

Measuring Environmental Sustainability and Living Standard of Panchmura Village: A Field Study Based Approach

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ABSTRACT

Panchmura village of Bankura is famous for its majestic Terracotta art. The long-necked Terracotta horse and other pottery items are most popular pottery items of this craft village. An extensive field survey is administered to evaluate the quality of soil, water and air of this village. The soil and water sample is collected for testing in laboratory along with the vehicular pollution is measured. The basic problem like soil and pollution due to contamination by fertilizers and other agricultural residuals are prominent in this region. Some suggestive measures like application of bio-fertilizer, green manure, crop rotation, usage of e-vehicle and green technology are made in this article.

Keywords- Terracotta, water pollution, soil quality, vehicular pollution.

I. INTRODUCTION

Environment is one of the major foundations for sustaining human life and the entire biodiversity of the Earth. Modern developmental activities such as industrial establishment, urbanization, road construction, mineral extraction, or large-scale agricultural projects create various direct and indirect impacts on the natural environment. Therefore, before implementing any project, it is extremely necessary to analyse in detail its possible environmental impacts, risks, advantages-disadvantages, and long-term consequences. From this necessity, an Environmental Project Report is prepared.

An environmental project is a scientific and analytical document where the nature of the project, working methods, technology used, resource requirements, elements, potential environmental risks, and the ways to mitigate them are mentioned in detail.

This environmental survey and project work has been undertaken by selecting Panchmura village of Taldangra Block in Bankura district of West Bengal for observation. Panchmura is a rural and environmentally sensitive area, which depends on natural diversity, soil structure, an agriculture-based economy, and the lifestyle

of the local community. In this region, mainly laterite soil, red soil, drought-prone climate, and rivers are observed, which are extremely important for environmental research.

In this environmental project, we collected soil and water samples from four selected locations of Panchmura village (such as the college field, Kumar Para, the area near the petrol pump, and in front of Tridhara Milan Temple). During the field observation, we clearly noticed several aspects. We observed differences in the colour, texture, smell, and some variations in the flowers in each direction. Slight changes were also noticed in the colour, clarity, and smell of the water, which depend on environmental conditions.

Panchmura village is famous for its traditional terracotta art and pottery work. We saw harmful smoke coming out from the factories or craft centres of this industry, and harmful smoke also comes out from the rice mill in front of the petrol pump. This smoke is worsening the local air quality and damaging the surrounding plants. A large amount of plastic and polythene is found lying on the roadside, which is polluting the soil.

Finally, after testing these soil and water samples in the laboratory, it was found that the soil pH value is

more alkaline, and the organic carbon is almost the same in all areas, while in some places it is medium, showing variations in soil fertility.

In some areas, the water is clean, but in densely populated and roadside areas, impurities and turbidity were seen in the water. The smoke from cottage industries and kilns contains carbon, which is increasing air pollution. Plastic and garbage accumulated on the roadside are reducing the soil quality.

II. STUDY AREA

The present study focuses on Panchmura, a culturally significant rural settlement located in the Taldangra community development block of Bankura district, west Bengal. Panchmura is widely known for its Terracotta craftsmanship, especially the iconic Bankura Horse, which has brought the village national and international recognition.

(i) **Administrative Location:** Panchmura is under the Taldangra block and is administered locally by a gram panchayet and a sarpanch. Its sub- district location in Taldangra, a district headquarters in Bankura, and a postal code of 722156.

- **State:** West Bengal
- **District:** Bankura
- **Sub- Division:** Khatra sub- division
- **Gram Panchayat:** Panchmura Gram Panchayat
- **Police Station:** Taldangra
- **Village Code (census 2011):** 328705
- **PIN code:** 722156

(ii) **Physical Location:** Panchmura lies in a hard rock laterite zone typical of Western Bankura. Its physical setting reflects undulating land, red soil, and scattered patches of sal forest nearby.

