# SCIENCE COMMUNICATOR

## INTER-DISCIPLINARY JOURNAL
## FOR
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# ELEPHANTS AND WHITE ELEPHANTS IN SCIENCE COMMUNICATION

Science Communication is a noble activity that contributes to the intellectual, social and economic development of society. It is the reason why democratic governments all over the world embark on missions to promote science communication. Our country is not an exception.Let us think of the mammoth efforts taken by certain agencies in Science Communication.

In India, the National Council for Science & Technology Communication (NCSTC) which comes under the Department of Science and Technology has various activities related to development of science and its communication. Another vibrant organization that has been performing well, although with a miniscule manpower is Vigyan Prasar (VP). The National Institute of Science Communication and Information Resources (NISCAIR) under the umbrella of Council of Scientific and Industrial Research (CSIR) is relentless in its efforts at planting scientific temper in the minds of the public through its numerous publications.The State Councils for Science Technology and Environment established in individual states are making heavy contributions towards the same objective in the regional languages. Even so we have to seriously consider the magnitude of success achieved by these agencies in the popularization of science and inculcation of scientific temper.

There is no doubt that science popularization has made societal progress in leaps and bounds during the pre- and post- independence periods. Science communication has played a commendable role in influencing peoples' minds on areas like health care, rational thinking, sanitation and mechanization of agriculture. The support of NGOs and commitment of government officers were behind the success of the Green Revolution which introduced new seeds and modern fertilizers.

It is often through NGOs that many agencies conduct science popularization activities. But, it is generally found that many of the NGOs exist only on paper.However,the fact still remains that NGOs are the apt conduit for effective communication of science to the public in local vernacular. Lack of efforts to monitor the actualisation of their schemes and evaluate their success is a major problem. It is also accused that the officers entrusted with such activities engage in the popularization of science, on their own. The so-called fashionable "*Tourist Science Communication*" via Power Point Presentations using tax money for air

travel to foreign countries and accommodation in luxury hotels does not earn glory for anyone. NGOs organizing lavish local hospitality and fitting treatment for such high-fliers are also not doing the right sense of *dharma,* it is alleged. Here lie the elephants and white elephants.

Science communication is not peer-group communication. It should start from the grass-roots level. It is high time for an evaluation in the numerous organizations established for the purpose to assess the linkage and relation with such grass-roots level people.Our country needs effective science communicators who speak the common man's language, write in the common man's language and are capable of empathizing with the common man's emotions and feelings. Science popularization should be made in an unequivocal manner. The communication of science should begin at the grass-roots level and be fostered and nourished so as to inculcate scientific temper. But there is a general feeling that the so-called *gurus* endeavour to gain publicity for themselves only is aimed at their own career growth and they evince a morbid distaste for the science communicators at the grass-roots level. The well-intentioned money spent by the government is thus laid to waste, thanks to the lack of vision and commitment of those who bear the burden of science communication for the governments. Many a time grass-root level communicators are side-lined and the mantle of popular science communication is wielded by ivory tower scientists and technocrats who are totally alien to science popularization. English is given more importance than regional languages. The real science communicators are many times kept off from the Juries to select science popularists / communicators for National Awards / titles or scripts for publication.This scenario has to change for the better. It is a general feeling that when Science Communication is not effectively carried out, and when the undeserving and ineligible occupy top positions, then all the paraphernalia in the name of science communication will be an eye-wash. In such cases one can clearly see the white elephants replacing the strong and sturdy elephants.

The persons at the helm of affairs should understand that science communication is not simply science or research. It is a social service aimed at developing a socialist society and inculcating scientific temper among the masses. White elephants have no role here. High level policy makers should put their heads together on this and come up with feasible solutions on a war-footing to ensure that the purpose is served, period. We, the citizens of this great country are bound to obey the fundamental duty '*to develop the scientific temper, humanism and the spirit of inquiry and reform'* enshrined in our Constitution under Article 51-A(h).

Editor

# CONTENTS

# MASS MEDIA AND ENVIRONMENTAL ISSUES

## Subash Kuttan

Regular coverage of particular issues by mass media can focus people's attention on them. Continuous media treatment of pertinent issues adds  significance to them and motivates the media consumers to pay attention to those topics. The mass media can make the people aware of the different aspects of the issues covered. For instance,the mass media have brought to our attention a number of environmental problems which threaten the very existence of humanity.

Indian media had succeeded in drawing our attention to several environmental issues like Ganga Action Plan, Chipko movement, Narmada Bachao Andolan and Silent Valley movement. Our newspapers and other media had kept alive the thrust of these movements, if we could recall. In the same way, at the international level the global media had reported widely on Global warming, Green Peace movement, depletion of ozone layer, climate change in the world, Green House effect etc.

The common people may not be able to assess the impact of many of the environmental issues existing in our world. For example, the effect of depletion of ozone layer and its long term effect on global warming cannot be understood at its full level by all. If media men try to inform the masses about the gravity of such a vital issue, atleast the right thinking people can be sensitised.

The mass media in our country have given wider coverage to the activities of environmentalists like Vandana Siva, Sunderlal Bahuguna and Medha Pathkar. Through constant coverage of their protest movements against the destruction of environment, the media could keep alive their voice  and make the authorities pay attention to them. We are made aware of the mass movements springing up to protect the local inhabitants from being uprooted due to the reckless implementation of new projects. The Narmada BachaoAndolan,a movement of this nature received much national attention thanks to the coverage given by the print and visual media.Surely, the media coverage extended to environmentalists actions on particular issues can enhance their social significance. We know that implementation of new projects often occurs at the cost of uprooting native people and indigenous culture, many a time rendering the masses homeless. This situation has happened in many nations while implementing new developmental projects like construction of dams or setting up of industrial plants.

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The media coverage on the pathetic conditions of the people who are forcibly evicted to pave way for the implementation of multi-crore projectscan evoke empathy among the general public. Many a time the media people support the view to adopt a policy of sustainable development, without causing damage to the nature.

Commercial groups may term the media coverage extended to the activities of environmentalists as media bias or journalistic distortion. On the other side,through such an act the media really play their social role in helping to sensitise the humanity on the impending peril emanating from man's materialistic greed. All people may not be influenced by media reports,still the message of environmental protection can be disseminated in the society.

### Inadequate coverage

A look at the coverage of environmental issues by mass media shows that it has gone up recently. With the spread of TV, the instant coverage of such issues is possible. Still,it is doubtful whether the coverage is really adequate in providing sufficient information for creating awareness on environmental problems.

In the course of the competition among media houses to publish sensational type of stories, environmental issues often fail in catching the attention of media personnel. Sensational types of news help in boosting circulation or viewership. This type of an attitude is rampant with the coverage of all types of news originating from urban or rural areas. Here, we may recall the observation of P. Sainath that a fashion show in Mumbai metro attracts more media men to cover it than the suicide of farmers in Vidharbha region.

The reason pointed out for inadequate media coverage of environmental issues is that such items do not appeal to the masses. Media consumers are more interested in stories having an emotional or sensational touch and environmental issues rarely affect the mind of the majority. Shouldn't the media share the blame for conditioning the people's mind to go after frivolous incidents? In this context, let us recall what the veteran journalist Chanchal Sarkar once remarked, "It is upto the reporters to make any subject appeal to their readers.They just do not want to make the effort."

In one sense,the cause of inadequate representation of environmental problems in media results from insufficient flow of relevant information. Media often lack accessibility to relevant sources for eliciting authentic information on many of the environmental issues, thus creating impediments in giving a credible or accurate coverage. But, some committed journalists consider this as an excuse for want of interest in

environmental issues. It is a fact that news media everywhere is obsessed with party politics. A thematic classification of media content can simply reveal the overdosage of raw political stories in our newspapers and television channels. The coverage of political developments is comparatively easy. But the coverage of subjects like environmental issues demands more perseverance and dedication from the part of the media personnel.

In this context, a glance at a pertinent research project conducted recently by CMS (Centre for Media Studies) on the nature of coverage of environmental news in leading dailies is relevant. The study tried to assess the frequency of appearance and amount of space given to environmental news in selected national dailies in comparison with other types of news items.

The researchers collected data from nine leading dailies for analysis. It was found that the coverage given to environmental news was limited to 4.35% of the total news space. At the same time news on politics, business and crime on the whole covered 83% of the total news space. The researchers also observed that environment success stories, environment best practices, local movements and campaigns were rarely given due prominence in the newspapers selected for the study .

If media men fail to understand the gravity of environmental exploitation, its coverage will be affected. On the other hand, if the intensity of an issue is well comprehended, the journalists can sense the danger behind it and make the people informed on that. However, this does not occur with relation to all environmental issues. Some really pertinent issues are not assessed or evaluated in its complexity so that they do not get studied by journalists and escape media scanning.

**Better media coverage needed**

The mass media have a responsibility to make the people know the problems which lead to the destruction of nature and its resources caused by the reckless life style of man. If the media can motivate at the cognitive level, in due course there will be changes in the behavioural pattern of the masses. To achieve this objective, introspection should be made by media personnel regarding the present nature of coverage of environmental problems. Consequently, sincere attempts should be made to overcome the inadequacy felt in carrying out the task of environmental journalism effectively. The journalists themselves should understand the need to acquire awareness on environmental issues which are timely and relevant. This awareness has to be spread to the masses through their reports.

Environmentalists should provide relevant information to media men with a view to sensitise them on environmental problems. The mass communicators can be supplied with sufficient research data  and other needed documents. The interaction between media men and environmentalist groups help in generating useful information which can be disseminated through mass media. Also, workshops  and  orientation courses  on environmental journalism meant mainly for younger journalists can facilitate a conducive media environment  for eco-friendly  information. What is called for is a change in the existing media priority with relation to the selection  and  dissemination  of environmental  information in the society.

## References:

1.  Ascroft J.  and Masilela S. (1994). Participatory  Decision Making in Third World Development.
    White S. A., Nair K. S. and Ascroft J. (eds.) Participatory Communication : Working for Change and Development, New Delhi; Sage.

2.  Berrigan F. J. (1979). Community Communications. The Role of Community Media in Development, Paris: UNESCO.

3.  Carey J. W.(1989). Communication  as Culture; Essays on Media  and Society, Bosten: Unwin Hyman.

4.  Carpentier N., and  Servaes J. (2001). Making  Community Media Work. Paris: UNESCO.

# SCIENCE COMMUNICATION AND ITS CHALLENGES IN INDIA

## Abhay S. D. Rajput

**Abstract**

Science Communication has recently emerged as a new field of scientific expertise. It is meant to commonise science and scientific culture among the general public. It is to make public scientifically aware and educated and to let them understand the significance of scientific knowledge and to make them adopt a scientific way of living. But presently, being in its infancy stage, it faces lots of challenges and barriers in both developed and developing countries. Science Communication as a subject, presently, does not have considerable amount of literature and theory. Little research has been done in identifying challenges and exploring their possible solutions. In the Indian context, such challenges can even be more. An effort is made to identify some of the important challenges confronting Science Communication in India.

*Key Words: Science communication, challenges, Indian context, guiding principles, significance of scientific knowledge.*

**An Introduction to Science Communication**

Science is an integral part of our life. In fact, our life is very much dependent on science. The produce of science effects directly or indirectly every one of us. Society produces scientists, and scientists produce science, which in turn, ultimately affects the society. Science can be either good or bad. At least, it comes with both good and bad aspects. So a need for public appreciation or criticism of science was realised worldwide.

In most parts of the world, science is funded by governments, *i.e.,* the taxpayers' money. So when the public is directly or indirectly funding science and science too is meant for the public or social welfare, then science becomes a public property. For that reason, it should be accessible to the public. Public should know the latest developments in science and their impact on society. But how public can access or know science? It is all trapped in the alien sounding technical language of science. For that reason, science is not a layman's cup of tea.

Scientists are unable to communicate science to the public, due to various reasons. And a layman cannot become a scientist for

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understanding science. But today, living in a world of science without knowing and understanding it, can be disastrous. Therefore, there is an urgent need for public understanding of science was felt.

This gave rise to what is known as the 'public understanding of science' or 'science communication' movement in the early 1980s. The movement has gained momentum worldwide, especially in the developed countries. Developing countries like India are also catching up.

Being a new interdisciplinary field of expertise, science communication aims at the dissemination of scientific knowledge and information to the masses in a way or format that they can understand and appreciate the communicated science. In India, communication means simplification and commonness of experience. So putting in the Indian context, Science Communication should mean simplification and commonness of science/scientific experience. Therefore, the aim of any science communication should be to simplify science and to achieve commonness or oneness of science among the masses. This should also include the joy of doing science and the adoption of scientific way of life.

**Benefits of Science Communication**

Communicating science to the public can lead to a general understanding of science among them. This is what we call public understanding of science. This can offer many benefits. Some important of these benefits can be listed as below:

1. An increased access to the S&T knowledge and information will help people in making informed decisions and solving their day-to-day problems by applying the scientific method.
2. General scientific awareness of the public will increase and hence, it will help in developing a scientifically informed citizenry.
3. It will strengthen democracy. The scientifically aware public can have their say in the S&T related issues and policies. Public participation in science is a must for a true democracy.
4. The politicians and the decision-makers can become more aware about the S&T issues. Their increased scientific awareness will help in the development of more relevant and realistic S&T policies.
5. Development of scientific temper, logical reasoning and thinking among the masses. This, in turn, will help in fostering the scientific culture in the society.
6. It can make the results of research available to the public and so making S&T more useful and valuable to them.
7. Ensuring transparency in prioritizing R&D issues and funding.
8. Nurturing more talent for scientific research for the future.

**Need for Literature and Theory**

Science Communication presently being in its infancy stage both in developed and developing countries, there is a great need for exhaustive research and development of literature and theory in the field. It is passing through a developmental phase and there is little literature available on the subject.

Some research has been done in the developed countries in this regard, which is quantitative and generally based on surveys. This is not sufficient. In fact, the wave of science communication in the modern terms started in the west. But there are cultural, social and psychological differences between the west and the east (especially India). Therefore, we cannot copy exactly the western ways and models of science communication. Copying such models blindly can lead to cultural conflicts and incompatibility issues.

The multi-cultural, multi-lingual and multi-religious society like India still offers more challenges and barriers in the way of Science Communication to achieve its objectives of science popularisation. Science Communication in India has already started gaining quantum, but the reality on the ground is still no different.

**Good Initiatives**

The challenges and opportunities for Science Communication are plenty[1]. But little work has been done in India, in this regard. However, some research has been done in the western countries. Royal Society's Bodmer Report (1985) initiated the 'public understanding of science' movement and called for scientists to devote more energy to public communication of science. The Wolfendale report (1995) recommended ways to encourage greater communication by scientists. The Science and Society (2000), a report of the House of Lords select Committee on Science and Technology focused on crisis of trust and advised to build stronger links between scientists and other communities through greater openness and dialogue.  The Role of Scientists in Public Debate (2001), a survey conducted by MORI for the Wellcome trust, UK found that scientists are keen to engage in science communication but is facing disincentives. These reports and surveys are quantitative and do not provide the qualitative and theoretical framework for science communication.

India too caught it up early with the establishment of the National Council for Science and Technology Communication (NCSTC) in 1982 by the Government of India. It was a good initiative. NCSTC is the apex body in the country meant for promoting Science Communication and developing human resources and capacity building in the area. It is now taking care of lot many things from organizing/supporting training courses, conferences,

workshops, funding communication projects, etc. Further, the union Department of Science and Technology (DST) has established an autonomous body called Vigyan Prasar for popularizing science among the general masses through content creation in popular languages and formats. NCSTC is mainly a funding agency, while Vigyan Prasar is for content creation.

**More Research**

The above mentioned works are appreciable but we need more to be done in the Indian context, keeping in view the socio-linguistic and cultural diversity prevalent in our society. Especially for identifying different challenges; qualitative, quantitative, analytical and evaluative studies are scarce and so, require urgent attention.

To make science communication effective, several scholars, science communication researchers and science communicators have called for more research for better understanding of science communication and for addressing its various challenges. Developing relevant theories, models and principles of s science communication for the Indian context is also a problem that needs urgent attention.

The idea behind science communication activities is to help science and scientific culture to penetrate India's socio-culturally diverse society, and to transform it into a nation of scientifically thinking and scientifically aware people (Patairiya). The Constitution of India also has a special provision 'to develop the scientific temper, humanism and spirit of enquiry'. To achieve this objective as mentioned in the Constitution of India, science communication can play a very vital role here.

But science is not succeeding in attracting mass media's interest and attention. It rarely appears as a lead story in newspapers, and it accounts for around 3% of coverage in the Indian media. This offers a great barrier in communicating science to masses. Why science is not getting good coverage in the media? Is it not so interesting or the media are not interested in science? It requires an exhaustive research and investigation.

**Guiding Principles Needed**

Therefore, in an effort to improve and make (the practice of) science communication in India more effective, productive and useful enterprise, there is a need to study the various challenges and perspectives for Science Communication in the Indian context. At present, science communicators in India (and abroad too) are perplexed about how to communicate science and how to make it more effective and goal-oriented to fulfill the purpose for which it is meant. Developing some model and some guiding principles of science communication which can fit well in

the Indian context is desirable. When such a model and the principles are available, it is hoped that the effectiveness of Science Communication and the skills of science communicators will increase many folds. In this regard, an effort for developing some principles for effective science communication is made.

Government should take initiatives to encourage both qualitative and quantitative study in this regard so as to generate a theory of Science Communication resulting in its better understanding and practice in India.

**Many Challenges**

1. Multiculturalism and multilingualism: The multicultural and multilingual society like India still offers many more challenges for science communication. As science is universal and so its communication can bring a universal scientific culture into existence. For that reason, many cultures/societies might be afraid of losing their own cultural identity. Therefore, communicating science while preserving the cultural diversity is a big challenge. In this regard, Rajan says that to overcome the challenges for science communication, one has to look much beyond anchored in deeper issues of the world, universe and humanity.

2. Local context: No doubt, science in a broad sense is universal. But it may be difficult to always have a universal context in communicating science. People are generally concerned about immediate surrounding environment and issues. So, the universal science is required to be communicated in the local context. With so many social, cultural, psychological, linguistic and other barriers, communicating science in the local context is not an easy job to do. Much of science is trapped and locked in the English language, which is not known to many people. Therefore, developing a database of science in regional languages is a challenge.

3. Scientific community lacks communication skills: It is a common observation that most of the scientists are not good communicators. They generally feel uneasy to talk to the media and the public. Many may not know how actually the media works and how to use it for effective communication of science. Their inability to express in simple and clear terms (layman's language), further, deeps the problem. They are equipped with all mental faculties and analytical skills to study their subject extensively and they receive thorough training for this. But they rarely receive any training in communication and media skills. The scientific community in India (in the government funded labs) may also be prevented by certain institutional rules from talking/sharing information straight to/ with the media. In India or else where, this challenge of getting scientists to talk (in popular terms) is usually faced by the concerned science journalists.

4.  Lack of media interest in S&T: The media too are interested more in politics, crime, sex, violence, cinema and lifestyle and pay little attention to S&T. They may claim that public is not interested in S&T and so it is not the right stuff which they can sell to get more advertisements and increased circulation (to get more avenues for their survival). In fact, this indifferent attitude can be attributed to the lack of dedicated and trained science communication professionals in the media. Without such professionals, the media are somehow unable to present science in a palatable and interesting manner to the public. Generally, most of the media reports are terse and full of scientific jargon. This makes the media reports repelling and so public may not be willing to read that stuff. Thus, the inability of the media to communicate science in popular terms should not be mistaken for "public is not interested in S&T". In fact, with the increased involvement of S&T in every man's life, public interest in knowing more about S&T is increasing day by day.

5.  S&T agencies show little concern: Many different S&T agencies work on different scientific and technological frontiers. They all have their own causes and purposes to pursue. They all claim that they are working for the betterment and prosperity of the society. But have they ever made it mandatory to communicate their research to the taxpayers? No. At least, this is not the trend presently. Efforts should be made to raise public awareness of science, engage public in science and to generate messages for public communication of science.

6.  No benefits to scientists: Scientists get promotions and other benefits by communicating their science (research) in the peer-reviewed research journals. They get more recognition when they are published in more standard and international journals. But this is not the case with popularisation of science. Generally, they do not get any such personal benefits when they engage themselves in any sort of science communication. Many scientists believe that science popularisation is not their duty and even consider it as a low standard job. Some may claim that great scientists should concentrate on their research and should avoid such cheap business. Such parameters need to be revisited and science communication should be given due weightage and consideration for personal benefits to scientists.

7.  Lack of collaboration in S&T agencies for science communication: Collaborative efforts by different S&T agencies are needed to communicate unified message of science to the public. Different S&T institutions should join hands and work together for their common interests concerning science communication. This can save efforts, manpower and money too! There is a need to network various institutions for the good cause of science communication and sharing the information resources.

8.  Lack of S&T communication policies: We are not having any policies concerning the communication of science and technology.

Government should take initiatives in this direction. Popular communication of science and technology should be made compulsory and mandatory for every scientist, or at least a bit lucrative. In addition to writing for research journals, scientists should also be encouraged to write for the general public, to give appearances on TV.

9. Uncertainties and risks: Science is full of uncertainties and so risks are associated with the communication of such uncertainties of science to the public. Science, being cumulative, is never a final word. It is ever evolving and provides answers through a process of enquiry and discovery. Sometimes, a scientific research brings fewer answers but more questions. The scientific hypotheses and theories are not concrete facts which are certain. In fact, these are the possible suppositions forwarded by a scientist or a group of scientists on the basis of the knowledge and information available at the time these were forwarded. In the light of new knowledge, they evolve (or are changeable). Therefore, communication of such scientific uncertainties as facts is dangerous and can be risky to both science and society. These uncertainties and risks pose a big challenge for science communication.

10. Trust and credibility: Maintaining public trust on science and scientists and ensuring the credibility of science communicated to the public is another big challenge. Science frauds, pseudo-science, biased reporting, misreporting and unauthentic sources of scientific information weaken the public trust and the credibility of science.

11. Simplification and presentation of scientific information: Presenting scientific information in simple terms so that a layman can understand it easily is a big challenge. Sometimes, simplification is not easy and sometimes, simplification becomes over-simplification distorting the intended message of science. Therefore, it needs to be handled with great care and caution.

**Western Models and their Limitations**

Different models of science communication were forwarded in the western world. Lewenstein reviews the various models of science communication including the deficit model, the contextual model, the lay expertise model and the public participation model. He finds that all these models are with their own limitations, and challenges the universality of any of these models. For that reason, he says that we need more research on public communication of S&T. Such research will contribute to better knowledge of how knowledge (science) operates in society, as well as in serving the practical needs of those concerned with improving public understanding of science. From the above discussion, it is clear that the western models of science communication are not that much efficient in communicating science effectively. So forget their application in the Indian context.

Popularisation is an essential and integral part of the scientific enterprise (Miller & Gregory). They further say that the purpose of a science communication may be to empower the recipients, to enhance existing democratic processes or help develop new ones where they do not exist or to prevent the alienation of sections of society. The background, beliefs, and sensibilities of the recipients of science communication play a large role in their reactions to the communicated scientific knowledge. These factors are the challenges for science communication and hence, are needed to be studied.

Science communication is a dynamic exchange and process of generating new, mutually acceptable knowledge, attitudes and practices. Now what hinders this dynamic exchange and process in India? This needs to be investigated.

