



सत्यमेव जयते

*"Arise! Awake! and Stop not
until the Goal is reached"*

-Swami Vivekananda

THOUGHT PROCESS

POINTS TO PONDER



Thought Process

Points to Ponder

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Thought Process

Points to Ponder

Special Edition (Volume-I) April, 2019

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Mustard in full bloom at Dhanshreemukh, Kaziranga





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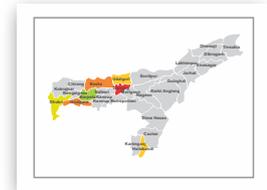
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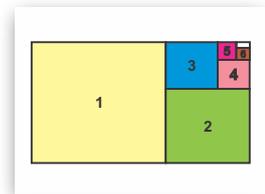
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স্বনামধন্য কবি নীলমণি ফুকন যোৱা শতিকাৰ পঞ্চাশৰ দশকৰ আৰম্ভণিতেই জন্মস্থান দেৰগাওঁৰ পৰা গুৱাহাটীৰ কটন কলেজলৈ পঢ়িবৰ বাবে আহিকালক্রমত কৰ্মসূত্ৰে গুৱাহাটীৰ... **119**



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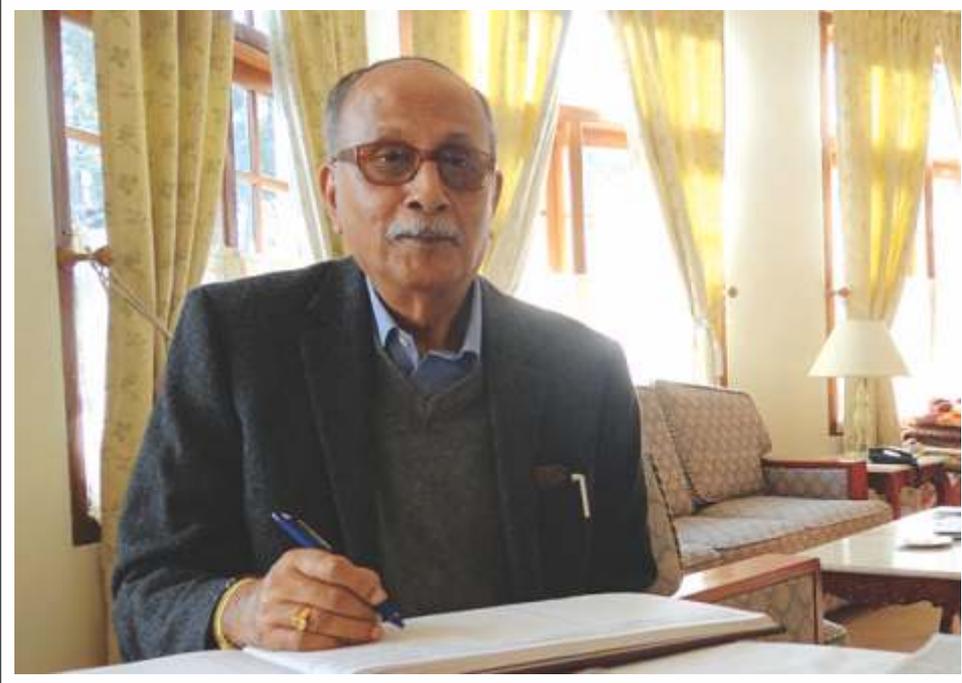
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SHILLONG SUMMER

Author - **NARAYAN BEZBARUAH**

Oh! My rainy Shillong Summer!
In a thousand mood ye ever,
Look so bright, and look so gloomy
Sunny, rainy, misty, clear!



It is indeed my pleasure to welcome you to this special edition of SITA journal. While sharing my experiences with you as Vice Chairman of the State Innovation and Transformation Aayog, I shall touch upon some important points that might help in giving an insight into the functioning of SITA over the last couple of years and our future course of action in the days to come as well.

Team SITA has been entrusted with some responsibilities and the expectations have been to act on certain deliverables for the overall benefit of the state through good governance initiatives in the form of innovative ideas and policies that might help in transforming the service delivery mechanism in the state in the most desired lines.

As SITA is still in its formative years, it is our huge responsibility to shape it into a full fledged institution to serve the mandate given and work as a catalyst of change for a better tomorrow. In our efforts we must adapt ourselves to the ever changing techniques and methods of service delivery to ensure 'SABKA SATH, SABKA BIKASH'.

With the support of Hon'ble Chief Minister and his team of dedicated ministers and officials since inception of SITA, we have been trying to work out an effective methodology in introducing good governance practices in decision making process for socio economic empowerment.

In spite of our limitations we can boast of a few initiatives, which, if properly implemented, can help in redefining our goals in the light of a new vision that might help in restoring the dwindling confidence and lost hope in the system.

It is high time we adopt the latest concepts of governance and adapt ourselves to ground-breaking works ethics to keep pace with other advanced societies. The role of ICT and scientific thought process in service delivery in both G2C and G2B have become synonymous with development and growth of a society.

During the last couple of years, SITA decided to intervene in a few areas requiring special attention as case studies and to effect administrative and structural reforms. e.g. Revival of Assam Polyester (APOL) Mills and ASCARD Bank, both having impacts on our society in their respective roles.

Another area of concern for the state is the prevailing credit flow and management system of banking and financial institutions. To analyse and suggest improvements in the system, SITA reviewed the issues with the concerned banks and financial institutions through SLBC. In the process, SITA organized meaningful discussions and recommended review of policies practiced by banks and financial institutions through SLBC.

SITA also organised a brain storming session on Agriculture. In the deliberations the main issues that took the centre-stage were, production and productivity gaps, market accessibility, problem of soil erosion, irrigation facility, empowering of farmers.

Tea sector has been playing a very important role in the State's economy since pre-independence era. Presently, the sector is facing a number challenges, which confronted the growth of the industry. SITA organised a two days Tea Conclave in March, 2018 at Guwahati to arrive at some decisions to act upon.

The 8th Round of India Bangladesh Friendly Dialogue was organised by SITA at Guwahati in July, 2017 in collaboration with India Foundation, Bangladesh Foundation and MAKAI. The objective of holding the dialogue was to ensure sustainable political goodwill and trust, economic growth and mutual sharing of prosperity of the people of Bangladesh and India, greater people to people and business to business contact between the North East region of India and Bangladesh, in matters relating to innovation, entrepreneurship, human resource development, technology, finance, power generation, etc.

As for the year 2018-19, SITA has taken up a number of Projects and studies in diverse fields concerning the state's socio economic interests. To name a few-

- ★ Low cost technology in controlling river erosion and floods.
- ★ New and Renewable Energy sources in Assam.
- ★ Project on Muga, the golden silk of Assam : emphasis on pre-production to rearing and production of silk with special focus on Dhemaji, Lakhimpur, Jorhat and Golaghat districts.
- ★ Impact of floods on the livelihood of the people of Assam and the poverty in affected areas.
- ★ Revival strategy for the tea sector in Assam-from production to auction and revamping of Tocklai Tea Research Centre.
- ★ Study on per capita income of farmers to formulate strategies to achieve the target of doubling farm income by 2022 in the state.
- ★ A comprehensive study on the status of the Rural Primary Markets (RPMs) to understand their functioning and infrastructural facilities available and identifying the gaps.

- ★ India's connection with South East Asia: The historical and civilization link.
- ★ A study on skilling of youth in Assam.

As decided in our Governing Body meeting, we have embarked on a very crucial mission to define a planning atlas for Assam based on a concept of district specific resource mapping. This will help our planners to identify areas of potential strength of available resources both natural and man-made to develop entrepreneurship skills and livelihood options on a realistic framework to bolster our socio economic condition. Geographic Information System and Remote Sensing techniques would be employed in the whole exercise in designing and developing tools for real time monitoring of projects and schemes.

During the year 2018-19, SITA organised a Seminar on Underwater Domain Awareness (UDA) Framework for Effective 'Security and Growth for all in the region (SAGAR)' Vision for the River Ecosystem in the North East in association with Assam Science and Technology Council (ASTECC) and North East Science Movement (an initiative of Bigyan Bharati) at Guwahati.

We have organised a consultation meeting at Guwahati on Rastriya Kisor Swasthya Karyakram (RKSK) Learning Lab District Initiative in collaboration with ASCPCR Guwahati, NHM Assam and UNICEF. A Daylong Brainstorming Session is proposed on 'Livestock, Dairy and Fishery' in collaboration with Assam Agricultural University and departments of Animal Husbandry & Veterinary and Fishery in the month of May, 2019.

In taking forward our innovative ideas in development agenda, SITA is in knowledge partnership with Assam Agricultural University, Gauhati University, Tezpur University, Indian Institute of Entrepreneurship, North Eastern Space Application Centre (NESAC), Indian Institute of Technology Guwahati and several other premier and research institutions.

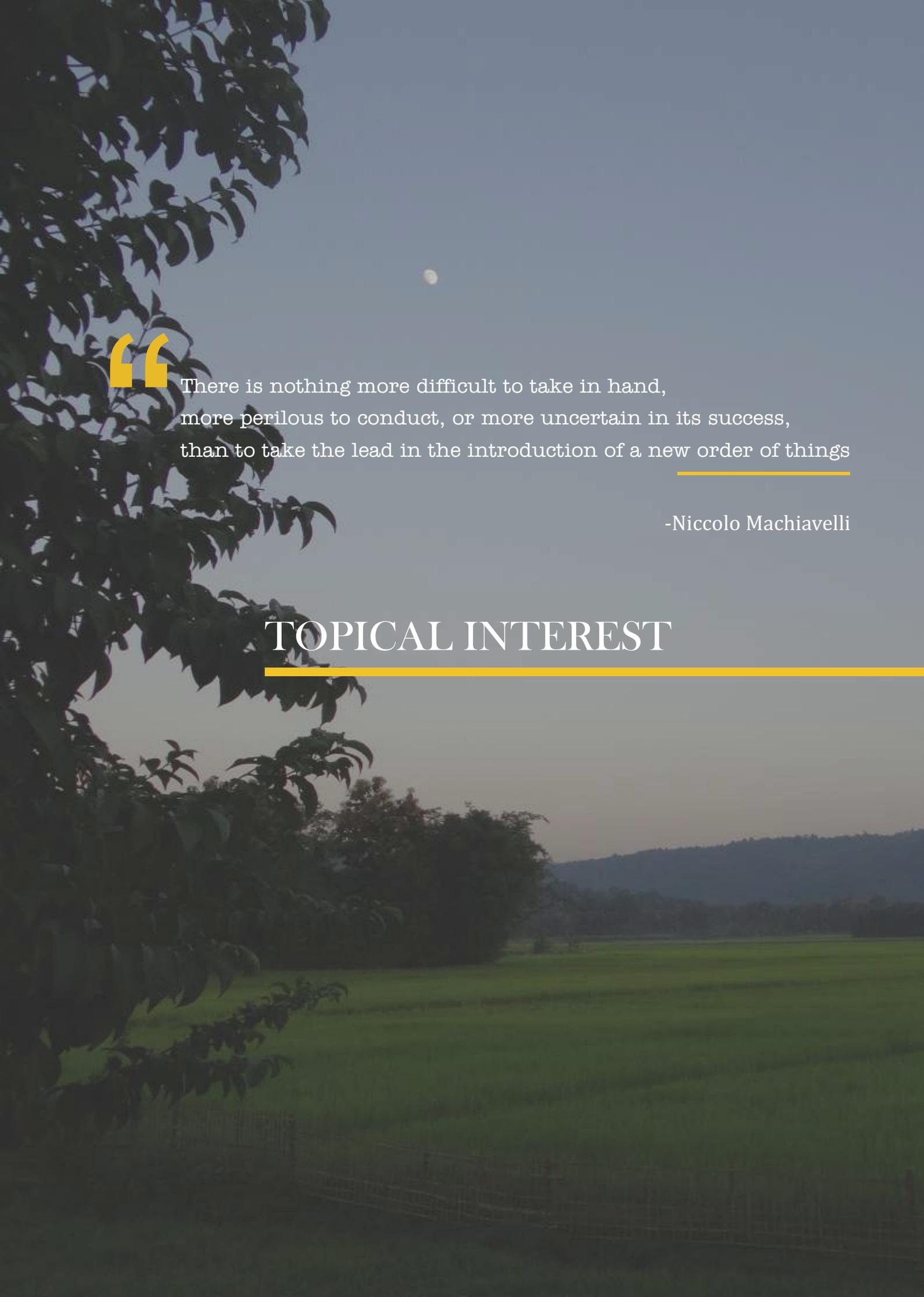
I am indebted to all the members and officials of SITA for their help and cooperation in arriving at decisions on various issues. I am also grateful to all the contributors to this special publication of SITA for sharing their ideas and thoughts which are thought provoking and quite relevant to the current socio economic trends of our society and the system of governance.

I shall request you all to come up with your valuable advice and suggestions to guide us in improving our services to the state's cause. Our website may be viewed at www.sita.assam.gov.in and you can share your views/ideas at my mail id : vchairmanassam2016@gmail.com

For a better tomorrow,



Dipok Kumar Barthakur



There is nothing more difficult to take in hand,
more perilous to conduct, or more uncertain in its success,
than to take the lead in the introduction of a new order of things

-Niccolo Machiavelli

TOPICAL INTEREST

ASSAM IN THE BACK DROP OF NORTH EAST : PROBLEMS AND PROSPECTS OF TRIBAL DEVELOPMENT

Dipok Kumar Barthakur

(Excerpt from a speech delivered at a National Seminar on "India's North East, A Celebration of (Indegineous) Cultures: A Phenomenological Approach" at St. Joseph's College at Jakhama near Kohima, Nagaland)

The Northeast of India, especially the seven sisters has been historically categorised and perceived as one homogenous region. However, in conventional terms of tribes, language, customs etc. we are perhaps one of the most diverse groups of people to inhabit in one small land mass. As per census there are around 200 Tribal Groups that exists in North East India. About 220 languages and dialects in multiple language families are spoken here. Arunachal Pradesh consists of around 25 tribes. Nagaland has around more than 16 major tribes and so on and so forth. Within Assam we have the Brahmaputra Valley, the Barak Valley and the hill districts broadly. Even though there is a majority dominance of various indigenous tribes in the hill districts and Bodoland Territorial Areas of Assam, we have significant population of Deoris in Upper Assam, Mishings in Majuli, of Tiwa and Rabha tribes near Nagaon/ Morigaon. Even in and around Guwahati we have pockets of Bodo dominated areas from time immemorial. And who can forget the Koch Rajbongshis to whom we owe the Kamakhya Temple as it stands today and who's areas spill into the Coochbehar region of West Bengal.



What exactly do we mean by tribes - The tribe can be seen as a social formation in two ways: first as part of evolution of societies in a historical context; second, as a coherent community on the basis of kinship ties which enables it to be a socio-cultural and economic group. So the way we define a tribe to me is a narrow construct.

So for me to divide Assam into tribal and non-tribal is not how I would like to see my state or even this region.

Despite our differences we are bound by geography, history and our future destiny together. Hence, what I speak today resonates not only for tribes of Assam but of the Northeast and the entire region. Whilst most of Northeast India had historically remained isolated and have thus preserved our religion, customs and traditions from millennia, the journey towards assimilation and integration have started from pre Independence itself. At the dawn of independence safeguards, were incorporated into the Constitution.



Colourful North East

However, 71 years after Independence, our policy makers have still failed to take cognizance of the uneven distribution of assets amongst us, unequal political emancipation, economic development and educational reach amongst various groups inter and intra tribes, and states. Our tribes and communities are not only numerous, but we also vary in our habitat, level of development, modes of livelihood, exposure to the wider world, traditional values, customs, beliefs, etc. There are communities living in inaccessible hilly areas, having minimal contact with the world. There are tribes in the plains who obviously have a large degree of interdependence, access and intermingling with the rest of the country.

However, a one size fits all approach has been the approach in most of our policies. Particularly, the approach oversimplifies the complex problem of tribal development by making it a purely economic one. But what we are facing today is more nuanced and includes, apart from economic development, a demand on preservation of ethnic identity, ecology, language, culture, style of living, indigenous practices, etc.

Thus, development, because of the diverse situations, has to be very area specific even within a state, I believe.

Again how do we define “development” – it is not simply imposition of others way of life or will on our communities.

If we look at the impact of economic development and increasing urbanisation in our region, there is almost a pattern. Because of the exposure to the wider economy, polity and society, the urban or semi

urban communities have retained very little of our indigenous economic and political practices and cultural institutions in its purest forms. Barring some socio-cultural practices and physical features, we are indistinguishable in our lifestyle and pattern of consumption from others. Inflow of money and capital have made these societies of ours transactional. Division of labour on the basis of skill and education has taken place. But barring a few, we have also seen traditional communities being pushed out of their homeland and facing impoverishment economically as the traditional means of livelihood and way of life has been taken away from these groups.

Tribes living in the hills, with some minor exceptions, have only recently been exposed to the mainstream economic system to some extent. A headlong rush into embracing development and progress without safeguards has seen us lose our balance as a society. The impact on our lives have already been enormous – from the cultural to political. Our Society cannot be modernized only in consumption and luxury, and not in production. Thus a word of caution here again as attempts to extend the mainstream economy to these



communities in a hurry is likely to be counter-productive of development, besides setting in motion more social unrest. The mainstream economy is a money economy with private ownership and individualism at its heart. The tribal communities, on the other hand, are communities focused on community holdings, barter systems and follow largely self-sustaining models of economy. Money is therefore, till recently not equated with status symbol, measure of values or even mode of transactions in most instances. Collective endeavour is a strongly developed feature in much of our societies. These also give us a sense of identity, of belonging of roots. But now the disparity between income and aspiration has led to many moral, social and political problems. The birth of many violent movements can be traced to these threats that face us as a tribal societies and our values. Drugs, Alcoholism, erosion of family values can also be traced to rampant urbanisation and superficial development. It is hence societies like ours are expressing our angst and our worries of developmental transformation and its impacts.

Development is a double edged sword for us. Take for example infrastructure: as geographical areas, we are grossly deficient in infrastructural facilities. Our roads and connectivity is poor. We are land locked. But when roads and railway lines are constructed linking the isolated areas, more people come from outside, not only as tourists, but for economic gains. There is land grabbing; our land gets alienated. Migration is a burning issue in Assam and in most parts of the Northeast. We feel threatened; we feel vulnerable and we feel we are losing our way of life. There is even a threat of us becoming a minority. The fear of losing our ethnic identity is no longer then a probability but looms large on the horizon.