- **Geographical Coordinates:** Panchmura is at approximately 22.9667N latitude and 87.1667E longitude.
- **Area:** The total geographical area of the village is around 296.29 hectares (which is about 2.9629 km²).
- **Topography:** The area is part of the Bankura uplands in the west, gradually merging with the Bankura- Bishnupur Rarh plains to the northeast.
- **Rivers:** The district is crisscrossed by several seasonal, rain- fed rivers, which are often dry in the summer. The major rivers in the border district include the Damodar, the Dwarakeswar, the Shilabati, and the Kangsabati. Panchmura is situated in an area where these river systems are present, and local clay used for its famous Terracotta craft is collected from nearby land.
- **Trees and Vegetation:** The natural vegetation in and around Panchmura

primarily consists of tropical dry deciduous forests. Common trees include Sal, Simul, Haldi, Mahua, Palash and various species of bamboo. The region's poor lateritic soil and dry climate are ideal for these specific types of trees.

(iii) **Total Population:** Using 2011 census data:

- **Total population:** 3719 people
- **Number of households:** 797
- **Gender breakdown:** Males- 1854, Females- 1865
- **Children (0-6 years):** 425
- **Scheduled Caste (SC) population:** 1302 (about 35.01%)
- **Scheduled Tribe (ST) population:** 21 (about 0.56%)

(iv) **Population Density:** Population density is calculated as:-

$$\text{Population Density} = \frac{\text{Total population}}{\text{Area (sq.km)}} \\ = \frac{3719}{2.96} \approx 1255 \text{ persons per sq. km}$$

This reflects a moderately high population density for a rural Bengal village.

(v) **Neighbouring Moujas:** Panchmura Gram Panchayat consists of several Moujas which surround the main settlement. Important neighbouring Moujas include:-

- Adhkara
- Amjor
- Banskopa
- Danduria
- Dhobajor
- Jaypur
- Lalbandh
- Radhanagar
- Kanaipur
- Jambedia
- Deulbhira

These Moujas from the rural cluster around Panchmura and share similar physical and cultural characteristics.

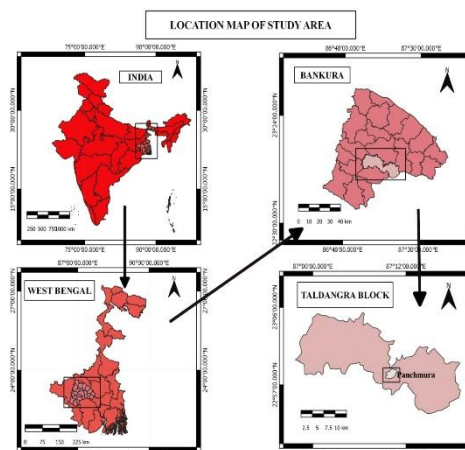


Fig: 1 Location map of Panchmura village

III. SOIL QUALITY OF THE STUDY AREA

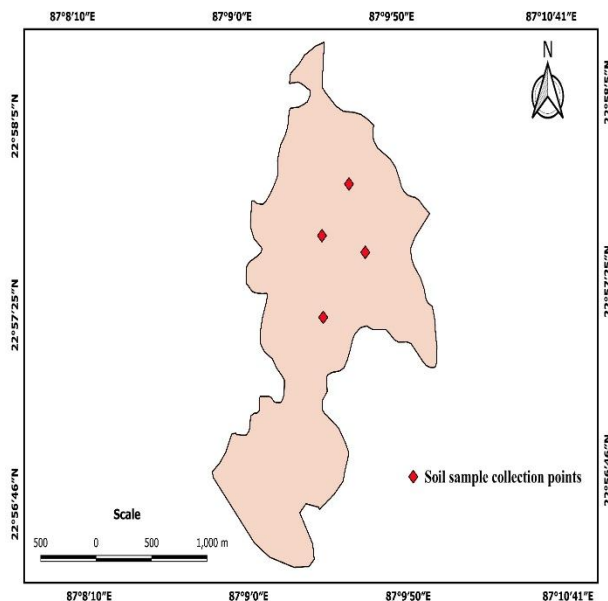


Fig:4 Soil collection location of study area

1. SOIL pH:-

Soil pH is a measure of soil acidity or alkalinity, determined by the concentration of hydrogen ions (H^+) on a scale from 0 to 14, with 7 being neutral. It is a crucial soil property because it affects nutrient availability, microbial community activity, and overall plant health, making it a key ecosystem and agriculture.

- **Acidity:** A pH below 7 is acidic, while a pH above 7 is alkaline or basic.
- **Logarithmic scale:** The pH scale is logarithmic, meaning each full unit of change represents a tenfold difference in acidity. For example, a pH of 6 is 10 times more acidic than a pH of 7.
- **Measurement:** Soil pH is typically measured using soil-water solutions with tools like pH meters or test kits.