**Scientific Knowledge and its Significance**

Scientific knowledge is undoubtedly powerful in terms of its effect on our daily lives and social structures. Therefore, to make a society powerful, it requires scientific knowledge. Stueart says that the growth in information service is a significant factor underlying the economic well-being of countries and is therefore a major indicator of success or failure of the economies of developing countries. Timely access to information is one of the most important factors in economic recovery and growth. Now, it is obvious that untimely access to scientific knowledge/information is one of the main causes of knowledge gap. What prevents Indian public from accessing and acquiring timely information needs to be studied systematically.

Science plays a significant role in our lives and a great impact on societal structures and life patterns. Therefore, appropriate and faithful communication of science, encouraging public talks and discussions, is always desirable. However, communication is fraught with challenges that can easily distort discussions. Most people cannot distinguish scientific, non-scientific, or pseudo-scientific subjects. For that reason, communicating science is a necessity[7]. But making science communication an important channel for essential dialogue between science and society is one of the challenges facing science communication. Further, the problem becomes more complex in the culturally complex society of India.

Till date, countries (even the developed ones) are not clear about the aims of science communication. Therefore, establishing the role that it can and should play in a particular community or country is a challenge (Metcalfe). And what should be the role of science communication in India? This question itself asks for in-depth research. Metcalfe further says that, "I believe it is vitally important to establish what role science communication needs to play".

All good (science) communication requires a fundamental understanding and appreciation of the perceptions, values and needs of those we are communicating with. Therefore, a study of the kind in the Indian context is a must.

Massarani says that there is a growing perception of the need of better links between science, public and society; and to become a prosperous and scientifically developed society, its population must be well informed on science-related issues. Important aspects like insertion of science in the cultural and socio-economical context, controversies, uncertainties and risks are often not considered in the construction of a realistic vision of science communication.

The Science Communication Framework (SCF) for Environment Canada states that there are several challenges inherently linked to science communications. It also states that the effective communication (and marketing) of research and scientific results to audiences such as decision-makers, the media and the public is often overlooked. The methods and infrastructure for communicating science to communities, politicians, the media and the general public are still evolving. Such methods and infrastructure are too lacking in India.

A report from the International Development Research Center states, "The most vital difference between developed and developing, rich and poor countries is the knowledge gap - the capacity to generate, acquire, disseminate and use scientific and technical knowledge. Malaysia's Prime Minister Mohathir Mohammed once said, "It can be no accident that there is today no wealthy country that is information-poor, and no information-rich country that is poor and underdeveloped". These two statements call for the communication of scientific knowledge as a way for enrichment and development of a society or country.

**Cultural Context**

Science communication cannot be just dissemination of scientific information. It might be related with the cultural or social context. A culture is a set of styles of living of a society at a particular place and at a particular time. It changes with time. Whenever there are new inputs and the society reacts to these inputs, there is a change in culture. Therefore, only those inputs of science communication will be accepted and absorbed by a society, which help it to meet its needs, goals and desires and to solve its existing problems, and which are culturally acceptable. To make science available to and accessible by the general public, science communication is to do the task. But all science cannot be useful (directly) to all people. Science helps the society to advance, solve its problems, and achieve its goals and objectives and to become prosperous. Therefore, there is a need to study which science is required and it makes a sense for studying

the acceptability and compatibility of science communication with reference to the Indian context. As science communication is aimed at the public understanding of science, so it makes a sense to know whether the communicated science is accessible to the public or not.

Effectiveness of science communication depends on the transmission of scientific knowledge, information, attitudes or opinions to the public without being interrupted or interfered by any factor. But there are many factors such as physical, psychological, social, cultural, linguistic political and others that might be challenging and hindering the effectiveness of science communication. Moreover, science communicators from both developed and developing countries usually complain of certain direct and obvious challenges and some hidden or unknown challenges, which reduce the effectiveness of science communication. Such challenges need to be identified, studied and analysed in the Indian context.

As communication is always goal or purpose oriented and so is the communication of science (i.e., science communication). Without a goal or purpose, there cannot be any (science) communication. Therefore, without clear-cut goals or objectives at the national, regional, local or personal level, science communication cannot be possible. In fact, any communication impacts or influences the recipients of communication. In India, no effort has been made to study the impact of science communication on the society. Therefore, there is a need to study the impact and influence of science communication on the society.

Every society or culture has its own model(s) of communication. So to communicate science effectively in a society, there is an immediate need to study its existing models of communication.

However, science is not always compatible with the existing values and perceptions of a society. It is always anew and hence, brings a change. And change is generally opposed and resisted by the society. To accept any change, there is a need of intelligent up-gradation of the existing values, believes and perceptions. For better absorption and assimilation of new science and the changes brought by it, there is demand to devise and develop new, better and more effective models/ methods of (science) communication. Without a model (or theory), science communication cannot achieve its goals completely.

**Conclusion**

The above discussion about the existing literature on science communication shows that little work has been done, especially in India. This demands to take this matter seriously and to promote and support research in the field of science communication. Extensive research is needed to study science communication in the Indian context including its

impact and influence on the Indian society and the existing science communication models and their limitations. There is also a need to identify, study and analyze the various challenges for science communication for their possible solutions. A study of the accessibility, acceptability and compatibility of science communication is also desirable. Better models/ methods for effective science communication should be devised and developed.

## References :

1.  Rajan Y. S. (2000), Science Communication in the Early Years of 2000: Networking the Communicators, International Conference for Science Communicators (30 January, 2000) held at Pune. <www.tifac.org.in/news/ scicom.htm> downloaded on 28 July, 2006.

2.  Patairiya M. (2002), Science Communication in India: Perspectives and Challenges, <www.scidev.net> downloaded on 30 July, 2006.

3.  Rajput Abhay S. D., Effective Science Communication: Evaluation and Appropriation of Basic Principles, *Indian Journal of Science Communication*, 2007, **6** (1), pp. 17-23

4.  Lewenstein Bruce V. (2003), Models of Public Communication of S&T, <http://communityrisks.cornell.edu/Background Materials/Lewenstein 2003. pdf> downloaded on 3 August, 2006.

5.  Miller Steve & Gregory Jane (1998), A Protocol for Science Communication in the Public Understanding of Science, <http:// www.ucl.ac.uk/sts/miller/sciencec.htm> downloaded on 30 July, 2006.

6.  Stueart, Robert D. (1999), The Economic Crisis and Other Challenges in Accessing to Science and Technological Information in Asia, 65th IFLA Council and General Conference, Bangkok, Thailand (August 20-28, 1999), <www.ifla.org> downloaded on 27 July 2006.

7.  Conradie, Elsab & Grabler, Anske (2004), Science Communication at Higher Educational Institutions: A Relationship Study between the Key Role Players in South Africa, <www.pcst2004.org> downloaded on 1 August, 2006.

8.  Dickson, D. (2005), The Case of a Deficit Model of Science Communication, <www.scidev.net> downloaded on 30 July, 2006.

9.  Metcalfe, Jenni (2002), Science Communication in Developing Countries: An Australian Perspective, 'Public Understanding of Research in Developing Countires' Workshop (8-9 December, 2002), Cape Town, South Africa, <www.pcstnetwork.org/PURworkshop> downloaded on 2 August, 2006.

10. Massarani, Luisa (2004), Challenges for Science Communication in Latin America, <http://www.scidev.net/editorials index.cfm?fuseaction= readeditorials & itemid=121&language=1> downloaded on 29 July, 2006.

11. Massarani, Luisa & Moreira, Ildeu de Castro (2004), The Dynamic Process of Science Communication History in Brazil, PCST International Conference, 2004. <http://www.pcst2004. org/ing/pdf/ Parallel_Session_13.pdf> downloaded on 3 August, 2006.

12. Environment Canada (1999), Science Communication Framework <www.ucar.edu/pres/sci_com/> downloaded on 29 July, 2006

# ELEMENTS OF TECHNICAL WRITING -AN OVERVIEW

## Ramachandran Mammayil

The objective of Technical communication is to simplify complex information so that any end user may benefit from it. According to US Bureau of Labour Statistics, a technical writer puts *"technical information into easily understandable language. They work primarily in information-technology-related industries, coordinating the development and dissemination of technical content for a variety of users; however, a growing number of technical communicators are using technical content to resolve business communications problems in a diversifying number of industries."* Two noteworthy implications of this definition is that, one it is a 'de-mystifying' process and the other it is not just confined to information technology.

Obviously there are many different categories of technical communication covering a wide area of knowledge. They encompass

- Legal issues like contract
- Marketing aspects like FAQ's, product catalogs , user manuals etc
- Business issues like policy documents, project documents
- Production notes like process flows
- Human resource development areas like training course materials
- Educational material like knowledge based articles, reference guides
- Governmental matters like white papers,
- Web content and web based training

The above list is only an indicative one, but the need for simplifying the complex is highlighted by the US Plain Writing Act of 2010. This act defines plain language as *"The term `plain writing' means writing that the intended audience can readily understand and use because that writing is clear, concise, well-organized, and follows other best practices of plain writing".[1]* In this information age the need for plain writing is bound to grow as knowledge increases in leaps and bounds.

There are usually three types of technical writing. They are

- Conventional technical writing
- End-user manuals
- Technical Marketing communication

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**Architecture of Technical Communication**

Without a blueprint technical communication cannot be effective. In its absence, either the message gets distorted or its essence diluted due to muddled writing. A technical communication plan must be prepared before proceeding to write it. They key issues would be

- *Target audience profiling*
  unless the communicator gets a clear picture of who his audience is going to be, his efforts would be a waste of time and labour. It is important to know who needs this information, what theirwants and capabilities are.

- *Research and planning*
  the next step would involve gathering the relevant information needed and how that is to be presented. What kind of visuals or illustrations would be appropriate.

- *Content development*
  would focus on level of language to be used, precision of words and economy of expression.

- *Pre-testing, editing and revising*
  very often the ambiguity in writing can be discovered if the content is pre-tested amongst a small group representative of the target audience. Once identified the content must be ruthlessly edited and revised.

- *Execution*
  this penultimate activity would involve producing and delivering the content to the target audience.

- *Evaluating*
  the final act of evaluating is intended to determine whether the desired objective has been fulfilled. If it has failed, a review has to be done to determine at what stage things went wrong.

In the early nineties, technical communication was limited in scope with activities centered onprocedural documentation. But now the canvas is much wider giving rise to the concept of Integrated technical communication. According to Connie Giordano *Integrated technical communications (ITC\*) is the coordination and integration of all technical communication processes, tools, functions, and sources within an organization to convey information and knowledge relevant to optimizing the users' product experience.*

**Elements of Good Writing**

*Clarity*

Clarity is the most important element in any form of writing. This is usually absent due to muddled thinking and approach. The writer must

have a clear idea about what he or she wants to say, and how to say it.  As words are the tools of communicating one's thoughts, precision is achieved, only if one selects the right word. While doing the  sowriter must avoid the following:

· jargons    · clichés    · puffery

Care must also be taken to use active voice

*Conciseness*

'Brevity is the soul of wit'. In technical writing, brevity is needed not for being witty but for simplifying the complex. The following example was quoted in the Lancet[3] and from which the translation is also taken.

*'Experiments are described which demonstrate that in normal individuals the lowest concentration in which sucrose can be detected by means of gustation differs from the lowest concentration in which sucrose (in the amount employed) has to be ingested in order to produce a demonstrable decrease in olfactory acuity and a noteworthy conversion of sensations interpreted as a desire for food into sensations interpreted as a satiety associated with ingestion food.*

*This can be simplified and written as follows*

*Experiments are described which demonstrate that a normal person can taste sugar in water in quantities not strong enough to interfere with his sense of smell or take away his appetite.*

*There is also the temptation to use words which are high-sounding or appear officious but which can be substituted by simpler words without any loss of meaning or effect. Some of these words are:*

| Usually Used Words | Preferred Words |
|---|---|
| terminate | end |
| utilize | use |
| incombustible | fireproof |
| substantiate | prove |
| optimum | best |

**Communicate Visually**

Even the simplest technical matter can be confusing and forbidding if communicated textually. The purpose of technical writing is to demystify and not confuse. It is therefore necessary to communicate it visually in order to make it intelligible.

| Do Nnt Describe | Show IT Visually Using |
|---|---|
| How does it look like | Illustration or Photograph |
| How is it organized/ how does it work | Schematic diagram |
| How something varies in relation to another | Bar graph |
| What percentage or proportion | Pie chart |

*Cconvincing*

Technical marketing communication can be effective only if the content is convincing. Logical presentations and matching evidences need to be presented. Only then the prospect may form a positive opinion about the product or service.

*Consistent*

Good technical writers strive for consistency in the use of numbers, hyphens, units of measure, punctuation, equations, grammar and symbols.

*Writing Styles*

Scholarly publications have various standardized writing styles which the technical writer should be aware of. Some of the important ones are:

- AMA Manual Style: this is a style guide adopted by the American Medical Association for their journal and is used in Medicine and Health related fields.
- ACS Style of writing is the standard adopted by American Chemical Society for citations in scholarly journals
- Chicago Manual Style is the style adopted by University of Chicago Press for writing in American English and is commonly used in Social Sciences.

*Readability*

The ultimate success of technical writing depends on its readability. Readability is the ease in reading and understanding text. As the very purpose of technical communication is to simplify the complex, readability indices help the writer in determining how readable his document is. This helps in finding out the level of clarity. It is also known as Fog Index. Though there are many different kinds of Fog Indices or Readability scores, the oldest and simplest is **F**lesch Reading Ease Score (FRES). The formula used is:

$$206.835 - 1.015 \left( \frac{\text{total words}}{\text{total sentences}} \right) - 84.6 \left( \frac{\text{total syllables}}{\text{total words}} \right)$$

In the Flesch Reading Ease test, a high score indicates that the material is easier to read and a low score means that the passage is more difficult. The table below explains the implication of the score.

| Score | Notes | Example |
|---|---|---|
| 90.0–100.0 | easily understood by an average 11-year-old student | TIME magazine (52) |
| 60.0–70.0 | easily understood by 13- to 15-year-old students | Readers Digest (65) |
| 0.0–30.0 | best understood by university graduates | Harvard Law Review (30) |

There is a slightly modified readability index called The Flesch–Kincaid" (F–K) Reading grade level which was developed by J. Peter Kincaid for the US Navy. In 1978 it was first used by US Army for assessing the difficulty of Technical manuals. Most word processing software like MS Word, WordPerfect and WordPro have incorporated this tool to help in finding out the readability of a content.
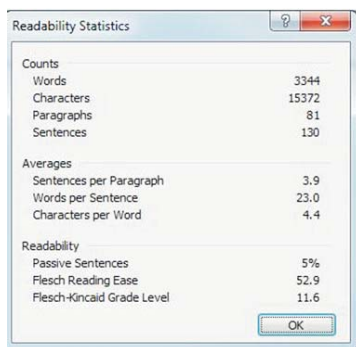


**Tools of Technical Communication**

Technical documents may be produced in various formats, like print, electronic or online. There many tools that can be used to create these documents. Some of the commonly used authoring tools are given below.

**Publishing Tools**

Though Microsoft word is the most popular tool, when the documents are very voluminous it is better to use FrameMaker which is more stable and consistent.

**Template Designer Tools**

These tools would be needed when typography requirements are stringent or layout design flexible. Many marketing documents like

brochures or office requirements like datasheets, or whitepapers need these authoring tools like Indesign, QuarkExpress or PageMaker.

**Authoring and Publishing**

| Authoring & Publishing | HelpConsole 2010 |
|---|---|
| Authoring | PTC Arbortext Editor with Styler |
| Publishing | PTC Arbortext Publishing Engine |

**Edit Tools**

| Edit tools for Microsoft word | EditTools v5.1 | EditTools v5.1 |
|---|---|---|
| | PerfectIt | Can be easily customized |

**Edit Tools**

| paper-based documents and PDFs | MS Word Apple Pages |
|---|---|
| PDF only docs | Adobe FrameMaker |

**Image Editing Tools**

| Image editor | Photoshop, SnagIt, CorelDraw, Illustrator |
|---|---|

**Diagrams, Flowcharts and Illustrations**

| For diagrams, flowcharts, UI related work and illustrations | Omnigraffle(vector) &Pixelmator (bitmaps/photo editing) |
|---|---|
| For dimensioned illustrations | High Design |
| For 3D illustrations | Cheetah 3D |

**Video**

| for video tutorials | Adobe Captivate, Camtasia | Useful for creating product demos, simulations & scenario-based training |
|---|---|---|

**Multimedia Tools**

| Multimedia tools | Flash, Max 3D, Teamsite Lectora, Visio | Useful for creating interactive animations and demonstratons |
|---|---|---|

**Screen capturing and editing**

| Screen capturing and editing | Adobe Illustrator, PhotoShop, Microsoft Paint, Snag IT, and Corel Draw |
|---|---|

**Website Tools**

| Website Designing Tool | Dreamweaver | can be used to create static and dynamic web pages |
|---|---|---|

**Web help**

| for web help | Madcap Adobe Robohelp Flare |
|---|---|
| For "Find and Replace" | Text Wrangler Hyper Edit |

**Help Authoring Tool (HAT(**

| Help authoring tool | Adobe RoboHelp, ForeHelp, DocToHelp, HelpNDoc, Epic Editor, AuthorIt |
|---|---|

**Llimiting Factors of Technical Communication**

Though owing to the rapid technological development, the scope of technical communication is increasing; a technical writer should be aware of some limiting factors.

**Technical Writing is not Creative Writing**

The work of a technical writer is similar to that of a copywriter; he is not engaged in creative writing. He does not have the freedom to let his thoughts run wild. He is bound by the brief of disseminating facts without any loss of meaning or essence.

**Knowledge Limitations**

A technical writer would always have to update his knowledge to communicate effectively. He should not only have a good grounding of the latest concepts and developments in his field of specialization, but be up-to-date in the authoring tools that he would need. In short he should be tech savvy.

Plain Writing Act of 2010 US

"Giordano Connie Integrated Technical Communications: A Strategy for Technical Communicators http://techwhirl.com November 1, 2011

"Gowers, Sir Ernest, The Complete Plain Words, ELBS

# MANDATORY CREATION OF HUMAN-FREE ZONES AMIDST THE HUMAN HABITATIONS ON EARTH

## Puthanveetil Yaseen

### Reducing the Human Impact

None damages or pollutes the environment the way we humans do. Many of our development activities often impair our ecosystem in some way or the other. Indeed, the negative human impact on our environment has reached alarming levels.

Reducing the gravity of anthropogenic impact on our planet is one of the primary concerns of our civilization today. We have to strive hard to slow down, if not stop, the ongoing degradation of our environment. We have to make multidimensional efforts to achieve this goal. We need to explore all the possible ways to reduce the level of human impact to the minimum.

In this regard, I too would like to drop a coin in the box.

### Human-Free Zones amidst Human Habitations

As a part of our efforts to reduce the gravity of human impact on our planet, I propose the creation of "human-free zones" (HFZs) amidst all human habitations all over the world.

We shall leave such territories—set up in villages, cities, and beyond—completely "untouched" making all efforts to keep those zones free of anthropogenic impact of any kind.

True, we may not be able to make those zones free of microwaves, electromagnetic waves, radiations, and the like incessantly poured out by our high tech civilisation. However, wherever possible, our ideal objective shall be nothing less than zero human impact.

In and around all human settlements, a certain percentage of the territories—portions of lands as well as ponds, lakes, rivers, and so on—shall be declared as human-free zones. HFZs could be created amidst house premises, farms, valleys, and hills.

### Convert Ten Percentage of Human Habitations Human-free

To start with, at least ten per cent of the area we use in villages and cities shall be marked, fenced, and declared as human-free zones.

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In the beginning, creation of HFZs in the private property shall be a voluntary activity for all. People may convert small patches of their land into HFZs. For instance, a person may simply fence off a few square metres of area on his/her house premises and designate it as a human-free zone.

However, in case the idea gains wide public acceptance—and after enactment of suitable laws and regulations—creation of such zones shall be made a mandatory pre-requisite for all development activities of the humankind.

## Absolutely Human-free

The expression "human-free zones" (HFZs) has to be taken in all sense of the term.  Areas designated so, whether land or water, shall be left absolutely "untouched" by humans and their activities whatsoever. Those zones have to be absolutely out-of-bounds for humankind.

No human shall enter or meddle with such zones. No activities like cleaning, sowing or irrigation are to be allowed in those territories. Let natural forces alone take control of such zones.

Ideally, we should totally ignore—and, if possible, forget—such declared zones. Indeed, zero human impact will have to be the ultimate goal.

## Shall it be made Mandatory?

We may encourage people to create and maintain human-free zones voluntarily on private properties.  Eventually, once the idea gets enough recognition among the society, the governments at various levels—local, state, and national—can enact laws and regulations to make it mandatory.

Indeed, citizens may voluntarily create HFZs in their private property—house premises, gardens, farms, marsh areas, or ranches—as they wish. They are free to decide how much of the area of the land or waters they own shall be declared, fenced, and converted into HFZs. The area of voluntarily created human-free zones could vary from ten per cent to ninety per cent of the property.

For example, a person who owns ten acres of land may fence, and convert one acre of land into a HFZ.  Another person might create a HFZ measuring nine acres of land keeping only the remaining one acre for his house premise.

Schools, colleges, universities, corporate houses, factories, and the like shall mark, fence, and declare patches of lands as human-free zones. Likewise well chosen ponds, lakes, rivulets, and rivers could also be declared as HFZs.

Indeed, creation of human-free zones all over the world requires global acceptance of the idea. This could be achieved through prolonged and sustained public communication campaigns. NGOs as well as other individuals shall come forward to materialise this objective

We have to encourage individuals for voluntarily creating human-free zones in their private property. We might mobilise our school/college/university students on a global scale to create and maintain HFZs in and around educational institutions

## Making Human-Free Zone a Mandatory Prerequisite to Development

The governments at different levels-local, state, and national-through the enactment of the necessary laws and regulations shall make creation of "human-free zones" a mandatory prerequisite for development activities.

This is to ensure that territories amounting to a minimum percentage of the area of the human habitations—say, at least ten per cent—are declared and maintained as HFZs.

International bodies including the United Nations may consider the idea for discussion on a global level. If found sensible and feasible, the United Nations could contribute a lot in spreading this innovation in all the member states

Eventually, after gaining enough public support, creation of human-free zones on private properties like house premises, gardens, farms, and ranches too could be made mandatory. I suggest that at least ten per cent of all sorts of private properties shall be converted into HFZs.

## The Benefits of Human-Free Zones

Indeed, the primary objective of creating human-free zones is to minimise the level of the gravity human impact on our planet and ecosystems. Such designated areas should not be confused with sanctuaries wherein humans might somehow gain access at times.

HFZs, on the other hand, are absolutely out-of-bounds for humans and such zones shall be left totally untouched and left to the forces of nature. Ideally, such zones shall be forever free of any anthropogenic impact.

Different forms of life might find sanctuary in such zone unbothered by humans. A variety of plants, animals, birds, microorganisms might live, thrive or perish in such protected territories in our villages, cities, and beyond.

When we think of human impact on our environment a host of negative consequences do rush into our mind: pollution, depletion, extinction, destruction, and so on. Creation of HFZs would contribute towards minimising all the negative consequences of human impact.

