

"Pioneering Sustainability: Analyzing Household Energy Consumption and Waste Generation in Palli, J&K UT-India's first Carbon-Neutral Panchayat"

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1. Abstract

The "Carbon Neutral is an Initiative of Sh. Narendra Modi Prime Minister of India, Ministry of Panchayati Raj, and Samba district administration J&K UT" includes the Palli Panchayat as a pilot project. With this project, the state hopes to follow a low-carbon, climate-resilient example. The village of Palli is dedicated to India's first carbon-free panchayat, which is in Jammu's Samba district. The 500 KW solar plant was inaugurated by the prime minister at this carbon-neutral panchayat. An area of 9443 Kanal is covered by the Palli Gram Panchayat, or "local self-government," in the Samba district of the J&K UT; over half of this is used for agriculture. 1313 mm of rainfall is typical annually. 3700 people in all, with 1918 males and 1782 women. The goal of this effort is to increase socioeconomic resilience and livelihoods by implementing nature-based adaptation strategies. The following tactics are advised for establishing and sustaining carbon neutrality: 1. Emission reduction, 2. Improving carbon sinks, and 3. Using natural processes to produce carbon credits or reserves. The sample size includes data from the "Energy Utilization Survey" and the "Waste Generation Survey," which were gathered from 724 houses across the whole panchayat. The concept of a "Carbon Neutral Community" encourages zero-carbon growth and regional government-level food and energy self-sufficiency. GHG emissions will decrease if electric autorickshaws and zero trash are promoted. By establishing "The Forest banking" programs for landowners and planting trees, in order to assure organic CO₂ elimination, a local green economy could be formed. An innovative pilot initiative called "Carbon Neutral Palli Panchayat" integrates climate action into a resilient local economy. This project was developed to serve as a model for low-carbon and climate-resilient development throughout the nation in the UT of Jammu and Kashmir. Existing manufacturing processes need to be modified immediately in order to reduce the release of greenhouse gases (GHG) and absorb the gas carbon dioxide (CO₂) from our atmosphere.

Key Words: Palli Panchayat, Carbon Neutrality, Greenhouse gases {GHG}, CO₂, Energy utilization Survey, Waste generation survey

Introduction

Palli, a small hamlet in the Samba district of the UT of Jammu and Kashmir, made history on April 24, 2022, when the Honourable Prime Minister of India, Sh. Narendra Modi declared the panchayat as India's first carbon-neutral panchayat. In keeping with this vision, the Ministry of Panchayati Raj and Samba district administration delegated the work of surveying and analyzing the residential energy utilization and waste generation in Palli panchayat to Unnat Bharat Abhiyan. The PI Coordinator, Mr. Balwant Singh Dogra Degree College, was given the assignment by the RCI IIT Jammu to survey and gather manual data on energy use and garbage generation in Palli panchayat. Students' assistance was used to complete this. In order to examine the domestic energy usage and waste generation in Palli panchayat, this report provides the specifics of the survey that was conducted and the results that were analyzed.

2.1 About Palli Panchayat

Palli and Bassi Khurd are the two villages that make up Palli Panchayat, which is situated in the Bari Brahmana Tehsil of the District Samba. It is located approximately 28 kilometers from the district headquarters in Samba and is under the control of the Bari Brahmana block. It is 340 meters above sea level and lies between the North latitude of 32° 64' and the East longitude of 74° 93'. The village, which has about 724 houses, is located on lush plains.

Samba District, Bari Brahmana MC, Panchayat Kartholi, and the West and South sides of Jammu District all encircle the Panchayat. Panchayat has a total area of 9443 kanal, of which over 50% is used for agriculture. 1313 mm of rainfall is typical annually.

There are 3700 people overall (1918 males and 1782 women). A large portion of the total population is dependent on work-related activities and cultivated. The 500 KW solar plant was inaugurated by the prime minister at this carbon-neutral panchayat.

Palli has emerged as a role model for panchayats and inspired others in India and Jammu & Kashmir to become carbon-neutral. 6,408 square meters of solar panels total of 1,500 in Palli. 340 panchayat houses will be powered by these solar panels.

Electricity generated will be distributed through the neighborhood grid station. The first figure shows the Palli panchayat's solar power plant, while the second figure shows an aerial picture of the Palli panchayat.



