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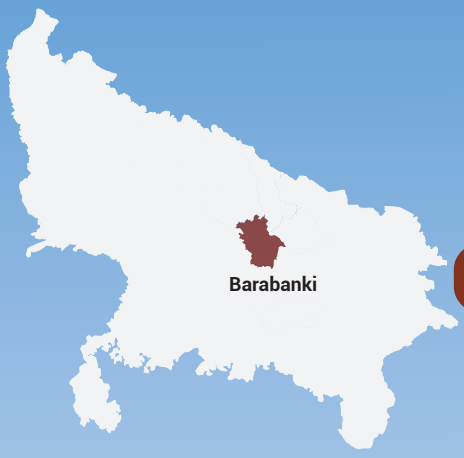

CLIMATE SMART GRAM PANCHAYAT ACTION PLAN

ALLAPUR RANIMAU GRAM PANCHAYAT

Department of Environment, Forest and Climate Change
Government of Uttar Pradesh

VASUDHA FOUNDATION
Green ways for a good earth!

CLIMATE SMART GRAM PANCHAYAT
ACTION PLAN

Allapur Ranimau Gram Panchayat

Department of Environment, Forest and Climate Change

Government of Uttar Pradesh

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–: संदेश :–

ग्राम पंचायतों को जलवायु सजग ग्राम पंचायत बनाने हेतु समर्पित क्लाइमेट स्मार्ट **ग्राम पंचायत अल्लापुर रानीमऊ, विकास खण्ड रामनगर, जनपद बाराबंकी** की कार्ययोजना हेतु संदेश लिखते हुए मुझे बहुत सम्मान का अनुभव हो रहा है। जैसा कि हम जलवायु परिवर्तन से उत्पन्न चुनौतियों को देख रहे हैं, हमारे लिये ज़मीनी स्तर पर तत्काल और व्यापक कार्यवाही किये जाने की आवश्यकता है। हमारी ग्राम पंचायतें, समुदाय के निकटतम शासन की एक आवश्यक इकाई होने के नाते जलवायु संबंधी चुनौतियों को कम करने और सतत् विकास को बढावा देने में महत्वपूर्ण भूमिका निभा सकती है। हमारे समुदाय, हमारा पारिस्थितिकी तंत्र और हमारी अर्थव्यवस्था सब आपस में जुडे है और हमारे लिये ऐसी रणनीतियों को अपनाना आवश्यक है जो जलवायु से जुडे जोखिमों को कम करती हों।

ग्राम पंचायतों हेतु तैयार यह कार्ययोजना जलवायु पर कार्य करने के प्रति हमारी प्रतिबद्धता है जो पंचायत को क्लाइमेट स्मार्ट पंचायत बनाने के लिये एक मार्गदर्शक के रूप में कार्य करेगी।

मैं इस क्लाइमेट स्मार्ट कार्ययोजना निर्माण के लिये **पर्यावरण, वन एवं जलवायु परिवर्तन विभाग, उत्तर प्रदेश,** तकनीकी सहयोगी **वसुधा फाउंडेशन, नई दिल्ली** को धन्यवाद करता हूँ और आशा करता हूँ कि निर्मित कार्ययोजना ग्राम पंचायत को क्लाइमेट स्मार्ट ग्राम पंचायत बनने में सहयोगी होगी।

धन्यवाद !

(सत्येन्द्र कुमार)
जिलाधिकारी,
बाराबंकी।

अन्ना सुदन
मुख्य विकास अधिकारी
जनपद बाराबंकी

दिनांकः–.....

संदेश

मैं क्लाइमेट स्मार्ट ग्राम पंचायत योजना विकसित करने में **पर्यावरण, वन एवं जलवायु परिवर्तन विभाग, उत्तर प्रदेश, तकनीकी सहयोगी वसुधा फाउंडेशन, नई दिल्ली उ0प्र0** के समर्पित प्रयासों के लिये हार्दिक आभार व्यक्त करता हूँ।

जिस प्रकार हम और हमारी ग्राम पंचायतें जलवायु परिवर्तन से उत्पन्न चुनौतियों का सामना कर रही है उसमें यह कार्ययोजना सहयोगी होगी। स्मार्ट और टिकाऊ प्रथाओं को बढावा देकर हमारा लक्ष्य एक ऐसा मॉडल तैयार करना है जो न केवल हमारी पर्यावरण की रक्षा करे बल्कि समुदाय के समग्र कल्याण को भी बढ़ाये।

यह कार्ययोजना हमारी ग्राम पंचायत में संवाद, सहयोग और क्रियान्वयन को प्रेरित करे। साथ मिलकर हम प्रभावी जलवायु नीतियों को लागू कर सकते है, स्थायी लक्ष्यों को अपना सकते हैं और एक ऐसे भविष्य का निर्माण कर सकते है जो न केवल पर्यावरणीय रूप से मज़बूत हो बल्कि सामाजिक रूप में भी न्यायसंगत हो।

एक बार फिर क्लाइमेट स्मार्ट कार्ययोजना तैयार करने में अमूल्य योगदान के लिये आप सभी को धन्यवाद। हम योजना के सफल कार्यान्वयन और समुदाय एवं पर्यावरण पर इसके सकारात्मक प्रभाव की आशा करते हैं।

धन्यवाद !

(अन्ना सुदन)
मुख्य विकास अधिकारी,
जनपद बाराबंकी

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सर्वप्रथम आप सभी को प्रधान, ग्राम पंचायत अल्लापुर रानीमऊ, विकास खण्ड रामनगर जनपद बाराबंकी की ओर से सादर नमस्कार और अभिनंदन। मुझे आशा ही नहीं पूर्ण विश्वास है कि आप सभी स्वस्थ होंगे, मैं अपनी ग्राम पंचायत को क्लाइमेट स्मार्ट ग्राम पंचायत बनाने की ओर बढ़ाये गये प्रथम कदम / प्रयास को आपसे साझा करते हुए गर्व की अनुभूति कर रही हूँ।

जलवायु परिवर्तन से उत्पन्न चुनौतियां हर दिन अधिक स्पष्ट होती जा रही है, हमारे समुदाय और भावी पीढ़ियों की भलाई के लिये उन पर कार्य करना हमारी सामूहिक जिम्मेदारी है। इस विषय की गम्भीरता को समझते हुए सभी ग्रामवासियों की सर्वसहमति से हमने अपनी ग्राम पंचायत को क्लाइमेट स्मार्ट ग्राम पंचायत बनाने की प्रक्रिया को प्रारम्भ किया। सर्वप्रथम आवश्यक था ग्राम पंचायत में जलवायु परिवर्तन संबंधी समस्याओं और मुद्दों की पहचान करना जिसके लिये सामुदायिक सहभागिता के साथ ग्राम सभा की बैठक एवं समूह केन्द्रित चर्चा के आयोजन के अतिरिक्त व्यक्तिगत चर्चा की गयी और आंकड़ों को एकत्र किया गया। आंकडे एकत्र करने की प्रक्रिया को पंचायत में क्रियान्वित करने के लिये बसुधा फाउण्डेशन नई दिल्ली का तथा आंकड़ें एकत्र करने में हमारे सभी ग्रामवासियों के समर्थन और सक्रिय भागीदारी के लिये हृदय से धन्यवाद।

हम सभी साथ मिलकर हमारी पंचायत में एक पर्यावरण अनुकूल वातावरण बनायेंगे जो न केवल हमारे प्राकृतिक संसाधनों की रक्षा करेगा अपितु प्रत्येक ग्रामीण के जीवन की समग्र गुणवत्ता को भी बढ़ायेगा।

इसके साथ ही मैं पर्यावरण, वन एवं जलवायु परिवर्तन विभाग, उत्तर प्रदेश और तकनीकी सहयोगी पार्टनर वसुधा फाउंडेशन, नई दिल्ली, की आभारी हूँ जिन्होंने एकत्र किये गये आंकड़ों को कार्ययोजना का स्वरूप दिया तथा मार्गदर्शन एवं तकनीकी सहयोग प्रदान किया।

मैं सभी ग्रामवासियों से अपनी पंचायत को क्लाइमेट स्मार्ट ग्राम पंचायत बनाने के लिये हाथ मिलाकर आगे बढ़ने का आग्रह करती हूँ। आइये हम सभी एक सकारात्मक बदलाव की ओर आगे बढ़े और दूसरों के लिये उदाहरण स्थापित करें।

धन्यवाद !

अर्चना शर्मा

(अर्चना शर्मा)
प्रधान
ग्राम पंचायत अल्लापुर रानीमऊ

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1 Executive Summary

The Allapur Ranimau Panchayat in the District of Barabanki lies under the Eastern Plain Zone agro-climatic zone of Uttar Pradesh. The Climate Smart Gram Panchayat Action Plan of Allapur Ranimau has been prepared with an aim to strengthen climate action at the Gram Panchayat (GP) level and make it climate smart/resilient by 2035. The action plan provides a GP-specific roadmap to aid in building resilience, enhancing adaptive capacity, reducing vulnerabilities, and associated risks as well as mitigating greenhouse gas emissions, while reaping other co-benefits like, additional revenue generation, overall socio-economic development, improved health, and natural resource management.

The action plan has been prepared by adopting the draft Standard Operating Procedure (SOP) for Development of Climate Smart Gram Panchayat Action Plans prepared by the Department of Environment, Forests and Climate Change, Government of Uttar Pradesh. The Climate Smart Gram Panchayat Action Plan (CSGPAP) for Allapur Ranimau is formulated in a manner that it can be easily and effectively integrated with the existing Gram Panchayat Development Plan (GPDP) of Allapur Ranimau.

The action plan captures the key demographic and socio-economic aspects, key issues pertaining to the Eastern Plain agro-climatic zone, climate variability, carbon footprint analysis of the GP, and the current status of natural resources. The action plan also includes inputs from the community members of Allapur Ranimau GP, gathered through field surveys, focused group discussion, relevant government departments and agencies. This helped in building a baseline and identifying key issues of Allapur Ranimau GP.

The GP has 1 revenue villages and 4 hamlets and 440 households with a total population of 3,829[1] as reported during field surveys. The main economic activity of the GP is agriculture. A baseline assessment shows that Allapur Ranimau GP has a carbon footprint of ~ 1,725 tCO_2e.

Approach

Development of primary survey tool

Survey & primary data collection: Survey was carried out with support from Gram Pradhan and community members. Participatory Rural Appraisal (PRA) activities included Focus Group Discussions (FGDs) with residents and community members, transect walks, development of social resource map etc.

Data analyses & plan development:

- ***Development of GP profile:*** A detailed GP profile was developed based on the responses received on the Survey Questionnaire. This profile includes demographics, climate variability, key economic activities, natural resources, and amenities of Allapur Ranimau.
- ***Identification of key issues:*** An exhaustive list of key developmental & environmental issues was identified through responses received in Survey Questionnaire
- ***Carbon footprint estimation:*** Carbon footprint was estimated for key activities* in Allapur Ranimau.
- ***Proposed recommendations:*** Recommendations were developed for Allapur Ranimau based on the environmental and climatic issues. These recommendations also take into account the prevailing agro-climatic characteristics of Eastern Plain Zone. Additionally, sector-wise adaptation needs & mitigation potential of Allapur Ranimau have been determined

A participatory approach was followed throughout the development of the action plan. This will result in enhancing the capacity of the community for climate leadership while fostering a sense of ownership and accountability at the local level.

* Activities include- Electricity consumption, residential cooking, emissions arising from diesel pump usage, transport, crop residue burning, livestock emissions, fertiliser emissions, rice cultivation & domestic wastewater.

1 Census 2011 data notes: Total Population- 2,229

A few priority areas for immediate action identified in Allapur Ranimau GP are:

- Establishing an effective waste management system and enhancing sanitation practices.
- Strengthen the agriculture sector by implementing sustainable practices like micro-irrigation, agroforestry, and natural farming techniques.
- Harnessing Renewable Energy (RE) and promoting energy efficiency through solar rooftop installations, solar-powered pumps, and energy efficient fixtures in households, and public utilities amongst others.
- Implementing measures such as improving green cover, and revitalising current water sources with community participatory management.
- Diversifying livelihood options and creating opportunities for green jobs.

Taking into account the vulnerable sectors, issues emerging from focus group discussions, field surveys, and ongoing activities in the GP, the recommendations have been proposed. The recommendations cover the thematic areas of agriculture, water, clean energy, enhancing green spaces, sustainable waste management, sustainable mobility, and enhanced livelihoods and green entrepreneurship.

The activities under these recommendations have been divided into 3 phases- Phase I (2024-2027), Phase II (2027-2030) & Phase III (2030-2035). The phase-wise targets can further be distributed into annual targets as per the discretion of the Gram Panchayats. Moreover, the financing avenues for the suggested activities have been indicated along with phase-wise targets, estimated costs, and supporting Central and State Schemes.

The Climate Smart Gram Panchayat Action Plan (CSGPAP) for Allapur Ranimau is formulated in a manner that it can be easily and effectively integrated with the existing Gram Panchayat Development Plan (GPDP) of Allapur Ranimau GP.

CSGPAP will supplement and complement the Allapur Ranimau GPDP by:

a. Broad-basing existing development initiatives and activities with a climate perspective

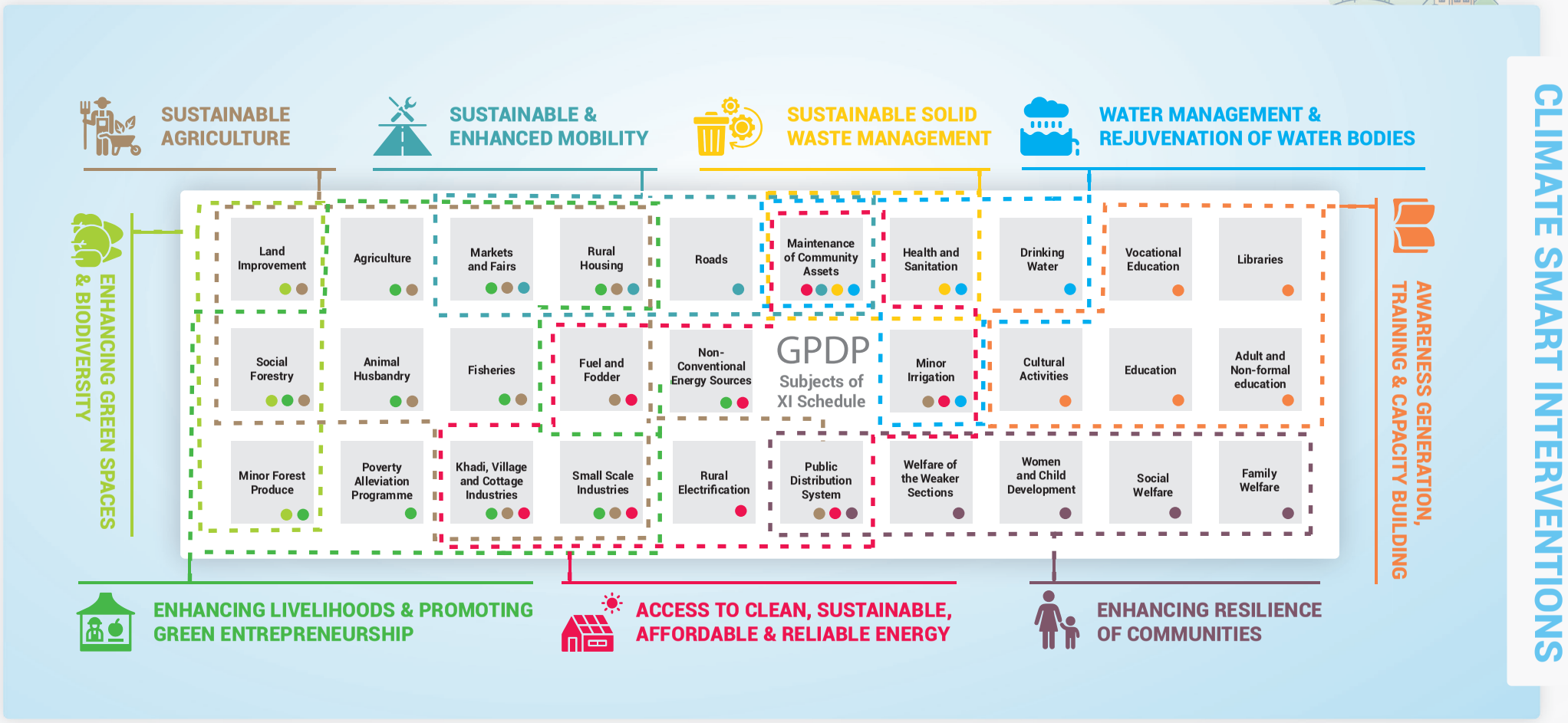
b. Dovetailing ongoing national and state programmes on climate change with the proposed development activities in the GPDP

The interventions and annual targets under this action plan can be implemented in convergence with the planned activities of the Allapur Ranimau GPDP. The existing budgetary allocations earmarked for certain programs under the GPDP can be used for climate adaptation and mitigation activities proposed in this plan. For example, water body rejuvenation carried out through schemes like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) will have climate change adaptation benefits as well. Similarly, funds earmarked under the "non-conventional energy" subject of the Eleventh Schedule (basis of GPDP) can be utilised to scale up renewable energy deployment.

The total emissions avoided/mitigated through implementation of this plan is estimated to be over 1,618 tonnes of carbon dioxide equivalent (tCO_2e) per annum and the sequestration potential goes up to 49,800 tCO_2 over the next 20-25 years. The total cost estimated for the implementation of this plan across the three phases is approximately ₹26 crores (for 11 years), comprising of community investment, public finance, private finance and potential CSR funding. From this, 30-35 percent (approximately ₹9 crores) of the required funding can be availed from Central and State Schemes/ Missions/Programmes, while the remaining cost can be secured from CSR and private funds. The Government of Uttar Pradesh has adopted an innovative approach of 'Panchayat-Private-Partnership' to engage CSRs and mobilize private finance.