If millions of people, in different continents, could individually convert territories, even as tiny as one square metre in size, into HFZs that would add up to something remarkable on a global scale.

Creation of numerous, widely scattered HFZs in and around our villages and cities is likely enhance overall freshness to our environment, providing conducible pools of ecosystem to a variety of plants, animals, and microorganisms of all kind. And, our "development" is likely to become still more sustainable!

**The Impossibility of Zero Human Impact**

It could be argued the no zone on our planet could be made absolutely free of any anthropogenic impact since the global environment is almost saturated with a host of human made phenomena including various electronic waves and radiations.

This may be true but we have to make all possible efforts to keep the level of such anthropogenic effect to the minimum. Indeed, the insurmountable problem indicated here is one of the countless limitations of our civilisation.

**Mandatory Human-Free Zones beyond Human Habitations**

Some portions of our remote areas including forests, valleys, hills, and the like—not generally frequented by humans—shall also be declared by law as absolutely human-free zones. Such areas could already be with only minimum human impact. Still we can bring such zones under the protection of law denying any sort of access to those areas.

Once we accept the core idea of mandatory creation of HFZs for implementation, we have to leave the questions regarding its legal aspects—enactment of statutes, laws, regulations, and the like—to the legal experts.

However, individuals are free to set up HFZs in their private property the extent they like and this has to be encouraged through communication campaign at local, state, national, and international level. And our ultimate objective shall be to convert territories constituting at least one third of the surface of our planet into absolutely human-free zones.

Human beings, the most advanced beings on the earth shall thus impose an ultimate restriction on themselves: creating and maintaining human-free zones.

**Some Questions on Human-Free Zones**

- *We do have enough natural human-free zones all over the world. Then why should we create more in and around our habitations?*

Maybe there are human-free zones on our planet wherein we have not yet intruded into or just could not get access to those areas yet. Our technology may help us, presently or in future, to gain access to such remote or inaccessible areas.

For the sake of other life forms, we have to bring at least a certain percentage of such areas under the protection of law. For instance at least thirty per cent of such areas could be declared, by law, as HFZs.

Humanity, other forms of life, and the environment are going gain a lot by the setting up of HFZs amidst human habitations as well.

Wouldn't it be great if humans, "the most advanced beings on the planet", could impose an outlandish restriction on themselves by creating HFZs in their own backyards?

- *How could we fence and protect the proposed HFZs?*

  Whenever possible, we have to use vegetating fencing using thick thorny plants like the cactus. Wire fencing could be another option. If it is possible and feasible, creating six-foot walls could also be used in some cases. After designating and fencing off, the ideal way to "protect" such zones would be to "ignore and forget" them.

- *Can't parents allow their children to create little HFZs in their house premises?*

  Indeed, they could be encouraged to mark and fence off small patches of land in a corner in their "homeland" and declare them as their sweet little HFZs. It is better for their parents to avoid meddling with what they thus create.

- *Why don't we promote the setting up of HFZs at schools, colleges, universities, and other institutions?*

- Yes, why don't we do so and go ahead? The government as well as the management of the various institutions shall come forward and take up the challenge.

- *Who will ultimately own the Human-Free Zones?*

  Ideally, the human civilisation should shun all its rights on Human-free zones. Humans shall not have any "sovereignty" over such zones. Indeed, such territories are supposed to be for all beings-all forms of life-except Homo sapiens.

However, until we could evolve an adequately viable system, the mandatory HFZs amidst the human habitations shall be treated as government owned.

Besides the mandatory area, people shall be free to create and maintain HFZs on their private property the way they like, keeping them so as long as they like. Such individuals can organise and formulate codes and ethics of their own for "regulating" creation and maintenance of HFZs. A person might voluntarily designate and declare twenty per cent of one's private property as human-free. Another person might keep for oneself only ten per cent and declare the rest as a HFZ.

Humans might need or take years, decades, or even centuries to accept, imbibe, and implement most of the ideas presented here. This is primarily because many who are in power—directing the destiny of our civilisation—are too insensitive to the survival rights of other forms of life on Earth.

- *Can't we designate ponds, lakes, rivulets, rivers, oceans or parts of them as Human-Free Zones?*

   We have to apply serious thought to the goal of converting whole or portions of ponds, lakes, rivers, and oceans into HFZs.

- *How far humans shall go on creating and maintaining HFZs?*

   Ideally, we shall not rest until we succeed in converting territories amounting to at least one third of the total surface area of our planet into HFZs. Anything less would be an underachievement for the "most advanced" beings on Earth.

- *In an age when human civilisation is attempting to explore and colonise other planets, is not the idea of converting domains on the Earth into human-free zones a bit nutty?*

   It appears that for the very survival of human race and other life forms on this planet in a sustainable environment we are in need of some "nutty" ideas as well.

   The achievements of our civilisation are quite often extolled by those who argue that science and technology can solve our problems. They present before us an impressive list of benefits we all enjoy at present. Yet, strangely, members of Homo sapiens alone have to "buy, buy, and buy" almost all of our survival needs: water, food, shelter, leisure, and so on. For all other beings, except the most advanced beings on Earth, all the survival needs are absolutely free. All our "wisdom and sanity" had led us to this plight. If "sane" ideas fail to save us, why not try a few "nutty"

ones? Perhaps, it would take mountains of "nuts" to enable us and all other forms of life to regain a sustainable environment on the planet.

- *Once widely spread, won't this idea of creation of HFZs add a lot more "nuts" in the world?*

  Our civilisation has always been blessed with a few, but precious, servings of "nuts" that still lay glitteringly scattered in the pathetic path of our history. They include great saints, philosophers, and thinkers who partly succeeded in delaying the degeneration of our civilisation. Those are the ones who argued for the well being of all forms of life—not just that of the humankind.

  Perhaps, once the idea of creating HFZs gains acceptance globally, there remains a possibility of widespread mushrooming of what could be called "human free nuts" all over the world. Some of such extreme "nuts" might even argue for the total evacuation of human beings from the Earth, and to declare the entire planet as a human-free zone.

  Fortunately, our civilisation is endowed with adequate resilience to assimilate nuts of all kind including the human.

HUMAN - FREE ZONE

# ROLE OF PRIVATE FM IN SCIENCE COMMUNICATION: A CASE STUDY OF RADIO MIRCHI

**Jayaprakash D. & I. Arul Aram**

**Abstract**

In developing as well as developed countries, science plays a great role for social welfare and empowerment. Of all the media, radio is an effective medium to reach the masses. This is because even illiterates can use this medium, especially in a developing country like India. Private FM radio stations make efforts in imparting scientific temper. The present study assesses the perceptions of the radio listeners about the potentiality of the radio to provide science programmes in an effective way in the urban areas. The study explores the broadcasting intensity of the science programmes across radio stations operating in Chennai. In the same line, effectiveness and use of the programme is examined. The study also analyses the prospective use of radio in communicating the science programmes and the extent that radio has made effective contribution to the public understanding of science in the study area.

## 1. Introduction

Science communication (Sci Com) helps incorporate the knowledge of science into the common culture. Generally, most of the people do not understand the basics of experimentation or scientific inquiry, and the overwhelming majority cannot even explain what a development is in science arena. The research community in science discipline genuinely wants to lower the barriers separating the public from science and help increase enthusiasm for an understanding of science. Public Understanding of Science (PUS) focuses on public engagement with science and is unique in its grassroots approach to disseminating science and generating enthusiasm for the topic.

PUS is a grassroots effort that coordinates a network of organizations into a sustained, national campaign to celebrate science. Its primary goals are to inspire broad appreciation of science and its contributions to quality of life, inform the public about the process and nature of science, as well as science itself and make science more accessible to everyone. Radio has is one of the fastest growing media in

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India because of its low cost in availability, maintenance and use. Although radio is one of the oldest media, it is regarded as most persuasive, affordable and the most accessible medium ever. The present study tries to ascertain the role of radio in disseminating science information in Chennai and the effectiveness of radio in transmitting the information to the intended inhabitants and its use and introspect the effectiveness of radio in communicating science programme, a private FM radio station (Radio Mirchi) was taken up for the study.

## 2. Conceptual Background

Several studies illustrate the various dimensions of the science communication process which enable to conceive the conceptualization of the study. Indian society has reached a complex socio-economic and cultural stage and has very limited space for science communication for public understanding. The media speaks very little about the public understanding of science but believes that it will automatically grow over the years due to the public interest in science (Singh, 2007). The professional science communication strategy evolved in mass media communication to address the issues in a more systematic way. Cribbs and Hartomo (2002) describe the methodology of science communication through the mass media and the method to communicate the science stories through newspaper, website or magazine with more clarity; in the same line it is essential to draw the outline for every science news article (Vilanilam, 2003). The role of radio to promote science communication has been well documented especially the role of community radio stations as a potential tool use to provide information and resources to ensure the effective delivery of science information to ensure PUS at the grossroots levels (Gutierrez and Cristina, 2002).

### 2.1 Research Questions

The research questions are :

(1)   What is the reach of science programmes / information through radio among the listeners    in Chennai?

(2)    What is the understanding of the radio listeners about science programmes / information?

(3)   How do science programmes / information help the listeners in their day-to-day life?

### 2.2 Objectives of the Study

The objectives of this study are:

(1)    To find the reach of science communication through radio among the listeners in Chennai

(2)    To find the perception of listeners about science communication through radio

(3)    To assess the utility of science communication through radio by the listeners

## 3. Review of Literature

Raza (2011) found significant regional disparity in awareness levels within India which should be factored into designing national campaigns to improve science awareness. The fact that some states with low literacy rates, scored high on public understanding of science shows that literacy and education are not the only influencing factors. "It indicates that in these places awareness about certain scientific facts has become part of the cultural background and is nurtured irrespective of the level of education," Raza explained.

Chandrappa and Ravi (2009) explain the rapidly growing population and economic development are leading to the environmental degradation in India through the uncontrolled growth of urbanization and industrialization, expansion and massive intensification of agriculture and the destruction of forests. Major environmental issues are forest and agricultural land degradation, resource depletion (water, mineral, forest, sand, rocks, etc.), environmental degradation, public health, loss of biodiversity, loss of resilience in ecosystems, and livelihood security for the poor.

According to a survey on science communication in India cited in Patairiya (2007), the status of science coverage is as follows:  5.84% on radio; 1.8% on TV; 3.4% in print; science-based research papers constitute 2.10%; and science-based books is 0.20%.

Chandramouli (1990) reported that majority of the radio listeners wanted information to be presented by a specialist in the form of a straight talk.

Maraty and Reddy (1998) concluded that majority of the respondents quoted reasons for listening of programme as broadcasts were need based and pronunciations of words was normal. The reason quoted for listening programme was easy to understand and attractive.

Chandrakandan and Knight (1987) in their study on 'factors affecting farm broadcasting' suggested selecting the speaker who would be knowledgeable with good pronunciation and voice would be able deliver the message more clearly. The topic should be related to felt need, timeliness and completeness.

**4. Scrutiny of the Science Programme Broadcast - Private FM**

Today, private FM channels are a boom in the industry. Radio Mirchi (98.3 FM) being the first FM radio station in Chennai is now at peak, they broadcast lots of advertisements and they take lot of time to broadcast their own promotions and identities of programmes and station.

In the commercial FM radio stations in Chennai, Radio Mirchi was found to be the station which broadcast a lot of science programmes. Analysis of the vernacular private FMs of the study area revealed that majority of the science programmes pertained to health-related issues followed by environmental issues; in the same line the time of broadcast format of the programmes were inappropriate to deliver the desired outcome of the programme to the people in the study area.

Thus, the content analysis of the science programmes exemplified that very limited portion of the time is allocated for science programme. But the information provided by the radio stations was very much useful for the radio listeners. The following analysis would reveal the perceptions of the people on the use of the science programmes broadcast.

Science programs in the formats of tid-bits, PSA were covered which focus on health issues, health campaign, environment related issues for ex. Weather report. They also covered energy related issues. They give up-to-date issues and timely information for eg. if it is science day they give information about inventions and also give tid-bits about science day.

**5. Research Methodology**

Research design as defined by Kerlinger (1995) is the plan and structure of investigation so conceived as to obtain answer to research questions. Expost facto research design was followed for conducting the study.

The study area is confined to Chennai. The researcher preferred to choose Chennai since a large portion of people reside in the radio's broadcasting territory, a radius of about 20 km. Two steps of analysis are taken up: firstly purposive sampling was done at AIR Chennai 'A' (primary channel) in Chennai and programmes of station is subjected to analysis. The bulk of this report draws on a quantitative content analysis of these stations' output in one month from April 1 to 30, 2013. Discussions about the coverage of science often proceed from anecdote, citing examples that are not necessarily representative. Quantitative content analysis can offer a more systematic view of output. But in examining broad patterns of coverage, quantitative analysis can do little to probe the more subtle features of individual items which would be helpful to assess proportion and quality of the science programme broadcast and data collected from

the structured questionnaire from 600 samples have been used to understand the perceptions of the radio listeners in Chennai.

## 6. Findings

Radio Mirchi allots very less time for both RJs and music when compared with the other radio stations. But when special days are considered they concentrate more on the special day programmes and they try to give the best of information possible. They mostly call celebrities and experts of that particular field to deliver information, be it a world's kidney day or cancer day, Radio Mirchi's programmes are very special. They attract the listeners by broadcasting the promos of programmes again and again with celebrities talking. For kidney day 2012 Radio Mirchi broadcast programmes with Tamil film actor Suriya which is known to have a lot of response. Out of the 20% science broadcast, 80% was on health, 5% was on technology and technology updates, 10% was on environmental issues, and 5% was on hygiene.

From the survey it is found that 98% of the respondents tell that the commercial radio stations do communicate a huge amount of information and only 2% of the respondents disagree that information is not communicated. That means radio particularly that of commercial FM is taking special care of communicating a large amount of information.

From the survey it was found that 20% of science is communicated from information that is broadcast in commercial FM stations. Science is communicated through the commercial radio stations but the quantity is very less. In the commercial FM radio stations in Chennai, Radio Mirchi was found to be the station which broadcast lot of science programmes.

## 7. Discussion

Extent of use of radio information is measured as maximum extent, somewhat extent and never. Change in knowledge, attitude and adoption levels among radio listeners is a clear identification of successful communication. The overall analysis revealed that science programmes broadcast by the radio have significant influence on the knowledge of the listeners but not to the adequate level. Along with the quantitative inferences it also found some of the elements were of significance such as radio programmes related to health, weather, home, community and entertainment. These give varieties of information and it is helpful to become aware of different new technologies. These programmes are in simple language. So it is very useful for illiterate people too.

From the study it was found that to communicate science, delivery style is important. The information reaches the audience according to the mode or format of presentation. If it is presented in an interesting manner then the reach of the programme is high.

It was found that most of the people listen to FM for entertainment but they expect good information from the programmes. It was also found that the people are bored of gossip broadcast by the radio stations and they are now attracted towards quiz type programmes.

Though the quantity is less, from the survey it is learnt that it has reached the audience and most of the respondents remember the programmes which were broadcast on health. From the findings it is interpreted that science is effectively communicated through the commercial FM radio stations though the quantity is less. The survey helped come to a better understanding of the effectiveness of the science programmes in terms of the utility, usefulness, perceptions of radio programmes in all the radio stations to the respondents.

The respondent's opinion on the usefulness of the science programme broadcast by the radio stations in the study area. As much as 37.3 percent of the respondents opined that health-related issues were useful. Only 2 percent of the respondents revealed that energy-related issues were useful, 17.2 percent of the respondents opined that agriculture-related issues were worthy enough, 20.2 percent of the respondents opined that space and weather-related issues were useful, 1.5 percent of the respondents said that technology-related issues were useful, 15 percent of the respondents said that both health and environment programmes were useful whereas 4.8 percent revealed that none of the programmes were constructive. It is noteworthy that health and weather programmes were useful to the respondents. Significant proportion of the respondents revealed that agricultural-oriented programmes were also useful. The analysis indicates that radio has got significant position in the information arena despite the fast development of other electronic media.

Respondents opined on the usefulness of science-related programmes on day-to-day activities. As much as 46.7 percent of the respondents revealed that science information provided by the radio is useful in day to day activities of the respondents whereas 53.3 percent of the respondents opined it did not have any influence on day-to-day activities. For instance, the Petralthan Pillaiya or "all children are our children" campaign ran for a month and raised three times the proposed target, allowing over 2,500 children to take part in the insurance plan. The success of the campaign inspired all the partners to take part in a similar initiative the following year. With the $46,000 they raised in 2010, much of it through small donations from taxi drivers, schoolchildren, and other individuals, Hello FM and Kamal Hassan are in the process of establishing a trust fund for children living with HIV. The interest earned through the trust fund will help pay the annual premiums for the children now covered under the insurance plan.

The means of utility of the science programmes on various criteria are: 20.7 percent of the respondents opined that it enhances the scientific knowledge, 30.8 percent of the respondents revealed that it gives clarity to health problems and reduces the apprehension on healthcare, 18.7 percent opined information provided by the radio reduced the mental stress on health issues, 14.8 percent revealed it was helpful to preserve the family through various preventive methods to protect the family members from health hazards. 15 percent of the respondents opined that it is helpful to understand the innovation. It could be inferred from the empirical verification that people were benefited more from the health-related issues.

The perception of the respondents on the statement that listening to radio can improve knowledge is of much interest. As much as 5.7 percent of the respondents strongly agreed, 20.3 percent agree, 22.3 percent neither agree nor disagree, 45 percent of the respondents agreed and 6.7 percent of the respondents strongly disagreed. It could be inferred from the data that significant portion of the respondents opined that the programmes broadcast by the radio did not enhance their knowledge. But some portion of the people agreed with the statement which implies positive impact of the science programmes broadcast by the respondents in the study area.

The survey clearly indicates that a major chunk of the respondents have used the radio for the purpose of entertainment. It could be inferred from the analysis that radio stations allocate limited time for science programmes as the listeners are not interested in science programmes. But at the same time as majority of the listeners hail from younger and middle age groups, it is essential to formulate an interesting way to communicate the science programmes in interesting formats to the listeners since it is essential to understand the changing dynamics. In the same line, it could be seen from the opinion of the respondents that they are aware of new solutions to their health problems and got awareness on health to the maximum extent as they listened to radio programmes regularly. But some of the respondents expressed that their knowledge has increased to some extent. Listening to science programmes is helpful for creating awareness and increasing information about new technologies, programmes and policies.

Some of the respondents expressed that radio is not useful for adoption of technologies. Because this medium is only audio i.e. one way communication, they cannot clarify their doubts whenever they want. Lack of detailed knowledge and too much information given in a short time confuses the audience. This might be the reason for non-adoption. Most of the youngsters did not want to listen to the lengthy information of science information so it would be nice if the pieces of information are broadcast between songs and talk show the people get the required science information.

The process of science communication needs to be enhanced in a more sophisticated way encompassing the multilateral dimensions which would facilitate the PUS as the informal observation. The survey indicated that most of the people engaged with science programmes without having the sense that they have been associating with science programmes. For example, people were interested in the PSA so it is imperative to formulate science programmes in a more transparent way thereby enabling the listeners to understand the issue more comfortably.

## 8. Conclusion

The analysis clearly indicates that the radio stations do not adequately broadcast science-related programmes. Science programmes certainly do not have priority in the listeners' interest but it is true that work needs to be done in the direction of making science interesting to all for the common good and promotion of knowledge. A lot more creativity is required in the field of science writing / programming and journalism. Perhaps, this is what we lack at the moment.

Science coverage arises out of a comprehensive interplay of factors including workloads, perceptions of audience expectations, genre norms, scientists' behaviour towards the media, institutions, and the physical constraints of different aspects of the scientific coverage. But the contents of the programmes pertaining to science issues have not substantially elucidated that it play a prominent and pivotal role in enhancing the scientific temper of the listeners and launched the platform for the youngsters to establish the potentiality to the world. Radio needs to be used to disseminate the science-oriented information to the people to a large extent in future.

The commercial FM radio stations' aim is to make the audience stay tuned in their frequency and tomakes them listen to their programmes and, in turn, to increase revenue. This is the core aim, but FM radio stations as a responsible media, besides entertainment they give, they also try giving useful information. They broadcast less amount of science fearing that they may lose their audience. Maintaining the audience tuned in one station depends on how interesting the station broadcasts programmes.

The role of radio in communicating science programmes in the study area is very limited and insignificantly accentuates science temper among the listeners. The listenership of radio stations which only broadcast entertainment and gossip is less than the radio stations which broadcast science and information. In this knowledge-based world, more space can be given for science by following innovative and creative methods.

## References

1.    Chandramouli, A.S. (1990). A report on 'Sasya Sanjeevini' serial programme, All India Radio, Bangalore.

2.    Chandrakandan, K. and Knight, A.J. (1987). Factors affecting farm broadcasting, Rural Development Review, Vol. 6, No. 1-4, pp. 610-613.

3.    Chandrappa, Ramesha and Ravi. (2009). Environmental Issues, Law and Technology: An Indian Perspective, Retrieved on 3rd October 2010 from http:// books. google.co. in/books?id =vt4HSQAACAAJ &sitesec=reviews.

4.    Cribb, J. Hartomo T.S.A. (2002). Guide to Effective Science Communication, CSIRO Publishing, Melbourne, Retrieved on 22nd August 2007 from http:// ec. europa. eu/ research/water-initiative / pdf / iwrm _ scicom/general/g14_en.pdf.

5.    Gutierrez, Hernan and Cristina, María. (2002). Broadcasting, voice, and accountability, Retrieved on 5th October 2008 from http:// books.google.co.in/books?_id=kptZioP7EeoC&pg=PA288&lpg= PA288& dq=Hernan+Gutierrez+%26+Mar%C3%A Da+Cristina+ (2002)&s ource=bl&ots=r6dfNCB1U&sig=A9o4MF2B6lAHLbUr Fc97wQSSd_M&hl=en& sa=X&ei=5dKvT7XzL4 TwrQe5trTsAw& redir_esc =y#v=onepage&q=Hernan% 20Gutierrez%20%26%20Mar% C3%ADa%20 Cristina%20(2002)&f=false.

6.    Kerlinger, F.N. (1995). Foundations of Behavioural Research, PRISM Books Private Limited, Bangalore.

7.    Maraty, P. and Reddy P.R. (1998). Listening and viewing behaviour of farmers towards agricultural of farmers towards agricultural programmes, Maharashtra J. Extn. Edu.,        Vol. 17, pp. 307-31.

8.    Patairiya, M. Status of science communication in India, A talk at the National Workshop on Science Writing/Journalism, Organised by the National Council for Science and Technology Communication and MTS Academy at Pondicherry University, Puducherry.

16.    Ramanaa, B.V. (2012 .)Environment and forests department, , Retrieved on 2nd January 2013 from http:// www.tn. gov.in/ policynotes / pdf/ environment.pdf.

17.    Raza. Scientific awareness in India, 2011, Retrieved on 17th April 201[1] from http://www.scidev.net/en/news/scientific-awareness-rising-in-india-1.html.

19.    Rogers, E., Braun, J.R., and Vermilion, M.A. (1977). Radio forums: a strategy for rural development, In Spain, P., Jamison, D and McAnany, E., Eds. Radio for Education and Development: Case Studies, World Bank Staff Working Paper 266. Washington DC: The World Bank.