Fig. 1:solar power plant{500 kw}

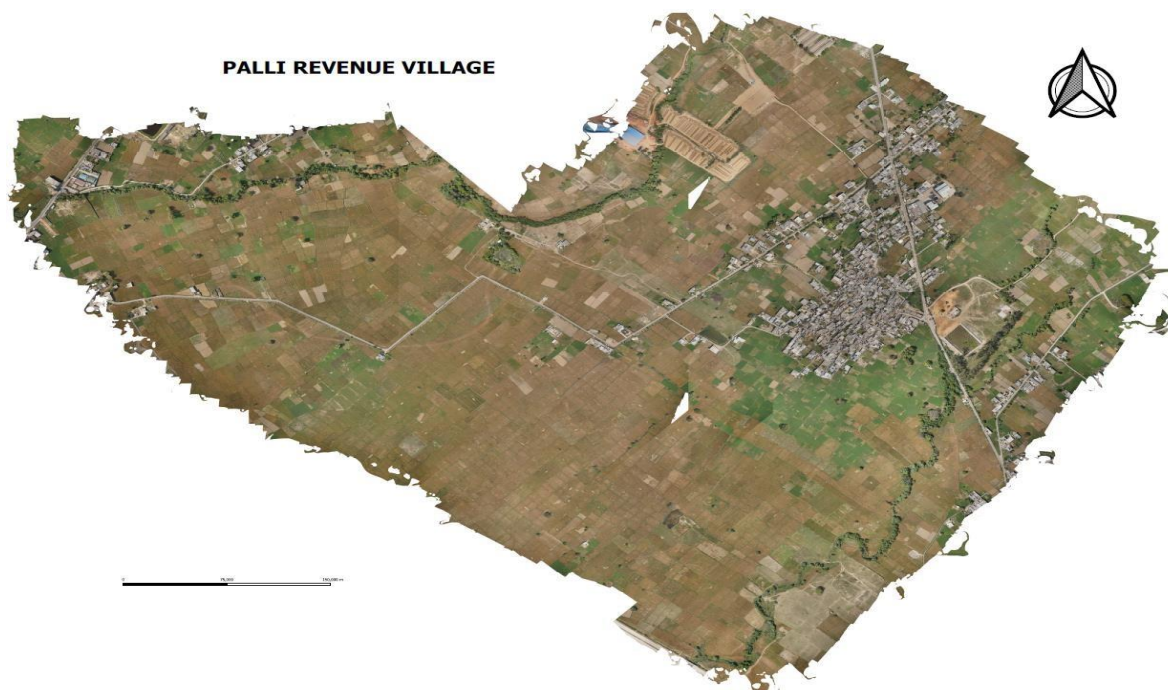


Fig-2 The aerial view of the Palli panchayat

3. Purpose of the Study:

To provide in-depth details regarding the level of energy access, energy use habits, and several ways waste is produced in Palli Panchayat. Through the recommendation of sector-specific adaptation and mitigation methods, this pilot project seeks to transform Palli Panchayat in Samba district, J&K UT, into a "Carbon-neutral Panchayat." This will be achieved by conducting an examination of carbon emission and sequestration in the transportation, energy, waste, livestock, and AFOLU (agricultural, forestry, and other land use) sectors. The concept of a "Carbon Neutral Community" encourages zero-carbon growth and regional government-level food and energy independence.

4. Method and Methodology:

The study research exclusively utilized primary data that was directly collected from participatory assessments and field surveys applying a range of methodologies, especially door-to-door assessing and interviews with respondents based on a set of questionnaire survey forms. Many visits took place in order to gather the data. Data was collected via survey forms and questionnaires. 724 households, or the sample size, were used to collect data using a structured questionnaire. The secondary sources including e-journals, government publications, government websites, etc. are also used. For better understanding, the primary data was examined using tables and graphs. Therefore, using the data that had been gathered, an analysis was carried out, and the results were also reviewed.

