. Clarke distinguishes it from the rounded arc of *P. tubiflorus*.

Key Words- *Phlogacanthus* Nees; Foliar characters; Petiole anatomy; Taxonomy; Assam.

Introduction: The genus *Phlogacanthus* Nees is one of the most important medicinal genera in the family Acanthaceae. They are tall herbs, shrubs and small trees with stout, quadrangular stem; swollen, flat nodes; opposite, acuminate leaves and terminal or axillary inflorescence with thyrsoid dense panicles. It is confined to a few South-East Asian countries viz., India, China, Vietnam, Indonesia, Bhutan, Myanmar and Bangladesh. The genus has about 35 species (Scotland 1992; Scotland and Vollesen 2000; Mabberley 2008; McDade *et al.* 2008). In India it is represented only by 10 species which are confined exclusively in north-east region of the country. In Assam 8 species are found (Kanjilal *et al.* 1939).

The members of the genus is commonly known as “Rangabahaka” or “Teetaphool” in Assamese and “Lal basak” in Bengali and Hindi (Patwari

* Department of Botany, Gauhati University

** Department of Botany, Gauhati University

1992). *P. tubiflorus* is known as “Alubabui” in

Dimasa (Das *et al.* 2008) and “Jok-anke-et” in Karbi (Kar and Borthakur 2008). Flowering mostly occurs during the months of February to April (Tamang *et al.* 2005).

The members of the genus *Phlogacanthus* Nees have been used as a source of traditional medicine by different ethnic groups of North Eastern India for treating wounds, tumorous growth and as a blood purifier. Its bitter tasted leaves and flowers are used to relieve cough, stomach ache and scabies (Das *et al.* 2008; Srivastavan 2010; Tangjanga 2011). The flowers of *P. tubiflorus* are used for treating intestinal worm and rheumatism (Kar and Borthakur 2008; Nath *et al.* 2011). Its leaves are used as detergents for washing clothes and hair (Jain and Borthakur 1980). The decoctions of leaves of *P. jenkinsii* are used in liver and spleen diseases. Many workers showed that the leaves yield a number of bioactive compounds like β -sitosterol, lupeol, betulin (Banarjee, 1980); phloganthoside (Barua, 1987); phlogantholide-A (Barua, 1985). The shape of epidermal cells, presence or absence of trichomes and crystals are important taxonomic characters. The present study therefore is to investigate the detailed leaf epidermal and petiole anatomical characters of the two species of *Phlogacanthus* Nees.

Materials and Methods:

Fresh leaves were collected from Hamren, Diphu of Karbi Anglong and Hahim of Kamrup (Rural) district. They were verified by consulting various floras (Hooker, 1986; Kanjilal *et al.*, 1934-1940). Voucher specimens were preserved in the form of herbarium as per standard field and herbarium technique (Jain and Rao 1977) and deposited in the Herbarium of Department of Botany, Gauhati University (GUBH). For the epidermal study, both upper and lower epidermal peelings of the fresh leaves were done by scrapping out with the help of a blade using a 10% aqueous solution of nitric acid following the technique of Boulous and Beakbane (1971). The peels were stained with 1% aqueous safranin solution for about 5-10 minutes, rinsed carefully in several changes of water to remove excess stains and then mounted in dilute (10%) glycerol solution on a glass slide for further microscopic observation. The tranverse sections of the leaf petiole were done by following Johansen's double staining procedure. Thin hand sections were at first stained with safranin and then grade passed in different concentrations of alcohol *viz.* 30%, 50%, 70%, 90% and 100%.

They were counterstained with fast green after grade pass and finally mounted with DPX. The slides were properly labelled and examined under the light microscope Nikon Eclipse E200 (with Camera DS-Fi1C) and Leica ATC 2000. Ten measurements were taken for each of the measured parameters. Stomatal Index (SI) was obtained using the formula: $SI = [S / (E + S)] \times 100$; where S = No. of stomata per unit area, E = No. of epidermal cells plus subsidiary cells in the same unit area.

Results:***Leaf epidermal surface******P. jenkinsii* C.B. Clarke**

The upper epidermal cells are polygonal (rectangular to hexagonal) with anticlinal walls, measuring $109.4 \pm 0.8 \mu\text{m}$ long and $71.4 \pm 0.1.27 \mu\text{m}$ broad (Table 3). Stomata are absent. Two types of trichomes viz. glandular multicellular and non glandular unicellular are present in the epidermal cells (Table 1). Glandular multicellular trichomes ranging $20\text{--}30 \mu\text{m}$ are present. SEM micrographs reveal a few sub sessile glandular trichomes with unicellular stalk and multicellular globular head (Fig 5B). Non glandular trichomes are absent. Numerous cytoliths of Calcium carbonate ranging $30\text{--}100 \mu\text{m}$ are present (Table 2). They are round to elongated (Fig 5C). Calcium oxalate crystals are absent (Table 1).

The lower epidermis cells are polygonal with anticlinal walls, measuring $103.6 \pm 1.57 \mu\text{m}$ long and $63 \pm 1.26 \mu\text{m}$ broad. Diacytic stomata measuring $49.2 \pm 0.53 \mu\text{m}$ long and $5.6 \pm 0.76 \mu\text{m}$ broad are present and the stomata index is 17.05% (Table 3). Glandular multicellular trichomes ranging $25\text{--}30 \mu\text{m}$ are present (Table 2). SEM micrographs reveal cupular glandular trichome with three clearly distinct cell layers (Fig 4C). Non glandular trichomes are absent (Table 1). Cytoliths of Calcium carbonate measuring $30\text{--}70 \mu\text{m}$ are present but the number is less than that of the upper surface. They are mostly round. Prismatic calcium oxalate crystals measuring $35\text{--}90 \mu\text{m}$ are present (Table 2).

***P. tubiflorus* Nees**

The upper epidermal cells are polygonal (rectangular to hexagonal) with anticlinal walls, measuring $94.6 \pm 0.48 \mu\text{m}$ long and $68.4 \pm 0.8 \mu\text{m}$ broad (Table 3). Stomata are absent. Glandular multicellular trichomes ranging $10\text{--}15 \mu\text{m}$ are present (table 2). SEM micrographs reveal a few single sub sessile glandular trichomes with unicellular stalk and multicellular globular head (Fig 7B). Non glandular trichomes are absent. Crystals of calcium carbonate and calcium oxalate are absent (Table 1).

The lower epidermis cells are polygonal with anticlinal walls, measuring $129.3 \pm 0.92 \mu\text{m}$ long and $89.58 \pm 0.58 \mu\text{m}$ broad. Diacytic stomata measuring $44.74 \pm 0.74 \mu\text{m}$ long and $4.6 \pm 0.84 \mu\text{m}$ broad are present and the stomata index is 15.64% (Table 3). SEM micrographs reveal cupular glandular multicellular trichomes ranging $10\text{--}15 \mu\text{m}$ are present. Non glandular trichomes are absent. Prismatic calcium oxalate crystals measuring $10\text{--}15 \mu\text{m}$ are present (Fig 6C, Table 2). However cytoliths of calcium carbonate are absent (Table 1).

Petiole Anatomy:***P. jenkinsii* C.B. Clarke**

The T.S of the petiole is more or less circular with adaxial wings (Fig. 8). The epidermis is single layered, barrel shaped and compact without ribs and trichomes. Below the epidermis there is a layer of calcium carbonate

druse which are round in shape. It is followed by the cortex that consist of acicular (Acy) and microspenoidal crystals (Mcy) along with 9-10 layered angular collenchyma, followed by 14-15 layered parenchyma cells. Surrounding the vascular bundle there are discontinuous patches of sclerenchyma cells. The shape of the vascular system is oval and very slightly curved with two complementary bundles. The pith is parenchymatous with acicular crystals (Acy).