20.    Singh, R.B. (2007). Science communication in Indian context, Retrieved on 12th September 2007 from http:// www. iisc.ernet. in/currsci/jul25/ articles4.html.

23.    Vilanilam, J.V. (1993). Science Communication and Development, Sage Publications, New Delhi.

# COMMUNICATION DIMENSIONS OF MGNREGS BENEFICIARY PERCEPTIONS

## Rahul Amin

**Abstract**

The Government of India since independence has initiated several socio-economic structural measures and communication strategies through different developmental programs for eradication of poverty, unemployment, health problems and others. As part of this objective, the Government has been allocating funds under different heads towards plan outlays from time to time for various development programmes being implemented by the state government. However, the common belief is that these programmes are not delivering the expected benefits, mainly on account of lack of proper communication and coordination between administrators or policy makers on one side and beneficiaries on the other. Even at the grassroots level the desired results have not been achieved because of improper implementation of the programme, ineffective transparency, communication gap, procedural delay, corruption and so on.

There have been a number of studies on MGNREGS that look at the implementation of the act in terms of employment created as well as issues of wages, processes of implementation, corruption, issues of migration, embezzlement of funds, participation of worker especially female, changes in livelihoods, payment procedure, etc. However, rarely studies have attempted in broader sense to look into the communication aspect and strategies of this particular programmme and its contribution towards long term development and sustained employment generation in the villages. This paper will specifically examine the communication perceptions of the beneficiaries about Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) which is different in nature than those of the studies have been conducted by different researcher in this particular development scheme.

*Key words: Communication strategies, plan outlays, eradication of poverty, MGNREGS, sustained employment, development scheme.*

**Workfare agenda justification**

In a rural agrarian economy, sections of rural population depend on the wages they earn through unskilled, casual and manual labour. They are vulnerable to the possibility of sinking from transient to chronic

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poverty in the event of inadequate labour demand or in the face of unpredictable crises that may be general in nature, like natural disasters or personal, like ill-health, all of which adversely impact their employment opportunities.

In a context of poverty and unemployment, workfare programmes have been important programme interventions in developed as well as developing countries for many years. These programmes typically provide unskilled manual workers with short-term employment on public works such as irrigation infrastructure, afforestation, soil conservation and road construction.

The rationale for workfare programmes rests on some basic considerations. The programmes provide income transfers to poor households during critical times and therefore enable consumption smoothing especially during slack agricultural seasons. In countries with high unemployment rates, transfer benefits from workfare programmes can prevent poverty from worsening, during lean periods. Durable assets that these programmes may create have the potential to generate a second-round of employment benefits as necessary infrastructure is developed.

**Employment series in India**

The Indian government implemented workfare plans from time to time that offered wage employment on public works on minimum wages. The wage employment programmes started as pilot projects in the form of Rural Manpower (RMP) [1960-61], Crash Scheme for Rural employment (CRSE) [1971-72], Pilot Intensive Rural Employment Programme (PIREP) [1972], Small Farmers Development Agency (SFDA), Marginal Farmers and Agricultural Labour Scheme (MFAL) to the poorest of the poor. These experiments were translated into a full-fledged wage-employment programme in 1977 in the form of Food for Work Programme (FWP). In the 1980's this programme was further streamlined into the National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP). Jawahar Rozgar Yojana (JRY1993-94) Employment Assurance Scheme (EAS), Employment Assurance Scheme (EAS). The Jawahar Rozgar Yojana (JRY) was merged with JGSY from 1999-2000 and was made a rural infrastructure programme. The programme was merged with the Sampoorna Grameen Rozgar Yojana from 2001-02, and National Food for Work (NFFWP, 2005) These wage-employment programmes implemented by State Governments with central assistance were self-targeting, and the objective was to provide enhanced livelihood security, particularly those dependent on casual manual labour. At the state level, the Maharashtra government formulated the Maharashtra Employment Guarantee Scheme and Maharashtra Employment Guarantee Act, 1977 to provide wage- employment to those who demanded it.

## MGNREGS

Giving a statutory framework to wage employment programmes—based on the experience of these programmes, the National Rural Employment Guarantee Scheme (MGNREGS) was enacted to reinforce the commitment towards livelihood security in rural areas. The Act was notified on September 7/2005. The significance of MGNREGS lies in the fact that it creates a right- based framework for wage employment programmes and makes the government legally accountable for providing employment to those who ask for it. In this way, the legislation goes beyond providing a social safety net towards guaranteeing the right to employment.

## MGNREGS Objectives

The National Rural Employment Guarantee Scheme (MGNREGS) aims at enhancing the livelihood security of people in rural areas by guaranteeing one hundred days of wage-employment in a financial year to a rural household whose members volunteer to do unskilled manual work. The objective of the Act is to create durable assets and strengthen the livelihood resource base of the rural poor. The choice of works suggested in the Act addresses causes of chronic poverty like drought, deforestation and soil erosion, so that the process of employment generation is maintained on a sustainable basis.

## Coverage of MGNREGS

The Act is applicable to areas notified by the Central Government and will cover the whole country within five years. In its first phase, it was notified in 200 districts across the country. In the second phase the Act has been notified in the financial year 2007-8 in an additional 130 districts, bringing the total of number of districts covered by MGNREGS to 330. In these districts, pre-existing wageemployment programmes, the National Food for Work Programme (NFFWP) and the Sampoorna Grameen Rozgar Yojana (SGRY) were merged with MGNREGS.

The remaining 266 districts have been notified on September 28, 2007 where MGNREGS would come into force from April, 2008, thus fulfilling the statuary commitment of the present government.

## Communication Provisions of MGNREGS

Awareness generation through Information, Education and Communication (IEC) For people to know their rights under the Act, effective communication of information about the Act and Scheme is essential.

For awareness generation every state Government will undertake an intensive Information Education and Communication (IEC) exercise to publicize the key provisions of the National Rural Employment Guarantee Act (NREGA) and procedures to be followed like the process of registration,

demand for employment, unemployment allowance, grievance redressal and social audit.

This IEC should target workers, rural households, PRIs and pay special attention to deprived areas and marginalized communities. The state government should draw up an IEC plan and develop communication material designed to help people articulate their demand and claim their entitlements.

Information should be widely disseminated, especially in remote areas, SC/ST hamlets through TV, radio, films, print media including vernacular newspapers, pamphlets, brochures.

While intensive communication should precede the introduction of the Act, communication is also an integral part of the implementation process, aimed at making this legislation a 'People's Act'. The effectiveness of this communication process will be evident in the extent to which people who need work under this Act register and apply for work. Other signs of successful communication include the active involvement of local communities at every stage prompt grievance redressal, vigilant social audits by the gram sabhas, and wide use of the right to information.

**Enabling Employment**

Since MGNREGS is a Rights-based programme, articulation of demand by the rural poor is the basic premise of its operation. The demand process of MGNREGS distinguishes it from other wage-employment programmes and also constitutes its biggest challenge, especially if wage seekers are not literate and not organized. Generating awareness among local rural communities through Information, Education and Communication (IEC) becomes critical for enabling the rural poor to articulate demand. States have forged a variety of methods for communication and social mobilization that include preparation of communication material on MGNREGS processes in simple local language, one day orientations of sarpanchs/ ward members, convening gram sabhas, using district teams for village level interactions, local vernacular newspapers, TV and radio spots, pamphlets and brochures and local cultural forms. Innovative methods like Information counters on local market days, Village Information Walls, fixing a Rozgar Day in the week and establishing a helpline have also been used.

MGNREGS progress and the weaknesses during its implementation, two kinds of reviews are available– (i) the implementation of the MGNREGS has been reviewed by the Comptroller and Auditor General (2007) and (ii) certain NGOs, especially the National Consortium of Civil Society Organizations (CSOs), have also undertaken several reviews.

The CAG report underlines the fact that the guidelines indicated in the MGNREGS have not been followed. The report specifically mentions lack of provision of professional staff to implement the scheme.

(1) Lack of professional staff: Every state government was required to appoint in each block, a full time Programme Officer, exclusively responsible for the implementation of the MGNREGS. The state government, however, directed Block Development Officers (BDOs) to take "additional charge" to implement the MGNREGS. The CAG Report finds that 19 States had not appointed these officers in 70 percent of the blocks surveyed. The point which needs to be highlighted is that the MGNREGS is not a programme that can work of on "additional charge.

All this resulted in a situation where out of 20.1 million households employed in the MGNREGS, only 2.2 million (that is, 10.5 per cent) received the full 100 days employment and wages as promised by the Act. The average employment per household was 43 days in 2006-07 and 35 days in 2007-08, as revealed by the Ministry of Rural Development.

The CAG report (2007) has brought out clear paucities of the MGNREGS in the subsequent words:

The main deficiency was the lack of adequate administrative and technical manpower at the block and gram panchayat level. The lack of manpower adversely affected the preparation of plans, scrutiny, approval, monitoring and measurement of works, and maintenance of stipulated records at the block and gram panchayat level. Besides affecting the implementation of the scheme and provision of employment, this has also impacted adversely on transparency, and made it difficult to verify the provision of the legal guarantee of 100 days of employment on demand. Planning was inadequate and delayed, which resulted in poor progress of works. Systems for financial management and tracking were deficient, with numerous instances of diversion/ misutilisation, and delay in transfer of state share. Maintenance of records at the block and gram panchayat level was extremely poor, and the status of monitoring, evaluation and social audit was also not up to the mark [CAG (2007), Draft Performance Audit of Implementation of MGNREGS, p. 95]

A study by the Centre for Environment and Food Security (CEFS) about the progress of the programme in Orissa revealed that the government had claimed that out of a budgetary provision of Rs 890 crores for 2006-07, the state government was able to utilize Rs 733 crores (that is, 82.4 per cent). As a result 57 days of wage employment was provided during the year. Not a single household was denied wage employment in 19 MGNREGS districts. The government also claimed that 1.54 lakh families in the state completed 100 days of wage employ during 2006-07.

However, the research team of the CEFS revealed the hollowness of these claims. Out of Rs 733 crores spent under the MGNREGS, more than Rs 500 crores was unaccounted for, probably siphoned off and misappropriated by government officials. The research team also found that not a single family in the 100 sample villages was able to secure 100 days of wage employment. Very few families got 20-40 days, the rest mostly between five and 20 days, if at all. Fake job cards and fabricated muster rolls exaggerated the benefits of the scheme. The social audit was non-existent. Thus, the ground reality was highly distressing despite tall claims of the government of the success about the MGNREGS implementation.

At the same time, it also necessary to take the following measures to strengthen the support structure of the MGNREGS.

(i)     Appointing full-time professionals for implementing the MGNREGS at all levels which is vitally necessary to implement the scheme.

(ii)    Provision of full-time employment guarantee assistants at the panchayat level to make the rural people aware of the benefits of the scheme and induce them to take advantage of the scheme.

(iii)   Specific efforts should be made to reduce the time gap between work done and payment received by the rural labourers in the MGNREGS.

(iv)    To use the Management Information System (MIS) and improve the system of monitoring of the scheme as also to check leakages and misappropriation of funds.

(v)     To undertake a massive programme of generating awareness about the scheme with the help of information technology.

(vi)    To revise the schedule of rates periodically so that changes in the statutory minimum rates of wages are made consistent with their revision.

**Role of GP in Implementation of MGNREGS**

The lowest tier of the three-tier system gaon panchayat as grass root institution is closest to the people and the locality. Section 19 of West Bengal GP Act, 1973, describes that "A GP shall function as a unit of self-government and, in order to achieve economic development and secure social justice for all, shall, subject to such conditions as may be prescribed, or such directions as may be given by the state government,"(West Bengal GP Act, 1973). It is the implementing agency of most of the development programs and also monitors and evaluates programs as well as it is the main service providing agency at the ground level. At this level, gaon

panchayat is a very powerful and influential body, wielding effective control over substantial resources and political power (Ghatak & Ghatak, 2002).

Gaon panchayat body is also one of the most responsible stakeholders in successful implementation of MGNREGS program. Gaon panchayat is responsible for creating awareness about the scheme, receiving application, register names, issue of job cards, provide employment to the job seeker and also keeping records of the works under MGNREGS. Along with this, gaon panchayat has to prepare self schemes to provide employment within the stipulated 15 days of demand, and to provide timely wage. It also has to make arrangement for enough funds for wage payment. Gaon panchayat body is also responsible for redress complaints lodged by people. Gaon panchayat has to publish and update the data related to implementation of MGNREGS in the specified hoarding in proactive disclosure format.

The panchayat and community development was created by the government of Assam in the year 1952 with the slogan for uplift of the rural people. Originally three numbers of community development projects and 135 numbers of development blocks were created in Assam. Now the development blocks have been increased up to 219 for implementation of various development programmes and schemes for suitable upliftment of rural people. The erstwhile panchayat and community development department and the rural development department have been amalgamated into one department in the name and style as Panchayat and Rural Development since 1.7.1989.

A study has been conducted on MGNREGS concentrating on communication aspect with a general objective of understanding the perceptions of respondents as to the style and strategies of government communication for rural development.

**Methodology/Design**

The researcher has followed survey method for the study with the help of a questionnaire and interview.

**Sample Size**

The Universe of the study is Barak Valley and 3 (three) development blocks of the three district (Cachar, Karimganj and Hailakandi) two villages from each block has been selected for the study. The number of respondent from each block is 200, making it a total of 600.

**Sampling Technique**

A convenient sampling   method has been followed for the study.

**Data used:** Both primary and secondary

Communication perceptions of the beneficiaries about MGNREGS: field report analysis

**Table 1.1**

| Effective Medium of Communication to the Rural People About MGNREGS | | |
|---|---|---|
| First source of information of the rural benificiaries about MGNREGS | No. of benificiaries received information through this source | Percentage of beneficiaries |
| Friends | 341 | 56.83 |
| Gaon sabha | 168 | 28 |
| Newspaper | 76 | 12.67 |
| Radio | 15 | 2.5 |
| Total | 600 | 100 |

In the above table 1.1, data reveal that 341 beneficiaries that is 56.83% identify 'friends' as their first source of information and 168 that is 28% from 'gaon sabha' while 76 that is 12.67% beneficiaries from 'newspaper' and 15 that is 2.5 % beneficiaries of the scheme identify 'radio' as their first source of information about MGNREGS.

**Table 1.2**

| Best Centre of Information of the Rural People About MGNREGS | | |
|---|---|---|
| Best centre of information of the rural benificiaries about MGNREGS | No. of benificiaries received information from the centre | Percentage of beneficiaries |
| Local market | 219 | 36.5 |
| Work place | 285 | 47.5 |
| Village community hall | 42 | 7 |
| Sports playground | 54 | 9 |
| Total | 600 | 100 |
| *Authentic information source to the beneficiaries about employment guarantee scheme MGNREGS* | | |

In the above table 1.2,data show that 291 beneficiaries that is 36.5% identify 'local market' as their best centre of information and 285 that is 47.5% identify 'work place' while 42  that is 7% beneficiaries marks 'village community hall' and 54 that is 9 % beneficiaries of the scheme identify 'sports playground' as their best centre of information about MGNREGS.

**Table 1.3**

In the above table 1.3, data show that 58 beneficiaries that is 9.67
opines 'print media' is mostly used

| Awareness & opinion of the rural beneficiaries regarding the use of media by the government | | |
|---|---|---|
| The Government mostly uses the following media to implement the specific program (MGNREGS) | Awareness of the beneficiaries | Percentage of beneficiaries |
| Print media | 58 | 9.67 |
| Electronic media | 18 | 3 |
| Both | 63 | 10.5 |
| Can't say | 461 | 76.83 |
| Total | 600 | 100 |

and 18 respondents that is 3% identify 'electronic media' while 63 that is
10.5% beneficiaries mark 'both medium' and 461 that is 76.83 %
beneficiaries of the scheme are not aware of that which media government
mostly uses to implement the scheme MGNREGS

**Table 1.4**

| The authentic source of information about employment guarantee scheme to beneficiaries | Number of beneficiaries authentic source | Percentage of beneficiaries |
|---|---|---|
| Friends | 272 | 45.33 |
| Gaon sabha | 281 | 46.84 |
| Newspaper | 38 | 6.33 |
| Radio | 9 | 1.5 |
| **Total** | **600** | **100** |

In the above table 1.4, data show that 272 beneficiaries that is
45.33% identify 'friends' as their authentic source of information and 281
that is 46.84% identify 'gaon sabha' while 38  that is 6.33% beneficiaries
mark 'newspaper' and 9 that is 1.5 % beneficiaries of the scheme identify
'radio' as their authentic source of information about MGNREGS.

**Table 1.5**

| Beneficiary perceptions about system and strategies of communication being followed by the authority as a whole at village level | | |
|---|---|---|
| My opinion of the system and strategies of communication which are being followed by the concerned authority of MGNREGS as a whole at my village is: | Number of beneficiaries communication perception | Percentage of beneficiaries |
| Happy | 91 | 15.167 |
| Unhappy | 268 | 44.67 |
| Can't say | 241 | 40.17 |
| Total | 600 | 100 |

In the above table 1.5, data show that 91 beneficiaries that is 15.167% are happy with the system and strategies of communication which are being followed by the concerned authority of MGNREGS as a whole at their village and 268 that is 44.67% are unhappy while 241 that is 40.17 % cannot say anything .

**Inferences**

The right to work in the Indian context is a continuing struggle. In some instances the assertions of people to gain the right to work have created a movement of various possibilities. In this respect, there are some basic components that the state has to undertake if it wants to actualize the right to work. One is to deal with the phenomenon of corruption and proper communication. Corruption and communication gap are two major obstacles in the case of implementing MGNREG scheme. Provisions of IEC laid in the Act are not being strictly followed by the government officials. The easiest way of reducing corruption is to ensure effective communication strategies. Government could start a feedback mechanism for the beneficiaries in remote villages to reduce corruption and make the scheme more effective. Also information of work and names of workers and wages paid should be publicly displayed. Public transparency at worksites and the participation of workers will go a long way in democratizing worksites and lowering the value of leakage. Gram sabhas, and social audits are also a useful guarantee against corruption and would ultimately help in strengthening democracy by raising consciousness of rights. The government should actively encourage such processes instead of blocking them, by leaving the initiative to the bureaucracy.

The two major sources of information are friends and gaon sabha. Data show that 56.83% of the beneficiaries came to know about MGNREGS

through friends making them the most effective transmitter of information. The gaon sabha comes next in terms of generating awareness as 28% of the beneficiaries identify it as their first source of information of the scheme. Inter-personal and group communication has played a particularly significant role where they seem to have made a huge impact in terms of making people aware of their rights. The government should emphasis on these means of communication for the smooth functioning of the scheme for the rural labors and for the state development as a whole.

As per the data given in table 1.3, 58 beneficiaries (9.67%) opine that 'print media' is mostly used for disseminating information relating to MGMNREGS, whereas only 18 respondents (3%) identify 'electronic media' for disseminating information relating to MGMNREGS. From the rest, 63 respondents (10.5%) opine that both 'print and electronic media' are used to disseminate information regarding MGMNREGS and 461 (76.83%) respondents are not aware of the media government uses to disseminate information on MGNREGS. In table 1.4, data show that 272 beneficiaries (45.33%) identify 'friends' as their authentic source of information and 281 (46.84%) identify 'gaon sabha' as their authentic source of information. Out of the rest, 38 (6.33%) beneficiaries mark 'newspaper' as an authentic source of information on MGMNREGS and only 9 (1.5%) beneficiaries identify 'radio' as their authentic source of information about MGNREGS. Similarly in table 1.5, data show that 91 beneficiaries (15.167%) are happy with the system and strategies of communication being followed by the concerned authority of MGNREGS and 268 (44.67%) beneficiaries are unhappy with the government's strategy and system of information dissemination in relation MGMNREGS. While 241 (40.17 %) of beneficiaries do not have any say on this regard.

It has been observed that in most of the places, Government officials do not provide the villagers with adequate information. The awareness generation effort of the government about MGNREGS is very limited especially among the rural people. In discussions with the government officials, it appears that even the government officials at the block and panchayat level are not well aware of the scheme and its guidelines. Data reveals that the government still has not devised proper communication tools & techniques to disseminate information & create awareness on MGMNREGS among the rural beneficiaries. The panchayat representatives say that they have not been provided with any publicity material (such as pamphlets, handbills, posters etc.). Lack of political will was found to be one of the reasons behind weak awareness on MGMNREGS among the rural masses. Some lower level officials in private conversations admitted to the fact that higher level of awareness could create problems for them as they would always have to be on their toes to provide work to the villagers.

Without implementing effective means of communication programmes at the *Panchayat* level, this act and resourses put into it will degenerate into wasteful expenditures. The barrier to this scheme is often the state itself, when it cites corruption as the reason for not granting financial autonomy to local bodies.

There are two ways to generate large scale awareness among the citizens. The first is the model used in large scale education programmes, which involves building a cadre of volunteers and taking up village level campaigns emphasizing on inter personal and group communication system and strategies to educate & inform rural beneficiaries on their rights and informing panchayats on their responsibilities for sustaining development through MGNREGS in rural India. The other type of mass mobilization is an intensive campaign in the village level using traditional media like puppet shows, public announcement, village level meetings, street play, and local folk traditions that could be used to reach the most underprivileged sections of the society along with the support of civil society organizations. The awareness campaigns should not only provide basic information about the act bas well as card holders' rights for 100 days employment, but also it should provide guidance in exercising their rights. The ongoing efforts of the government to popularize the scheme as well as of the civil society to reach out to the potential families need to be up scaled and intensified.

## References

- Centre for Science and Environment: MGNREGS Implementation Status, Jan 2008 update: http://www.cseindia.org/programme/nrml/update_january08.htm#MGNREGS

- Epen, K, "Communication Technology is Only a Means Of Development", Communicator,Vol.12, No.2,1981.

- Ghatak. Maitreesh "Recent Reforms in the Panchayat System in West Bengal: Toward Greater Participatory Governance?" (with Maitreya Ghatak), Economic and Political Weekly of India, Vol 37, No 1, January 5, 2002.

- Gupta,V.S, "Communication Development and Civil Society" Concept Publishing Company, New Delhi,2004.

- Gupta,Jaiprakash, "Communication Strategy and Social Development", Communicator,Vol.13, No.3&4,1978.

- Government of India, Ministry of Rural Development. The National Rural Employment Guarantee Scheme 2005 (MGNREGS): operational guidelines. New Delhi, India

- Joseph, Joni C, "Mass Media and Rural Development" Rawat Publications Jaipur and New Delhi, 1997.

- Kuppuswamy, B, "Communication and Social Development in India", Sterling Publishers, New Delhi,1976.

- Kurukshetra, a Journal of Rural Development,January 2004

- Likhi,Abhilaksh, "The National Rural Employment Guarantee Scheme, Gram Panchayats and Community Radio: Exploring Structural Linkages To Strengthen Access and Transparency", Communicator, Vol. xxxx,No.2,2005.

- Mass Media, a comunication research journal, Vol-1, No.-1,April 2012

- Narula, Uma, "Development Communication Theory and Practice", Har-Anand Publication, New Delhi,1999.

- Sharma, Ritika. 2008. "MGNREGS: Impacts and Implementation Experiences: Poverty, Food

  Security and Environment." in The National Rural Employment Guarantee Scheme (MGNREGS)—Design, Process and Impact. New Delhi: Government of India, Ministry of Rural Developmentand UNDP

- The National Rural Employment Guarantee Scheme 2005 (MGNREGS): Operational guidelines 2008. 3rd ed. New Delhi, India: Ministry of Rural Development, Department of Rural Development.