5. Information about the survey:

Dogra Degree College Jammu was one of the Participating Institutions (PIs) that attended the discussion on the creation of a model climate action plan during the MOPR officers' visit to Palli Gram Panchayat on June 3, 2022. Whereas a field survey on the Carbon Neutral Palli Panchayat was assigned to PI Dogra Degree College. Both the "Energy Survey" and the "Waste Survey" of 724 houses in the entire panchayat were carried out under the supervision of Mr. Balwant Singh, PI Coordinator. Around 80 of the 724 households did not answer or were closed. Under the direction of UBA coordinator Mr. Balwant Singh, UBA Volunteers assisted in completing the tremendous task of surveying. Annexure 1 contains the comprehensive "Energy Survey" and "Waste Survey" analysis. After the completion of the field survey, 641 survey forms were given to the IIT Jammu UBA team. A glimpse of the survey forms being distributed at IIT Jammu is shown in Fig. 4. Under the supervision of Prof. Rakesh Singhai, Dean of Outreach and Continuing Education Programs, and RCI Coordinator, IIT Jammu, the team first completed the enormous work of digitizing the whole data from the physical copies of the form. In Annexure 2, a sample of the digitized data is provided.





Fig-3: Glimples of the Survey



Figure 4 shows Mr. Balwant Singh PI Coordinator, from Dogra Degree College delivering packages with 641 forms to Dr. Riya Bhowmik and Mrs. Jeyoti Kaul Bhat from IIT Jammu.

6. Carbon Neutrality Definition:

In order to achieve carbon neutrality, carbon outputs and carbon sink absorption must be balanced. This can be accomplished by reducing or eliminating carbon dioxide emissions (the shift to a "post-carbon economy"). Carbon sequestration is required to offset all greenhouse gas (GHG) emissions on a worldwide scale (Das et al., 2022). Literature uses a variety of definitions of carbon neutrality.

Table 1: Different definitions of carbon neutrality				
Concept	Focus	Definition	Source	Reference
Carbon neutrality	GHG	The circumstance in which the greenhouse gas emissions related to the issue during the same period resulted in a net increase in the global release of greenhouse gases to the environment.	PAS2060	BSI (2014)
Carbon neutrality	carbon	To achieve carbon neutrality, carbon emissions and atmospheric carbon absorption must be balanced.	European Parliament	European Parliament(2019)
carbon neutrality	Carbon emission	When carbon emissions from an entity (such as a corporation, assistance, goods, or activity) are balanced off by funding an equivalent amount of carbon savings elsewhere in the globe, that entity is said to be in a "carbon neutral" state.	Carbon footprint	Carbon footprint 2019
Net zero carbon dioxide emission	Co2	The worldwide balance of anthropogenic CO2 emissions and removals during a certain time period results in net-zero carbon dioxide (CO2) emissions. The term carbon neutrality additionally refers to net zero CO2 emissions.	IPCC	IPCC {2018}
Carbon neutral	GHG	The second part of the decade should see a balance between anthropogenic GHG emissions from sources and removals from sinks.	Paris AgreementArt. 4	United nation Framework Convention on Climate Change (2015)
climate	Emissions	The balance between the quantity of emissions produced and the planet's inherent ability to absorb them leads to climate neutrality.	UNFCC	UNFCC (2019)

Dr. Riya Bhowmik, Associate Dean for Outreach and Skill Development Programs, and Mrs. Jeyoti Kaul Bhat, Project Staff, UBA, IIT Jammu, assembled and carefully examined the data once it had been digitized. This study contains in-depth details regarding the level of energy access, energy use habits, and several ways waste is produced in Palli homes.

Annexure 1

7. Analysis of Survey Data:

The data from the "Energy Survey" and the "Waste Data" have been examined and are provided here. No responses were obtained from the respondents for some of the questions, which is represented as "No Data" in the current analyses.