For our study we have selected Panchmura village. This area's soils are collected from four different locations. Such as (i) Tridhara Milan Mandir (East), (ii) Petrol pump (West), (iii) College ground (North), (iv) Kumar para (South). After the soil collection we measured its pH value of department lab. The soil pH value of this area stands between 5.5 to 6.6. It is an acidic soil. Paddy, wheat, maize, potato, mustard, sunflower, groundnut and different types of crops are produced in this area's soils.

Soil pH is considered a master variable in soils as its effects may chemically process. It specially affects plant nutrient availability by controlling the chemical reaction they undergo. The optimum pH range for most plants is between 5.5 and 6.9. However, many plants have adapted to their all-pH values outside this range.

Table-2: pH values of selected soil sample

Station	Lat, Long	pH Value
North	Lat:-22.97° Long:-87.17°	7.9
South	Lat:-22.963687° Long:-87.1610810	7.2
East	Lat:-22.966846° Long:-87.176020°	6.0
South	Lat:-22.962925° Long:-87.156213°	6.5

The station A is located at North having lat-22.97, long -87.17, and pH value -7.9. The pH value 7.9 showing very slight alkalinity. The station B located at the South of Panchmura (Kumar para) having lat -22.96, long -87.16, and pH value -7.2. The pH value 7.2 showing very slight alkalinity. The station C located at the East of Panchmura (Tridhara mandir) having lat -22.96, long -87.17, and pH value -6.0. The pH value showing acidic nature. The station D located at the West of Panchmura (petrol pump) having lat -22.96, long -87.15, and Soil pH value -6.5. The pH value 6.5 showing acidic nature.

Hence, The Northern Forest region of Panchmura and the southern Kumorpara region having alkaline nature of soil. Where, as the Eastern part (Tridhara Milan Mandir) region and Western part (petrol pump) region having acidic nature of soil. The average pH level is 6.9 showing the neutral nature of soil.

(i) Soil Pollution:-

Soil pollution is the contamination of soil with harmful substances, such as chemicals, heavy metals, and waste, which degrades its quality and threatens human health and ecosystems. This can result from activities like industrial waste discharge, overuse of agricultural chemicals, and improper waste disposal, and it can lead to reduced soil fertility, contaminated food crops, and long-term health problems.

Causes of Soil Pollution:-

- **Agricultural chemicals:** Excessive use of fertilizers and pesticides can accumulate in the soil.
- **Industrial waste:** Improperly treated waste from industries can contain chemical, heavy metals, and solvents that pollute the soil.
- **Waste disposal:** Landfills and the improper disposal of waste, including non-biodegradable plastics, can release pollutants into the soil.

Panchmura village is known as a terracotta craft village in the Bankura district of West Bengal. One case study on the terracotta craft notes that the specific cottage industry in the village does not cause soil pollution, as it operates on a small household scale with locally sourced mud ("Entel mati").

(ii) Suggestion:-

- **Balanced Fertilizer Use:** Avoid excessive use of chemical fertilizers and encourage the use of organic manure and compost to maintain a stable soil pH.
- **Regular Soil Testing:** Conduct periodic soil tests to monitor pH levels and nutrient availability. This helps in selecting suitable crops for each location.
- **Addition of Organic Matter:** Incorporating organic matter (compost, cow dung, green manure) improves soil structure and helps stabilize pH levels.
- **Use of Lime or Sulphur (Where Required):** In areas with acidic soil (low pH), lime can be applied to increase pH.
- In slightly alkaline soil, Sulphur can be used to lower the pH.
- The overall survey shows that the soil pH of different locations in Panchmura village ranges between 5.5 and 7.9.
- The northern part shows slightly alkaline soil.
- The southern part has nearly neutral soil.
- The eastern and western parts show acidic characteristics.

This variation in pH directly affects agricultural activities, as soil pH controls nutrient availability, plant growth, and soil chemical processes. No significant evidence of soil pollution was observed in the study area, and the terracotta cottage industry does not contribute to soil pollution because it functions on a small scale using locally sourced clay.