***P. tubiflorus* Nees**

The T.S of the petiole is more or less circular with slightly winged adaxially (Fig 9). The epidermis is single layered, barrel shaped and compact without ribs and trichomes. Below the epidermis there is a layer of calcium carbonate druse which are round in shape. It is followed by the cortex that consist of acicular (Acy) and microspenoidal crystals (Mcy) along with 9-10 layered angular collenchyma, followed by 14-15 layered parenchyma cells. Surrounding the vascular bundle there are discontinuous patches of sclerenchyma cells. The shape of the vascular system is a rounded arc with two complementary bundles. The pith is parenchymatous with acicular crystals (Acy).

Discussion:

The present study showed that foliar epidermal and petiole anatomical features are useful for characterization and delimitation of the two species of *Phlogacanthus*. The species investigated have very similar foliar epidermal characters with polygonal (rectangular to hexagonal) epidermal cells and anticlinal walls on both adaxial and abaxial surfaces. These few differences points out the close inter-relationship between the two species. The epidermal cells are regular with glandular as well as non glandular trichomes on the adaxial and abaxial surfaces of both the species. Calcium oxalate crystals are present on the abaxial surface while absent on the adaxial surface of both the species. However calcium carbonate crystals are seen in both the adaxial and abaxial surfaces of *P. jenkinsii* whereas such crystals are absent in either surfaces of *P. tubiflorus*. The upper epidermal cells and stomatal size of *P. jenkinsii* are bigger than that of *P. tubiflorus*; but the case is quite opposite in *P. tubiflorus* where the lower epidermal cells are bigger in comparison to that of *P. jenkinsii*. It is also observed that the Stomatal Index of *P. jenkinsii* is greater than *P. tubiflorus*. According to the works done by Illoh (1995), Adedeji and Jewoola (2008) and Saheed and Illoh (2010), the foliar epidermal cells and their varying sizes could be characteristics and delimiting among closely related species. Diacytic stomata are found in both the species.

The petiole anatomy showed that the outline is more or less circular with adaxial wings. The epidermal cells are uniseriate with trichomes and round calcium carbonate druses are found below the epidermis that is round in shape.

Cortex consist of angular collenchymas cells with acicular and

microsphenoidal crystals. The only difference is the vascular bundle which is oval in *P. jenkinsii* and rounded arc in *P. tubiflorus*. The presence of acicular crystals in the pith is quite delimiting. The microscopic characters reported in this paper shows close relationship between the two species of *Phlogacanthus* that could be used as tool for authentication of this medicinal plant. The work would serve as information for further phytochemical and pharmacological study.

References :

1. Adedeji, O. and Jewoola, O.A (2008) Importance of leaf epidermal characters in the Asteraceae family. Not. Bot. Hort. Agrobot. Cluj. 36(2): 7-16.
2. Banarjee, S.K., Biswas, S. & Choudhury, M.K (1980) Chemical investigation of the leaves of *Phlogacanthus thyriflorus*. Journal of Indian Chemical Society. 57: 665.
3. Barua, A.K., Biswas, S., Patra, A., Basu, K.A., Panda, S.K. and Ghosh, A (1987) Phloganthoside - a diterpene lactone glucoside from *Phlogacanthus thyriflorus*. Phytochemistry. 26: 491-492.
4. Barua, A.K., Choudhury, M.K., Biswas, S., Gupta, C.D., Banarjee, S.K., Saha, S.K., Patra, A. and Mitra, A.K (1985) The structure and stereochemistry of phlogantholide-A, a diterpene from *Phlogacanthus thyriflorus*. Phytochemistry. 24: 2037-2039.
5. Das, A.K. Dutta, B.K. Sarma, G.D (2008) Medicinal plants and their uses by different tribes of Cachar District, Assam. Indian Journal of Traditional Knowledge. 7(3): 446-454.
6. Illoh, H.C (1995) Foliar epidermis and petiole anatomy of four species of *Celosia* L. in Nigeria. Feddes Repert. 106(1-2): 15-23.
7. Jain, S.K. and Borthakur, S.K (1980) Ethnobotany of Mikirs of India. Econ Bot. 34: 264-272.
8. Kanjilal, U.N. Kanjilal, P.C. Das. P. and De, R.N (1939) Flora of Assam. Vol III. Govt. of Assam, Shillong, India.
9. Kar, A. and Borthakur, S.K (2008) Wild vegetables of Karbi-Anglong District, Assam. Natural Product Radiance. 7(5): 448-460.
10. Mabberley, D.J (2008) Mabberley's Plant-book: a portable dictionary of plants, their classification and uses. Third edition. Cambridge University Press, Cambridge, 1021 pp.
11. McDade, L.A., Daniel, T.F. and Kiel, C.A (2008) Toward a comprehensive understanding of phylogenetic relationships among lineages of Acanthaceae s.l. (Lamiales). American Journal of Botany. 95: 1136-1152.
12. Nath, K.K., Deka, P. and Borthakur, S.K (2011) Traditional remedies of Joint diseases in Assam. IJTK. 10(3): 568-571.
13. Ogundare, C.S. and Saheed, S.A (2012) Foliar epidermal characters and petiole anatomy of four species of *Citrus* L. (Rutaceae) from South-Western Nigeria. Bangladesh J. Plant Taxon. 19(1): 25-31.
14. Patwari, B (1992) A glossary of medicinal plants of Assam and Meghalaya. 1st Ed. M.N. Printers, Guwahati, India, 98 pp.
15. Saheed, S.A. and Illoh, H.C (2010) A taxonomic study of some species in Cassinae (Leguminosae) using leaf epidermal characters. Not. Bot. Hort.

- Agrobot. Cluj. 38(1): 21-27.
16. Scotland, R.W (1992) Pollen morphology of Andrographideae (Acanthaceae). Review of Palaeobotany and Palynology. 72: 229-243.
 17. Scotland, R.W. and Vollesen, K (2000) Classification of Acanthaceae. Kew Bulletin. 55:513-589.
 18. Srivastavan, R.C., Nyishi Community (2010) Traditional Knowledge of Nyishi Tribe of Arunachal Pradesh. IJTK. 9(1): 16-37.
 19. Tamang, J.P., Thapa, M.P., Sharma, R.M., Rai, A.K. and Dhakal, R (2005) Carrying capacity study of Teesta Basin in Sikkim. Biological Environment Food Resource; 8.
 20. Tangjanga, S., Namsab, N.D., Arana, C. & Litin, A (2011) An Ethnobotanical survey of medicinal plants in the Eastern Himalayan zone of Arunachal Pradesh. Indian Journal of Ethnopharmacology. 134(1): 18-25.

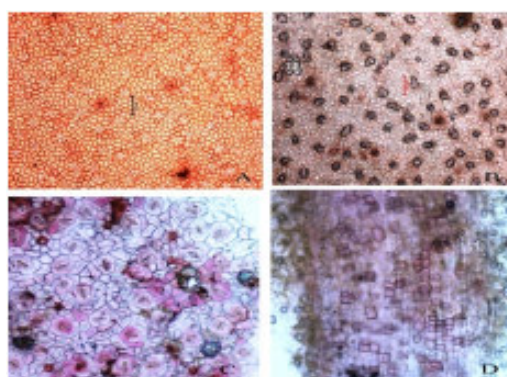


Fig 1. *P. jenkinsii* C.B. Clarke, A-B. Upper epidermis showing Calcium carbonate crystals and glandular trichomes X100.
C-D. Lower epidermis showing CaCO₃ in the midvein region along with prismatic Calcium oxalate crystals X100.

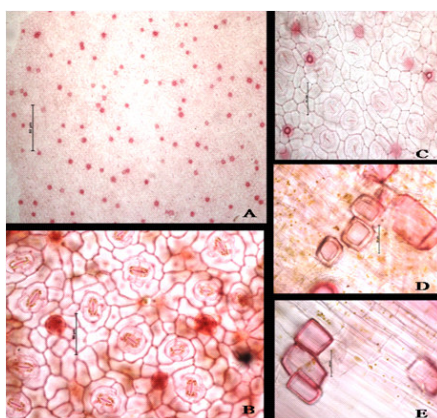


Fig 2. *P. tubiflorus* Nees (A-E. Lower epidermis) A. Stomata and GT X 100, B-C. Diacytic stomata and multicellular GT X 400, D. Sclerenchyma cells in leaf margin X 400, E. Prismatic CaOxalate crystals in leaf margin X 400.

