INTRODUCTION

Indira Gandhi Nahar Project (IGNP) area covers parts of Sriganganagar, Bikaner, Jodhpur, Jaisalmer and Barmer districts. It encompasses the most difficult geoclimatical areas of the Thar Desert. I.G.N.P. Stage-II terrain is very undulating and infested with high moving sand-dunes. So far this vast sandy tract of over 2.5 million hectares (25000 sq. kms) area remained almost completely unutilised because of very erratic, grossly inadequate (around 10 cms.) and ill distributed rainfall. In addition to this very high temperatures (going upto 53°C) and almost continuous and storms from March to September make this area very very inhospitable for human, animal and plant life. However, given water and a well knit system of shelterbelt plantations this vast tract promises to yield bumper agricultural crops.

The National Forest Policy 1952 aims at checking the shifting sand-dunes, increasing the production of fuel-wood, timber, small wood (for timber and agriculture implements) fodder and other forest produce. The National Conservation Strategy and Policy Statement on Environment and Development issued by Ministry of Environment and Forests in June, 1992 fixes priorities and strategies for action and directs the steps to be taken for sustainable use of land and water. This includes classification, and zoning of land for designated uses such as forestry, grassland, catchment areas, watersheds, areas for industrial activities and human settlement. These actions aim at the need for increasing substantially, the forest tree cover in the country through massive afforestation and social forestry programme, especially on all denuded, degraded and unproductive lands. It suggests the investment of the local people in this endeavour by giving them tangible economic motives and employment opportunities to them. It also specifies the improvement of environment for human settlement by planting of fruit, shady and ornamental trees along the roads, in the compounds of residential houses, schools, hospitals, government as well as private
office buildings, places of worship, market yards, play grounds and water-bodies; parks and open spaces etc. in the towns and cities.

OBJECTIVES

The total length of Indira Gandhi Nahar is 649 kilometres out of which 204 kilometres is the feeder canal from Harike Barrage to Masitawali head in Sriganganagar district. Stage-I has 189 kilometres and Stage-II 256 kilometres of the main canal. The canal has a discharge of 16500 cusecs (467.18 Cu.M/Sec.) at its head. Construction of the main canal was completed and water released upto 1458 RD on 1st January 1987.

Stage-I has culturable command area of 5.78 lac hectare and Stage-II has 7.00 lac ha. plus 3.12 lac ha. of various lift canals. The distribution systems in Stage-I have already been completed whereas in Stage-II these are under construction.

Due to typical geoclimatic conditions and persistent sand storms in I.G.N.P. area, the purpose of afforestation activity is also different than those for rest of the areas in the country. The main aims of afforestation in I.G.N.P. areas are as under:

1. To protect canals from windblown by creating effective shelterbelts and preventing sand deposition in the canals.
2. To create adequate network of shelterbelts around the farm lands so that their productivity is increased.
3. To produce timber, fuel and fodder to meet the local demand as well as that of the adjoining districts.
4. To improve the environment.
5. To provide employment to local people.

AFFORESTATION IN STAGE-I

Though the afforestation activity in Stage-I was started in 1962, it was taken up on a large scale from 1974-75 under phase-I (IDA assisted) project 1974-80 extended upto December, 1983. It was further boosted under phase-II (IFAD assisted) project 1980-88. Some works were also done under World Food Programme, D.P.A.P. and D.D.P. Under Phase-I, approximately 48,000 hectare area was treated and under phase-II approximately 37,000 hectare area was treated are as under.

Subsequently the following afforestation works have been carried out under various programmes during the period (1989-90 to 1991-92 upto October 91) in I.G.N.P. Stage-I and further work of plantation is under progress.
Table 1

Progress of Afforestation Work in I.G.N.P.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of the Works</th>
<th>Programme</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CAD</td>
<td>DDP</td>
</tr>
<tr>
<td>1</td>
<td>Canal side plantation</td>
<td>466 (1398 RKm)</td>
<td>232 (698 RKm)</td>
</tr>
<tr>
<td>2</td>
<td>Road side plantation</td>
<td>-</td>
<td>15 (30 RKm)</td>
</tr>
<tr>
<td>3</td>
<td>Village Fuelwood plantation</td>
<td>-</td>
<td>87.5</td>
</tr>
<tr>
<td>4</td>
<td>Block Plantation</td>
<td>377</td>
<td>45</td>
</tr>
<tr>
<td>5</td>
<td>Sand-dune Stabilization</td>
<td>487</td>
<td>1171</td>
</tr>
<tr>
<td>6</td>
<td>Silvi pastoral</td>
<td>-</td>
<td>250</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1330</td>
<td>1800.5</td>
</tr>
</tbody>
</table>

In stage-I continuous strips of land on both sides of various canals upto the following distances were taken up for canal side plantation:
- Main Canal 100 Metres from toe.
- Branch Canal 50 Metres from toe.
- Distributories 30 Metres from toe.
- Minors and Sub-Minors 15 Metres from toe.

**AFFORESTATION IN STAGE-II**

Looking at the more difficult geo-climate conditions of Stage-II a new project was prepared for 1987-88 to 89-90 period in which much wider strips were to be planted on both sides of the canals, particularly on windward side. Because of very heavy sand deposition in canals planting was also envisaged at closer spacings of 3×2 M for Canal Side Plantation and Block Plantation and 3×3 M for Sand-Dune Stabilization plantations. Rainfall in Stage-II area being much lesser than in Stage-I area lift irrigation using diesel engine pumping sets and pipe lines has been adopted for irrigating plants even on uncommand lands. More emphasis has been laid on planting indigenous species like *Prosopis cineraria*, *Tecomella undulata*, *Zizyphus mauritiana* and *Acacia nilotica*. 
Afforestation works in Stage-II were started during year 1985-86 on a small scale with World Food Programme funds. From 1987-88 works were done on a large scale with C.A.D. and D.D.P. funds. Following plantations were raised during 1985-86 to 89-90, refer III, IV.

Table : 2
Progress of afforestation Works in I.G.N.P. Stage-II from 1985-86 to 1989-90

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Work</th>
<th>Area in Hect.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Canal Side Plantation</td>
<td>7,317 (21951 R.K.m)</td>
</tr>
<tr>
<td>2</td>
<td>Road Side Plantation</td>
<td>270 (540 R.K.m)</td>
</tr>
<tr>
<td>3</td>
<td>Block Plantation</td>
<td>3,153</td>
</tr>
<tr>
<td>4</td>
<td>Sand-Dune Stabilization</td>
<td>8,361</td>
</tr>
<tr>
<td>5</td>
<td>Pasture Development</td>
<td>2,000</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>21,101 Hect.</strong></td>
</tr>
</tbody>
</table>

A project for Afforestation and Pasture Development along Indira Gandhi Canal Area was presented to the Overseas Economic Cooperation Fund, Japan for a soft loan of Rs. 107.65 Crore (7.869 billion yen) at an interest rate of 2.5%. It was sanctioned in January 1991. The statement of proposed physical targets for five years is given in the following table.

The areas planted under various schemes during 1990-91 and 91-92 are as under:

Table 3.4
Progress of Afforestation Programme in I.G.N.P. Stage-II from 1990-91 to 1991-92

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Scheme</th>
<th>Area Planted in Hectares</th>
<th>OECF</th>
<th>WFP &amp; DDP</th>
<th>OECF</th>
<th>WFP</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Canal Side Plantation</td>
<td></td>
<td>1380</td>
<td>29</td>
<td>778</td>
<td>-</td>
<td>2187</td>
</tr>
<tr>
<td>2</td>
<td>Block Plantation</td>
<td></td>
<td>200</td>
<td>975</td>
<td>442.5</td>
<td>-</td>
<td>1617.5</td>
</tr>
<tr>
<td>3</td>
<td>Sand-Dune Stabilization</td>
<td></td>
<td>450</td>
<td>1235</td>
<td>1756</td>
<td>-</td>
<td>3441</td>
</tr>
<tr>
<td>4</td>
<td>Pasture Development</td>
<td></td>
<td>300</td>
<td>-</td>
<td>635</td>
<td>-</td>
<td>935</td>
</tr>
<tr>
<td>5</td>
<td>Road Side Plantation</td>
<td></td>
<td>-</td>
<td>-</td>
<td>90</td>
<td>-</td>
<td>90</td>
</tr>
<tr>
<td>6</td>
<td>Environmental Plantation</td>
<td></td>
<td>18</td>
<td>-</td>
<td>19</td>
<td>-</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>(20,000 plants)</td>
<td></td>
<td></td>
<td></td>
<td>(20,800 plants)</td>
<td>-</td>
<td>(40,800 plants)</td>
</tr>
<tr>
<td>7</td>
<td>Canal Bank Stabilisation</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2348</td>
<td>2239</td>
<td>3720.5</td>
<td>20</td>
<td>8327.5</td>
</tr>
</tbody>
</table>
IMPACTS OF AFFORESTATION

Trees are the cheapest, large-scale and long range parasol, one can produce, which provide protection from scorching heat, cold wave, heavy rains and strong winds. It provides both goods and services. The goods are woody products. The services rendered include protecting soil against erosion, checking siltation of sand in water channels, maintaining flow of clean water, abating floods, fighting famines, creating congenial climate, checking pollution, beautifying landscapes, enhancing market value of property, attracting birds, wildlife, bees etc. and thus sustaining ecological balance, promoting nature tourism, developing tree-product based industries, generating employment, increasing agricultural production etc.

The trees provide both direct and indirect benefits. Direct or tangible benefits (goods) are derived from dead or felled tree, while indirect or intangible benefits (services) include functions of standing or living trees which are productive, protective and biological.

In India, particularly in I.G.N.C.A., the prices of fuel-wood are sky-rocketting. FAO Expert has warned that if the present rate of cutting of tree continues, we, by 2010 AD may not have enough wood to cook food and the fuel-wood may cost as much as the itself. According to National Council for Applied Economic Research for North India (1978), the estimated consumption of fuel wood including vegetable waste is 0.58 kg. excluding dung-cake at the rate of 0.43 kg per capita per day. There is acute shortage of fuel-wood in I.G.N.C.A. as practically there are no forests and a part of the present demands are met by Khejri tree, roots of phog bushes and dung cake. Fire-wood can be obtained from the trees. The calorific value (Kcal/kg) of some of the woods is given in brackets Babool (4870), Bengali Babool (4800), arinjia (4886), Kumat (3000), Siris (5165), Shisham (5045), Jamun (4833), Khejri (5000), Imli (4850), Farash (4835), Israeli Babool (4400), Vilayati-Babool (4700), Ber (4878) etc. The regular harvesting and Restocking programme has not yet started although some of the plantations have become over nature and have started showing negative increment. Most of the plantations in the water logged area are rotting.

Timber trees of arid and semi-arid area are Babool, Shisham, Bar, Khejri, Rohida, Bans, Siris, Neem, Safeda, Subabool, Sainjana, Dhak, Shahtut, Kadam, Imli, Cassia, Siamea, (mijari), amaltas, ardu etc.