Therefore, through proper fertilizer management, use of organic matter, and regular soil testing, the soil quality of Panchmura village can be maintained and further improved. This study provides useful guidance for agricultural planning and environmental conservation

2. Organic Carbon:-

Organic carbon is the carbon component of all living and dead organic matter in the soil, such as plant residues, roots, and microbes. It is crucial for soil health as it acts as a "glue" and "sponge" improving structure, water retention, and nutrient supply. Organic carbon is vital for soil fertility, regulating nutrient cycles, and plays a significant role in climate change mitigation.

- **Carbon component of organic matter:** Soil organic carbon (SOC) is the carbon part of 'Soil Organic Matter'(SOM).
- **Source materials:** It originates from the decomposition of materials from once- living organisms, including plant and animal residues, root exudates and microorganisms.
- **Excludes inorganic carbon:** Inorganic carbon, such as in carbonates is not considered organic carbon.

Soil organic carbon quality of Panchmura village of the study area is below 0.5%. Soil organic carbon in the range of 0.5% is considered moderate organic matter content in the soil organic matter is crucial for soil

fertility, structured and nutrient retention. Higher levels of soil organic carbon generally indicate better Soil fertility and water retention capacity.

The Organic Carbon (OC) analysis of the soil sample collected from Panchmura village shows a value below 0.5%, as indicated by the colour comparison chart. This result signifies that the soil contains a low level of organic carbon. Such a low OC content generally indicates poor soil fertility, low humus content, and reduced microbial activity. As a consequence, the soil structure becomes weaker, water-holding capacity decreases, and the availability of essential nutrients for plant growth is reduced. Therefore, to improve the soil quality of Panchmura village, it is necessary to increase organic matter through the application of compost, farmyard manure, green manure, and bio-fertilizers.

i. Suggestion: -

- **Increase Organic Matter Application:** Regular application of compost, farmyard manure, green manure, and bio-fertilizers should be encouraged to improve soil organic carbon levels.
- **Adopt Conservation Farming Practices:** Techniques such as minimum tillage, mulching, and crop residue retention help reduce soil erosion and enhance organic matter accumulation.
- **Introduce Crop Rotation and Cover Cropping:** Growing leguminous crops and maintaining cover crops can significantly boost soil microbial activity and increase natural organic carbon content.
- **Promote Agroforestry and Plantation:** Planting trees and shrubs around agricultural fields improves carbon storage and stabilizes soil nutrients.
- **Discourage Excessive Chemical Use:** Overuse of chemical fertilizers reduces microbial diversity. Balanced fertilizer use along with organic amendments should be promoted.

The analysis of soil samples from Panchmura village shows that the organic carbon content is below 0.5%, indicating a low level of organic matter in the soil. This low organic carbon level reflects poor soil fertility, reduced microbial activity, weak soil structure, and lower water-holding capacity. As a result, the availability of essential nutrients for plant growth is also limited.

To enhance soil fertility and maintain long-term agricultural productivity, it is essential to increase the organic carbon content through sustainable farming techniques such as adding compost, farmyard manure, green manure, adopting conservation tillage, and practicing crop rotation. By implementing these measures, the soil quality of Panchmura village can be significantly improved, ensuring better nutrient retention, improved plant growth, and sustainable environmental management.

IV. WATER QUALITY OF THE STUDY AREA

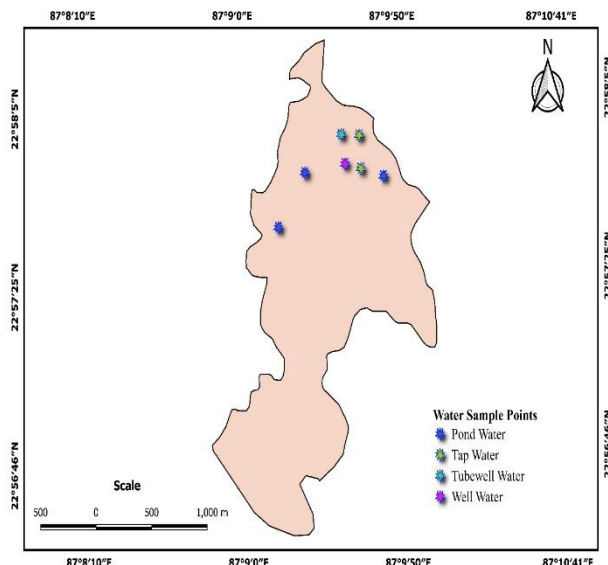


Fig:5- Water Sample Collection Map

1. Water pH :

Water PH is a measure of the acidity or alkalinity of water. It is a critical parameter in determining the quality and safety of water for various uses, Including drinking, irrigation, and indurtrial applications.