Climate Smart and Sustainable Gram Panchayats by 2035

Mainstreaming Climate Action with Development



2 Gram Panchayat Profile

Allapur Ranimau

Allapur Ranimau Panchayat at a Glance*

Location	Ramnagar Block, Barabanki District
Total Area[2]	212.11 ha
Composition	1 Revenue Village 4 Hamlets
Total Population[3]	3,829
No. of Males	2,059
No. of Females	1,770
Total Households	440
Panchayat Infrastructure	5 (Panchayat Bhawan, 2 Primary Schools, Fertilizer and Seed Centre and Anganwadi Centre)
Primary Economic Activity	Agriculture
Land-Use[4]	~170 ha Agriculture Land ~ 3.20 ha Common Land

Water Resources

13 Ponds
1 Amrit Sarovar
15 Wells

Agro-Climatic Zone[5]

Eastern Plain Zone

- Climatic Conditions: Hot summers, cold winters, and moderate rainfall
- Maximum Temperature: 41.4 °C
- Minimum Temperature: 5.7 °C
- Annual Rainfall: 803 mm
- Soil Type: Alluvial, sodic and diara soil

Composite Vulnerability Index (CVI) of District[6]

Low

Sectoral Vulnerability of District

- Water Vulnerability: Low
- Energy Vulnerability: Very high
- Health Vulnerability: Moderate
- Agriculture Vulnerability: Low
- Disaster Management Vulnerability: High
- Forest Vulnerability: Moderate
- Rural Vulnerability: High

* Data from Field Survey conducted for preparation of the Plan (February,2023)

2 Data from BHUVAN indicates that the area of GP is 2.12 km^2. Available at https://bhuvanpanchayat.nrsc.gov.in/index.html

3 Census 2011 data notes: Total Population- 2,229; Male- 1,159; Female-1,070

4 As per the inputs received from the Gram Pradhan

5 UP Department of Agriculture

6 UP SAPCC 2.0

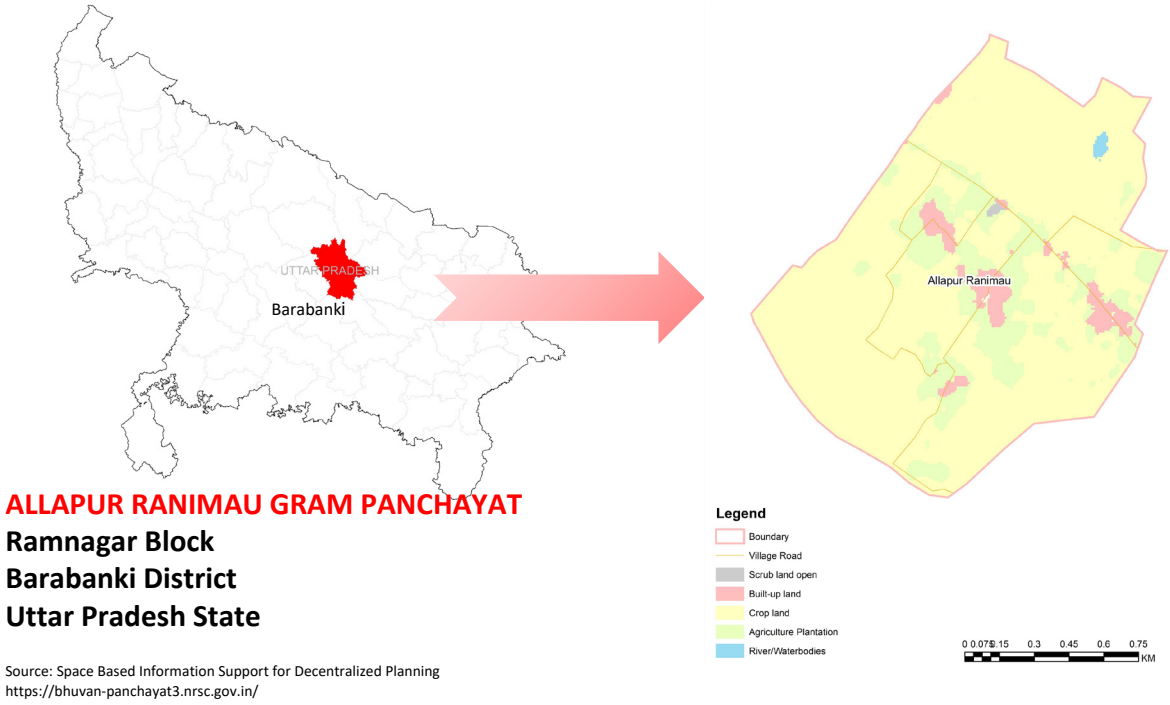


Figure 1: Land-use map of Allapur Ranimau Panchayat, Barabanki District

Climate Variability Profile

The climate variability data (temperature and rainfall) received from the India Meteorological Department (IMD)[7] indicates that there has been no significant change in annual average maximum and minimum temperature in the region (Bahraich district) between 1991 and 2020 (see Figure 2). During the same timeframe, annual rainfall increased slightly which most likely implies more intense rainfall in fewer days (see Figure 3). However, the IMD data does not capture granular temperature variability at the Panchayat level and further, there are days for which data was not available.

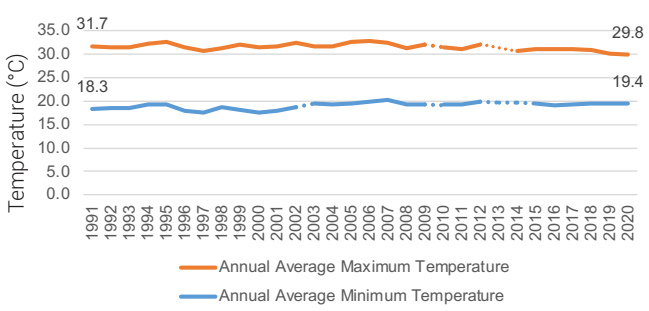


Figure 2: Annual average maximum and minimum temperature (°C) in Allapur Ranimau, 1991-2020

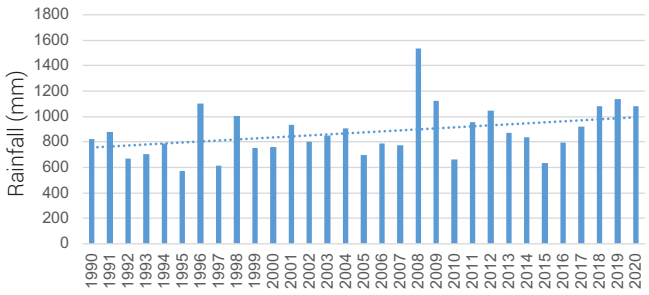


Figure 3: Annual rainfall (mm) in Allapur Ranimau, 1991-2020

A recent report by World Meteorological Organization, indicates that Asia as a whole has warmed faster than the global land and ocean average between 1991 to 2023 and there has been an evident surge in warm days across large parts of South Asia in the decade of 2010-2020[8]. Similar findings are also confirmed by IPCC[9], and MoES, Government of India[10].

7 Daily temperature (maximum and minimum) data and daily rainfall data taken from Bahraich station; Annual average maximum and minimum temperature data for the year 1992, 2012, 2013, and 2014 is not available; Annual rainfall data for the year 1992 and 2017 is not available.

8 State of the Climate in Asia 2023 (wmo.int)

9 AR6 Synthesis Report: Climate Change 2023 (ipcc.ch)

10 Assessment of Climate Change over the Indian Region: A Report of the Ministry of Earth Sciences (MoES), Government of India | Springer

Further, the perception of the communities on weather changes informed from the field survey and focus group discussion indicates that across the decades 2010-2020, the GP has witnessed an increase in the number of summer days by an average of 30 days and a decrease of winter days by 30 days. Further, they also indicated that the number of rainy days has also decreased by roughly 30 days with an increase in its intensity.

The climate variability analysis undertaken for the GP accounted for both IMD data as well as community perception to bring out a balanced view of the prevailing climate variability in the GP.

Key Economic Activities

Majority of households are dependent on agriculture (73 percent) for their livelihood in the GP. This is followed by non-farm wage labour (around 11 percent) and animal husbandry (~6 percent) as seen in Figure 4. Some households are also engaged in local business, service sector and other activities.

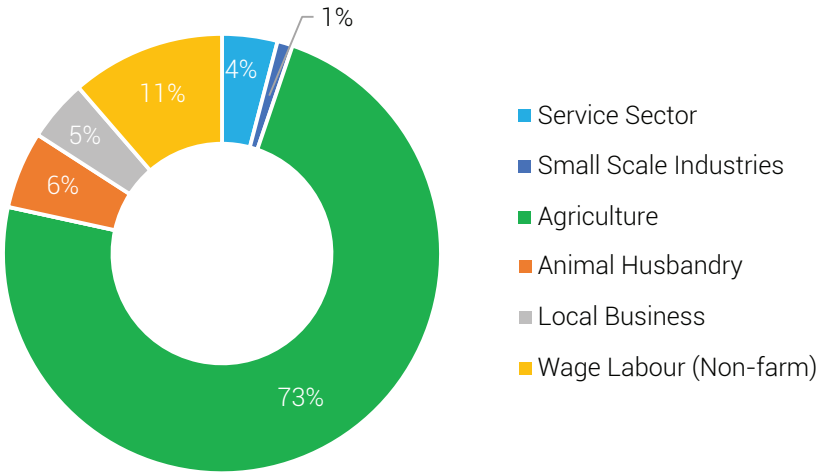


Figure 4: Sources of income by number of households in Allapur Ranimau

Household level income estimates obtained from the primary survey reveal that around 57 percent of the households earn between ₹50,000 to ₹1 lakh per annum and 26 percent of the households earn between 1 lakh to 2 lakh. Only a small fraction (2 percent) of the households earns more than ₹5 lakh (see Figure 5).

At the time of the survey, there were 33 Below Poverty Line (BPL) households, i.e. 7.5 percent of the total households in the GP. The data on ration card reveals that nearly 100 percent households benefit from the Public Distribution Scheme and hold ration cards, of these, 33 households hold an *Antyodaya* card[11] (see Figure 6).

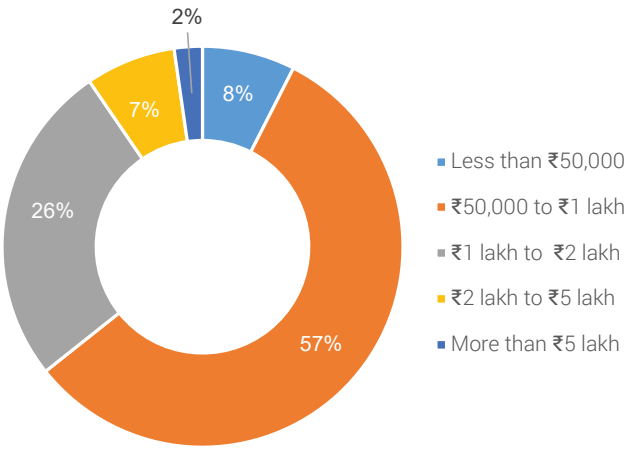


Figure 5: Household level income estimates in Allapur Ranimau

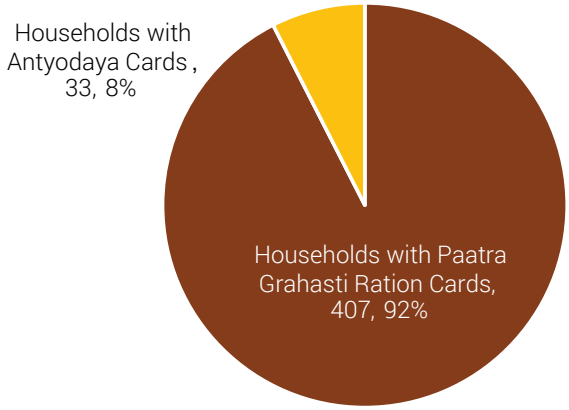


Figure 6: Households with ration cards in Allapur Ranimau

11 National Food security Portal (https://nfsa.gov.in/portal/Ration_Card_State_Portals_AA)

Women's Employment

There are nearly 724 working women in Allapur Ranimau. They are mostly involved in agriculture and arts and handicraft (see Figure 7). A few women are also engaged in animal husbandry and wage labor. There are 15 women headed households[12] which account for 4 percent of the total households in the GP. Additionally, there are 15 SHGs which are involved in *poshahar vitran*.

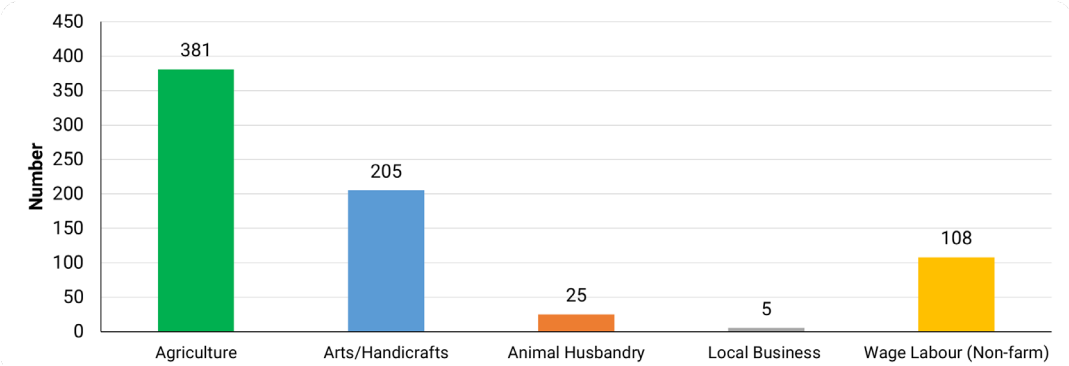


Figure 7: Number of women engaged in various economic activities in Allapur Ranimau

Agriculture

In the gram panchayat, 73 percent households are dependent on agriculture for their income as seen in Figure 4.

The net sown area in Allapur Ranimau is 170 ha while gross cropped area is 348 ha[13]. Figure 8 gives the crop-wise distribution of gross cropped area in the GP. The major *kharif* crop grown are paddy (~6000 quintals). The major *rabi* crops grown are wheat (~400 quintals), potatoes (~28,000 quintals) and mustard (~500 quintals). Additionally, mint (~12,500 quintals) is also grown in the GP, during the *zaid* season.

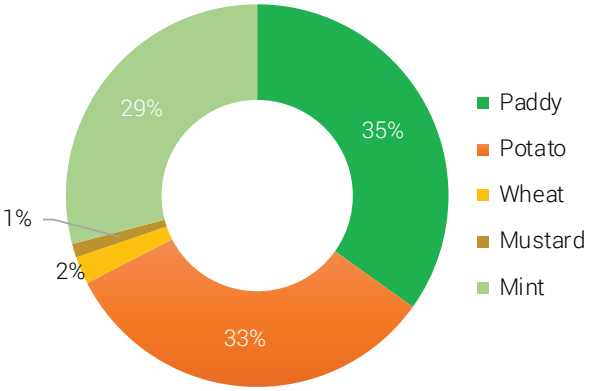


Figure 8: Crop-wise distribution of gross cropped area in Allapur Ranimau

The main sources of irrigation include groundwater, tube wells and canals. Further, there are 100 diesel pumps used for irrigation. Around 6 percent of the population of the GP is engaged in animal husbandry. The total livestock population is 510 (60 cows, 200 buffaloes, 250 goats).

Natural Resources

Allapur Ranimau has 13 ponds, 15 wells and one canal passing through the GP. An *Amrit Sarovar* has also been created. The GP also has 3.3 ha of common land of which 20 percent has been encroached. The common trees planted through MGNREGA and other initiatives like *Vriksharopan jan aandolan*[14] have involved planting major tree species such as *Jamun, peepal, amla* and *mahogany*.

12 Women-headed households are those households where women are sole/primary earners.

13 As per the inputs received from multiple rounds of discussions with the Gram Pradhan

14 Vriksharopan Jan Andolan 2022 was a mass tree plantation movement aimed at promoting environmental sustainability and enhancing green cover across communities in Uttar Pradesh.

Amenities in Allapur Ranimau

Electricity & LPG

- Electricity access: 91% Households
- LPG coverage: 90% Households

Water

- Main Source of Water for Household Use and GP Level Supply: Groundwater
- 50 India Mark Hand Pumps[15]

Waste

- Open Defecation Free (ODF) status: Achieved
- Household Toilet Coverage: ~90%

Mobility and Market Access

- National Highway (NH 27): 13 km
- Railway Station: 2 km
- Bus Stop: 10 km
- Post Office: 2 km
- Bank: 2 km
- Agriculture Market: 30 km

Education

- 2 Primary Schools

Health

- Anganwadi Centre

15 Piped water connection underway

3 Carbon Footprint

While the Carbon Footprint (in other words, Greenhouse Gas (GHG) emissions) from rural areas is not significant, this exercise has been carried out to develop a complete baseline of the gram panchayat. It may be noted that the objective of this plan is not to develop a carbon neutral GP, but a Climate Smart GP. However, the recommendations will have emission reduction benefits which perhaps will help make the GP carbon neutral or even carbon negative. Keeping this in view, this exercise therefore does not include GHG projections.

Further, the carbon footprint also aids in providing recommendations to ensure sustainable development that aligns with the principles of the LiFE Mission. Overall, in 2023, Allapur Ranimau GP emitted approximately ~1,725 tonnes of carbon dioxide equivalent (tCO_2e) from a wide range of activities (see Figure 9).

Activities in energy, agriculture and waste sectors contributed to the carbon footprint of Allapur Ranimau GP. Energy sector emissions are due to combustion of fuelwood and LPG for cooking, use of generator for power backup and use of fossil fuels in various means of transport. Agriculture sector emissions include those due to rice emissions, application of fertilizer on agricultural fields, livestock and manure management and crop residue burning. Emissions due to domestic wastewater are included in the waste sector.

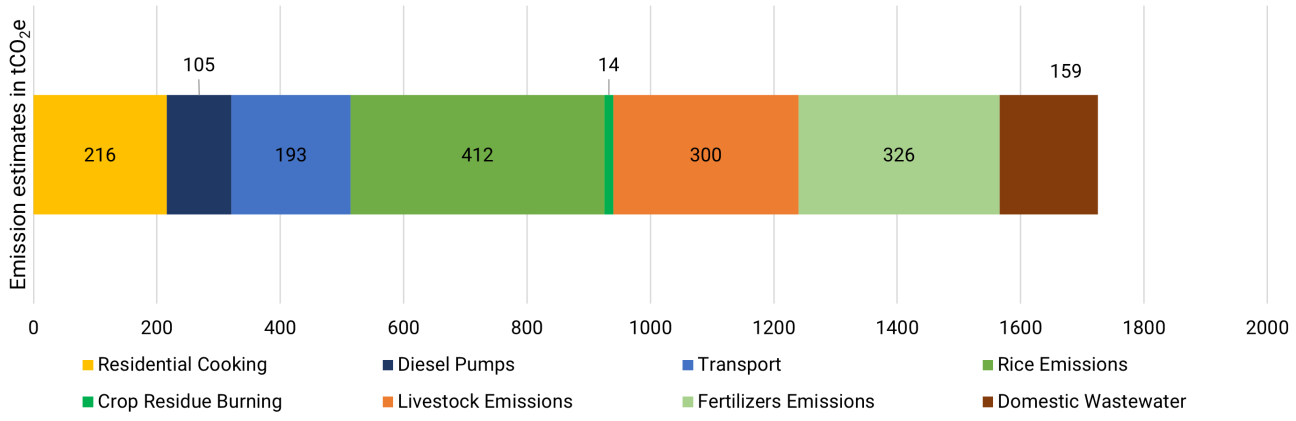


Figure 9: Carbon footprint of various activities in Allapur Ranimau in 2023

The agriculture sector accounted for 61 percent of the total emissions. Within this sector, rice emissions (~412 tCO_2e) being the leading contributor, followed by fertilizers emissions (~326 tCO_2e). The energy sector accounted for 30 percent of the total emissions of Allapur Ranimau. Within the energy sector, residential cooking (~216 tCO_2e) was the key emitter, this was followed by transport (~193 tCO_2e) diesel pumps (~105 tCO_2e) and. The waste sector accounted for 9 percent of the total emissions (see Figure 10).

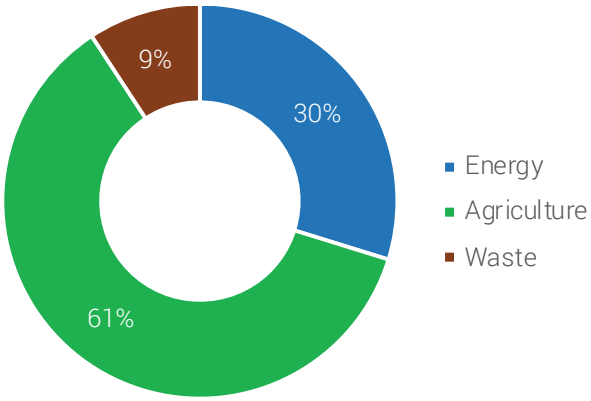


Figure 10: Share of sectors in carbon footprint of Allapur Ranimau in 2023

4 Broad Issues Identified

The broad issues identified are based on the data collected and analysis conducted to establish the GP baseline, the inherent characteristics of the agro-climatic zone in which the GP is located as well as the inputs received from the community members during field surveys, and focus group discussions.

Wherever possible, this information was corroborated with available government data sources. However, certain issues are completely based on information from the community because for these GP level data was not available for corroboration. The issues identified in the GP are summarized below. Further, the detailed issues are listed in the respective themes of the recommendations section.

Broad Issues:

- Changes in seasonal patterns and unpredictable rainfall are affecting the timing of sowing and harvesting for certain crops, leading to higher irrigation demands.
- Unsustainable agricultural and livestock management practices, along with frequent outbreaks of pests and crop diseases, are resulting in significant crop losses.
- Lack of proper waste management practices leading to dumping of waste in public areas, wells and ponds
- Poor maintenance of natural resources including water bodies, leading to reduction in number of ponds and functional wells in the gram panchayat
- Lack of awareness about climate change impacts
- Lack of awareness about various schemes and programmes of the Central and State governments on clean energy and climate change

5 Proposed Recommendations

Each thematic issue consists of several interventions, with focus on both mitigation and adaptation that address the key issues identified in the previous section. The interventions are described with **phased targets** and **cost estimates**[16] (to the extent possible). The targets are spread across three phases: Phase-I (2024-25 to 2026-27); Phase-II (2027-28 to 2029-30); and Phase-III (2030-31 to 2034-35).