FUEL-WOOD AND TIMBER IN I.G.N.P. STAGE I AREA

In the I.G.N.P. Stage I area the plantation was started from 1966-67 on a limited scale along the I.G.N.P. Feeder and Main Canal. The I.G.N.P. has been divided into two
stages: Stage-I includes the total length of the I.G.N.P. Feeder and the Main canal up to 189 kms. For Command area development, Stage I has been divided into two phases: Phase-I, financed by the World Bank in 1974 for a period of six years and Phase-II having the remaining area of Stage-I and was being financed by I.F.A.D. In Stage-I upto 1979-80 about 15,995.7 ha. was planted under various afforestation schemes out of which 11,890.2 ha. was under Canalside plantation, 902.5 ha. under Roadside plantation, 1,920.0 ha. under Village forests and 1,283.0 ha. under Block plantation valuing at Rs. 614.03 lakh in 1981. Since then afforestation upto, September 1992 has been done in 1,06,515.5 ha. of which 11,187 is under canal side plantation 2582 under road side plantation, 4,186.5 ha. under Fuel wood/village plantation, 67,791 ha. under Sand-dune stabilisation, (Rainfed) 20,000 under D.P.A.P., WFP, DDP Schemes etc. (Rainfed), 519 ha. under Block plantation and 250 ha. under Silvi-pastoral plantations. The impact of this massive afforestation is very well visualised. As a result of this the barren desert areas have been transformed into long green belts. This forest wealth created over a period is now worth crores of rupees.

**FODDER** : Many species of trees provide fodder. They are khejri (dry leaves are known as ‘loong’, ber, jharberi (dry leaves are called ‘Pala’), subaabool, babool, aranjia, kumata, sainjana, neem, bakain, pipal, siris, shisham, ardu, kachnar, etc. The fruits of hingota, vilayati babool, babool, aranjia etc. are also useful fodder.

Under the Afforestation and Pasture development in I.G.N.P. extensive use of top-feed trees has been suggested. The schemewise percentage of fodder trees to be planted and the number of fodder trees which shall be available for harvesting as per their survival percentage.

**FOOD** : Many trees provide edible fruits i.e. ber, aonla, belpatra, jamun, imli, khejari (fruits are called ‘Sangri’) kair, pilu, khajur, karonda, lasoda, sainjana, khimp etc.

**DRUGS** : Various parts of trees, shrubs and herbs produce useful drugs and medicines e.g. neem, aonla, dhak, sainjana, belpatra, amaltas, akada, shankhpushi, santhi, sajji, indrayan etc.

**FIBRES & FLOSSES** : Trees and bushes like baonli, munj, sania, khimp, aranjia, khajur, rambans (Agave), akda etc. produce crude fibre.

**TRANS AND DYES** : Tans and dyes are obtained from various parts of tree e.g. babool, amaltas, aonla and leaves of karonda. Dyes can be obtained from the flowers of dhak.

**MISCELLANEOUS PRODUCTS** : Leaves of Khajur, dhak, patera etc. are used for thatching. Silk worms are reared on the leaves of shahtut, arandi, arjun etc. while
important host tree for lac are dhak, ber, pipal. Seeds of neem yield fatty oils. The flowers for bukhan, neem, bakain, kair, rohida produce honey.

Gums are produced by babool (Indian gum arabic), kumta (gum arabic), aranjia (ronjh gum), dhak (Bengal kino-kamarkasa), sainjana (sainjana gum), subabool etc.

**PROTECTIVE FUNCTIONS**: The trees help in the amelioration of climate, soil and water conservation, pollution control and enhance aesthetics of the surroundings.

**AMELIORATION OF CLIMATE**: Properly planted trees influence the micro-climate by moderating temperatures, increasing humidity, checking wind velocity etc. There are no Meteorological Stations in the command area. In absence of which questionnaire was asked from 212 residents of villages of Stage I and II. All have reported reduction in wind velocity, shifting of sand-dunes, and slight change in temperatures by plantation.

**WATER CONSERVATION** : A tree acts as a million dam. Innumerable root hairs hold capillary and hygroscopic water. They are important in hydrological cycle. Of late, the waste-water from habitations and industrial areas is managed through what is termed as ‘Living filter concept.’

**SOIL CONSERVATION** : It has been established that soil-erosion is considerably checked by extensive plantation of trees along canals, roads and near habitation.

**BIOLOGICAL FUNCTIONS**: The legumineous trees like babool, khejri, siris, subabool etc. enrich the soil by fixing nitrogen from the soil directly from the atmosphere.

**CONCLUSION AND SUGGESTIONS** :

1. It had been observed that a number of valuable timber plantations of shisham, babool, eucalyptus etc. planted along the canals and in the block plantations have become overmature or are waterlogged. They are showing negative increment.
2. It was revealed that the wood from the various plantations is stolen and more than 200 illegal Sawmills are operating in the area. This illegal cutting of the wood should effectively be stopped.
3. The main objective of Afforestation is to plant trees along the canalside, roadside in blocks/abadies and on sand-dunes to protect them and to prevent their blocking and siltation by reducing the velocity of the dessicating and cold winds thereby changing the microclimate of the area.
4. The objective of Environmental plantation as envisaged in the O.E.C.F. “is to undertake tree plantation in and around residential colonies, townships, market and mandi yards, canal head-works, public office buildings, parks etc. to improve the environmental and aesthetic value by planting ornamental flowering and
shady trees and shrubs. It is, therefore, suggested that a separate study on
the preparation of Model Environmental and Landscape each for typical Abadi,
Mandi, town, Agro-service Centre, School, Panchayat and Community Centre,
Mandiyard, Patwarghar, Public Office Compounds, Parks etc. should be got
conducted and plantation of that area be done as per the Model Plan.

5. Tourists are very much attracted by the Desert tourism. Jaisalmer which
receives the I.G.N.P. canal water has been developed as a centre of desert
tourism.

6. Planting of at least one year old, 2-3 ft. high well trained and healthy seedlings
instead of small sized seedlings particularly along the roadsides in straight
rows so that slow moving vehicles can use the shade.

7. Shady trees like, Siris, Neem, Rohida, Lahsora, Shehtut etc. should be planted
along roads instead of Acacia tortalis, Khejri, Babool etc.

8. Brick planting technique of earthen bricks deserves recognition on Sand-dune
plantation activity.

9. In Pasture development programme, the sowing of sawan and dhaman grass
have not come up-to expectations. Reseeding or retilting should regularly be
done in patchy areas. Species of trees having more timber and fuel value
should be planted and species mix should be adhered to.
ABSTRACT

Planners and decision-makers, have to depend upon spatial and spatial data for effective planning and decision making. They need to have at their disposal a sophisticated data management system. Large volume of data is gathered whenever preparation of physical plan is taken up and a good number of maps as part of the exercise on plan formulation are also prepared. The developments taking place in introduction of Information Technology as an operational tool have given chances for the availability of various software, GIS packages and computer databases in district collect orates and major offices. Therefore there is a need for an ‘Management Information System’ to query and extract information from the GIS created, which should be capable of handling the massive spatial data and spatial data, for taking decision for optimum utilization of available resources.

Can GIS really support change for the better in poorer countries and avoid the trap of putting the powerless seriously at risk from GIS in top down planning?

The main aim of this paper is to review some of GIS applications which are pertinent to sustainable development planning.

Key Words: sustainable development, management information system, GIS

INTRODUCTION

Geographic Information System (GIS) are considered an exciting tool for promoting socio-economic growth. While there have been many forms of mapping system available since the 1960s, GIS technology has evolved since the early 1980s. The potential of this technology to provide planners with up-to-date, reliable information about environment and its characteristics and its relation to region’s inhabitants has prompted governments to undertake large scale initiatives involving high investment in order to implement this technology.

Since the late 1980s, this technology has become increasingly visible in developing countries. In terms of the development planning function, there has been
a shift toward spatial based eco-development planning and towards the creation of district profiles of natural resources and socio-economic data. This trend, coupled with an increasing awareness of the importance of GIS technology in the planning process, has provided the impetus to various government agencies to initiate large-scale GIS programmes. While these initiatives are in the early stages, and have not really become operational, we feel quite strongly that these efforts are worth reporting because of the important influence of the initiation stage of technology implementation of subsequent project outcomes.

The economics of development must expand within eco-systems which have limited regenerative capacities. The need is for a full integration of environmental and developmental; issues for decision-making. With the continued development of Information and Communication Technology (ICT), there is a major opportunity for the authorities to use it to manage the allocation of scarce resources in a rapidly changing environment. The quality of urban planning and management can be upgraded when available and valid data are handled in an advanced manner with the aid of computers. The adoption of innovative technology can support planning and decision-making by offering relatively quick response on analytical questions and monitoring issues.

The 1990’s saw a number of intelligence based information technology projects. The Planning Support System (PSS) will provide intelligence in handling novel problems and to use experience and knowledge to guide behavior, and designed to facilitate collective design, social interaction, interpersonal communication, and a community debate (Klosterman, 2001).

The Role of Geographical Information Systems (GIS)
The major functions required from an information system can be identified as follows:

i) The descriptive function- information should help to describe a situation

ii) The cognitive function- information system also contribute to improve understanding of urban and regional problems by providing the key factors and variables that can be analyzed using urban and regional modeling and other statistical technique;

iii) The normative function - the information system can also contribute to improved action by reducing the cost of actions with known consequences or by reducing uncertainty about the consequences of actions already taken or about to be taken.
In an era of increasing urban and regional problems, the planning authorities therefore must increase their effectiveness by developing innovative ideas in carrying out their functions. The urban system can no longer be treated in terms of simple land use and traffic concepts. The planner’s conception of the urban system must extend to include a host of social, political and economic variables. The mixture of problems which must all be resolved together creates a situation in which many alternatives must be tried, combined, improved and tested by analysis, by experiment, and public discussion.

An important GIS capability is in handling both digital cartographic data and the associated databases of attribute information for map features (Healey, 1988). GIS can store the map-coordinates of point locations, linear and area features. These functions have attributes that must be stored in the database. Once all the data are stored, both the digital map and the database can be manipulated simultaneously. This is particularly important in many land use planning application, which require data on wide variety of physical and environmental attributes.

**GIS for Development Planning and Monitoring**

Development Planning requires an effective planning approach to achieve the desired goals and objectives, evaluate alternative as well as control development programmes that are in line with the current and future prospects. GIS technology has long been applied in planning activities which essentially include plans formulation as well as development control (Johar et al., 2003). The Manual published by the Federal Town and country Planning Department for preparing the various levels of plan has provided that all plans use GIS technology in plan formulation. The different spatial level and form of plans requires different support in term of information system. Various skills are also required for preparing development plans using GIS. They include the ability to build up and manage the database which should incorporate socio-economic attributes of the local population. Managing services at local level would also call for contiguity and proximity analysis. On the other hand, cartographic skills are importance if plans are to be exhibited.

It should be noted that successful implementation of GIS for sustainable urban and regional planning will largely depend on four factors. The first requirement is automation of the database. It is costly to collect, store and shift through large quantities of unnecessary data.
Hence, the most cost effective approach is to collect only the data required for the specific task. Secondly, data collected either from existing records, aerial photography or field survey will need to be integrated using GIS methods. Thirdly, the ability to perform spatial modeling, so that alternative scenarios can be generated. Lastly, application of valid criteria to evaluate the effectiveness of possible planning strategies before the final solution is determined.

A well-integrated and comprehensive database design, which meets the user requirements, is part of the important elements that could determine the ultimate success of GIS (Chamber, 1989). The GIS database for development planning should designed based on several important consideration which includes:

- The GIS application to be developed
- The need of data for each application
- The availability and format of the existing data
- Size or volume of the data base
- Hardware platform and its configuration
- User background
- Organization structure of the users and facilities

The database development for strategic development plan basically involve gathering data, spatial and attribute data entry, and generating data layers based on the application for analyses purposes. Paper maps and remotely sensed data including satellite data and high-resolution digital orthophotographs are major sources for collecting digital data.