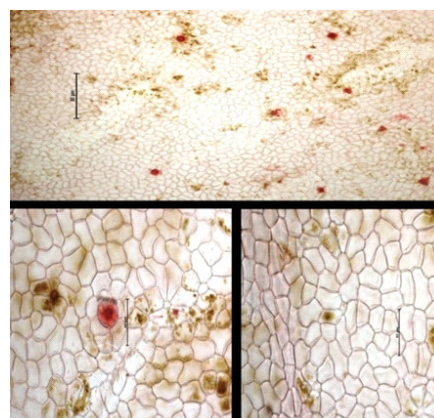


Fig 3. *P. tubiflorus* Nees (F-H. Upper epidermis) F. Epidermal cells with GT X 100, G-H. Multicellular GT X 400.

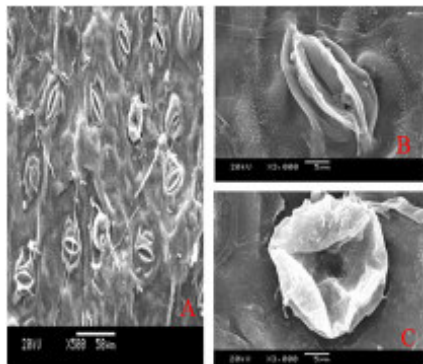


Fig 4. SEM micrographs of *P. jenkinsii* C.B. Clarke A-C. Lower epidermis, A. Diacytic stomata with glandular trichome X 300, B. A single stomata X 3000, C. Cupular glandular trichome with three clearly distinct cell layer X 3000.

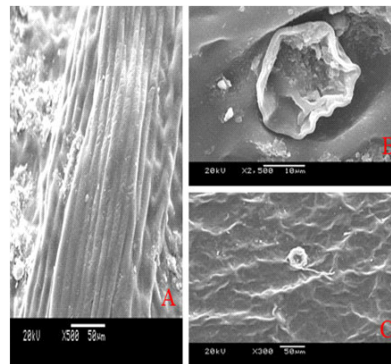


Fig 5. SEM micrographs of *P. jenkinsii* C.B. Clarke A-C. Upper epidermis, A. Epidermal cells with CaCO_3 crystals and Glandular trichome X 200, B. A sub-sessile glandular trichome X 2300, C. An elongated calcium carbonate crystal X 700.

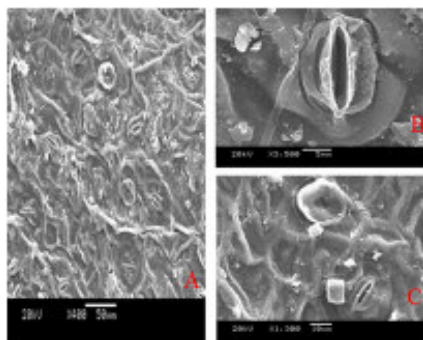


Fig 6. SEM micrographs of *P. tubiflorus* Nees A-C. Lower epidermis, A. Stomata with GT X 400, B. A single diacytic stomata X 3500, C. Cupular GT with prismatic Calcium oxalate crystals X 1300.

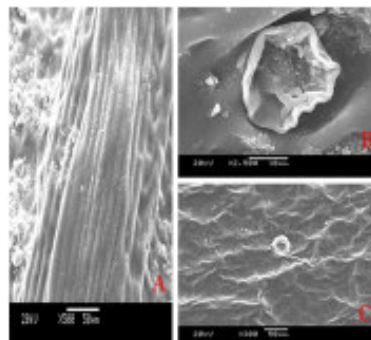


Fig 7. SEM micrographs of *P. tubiflorus* Nees A-C. Upper epidermis, A. Leaf margin X 500, B. A single sub-sessile GT X 2500, C. Epidermal cells with multicellular GT X 300.

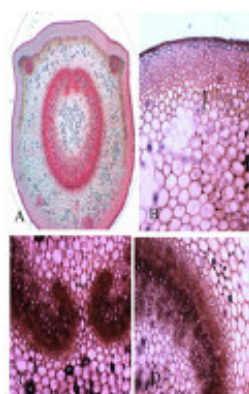


Fig 8. *P. jenkinsii* C.B. Clarke (A-D). TS of petiole. A. X 35, B. Epidermis with rounded CaCO_3 druse, C. Arc shaped vascular bundle X 100, D. VB showing Acyl in the pith X 100.

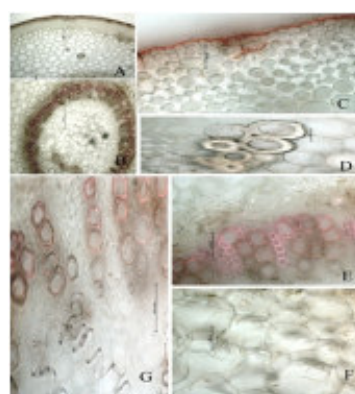


Fig 9. *P. tubiflorus* Nees (A-G). TS of Petiole Epidermis with Round VB X 100, (C-G. X 400) C. Calcium carbonate druse in epidermis, D. Stone cells in parenchyma, E. VB, F. Acyl in pith, G. VB with xylem.

Table 1: Comparative qualitative foliar epidermal features

Name of taxa	Adaxial surface(upper)				Abaxial surface (lower)				ST
	Trichome type		Crystals		Trichome type		Crystals		
	GT	NGT	Calcium oxalate	CaCO3	GT	NGT	Calcium oxalate	CaCO3	
<i>P. jenkinsii</i>	+	-	-	+	+	-	+	+	Diacytic
<i>P. tubiflorus</i>	+	-	-	-	+	-	+	-	Diacytic

GT= Glandular trichome; NGT= Non glandular trichome; ST= Stomata type

Table 2: Comparative quantitative features of SEM micrographs

Name of taxa	Trichome type				Crystals			
	Abaxial		Adaxial		Abaxial		Adaxial	
	NGU	GM	NGU	GM	CaCO ₃	Calcium Oxalate	CaCO ₃	Calcium Oxalate
<i>P. jenkinsii</i>	Ab	25-30µm	Ab	20-30µm	30-70 µm	35-90 µm	30-100 µm	Ab
<i>P. tubiflorus</i>	Ab	10-15µm	Ab	10-15µm	Ab	10-15µm	Ab	Ab

NGU= Non glandular unicellular; GM= Glandular multicellular

Table 3: Comparative quantitative Epidermal and Stomatal features

Name of taxa	Upper Epidermis		Lower Epidermis						
	ECL	ECB	STL	STB	ECL	ECB	ST V (S)	EC V (E)	SI= (S/E+S)×100
<i>P. jenkinsii</i>	109.4±0.8	71.4±1.27	49.2±0.53	5.6±0.76	103.6±1.57	63±1.26	22.3	108.4	17.05
<i>P. tubiflorus</i>	94.6±0.48	68.4±0.8	44.74±0.47	4.6±0.84	129.3±0.92	89.58±0.58	20.5	110.5	15.64

ECL= Epidermal cell length; ECB= Epidermal cell breadth; STL= Stomata length; STB= Stomata breadth; ECL= Epidermal cell length; ECB= Epidermal cell breadth; STV= Stomata per vision; ECV= Epidermal cell per vision; SI= Stomatal Index

Table 4: Comparative anatomical features of the petiole

Name of Taxa	Outline	Trichome type in epidermis	Vascular system	Nature of crystals	
				Cortex	Pith
<i>P. jenkinsii</i>	Round, adaxially winged	Absent	Oval, slightly curved	ACy, MCy	ACy
<i>P. tubiflorus</i>	Round, slightly winged adaxially	Absent	Rounded arc	ACy, MCy	ACy

Fungal endophytes and their antibacterial activities isolated from *Curcuma longa* L., grown in Greater Guwahati

* Prabhali Doley
** Bandana Nabis Das

Abstract- *Endophytes of medicinal plants occupy a unique habitat, highly diverse and are important sources of natural metabolites. *Curcuma longa* L. (Zingiberaceae) commonly known as turmeric or Halodhi (Assamese) is known for its medicinal properties and is also a rich source of endophytes. The matured dried rhizome is most common ingredient of Assamese kitchen as spice and well known antiseptic. Traditionally, it has been extensively used by the people of Assam in the treatment of swelling caused by injury. In the present investigation, we were able to recover a number of fungal endophytes from *C. longa*. A total of 33 fungal isolates belonging to 5 genera were recovered during the investigation. *Fusarium* sp. was the most frequently isolated endophyte. Among all the endophytic strains recovered from *C. longa*, *Fusarium* sp. PDFL14 was found to exhibit a good activity against the test organisms. Highest activity was shown by *Fusarium* sp. PDFL14 against *Klebsiella pneumoniae* (Zones of inhibition 18 mm in diameter).*

Key Words-Endophytes; *Curcuma longa*; *Fusarium* sp; Antibacterial activity.