Energy Usage Data:

Details of Respondents

No of Household Members	1	2	3	4	5	6	7	8	9	10	11	12	13	28
No of Families having the no. of household members	3	26	79	181	163	80	34	37	16	10	6	4	1	1

Gender Distribution among Respondents

Percent Women folks in a family	<34%	34% < x < 50%	> 50%
No. of Households	147	308	186

Details of Electricity Consumption

Electricity Bill	<Rs. 500	Rs. 500 < Bill amount <Rs.1000	>Rs. 1000	No Data
No of Households	259	139	55	188

Phase of Electricity:	1	3	No data
No of Households	284	4	353

Electricity Consumption	%	No. of Households
< 12 hours	13.70	84
> 12 hours	42.25	259
No Data	48.61	298

Source: Primary Data

Details of Energy Consumption

Energy Consumption	Yes/No/ No Data	No. of Households	%
LPG	Yes	613	95.63%
	No	8	1.25%
	No data	20	3.12%
Electricity	Yes	234	36.51%
	No	36	5.62%
	No data	371	57.88%
Kerosene	Yes	4	0.62%
	No	182	28.39%
	No data	455	70.98%
Biogas	Yes	1	0.16%
	No	264	41.19%
Firewood	Yes	121	18.88%
	No	427	66.61%
	No	93	14.51%

Devices Used for Cooking	Present in No. of Households									
LPG	503									
Induction Cooker	130									
Electric Heater	165									
Microwave Oven	28									
Kerosene Stove	12									
Parishad Stove	3									
Open Firewood Stove	58									
Saw-dust Stove	5									
Other Efficient Stoves	6									
Thermoboxes	1									
Renewable Devices in Use	Present in No. of Households									
Solar Power Plant	57									
Solar Light System	32									
Solar Lantern	13									
Solar Water Heater	4									
Solar Cooker	179									
Solar Water Pump	1									
Biogas Plant	1									
Other Devices run on renewable energy	0									
On average, how many months will one cylinder last?										
Metric	<1	1	1.5	2	3	4	5	6	No Data	
No. of households	14	203	34	40	10	4	1	2	333	

Vehicle	Present in No. of Households
Scooter/ Bike	453
Auto Rickshaw	11
Car	161
Cycle	129

Do You use public vehicles?	Yes	No	No Data
	287	124	230

Source: Primary Data

Awareness of Energy Consumption

S.No.	Questions	Yes	No	No Data
1	Do you turn off lights and fans after use?	574	17	50
2	Do you use 'Parishad Stove', Thermobox, etc. for cooking?	67	446	128
3	Have you heard about the Energy Management Centre and ANERT which works on Energyconservation and Renewable energy?	90	411	140
4	Have you heard about LED bulbs, BLDC Fans, and Inverter Refrigerators with lower energy consumption than conventional lights,fans, and refrigerators?	385	186	70
5	If energy-efficient devices, like the above-mentioned, are given to you with the help ofloans, are you willing to pay it back in installments?	160	321	160
6	Do you know about Star Labelling?	53	431	157

Source: Primary Data

Details for Devices for Lighting

Lighting Devices	Yes	No	No Data
CFL	61	15	565
Incandescent Lamps	57	8	576
Tube Lights	192	9	440
LED Bulbs	96	107	438
Refrigerator	34	1	606
TV	91	1	549
Radio	22	6	613
Computer	18	22	601
Iron Box	41	10	590
Mixer	116	7	518
Washing Machine	57	8	576
Induction Cooker	29	10	602
Grinder	18	16	607
Waste Heater	15	13	613
Microwave Oven	36	8	597
Air Conditioning System	47	4	590
Pump Set	21	15	605
Pump for Agriculture	65	7	569
Inverter	37	13	591
Mobile Charger	80	10	551
Laptop	4	8	629
Modem Router	2	8	631
Emergency Lamp	45	0	596
Mosquito Repellent	53	0	588
Set Top Box	28	1	612