**Development Control System**

Development control is the most important activity for a local authority. To increase the development control efficiency, planners require the moist up-to-date planning data while considering development applications as the basis for decision making. It is seen as problem for the local authority, especially in collecting planning data which undoubtedly need for the use of new techniques. Thus, an information system is necessary to not only keep and display data pertaining to planning application for the purpose of administrative functions but should also be designed to facilitate planning and development control at strategic level (Yaakup et al., 2004). The control of development which involves the process of analyzing the appropriateness of planning applications requires various data from the relevant agencies. A planning application
will be assessed in terms of current development scenario, and land information, planning requirements and planning design (Yaakup et al., 2004).

Ideally, consideration for planning and building approval involves a technique for the systematic complication of expert quantitative analysis and qualitative assessment of project land use and property development viability, including its effect on the surrounding area, and the presentation of result which indicate the resulting scenarios (Yaakup et al., 2004). It should also indicate the scope of modifying or mitigating these adverse effects. This allows the proposed development to be properly evaluated by the relevant decision making body before a planning permission is rendered.

The Computerized Development Control and Approval System implemented by the Planning and Development Control Department, City Hall of Kuala Lumpur, is one of the DCS Application undertaken to facilitate the procedures to control and monitor the city Development (Yaakup et al., 2004). The system being developed integrates several sub systems to execute specific functions, while at the same time interact with one another by sharing information sources (Yaakup et al., 2004). GIS is seen as the most suitable solution for supporting the handling of spatial information throughout the development control and approval process. The advent of GIS has created a large field of opportunity for the development of new approaches to computer processing of geographically referenced data obviously needed in supporting decision-making process.

Some of the important functions include the ability to retrieve information rapidly and efficiently, model different scenarios and evaluate alternative solution generated by various modeling procedures. Therefore, a more effective solution to various spatial-related problems including those associated with planning and development matter can be achieved.

**Conclusion**

GIS has proved to be invaluable tool for evaluating alternative solutions to planning problems. Planning database can be extensively interrogated to generate several alternative solutions to strategic planning problems. Various scenarios which take into account the socioeconomic characteristic of dwellers, and constraints of physical development, availability of land and land suitability of different kind of development can be generated. Apart from that, we-based GIS is currently one of the GIS-based innovative technologies being employed intended at upgrading the quality of...
of urban planning. To optimize its use, more research and attention need to be directed toward organizational and institutional issues, as well as developing the technology for planning and management purpose.

Much of the success or failure in applying GIS to sustainable development in less developed countries well depends on technology and data access. The so-called “digital divide” – where less-developed countries lack Internet access, technology training, and generally have weak capacities in the use of information technology – must be overcome.

Developing countries will need to develop spatial data infrastructure that address the problems of data quality, access, intellectual property rights and metadata. However this is why we have joined GIS methods with participatory methods that help people determine how they want their local environment to be and how they can progressively transform it through better management of their natural resources.

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5 Ahris Yaakup,(2004)“GIS as a tool for development planning and monitoring”, Department of Urban and regional Planning, Faculty of built Environment, University Technology, Malaysia.
The meaning of values has been changing from time to time. There is no unanimity on this point. In philosophical context it lacks universal definition. It has been interpreted in a number of different ways. Webster’s New World Dictionary defines values as ‘the social principles, goals or standards held or accepted by an individual class or society’.

In the words of Prem Kirpal, ‘Human values are a sum total of several criteria operating various spheres of life such as social relations, economy, politics, religion, cultural life etc. values are derived from History, tradition, religion, culture, education, environment and aspiration of the future. They are subject to forces calling for renewals, adaptations and change.’

Psychologically in the context of instructional objectives ‘valuing’ falls under ‘Affective Domain’ Affective Domain has five major categories- Receiving (Attending), Responding, Valuing, Organization, and Characterization. The third category valuing includes the individual’s commitment to a certain goal, idea, or belief. The forth category organization indicates the level at which the learner build up a value system that includes his behaviour. The last category in this taxonomy is characterization by value or value complex. At this stage of development the individual attains his beliefs, ideas and attitudes into a total philosophical or world view.

The dictionary meaning of the word ‘Environment is a surrounding, external conditions influencing development or growth of people, animals or plants, living or working conditions’.

Anastasi- ‘The environment is everything that affects the individual except his genes’.

Mans environment consists of natural as well as socio-cultural environment. Environment is the aggregate of all the external forces, influences and conditions which affect the life, nature behavior and the growth, development and maturation of living organisms. A favorable environment caters to the development of native abilities of child. There is very close link between values and environment. Values originate from environment and help to shape and maintain the culture of society. Various Values based on environmental conditions developed by the individuals. History reveals that
in every society and nation had been certain Great personalities to counter several evils of the society and strengthen the various values for the wider interest of mankind.

Kurt Lewin has enumerated three types of environment which influence the personality of an individual.

1. Physical environment
2. Social and cultural environment.
3. Psychological environment.

**Physical environment and values**

Physical environment refers to geographical climate and weather or physical conditions in which an individual lives. The races are greatly influenced by the climate. The white, black and yellow races are due to the climatic conditions. The human working efficiency depends on the climatic conditions. The individual tries to adjust in his physical environment. Even heredity is also influenced by the physical environment.

The human mind naturally gets impressed by the rich and enthusiastic atmosphere around. It inspires man for self-contemplation and self-analysis. He begins to feel a kind of affinity for the environment and regards trees, plants, and creepers as his own relatives. The environment possesses a magic strength to bring about a total change in man. Environment is the maker of man. Man acquires an ability to see ‘truth, goodness and beauty’ in his surroundings. Due to natural climates various problems created and to overcome from this feeling of co-ordination created in human, this feeling is ‘empathy’.

Geographical conditions in Japan have been very insecure; however by consciously cultivating human values and also by continually striving for progress, people in Japan have raised their country to the status of the most secure place on the earth.

Preservation of environment is the demand of the day. Nature is to be befriended. Man has further disturbed the balance of environment due to his extreme selfishness which has proved damaging to his own life. It is everybody’s duty to create favorable atmosphere for development.

**Social environment and values**

It refers to the social, economic and political conditions of an individual in which he lives. The moral, cultural and emotional forces affect the life and nature of individual
behavior. It may be of two types-

1. closed
2. Open society.

The open society is very conducive for the individual development where as closed society is not very conductive for the development. Every individual tries to adjust in his social environment. In ancient time human lives alone, after that he formed the group. When he started agriculture and domestication, then the formation of families was done. In a family various values like co-ordination with family member, sympathy love for members, thinking about others, helping in others task, doing duties of family honestly, obediently, follow the rules, commands of head of the family, respecting elders, parents etc. develop in man. After that people who didn’t had blood relation also formed groups or society and the society creates. The people of different experience, age, status, economical level are coming together to form a community.

As society expanded as increased, people of various caste, region, and religion live together. From this equality brotherhood secularism, such values are generated. After that people tried to solve the problems of others and this feeling of solving others problem is understanding. There was great revolution with the development of science. Human build street, railway, light, schools, hospitals, institutes for himself and others. From this responsibility about public property this created in people.

Environment and Spiritual values

Living with better and best behavior is actually morality. This morality behavior converts into spiritual value. Because spirit of accepting others views develops in one, feeling of oneness creates and there is no difference in me and others this feeling creates in one. Hence this change in behavior is ‘spiritual value’.

In this manner, all values are classified, but how people utilize these values for proper living, it should be explained. Value means the things which are done automatically. The thinking, activities, duties beyond self purposes are values. So in this way, for understanding the term ‘values’ we have to consider the history of its formation. In spite of vast scientific progress that man has achieved, we urgently need spiritual values and moral values for healthy and peaceful human life.

Environment and International values:

Today we see globalization. Due to tremendous progress in science & technology there is good interrelationship between nations, states. Nations are come as close as each other that we can receive immediate information. e.g- if there was
earthquake, drought then peoples of other nation help to the affected people. As a result humanitism increased in people. International business, give & take are increased. In short people of all nations think about others benefits and besides nation, religion, nationality, color difference feelings of oneness become important. Hence humanity, liberty, equality, justice, brotherhood are best in spiritual values and it must take firm roots in the life of an individual.

The progress of modern age is not only due to single factor/nation. new inventions, new knowledge, technology are also used by other nations.

e.g.:-

1) Steam engine & penicillin invented in England
2) Aero plane invented at America
3) Electricity invented by Italy
4) First space satellite was launched by Russia.
5) Neel armonstrong was from America

All these things are also utilized by other nation. the psychological and physical need fulfilled by international development. The countries of the world are different from each other but these should be feeling world peace from this the important value international integration is developed. due to progress in scientific field, the interrelationship between peoples increases with the invention of satellite radio, T.V human can able to solve many problems from these the feeling of living in good manner develops in people. as human entered in space he express the willing of live in the space. Then to maintain good relation between man on earth & man in space, one new spiritual value is come into existence.

In short, as man develops day by day as he start to progress, then new values are created and they have to develop in this manner because developed life of man required spiritual values and take in this values in our self is duty of each social factor.

Present scenario-

We proudly say that India is a country with a long spiritual tradition. India was once known for security. It was said that people could travel from one end to another end of the country from Kanyakumari to Kanshi with a bunch of gold tied to a walking stick.

India is a united sovereign country. The present situation in India we notice that violence, selfishness, communalism, separation, isolation, untouchability, bigotry, exploitation of man by man have become the order of the day. our country is facing
crucial problems like growing population, natural calamities, pollution of all sorts and environment imbalance. We are being stunned by more and more difficult problems almost everyday. The young in India have been in a mood of frustration and confusion.

The point is the environment is far less favorable than it was chiefly owing to the recent development of mass communication. Life has become so busy now that man has no time to wait and see. People social prestige, the young are compelled to face breath taking competitions more and more people have fallen victim to bad habits such as drinking liquor, drug addiction.

The stringent economic conditions have forced both of parents to go out for job and they are required to remain out of doors thought the day. It is no more a home sweet home for the children.

There has been a misunderstanding that in the modern age of technology and science, education based on moral values is of no use. There has been a misunderstanding that the concepts like religion spiritualism and morality have become out of date now.

It is one of the most important aim of social environment to inculcate values necessary for religious tolerance, social unity, social commitment and social obligations.

**Psychological environment and values**-

Kurt lewin has given main emphasis to the psychological environment of individual. The physical and social environment are common to the individual in a specific situation while every individual has own environment in which he lives. He has used ‘life space’, topology for explaining psychological environment. It refers to the definition of personality. Psychology environment is very important to understand the personality of an individual. The person and his goal unable to overcome the barriers if may account frustration or he was to change his goal for a new psychological environment. This mechanism will help the individual for the adjustment.

**Conclusion**-

Values and environmental conditioning is most important thing for human life. Behavioral patterns of a child are set as he reacts to his environment. Child is exposed to a triangular environment -

1) home 2)school 3)society

His behavioral patterns in this triangular environment tent to persist for a longtime shape his attitude to wards himself and others. If we want children to be
unself dependable, self reliant, co-operative, altruistic, honest, sincere. So we must provide environment capable to inculcate these values in him. Home, school and society can play very significant role in this matter. These three are main components mainly responsible for environmental conditioning of a child. If all these environments are maintain in good manner there is no need of value education as a formal subject in school education.

References-
Introduction -

Agriculture market is a place where agriculture and allied products are bought and sold. A proper and efficient marketing system of agriculture produce is imperative for the development of rural areas. The income of rural people depends upon the efficiency of marketing the agriculture produce irrespective of the technology adopted in production. Any technological innovation should go hand in hand with efficient marketing. The peculiar characteristics of agricultural produce are: (i) Bulkiness (ii) Perishability (iii) Wide varietal differences (iv) Dispersed Production (v) Processing needs for consumption (vi) Seasonality (vii) Comparative advantage.