Introduction: Endophytes are defined as microorganisms that reside within the plant tissues without causing apparent diseases (Wilson, 1995). Endophytes colonize different internal living healthy tissues such as leaf, bark and root of plant without producing any pathogenic effects (Chanway, 1996). Endophytes are considered as a rich source of novel bioactive metabolites (Tan and Zou, 2001) for utilization use in agricultural and industry (Strobel and Daisy, 2003) and therapeutic use in medicine (Tejesvi et al., 2005). Fungal endophytes produce various kinds of secondary metabolites which have bioactive potential (Arora et al., 2010; Ruma et al., 2013). Endophytic microorganisms are an important source of novel metabolites with pronounced antibacterial, antifungal and antiviral activities (Kumar et al. 2016).

Strobel (2003) rationalized the isolation of endophytes from different plant species. He suggested that the selection of plant species be based on the environment where a specific benefit of the species was observed. Isolation

* Department of Botany, Handique Girls' College, Guwahati

** Department of Botany, Handique Girls' College, Guwahati

and characterization of endophytes from traditionally used medicinal plants may lead to production of new bioactive compounds. Medicinal plants can have potential and diverse microbial association. The rhizome of turmeric is very remarkable due to its metabolite richness and the physiological processes associated with these tissues (Sahadevan et al. 2016).

Curcuma longa L. (Zingiberaceae) is commonly known as “Halodhi” (Assamese) is a small perennial herb bearing many rhizomes on its root system which are the source of its culinary spice known as turmeric and its medicinal extract called Curcumin. The mature dried rhizome is most common ingredient of Assamese as well as Indian kitchen as spice and well known antiseptic, antipyretic since ancient times. Traditionally, it has been extensively used by the people of Assam in the treatment of swelling caused by injury. In addition, turmeric also possesses antimicrobial and anticancer properties (Mukhtar et al., 2012). The medicinal properties are assigned due to the presence of curcuminoid and sesquiterpenoid compounds. Metabolites present in *C. longa* are Curcumin-sulphate, Curcumin-glucuronide.

Endophytic fungi namely *Acremonium*, *Aspergillus*, *Exophiala*, *Fusarium*, *Penicillium*, *Phoma* have been reported as being associated with *C. longa* and able to synthesize secondary metabolites. Several scientists worked on endophytes of *C. longa* and recovered a large number of endophytes with good antimicrobial activities (Kumar et al., 2016; Sahadevan et al., 2016; Gupta et al., 2016).

Therefore, the study was framed to isolate endophytic microorganisms with antimicrobial properties from a medicinally important plant *C. longa*, available in greater Guwahati.

Materials and Methods:

Collection of plant materials:

Healthy plant tissues of leaves, rhizomes and roots of *Curcuma longa* were collected aseptically in sterile plastic bags from different places of Guwahati. Plant materials were sealed immediately after collection and preserved at 4^o C until they were processed.

Isolation of endophytes:

Endophytes were isolated from surface sterilized plant parts. Surface sterilization was performed using the modified method of Guo et al. (2008). Outer tissues of the collected samples were removed and inner tissues were cut into small pieces with sterile scalpel and sets of four segments were evenly placed in each petridish containing potato dextrose agar (PDA). The plates were incubated in incubator at 27±1^o C until microbial growth appeared on the plates. After several days of incubation the endophytic microorganisms that appeared on the plates were transferred with a sterile needle to freshly prepared petriplates containing PDA medium and incubated for 1-3 weeks and were checked for its purity. The purified strains were preserved at 4^o C.

Identification of Fungal Endophytes:

The isolates were identified on the basis of their morphological and spore characteristics with the help of standard fungal identification manuals of Gillman (1998) and Nagamani (2006).

Antimicrobial screening of the isolated fungal endophytes:

For antimicrobial screening, fresh culture of the isolated endophytic strains was inoculated into 250 ml conical flasks each containing 150 ml potato dextrose broth (PDB). The flasks were incubated for 4-5 weeks at $27 \pm 1^\circ\text{C}$ with periodic shaking at 150 rpm. After incubation, the fungal cultures were filtered through sterile cheesecloth to remove the mycelia mats. The filtrates were collected for antimicrobial screening. For this, nutrient plates were inoculated with 0.2 ml of overnight grown culture of each test bacterial (*Bacillus subtilis* and *Klebsiella pneumoniae*) suspension. The plates were evenly spread out with the help of a sterile cotton swab. Agar cups were prepared by scooping out the media with cork borer (6 mm in diameter). The agar cups were then loaded with the filtrate of each fungal endophytic strain. The plates were inoculated at $27 \pm 1^\circ\text{C}$ for 24h. Zone of inhibition were measured. The endophytes with broad spectrum activity were considered as potent strains.

Extraction of crude metabolites and evaluation of antimicrobial activity of the fungal potent strains:

Fungal potent strains were inoculated into 30 numbers of 250 ml conical flasks each containing 150 ml potato dextrose broth (PDB). The flasks were incubated for 4-5 weeks at $27 \pm 1^\circ\text{C}$ with periodic shaking at 150 rpm. After incubation, the fungal cultures were filtered through sterile cheesecloth to remove the mycelia mats. The liquid broth was collected and extracted with equal volume of ethyl acetate in a separating funnel by vigorous shaking for 10 minutes. The mix suspensions were then allowed to stand for 5 min to separate the organic solvent (ethyl acetate) extract and cell mass. The lower portion containing cell mass was discarded and upper solvent portion so obtained was collected. Ethyl acetate was evaporated with the help of rotary evaporator. The resultant component was dried with MgSO_4 to yield the crude extract. The crude extract was dissolved in dimethyl sulphoxide (DMSO) for antimicrobial activity against the test organisms. The antimicrobial assay was performed by agar cup diffusion method as suggested by Grammer (1976). The diameter of zone (mm) was recorded after 24 h of incubation at 27°C . Three replicates were maintained in each case.

Results and Discussion:

Isolation of endophytes:

During the investigation, endophytic microorganisms were isolated from healthy and symptomless plant tissues of *Curcuma longa*. A total of 33 fungal isolates belonging to 5 genera (viz. *Acremonium* sp, *Curvularia lunata*, *Fusarium* sp, *Penicillium citrinum*, *Trichoderma viridae*). The fungal strains unable to produce spores were designated as white sterile mycelia (WSM)

and black sterile mycelia (BSM).