Other Music Devices	7	4	630
Dishwasher	12	8	621
Non-Household Devices	0	4	637

Source: Primary Data

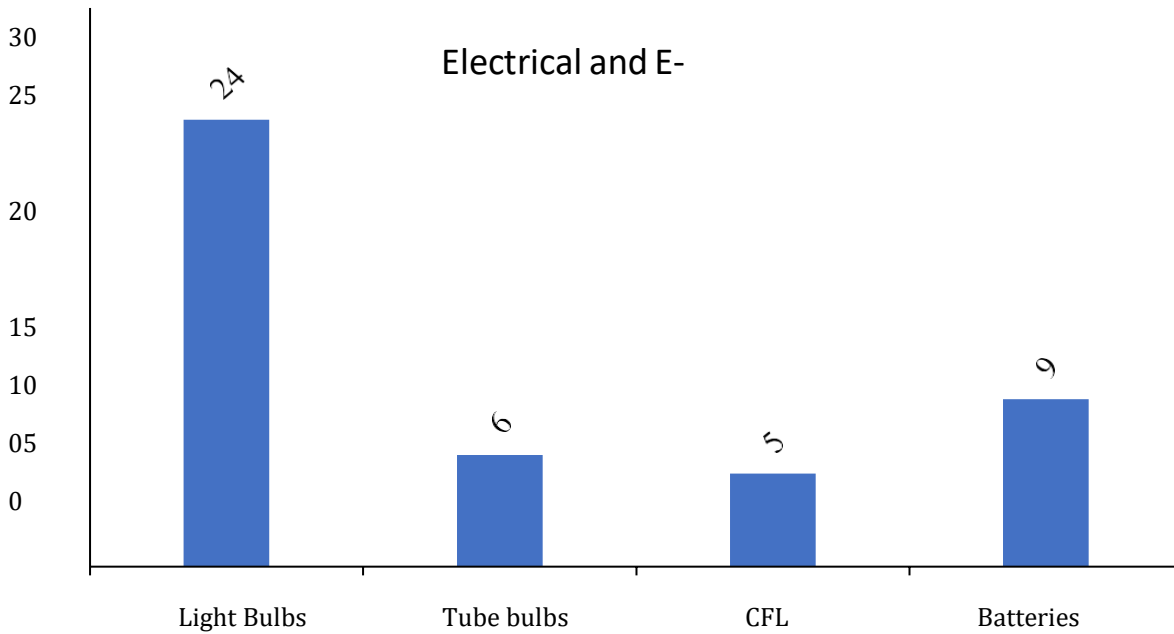


Fig-5- Average generation of electrical and electronic waste 300

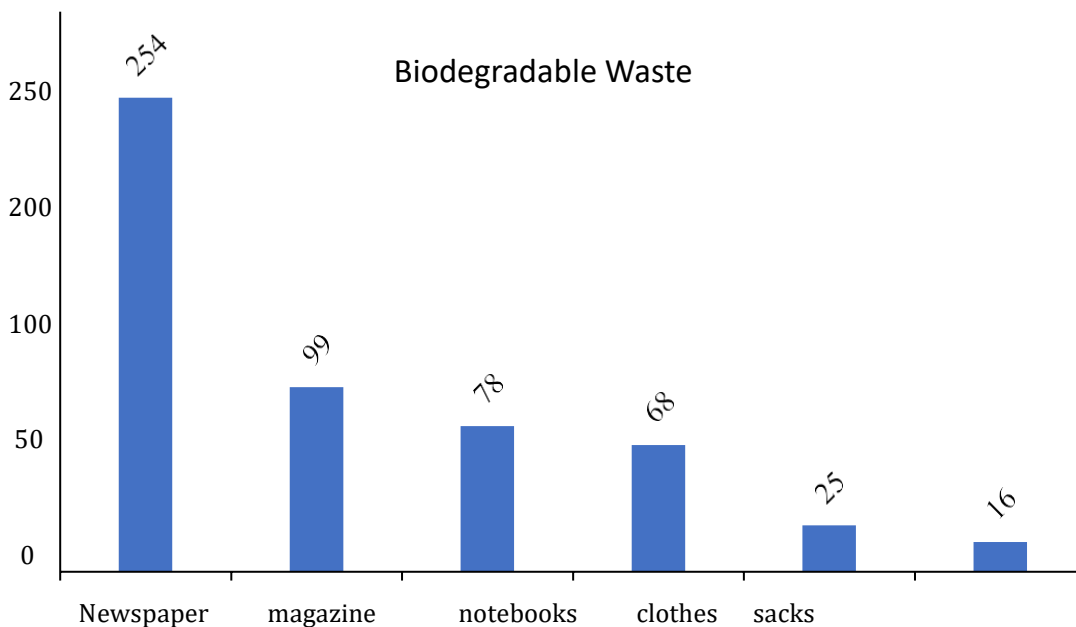


Fig-6- Average generation of biodegradable waste per household per annum in Palli Panchayat

Water Consumption Data

Agriculture	
Sources of Water Consumption	Number of Respondents
Pipe	137
Canal	85
Pond	6
Well	12
River	1
Rain	1
Other	68
No Data	331