These characteristics make marketing of agriculture produce a complicated affair. Generally, farmers market only the raw agricultural produce (as harvested) without any processing. At the farm level, processing of raw produce is generally not done, rather the value addition to the produce is very minimal. Since only raw produce is marketed, there arises a need for many intermediaries to operate between the producer and consumer depress the ultimate price realisation by the farmers. Nearly about 50 to 60% of the price paid by the consumer is realised by the produce. Infact, the share is much lower in the case of perishable products like milk, fruits, seasonal vegetable and flowers etc. Agriculture productions being seasonal, most produce the same crop at the same time. These often leads to a glut and further depresses prices.

An overview of Jharkhand

The Newly created Jharkhand state was carved out of Bihar and came into being on November 15th 2000. Having an area of 79714 sq. km Jharkhand has the potential to develop as the financial most viable state in the whole country owing to its mineral based resources and the available industrial infrastructure.

The state’s total geographical area is 79.7 lac hectares. Out of this the cultivable land is 38 lack hectares and the present net shown area is only 1.57 lac hectares.
The net irrigated area is only 1.57 lac hectares which is 8% of the net shown area. More than 29% land is covered by forest area.

Although Jharkhand is endowed with vast and rich natural resources mainly minerals and forests, 80% of its population resides in villages also depend mainly on Agriculture and allied activities for their livelihood. The nascent state of Jharkhand has enormous potential for industries. Without agriculture activities, we cannot even think to develop the Jharkhand as agriculture covered the maximum population. Agriculture and allied activities are sine qua none for the economic upliftment of this region.

Farmers of Jharkhand are expert in production but poor in marketing. They are very innocent and simple in nature and hard working by their behaviour, specially in tribal. The farmers lack adequate knowledge about demand and supply conditions, which can protect their interest. In the process, intermediaries exploit them. The marketing expenses are also borne by the reproducers unlike in the case of manufactured goods.

**Occupation Pattern in Jharkand**

The main occupation for a vast majority of rural population in Jharkand is agriculture and allied activities. Table : I gives the distribution of rural population in Jharkhand as per their occupation pattern.

<table>
<thead>
<tr>
<th>SN.</th>
<th>Occupation</th>
<th>Population of Total Rural population (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agriculture</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>Agriculture Labour</td>
<td>27</td>
</tr>
<tr>
<td>3</td>
<td>Business</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Non-Agricultural Labour</td>
<td>09</td>
</tr>
<tr>
<td>5</td>
<td>Salary earners</td>
<td>02</td>
</tr>
<tr>
<td>6</td>
<td>Not gainfully Employees</td>
<td>02</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Source : www.JHARNET.COM

About half of the rural population own a lease land and cultivate it for their livelihood. Another 27% are dependent on these cultivators to jobs as agricultural labourers. Thus a total of 77% of rural population of Jharkhand dependend on agriculture and allied activities.
Income Generation in Jharkhand

The occupation pattern dictates the pattern of income generation also. The proportion of income generated in rural areas, source wise is presented in Table-2.

Table - 2

<table>
<thead>
<tr>
<th>SN.</th>
<th>Source of Income</th>
<th>Population of Total Rural population (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agriculture</td>
<td>59</td>
</tr>
<tr>
<td>2</td>
<td>Agriculture Labour</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Business</td>
<td>09</td>
</tr>
<tr>
<td>4</td>
<td>Non-Agricultural Labour</td>
<td>07</td>
</tr>
<tr>
<td>5</td>
<td>Salary earners</td>
<td>03</td>
</tr>
<tr>
<td>6</td>
<td>Not gainfully Employees</td>
<td>02</td>
</tr>
<tr>
<td>7</td>
<td>Others</td>
<td>04</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Source : www.JHARNET.COM

Although Jharkhand is rich in minerals, 75% of income generated in rural areas is from agriculture and agriculture related activities. Thus the prosperity of rural areas depend on the program of rural market of their agriculture and related activities.

Problems of Agriculture Marketing in Jharkhand -

While the agriculture market does offer vast untapped potential, it should be recognised that it is not very easy to operate in this market because of several attendant problems. The major problem faced by agriculture and allied products in rural areas of Jharkhand are as follows.

1. Underdeveloped People and Underdeveloped Marked :

   Agriculture technology has tried to develop people and market in rural areas of Jharkhand like other state Punjab, Haryana and Western U.P. But there is still large areas and groups of people are untouched by technological break through. Most of agriculture activities are being carried out through traditional system. In addition, farmers with small agriculture land holding have also not be able to take advantage of the new technology.
2. Lack of Proper Physical Communication Facilities:

Nearly half of the villages in the Jharkhand state do not have all weather roads. Most of the remote parts of the state are inaccessible during the monsoons. Recently, Pradhan Mantri Gram Sadak Yojna promises to connect all villages by all weather roads by 2007. This should considerably ease the distribution logistics for marketers.

3. Rural Communication:

Proper communication provides right information to right people at right time which we lack in rural areas. Rural communication is still mainly dependend on Radio. The advent and expansion of television network appears to be offering another potential medium for easy communication with rural masses. Print media do not more impart due to low literacy rate.

4. Many languages and dialects:

Jharkhand State has many tribals which have their own languages. It contributes of 27% of total population. Messages have got to be delivered in their local languages and dialects.

5. Vastness and Uneven Spread:

The length and breath of villages in Jharkhand are uneven and spread and are not uniform in size. The Population are very low in far remote areas specially among the tribals who live in forests. The distribution and promotion strategy are very difficult to implement in these uneven spread villages.

6. Low Per Capital Income:

Even though about 30% of Gross Domestic Product is generated in rural areas of Jharkhand, it is shared by more than 70% of the population. Hence, Per capita incomes are very low as compared to urban area. The distribution of Income is highly skewed since the land holding pattern is itself skewed since the land holding pattern is itself skewed. Thus, the rural population presents a highly heterogeneous scence. These aspects require very carefully consideration while evolving strategies for rural markets.

7. Lack of Logistics, Storage, Handling and Transport:

Transport facilities in rural Jharkhand are poor. Bullock carts and cycles are the major transport of agriculture and allied products to reach the rural market. There is no storage facilities and it leads the opportunity of getting high share by the middleman in Jharkhand.
8. Lack of Organised Market:

Agriculture and allied products are mainly dependent on local market where middle man are in upperhand and they reap the major share of profit. Producers have no bargaining power due to lack of organised market in Jharkhand.

9. Low level of literacy:

Most farmers are illiterate and are unaware of the market. The middleman and consumers are taking advantage of their illiteracy. The perfect market information are not being transferred to the producers.

10. Seasonal Product:

Agricultural products are being produced in seasons. Heavy supply in the local market create the through price of the products in the market. Vegetables in seasons are at very low price. Producers are the real loser at this juncture.

Remedial Measures:

There is an immense scope of agriculture and allied products like floriculture, semiculture, fisheries, goetry, pouultry, horticulture etc. in Jharkhand. Recently biofuel products like Jatropha and Medicinal plants, like white musli have great potentiality of production in Jharkhand region.

Thus, attention need to be given to improve the marketing system of agriculture and allied produce so that price realisation will be higher and favourable to the producers. By and large certain improvements like establishment of regulated markets have been brought about in the system which have proved beneficial to the producers, but a lot remains to be done.

1. Regulated Market

In past local bodies like Panchayats had control the rural markets but they had no control on the functioning of markets. All the state have now enacted the “Agriculture produce markets ACT” which empowered them to control these existing market in several ways and also to create new markets whenever necessary. Jharkhand State should implement this Act seriously and heartily. In Short “Regulations of Markets” has really helped the farmers in cutting down the marketing charges and to an extent their exploitation. Studies conducted on the impact of regulated markets revealed that the number of farmers selling the produce in such market increased in addition to realisation of better price.

2. Formation of co-operative organisations

Another major improvements of agriculture and allied producers is the formation
of co-operative marketing and processing societies. Farmers with common interests form co-operative societies, to take over some of the functions performed by the intermediaries. To increase the income of farmers it is important to involve them in processing. The processed agriculture produce becomes “a value added” product and the benefits accrue the farmers. A number of co-operative societies engaged in this activities in Jharkhand but this is not enough.

3. **Strengthening the RRBs For Micro Finance** -

Finance is queue none for success of production and marketing of any produce. Regional Rural Banks like Co-operative Banking, Grmin Kshetriya Banks etc. can play major role in financing the farmers. Micro-finance can help in production and better marketing of agriculture and allied produce.

4. **Contract Farming** -

The latest trend in marketing agricultural produce is contract farming and corporate farming. This will certainly help the farmers of Jharkhand as there is immense scope of cultivation of biodiesel Jatropha plants and medicinal plants like white mosli. Contract and corporate farming will certainly give the assurance to the farmers to purchase their produce. This eliminate the headache of marketing of agriculture products. It help the farmers in concentrating production and helps to produce quality products.

5. **Agricultural Export Zones (AEZ)**

The Jharkhand State should point out some specific zones as a agricultural export zones. Lohardaga district’s soil is very much suitable for rose cultivation. Barkagaon and hatra is very much popular for producing “Simla Chilli” and Tomato etc. So specific zones should be pointed out after research in this field as a export zones.

6. **Marketing of Rural/Cottage Industry / Artisan products** -

Rural and Cottage Industries and rural artisans are very significant to be economy of Jharkhand. They have proved to be a source of employment and income generation for the landless population who possesses certain skills and talents acquired over generating. The Khadi and Village Industries Commissions of the Central Government and Khadi and Village Industry Board of Jharkhand State should be strengthened.

**Conclusion**

It is necessary to pay adequate attention to the marketing aspects of agriculture
and allied products and rural cottage industries and rural artisans, Such an approach will help the rural population in generating adequate income. For this, proper strategies are needed of product, price palce and promotion. Govt . should also give special emphasis in agriculture marketing and heartly effort is needed for the growth and development of smooth agriculture marketing. Thus, agriculture marketing has a very significant role in suplifting rural society.

References

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2. Gupta A.P. “Marketing of Agricultural Produce in India” Vora, Bombay 1975

Introduction -

The Hazaribag District was originally covered in extensive area with thick forest with dense undergrowth of scrubs and grasses ensuring normal hydrological functioning of the district. Such as condition resulted in low run-off and greater absorption of rain water into the soil subsequently to be released in the streams slowly for a longer period of time.

The forest is the best single index, which determines the influence of physical environment. It reflects temperature, rainfall, drainage, elevations and soils. the forest resources are of great importance. Forest not only provides various kinds of wood, fuel and fodder, but also provides raw materials for paper, leather, tanning, match, boxes, drug, lac and silk industries. It also balances moisture in the atmosphere reduces atmospheric temperature and prevents the atmospheric and noise pollution.

Man and his activities are the main causes of environmental degradation. Natural vegetation are main components of biosphere. But above district of conditions have long been disturbed in the district by a number of factors causing deforestation.

Objectives

Natural vegetation is an index of other environmental factors such as climates, soil, land forms while by itself it is a factor of environment. But the district is facing several problems due to deforestation which has become the main course of environmental degradation, so the objectives of the paper is highlight the causes of deforestation and environmental degradation in the Hazaribag district.