Antibacterial activity of the isolated fungal endophytes: All the fungal endophytes were screened for their antimicrobial activity against both gram-positive, *Bacillus subtilis* and gram-negative bacteria, *Klebsiella pneumoniae*. Out of the potent isolates two endophytes displayed significant antibacterial activity against both the test organisms. One of these was identified as *Fusarium* sp on the basis of its morphology and sporulation. The other one was unable to produce spore but form white colour colony and was designated as white sterile mycelia (WSM). Zones of inhibition of endophytic fungi *Fusarium* sp and WSM were highest (18 mm in diameter) against the test organism *Klebsiella pneumoniae* which was followed by *Curvularia lunata* and *Trichoderma viridae* (14mm in diameter in each), *Penicillium citrinum* sp (13 mm in diameter), *Acemonium* sp (12 mm in diameter), BSM (10mm in diameter) and lowest activity was shown by *Penicillium citrinum* against *B. subtilis* (4 mm in diameter) (Table 1). Fungal endophytes have been recognized as great source of novel bioactive metabolites. Besides these, endophytes are also recognized a rich source of secondary metabolites with antimicrobial activities (Tan and Zou, 2001; Strobel and Daisy, 2003). During our investigation also, fungal endophytes isolated from different parts of *C. longa* were screened for their ability to produce antimicrobial property. Among all the endophytic strains recovered from *C. longa* during our investigation, *Fusarium* sp. PDFL14 was found to exhibit a good activity against both the test organisms. In many instances endophytes isolated from different medicinal plants have shown their ability to produce antimicrobial activity against plant and human pathogens (Raviraja et al. 2006, wang et al. 2000). Thus, the isolation of antimicrobial producing endophytic strains associated with *C. longa* indicated the importance of the medicinal plant.

In the present investigation too, crude extracts obtained from broth culture of endophytic fungi displayed considerable antimicrobial activity against a number of test organisms. Radu and Kqueen (2002) while studying the antimicrobial activity of endophytic fungi isolated from medicinal plants, attributed the low antimicrobial activity due to less amount of active compound present in the crude extract. After purification they might have yielded compounds with good antimicrobial activity.

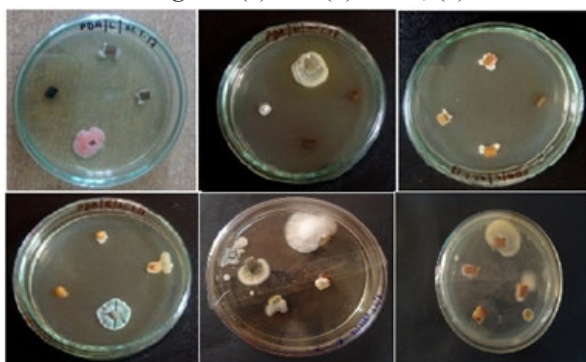
Table1: Zone of inhibition of test organisms by endophytic fungi isolated from *C. longa*

Endophytic Fungi	ZOI (mm)	
	BS	KP
<i>Acromonium</i> sp	4	3
<i>Curvularia lunata</i>	10	14
<i>Fusarium</i> sp	12	18
<i>Penicillium strictum</i>	12	13
<i>Trichoderma viridae</i>	8	14
WSM	14	18
BSM	8	10

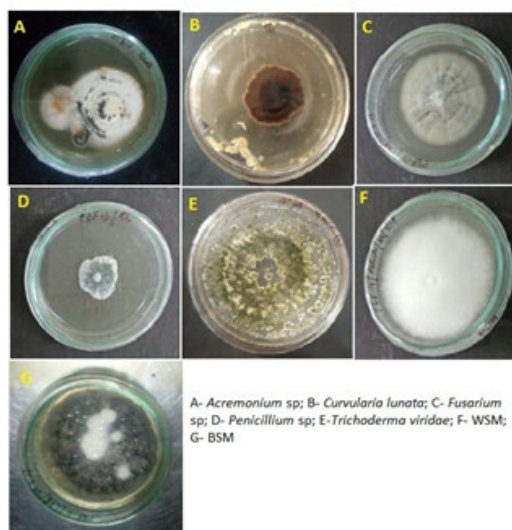
*ZOI-Zone of inhibition; BS-*Bacillus subtilis*; KP-*Klebsiella pneumoniae*;
WSM-White sterile mycelia; BSM-Black Sterile mycelia



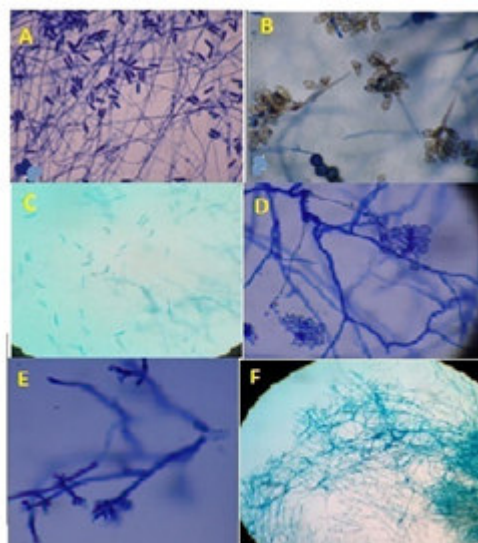
Photoplate1: *Curcuma longa* L. (a) and (b) Habit, (c) Rhizome and (d) Leaf



Photoplate2: Recovery of some endophytic colonies from different parts of *C. longa*

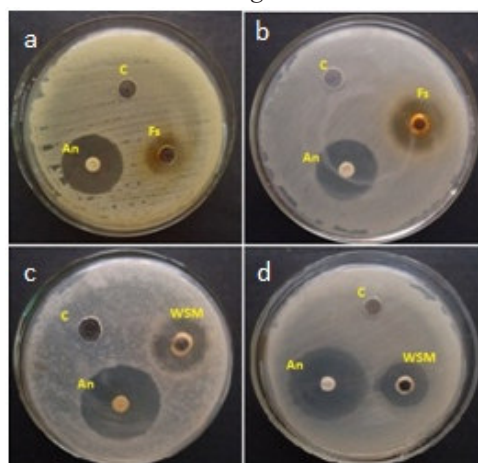


Photoplate 3: Some Pure endophytic fungal colonies isolated from *C. longa*



A- *Acremonium* sp; B- *Curvularia lunata*; C-*Fusarium* sp; D- *Penicillium citrinum*; E- *Trichoderma viridae*; F- Mycelia Sterile

Photoplate 4: Microphotographs of identified fungal endophytes isolated from *C. longa*



Photoplate 5: Zone of inhibition of endophytic fungal strains against (a) & (c) *B. subtilis*; (b) & (d) *K. pneumoniae*.

Fs- *Fusarium* sp; WSM- White sterile mycelia; An- Antibiotic Disc

Conclusion:

During present investigation also we were able to recover a number of endophytes with a good antimicrobial activity from healthy and symptomless plant tissues of *C. longa*. The fungal endophytes were found to have good ability to inhibit the growth of the test organisms like *B. subtilis* and *K. pneumoniae*. Among all the endophytic strains recovered from *C. longa* during our investigation, *Fusarium* sp. PDFL14 was found to exhibit a good activity against both the test organisms.

The results from the study showed that diverse community of endophytic

fungi and bacteria are associated with the internal tissues of *C. longa*. The endophytic fungal strains effectively checked the growth of bacterial test organisms. During our investigation, we might not be able to recover all the endophytes associated with the medicinal plant *C. longa* within this short period of time. It was our small effort to recover some endophytes having secondary metabolites with antimicrobial activity. Therefore, to recover all the endophytes associated with the medicinal plant, to identify the secondary metabolites with novel bioactive compounds and to know the structural elucidation of the compounds obtained from the endophytes needs further investigation.