Again our per capita income is one of the lowest in India. This is a contradiction in itself as the North-East and particularly Assam has been a source of raw materials such as coal, oil, forests and tea since during the British raj. There was a mass extraction of these resources which were then exported to other parts of the country for processing. Thus this region however did not benefit from this process. And till many decade, post -independence this has been our fate. It is still in our region that much of the Nation's mineral, forest and water resources are located and national economic



development demands utilization of these resources. So should we not extend the national developmental measures to our tribal societies? The answer is not simple. Our areas constitute a very important chunk of the national economy. In this backdrop, some social scientists have put forward the theory that the concept of a tribe is an anachronism in the present-day world, as smaller, isolated, self -contained, cohesive communities have either ceased to be thus or have become part of one other greater civilization or political boundaries of the world. However, the pace and intensity of utilization of resources must be in a manner which produces the least adverse effects on our tribal societies.

What should be emphasized in the development strategy for our areas is to ensure the impact of the transformation is cushioned and as much priority is given to the preservation of socio-culture ethos of our societies. Our societies should also be primed to inherently defend what is good in our societies, without losing confidence in who we are and that we are different. We don't need to be defensive of who we are and what we represent as communities, as tribes.

Economic development for us as tribal societies, must be achieved while minimizing the adverse effects on future resource availability and ecology and without jeopardizing, ethnic identity.

But as I said in the beginning the glass is half full - our region has performed reasonably well in comparison to all India average situations in respect of human development indicators and is now being propelled to centre stage of national economic growth. Various terms have been coined - AsthaLakshmi, Northeast- Gateway to ASEAN, Act east from Northeast etc. I hope a more coherent and tailor made policy framework, better governance and a parallel development in civic bodies and institutions to hold together our socio-cultural framework, will allow us to shape a society and a region that we want and not parachuted from elsewhere.

I look forward to taking some of this aspirations and giving a policy mandate in my role at the State Innovation and Transformation Aayog, Assam.

THE AUTHOR

Shri Dipok Kumar Barthakur, Vice Chairman, SITA is a social activist, thinker, an entrepreneur and a visionary. He writes on topical issues ranging from culture, history to socio economic problems. He is associated with a large no. of social, cultural and philanthropic organisations. Phone: +91 9954028650

ETHICS AND VALUES IN GOVERNANCE

Jatin Hazarika

Ethics in administration is a comprehensive concept encompassing all facets of administration emphasizing on moral and ethical norms of people running the administration. Ethics in administration has been an integral part of Indian traditions. The King his relatives and Ministers as well as other State Employees who have taken the responsibility of administration must uphold the ethics and values and must take care of public needs and not act unjustly or unethically because if they do so they will not only destroy the moral basis of governance, but also turn the State into a hell (Mahabharat). Kautily's Artha Shastra defines good and ethical governance as Rajdharma emphasizing that the happiness of people and their welfare are the key responsibility of the King and what pleases the citizen at large should be his happiness. Public Administration is a part of citizen's daily life and to a large extent govern it. Public administration functionaries have to provide services in aid of community, and such services cost public money and property and therefore misuse of public fund by functionaries cannot be ruled out. Citizens trust the public officials and therefore such delinquencies in using public fund amount to betraying of public trust. Ethical behavior and decisions maintaining citizens' trust, ensure effective and efficient use of resources, and allow government to preserve individual rights while assisting those who will benefit the most. Ethics is one of the vital components that allow democracy to thrive in any country. Ethics in government is critical to realizing the promises of democracy. In a democracy, government has an obligation to treat everyone equally and to provide the greatest good to most of citizens. The effective operation of democratic government requires that public officials and employees be independent, impartial, and responsible to the people. Government decisions and policies should be made within the proper structure of government and public office shall not be used for personal gain; and the public has to have confidence in the integrity of its government

Public Service has its own value and the most important of them is the integrity. It can be interpreted to cover a broad range of bureaucratic behavior, but it is used also to refer to administrative or public service ethics, to principles, and standards of right conduct for public servants.

It is accepted universally that Public Service Ethics are a prerequisite to, and underpinning of public trust and are keystone of Good Governance.

Before we discuss about Ethics and Values in Governance let us go to the dictionary meaning of these two words. The word 'ethics' is concerned with human character and conduct. It implies professional standard of conduct. Similarly the word "value" signifies intrinsic worth or goodness – recognition of such worth which renders anything useful or estimable. It also implies efficacy and excellence. Over the centuries, philosophers have debated the relative merit of ways of looking at, and measuring ethics and values which are moral behaviour. Various sets of virtue and human goals have been advanced as the best ways to understand, and to implement achievement of what is good. Ethical pluralists, in more modern times have argued that single set of laws of ethics cannot define the means of good ends or explain man's obligations. A variety of tests, they say, must be employed to ascertain when choices and decisions serve morally justifiable purposes. Elaboration of no one virtue such as honesty, justice, selflessness, or courage will provide the satisfactory measure. Good behaviour emerges from applying them all. It would

probably be relevant to mention that the ultimate ethical postulate in human being is not that man is good, but that he is capable of doing good, and not that he is wise, but that he is capable of using wisdom. Certainly the pluralistic approach has the appeal of common sense and would seem most applicable to performance in the public service. But again applying any test to goodness of behaviour of administrators poses some very complex and agonizing problems that transcend those common to other human inter-relationships. We cannot ignore some of these major issues when we discuss about ethics and values in administration.

Problems of ethical conduct arise for the administrator by virtue of the power and influence he commands and the commitment he undertakes of devoted and disinterested service to the public. In a democratic country like India, authority is derived from the consent of the governed. Public administration, therefore, must serve the public in a manner that strengthens the integrity and process of a democratic society. The fundamental principle has at least three implications for performance in a government position, specially as we move up the hierarchy to those greater responsibility. It means (one) all people must be served equally and impartially (two) this must be achieved with full respect for and reliance on representative institutions and (three) internal administration in public agencies must be consistent with these modes of behaviour.

All will agree that one of the most difficult concept to define is 'public interest'; but without getting lost in the finer points as to whether there is a single or whether there are multiple 'public' to be served, we can safely assert that the civil servants and political executives should above all, think in terms of the total welfare, the over-all good, the long range effect and eschew the temptation to please just the individual or group pressing its case before him. Prof. Paul Appleby, an outstanding scholar in the discipline of Public Administration; put it well in his famous book, "Morality and Administration in Democratic Government", that nearly in all administrative decisions, the sense of virtuous performance is to be pursued by attempting to inject some increased allowance for the more public interest and some increased concern for those citizens not immediately present or heard. The responsibilities of civil servants to the public, to the law and to their political bosses are tied together by the common bond of democratic consent – which leads us to the second implication that may be perceived in trying to understand the democratic base for public service ideals. One of the most difficult principles for the average civil servant to appreciate and honour; is his complete dependence on the will of the people. Having once joined the civil service, he is quite understandably inclined to resent any intrusion upon his time and his authority that appear to sway him from pursuing his mission as he understands it. It becomes difficult for him to reconcile – how any legislator or any citizen could possibly have an interest in what he does, He very often forgets that, in exercising those discretions that are left to him he is obliged in his deliberations to listen to, to consider carefully and to weigh the view points of others as to the meaning, intent and the spirit of the law he administers.

One of the tests of the civil servant's dedication is his earnestness in recognizing the importance of letting the people decide for themselves what policies and objectives the public administration shall have. He must have an abiding faith in democratic process in making certain that it is not just his personal view but that of the people as expressed in law and declared policy to which he gives effect. Where he has latitude to make choices, he must continually apply the rule – is this action consistent with all the objectives and requirements that impinge on it? Democratic government can succeed only provided its agents which include civil servant display a healthy respect for, and intelligent understanding of democratic environment. Finally, we must also consider the character of a public agency's internal administration. A

cardinal tenet of our democratic faith is respect for human personality, for individual dignity and worth. The success and coincidentally the moral behaviour of an administrative undertaking depends ultimately upon the capacity, the integrity and the motivation of its workers. An organization is effective in almost direct proportion to the degree to which its employees have pride in its work; identify personally with its goals and sense a genuine, open opportunity to participate to their fuller capacity in attaining its mission. Ethical necessities in their broadest sense require that the administrators commit themselves; to quote another scholar Prof. Hurst A. Anderson (Ethical values in Administration) "to a philosophy of personal and group living which allows every one to live, work, and contribute to the general good." We must also remember that in all governments, totalitarian or democratic, laws and rules are set for governing in the individual's conduct in his relation to others and to a society as a whole. But the methods by which these controls are arrived at, and the protection which a citizen enjoys against arbitrary action effecting his person and his possessions, comprise the major area of distinction between totalitarian and democratic government. In democracy, "means" are as important as "ends", in other governmental system they are not.

When we examine the role of administration on the basis of above parameters, we could define the primary responsibility of the administrator as enforcing order in public affairs as to reduce arbitrariness and subjectivity as far as possible. This of course does not mean that he acts or should act mechanically like a robot. Even then, he cannot move very far from the constraints imposed by his position in the administrative hierarchical apparatus as well as rules governing the matter under consideration. In fine, the aim of public administration is to supply services to people according to their needs and treat all such customers of services equally. This objective compels the administrators to maintain a role of strict impartiality based on principle of equality of individual citizens vis-à-vis their government. But this imperative has frequently been mistaken to mean that civil servants should also be neutral with no views or commitment relating to the policy he wants to implement. There is clear difference being neutral and being impartial. Civil servants must fully grasp the spirit and purpose of a government policy or in short its orientation. This does not mean commitment or political bias, but it is also not neutrality in cold, aloof, untouched robot like sense of the term. It is definitely imperative that public servants must not become political partisans or engage in political activities. Fortunately for us the ideal of a welfare state is not in our country a controversial political issue - it is the goal laid down in our Constitution itself and we are all committed to reach this goal. To achieve this goal, far from being a neutralist, the public servant should be one rich in human sympathy and with a fully awakened social conscience. To his work he must bring not only competence, but faith and fervour and mind receptive as well as constructive, able to see, beyond the immediate difficulties, the opportunities that lie ahead. This does not mean that the civil servant should degenerate into a 'yes-man' - but it also does not mean that he should on no account be a 'no-man'- the man who can only see snags and pitfalls and whose instinctive reaction to external stimulus is one of obstruction. This type of man is a danger to society, particularly at a time of growth and development.

In a developing country, the state has become the instrument of economic development and social change and its goal is to raise the level of living of all sections of people. When the state is required to perform this type of developmental functions, the scope of public administration has also been widely enlarged with the object of accelerating economic growth with particular emphasis on removal of poverty. In a vast and poor country like India, the copy book concept of Economic Growth does never operate, because the resources of the society are not equally distributed. In agrarian economy land is the prime social resource, but this prime resource is not equitably distributed among the people who depend on agriculture for

their livelihood. In a situation of unequal distribution of resources, hence of income as well as economic power, the choice of products and techniques of production tends to be dictated by the wants of the few; rather than the needs of many. Growth of a kind may take place under these circumstances and may even be quantitatively impressive, but the natural productivity of the system is to direct resources towards the growth to meet wants of a very few 'haves' who happen to own and control the resources of the society at the cost of the needy 'havenots' who are vast in number. This type of economic growth has hardly any impact in the general economy in real sense and on the other hand it creates unemployment and underemployment instead of removing the same, thereby widening the gap between the rich and poor, substantially. Moreover, such type of growth is not spatial and confined to particular region/s or area/s only. Ironically in a situation like this, the wealthy often benefit more than the poor from public social services. As more than one third of our population is below poverty line, first priority before the administration is poverty alleviation. Therefore, not to speak of administration, entire process of development must be reoriented to the needs of the poor and this constitutes the basis of all administration ethics and values for the present.

In view of this type of economic situation, the enlarged function and primary responsibility of the administration today includes new activities like rural development, public distribution, different employment schemes, family planning etc. and the intensity and coverage of these functions have also enormously expanded. The task of administration today is to attain maximum efficiency, efficacy and economy in the administrative functions with the object of development administration being the primary concern. Thus there is qualitative change in the concept of public administration today. It is increasingly felt that development administration requires a positive attitude, managerial competence and capacity to work with people and these traits combine to form the concept of responsiveness in the administration. Owing to this changed role of public servants, their primary responsibility is to function as the catalyst, but the general grievance is that, there is often lack of trust and understanding between the catalyst and the people, whom the catalyst is expected to serve. This type of lacuna creates implementation gaps in programmes launched for the benefit of the poor.

The only way to bridge this gap is to motivate the officials in charges of implementing the programmes so that they could discharge their duties with high level of dedication, spirit of service, integrity and involvement. An administrator must be able to understand the human social facts for what they are, unfettered by his own emotions or prejudices. He must be capable of appreciating and interpreting the wide spectrum of economic, political, social and several other parameters involved in his day to day functioning. If we can reorient the personnel in-charge of administration with this motivation, the administration is bound to be responsive to people's aspiration. Administration must also be capable of identifying the basic features of economic growth and initiate short term as well as long term measures for their development. If this can be done properly, many of the difficulties faced by people could be removed easily. This will be the real transformation of the concept of ethics and values in administration to actual action.

It has been already mentioned earlier that, in a developing poor country like India, development has become the greatest challenge before the policy makers, planners, political scientists, economists, the administrators and the general public. But what does development imply in a country like ours? Basically it implies two fundamental propositions- it is concerned with alleviating poverty, ignorance and disease - thus it is related to social, political, economic and cultural factors. It also implies that the concept of development applies to every one and not just to a small privileged class or elites in the society - that is

reduction of economic and social disparities between the haves and have-nots. To achieve this type of development as mentioned above our entire administrative system needs re-orientation to face this challenge effectively and adequately. Those who are responsible for administration of the society must look beyond the traditional confines of a stereotype system and instead become change oriented catalyst. This goal suggests that the development is a national process of comprehensively changing a whole society directing its towards growth with equity, redistribution of social benefits and community mobilization. This is no doubt a gigantic task. To tackle such gigantic task within a limited time frame all administrative ethics and values must centre round this objective.

I strongly feel that, redress of public grievances, particularly grievances of the poorer people is a pre-condition to achieving development, and this is also an important field for acid test of ethics and values cherished by administrators.

A clean, effective and efficient administration is essential in our country both at the Centre as well as in all States irrespective of the political philosophy of the government in power. The objectives of adequate and sustained growth based on social justice, accompanied with the uplift of those below the poverty line places a very heavy responsibility on all who are in the helms of affairs whether at the Centre or in the States or in the districts. Public administration as a professional activity is concerned with a multitude of processes and practices and they are as widespread and diverse as are the goals and purposes of government and its various agencies. Moreover, the perspectives of administration are changing very fast and so are the expectations of people. In discharging the responsibility as the instrument of economic development and social change and achieving the goal of raising the level of living of all sections of people – with particular emphasis on the vulnerable sections who are at the bottom of the economic and social strata, it is necessary that people at large are fully involved in the state's efforts to implement the development programmes. Since democracy has been defined as “Government of the people, by the people, for the people” – one of the main obligations of the democratic government is to secure a “Government for the people.” This basic concept can be translated into action by a democratic government only by adopting specific measures to secure all round contentment and satisfaction with the policies of government and the methodology of implementing such policies. Therefore, the removal of prevailing or lingering sense of injustice springing from an administrative act is the sine qua non of a popular and ethical administration. A popular administration must also be capable of generating people's enthusiasm for constructive purposes by attending to their genuine grievance promptly and effectively.

The unprecedented increase in the volume of functions of the state following the acceptance of the welfare state ideal and consequent growth in its structures, power and discretion rendered all traditionally available means of control over its operations and personnel; ineffective. As “power corrupts and absolute power corrupts absolutely” and as “where there is discretion there is room for arbitrariness” it becomes a compelling necessary to search for an effective means of exercising control over the vast power and discretion enjoyed by the state functionaries. The gradual culmination of the ideal of welfare state into reality of what ultimately came to be know as the administrative state, soon led to the realization of its possible danger for enjoyment of fundamental democratic rights by citizens. In view of this change in political and social perspectives, there is a great concern today with the capability of the government to deal with the grievances of those who have suffered injustice or believe they have suffered from the officials who govern. The right to complain, the right to be heard, and the right to have remedial action, if one has suffered harm from the government functionaries, are human right. Legally rather philosophically citizens' rights are protected by the constitution, charters and other laws of the country –

but in practice the remedies prescribed in the statutes are not easy to obtain for a common man for obvious reasons. We have no doubt different judicial and administrative forum like Lokayukta, for redress of citizens' grievance but these institutions have hardly any impact of the redressal of the genuine grievances of a common man. To him there is none to look after his woes and worries, difficulties and problems which appear to be very small to others but are question of life and death to him. There is none to protect his legitimate claim of getting ₹1000/- from MGNREGA scheme without spending ₹500/- as the cut. This small man makes the bulk of the society, but has been rendered helpless and is incapable of asserting himself. To redress him grievance or provide remedies to him, he has to depend and rely mostly upon the bureaucracy, which itself according to public rhetoric not a fit instrument for successful working of democracy and socio-economic transformation. Here again, the administration needs to be restructured and re-oriented to respond to the popular will by having systems of easily accessible quick response to public grievances, within a fixed time frame. The need of a suitable system is of topmost priority at the cutting edge points in the grass-root level, where general public have frequent contacts for their day to day living. While redress of individual grievances should continue to receive attention, more stress needs to be laid on identifying the systematic deficiencies which are causing the grievances. These deficiencies could be clumsy organizational structure, dilatory and cumbersome procedure, wrong attitude etc. After identification, quick steps should be taken to remove the deficiencies. The procedure should be so streamlined that even when a citizen does come to government, his work is simplified and there is proper monitoring of the delay, if any, in the disposal of such work.



Administrative reforms initiative is important for effective service delivery by the Government

I would like to reiterate that broad ethical drives combined with the stimulus of tackling society's major problems suggest a pattern of administrative behaviour that can treat each member of the administrative machinery as if he is himself is a worth-while human being bent upon doing his utmost, to help get the job done. This is what we may term as "work-centred motivation". Motivation to perform and morale, with its concomitant should be the basic driving force of the administrative service. We all know that morale is the capacity of a group of people to pull together persistently and consistently in pursuit of a common purpose, i.e. the possession of a feeling of being accepted and belonging to a group through adherence to common goals and confidence in the desirability of those goals.

We have three basic values of our constitution viz Democracy, Secularism and socialism. Unfortunately in today's context, all three are seriously threatened. Democracy does envisage change, but change in a peaceful and constitutional manner. It is inconsistent with violence which distorts democratic process such as rigging and booth capturing, not to speak of secessionist movement with terrorism as the vehicle. Again Secularism which assures equal treatment to all citizens irrespective of their religious affiliation is threatened by fundamentalism preached by some sections of people.