Deforestation is going on at very fast rate. The immediate effects of deforestation on atmospheric and soil processes. The impact of deforestation on the environmental degradation can be seen in the form of micro climatic chages, increase in temperature and decrease in humidity rainfall, soil erosion in the form of sheet, rill and gully erosion, increase in frequency of floods loss of soil fertility, economic loss through damages of agricultural crops due to increased of floods and droughts decrease in agriculture production because of loss of fertile soil.
Study Area

The Hazaribag District lies between 85° 0'E to 86° 0'E longitudes and 23° 30' N to 24° 30'N latitudes. The altitude ranges 1000 above mean sea level. This district is bounded by Koderma, Giridih, Bokaro and Purulia district (West-Bengal) in the east. Hazaribag district has three subdivisions viz. Hazaribag, Sadar, Ramgarh and Barhi, consisting of altogether 15 blocks.

The total geographical areas of the district is 5965.35 sq. kms as much as 2429.04 Sq.kms. are covered forest at present. Hazaribag is a predominantly forest district and about 43.83% of the total area is covered by forests.

Climatic Conditions:

The climate of the Hazaribag district in general is the same as the central part of Chotanagpur plateau. Weather which is a part of climate plays an important role in deforestation in natural vegetation. The several elements of temperature and rainfall has key position in success of forest. The forest is dependent upon favourable climatic condition.

Temperature is the most important factor of climate. The annual mean temperature of Hazaribag district is 23.5 °C. Rainfall is the most important but is variable factor. This area experiences annual and season (May to October) rainfall of 1299 mm and 1168 mm respectively. Nearly 90% of the rainfall is concentrated between 15th June to 15th October the climate change of the Hazaribag district due to deforestation.

Distribution of natural Vegetation -

The total geographical area of the district is 5965.35 sq.kms. as much as 2429.04 sq.kms. are covered forest at present. Hazaribag district unfortunately has only 43.83% area under forest. Most of the forests occupy the scarps of Hazaribag district. In remaining part of the Chotanagpur plateau there is diverse natural vegetation. The natural vegetation in the plain is dominated by greases and scrubs.

The forest of Hazaribag district are placed under two categories -

i) Wet deciduous forest
ii) Dry deciduous forest

i) Wet Deciduous Forest : Wet deciduous forests are found in those parts of the Chotanagpur plateau where the rainfall exceeds 1250 mm. per annum. The forest is dense and is dominated by soil trees. Roughly 60-70% of trees are soil alone. It is deciduous variety of trees which shed leave during spring season. For some time the
forest looks barren till new twinge appear on the branches. For some time the forest look barren till new twinge appear on the branches. But this increases the activity of the tribals for whom dry leaves are main sources of fuel. It is a period of great danger as a small fire may engulf the whole forest and destroy them completely. The sal forests and dotted with bamboos and evergreen shrubs underneath the trees as undergrowth. Because of the concentration of trees lumbering has greatly developed.

ii) Dry deciduous forest:

It is the dominating forest where rainfall is below 1250 mm. The trees are short below metres and fairly. The dry deciduous forest is the poorer forest. The occur towards north on the lower erosional surface and on the scrap areas.

The distribution of natural vegetation of Hazaribag district lie in the areas of remote. The district is covered with natural vegetation of dry deciduous type but kilometers after kilometers, there are only scrubs and thorny bushes.

**Distribution of forest in Hazaribag district, 2001**

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Blocks</th>
<th>% age of the forest area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hazaribag Sadar</td>
<td>27.03</td>
</tr>
<tr>
<td>2</td>
<td>Ichak</td>
<td>42.78</td>
</tr>
<tr>
<td>3</td>
<td>Barhi &amp; Padma</td>
<td>36.13</td>
</tr>
<tr>
<td>4</td>
<td>Chauparan</td>
<td>54.77</td>
</tr>
<tr>
<td>5</td>
<td>Barkatha</td>
<td>39.91</td>
</tr>
<tr>
<td>6</td>
<td>Bishungarh</td>
<td>42.74</td>
</tr>
<tr>
<td>7</td>
<td>Katkamsandi</td>
<td>45.97</td>
</tr>
<tr>
<td>8</td>
<td>Churchu</td>
<td>55.97</td>
</tr>
<tr>
<td>9</td>
<td>Mandu</td>
<td>44.58</td>
</tr>
<tr>
<td>10</td>
<td>Keredari</td>
<td>51.94</td>
</tr>
<tr>
<td>11</td>
<td>Barkagaon</td>
<td>46.04</td>
</tr>
<tr>
<td>12</td>
<td>Patratu</td>
<td>33.76</td>
</tr>
<tr>
<td>13</td>
<td>Ramgarh</td>
<td>17.52</td>
</tr>
<tr>
<td>14</td>
<td>Gola</td>
<td>21.71</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>43.83</strong></td>
</tr>
</tbody>
</table>

Source: Forest deptt. of Hazaribag
The above shows that 43.80% of the total area of the district is covered by forest area. The forest lands predominates in different development blocks of Hazaribag district. The forest of the district also improve the ground water potentials, soil, moisture and regulate the surface run-off of the area to a great extent.

**Causes of Deforestation:**

Forest are not merely a natural resource to supplement multiple human requirements but are a very vital aspect of the environmental system. The forest plays a pivotal role in balancing the ecosystem, growing industrialisation, urbanisation and ruthless exploitation of forests has created chaotic conditions and environmental imbalances.

Deforestation is one of the outcomes of various developmental activities having the character of extensional development and it is true that deforestation is a have wreaked by thoughtless destructives activities of development. Forest clearing were made not only for village settlement but also far cultivation and pastures. As the population increased more forests were cleared for various uses. A part from this the open cast mining commercial exploitation of forest is the main cause of deforestation. There was a time when 70% of the land area was covered with forest in the Hazaribag district and now the total forest cover shrunk to 43.83% only.

The major causes of deforestation in Hazaribag district are as follow -

1. **Forest Fires:**
   
   Forest fires are the main cause deforestation in the district. The main reason for the very widespread summer fires in the district forests is the villagers desires to clean the ground below all the Mahua trees. So, that the crop of flowers can be gathered as an article of food as it fuels to the ground.

   The other reasons given for burning are to drive the game out and to refresher the grass crop for the cattle but little or no reason is needed for the buring which amounts to a summer pasture for the village boys. The burning does little damage to the grass, which recovers quickly and the soil is such a hardly three that it quickly recovers even when young trees are burned back to the stamp. The fire, therefore, consumes the dry grass and the fallen leaves and scorches of a good many of the live ones, particularly from the younger shoot which have not reached sapling height. This in itself would not be very destructive, but the chief disadvantage of these forest fire is that they leave the forest floor completely bare and exposed to the onslaught of
the first heavy rain, thus giving an opportunity for soil erosion which does not arise in an unburnt forest where the humus layer is given a chance to build itself.

2. Conversion of Forest Land into Agricultural Land:

Increasing population growth at fast rate mainly in the developing countries has put enormous pressure on forested land because it became necessary to clear the virgin forest covers and convert them into agricultural land so that the agricultural production may be substantially increased and food may be provided to hungry human population. This trend has resulted into large scale destruction of natural vegetation in district.

3. Shifting or Jhuming Cultivation:

In early days it is a major cause of forest loss in the hilly areas of the Hazaribag district. The loss of virgin forest cover due to shifting cultivation is also practicing in the area up till now.

4. Transformation of forests into pastures:

It has been responsible for rapid rate of loss of virgin forests in the study area. The main factor behind large scale conversion of land into pastures land is the pressure of increasing population of cattle.

5. Overgrazing:

The overgrazing of forests of moderate cover by animals has resulted into large scale degradation of natural vegetation. The deforested areas have been worst effected by grazing animals because no fresh regeneration of plant has been allowed by large herds of grazing animals.

6. Lumbering:

Lumbering for domestic and commercial purpose is the real causes of large scale destructions of forest cover. Ever-increasing demands of timber by villages for various purposes due to rapidly increasing of human population has does great damage to natural vegetation cover in the district.

7. Multi-Purpose river projects:

There six reservoirs and five weirs in the Hazaribag district. Due to the construction of these reservoirs and weirs large areas have been submerged due to storage water. Thus the sumberged forested reverine a areas have been submerged due to storage water. Thus the sumberged forested reverine a areas completely destroyed the natural vegetation.

8. Biological Factors:

These factors also help in destroying the natural vegetations. Conversions of
forest areas into marked shrinkage in the forest covers and thus tremendous pressure of animals on existing forests.

**Environmental Degradation:**

Environmental degradation leaves direct impact on the ecology and thus is caused ecological imbalance because of marked reduction in the ecosystem and ecological diversity. Ecological imbalance is the indicator of environmental degradation because it becomes difficult to perceive environmental degradation directly in the initial stages.

Deforestation gives birth to several problems encompassing environmental degradation through accelerated rate of soil erosion, increase in the sediment load of the rivers, soltation of reservoirs, weirs and river beds, changes in the pattern of distribution of precipitation, decrease in agricultural production because of loss of fertile top soils etc. It is thus obvious that deforestation increases greenhouse effect of the atmosphere which raises the temperature of the earth's surface and the atmosphere.

**Remedial Measures:**

The remedial measures have been taken from the forest department of Jharkhand Government and soil conservation department of Damodar Valley Corporation. The following steps have been taken for conservation of forests:

1. Planned Cutting of trees
2. Control Over forest fire
3. Shifting Cultivation
4. Grazing Control
5. Diversion of forest land for non-forest purposes
6. Reforestation programme
7. Check over forest clearance for Agriculture.

**Conclusion:**

Above discussion concludes that indiscriminate cutting of trees affect adversely the environments degradation of Hazaribag district. Conservation of forest is a new frontier to save the environmental degradation.

The deforestation has badly affected the ecology of the state. The most affected has been the habitat of the wild life. Keeping in view a number of National Park of Hazaribag district. To meet the requirements of fuel, fodder and small wood, social forestry and farm forestry programmes have been launched in the state on a large scale. This programme was implemented but now it covers the entire district.
References


2. Singh, Savindra (200) : Environmental Geography, Prayag Pustak Bhawan Allahabad


Abstract

There are various natural and cultural development of any region. Availability of reasons utilization of resources play a key role on the nation development. Population is one of the important non-exhaustible reason available in India. The planned utilization of such large human resource certainly influence further bright future for nation development. This aims in mind a group of investigator have been studied and made some observations in population studies. A case study of Chandrapur city in Maharashtra. The detail survey about the various population aspects have been made by questionnaire survey and following observations are presented in brief.

Chandrapur city at a Glance:

Chandrapur is one of the important city in Maharashtra state in India. Chandrapur city is located on 19° to 20°44' North latitudes and 78°48' to 79°45' East large tude. This city is located on Deccan plateau. The height of the city is 262 mts and spread over 58040 square km. area. The North South expansion is about 7.8 kms and East - West expansion is 6.7 kms. In old age Chandrapur city was located in ancient port constructed by king. But today it extended out of fort area. Chandrapur city is located in the vicinity of Durgapur coal field. It is located on bank of river Irai and Zharpat river. The second largest thermal electric plant in Asia is located at Chandrapur surrounding area of Chandrapur city is occupied by reserved forest and agricultural land. Chandrapur is one of the important city mining centre in Maharashtra State. Chandrapur work as mining centre education centre, in Vidarba region of Maharashtra. The specially growth of secondary economic activity influence the sudden changes in population aspects.