## Internet Resources

- http://MGNREGS.nic.in/MGNREGS_guidelinesEng.pdf>.

- http://www.skoch.in/images/Stories/Governance_knowledge/Good%20Governance%20and%20Employment%20Generation%20through%20MGNREGS.pdf.

- http://www.levyinstitute.org/pubs/UNDP-Levy/India/India_Report.pdf

- http://economictimes.indiatimes.com/news/economy/policy/Now-MGNREGS-gets-a-taste-of- uniongiri-/articleshow/5585611.cms

- http://www.jesaonline.org/index.php?option= com_content&view=article&id=409%3Axisa- reflects-on-MGNREGS-implementation-in-p&catid=46%3Ajesa&Itemid=47

  http://www.mainstreamweekly.net/article641.htm

# ROLE OF THIRD SECTOR IN DEVELOPMENT: A STUDY OF PATNA DISTRICT

### Rajnesh Kumar Pandey

## Abstract

In 1976, Daniel Bell predicted that the third sector would become the predominant sector in society, as the knowledge class overcame the effects of the private sector. The third sector that is generally called the non- governmental and non- profitable organizations plays a very active role in the development of rural areas. It is observed through experience that non- governmental organizations (NGOs) are becoming very important in the people- oriented development programs and grassroots level programs by virtue of their involvement and commitment. There are different approaches and thinking towards the third sector involved in development. NGOs have been denounced as 'new missionaries' engaged in re - colonization, as 'unguided missiles' (Hanlon 1991) or as 'the new East India Company' (Burne 1995). After observing all these different approaches, this paper attempts to explain the role of third sector along with the role of government in development. The paper mainly analyzes how communication has been used by various NGOs and government agencies for development. The study covers three villages of Patna district in Bihar.

Keywords: *Third sector, Development, Alternative development, NGOs, Civil society.*

## Introduction

There is much emphasis on development as a process to fulfill the basic needs of the society with greater effort and equal participation. It is a never ending process. In most of the societies availability of food, shelter, water are still considered the parameters of development though in some societies employment, education and urban lifestyle are the parameters of development (Jan Servaes, 1996). Each society has its own requirements and they are fulfilled through a particular developmental model. The western societies are more developed as we say, because they have been able to fulfill the basic needs of their people and they are much ahead in terms of food, shelter and other basic necessities. In contrast the third world countries, South Asian, Latin American and the African countries are still struggling to meet their basic necessities. So, there is a huge difference between development how it is seen in developed

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countries and the third world nations. Now, the question here is: What really 'development' means? Can we go beyond the conventional pattern of thoughts when it comes to development connected with the fulfillment of basic needs? Is it necessary to bring the concepts like justice, equality, access to education, and freedom of choice under the umbrella of development? These are the questions to be answered.

Because some of the important aspects have not yet been included and reflected upon when it comes development. It has remained a question of debate among the civil society groups, which is also considered a part of third sector. Instead of a development paradigm which has been more top-down in order, should we not redesign the model of development relying more on a mutual dialogue between the policy makers, pressure groups and the actual beneficiaries? A top down approach of development has less chance that the programs will actually benefit.   Sometimes we see that development as popular agenda of the state, but really when we see in depth then we come to the point that the agenda is only for the sake of their politics. The term 'development' has different meanings, for the state machinery while development is something else  for the civil society and for different sections of society, development has different meanings. Sometimes it collides also.

It has been observed that after the Second World War, many countries have gained liberation from colonialism and imperialism. But at that time, nations of Latin America, Africa and Asia's economic condition was weak and they needed the assistance of powerful western countries. But gradually the agenda of modernism became a failure, as it was one sided and not participatory in nature. Afterwards, the third world nations develop their own agenda for development and that is self-reliant with a wider consultation for decision making, community participation, and development via local to global initiatives (Srinivas Melkote and H. Leslie Steeves, 20007). Now, technology is also becoming a parameter of development. We cannot separate technological progress from the development process. At present we are in the era of information society, where access to information is an important factor to measure development. There are different agencies that are measuring the development according to their own understandings. For some, GDP (Gross-domestic product) is also the parameter of development. For some, male and female ratio is also the parameter of development; yearly growth rate is also the parameter of development. It depends on which group is involved and what are their criteria to measure.

According to the United Nations Expert Group on Human and Social Development:

"Development is fundamentally not about index number of national income and its growth, it is not saving ratios and capital co-efficient;

it is about by and for human beings. " The chief focus of development is the human being and the quality of his/her life, (Jan Nederveen Pieterse, 2010)."

**Theoretical Framework:**

'Development' itself is today a broad term which discuss lots of concept which comes under its purview. Participatory approach is the most important character for the grass-root development programs. Without proper and full participation, it is very difficult to make a program successful. There are different phases of the concept of the term 'development.' When we talk about the role of third sector in development then we find out that what it means actually when we relate third sector with development. Actually, the programs which are carried by the third sector for development, it mainly depends upon its participation with those communities for which the programs have been made. It needs democratization in public programs. 'Development theory' has such a broad aspect that it is very tough to come to a conclusion easily. It is a consortium of different theories which says how a change in society is happening. Besides different meanings of development, another aspect is 'perceptions of development' or how different stakeholders perceive and represent their interests (Wallman, 1977). 'Development theory' has a variety of approaches. Market-oriented approaches marginalize the state and the state-oriented approaches marginalize the market forces. When they come together they marginalize the society. Long-term clashes take place when market-oriented forces clash with the indigenous forces. Approaches of alternative development always focus on local policy programs. The main aim of alternative development approach of 'development theory' is to participate with the local groups and they try to focus on grass root activities mostly. Third sector organizations are not totally market funded; sometimes it is the effort of the community also to develop a program for its own development. Rural development programs are mostly based on the participation activities, the policy makers if impose the policy without participation on the rural population for which the programs has been made then it would be the probability that the programs fail, that's why emphasis on participation is very much needed. 'Development theory' thus gives an approach through multiplicity paradigm (another development) which combines top-down approaches with community. It emphasizes on local ownership and control.  The policy of 'strengthening civil society' by supporting NGOs is deeply apolitical, ignores contradictions within civil society, overrates NGOs and weakens state capabilities (Tvedt, 1998).

**Alternative development**

We use the term "alternative development" as the counter of mainstream development. What we called the mainstream development

is generally the development by the state mechanism and market oriented development programs. Alternative development programs differ from the mainstream development programs. It is believed that the programs of alternative development are more participatory in nature, grass root oriented programs. Civil society groups are mainly involved in the alternative development programs, as the civil society thinks that the programs of the state are not sufficient and also not efficient for beneficiaries, who really want to experience development. There is a negative thinking about the development carried by the state machinery and sometimes the state machinery along with the market forces. Most of the time, the civil society and the serious academicians criticize the state development programs. There is a popular conception in India that the programs run by the centre are really the programs of market forces, that always attempts to deduce the profit from the people's pocket and the 'theory of capitalism' is behind the public programs. People also perceive that on the basis of popular programs, the powerful political party tries to woo the people only for their political interest. There is also a section which thinks that programs of the state are not enough for the benefit of people. In India, at present we are witnessing that so many local groups are working for the rights of tribal's, who in turn think that there is a popular conspiracy to occupy their lands, forests and water resources.

Now, development has two dimensions, one is the development according to the plan of state and another, according to the plan of people who are unsatisfied with the state programs. As a consequence, the concept of "Alternative Development" has come into existence. One negative aspect of alternative development is that it does not coordinate with the state development programs but it is always in competition with the state oriented development programs. According to (Nerfin,1977), "alternative development is the terrain of 'Third system' or citizen politics, the importance of which is apparent in view of the failed development efforts of government (the prince of first system) and market forces (the merchant of second system)." Often it seems that alternative development is the development of backward and deprived people, who are not in the purview of development since long. It refers the development through the local community or through the NGOs. It refers to the participation of development workers with the beneficiaries. Though NGOs are mainly participatory in nature but there are different types of NGOs, so it is not necessarily the agencies which carry the development programs. The most important is the community participation in the development programs and the programs must be inclusive in nature. Alternative development talks about self-reliance and development must be a two way process and more and more participatory in nature. It is difficult to say that 'alternative development' is itself a theory, but "Hettne (1990, 2008b) among others, tries to make a case, arguing that it represents a counterpoint to mainstream development."

**Third Sector:**

The third sector is concerned basically with non- governmental organizations and non- profitable organizations. We also call them as voluntary sector and community sector. Today the third sector plays a significant role in the development of rural areas, especially in the field of literacy, land reforms, sanitation and different public welfare programs. The third sector is mainly concerned with the implementation of programs that is for the people. Participation is one of the important characters of this sector.

Civil society is another term that is also used for the third sector. Civil society is almost free from the state backed pressure and commercial institutions of the market. Its working style is also different; moreover it is concerned with the legal and human rights of citizens, if the citizens rights are violated, then the civil society always attempts to focus its attention of the people on the issue. At present we have seen that civil society are actively involved in fighting against corruption and malpractices in public institutions.

Non- governmental organizations (NGOs) are the best organized forms of volunteers who are involved in the execution of different public schemes. Not only are they active in rural area, but also in urban areas. Children's education, sanitation, right to information, messages against domestic violence, child labor, dowry, women's empowerment, land reform, and many other areas where NGOs are active. "NGOs (non-government organizations) have become part of the development industry, another component in the package. The rise of NGOs during the 1970s and 1980s was both a by-product of and compensation for the wave of neoliberalism (Duffield 1996)." NGOs also have problems like bureaucracy, corruption, malpractices and many others. When NGOs make decisions, they have to think of also the donor agencies that are funding to them. Due to the vacillation of donor agencies, the work of NGOs is also affected. "Some NGOs such as church organizations were active long before the development era. There are steep differences between NGOs as public service contractors and people-oriented NGOs (Edwards and Hulme 1992)."

**NGOs in Bihar:**

According to the information given by the Registration Department, New Secretariat, Patna, Bihar is as follows: The total number of NGOs registered in Bihar is 30,000. In Patna the number of NGOs registered from the period 2010-2011 is 517 and from the period 2011 – April 2012, the number of NGOs registered is 425, taking the total number of NGOs registered from 2010 to April 2012 is 942.

The Patna area is selected for the study. It is located on the south bank of river Ganga and well connected by railway and road. It is the main administrative and educational centre of Bihar. It has, however, a few ancient sacred places as well as places of tourist interest. The total area in (sq.km) is 3202. The population of Patna district (projected for 2008) is 5,598,533 (urban-41.48 per cent, rural- 58.16 per cent, male-53.40 per cent and female- 46.60 per cent). The population density of Patna district is 1471 per sq.km. The sex ratio of Patna district is 873 females to 1000 males. The number of sub-divisions is 06 and the total number of community and non-community development blocks is 23. Patna comes under the community development blocks. The number of villages in Patna district is 1157 from which three villages are selected. As is well known, the rural areas of Bihar lack development. As Bihar is an underdeveloped state and though Patna is the capital of this state, it is still underdeveloped and the rural areas of this district have lots of problems.

**Overview of Literature:**

*Jan Nederveen Pieterse (2010) in Development theory* focuses on the meaning of 'development' over time. The concept 'development' has carried different meanings over different periods of time. The book outlines three main eras of development in the 1800s and the catch-up policies from the mid-nineteenth to the mid-twentieth century; in brief, the state-centred and the market-led approach and the Washington consensus- in brief. This book provides a clear view of alternative development which is different from the mainstream development, the role of NGOs, and their history and politics. *Rashmi Jain (2003) in her book Communicating Rural Development: Strategies and Alternative* throws light on the implementation of some specific programmes of development in selected villages of Rajasthan in the context of a communication framework. The evaluation of these programmes has been undertaken keeping in view the role of communication in developmental processes *Ram K. Varma (1996) book, People's Participation And Development Initiatives* covers such topics as people's participation and development initiatives, well being in poor countries, rural industrialization, dynamics of community development and training for people's development. The significance of this compilation of papers, articles, excerpts and discussion notes arise from their focus on the crucial aspects of rural development in the context of economic health and well-being of the nation. *B.T. Lawani's (1999), Non-Government Organizations In Development (A case study of Sholapur district)* provides a comprehensive coverage of the course content and the requirements of the social work teachers, research scholars, practitioners and executives of the voluntary organizations. Further, it is useful for the policy makers and the government official's dealings with the non-government organizations. The *Rural Litigation and Entitlement Kendra (RLEK)* has under the banner of this initiative implemented the use of a wireless communication system in the

relying of information between the isolated tribal communities. *Simon Batchelor, Soc Evangelista, Simon Hearn, Malcolm Pierce, Susan Sugden, Mike Webb (Nov 1, 2003)* have studied the Internet access and effective use by third sector organizations in Brazil, which is a case study of a larger grouping of seventeen case studies. However, the *Rits/samp.org cooperative association in Brazil* exercised between the two organizations was developed in order to facilitate greater access to the internet and digital services for the economically poor, *ISTR- International Society for Third Sector Research,* is a major international association promoting research and education or research and provides in the field of philosophy, civil society and the non-profit sector. ISTR reflects the growing worldwide interest in third sector research and provides a permanent forum for international research, while at the same time building a global community in this field. *Edited by Hasan and Jenny Onyx (2008), Comparative Third Sector Governance in Asia: Structure, Process and Political Economy,* focuses on non-profit organizations, NGOs and other third sector organizations and their central role in achieving and sustaining a prosperous economy and a just civil society in countries around the world. It establishes a new theory and knowledge in the area of third sector organizations in Asia. The main purpose of this book is to draw the attention of third sector organizations in Asia on the importance of good governance. It documents a variety of approaches and identifies socio-cultural, economic and political dynamics and impacts of different models of third sector organizations governance.

**Aim of the Study:**

The main aim of the study is to analyze what actually the third sector is doing in rural areas of Bihar for development. The question is whether they are participating in the development programs initiated for the rural people along with Government agencies.

**Objectives of the Study:**

1. To know the type of information the rural people gather from different media and to examine their knowledge about welfare schemes.

2. To know the source of information from where rural people get information about governmental welfare schemes.

3. To know the core areas in which the NGOs are active and how much needful information they provide to the rural people.

4. To know the problems faced by rural people while communicating with the NGOs and government officials.

5. To know whether the information given by NGOs and government officials is reliable.

**Area of the Study:**

The three sample villages are taken from the Patna district for the purpose of the study. The first village is Kaab which belongs to Kaab panchayat of Dulhin Bazaar block; the second village is Mohanchak which belongs to Akhtiyaarpur Manjhauli panchayat of Vikram block and the third village was Dumri which belongs to Dumri panchayat of Fatuha block.

**Methodology:**

For the present study, the researcher has used the survey method for data collection, using a structured questionnaire.

**The Sample:**

The three sample villages were taken through the purposive sampling method. 150 respondents from each village have been selected by convenient sampling method totalling 450 respondents forming the sample size.

**Table 1:  Age wise distribution of total respondents selected in three villages**

| Age (In years) | Total |
|---|---|
| a.  15-20 | 16.44%  (74) |
| b.  20-25 | 14.90%  (67) |
| c.  25-30 | 18.44%  (83) |
| d. More than 35 | 50.22% (226) |
| **Total** | 100%    (450) |

When the age wise distribution of total respondents in all the three villages is analyzed, we find that 16.44 per cent respondents belong to 15-20 (yrs) age group.  In 20-25 (yrs) age group, 14.90 per cent of respondents and 18.44 per cent respondents belong to 25-30 (yrs) age group. The maximum number of respondents is in more than 35 (yrs) age group, with 50.22 per cent. Actually in the village, people in the age group of more than 35 (yrs.) are more conscious of the activities of NGOs and government officials. They are more participatory in nature with good understanding of the role of third sectors.

**Table 2: Income wise distribution of respondents in the selected village**

| Annual Income  (In Rupees) | Total |
|---|---|
| a. Less than 50,000 | 91.11%  (410) |
| b. 50,000- 1 Lakh | 7.56%   (34) |
| c. 1 Lakh- 1.5 lakh | 1.33%    (6) |
| d. More than 1.5 Lakh | 0 |
| **Total** | 100%    (450) |

When it comes to annual income distribution, 91.11 per cent respondents from all the three villages have the annual income of less than Rs.50 thousand. Because most of them are totally illiterate and they are laborers and they are landless too. Due to this, their participation is very much low in the welfare schemes and their accessibility to media is negligent. About 7.56 per cent respondents have the annual income between Rs.50 thousand to Rs.1 lakh. Annual income of 1.33 per cent respondents from all the selected three villages is between Rs.1 lakh to 1.5 lakhs. Very rarely it was found that two or three persons in selected village are in government services. No respondent has the annual income of more than Rs.1.5 lakh in the selected three villages.

**Table 3: Type of information sought by respondents**

| Type of information gathered from different media. | Total |
|---|---|
| 1. Development | 19.56%   (88) |
| 2. News | 50.67%   (228) |
| 3. Entertainment | 26.89%   (121) |
| 4. Political | 2.88%   (13) |
| **Total** | 100%  (450) |

As regards the type of information that respondents gather from different media, we find that 19.56 per cent respondents from all the three villages get the information about development. It means that yet 'development' is not such an important issue in the rural areas.  While the maximum 50.67 per cent respondents seek news, 26.89 per cent of respondents are interested in entertainment and only 2.88 per cent respondents are interested in getting information about politics. In villages, people watch news but they are not very much connected with the mass media messages. They are not specifically interested in any programs. Though entertainment has its impact and youth are mostly influenced by the programs of entertainment. They are not receiving any information apart from entertainment. Films and their songs are deeply embedded lives.

**Table 4: Respondents' knowledge about welfare schemes**

| Knowledge of welfare schemes | Total |
|---|---|
| 1. Natioal family Benefit scheme | 3.11%   (14) |
| 2. National old age pension scheme (NOAPS) | 19.11%   (86) |
| 3. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) | 22.22% (100) |
| 4. National Maternity Benefit Scheme | 7.56%   (34) |
| 5. Indira Aawas Yojna | 44.44% (200) |
| 6. None | 3.56%   (16) |
| **Total** | 100%  (450) |

Only 3.11 per cent of respondents of the selected villages have the knowledge of 'national family benefit scheme.' Due to illiteracy, the respondents are not well aware of the 'national family benefit scheme' and at the same time government officials do not actively communicate with the people to deliver the message of welfare schemes. 19.11 per cent of the respondents have the knowledge of 'National old age pension scheme.' Money oriented programs are somehow are more known to people because, money is very important for once survival. So more or less people due to their need gather information about pension or any other scheme that directly benefits them. 22.22 per cent of the respondents are well aware of the MGNREGA programs because it is directly related with job which is a huge problem in villages. MGNREGA programs are also successful in villages and actively peoples are participating in it. 7.56 per cent respondents have the knowledge of 'national maternity benefit scheme.' Actually women's of the village are not educated and their village set up is like that they are not very much participatory with the workers of NGOs and government officials. 44.44 per cent of respondents have the knowledge of 'Indira Aawas Yojna.' This scheme is very old and people are much benefitted with these schemes. 3.56 per cent respondents are not aware of any schemes.

**Table 5: Source of information on government welfare schemes**

| Source of information on government welfare schemes | Total |
|---|---|
| 1. Government officials | 31.7% (143) |
| 2. Non- government organizations | 19.3%  (87) |
| 3. Both of them | 11.3%  (51) |
| 4. Media | |
| Newspaper | 15.5%  (70) |
| Radio | 12.22%  (55) |
| Television | 9.78%   (44) |
| Internet | 0 |
| **Total** | 100%  (450) |

As regards the source of information about government welfare schemes, one can find that 31.78 per cent respondents of the selected three villages get information from government officials, while 19.33 per cent respondents got information from non-governmental organizations (NGOs). Now also government officials are a primary source to provide information to villagers and slowly and gradually NGOs are also supplying information, but it is not up to the mark. After1990s, many NGOs basically came in to existence and there are lots of problems also in their structure whereas government officials do not have the problem of funds. There are some people

conscious and aware both sources of information. 11.33 per cent respondents get information from both government officials and NGOs. When it comes to media as a source, 15.56 per cent of respondents use newspaper as a source and 12.22 per cent respondents use radio as a source to get information. 9.78 per cent respondents use television and no respondent uses Internet as a source. Due to illiteracy only 15.56 per cent people are reading newspapers and most important thing is that media accessibility is very less in villages. Yet 'radio' and 'TV' are not available in the villages to every household.

**Table 6: Respondents' information about the core areas of NGOs operation**

| The core areas, in which the NGO's are working. | Total |
|---|---|
| 1.Health | 8.22%   (37) |
| 2.Education | 52.67% (237) |
| 3.Sanitation | 4.44%   (20) |
| 4.Right to education | 8.89%   (40) |
| 5.Land reform | 4.22%   (19) |
| 6.Removal of poverty | 13.78% (62) |
| 7.Starvation | 7.78%   (35) |
| 8.Other's | 0 |
| **Total** | 100% (450) |

In all the selected three villages, a total of 8.22 per cent of respondents say that health is the core area where NGOs are working. While the 52.67 per cent respondents say education is the core area where the NGOs are working, 4.44 per cent respondents say that NGOs are working in the area of sanitation. 8.89 per cent of total respondents says that NGOs are in the area of right to education, and 4.22 per cent respondents opine that NGOs are working in the area of land reforms. 13.78 per cent of total respondents say that NGOs are working for removal of poverty, and 7.78 per cent respondents says that NGOs are working for banishing starvation. Education is the most focused area of the NGOs. Programs for the education of dalit and poor children of backward class are implemented by the NGOs.

**Table 7: Opinion as to the availibility of needed information from NGOs**

|  | Total |
|---|---|
| Yes | 72.89%   (328) |
| No | 27.11%   (122) |
| **Total** | 100%   (450) |

72.89 per cent of total respondents in select villages say that they are getting needful information and rest of the 27.11 per cent of respondents contend that they are not getting needful information from NGOs. Majority of respondents said that they are getting needful information from NGOs. Due to the participatory approach of NGOs, they are successfully transferring the information.

**Table 8: Problems faced by respondents in communicating with the NGOs**

|  | Total |
|---|---|
| 1. Not participatory | 7.11%  (32) |
| 2. Language | 2.67%  (12) |
| 3. Wrong media | 0 |
| 4. Time | 3.78%  (17) |
| 5. Lack of expertise | 1.56%  (7) |
| 6. Lack of knowledge | 84.88%  (382) |
| **Total** | 100%    (450) |

As regards the problems faced by the respondents in communicating with NGO workers, 7.11 per cent of the respondents from all the three villages selected are of the opinion that it is not participatory, while 2.67 per cent of respondents face the problem of language. No respondent has identified the problem of wrong media. 3.78 per cent of respondents contend that it is time, and 1.56 per cent of respondents say that it is lack of expertise, and a maximum 84.88 per cent of respondents have identified lack of knowledge as a significant problem while communicating with the NGOs. Lack of knowledge is a serious problem due to which people cannot communicate properly with the NGO workers.