Socialist values of development envisaged balanced development of various regions of the country and various sections of its population, which would reduce disparities of wealth and income among them – but in actual field we have seen aggravation of existing imbalances in the society instead of reducing it and that has in turn given rise to the ugly phenomenon known as concentration of wealth and income causing not only social discontentment but also generating economic power that distorts the democratic process contradicting our constitutional obligation of preventing concentration of wealth and means of production to the common detriment.

Prof. Paul H. Appleby, the eminent scholar in the discipline of Public Administration held that government action reflects a basic moral tone. To him basic moral character of government action manifests itself when, action conforms to the process and symbol designed for general protection of freedom, It leaves open the way for modification and reversal by public determination. It is taken within the hierarchy of control in which responsibility for the action be readily identifiable. 3) It galvanized leadership to the concrete structuring of response to the properly felt needs, 4) It has nothing to do with the private needs of the leaders.

Appleby further holds that moral ethos begins in individual self discipline of a public servant. It is not enough for democratic morality at a particular point of time or for a particular case. It must be in his psyche and he must have a mind set. Group character is equally important which means devoted guardianship of the democratic morality in continuity. Public servants work in a group with a certain hierarchy. Ethics and group behavior can be developed and sustained with appropriate values and character inculcated by the leadership at each level of public governance.

Dynamics of governance call for educating the public servant in updating his skill and knowledge to cope with the changing need of time, rising expectation of people. It also calls for constant up-gradation of skill of a public servant to meet the demand of time for which he should be more professional. That will improve the delivery system both in regulatory and developmental administration. Therefore, at certain states of career, training of the public servant is absolutely necessary to improve his capability. Deficiency in knowledge and skill make the public governance weak and less effective. In course of time new ideas emerge to meet new challenges in public administration. Countries in the globe introduce novel practices to cope with changing situation in the realm of governance. Public servants who join different branches of administration and undergo initial training at the time of entry into service, will find themselves out of date unless they re-induct new skill for capacity building and ethical standard of governance will go down the line.

There has been paradigm shift in the concept of Ethics in public administration, during the last three decades. What goes on inside the state administrative machinery has important implication both for the legitimacy of the political system as well as for most measure of human well being. This includes of course economic prosperity and standard measure of population health, but also for more subjective variable such as “happiness” and social trust. This development has focused interest on factors like State capacity, the quality of the institutions that implement public policies and how the public administration operates. It has further been emphasised that a set of core values are most important in public administration in order to achieve success at the organizational level in the public sector. The core values are transparency, accountability code of ethics professionalism and leadership.

To practice transparency in public administration is to ensure citizens the availability of information

which is deemed public. This should be an organizational goal, and is to be taken into account when conducting all public business regardless of one's job title. If the goal of an organization is to serve the citizens to the best of their ability, then avoiding or failing to achieve transparency would cause significant damage to the relationship between them and the people they are aiming to serve.

Accountability is to adhere to a standard of professionalism in the workplace. Additionally, it means to understand that our professional activities are being funded by the citizens of this country. As such, public employees are held responsible by citizens for upholding the mission of their organization. Accountability is an important aspect of the functionality of any organization public or private. Essentially, it reminds individuals that while they are employed by a professional organization they will be held liable for their actions.

Each public administrator is asked to adhere to a code of ethics. In order to function properly as an organization, the administrator must be held to a high degree of ethical standards. Specifically, ethics calls for administrators to display integrity, and be mindful of laws and regulations. Furthermore, this must be accomplished in order to successfully practice and promote transparency of government. Unfortunately, the importance of ethics in government is usually shown when public officials violate laws or regulations. Because of these instances, we are constantly reminded of the importance of ethics in public administration.

Professionalism is an important core value when considering the prestigious nature of our positions in the field of public administration. In essence, administrators are hired to be visionaries, in addition to being stewards of public funds and information. To be professional is to understand the importance of our jobs in the public sector, to have respect for ourselves and the organizations that we represent, and to act accordingly. Each individual is to deal with issues, whether positive or negative, in a mild and straightforward manner whenever possible. Without professionalism in public administration, the overall perception of our work and our organizations would undoubtedly falter.

There are few organizations in the public sector that are able to flourish without proper leadership. Practicing leadership is setting an example of professionalism for staff members and possessing the motivation to achieve organizational goals. In doing so, leaders must have the ability to recognize the talents of individuals and allow those talents to be utilized for the betterment of the organization. Admittedly, leadership can become a balancing act between becoming an active team member and taking charge of overall operations. As a leader, it is of utmost importance to stay connected with staff members, but to act in a managerial role when called upon. Timely reform in administrative system is another most important need to improve quality of public administration

Lastly, we must recognize that at macro level, for ethical good governance system, we cannot lose sight of an important relationship between Rule of Law, Good Governance and Sustainable Development. Deficiency in the rule of law encourages indiscipline in the Society, breeds high rates of corruption with devastating consequences on the confidence of law abiding citizens, making the administrative system itself irrelevant.

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STRATEGIC APPROACH TO DOUBLE FARMERS INCOME IN ASSAM BY 2022

Dr. K M Bujarbaruah

The desire of our Hon'ble Prime Minister to double the income of our farmers by 2022 has to be taken with all the needed seriousness both for realizing his dream and benefiting the farming community in the process. Once Mahatma Gandhi had said, To a hungry man, God comes in the form of Bread. This hungry man could be an economically underprivileged one or even a billionaire depending on the situation. The point to bring home is FOOD and its importance irrespective of one's standing and this food producer is today experiencing multiple obstacles ranging from environmental issues to a good price for his harvest. On the face of these obstacles, how we proceed to double his income is the core issue. Notwithstanding the argument as to whether this proposed income increase is in nominal term or real time income, let us analyze how can we go about it. We need, first of all, to understand that a farmer income



does not come from the farm alone. A farmer also does other jobs like running a pan shop, having a roadside tea stall or working in MNREGA type of programs. Supposing, out of an income of ₹100 in a day, ₹70 and ₹30 come from farm and non-farm sources prospectively, the income doubling target will have to cover both these sources of income i.e. ₹70 has to be taken to ₹140 and ₹30 to ₹60. Stakeholders engaged in delivering the farm deliverables will be responsible for doubling the farm income and other players for the non-farm part of the income. Going by the milestone fixed, we have exactly 4 years time from now to achieve the target. We will have to start from this year itself (AAU has started in a modest way through the KVKs) for which following go ahead path is suggested:

Select at least 20 districts, for first two years, identifying 2 villagers in each under 2 cereal crops, 4 horticultural crops, 2 spices and 2 flower crops besides cattle, goat, pig, poultry and 1 fish crop enlisting the cropping pattern followed therein and the niche/commercially attractive crops of the village together with diversification options and then assess the current level of farmers income in the selected villages based on their categorizations like small, medium and large.

Immediately after identification of the villages applying PRA type of the technique, carry out soil quality assessment together with nutrient application schedule, water availability and quality, quality of seed (including animal and fish seeds) and planting materials used and identify intervention points. After their

identification, arrange village wise awareness and training including skill development program.

Simultaneously, assess support needs in a realistic way taking into consideration the accessible support from the already launched GoI schemes like Pradhan Mantri Krishi SinchaiYojana, FasalBimaYojana, Soil Health, Cards, RKVY, MNREGA, Technology Missions both on Animal and Horticulture as well as programs under NFDB (National Fisheries Development Board) etc and also articulate the linkage chain among these schemes. Separate demands for additional support that might be needed may also be placed to the Ministry of Agriculture.



Since entire North east is being converted to organic mode of agriculture, plan the interventions accordingly right from seed to other inputs like fertilizers/pesticides promoting thereby non-farm sector income growth through their production.

Prepare contingency plans, arrange short and medium range weather forecasting, use ICT for technology and information (including fund utilization aspect) delivery right at the village community centre, demonstrate resource efficiency doubling methodologies and also attend to farmers stresses by minimizing their labor

through suitably designed farm implements.

Having done these, foresee the likely output, fix MSP for the crops produced and strengthen procurement machinery as well as storage infrastructure.

Assess post harvest infrastructure and competitiveness of the existing manpower to effectively handle the produce and add value to them. Since they are, by and large, not very sound, drawn up a plan to first train the manpower and then infrastructure updating and/or creating newer ones as the need be.

Encourage the youths to adopt secondary agriculture covering the areas of seed, organic fertilizer/pesticide production, start ups with farm implement manufacturing, food grading, packing, branding and marketing thus providing locally the backstopping support need to tighten both the back end and forward end linkage chain as well as for creating the missing platform for non-farm earning and employment and also for doing away with the middlemen involved in supplying inferior inputs or taking away the major profit portion at the cost and labor of the farmers. Each pennyso saved shall add to the income of the farmer.

Take the advantage of GoI initiative for establishing 2 Primary markets in each district and 2 Secondary agricultural markets in each block followed by around 5-6 terminal markets across the state. Also plan for linking the state with e-NAM after a year or two.

Skillfully empower the extension agents both for technology and its delivery technique as well as on market intelligence gathering so as to pave the way for regional mark within the NE Region specially through the trading of niche area crops/commodities of one state to plug the weakness of the other states in producing the same, i.e., promote complimentary and supplementary agriculture trading within the region.

Similar assessment and intervention identification for livestock/poultry and fisheries sector either on Integrated Farming or on independent farming mode as per the call of the resources and aptitude.

Plan to develop the village community halls with electronic facilities, the facilities for custom hiring centers for farm machineries as well as with e-choupals.

To explore the possibility of roping in private players in a partnership mode to translate the currently pursued CDR (Complex, Diverse and Resource Poor) form of agriculture to a semi-commercial to commercial mode.

To pool 25 percent of CSR fund from the corporate sector for this cause and also involve NABARD like organizations.



After two years of doing the program in the villages suggested above, the other districts and villages will have to be covered in remaining 2 years. The target is achievable. We have committed man power and also the willing farmers to be the beneficiaries. What is needed is the convergence among the players implementing various government schemes. For, example, agriculture department of the state is learnt to have been allocated ₹40 crore this year for carrying out demonstration under RKVUY. This amount needs to be utilized for doubling farmers income together with the fund available under

departments like Irrigation and soil conservation, social welfare, rural development etc. 10 percent fund from these and other related departments needs to be earmarked for this cause and a nodal department/agency formed under the direct supervision of either the Agriculture Minister or the Chief Minister. We have to realize that lending a helping hand to the farming community who produces food for all of us, is much better than joining the two hands for prayers. We can do it and let us begin systematically.

THE AUTHOR

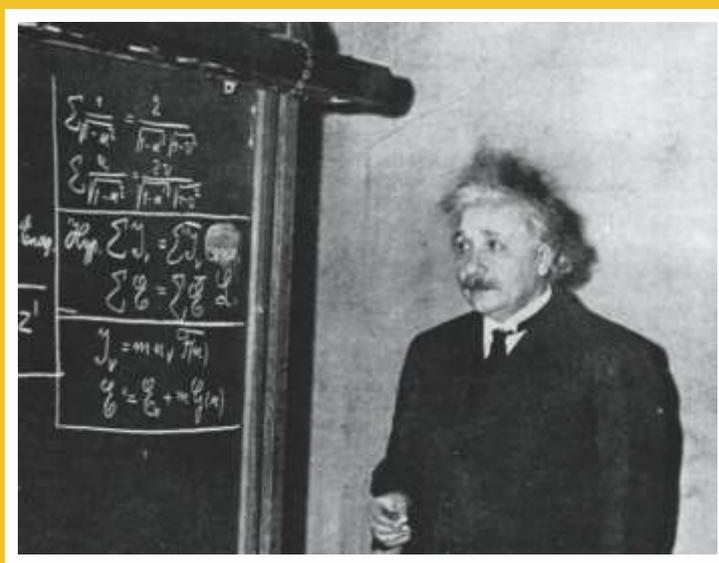
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SCIENCE DAY AND DEVELOPMENT

Deepak Goswami

The National Science Day is celebrated each year on 28th February since 1987. It is celebrated to pay respect to Chndrasekhara Venkata Raman (or C V Raman, 1888-1970), the only scientist from India till date who was able to win the Nobel Prize with his entire scientific research work conducted within the country. 28th February 1928 was a very memorable day in the annals of the country when C V Raman was able to finally discover the Raman Effect, a phenomenon where light scattered by a transparent liquid was found to undergo a change of wavelength. He was awarded the Nobel Prize in physics two years later for this momentous discovery. In fact, C V Raman was also the first Asian and the first non-white scientist to have won Nobel Prize.

I am trying to highlight some of the aspects of C V Raman's life in comparison to another great scientist, Einstein. Both of them had a great interest in music. Einstein himself used to play Violin. C V Raman's interest was in Indian percussion instruments like Tabla and Mridangam and he started his scientific research in these instruments. Later, he extended the area of research to include string instruments like Ektara, Veena etc. In fact, before he switched over to Optics as his area of research, Acoustics was the area which kept him immersed and his research in this area made him famous far and wide. It is said that during his fifteen-day return journey by ship from London to Mumbai in 1921, the deep blue water of the Mediterranean Sea made him think deeply about the reason of this particular colour of sea water and gradually his research interest shifted to Optics.



Albert Einstein (1879-1955)

Another similarity he shared with Einstein was that both of them started serious scientific research while working in areas other than science. Einstein had published three major papers, namely on Special Relativity, Photo-electric Effect and Brownian Motion while working as a Clerk in a Patent Office. C V Raman completed all his research on Acoustics while working as an Assistant Accountant General at Kolkata. Only in the year 1917, did he join as the first Palit Professor in the Calcutta University on invitation from Sir Ashutosh Mukherjee.

Just like Einstein, Raman also took science as a hobby; of course during his days, science was getting transformed into big-budget professional enterprises. Raman normally depended on low-budget experiments while pursuing his research. Raman felt more at home while pursuing his pure scientific goals and was averse to social-networking because of which he had to face obstacles on regular intervals

while working in senior positions in scientific establishments. He was quite aware of the undesirable effects of very focused patronage from governments, military or big industrial houses. He also insisted on the necessity of going for research on pure and fundamental science apart from applied science, where patronage from government or private parties was more readily available. He was never tired of drawing attention to the need of research on fundamental sciences.

Just like Einstein, Raman was against very strong nationalist ideals. While appreciating the fact that successful scientists are felicitated and claimed ownership of by the countries that they belong to, he used to say that science and scientists are common properties of the entire world. In addition, unlike other contemporary famous Indian scientists like Meghnad Saha, Raman did not pose as a strong proponent of the nationalist cause in the pre-independence India. The similarity with Einstein that he shares in this case is that being a Jew, Einstein faced persecution in Hitler's Germany but after the formation of the new Jewish State of Israel, he politely refused the offer of President-ship made to him and also cautioned the new State against following strong nationalist policies.



C V Raman (1880 - 1970)

this stage of human civilisation and an opportunity has arisen when the problems of hunger, poverty, healthcare, drinking water, shelter etc can be obliterated from the face of Earth for ever. But the actual picture is quite different. According to the report published by Oxfam recently, the rift between the rich and the poor has been increasing day by day and wealth is being concentrated in the hands of the rich by leaps and bounds. Even organisations like IMF, who are quite often seen to take the side of the rich countries have voiced similar concerns recently. Such situations have emerged also because of the wrongful diversion of scientific research through undesirable patronages against which C V Raman so emphatically cautioned.

As said by Gandhiji, this earth has enough for everybody's need but not for anybody's greed. The hatred and enmity between nations – which is unnatural and fostered by big powers with wrong intentions – is the main reason for earmarking huge resources for military armaments. It is actually a wastage in the final analysis because the common people of no country want war. If such resources unnecessarily blocked up in military endeavours can be freed, there will not be any dearth of resources required for peoples'

The theme of the National Science Day 2019 is “Science for the People and the People for Science”. This is a very apt theme because People are always at the very centre of all activities we do. The contributions of science should always be used for the comprehensive welfare of people and not for the exploitation of people. But in this complex world, science is pursued not only for the welfare of people; science is pursued for creating weapons of mass destruction also; science is pursued also for making healthcare very expensive with a motto to profiteering; science is pursued also for hiding the knowledge discovered by scientists on the pretext of copyrights and patents so as to earn money. The productive forces have attained unimaginable heights in

welfare. Science is not only a body of knowledge but it also includes the methods of acquiring this knowledge. The main attributes of this method are – denial of any authority of scientific knowledge, using direct observations as final proofs of scientific truths and a preparedness to accept a new truth in place of an older one which has been proved to be false. This scientific method has proved to be hugely successful during the last few centuries in its application to science proper.



When such a method is applied to other aspects of life with a view to discover the truth, it is known as Scientific Temper. But scientific temper is an inconvenience to some quarters to say the least and may be a big obstacle for the vested interest in so many fields of life. Therefore, presently a certain section of people are trying their best to stifle scientific temper at the very root. The science-lovers and science-workers must remain alert against such ill-conceived attempts.

As an example, emboldened by the prevalent situation in the country, a section of people is trying to assert that one can also discover scientific truths by meditation and logical discussions alone without resorting to the proper scientific method (e.g. Cosmology and Consciousness by Dr H K Suhas). According to them, sages from ancient India discovered scientific truths by meditations alone. These sections of people get elated if any resemblance is suddenly found between new scientific opinions and those by ancient sages. Ancient India has a number of important contributions (e. g. discovery of Zero, various contributions in Algebra and Astronomy and above all, creation of an entire medical science Ayurveda precisely following scientific methods etc.) which are recognised by all and for which all Indians should feel proud of. But it is very clear that nobody can discover scientific truths by imaginations or meditations alone; through these means, of course, it is possible to build up scientific hypotheses; modern scientists also build up hypotheses in a similar manner which are subjected to direct observations to arrive at the truth. Scientific truths have proved themselves indispensable in the rapid progress of human civilisation during the last few centuries.

While celebrating the Science Day, it is necessary to remind ourselves the need to imbibe scientific temper in our daily life. Through this, on the one hand, it is possible to fight various superstitions prevalent in our backward society like Witch-hunting, belief in ghosts and quacks etc. On the other hand, scientific temper also enables us to analyse the deep-rooted causes of the inequality and injustices in this society which has been created by usurping the contributions of science. A new society can be founded only by relying on tools like Scientific Temper.