Chandrapur city having monosonal climate. May is the hottest month and December is the coldest month in the city. The annual rainfall is 120 cms. The range of humidity changes through variations in climate. Alhrai black soil and mountains sort spread in the vicinity of the city. Surrounding is femoz for cultivation of Rice and pulses.
Land utilization in Chandrapur city is as follows: 66% residential, 12% roads, 4% market, 12% water bodies, and 6% open space area. According to the 2001 census, Chandrapur city had 2,89,450 persons in space area. According to the 2001 census, Chandrapur city had 2,89,450 persons populations in 51 words of the city.

**Distribution of population:**

There are spatio-temporal variations in the distribution of population of Chandrapur city. In 1951, Ward No. 12 had the population of 13,689 and was the lowest. In 2001, Ward No. 3, 8, 9, 12, 17 had more than 10,000 inhabitants, while Ward No. 10, 11, 14, 20, 25, 28, 23, 31, 33, 35, 39, 51 had less than 4,000 persons. The highest population density area is located inside the old fort of the city. The surrounding words have the lowest population density.

**Population Growth:**

The temporal changes in economic states in Chandrapur city play an important role in population growth. During the various five-year plans, socio-economic development in the Vidarbha region specifically influenced population growth in Chandrapur city. It works as a coal mining center, an industrial center, a thermal power generation center, and a cultural center, which are significant aspects influencing population growth in the city. In 1901, Chandrapur worked as an urban center of Vidarbha with a population of 17,803 persons. In 1911, it had 19,863 persons, in 1921 it had 22,981 persons, in 1931 it had 28,138 persons, in 1941 it had 35,730 persons, in 1951 it had 40,744 persons, in 1961 it had 51,484 persons, in 1971 it had 75,134 persons, in 1981 it had 115,777 persons, and in 1991 it had 226,105 persons. These population growth figures show that after independence, continuous growth of industries influenced the rapid development of population in Chandrapur city.

**Density of Population:**

There has been a chronological development of population density in Chandrapur city. All the 51 words of the city population density is calculated and shows the growth of density of population in each word of the city. The population density in the Chandrapur city was 1,424 persons per sq km in 1951 and increased to 1,803 in 1961. In 1971 it was 2,632 persons per sq km, and in 1981 it was 4,056. In 1991 it was 4,018 persons per sq km, and it increased to 5,143 persons per sq km in 2001. Today, there is vertical expansion of the city influencing population density in the city.

**Age-sex composition:**

In this survey, a detailed study about age-sex composition was made by investigators. The population at Chandrapur city is classified into three age groups: i.e.
0 to 14 years 15 to 59 years age group and above 60 age group, 0 to 14 years age group consist 19.27% population; 15-59 a working age group consist 78.38% population and above 60 years age non-working group consist 3.28% population. In 1951 there are balance sex ratio in Chandrapur city. But after 1981 there an sudden changes in increase in sex-ratio due to industrial development in the city. In 2001 there are 986 families per thousands makes in work No. 38 while work No. 36 having highest sex ratio 797 femetes per thousands makes.

**Marital Status**:

Marital Status among the population play vital role an population increase of any region. In this survey detail questionnaire survey shows the following observations. According to our survey 50.26% persons are unmarried. Male marital status is 55.83% and female marital status is 43.93% Age at marriage for male is 21 years and 18 years for female in Chandrapur city.

**Religions compositions of populations**:

Chandrapur city having majority of Hindu Population. Hindu people consist 83.52% population, Harijan 9.15% Muslim 6.86 and remong caste are Cristain, Shikh, Jain.

**Birth and death rate**:

The detail survey and field observations about birth and death rate was made with the help of questionnaire survey. In 1961 the birth rate 38.18 birth per thousand population. While in 1981 it was 22.71, birth per thousand population. In 2001 it was 23.91 birth per thousand population. There are continuous declare in death rate in Chandrapur city i.e. 1961, 166 persons per thousands population and it decline as follows - 1971-69, 1981-88, 1991-76 and in 2001-69 death per thousand population. Improvment in health and medical services, increase in literacy increase in socio economic status may influence to declive the death rate in Chandrapur city.

**Literacy rate**:

Socio economic development of the population is influence by literacy levels. There are continuous increase in literacy rate in Chandrapur city. In 1981 literacy rate was 40% while 1961-45%, 1981-65%, 1991-68%, 2001-80% literate population in Chandrapur city. The coninuous growth of literacy due to educational awareness among the population socio economic development, development in educational facilities, 900 policy. Proper implementation of literacy mission play important rate on increase in literacy levels in Chandrapur city.
Occupational Structure:

Occupational structure is one of the important aspects of population study studied by investigators with the help of secondary data and primary data following save marks are as follows. There are continuous changes in the occupation structure of population in Chandrapur city. Increasing mining work, industrial development, power generation plant, socio-economic development in the city influence sudden change in occupation structure in the population. The proportion of primary economic activity works and declining day by day in Chandrapur city. While there are continuous inner in secondary and tertiary workers in the city.

Slum population:

Increase in secondary occupations like industrial development, primary occupation like mining attract the workers from all over India. Large scale immigration from Maharashtra, Karnataka, Madhya Pradesh, Uttar Pradesh are observed in Chandrapur city. Today there are 10.21% slum population living in Chandrapur city. Most of the immigration settled in there slums. Most of the slums are located along the bank, alay road side, and on municipal open space area.

References:

5. United Nations publications - “Determinents and “consequences of population”. 
Abstract

Growth of population is one of the important parameter of population influence socio economic development of the region. Fertility, mortality and migration are the dominant factors play important rate on growth of any region. In this study investigators have been studied the spatio-temporal growth of population of the Beed district in the Maharashtra State. The growth of population from 1901 to 1991 have been considered for the study. The regional variations in environment influence spatiotemporal growth of population in the study region.

Introduction:

The concept of population change or growth of population is often used to connect the change in the number of inhabitants of territory during a specific period of time, irrespective of the fact whether the change is negative or positive.

Population growth is the most fundamental demographic process with which all other demographic attributes are directly or indirectly associated. Population growth determines density, distribution and composition of population. Therefore geographical study of population growth is of vital importance for understanding its dynamism as well as for planning at the local and regional levels.

The growth of population in any region is determined by three basic factors namely fertility, mortality and migration. The difference between fertility and mortality is called natural increase of population.

There are many factors which are responsible for natural growth of population. The demographic, social, economic, Geographical factors influence the growth rate of population.

The purpose of this topic is to examine the dynamics of population numbers in the study during 1961-2001

The Growth of Population Since - 1901

The growth may be approached just by taking into consideration the next growth of population over the basic year. The growth rate assumes special signification when
viewed in temporal perspective. The last time decades 1901-1910 have taken into consideration for the study. The growth rate of population has a great significance for the geographers. The growth of population of Beed district since 1901 is shown in the following table.

**Growth rate of population since 1901 to 1991**

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Decades</th>
<th>Growth rate %</th>
<th>General</th>
<th>Rural</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1901-1911</td>
<td>+ 25.97</td>
<td>+ 29.28</td>
<td>-7.13</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1911-1921</td>
<td>- 25.12</td>
<td>- 26.16</td>
<td>-10.53</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1921-1931</td>
<td>+ 35.88</td>
<td>+ 33.75</td>
<td>+ 60.56</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1931-1941</td>
<td>+ 12.21</td>
<td>+ 10.98</td>
<td>+ 24.09</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1941-1951</td>
<td>+ 13.44</td>
<td>+ 12.60</td>
<td>+ 20.71</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1971-1981</td>
<td>+ 15.47</td>
<td>+ 10.13</td>
<td>+ 53.90</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1981-1991</td>
<td>+ 28.95</td>
<td>+ 326.36</td>
<td>+ 42.30</td>
<td></td>
</tr>
</tbody>
</table>

Source - Complied by author from census hand book (1991)

If we consider Table and fig. it is seen that the trend of general, rural and urban population growth rate very from one another during the span of ninety years (1901-1991). The trend of general population growth rate and rural population growth rate are some what parallel to each other in the study region but there are remarkable ups and downs in the growth rate of urban population during the period of ninety years. (1901-1991)

The general population growth rate and rural population growth rate have shown gradual increase up to the year 1991.
Only 1911-21 and 1971-1981 decades show reverse trends. There was serve toll of life due to influenza epidemics (1918) and other servers diseases. The heavy toll of life was experienced in the rural areas as compared to the urban areas. After the independence (1947) huge medical facilities have been provided to rural areas, which helped in controlling the epidemics and other diseases in the study region.

There were remarkable ups and downs in the trend of urban population growth rate. The growth rate sharply decline during 1901-1911, 1911-1921 and 1951-1961 decades while it suddenly increased during 1921-1-31 decade. The rate decreased by 7.13% -10.53% and + 14.04 in 1901-1911, 1911-1921 and 1951-61 decades respectively. White it increased by + 60.56 in 1921-31 decade. The growth rate of urban population declined in 1901-11 and 1911-21 decades due to heavy toll of life because of fevers and respiratory diseases in urban areas.

There was a sudden growth in urban population during 1921-1931 due to migration and control over fevers and respiratory diseases in urban areas.

If the period of ninety years (1901-91)
1901 - 1931:
In this period, population grew by 135535 people (i.e. 35.88%) in this net increase of population 44465 (i.e. 25.04%) increase was by urban 121070 (i.e. 21.66%) increase with by rural.

1931-1961:
In this period, population increased by 332998 people (i.e. 35.06%) In this net increase of population 40898 people (i.e. 41.45%) increased by urban population and 292100 people (i.e. 34.32%)

1961-1991:
In this period, the population grows by 872399 people (i.e. 47.88%) In this net increase of population 228319 people (i.e. 69.83%) increased by urban population while 644080 people (i.e. 43.07%) increased by rural population. These figures show that the population grew in this period due to gradual decline in births and sudden decline in the deaths, Rapid decline in mortality rate was a major cause for the population increase.

From the dissuasion, it can be concluded that the population increased due to higher fertility rates as composed to the mortality rates in first three decades (1901-31) In the next three decades (1931-1961) it increased due to rapid decline in death rates than the birth rates. While the last three decades it increased because of sharp decline in death rates.

In brief, the fertility the major cause for the three decades (1901-31) mortality is the major cause for the next three decades (1931-61) While mortality and mobility both are the causes for last three decades (1961-91)

It emerges from the above that the history of population growth in the study are a thus has been mainly a function of the changing pattern of the death rates in the years to come. One of other land, even under favourable conditions birth rates have taken a comparatively long time to decline. It is most likely, therefore that the current trend, population of the study region will continue to grow at accelerated rates. During the coming decades, it will be close to 21.34%

It is obvious from the points made above that the accelerated growth of population during the post independence period has not retarded the socio-economic development which other wise has been substantial, but it seems sure to be the main stumbling block in the study area. If the same demographic trend continues, it will produce adverse effects on the environmental conditions of the land as well as the
psychology of the people in the long run.

An understanding of this dynamics of population will be neither complete nor clear without making a reference to the differentials in the growth rates of its two vital components—rural and urban. Although the general population in the study area has experienced consistent acceleration in growth since 1921, the increase in rural and urban population reveals differing trends. During 1921-31 there was a sudden increase in rural population by 3.75% during the decades 1931-1991 the rural population was increasing at practically uniform medium rates of about 10 to 26 percent. Its urban counterpart grew at higher rates which were rising regularly (60.56% during 1951-31, 24.09% during 1931-41 and 20.71% during 1941-51) The urban which increased by 1.85 percent in the same period due to change in the urban definition and consequent reclassification of urban places.

During 1961-71, 1971-81 and 1981-91 decades the rural growth rate slightly declined and urban growth rate increased as compared to post decade 1951-61. After 1961 thought the absolute number of population increased the growth rates in rural section decreased and urban section increased. These were a remarkable differentiation in the growth rates in both the sections (rural-urban) of the study area during the same period.