**Table 9: Problem faced by respondents while communicating with government officials**

|  | Total |
|---|---|
| 1. Not participatory | 42.0% (189) |
| 2. Language | 0 |
| 3. Wrong media | 0 |
| 4. Time | 11.3% (51) |
| 5. Lack of expertise | 1.56%  (7) |
| 6. Lack of knowledge | 45.11% (203) |
| **Total** | 100% (450) |

As regards the problems faced by the respondents while communicating with government officials, 42.00 per cent of the respondents identified non- participatory mode as one of the reasons, while no respondent

identified language and wrong media as problems. 11.33 per cent of respondents identified time, and 1.56 per cent of respondents identified lack of expertise, while a maximum of 45.11 per cent of respondents identified lack of knowledge as a serious problem while communicating with the government officials. Government officials are not participatory in nature because one of the core reasons is the temperament of bureaucracy. Communication skills of government officials are not developed. Village people need more time for any understanding and government officials are not giving time, which in turn, affects the programs.

**Table 10: Problems faced by the respondents while communicating with both the NGO workers and government officials**

|  | Total |
|---|---|
| 1.Lack of literacy | 66.00%  (297) |
| 2.Lack of awareness | 26.00%  (117) |
| 3.Lack of interest | 2.67%  (12) |
| 4.Lack of reliability | 5.33%  (24) |
| **Total** | 100%  (450) |

With regard to the problems faced by the respondents while communicating with NGO workers and government officials, 66.00 per cent of the respondents from all the three villages selected identified lack of literacy as the major reason, while 26.00 per cent of respondents attributed it to lack of awareness. 2.67 of them said it was lack of interest. Lack of reliability is the reason provided by 5.33 per cent of the respondents. Literacy rate is very less, so it is quite natural that it is a serious problem while communicating with NGO workers and government officials. If there is no literacy then there should be no awareness also.

**Table 11: Feedback about reliability of information given by NGOs and government**

| Reliability of information | Total |
|---|---|
| 1. NGOs | 41.56%  (187) |
| 2. Government | 27.56%  (124) |
| 3. Both of the above | 18.22%   (82) |
| 4. Both are not reliable | 12.66%   (57) |
| **Total** | 100%  (450) |

With regard to the reliability of information between NGOs and government, 41.56 per cent of the respondents said that information given by NGO is more reliable, while 27.56 per cent of the respondents said that information given by government is more reliable. 18.22 per cent of the respondents said that both are reliable and 12.66 per cent of the respondents said that

both are not reliable. NGOs are more reliable because they are more participatory in nature and somehow honest in their program implementation, whereas government mechanism is not developed in such a way that it creates such an environment where people should trust. There are some people who have interacted with both of them. So, they are more aware and they trust both and some are not even interested in any programs or schemes of either the government or NGOs.

**Results and Discussions:**

We notice that the age group of more than 35 (yrs) people has shown its significance presence during the study, i.e. (50.22 per cent). They are most active and their approach is more participatory towards the activities of NGO workers and government officials. In villages, we see different types of cultural values. In Bihar, even today feudal system prevails in the villages, so only males have the right to take decisions and they mostly participate in the programs. The youth are not enthusiastic (14.90 per cent). It means that they are not involved in the development programs. Maximum people are illiterate and also landless and their economic condition is depressing, so they are compelled to opt for manual labour. It is because (91.11 per cent) of the respondents income is less than Rs 50,000. Hardly two to five persons are involved in any type of regular job. Government job holders are almost negligible. Less education and poverty the main reasons for this situation.

Recipients of development information in selected villages are not many. This is due to less accessibility to media and less interaction with the officials (19.56 per cent). Afterwards, it appears that they are more interested in getting information through news in any form, i.e. (50.67 per cent). Youths are mostly interested only in that information which is related to entertainment. Films and film songs are very much connected with the life styles of youth (26.89 per cent). It is a disadvantage that youth are not participating in the development programs actively, and it is also one of the reasons that why the development programs are not successful in villages. It appears that very less number of respondents (2.88 per cent) seek information related to politics.

Political awareness is very low and people even don't know that actually power is for whom. Their attention is totally focussed on 'hand to mouth' existence.  It is due to less information and less participation; people have no knowledge of welfare schemes devised for their benefit. Government officials are also not actively applying those strategies by which they can give proper messages about different schemes. Only 3.11 per cent of respondents have the knowledge of 'National Family Benefit Scheme. It appears that 19.11 per cent of respondents have the knowledge of 'National Old Age Pension Scheme (NOAPS).The Pension scheme program's success rate is good and people are taking advantage of this.

The 'Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)' now days provide jobs to those people who are totally landless and jobless. It gives job guarantee. It is one of the successful programs whose information is available with a good number of respondents. It appears that 22.22 per cent of the respondents have the knowledge of 'MGNREGA.' Unemployment is a serious problem and people with anyhow need some work. Women are less educated and they do not participate due to cultural barriers. That's why only 7.56 per cent of respondents have the knowledge of 'National Maternity Benefit Scheme.' It appears that 44.44 per cent of respondents have the knowledge of 'Indira Aawas Yojna.' For proper livelihood, house is the most important need to survive and a maximum number of respondents more or less have the knowledge of this scheme.

Even today people collect more information from the government officials. It is a conventional type of approach. It is found that 31.78 per cent of respondents get information from government officials. Compared to it, only 19.33 per cent respondents use NGOs as a source of information. Slowly and gradually NGOs are making their presence felt. Many a time, people of villages think that NGOs are also part of government officials and that is why they don't think about NGO workers as separate. There are active citizens who interact with both of them (11.33 per cent). Media accessibility is very less. There are number of reasons behind this. Poverty is one of the factors, illiteracy and unavailable of electricity also hampers the presence of media. Conventional medium newspaper is the most effective media which is used as a source for information. It appears that (15.56 per cent) of respondents use newspaper as a source. Though, radio was used as a medium which is very famous in villages but now days the situation has changed. Only (12.22 per cent) of respondents use it as a source. In radio watching songs is a fulltime business for the peoples of villages. Due to unavailability of electricity and poverty, people are not watching television. Only (9.78 per cent) respondents are using television as a source. Internet was totally unavailable.

'Education' is the core sector where maximum NGOs are working. Illiteracy is a serious problem and without education, any program or information will not have much impact which is needed for the purpose of development. It appears that 52.67 per cent of respondents said that 'education' is the core area where NGOs are working. Afterwards, poverty is the problem area where NGOs focus themselves. It is found that 13.78 per cent of respondents said that 'removal of poverty' is the core area where NGOs are involved.  Many people said that information about health is also provided by the NGOs. Health is one of the important factors for the development of any society and healthy environment is required for smooth development. This field needs more attention but due to lack of awareness

and also of funds NGOs are less focussed on it. It appears that 8.22 per cent of respondents said that 'health' is the area where NGOs are working. NGOs are giving needed information to the villagers. After the field study it is found that any information which benefits the people is always welcome.

NGOs' work pattern now- a -days is more participatory and they involve themselves with the rural people. Maximum 72.89 per cent of the respondents said that they are getting needed information from NGOs. There are people also who are not willing to participate in any program but want the benefit from the programs. Almost 27.11 per cent of respondents said that NGOs are not getting needed information. While communicating with the NGOS again illiteracy is the major problem. In villages literacy percentage is very low, almost negligible. So, at this stage it is a tough job for the NGO workers to communicate with the rural people. Maximum 84.88 per cent of the respondents said that 'lack of knowledge' is the major problem while communicating with the NGOs. But in the case of problems faced while communicating with government officials, the situation is different. 'Lack of knowledge' is the major problem but it was found that government officials are also 'not participatory' in nature. Participation is very much necessary for a program's success.

The success of development approach depends upon participation and it is felt that it is absent in the behavioural approach of government officials. 42.00 per cent of the respondents have said that government officials are 'not participatory' and 45.11 per cen) of the respondents said that it is a major problem while communicating with the government officials. In study it is found that 26.00 per cent of the respondents said that 'Lack of awareness' is the problem while communicating with NGO workers and government officials both. 41.56 per cent respondents have said that information given by NGOs are more reliable and 27.56 per cent respondents have said that information given by government is more reliable. There are people who use both as the source of information and they said that they are satisfied with the information given by NGOs and government officials both. For 18.22 per cent of the respondents, both are reliable.

**Conclusion:**

Young respondents are not much active when it comes to development programs. It is those who are more than 35 years of age are much active in rural areas. The youth of villages are not participatory and their focus area is not education, it is money and job only, where they focus all their efforts. The Government along with NGOs must take some strong initiative, so that youth should be part of the development programs. But it happens only when the rate of literacy is high in rural areas. Due to illiteracy and poverty people are unable to get a job.

Most people are jobless due to this reason. Land reforms and abolition of feudalism are a big challenge for the government and it is the duty of the third sector also to make aware the villagers become aware of their rights with great effort and commitment. Cinema and songs are mostly influencing the people of villages. But their form is totally commercial and what they are shoeing that is total unreal approach of society. The issue of politics is not well discussed in the villages. Now, it's the duty of the third sector to inform people about politics and the different forms of political class. Here the NGOs must apply the 'two step flow theory' because people understand the language of opinion leaders and they have faith in them.

'Lack of education' is another major problem. If this problem is overcome then there are many problems that come in the way of improving the rate of literacy. Schemes directly related to livelihood and money are known to the respondents.  In recent years we have seen that the government has put more effort on the programs of 'MGNREGA'. Livelihood schemes like 'Indira Aawas Yojna' are well known, because they are directly related with once survival. But due to the absence of a monitoring system these programs fail.  THE Government and the civil society must develop a mechanism to monitor these schemes.

Conventional approach of people is preferred to get any information. Still they are visiting government offices for any information. If the government and third sectors avail these information to them by using some medium in proper form then it will be more helpful. Accessibility to media is also very less due to lack of money, lack of education and lack of electricity. The third sector must expose these problems and they have to continue with these issues so that the government should focus on it. If literacy rate is below the average rate then how can we talk about the knowledge of computer and uses of internet? The Government has to distribute TV and radio sets in an efficient manner and provide the basic requirements for using these media. Interpersonal communication is needed to inform the people about health programs and programs related to the removal of starvation. Due to less participatory approach of government officials, people have more faith in the information of NGOs. Government officials will have to develop this approach in a positive manner. Respondents are more inclined towards the information of NGOs, because of corruption ineffective means adopted by the government officials. Improvement of education is the main responsibility of the government and NGOs to make any developmental programs successful. The 'development theory' discusses many approaches. But we see that in the third world nations, development programs are unsuccessful because of their non-participatory approach and due to absence of two way communication. Programs must not be imposed lest they are bound to fail.

**References:**

Books:

1. Gupta, V.S (2004), Communication Development And Civil Society, Essays On Social Development And Civil Society, Concept Publishing Company, New Delhi.

2. Hasan, Samiul and Onyx, Jenny (2008), Comparative Third Sector Governance in Asia, Structure, Process and Political Economy, Springer, US, New York.

3. Jain, Rashmi (2003), Communicating Rural Development Strategies and Alternatives, Rawat Publications, Jaipur and New Delhi.

4. Lawani, B.T. (1999), Non-Government Organizations in development: (Case study of Solapur district), Rawat Publications, Jaipur and New Delhi.

5. Melkote, Srinivas R and Steeves, H. Leslie (2007), Communication for development in the third world countries: Theory and Practice for empowerment, SAGE Pubilcations, New Delhi.

6. Pieterse, Jan Nederveen (2010), Development Theory, SAGE Publications India Pvt. Ltd. New Delhi.

7. Servaes, Jan and Thomas, L Jacobson and White, Shirley A (1996), Participatory Communication for Social Change, SAGE Publication Pvt. Ltd.

8. Sundaram, K.V (1997), Decentralized Multilevel Planning, Principles and Practice (Asian and African experience), Concept Publishing Company, New Delhi.

9. Varma, Ram.K (1996), People's Participation and Development Initiatives, Printwell, Jaipur (India).

Journals:

1. Non-Profit and voluntary sector quarterly: sponsored by the association for research on Non-Profit organizations and voluntary action. (ISSN 0899-7640) (J344),Thousand Oaks, (2008), SAGE Publications.

2. Journal of Rural Development (quarterly),(ISSN 0970-3357), National Institute of Rural Development, Ministry of Rural Development, Government of India, Rajendra Nagar, Hyderabad, India.

3. Journal of Rural Development, Vol.1, July 1982 No. 4.

Websites:

www.en.wikipedia.or

www.patna.bih.nic.in    www.rlek.org

# BASIC STATISTICAL TOOLS: A PRIMER FOR JOURNALISTS

**K. R. Muraleedharan Nair**

### Introduction

In early days the science of Statistics was primarily concerned with collection,classification, presentation and interpretation of data. The government as well as certain private organizations required data, analysed properly, for making policy decisions and proper planning. Since the development of probability theory the subject has developed to an extent that it can be used as a powerful tool to make valid decisions in uncertain situations. Statistics now finds applications in several branches of learning in connection with (i) examining the validity of experimental laws (ii) predicting future behavior using past data(iii) identifying those factors which contribute more to variability (iv) estimating population characteristics (v) finding appropriate models to represent data etc. However, statistical predictions are true only on the average and there are several instances where statistics is misused.

### Descriptive Statistics

Data shall be primary (first hand collected information) or secondary (data collected by some other agency which is relevant in the present scenario).Collection of primary data is generally done using carefully designed questionnaires. After collection of data the next problem is how to summarize and present the data. Classification is the process of arranging the data according to their common characteristics. For example individuals in a group may be classified into males and females. Classification shall be according to (i) the geographical location (state wise, district wise, etc. ) (ii) on the basis of time (year, months, etc. ) (iii) the qualitative characteristics or (iv) the magnitude of the quantitative characteristic. Tabulation is the arrangement of data using tables. The most commonly used table is the frequency table in which the range of variation is divided into a number of classes and the number of observations in each class is counted and listed as the frequency.

Another method of presentation of data is by using diagrammatic and graphical representations. Diagrams provide a more attractive presentation of data and leave a long-standing impression in the mind. They are easy to understand by a common man and facilitate comparison.The most commonly used diagram is the bar diagram. Here

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bars are erected over a common horizontal line with heights proportional to the frequency. Another type of diagram in common use is the Pie diagram. Here circles are drawn with area proportional to the total frequency and are subdivided into segments according to the size of each component. Graphical representations include histograms, frequency curves, etc.

**Measures of Central Tendency and Dispersion**

When one meets with large data sets, it is usual to represent the data by means of a single number capable of representing all the observations. Such a number is called a measure of central tendency (average). The most commonly used averages are the arithmetic mean, median and mode. The arithmetic mean is defined as the ratio of the sum of the observations to the number of observations. If $x_i$, i=1,2...n represents a set of n observations, the arithmetic mean is

$$\bar{x} = (1/n)\sum_1^n x_i \ (\Sigma\text{-notation to represent summation})$$

Whereas the median is the middle most observation, when the observations are arranged in order of magnitude the mode is the most frequently occurring observation.

For different data, the arithmetic mean may be the same but the nature of data may be different. In certain cases the observations may be closer to the average and in certain cases the observations may be scattered away from the average. So the average fails to give a complete description of the data. Hence the average is augmented by a number which is capable of describing the extent of spread or dispersion of the observations from the average. Such a number is called a measure of dispersion. An average together with a measure of dispersion provides a description about the data. The most realistic and commonly used measures of dispersion are the variance or its square root, the standard deviation (SD). The SD is defined as the square root of the arithmetic mean of the squares of differences between the observations and the mean. If $x_i$ represent the observation the standard deviation, $\sigma$, is computed using the formula

$$\sigma = \sqrt{\Sigma (x_i - \bar{x})^2/n}$$
$$= \sqrt{\Sigma x_i^2/n - \bar{x}^2}$$

The standard deviation cannot be used to compare variability in different data sets since it measures deviation from the corresponding average and a larger average naturally gives rise to larger SD.

For this purpose the coefficient of variation (CV) is commonly used.

$$CV = (\sigma/\bar{x}) * 100$$

To illustrate this, consider the runs scored by two batsmen A and B in a cricket season

| Batsman A | 55 | 0 | 102 | 65 | 18 |
|-----------|-----|-----|-----|-----|-----|
| Batsman B | 45 | 75 | 20 | 17 | 23 |

The mean scores are $x_1 = 48$ and $x_2 = 36$. Here batsman A is more efficient.

The standard deviation are approximately, $\sigma_1 = 78$ and $\sigma_2 = 48$ Hence CV of batsman A = 78/48*100=142 and that of B is 48/36*100=133. Since the CV is less for batsman B, B is more consistent.

**Survey Sampling**

To study a population there are two courses of action possible namely census survey and sample survey. In census survey information is elicited from each and every individual in the population. In sample surveys a representative part or sample is drawn from the population and the conclusions derived from the sample are generalized to the entire population. The advantages of sampling as compared with census are (i) reduced cost (ii) greater speed (iii) greater scope and (iv) greater accuracy. Note that results derived from sample surveys is found to be more accurate since highly trained enumerators or special equipments or additional checking shall be used in sample surveys as the sampling frame is small.

The most commonly used method of selection of sample is simple random sampling. Here the sample is drawn in such a way that each individual in the population has equal chance of being included in the sample. The sample can be drawn either by lottery method or using random number tables. When the population is heterogeneous in nature, stratified sampling can be used. Here the population is divided into a number of strata in such a way that each stratum is homogeneous according to the characteristic under study. Then simple random samples are drawn from each stratum which taken together determines the sample. The number of units to be drawn from each stratum shall be taken as proportional to the stratum size. Another common method of selection of sample is systematic sampling. If N is the population size and n is the sample size, first we compute $\frac{N}{n}$ = k . Then a number is chosen at random from 1,2,3,……k . Let it be k. Then the units to be included in the sample are $a^{th}$, $(a+k)^{th}$, $(a+2k)^{th}$, etc. For instance if a sample of size 100 is to be drawn from a population of size 1000, we have 1000/100=10. Choose a number at random from 1,2,... 10. Let it be 7. The units to be included in the sample are $7^{th}$, $17^{th}$, $27^{th}$ ……This method of selection of samples is generally adopted in exit polls. Other methods of selection of samples include cluster sampling, sub sampling etc.

### Determination of Sample Size:

In several practical situations the number of units used for experimentation is too small due to time or financial constraints. This leads to wrong conclusions. Too large a sample is a wastage of resources and too small a sample is likely to lead to wrong conclusions. So the problem is to determine the optimum sample size. The sample size may be determined by minimizing the variance for fixed cost or by minimizing the cost for fixed variance.

Denote by d – the margin of error that the experimenter is willing to sacrifice, s – the standard deviation of the estimator, (known/estimated from a pilot survey), $Z_\alpha$-tabled value of the normal distribution, corresponding to significance level $\alpha$, the sample size is given by

$n = (Z_{\mathrm{a}} \, s)^2/d$

Ex: Let the characteristic under study be life length of electric bulbs of a certain brand. Assume that the experimentor is ready to sacrifice a margin of error 50. That is if the life length is estimated as 2000 hrs, the true value has between 1950 and 2050 hrs. Hence, d=50. Assume that from precious surveys the standard deviation of life length is 100 hrs. That is s = 100. For a significance level " = .05, the tabled value from normal tables is Z=1.96. Hence the sample size is

$N = (10.96 \times 100)^2/50$
   $\sim 385$

### Statistical Inference

Statistical inference deals with methods and procedures for making conclusions regarding a population using samples taken from the population. Statistical inference can in general be classified under two headings namely estimation and testing of hypothesis. Estimation deals with methods for finding values of unknown characteristics or providing intervals within which these characteristics may be, using samples taken from the population. The former is known as point estimation and the latter is known as interval estimation. Any statement regarding the form of distribution or values of certain characteristics in the population is called a statistical hypothesis. Tests of hypothesis deals with methods for deciding whether a hypothesis shall be accepted or rejected using samples from the population.

Properties of a good estimator include (i) unbiasedness : the average value of the estimator taken over all possible values should coincide with the true value (ii) consistency: the estimator should approach the true value as the sample size increases (iii) efficiency: the estimator should have minimum variability and (iv) Sufficiency: the estimator should contain all possible information in the sample about the parameter. The

common characteristics of interest with regard to a population are (a) population mean and (b) population proportion. The best estimators for these characteristics satisfying the above properties are the sample mean, and the sample proportion.

In point estimation since the conclusion is based on a sample it seldom happens that the estimator coincides with the true value of the characteristic under study. Hence instead of suggesting a single value for the unknown characteristic it is usual to find an interval of estimates. Further the extent of confidence that the random interval covers the true value is also measured in terms of probability. Some commonly used confidence intervals are given below.

1.Estimation of mean.

Denote by n the sample size, $\bar{x}$ the sample mean and $\sigma$ the population standard deviation. The 95% confidence interval for the population mean is

$(\bar{x} - 1.96 \, \sigma/\sqrt{n}, \bar{x} + 1.96 \, \sigma/\sqrt{n})$

99% confidence interval for the population mean is

$(\bar{x} - 2.58 \, \sigma/\sqrt{n}, \bar{x} + 2.58 \, \sigma/\sqrt{n})$

If $\sigma$ is unknown, the above intervals can be calculated taking s, the sample standard deviation instead of $\sigma$ provided the sample size is large

2. Estimation of proportion

Denote by p the sample proportion and assume n is large. The 95% confidence interval for the population proportion is

$p - 1.96 \, \sqrt{pq/n}, \; p + 1.96 \, \sqrt{pq/n}$

99% confidence interval for the population proportion is

$p - 2.58 \, \sqrt{pq/n}, \; p + 2.58 \, \sqrt{pq/n}$

Ex: In a gallop poll to estimate the percentage of votes for candidate A, 10000 persons were interviewed 4500 persons stated that they will vote for A.

The proportion of votes for A in the sample = 4500/10000 = 0.45. The 95 % confidence interval for the proportion of votes for A is , using the above formulae ( 0.446,0.454) . This means that with 95% confidence one can state that the percentage of votes for A lies between 44.6% and 45.4%.

In testing of hypothesis, the hypothesis is first formulated. Associated with the problem a test criterion, whose distribution is known, is then decided upon. Based on the sample if the value of the test criterion is less than or equal to the tabled value (obtained from the distribution of the test statistic corresponding to a given significance level), the hypothesis is accepted and otherwise rejected.

# WOMEN THE MARGINALIZED SECTION IN HEALTH SECTOR: A STUDY ON HEALTH COMMUNICATION PERSPECTIVE OF THOUBAL DISTRICT, MANIPUR.

**Nongmaithe Reena Devi**

**Abstract:** Health is a basic need as identified by Abraham Maslow. Every human being when he/she has access to health care, one of the criteria of development is fulfilled. World Health Organization (WHO) has postulated: "the enjoyment of highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, and political belief, economic and social condition". "Health and development are intimately interconnected. Both insufficient development leading to poverty and inappropriate development can result in severe environmental health problems". Perhaps, a large number of poor sections are in need of good health life. Poorer sections are fighting for their rights to be well treated in public hospitals. Affording such branded and costly medicines becomes more challenging. The paper attempts to bring out the prevalent health issues and its factors of marginalizing women in health sector taking Thoubal District of Manipur as study area .It also studies health communication perspectives among women and their use of mediated and non-mediated health information.