THE AUTHOR

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CULTURAL TOURISM AND ECONOMIC DEVELOPMENT

Balancing the Act

Dr. Chandan Kumar Sharma

Tourism has long been recognized as a source of income for the host communities and thus as a significant facilitator in the latter's economic development. However, it is mainly in the contemporary times that tourism has emerged as one of the most potent sectors of economic development. Its role in stimulating economic development has earned itself the status of an industry. Tourism does not only bring in hard cash, including foreign currency, to the local economy, it also has a multiplier effect on many other spheres of economy and society such as transport and communication, power, hotels and restaurants, and so on.

CULTURE AND TOURISM

Since ancient times culture has been a major object of travel. Cultural attractions play an important role in tourism at all levels, from the global highlights of world culture to attractions that underpin local identities. However, in recent years 'culture' has been rediscovered as an important marketing tool to attract travelers. In such a context, cultural tourism has acquired a renewed importance as a major domain of economic activity. It is therefore rightly pointed out that relationship between tourism and culture is not a newly formulated concept, but a newly advocated one.

Cultural tourism has been defined as 'the movement of persons to cultural attractions away from their normal place of residence, with the intention to gather new information and experiences to satisfy their cultural needs'. It is that branch of tourism that hinges on various cultural products, tangible and non-intangible, of a particular land or community. To understand the different elements of cultural tourism, it is necessary to define the term 'culture'.

The definition of 'culture' being subjective and its scope diverse, for the purpose of tourism we may define the term in its broadest sense. In the very first page of his renowned work *Primitive Culture*, the British anthropologist Edward Burnett Tylor provides an all-inclusive definition of culture. He writes: "*Culture, or civilization, taken in its broad, ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society.*" However, the constituents of culture do not take shape in vacuum. They emerge out of the prolonged interaction of man with his specific environment, both physical and social. Hence, though culture is universal, it is also space and time specific at the same time. This specific nature of culture is the mainstay of cultural tourism as it is this specificity that becomes the focal point of the latter.

Accordingly, the cultural products include the lifestyle of the people in those specific geographical regions, the history of those peoples, their art, architecture, religion(s), and other elements that shape their way of life. Cultural tourism includes tourism in both urban areas (historic cities and their cultural facilities such as museums and theaters as well as rural areas showcasing the traditions of indigenous cultural communities (i.e. festivals, rituals), and their values and lifestyle. Thus, a broader understanding of

culture will allow cultural tourism to include different varieties of tourism such as ethnic tourism, historical tourism, environmental tourism, rural tourism and so on.

It is generally agreed that cultural tourists spend substantially more than standard tourists do. This form of tourism is also becoming generally more popular throughout the world, and a report of the Organisation of Economic Co-operation and Development (OECD) in 2009 highlighted the role that cultural tourism can play in regional development in different world regions.

THE CONTEXT OF NORTHEASTERN INDIA

The Northeastern region of India is one of its most bountiful regions in terms of its cultural and natural resources. One of the top global bio-diversity hotspots, the region is also one of the richest cultural landscapes in the world. The numerous ethnic communities, their unique art, music, handicraft, languages (some facing the threat of extinction) – all make the region an ideal destination for all tourists in general and cultural tourists in particular. However, this rich cultural repertoire of the region, much like its natural bounty, still remains by and large unexplored. And the truth is that there has been not much effort to project the region as an ideal tourism destination. On the contrary, there have been, and there are, various government policies which act as deterrents to the development of tourism in the region.

Nevertheless, in recent times, one witnesses a new initiative from both government as well as private agencies to promote tourism in this neglected and underdeveloped region. These agencies find in the rich cultural repertoire of the region the much required capital to stimulate the process of its economic development.

Indeed, each and every state in the region is sated with bewildering ethno-cultural diversity. The music, dance, art and craft, architecture, livelihood patterns, kinship systems, fairs and festivals, religions, languages, etc. of the communities living therein offer an unparalleled cultural space waiting to be explored. The region can also take pride in scores of heritage and historical sites and monuments spread all over it. One can take the example of pilgrim tourism. The Kamakhya temple, the neo-Vaishnavite monasteries of the river island Majuli, the Tawang monastery and Parashuram Kunda have earned widespread fame and attracted both pilgrim and non-pilgrim tourists from all over. There are also many more such pilgrim centres which are very well known in the region or within the respective states, but not known much outside. The Barpeta Satra of Barpeta, the Sivadoul and Joydoul of Sivasagar, Poa Macca and Hayagreeb Madhav temple of Hajo in the state of Assam, Malinithan in Arunachal Pradesh, the Tripura Sundari temple of Tripura, etc. are some such examples besides many others which can be developed into very important pilgrim tourist sites.

In terms of historical sites and monuments, Assam should have been recognised as one of the leading states not only in the region but in the entire country. Historical sites and monuments are strewn all over the state starting from the various relics of the Koch kingdom and its fragments in the western Assam to the eastern Assam replete with the architectural marvels of the Ahom kingdom, from the legendary as well as historical relics and temples in and around Tezpur in north Assam to the fine architectural specimens of Dimapur in the erstwhile south Assam, now in Nagaland. Besides, the various sites reminiscent of the famous battle of Sairaihat near Guwahati city, the ancient ruins of Deopahar near Golaghat of Upper Assam also must be mentioned here. The door frame of Da-parbatiya of Tezpur, which is described by critics as one of the finest specimens of stone art of the Gupta age or the stone ruins of

Bamuni Pahar near Tezpur are other such exquisite examples of ancient architecture. Similarly, the late medieval Ahom architecture as manifested in the monuments such as the Rang ghar, Kareng ghar, Talatal ghar, the temples scattered all over the Brahmaputra valley, the Stone bridge of Namdang, and so on are not mere monuments, they also speak of the culture and civilization that evolved in the region since ancient times. The water management system of the Ahom state with its network of gigantic tanks could also be a very interesting element of cultural tourism. The list is endless.

The above examples offer excellent foundations for building up cultural tourism in the region. However, it requires proper packaging with necessary infrastructure support so that it can significantly contribute to the growth of tourism and the economy of the region. Indeed, all the states in the northeast are not equally blessed with historical sites and monuments. But these states are definitely blessed with a rich ethnic landscape. A great number of communities in the region are still living in a pristine setting without being much affected by the fast socio-economic processes around them. Many communities in Arunachal Pradesh are ideal examples of this. Similarly, foothill communities of Assam bordering Nagaland and Arunachal Pradesh are again excellent destinations for cultural tourism. Interestingly, many of these communities, such as the Singpho, the Tangsa and the Lisu are also transnational in terms of their ethos and culture.

Although cultural tourism has struck some root in case of some such communities, notably the Singphos and the Tai-Phakes of Assam-Arunachal Pradesh foothills in eastern Assam, it is still at a very incipient stage. Some such efforts have also been made in certain pockets of the Mising society. Such initiative can be replicated in case of many other such communities which can provide the tourists a living experience of ethnic life and their culture. This kind of ethnic experience may be of special interest to anthropologists, linguists, ethnomusicologists and ecologists besides general culture enthusiasts. In the process, these communities can also benefit economically.

In fact, such in situ experience of ethnic culture tends to benefit the communities more directly in economic terms than other kinds of tourism managed mostly by people from outside these communities. In many cases, however, we also see examples of effort at engaging the local ethnic communities by the agencies of tourism. For instance, the ethnic communities near Kaziranga National Park are engaged by the agencies nearby in showcasing their ethnic cultures to the tourists visiting the park. In the process, the culture of these communities including their music, food, handicraft, etc. have received wide attention and the communities have become direct economic beneficiaries of this. The Kaziranga model is replicated by a Mising NGO called DASK in Nameri National Park. Such examples are growing which is an encouraging sign.

The northeast region shares a cultural continuity with the neighbouring south-east Asian countries. Although this has been often emphasized in public rhetoric, no worthwhile effort has been made to translate this relationship into a mutually rewarding one. In fact, cultural tourism could be one of the main instruments to facilitate economic development in the region by integrating it with the neighbouring south-east Asian countries.

Unfortunately, there have not been adequate government measures to promote tourism in the region. Poor infrastructure including roads, accommodation, public toilets, sanitary facilities, etc. hinders the region's tourism prospects. Although some private agencies have taken it upon themselves to bring about a change in the tourism ecosystem in the region, this is clearly not enough. Only a combined effort involving the government, NGOs, local authorities, community representatives, experts and development

agencies can give us a successful model for promoting tourism in general and cultural tourism in particular in the region. However, the government must play the most critical role in facilitating this.

Indeed, there is a strong ground to believe that the growth of cultural tourism will usher in the expected economic welfare of the people of the region. This has the potential to generate significant employment opportunities in this economically backward region. Though militancy is generally blamed, which is not entirely untrue, as a deterrent to tourism, a carefully strategized tourism policy can also contribute towards mitigating militancy to some extent.

NEED FOR CAUTION

Having said this, it must also be underscored that cultural tourism is not without its pitfalls. There are many experiences all over the world which show that although promotion of culture and heritage is embedded in the project of cultural tourism besides bringing about economic development, often the obsession with the latter wreaks havoc with the culture and heritage of local communities. Such economic motives lead to the production of counterfeit, manufactured cultural products or folklore presented as if they were genuinely traditional. This predicament was described by the American folklorist Richard M. Dorson as 'fakelore' way back in 1950. Again, German scholars who studied the use of folklore by the tourism industry in 1960s coined the term folklorismus (or folklorism) to refer to the invention or adaptation of folklore outside the cultural context in which it was created. These products masqueraded as genuine are in fact alien to the people whom they supposedly represent. Thus while the 'fakelores' make profit for the cultural traders, they tend to trivialize the real 'folklore' of the people having a negative impact on their cultural creativity. It will, therefore, be worthwhile to learn from the experiences of other societies where cultural tourism's overt economic obsession has left a stifling effect on the cultural life of people.

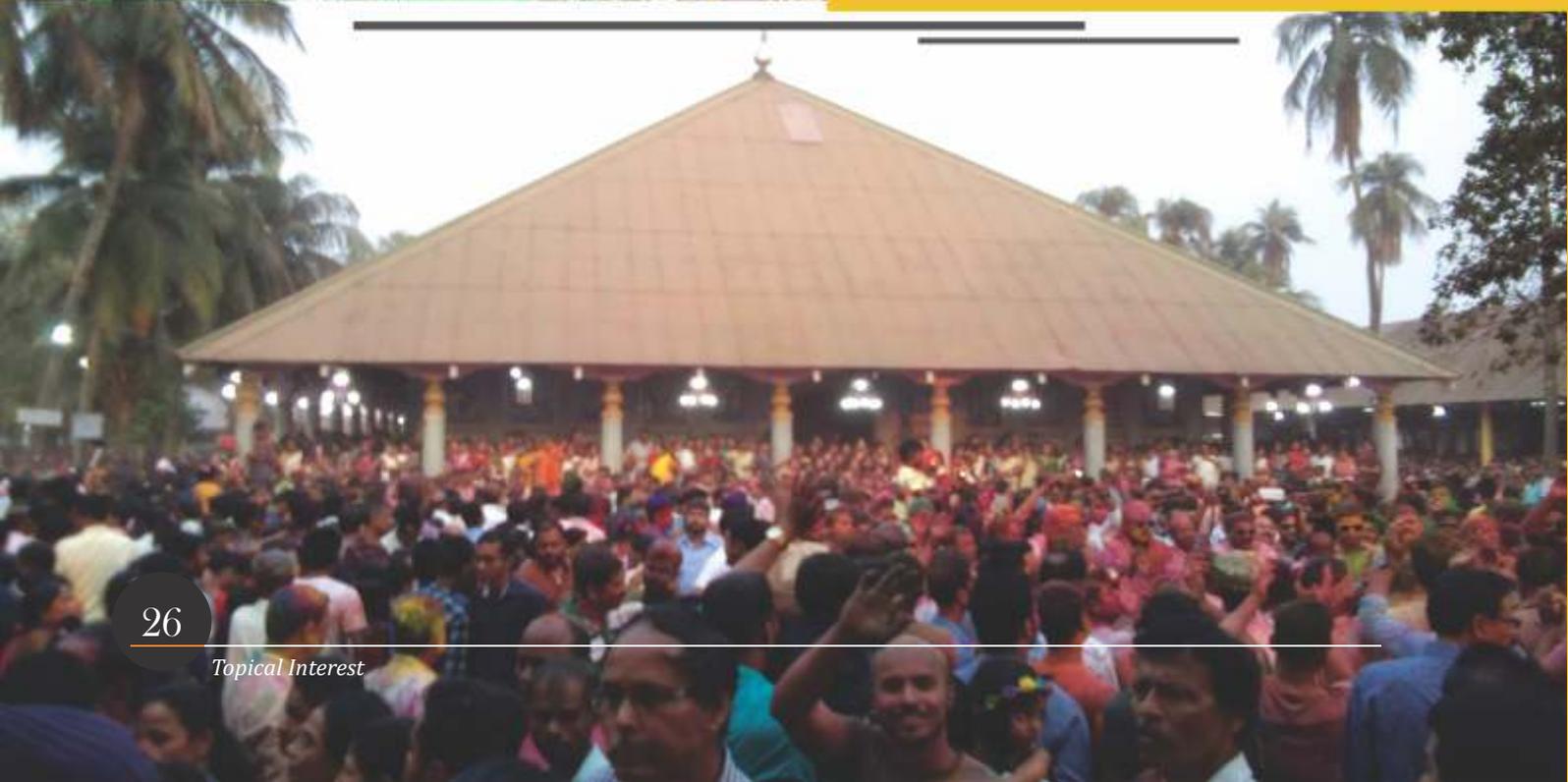
Clearly, cultural tourism is a double-edged weapon for any community. On the positive side, it brings the unique cultural practices and arts of the community to the attention of the tourists and provides opportunities for tourism and economic development. On the negative side, the danger of trivialization of local cultures looms large. Thus what is critical here is the issue of how to regulate tourism so that the cultural products and values are not destroyed and the people do not feel violated. This is also a serious moral issue. Addressing this issue is important because the negative effects of overlooking this are already unfolding in different parts of the world including, to some extent, our own.

This calls for policies on cultural tourism in the northeastern region which while promoting its cultural life and heritage also would facilitate economic development. While satisfying tourists' interests and demands may be a top priority, it is also imperative to consider the predicament of the local communities. This assumes all the more significance in case of the much smaller indigenous communities. With the forces of globalization in full flow in the contemporary world, the protection of the authentic cultural tradition of a community is becoming extremely challenging. However, a sensitive, people-friendly approach can definitely help surmount such challenges.

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Doul Utsav at Barpeta Kirtanghar



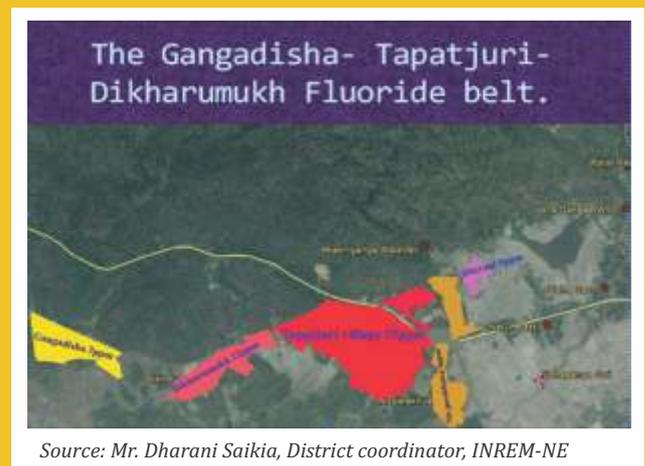
Drinking water is one of the basic necessities of human life and thus is considered to be no less than an elixir. But the contamination of such an elixir has risen to be a huge concern in recent times. Groundwater is the main source of portable water. Both arsenic and fluoride are ubiquitous in the environment. With systematic water quality checking, excess fluoride and arsenic contamination in ground water have been confirmed in 11 districts and 21 districts out of 27(2011 census) districts in Assam respectively. 80% of potable water supply sources are ground water. 930 habitations with 18 lacs population(including a large part of Guwahati City) and 6681 habitations with 29.12 lacs population are affected by fluoride and arsenic beyond safe limit .The origin of fluoride in Assam is Geogenic occurring in Granite, shale, sand stone etc.

FLUORIDE MENACE

Fluoride is a highly reactive compound; officially classified as neurotoxin. Ground water based drinking water, contaminated with excess fluoride has been identified as the main source of fluoride in Assam. As mentioned above it has affected 11 districts out of 27, putting 18 lacs people at risk and many of them are suffering from crippling fluorosis diseases which didn't come to notice until 1999. Fluorosis disease and fluoride were first discovered in Karbi Anglong District in May 1999 by Er. A.B. Paul, the then-Additional Chief Engineer, PHED, Diphu.

The disease of fluorosis both skeletal and non skeletal affects people in many ways. The first signs are with stains on teeth, and then there are problems (pain and rigidity) in joints and bones. In higher stages, there are deformities of bones as well. Also, certain neurological disorders, nutritional deficiency problems, damage in Kidneys, urinary track, etc., allergic reactions, headache, gas in stomach, loss of appetite, abnormality to sperm , Red blood cell destruction, damage in fetus, abnormalities in babies of woman with fluorosis and damage of thyroid – affects intellectual and motor function in children.

Skeletal Fluorosis (SF) cripples the victim and is believed to be non-curable. But SF can be reversed especially in children to lesser extent in adult, which is proven by the Jhabua(MP) model of Safe-Water-and-nutrition approach (by INREM Foundation, Gujarat). The Jhabua example had shown that for mitigation of fluorosis, awareness generation, avoidance of fluoride laced food and beverage and consumption of safe-water along with nutrition provision were important. In Assam, in a severe fluorosis affected area Gangadisha -Taptajuri -Dikharumkh fluoride belt of Akashiganga GP in Hojai District was



Source: Mr. Dharani Saikia, District coordinator, INREM-NE

taken up for mitigation of fluoride and fluorosis. Multidisciplinary experts from different parts of the country visited the villages and examined the fluorosis victims and encouraged the treatment in the line of Jhabua. Different stake holders like PHED, HLTH, Education, Social Welfare, NGOs were identified. A Fluorosis Mitigation Support Centre (FMSC), (brain child of Er.A.B.Paul, (Rtd. CE/PHED) for regular convergence of stake holders was established in a room of PHED, Hojai District. At first a group of 20 children was identified in Tapatjuri and a combination of nutritional supplement tablets (calcium, magnesium and vitamin C through food) and safe water were provided to them along with a few adults. Biomarker like fluoride in urine, X-Ray of legs and elbows were done. For sustaining WSSO the users committee was activated, PHED staffs were motivated.