Targets under each phase can be further distributed into annual targets (year-on-year targets) ensuring effective and monitored implementation. The template for developing year-on-year targets can be referred from the document "Standard Operating Procedure (SOP) for Development of Climate Smart Gram Panchayat Action Plan". The SOP is a step-by-step approach to be used by Gram Padhans, community members or any other stakeholder to develop Climate Smart Action Plans for their respective Gram Panchayats.

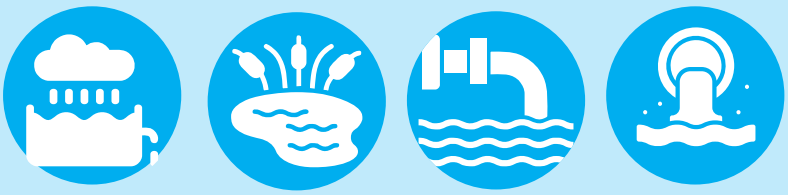
The financing avenues identified include, Central or State schemes, various tied and untied funds of the Gram Panchayat or private finance through CSR interventions have been identified. The detailed recommendations are in the following section:

Recommendations suggested in the action plan span across the following themes:

1. **Management and Rejuvenation of Water Bodies**
2. **Sustainable Solid Waste Management**
3. **Sustainable Agriculture**
4. **Enhancing Green Spaces and Biodiversity**
5. **Access to Clean, Sustainable, Affordable and Reliable Energy**
6. **Sustainable and Enhanced Mobility**
7. **Enhancing Livelihoods and Green Entrepreneurship**

Further, while not forming a part of the recommendations, a list of possible initiatives has also been listed out for consideration by the Panchayats. These initiatives have been implemented successfully in some parts of India and could be replicated here as well. However, since these initiatives are not covered by any ongoing schemes/programmes of the Government of Uttar Pradesh, the funding for these initiatives at this point in time will have to be borne by the communities or by exploring CSR and private sources. Hence, they are not included in the recommendations.

16 Costs have been estimated based on different methods like:
- » inputs from key members of the Gram Panchayat,
- » OR cost estimates as per relevant schemes and policies,
- » OR approximate per unit costs of inputs required
- » OR schedules of rates of various departments.



1. Management and Rejuvenation of Water Bodies

Context & Issues[17]

- The primary source of water in Allapur Ranimau is groundwater. Households also rely on hand pumps for water[18]. There are 350 handpumps (50 India Mark and 300 private handpumps) being used in the gram panchayat.[19]
- While there are 350 hand pumps to supply drinking water in the GP, these are insufficient to meet water needs of the community due to depleting groundwater levels
- The GP has experienced flood in the year 2023, as well as waterlogging incidents in year 2002 and 2023[20].
- There are 13 ponds and 15 wells in the gram panchayat. However, these ponds and wells are poorly maintained and filled with silt, debris, weeds and plastics. Of these, one pond is being developed as an *Amrit Sarovar*.

Dependence on groundwater and frequent incidences of waterlogging and droughts in the past five years highlight the urgent need for watershed management to conserve water and replenish groundwater resources. The following recommendations are proposed to reduce vulnerability, build resilience and improve water security in Allapur Ranimau.

17 As understood from the community during field surveys and FGDs and corroborated by relevant sources
18 Piped water supply data supply not available for the gram panchayat
19 As per the inputs received from field survey
20 As reported in the field survey

Promoting Rainwater Harvesting (RwH) Structures

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	1. RwH structures installation in all government buildings /Panchayati Raj Institution (PRI) buildings 2. Incorporating RwH system in all new buildings	1. Installation of RwH structures in residential buildings above a plot size of 2,000 sq.ft. 2. Incorporating RwH system in all new constructions	1. Installation of RwH structures in residential buildings above a plot size of 1,000 sq.ft. 2. Incorporating RwH system in all new constructions
Target	Installation of 5 RwH structures in government buildings -Panchayat building, fertilizer and seed centre, anganwadi and 2 primary schools	22 households to install RwH with an average storage capacity of 10 m^3	135 households to install RwH with an average storage capacity of 10 m^3
Estimated Cost	RwH 5 RwH Structures of 10 m^3 capacity): ₹1,75,000 *Total Cost: ₹1,75,000*	RwH: ₹7,70,000 *Total Cost: ₹7,70,000*	RwH: ₹47,25,000 *Total Cost: ₹47,25,000*

Rejuvenation and Conservation of Water Bodies

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Rejuvenation of ponds 2. Cleaning and repairing of wells 3. Tree plantations around water bodies with tree guards 4. Construction of recharge pits 5. Capacity building of the existing Village Water and Sanitation Committee (VWSC) and Construction Work Committee (CWC)[21] » To enhance awareness among various key community groups to improve water conservation » Prepare/update Village Water Security Plan to ensure optimum utilisation of available water to meet the needs of various users	1. Regular maintenance of water bodies 2. Additional tree plantation around water bodies 3. Update Village Water Security Plan to ensure optimum utilisation of available water	1. Regular maintenance of water bodies 2. Update Village Water Security Plan to ensure optimum utilisation of available water
Target	1. Rejuvenation of ponds 5 ponds 2. Construction of 10 recharge pits 3. Plantation of 1,000 trees with tree guards (around water bodies)	1. Maintenance of 5 ponds 2. Maintenance of canals, and other infrastructure 3. Additional 1,000 trees planted around water bodies with tree guards	1. Maintenance of 5 ponds 2. Maintenance of canals, and other infrastructure

21 VWSC Handbook, https://phed.cg.gov.in/sites/default/files/gphandbook-0.pdf

Estimated Cost	1. Rejuvenation of ponds: ₹35,00,000 2. Construction of 10 recharge pits: ₹3,50,000 3. Plantation around water bodies: covered in section "Enhancing Green Spaces and Biodiversity": ₹12,70,000 *Total Cost: ₹38,50,000*	1. Maintenance of 5 ponds: ₹18,75,000 2. Plantation around water bodies: covered in section "Enhancing Green Spaces and Biodiversity": ₹12,70,000 *Total Cost: ₹18,75,000*	Maintenance of 5 ponds: ₹18,75,000 *Total Cost: ₹18,75,000*

Enhancing Drainage and Sewage Infrastructure

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Construction of drainage network 2. Cleaning of existing drains to prevent waterlogging	1. Regular cleaning and maintenance of existing drains 2. Maintenance of existing infrastructure	Regular maintenance of all infrastructure
Target	1. Construction of ~1.45 km of drainage network[22] 2. Cleaning of existing drains	Regular maintenance of existing infrastructure	Regular maintenance of all existing infrastructure
Estimated Cost[23]	1. Construction of ~1.45 km of drainage network: ₹42,00,000 2. Cost as per requirement *Total Cost: ₹42,00,000*	As per requirement	As per requirement

22 Based on discussion with the Gram Pradhan

Wastewater Management

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Setting up of Decentralised Wastewater Treatment System (DEWATS) 2. Construction of soak pits (for houses not connected to DEWATS)	1. Regular maintenance of existing DEWATS 2. Regular maintenance of soak pits and additional soak pits if required	1. Scaling up wastewater treatment unit based on future population growth 2. Regular maintenance of existing DEWATS and additional soak pits if required
Target	1. Setting up 1 DEWAT with a capacity of 0.56 MLD 2. Construction of soak pits at strategic locations	1. Maintenance of wastewater treatment infrastructure 2. Regular maintenance of soak pits and construction of additional soak pits if required	1. Maintenance of wastewater treatment infrastructure 2. Regular maintenance of soak pits and construction of additional soak pits if required
Estimated Cost	Cost of 1 DEWAT[24]: ₹28,00,000 *Total Cost: ₹28,00,000*	As per requirement	As per requirement

Existing Schemes and Programmes

- Development of rainwater harvesting systems can be carried out through provisions and resources made available through Jal Shakti Abhiyan: Catch the Rain Campaign.
- UP State Annual Budget under Irrigation Department can be channelled for GP level water body conservation and restoration activities.
- Annual budgets under MGNREGA and Watershed Development Component under PMKSY can be leveraged for watershed development activities.
- Swachh Bharat Mission (Grameen) can be leveraged for GP level sanitation activities.
- Wastewater management at GP level through creation of soak pits can be channelled through Jal Shakti Abhiyaan: Sujlam 2.0 Campaign

24 The cost of DEWATs may vary according to the technology and other associated variables

Other Sources of Finance

- Corporate/CSR can be encouraged to 'Adopt a water body' to contribute to the maintenance and upkeep of water bodies and wells
- Watershed Development related activities can be promoted through Watershed Development Fund by National Bank for Agriculture and Rural Development (NABARD)

Key Departments

- Rural Development Department
- Irrigation and Water Resources Department
- Uttar Pradesh Department of Land Resource

2. Sustainable Solid Waste Management

Context & Issues[25]

- The total waste generated[26] from all domestic activities (households, public and semi-public spaces, and commercial areas) in the GP is approximately ~306 kg per day, with 178 kg per day of biodegradable/organic waste and 129 kg per day of non-biodegradable waste.
- There is a lack of waste collection, segregation, and effective waste treatment system in Allapur Ranimau leading to waste dumping in water bodies, drains and plots within the GP.
- The total livestock population in the GP is 510 (60 cows, 200 buffaloes, 250 goats) and the estimated dung output is roughly 3.6 tonnes per day[27] which can be managed sustainably through interventions such as composting, vermicomposting, natural fertilizer production and biogas generation in Allapur Ranimau.
- The household toilet coverage is nearly 90 percent in the GP.

Against this backdrop, the following solutions are proposed to ensure 100% solid waste management in the GP as well as boosting the economy and creating livelihood opportunities, the following solutions are proposed.

Establishing a Waste Management System

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
	1. Setting up GP-level segregation and storage facility	1. Maintenance of GP-level segregation and storage facility	1. Maintenance of GP-level segregation and storage facility

25 As understood from the community during field surveys and FGDs and corroborated by relevant sources

26 See annexure III for estimation methodology

27 Assuming cows produce10 kg dung/day, buffalos produce 15 kg dung/day, pigs produce 2 kg dung/day, and goats and sheep produce 150 g dung/day.

Suggested Climate Smart Activities	2. Electric garbage collection vans and workers hired for collection and transportation of waste: » Door-to-door collection of segregated waste from households and public facilities » From households to GP-level segregation facility 3. Installation of waste collection bins at strategic locations (ration shops, markets, shops, tea stalls etc.) 4. Setting up partnerships between Panchayat, SHGs, informal ragpickers, local scrap dealers, local businesses, and MSMEs	2. Maintenance of existing waste bins installed and additional installation of bins at new strategic locations, as per requirement. 3. Scaling up partnership beyond GP to other villages/districts	2. Maintenance of existing waste bins installed 3. Scaling up partnership beyond GP to other villages/districts
Target	1. Provision for 1 electric garbage vans (capacity 310 kg) to collect ~306 kg of waste generated per day 2. Installation of 125 waste bins at strategic locations	1. Installation of additional waste bins as per requirement 2. Maintenance of existing facilities and waste management system	1. Installation of additional waste bins as per requirement 2. Maintenance of existing facilities and waste management system
Estimated Cost	1. Electric garbage van: ₹95,000 to 1,00,000 2. Cost of waste bins: ₹18,75,000 *Total Cost: ₹19,70,000 to ₹28,75,000*	As per requirement	As per requirement

Improved Sanitation Management

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	All new construction/ households should have toilets	1. Maintenance of existing infrastructure 2. All new construction/ households should have toilets	1. Maintenance of existing infrastructure 2. All new construction/ households should have toilets
Target	Construction of toilets as per requirement	Construction of more toilets and maintenance of existing one	Maintenance of existing infrastructure
Estimated Cost	Cost as per requirement	As per requirement	As per requirement

Sustainable Management of Organic Waste

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Setting up of Nadep compost pits and vermicompost pits 2. Partnership building between Panchayat and relevant stakeholders for setting up compost value chain in the GP	1. Regular maintenance of compost pits 2. Scaling up partnership beyond GP to other villages/districts	1. Regular maintenance of compost pits 2. Scaling up partnership beyond GP to other villages/districts

Target	1. Setting up of Nadep compost pits and vermicompost pits as per requirement 2. Partnership model between panchayat community members and farmer groups for (explained in detail in "Enhancing Livelihoods and Green Entrepreneurship" section): » Production and sale of compost » Sale of agricultural waste	1. Maintenance of compost pits 2. Scaling up partnership	1. Maintenance of compost pits Scaling up partnership
Estimated Cost	Cost as per requirement	As per requirement	As per requirement

Ban on Single Use Plastics

Phase	**I** 2024-25 to 2026-27	**II** 2027-28 to 2029-30	**III** 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Awareness training and capacity-building programs for: » Village Water and Sanitation Committee (VWSC) » Students & youth groups » Community members & commercial establishments	1. Regular awareness training and capacity-building programs 2. Scaling up partnership beyond GP to other villages/districts	1. Regular awareness training and capacity-building programs 2. Scaling up partnership beyond GP to other villages/districts

	2. Partnership model between panchayat women and SHGs for manufacturing products from plastic alternative products (explained in detail in 'Enhancing Livelihoods and Green Entrepreneurship' section)		
Target	1. Complete ban on single use plastics (SUPs) 2. 100-120 women to be engaged in manufacturing plastic alternative products	1. Ban on SUPs upheld 2. Increased engagement from this GP & nearby villages of: » Additional 200 women » Additional SHGs MSMEs & individual entrepreneurs	1. Ban on SUPs upheld 2. Consumer-wide plastic use diminishes as alternatives are available readily

Existing Schemes and Programmes

- MGNREGA can be tapped into for the construction of community-based composting facilities
- The development of infrastructure and training and capacity building can be supported by initiatives under the Swachh Bharat (Gramin) Mission.

Other Sources of Finance

- CSR support will be crucial in increasing awareness, training, and capacity building of all stakeholders involved in the production of plastic-alternative products, composting processes and to promote sustainable consumption behaviour at the individual level.
- Further, CSR support will be crucial in increasing awareness, training, and capacity building of all stakeholders involved in the production of plastic-alternative products for plastics, composting processes and to promote sustainable consumption behaviour at the individual level.
- GP's own resources, including tied and untied funds, can be utilised to develop the required infrastructure for waste management as per Swachh Bharat Mission – Gramin (SBM-G) guidelines

Key Departments

- Panchayati Raj Department
- Department of Health and Family Welfare
- Department of Rural Development
- Department of Agriculture
- Uttar Pradesh Khadi and Village Industries Board

3. Sustainable Agriculture

Context & Issues[28]

- The total net sown area in Allapur Ranimau is 170 ha and the gross cropped area is nearly 347 ha.
- 73 percent of the households in the GP depend on agriculture practices and around 6 percent households depend on animal husbandry practices as a source of income.
- The major crops grown are paddy (~121 ha), wheat (~8 ha), potato (~113 ha), mint (~101 ha) and mustard (~4 ha) across *kharif*, *rabi* and *zaid* seasons.
- Waterlogging affected nearly 50 acres of land during the months of September in the years 2022 and 2023.
- Between 2018 to 2023, the GP frequently faced pest issues such as rust and aphids impacting paddy crops.
- In the years from 2022 to 2023, crop losses have been caused due erratic rainfall. The losses amount to around 1,200 quintals of produce or around ~₹24 lakhs (corroborated by prevailing MSP of the respective years).
- Farmers use ~115 tonnes of urea and other nitrogenous fertilizers per year which leads to GHG emissions of ~326 tCO_2e per year. The farmers also rely on other inputs such as pesticides and weedicides.
- Natural farming is not practiced in Allapur Ranimau.
- Agricultural water demand has increased as reported in the field surveys, stressing on the need for water conservation and improved irrigation techniques.

The above points highlight a need for adopting sustainable and drought resilient agricultural practices to enhance the adaptive capacity.

28 As understood from the community during field surveys and FGDs and corroborated by relevant sources

Building Climate Resilience in Agriculture

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Promotion and adoption of micro irrigation practices like drip irrigation and sprinkler irrigation 2. Construction of bunds with trees around agricultural fields 3. Construction of farm ponds 4. Need based nutrient management in crops (e.g. organic recycling, nutrient for foliar spray, etc.)[29] 5. Use of mulching to minimise evaporation losses from irrigated fields 6. Creating awareness about various insurance programs for farmers to protect them from crop loss 7. Setting up of automatic/ mini weather stations at strategic locations in the agricultural area	1. Extension of bunds 2. Construction of additional farm ponds 3. Regular maintenance of existing farm ponds and bunds with trees 4. Continue the initiative on creating awareness and provide support to farmers to avail various insurance programs to protect them from crop loss	Maintenance of existing bunds and farm ponds

29 Drought Manual (2020), https://vedas.sac.gov.in/static/pdf/Drought%20Manual-2020.pdf

Target	1. Micro-irrigation practices introduced on ~60 ha (50% of agricultural land under mustard and potatoes) 2. 85 ha of agricultural land have bunds with trees (50% of total agricultural land) 3. Construction of 5 farm ponds	1. Micro-irrigation practices introduced on ~120 ha (100% of agricultural land under mustard and potatoes) 2. All agricultural land 85 ha (100 % coverage) to have bunds with trees 3. Construction of additional farm ponds as per requirement and maintenance of existing farm ponds	Maintenance of existing bunds and farm ponds
Estimated Cost	1. Micro-irrigation: ₹60,00,000 2. Bunds: ₹97,788 3. Farm Ponds: ₹4,50,000 *Total Cost: ₹65,47,788*	1. Micro-irrigation: ₹60,00,000 2. Bunds: ₹97,788 *Total Cost: ₹60,97,788*	As per requirement

Transition to Natural Farming

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
	1. Promote natural farming through the use of organic fertiliser bio-pesticides and bio-weedicides » Training and demonstrations » Natural/Organic farming certification initiated » Market access and linkages to be explored	1. Continuing the transition of agricultural land to natural farming (nursery seed bank certification mechanism and market linkages established) 2. Promotion and adoption of practices implemented in Phase I	100% expansion of transitioning agricultural land to natural farming

Suggested Climate Smart Activities	2. Promotion of diverse cropping systems such as mixed cropping crop rotation mulching zero tillage to enhance soil health by reducing evaporation and increasing moisture retention 3. Promote adoption of Agro-Eco System Analysis (AESA) based on Integrated Pest Management (IPM) strategies for area under various crops (as per GoI guidelines)		
Target	Transitioning 26 ha (15%) of agricultural land to natural farming	Transitioning 43 ha (additional 25% coverage) of agricultural land to natural farming	Transitioning 102 ha (100% coverage) of agricultural land to natural farming
Estimated Cost	1. Cost of natural farming training: ₹60,000 2. Transition of land to natural farming: ₹63,01,050 3. Cost of IPM training: as per requirement *Total Cost:* ₹63,61,050	1. Cost of natural farming training: ₹60,000 2. Transition of land to natural farming: ₹1,05,01,750 *Total Cost:* ₹1,05,61,750	1. Cost of natural farming training: ₹60,000 2. Transition of land to natural farming: ₹2,52,04,200 *Total Cost:* ₹2,52,64,200

Sustainable Livestock Management

Phase	**I** 2024-25 to 2026-27	**II** 2027-28 to 2029-30	**III** 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Raising awareness and capacity building for households engaged in animal husbandry for livestock management	1. Expansion of training and capacity building activities 2. Scaling up para-vet training as per requirement	1. Expansion of training and capacity building activities 2. Scaling up para-vet training as per requirement

	2. Training community members as animal health workers/ para-vet training for improving access to livestock health services Refer to section "Additional Recommendations" for intervention on reducing methane emission from livestock.		
Target	1. Workshops organised for households engaged in animal husbandry on sustainable rearing practices, disease prevention and management of livestock health 2. Training of 2 para-vets[30]	1. Additional workshops on disease prevention and sustainable rearing practices organised 2. Continued training and capacity building for livestock	1. Additional workshops on disease prevention and sustainable rearing practices organised 2. Continued training and capacity building for livestock
Estimated Cost	Cost of workshop and para-vet training: As per requirement	As per requirement	As per requirement

Existing Schemes and Programmes

- Drought management and proofing practices can be supported through funds and subsidies from Pradhan Mantri Krishi Sinchai Yojana (PMKSY), UP Millets revival programme, Pradhan Mantri Fasal Bima Yojana, National Agricultural Insurance Scheme, Weather-based Crop Insurance Scheme, Gramin Krishi Mausam Seva Scheme.
- Drought proofing activities and creation of nurseries and seed banks can be streamlined through MGNREGA
- Organic farming practices can be supported through funds and subsidies provided under various schemes such as: Paramparagat Krishi Vikas Yojana (PKVY) and Soil Health Management Scheme
- Technical and knowledge support as well as organic farming demonstrations for farmers can be enabled through National and Regional Centres for Organic Farming (NCOF & RCOF), Krishi Vigyan Kendra (KVK), nearest Organic Farming Cell of the Department of Agriculture, Cooperation and Farmer Welfare.

