

THE ROLE OF SOCIAL SCIENCES IN THE MAN AND BIOSPHERE PROGRAMME

*Note by Abdul Aleem**

UNESCO's Man and Biosphere (MAB) programme is a programme of research directed towards "developing the basis within the natural and social sciences for the rational use and conservation of the resources of the biosphere, and for the improvement of the global relationship between man and the environment".**

Because of its abiding concern for the conservation of renewable resources, the Pakistan Forest Institute hosted a seminar from August 13-15, 1977 on 'the Role of Social Sciences in the MAB Programme'. UNESCO, Pakistan Science Foundation and University Grants Commission also co-operated.

The seminar was inaugurated on August 13 by Mr. Justice Abdul Hakim Khan, Acting Governor, NWFP. In his address of welcome, Dr. Mohammad Aslam Khan, Secretary, National MAB programme introduced the programme and its activities in Pakistan. Professor Yogesh Atal, UNESCO Regional Adviser for Social Sciences in Asia and Oceania, highlighted the importance of social sciences and stressed the need for their integration with the natural sciences to achieve success in MAB programmes. He outlined the following objectives for the seminar:

- to make MAB programme known to the academic community;
- to establish a dialogue between natural and social scientists so that they could jointly initiate activities pertaining to MAB;
- to interest social scientists in MAB programme and ensure their participation; and
- to take a first step towards nationally organising social science activities.

The chief guest emphasised the need of launching a vigorous programme of motivation of rural communities, by knowledgeable and dedicated social and biological scientists, for the same use of natural resources. He also emphasised the need of organising local communities for collaborative action, and for the dispensation of incentives and disincentives.

Manzoor Ahmad Sheikh observed that men of science have not only to create knowledge and technology but must also to make sure that these are applied with full responsibility so that the physical environment of man and his cultural and social fabric is not distorted.

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Aslam gave MAB's definition of perception of environmental quality; the ways in which man senses and understands natural and man-made environment especially as influenced by social and cultural factors, described methods of measuring the perception and areas of perception of environmental quality and presented the results of an interview conducted through a questionnaire with administrators and professional workers and university teachers on the perception of environmental problems. Deforestation was rated as the main environmental problem by administrators, and waterlogging and salinity by professional workers. Deforestation, overgrazing in the mountains; pollution, concentration of industrial waste in cities; waterlogging and salinity, soil erosion, floods, and unhealthy drainage in rural areas were delineated as the main environmental hazards. Poverty and lack of knowledge about the environment were rated as the main causes of deterioration. Concern was expressed about the inadequacy of environmental education. Mass education through integrated approach was considered to be the major remedial measure.

Khattak stated that the productive capacity of our lands was being depleted fast through mismanagement. Unless forceful measures were taken on a scale unprecedented so far vast areas would soon become unproductive and would cease to support the human and livestock population subsisting on them at present. Moreover, shorn of protective vegetation mountain lands would pose a constant threat to downstream agriculture. The main drawback of the current approach to the renewable resource management programmes was that it sought to assay only physical, biological and engineering problems when in Pakistan, the major problems to be solved were social, economical and political. The critical problem in biosphere management, in his view, was man. Were it not for him, the world would be well able to look after itself. Conclusion: Research and educational institutions dealing with the management of renewable resources must develop strong social sciences units comprising competent workers in Social Anthropology, Sociology, Social Psychology, Political Science and Economics. Their task—to conduct research in the socio-economic and political problems of the management of renewable resources, to teach these subjects to resource managers, and to evolve by interaction among themselves and with the Biologist and the Physical Scientist, a discipline which can motivate human communities to live in harmony with their environment.

According to Jafri, rapid industrialization, farm mechanisation and urbanisation were responsible for problems of environmental health. Air pollution was increased by dust, carbon monoxide, lead compounds and polyhydro-carbons, and caused diseases of the upper respiratory tract. Large quantities of sulphur dioxide, chlorine and nitrogen oxide emitted by chemical industries was causing air pollution in the cities whereas dangerous pesticides such as DDT, Dieldrin and other chlorinated hydrocarbons were poisoning the rural environments. Over-crowding caused by population shifts from rural to urban areas increased the spread of such disease causing organisms as *Giardia lamblia*, *Entamoeba hartmanni*, *Iodamoeba butschlii*, *Trichuris trichura*, *Ankylostoma duodenale*, *Enterobius vermicularis*, *Ascaris lumbricoides*, *Hymenolepis mana* and several others.