As already discussed the population growth since 1901 for the entire study area, it is not enough to decide the sub-regions of population growth rate within the study area.

For this purpose taluka wise growth is taken into consideration to examine how the geographical factors affect the growth of population growth during 1961-91. This rate a population growth was not uniform throughout the study region. It varies from taluka to taluka. The Beed taluka recorded highest growth rate during 1961-91. All the talukas of the district are classified into three subregions of population growth. There are (i) High population growth region (ii) Medium population growth region (iii) Low population growth region.

This classification of sub-region of population growth is based on the districts average growth rate (81.94) as medium growth.
Table 4.2
Taluka wise population Growth (%) during 1961-1991

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ambajogai</td>
<td>199335</td>
<td>344505</td>
<td>72.82</td>
</tr>
<tr>
<td>2</td>
<td>Ashti</td>
<td>108123</td>
<td>187915</td>
<td>73.79</td>
</tr>
<tr>
<td>3</td>
<td>Beed</td>
<td>159622</td>
<td>336934</td>
<td>111.08</td>
</tr>
<tr>
<td>4</td>
<td>Georai</td>
<td>135519</td>
<td>236299</td>
<td>74.36</td>
</tr>
<tr>
<td>5</td>
<td>Kaij</td>
<td>164331</td>
<td>270383</td>
<td>64.53</td>
</tr>
<tr>
<td>6</td>
<td>Majalgaon</td>
<td>143487</td>
<td>272748</td>
<td>90.08</td>
</tr>
<tr>
<td>7</td>
<td>Patoda</td>
<td>90849</td>
<td>173288</td>
<td>90.74</td>
</tr>
</tbody>
</table>

District Total 1001466 1822072 81.94

Source: Complied by the author from the census hand book and primary census abstract.

1) High population Growth rate (More than 90):

The Beed and Majalgaon talukas of the study area come under this growth category. Beed had 111.08% present, Majalgaon had 90.08% while Patoda taluka had 90.74% population growth during 1961-91. The Beed is located in central part of Beed district, Majalgaon is located in the North part while Kaij is far eastern/western side of the district.

2) Medium Population Growth rate (61-90 percent):

The Georal Asti and Ambajogai to works of the study are fall in this category 65 to 90% had 74.36% had 74.36% growth, Ashti has
Findings and observations:

There are regional variations in growth of population of Beed district. Expect the decade/1911-21 all the decades there are continuous growth of population. The grante rate of population is highest dung the 1981-91 decades this may be due to growth of industries in the district. The special and tumpord population growth rate varies from region to region in the study region. Beed Patoda, Majalgaon tehsils having the highest growth of population during 1961-1991 decades. Kaj tehsils having lowest greatest population. This may be due to lower level of industrial development in Kaj Tehsil.

Reference:


4. Chanana R.C., (1951-61) : Growth of population in Rahatak and Gargan District Panjab University Buletin Vol 57
Personality Deviant Children are classified in several groups as – Emotionally Disturbed, Delinquents, Socially maladjusted. Emotionally disturbed children are one of them. The term ‘Emotional Disturbance’ has different meanings. For teachers, an emotionally disturbed child is one who is shy withdrawn or who is too aggressive. Emotionally disturbed behaviour was considered synonymous with misbehaviors or deviancy. A different kind of definition was also given in terms of the ecology of the child. According to this emotional disturbance is viewed in terms of environmental variables which create maladaptive emotional reactions.

The American Psychiatric Association defined emotional disturbance as follow, “It is a type of Psychiatric disturbances with clearly defined physical cause or without structural damage to the brain”.

Emotional disturbance in children can be defined in terms of certain observable characteristics as – “hyperactivity, withdrawn behaviour, failure to achieve at a level reasonably commensurate with ability, tendency towards fighting and other aggressive behaviour, resentment and antagonism towards authority and rules and regulations and general problems in learning and concentrating, not associated with known organic or sensory defects” (Phillips 1967).

Emotionally disturbed child is one who shows to an extreme degree, one or more of the characteristics listed above. Emotionally disturbed children may be either of mild and moderate type or of severe type. Experts discussed the behaviour and psychological characteristics of mildly and moderately disturbed children as (1) Intelligence and Achievement (2) Social and Emotional characteristics (3) Behavioural characteristics.

Kauffman, Cullinan, and Epstein (1987) found that academic deficits specially reading were related to the student’s aggression, defiance and violation of the social rules. Intelligence of these children to be less than average or low average i.e. around 90 IQ, varying from 60 to 130 IQ. Kauffman (1985) indicated six school related factors
Insensitivity by the school to the individual.
Inappropriately high or low expectation for the student.
Inconsistent behaviour management procedures.
Meaningless or uninteresting materials and assignments.
Reinforcement of inappropriate behaviour caused by teacher attention.
Student modeling inappropriate behaviour.

Such students may be rebellious, aggressive and abnormal in their behaviour due to the operation of some adverse and disturbing factors which if eliminated, they may be helped to resume their normal behaviour.

The parents, teachers and the counselors have to play important role in the process of education and rehabilitation of emotionally disturbed children.

There are different approaches to the education of disturbed children such as –

1 – Psychoanalytic approach
2 – Psycho educational approach
3 – Humanistic approach
4 – Ecological approach
5 – Behavioural approach

Teaching to emotionally disturbed child is challenge Kauffmann (1985) stressed that, “The teacher ultimately focus on those factors that can be changed. Teachers should believe that proper classroom environment alone can make a difference in the child’s life even if nothing else can be altered and hope that more than classroom can be changed”.

In order to organize an effective programme of education of the emotionally disturbed children, it is imperative that the teachers must understand the degree and approximate causes of emotionally disturbances. The teacher may adopt specific identification criteria as recommended by Gropper. They may include classroom activities, physical activities, reaction to tension appropriateness of behaviour, meeting work requirements, interest in work, adjustment with others, consideration for group needs response and reaction to teachers requirements, degree of independence, regard for school rules and integrity and reliability on the basis of the identification criteria, teacher may have a proper diagnosis of such children for their educational strategies.

While planning the instructional strategies, the teacher may keep in view the following basic principles.
a) Attention - Distracting stimuli may be removed and concrete tasks may be assigned.
b) Response - Criterion for success may be reduced to ensure success.
c) Order - Requirements of behaviour may be kept at the basic level.
d) Exploratory - Wide range sensory experiences may be provided.
e) Social - A close communication with the teachers and peers may be emphasized.
f) Mastery - Development of sense and habit of independent living and functioning may be encouraged.
g) Achievement - An enriched and diversified curriculum may be offered with a view to provide plenty of choice in the selection of courses.

The primary function of the parents and teachers is to remove these children from the uncongenial environment and to place them in a more sympathetic and congenial environment. Sometimes the atmosphere in the home may cause emotional disturbances in the children, it would be beneficial if the children are removed from the uncongenial home environment and help them to lead a healthier, natural, normal life.

In order to organize an effective educational programme for emotionally disturbed children, the teacher should realize and appreciate the individual differences, degree of their growth and their differential socio-economic and cultural background. The emotionally disturbed students need a proper understanding of their own problems and specific guidance and encouragement to come out of their tangle. The attitude of teachers should not be critical about their failings, but they should develop in them a sense of security, achievement, co-operation and above all affectionate relationship.

References :-
Education for handicapped children was neglected in India before independence. All round development of handicapped children and special education attracted the attention of politicians, parents & educationalist after 1947. This research paper evokes the social sensitivity of orthopaedically handicapped, visually impaired, hearing impaired and mentally retarded children studying in common schools and special schools in Khandesh, Maharashtra. Now all educationalists stress on the inclusive education for throughout the world. The effect of special education and integrated education for developing social skills among handicapped children has been studied in this research work. Social sensitivity reflected in the behaviour of these children that is measure from their parent’s and teacher’s point of view. Orthopaedically handicapped, visually impaired and hearing impaired children found higher level of social sensitivity. Handicapped children in special schools developed their social sensitivity higher than handicapped children in common schools.

Social Sensitivity is a part of the fundamental values and beliefs we share in our communities and society as a whole that we are caring for others, have empathy for those around us, and believe in the importance of equality and social justice for all. Social sensitivity means how well a person can interpret what others are trying to communicate about social situations. Disabilities can create social and emotional difficulties. Orthopaedic disability, visual and hearing impairment may cause frustration. Social sensitivity is an automatic process. School is the unit for change and development. A handicapped child, as he leaves the school, ideally should be an individual possessing such qualities as sensitivity, the capacity of reflection and self knowledge. In both mainstreamed and in special schools, regular classroom provides training programs to develop social skills so that these could meet the needs of children. Teachers are implementing effective programmes that provide increased practice and opportunities to participate in social interactions with peer group.
Children with disabilities enrolled in inclusive settings make at least as much progress on standardized measures of cognitive, language, motor and social development as children in non-inclusive classrooms (Buysse & Bailey, 1993; Lamorey & Bricker, 1993; Odom & Mcevoy, 1988; Peck & Cooke, 1983). Moreover, there is evidence that when teachers promote social interaction among the children with disabilities, they may get greater gains on standardized measures of language and social competence (Jenkins, Odom & Speltz, 1989). Enrollment in inclusive programmes does not have deleterious effects for typically developing children (Odom, Deklyen & Jenkins, 1984). Two factors that appear to influence the performance of children with and without disabilities in inclusive settings on standardized developmental measures are the type of curriculum employed (Cole, Dale, Mills & Jenkins, 1993; Mills, Dale, Cole, Jenkins, 1995).

Families of handicapped children enrolled in inclusion settings generally have positive attitudes toward inclusion (Bailey & Winton, 1987; Guralnick, 1994; Peck, Carlson, & Helmstetter, 1992). They often report as a benefit all the increased social contact between handicapped children and normal children (Miller, Strain, Boyd, Hunsicker & Wu, 1992; Peck et al., 1992) and children increased social sensitivity and acceptance of differences (Green & Stineman, 1989; Reichard et al., 1989).

Van Hasselt (1981), Calvo (1986), Calvo & Seaz (1995) have reached the conclusion that there is a need for blind students to be given social skills education. According to Diaz Agudo (1995), Verdugo & Callabo (1999) by learning the skills of social behaviour, social competence will be increased and blind students will then feel themselves more integrated within the world of the sighted. Solodoca (1991) studied interpersonal relationship, formation of organizational ability and responsibility at school. Teras et al. (1993) conducted an experiment to teach independent living skills to children and young men with visual impairments. Haider (1991) investigated the adjustment, social competency, aspiration and academic achievement of visually handicapped children in special schools and in integrated setting. The result showed that visually impaired children from integrated school are better in all respects.

Tisdal (1962) found the average performance of mentally retarded children in special groups were significantly better than the average of the regular class retarded.

We carried out this study to identify social sensitivity in handicapped children so that it will be useful in their daily life. Integrated schools provide opportunities to experience the diverse nature of the society in a small scale in a classroom and develop unique characteristics and abilities of each student. In special schools, teachers demonstrate, explain, do role play and practice using the behaviour and provide students various opportunities to use it in a natural setting with peers. All the activities in both types of schools are enhancing social skills among students.

