



# Submitted to:

# Power Finance Corporation Limited Submitted by:

# Indian Institute of Social Welfare & Business Management

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# Acknowledgment

The project report entitled 'CSR impact assessment report on plantation in Nagpur region of NH-7 was supported by PFC.

We would like to express our sincere gratitude to the Power Finance Corporation (PFC) for their generous support of the study. Their contribution has been instrumental in enabling us to conduct a comprehensive assessment of the plantation activities along National Highway 7 in the Nagpur region.

We are also deeply indebted to the National Highways Authority of India (NHAI) officials for their invaluable guidance and assistance. Their expertise and support have been crucial in ensuring the success of this survey.

Our heartfelt thanks also go to the local stakeholders who cooperated in this study. Their insights and experiences have provided us with a rich understanding of the impact of the plantation activities on the region. We are especially grateful to the nursery owners, toll booth staff, villagers Farmers, and cab drivers who took the time to share their perspectives. Their positive feedback regarding the growth and maturity of the plants along the highway has been invaluable in shaping our findings.

Finally, we would like to acknowledge the contributions of our colleagues and the PFC CSR officials. Their dedication, hard work, and collaborative spirit have made this field visit and data collection possible. We are particularly obliged to Mr. Chandrakant Sinha, GM (Tech) Project Director Nagpur, Maharashtra, for his leadership and support.

Dr. ARINDAM DUTTA Principal Investigator Prof. SANDIP GHOSH Co Principal Investigator

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# 1. Executive summary

This report presents the findings from the CSR Impact Assessment conducted for the tree plantation project along NH-7 in the Nagpur region. The project, part of the National Green Highways Mission, aimed to mitigate the environmental degradation caused by the rapid expansion of road networks while simultaneously providing social and economic benefits to local communities.

The plantation along two key stretches, Borkhedi-Jam-Wadner and Khatara-Kelapur, covered approximately 87.15 kilometers. The tree plantation primary objective was to reduce air and noise pollution, provide a greener landscape, and create livelihood opportunities for residents. The impact assessment study of the CSR project is based on a mixed-method approach, involving both quantitative data collection and qualitative interviews with local stakeholders, including nursery owners, roadside shop owners, drivers, and village representatives.

### 1.1 Key findings include

**Environmental Benefits:** The project successfully reduced air and noise pollution along the highway, with trees acting as natural barriers to absorb pollutants and deflect sound, creating a healthier environment for residents and travelers.

**Economic Impact:** The plantation provided various sources of income for the local community, including the sale of fruits and bamboo. The project also enhanced safety by reducing animal-related accidents and improving nighttime visibility.

**Social Impact:** Residents benefited significantly from the project through enhanced employment opportunities and an improved quality of life. The involvement of stakeholders, such as cab drivers and shop owners, demonstrated the plantation's positive socio-economic effects.

**Sustainability:** The project's alignment with the National Green Highways Mission ensured long-term sustainability through continued community engagement, training programs, and the fostering of local ownership.

# CHAPTER 2 BACKGROUND OF THE PROJECT

### 2.1 BACKGROUND

Tree plantation along national highways is a vital component of environmental conservation and sustainable infrastructure development. The rapid expansion of road networks has led to deforestation, increased carbon emissions, and environmental degradation. Planting trees along highways helps offset these effects by absorbing carbon dioxide, reducing dust and noise pollution, and stabilizing soil to prevent erosion. In countries like India, government initiatives such as the Green Highways Policy, 2015, and the National Green Highways Mission promote tree plantation as part of green infrastructure development. These efforts are designed to mitigate environmental damage while creating green corridors that improve biodiversity, provide habitats for wildlife, and enhance the visual appeal of highways.

#### 2.2 LOCATION

North-South Corridor: This section of NH-7 is part of the North-South Corridor, a major highway development project connecting Srinagar in the north to Kanyakumari in the south.