After 2 yrs of intervention, gradually reversing of Fluorosis in children became evident. Among adults reduction of fluoride in urine and relief from pain, gastroenteritis problems were also observed. The achievement has been highly praised in International Seminar on Fluorosis in Hyderabad (2016).



Meeting of the User's Committee in Dikharumukh Water Supply Scheme, Akashiganga, Tapatjuri

Of late- a joint plan of action between Assam PHED-WSSO and INREM (NE) had been taken up for setting 4 FMSCs in fluoride affected districts of Assam these are K.A., Nogaon, Hojai, Kamrup (Rural) districts and an office in WSSO, Bethkuchi, Guwahati campus has been established. Other states like Odissa, West Bengal, Rajasthan shown keen interest for evolving the FMSC of Assam model in their states (in Balasore district of Odissa it is already functional since last year) with help of experts from Assam and INREM.

ARSENIC

Arsenic is the most toxic natural element that can be found in rocks, soil, water, air, in plants and animals. Arsenic levels are higher in drinking water that originates from ground sources instead of water from surface sources. The International Agency for Research on Cancer (IARC), US Environmental Protection Agency (EPA) and the US National Toxicology Program (NTP) classifies inorganic arsenic compounds as “carcinogenic to humans”.

American Cancer Society studied individuals in parts of Southeast Asia and South America, with abnormal amounts of arsenic in their drinking water, have discovered higher dangers of Cancers of the Gall bladder, kidney, lung, skin, and, less reliably colon, prostate, and liver.

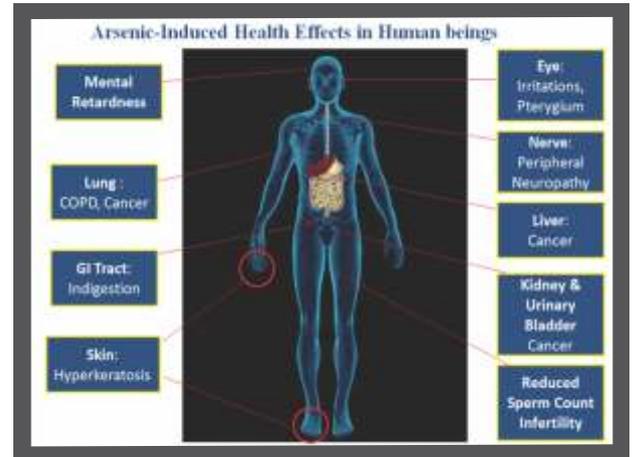
There are about 33000 new cancer patients every year in Assam. Arsenic concentration in ground water varies from 0- 900 ppb./ltr. Add to it pesticide from Tea gardens during last 150 yrs, uranium in Meghalaya, and hydrocarbon extraction for more than 150 yrs which contaminate both ground and surface water.

Source:

Excess arsenic in ground water of Assam was discovered by Er. A.B.Paul, in his private Lab. (the then-Chief

Engineer, PHED, Assam) in Dhubri and Karimganj districts. In Nov.2004 and sent samples to SOES, Jadavpur University, Kolkata for quantification in sophisticated labs and they validated the arsenic finding in 2004 January.

A JPoA (UNICEF, PHED, Assam, IIT-G) was formulated for checking all Public Gr.Water sources for drinking water in Assam 76000 water samples were checked Arsenic levels in groundwater of Assam were in the range of 0.05-0.996 mg/l. were found. Thereafter, through Departmental labs many water sources were checked .Till to day 20 districts out 33(as of 2016) districts were found high arsenic affected. 29.12 lacs people were living in arsenic areas.



There are 7 Hot Bed blocks (having one third or more water samples tested more than safe limit 10 ppb of arsenic requiring immediate special attention like health survey, ensuring sustaining safe water supply @ 55 litres per capita per day, medical intervention and Arsenic Mitigation Support Centre(AMSC) for convergence of all stakeholders (like PHED, Hlth, Education, Social Welfare Deptt. ,Civil Administration, UNICEF, NGOs etc.)

Blocks	Public Spot Surce Source tested	Contamination >10ppb	
Madhupur	929	735	79.11%
TihuBarama	321	216	67.28%
Sonai	282	108	38.29
Katigora	571	309	54.11%
Mancachar	645	216	33.48%
East DB	566	513	90.63%
Titabor	1032	968	93.79%

Table 1.1 depicts the seven hotbed blocks identified jointly by PHED Assam, UNICEF and IIT, Guwahati in their report on 'Arsenic monitoring and surveillance program in Assam'.

DOTING CANCER AND ARSENIC

Arsenic is carcinogenic. Due to lack of systematic health survey among the people in arsenic affected areas it is difficult to asserting health damage it has caused so far. A very disturbing scenario in Assam is that every year 33,000 new cancer cases are registered. Connecting the dots between arsenic in water and cancer cases especially Gall Bladder Cancer which is frighteningly becoming very common will point to excess arsenic along with in ground water.

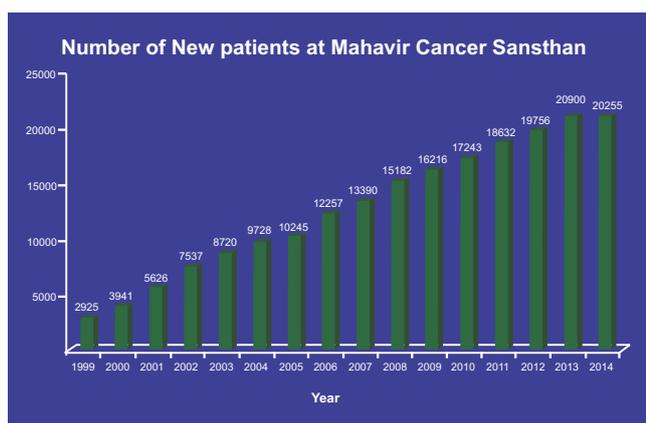
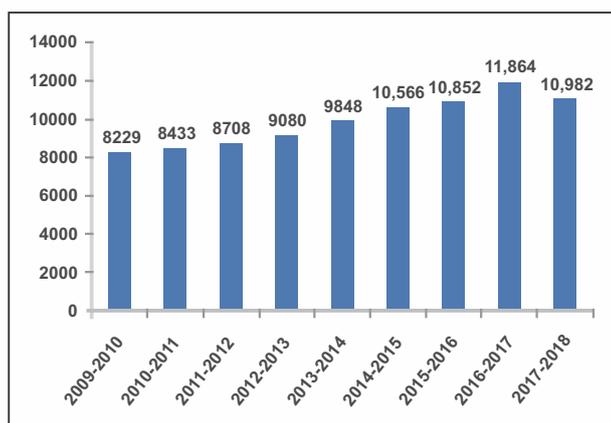
"---- Arsenic exposure appears to be linked to increase in cancer, heart disease and developmental problems. Out of an estimated 10 million arsenic exposed population in India, nearly 1 million are

showing various forms of clinical manifestations, including cancer". (Ref: Ashok Ghosh, Mahavir Cancer Sansthan and Research Centre Bihar, Patna, Chairman of Pollution Control Board, Bihar).

" ---higher levels of arsenic in regions like, Chile in South America, and in the Gangetic belt and Assam may connect the dots for the high incidence of Gall Bladder Cancer in these regions despite racial variation and wide geographical separation". (Ref: Dr. Manigreeva Krishnatreya, Department of Cancer and Epidemiology and Biostatistics, Dr.B.Borooah Cancer Institute, Guwahati).

The JPoA –between GoA and UNICEF (2005-2007) though had provision for training of Medical and Para medical staffs, setting of 15 referral centers, had not been executed . These need to be completed without further delay so that Health Department and medical people can diagnose the Arsenicosis diseases before it is too late and turns into cancer in various forms.

Sources of both Fluoride and Arsenic Contamination in Assam are geogenic implying that generation after generation will have to live with these two menaces (as we cannot eliminate the sources) and must know how to deal with the situation affectively, These two contaminants have a high cost on society and addressing the problem would require more attention from government agencies and society apart from individual awareness.



The above graph suggests the new patients affected from cancer in Assam (left side) and Patna (right side). Source: Dr. Manigreeva (BCCI, Assam) and Dr.A.Ghosh (MCS, Patna)

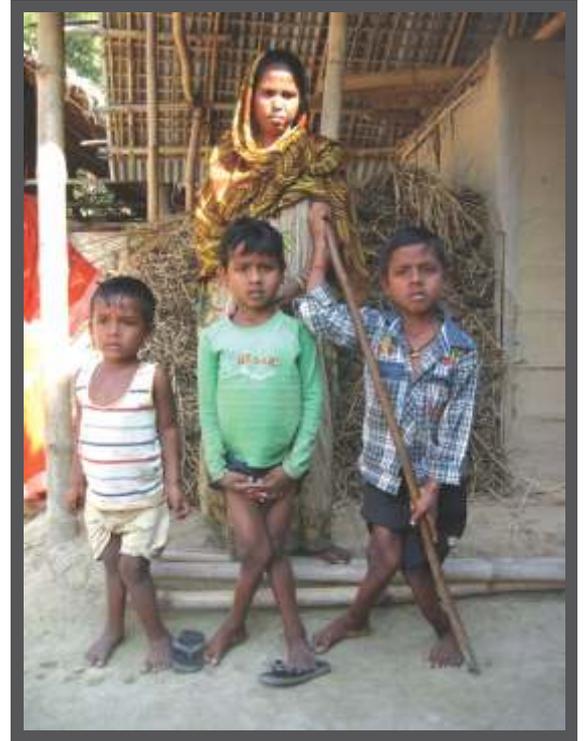
In Bihar, research has shown how the areas with ground water contaminated with excess arsenic correlates with the areas of cancer cases. It clearly indicates the close relation between arsenic and cancer.

Unlike fluorosis no health survey for arsenicosis has been done in Assam. Prof. Dr. Mamata Goswami, Cotton University and her team surveyed health status in excess arsenic area (consumig water from shallow HT) and found a few arsenicosis cases in Dhubri district.

In November 2017, a comprehensive health survey among the people in arsenic affected areas was conducted by INREM and SachiWATERS under guidance of Dr. A.K Ghosh (MCS, Patna) and K.K.Mazumder (K.P.C. medical college and Hospital Kolkata). Er.A.B.Paul 2006, the then UNICEF Consultant) found three arsenicosis patients in Nalbari district in Mulakuchi village.

CONCLUSION

Experts warn that the number of victims will rise if proper interventions to mitigate the problems of Fluoride and Arsenic contamination are not given priority. Providing safe water and nutrition through both pharmaceutical and natural, like Nutrition kitchen garden are very important intervention. But the main problem is efficiency of the safe water supply schemes. Simply completion of a pipe water scheme will not ensure its sustainability and availability. To derive reasonable benefit from water supply schemes other criteria for safe water like quality, quantity, punctuality and convenience are very important and must be ensured.



ACHIEVEMENTS

- ❖ Invented Water Purifier Packets for in house/shelter flood Water Treatment
- ❖ Pioneer of Tube Settler Research and application in India.
- ❖ Developed low cost asbestos fiber cement joints for CI Pipe.
- ❖ Invented movable package water treatment plant-Four in One.
- ❖ Invented disaster management unit (Water Treatment) (patented)
- ❖ Developed electrolytic process (patented) for chemical less.
- ❖ Invented movable Package effluent Treatment plant for Oil and Gas exploration (patented)
- ❖ Conceptualize and implemented Water Users Committee Concept for sustaining water supply schemes (more than 3000 committees are in Assam) for O&M of Rural Water Works.
- ❖ Discovered Fluorosis patient and Fluoride in groundwater in Assam.
- ❖ Discovered Arsenicosis patient and Arsenic in groundwater in Assam.
- ❖ Invented Electrolytic treatment for Oil and Gas industry Drilling Site.

Acknowledgement

The author would like to express his deep gratitude for the kind help and cooperation of the following personals towards the successful completion of the article.

1. Dr. Manigreva Krishnatreya, B.Baruah Cancer Institute.
2. Dr. A.K Ghosh, (Prof.MCS,Patna, Chairman Bihar PCB).
3. Mr. Dharani Saikia, District Coordinator, INREM-NE.
4. Ms.Amrita Baruah, Project Coordinator, INREM-NE.
5. Ms.Sarmila Kakoti, Field Coordinator, INREM-NE.

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FOOD SAFETY – IMPERATIVE FOR THE GOVERNMENT

Dr. Miftahul Islam Barbaruah

In recent times editorials of many newspapers in Assam have highlighted the need for sustained government crackdown on establishments violating food safety laws. There is a felt need for a more robust system for improved food safety monitoring of the market. The most important imperative for the government for this will be to increase the number of trained food safety officers with regulatory power. The officers should be empowered and given access to resources to do their assigned job professionally. Government should also encourage legally binding framework agreements between food safety Commissionerate of health department and other line departments like Agriculture, Horticulture, Animal Husbandry and Veterinary, Dairy Development, Fisheries, Food processing, Public Health Engineering, Environment and Forest etc. This is required to integrate efforts and ensure food safety across food chain (farm to fork). Being 'framework agreement', there will be scope of continuous engagement amongst the parties to resolve field level differences. Such agreement should broadly specify roles, engagement of additional experts, scope of sharing of resources, scope of joint field / laboratory investigations, awareness drive and enforcement of regulations. Evaluation of health department and each of the related line departments should be done to list required infrastructure, human resource capability and adequacy of regulatory provisions. Following the 'One Health' approach, the framework agreements can be further extended to include critical areas at the interface of human, animal and environment. As far as strong monitoring is concerned, government must take a people centric, risk-based or targeted approach. People centric approach essentially means taking measures to ensure livelihood of small producers, processors and traders who may find it difficult to attain the required standards. For risk based or targeted approach, effort should be made for mandatory bar / QR code-based premises registration of all related production, processing and trade facilities under FSSAI. The registration system should be designed in such a way that it permits GIS mapping, real time data collection and risk analysis thereof. The code-based premises registration system will make physical inspection by food safety officers and monitoring of production, processing facilities by officials of line departments more robust and accountable.

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ASPIRATIONAL DISTRICTS IN ASSAM

K K Nath

“We are living in an era of immense possibilities which in turn create opportunities. We need to identify existing aspirations in the districts and channelize them to create a ripple effect for transforming Aspirational Districts. The development of every village of these 115 districts is vital to our commitment to social justice.”

- Shri Narendra Modi, Hon'ble Prime Minister, India

India has been on a high growth trajectory for about three decades now. Within a generation, the lives of its multitude of citizenry changed for the better. This achievement within a democratic framework is universally applauded. And yet, the country's spectacular growth story is incomplete. India fares rather modestly on the Human Development Index (HDI) released annually by UNDP to rank nations in terms of life expectancy, average income and years of schooling of its citizens. India is placed at 133 among 188 nations in terms of HDI in 2016. In a vibrant democracy like India it is not acceptable to the common people.

The Prime Minister of India, Shri Narendra Modi has encapsulated the motto of his Government: SabkaSaath, Sabka Vikas (Development for All). It is opined by eminent experts that in an era where economic inequalities are rising in many parts of the world, India can emerge as a model of good governance, if it ensures that its growth process remains both inclusive and sustainable. However, in a mixed economy like India's, there is no guarantee that, without intervention, the growth process and results of development would be shared by all.

Economists have observed that development throughout the country is not uniform and there are widespread variations. For example, the development is still a far distant phenomenon in some pockets of the country, due to which the overall development of the country is suffering. Otherwise, there are many pockets in the country where the development is as comparable as western countries of the world. There may be numerous reasons and institutions to be blamed for such uneven development of the country, but for a holistic development of the backward pockets the 'aspirational districts programme' is the solution at hand.

The concept of backward districts or aspirational districts has cropped up in the literature of developmental economics recently. Anchored in NITI Aayog, Govt of India this programme intends to turn development into a mass movement, facilitated by Government at different levels namely Centre, State and District.

TRANSFORMATION OF ASPIRATIONAL DISTRICTS PROGRAMME

The “Transformation of Aspirational Districts” programme was launched in January 2018 by Government of India. The programme covers 117 districts of 35 states of India. The core aspects that frame the

structure of the programme are- Convergence (of Central and State schemes), Collaborations (of Central, State-level 'Prabhari' Officers & District Collectors), and Competition among districts.

The outline of programme architecture is:

- ★ The districts are to be called 'Aspirational Districts.'
- ★ District officials should draw up a vision and Action Plan for 2018-22, through public participation, to ensure that their district is a full-fledged partner in creating a New India by 2022.
- ★ Development should become a byword, a mass movement in the districts.
- ★ People should fully recognize their current status, their strengths and weaknesses. They should aspire to become the best district in the State and thereafter, to grow to feature among the better-performing districts in key performance indicators across the country.

Of these 117 districts (2 added afterwards), 35 districts have been identified by the Ministry of Home Affairs on the basis of the density of violence. Central Ministries of Government of India have selected 55 districts on the basis of severe deficiency or sensitivity in the district. Remaining 25 districts, spread across 10 States, have been picked by NITI Aayog. At the launching of the programme the Government has collected baseline statistics on 49 indicators (on 81 data points) for each district. The data provided an initial benchmark for the districts and over the coming months/years, they will help to assess outcomes and in monitoring the progress.

THEMATIC AREAS AND KEY PERFORMANCE INDICATORS

Objective decision making with the use of good quality of data is the mantra of the development now-a-days. As Prof. Peter Drucker said, "if you cannot measure it, you cannot improve it". It is infact realized that most of our programmes/plans fail because of subjective decision making based on incomplete information. Considering good information as a key area of development, NITI Aayog has finalized 49 Key Performance Indicators (KPIs) in consultation with stakeholders. They are based on five themes: (i) Health and Nutrition, (ii) Education, (iii) Agriculture and Water Resources, (iv) Financial Inclusions and Skill Development, and (v) Basic Infrastructure. These themes are weighted and linked with indicators as below:

Thematic Area	Weightage	No. of Indicators
Health and Nutrition	30%	13
Education	30%	08
Agriculture and Allied	20%	10
Financial Inclusion and Skill Development	10%	11
Basic Infrastructure	10%	07
Composite Index	100%	49

Under 49 KPIs more than 85 data points are used to measure the backwardness, compare or rank them and monitor their performance in every month through a specially designed real-time monitoring mechanism. Initially the districts were identified using 49 KPIs and 81 data points. The Delta rankings are also incorporated in the system to see the performance of the districts.