We hypothesized that handicapped children in mainstreaming are less social sensitivity than handicapped children in special schools, there are different level of social sensitivity among OH, VI, HI & MR children and girls have more social sensitivity than boys in both schools. Investigators are constructed inventory depend upon appropriate social behaviour that is expected in school as well as in society. For this study our sample was taken four types of from handicapped children i.e. Orthopeadically handicapped, visually impaired, hearing impaired and mentally retarded children in mainstreaming and special schools. A inventory of social sensitivity using two point scale that consist following aspects of social sensitivity like Understanding others, Friendliness, Self-awareness, Cooperation, Ambitious, Decision making ability, Obedience, Neatness, Optimism, Self control, Self-confident, Self-concept, Creativeness, Adjustment capacity, Empathy and Initiative.
### Social Sensitivity of Handicapped Children in both types of schools

<table>
<thead>
<tr>
<th>No.</th>
<th>Dimensions of social sensitivity</th>
<th>Special schools</th>
<th>Common schools</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Understanding others</td>
<td>91.01</td>
<td>66.07</td>
<td>24.71</td>
</tr>
<tr>
<td>2</td>
<td>Friendliness</td>
<td>91.01</td>
<td>69.52</td>
<td>21.49</td>
</tr>
<tr>
<td>3</td>
<td>Self Awareness</td>
<td>71.85</td>
<td>67.38</td>
<td>4.47</td>
</tr>
<tr>
<td>4</td>
<td>Cooperation</td>
<td>90.41</td>
<td>83.26</td>
<td>7.15</td>
</tr>
<tr>
<td>5</td>
<td>Ambition</td>
<td>49.99</td>
<td>52.35</td>
<td>-2.36</td>
</tr>
<tr>
<td>6</td>
<td>Decision making ability</td>
<td>41.01</td>
<td>54.08</td>
<td>-18.07</td>
</tr>
<tr>
<td>7</td>
<td>Obedience,</td>
<td>92.51</td>
<td>89.91</td>
<td>2.6</td>
</tr>
<tr>
<td>8</td>
<td>Neatness</td>
<td>88.92</td>
<td>82.40</td>
<td>6.52</td>
</tr>
<tr>
<td>9</td>
<td>Optimism</td>
<td>93.41</td>
<td>81.11</td>
<td>12.3</td>
</tr>
<tr>
<td>10</td>
<td>Self control</td>
<td>90.41</td>
<td>81.75</td>
<td>8.66</td>
</tr>
<tr>
<td>11</td>
<td>Self-confident</td>
<td>53.29</td>
<td>40.33</td>
<td>12.96</td>
</tr>
<tr>
<td>12</td>
<td>Self-concept</td>
<td>65.26</td>
<td>56.43</td>
<td>8.83</td>
</tr>
<tr>
<td>13</td>
<td>Creativeness</td>
<td>50.29</td>
<td>20.81</td>
<td>29.48</td>
</tr>
<tr>
<td>14</td>
<td>Adjustment capacity</td>
<td>87.20</td>
<td>58.79</td>
<td>28.33</td>
</tr>
<tr>
<td>15</td>
<td>Empathy</td>
<td>96.40</td>
<td>83.47</td>
<td>12.93</td>
</tr>
<tr>
<td>16</td>
<td>Initiative</td>
<td>50.29</td>
<td>18.66</td>
<td>31.63</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>75.19</td>
<td>63.20</td>
<td>11.99</td>
</tr>
</tbody>
</table>

In this sample handicapped children in both types of schools showed different levels of social sensitivity. Handicapped children in special schools are higher than handicapped children in common schools. Only two aspects are lowering i.e. ambitious and Decision making ability because in common schools handicapped children faced competitions with other children. Creativity is higher in children studying in special schools compared to handicapped children in common schools. Creativity, Adjustment capacity, Understanding others, Friendliness, Initiative ness found very high among handicapped children in special schools because personal attention is available in special schools.
### Social Sensitivity of Handicapped Boys and Girls

<table>
<thead>
<tr>
<th>No.</th>
<th>Dimensions of social sensitivity</th>
<th>Boys in Special schools</th>
<th>Girls in Special schools</th>
<th>Boys in common schools</th>
<th>Girls in common schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Understanding others</td>
<td>91.2</td>
<td>90.67</td>
<td>67.18</td>
<td>64.96</td>
</tr>
<tr>
<td>2</td>
<td>Friendliness</td>
<td>92.12</td>
<td>88.98</td>
<td>72.06</td>
<td>65.33</td>
</tr>
<tr>
<td>3</td>
<td>Self Awareness</td>
<td>70.37</td>
<td>74.57</td>
<td>66.94</td>
<td>77.46</td>
</tr>
<tr>
<td>4</td>
<td>Cooperation</td>
<td>89.81</td>
<td>91.52</td>
<td>79.30</td>
<td>89.76</td>
</tr>
<tr>
<td>5</td>
<td>Ambition</td>
<td>54.62</td>
<td>41.52</td>
<td>55.51</td>
<td>47.15</td>
</tr>
<tr>
<td>6</td>
<td>Decision making ability</td>
<td>43.97</td>
<td>35.59</td>
<td>71.37</td>
<td>38.63</td>
</tr>
<tr>
<td>7</td>
<td>Obedience,</td>
<td>89.34</td>
<td>98.30</td>
<td>80.68</td>
<td>94.88</td>
</tr>
<tr>
<td>8</td>
<td>Neatness</td>
<td>85.64</td>
<td>94.91</td>
<td>86.20</td>
<td>76.13</td>
</tr>
<tr>
<td>9</td>
<td>Optimism</td>
<td>91.82</td>
<td>96.60</td>
<td>81.72</td>
<td>80.11</td>
</tr>
<tr>
<td>10</td>
<td>Self control</td>
<td>87.96</td>
<td>94.91</td>
<td>77.58</td>
<td>88.63</td>
</tr>
<tr>
<td>11</td>
<td>Self-confident</td>
<td>56.94</td>
<td>46.60</td>
<td>42.41</td>
<td>36.92</td>
</tr>
<tr>
<td>12</td>
<td>Self-concept</td>
<td>70.82</td>
<td>60.16</td>
<td>58.61</td>
<td>52.83</td>
</tr>
<tr>
<td>13</td>
<td>Creativeness</td>
<td>49.53</td>
<td>51.69</td>
<td>22.40</td>
<td>18.17</td>
</tr>
<tr>
<td>14</td>
<td>Adjustment capacity</td>
<td>85.07</td>
<td>88.13</td>
<td>54.15</td>
<td>65.90</td>
</tr>
<tr>
<td>15</td>
<td>Empathy</td>
<td>95.88</td>
<td>97.45</td>
<td>86.89</td>
<td>78.07</td>
</tr>
<tr>
<td>16</td>
<td>Initiative</td>
<td>58.79</td>
<td>34.73</td>
<td>26.57</td>
<td>14.20</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>75.86</td>
<td>74.14</td>
<td>64.34</td>
<td>61.82</td>
</tr>
</tbody>
</table>

Dimensions of social sensitivity vary among boys and girls in special schools & common schools. Obedience is higher among the girls in both schools. Except Obedience, self control, adjustment girls are higher than boys. In common schools, the handicapped children show a low level in initiative quality, they don’t come toward in such environment.
### Social Sensitivity among OH, VI, HI & MR Children

<table>
<thead>
<tr>
<th>No.</th>
<th>Dimensions of social sensitivity</th>
<th>OH</th>
<th>VI</th>
<th>HI</th>
<th>MR</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Understanding others</td>
<td>93.08</td>
<td>80.99</td>
<td>93.61</td>
<td>50.72</td>
<td>79.6</td>
</tr>
<tr>
<td>2</td>
<td>Friendliness</td>
<td>90.94</td>
<td>73.00</td>
<td>70.62</td>
<td>78.29</td>
<td>78.21</td>
</tr>
<tr>
<td>3</td>
<td>Self Awareness</td>
<td>86.15</td>
<td>63.13</td>
<td>84.02</td>
<td>51.45</td>
<td>71.18</td>
</tr>
<tr>
<td>4</td>
<td>Cooperation</td>
<td>96.25</td>
<td>80.90</td>
<td>85.62</td>
<td>88.50</td>
<td>87.81</td>
</tr>
<tr>
<td>5</td>
<td>Ambition</td>
<td>83.51</td>
<td>76.29</td>
<td>68.06</td>
<td>00</td>
<td>56.96</td>
</tr>
<tr>
<td>6</td>
<td>Decision making ability</td>
<td>84.55</td>
<td>65.71</td>
<td>78.39</td>
<td>07.34</td>
<td>58.99</td>
</tr>
<tr>
<td>7</td>
<td>Obedience</td>
<td>85.09</td>
<td>92.74</td>
<td>93.06</td>
<td>90.79</td>
<td>90.42</td>
</tr>
<tr>
<td>8</td>
<td>Neatness</td>
<td>96.22</td>
<td>88.79</td>
<td>93.59</td>
<td>69.47</td>
<td>87.01</td>
</tr>
<tr>
<td>9</td>
<td>Optimism</td>
<td>87.75</td>
<td>90.76</td>
<td>90.93</td>
<td>76.82</td>
<td>86.56</td>
</tr>
<tr>
<td>10</td>
<td>Self control</td>
<td>80.92</td>
<td>89.45</td>
<td>85.08</td>
<td>86.37</td>
<td>85.45</td>
</tr>
<tr>
<td>11</td>
<td>Self-confident</td>
<td>87.22</td>
<td>57.88</td>
<td>58.48</td>
<td>01.46</td>
<td>51.26</td>
</tr>
<tr>
<td>12</td>
<td>Self-concept</td>
<td>81.90</td>
<td>94.71</td>
<td>77.11</td>
<td>16.17</td>
<td>67.47</td>
</tr>
<tr>
<td>13</td>
<td>Creativeness</td>
<td>46.26</td>
<td>48.01</td>
<td>57.95</td>
<td>05.87</td>
<td>39.52</td>
</tr>
<tr>
<td>14</td>
<td>Adjustment capacity</td>
<td>80.83</td>
<td>83.53</td>
<td>73.91</td>
<td>60.29</td>
<td>74.64</td>
</tr>
<tr>
<td>15</td>
<td>Empathy</td>
<td>96.79</td>
<td>92.08</td>
<td>85.61</td>
<td>83.80</td>
<td>89.57</td>
</tr>
<tr>
<td>16</td>
<td>Initiative</td>
<td>38.81</td>
<td>59.19</td>
<td>43.07</td>
<td>08.08</td>
<td>37.28</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>76.44</td>
<td>77.32</td>
<td>77.44</td>
<td>45.64</td>
<td>77.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>77.44</td>
<td>45.64</td>
<td>77.44</td>
<td>45.64</td>
<td>69.21</td>
</tr>
</tbody>
</table>

Orthopedically handicapped, visually impaired and hearing impaired children have higher level of social sensitivity. All handicapped children show lower level in initiative ness, creativeness and self confident. Mentally retarded children show a higher level in friendliness, obedience, self control and empathy than other aspects of social sensitivity.

**Findings:**

- Social sensitivity among handicapped children studying in special schools is 11.99 higher than handicapped children studying in common schools.
- Social sensitivity among handicapped boys and girls have very low difference in special schools but handicapped boys and girls in common schools have
Mentally retarded children have low average than Orthopedically handicapped, visually impaired & hearing impaired children. But in friendliness, Cooperation, Obedience, Self control & Empathy, Mentally retarded children have not difference than others.

Conclusion

Social sensitivity among the handicapped children in the Khandesh is vary according to various aspects. In the region, handicapped children have the highest average in obedience. Handicapped children have moderate development in some aspects i.e. Understanding others, Cooperation, Empathy, Friendliness, Optimism, Adjustment capacity, Self control, Neatness & Self Awareness and very low level in Self-confident, Self-concept, Creativeness & Initiative.

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