2. pH Scale :

The PH Scale ranger from 0 to 10, with:

- pH 7 being neutral (neither acidic for alkaline)
- pH below 7 being acidic
- pH above 7 being alkaline (basic)

3. Importance of water pH :

- Human Health: - Water with extreme pH level can cause health issues, such as:
 - Eye and skin irritation.
 - Gastrointestinal problem.
 - Disruption of body's acid bare balance.
- Agriculture: - PH effects plants growth, with optimal PH ranges varing by crop.
- Aquatic Life: - PH effects aquatic life, with extreme level potentially harming aquatic organisms.

4. Methodology:

The project involved collecting water sample from different sources including .

- East Point
- West Point
- North Point
- South Point

The PH level is measured using a pH meter. The result was then compared with the standard set by the world Health organization (WHO) and the Environmental Protection Agency (EPA) .

5. Results:

The results of the analysis are presented in the following tables

Table-3: pH values of selected water sample

Station	Lat,Long	pH Value
North	Lat:- 22. 977681, Long:- 87.172127	8.5
South	Lat:- 22.963822, Long:- :- 87.161153	8
East	Lat:-22. 96706, Logn:-87.17	7.2
south	Lat:- 22.963822, Long:- 87.161153	7.5

6. Interpretation:

East Point (pH 8.5):- The water is alkaline, indicating a clean and safe condition .This suggests low population and good environmental quality .

West Point (pH 8.0):- This value is also alkaline. The water is pure , contains very few impurities and is environmentally health.

North Point (pH 7.2) :- This PH value is almost neutral, meaning the water is fresh and safe. Natural water usually shows no harmful contamination.

South Point (pH 7.8):- This value shows slightly alkaline water. It indicates good water quality with no major pollutions.

All PH values range between 7.2 and 8.5, which lies within the safe and acceptable limits of WHO and EPA standards. The water from all four sampling points in either neutral or slightly alkaline. 20 Sample shows high acidity or dangerous PH levels. This means the water is clean, safe, and not polluted.

From the analysis, it is clear that the water quality in all four directions of the study area is good and environmentally safe. Alkaline and neutral PH levels indicate minimum pollution and healthy water conditions. Therefore, the overall water quality of the region is Suitable for general use and does not pose any environmental risk.

❖ Water TDS :

Total dissolved solid (TDS) refers to the amount of dissolved solids (minerals,salts,and others substance) present in water.TDS in important parameter in determining water quality and it often used to assess the suitability of water for various uses ,including drinking, irrigation and industrial applications.

• Effects Of High TDS :

- Taste and Order:** High TDS level can effect the tast and order of water.
- Health Concerns:** High TDS level can pose health risk,including;

- Kidney stone formation
- Cardiovascular disease
- Other health problem

iii. Environmental Impact: High TDS levels can harm aquatic life and ecosystems.

- Methodology :** The projects involved collecting water samples from different source, including;
 - East Point

- b. West Point
- c. North Point
- d. South Point

The TDS level was measured using a TDS meter.

- **Results :** The results of the analysis are presented in the following table.

Table-4: TDS values of selected water sample

Sample	LAT, LONG	TDS level(Mg/L)
NORTH	Lat:-22.977676 Long:-87.172107	8.5
SOUTH	Lat:-22.963822 Long:-87.161081	8
EAST	Lat:-22.967067 Long:-87.171602	7.2
WEST	Lat:-22.962778 Long:-87.156012	7.5

• **Interpretation :**

- i. The four water sample show different TDS level
- ii. East point (63 ppm): very good quality low dissolved solids.
- iii. West point (492 ppm): Highest TDS including high salts and minerals.
- iv. North point (102 ppm): Moderate and acceptable level.
- v. South point (291 ppm): Relatively high but still within the permissible limit.

This shows that water quality varies across the

area.

The analysis shows that the east point has the best water quality, while the east point has the highest TDS level .The north and south point have moderate TDS values .The west point may need further monitoring or improvement regular testing will help track change in water quality.

Some water pollution include heavy metals like mercury and lead , nutrient like nitrogen and phosphorus ,pathogens from sewage and various chemicals such as participate peas, and petroleum products, other pollutants include radio active substance ,sediment and even heated water ,which is known as thermal pollution.