30 Number of community-based animal health workers trained based on requirement of the GP

- Agricultural Technology Management Agency (ATMA) can be tapped into for support for training and capacity building of the farmers and FPOs for technology upgradation and sustainable farming.
- Krishi Raksha Scheme supports farmers in pest control through different ecological resources and to promote use of bio-chemicals.
- Para-veterinarian training and capacity building can be leveraged through state schemes like State Rural Livelihood Mission, Uttar Pradesh *Pashudhan Swasthya Evam Rog Niyantran Yojana,* and *Rashtriya Gokul Mission.*

Other Sources of Finance

- Set-up & operationalise (in alignment with schemes mentioned in "Access to Clean, Sustainable, Affordable and Reliable Energy" section
  - » Cold-storage facility to help minimise post-harvest losses
- Raising awareness: information on organic farming practices and benefits, inputs required, demonstrations, relevant sources of information and guidance, registration process, verification and certification process, market linkages and weather-based information services etc.
- Provide guidance, training, and capacity building farmers, FPOs, SHGs and other community members to avail insurance, benefits of different schemes as well as for technical aspects of implementing Climate Smart Agriculture practices including adoption of organic fertilisers, eventual transition to organic farming, drought proofing agriculture and sustainable livestock management.
- Further, capacity building of farmers, FPOs, SHGs and other community members engaged in sustainable agriculture in Allapur Ranimau can be carried out in collaboration with technical experts and institutes in the region, local NGOs, CSOs and corporates.

Key Departments

- Department of Agriculture
- Centre for Integrated Pest Management (CIMP)
- Department of Horticulture and Food Processing
- Department of Land Resources
- Jal Shakti Department
- Animal Husbandry Department
- Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA)
- Regional Centres for Organic Farming
- Krishi Vigyan Kendra, Barabanki

4. Enhancing Green Spaces and Biodiversity

Context & Issues[31]

- The GP does not have any demarcated forest land within its boundary and has limited green spaces
- The plantation initiatives were carried out under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), and the *Vriksahropan Jan Aandolan*. The primary tree species planted included *Jamun, peepal, amla* and *mahogany*.

Allapur Ranimau panchayat has potential to enhance lung spaces, as it will not only improve thermal comfort and provide shade but also help improve soil health and water levels in the long term, in addition to enhancing carbon sink in the GP.

Improving Green Cover

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Annual community-based plantation activities[32] through various initiatives: » **Green Stewardship programme**[33] for students (5 students selected) » Creation of a **Food Forest** by planting indigenous fruit trees	1. Maintenance of existing plantations and nursery 2. Plantation activities continued and enhanced with creation of ***Bal Van***[34] 3. Farmers are encouraged to adopt agroforestry 4. *Arogya Van* is established	1. Plantation activities expanded and maintained- *Bal Van* Food Forest and other plantations 2. Expanding area under agro-forestry initiative

31 As understood from the community during field surveys and FGDs and corroborated by relevant sources

32 Trees species listed in Annexure V

33 School students will be engaged in planting trees and Student Leaders will be picked from each class who will motivate their fellows as well as the GP community to plant trees.

34 New parents will be gifted with saplings of indigenous evergreen trees as a celebration of birth of their children and be encouraged to nurture the plants through their children's life

Suggested Climate Smart Activities	3. Development of ***Arogya Van*** – procurement and preparation of land species selection and plantation of various medicinal herbs, shrubs and trees[35]		4. *Arogya Van* maintained units for the production of natural medicines and supplements established (as explained in the 'Enhancing Livelihoods and Green Entrepreneurship' section)
Target	1. Plantation of 2,000 saplings of common and endangered trees to be planted and ensure at least 65% survival rate (using tree guards) Sequestration potential: 11,200 tCO_2 to 20,000 tCO_2[36] in 15-20 years 2. Around 0.1 ha of land allocated/demarcated to establish *Arogya Van*	1. Another 2,000 to 2,500 saplings planted along roads, pathways and around water bodies in the GP Sequestration potential: 14,000 tCO_2 to 25,000 tCO_2 in 15-20 years 2. *Arogya Van* established and maintained 3. Agro-forestry adopted in ~4 ha land 400 trees[37] planted Sequestration potential: 2,240 tCO_2 to 4,000 tCO_2 in 20 years 4. Capacity building of FPOs women's groups youth groups to manufacture and market natural medicines and supplements.	1. Additional 2,500 to 3,000 saplings planted Sequestration potential 16,800 tCO_2 to 30,000 tCO_2 in 15-20 years 2. Expanding area under agro-forestry initiative 3. *Arogya Van* maintained, and production of natural medicines and supplements continues

35 Trees species listed in Annexure V

36 Sequestration potential estimated based on teak species

37 The agricultural land under wheat (~4 ha) is considered suitable for agroforestry.

Estimated Cost	Plantation activities: ₹25,40,000 *Total Cost: ₹25,40,000*	1. Total cost of tree plantation: ₹25,40,000 2. Cost of agro-forestry: ₹2,40,000 *Total Cost: ₹27,80,000*	Total cost of tree plantation: ₹31,75,000 *Total Cost: ₹31,75,000*

People's Biodiversity Register

Phase	**I** 2024-25 to 2026-27	**II** 2027-28 to 2029-30	**III** 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Updating People's Biodiversity Register 2. Build awareness	1. Updating of People's Biodiversity Register continued 2. Strengthen awareness	1. Updating of People's Biodiversity Register continued 2. Strengthen awareness
Target	1. Formation and capacity enhancement of the Biodiversity Management Committee 2. Participatory update of the People's Biodiversity Register	Participatory update of the People's Biodiversity Register continues	Participatory update of the People's Biodiversity Register continues
Estimated Cost	Formation of Biodiversity Management Committees (BMCs) and training cost[38]: ₹2,5000		

38 Guidelines for Operationalising Biodiversity Management Committees (BMCs), 2013, National Biodiversity Authority. http://nbaindia.org/uploaded/pdf/Guidelines%20for%20BMC.pdf

Existing Schemes and Programmes

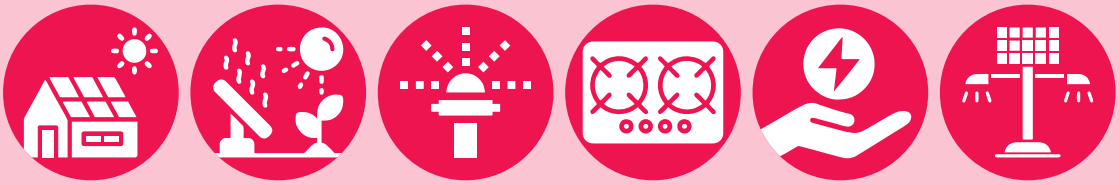
- Plantation activities can be aligned and carried out through provisions under 'Trees Outside Forests in India' initiative by MoEFCC, Green India Mission, Jal Jeevan Mission and UP State Plantation Targets.
- Annual budgeting under UP State Compensatory Afforestation Fund Management and Planning Authority Fund (State CAMPA fund) can be directed for:
- Afforestation, enrichment of biodiversity, improvement of wildlife habitat, and soil and water conservation activities in the GP
- Plantation activities can be aligned with MGNREGS and the local community can also be engaged in providing *shramdaan*
- The Sub-Mission on Agroforestry under the National Mission on Sustainable Agriculture can be leveraged to:
  - » Avail ₹28,000 per ha of agroforestry plantation
  - » Assistance for plantations can be availed in year-wise proportion of 40:20:20:20 for four years
- Skill development and training programme of the Central Institute of Medicinal and Aromatic Plants, Lucknow can be helpful in setting up *Arogya Van* in the GP
- Programmes by the National Biodiversity Authority and Uttar Pradesh State Biodiversity Board can be tapped into for training and capacity building of BMCs

Other Sources of Finance

- Resources allocated to Gram Panchayat under 15th Finance Commission and Own Source Revenue (OSR).
- CSR funds for purchase of saplings, organising plantation drive, erection of tree guards to ensure protection of saplings can be availed. CSR support can be utilised for creation of *Arogya Van* and establishing production unit for herbal products as described in the recommendation on "Enhancing Livelihoods and Promoting Green Entrepreneurship".

Key Departments

- Department of Environment, Forests and Climate Change
- State Biodiversity Board
- Panchayati Raj Department
- Rural Development Department
- Central Institute of Medicinal and Aromatic Plants, Lucknow



5. Access to Clean, Sustainable, Affordable and Reliable Energy

Context & Issues[39]

- The GP has 91 percent household electric connectivity, the power supply, as understood from the community members is not 24*7. As reported by the community during the field survey, on an average the GP experiences an average of 6 hours of power cuts every day.
- There are 100 diesel pumps, and 1 electric pump used for irrigation.
- Electrical fixtures and appliances with low efficiency are in use in any homes and public utilities. Additionally, the GP has expressed a need for additional street lights (150 streetlights and 20 high-masts solar LED).
- Cow dung and fuelwood is used for cooking in ~44 households. There is a need to transition to cleaner cooking solutions that will not only lead to reduction in emissions but also co-benefits like improved indoor air quality.

Based on the energy related concerns identified of the GP, in combination with the recently launched as well as ongoing programmes of the Central and State Government, such as the PM Surya Ghar Bijli Muft Yojana, PM KUSUM scheme, UP State Solar Policy 2022, among others, the following solutions are proposed for implementation in Allapur Ranimau. The intent of the suggested activities is to ensure access to clean, sustainable, affordable and reliable energy for the communities in the GP. This would not only enhance their quality of life but also help to supplement incomes through productive use of energy.

39 As understood from the community during field surveys and FGDs and corroborated by relevant sources

Solar Rooftop Installation

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	Solar rooftop photovoltaic on all government buildings: Panchayat Bhavan, Anganwadi, Fertilizer and seed Center and 2 Primary schools	1. Installation of rooftop solar panels on pucca houses 2. Installation of rooftop solar panels on all new buildings (constructed during Phase II)	1. Scaling up installation of rooftop solar panels on pucca houses 2. Installation of rooftop solar panels on all new buildings (constructed during Phase III) 3. Regular maintenance of solar rooftops
Target[40]	Solar rooftop capacity installed on: » Panchayat Bhavan: (130 sq.m. rooftop area) 5 kWp » Primary schools: (92 sq.m. rooftop area) 5 kWp » Primary schools: (155 sq.m. rooftop area) 5 kWp » Fertilizer and seed Center: (300 sq.m. rooftop area) 10 kWp » Anganwadi: (22 sq.m. rooftop area) 3 kWp Total solar rooftop capacity installed in this phase: 28 kWp Electricity generated: 37498 kWh per year (~103 units per day)	Solar rooftop capacity installed on 167 houses (40% of pucca houses)[41] Total solar rooftop capacity installed in this phase: 501.6 kWp Electricity generated: 6,71,743 kWh per year (~1,840 units per day) GHG emissions avoided: 551 tCO_2e per year	Solar rooftop capacity installed on 251 houses (100% of pucca houses) Total solar rooftop capacity installed in this phase: 752 kWp Electricity generated: 10,07,614 kWh per year (~2,761 units per day) GHG emissions avoided: 826 tCO_2e per year

40 Solar installation in PRI buildings capped at 10 kWh

41 Average area of households considered to be 130 sq.m; 3 kWp rooftop installation estimated per household

	GHG emissions avoided: 31 tCO_2e per year *In light of much needed and ambitious targets of the recently launched PM Surya Ghar Yojana, some households can also be part of this phase of solar PV installation on rooftops.*		
Estimated Cost	*Total Cost: ₹1,400,000*	Cost (per kWh): ₹2,50,80,000 Indicative subsidy[42]: ~40% (State + CFA) *Effective Cost: ₹1,50,48,000*	Cost (per kWh): ₹3,76,20,000 Indicative subsidy: ~40% (State + CFA) *Effective Cost: ₹2,25,72,000*

Agro-photovoltaic Installation

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	Awareness generation amongst farmers, farmer groups, women's groups etc.	Agro-photovoltaic installed on area portion of suitable agricultural land (under horticulture and legume crops)	Agro-photovoltaic installed on area portion of suitable agricultural land (under horticulture and legume crops)
Target	Organising awareness campaigns and orientation sessions to encourage uptake of agro-photovoltaic initiatives amongst farmers	Agro-photovoltaic installed on 2 ha Capacity installed: 500 kWp Electricity generated: 6,69,600 kWh per year (~ 1,835 units per day) GHG emissions avoided: 549 tCO_2e per year	Agro-photovoltaic installed on 2 ha Capacity installed: 500 kWp Electricity generated: 6,69,600 kWh per year (~ 1,835 units per day) GHG emissions avoided: 549 tCO_2e per year

42 Subsidies are dynamic and are subject to change as per various parameters fixed by the State and Central government from time to time. Hence, the subsidy amount assumed is based on past trends and averages and may not be exact at prevailing time.

Estimated cost		*Total Cost*[43]*: ₹5,00,00,000*	*Total Cost: ₹5,00,00,000*

Solar Pumps

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	Replacing existing 50 diesel pump sets in the GP with solar pumps *If solar pumps are not feasible then, energy efficient pumps (Kisan Urja Daksh Pumps by EESL) can be considered	Replacing existing 50 diesel pump sets in the GP with solar pumps	Encouraging use/purchase of all new pumps to be solar-powered
Target	Capacity installed: ~550 kW Electricity generation potential: 7,36,560 kWh per year GHG Emissions avoided: 105 tCO_2e per year	Capacity installed: ~550 kW Electricity generation potential: 7,36,560 kWh per year GHG Emissions avoided: 105 tCO_2e per year	Capacity as per requirement
Estimated Cost	Total cost: ₹200,00,000 Subsidy: ~60% (State + CFA) *Effective cost: ₹80,00,000*	Total cost: ₹200,00,000 Subsidy: ~60% (State + CFA) *Effective cost: ₹80,00,000*	As per requirement

43 With advancements in technology, the cost of agro-photovoltaic has been decreasing. However, a conservative estimate of the cost on the higher side has been taken. Further, it has been assumed that farmers tend to practice crop rotation even on land earmarked for horticulture and other similar crops. Hence, only a percentage of the land available under horticulture has been taken into consideration for installation of agro-photovoltaic.

Clean Cooking

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	Scenario 1: Household Biogas + LPG Scenario 2: Solar powered induction cook stoves + LPG Scenario 3: Solar powered induction cook stoves + Improved Chulhas + LPG	Scenario 1: Household Biogas + LPG Scenario 2: Solar powered induction cook stoves + Improved Chulhas + LPG	Scenario 1: Household Biogas + LPG Scenario 2: Solar powered induction cook stoves + Improved Chulhas + LPG
Target	Scenario 1: 25 Households use Biogas plants (100% households having cattle) + 415 Household use LPG Scenario 2: 42 Households use Solar powered induction cookstoves (100% households in the top income groups) + 398 use LPG Scenario 3: 42 Households use Solar powered induction cookstoves (100% households in the top income groups) + 10 households use improved Chulha (50% households that currently use biomass) + 388 Household use LPG	Scenario1: Any additional households that engaged in animal husbandry Scenario 2: Any additional households that use biomass to use improved chulhas	Scenario1: Any additional households that engaged in animal husbandry Scenario 2: Any additional households that use biomass to use improved chulhas

Estimated Cost	Scenario 1: ₹12,50,000 for biogas plants (₹50,000 for 2 to 3 m^3 biogas plant) Scenario 2: ₹18,90,000 for solar induction cookstove (Rs 45,000 for 1 double burner solar cookstove without battery) Scenario 3: ₹18,90,000 + ₹30,000 (1 Improved Chulhas @ Rs 3,000) Average total cost: *₹16,86,667*	Scenario 1: ₹20,00,000 for biogas plants (₹50,000 for 2 m^3 to 3 m^3 biogas plant) Scenario 2: ₹3,000 for 1 improved chulha	Scenario 1: ₹20,00,000 for biogas plants (₹50,000 for 2 m^3 to 3 m^3 biogas plant) Scenario 2: ₹3,000 for 1 improved chulha

Energy Efficient Fixtures[44]

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Replacing all light fixtures and fans with energy efficient fixtures in all PRI buildings 2. Replacing at least 1 CFL bulb with LED bulbs and LED tube lights in each house of GP 3. Replacing at least 1 fluorescent tube light with LED tube light in each house of GP 4. Residents must also be encouraged to upgrade other household appliances energy efficient appliances (4-5 star rated by BEE)	1. Scaling up replacement of CFL bulbs with LED bulbs 2. Scaling up replacement of 2 tube light with LED tube light 3. Replacing 1 conventional fan in houses with energy efficient fan 4. Residents must also be encouraged to upgrade other household appliances energy efficient appliances (4-5 star rated by BEE)	Scaling up replacement of conventional fan in houses with energy efficient fans

44 Based on inputs received from the GP during field surveys and further discussions with Gram Pradhan

Target	1. 100% replacement of existing fixtures with LED tube lights and energy efficient fans in all PRI/ government buildings 2. Replacing 440 existing CFL with LED bulbs in all houses (1 per household) 3. Replacing 440 existing tube lights with LED tube lights in all houses (1 per household)	1. Replacing additional 880 existing CFL with LED tube lights in all houses (2 per household) 2. Replacing additional 880 tube lights with LED bulbs in all houses (2 per household) 3. Replacing 440 energy efficient fans in all (100%) houses (1 in each house)	1. Replacing 880 energy efficient fans in all (100%) houses (2 in each house)
Estimated Cost	1. Cost of LED bulbs: ₹30,800 2. Cost of LED tube light: ₹96,800 *Total cost: ₹1,27,600*	1. Cost of LED bulbs: ₹61,600 2. Cost of LED tube light: ₹1,93,600 3. Cost of energy efficient fans: ₹4,88,400 *Total cost: ₹7,43,600*	1. Cost of energy efficient fans: ₹9,76,800 *Total cost: ₹9,76,800*

Solar Streetlights[45]

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Installation of solar LED streetlights along roads, public spaces, and other key locations 2. Installation of high-mast solar LED streetlights along roads, footpaths, government buildings, at public spaces, around water bodies and other key locations	1. Installing of new solar LED streetlights 2. Installation of more high-mast solar LED 3. Maintenance and repair of existing streetlights	Regular maintenance and addition of solar street streetlights as required

45 Based on inputs received from the GP during field surveys and further discussions with Gram Pradhan

Target	1. Installing 100 solar LED streetlights 2. Installing 20 high-mast solar LED streetlights	1. Installing 50 solar LED streetlights 2. Installing more high-mast solar LED as per requirement	1. Additional streetlights converted to solar LED streetlights as per requirement 2. More high-mast solar LED streetlight as per requirement
Estimated Cost	1. Installation of 100 solar LED streetlights: ₹10,00,000 2. Installation 20 high-mast solar LED streetlights: ₹10,00,000 *Total Cost: ₹20,00,000*	1. Installation of 50 solar LED streetlights: ₹5,00,000 2. Cost as per requirement *Total Cost: ₹5,00,000*	As per requirement

Existing Schemes and Programmes

- The Uttar Pradesh Solar Energy Policy, 2022[46] provides:
  - » Subsidy on solar installations in residential sector: from ₹15,000/kW to a maximum limit of ₹30,000/- per consumer over and above the Central Financial Assistance by MNRE
  - » Provision for solar installations in institutions in RESCO[47] mode by themselves or in consultation with UPNEDA with consultancy fee of 3 percent cost of the plant
- Central Financial Assistance by MNRE through Grid Connected Solar Rooftop Programme
  - » CFA up to 40 percent will be given for RTS systems up to 3 kW capacity. For RTS systems of capacity above 3 kW and up to 10 kW, the CFA of 40 percent would be applicable only for the first 3 kW capacity and for capacity above 3 kW (up to 10 kW) the CFA would be limited to 20 percent.
  - » For Group Housing Societies/Residential Welfare Associations (GHS/RWA) CFA will be limited to 20 percent for installation of RTS plant for supply of power to common facilities. The capacity eligible for CFA for GHS/RWA will be limited to 10 kWp per house and total not more than 500 kWp
  - » Solar rooftop installations for poor households can be undertaken under through the PM-Surya Ghar: Muft Bijli Yojana[48] . The scheme provides a CFA of 60 percent of system cost for 2 kW systems and 40% of additional system cost for systems between 2 to 3 kW capacity. The CFA will be capped at 3 kW. At current benchmark prices, this will mean Rs 30,000 subsidy for 1 kW system, Rs 60,000 for 2 kW systems and Rs 78,000 for 3 kW systems or higher
- PM KUSUM Yojana provides:
  - » Component A of PM KUSUM Yojana, promotes setting up of 500 kW and larger solar power plants on agriculture land.
  - » Under Components B & C of the PM KUSUM scheme, the Centre and State government will provide a subsidy of 30 percent each per pump basis. Farmers will only need to pay an upfront cost of 10 percent and rest can be paid to the bank in installments.