Avenue Plantation Stretches:

- Borkhedi-Jam-Wadner: This stretch covers a distance of 57.15 kilometres, starting from km 36.6 and ending at km 93.750. It is part of the OMT package number 29.
- Khatara-Kelapur: This stretch covers a distance of 30 kilometres, starting from km 123.00 and ending at km 153.00.

In summary, the project aims to plant trees along specific stretches of the Nagpur-Hyderabad section of NH-7 as part of the broader North-South Corridor development. The two stretches identified for avenue plantation are Borkhedi-Jam-Wadner and Khatara-Kelapur.

# 2.3 BING MAP:



**Table 1.0 Project Details** 

Project Name	CSR Project For Plantation in Nagpur Region of NH-7
Project cost	₹ 6.31cr
Nearest village	Kanhan
Nearest Town	Buttibori
Nearest City	Nagpur
Project Coordinate	Latitude: 20.846239° to 20.453° Longitude: 78.960435° to 78.755126°
Nearest Railway Station	Nagpur Railway Station
Nearest Airport	Dr. Babasaheb Ambedkar International Airport
Nearest River/Water body	Kanhan River
National Park/Reserve Forest, Biosphere	Oxygen Bird Park

Nagpur – Hyderabad Section of NH-7 (new name: NH-44) is the part of North-South Corridor. North-South Corridor connecting Srinagar in the North to Kanyakumari in the South is the second phase of the National Highway Development Project and is managed by NHAI. In the entire report, we mentioned NH-7 instead of NH-44 for convenience.

# <u>Chapter 3: Research Methodology and Scope of the Study</u>

# 3.1 Objective

To assess that how the plantation and allied activities generate livelihood opportunities To assess that how the CSR project is helpful in controlling various forms of pollution such as air and noise pollution

To assess the benefit of the intervention to various stakeholders of the activities

# 3.2 Methodology

To assess the impact of CSR projects, a mixed-method approach was deployed, which involved either one or both quantitative and qualitative research tools (as relevant) for primary data collection. Using these tools, the team conducted interactions (virtual and on-field) with the project beneficiaries and other relevant stakeholders.

Post-data collection and analysis, the key insights and findings were collated in the form of a consolidated report for Management's consideration. This study was guided by the OECD- Development



Assistance Committee (DAC) Framework which was used to provide overall feedback on the efficacy of implementation as well, as its efficiency in terms of achievement of the desired project outputs with reference to inputs.

The deliverables of the study have the following deliverables:

- Impact assessment of the CSR project
- Case studies from the initiatives
- Short videos of testimonies and geo-tagged photographs for the project.

# 3.3 Research Design

Name of the Project	CSR Project for Plantation in Nagpur Region
	of NH-7
Project Partner	National Highway Authority of India (NHAI)
Research Methodology	Descriptive Research Design
Sampling Technique	Purposive Sampling
Number of Stakeholders Covered	153 (Study has Covered 10km of Plantation
	done on NH-7)
Quantities Method Used	Focus Group Discussion, Key Informative
	Interview, Stakeholder Engagement

# 3.4 Stakeholders Covered



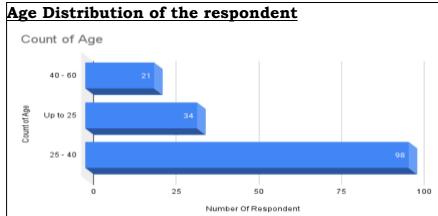
# **Location Covered for assessment:**



Name of the district of Jharkhand	Number of stakeholders Covered
BORKHEDI (0 to 2.1km)	30
JANGESHWAR (2.1 to 4.3 km)	25
BUTIBORI (4.3 to 5.3 km)	27
RUIKHAIRI (5.3 to 6.2 km)	21
MOHGAON (6.2 to 8.1 km)	19
DONGARGAON (8.1 to 10.0 km)	31

## 3.5 Various Strata Results

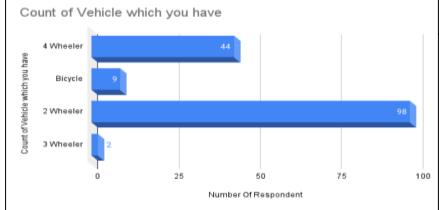
### Total no. of Respondent 153



### Comment

Among all respondents (98) 64.3% are in the 25-40 age category. (21) 14.3% lie in the 40-60 age category. (34) 21.4% lie in the up to 25 year's age category.