References :

1. Arora DS and Chandra P (2010) Assay of antioxidant potential of two *Aspergillus* isolates by different methods under various physio-chemical conditions. *Brazilian Journal of Microbiology* **41**:765-777.
2. Chanway CP (1996) Endophytes: they're not just fungi! *Canadian Journal of Botany* **74**:321-322.
3. Gilman JC (1998) A Manual of soil fungi. Biotechnology Books Delhi-110035. First Indian Edition. *Journal of Botany* **38**:817-831.
4. Grammer A (1976) Antibiotic sensitivity and assay test. In: Collins CH and Lyne PM (Ed.) *Microbiological methods*. Butterworth, London, p. 235.
5. Guo B, Wang Y, Sun X, and Tang K (2008) Bioactive Natural Products from Endophytes: A Review. *Applied Biochemistry and Microbiology* **44**(2):136-142
6. Gupta S, Kaull S, Singh B, Viswakarma RA and Dhar MK (2016) Production of Gentisyl Alcohol from *Phoma herbarum* Endophytic in *Curcuma longa* L. and Its Antagonistic Activity Towards Leaf Spot Pathogen *Colletotrichum gloeosporioides*. *Applied Biochemistry and Biotechnology* **10**:12010-12016
7. Kumar A, Singh R, Yadav A, Giri DD, Singh Pk and Pandey KD (2016) Isolation and characterization of bacterial endophytes of *Curcuma longa* L.. *Biotech* **3**: 6:60
8. Mukhtar S, and Ghori I (2012). Antibacterial activity of aqueous and ethanolic extracts of garlic, cinnamon and turmeric against *Escherichia coli* ATCC25922 and *Bacillus subtilis* DSM3256. *International Journal of Applied Biology and Pharmaceutical Technology* **3**(2):131-136.
9. Nagamani A, Kunwar IK and Manoharachary C (2006) *Handbook of Soil Fungi*, 1st edition. IK International Pvt. Ltd., New Delhi.
10. Radu S and Kqueen (2002) Preliminary screening of endophytic fungi from medicinal plants in Malaysia for antimicrobial and antitumour activity. *Malaysian Journal of Medical Sciences* **9**:23-33.
11. Raviraja NS, Maria GL and Sridhar KR (2006) Antimicrobial Evaluation of Endophytic Fungi Inhabiting Medicinal Plants of the Western Ghats of India. *Engineering of Life Sciences* **6**:515-520.
12. Ruma K, Sunil K and Prakash HS (2013) Antioxidant, anti-inflammatory, antimicrobial and cytotoxic properties of fungal endophytes from *Garcinia* species. *International Journal of Pharmacy and Pharmaceutical Science* **5**(3):889-897.

13. Shadevan N, Vishnupriya S and Mathew J (2016) Isolation and functional characterization of endophytic bacterial isolates from *Curcuma longa*. *International Journal of Pharm and BioSciences* **7(1)**: (B) 455 - 464
14. Strobel G and Daisy B (2003) bioprospecting for microbial endophytes and their natural products. *Microbiology and Molecular Biology Review* **67**:491-502.
15. Strobel GA (2003) Endophytes as sources of bioactive products. *Microbes and Infection* **5**:535-544.
16. Tan RX and Zou WX (2001) Endophytes: a rich source of functional metabolites. *Natural Product Reports* **18**:448-459
17. Tejesvi MV, Mahesh B, Nalini MS, Prakash HS, Kini RK, Subbiah V and Shetty HS (2005) Endophytic fungal assemblages from inner bark and twig of *Terminalia arjuna* W&A (Combretaceae). *World Journal of Microbiology and Biotechnology* **21**:1535-1540.
18. Wang J, Li G, Lu H, Zheng Z, Huang Y and Su W (2000) Taxol from *Tubercularia* sp. strain TF5, an endophytic fungus of *Taxus mairei*. *FEMS Microbiology Letter* **193**:249-253.
19. Wilson AD (1995) Endophyte-the evolution of the term, a clarification of its use and definition. *Oikos* **73**:274-276.

Effects of the Anabolic Steroid Stanozolol on Growth of Channel Catfish, *Ictalurus punctatus*, and Goldfish, *Carassius auratus*

* Umesh Shukla

Abstract- *Stanozolol is not efficacious at the dosages tested in producing long-term weight gains among immature channel catfish and goldfish. A slight response in weight gain might occur shortly after feeding of the drug is initiated, but if present, it is of limited duration at best. In tests ranging from 3 to 8 weeks, the anabolic steroid Stanozolol added to the diet of channel catfish and goldfish did not significantly improve weight gains.*

Key Words- Steroid Stanozolol, Growth, Catfish, *Ictalurus punctatus*, *Carassius auratus*

Introduction: Culture of fish for commercial and sport fishing purposes is a multimillion rupees industry in the India. Many species are fed a nutritionally complete diet in pellet form to increase growth rate and standing crop. Substantial savings in production costs could be realized if efficiency of feed utilization was improved. Various substances have proved useful for enhancing food conversion and protein synthesis in livestock, but testing of these substances for similar effects on cultured fishes has been limited. Hutchison and Campbell (1994)⁴ evaluated the effects of ethylestrenol on *Tilapia melanopleura* in South Africa, but results were negligible. Hirose and Hibiya (1998a,b)² reported growth-promoting effects on goldfish, *Carassius auratus*, and rainbow trout, *Salmo gairdneri*, from 4-chlorotestosterone acetate, but their findings could not be duplicated with channel catfish *Ictalurus punctatus* (McWilliams and Bulkley, unpublished). Diethylstilbestrol is a valuable feed additive for cattle and considerably improves weight gains, but this compound exhibits catabolic properties when fed at trace or higher levels to channel catfish (Bulkley, 2002)¹. The purpose of our study was to test the effects of different levels of the synthetic anabolic steroid Stanozolol [17b-hydroxy-17a-methylandrosterone (3,2-c) pyrazole] on weight gains when included in the diet of immature channel catfish and goldfish. Stanozolol is used in small-animal therapy to promote more efficient utilization of protein in the diet, improve appetite, and increase weight gains (Winthrop Laboratories, 1998)⁶.

* Department of Zoology, Agra College, Agra

Materials and Methods: Catfish used in experiment 1 had just completed their first growing season and ranged in weight from 2 to 5 g. Twelve fish were placed in each of 12 176-liter fiberglass tanks. Total weight of fish per tank ranged from 29.8 to 44.3 g. Fish were fed a nutritionally- complete pelleted trout ration at the rate of 3% body weight 5 days per week. Water temperature in the flow-through system was $25 \pm 2^\circ\text{C}$. Water replacement occurred approximately three times per day. Fish were weighed at the beginning and after 19, 33, and 56 days.

In experiment 2, five marked goldfish of undetermined age, ranging in weight from 21 to 64 g were placed in each of the 12 tanks. Water temperature was maintained at $21 \pm 1^\circ\text{C}$. Feeding was at the rate of 3% body weight per day, 6 days per week. Fish were weighed at the beginning and after 14 days and 28 days of growth. At the end of the test, fish were killed, and kidney and liver weights determined.

In experiment 3, 20 to 24 goldfish, weighing from 3 to 4 g each, were selected so that each of 20 tanks contained $76 \pm 3\text{g}$ of fish. Fish were treated similarly to those in the other goldfish test but were weighed weekly. Water temperature was maintained at $25 \pm 2^\circ\text{C}$.

In all experiments, treatment levels were selected at random within each block of four tanks at rates of 0.0, 0.25, 2.5, and 25.0 mg of Stanazolol per kilogram body weight daily each feeding day if all feed was consumed. The hormone in a gelatin mixture was sprayed on the ration before feeding. In all tests, fish received 12 hours of artificial lighting and were acclimated for 1 week in the tanks before experiments began. Food was withheld 1 day before each weighing.

Results and Discussion:

In experiment 1, percentage changes in body weight of catfish at all treatment levels were not statistically significant at the 0.01 probability level at any weighing. In experiment 2, differences in mean weight increase of goldfish were evident after 14 days of feeding. Control fish increased an average of 6% in body weight, but fish receiving 25.0 mg Stanazolol increased an average of almost 15%. Analysis of variance ($F = 13.39$, significant at the 0.01 level) supported the conclusion that a difference in weight increase had occurred. The difference also was significant when individual fish weights were compared instead of mean tank weights. At the end of 28 days, differences still were evident, but not statistically significant. Overall mean weight increases were greater for fish fed all levels of Stanazolol than among control fish. In experiment 3, goldfish of more uniform size were selected, and the number of fish per tank was increased from 5 to 20-24 goldfish. Unfortunately, disease erupted in this lot of fish and forced termination of the test at 21 days. Differences in weight increase were not statistically significant on any measuring date.

