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## RISK ASSESSMENT AND SMART MANAGEMENT OF MANIMANGALAM

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**Abstract:** The development of rural areas in our country is very important. The rural areas support the development of the country from the root. Manimangalam is a village located in Kundrathur taluk of Kanchipuram District in Tamilnadu, this paper tends to study the current level of infrastructure in Manimangalam, to identify the required infrastructure in the area through risk assessment using questionnaire survey and providing the mitigation measures. The mitigation measures also include the various government schemes which support the development of the rural area and help to enhance the standard of living in Manimangalam by improving its economy.

**Keywords – Risk Assessment, Questionnaire survey, Infrastructure.**

### I. INTRODUCTION

Manimangalam is a village located in Kundrathur taluk of Kanchipuram district of Tamilnadu. Size of the village is 110.7 sq. Km with a population of 8198 in which male population were 4117, female population 4081 and children of age 0-6 were 806 as per 2011 census as shown in table 4.1. The nearest railway station to the village is Vandalur and nearest airport is Chennai International Airport. The soil type of Manimangalam village is lateritic soil. The average rainfall in the village located in Kanchipuram district is 1227.7 mm, 54% northeast monsoon and 36% southwest monsoon. The major crop cultivated in the village is paddy. The average maximum and minimum temperature during summer is 36.6°C 21.1°C and during winter is 28.7°C and 19.8°C. Developing the infrastructure facilities in the study area will help to improve the living standards in the area and by providing the required infrastructures the economy of the study area will also develop.

### II. RISK ASSESSMENT AND SMART MANAGEMENT

The Project Management Body of Knowledge (PMBOK) defines a risk as an unforeseen circumstance that, if it materializes, may have a favorable or unfavorable impact on the project's objectives. The PMBOK also includes a set of guidelines for creating a risk management plan, which includes identifying risks, performing qualitative and quantitative analysis, planning risk mitigation, and finally controlling risks. In order to monitor and control the risks more readily, an active risk management plan should be implemented as soon as the hazards are identified. Risk identification, risk analysis, and risk evaluation are all parts of risk assessment.

#### RISK ANALYSIS PROCEDURE

Risk analysis is the process of classifying the potential problems involved in a project and also it identifying the severity of the risk. The following steps make up the risk analysis process:

STEP1: Obtain input from the departmental leader and local organizations for a risk assessment survey. This is helpful to determine the risk that exists in each area.

STEP2: Determine and list the risks based on the results of the risk assessment survey.

STEP3: Gather primary data via a questionnaire survey after determining the prospective variable.

STEP4: Utilize the Risk Scoring Matrix and the Risk Severity Index to analyze the detected risk (RSI).





STEP5: Risk analysis uses the probability or consequence method.

STEP6: Rank should be provided based on the RSI value of the indicated variable.

## RISK ANALYSIS STRATEGY

Examine in particular the processes and situations that can harm people. Calculate the likelihood of a threat occurring as well as the severity of the consequences. Determine the steps that the company should take to monitor the threat or to minimise such risks. Understanding the connection between risks and hazards is crucial. A hazard is anything that has the potential to cause harm. Examples include workplace accidents, unexpected events, dangerous substances, employee conflicts, stress, and much more. The probability that the risk will result in damage is the second aspect of the risk. One must both identify risks and assess the likelihood or danger of those risks occurring as part of their risk management plan.

**Table1: Risk Scoring Matrixes**

Probability of Risk		Grade of Extremity				
		Very Low (1)	Low (2)	Medium(3)	High (4)	Very high (5)
Critically Needed	(5)	5	10	15	20	25
Majorly needed	(4)	4	8	12	16	20
Moderately needed	(3)	3	6	9	12	15
Needed	(2)	2	4	6	8	10
Not much needed	(1)	1	2	3	4	5
Grade of Extremity		Mitigation Actions				
Critical Risk		Give intense focus, and taking immediate action to eliminate the risk was necessary.				
Major Risk		To lower the danger, a certain action must be taken.				
Moderate Risk		Unwanted risk requires a cyclical review to lower risk.				
Minor Risk		with cyclic check, acceptable				

As per Table 1 first the total risk score is found and then the Risk Severity Index RSI is found by total score divided by total number of respondents 100. The total score and RSI are calculated for all the indicators individually and then the indicators are ranked based on its RSI value. Higher the RSI value the importance of the indicator is also high. The risks are ranked from 1 to 15.