46 https://invest.up.gov.in/wp-content/uploads/2023/02/Uttar_Pradesh_Solar_Energy_Policy_2022.pdf
47 Third party (RESCO mode) {Renewable Energy Supply Company}
48 https://pmsuryaghar.gov.in/

- Contribution of UP government to PM KUSUM Yojana:
  - » Under Component C-1: Solarisation of installed on-grid pumps with 60 percent subsidy to farmers (70 percent subsidy to the Scheduled Tribe, Vantangia and Musahar caste farmers); this is in addition to subsidy available from Central Government through MNRE'S PM KUSUM Scheme
  - » Under Component C-2: Solarisation of Segregated Agriculture feeders by State government providing Viability Gap Funding (VGF) of ₹50 lakh per megawatt in addition to subsidy being provided by Central Government through MNRE'S PM KUSUM Scheme
- LED Street lighting projects in Gram Panchayats[49]:
  - » EESL replaces conventional streetlights with LED streetlights at its own cost and provides free replacement and maintenance of LED bulbs for up to 7 years.
  - » Atal Jyoti Yojana and MNRE Solar Streetlight Programme provide subsidies for installation of solar streetlights with 12 Watt LEDs and 3 days battery back-up.
- GRAM UJALA scheme[50]:
  - » LED bulbs available at an affordable price of ₹10 per bulb
  - » Rural customers will be given 7-watt and 12-watt LED bulbs, with a three-year warranty, in exchange for working incandescent bulbs
- Subsidies for cold storage set ups
  - » Government assistance in the form of credit linked back ended subsidy of 35 percent of the project cost is available through 2 schemes
- Department of Agriculture Cooperation and Farmers Welfare (DAC&FW) is implementing Mission for Integrated Development of Horticulture (MIDH)
  - » National Horticulture Board (NHB) is implementing a scheme namely "Capital Investment Subsidy for Construction/Expansion/Modernisation of Cold Storages and Storages for Horticulture Products
  - » Under the Pradhan Mantri Kisan Sampada Yojana, the component on Integrated Cold Chain, Value Addition and Preservation Infrastructure provides financial assistance in the form of grant-in-aid at the rate of 35 percent can be obtained for creation of infrastructure facility along the entire supply chain[51] for facilitating distribution of non-horticulture, horticulture, dairy, meat and poultry. The scheme allows flexibility in project planning with special emphasis on creation of cold chain infrastructure at farm level.
- EESL plans to initiate market-based interventions for Solar based Induction cooking solutions by leveraging Carbon financing
- Leveraging funds through the 15th Finance Commission and schemes like GOBARDHAN (Galvanising Organic Bio-Agro Resources Dhan) scheme under Swachh Bharat Mission - Gramin (SBM-G).
  - » The GOBARDHAN scheme under SBM-G provides financial assistance up to ₹50.00 lakh per district for the period of 2020-21 to 2024-25 for setting up of cluster/community level biogas plants[52].
- UP Bio-Energy Policy 2022[53] provides incentives for setting up CBG plants in addition to incentives available from Govt. of India under the GOBARDHAN scheme:
  - » The incentive of ₹75 lakh/tonne to the maximum of ₹20 Crore on setting up Compressed Biogas

49 Street Lighting National Programme by EESL

50 Gram Ujala scheme distributes One Crore LED bulbs in rural areas (Feb 2023), PIB

51 viz. pre-cooling, weighing, sorting, grading, waxing facilities at farm level, multi product/multi temperature cold storage, CA storage, packing facility, IQF, blast freezing in the distribution hub and reefer vans, mobile cooling units

52 https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1883926

53 https://invest.up.gov.in/bio-energy-enterprises-promotion-programme-2022/

(CBG) Production Plant

- » Exemption on development charges levied by development authorities
- » Exemption of 100 percent Stamp duty and Electricity duty

- MNRE implemented the Waste to Energy (WTE) Programme under the umbrella of the National Bio-energy Programme:
  - » The programme supports the setting up of plants for the generation of Biogas from urban, industrial, and agricultural waste
  - » Financial assistance available for Biogas generation is ₹0.25 Crore per 12,000 m^3/day[54]
  - » PM-Surya Ghar: Muft Bijli Yojana is a Central Scheme that aims to provide free electricity to households in India, who opt to install solar rooftop[55].

Other Sources of Finance

- Explore tie ups with local banks, microfinance institutions and cooperative banks for loans to procure solar rooftop, solar pumps etc
- Explore partnerships with solar developers for agro-photovoltaics
- CSR funds can be utilised:
  - ➢ To cover the capital cost for installation of solar rooftops/agro-photovoltaics/solar pumps over and above the scheme/programme subsidy through a revolving fund model similar to those given by micro-finance institutions
  - ➢ Provide "Operation and Maintenance" training to village community members/SHGs members for the various clean technologies adopted in the GP
  - ➢ Organise awareness campaigns on existing government schemes/programmes that promote rooftop solar (UP Solar Policy, 2022) and solar irrigation (PM-KUSUM, UP Solar Irrigation Scheme)

Key Departments

- Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA)
- Uttar Pradesh Power Corporation Limited (UPPCL)
- Madhyanchal Vidyut Vitran Nigam Limited
- Panchayati Raj Department
- Rural Development Department
- Department of Agriculture
- Education Department

54 https://pib.gov.in/PressReleasePage.aspx?PRID=1896067
55 https://pmsuryaghar.gov.in/

6. Sustainable and Enhanced Mobility

Context & Issues[56]

- Allapur Ranimau has a total of 473 internal combustion engine (ICE) vehicles: 400 two-wheelers, 21 cars, 6 mini trucks, 40 tractors, 1 harvestor and 5 e-rickshaws.
- The total fuel consumption by the ICE vehicles is ~88.2 kilo litre (kL) of diesel and ~32 kL of petrol per annum. Overall, the fuel consumed in the transport sector has led to over ~193 tCO_2e emissions.

Therefore, there is significant scope for improving transport infrastructure and initiating a transitioning towards e-mobility solutions.

Enhancing Road Infrastructure

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	Maintenance of road infrastructure and repairs as per requirement	Maintenance of road infrastructure and repairs as per requirement	Continued maintenance of road infrastructure and repairs as per requirement
Target	Regular maintenance/repair of roads	Regular maintenance/repair of roads	Regular maintenance/ repair of roads

56 As understood from the community during field surveys and FGDs and corroborated by relevant sources

Estimated Cost	As per requirement	As per requirement	As per requirement

Enhancing Intermediate Public Transport

Phase	**I** 2024-25 to 2026-27	**II** 2027-28 to 2029-30	**III** 2030-31 to 2034-35
Suggested Climate Smart Activities	Introducing e-autorickshaws to improve the last mile connectivity	Introducing more e-autorickshaws to improve the last mile connectivity	More e-autorickshaws can be procured based on demand
Target	Introducing 3 e-autorickshaws	Additional e-autorickshaws procured as per requirement	Additional e-autorickshaws procured as per requirement
Estimated Cost	Cost of one e-autorickshaw around[57]:₹3,00,000 Available subsidy upto: ₹12,000 per vehicle *Effective Cost: ₹8,64,000*	As per requirement	As per requirement

57 The cost of e-autorickshaws range from a band of ₹1,50,000 - ₹4,00,000 and more, depending on the configurations, battery type, amongst others. Price of e-autorickshaws is assumed to be at the middle of the price band primarily factoring in possible subsidies/ grants/seed capital/viability gap funding from philanthropies and other funding agencies.

E-vehicles and E-tractors[58]

Phase	I 2024-25 to 2026-27	II 2027-28 to 2029-30	III 2030-31 to 2034-35
Suggested Climate Smart Activities	1. Promote electric alternative of diesel tractors and goods transport vehicle by sensitising user groups (farmers/logistic owners /entrepreneurs) towards long term benefits of e-vehicles over ICE vehicles 2. Establishing facility to hire e-goods carriers and e-tractors (explained in detail in the 'Enhancing Livelihoods and Green Entrepreneurship' section)	Continue the sensitisation of various user groups towards long term benefits of e-vehicles over ICE vehicles as well as the schemes and programs available for their benefit	Continue the sensitisation of various user groups towards long-term benefits of e-vehicles over ICE vehicles as well as the schemes and programs available for their benefit
Target	Total 5 e-tractors and 5 e-goods carriers purchased	Regular awareness programmes and/or as per identified needs	Regular awareness programmes and/or as per identified needs
Estimated Cost	1. 5 e-tractors: ₹30,00,000 2. 5 e-goods carrier: ₹25,00,000 – ₹50,00,000 *Total Cost: ₹55,00,000–₹80,00,000*		

Existing Schemes and Programmes

- Road infrastructure can be repaired and enhanced with support from Pradhan Mantri Gram Sadak Yojana and MGNREGS
- UP Electric Vehicle Manufacturing and Mobility Policy, 2022 provides
  - » 100 percent registration fee and Road Tax exemption to buyers (during the Policy period)
  - » Purchase Subsidy as early bird incentives to buyers[59] (one time) through dealers over a period of 1 year – E-Goods Carriers: @10 percent of ex-factory cost up to ₹1,00,000 per vehicle; 2-Wheeler EV: @15 percent of ex-factory cost up to ₹ 5000 per vehicle; 3-Wheeler EV: @15 percent of ex-factory cost up to ₹12000 per vehicle
- Subsidies for e-rickshaws can also be availed under the Faster Adoption and Manufacturing of Electric Vehicles in India Phase II (FAME II) Scheme

58 Further details can be found in the Enhancing Livelihoods & Green Entrepreneurship section

59 Subsidies provided by the government are subject to periodic changes both in terms of the quantum and number of beneficiaries. Hence, subsidies mentioned in any section of this plan are only indicative, and need to be confirmed at the time of procurement.

Other Sources

- GP's resource envelope and OSR
- Loans from banks and micro-finance institutions in tandem with CSR support

Key Departments

- Infrastructure and Industrial Development Department
- Transport Department
- Panchayati Raj Department
- Department of Rural Development
- Uttar Pradesh New & Renewable Energy Development Agency (UPNEDA

7. Enhancing Livelihoods and Green Entrepreneurship

Context & Issues

Agriculture and animal husbandry are the mainstay of the GP and more than 78 percent of the households are engaged in these activities. Both the sectors are fraught with livelihood insecurities, particularly due to the frequent droughts, changing climate and the current unsustainable production practices in animal husbandry. Thus, the livelihoods of a large fraction of the population are uncertain. Other key sources of income in the GP are non-farm wage labour and running local businesses/shops.

Presently, there are limited opportunities for jobs within the GP, beyond the activities mentioned. The recommendations mentioned in this action plan provide multiple avenues for new businesses and job opportunities in the coming years These are detailed in the following table:

Engage already Existing SHGs in Manufacture of Sustainable Products

Suggested Climate Smart Activities

1. Engaging women and SHGs for manufacturing products from plastic-alternative materials (bags, home décor, cutlery, stationery items, furniture, etc.)
2. Capacity building for:
   - » Diversification of product range
   - » Marketing/selling of the products within & outside the GP

Target

Initial engagement of:

- 100 women
- 15 SHGs (currently involved goat and buffalo rearing)
- Utilize locally available raw materials

Long-term engagement from this GP & nearby villages:

- Additional 50 women
- Additional SHGs, MSMEs & individual entrepreneurs

Composting & Selling of Organic Waste as Fertiliser

Suggested Climate Smart Activities

1. Partnership model between panchayat, community members, and farmer groups for the production & sale of compost
2. Capacity building of community members and farmer groups
   - Composting & vermicomposting techniques
   - Marketing & selling compost within & outside the GP

Target

Immediate target:

Compost/vermicompost generated from domestic waste (organic): 90 kg per day; 2,670 kg per month (as per current waste generation)

Long-term target:

Scaling up compost/vermicompost generation as per organic waste generation (based on population growth)

Facility to Hire E-goods Carriers and E-tractors

Suggested Climate Smart Activities

1. Commercial hiring (rental basis) of e-goods carriers & e-tractors presents green entrepreneurship opportunities through incentives under U.P. EV Policy 2022 and FAME-India Scheme phase-II
2. Sensitising user groups (farmers/logistic owners) towards the use of e-tractors & e-goods carriers

Target

Immediate target:

- 2 or 3 e-tractors *(Estimated cost: Rs 6 lakh per e-tractor)*
- 2 or 3 EV mini goods transport trucks *(Estimated cost of mini goods EV transport truck: Approximately Rs 9.2 lakhs)*

Mid-term target:

Additional procurement of 2/3 e-tractors, 2/3 EV mini goods transport trucks

Improving Livelihoods through Use of Solar Powered Cold Storage

Suggested Climate Smart Activities

1. Entrepreneurship opportunities through renting out of solar-powered cold storage space to smaller and medium farmers (within the GP & nearby villages) to minimise post-harvest losses
2. Business model/tie-up between entrepreneurs, farmer groups, cooperatives (like PARAS) and other institutional buyers for storage of fruits, vegetables, milk and milk products

Target

Setting up of cold storage with 5 to 10 metric tonnes capacity

(tonnes based on production of vegetables and fruits/and/or milk products)

Cost: ₹8 to ₹15 lakhs

Arogya Van for Production & Sale of Natural Medicines and Supplements

Suggested Climate Smart Activities

1. Livelihood generation for communities through development and maintenance of *Arogya Van* for production of natural medicines & supplements
2. Partnering with Central Institute of Medicinal and Aromatic Plants, Lucknow for skill development & training

Target

Around 0.1 ha of land to be established as *Arogya Van*

O&M of various RE installations (Solar and Biogas)

Suggested Climate Smart Activities

- » Training and capacity building of community members, especially. graduates, youth groups and farmer groups for skill development in RE maintenance.
- » Support from CSR, upskilling schemes of Central and State Government in establishing Solar and Bio-gas installation and O&M businesses within the GP

Financing & Skill Development

- Sensitising banking & financial institutions to support green entrepreneurship & livelihoods (through various credit schemes, partnership/revenue models); Government loan schemes such as Mudra Loan, Stree Shakti Yojana, etc. can support women entrepreneurs
- Necessary skill development provided through supporting government schemes and programmes like: Make in India, Entrepreneur Development Programme run by Department of Science and Technology (DST), National Skill Development Missions and Atal Innovation Mission.

6 List of Additional Projects for Consideration

Given below is a list of possible projects for additional consideration for implementation at the GP level by respective Panchayats. These projects have been successfully implemented in various parts of India and in geographies that may have a lot of similarities with Uttar Pradesh. The reason for not including them in the main recommendation is that these projects do not fall or come under the ambit of any ongoing schemes or programmes of the Government of Uttar Pradesh or through Centrally Sponsored Schemes. Hence, the implementation of these projects would have to be done through alternate financing options such as self-financing, CSR, or other such sources.

If implemented, these projects could have the potential to further strengthen the adaptive capacities of communities and may also result in livelihood enhancements.

1. Solar-powered cold storage unit (FPO/SHG/Individual farmers)

- A solar-powered cold storage unit to enhance post-harvest efficiency and reduction in loss.
- It helps farmers avoid distress sales and improves farmers' income

This activity will strengthen initiatives discussed in the 'Enhancing Livelihood and Entrepreneurship' section

Case Example / Best Practice[60,61,62]:

Kattangur Farmers Producers Company Ltd in Hyderabad, Telangana

Ghummar Farmer Producer Organisation (FPO) is based at village Nana of Bali tehsil of Pali district of Rajasthan

2. Solar Passive Design and Passive Cooling

For new construction and retrofitting (wherever possible): Promoting sustainable design and vernacular (local/traditional) materials in public and administrative buildings along with scaling up to residential houses to reduce energy demand and increase energy efficiency:

- Building orientation as per solar geometry
- Allow efficient movement of natural air
- Wind tower coupled with solar chimney
- Allow natural lighting through light vaults (minimizing conventional light load)
- Energy conservation activities0
- Water bodies and designed landscape (plantation/horticulture)

This activity will strengthen initiatives discussed in the 'Access to Clean, Sustainable, Affordable and Reliable Energy' section

60 https://selcofoundation.org/wp-content/uploads/2023/08/Compendium_Updated_20230922.pdf
61 https://www.opportunityindia.com/article/empowering-women-fpo-through-solar-power-ghummar-fpo-34521
62 https://www.ecozensolutions.com/ecofrost/fpos-leverage-agri-infra-funds-for-ecofrost.html

Case Example / Best Practice:

The Rajkumari Ratnavati Girl's School[63], rural Thar desert, Rajasthan: for more than 400 girls that live below the poverty line.

- Building orientation to maximize thermal comfort
- Solar panel installations to run lighting and fans
- Solar panel canopy and Jallis/screens keep the heat out
- The elliptical shape of the canopy creates cooling (airflow)
- Building walls allow air penetration and keep the sun/sand out
- Use of local/vernacular material for construction

Solar Passive Complex, Punjab Energy Development Agency (PEDA), Chandigarh[64]

- 25 kWp building integrated solar power plant
- Orientation as per solar geometry
- Building envelope (design+material) to provide thermal comfort (e.g., Cavity walls, insulated roofing)
- Conditioned air and light by controlling solar access (e.g., Light vaults, Wind Tower coupled with Solar Chimneys)
- Small ponds and plantations (trees, shrubs, and grass) for cooling and air purification

3. Solar-powered RO water filtration system/ Water ATM Kiosk (community-based)

Solar-based RO water purification systems offer a sustainable and cost-effective solution by utilizing solar energy. It ensures a safe drinking water supply to the community while promoting the reuse of water. This initiative can be beneficial for Gram Panchayat facing issues with the quality of drinking water.

Case Example / Best Practice:

Hiwra lahe village, District - Washim, State- Maharashtra[65]

- Installing solar-powered RO water filtration system with CSR support
- Improvement in the socio-economic status of the community
- Enabling Village Water and Sanitation Committee for the operation and management of the system
- Similar initiatives have been implemented in the states of Gujarat, Telangana, Rajasthan, etc.