Evidence that Stanazolol was being absorbed from the diet by goldfish

was obtained in experiment 2. Individual liver and kidney weights were compared with body weight at the termination of the experiment. The renosomatic index ranged from 0.68 to 1.33% body weight. Mean values by treatment level were: 0.0 mg, 0.91%; 0.25 mg, 0.89%; 2.5 mg, 0.93%; and 25.0 mg, 1.06%. Differences were significant at the 0.05 probability level ($F = 7.66$, $df = 3,6$). Renal hypertrophy is not an uncommon response to anabolic steroids (Kruskemper, 1988)⁵ and seemed to occur in goldfish receiving 25.0 mg of Stanozolol. Observation of goldfish livers did not reveal hypertrophy of this organ from the hormone ($F = 0.26$, $df = 3,6$). The hepatosomatic index in terms of percentage body weight ranged from 1.54 to 7.31, with mean treatment-level values for: 0.0 mg, 3.7%; 0.25 mg, 4.0%; 2.5 mg, 3.5%; and 25.0 mg, 4.0%. Bulkley (2002)¹ found similar responses in organs of channel catfish exposed to various levels of diethylstilbestrol.

Based on these experiments, we conclude that Stanozolol is not efficacious at the dosages tested in producing long-term weight gains among immature channel catfish and goldfish. A slight response in weight gain might occur shortly after feeding of the drug is initiated, but if present, it is of limited duration at best.

References :

1. Bulkley, R.V. (2002). Diethylstilbestrol in catfish feed. Trans. Amer. Fish. Soc. 101(3) : 537-539.
2. Hirose, K., AND T. Hibiya. (1963a). Physiological studies on growth promoting effect of protein anabolic steroids on fish-I. Effects on goldfish. Bull. Jap. Soc. Sci. Fish. 34: 466-472.
3. Hirose, K., AND T. Hibiya. (1968b). Physiological studies on growth promoting effect of protein-anabolic steroids on fish-IT. Effects of 4-chlorotestosterone acetate on rainbow trout. Bull. Jap. Soc. Sci. Fish. 34: 473-479.
4. Hutchison, R. E., AND G.D. Campbell. (1994). An attempt to increase the weight of *Tilapia melanopleure*, a fish used in fish farming, with an anabolic steroid ethylestrenol. In Handelingen van die Kongres van die Voedingvereniging van Suidelike Afrika, Durban, 17-19 April 1963. Abstracted in S. Afr. Med. J. 38(29): 640. (Abstract only seen).
5. Kruskemper, H. L. (1988). Anabolic steroids. Academic Press, N.Y. 236 p.
6. Wintrop Laboratories. (1998). Advances in anabolic therapy. Winthrop Lab. N.Y. 27 p.

Monitoring airborne mycoflora of chilli (*Capsicum annum* L.) during the crop season in Baksa District of Assam

* Ramesh Das

Abstract- *The experiment was carried out to study the airborne mycoflora of chilli local variety "Dhepa" in Baksa District of Assam during the crop season of 2016-17 (November to June). The experimental results revealed that a total of 22 fungal species including hyphal fragments were isolated by Nutrient Agar Plate method and 19 by Smear Slide method in the air over chilli plantation field during the crop season. Most commonly isolated fungi were the species of Alternaria, Aspergillus, Colletotrichum, Fusarium Penicillium, and Rhizopus. Alternaria alternata, was found maximum (total 150 colonies) in Nutrient Agar Plate and method and followed by Colletotrichum capsici, (total 149), Aspergillus niger, (total 141) Fusarium sp. (total 111), Rhizopus sp. (total 103 colonies). In case of Smear Slide method Aspergillus species was found highest in number (total 117 colonies) and followed by Alternaria sp. (total 115), Fusarium sp. (total 115) and the other species were occurred in frequently.*

Key Words- Nutrient, Colletotrichum, experiment, contamination, cultivation, fragment.

Introduction: The chilli (*Capsicum annum* L.) fruits are very important economically due to the diverse varieties used, such as, spices, condiments, vegetables, sauces and pickles and as other culinary supplements. Chilli fruits are used as green, red and dried forms. The dry chillies are extensively used as spice in all types of curried dishes in India and abroad. The hot flavour is caused by seven closely related alkaloids or capsaicinoids, but **capsaicin** and **dihydrocapsaicin** are responsible for 90% of the pungency that give the quality and nature of the fruits (Grewal and Grover, 1974; Govindarajan, 1986; Verghese, *et al* 1992; Iwai, *et al*; 1979 b). Chillies are rich in Vitamin A and C, carbohydrates and minerals (Govindarajan, 1986; Singh & Singh, 1974). There are many diseases of chilli caused by various fungi, bacteria and viruses including insect pests. Due to fruit-rot disease of chilli, the cultivators have been facing heavy loss year after year during cultivation and storage. The air currents have great influence on the production, liberation, dispersal and deposition of the fungal spores on the earth surfaces and these processes are complex and varied.

* B B K College, Nagaon, Barpeta, Assam (India)

The materials and methods:

The experiment was carried out to study the airborne mycoflora of chilli local variety “Dhepa” during the crop season of 2016-17 (November to June) by using (i) Exposure of Nutrient petriplates and (ii) Smear slides (Gravity slide) methods.

i) Exposure of Nutrient Petriplates (NP):

The petridishes (9 cm diameter) containing Czapek’s-Dox-Agar medium were exposed horizontally to the atmosphere of chilli plantation field at one-meter height above the ground level. The petridishes were exposed four days in a month during the crop season and placing three times in a day at six hours intervals (at 6 am, 12 noon, and 6 pm) taking ten minutes. The petridishes were incubated at 27±1°C for five days. After incubation period, the fungal colonies developed were counted and identified based on colony and reproductive characters and the average numbers were recorded (Table-1)

ii) Smear Slides methods (SS):

Smear slides were prepared using Durham’s gravity sampler (Durham, 1946) method. Two aluminium dishes (21 cm diameter) were horizontally set 8 cm. apart with three struts and two slides holders were fixed at 2 cm. above the lower disc. This sampler was nailed on the roof of a height of half meter above the ground. Five slides coated with glycerin-jelly (Erdtman, 1952) were exposed to the atmosphere for 24 hours (11 am. to next day 11 am.) and a cover slip was placed on each slide at the site itself to avoid contamination. The experiment was carried out during the cultivation period taking the reading four times in every month. Total catch of fungal spores and their averages numbers were recorded (Table-2). The identification was based on the color, size, shape, and the specific and diagnostic features. Rainfall, temperature and relative humidity in the field were recorded with the help of maximum, minimum, and wet-dry bulb thermometer respectively.

Results and discussion:

The results obtained in the experiment revealed that a total of 22 fungal species were isolated by Nutrient Agar Plate method (Table-1) and 19 by Smear Slide method (Table-2) in the air over chilli plantation field during the crop season. Most commonly isolated fungi were the species of *Alternaria*, *Aspergillus*, *Colletotrichum*, *Fusarium*, *Penicillium*, and *Rhizopus*. The commonly occurring fungi were the species of *Phytophthora*, *Mucor*, *Helminthosporium*, and *Penicillium*. The other species were appeared in frequently. *Alternaria alternata*, was found maximum (total 150 and 115 colonies in NP and SS method respectively and followed by *Colletotrichum capsici* (total 149 and 93), *Aspergillus niger*, total 141 and 117), *Fusarium* sp., (total 111 and 115), *Rhizopus* (total 103 and 78 colonies) and other species were occurred in frequently.

The results (Table-1) showed that the highest number of fungal colonies were isolated (Total 290 colonies) in the month of May and followed by April

(Total 282 colonies) and the lowest number (Total 74 colonies) in the month of November. The results (Table-2) showed that the highest number of fungal colonies were isolated (Total 208 colonies) in the month of May and followed by April (Total 204 colonies) and the lowest number (Total 63 colonies) in the month of November. Unidentified fungal spores were placed under unclassified group. Some sterile mycelia were found and put as hyphal fragments. The isolated fungi were identified with the help of the keys monograph and literature provided by Gilman (1967), Burnett and Hunter (1972) and Alexopoulos and Mims (1985). During the investigation period, the species of *Alternaria*, *Aspergillus*, *Colletotrichum* and *Fusarium* were found the most dominant fungi in the air over chilli plantation field. Similar results have recorded by C. Ekhuemelo & E. Ekefan (2013). Sumbali and Badyal (1991) reported that *Aspergillus niger* has been recorded maximum in numbers in summer and in rainy season and it was most frequent pathogen causing rot of different fruits.