Household	
Sources of Water Consumption	Number of Respondents
Pipe	250
Canal	2
Pond	1
Well	31
Other	80
No Data	271

Source: Primary Data

Fuel Consumption for Cooking											
Form No.	LPG		Electricity		Kerosene		Biogas		Firewood		
	YES/NO	On average how many	YES/NO	Hours Per day	Consumption	YES/NO	Monthly Consumptio	YES/NO	Hours Per Da	YES/NO	Hours Per Day
1	YES	-	YES	ND		NO	-	NO	-	NO	-
2	YES	-	YES	ND		NO	-	NO	-	NO	-
3	YES	-	YES	ND		NO	-	NO	-	NO	-
4	YES	-	YES	ND		NO	-	NO	-	NO	-
5	YES	30	YES	10		1 NO	-	NO	-	NO	-
6	YES	30	YES	10		1 NO	-	NO	-	NO	-
7	YES	45	YES	9		1 NO	-	NO	-	NO	-
8	YES	30	YES	7		1 NO	-	NO	-	NO	-
9	YES	-	YES	ND		NO	-	NO	-	NO	-
10	YES	-	YES	ND		NO	-	NO	-	NO	-
11	YES	30	Y	18		0 N		N		N	

Annexure 1I

Awareness of Energy Consumption							
Q.1	Do you turn off lights and fans after use?						
Q.2	Do you use 'Parishad Stove', Thermobox, etc. for cooking?						
Q.3	Have you heard about Energy Management Centre and ANERT which works on Energy conservation and Renewable energy?						
Q.4	Have you heard about LED bulbs, BLDC Fans, and Inverter Refrigerators with lower energy consumption than conventional lights, fans, and refrigerators?						
Q.5	If energy-efficient devices, like the above mentioned, are given to you with the help of loans, are you willing to pay it back as installments?						
Q.6	Do you know about Star Labelling?						
S No.	Form No.	Q.1	Q.2	Q.3	Q.4	Q.5	Q.6
1	1	YES	NO	NO	NO	NO	NO
2	2	YES	NO	NO	NO	NO	NO
3	3	YES	NO	NO	NO	NO	NO
4	4	YES	NO	NO	NO	NO	NO
5	5	YES	NO	NO	NO	NO	NO
6	6	YES	NO	NO	NO	NO	NO
7	7	YES	NO	YES	NO	YES	YES
8	8	YES	YES	NO	YES	YES	YES
9	9	YES	NO	YES	NO	YES	NO
10	10	YES	NO	YES	NO	YES	YES
11	11	YES	NO	NO	NO	NO	NO
12	12	YES	NO	NO	NO	NO	NO

Use of Renewable Energy DEVICES (YES / NO)									
S. No.	Form No	Solar Power Plant	Solar Light System	Solar Lantern	Solar Water Heater	Solar Cooker	Solar Water Pump	Biogas Plant	Other Devices run on renewable energy
1	1	YES	NO	NO	NO	YES	NO	NO	NO
2	2	YES	NO	NO	-	YES	NO	NO	NO
3	3	YES	NO	NO	NO	YES	NO	NO	NO
4	4	YES	NO	NO	NO	YES	NO	NO	NO
5	5	YES	NO	NO	NO	YES	NO	NO	NO
6	6	YES	NO	NO	NO	YES	NO	NO	NO
7	7	NO	NO	NO	NO	NO	NO	NO	NO
8	8	NO	NO	NO	NO	NO	NO	NO	NO
9	9	NO	NO	NO	NO	NO	NO	NO	NO
10	10	NO	NO	NO	NO	NO	NO	NO	NO
11	11	NO	NO	NO	NO	NO	NO	NO	NO

Own Vehicles (YES / NO)							
S. No.	Form No.	Scooter/ Bike	Auto Rickshaw	Car	Cycle	Do You use Public vehicles? If not, why	
						YES	NO? Why
1	1	YES	NO	NO	NO	-	-
2	2	YES	-	YES	-	-	-
3	3	-	-	YES	-	-	-
4	4	YES	-	YES	NO	-	-
5	5	YES	NO	YES	NO	-	-
6	6	-	-	YES(TAXI)	-	-	-
7	7	YES	-	YES	-	YES	-
8	8	YES	NO	NO	NO	YES	-
9	9	YES(2SCOOTER, 1-	-	YES	-	-	-
10	10	YES	-	-	-	YES	-
11	11	YES	NO	NO	NO	YES	-
12	12	YES	NO	NO	NO	YES	-

