

Integrated Environmental Development Planning For Rural Areas Emerging Towards Growth Centre- Mahalung, Solapur

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Abstract: *Development processes all over the world are facing challenges emerging from changing climatic conditions and global warming. A paradigm change in the approach to planning and facilitating the development processes is necessary to effectively deal with these emerging challenges. In the new paradigm, on one hand, the development processes need to be environmentally responsible and well informed about the global challenges and on the other hand should respond to the development needs and rights of the various communities involved, especially of the marginalized rural communities at the local level. It is also necessary to mainstream this approach without restricting it to isolated, standalone interventions under development schemes. The motif of the paper is to support villages for environmentally responsible development and management of infrastructure and services for attaining the sustainable improvement in the quality of life of rural communities which is emerging towards growth centre. In this paper the study of existing situation of infrastructural facilities such transportation, water supply facilities, liquid waste management, solid waste management, natural resource management and other socio-economic facilities using GIS software. Further SWOT analysis carried out to formulate the vision which describes the direction that the village should take for optimal growth to attain sustainability in the long term, and sets the target. Finally prepare a plan which includes sector wise recommended interventions for the villages. Strategies for projected population, prioritization of interventions and feasible resources with technology options to achieve objectives are protect, conserve and enhance available natural resources through peoples' participation and ensure sustainable village development and also to prepare an action plan at the village-level integrating available /existing govt. schemes in village development plan and by mainstreaming environmental, social and cultural considerations in economically sound village development.*

Keywords: Global challenges, Growth centres, Geographical Information System, sustainable village development.

1. Introduction

The growth centre can be defined as a village with population more than 10, 000 as per the 2001 census. Considering the growth rate of these villages and their development as peri-urban villages facilitating the environmentally responsible development of these villages is the need of hour. Therefore one of growth centre selected under this paper for the preparation an Integrated Environmental Development Plan[1].The population of these types of villages are rapidly increases due to this problems regarding environmental issues such water supply facilities, liquid waste management, solid waste management.

Growth centre Mahalung is one of the large village selected for prepare the Integrated Environmental Development Plan.

The objectives of the IEDP project are:

- a) To protect, conserve and enhance available natural resources through peoples' participation and ensure sustainable village development.
- b) To prepare an action plan at the village-level integrating available / existing govt. schemes in village development plan and by mainstreaming environmental, social and cultural considerations in economically sound village development.

- c) To build capacities of panchayats and local NGOs and professionals to ensure implementation and sustainability of the Scheme

It is proposed that the IEDP should evolve through a combination of participatory processes and sound technical inputs supplemented by the latest technologies available in the sector.

The IEDP is an instrument to facilitate the transition of these villages to growth centres having facilities and services on par with the towns, if not better, and to set an example of environmentally responsible development, offering the best quality of life.

2. Methodology

The paper aimed as to prepare integrated environmental development planning for rural areas emerging towards growth centre. For the fulfillment of objectives Integrated Environmental Development Plans included following steps:

- o Data collection
- o Situation Analysis
- o Identification of issues
- o SWOT analysis
- o Plan preparation

The data collection activities included both primary and secondary data collection. Secondary data pertaining to the village was collected from the Census 2011 and the report on the economic base of growth centres in Maharashtra. Also Google image of project area was used for analysis of land use, and for tracing building footprints, roads and creating the base map. Being a rural settlement environmental status of Mahalung is not monitored by any Government agencies. Therefore to know the environmental status of village air, water and noise pollution monitoring was done at selected locations in the village.

The timeline of the village was constructed in consultations with a group of the oldest residents of the village and members of the GP using participatory rapid appraisal techniques.

For the identification of issues study and mapping of natural resources, road network, traffic volume, water supply facilities, liquid waste management, solid waste management and other infrastructural facilities. Furtherly SWOT type analysis was worked out with help of consultation with the grampanchayat, settlement wise stakeholders.