**Introduction:**

World Health Organization (WHO) has postulated that "The enjoyment of highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, politicalbelief, economic and social condition". Again Abraham Maslow identified 'health' as a basic need. If every human being has access to health care, then one of the criteria of development is fulfilled. It is also known that health is directly or indirectly influenced by poverty, education, socio-economy and socio-cultural backgrounds in a society. Health and development are intimately interconnected. Both insufficient development leading to poverty and inappropriate development can result in severe health problems. It has also been argued that poverty is the main cause and result of marginalization (WHO, 2013). Low socio-economic status affects people's health condition drastically with the intertwinement of poverty and illness. As women, poor and rural populations are under marginal group and thus they are vulnerable to any determinants to health.

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So, the world over public health is the much focused area in bringing up the socio- economic condition of any country. No doubt, India as a vast country and one of the developing countries, has been struggling with initiatives for their public health. Since, more than 70% of its people are rural poor; the task needs to be more strategic. Here, communication in health care domain as a strategy plays a vital role in any public health programs or initiatives.Health communication is seen to have relevance for virtually every aspect of health and well-being of all including disease prevention, health promotion and quality of life (Rimal,RN and Lapiniski,MK, 2009).

**Health status of Indian Women**

The Indian constitution guarantees equality to all citizens in accomplishing all their rights including the right to healthcare. The Union Government of India adopted a 'National Health Policy' in August 1983 to achieve the goal of 'Health for All' by 2000 AD. To achieve this goal, the National Rural Health Mission (NRHM) served since 2005 throughout its 16 focus states including North-East India. However, the situation is still depressing when we talk about their health literacy and nutritional value consciousness in this region. There are numerous factors for poor health of women like education, socio-economic condition and family background. Whatever the family economic condition is, media habit plays a great role in educating the public as to health care service with its accessibility.

It is a well-known fact that women's health is as much as important as a healthy woman makes a healthy family. Health status of any nation could be seen through the health status of women and children. As we talk about Indian women's health, a picture of weakness, exhaustion and pale, irritable and depressed face comes into our mind automatically. In most developing and underdeveloped countries including India, the condition is depressing regardless of all efforts. The health status of women is generally low in India, except in the southern and eastern states (Vora, Maternal Health Situation in India: A Case Study, 2009).The World Health Organization (WHO) estimates that, of 536,000 maternal deaths occurring globally each year, 136,000 take place in India. With its public health interventions the MMR/IMR have somehow improved but the quality of life is far from improvement. The Maternal Mortality Ratio (MMR) in India is 212 per 100,000 live births according to Sample Registration System (SRS) Report for 2007-2009. This is a decline from the earlier ratio of 254 during 2004-2006. It has been found out that diverse factors are associated with maternal mortality. The factors include delay in seeking medical care, in reaching a place where care is available, and in receiving appropriate care. Inadequate antenatal care, the low proportion of institutional deliveries/ birth, and non-availability of skilled birth attendants are responsible in two-thirds of MMR cases in India.According to UNICEF-

India, about half of the total maternal deaths occur because of hemorrhage and sepsis. It is reported that a large number of deaths are preventable through safe deliveries and adequate maternal care. It also reports that half of all married women are anaemic and one-third of them are malnourished i.e. having body index below normal.

In India, against government's all effort to attain the standard of health as fundamental rights of every citizen, women and poor people of either urban or rural are still under marginal. They always have less opportunity to enjoy their fundamental rights including health care despite of all International and National Rights which is entitled to all human beings.

**Public Health Program in Manipur**:

Manipur, because of weak health and infrastructure indicator, is recognized as one of the special focus areas of National Rural Health Mission (NRHM) to address the millennium development goals (MDG) on health related indicators. The objective of NRHM is to strengthen the healthcare delivery to provide accessible, affordable, accountable, effective and reliable primary health care, especially, to the poor and vulnerable sections of the population.

It also aims at bridging the gap in rural Health Care through creation of a cadre of Accredited Social Health Activists (ASHA), improved hospital care measured through Indian Public Health Standards (IPHS), decentralization of programs to district level to improve intra and inter convergence and effective utilization of resources. The NRHM further aims to provide overarching umbrella to the existing programs of Health and Family Welfare including RCH-II, malaria, blindness, iodine deficiency, TB, leprosy and Integrated Disease Surveillance.

Further, it addresses the issue of health in the context of sector-wise approach for sanitation and hygiene, nutrition and safe drinking water as basic determinants of good health in order to have greater convergence among the related social sector Departments i.e. AYUSH, Women and Child Development, Sanitation, Elementary Education, Panchayati Raj and Rural Development. The Mission further seeks to build greater ownership of the program among the community through involvement of Panchayati Raj Institutions, NGOs and other stake-holders at national, state, district and sub-district levels to achieve the goals of national Population Policy. The key components of the Mission are: (i) creation of a cadre of voluntary female Accredited Social Health Activists (ASHA) at village level (ii) creation of village health team and preparation of village health plan (iii) strengthening sub-centres with untied funds of Rs. 10,000 per annum (iv) raising Community Health Centres and Primary Health Centre's to levels of Indian Public Health Standards (v) integrating vertical

health and family welfare programs and societies under NRHM at national, state, district and block levels (vii) institutionalizing district level management of health (viii) supply of generic drugs (both allopathic and AYUSH) to sub-centre's /PHCs/CHCs.

HEALTH INSTITUTIONS IN MANIPUR AS ON 31ST DECEMBER, 2012.

| Sl. No. | District | Hospital | TB Hospital | UCH/Sub-Dist.Hospital | Leproc-yHospi-tal | CHC | PHC | PHSC | Disp | Total |
|---------|----------|----------|-------------|------------------------|-------------------|-----|-----|------|------|-------|
| I. | State Hospital (J.N) | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| II. | Valley | 4 | 1 | 1 | 3 | 11 | 40 | 195 | 7 | 262 |
| 1. | Imphal East | 1 | 0 | 1 | 0 | 2 | 11 | 54 | 2 | 71 |
| 2. | Imphal West | 1 | 1 | 0 | 1 | 2 | 9 | 50 | 5 | 69 |
| 3. | Thoubal | 1 | 0 | 0 | 1 | 5 | 13 | 57 | 0 | 77 |
| 4. | Bishnupur | 1 | 0 | 0 | 1 | 2 | 7 | 34 | 0 | 45 |
| III. | Hill | 5 | 0 | 1 | 0 | 6 | 45 | 226 | 13 | 296 |
| 5. | Churachandpur | 1 | 0 | 0 | 0 | 1 | 11 | 65 | 7 | 85 |
| 6. | Senapati | 1 | 0 | 0 | 0 | 2 | 14 | 66 | 2 | 85 |
| 7. | Ukhrul | 1 | 0 | 0 | 0 | 1 | 8 | 40 | 2 | 52 |
| 8. | Tamenglog | 1 | 0 | 0 | 0 | 1 | 6 | 29 | 2 | 39 |
| 9. | Chandel | 1 | 0 | 1 | 0 | 1 | 6 | 26 | 0 | 35 |
| | Total (H+V) | 10 | 1 | 2 | 3 | 17 | 85 | 421 | 20 | 559 |

Source: Annual Administrative Report 2012-2013, Directorate of Health & Family Welfare Services Including NRHM & MACS, Manipur.

Medical & Para medical posts under cadre control of Health Department, Manipur

| SL. No. | Category | Sanctional post | In position | Remarks |
|---------|----------|-----------------|-------------|---------|
| | Medical Doctors | 1614 | 862 | |
| | Dental Surgeons | 96 | 96 | |
| | AYUSH Doctors | 30 | 8 | +98 provided by NRHM |
| | Sub-Total Doctors | 1740 | 966 | |
| 1 | Joint Director (Nursing) | 1 | 1 | |
| 2 | Deputy Director (Nursing) | 1 | 1 | |
| 3 | Principal of Nursing School | 3 | 3 | |
| 4 | Asst. Nur. Supd. Matron | 10 | 10 | |

| 5 | Staff Nurse | 714 | 594 | +140 provided by NRHM |
|---|---|---|---|---|
| 6 | Sister Tutor | 10 | 5 | |
| 7 | Nursing Sister | 60 | 11 | |
| 8 | Public Health Tutor | 7 | 6 | |
| 9 | Public Health Nurse | 0 | 0 | +14 provided by NRHM + 6 under FW |
| 10 | ANM/FHWs | 401 | 387 | +275 under FW +470 under NRHM |
| 11 | LHV/FHS | 130 | 130 | |
| | Sub-Total Nurses & allied | 1337 | 1148 | |
| 12 | Male Health supervisor | 155 | 153 | |
| 13 | Male Health Worker | 391 | 275 | |
| 14 | Pharmacist | 341 | 340 | +9Allo+65 AYUSH provided by NRHM |
| 15 | Laboratory Technician | 102 | 100 | +52 provided by NRHM |
| 16 | Microscopist | 102 | 101 | |
| 17 | Radiographer | 30 | 29 | +13 provided by NRHM |
| 18 | Ophthalmic Assistant | 37 | 37 | |
| 19 | Audiometric assistant | 0 | 0 | +4 provided by NRHM |
| 20 | Sr. Physiotherapist | 1 | 1 | |
| 21 | Physiotherapist Technician | 11 | 11 | |
| 22 | BCG Technician | 13 | 13 | |
| 23 | Dietician | 3 | 3 | |
| 24 | Sub-Total Others: | 1186 | 1063 | |

Source: Annual Administrative Report 2012-2013, Directorate of Health & Family Welfare Services Including NRHM & MACS, Manipur.

Since NRHM's inception in Manipur, improvement in the various health indicators can be seen. The full immunization rate has improved from abysmal 30% to more than 85% till November 2010. The rate of

institutional delivery which was a mere 19%; and in many surveys, it has been lowest in the country. However, other health indicators like MMR and malnutrition among 0-6 year children have been relatively higher when compared to other health indicators (SPIP_2011_12_FINAL_ DRAFT_Manipur).

**Healthcare Accessibility of Thoubal District:**

Under the guidelines of National Rural Health Mission, District Health Society, Thoubal, was formed in August, 2006 and registered under the Manipur Societies Registration Act, 1989, under the chairmanship of Deputy Commissioner, Thoubal.

Table 1. Percentage of availability of facility and health personnel at villages in Thoubal, 2007-2008.

Percentage of village with

| Health facilities | Subcentres | PHCs | Any govt. health facility 1 | Doctors | ASHA | Anganwadi workers | JSY beneficiary | VHSNC | Aware of untied fund | Number of villages |
|---|---|---|---|---|---|---|---|---|---|---|
| Thoubal District | 34.4 | 15.6 | 53.1 | 9.4 | 84.4 | 96.9 | 50.0 | 28.1 | 37.5 | 32 |
| Manipur | 28.4 | 10.3 | 39.3 | 6.3 | 72.5 | 93.4 | 30.1 | 25.8 | 30.9 | 349 |

Table 2: Percentage of women (aged 15-49) who had pregnancy, delivery, post-delivery complications and treatment seeking behavior, 2007-2008.

| Percentage of women | | | | | | |
|---|---|---|---|---|---|---|
| | Who had complication during pregnancy | Sought treatment for pregnancy complication | Who had delivery complication | Who had post - delivery complication | Sought treatment for post -delivery complication | Number of women |
| Thoubal district | 35.0 | 78.3 | 26.4 | 20.2 | 47.3 | 401 |
| Manipur | 33.5 | 56.5 | 25.6 | 18.8 | 36.2 | 3531 |

**Maternal health Communication Strategies of NRHM:**

'Communication strategies' as a component in health care services were not considered seriously till the arrival of NRHM. In the United States of America for the first time, health communication was allocated a chapter in the USA's Healthy People 2010 objectives. Diverse communication methods have been incorporated within the national public health mission.

In NRHM, the Accredited Social Health Activist (ASHA) plays a great role in bridging the gap between the community and health services. From communication view point, it can also be said that ASHAs are community health communicators. Behavior Change Communication & Information Education Communication (BCC/IEC) intervention comprise electronic, print, folk, interpersonal and focus group communication to inform and influence people towards health. The focus of NRHM. The BCC/IEC activities are performed at three different levels such as: state level; district level and block level. And the BCC messages are being disseminated to the community through the following systems:

1. Observation of Village Health & Nutrition Days

2. District Health Melas

3. Home visits and community mobilization by ASHAs and ANMs

4. Mothers' meetings organized by Mobile Team under Tribal Health and ANMs of Sub-Centres

5. Block level need assessments

6. Block level awareness programs on major public health issues

7. Publication of annual State Health Society Calendar

8. Exhibition of Gate/ Tableaux during Republic Day Celebrations

9. Broad-cast in TV (local/ DDK)/ Radio

10. Newspapers

11. Publication of newsletters

12. Hoardings, posters, leaflets

13. Hoardings

14. Street-plays

**Discussion**

Women's health is directly linked to poverty and the absence of basic services like clean drinking water and sanitation, leading to malnutrition, anemia, a variety of diseases and poor life expectancy. Maternal care is also influenced by the educational and economic status of the women. "Illiterate mothers and mothers from the wealth quintile used basic maternal health care much less than their literate or wealthier counterparts and were far less likely to see a doctor". In Thoubal district, most prevalent health problems among women are reproductive health, nutritional deficiency, lack of safe drinking water and sanitation. Young mothers and pregnant women in rural area are suffering because of traditional practices in the society. 50% to 60% of pregnant women in

Manipur have low hemoglobin level leading to deficiency of iron in blood which in leads to anemia with the symptoms of fatigue, irritability, weakness, pale skin colour.

Following factors are found out as making women marginalized in health sector:

1. Socio- economic and cultural factors: In the study area, Langathel, a village under Khongjom Primary Health Centre (PHC) of Thoubal District, it is found that women's educational level is very low. Elderly women are less informative and stuck to their unscientific mind set and beliefs. Lack of knowledge on nutritional and essential diets to be taken during pregnancy can also be seen. As some women complained that they spent their pregnancy period with only two meals a day.

2. Information barriers: during researcher's field visit it has been found out that many pregnancy and newly delivered women, in fact seven out of ten are not taking or were not taken the supplements especially iron tablets by one reason or the other.

a. It has been told by their elders that the baby grows bigger in size by taking doctor's medicine that makes difficult to the mother and have to deliver by operation.

b. Many women skipped from taking food supplements due to constipation, vomiting tendency, loss of appetite as a minor side effect of the tablets. This problem could be solved out by taking adequate water, food items rich with fiber and green vegetables (Paikhomba: 2012). But due to the lack of nutritional information and less health consciousness, many women never try to get right information or do follow -up from reliable sources.

   Here the lack of communication and desired relationship between physician and patients are clearly observed. On the other side, as Government is giving much effort through IEC/BCC strategies as health communication strategy, and its women cadre ASHAs are playing a great role in bridging the health gaps at village and community level. But the applicability of the information are observed to be weak mostly in poor income family, people residing in far flung with bad and road transport condition, less educated family, lower media exposure and where ASHA activity is low.

3. Bad road and transport condition of far flung areas under Thoubal district is also a great component in marginalizing them. Many of them agreed to the fact that "inconveniency in road transport, non- availability of medical stores in the village and of not considering about their heath seriously, many of women completed the Iron Folic tablet (IFT) with as much as given by ASHA without completing the actual 100 days for compulsory".

4.   Another very important factor is the ever increasing costly brand conscious medical prescription by the medical practitioners. Again proper counseling is major left out practice in public hospitals that makes people to develop a negative mind set towards public hospitals. Everyone is accepted about well treatment and good hospitality in private hospitals, but the matter is about affordability.

**Strategic Communication**:

The study identified the importance and impact of both mediated and non-mediated health communication. It has found out the value and importance of radio is very high where there is no availability of doctors and nurses (PHSC). But the performance of certain BCC systems are found very low in various villages, like displaying of hoardings carrying BCC messages. It also came to know that people are more informative and aware about health related beneficiary schemes like JSY (JananiSurakshaYojana) where there is active Accredited Social Health Workers (ASHA). The importance of good communication between physician and patient is marked as by Dr. Paikhomba, Asst. Prof. Department of Gynecology, JawaharLal Nehru Institute of Medical Sciences (JNIMS), Imphal, it is highly needed to give awareness about the essentiality of certain vitamins and minerals among women of reproductive age and pregnant women through counseling and through media strategically (Nongmaithem,2013). Study also found out that women who had or have counseled properly by Doctors has better chance for taking their nutritional supplements regularly regardless of their educational level, socio-culture, economy backwardness, even they for ASHA in seeking of supplements.

**Conclusion:**

Though a small state, its journey for public health service upto a considerable level is beyond imaginable as of today. Under the umbrella of National Rural Health Mission ( NRHM), state is giving much effort on Reproductive and Child Health –II as the focused area, perhaps when we look at the matter little bit closer various loopholes, drawbacks, insincerity at the implementation process from top to bottom will be seen easily. A huge gap between publicity and actual implementation of the program is witnessed by people at the hill districts and periphery area of the valley on one side. On the other hand many people are not aware of the improvements in terms of medical facilities at their nearby Public Health Centers (PHCs) or Community Health Centers (CHCs), thus they choose to go long distance at State Hospital or other private clinic and hospitals at time of delivery. Another important fact is that many people could not trust to the Doctors and medical facilities at PCH or CHC nearby which is a symbol of lack of communication between Doctors and patient parties.

Though the Millennium Development Goals on health was set up to minimize women health problems following the International Conference

on Population and Development, 1994, Cairo (ICPD), the impact of poverty on women health is still clearly seen mostly in so called third world countries. The situation of women health mainly in developing countries including India is still depressing.

Although there is enough national and International individual health rights, rural people especially women and poor of Thoubal District are needed to concern critically on the healthcare services like nutrition, high prevalence of diseases, poor sanitation, inadequate safe drinking water and healthcare infrastructure, so as to develop living status of marginalized sections at Thoubal District in their health sector, multi-dimensional social up gradation is needed. Socio-economic backwardness of the state is one reason of marginalizing the vulnerable groups in a society. So as to improve and to empower themselves, the village community through PRIs need to be more involve and participatory.

**References:**

- Badr, Elisheikh. Public health communication: some lessons for effectiveness. Sudanese Journal of Public Health July 2009 Vol 4 No.3.
- Cedomir Sagric O.R. (2007). Social Marginalization and Health.*ActaMedicaMedianae*, 49-52.
- Dr. Paikhomba, JNIMS (interviewed on 2012, November 12).
- Directorate of Health & Family Welfare services including NRHM & MACS, Manipur. Annual Administrative Report 2012-1013 sponsored by NRHM Institute on Race, H.C. (n.d) http://academic.udayton.edu/health/07humanrights/health.htm.New York.
- Khan,K.(2010). Health status of women in India: Evidence from *National Research and Practice in Social Sciences* 1-21
- Network, P.H. (2008). What is human development?
- Nongmaithem R.(2013, February 10) *http://www.manipurtimes.com/editorial-and-articles/manipurtimes-article*. Retrieved on March 15, 2013(www.manipurtimes.com)
- Pereira,A.(2oo4). Live and Let Live: CONN.PUB.INT.L.J.414-435
- Rimal RN and Lapiniski MK. Why health communication is important in public health. Bulletin of the World Health Organization 2009; 87:247-247 (http://www.who.int/bulletin/volumes/87/4/08-05671/en/index.html, accessed on 20 October 2013)
- Sheikh, M.R. (2012, Sept-Oct) retrieved on February 5, 2013, from www.iosejournals.org
- SPIP-2011-12-FINAL-DRAFT-MANIPUR. (n.d)
- Tigani, N.A (2007). Health, Poverty and Human Development Sudanese Journal of Public Health, 207-211
- UNICEF India, Maternal Health in India (www.health women in india.html, accessed on 21st October 2013)
- World Health Organization, Maternal Mortality in 2000: Estimates developed by UNICEF and UNFPA. Geneva: World Health Organization. 2007;4:16. (http://www.who.int/whosis/mme_2005.pdf, accessed on 20 October 2013)
- WHO (2003) WHO Vulnerable Groups

# EVALUATING SCICOM PROGRAMMES: SOME REFLECTIONS

**T. V. Venkateswaran**

## Abstract

Evaluation of a SciCom project is not simple or straight forward as it may appear at the first sight. As a social science activity it is embedded in many levels of contestations and hence require conscious choices to be made. One SciCom activity is not identical to another; aims and goals also differ. Large number of SciCom activities aim broadly to generate public interest in science. Most TV shows, radio broadcast, panel discussions and so on are actually largely one-way information flow. On the contrary, there may be a smaller portion of SciCom events specifically organized to make the audience engage with S&T. Such 'dialogue events', which aim to generate open-ended discussion between the general public, scientists, policy makers and campaigners are not mere one way street and provide a platform for thoughtful and informed public debates. There may be more intense SciCom activities wherein the audiences are not mere spectators; in fact, there is no distinction between the audience and the 'communicators'. Each of these levels requires different evaluation criteria. Further, increasingly SciCom activities have shifted from the simplistic 'deficit model' perspective to that of involvement and participation of the audience. Therefore, evaluating a SciCom activity that has transmitting knowledge as its central goal is not the same as evaluating another SciCom activity that has promoting discussion between different social actors about a certain issue as its central aim. In the first case, we are dealing with top-down communicative interaction; in the second, communication is based mainly on dialogue and hence in the first case the results may be largely predetermined, however, in the later case results would necessarily be open-ended. Thus, it may be prudent to design the assessment tools of SciCom programme open-ended enough to capture range, including unintended impacts, rather than fall into the pitfall of fetishism of 'numbers' In addition the dominant model of viewing SciCom activities as 'selling' science and hence one can adopt strategies and evaluate it in terms of 'marketing' needs a careful considerations, if we accept SciCom to be a public good and the ultimate purpose of development is to enhance democracy and participation.

## Introduction:

Attaining the Millennium Development Goals and ensuring minimum needs, such as, water, education, sanitation and health are not

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feasible without ability to access and apply the fruits of modern science and technology in a responsible manner. From high cost to lack of absorption capacity there may be many hurdles in harnessing modern S&T for development. Furthermore, attaining these goals in a responsible manner, for example, ensuring that it reduces rather than increases the gap between the rich and the poor, and is inclusive even in reaching the disadvantaged sections of the society is not an easy task given that much scientific knowledge comes wrapped as privately owned intellectual property. Using science and technology effectively to meet local needs so that it is appropriate to local conditions, sustainable to the development goals and also serves the developmental goals of f equity and social justice remains a challenge, particularly when supply is dominated by commercial considerations.

But knowledge will not reach those who can benefit from it unless it has been effectively communicated to appropriate groups (like policy makers, government officials, welfare officers, NGOs, community of practitioners etc). Indeed formal education is the key, yet informal education provided through various media can play a crucial role.

As it is being realised that communication is crucial in bridging the gap between the production of new knowledge that can meet such needs, and the application of that knowledge to either practice or policy, the importance of science communication as an essential component of any development strategy is slowly dawning on the policy makers. In a democracy the need to stimulate an informed public discussion about the potential opportunities and threats needs no stress. The importance of such debates, and the role of science journalists and other communication professionals in ensuring that they take place in an informed way, is growing strongly, particularly in the last decades. Robust scientific evidence is also essential in public debates; however, it is clear to many that science should inform, rather than determine, policy decisions. This means ensuring that all stakeholders have access to relevant scientific information, in a form, which they can easily understand. In other words, we need access to well-communicated science.

The qualifier "well communicated science" in the last sentence implies the imperative for appropriate assessment and evaluation tools of science communication activities (SciCom activities). Lewis Carroll famously counselled "If you don't know where you're going, any road will get you there" emphasising the imperative of goal setting of human actions. Evaluation, being the tool to scrutinise if we are indeed 'getting there', hence cannot be wished away, particularly when the resources are scarce or the achievement of the goal is exigent.