Rashid Ali presented the effects of Associated Industries Nowshera, Mardan Sugar Mills, Pakistan Marble Factory, Peshawar, Kala Shah Kaku Complex Lahore, and Daud Hercules Fertilizer Factory Sheikhpura on fresh water organisms studied by him in 1976.

More than half the fish and invertebrate species were eliminated because of industrial wastes containing hydrogen sulphide and ammonia. Rivers Soan and Ravi and a stream near Choa Saiden Shah showed an increase in total alkalinity and hardness and a decrease in pH, as a result of organic pollution. About half the fish species were found missing whereas little change was observed in invertebrate fauna.

Haider Ali Chaudhri presented some environmental problems and their impact on the socio-economic life of people of 83 villages in Mona Experimental Project, (44515 ha, Sargodha and Gujrat districts) where irrigation had been in practice for 75 years. Tropical thorn forests were converted into agricultural land after the introduction of canal irrigation. Prosperity and population growth followed and nomads started settling down. Population increased from 21 persons/km² in 1891 to 1974 persons/km² in 1972. Literacy, however, remained drastically low though living standards rose.

Lack of proper drainage, however, caused the ground water table rise: from 6-18m in 1900 to 3 m in about 90% of the area. About 20% of the area was also affected by salinity. Waterlogging and salinity adversely affected agricultural production of the area, and also increased water borne diseases and fungal infection. Reclamation activities were started in 1965 and 136 tubewells were sunk. In 10 years the water table dropped by 1-2 m. Cropping pattern changed after the installation of tubewells with a shift towards cash crops. Cropping intensity changed from 100 percent in 1965 to 127% in 1972-73 and beyond 130% in 1975-76. Additional area was cropped due to farm mechanisation which also increased irrigation intensity. Crop yields increased: wheat threefold from 1897 to 1975-76 for canal irrigated fields. Sheep, goats and camels were replaced by cows, buffaloes and horses after the introduction of irrigated agriculture.

During the period 1966 to 76 migration from rural to urban areas was 9 times more than vice versa. The migrants were mostly land-less tenants and various categories of artisans who moved towards urban and industrial centres or middle eastern countries in search of better opportunities.

Bhatti described the Integrated Rural Development Programme and its activities in Pakistan. He considered the Daudzai Project started in 1972 with the basic approach of motivation and organisation of small farmer groups by institution building at the village and markaz levels, a great success. He advocated the incorporation of rural development in MAB programmes.

Sabiha Hafiz eloquently presented her excellent study on the role of social welfare voluntary organisations as change agent, change catalyst or pacemaker in slum environment in Lyari (Karachi). Her conclusions were based on data collected from 237 out of the 319 organisations existing in the area,

“(i) The level of the physical deterioration of the mohallas where the organizations are located has little or no impact on the extent to which the voluntary organizations tend to perceive themselves ambiguous about the direction of improvement.

- (ii) The perceived degree of powerlessness of the organization over improvement efforts does not increase with an increase in the level of the physical deterioration of the mohullas where the organizations are located; however the number of the organizations with moderate degree of powerlessness tend to increase in mohullas with the higher degree of the physical deterioration of the mohullas.
- (iii) Fewer organizations score high on commitment to improvement in the slum to some extent mohullas and the high degree of slum mohullas.

Although, the involvement of the voluntary organizations in the roles of change agent, change catalyst or pacemaker does not increase with an increase in the degree of the physical deterioration of Lyari, the scope of their activities tends to expand in the mohullas with the higher degree of physical deterioration. More organizations in worse conditions work; these organizations work with great deal of problems like high level of powerlessness and little commitment, with the result that their activity in the roles of various change actors remains on the low level. In particular, the extent to which the voluntary leaders would stimulate their people to contribute to slum improvement is limited by the magnitude of the physical deterioration of slum environment”.

She was of the view that, “it is not necessary to increase the number of voluntary associations in the slum mohullas. What is needed is, training of the representatives of these organizations in those mohullas and the provision of the services and incentives to them so that they can use their training for performing the roles of change agent, change catalyst and pacemaker; the needed sets of responsibilities and duties for effective execution of planned efforts of improvement”. She advocated more attention to powerlessness of the representatives and their commitment in the mohullas with the considerable degree of slum environment and systematic efforts should be made to increase the awareness of the voluntary organizations about the physical degradation of their surroundings.