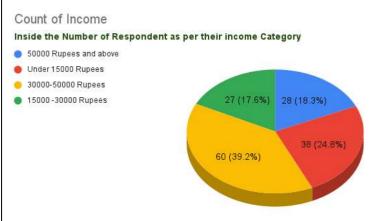
## Vehicles that the regional people have



### Comment

The bar chart shows among the respondents in the Nagpur region, (9) 5.2% of the public has bicycles, (98) 63.6% have two-wheelers, (2) 1.3% have three-wheelers, and (44) 29.9% have four-wheelers.

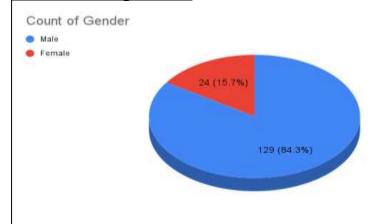
# **Colour Code Representation**



### Comment

Here different income levels of the respondents have been depicted. (27) 17.6% of the respondents have a monthly family income between Rs. 15K-30K, (60) 39.2% of the respondents have a monthly family income between Rs. 30K-50K, (38) 24.8% of the respondents have a monthly family income under Rs. 15K, (28) 18.3% of the respondents have having monthly family income above 50K.

### Gender of respondent



### Comment

Among all the respondents (129) 84.3% are male and (24)15.7% are female.

# Chapter 4: Action Plan & Visits

# 4.1 Assessment Study Activities Undertaken

SN	Date	Activities Performed
1	1 01.09.2024	Interacted with the RO of (NHAI) the National Highway Authority of India of
1		the Nagpur region
2	15.09.2024	Frame a Google Form for collecting feedback on the Plantation of NH-7 (NH-7)
4	13.09.2024	from the local people living near NH-7 of Nagpur Region
3	01.10.2024	Collected More than 50+ Responses from the local people from
3	01.10.2024	Nagpur Region
		Visited to Nagpur and Meet the GM (tech) & Project Director of NHAI of the
4	11.10.2024	Nagpur Region and completed the survey of tree plantation of NH-7 with RO
		of Nagpur Region
1		

SN	Date	Activities Performed
<b>SN</b> 1	01.09.2024 - 08.09.2024	Activities Performed  The scope of the project has been analyzed and a detailed roadmap for the project execution has been prepared.  The google form was created and circulated among the respondents of Nagpur region. The Google Form was designed to collect specific information from respondents, such as:  • Demographic details: Age, gender, occupation, and length of residence in the area.  • Awareness of plantation initiatives: Whether respondents were aware of any existing plantation efforts along NH-7.
2	15.09.2024-18.09.2024	<ul> <li>Perception of the plantation: Their opinion on the effectiveness, aesthetics, and environmental impact of the plantations.</li> <li>Suggestions for improvement: Ideas for improving the plantation efforts, including species selection, maintenance, and community involvement.</li> <li>By collecting this data, the project aimed to gain valuable insights into the local community's perspective</li> </ul>

on the plantation efforts along NH-7. This information could be used to inform future planning, improve existing initiatives, and ensure that the plantations align with the needs and preferences of the residents.

During a visit to Nagpur, we met with the General Manager (Technology) and Project Director of the National Highways Authority of India (NHAI) for the Nagpur region. We conducted a comprehensive survey of the tree plantation initiatives along National Highway 7 (NH-7) in conjunction with the Regional Office (RO) of Nagpur and conducted Focussed Group Discussion with the community people.