**Table:2 Example of Questionnaire Survey**

Sl No	Indicators	Probability of Risks (A) low to high					Consequence of Risks (B) low to high				
		1	2	3	4	5	1	2	3	4	5
1	Need for safe drinking water										
2	Need for proper drainage system										
3	Need for health centres										
4	Need for better roads										
5	Need for education centres										
6	Need for garbage bins on streets										
7	Need for quality houses										
8	Need for proper waste disposal										
9	Need for better irrigation practices										
10	Need for Wi-Fi facility										
11	Need for computer centres										
12	Need for warehouses for agricultural products										
13	Need for street lights										
14	Need for veterinary hospitals										
15	Need for job opportunities										
Suggestions :						Respondent's signature:					

**RISK IDENTIFICATION IN MANIMANGALAM**

The risks involved in the Manimangalam village were identified using the risk identification process from the questionnaire survey. The questionnaire survey results are elaborated in the table 3.

**TABLE 3: Results of Questionnaire survey**

Sl no	Indicators	Grade of Extremity					Total score	RSI	Risk
		Critically Needed 5	Majorly needed 4	Moderately needed 3	Needed 2	Not much needed 1			
1	Need for safe drinking water	15	28	30	25	2	329	3.29	10
2	Need for proper drainage system	89	1	7	2	1	475	4.75	4
3	Need for health centers	93	4	3	0	0	490	4.9	1
4	Need for better roads	92	2	3	1	1	480	4.8	3
5	Need for education centers	93	1	2	4	0	483	4.83	2
6	Need for garbage bins on streets	12	12	54	22	0	314	3.14	11
7	Need for quality houses	15	28	30	25	2	329	3.29	10
8	Need for proper waste disposal	10	18	46	22	4	263	2.63	14
9	Need for better irrigation practices	0	13	17	25	45	198	1.98	15
10	Need for Wi-Fi facility	14	28	40	17	1	337	3.37	8
11	Need for computer centers	15	39	26	19	1	348	3.48	7
12	Need for warehouse for agricultural products	40	27	20	13	0	394	3.94	5
13	Need for street lights	11	14	45	27	3	303	3.03	13
14	Need for veterinary hospital	31	21	24	21	3	356	3.56	6
15	Need for job opportunities	11	26	45	18	0	330	3.3	9

From the Table3 the required infrastructures are found for the Manimangalam study area.

## OUTCOME OF QUESTIONNAIRE SURVEY

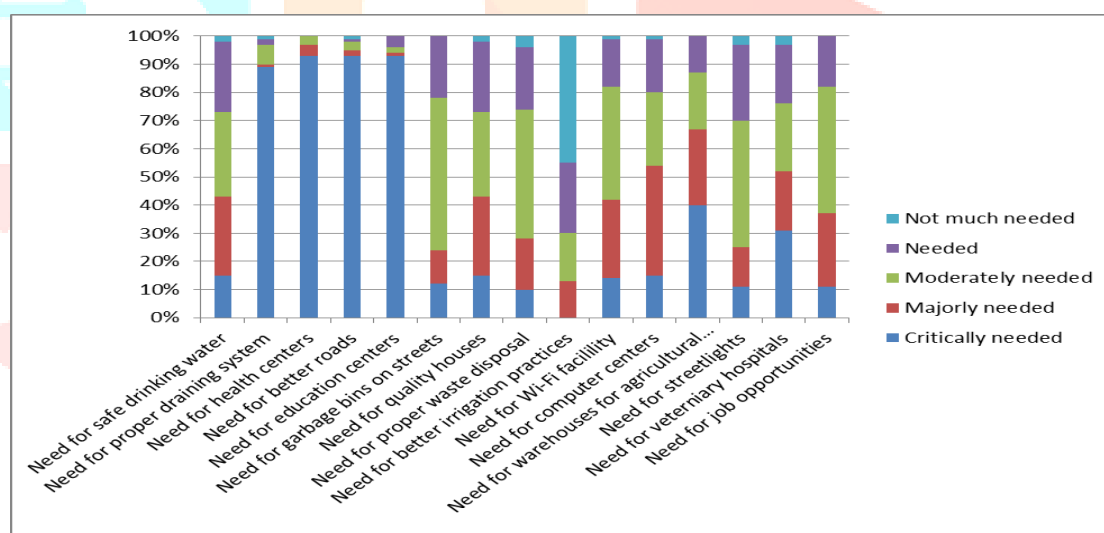
The outcome of the questionnaire survey describes the needs of Manimangalam population and effects of infrastructure present in the area and also the future infrastructure needs of the Manimangalam population.