The maximum numbers of fungal colonies were recovered during the month of April-May in both Nutrient agar plate and Gravity slide method, and this is probably may due to the optimum temperature range (27-32°C) during this period along with high relative humidity (65-92%). Sinha (1971) reported that meteorological factors, such as rainfall, temperature, and relative humidity determine the periodicity and the population of micro flora in the air. Moreover, April/May is the fruiting stage of the crop and probably the physiological growth status of chilli plants helped in the growth of microorganisms in this period. Fungal population was relatively lower at the seedling stage of crop plants and it was increased gradually with increasing maturity of plants. The Maximum number of colonies of the pathogenic micro fungi was isolated from the air of chilli-cultivated field in May, coinciding with the maximum disease intensity in the field during this period.

Table – 11: Some important types of fungal colonies isolated in the air over chilli plantation field in the different months during the crop season (Results represented the average number of fungal colonies in three replica plates (Nutrient-Agar plate method))

Fungi Isolated	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Individual Total
<i>Alternaria alternata</i>	10	12	13	20	23	25	27	20	150
<i>Aspergillus niger</i>	9	12	12	19	21	24	23	21	141
<i>A. flavus</i>	6	5	9	10	13	15	17	12	87
<i>Cercospora sp.</i>	2	3	4	4	5	8	8	5	39
<i>Chaetomium sp.</i>	1	2	1	1	3	4	2	2	16
<i>Cladosporium sp.</i>	--	1	1	2	2	3	1	1	11

<i>Colletotrichum capsici</i>	9	11	15	15	22	24	29	24	149
<i>Colletotrichum sp.</i>	1	3	3	7	8	12	7	5	46
<i>Curvularia sp.</i>	2	4	5	7	11	13	16	9	67
<i>Fusarium sp.</i>	6	9	9	14	18	20	18	17	111
<i>Helminthosporium sp.</i>	4	6	6	8	13	16	16	12	81
<i>Mucor hiemalis</i>	3	7	9	10	12	14	14	10	79
<i>Nigrospora sp.</i>	--	1	1	2	4	5	7	2	22
<i>Penicillium sp.</i>	3	7	9	11	13	15	16	12	86
<i>Phoma sp.</i>	--	1	2	3	6	8	8	5	33
<i>Phytophthora sp.</i>	4	7	9	13	13	15	16	14	81
<i>Pythium sp.</i>	3	4	6	7	10	11	11	9	61
<i>Rhizopus stolonifer</i>	8	10	12	13	13	16	19	12	103
<i>Rust & smuts spores</i>	3	5	6	6	11	12	10	7	60
<i>Trichoderma sp.</i>	1	2	2	1	6	9	9	5	35
<i>Verticillium sp.</i>	-	1	1	5	7	7	7	3	31
Unclassified sp	5	2	3	5	3	6	9	7	40
Total no. of fungal colonies	74	115	138	183	237	282	290	193	

Table – 2: Some important types of fungal colonies isolated in the air over chilli plantation field in the different months during the crop season
(Smear Slide Method)

Fungi Isolated	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Individual total
<i>Alternaria sp.</i>	9	9	11	13	17	21	19	16	115
<i>Aspergillus sp.</i>	8	10	13	15	18	20	18	15	117
<i>Cercospora sp.</i>	--	1	1	3	3	4	6	1	19
<i>Cladosporium sp.</i>	4	6	7	6	9	11	8	4	54
<i>Colletotrichum sp.</i>	5	7	10	10	14	17	16	14	93
<i>Curvularia sp.</i>	3	3	6	7	8	12	11	8	58
<i>Fusarium sp.</i>	7	10	12	14	16	19	20	17	115
<i>Helminthosporium sp.</i>	2	3	5	5	8	9	10	7	49
<i>Mucor sp.</i>	6	8	9	11	14	16	18	12	94
<i>Nigrospora sp.</i>	--	1	2	2	4	5	5	2	21
<i>Penicillium sp.</i>	5	9	9	10	12	14	15	10	85
<i>Phoma sp.</i>	1	1	1	1	3	4	5	2	18
<i>Phytophthora sp.</i>	3	4	7	7	8	10	10	5	54
<i>Rhizopus sp.</i>	5	8	8	10	11	13	13	10	78
<i>Rust & smuts spores</i>	3	4	4	6	9	8	9	9	52
<i>Trichoderma sp.</i>	--	3	3	5	6	9	9	7	42
<i>Verticillium sp.</i>	--	1	2	2	3	2	3	3	16
Hyphal fragments	1	1	2	5	6	5	7	4	31
Unclassified sp.	--	--	2	3	4	5	6	5	25
Total no. of fungal colonies	63	89	114	125	162	204	208	131	

Table –3: Analysis of Variance of the data of Table-1 and 2

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3409.613	3	1136.538	31.950	.000
Within Groups	569.152	16	35.572		
Total	3978.765	19			
Between Groups	2845.618	3	948.539	13.175	.000
Within Groups	1156.332	16	72.271		
Total	4001.950	19			

* Mean difference is highly significant at the 5% probability level.

The results represented in the Table-3, revealed that there exist a significant difference of the various fungal colonies isolated using Nurtient Agar Plate method and Smear Slide method. Since the calculated values are smaller than the table value ($P < .05$), hence, the results of the isolated fungal colonies are highly significant at the 5% probability level.

References :

1. Alexopoulos, C. J. and Mims, C. W. (1985). Introductory Mycology, Wiley Eastern Ltd, New Delhi.
2. Bennett, H. L. and Hunter, B. B. (1972). Identification of Species of *Curvularia* on rice seed. *Proc. Intl. Seed Testing Assoc.* 35: 99-119
3. Chigoziri Ekhuemelo & Ebenezer Ekefan. (2013): Seed borne fungi of Chilli Pepper (*Capsicum frutescens*) from pepper producing areas of Benue State, Nigeria Doi: <https://www.researchgate.net/publication/282357544>
4. Durham, O. (1946). The volumetric incidence of atmospheric allergense iv. A proposed Standard method of gravity sampling counting and volumetric interpolation of results. *J. Allergy*. 17:79-86.
5. Erdtman, G. (1952). Pollen morphology and plant taxonomy of angiosperms. Hafner Publ. Co. Stockholm.
6. Gilman, C. G. (1967). A manual of soil fungi. Revised and 2nd edition. Oxford and IBH Publication, New Delhi, Bombay and Calcutta.
7. Govindarajan, V. S. (1986). *Capsicum* production, Technology, Chemistry and Quality. Part-II. Processed, products standards, world production and trade. *CRC Crit. Rev. Food. Sci. Nutr.* 24:207-288.
8. Grewal A. S. and Grover, R. K. (1974). Changes in amino acids, carbohydrates and capsaicin content of red fruits of chillies infected with *Colletotrichum Piperatum*. *Indian Phytopath.* XXVII: 603-604.
9. Iwai, K.; Suzuki, T.; Fujiwake, H. (1979 b). Simultaneous microdetermination method of capsaicin and its four analogues by HPLC and GC/MS. *J. Agric. Food. Chem.* 172:303-311.
10. Singh, P. K. and Singh, J. P. (1974). All about cultivation of chillies. *Indian Farmer's Digest*. 1-3;45-46
11. Sumbali, G. and Badyal, K. (1991). Relationship between fungal air spora of fruits shops and incidence of fruit rots. *Indian Phytopath.* 44(2) :214-218.
12. Verghese, J., Balakrishnan, K. V. and Kurian, T. (1992). Chillies : a profile of quality determination and extract processing. *Indian Spices*. 29(3): 4-7 and 9-11.



JOURNAL OF

Centre for Research Studies

Rewa-486001 (M.P.) India

Registered under M.P. Society Registration Act,
1973, Reg. No. 1802, Year-1997
www.researchjournal.in

ISSN 0973-3914



9 770973 391009