• **Suggestion:**

i. Treat industrial waste: Industrial should not discharge dairy water directly into rivers or ponds ,waste water the use of organic fertilizer can reduce water pollution.

ii. Use organic fertilizers: Reducing chemical fertilizers and pesticides in agriculture and increasing the use of organic fertilizers can reduce water pollution .

iii. Stop dumping plastic waste: plastic, bottles, polythene, and household garbage must not be thrown into rivers, ponds or drains.

iv. Plant trees near water bodies : Plantation near river and ponds help reduce soil erosion and improves natural water filtration .

v. Stop open defection: Encouraging people to use toilets instead of open areas helps prevent contamination of water sources.

Industrial Population of the Study Area

❖ **MAJOR AVAILABLE INDUSTRY IN PANCHMURA.**

Panchmura is a small village in the Bankura district of West Bengal, but culturally it holds great significance. The geographical elevation of Panchmura is approximately 68 meters. There are many small and medium-scale industries in Panchmura, among which the major ones are:

1. Terracotta Craft Industry.
2. Rural Tourism.
3. Panchmura Rice Mill.

1. TERRACOTTA CRAFT INDUSTRY:

Terracotta craft is an ancient and traditional handicraft made from natural clay, where various decorative, functional, and artistic objects are created. The terracotta craft of Panchmura is a remarkable cultural and traditional art form that reflects the skills and heritage of artisans for centuries. The famous “Bankura Horse” and “Manasa Chali” produced here are internationally acclaimed and serve as the primary source of livelihood for the local artisans. Panchmura terra cotta art Terracotta art is not only a handicraft but a symbol of rural art, economy, society and culture.

2. RURAL TOURISM :

Panchmura village has been developed as a Rural Craft Hub by the Government of West Bengal, in collaboration with various organizations including UNESCO, Panchmura is not only an attractive destination for tourists but also a powerful means of supporting the local artisan community The terracotta fair, workshop folk festival and rural renovation orientation together make this place known as an important Craft Tourism Spot.

3. PANCHMURA RICE MILL :

A famous rice mill in Panchmura village is "Haragauri Rice Mill" It is a small-scale rice mill registered as Small Enterprise under MSME category.

❖ **MAJOR AFFECTED SECTOR:**

1. MAJOR AFFECTED SECTOR IN TERRACOTTA CRAFT INDUSTRY

The terracotta industry being a traditional rural industry has several problems and implications. The terracotta industry is facing various challenges mainly in raw material, production, marketing, transportation, economy, labour technology and tourism sectors. These problems can be largely solved by proper government support training, modern technology and market expansion.

2. MAJOR AFFECTED SECTOR IN RURAL TOURISM :

Panchmura primary tourism infrastructure communication, marketing, cultural promotion, economic activities, skill development and tourism services are the most affected in these sectors.

Proper government planning, improved promotion, modern tourism facilities and increased participation of local people can improve the rural tourism of Panchmura.

3. MAJOR AFFECTED SECTOR IN PANCHMURA RICE MILL :

Panchmura Rice Mill Sector is affected due to various problems. It is mainly suffering due to problems of raw material procurement, old machinery, shortage of skilled workers, competition in the market and rising cost of transportation. Financial constraints and waste management hinder the development of this sector. Technology development, infrastructure, market linkages and government support are highly needed to make the Panchmura Rice Mill Sector more efficient.

❖ MAJOR POLLUTION :-

1. MAJOR POLLUTION IN TERRACOTTA CRAFT INDUSTRY :

The main pollution in Panchmura terracotta industry is mainly air pollution due to kiln firing, dust pollution during grinding and preparation of soil, thermal pollution from the heat of the rice and waste pollution generated from broken earthenware and ash. Land pollution is also seen due to over mining. Adopting environmentally friendly kilns, dust control systems and proper waste management can greatly reduce this pollution.

2. MAJOR POLLUTION IN RURAL TOURISM :

Panchmura village is famous for its terracotta industry, but due to growing rural tourism, there are various pollution problems. Plastic food wrappers and other wastes left behind by tourists are polluting the environment. Also, the noise of tourist vehicles is damaging the rural environment. All in all, although Panchmura rural tourism has improved, it is necessary to solve it quickly.