Do people learn as a consequence of a SciCom experience? It is easy to state but harder to prove. Particularly if one is trying to document

and asses free-choice learning – the learning that occurs when individuals have considerable choice and control over what, where, when and how they learn, the task is daunting. Providing compelling evidence that SciCom in general or in particular programme has 'worked' is indeed challenging. The challenge is not much related to absence of evidence but more often to wrong questions asked and inappropriate measurement tools used (see Falk 1999 and Falk & Dierking 2013 have useful evaluation of science museum in the west).

Although the term evaluation is often deployed as unambiguous, it can mean different to different people. While one focuses the 'evaluation of the reaction' of the audience (say TRPs of a TV programme) others may place 'evaluation of learning' far ahead of that. 'Evaluation of behavioural changes' and 'evaluation of results' are other emphasizes that are prevalent in the literature. Apart from 'outcome' or 'impact' evaluation as done in above elaborations, one may wish to engage in front-end analyses that gather baseline information about target audiences or formative evaluation that tests treatments, storyboards, and/or rough-cuts with audiences. From fetishism of 'numbers', prompting even spurious 'indicators', to obsession with assessing 'results' and 'efficiency' are clouding our vision in regard to evaluation. In this paper, the issues connected with quantitative and qualitative assessments of SciCom activities and fixation on 'efficient' communication are interrogated and dilemmas lay bare.

**Going Beyond the Numbers for Comprehensive Assessment:**

Media theorists, especially science communication practitioners have realised that there is much more to evaluation than the end assessment or outcome/impact assessment. Evaluation is not just the assessment one may engage at the completion of the programme to answer the question if the SciCom activity has been 'effective'/'useful' or appropriate. Evaluation should be conducted throughout a project: during planning (front-end), development (formative) and on completion (summative). Most often we begin with an idea of what we want to do (create an exhibition, have a community programme, or produce a TV serial) before we deliberate about why and for whom we want to do it. Rightly seen evaluation is a process and tool for planning. From this perspective, ideally it is prudent to adopt backward research design approach. Firstly state what you want to accomplish with the target audience on an opportunity provided. Then describe how the particular type of project will enable these outcomes to be accomplished. Such an approach requires starting with a clear formulation of the intended project impacts and the audience(s) who will be targeted. Then by working back in a disciplined and systematic way, you can define project goals, as well as develop the program elements and strategies that you can effectively achieve. From this precept, evaluation is integral to project formulation.

Front-end evaluation, or need analysis, aims to identify the needs, wants and prior knowledge of the potential audience(s) of the proposed SciCom activities. What topics will capture the audience's interest? What topics would be challenging or initially uninteresting for the audience? How much prior knowledge the audience have? To what extent we can take explanations for granted? What format of event works best for a particular topic and a particular set of audiences? Ideally focus groups or in-depth interviews are appropriate tools, nevertheless valuable information already available in the SciCom research could be used effectively. Formative evaluation is akin to 'pilot project' or 'prototype design'. The main purpose of this is to identify design and delivery faults through trial events reaching out to test audiences prior to roll out of the full scale campaign. Thus, formative evaluation should be an iterative process quickly identifying problems, making modifications and retesting the SciCom products. No matter how well we imagine a strategy of work, it takes exposure to real audience members to discover just what actually works, and for whom. Whether a particular SciCom product 'makes sense' to the audience could be gauged from this type of assessment.

Even in a task of say assessing the 'effectiveness of a SciCom product' in enhancing the levels of understanding the matter is not that smooth. Evaluation of informal SciCom programmes are besieged with many difficulties. For example, in contrast to school-based science education, SciCom materials often attract heterogeneous public audiences. Learners range in age from newborns to centenarians, in formal science background from novices to professional experts, and in language, culture, and motivation across many dimensions. Not only is the range of learners large, but also each individual has a unique experience because they move individually through a set of choices, interactions, and interpretations. All of this variation makes SciCom deliverables particularly challenging to evaluate. Even in a simple formative research to find a SciCom material that would 'make sense' may become a daunting task.

What most project managers, especially fund providers are interested is not on front end or formative evaluation but on the summation evaluation, that aims to assess whether the project met its objectives, especially the potential long-term impact. Summative evaluation of SciCom events presents a number of particular challenges, especially assessing the long-term impact. How will you maintain contact with a reliable sample of participants to conduct this type of research after the conclusion of the event? How will we ensure that we are not altering participants' opinions and behaviour by maintaining this contact? Do we have the resources to conduct long-term studies lasting months or even years? How will we ensure that what we are measuring is truly the impact of your event and not of a multitude of different experiences that a participant may have had in the meantime? It is a nightmare.

Even if we are not talking of potentially unfeasible long-term impact study and reconcile to a modest short-term impact, sadly the canonical assessment frame is set in now largely on discredited behaviorist, stimulus-response model of learning in which individuals are assessed to determine whether they have learned specific, predetermined information. The reality of science learning through SciCom activities is much more subtle and complex. Given the free-choice nature of SciCom experiences, audience selectively pick and choose what they want to learn more, and these decisions are very strongly influenced by what they already know and are interested in. Hence, this will vary from person to person. Thus, trying to measure a phenomenon that is very idiosyncratic and highly variable from individual to individual is challenging and requires different approaches and tools than those used to assess learning in set ups like schools (see Falk and Storksdieck 2005 for a case study of evaluation of science museum experience).

Additionally the learners use the SciCom materials to essentially build their existing knowledge and experience. The diversity of audience background in SciCom implies a large range of possible learning outcomes, which are potentially possible. It is a field in which multiple outcomes are the norm where learning is often the result of combined, interwoven and overlapping experiences (informal, formal and everyday). Thus, one of the focuses of assessment needs to be about understanding how the experience of participating in or engaging with SciCom activity contributed to fostering, reinforcing and sustaining science interest and understanding.

Every participant in a SciCom activity may not have identical levels of motivation or expectations. While some may participate just to *experience* excitement or interest others may be motivated to go beyond this to *understand*, remember and use concepts, explanations, arguments, models and facts related to science. If the above two are two strands, the third may be those who want to *manipulate*, test, explore, predict, question, observe and make sense of the natural and physical world and fourth to *reflect* on science as a way of knowing; on processes, concepts, and institutions of science; and on their own process of learning and the fifth strand may like to *participate* in scientific activities and learning practices with others, using scientific language and tools. There may be small but significant sections of audience who may take up the sixth strand, that is think about themselves as *science learners* and develop an identity as someone who knows about uses and sometimes contributes to science. Assessments for evaluating SciCm activities should take these varying interest and motivational levels into account.

Another methodological problem is the apparent opposition between so-called quantitative methods – principally surveys with

standardised questionnaires – and qualitative ones (discursive interviews, ethnographic observation, focus group discussions, etc.). While the quantitative methods appear to be characterized by detachment, neutrality and separation, by those who are not familiar with social sciences take the later to lack these .

Increasingly, influenced by management framework, project managers and funders ask for 'quantitative' measure of assessment/ evaluation. As a reaction, often it is the randomized controlled trials (RCT), often used in medicine and pharmacology to evaluate the impact of a new procedure or a new drug that comes to mind as an appropriate evaluation methodology. Indeed this is an excellent methodology for some projects, especially when we seek to establish if there is a causal relationship between a specific innovation (treatment) and a set of specific effects or side effects of that treatment. For example, when one wants to test if a particular learning strategy devised is effective then this methodology may be adopted. However, this methodology is expensive and time consuming, on the contrary it can provide hard, numerical evidence for the causal effects of one or more variables. As it is difficult to conduct rigours RCT in SciCom activities, often the procedures and protocols are compromised resulting in substandard research. However, they are tolerated on the grounds that rigours research is rather difficult. This fixation for 'numbers' 'pie charts' and 'graphs' are a bane. Evidence of behaviour change or attitudinal change is often captured by participants' self-reported intentions. It is well known in the social science research for the tendency of the respondents to please by saying what they think the researcher wants to hear. Often the reported data are interpreted as matter of fact, marring the objectivity of the study. RCT could be a pre-test follow by post test; one shot post test; post test with random assignment, pre-test with post test random assignment. The last one is rather difficult to conduct for it is time consuming and needs high degree of control over the audience and may be prohibitively costly. Furthermore, in cases where there are no "treatment" being tested, no causal links to be established, even if RCT methodology is powerful, it is often inappropriate for the given task at hand(see Rowe et.al 2005 and Neresini, F., & Pellegrini, G. 2008 for a discussion on difficulies in evaluating SciCom activities).

Another common confusion is taking output as an indicator of outcome. Output is easy to measure and quantify. Enumeration of footfalls in the museum, number of hours of television programme, count of people who attended a campaign programme will give us a sense of 'output'. But does this directly imply short-term or long-term 'outcome' (comprehension and initial changes in knowledge, attitude, and/or behaviours)? In real situation, ferreting out the impact of the SciCom project on the learning from all other variable is not an easy task. Methodologies other than RCT, such as, focus group discussion could actually provide perceptive insights

on the audience levels and understanding rather than large scale surveys. In addition to RCT, there are arrays of evaluation design choices, such as, ethnographic studies, case studies, content analysis, etc. Appropriate tools are to be deployed for specific SciCom programmes.

Increasingly SciCom activities have shifted from the simplistic 'deficit model' perspective to that of involvement and participation of the audience. Therefore, evaluating a SciCom activity that has transmitting knowledge as its central goal is not the same as evaluating another SciCom activity that has promoting discussion between different social actors about a certain issue as its central aim. In the first case, we are dealing with top-down communicative interaction; in the second, communication is based mainly on dialogue and hence in the first case the results may be largely predetermined, however, in the later case results would necessarily be open-ended.

One SciCom activity is not identical to another; aims and goals also differ (See Bell 2009 for an overview of the range of SciCom activities). Large number of SciCom activities aim broadly to generate public interest in science. Most TV shows, radio broadcast, panel discussions and so on are actually largely ne-way information flow. On the contrary, there may be a smaller portion of SciCom events specifically organized to make the audience engage with S&T. Such 'dialogue events', which aim to generate open-ended discussion between the general public, scientists, policy makers and campaigners are not mere one way street and provide a platform for thoughtful and informed public debates. There may be more intense SciCom activities wherein the audiences are not mere spectators; in fact, there is no distinction between the audience and the 'communicators'. Each of these levels requires different evaluation criteria (for useful tips on designing project specific evaluation see Friedman, 2008; Gammon, B. and Burch, A. 2006 and McCallie et.al 2009).

In summry to the extent we are overtly concern about the 'outcome', or 'learning' the SciCom activity has achieved it may be prudent to design the assessment tools open-ended enough to capture this range, including unintended impacts, rather than fall into the pitfall of fetishism of 'numbers' (see Falk and Storksdieck 2001, 2005 for an exemplar of multi-factor investigation).

SciCom activity being essentially a public good, it should not overly concern with outcome, but should pay adequate attention to inclusiveness and universal access. From this perception, it is important to look at the data related to ages, social group, gender, income, residence (rural/urban), distance travelled and so on. Likewise, motivations, interests, existing knowledge, expectations, perceptions, etc of the audience are also paramount, which needs to be gathered and assessed.

Comprehensive assessment should not only be fixate on the impact of the knowledge but also on the engagement (capture the excitement and involvement of participants), attitude (changes in perspectives), behavior and skills. By the skills we imply, not only the tacit knowledge of operation of an artefact but also the procedural aspects of knowing. Skills include scientific inquiry skills (such as observation, exploration, questioning, prediction, experimentation, argumentation, interpretation, and synthesis), as well as, specific skills related to using scientific technologies or representations.

Further, in evaluating SciCom activities instead of expecting to verify whether a particular result can be legitimately ascribed to a given input and also assume that the apparent cause–effect relation thus identified can be transposed to other cases it may perhaps be wise to understand how the observed result may have ensued from a given input, emphasising the role that the context – in combination with the input – plays in producing the result.

**Interrogating the Goals:**

The base-line studies evaluation and formative evaluation are indeed crucial for authoring the communication products (TV programme, newspaper article, exhibition panels etc). However, the 'outcome' and 'impact' evaluation are not that unproblematic. The very philosophy that guides the communicative action in fact frames what sort of 'outcomes' or 'impacts' are expected in the first place. In this sense, the way we measure the 'success' of a science communication programme reveals the attitudes and values we implicitly promote.

Say in a science museum exhibition, are we there to strive to control visitors so that people will experience what we want or facilitate them to find their own path? 'Outcome-based evaluation' that social marketing advocate weighs in on the side of control, whereas the 'empowerment approach' may favour the second. Often the outcomes are codified and limited to few 'learning objectives' or 'impact categories.' In essence, those who follow this approach are committed to creating exhibitions that will tell visitors what they *must* experience. Yet people come to museums to construct something new and personally meaningful (and perhaps unexpected or unpredictable) *for themselves*. They come for their own reasons, see the world through their own frameworks, and may resist (and even resent) attempts to shape their experience. How must then science museums design and evaluate exhibitions that seek to support visitors rather than control them? Thus, it can be clearly seen that evaluation of impacts or outcome are not clear and evident and are based on the philosophical stand we take. This dilemma is related to the two dominant strands of communicative actions prevalent in contemporary world.

Broadly labelled as 'empowerment approach' the first strand draws inspiration from the liberalism as discussed by John Locke (1689), Immanuel Kant (1795), Jean Jacques Rousseau (1762), and John Stuart Mill (1859; 1863). In the modern times it draws its theoretical framework from the Jurgen Habermas' public sphere theory (1962) and theory of communicative action (1981), Manuel Castells' (1996) network theory, and the social shaping of technology theory as outlined by Lievrouw (2002). Concepts such as strength of weak ties, the mediated public sphere, the amateur as producer, private versus public spaces informs this vision that aims at 'engagement' rather than 'behavioural change' as its essential goal.

The second strand 'social marketing theory' is a combination of social science & social policy approaches with that of commercial & public sector marketing approaches aimed at measurable 'results', achieving specific behavioural goals with specific audiences in relation to topics relevant to social good (e.g., health, sustainability, recycling, etc). Dr. Wiebe, psychologists who worked as a Research Psychologist with the CBS Radio Network rhetorically asked "Why can't you sell brotherhood and rational thinking like you can sell soap?" in an influential article that was published in the Public Opinion Quarterly argued that although citizenship is not soap, efforts to "sell" broad social objectives via radio or television are not likely to succeed unless the essential conditions for effective merchandising exist, or can be made to exist. Further, he averred that primarily the audience must be forcefully motivated and clearly directed to an adequate, appropriate, and accessible social mechanism for a 'successful' achievement of desired outcome (Wiebe, 1951). Taking this idea further Philip Kotler and Gerald Zaltman (1971) advocated that marketing concepts and techniques be effectively applied to the promotion of social objectives such as, brotherhood, safe driving and family planning. They advised that social causes can be advanced more successfully through applying principles of marketing analysis, planning and control to problem of social change.

Advocated by World Bank, USAID and many other international AID agencies the idea of 'social marketing' has seen widespread acceptance and usage across the spectrum of communication programmes. Arguably, the first ever documented deliberate use of social marketing concepts to address a social issue was initiated in India during the1960s at the instance of IIM-Calcutta. Addressing the then priority social issue of family planning Chandy et.al (1965) proposed a framework for the national family planning program that included high quality condoms with a government trademark be distributed and sold throughout the country at a low cost, that an intense consumer advertising campaign be run with active and open promotion at the point of sale, that retailers be trained to

sell the product aggressively, and that a new organization be created with the responsibility of implementing the program. From then on various health issues such as HIV prevention, use of oral re-hydration therapies, malaria control and treatment, point-of-use water sanitation methods and the provision of basic health services have been routinely addressed from the perception of 'social marketing'. Beyond health issues social marketing perception has gained currency in varied social issues such as nutrition, educating children about land mine danger in places such as Kosova and so on.

The social marketing framework impels the science communication programme to change participants' long-term behavior after the SciCom experience, such as visit to science museum, watching a science TV serial, listening to science broadcast on radio or informal science opportunities. This category of impact is particularly targeted in projects that are environmental in nature or have some connection to the health sciences since subsequent action is a desired outcome. Australia's Victoria Cancer Council's anti-tobacco campaign "Quit" (1988) and campaign against skin cancer "SunSmart" (1988) are often cited as exemplars of social marketing campaign with public good as goal (see Lefebvre, R.C.(ed) 2013, for an anthology of successful case studies of social marketing).

In so far as the goals of the social marketing is limited to non-contentious advocacy issues such as: mass polio vaccine campaign, public campaign to tweak helmet and/or seat belt wearing behaviour etc they may have been effective and positive. Nevertheless, social marketing is not without major problematic contradictions and inconsistencies.

**Conclusion:**

It appears that the philosophy of libertarian empowerment is fundamentally incompatible with the basic philosophy of social marketing and is more pronounced in cases where the goals are contentious. The social marketing assumes that individuals, groups and organisations have similar interests and equal access to resources. These assumptions seem unrealistic given the vast inequalities between the countries of the world and within each country. Societies are in fact characterised by conflicting interests of different groups and organisations and social change is feasible only by social action. Take for instance debates related to 'nuclear power', biotechnology or use of chemical fertilisers. Ferreting out 'goals' in these implicitly have a vision of the society that we want to build as a community and are real choices before the public; yet social marketing presents them as 'given' and 'there-is-no-alternative' picture thus essentially taking away the democratic agency from people at large. In such situations ideology in praise of social marketing degenerates and concept of social change becomes a matter of rhetoric.

Furthermore, there are lasting questions on the efficacy of social marketing; research data indicates that there is more strong correlation between adoption of family planning to that of education of women rather than that of 'social marketing' alone. Although the conditions engendered by social marketing, such as, access to family planning technology etc provided an enabling circumstance, it has seen success only in those regions which had seen social mobilisation, especially leading to women literacy/schooling. Hence, social theorist argue that except for issues which has low stakes, or having low social impact, social marketing has failed to lead to social change.

The 'dark art' of marketing first makes us feel inadequate in order to persuade us to buy things. Social marketing is no exception and is based on this premise. Such 'marketing campaigns' not only sells the 'goods' but also subtly, and at times even unintentionally advocate a whole set of values — values about happiness, identity, and the good life. Thus, on the moral side, social marketing appears to be 'manipulative' and 'coercive' taking away the agency from people.

In contrast empowerment advocacy eschews every assumption made by the inadequacy approach and are premised upon the possibility for human growth and even transcendence. They inspire action by painting a picture of an imperfect world that can be repaired through collective human action. They provide an opportunity for us to critically reflect upon ourselves and our assumptions, enabling in the long-run voluntary transformation. And most importantly, they create deep affinity by acknowledging that human beings who can be something more than selfish machines seeking status, sex, comfort and convenience.

It is not that empowerment approach does not define goals or propose rational pragmatic approach to reaching the goals, but social marketing differs from empowerment approach fundamentally in that it sets to define specific behavioural goals. In contrast empowerment approach adopts more reflexive approach and exhibit willingness to shift the goals and objectives of the initiatives in response to community needs and wants. Social marketing is ultimately concerned with achieving measurable behavioural goals whereas community development and empowerment programme may have this as a focus but they are also concerned with informing educating and creating attitudinal and belief changes as end-points in themselves. Social marketing in so far as is parallel with the structure of the discourse of marketing is traversed by empowering/controlling contradiction. Rather than fulfilling promise of empowerment, social marketing ultimately constructs the individual subject as a "consumer" in accordance with the model of consumer capitalism. As

they are made mere consumers in the market, social marketing has a negative effect on democracy because it elevates the individual over the community.

Thus, in a SciCom activity say of promoting scientific temper, the social marketing approach may try to trust down a particular vision down and anticipate certain behavioural changes the; empowerment approach would also share the same goals of challenging preconceived notions and help them to self-reflect and embrace new understandings rather than expecting 'conversions'. In our quest for 'efficient' we may land up dis-empowering and lessen the democracy. This is a danger that lingers like Damocles sword.

## Bibliography

- Bell, P., Lewenstein, B. V., Shouse, A., & Feder, M. (Eds.). (2009).*Learning Science in Informal Environments: People, Places, and Pursuits.* Washington, DC: National Academies Press

- Chandy, K.T., Balakrishman, T.R., Kantawalla, J.M., Mohan, K., Sen, N.P., Gupta, S.S. & Srivastva, S. (1965). Proposals for family planning promotion: A marketing plan. Studies in Family Planning;1(6):7-12.

- Falk, J. H and Storksdieck, M.;2001, A multi-factor investigation of variables affecting informal science learning. Final Report, National Science Foundation, Washington, DC.

- Falk, J. H, Dierking, Lynn D, 2013  Museum Experience Revisited, Left Coast Press, Walnut Creek CA

- Falk, J. H. 1999, Museums as institutions for personal learning,  Daedalus, v. 128, n. 3, p. 259-75.

- Falk, J. H. and Storksdieck, M. 2005 .Learning science from museums. História, Ciências, Saúde – Manguinhos, v. 12 (supplement), p. 117-43.

- Friedman, A. (Ed.). 2008., Framework for Evaluating Impacts of Informal Science Education Projects [On-line]. (Available at: http://insci.org/resources/Eval_Framework.pdf)

- Gammon, B. and Burch, A. (2006) 'A guide for successfully evaluating science engagement events', in Turney, J. (ed.) Engaging Science. Thoughts, Deeds, Analysis and Action, London: Wellcome Trust, 80-5.

- Lefebvre, R.C. (2013) (Ed). Social marketing: Six volume set. London: SAGE Publications,

- McCallie, Ellen, Bell, Larry, Lohwater, Tiffany, Falk, John, Lehr, Jane H., Lewenstein, Bruce V., Needham, Cynthia, Wiehe, Ben. (2009). *Many Experts, Many Audiences: Public Engagement with Science and Informal Science Education*.  A CAISE Inquiry Group Report (pp. 83). Washington, DC: Center for Advancement of Informal Science Education.

- Neresini, F., & Pellegrini, G. (2008). Evaluating public communication of science and technology. Handbook of public communication of science and technology, 237-51.

- Philip Kotler and Gerald Zaltman (1971)Social Marketing: An Approach to Planned Social Change, *Journal of Marketing,* Vol. 35, No. 3 (Jul.,), pp. 3-12.

- Rowe, G., Horlick-Jones, T., Walls, J. and Pidgeon, N. (2005) 'Difficulties in evaluating public engagement initiatives: reûections on an evaluation of the UK GM Nation? Public debate about transgenic crops', Public Understanding of Science, 14: 331-52.

- Storksdieck, M. and Falk, J. H. (2004) 'Evaluating public understanding of research projects and initiatives', in Chittenden, D., Farmelo, G. and Lewenstein, B. (eds) Creating Connections, Walnut Creek, CA: AltaMira Press, 87-108.

- T. R., Gustafson, D. H., Henderson, J., Jimison, H., & Patrick, K. (1999). Introduction to evaluation of interactive health communication applications. American journal of preventive medicine, 16(1), 10-15.

- Wiebeg. G. D. *(1951)* Merchandising Commodities and Citizenship on Television, *Public Opin Qly, 15(4):pp.679-691*.

## FORM IV (See Rule 8)

Statement about ownership and other particulars about newspaper

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22/02/2014                                         **Signature of publisher**

## CONTENTS