3. Literature Review

The Integrated Environmental Development Plan is proposed for the next 25 years i.e. upto 2040. In this context population data from 1961 to 2011 was collected from District Statistics Office and tahsil office and population projections have been made. To develop understanding of village, data on various sectors was collected from primary and secondary sources. Adequacy of existing infrastructure to serve present and projected population was assessed. Service levels provided by Grampanchayat and financial ability of Grampanchayat were also assessed by reviewing budgets of Grampanchayat. Gap analysis in terms of infrastructure and services was carried out for current and design stage.

UDPFI, CPHEEO and other relevant norms were used to assess the adequacy of infrastructure and gap analysis. Also studied various existing schemes of state and central government schemes for the rural development [4].

Researching various low cost technologies options for water supply facilities, liquid waste management facilities, solid waste management facilities, road infrastructural facilities from the internet sources on ministry of drinking water and sanitation also refer India sanitation portal.

4. Context Analysis

Mahalung Gram-Panchayat was formed in the year 1952. Prior to the existence as an independent Gram Panchayat, village had adequate water supply facilities as the Nira Right bank canal and Ujanisystem was built during the British raj. The Shree Pandurang sugar factory and Brima distillery were founded in the year 1955. In 1983, Chandrashekhar Aghashe College started. Thus though Village Mahalung is located in drought prone area,

adequate water availability and opportunities for education and employment has always attracted migrants to relocate in Mahalung.

Mahalung is a village located in the Malshirastaluka in Solapur district, 25 km to the west of the town of Malshiras.

It has an area of 3436 Ha. of the total area of the village. The most cultivable land is present Sugarcane and wheat are the main crops cultivated. Some of area acquired by sugar industries, Other land containing residential, roads, nalla and open spaces etc. The breakup of carried of land use specifically according to talathi data afterwards.

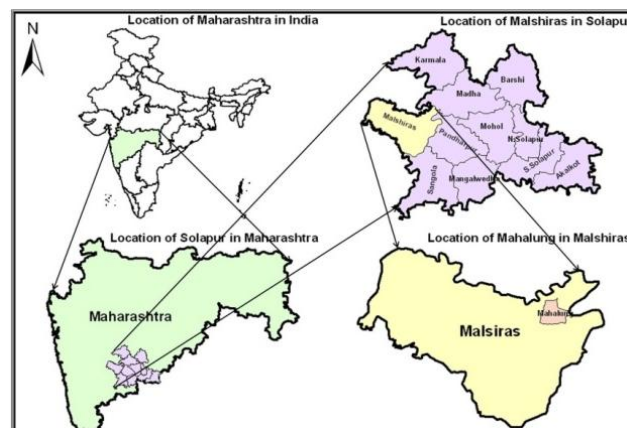


Figure 1: Showing Mahalung Location

Cultivable land amounts around 89 % of the total area of the village; of the total cultivable land 70 % is under cultivation. A small tract of land in Mahalung is occupied by industries.

Mahalung is settled in three big settlements named as Mahalung Gaothan, Shreepur and Dattanagar. Another settlement is located in the scattered region of the village. There are five settlements along with covered area with number of households and population are given in the below table.

Table 1: Details of Settlement wise Habitations

Settlements	Number of HHs	Population
Shreepur	1696	7699
Gaothan	621	2817
Dattanagar Gat No. 2	539	2449
Scattered settlements-Westside	852	3867
Scattered settlements-North-East side	881	4001
Total	4589	20833