3. MAJOR POLLUTION IN RICE MILL :

During rice milling in Panchmura area, a lot of dust and chaff is released into the air, resulting in increased air pollution along with the continuous noise of heavy machinery causing noise pollution to the people nearby. If the waste water generated after soaking and cleaning the paddy is not properly disposed, the water in the pond and the surrounding land becomes polluted. Besides, accumulation of chaff, ash and other solid waste in open places causes soil pollution.

❖ MAJOR SUGGESTION :-

1. IMPROVEMENT IN TERRACOTTA CRAFT INDUSTRY :

- Modern and energy-efficient kilns should be introduced to reduce air and thermal pollution.
- Proper dust-control systems and safety equipment should be provided to artisans.
- Government support, skill-development training and better marketing facilities can help the artisans increase their income and product quality.
- Sustainable clay-mining practices must be followed to prevent land degradation.

2. DEVELOPMENT OF RURAL TOURISM :

- Proper waste-management systems must be installed in tourist spots to prevent plastic and land pollution.
- Tourism infrastructure such as roads, signboards, rest facilities, and communication networks should be improved.
- Awareness programs should be conducted for tourists to maintain cleanliness and protect the rural environment.
- Promotion of cultural festivals, workshops, and local handicrafts can boost the local economy and provide employment.

3. UPGRADATION OF PANCHMURA RICE MILL SECTOR :

- Modern machinery should be introduced to reduce noise pollution and improve efficiency.
- Proper disposal systems must be installed to manage wastewater, chaff, ash, and other solid waste.
- Regular maintenance of machines will reduce breakdowns and energy consumption.
- Training programs for workers and financial support for small mill owners can help improve productivity and environmental sustainability.

4. GENERAL ENVIRONMENTAL SUGGESTIONS :

- Plantation of trees around industrial areas to reduce dust and air pollution.
- Awareness among local people regarding pollution control and sustainable development.
- Strict monitoring and guidance from local government authorities to ensure responsible industrial practices.

V. VEHICULAR POLLUTION OF THE STUDY AREA

We have chosen two particular time slots for studying traffic flow at Panchmura college more. The first time slot was 10:00 am to 11:00 am which is the peak period of vehicle transport. And the second one is from 12:00 pm to 1:00 pm. The following table and graphical presentation showing the same.

Table:5- Vehicle frequency during 10-11 am.

Vehicle	Frequency
Bus	6
Private Car	19
Electronic Scooter	15
Toto	44
Lorry	10
Motorbike	301
Engine Van	12
Pickup Van	11
Tractor	4
Auto	1
JCB	1

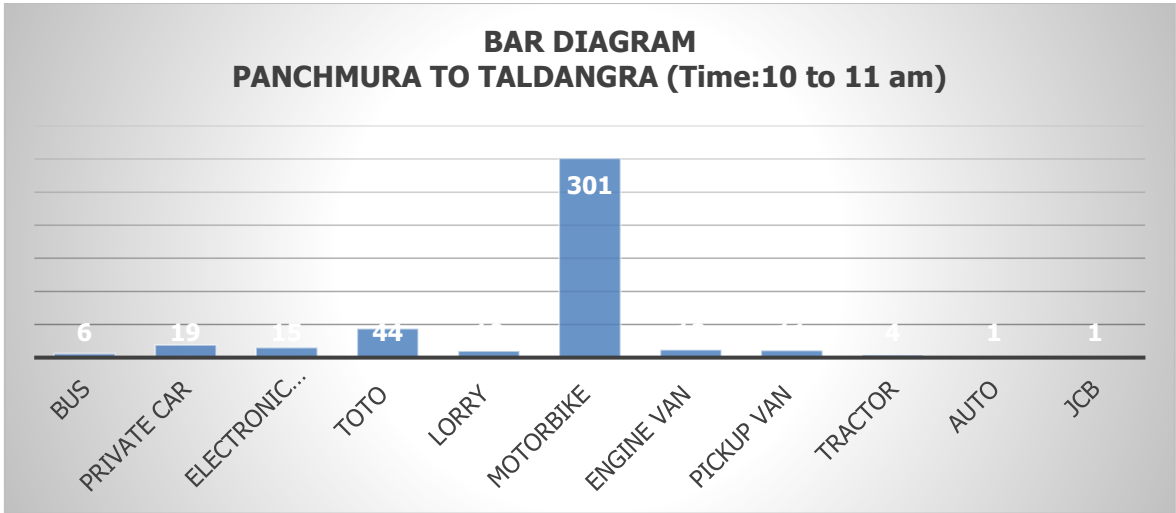


Fig:6 Vehicle frequency during 10-11 am.