63 https://www.avontuura.com/rajkumari-ratnavati-girls-school-diana-kellogg-architects/

64 https://peda.gov.in/solar-passive-complex

65 https://yraindia.org/wp-content/uploads/2019/12/RO-plant-Success-story-in-Village-Hiwara-HDB-project.pdf

4. Solar-powered cattle sheds

Cattle sheds are an adaptive measure for livestock to protect them from heat and cold waves; this initiative can be supplemented to enable climate change mitigation by deploying solar power installations over the cattle shed roofs. This can power lighting, reduce energy demand (passive cooling and ventilation), support fodder preparations, and any other operations in the sheds. Excess power can be fed into the grid thereby generating additional income for farmers.

Cattle sheds will also help in waste management through biogas generation and fertilizer preparation from animal waste (dung). Cattle sheds will also help in reducing the transmission of communicable diseases in livestock by providing proper segregated and secure spaces.

This activity can strengthen the Sustainable Livestock Management suggestions in the 'Sustainable Agriculture' section of the recommendations.

Case Example / Best Practice:

Districts: Ludhiana, Bathinda & Tarn Taran, Punjab[66,67]

- The project is being implemented in 3 districts targeting 3000 Households of small & marginal farmers having landholdings of 1-2 ha and 5-15 dairy animalsClimate proofing of cattle sheds and promoting sustainable livelihoods of small and marginal livestock farmers

Nirmal Gujarat Campaign[68]

- The animal hostels in Himmatnagar, Gujarat help to keep the villages cleanSuch shelters collect dung to generate biogas and vermicompost for villagers. Further, vermicompost can be sold to raise funds for village welfare

Additionally, there is a "Cattle Shed Subsidy Scheme under Scheduled Castes Sub Plan (SCSP)[69]" which is implemented by the Directorate of Animal Husbandry, Agriculture, Farmers Welfare and Co-operation Department, Government of Gujarat. Under this scheme, financial assistance (either ₹30,000/- or 50 percent of the cost of the cattle shed, whichever is less) is given to Scheduled Caste beneficiaries for the construction of a Cattle Shed for 2 animals.

5. Cool Roofs

Painting the roofs of households, and public and government buildings with solar-reflective paint

Case Example / Best Practice:

Slum households in Jodhpur, Bhopal, Surat, and Ahmedabad[70]

- Local community workers trained the households to paint their own cool roof
- Demonstration outreach: more than 460 roofs
- Indoor temperatures lower by 2 - 5°C compared to traditional roofs

This activity links to the section 'Access to Clean, Sustainable, Affordable, and Reliable Energy.'

66 https://pscst.punjab.gov.in/en/climate-resilient-livestock-production-system
67 https://moef.gov.in/wp-content/uploads/2017/08/Punjab.pdf
68 https://jayshaktiengg.com/gujarat-government-launches-solar-scheme-for-farmers/
69 https://www.myscheme.gov.in/schemes/csssscspscc
70 https://www.nrdc.org/bio/anjali-jaiswal/cool-roofs-community-led-initiatives-four-indian-cities

6. Reduction of methane emissions from cattle through the use of feed supplements

The Indian Council of Agricultural Research (ICAR) -National Institute of Animal Nutrition and Physiology has developed feed supplements (Harit Dhara and Tamarin Plus) to help reduce methane emissions from livestock.

This activity links to the section on 'Sustainable Agriculture'

- The usage of these supplements can potentially lead to the reduction of enteric methane emissions upto 17-20 percent[71] when incorporated with feedstock.
- These feed supplements as reported by the ICAR cost ₹6 per kg

7. Solar-powered vertical fodder grow units (household level/community level)

A solar-powered, microclimate-controlled, vertical fodder grow unit enables users to harvest fresh fodder daily with less than a bucket of water. Such units will ensure the availability of fodder for livestock even in the event of droughts.

This activity links to the section on 'Sustainable Agriculture'

Case Example / Best Practice:

In the states of Andhra Pradesh, Rajasthan, Karnataka, and Bihar[72]

- Adoption of fodder grow units results in increased availability of green fodder for livestock
- It leads to an increase in farmers' income

8. Panchayat level Water Budgeting

Water management and 'Water budgeting' for climate-compatible agriculture-based livelihoods

- Calculation of annual/quarterly Water Budget
- Compute 'Water Deficit' and 'Water Surplus' at the village level
- Annual crop production planning based on water availability
- Water audit to account for any wastage

This activity links/adds to the initiatives Sustainable Agriculture and Water Resource Management sections of the Action Plan. This initiative supports multiple interventions like crop selection/planning, farm ponds, improved irrigation methods, water recharge, etc.

71 As reported by Indian Council for Agriculture (https://testicar.icar.gov.in/content/icar-nianp-commercializes-anti-methanogenic-feed-supplement-%E2%80%9Charit-dhara%E2%80%9D)

72 https://india.mongabay.com/2024/04/amid-fodder-crisis-hydroponics-offers-new-hope-for-indian-farmers/

Case Example / Best Practice:

7 Gram Panchayats (GP) and the neighboring hamlets, Rangareddy and Nagaurkurnool districts, Telangana[73]

- Current status of water consumption, measures to optimize consumption
- Planning for each agriculture season i.e., Kharif (monsoon), Rabi (winter), and Zaid (summer)

9. Enabling rural women entrepreneurs in climate impact sectors

Creating a women-led grassroots entrepreneurship support ecosystem in villages:

- Women sell clean/green technology-based products
- Women educate communities on the importance of clean-technologies
- e.g., clean cooking (solar cookstoves), portable Solar water purifiers, energy-efficient light fixtures, etc.
- Providing business expansion loans to women
- Facilitating rural marketing and distribution linkages

Vocational skills development, Training, and capacity building to enable rural women into the entrepreneurship ecosystem.

This initiative intends to strengthen women's role and engagement in clean energy technologies and climate impact sectors. It links to and adds to the Enhancing Livelihoods and Green Entrepreneurship section of the Action Plan.

Case Example / Best Practice:

14 districts across 4 states (Maharashtra, Bihar, Gujarat and Tamil Nadu)[74]

Swayam Shishan Prayog (SSP) enabling women as clean energy entrepreneurs and climate change leaders in their rural communities:

1. Enabled more than 60,000 rural women entrepreneurs in clean energy, sustainable agriculture, health and nutrition, and safe water and sanitation
2. More than 1,000 women entrepreneurs trained in clean-energy technologies and started businesses

10. Community Seed Banks

- Community seed banks will promote crop diversification and sustainability in the region while mainstreaming local seed systems, and climate resilience. Such seed banks will encourage farmers to grow drought-tolerant and climate-resilient varieties of cropsEnsure safety nets for farmers, especially during unfavorable weather conditions and food shortages

73 https://wotr.org/2018/03/31/water-budgeting-in-telangana-the-need-and-the-objective-of-the-campaign/

74 https://unfccc.int/climate-action/momentum-for-change/women-for-results/rural-community-leaders-combatting-climate-change

Case Example / Best Practice:

Community Seed Bank, Dangdhora, Jorhat, Assam (UNEP-GEF project)[75]

- Seed bank-associated farmers are trained to harvest, treat, store, and multiply seeds that are of better quality than those available in the local marketSeed bank initiatives in the region forward participatory crop improvement and knowledge-sharing strategiesFarmers and smallholders are provided with cheaper and easier access to quality seeds; bridging farmers and markets together.
- These seed systems and value chains safeguard both sustainability and food security.

11. Setting up Bio-Resource Centre (BRC)

Bio-inputs Resources Centres (BRCs) prepare and supply bio-inputs to facilitate the adoption of natural farming without individual farmers having to prepare them on their own, as preparation of bio-inputs is a time-consuming and labor-intensive activity.

- The locally prepared products/formulations utilizing biological entities or biologically derived inputs useful for improving soil health, crop growth, pest, or disease management are made available for purchase by farmers.
- BRC serves as a single-stop shop for all bio input needs of farmers in the area.

Case Example / Best Practice:

In the state of Andhra Pradesh[76]

- Contributes to sustainable climate-friendly agriculture
- Helps farmers adapt to climate change because high soil organic matter content makes soils more resilient to floods, droughts, and land degradation processes
- Minimizes risk as a result of stable agro-ecosystems and yields, and lowers production costs

75 https://alliancebioversityciat.org/stories/community-seed-banks-empower-farmers-address-climate-risk-india
76 https://www.apmas.org/pdf/csv/casestudy-1.pdf

7 Linkages to Adaptation, Co-Benefits & Sustainable Development Goals

Management and Rejuvenation of Water Bodies

Suggested Climate Smart Activities	Adaptation Potential and Co-benefits	SDGs and Respective Targets Addressed[77]
a) Promoting Rainwater Harvesting (RwH) Structures	▪ Nature-based Solutions (NbS) enhances coping ability from water scarcity and water stress ▪ Improved groundwater recharge ▪ Enhanced water quality ▪ Increased resilience to disasters like droughts, heatwaves, etc. ▪ Improved agricultural and livestock productivity ▪ Boost local biodiversity	**SDG 6: Clean Water and Sanitation** ▪ Target 6.1 ▪ Target 6.3 ▪ Target 6.4 ▪ Target 6.5 **SDG 11: Sustainable Cities and Communities** ▪ Target 11.4 **SDG 12: Ensure Sustainable Consumption and Production Patterns** ▪ Target 12.2 **SDG 13: Climate Action** ▪ Target 13.1 ▪ Target 13.2 **SDG 15: Life on Land** ▪ Target 15.1 ▪ Target 15.5
b) Rejuvenation and Conservation of Water Bodies		
c) Enhancing Drainage and Sewage Infrastructure		
d) Wastewater Management		

77 Detail list of relevant SDG and respective targets in Annexure V

Sustainable Solid Waste Management

Suggested Climate Smart Activities	Adaptation Potential and Co-benefits	SDGs and Respective Targets Addressed
a. Establishing a Waste Management System 	▪ Reduced waterlogging ▪ Reduction in water and land pollution/ improved sanitation ▪ Good health and a relatively disease-free environment due to 100% waste management and reduction in occurrence of public health risks and epidemics ▪ Livelihood and income generation ▪ Revenue and profit generation ▪ Enhanced inputs for sustainable agriculture ▪ Promotion of waste-based agricultural circular economy	**SDG 3: Good Health and Well being** ▪ Target 3.3 ▪ Target 3.9 **SDG 6: Clean Water and Sanitation** ▪ Target 6.3 ▪ Target 6.8 **SDG 8: Decent Work and Economic Growth** ▪ Target 8.3 **SDG 9: Industries, Innovation and Infrastructure** ▪ Target 9.1 **SDG 12: Ensure Sustainable Consumption and Production Patterns** ▪ Target 12.4 ▪ Target 12.5 ▪ Target 12.8 **SDG 13: Climate Action** ▪ Target 13.1 ▪ Target 13.2 ▪ Target 13.3 **SDG 15: Life on Land** ▪ Target 15.1
b. Improved Sanitation Management 		
c. Sustainable Management of Organic Waste 		
d. Ban on Single Use Plastics 		

Sustainable Agriculture

Suggested Climate Smart Activities	Adaptation Potential and Co-benefits	SDGs and Respective Targets Addressed
a. Building Climate Resilience in Agriculture  b. Transition to Natural Farming  c. Sustainable Livestock Management 	▪ Increased agricultural productivity and profit ▪ Improved soil health ▪ Improved water quality due to reduced use of chemical inputs ▪ Improved agricultural water security ▪ Reduced losses and increased productivity of livestock during cold waves and heat waves ▪ Improved air quality and reduced emissions	**SDG 2: Zero Hunger** ▪ Target 2.3 ▪ Target 2.4 ▪ Target 2.a; Article 10.3.e **SDG 6: Clean Water and Sanitation** ▪ Target 6.4 ▪ Target 13.1 **SDG 13: Climate Action** ▪ Target 13.2 ▪ Target 13.3 

Enhancing Green Spaces and Biodiversity

Suggested Climate Smart Activities	Adaptation Potential and Co-benefits	SDGs and Respective Targets Addressed
a) Improving Green Cover  b) People's Biodiversity Register 	▪ Natural buffer from climate events/disasters ▪ Regulating the micro-climate will aid in adaptation from heatwaves and heat stress ▪ Health benefits from access to medicinal plants ▪ Nature-based Solutions (NbS) for improved soil stability, water conservation and corresponding agricultural benefits ▪ Improved livestock productivity ▪ Revenue generation from agroforestry, production of natural medicines, etc. ▪ Improved environment and habitat for biodiversity, enhancing ecosystem health	**SDG 11: Sustainable Cities and Communities** ▪ Target 11.7 ▪ Target 11.4 **SDG 12: Ensure Sustainable Consumption and Production Patterns** ▪ Target 12.2 **SDG 13: Climate Action** ▪ Target 13.1 ▪ Target 13.2 ▪ Target 13.3 **SDG 15: Life on Land** ▪ Target 15.1 ▪ Target 15.2 ▪ Target 15.3 ▪ Target 15.5 ▪ Target 15.9 

Access to Clean, Sustainable, Affordable and Reliable Energy

Suggested Climate Smart Activities	Adaptation Potential and Co-benefits	SDGs and Respective Targets Addressed
a. Solar Rooftop Installation 	▪ Energy security ▪ Thermal comfort ▪ Enhanced livelihood options ▪ Additional revenue generation ▪ Provides relief from high temperatures/ sun exposure, thus resulting in yield stability and boost in productivity ▪ Decline in toxic emissions/local air pollution ▪ Economic benefits after pay-back period ▪ Reduction in indoor air pollution ▪ Improvement of health, especially of women ▪ Eliminates drudgery/ physical labour of fuelwood collection ▪ Enhanced ability to cope with grid failures during disasters	**SDG 6: Clean Water and Sanitation** ▪ Target 6.4 **SDG 7: Affordable & Clean Energy** ▪ Target 7.1 ▪ Target 7.2 ▪ Target 7.3 ▪ Target 7.a ▪ Target 7.b **SDG 9: Industries, Innovation and Infrastructure** ▪ Target 9.1 **SDG 13: Climate Action** ▪ Target 13.2 ▪ Target 13.3
b. Agro-photovoltaic installation 		
c. Solar pumps 		
d. Clean cooking 		
e. Energy efficiency fixtures 		
f. Solar street lights 		

Sustainable and Enhanced Mobility

Suggested Climate Smart Activities	Adaptation Potential and Co-benefits	SDGs and Respective Targets Addressed
a. Enhancing Road Infrastructure 	▪ Decline in local air pollution leading improved human and ecosystem health ▪ Improved accessibility for at-risk and vulnerable people ▪ Additional revenue generation ▪ Enhanced last-mile connectivity of goods and services ▪ Improved resilience through strengthening road infrastructure with co-benefits like reduced waterlogging	**SDG 7: Affordable & Clean Energy** ▪ Target 7.2 **SDG 11: Sustainable Cities and Communities** ▪ Target 11.2 **SDG 9: Industries, Innovation and Infrastructure** ▪ Target 9.1 **SDG 13: Climate Action** ▪ Target 13.2 ▪ Target 13.3
b. Enhancing Intermediate Public Transport 		
c. E-vehicles and E-tractors 		

Enhancing Livelihoods and Green Entrepreneurship

Suggested Climate Smart Activities	Adaptation Potential and Co-benefits	SDGs and Respective Targets Addressed
a. Engage already existing SHGs in manufacture of sustainable products 	▪ Enhanced livelihood options through locally sourced raw material ▪ Reduction in water and land pollution ▪ Enhanced inputs for sustainable agriculture ▪ Good health and a relatively disease-free environment due to 100% waste management and reduction in occurrence of public health risks and epidemics ▪ Health benefits from access to medicinal plants ▪ Revenue generation from agroforestry, production of natural medicines, etc. ▪ Improved environment and habitat for biodiversity, enhancing ecosystem health ▪ Decline in local air pollution leading improved human and ecosystem health ▪ Enhanced last-mile connectivity of goods and services	**SDG 5: Achieve Gender Equality and Empower All Women and Girls** ▪ Target 5.5 **SDG 8: Decent Work and Economic Growth** ▪ Target 8.3 **SDG 12: Ensure Sustainable Consumption and Production Patterns** ▪ Target 12.2 ▪ Target 12.4 ▪ Target 12.5 ▪ Target 12.8 **SDG 13: Climate Action** ▪ Target 13.1 ▪ Target 13.2 ▪ Target 13.3
b. Composting & selling of organic waste as fertiliser 		
c. Facility to hire e-goods carriers and e-tractors 		
d. Improving livelihoods through use of solar powered cold storage 		
e. *Arogya Van* for production & sale of natural medicines and supplements 		
f. O&M of various RE installations (solar and bio-gas) 		

8 Way Forward

The proposed recommendations on implementation will help to not only reduce Greenhouse Gas (GHG) emissions of Allapur Ranimau but also to achieve energy, food and water security, thereby, making the Gram Panchayat climate smart, resilient and sustainable. This will foster a holistic and sustainable development of the GP to meet the aspirations of its residents. Additionally, these recommendations would improve quality of life while promoting a harmonious co-existence with nature. This Climate Smart Action Plan for Allapur Ranimau will make it '*Aatma Nirbhar*' through various aspects like, reduction of expenditure on energy, farming inputs, water, etc. and will open new avenues for economic development.

Further, with the implementation of proposed interventions, Allapur Ranimau would also contribute to the State's vision and targets on climate action as envisaged in the UP State Action Plan On Climate Change II, 2022, which in turn, would add to the country's endeavours to address climate change meeting the contributions listed in the NDC, 2015 and its updated version, 2022 and also meet the Sustainable Development Goals by 2030.

Addressing climate issues requires tailor-made solutions at the local level, which can only be successful with the availability of adequate climate finance and other means of implementation. This can be achieved by integrating the climate action both mitigation and adaptation in to ongoing activities as envisaged in the Gram Panchayat development Plan supported under State and Central schemes and mobilising additional financial resources. This would entail enhanced collaboration and cooperation between all relevant stakeholders: community, government administration, elected representatives and private sector. Post implementation of the Action Plan, continued action in the form of efficient management of the new infrastructure/technology will be the key in ensuring Allapur Ranimau becoming a model climate smart gram panchayat. The success of the present plan will possibly influence other Gram Panchayats to follow the process to make themselves smart, resilient and sustainable. To achieve this vision, it will be crucial to promote a sense of community ownership and behavioural change for adoption of a sustainable lifestyle, along the lines of LiFE Mission as envisioned by the Hon'ble Prime Minister, Shri Narendra Modi.

9 Annexures

Annexure I: Background and Methodology

Background

The State of Uttar Pradesh (UP) is making rapid strides towards climate action. Under the visionary and inspirational leadership of the Hon'ble Chief Minister, Shri Yogi Adityanath, the State has initiated a wide-range of climate actions across different levels of governance. One such initiative is to develop action plans for 'Climate Smart Gram Panchayats.' This concept was envisaged by the Chief Minister of Uttar Pradesh in June, 2022. To take this work ahead, a rapid multi-criteria assessment was conducted to identify climate friendly Gram Panchayats in 39 vulnerable districts[78] of UP. The selected Gram Panchayats were announced and several of these were felicitated during the 'Conference of Panchayats' (COP) held on 5th June, 2022.

The Climate Smart Gram Panchayat Action Plan[79] for Allapur Ranimau has been developed by the Department of Environment, Forest and Climate Change, Government of UP in collaboration with Vasudha Foundation, and Gorakhpur Environmental Action Group. The action plan aims to provide a customised blueprint for mainstreaming climate action at the Gram Panchayat level. This in turn would strengthen localised climate initiatives to not only build climate resilience but also reduce emissions with the aim of becoming zero carbon/carbon neutral by 2030.

The participatory approach adopted in developing this action plan reinforces the concept of bottom-up planning. The key recommendations provided in this action plan can be converted into individual pilot projects that can be funded through a range of financing options, such as CSR funds, existing State and Central Government Programmes, innovative Public-Private Partnerships, carbon finance, and private investments.

To make this feasible, the action plan also has an outline for forging Panchayat-Private-Partnership (PPP) and enhanced collaboration and cooperation between state actors and non-state actors to ensure effective implementation of this action plan.