Table 4 explains outcome of questionnaire survey

**Table:4 Outcome of Questionnaire survey**

INDICATOR	RANKING
Need for health centres	1
Need for education centres	2
Need for better roads	3
Need for proper draining system	4
Need for Warehouses for agricultural products	5
Need for veterinary hospitals	6
Need for computer centres	7
Need for Wi-Fi facility	8
Need for job opportunities	9
Need for safe drinking water	10
Need for garbage bins on streets	11
Need for quality houses	12
Need for streetlights	13
Need for proper waste disposal	14
Need for better irrigation practices	15

From table4 it can be understood that the urgent needs of the Manimangalam population is health Centre (hospital), education Centre (higher secondary school), better road facilities, proper drainage facility and agricultural warehouse.



**Figure1: Outcome of Questionnaire Survey**

## MITIGATION MEASURES AND GOVERNMENT SCHEMES

The report suggests that the provision of efficient infrastructure amenities needed for the study area is a solution to the problems addressed by insufficient infrastructure. Taking into account this factor, the following measures are suggested as a means of creating a better semi urban society. As per the MNRGA-Mahatma Gandhi National Rural Employment Guarantee Act (2006), the residents of Manimangalam are guaranteed 100 days of work throughout the construction and operation of each of the facilities mentioned in this report. This work also shows the cost of building for the required infrastructure in the Manimangalam study area and also funds supporting these requirements by local population. Also, Non-Governmental Organization, Panchayat Raj Institution, Self-help Group may borrow from local banks linked to the (NBARD) National Bank for Agriculture and Rural Development program under RIDF for the development and maintenance of infrastructures in the study area. This inspires the residents of the study area to re-energize their abilities and turn their chances into achievement and helps to improve their lifestyles. The central and state government has implemented various schemes which help to develop the study area and by developing the required infrastructure in the study area the, economy of the Manimangalam village will improve and helps the residents to live peacefully.

**Table5: Mitigation Measure and Government Schemes For Funding**

SI No	Indicators	Measures	Schemes
1	Need for health centre	Construction of hospital with good facilities and services	Construction of primary health care centre under <b>Member of Legislative Assembly Constituency Development Scheme (MLACDS) (or) Self Sufficiency Scheme (SSS)</b>
2	Need for education centre	Construction of higher secondary school	Construction of education centre under <b>Rashtriya Madhyamik Shiksha Abhiyan (RMSA) Member Of Legislative Assembly Constituency Development Scheme (MLACDS) (Or) Self Sufficiency Scheme (SSS)</b>
3	Need for efficient drainage	Construction of storm water drains	Under <b>Tamil Nadu Water Supply and Drainage Board Scheme</b> planning a suitable drainage facility to Manimangalam
4	Lack of proper roads	Construction of Roads	Planning and construction of proper road facility under the scheme <b>Pradhan Mantri Gram Sadak Yojana (PMGSY)</b>
5	Lack of agriculture products storage warehouse	Construction and maintenance of agricultural warehouse is required	Construction of warehouse under <b>Gramin Bhandaran Yojana (GBY) scheme</b>
6	Need for veterinary hospitals	Proper veterinary hospital is required	Construction of veterinary clinic <b>Member of Legislative Assembly Constituency Development Scheme (MLACDS) or Dairy Entrepreneurship Development Scheme (DEDS)</b>
7	Need for computer centres	The youth of the village should be educated about the importance of computer education	Computer education can be provided to youth under the <b>Prime Minister's Gramin Digital Saksharta Abhiyaan (PMGDISHA) SCHEME</b>
8	Need for Wi-Fi facility	Wi-Fi facilities should be provided to promote E-Learning in the study area	Wi-Fi facilities shall be provided under the <b>Prime Minister Wani Yojana Wi-Fi (PM Wi-Fi Access Network Interface Scheme)</b>