Starting area of tree plantation



Road Side Shop Owner





Cab Driver



Toll both Incharge of NH-7

# NHAI Nagpur Official, Visiting Date: 11th October.2024

S. NO.	Name of	Designation
	Executive	
1.	Chandrkant	GM (Tech) & Project Director National Highway Authority of India
	Sinha	Nagpur
2.	Vaibhav	Regional Assistant officer
	Raut	
3.	Manoj Gode	Site Engineer of NHAI
4.	Shashank. D	Nursery Owner who supplied the trees for the Plantation in some parts
	Khandre	of NH-7

# **Chapter 5: IMPACT Assessment of CSR Project**

# 5.1 Activities Performed Data

Name of the project	CSR Project for Plantation in Nagpur Region of NH-7
Project Cost	₹ 6.31cr
Plant Survival Rate	55,000 plants were planted & 90% of those have survived.

# 5.2 Surveying Trees Plantation







As part of our CSR project, we conducted a survey along NH-7 in Nagpur. Our observations revealed a well-structured tree-planting initiative undertaken by the National Highways Authority of India (NHAI). The plantation design demonstrated a multi-tiered approach to maximize both ecological and socio-economic benefits. The first row showcased a visually appealing array of ornamental species, including Cassia glauca, white frangipani, and Lagerstroemia indica, enhancing the aesthetic appeal of the highway. The second row comprised larger, visually dominant trees such as Delonix regia (Gulmohar), Alstonia scholaris (Saptaparni), and Azadirachta indica (Neem), providing significant shade and contributing to a more pleasant travel experience. The third row strategically incorporated economically valuable species, including Mangifera indica (Mango), Bambusa arundinacea (Bamboo), and Syzygium cumini (Jamun), offering potential income-generating opportunities for local communities. This multi-tiered approach not only enhances the visual appeal of NH-7 but also contributes significantly to environmental sustainability by mitigating greenhouse gas emissions, reducing noise pollution, and creating a more harmonious coexistence between the highway and the surrounding environment.

# Detailed analysis based on the OECD Framework:

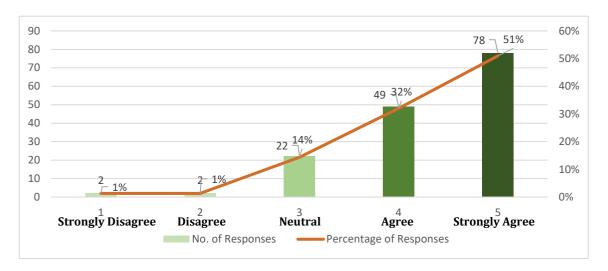
1 Star - STRONGLY DISAGREE, 2 Star - DISAGREE, 3 Star - NEUTRAL, 4 Star - AGREE, 5 Star - STRONGLY AGREE

#### 

Question 1:

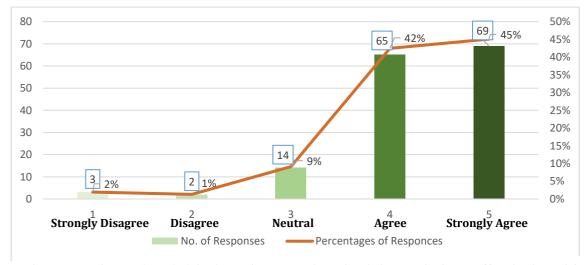
How relevant is the plantation in contributing to the reduction of heat and greenhouse gas emissions in your locality?

Total -153 Responses



# Question 2:

How relevant do you think the plantation activities are improving the well-being of the future generation in your community?



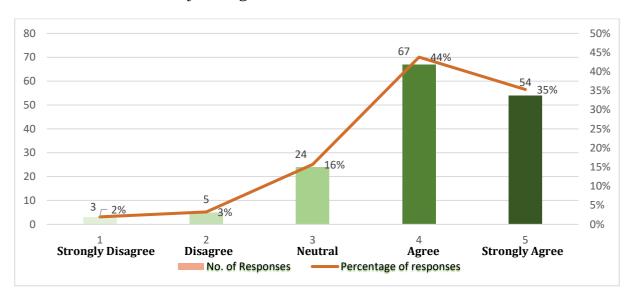
The tree plantation initiative along National Highway 7 has effectively addressed its primary goal of reducing heat and greenhouse gas emissions while delivering additional benefits to the local community. By creating extensive greenery, the project has significantly contributed to reducing air and noise pollution, thereby enhancing the residents' quality of life.