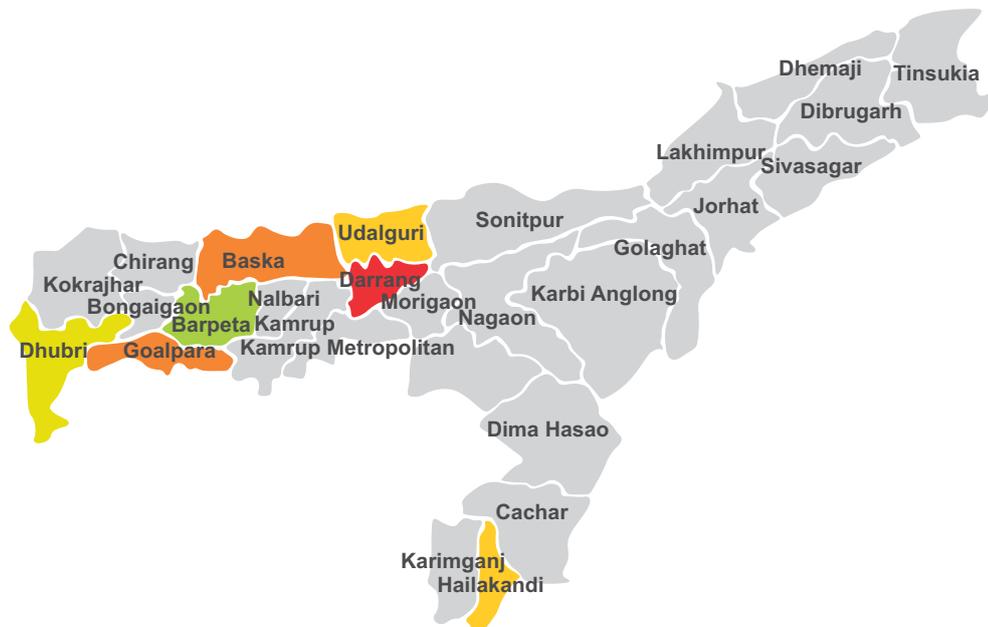
DISTRICT VISION DOCUMENTS AND ACTION PLAN

District Planning is a form of perspective planning that involves local participation at the district level in implementation and monitoring of central, state and district level schemes. It is a critical instrument for directing resources towards district and areas that need special attention including border areas, char areas, areas affected by insurgency/LWE, hilly areas, areas with high forest cover, and areas with high tribal/ST/SC/tea tribe population. This involves transparency in financial resource mapping, mobilization and allocation and more importantly the convergence of schemes for a systematic and comprehensive development.

The Deputy Commissioners (DCs) of the aspirational districts are the change agents. They are required to prepare a Vision Document 2022 and Action Plan of district concerned. On the basis of identified thematic areas and available baseline information of district, best district of the state and country average a district vision document required to be prepared prioritizing the areas of special attention required. Also, action plan to identify the sectoral needs with strategies for long term, medium term and short term.

ASPIRATIONAL DISTRICTS IN ASSAM

There are 7 (seven) Aspirational districts in Assam and they are Baksa, Barpeta, Darrang, Dhubri, Goalpara, Hailakandi and Udalguri. The ranking of these aspirational districts in all India level as on original ranking, at the time of baseline ranking in March and as on October in overall and KPIs are given at Table-1.



At Central level- NITI Aayog (a nodal agency), Ministries including M/o DONER, Central Prabhari Officers (CPOs) are appointed. At state level Transformation & Development Department is the nodal department

and a high-level committee is constituted with the Chief Secretary as the Chairperson to look into various aspects of these districts. Also, State Nodal Officer, State Prabhari Officers and Departmental nodal officers are nominated for each district. The CPO/SPO/Nodal Officers have been appointed to play an impotent role in coordinating and monitoring special activities relating to the aspirational districts with necessary guidance to the District Authority. DCs of the Aspirational Districts are the change agents. DCs have been preparing the district action plan in consultation with nodal Department and other Departments concerned identifying the short, medium and long-term action plans specific to target areas for all the aspirational districts of Assam. Government of India has partnered with some NGOs/Organizations to help districts in carrying out various activities. Some of them are Piramal Foundation- for Education & Health sector; Bill & Melinda Gates Foundation and Microsave- for Financial Inclusion; ITC (Social Investment)- for Agriculture & Water Conservation; TATA Trust and ID Insight- for Third party evaluation.

ACTIVITIES UNDER GRAM SWARAJ ABHIYAN

At the initiative of Hon'ble Prime Minister on the occasion of Ambedkar Jayanti, a "Gram Swaraj Abhiyan (GSA)" was organised starting from 14th April to 5th May 2018. The campaign undertaken under the name of "SabkaSath, Sabka Gaon, Sabka Vikas", was to promote social harmony, spread awareness about pro-poor initiatives of government, reach out to poor households to enrol them as also to obtain their feedback on various welfare programmes. As a special endeavour during the GSA, saturation (progress of more than 90%) of eligible households/persons was made under seven flagship pro-poor programmes about 21,058 villages throughout India.

GSA programme was extended by Union Government to about 45000 villages with more than 1000 population in 117 aspirational districts in the country. The extended GSA (EGSA) programme aimed to achieve hundred percent saturation in these districts under the 7 flagship programmes by 15th of August, 2018. The seven flagship programmes are- Prime Minister Ujjwala Yojana, Prime Minister Sahaj Bijli Har Ghar Yojana, UJALA Scheme, Prime Minister Jan-Dhan Yojana, Prime Minister Jeevan-Jyoti Bima Yojana and Prime Minister Suraksha Bima Yojana. Later on Poshan Abhiyan was also included as a programme under EGSA. In Assam the programmes covered 2728 villages in seven aspirational districts and as on 15th August 2018 hundred percent saturation were achieved in five programmes except Prime Minister Sahaj Bijli Har Ghar Yojana and UJALA Scheme. This was possible because of regular monitoring the activities by Hon'ble Chief Minister, Chief Secretary, nodal Departments, SPOs, Departmental Heads/ Nodal Officers and wholehearted efforts by DCs and his/her team at state level. And regular monitoring by NITI Aayog, Ministry's concerned, M/o DONER, CPOs at Central level.

PROGRESS OF DISTRICTS DURING LAST FIVE MONTHS

Although it is not proper to judge the success of the programme (targeted 2022) on the basis of the activities taken up by the district authorities in last five months i.e. March to August in 2018 yet the online monitoring portal gives the picture of the aspirational districts as below to create a competitive environment among the districts. The position of the districts at three different time points are given in the Table below.

Ranking of Aspirational Districts of Assam in all India ranking

District/ original ranking	Baseline Delta Ranking, as on March 2018	Delta Ranking as on October, 2018 (based on August data)
Baksa (66)	Overall- 51 [26-HnN, 79- Edn, 91- AWR, 25- FI, 91-SD, 63-BI]	Overall- 79 [88- HnN, 85- Edn, 109- AWR, 51- FI, 1-SD, 64-BI]
Dhubri (68)	Overall- 88 [86-HnN, 56- Edn, 66- AWR, 51- FI, 38-SD, 67-BI]	Overall- 61 [107- HnN, 85- Edn, 54- AWR, 44- FI, 1-SD, 47-BI]
Barpeta (73)	Overall- 49 [38-HnN, 30- Edn, 66- AWR, 73- FI, 18-SD, 91-BI]	Overall- 58 [74- HnN, 22- Edn, 101- AWR, 10- FI, 1-SD, 88-BI]
Hailakandi (76)	Overall- 70 [89-HnN, 75- Edn, 8- AWR, 70- FI, 90-SD, 57-BI]	Overall- 60 [71- HnN, 104- Edn, 112- AWR, 60- FI, 1-SD, 45-BI]
Udalguri (79)	Overall- 39 [52-HnN, 25- Edn, 101- AWR, 31- FI, 60-SD, 58-BI]	Overall- 82 [26- HnN, 43- Edn, 10- AWR, 29- FI, 1-SD, 76-BI]
Goalpara (84)	Overall- 68 [88-HnN, 59- Edn, 66- AWR, 82- FI, 92-SD, 17-BI]	Overall- 49 [50- HnN, 85- Edn, 45- AWR, 51- FI, 1-SD, 32-BI]
Darrang (87)	Overall- 73 [48-HnN, 66- Edn, 86- AWR, 76- FI, 70-SD, 72-BI]	Overall- 102 [87- HnN, 76- Edn, 85- AWR, 8- FI, 1-SD, 98-BI]

HnN- Health & Nutrition, Edn- Education, AWR- Agriculture & Water Resources, FI- Financial Inclusions, SD- Skill Development, BI- Basic Infrastructure

It is seen that due to various interventions during last 5 months the overall ranking of the districts are improving for Dhubri, Hailakandi and Goalpara. However, for Baksa, Barpeta, Udalguri and Darrang it is reverse.

The success of the GSA/EGSA is a real push to the machinery involved in developmental activities in the districts whether it is the DC and his team or Department concerned and other higher decision-making authorities in the state. The success of the programme also worked as an acid test for plans and programmes aims in aspirational districts for its development. Although as on date no separate fund is allotted by the State Government for activities, yet the Departments are committed for development of the districts by way of better management and injecting more resources through already running schemes. Corporate Social Responsibility fund of corporate houses or PSUs, district mineral funds, Compensatory Afforestation Fund Management and Planning Authority (CAMPA) may work as an additional resource for taking up much needed work in districts.

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ORGANIC AGRICULTURE IN INDIA : CURRENT SCENARIO AND FUTURE PROSPECTS

Upamanyu Baruah

Organic farming in India was initiated in 1900 by a British agronomist named Albert Howard, in North India. The traditional farming system was characterized mainly by small and marginal farmers producing food and basic animal products for their families and local village communities. After this qualification was drastically changed during the green revolution period but



An Organic Rice Field in East Sikkim

organic farming is seen today as the best option to attain sustainability in the crop production. Therefore organic agriculture seems to be one of the options for sustainability. Organic agricultural is a holistic production and enhances ago-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It lay emphasis on the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted system. India is endowed with various types of naturally viable organic form of nutrients across different regions of the country which

will be helpful in organic cultivation of crops. India is classified into 21 agro-ecological zones based on temperature, soil conditions, and rainfall. Hence, each zone has a comparative advantage for the production of different products, e.g. tea, spices and fruits in the north eastern region; spices and coffee in the southern region; rice, wheat and fruits in the northern region; cotton and herbs in central and western region. Products with potential in the domestic market are fruits, vegetables, rice and wheat. Products with potential in the export market are tea, rice, fruits, vegetables, cotton, herbs and spices. Further, India has time tested indigenous farming systems and use of indigenous technical knowledge in agriculture and allied sector.

Organic Food	Sales (Tonnes)
Tea	3000
Coffee	550
Spices	700
Rice	2500
Wheat	1150
Pulses	300
Oil seeds	100
Fruits and Vegetables	1800
Cashew Nut	375
Cotton	1200
Herbal Products	250
Total	11295

Table 1.1: Export performance of organic food products from India.

The National Program for Organic Production (NPOP) was implemented by Agricultural and Processed food products Export Development Authority (APEDA) in 2001. The standards made by NPOP have been developed under guidelines of international organic production standards such as CODEX and International Federation of Organic Agricultural Movements (IFOAM). The NPOP standards for production and accreditation system have been recognized by European commission and Switzerland as equivalent to their country standards. Similarly, United States Department of Agriculture (USDA) has recognized NPOP conformity assessment procedures of accreditation equivalent to that of US. With these recognizes, Indian organic products duly certified by the accredited certification bodies of Indian are accepted by the importing countries. Europe and North America are the major global markets for organic food products. The demand for organic food products is growing in these regions due to high purchasing power and huge presence of health conscious consumers. The organic food consumption in India is very low as compared to western markets. Organic food market in India is highly unorganized and fragmented,

which offers immense growth opportunities for domestic as well as international players. India mainly exports organic processed food products, organic rice, beverages and other cereals and millets to United States of America, Canada, Europe, and South East Asian countries. India is 10th leading country in the world in terms of organic certification. There are 6.5 lakh producers and 362 exporters who are associated with organic production and exports in India.

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Country	Percentage of area under organic farming
USA	0.23
UK	4.22
Germany	4.1
Argentina	1.7
Austria	8.4
Australia	2.2
Japan	0.1
Switzerland	7.94
South Africa	0.05
Italy	3.7
India	0.03
Pakistan	0.08
Srilanka	0.05

Table1.3: Percentage of area under organic farming in the total cultivated area of different countries of the world.

SIGNIFICANCE IN ORGANIC FARMING IN NORTH EAST REGION

Farmers of the north east region had been practicing organic cultivation since time immemorial. Moreover, the green revolution of the sixties had remained alien to the farmers of this region. Therefore, the farmers of this region continue their traditional farming without use of any synthetic inputs. Because of rich biodiversity, pest and disease are not a severe threat for the crop. The soil is also fertile and rich in organic matter content. These factors may be the reason for going organic and rely on it.



Organic Garden in the backyard of a village household, Dhanshreemukh, Kaziranga

Shifting cultivation is the most common practice where the jungles are slashed and burned for cultivation. Making of terraces is also prevalent in some areas where the land is used permanently. No inputs for crop improvement is been incorporated. The crop is allowed to grow from the available nutrients present in the soil. The crop is rain fed and the same land is used for another one or two more years for cultivation and the farmers shifts to another new location when the



Farmers at work in an organic farm

affecting the farmers.

Modern scientific method of practice needs to be encouraged which emphasize on the use of inputs like bio-fertilizers and bio-agents to enhance fertility of soil, crop protection and thereby quality produce. This will help the farmers to settle and cultivate in the same field year after year. Net cultivated land is also likely to increase by cultivating the land left for fallow.

North east region with the record of practicing organic method of cultivation traditionally has the potential to market organic produce. The region also has enough land for area expansion under organic farming. But the products need to get certified in order to market the produce as organic. Once the produce gets certified from a registered organic certifying agency, the product can be sold out at premium price. This venture will not only help farmers in getting premium price of their produce, it will also generate employment opportunities indirectly by creation of market establishment of processing units etc.



nutrients gets exhausted from the soil. After five years or depending upon the rotation cycle, the farmers return to the same field for cultivation when the nutrients gets renewed naturally. Because of this the soil is free from any synthetic residues. But this demands a lot of labour especially during the initial clearing operation. Besides, this practice has negative impact on the environment. Even though, the food is produced organically, this practice is not encouraging. Therefore, there is an urgent need to prevent this practice without

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Science and technology revolutionize our lives,
but memory, tradition and myth frame our response.

-Arthur M. Schlesinger

SCIENCE AND TECHNOLOGY

GIS AND REMOTE SENSING



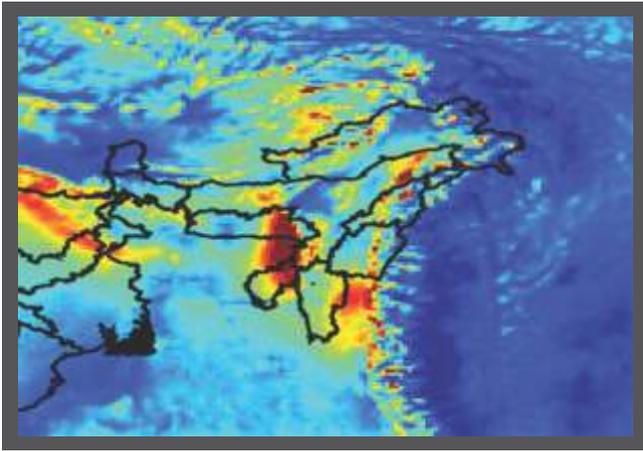
GEOPORTAL ON NORTH EASTERN DISTRICT RESOURCES PLAN (NEDRP) TO SUPPORT EFFECTIVE GOVERNANCE APPLICATIONS

Dr. Dibyajyoti Chutia
P L N Raju

North Eastern District Resources Plan (NEDRP) is one of the unique activities of North Eastern Space Applications Centre (NESAC) towards strengthening the Governance policy through effective mechanism of geospatial framework. The project was sponsored by the North Eastern Council (NEC), MoDONER Government of India, Shillong and executed in collaboration with the State Remote Sensing Applications Centre (SRSACs) of NE region. NEDRP was initiated with 36 selected districts of NE Region and later on extended to remaining districts (65 districts) of the region. Each of the districts comprised of around 30-35 geospatial layers categorized into six major modules- i) Administrative or base data, ii) Infrastructure, iii) Land and Water resources, iv) Planning inputs, v) Terrain module and Disaster management. In addition, NEDRP dashboard is populated with the Governance Applications on Election, Census, Project Monitoring, Geo-Tourism, Village Resources Information etc. The Geoportal is hosted at www.nedrp.gov.in using 1Gbps NKN network. The major objectives of the project are

- ★ To identify the needs of geospatial inputs for district administration and concerned line departments towards preparation of DPR, master plan document etc. through proper awareness programme and demonstration of geospatial applications
- ★ To generate need based location specific geospatial inputs for land and water resources action plans
- ★ To develop a single window geoportal to integrate geospatial inputs for various action plans with necessary geoservices using open sources GIS software packages

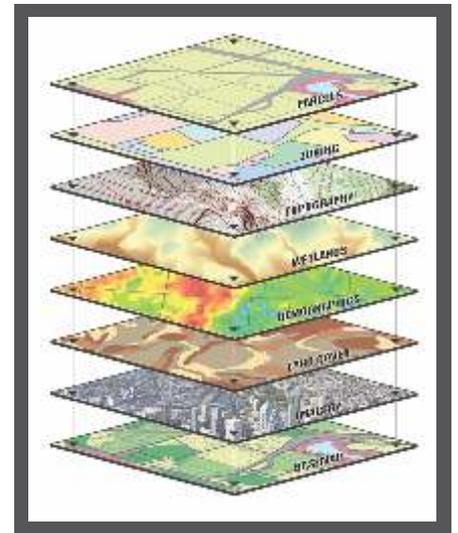
The beta version of NEDRP with 36 districts database was released during 16th Foundation day of NESAC celebrated on 5th September, 2016. NEDRP data services have been effectively utilized by various Line Departments for preparing Disaster management support plan, Forest Resources Management plan, DPRs for Integrated Watershed management Programme (IWMP)/Meghalaya Basin Development Authority (MBDA) and Roads/Pradhan Mantri Gram Sadak Yojana (PMGSY), inputs for Election Management, inputs for development of MoSQuIT an integrated Surveillance System for Malaria, etc. Various investigation agencies including Special Investigation Branch (SIB), Police etc., Line Departments like Agriculture & Horticulture, Water Resources, PWD etc., research institutes like Indian Council of Agriculture Research (ICAR), Indian Institute of Technology (IIT), Guwahti, University have been utilizing NEDRP portal for their planning activities. NEDRP has been found one of the lead platforms of Department of Space in NE Region to showcase the maximum utilization of geospatial data and services derived from the Indian Remote Sensing Satellite. It is now becoming decision making platform for the Governance applications in many Government Departments and agencies for their planning and



monitoring activity. NEDRP dashboard is populated with the Governance Applications on Election, Census, Project Monitoring, Geo-Tourism, Village Resources Information etc. A number of Spatial Decision Support Systems (SDSSs) like land resources planning based land and climatic condition, suitable sites for check dam construction etc. are part of the NEDRP system. Around 40+ NEDRP standalone versions were installed in the offices of District Administrations and Line Departments where there was problem with high quality internet

bandwidth. NEDRP is now becoming decision making platform for the Governance applications in many Government Departments and agencies for their planning and monitoring activity.