Anwar-ul-Haq studied a group of 5,000 industrial workers in Crescent Textile Mills Faisalabad. 3,000 of these were migrants from rural areas. The study was conducted on a random sample of 150 out of the latter. His conclusions:

- “(i) Economic motives are dominant in rural-urban migration. Where the per capita output of agriculture labour and agrarian level of living are low the impulse to move to the cities is the strongest;
- (ii) where much of the agricultural land is in few hands and much of the rural populace is a proletariat of poorly paid agricultural labourers, higher wages in urban occupations are likely to furnish a strong economic motive for migration;
- (iii) the law of inheritance which permits the division of property in Pakistan may force many people to migrate to the cities;
- (iv) modernization of agriculture in certain rural areas of Faisalabad district has become a factor of decisive importance in rural migration: Improved agricultural techniques and the introduction of farm machinery have greatly reduced the

amount of labour needed on the farm, farming has changed from a self-sufficient way of life to a business enterprise, the interest of the farmers has shifted from the land itself to the cash income which they can earn. Thus the income differential between agriculture and urban industries has become more apparent, furnished a powerful incentive for migration.

Employment opportunities grow faster in urban areas than in rural. As per capita real income rises, the demand for manufactured goods and services produced in urban areas increases faster than for farm products. With the rationalization of agricultural production many economic activities formerly carried out in the rural areas are transferred to the city. Thus, economic opportunities grow faster in urban than in rural areas; while the natural increase of the population is generally lower in urban areas than in rural areas. Consequently, a drift towards cities for non-agricultural occupations would be expected.

The effect of these underlying economic tendencies is commonly accentuated by substantially higher earnings in non-agricultural industries than in agriculture and also by a superior standard of life and better working conditions in the cities. It may be reinforced also, under some conditions, by the prospect of more stable, continuous employment in the cities than can be obtained in the rural areas.

The closeness of social contacts between friends and relatives in different areas of a country as one of the determinants of the amount of internal migration is at its maximum in this instance. Relatives and friends of similar background help make the social transition easier for the recent migrant, and they also may provide him with food and shelter until he can find a job. In either case the potential rural migrant will be less uncertain about his prospects in the city.

The movement of labour to cities has been creating many issues in the civic life of the urbanites. The growth of business and industry brings about a higher concentration of population in urban centres in relatively small areas so that the demand for utilities and services e.g. electricity, drinking water and sewerage arrangements can be met in full and the migrant workers are often forced to live in towns without these facilities".

Anwar-ul-Haq and Abdul Majid Khan reported another case history of labour engaged in National Silk and Rayon Mills limited, 2200 workers out of a total of 2600 had migrated from rural areas and 150 of these were interviewed (cases of more than one year migration). They concluded: "The migrants who have come to Faisalabad city appear to react in different manner. To be sure, majority of them have become accustomed, to a very large extent, to the life, but the rhythm and extent of adaptation vary considerably.

From all the factors likely to favour or oppose the process of adjustment, economic values seem to play a very important part. Their feeling of economic dependence, the social gap which separates them from relatives and friends, fires their energy, and the degree of adjustment seems to be in inverse proportion to the degree of dependence; the more rapid the adjustment, the lower standard of living at the places of origin.

Migrants behave in illegal ways when the new environment denies them resources for the satisfaction of certain social needs. The efforts for equal rights and access to uniform facilities seem to indicate in different ways the place of origin: a desire to lessen the social gap between themselves and the society around them, or on the other hand, to widen the gap".

S.M. Moghni highlighted the role of psychological variables, such as attitude, cognition, learning and motivation, in the improvement of physical and social environments (industrial and urban planning, rural development and watershed management) rather in initiating and controlling all such environmental changes as are a consequence of man's decisions, as well as in the management and utilization of resources which Nature has given to him. He stated that psychological variables are not only basic to the higher level functioning of the individual, but also to social change, economic development, and man's control, use and management of natural resources. The fact that attitudes can be changed, motivational variables can be manipulated, public opinion can be mobilized and behaviour can be modified through a judicious use of reinforcements and incentives, which are also partly socio-culturally determined, is no longer in the realm of conjecture; it is now scientifically established. Researches in clinical, experimental and social Psychology have clearly demonstrated it.