Source: Information from GP

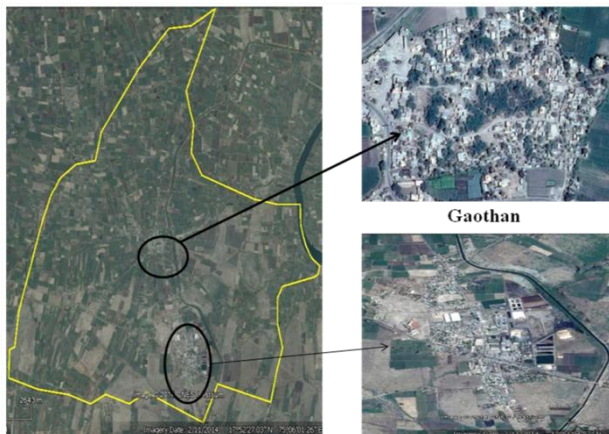


Figure 2: Satellite Image of Mahalung

5. Situation Analysis

A. Demography

To understand the Demographic character of Mahalung; following indicators are taken into account such as Settlement Pattern / Spatial Distribution of Population, Literacy Rate, Male-Female Ratio (Sex Ratio), Population Share - % of Scheduled Cast, Scheduled Tribe and Other, Occupational Pattern, Migration Trend, Decadal Growth and Population Projection.

The decadal growth clearly seen that, Population in Mahalung shows declining trend during 1971 to 1981 but next two decades witnessed considerable increase in population. During last decade population again shows slight decrease [5].

Table 2: Showing Decadal Growth

Year	Population	Decadal Growth %
1951	5593	---
1961	8644	30.51
1971	12728	40.84
1981	15757	30.29
1991	16486	7.29
2001	19983	34.97
2011	20833	8.5

The population projection of Mahalung Shown in following graph

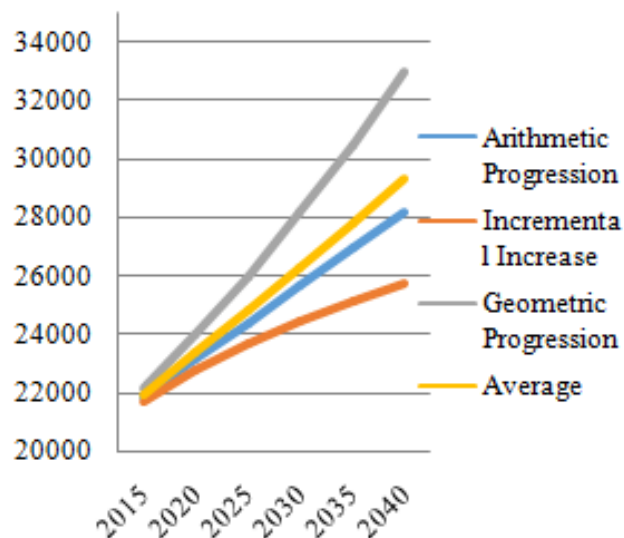


Figure 3: Showing Graph of population forecasting

B. Economic Profile

Mahalung is located in the sugar belt of western Maharashtra; hence, the primary crop is sugarcane. Apart from sugarcane, cereals such as Wheat, Bajra and Jowar are also cultivated. Dominance of milch animals indicates that dairy farming is a growing occupation in Mahalung. The varieties of milch cattle owned in Mahalung range from native Indian breeds to Jersey cows to hybrids of native and foreign breeds. Depending upon agriculture other economic drivers are present in Mahalung. Such as milk cooperatives, sugar factory and at the tertiary level various kinds of shops.

C. Social Infrastructure

The educational facilities are adequate in Mahalung. There are 13 schools, 2 colleges and 24 anganwadis present. Regarding the health facilities one PHC and 20 private clinics and hospitals are present in the Mahalung.

D. Village Infrastructure

1. Road Network

In Mahalung total road network is 100 Km covered all types of roads such as state highway, main BT roads, internal concrete roads and Kaccha roads. Present roads conditions are not good. The Gaothan area and the settlements along the highway have internal roads with width ranging from 3 m to 3.5 m, with the average width being approximately 3.2 m. The internal roads made of BT or concrete are typically 3 – 3.5 m wide.

2. Water Supply Facilities

Presently two water supply schemes and 10 mini water supply schemes with 20 storage tanks are supplying water in different parts of village. In addition to water supply schemes 65 hand pumps are used for water supply purpose. Few scattered settlements use own bore wells and open wells as drinking water sources. Ground water sources in form of dug wells and bore wells is the main

source of water supply. The water supply levels varying from 50-136 lpcd. The total consumption of water in Mahalung 1.46 ML.