Moreover, the initiative has supported sustainable livelihoods for local populations, enabling them to meet their essential needs. These achievements underscore the program's relevance in tackling both environmental challenges and socio-economic issues effectively.

COHERENCE: \*\* \* \* \* \* \* 4/5

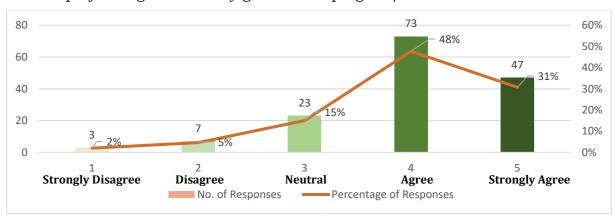
## Question 3:

How coherent and the plantation activities aligned with the overall development goal for various stakeholders in your regions?



## Question 4:

Is the project aligned with any government program/SDG?



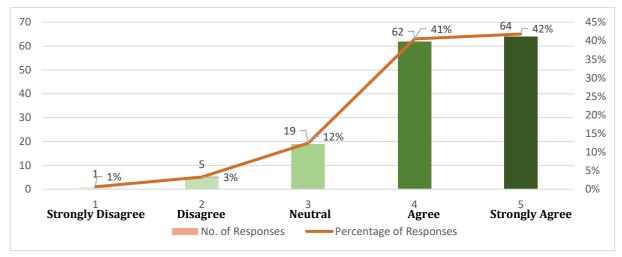
**Explanation:** The program demonstrates strong coherence by benefiting a diverse range of stakeholders and aligning with key government initiatives. Farmers benefit by using fallen leaves from the plantations as fodder for their livestock, while drivers enjoy increased highway safety due to reduced accident risks facilitated by the greenery.

The initiative aligns seamlessly with the National Green Highway Mission, under which the NHAI promotes community-based plantations along national highways to create green corridors and support livelihoods. Local groups are actively involved in managing the plantations, with NHAI providing training and awareness programs to enhance their capacity. This collaborative approach strengthens local empowerment and establishes a sustainable framework for Green Infrastructure development, ensuring synergy between environmental and community goals.

# EFFECTIVENESS: ★★★★★ 5/5

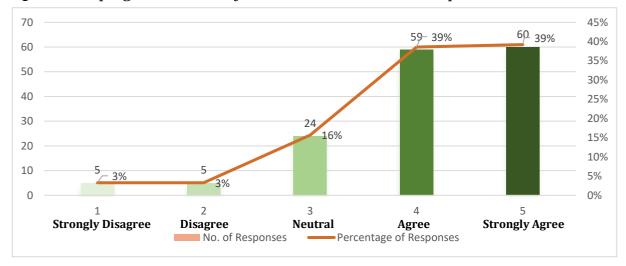
### Question: 5

**Q.** How effective has the plantation activities been in reducing noise pollution in the community along NH-7?



### Question: 6

**Q.** Has the program met its objective? To what extent the expected.



**Explanation:** The effectiveness of the plantation project along NH-7 is evident from stakeholder feedback and measurable outcomes, demonstrating the successful achievement of the CSR intervention's objectives.

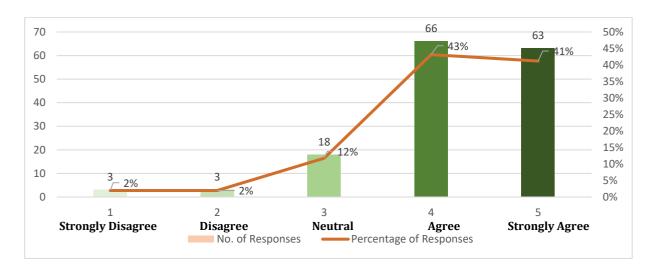
One significant outcome is the reduction in accidents involving animals, attributed to the improved visibility and safe habitat created by the greenery. Additionally, the project has enhanced local livelihoods through increased employment opportunities in plantation maintenance, potential ecotourism initiatives, and improved agricultural yields due to the positive ecological impact of the trees.