Methodology

This report comprises of the main Climate Smart Gram Panchayat Action Plan as well as the inputs received from field in the form of filled questionnaire, social and resource map of the Gram Panchayat enclosed as annexures.

To develop the Climate Smart Gram Panchayat Action Plan, the following steps were undertaken:

- *Preparation of survey questionnaire*: to understand the ground situation and develop a baseline scenario of the Gram Panchayat a questionnaire was developed with inputs from key stakeholders and sectoral experts. The questionnaire covered various aspects such as demography, socio-economic indicators, climate variability, climate perception (past 5 years), energy, agriculture

78 39 highly vulnerable districts of UP were identified from the State Action Plan on Climate Change 2.0 of UP and the Scoping Assessment for Climate Change Adaptation Planning in Uttar Pradesh by DoEFCC, GoUP

79 This document comprises of the main Climate Smart Gram Panchayat Action Plan and includes the following as annexures: detailed methodology; filled questionnaire and the social and resources map of the Gram Panchayat.

& livestock, land resources, sanitation, and health. The survey also aimed to understand the penetration of Central and State government schemes in the Gram Panchayat.

- *Stakeholder consultation & Capacity building:* Consultations and capacity building workshops were conducted for local NGO partners, Gram Pradhans, Panchayat Secretaries. The stakeholders were briefed about the objective and components of the Climate Smart Gram Panchayat Action Plan, the process of development of these action plans and their individual roles in the same.
- Additionally, NGO partners were also given a training on key climate change concepts, the surveying techniques to be adopted and the questionnaire developed for focus group discussions.
- *Field survey*: To ensure maximum participation from the community, a few rounds of Gram Sabha and focus group discussions were organised to collect primary data.
  - » Field survey included a transect walk of the GP to develop the social and resource maps of the GP.
  - » Focus Group Discussions were held to identify key climate change-related issues faced by Allapur Ranimau GP as well as identify the development priorities of the GP.
- Based on the inputs received, the plan was developed and baseline assessments were conducted for the Gram Panchayat. This included identification of climate-smart activities that not only address the environmental and climatic issues that have been identified but also take into account the prevailing agro-climatic characteristics of the GP. Information gaps were identified and addressed through multiple rounds of one-on-one discussions with the Gram Pradhan, community and Panchayat Secretary.
- The draft plan was presented to the Gram Panchayat for review.
- Post accommodating required updates based on inputs from the Gram Panchayat, the action plan was finalised and presented to the GP for endorsement.

Annexure II: Questionnaire

UP Climate Smart GP Survey Questionnaire

Gram Panchayat: **Block:** **District:**

I. Socio-economic

1		**Status of women**	
	a	**महिला मुखिया वाले परिवारों की संख्या (अर्थात महिलाएं मुख्य/एकमात्र कमाने वाली हैं)**	
	b	कार्यरत महिलाओं के व्यवसाय का विवरण	**Total Number**
		सेवा/नौकरी (उदाहरण: शिक्षण, बैंक, सरकारी नौकरी, आदि)	
		लघु/कुटीर उद्योग	
		कृषि	381
		कला/हस्तशिल्प	205 (kadhai)
		पशुपालन	25
		व्यवसाय (स्थानीय दुकानें)	05
		मजदूरी (गैर-कृषि)	108
		अन्य	

2	**समुदाय आधारित संगठन**	
a	ग्राम पंचायत में स्वयं सहायता समूहों की कुल संख्या	15
	सदस्यों की कुल संख्या	150
	महिलाओं की संख्या	150
	समूह द्वारा की जाने वाली गतिविधियों का विवरण	Poshahar distribution
	समूह का खाता बैंक से लिंक किया गया है या नहीं	Yes

3	**पंचायत में निर्मित सरकारी संरचनाएँ**	
		कुल छत क्षेत्र (मी ^{2} या फ़ीट ^{2})
a	प्राथमिक विद्यालय	1000 sq ft
	माध्यमिक स्कूलों	1675 sq ft
	हाई स्कूल/इंटरमिडिएट	

b	कॉलेज/व्यावसायिक/आईटीआई/कौशल संस्थान आदि	
e	Panchayat Bhawan	1400 sqft
f	RRC	
g	Any other PRI buildings	
	Fertilizer and seed centre	300 sq.m.
	Community toilet	240 sqft
	Anganwadi centre	240 sqft

4

गतिशीलता और पहुंच

		जीपी से दूरी	Condition of the connecting road Good (1) Bad (2) Poor (3) Very Poor (4)
	राजमार्ग का नाम (राज्य या राष्ट्रीय)	**(NH 27) 13 km**	**Good**
	रेलवे स्टेशन:	(SH -127) 0 KM	Good
	बस स्टॉप	2 km	Bad
	पोस्ट ऑफ़िस	10 km	Good
	किनारा	2 km	Good
	कृषि बाज़ार		
	Bank	2 km	Good
	Police Station	2 km	Good
	Mandi	8 km	Good
	Block office	30 km	Good
	Tehsil office	14 km	Good
		30 km	Good
	Water Supply		

6			
	d	पाइप से जलापूर्ति वाले घरों की संख्या?	00 (water tank is under construction) पीने के पानी के लिए 50 इंडिया मार्क हैंडपम्प, 300 प्राइवेट हैंडपम्प और 100 पम्प सेट का उपयोग लोंगो द्वारा किया जा रहा है गर्मी के दिनो में पानी का स्तर नीचे चला जाता है
	e	क्या प्रवाह दर कम, अधिक या संतोषजनक है?	
	f	पाइप से जलापूर्ति की समयावधि 24*7 (1) काफी नियमित (2) अनियमित (3)	
	g	ग्राम पंचायत में सिंचाई के लिए पानी का मुख्य स्रोत क्या है ? नहर (1) वर्षा जल (2) भूजल : ट्यूबवेल (3 ए); कुआँ (3 बी); तालाब/झीलें (4) अन्य (5)	Canal, Pump set and tubewell
	h	क्या उपरोक्त स्रोत मौसमी है या बारहमासी?	Water available in canal for 6 months
	i	सिंचाई के लिए पम्पों की संख्या: सिंचाई के लिए उपयोग किये जाने वाले डीजल पंपों की संख्या सिंचाई के लिए उपयोग किये जाने वाले विद्युत पंपों की संख्या उपयोग होने वाले पम्पसेट कितने हॉर्स पावर के है ? (एचपी में)	100 pumpsets All are diesel sets They are 5 to 6.5 hp pumps
	j	अतिरिक्त जानकारी (उदाहरणार्थ, क्या घरों, कृषि एवं संबंधित गतिविधियों, उद्योगों के लिए जल आपूर्ति पर्याप्त है ; क्या पिछले कुछ वर्षों में भूजल, नदी या नहर से पानी की उपलब्धता बढ़ी है, घटी है या वही रही है? क्या शुष्क या गर्मी के मौसम में पानी की टंकियों का उपयोग बढ़ जाता है?	पिछले कुछ वर्षों में भूमिगत जल की उपलब्धता घाटी है । गर्मी के दिनो में पानी का स्तर 20-25 फीट नीचे चला जाता है
	k		

कृषि एवं पशुधन

8 a	उगाई जाने वाली प्रमुख फसलें और उनसे संबंधित जानकारी										
	फ़सल उत्पादन				उर्वरक का उपयोग			कीटनाशक का उपयोग		खरपतवारनाशक का उपयोग	
	फसल का नाम (कृषि भूमि पर उगाई जाने वाली फसलें, बागवानी, पुष्पकृषि आदि शामिल हैं)	मौसम	क्षेत्रफल (एकड़)	उपज (क्विंटल/ एकड़)	फसल का नाम (कृषि भूमि पर उगाई जाने वाली फसलें, बागवानी, पुष्पकृषि आदि शामिल हैं)	मौसम	क्षेत्रफल (एकड़)	उपज (क्विंटल/ एकड़)	फसल का नाम (कृषि भूमि पर उगाई जाने वाली फसलें, बागवानी, पुष्पकृषि आदि शामिल हैं)	मौसम	क्षेत्रफल (एकड़)
	खरीफ धान	वर्षा ऋतु	300	20	डीएपी यूरिया	100 200	बढ़ी है	एमड़ा-70	30	नॉमिनी गोल्ड बूटा क्लोर	500 ग्राम 1 लीटर
	रबी आलू	शरद ऋतु	280	100	डीएपी यूरिया	750 100	बढ़ी है	मिसाइल	100 ग्राम	सिंकार	100 ग्राम
	गेंहू	शरद ऋतु	20	20	डीएपी यूरिया	50 100	बढ़ी है			सल्को - सलफुरान	14 ग्राम
	सरसों	शरद ऋतु	10	50	डीएपी यूरिया	150 45	बढ़ी है	चमत्कार	100 ग्राम	बादशाह	500 ग्राम
	जायद मिंट	ग्रीष्म ऋतु	250	50	डीएपी यूरिया	100 100	बढ़ी है	कोराजिन	30 ग्राम	एजिल	500 मिलीलीटर

३१	कृषि वानिकी, सामाजिक वानिकी, बंजर भूमि विकास और अन्य वृक्षारोपण गतिविधियाँ							
वृक्षारोपण गतिविधि का प्रकार	कवर किया गया क्षेत्र	जगह	योजना का उपयोग: राष्ट्रीय कृषि वानिकी मिशन (1) एकीकृत वाटरशेड प्रबंधन कार्यक्रम (2) वर्षा आधारित क्षेत्र कार्यक्रम (3) मनरेगा (4) वृक्षारोपण जन आंदोलन (5) अन्य (6) - विवरण दें	रोपित प्रजातियाँ	आरंभ की तिथि	% सफलता	कृषि -वानिकी गतिविधि का उपयोग करने या उससे लाभ उठाने के अवसर/पहुंच	
	तालाब स्कूल	बासिनपुरवा	मनरेगा	पाकर, जामुन				
	पंचायत भवन	नबीगंज	वृक्षारोपण जन आंदोलन	पीपल, आंवला				
	नहर पटरी रोड पटरी	बासिनपुरवा अल्लाभ		मोहगिनी				

Livestock

10	Livestock	Number	प्रबंधन तकनीक (चारे में परिवर्तन, पोषण संपूरक (या सप्लीमेंट, खुली चराई आदि)	सालाना औसत आय (रु प्रति पशु)	जलवायु परिवर्तन/बीमारियों के कारण पिछले 5 वर्षों में पशुधन की हानि
	गाय	60		16800	
	भैंस	200		60000	
	मुर्गीपालन				
	सुअर				
	कोई अन्य (निर्दिष्ट करें)	250		4-5,000	बच्चों की मृत्यु
	क्या ग्राम पंचायत में मधुमक्खी पालन/मत्स्यपालन/मुर्गा पालन किया जाता है?				

स्वच्छता एवं स्वास्थ्य

11		शौचालय	
		स्वयं के शौचालय वाले घरों की संख्या	90 % परिवारों के पास शौचालय है

12		अपशिष्ट					
	a	अपशिष्ट जल के स्रोत क्या हैं?	घरेलू □	वाणिज्यिक □	औद्योगिक □	कृषि पद्धतियाँ □	सीवेज □
	b	उत्पन्न अपशिष्ट जल की मात्रा (प्रतिदिन लीटर में अनुमानित)	200-300 लीटर				
	c	गांव में अपशिष्ट जल उपचार सुविधा, यदि कोई हो	नहीं				

	d	अपशिष्ट जल पुनर्चक्रण या पुनः उपयोग प्रथाएँ, यदि कोई हों					
	e	ग्राम पंचायत में सोख गड्ढों की संख्या	12 गड्ढे हैंडपम्प के पास बने है				

13		स्वास्थ्य सुविधाएं			
		स्वास्थ्य सेवा केन्द्रों की उपलब्धता	**हाँ**	**नहीं**	**उपलब्ध छत क्षेत्र (मी ^{2})**
	a	प्राथमिक स्वास्थ्य केंद्रों	□	□	
	b	सामुदायिक स्वास्थ्य केंद्र	□	□	
	c	स्वास्थ्य उप-केंद्र	□	□	
	d	आंगनवाड़ी	□	□	

II. ऊर्जा

14	खाना पकाने के लिए उपयोग होने वाले ईंधन का विवरण	घरों की संख्या	प्रति परिवार औसत उपयोग मात्रा (किग्रा/माह)
	पारंपरिक बायोमास (गाय का गोबर/ईंधन लकड़ी)	10 % परिवार	लकड़ी- 50 किलो उपले – 10 किलो
	बायोगैस		
	रसोई गैस		
	बिजली	5%	
	सौर		
	अन्य (कोयला, केरोसिन, चारकोल आदि)		

15		वाहन संख्या			
		वाहन का प्रकार	**पंचायत में वाहनों की संख्या (लगभग)**	**प्रयुक्त ईंधन का प्रकार**	**औसत यात्रा दूरी (किमी/दिन)**
	a	जीप			
	b	कारें	21	डीजल +पेट्रोल	20 किलोमीटर
	c	दो पहिया वाहन	400	पेट्रोल	10 किलोमीटर

	d	ईवी (EV)			
	e	ऑटो			
	f	ई-रिक्शा	5		60 किलोमीटर
	g	अन्य DCM- 2 PICKUP- 4	06	डीजल	100 किलोमीटर

16		कृषि मशीनरी	पंचायत में मशीनों की संख्या	प्रयुक्त ईंधन का प्रकार	औसत यात्रा दूरी (किमी/दिन)
	a	ट्रैक्टर	40	डीजल	4 किलोमीटर
	b	फ़सल काटने की मशीन	1	डीजल	1-2 किलोमीटर
	c	अन्य, कृपया निर्दिष्ट करें)			

अतिरिक्त प्रश्न

अतिरिक्त प्रश्न	संख्या
नाडेप एवं कम्पोस्ट गड्ढों की आवश्यकता:	00
ग्राम पंचायत में हैंडपंपों की संख्या:	50 इंडियामार्का 300 प्राइवेट हैंडपम्प
सड़कों की वर्तमान स्थिति • Total Kuchha roads (in km) in GP • Condition of existing roads: मौजूदा सड़कों की स्थिति: • खराब स्थिति वाली सड़कों की कुल लंबाई- • किन समस्याओं का सामना करना पड़ता है (गड्ढे, निचले इलाके, क्षतिग्रस्त/टूटे हुए) जल जमाव	500 मीटर Condition ठीक है
• नये नालों के निर्माण की आवश्यकता (length and cost)	350 मीटर नए नाले के निर्माण की आवश्यकता है 1100 मीटर नाली निर्माण के आवश्यकता है

	d	ईवी (EV)			
	e	ऑटो			
	f	ई-रिक्शा	5		60 किलोमीटर
	g	अन्य DCM- 2 PICKUP- 4	06	डीजल	100 किलोमीटर

16		कृषि मशीनरी	पंचायत में मशीनों की संख्या	प्रयुक्त ईंधन का प्रकार	औसत यात्रा दूरी (किमी/दिन)
	a	ट्रैक्टर	40	डीजल	4 किलोमीटर
	b	फ़सल काटने की मशीन	1	डीजल	1-2 किलोमीटर
	c	अन्य, कृपया निर्दिष्ट करें)			

अतिरिक्त प्रश्न

अतिरिक्त प्रश्न	संख्या
नाडेप एवं कम्पोस्ट गड्ढों की आवश्यकता:	00
ग्राम पंचायत में हैंडपंपों की संख्या:	50 इंडियामार्का 300 प्राइवेट हैंडपम्प
सड़कों की वर्तमान स्थिति • Total Kuchha roads (in km) in GP • Condition of existing roads: मौजूदा सड़कों की स्थिति: • खराब स्थिति वाली सड़कों की कुल लंबाई- • किन समस्याओं का सामना करना पड़ता है (गड्ढे, निचले इलाके, क्षतिग्रस्त/टूटे हुए) जल जमाव	500 मीटर Condition ठीक है
• नये नालों के निर्माण की आवश्यकता (length and cost)	350 मीटर नए नाले के निर्माण की आवश्यकता है 1100 मीटर नाली निर्माण के आवश्यकता है

• जलभराव को रोकने के लिए मौजूदा नालियों की सफाई, गाद निकालना और मरम्मत करना (length and cost)	नाला निर्माण की लागत- रू० 17 लाख **नाली निर्माण की लागत – रू० 25 लाख**
कूड़ेदान की आवश्यकता	125
आवश्यक सोलर स्ट्रीटलाइट और हाईमास्ट की संख्या	सोलर स्ट्रीट लाइट- 150 हाइ मास्ट लाइट – 20
अंत्योदय डेटा (verify) Total number of households:440	NFS data Households with Paatra Grahasti Ration Cards **407** Households with Antyodaya Cards **33**
तालाबों एवं कुओं की वर्तमान स्थिति इनका उपयोग किस प्रयोजन के लिए किया जाता है? उनमें से कितनों को पुनर्जीवित करने की आवश्यकता है?	05 तालाब मिट्टी से पटे हुए हे 05 तालाबों में घरों के गंदा पानी जाता है 03 तालाबों में सिंघाड़े की खेती की जाती है 02 तालाबों से सिंचाई की जाती है 01 तालाब को अमृत सरोवर के रूप में तैयार किया गया है 05 तालाबों को पुनर्जीवित करने के आवश्यकता है
आवश्यक रिचार्ज पिटों की संख्या?	10 रीचार्ज पिट की आवश्यकता
ग्राम पंचायत में आवश्यक ऑटो/ई-रिक्शा की संख्या	

01 घर में सोलर रूफटॉप लगा हुआ है जिसकी क्षमता 3-4 किलोवाट की है
पिछले 10 सालों में पेड़ों की संख्या कम हो गयी है गर्मी में 3 माह की बढ़ोत्तरी सर्दियों में 30 दिन की कमी आई है बरसात के दिनो में कमी और तीव्रता बढ़ी है

Annexure III: Estimating Targets and Costs

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
Enhancing Green Spaces and Biodiversity				
1	Plantation activities	**Phase 1:** Similar to current level of plantation activities that the GP does (to be asked during consultation with the Pradhan) **Phase 2:** Increase plantation targets by 500-1000 based on availability of land **Phase 3:** Further increase target by 500-1000 based on availability of land	Tree plantation (preparation, sapling, labour, etc.)[80] = **Rs. 70 per tree** (saplings are also available at no cost from DoEFCC, GoUP) Tree Guards (metal)[81] = **Rs. 1,200 per unit** Maintenance of plantations: **1.5 lakh/ha**	
2	Arogya van	For a GP with area less than **300-400 ha**, one Arogya van can be suggested with **0.1 ha** area For a GP with area of around **1000 ha**, one Arogya van can be suggested with an area of **0.2- 0.5 ha** based on availability of land		Sequestration potential estimated based on teak species - 5.6 to 10 tCO_2e sequestered per tree
3	Agro-forestry	(Can be subjective and agro-forestry activities can be started from **Phase 1**) **Phase 2:** 40 % of total agricultural land; with +100 trees planted per hectare **Phase 3:** Remaining agricultural land; with + 100 trees planted per hectare	Cost of agroforestry[82] = **Rs 40,000/ hectare**[83]	Plantation density for agro forestry is considered 100 trees/ha

80 Cost as per plantation guidelines and inputs from GPs
81 Cost as per market rates
82 Cost as per Sub-mission on Agroforestry Guidelines, National Mission for Sustainable Agriculture
83 https://link.springer.com/article/10.1007/s42535-022-00348-9

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
Sustainable Agriculture				
1	Micro Irrigation - Drip and Sprinkler Irrigation	**Phase 1:** 30% of total agricultural land to be covered **Phase 2:** 70% of total agricultural land to be covered **Phase 3:** 100% of total agricultural land to be covered	**Rs 1 lakh per hectare**	
2	Construction of Bunds	**Phase 1:** 50% of total agricultural land to be covered **Phase 2:** 100% of total agricultural land to be covered **Phase 3**: Maintenance of bunds - Bunding is done on periphery of agricultural fields - Farmers in GP have land holdings of various sizes **Assumption**: all fields are square	**1m of bunding[84]= Rs 150**	
3	Construction of farm ponds	**Phase 1**: 5-10 ponds **Phase 2**: 15- 20 ponds Phase: More if required + Maintenance of ponds Capacity of 1 farm pond= 300 m^3 Depends on number of large farms in GP + requirement of ponds (based on conversation with Pradhan)	Construction of 1 farm pond[85]= **Rs 90,000**	