This point of view was enthusiastically supported by both Yogesh Utal and G.M. Khattak, the latter while agreeing with Professor Moghni on the importance of psychological variables in social change and environmental control, pointed out that even in such matters as watershed management, conventionally a domain of physical and biological scientists, psychologists and sociologists in developing countries had a more important role to play than had been hitherto assigned to them. He was of the view that since physical and biological research from developed countries could with minor modifications be applied here, it would be more beneficial for developing countries to shift their emphasis from repeating such research to conducting psychological and sociological research directed to the mass adoption of manifestly superior ways.

Mohammad Yousaf Abbasi highlighted the contribution of Muslim Empires in improving the quality of environment. He advocated the planting of trees along highways and railway tracks. Yogesh Atal commenting on the paper stated that even in contemporary times Dr. Soekarno of Indonesia had advocated the cultivation of fruit trees to serve both environmental protection and provision of food and cooking oil. He stressed that there was a great need to write a history of Muslim period with environment and architectural perspective to arouse interest in Muslim architectural designs which suit the environment more than western architecture.

Mohammad A. Rauf outlined a number of environmental problems in Pakistan. He was concerned with the low level of the awareness of the problems and suggested mass education for checking environmental degradation. He also suggested the preparation of a bibliography on environmental studies and related issues and their inclusion in the curricula of social sciences.

The following recommendations were made:

1. **Research**

Both empirical and library research be arranged by the MAB Committee involving more Social Scientists. The following themes were identified for such research:

(a) *Empirical studies*

- Pollution of urban environment: particularly in such cities as Lahore and Lyallpur
- Slum cultures: comparative study in Pakistan
- Regional cultures in a metropolis: formulation and integration
- Human migration: from hilly areas to lowland cities
- Hospital environment: their facilities, performance of staff, noise level and related problems
- Child rearing practices: among different socio-economic, educational—professional and regional cultural groups relating them to human behaviour
- Indus Basin: long term stability and productivity

(b) *Library Research*

- Stock taking exercises on environmental problems and social sciences: to identify topics for future research as well as training/programme
- History of architecture and environment: assistance to be sought from the division of human settlements and socio-cultural environment of UNESCO.

2. **Training/Seminar/Workshop**

The following steps should be taken for training purposes as well as increased awareness:

(a) *Seminar/workshop*

- Regional seminar on the role of social sciences in agricultural education: to provide incentive to Social Scientists to focus their attention on the problems of development. The Pakistan National Commission for UNESCO to be approached for help in the organisation
- Seminar/Workshop on a system thinking across disciplines
- Seminar on the management of human settlements.

(b) *Training education*

- Social Sciences component in environmental education: higher standards
- Master and doctoral dissertations: on environmental impact assessment
- School level curriculum: to include education and awareness on environmental themes.

3. Professionalisation of social science

- (a) The seminar was appreciative of the support extended by MAB Committee, Pakistan Science Foundation and the National Science Council for the Social Sciences. In particular, the seminar commended the decision of the National Science Council regarding the setting up of a Social Science Committee within its structure. This a welcome step, it is an index of the official recognition granted to social sciences. The seminar expressed the hope that the Committee would ensure effective participation of social scientists in national and international programmes of research development.
- (b) The seminar recommended to the individual associations on social science subjects that they should have panel discussion on MAB programme and social sciences in their next annual general meeting for their effective participation in this programme of international importance.

Participants referred

1. Dr. M. Aslam, Deptt. of Geography, Peshawar University Peshawar.
2. Mr. Manzoor Ahmed Sheikh, Secretary to Government of Pakistan Ministry of Science and Technology, Islamabad.
3. Dr. G.M. Khattak, Director General, Pakistan Forest Institute, Peshawar.
5. Mr. Rashid Ali, Deptt. of Zoology, Gordon College, Rawalpindi.
6. Dr. Haider Ali Chaudhri, Deptt. of Sociology, Agriculture University, Faisalabad.
7. Mr. K. M. Bhatti, Academy for Rural Development, Peshawar.
8. Dr. Miss Sabihan Hafiz, Deptt. of Sociology, Karachi University, Karachi.
9. Dr. Anwar-ul-Haque, Deptt. of Sociology, Agriculture University, Faisalabad.
10. Dr. S. M. Moghni, Deptt. of Psychology, Peshawar University, Peshawar.
11. Dr. M. Yousaf Abbasi, Deptt. of History, Islamabad University.
12. Dr. Mohammad A. Rauf, Deptt. of Anthropology, Islamabad University.