Hon'ble Union Minister for Electronics & Information Technology and Law & Justice, Government of India launched the updated version of North Eastern District Resources Plan (NEDRP) GeoPortal on 11 August, 2018 in august presence of the Hon'ble Chief Ministers and IT Ministers of North Eastern States. The launching of the NEDRP portal was taken place during the Release Programme of the Vision document for Digital North East 2022 in Guwahati at the initiative of Ministry of DoNER, Government of India. NEDRP was also previously awarded with the most prestigious National Awards for e-Governance for the year 2017-18 for outstanding contribution using Spatial Technology and GIS in e-Governance by the Department of Administrative Reforms & Public Grievances (DARPG), Government of India. The award was received from Ministry of Development of North Eastern Region, Prime Minister Office, Personnel, Public Grievances and Pensions, Department of Atomic Energy and Department of Space during National Conference on e-Governance held in Hyderabad on 27th February, 2018.



Facilities at NESAC

The Centre has got state-of-the-art servers and workstations for geospatial analysis and digital image processing, very high-end systems for photogrammetry, hydrological modeling, etc, GIS and GNSS equipments, Echo sounder, high quality output devices, etc. The Centre has rich collection of satellite data from Indian and foreign remote sensing satellites, covering entire NER, reference maps and other ancillary data of the region. NESAC is well equipped to process data from wide varieties of platforms to enable digital image processing, geospatial analysis and location based services. Capabilities and expertise do exist from both COTS and open source software for data analysis. The Centre also has in its possession the Digital Plant Canopy Analyzer to measure leaf area index, Spectroradiometer to measure spectral reflectance at close narrower interval for creation of spectral library.



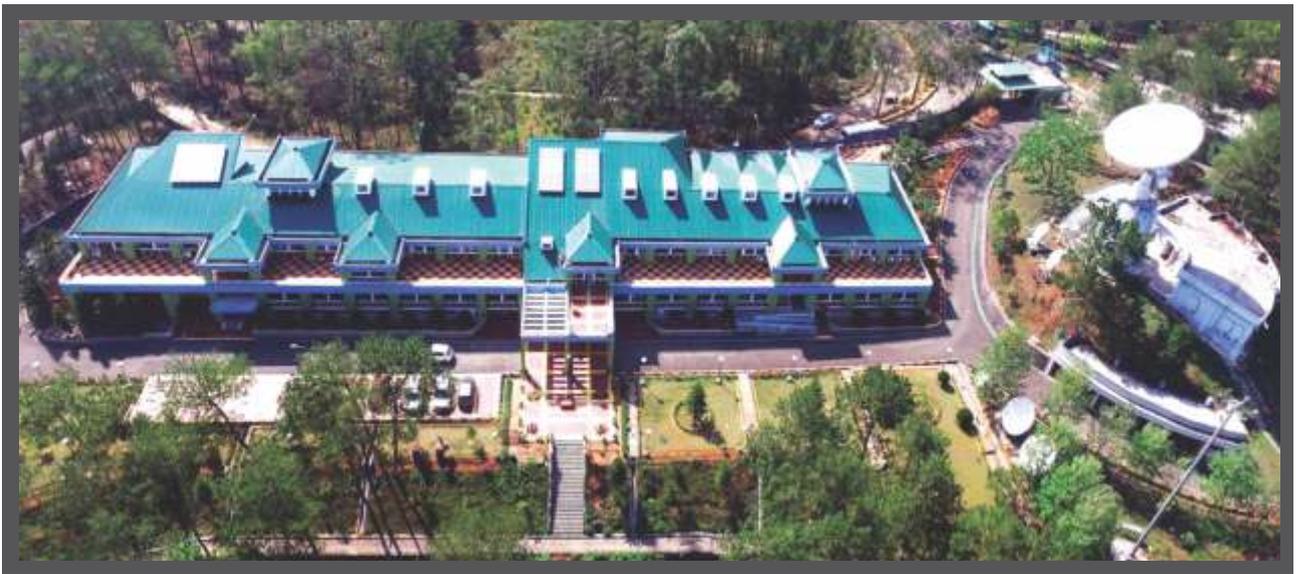
Home page of NEDRP (www.nedrp.gov.in)



GeoExplorer for Land Resources Planning



Overall achievements and success of NEDRP towards Governance activity



NESAC is located at Umiam (Barapani) about 20 km from Shillong, Meghalaya State. The residential complex including guest house cum training hostel are located nearby the office complex. The centre is well equipped with state of the art facilities in the areas of Remote Sensing (₹) and Geographical Information System (GIS), Disaster Management, Satellite communication and Space & Atmospheric Science Research.

e-ATLAS successfully utilized in Mizoram Legislative Assembly Election

Office of the Chief Electoral Officer (CEO), Mizoram Election Department has successfully utilized the Election e-ATLAS for effective planning and monitoring of the Mizoram Legislative Assembly Election held on 28 November, 2018 to capture the live feeds of polling updates for live visualization (heat map etc.) and turn out. The Election e-ATLAS is one of the unique initiatives of NESAC towards Governance Services in collaboration with Mizoram Remote Sensing Application Centre (MIRSAC). Mizoram Legislative Assembly is comprised of 40 Assembly Constituencies with 1179 Polling Stations and 770239 voters as per 2018 records. The total turnout of the last Mizoram Legislative Assembly Election held on 28th November, 2018 is 76.84% till 5.30pm

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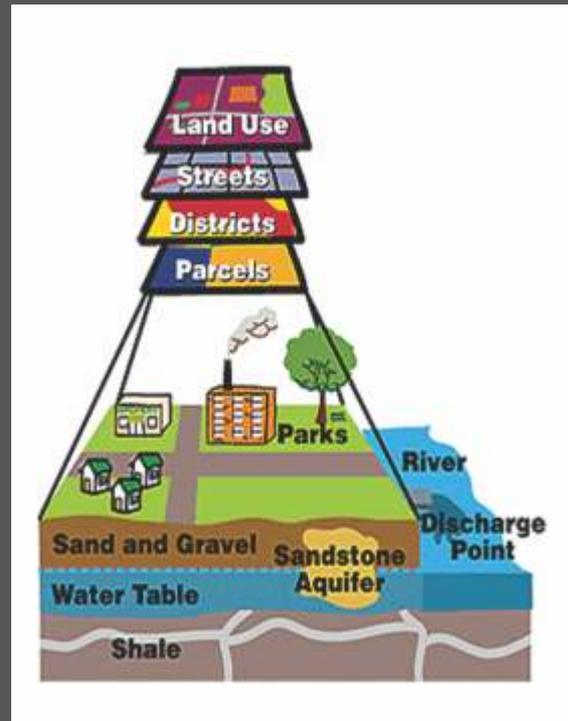
NEED OF A STATE LEVEL GIS FOR DEVELOPMENT PLANNING IN ASSAM

Monuj Gohain

WHY GIS IS THE KEY WORD ?

Geographic Information System (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data. GIS applications are tools that allow users to create interactive queries, analyze spatial information, edit data in maps, and present the results of all these operations. The strength of GIS is its ability to create distinct map layers for different types of information, and then to combine them in a way as desired or needed. Each layer consists of geographic, or spatial, data linked to descriptive, or tabular, information.

In these days there exists variety of types of geospatial technologies including Remote Sensing (imagery and data collected from space- or airborne camera and sensor platforms), GNSS/Global Positioning System (GPS) (a network of satellites which can give precise coordinate locations to its users with proper receiving equipment, Internet Mapping Technologies like Google Map/Earth, OpenStreetMap, WikiMapia, Openlayers, etc changing the way geospatial data is viewed and shared.

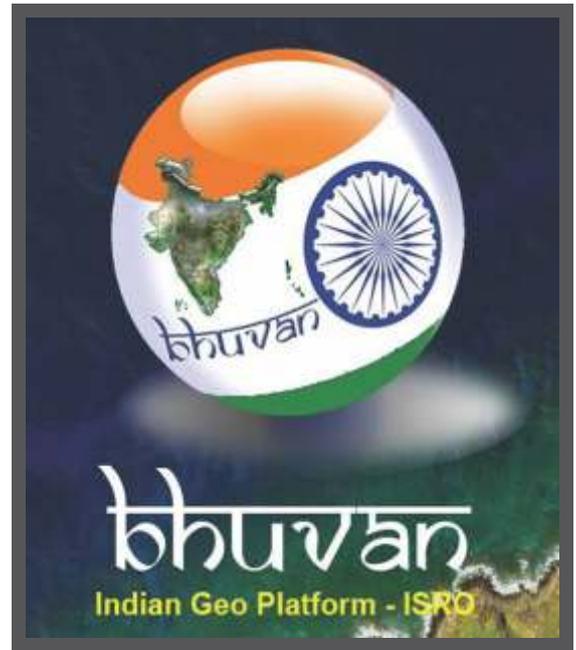


NEED OF GIS AND REMOTE SENSING AS A TOOL FOR ECONOMIC PLANNING

Village or Town is the smallest planning unit where different events occur, activities/schemes selected for overall development and economic upliftment of its population. Selection of a good number of schemes under multiple projects in a town or village or gaon panchayat or in a development block under different line departments within a district is a matter of concern due to non-availability proper information.

This creates unbalanced development for lack of rationalization of schemes' location with respect to its population, approval of different sectoral schemes with improper verification and justification due to non-availability of overall information within a district. As a result, confusion and doubts prevail in plan preparation process. Application of GIS with integrated MIS has to play a vital role in streamlining the entire planning and monitoring process.

Further, new-age technologies like Internet of Things (IoT), artificial intelligence, cloud, wireless & broadband and big data are empowering the assimilation of spatial information into existing business processes and systems. Analyzing data using a GIS is becoming a critical core strategy for successful decision making. This trend is being driven by many factors, like reduced technology costs, free mobile apps, social media platforms, cloud computing and effective ways of managing high volumes of data to develop a State Level GIS. In a recent conversation with Jack Dangermond, President, ESRI Inc. expressed that the challenges that India is facing today demand a GIS based platform for effective result oriented planning and real time monitoring with decision support system. GIS is all about an integration mechanism which helps to integrate data and technologies. So it is high time our planners understand the need of the hour and work out a development strategy based on latest technologies. Thus a State Level GIS has become indispensable.

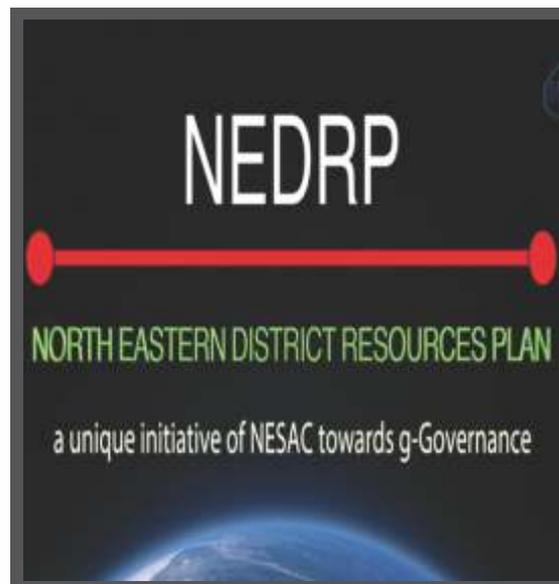


STATUS OF GIS APPLICATIONS IN INDIA



India has for long been using remote sensing and GIS and other geospatial technologies in some priority areas like defense, scientific research, agriculture and such other sectors and ISRO has been playing a significant role in creating its foot print for the country among world leaders in space research. Although breakthrough has been made at the national level, the states have adopted space technology as a means to correct their imbalances in socio economic planning only recently and some of the states have made tremendous progress in employing the available technology to the best possible uses. However, the renewed focus on big-ticket infrastructure projects brings the focus back on updated maps and spatial technologies. With flagship Digital India Initiative, the Department of Space (DoS) was assigned with the task of extending the geospatial technology across different ministries. DoS came up with 160 such projects stretched across 58 Departments, viz., earth observation and geospatial (97), communication and navigation (30), technology development (10), meteorology (6), asset mapping and mobile applications (8), and others (9). Some of these projects will also render support to flagship programs of the Government of India (GoI), viz. AMRUT, Smart City, housing for all, Clean Ganga, Prime Minister Krishi Sinchayee Yojana (PMKSY), etc.

There are more than 68 Web-based GIS Portals in India under independent departments, Govt. of India (4), Ministries, Govt. of India (7), State Portals (40) and Commercial/NGOs (17) developed on different aspects, out of which Bhuvan, India-WRIS, Bhuvan Panchayat and MOSDAC are most well-known portals across the country. K-GIS, developed by Karnataka State Remote Sensing Applications Center (KRSRAC), is one of the first full-fledged State Spatial Data Infrastructures (with multi department data, metadata, application, documents, public and dept specific dashboards etc) in the country. BISAG in Gujarat has prepared a GIS/₹ based planning atlas for planning and monitoring purposes.



NEDRP (North Eastern District Resources Plan) GeoPortal developed by North East Space Application Centre (NESAC), Shillong released, on 11 August, 2018, as a part of the programme on releasing vision document for Digital North East 2022 under the initiative of Ministry of DoNER, Government of India. The vision document emphasizes leveraging digital technologies to transform lives of people of the North Eastern States and enhance the ease of living. NEDRP GeoPortal contains a total of 101 districts covering entire North East India as per the directive of North Eastern Council and the demands from the various line departments to showcase the capability of space technology applications and tools for district level planning.

The key elements/pillars of a State level GIS includes activities like GIS infrastructure, GIS assets, GIS portal and applications, GIS capacity building, a high end solution architecture with Single Gateway Access System supported by GIS policies and institutional arrangements.

KEY ELEMENTS OF STATE LEVEL GIS

1 GIS Infrastructure

GIS Infrastructure can be described as a “GIS Platform” and the computing and networking infrastructure for the state, designed to integrate in alignment with the National level GIS infrastructure. The platform could be developed, hosted in state data centre. As part of the GIS infrastructure, it may be planned to position GIS dashboards for key dignitaries such as Chief Minister's office, Chief Secretary's office for high-level reviews/meetings etc and to promote the GIS usage to other key dignitary-levels. GIS infrastructure would be a bank of



specialized computing facilities, necessary GIS engine and other software, a high-capacity data centre, a comprehensive user portal and an administration/management portal with appropriate security and risk management solutions.

2 GIS Asset

As of now, Assam Remote sensing and Space Application Centre (ARSAC) under Science & Technology Department of the state Government has GIS Assets for the whole state based on SOI map foundation, generated under Natural Resources Census (NRC) and Space Based Information Support for Decentralized Planning (SISDP) to prepare layers for land use/land cover, land degradation, wetlands, vegetation, snow and glaciers and geomorphology, etc. at 1:50000 and 1:10000 scale, respectively. It should be ensured that GIS assets are ready to use in GIS consisting of district, taluk, GP boundaries linked to Census names for State level GIS. It is important to ingest available and usable digital maps of all other line departments and sourcing additional layers from all other state/central agencies (like SOI, NESAC, NBSSLUP, CWC, CGWB, TCPO, Census, state departments etc), any private agencies and any others layers that have already generated the map/tabular data under government funded projects across the state to the main GIS Asset. It will have to work out the methods, procedures, Quality Analysis for ingesting those datasets into GIS asset and could involve the private sector to undertake these voluminous tasks, if necessary. ARSAC should take up the task to initiate surveying/mapping of unavailable dataset and ensure regular updation of the same at regular interval with the concerned departments.

3 GIS Portal and Applications

State Level GIS will provide a single gateway access and a service platform to different line departments, target groups in private enterprises and also for citizens. Therefore, establishment of a State GIS Portal as a gateway for accessing all GIS services is vital through which all the GIS assets and GIS application services would be accessed with detailed modules of metadata search, to be accessed by different line departments and other users based on sign-on and log-on procedures with multiple authentication and verification process.

Developing and enabling a series of specialized GIS applications using GIS assets is an integral part for governance by different line departments. A very comprehensive assessment of GIS decision support requirements for line departments and other users has to be done through a consultation process. Based on the consultations possible applications may be developed for prioritized line departments i.e. Education, Public Works, Panchayat and Rural Development, Health & Family Welfare, Transformation and Development, Public Health Engineering, Agriculture, Environment & Forest, Social Welfare, Science & Technology, Industries & Commerce, Fisheries, Water Resources, Animal Husbandry & Veterinary, Handloom Textile & Sericulture, Soil Conservation, Urban Development, Transport, etc.

4 GIS Capacity Building

Capacity building require a dedicated team charged with technical savvy to help in developing the basic building blocks (metadata, clearing house, standards, framework, etc), building an efficient capacity building module, high level political and policy support with funding, rigorous campaign to develop

interest among departments on useful applications so that development is worthwhile. Hence, a series of trainings in geo-spatial technologies will be required at different levels. State level GIS will have to ensure that benefits of GIS technologies are easily accessible at an affordable price to diverse users in governance, enterprises and citizens.

5 Single Gateway Access System

With simple to use Graphical User Interface, platform may be implemented as a Single Gateway Access to facilitate and coordinate for creating, accessing and sharing GIS content & web maps, web services, spatial data, tools, host dashboards, mobile applications, build solution templates and web applications for performance analysis and aid the concerned authorities in quick and effective decision making/support, between the line departments and other stakeholders from various jurisdiction level.

6 High End Solution Architecture

Selecting the right architecture pattern to suit best analyses needs can improve user productivity and reduce operational costs. State GIS Solution is recommended to be on a Hybrid In-Premises Cloud, a Service-oriented Architecture (SoA) based distributed server architecture which supports creation, access, sharing & dissemination of Geo-Spatial Information i.e. web maps, apps, tools & services through a simple to use common platform. The solution architecture would lead to create government-to-citizen, government-to-business, government-to-education, and government to-government applications that would integrate all levels of the Government and support open access, collaboration, and transparency.