3. Natural Resource management

There are 1240 dugwell and 661 bore well in Mahalung. Apart from this Nira Right Bank canal and Ujani canal is major source for water for irrigation in Mahalung. Approximately main canal of 20 km length passes through Northern part of Mahalung.

4. Liquid Waste Management

There is no any treatment on sewage water. Sewage water directly discharged into nalla due to which surface water is polluted. Apart from this partially open drain system present in there are about 22% HHs are covered. Present drainage network in the village includes only open drains. Total length of drainage network is 10.26 km the quantity of waste generated is 1.16 ML.

5. Solid Waste Management

There is no scientific management of solid waste. One vehicle provided by the grampanchayat which collect community garbage bin waste. There are above 50 nos of open dumping spots in different location. Assume per capita waste generation in Mahalung is 300 gm per day, present solid waste generation is 6.25 ton daily. In Mahalung no any provision of house to house collection.

E. Environmental Status

To assess the air quality in village Mahalung air pollution monitoring done. The results are particulate matter pollutants exceed prescribed standards at both the locations and gaseous pollutants are within the limit. Noise levels in the village within the prescribed limit.

To assess the wastewater characteristics in Mahalung village and results compare with CPCB standards, the sewage is not suitable for domestic, irrigation and discharge in natural stream.

6. SWOT Analysis

The strengths of village availability economic drivers, educational facilities along with abundant source of water for drinking and irrigation purpose. The weaknesses are absence of solid and liquid waste management which creates unhygienic conditions. Opportunities' are Mahalung has great potential to develop further as a residential hub and improving village infrastructure. Haphazard and unplanned growth will lead to irreversible environmental degradation, place undue strain on natural resources, and reduce the quality of life.

7. Vision

This section discusses the vision for the village Mahalung for future development and strategies to realize the vision. Mahalung through its evolution has demonstrated its

strength as a Residential and agricultural hub. The establishment of the sugar factory in Mahalung and the irrigation provided by the canal acted as the seed factors for economic development; workers were attracted to Mahalung because of the employment prospects in agriculture in the village itself and in the neighboring villages. Therefore the vision for Mahalung is:

“Ensure a self sufficient sustainable socio-economic growth to develop Mahalung as an Ideal Residential hub with urban amenities and sustainable agricultural development.”

8. Plan

Thus, the plans have evolved mainly to meet out the gaps of infrastructure to serve the present and future population. Therefore, phase-wise plans were prepared. The development control rules to be taken up by the GP for effective execution of plans are defined as policy interventions and incorporated along with the infrastructure plan. The plan for building capacity of the Gram Panchayat and the community to implement the IEDP is also proposed.

Based on the suggestion and recommendations of the GP members revisions were taken up. Sector specific strategic Plans were proposed for attaining the goals and achieving the vision.

These plans mainly include:

- Liquid waste Management Plan
- Solid waste Management Plan
- Water Resources Management Plan
- Sustainable Habitation & Infrastructure Plan
 - Land use plan
 - Roads & Communication
 - Health & Educational Facilities
- Natural Resources Management Plan
- Village Capacity Building Plan

In each plan the specific activities and potential sources of funds are mentioned. The block costs for the proposed interventions have also been worked out and presented in the plan. The actual costs can be worked out during the process of preparation of the detailed project reports for the proposed interventions.

9. Conclusion

As per the census data of last six decades the population of Mahalung is continuously increase and at present population of Mahalung is 20833 which emerging towards growth centre. So Environment preservation and Development cannot be taken into isolation. Hence there is need to plan infrastructure considering Environmental aspects. The Infrastructure sector has both backward and Infrastructure in general and rural infrastructure in particular contributes to economic development both by increasing productivity and by providing amenities which enhance the quality of life.

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Norms and Standards

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