The plantation has also significantly reduced air and noise pollution. The trees act as natural air filters, absorbing pollutants, while their presence diminishes noise levels, thereby improving the quality of life for both residents and travelers. These results underscore the program's effectiveness in delivering environmental, economic, and social benefits.

Efficiency: 4/5

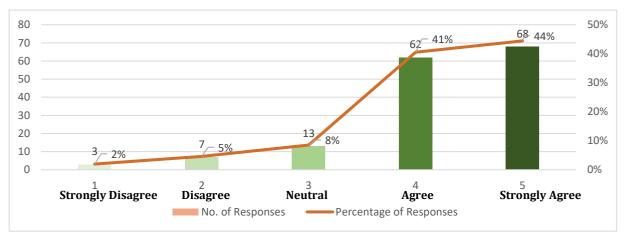
## Question: 7

**Q.** How effectively has the plantation project increased the availability of green spacing along NH-7?



## Question: 8

**Q.** How efficiently have the plantation activities contributed to improving the income level of local households?

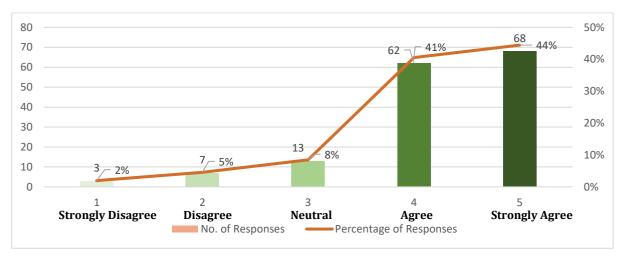


**Explanation:** The plantation project along NH-7 demonstrates high efficiency through the strategic implementation by the National Highways Authority of India (NHAI). The three-tiered planting approach enhances the green cover while optimizing land use. This method involves planting visually appealing trees in the first row, medium-sized trees in the second, and tall, mature species such as bamboo and Madhuca indica in the third, maximizing environmental and aesthetic benefits. The initiative has been particularly impactful in the Nagpur region, where it not only increases green space but also supports local farmers economically. The fallen leaves serve as cost-free fodder for livestock, while naturally growing bamboo is harvested and repurposed into items such as animal shelters. This multifunctional approach ensures the effective utilization of resources, contributing to both environmental sustainability and local livelihoods.