8. Executive summary:

There are two revenue villages in Palli Gram Panchayat, and they are called Palli and Bassi Kurud. There are 3700 people living in the panchayat, 724 households, and 9443 kanals of land. Most of the land is used for agriculture and related activities. Of the 240 hectares that are cultivated, 194.55 hectares are irrigated using canal irrigation. Mr. Balwant Singh, the PI Coordinator at Dogra Degree College in Jammu, and Government Polytechnic College, carried out the field survey of an energy and waste study of 724 houses throughout the whole panchayat. The data was thoroughly evaluated by Unnat Bharat Abhiyan, IIT Jammu, following its digitization. A local climate action strategy was then created after that. The Palli Gram Panchayat's emission situation is shown below:

S.I No.	Source of Emission	Number/Units	Present Scenario (tonneCo2 /Year)	Proposed emission Reduction/Removals (t Co2 /Year)
I.	Emission from Energy Consumption	759 Households	4470 (44.70 Lakh units)	4470 (44.70 Lakh units)
II.	Emission from Agriculture			
	i. Cultivation	290 Hectares	3691	1476.4 (40%)
	ii. Diary	980 No.	1127	225.4 (20%)
	iii. Pump Sets	18 No.	1121	
III.	Emission from Vehicles			
	i. Two Wheelers	494	133.38	{1121- Clarification required}
	ii. Four Wheelers	180	217.8	
	iii. Passenger Vehicles	1	4.6	
	iv. Tractor	18	30	
	Total		10794.78	7331.37
Source of Sink (Sequestration)				
I.	i. Trees on Farm Land	1100 Nos.	-49.5	-1125 (25000 No)
	ii. Trees on State/Public Lands	-	-	-90 (2000 No.)
II.	Tree in Horticulture	18000 Nos.	-270	-150 (10000 No.)
III.	Soil OrganicCarbon	-	-	-1.792 c.t/Ha
	Total	-	-319.5	-1275
	Grand Total		10475.28	

According to a report from Palli Gram Panchayat's Local Climate Action Plan, a total of 10475.28 tonnes of CO2 per year are now produced. Between 2022–2023 and 2027–2028, several interventions are to be adopted as part of the local climate action plan by various stakeholders. The main interventions suggested consist of:

1. Building 10 biogas plants with a combined capacity of 2 cubic meters of biogas, which will result in an annual energy savings of 29,200 units and a 29-ton decrease in carbon emissions. The State Agriculture Department and Rural Development Department would build the biogas facilities.

2. The Department of Forests, planted trees like Poplar and Meli Dubia in various combinations with crops like paddy and wheat in outlying areas. In addition to producing wood products including plywood and plyboard and promoting livelihood security, it was anticipated that it would sequester 1125 tons of CO2 when it reached maturity.

3.The Rural Development Department and the Education Department have developed water storage facilities and rainwater harvesting structures as part of their drought-proofing efforts. In addition to rejuvenating other micro water bodies (Chappris), it would involve the restoration and rejuvenation of three ponds with a combined impounding capacity of 1.05 lakh liters. All government establishments will also have a rooftop rainwater harvesting structure erected in addition to that.

4.Solid Liquid & Plastic Waste Management—100% achievement of the goal set forth in SBM-G for the management of solid waste and grey water. This would make it possible to create an ecosystem that is healthy, sustainable, and climate-resilient. The Rural Development Department would be responsible for paying the project's expenses.

5.Jammu & Kashmir State Power Distribution Company Limited installed a 1200 kW solar power plant, 52 solar street lights, and 50 solar water pumps to increase the amount of solar power that can be produced to meet the needs of the households and institutions in the Gram Panchayat.