From the above table we have found that during 10:00 am to 11:00 am time slot highest frequency is found for motorbike (301). Besides that Toto vehicle obtains high frequency (44). As it is a peak period for office goers, school and other passengers. Hence, a bottleneck situation is Areas.

Table:6- Vehicle frequency during 12-1 pm.

Vehicle	Frequency
Bus	5

Private Car	29
Electronic Scooter	20
Toto	35
Lorry	7
Motorbike	265
Engine Van	12
Pickup Van	11
Tractor	6
Auto	1

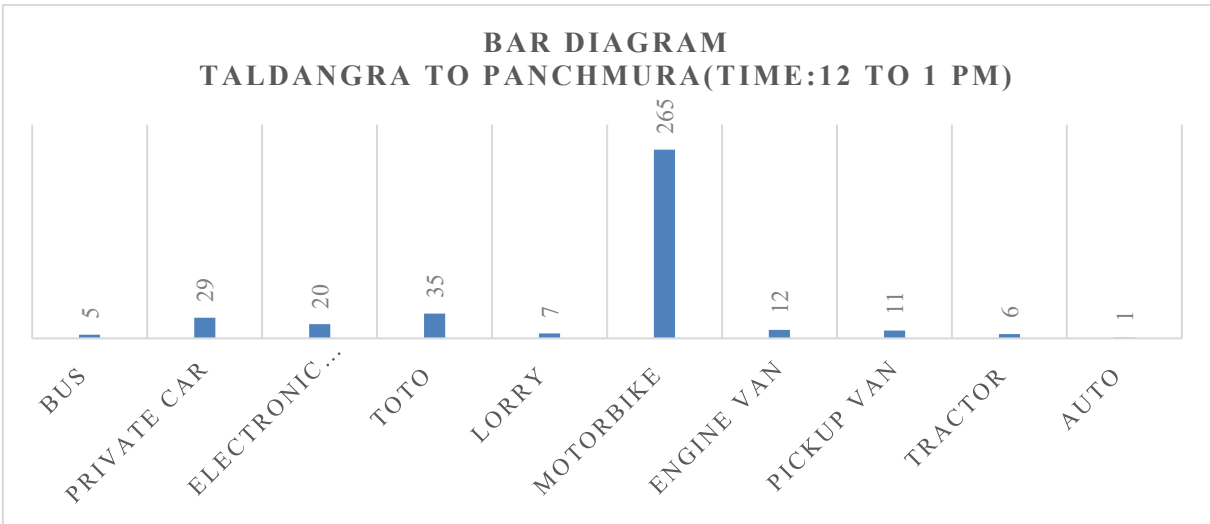


Fig:7 Vehicle frequency during 12-1 pm.

From this table we have found that the frequency of motorbike reduced at 265 and the frequency of toto is gradually decreased up to 35 as this period is not peak hour of transportation.

VI. CONCLUSION

The said environmental project report consists three specific attribute like soil quality, water quality,

vehicular pollution level of the village Panchmura. The soil PH and organic carbon are measured through soil testing kit and the water PH and TDS is measured through digital PH and TDS meters.

The calculated value of three selected parameters is given bellow. The Collected soil sample shows that organic matter concentration is quite low at Panchmura. The pH. value of soil remains slightly alkaline at northern part (college ground), southern part

(Kumor para) whereas, it is quite acidic in eastern part (Tridhara mandir) and western part (Petrol pump). The reason for acidic nature is because of over application of chemical fertilizer and insecticides for agriculture purpose and east and west consist highest agriculture ground.

Whereas, the northern and southern part consists institution and Kumor para (Mrithsilpo) and having no such concentration of fertilizer and chemical.

Hence. The soil is nature in nature. The water pH of North and south is 8 whereas the east and west having pH. level 7, which shows the concentration difference of chemicals in water body's at selected region.

The air quality of Panchmura is quite good. During the pick hour of transportation slight pollution is generated due to rise of vehicle numbers, whereas nest of the time the air quality remains heltheair.

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