84 Cost as per inputs received from GPs in HRVCA
85 Cost as per inputs received from GPs in HRVCA

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
4	Transition to natural farming	**Phase 1**: 15% of total agricultural land to be covered **Phase 2**: 40% of total agricultural land to be covered **Phase 3**: 100% of total agricultural land to be covered	A. Training & demonstration (3 sessions): **Rs 60,000** B. Certification (based on expert consultation): **Rs 33,000** C. Introduction of cropping system- organic seed procurement; planting nitrogen harvesting plants--> Cost per acre = **Rs 2,500** D. Integrated manure management - Procuring liquid bio fertiliser & its application; Procuring liquid biopesticide & its application; Natural pest control mechanism set up; Phosphate rich organic manure ---> Cost per acre= **Rs 2,500** E. Calculation (cost of transition per acre)= A+B+C+ D= Rs 1,00,000 Total Cost[86]: Area (ha) * E -> 2.471 * 1,00,000 = **Rs 2,47,100**	

86 UP State Organic Certification Agency (UPSOCA_Tariff_20March.pdf (apeda.gov.in)) and National Mission for Sustainable Agriculture (NMSA) Guidelines

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
Management & Rejuvenation of Water Bodies				
1	Rainwater Harvesting (RwH) Structures	**Phase 1**: Installation of rainwater harvesting structures (RwH) in all PRI buildings + recharge pits (as recommended in HRVCA) **Phase 2**: Installation of RwH structures in residential buildings above a plot size of 1500 sq. ft. + Additional recharge pits + Incorporating RwH system in all new buildings **Phase 3**: Installation of RwH structures in residential buildings 1000 sq. ft.+ Incorporating RwH system in all new buildings	Cost of 1 Rainwater harvesting structure with 10 m^3 capacity[87]= **Rs 35,000** Cost of 1 recharge pit[88] = **Rs 35,000**	

87 Rooftop Rainwater Harvesting Guidelines, Indian Standards (IS 15797:2008)

88 Cost as per inputs received from GPs in HRVCA

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
2	Maintenance of water bodies (Cost not to be double counted if these plantations are a part of the overall green space enhancement initiative as mentioned above)	**Phase 1**: Cleaning, desilting & fencing of water bodies + Tree plantations (1000) around periphery of water bodies (along with tree guards) **Phase 2**: Additional 100 tree plantations (along with tree guards) around water bodies + continued maintenance of water bodies **Phase 3**: Continued maintenance of water bodies	Approximate Cost[89]: 1. Restoration (cleaning, desilting, increase in catchment area, etc.) of 1 pond = **Rs. 7 Lakhs** 2. Construction of 1 Retention Pond (300 m^3 capacity) = **Rs. 7 Lakhs** 3. Tree plantation with tree guard = **Rs. 1,200 per unit** 4. Maintenance Cost: a. 1 Pond/water body = **Rs. 3, 75,000** b. 1 Retention Pond = **Rs. 50,000** c. Tree with tree guard = **Rs. 20 per unit**	

89 Cost as per inputs received from GPs in HRVCA

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
3	Enhancing Drainage and Sewage Infrastructure	**Phase 1**: Cleaning & desilting of existing drains + enhancing drainage infrastructure (construction of new drains) **Phase 2 & 3:** Continued activities carried out in Phase 1	Refer mostly to the costs provided in the HRVCA document For DEWATS/ Oxidation Pond: For every GP with 4000 population and water supply quantity as 100 l/ person/day, Wastewater generated is 70% of the water supply, therefore total wastewater generated is 2,80,000 litres/day or 0.28 MLD So, considering future demand, estimated capacity of DEWATS/ Oxidation Pond = 0.56 MLD (doubling the existing wastewater generated) Cost for 1 MLD capacity DEWATS/ Oxidation Pond is Rs. 50 Lakhs, therefore for 0.56 MLD DEWAT will be around Rs. 28Lakhs	

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
Sustainable and Enhanced Mobility				
1	Enhancing existing road infrastructure	**Phase 1**: Road elevation works + Road Rcc/ Interlocking works **Phase 2** & 3: Continued maintenance of roads	Cost per km of road upgradation/ repair[90]: **Rs 50,00,000 per km**	
2	Enhancing Intermediate Public Transport	E-rickshaws as per inputs on requirement of GP	Cost of 1 e-autorickshaw: ~ **₹3,00,000** Available subsidy: up to **₹12,000 per vehicle**	
3	Facility to hire e-tractors & e-goods vehicles	**Phase 1**: Promote electric alternatives of diesel tractors and goods transport vehicles + sensitising farmers about long-term benefits of e-vehicles **Phase 2 & 3**: Continued sensitisation	Cost of 1 e-tractor= **Rs 6,00,000** Cost of 1 commercial e-vehicle= Rs 5 to 10 lakhs	

90 Cost as per Pradhan Mantri Gram Sadak Yojana (PMGSY) rate/km and inputs received from GPs in HRVCA

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
Sustainable Solid Waste Management				
1	Establishing a waste management system	**Phase 1**: a. Coverage of 100% households under GP's door-to-door waste collection system b. Provision for Electric Garbage Vans to collect 100% of existing waste generated c. Installation of waste bins d. Building partnership with other stakeholders (SHGs, local scrap dealers, local businesses, and MSMEs)	Total waste generated = Primary data, if not available, take average per capita waste generated in the GP as approximately **80 g per day**; biodegradable/ organic waste-58% non-biodegradable/ inorganic waste - 42% No. of e-garbage Vans required[91] = Total waste generated / capacity of each van (310 kg) No. of waste bins = from HRVCA or can be estimated by identifying strategic locations (PRI buildings, public buildings, parks, etc.)	
		Phase 2: a. GP-level recycling and plastic shredder unit b. Installation of additional waste bins c. Provision for additional electric garbage vans d. Maintenance of existing facilities/ infrastructure e. Scaling up partnership	No. of plastic shredder unit = 1 per GP Additional waste bins = from HRVCA or estimated by identifying strategic locations (PRI buildings, public buildings, parks, etc.)	

91 Cost as per market rates

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
		Phase 3: a. Maintenance works b. Scaling up partnership	COST[92]: 1. 1 electric garbage van = ₹95,000 to 1,00,000 2. 1 waste bin/ container[93] = Rs. 15,000 3. Plastic shredder unit[94] = ₹50,000 per unit	
2	Management of organic waste	**Phase 1**: a. Setting up Compost & vermi-compost pits through community involvement b. Partnership model between panchayat, community members and farmer groups for: 1. production & sale of compost 2. sale of agricultural waste	Total biodegradable/ organic waste generated = Primary data Organic waste from houses, commercial shops, PRI buildings, public buildings and open spaces, etc. = xxx kg per day (as per primary data) Potential compost quantity (kg per day) which can be generated[95] = xxx kg/day of organic waste / 2 Periodic composting of __ kg per year of agricultural waste (as per primary data)	

92 Cost as per market rates

93 Cost as per SBM guidelines and inputs in HRVCA reports

94 Cost as per market rates

95 https://www.biocycle.net/connection-CO_2-math-for-compost-benefits/#:~:text=In%20the%20process%20of%20making%20compost%20the%20microbes,food%20waste%20turns%20into%2050%20kg%20of%20compost

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
		Phase 2 and 3: a. Maintenance and increasing compost pits capacity b. Scaling up partnership	Cost[96]: 1. Compost Pits cost reference: 30 vermicomposting and 15 Nadep compost pits = **Rs. 4,50,000** 2. Solid Waste Management Yard (for both organic and inorganic waste) cost[97] reference: **Rs. 35,00,000**	
3	Improved Sanitation Management	**Phase 1:** 1. Enhancing household toilet coverage 2. Construction of toilet for men and disabled community members **Phase 2**: Expanding toilet coverage **Phase 3:** Maintenance of existing infrastructure	**Cost** 1. Twin pit toilet[98] : ₹12,000 2. Toilet for men and disabled community members[99]: ₹8,00,000	
4	Ban on Single Use Plastics	**Phase 1:** a. Complete ban on single use plastics b. Awareness, training, and capacity-building programs c. Leveraging RACE Campaign and LiFE Mission d. Partnership model between panchayat, women and SHGs	Engagement of 100 women in manufacturing	

96 Cost as per inputs received from GPs in HRVCA
97 Cost as per inputs received from GPs in HRVCA
98 https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1797158
99 Cost as per inputs received from GPs in HRVCA

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
		Phase 2: a. Continued Awareness, training, and capacity-building programs b. Increased engagement from this GP & nearby villages of women, SHGs, MSMEs & individual entrepreneurs	Additional 200 women	
		Phase I: a. Continued Awareness, training, and capacity-building programs b. Increased engagement from this GP & nearby villages of women, SHGs, MSMEs & individual entrepreneurs	Additional 300 women	
Access to Clean, Sustainable, Affordable and Reliable Energy				
1	Solar Rooftop Installation	**Phase 1:** PRI buildings (Panchayat Bhawan, schools, anganwadi, PHC, CHC, CSC etc) Assumption-70% of rooftop area is available for solar rooftop installation	Total rooftop capacity installed = 50 sq.m.=5 kW About 10 sq.m. area is required to set up 1 kWp grid connected rooftop solar system[100] Annual clean electricity generated (in kWh) = installed capacity (kWp)*310 (sunny days)*24 (hrs)*0.18 (CUF) (calculate this for each PRI building and add up for total) Installed capacity- from the above website	Annual electricity generated (kWh)* 0.82/ 1000= ____ tonnes of CO_2e

100 https://upneda.org.in/faqs.aspx

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
			Total installed capacity= Panchayat Bhawan+ School 1+ School 2.... + any other PRI buildings Cost per kWh= **₹50,000**[101] No. of units of clean electricity generated per day= Electricity generated/365	
		Phase 2 & 3: Households Assumption- 70% of rooftop area is available for solar rooftop installation Installed capacity taken to be 3 kWp **Phase 2**: 40% of total pucca houses to install **Phase 3**: 100% of total pucca houses to install	Average Installed capacity per HH= 3 kWp Total capacity installed at HH level= No. of HH * 3 kWp Annual clean electricity generated (in kWh)=Total capacity installed at HH level (kWp) *310 (sunny days)*24 (hrs)*0.18 (CUF) Cost per kWh= Rs 50,000[102] No. of units of clean electricity generated per day= Annual Electricity generated/ 365	

101 Cost as per MNRE and current market rates
102 Cost as per MNRE and current market rates

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
2	Agro-photovoltaic	**Phase 2**: 25 % of suitable agricultural area **Phase 3**: 50% of suitable agricultural area Suitable agri area- area under legumes & vegetables (keep the value under 10 ha)	250 kWp installed per hectare Total capacity installed = Area (ha) * 250 kWp Annual clean electricity generated (in kWh)=Total capacity installed (kWp) *310 (sunny days)*24 (hrs)*0.18 (CUF) Cost per kWh= **Rs 1 lakh**[103] No. of units of clean electricity generated per day= Annual Electricity generated/ 365	

103 Cost as per market rate of installation

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
3	Solar pumps	**Phase 1**: 20% of diesel pumps replaced **Phase 2**: 50% of diesel pumps replaced **Phase 3**: 100% of diesel pumps replaced	Installed capacity = 5.5 kWh per pump Total installed capacity= No.of pumps replaced * 5.5 kWh Annual clean electricity generated= Total installed capacity (kWh) *310 (days)*24 (hrs)*0.18 (CUF) No. of units of clean electricity generated per day= Annual Electricity generated/ 365 Cost per pump = Rs 3 to 5 lakhs[104]	Diesel consumption avoided= 390 litres/ per/ year Total diesel consumption avoided per year= No.of pumps replaced * 390 Emissions avoided= 1.05 tonnes CO_2e per pump per year
4	Clean Cooking	**Phase I:** Setting up Biogas plant of 25m^3 capacity **Phase II:** Improved chulhas to households	Cost for 1 biogas plant = **₹50,000** for 2 to 3 m^3 biogas plant Cost for 25 m^3 biogas plant = ~15,00,000[105] Cost for 1 improved chulhas = **₹3,000**[106]	

104 Cost as per market rates and PMKSY guidelines

105 Cost as per GOBAR-DHAN scheme guidelines; https://tnrd.tn.gov.in/project/go_files/4_595_2021_S18017.pdf

106 Costs as per UJALA scheme guidelines by Ministry of Power (https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022/jun/doc202261464801.pdf)

Sl. No.	Suggested Actions	Broad Guidelines to decide targets of various activities (Subject to change based on the context of Gram Panchayat)	Calculation/ formula for estimating quantitative target	Sequestration potential/ emissions avoided
5	Energy efficiency (EE)	**Phase 1**: All PRI buildings to replace all fixtures and fans with energy efficient fixtures and fans + All HH to replace 1 incandescent/CFL bulb with LED bulb or 1 fluorescent tube lights with LED tube light **Phase 2**: All incandescent/CFL bulbs replaced with with LED bulb & all fluorescent tube lights replaced with LED tube light + 1 conventional fan replaced with EE fan in all HH **Phase 3**: All fans in all HH to be replaced with EE fans	Cost of 1 LED bulb= **Rs 70** Cost of 1 LED tubelight= **Rs 220** Cost of 1 EE fan= **Rs 1,110**[107]	
6	Solar streetlights	Based on inputs from Pradhan High-mast solar street light- 1 (or more as per requirement) for each PRI building, pond/lake, green space/parks/ playground/ gardens/ arogya van	Cost of 1 high-mast= **Rs 50,000** Cost of 1 solar LED street light = **Rs 10,000**[108]	
Enhancing Livelihoods and Green Entrepreneurship				
1	Construction & renting out of solar-powered cold storage	Setting up of cold storage	Capacity : **1 unit = 5 - 10 metric** tonnes based on production of vegetables and fruits/ and/or milk and milk products Cost: **Rs 8-15 lakh per unit**[109]	

107 Costs as per UJALA scheme guidelines by Ministry of Power (https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022 jun/doc202261464801.pdf)

108 Costs as per market rates

109 Costs as per market norms

Annexure IV: Relevant SDGs & Targets

SDG 2: Zero Hunger

Target 2.3: Double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment

Target 2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality

Target 2.a; Article 10.3.e: Development of sustainable irrigation programmes

SDG 3: Good Health and Well being

Target 3.3: End the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

Target 3.9: Substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination

SDG 6: Clean Water and Sanitation

Target 6.1: Achieve universal and equitable access to drinking water

Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimising release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

Target 6.4: Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals

Target 6.5: Implement integrated water resources management at all levels

Target 6.8: Support and strengthen the participation of local communities

Target 6.a: Expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including wastewater treatment, recycling and reuse technologies

SDG 7: Affordable & Clean Energy

Target 7.1: Ensure universal access to affordable, reliable and modern energy services

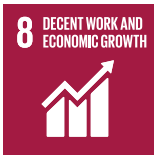
Target 7.2: Increase share of renewable energy in energy mix

Target 7.3: Double the global rate of improvement in energy efficiency

Target 7.a: Enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology

Target 7.b: Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries in accordance with their respective programmes of support.

SDG 8: Decent Work and Economic Growth



Target 8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalisation and growth of micro-, small- and medium-sized enterprises, including through access to financial services

SDG 9: Industries, Innovation and Infrastructure

Target 9.1: Develop quality, reliable, sustainable and resilient infrastructure

SDG 11: Sustainable Cities and Communities

Target 11.2: Safe, affordable, accessible and sustainable transport systems for all

Target 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage

Target 11.7: By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

SDG 12: Ensure sustainable consumption and production patterns

Target 12.2: Achieve the sustainable management and efficient use of natural resources

Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment

Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse

Target 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

SDG 13: Climate Action

Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

Target 13.2: Integrate climate change measures into national policies, strategies and planning

Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning

SDG 15: Life on Land

Target 15.1: Ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements

Target 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally

Target 15.3: By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

Target 15.5: Take urgent and significant action to reduce degradation of natural habitats, halt loss of biodiversity

Target 15.9: By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies

Annexure V: Suitable Species for Plantation Activities

Name of plants	Family	Local names	Uses/ Medicinal properties
Timber Trees			
Acacia nilotica	Fabaceae	Babul	It is used for such products as bodies and wheels of carts, instruments and tools
Ficus religiosa	Moraceae	Peepal	Has medicinal properties and religious value
Azadirachta indica A. Juss.	Meliaceae	Neem	All parts of the neem tree- leaves, flowers, seeds, fruits, roots and bark have been used traditionally for treatment. The wood is ideal for furniture, both strong and termite resistant.
Tectona grandis	Lamiaceae	Sagaun	It is used in the manufacture of outdoor furniture and boat decks
Dalbergia sissoo	**Fabaceae**	Sheesham	It has several applications in aircraft and marine plywood, as charcoal for heating and cooking food, creating musical instruments etc
Madhuca longifolia	**Sapotaceae**	Mahua	It provides quality timber wood for various uses
Shorea robusta	Dipterocarpaceae	Sal	It is used for railway sleepers, ship-building, and bridges.
Cinnamomum tamala	Lauraceae	Indian bay leaf	It helps manage various health issues and used in cooking.
Fruits and Wild Food Plants			
Mangifera indica	Anacardiaceae	Aam, Mango	All parts are used in traditional treatments
Artocarpus heterophyllus	Moraceae	Kathahal, Jackfruit	The timber is used for furniture. Many parts of the plant, including the bark, roots, leaves, and fruits, are known for their medicinal properties in traditional and folk medicine.
Psidium guajava	Myrtaceae	Guava, Amrood	It is a common and popular traditional remedy for various gastric ailments
Agaricus campestris L	Agaricaceae	Dharti Ka Phool	A type of mushroom
Alangium salvifolium (L.f.) Wang	Alangiaceae	Dhera, Ako	Ripe fruits are eaten
Amorphophallus paeoniifolius Dennst	Araceae	Elephant foot, Zimi Kand	Eaten as vegetable.

Name of plants	Family	Local names	Uses/ Medicinal properties
Crotolaria juncea L.	Fabaceae	Sanai	Light boiled buds eaten as vegetable.
Manilkara hexandra (Roxb) Dub	Sapoataceae	Khirini	The fruits are made into pickles & sauces.
Eugenia jambolana	Myrtaceae	Jamun	The root, leaves, fruits and bark have numerous medicinal properties
Aegle marmelos	Rutaceae	Bael	The unripe fruit, root, leaf, and branch are used to make medicine.
Morus rubra	Moraceae	Mulberry	Mulberries can be eaten raw and are also used to make jams, pies etc. They also have medicinal properties
Trees with Medicinal properties			
Withania somnifera	Solanaceae	Ashwagandha	It is useful for different types of diseases
Bacopa monnieri	Plantaginaceae	Brahmi	It is used to manage different respiratory ailments
Andrographis paniculata	Acanthaceae	Kalmegh	It helps to boost immunity and is used to manage the symptoms of the common cold, sinusitis and allergies
Rauvolfia serpentina	Apocynaceae	Sarpagandha	It is used for the treatment of many different ailments.
Endangered trees with medicinal properties			
Acorus calamus L.	Araceae	Bach, Bal, Ghorbach	A useful ethnomedicinal plants for curing bronchitis, cough, and cold
Asparagus adscendens Roxb.	Liliaceae	Satavar	Helps in treating conditions related to hormone imbalance
Celastrus paniculatus Wild.	Celastraceae	Umjain, Mujhani, Malkangani, Kakundan	Useful in the treatments of a variety of ailments
Other Trees			
Populus ciliata	Salicaceae	Semal, kapok	Its leaves are used for animal fodder and herbal teas
Eucalyptus globulus	Myrtaceae	Tailapatra	Used in medicines to treat coughs and the common cold and also used to make essential oil


14 नवम्बर बाल दिवस
पंडित जवाहरलाल नेहरू


केम्प कार्यालय

GORAKHPUR ENVIRONMENTAL ACTION GROUP

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