9	Need for job opportunities	The youth of the village should be encouraged in entrepreneurship	Employment opportunities shall be provided under <b>Prime Minister's ROJGAR Yojana , Rural Employment Generation Program, Deendayal Antyodaya Yojana-National Urban Livelihoods Mission(DAY-NULM)&amp; Skill Development For Minorities</b>
10	Need for safe drinking water	The water supply line should be maintained periodically and illegal connections should be checked	New connections shall be provided under the <b>TWAD (Tamilnadu Water Supply And Drainage Board)</b> and also under the newly formed <b>Ministry Of Jal Shakti or Self Sufficiency Scheme</b>
11	Need for garbage bins on streets	Garbage bins should be provided in every streets of the study area	Garbage bins should be provided under the <b>Swachh Bharat Mission 2.0 (GRAMEEN)</b>
12	Need for quality houses	Homeless people should be selected and land should be allocated for them	Houses shall be provided under the <b>chief minister greenhouse scheme</b>
13	Need for streetlights	The streetlights should be frequently maintained	Streetlights should be provided as per the <b>URDPFI</b> guidelines and under the " <b>Prakash Path</b> " <b>Street Lighting National Program</b>
14	Need for proper waste disposal	People in the study area should be educated about the difference between the degradable and non-degradable wastes	Under <b>Swachh Bharat Mission 2.0 (Grameen)</b> provide proper waste disposal facility
15	Need for better irrigation practices	Frequent maintenance should be done	Frequent maintenance should be done under <b>Pradhan Mantri Krishi Sinchai Yojana -PMKSY</b>

## CONCLUSION:

The risk assessment and management strategy approach is used to identify infrastructure facilities in the region that pose a higher risk. The planned village's prospective indicators were framed using a questionnaire survey.

- In the Manimangalam village out of the 15 indicators identified, the need for healthcare centre ( primary hospital) had the higher risk, followed by the need for education centre ( higher secondary school), agricultural warehouse, need for better roads and proper drainage system.
- These indicators require an instant focus and the infrastructures should be provided immediately.
- The critically needed infrastructure facilities are to be provided at a cost of 7.03 crores so that the residents of Manimangalam can live more happily and implementing these infrastructures will help to develop the economy of the Manimangalam area.



- The majorly needed, moderately needed, needed and not much needed infrastructure stands as the risk which has the tendency to become a critically needed risk which also requires attention and should be treated.
- The infrastructures which are to be implemented and existing infrastructures should be periodically maintained so that these infrastructures will help to ameliorate the standard of living in the Manimangalam village.
- The cost of the mitigation measures and its scheduling is given in the table 6.

**Table6: Infrastructure Facilities in Enhancing the Manimangalam Village**

Sl. No	Infrastructure Required	Funding Scheme	Cost For Implementing The Infrastructure	Scheduling For The Infrastructure
1	Hospital	Member of Legislative Assembly Constituency Development Scheme	81,07,328 lakhs	180 days
2	Higher secondary school	Member of Legislative Assembly Constituency Development Scheme	1,50,25,054 crores	195 days
3	Agricultural warehouse	Gramin Bhandaran Yojana (GBY) scheme	38,00,942 lakhs	105 days
4	Better Roads	Pradhan Mantri Gram Sadak Yojana (PMGSY) scheme	2,25,50,870 crores	110 days
5	Proper Drainage Facility	Tamil Nadu Water Supply and Drainage Board Scheme planning	2,09,06,614 crores	150 days

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