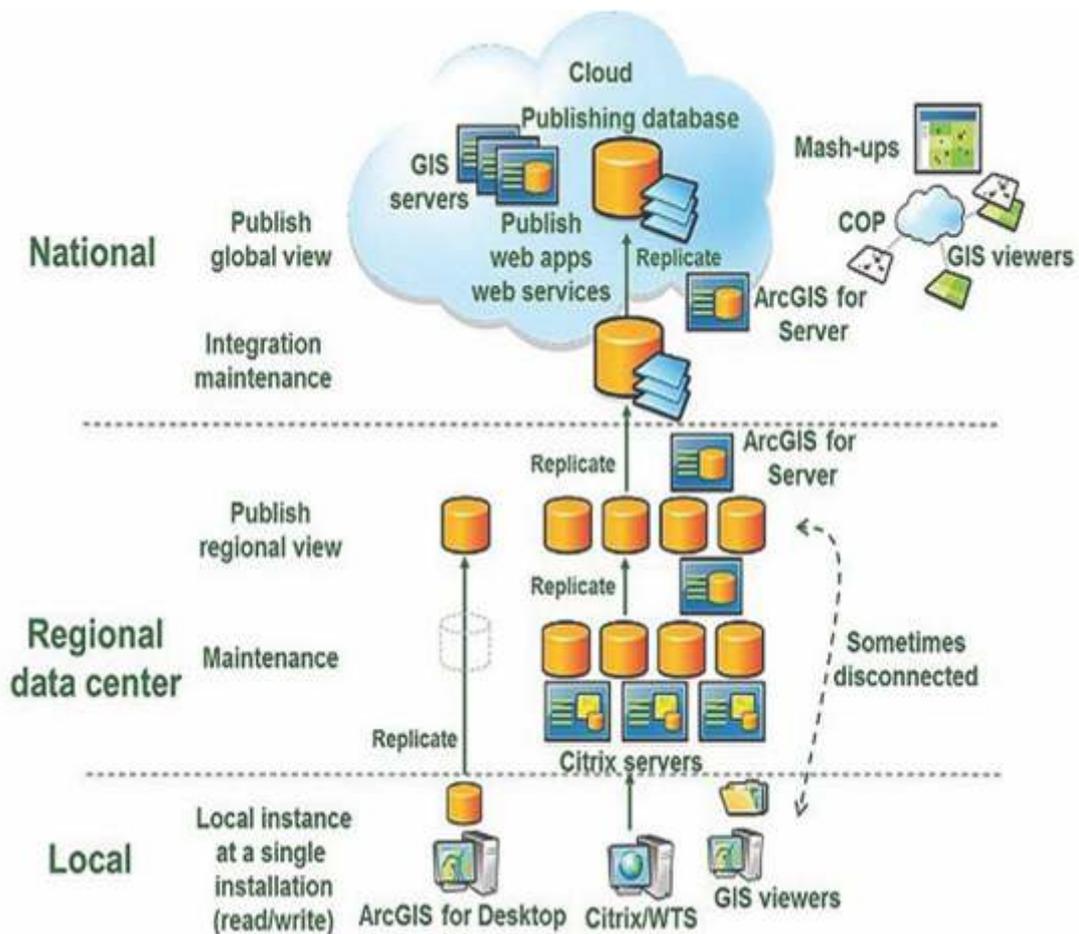
7 GIS Policies and Institutional Arrangements

Geospatial data usage in India is supported to a large extent by initiatives set out by the Central Government through its ministries and various departments, especially in 160+ projects. The absence of a comprehensive policy on the accessing and sharing on use of geospatial data and technologies has been one of the contention in India and so for the state of Assam. In this background, an enabling geospatial content policy will act as a catalyst in embedding geographic information into various government processes and building powerful decision support systems. Successful implementation of National Data Sharing & Accessibility Policy (NDSAP), 2012, would lead to easy data sharing and accessibility in the state.

8 Key Challenges

Although, Geo-spatial technology is in use at various levels in different departments but potential of the Geospatial technology has not yet been explored in public administration & governance for planning and effective decision support owing to following challenges:

- ★ Non availability of any standard state policy with regard to use of geo-data
- ★ Lack of awareness among the stakeholders regarding the use of geo-spatial data



- ★ Lack of qualified and trained manpower having expertise in Geospatial system
- ★ Non availability of structured data
- ★ GIS initiatives are only visible in silos and are not extended in a collaborative and pervasive way
- ★ Collating and validating data is a cumbersome activity
- ★ Restrictions imposed by various line departments does not allow public usage of Geospatial data / information
- ★ Effort duplication and lack of transparency
- ★ Non availability of high resolution maps in the state departments
- ★ No standard mechanism for data integrity and updation
- ★ Lack of a collaborative and integrated Geo-Spatial platform

The objective of State Governments should be to overcome/address these challenges by way of a new paradigm for sustainable development as well as to supporting a new model of g-Governance through a comprehensive GIS based Decision Support Systems (DSS). It would be crucial that the new implementation extends the characteristics of being integratable, collaborative, open and scalable in order to meet the current GIS aspirations of the state as well as amenable to new paradigm of computation such as cloud.

Abbreviations used in the article

GIS	: Geographical Information System
GNSS	: Global Navigation Systems & Services
GPS	: Global Positioning System
IoT	: Internet of Things
ESRI	: Environment Systematic Research Institute
DoS	: Department of Space
GoI	: Government of India
AMRUT	: Atal Mission for Rejuvenation and Urban Transformation
PMKSY	: Pradhan Mantri Krishi Sinchayee Yojana
WRIS	: Water Resources Information System
MOSDAC	: Meteorological and Oceanographic Satellite Data Archival Centre
KRSRAC	: Karnataka State Remote Sensing Applications Centre
NEDRP	: North Eastern District Resources Plan
NESAC	: North Eastern Space Application Centre
DoNER	: Department of Development of North Eastern Region
CMO	: Chief Ministers Office
NRC	: Natural Resources Census
SISDP	: Space Based Information Support for Decentralized Planning
NBSLUP	: National Bureau of Soil Survey and Land Use planning
CWC	: Central Water Commission
CGWB	: Central Ground Water Board
TCPO	: Town and Country Planning
ARSAC	: Assam Remote Sensing and Application Centre
SoA	: Service-oriented Architecture
NDSAP	: National Data Sharing & Accessibility Policy

Image references

Image 1	: https://www.in.gov/gis/Ortho.htm
Image 2	: http://priede.bf.lu.lv/GIS/Descriptions/RST/Sect15/nicktutor_15-4.shtml
Image 3	: Not required
Image 4	: Not required
Image 5	: http://www.bhuvan-panchayat.nrc.gov.in/printable_version.php
Image 6	: https://medium.com/esri-insider/selecting-the-right-computing-architecture-for-your-gis-546483f125f5

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UAV FOR SURVEY, MAPPING AND URBAN PLANNING

Dr. Balen Basu

UNMANNED AERIAL VEHICLE

The UAV is an acronym for Unmanned Aerial Vehicle, which is an aircraft with no pilot on board. UAVs can be remote controlled aircraft (e.g. flown by a pilot at a ground control station) or can fly autonomously based on pre-programmed flight plans or more complex dynamic automation systems. UAVs are currently used for a number of missions, including reconnaissance and survey.

Drones can be used by companies to create accurate current topography maps with elevation contour lines, and detailed 2D and 3D models.

USE OF DRONE FOR URBAN PLANNING

Drone images provide better insights from rich, visual datasets. Unlike traditional topographic survey data—which is basically a set of linework—drone survey deliverables include an orthophoto, a contour map, a digital terrain model and dense point-clouds. The result is a highly accurate and richly visual dataset, ready for analysis.

Drone data is already being used in many land development projects, from the early stages of planning and designing land subdivisions, through to preconstruction assessments, progress tracking and final “as-built” surveying.

Civil contractors are among the earliest adopters of drone technology, and they admit that drone-captured data—used in combination with ground control systems has given them a quicker, easier, and safer way to produce digital terrain models and aerial site maps than the methods they used before.

A pilot project was conducted by OPSIS SYSTEM for an area in Howrah district in West Bengal using TAS drone from Throttle Aero space, Bangalore and PHOTOMOD software from Racurs, Russia.

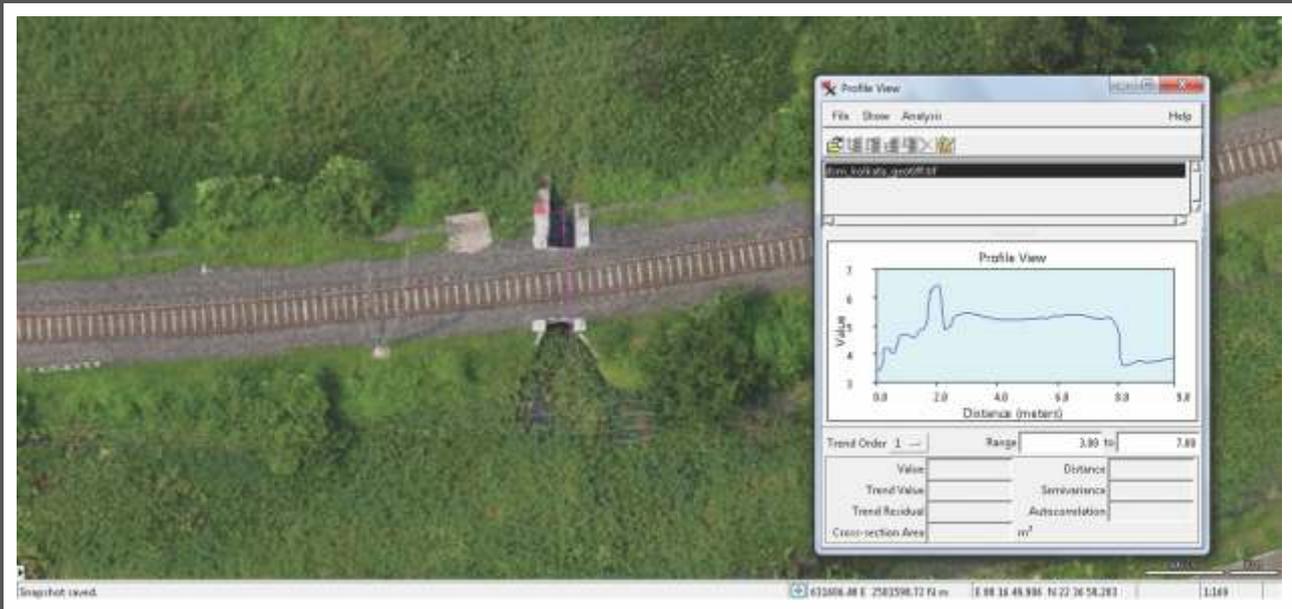
INPUTS USED

- ★ A drone carrying a GPS and camera collecting photos
- ★ Few control points using GPS/DGPS/RTK in the area flown

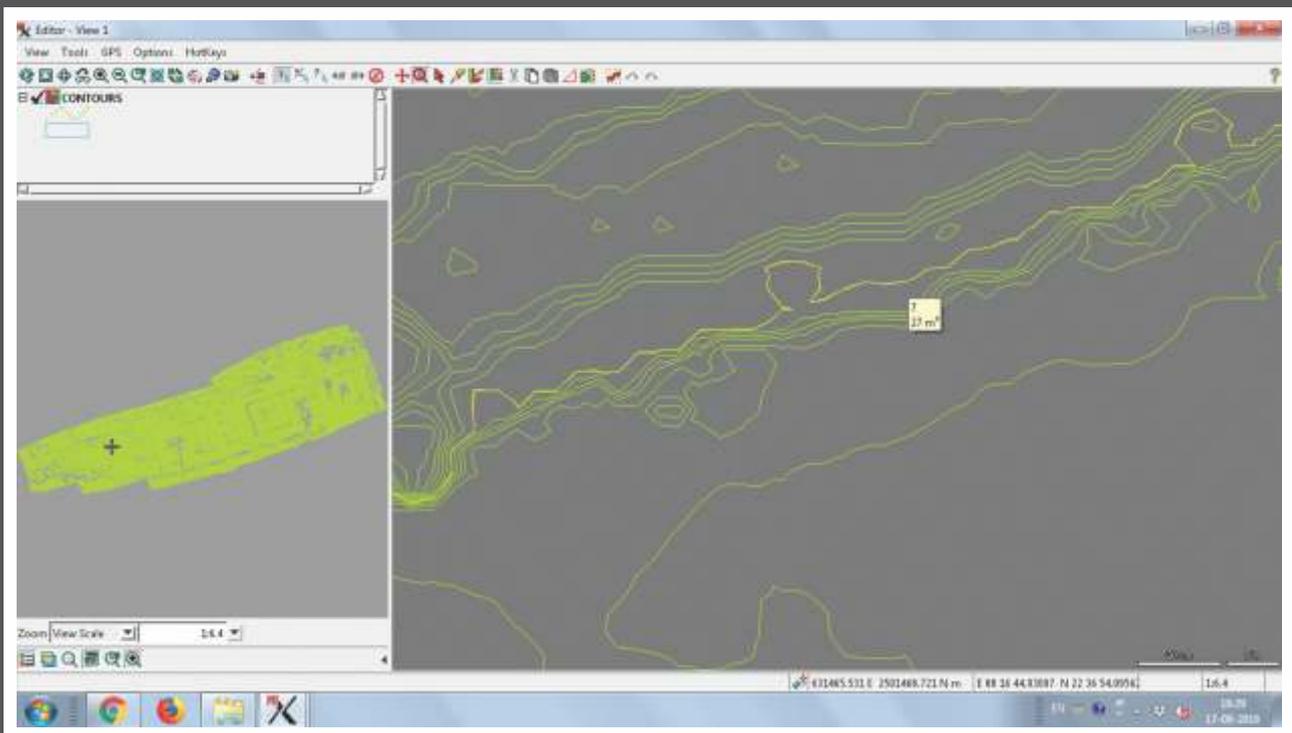
OUTPUT FROM PHOTOS TAKEN BY DRONE

- ★ Photos are mosaiced to create a single picture of the area flown.
- ★ Point clouds in 3D
- ★ Contour at 20cm interval

The digital surface model was generated for the 500 sqmt area and the photos were orthomosaiced. The profile was generated at culvert locations.



The contours were generated from the Digital Surface Model (DSM) at 20cm interval using high end computers.



TIME ASSESSMENT AND ACCURACY

The UAV survey consumes less time. An area of 100 acres may be covered with 60% overlap with a camera of 20MegaPixel in 30minutes.

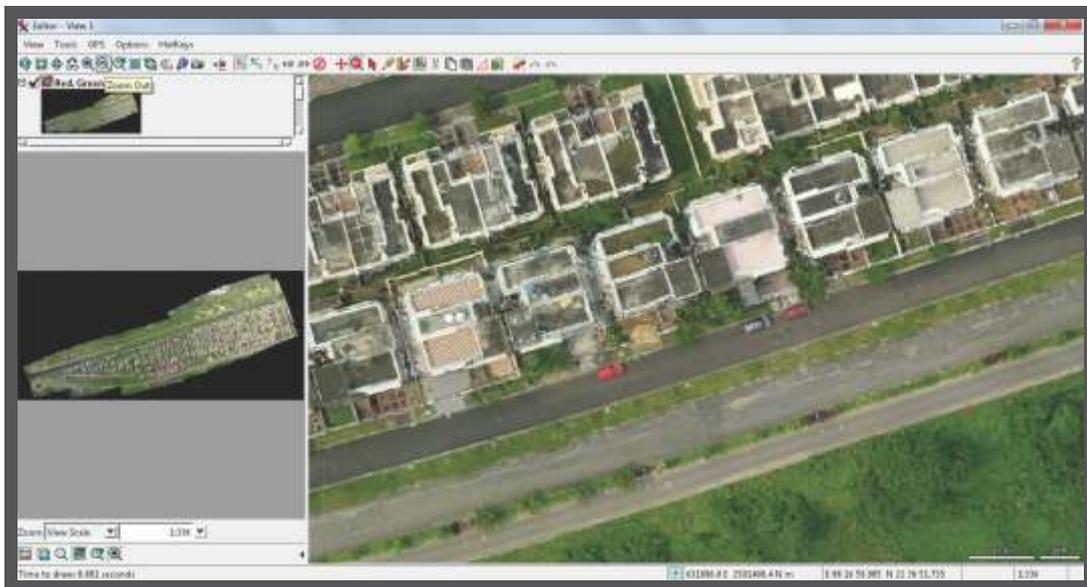
The images of the above area would roughly consume 1GB space and post processing to generate the 3D points or contour would approximately take 12 hours by a standard i5 computer.

The horizontal error was approximately 3-5cm in X-Y and 7-10cm in Z with good number of Ground Control points.

UAV AND POST-PROCESSING SOFTWARE USED

The UAV from Throttle Aero Space, India, was used for the purpose and the processing software used was Photomod UAV from Racurs Russia. TNTmips from MicroImages,USA was used for landuse planning and digitisation.

Conclusion : OPSIS SYSTEM was assigned the pilot project to assess the accuracy and the quality of drone images. It was observed the final image could be used to work in 1:500 scale very effectively and with high accuracy.



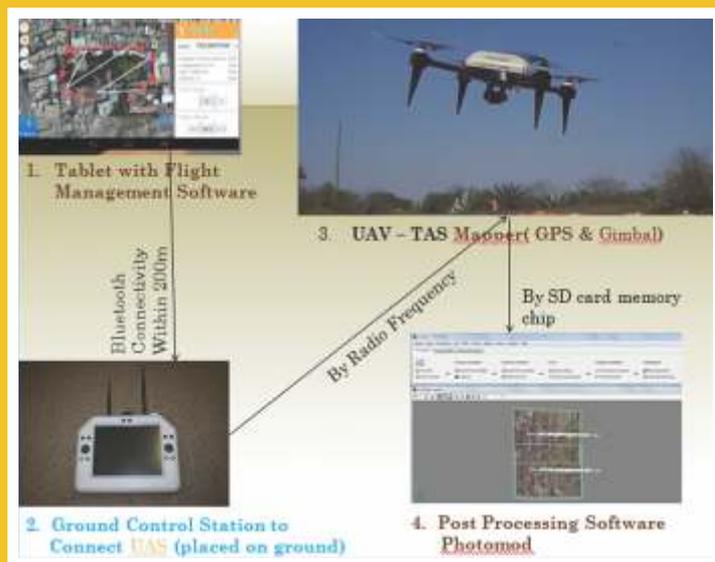
Height information of each object identified in image





HOW UAV WORKS

The UAV comprises of three units - The Flight Management Software in TAB(1), the Ground Control Station (2) and the Bird (3).



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