The Local Climate Action Plan's project-based costs are broken down in the following manner:

S. No.	Department	The amount proposed for under Local Climate Resilience Plan – Palli (Rs. In Lakhs)							
		Low Carbon Panchayat	Clean Energy	Agriculture	Afforestation	Water conservation /Drought Proofing	Solid Liquid Waste Management	Livelihoods	Total (in Lakhs)
1.	Agriculture	0.00	12.00	37.00	0.00	0.00	0.00	0.00	49.00
2.	Horticulture	0.00	0.00	7.22	0.00	0.00	0.00	0.00	7.22
3.	JAKEDA	18.00	741.32	0.00	0.00	0.00	0.00	0.00	759.32
4.	Handicrafts	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
5.	RDD-ACD	0.00	6.50	0.00	1.55	14.50	0.00	0.00	21.00
6.	Forest	0.60	0.00	0.00	0.00	0.00	0.00	0.00	2.15
7.	PCB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.	Education	3.00	0.00	0.00	0.00	9.00	0.00	0.00	12.00
9.	JKPDCL	0.00	30.00	0.00	0.00	0.00	0.00	0.00	30.00
10.	Social Welfare/ICDS	2.90	0.00	0.00	0.00	0.00	0.00	0.00	2.90
11.	NRLM	0.00	0.00	0.00	0.00	0.00	0.00	4.85	4.85
12.	Sheep Husbandry	0.00	0.00	0.00	0.00	0.00	0.00	20.40	20.40
13.	Animal Husbandry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.	ACD/DPO-RDD	0.00	0.00	0.00	0.00	0.00	84.00	0.00	84.00
15.	DIS, Samba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.	Health	0.52	0.00	0.00	0.00	0.00	0.00	0.00	0.52
17.	Revenue	24.00	0.00	0.00	0.00	0.00	0.00	0.00	24.00
18.	NGO- Jnana Prabodhini	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	49.02	789.82	44.22	1.55	23.50	84.00	26.25	1018.35

From 2022-2023 through 2027-2028, various stakeholders will contribute a total of 1018.35 lakhs, or 10.18 crores.

9. Recommending measures:

The rural population of India has very basic energy needs, yet these needs are largely unmet (for cooking, drinking water, and irrigation). To increase efficiency, it is necessary to encourage the introduction of cleaner-burning fuels such as hot water chullah, solar house lighting systems, solar street lighting, solar parabolic cookers, and biogas facilities. To reduce travel distance, producers and consumers should be located closer to one another. This calls for the development of regional markets, locally produced goods and services, and robust ecosystems that supply unrestricted access to local resources. Alternative system remote distribution is expensive and energy-intensive. To cut emissions and the amount of money that leaves the village economy, local business owners must learn to develop and assemble products. As a result, emissions would be reduced and community livelihoods would be improved (Mathur and Awasthi, 2016). To achieve net zero CO₂ emissions globally, all sectors and regions must implement significant emissions reductions, and active CO₂ removal must be used to balance any remaining emissions that may be too difficult or expensive to reduce one at a time. To reach worldwide net-zero CO₂ or GHG emissions, net negative emissions from one industry can balance out positive emissions in another sector or region. The timescale for achieving net zero CO₂ or GHG emissions in each sector or location depends on mitigation measures, costs, and suggested policies.

Conclusion:

Carbon-neutral development has become more important as nations throughout the world have understood how crucial it is to reduce anthropogenic emissions to address the current climate issue. Development that is carbon neutral has emerged as a viable alternative for an environmentally friendly future. The current civilization must quickly make a transition to a low-emission economy because of its reliance on fossil fuels. Many countries have made commitments to eliminate coal and other fossil fuels and replace them with technology based on renewable resources. We can prevent climate change and prepare the path for an environmentally friendly, independent, beneficial, and ecologically sound future for all by making the transition to a low-carbon economy. By implementing laws and strategies, creating short- and long-term initiatives, and involving all community members, a town can quickly become carbon neutral. When every community achieves and works to preserve carbon neutrality, the planet will be better for future generations as well as the present. Mainstreaming low-carbon development is the new approach for reaching the SDGs, preventing global warming, and guaranteeing an environmentally friendly future. The panchayat also started implementing energy-saving practices, including energy audits, LED bulb promotion, trash disposal facilities, vermicomposting, and distributing household recycling tools to homes. The goal of the initiative is to improve human welfare, aid in climate change adaptation, and build an environmentally sound community.

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