



# International Journal of Research Publication and Reviews

Journal homepage: [www.ijrpr.com](http://www.ijrpr.com) ISSN 2582-7421

## Sustainable Village Development for – Wategoan, Tal. Walwa, Dist. Sangli.

**Mr.P. A. Karande, Sanidhya Vijay Waingade, Om Shashikant More, Harshwardhan Shashikant Patil, Om Prashant Malgave, Akash Jagdish Sharma**

Professor, Student, Department of Civil Engineering, Rajarambapu Institute of Technology, Rajaramnagar.

### ABSTRACT:

This project presents a comprehensive development model for the sustainable redevelopment of Wategaon village, focusing on agriculture, energy, water resources, sanitation, and economic upliftment. Based on extensive surveys and analysis, the model integrates modern technologies like solar energy systems and rainwater harvesting with traditional practices to improve quality of life and promote self-sufficiency. The proposed solutions are designed to address the challenges of limited water supply, poor road conditions, energy shortages, and insufficient economic opportunities, thereby enhancing rural living standards.

**Keyword:-** Sustainable Development, Rainwater Harvesting, Solar Energy, Self-Sustainability, Rural Infrastructure, Small-Scale Industries

### I. INTRODUCTION

India is a country with a large rural population. According to the 2011 census, there are around 597,608 villages, where about 70% of the population lives. Many of these villages lack basic facilities such as good roads, proper drainage, quality drinking water, consistent electricity, and good healthcare. Due to poor infrastructure, villagers face problems like waterborne diseases, low agricultural productivity, and unemployment.

Sustainable development is about meeting present needs without harming the ability of future generations to meet their own. It includes balancing economic growth, environmental protection, and social well-being. A self-sustainable village aims to use local resources effectively and independently to meet its own needs in areas like water, energy, food, education, and employment.

In this project, Wategaon village has been selected for planning a self-sustainable development model. The goal is to improve the village in a way that supports agriculture, promotes small-scale industries, uses renewable energy like solar power, and conserves water through methods such as rainwater harvesting. This will also involve studying the current problems of the village, collecting data, and designing solutions to address those issues.

The project focuses on identifying key problems in the village and preparing a model plan for development. Major areas of focus include cropping patterns, water and wastewater management, energy supply, and economic activities. The final report will provide a detailed development plan that can help the village become more self-reliant and improve the quality of life for its residents.

### II. VISIT PHOTOGRAPHS





### III. MODULE IDENTIFICATION

The sustainable development model for Wategaon is divided into key modules:

1. Agriculture Revamp
2. Solar Energy System
3. Rainwater Harvesting
4. Waste and Sanitation Management
5. Small-Scale Industries Development
6. Village Survey & Data Mapping

### IV. SCOPE

This report focuses on the preparation of a self-sustainable redevelopment plan for Wategaon village. It includes detailed study and implementation strategies in the fields of water, energy, agriculture, and local economy with the aim of improving overall living conditions and reducing dependency on external systems.

---

## V. PROPOSED SYSTEM

1. Agricultural Development – Redesign cropping patterns to cover food requirements using 477.07 hectares.
2. Energy System – Solar-MSEB hybrid model for 4534 households, requiring approx. Rs. 1,01,500 per household.
3. Water Management – Rainwater harvesting system for every household; 299,200 L/year capacity.
4. Waste Management – Septic tank systems and improved drainage layout.
5. Industry Planning – Encourage sugar, paper, and agro-based micro-enterprises.
6. Educational & Healthcare Improvements – Leverage existing institutions, no new schools needed.
7. Monitoring Dashboard – Integration of all data for continuous monitoring and feedback.

---

## VI. RESULT

Self-sustaining agricultural production was achieved by utilizing ~477 hectares.

Solar power system design supports 20.2 MW monthly energy needs.

Each family can harvest 299,200 liters of rainwater per year—sufficient for domestic needs.

Economic analysis showed feasibility for solar and agro-based industry investments.

Market analysis guided reallocation and reduction of excess businesses like meat shops.

---

## VII. CONCLUSION

The sustainable village development plan for Wategaon demonstrates that with targeted interventions in agriculture, energy, water, and micro-economies, rural communities can achieve self-sufficiency. This model, based on scientific analysis and community data, is scalable and can be adapted to similar rural contexts in India. Future enhancements include integrating smart sensors and AI-based monitoring for real-time planning and sustainability.

---

## REFERENCES

1. Dr. Pramod Shrivastava, Mrs. Ravneet Kaur, Prof. Reetu Trivedi (2014). "Impact of PURA on rural marketing in India with special reference to Jhabua" – *Altus Shodh Journal of Management and Commerce*.
2. Gerrit-Jan Knaap, Arnab Chakraborty (2007). "Comprehensive Planning for Sustainable Rural Development" – *Journal of Regional Analysis and Planning*, University of Maryland.
3. James Ehrlich (2015). "Regen Villages – Integrated village designs for thriving regenerative communities" – Brief for GSDR.
4. Jonathan M. Harris (2003). "Sustainability and Sustainable Development" – *Internet Encyclopedia of Ecological Economics*.
5. Padhye P. R. (2016). "Self Sustainable Township Planning" – *International Journal of Engineering Research*, Volume 5.