**IMPACT**: ★★★★ 5/5

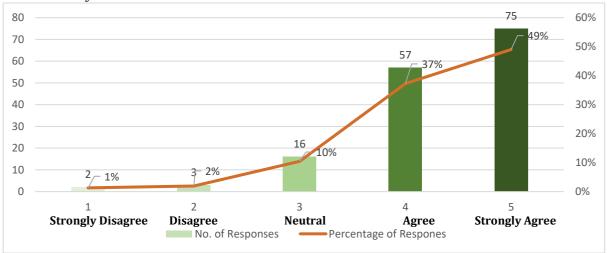
# Question: 9

**Q.** The direct economic impact of the plantation activities on the income level of the local households?



# Question: 10

**Q.** The plantation activities along NH-7 impacted noise pollution reduction in your community?



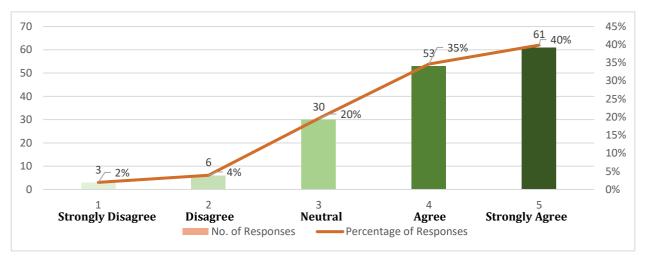
#### **Explanation:**

The plantation project along NH-7 has delivered significant and multifaceted impacts, benefiting both the environment and the local community. One major economic benefit is the generation of diverse income streams. Farmers and locals can earn from selling fruits such as mangoes and products from Madhuca indica. Fully grown trees like bamboo provide timber that can be utilized in construction, crafting, or sold for profit. Additionally, non-timber forest products, including medicinal herbs, honey, and edible leaves, add to the economic opportunities created by the project. Employment opportunities in grass cutting, tree maintenance, and other related activities further support income generation for the community. Beyond economic impacts, the trees serve as natural sound barriers, absorbing and deflecting noise. This function significantly enhances the quality of life for residents near the highway by reducing noise-related stress and disturbances, showcasing the project's broader societal and environmental value.

# SUSTAINABILITY: \$\frac{1}{2} \frac{1}{2} \

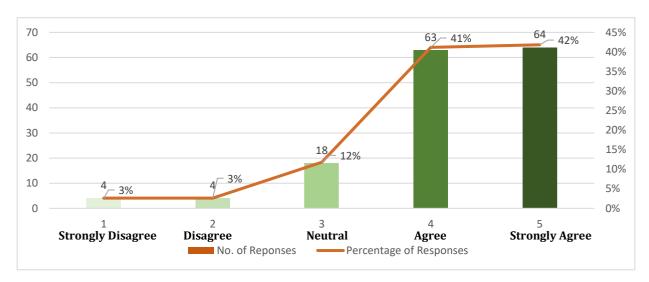
## **QUESTION: 11**

**Q.** The plantation efforts are in contributing to the long-term climate change mitigation and Environmental development of your state?



# Question: 12

**Q.** How sustainable do you think the benefit of improved road safety through plantation activities will be in long run?



**Explanation:** The project aims to combat climate change by preserving trees, mitigating greenhouse gas emissions, and promoting environmental resilience. To ensure its sustainability, the organization conducts regular tree plantations, trains the local community, and generates livelihoods, fostering a positive economic and environmental impact.

The tree-planting project not only beautified the area but also improved road safety. Trees now act as natural barriers, reducing headlight glare and enhancing visibility. This sustainable solution protects lives and contributes to a more environmentally friendly transportation infrastructure.

# 5.3 Case study of different stakeholders

# 1. Shashank. D Khandre, Owner of the Nursery

Shashank Khandre, a nursery owner from Nandgaon near NH-7, has noted a remarkable reduction in noise pollution following the implementation of roadside tree plantation initiatives. The mature trees, with their dense canopies, effectively absorb and dissipate noise, resulting in a significantly quieter and more peaceful environment for local residents.

Prior to the plantation, the area experienced high levels of noise pollution, which adversely affected the quality of life for the community. The successful growth of these trees underscores the positive impact of green infrastructure in addressing environmental challenges and enhancing the well-being of the local population.



# 2. Shanti Bai Key Village Person

Shanti Bai, a resident of Jam Village near NH-7, has experienced significant benefits from the tree plantation initiative undertaken by the National Highways Authority of India (NHAI). The trees, particularly those in the outer rows, have become a valuable resource for Shanti Bai and the local community, providing a variety of fruits such as Jamun, Bamboo, and Tamarind, which serve as a source of sustenance.

Additionally, the dry leaves from these trees are utilized as fodder for livestock, including buffaloes, goats, and cows, further supporting the villagers' livelihoods. Trees planted closer to the village have also catered to daily needs; for example, mature Bamboo is used to construct animal sheds. This initiative by the NHAI has not only enriched the local environment but has also significantly contributed to the well-being and economic sustenance of the villagers.



# 3. Balvan Devrao Shende, a Taxi Driver

Balvan Devrao Shende, a taxi driver operating on NH-7, highlighted the positive impact of the roadside tree plantation on driving conditions. Prior to the initiative, the highway was prone to frequent animal-related accidents, and nighttime driving was particularly hazardous due to headlight glare. The introduction of trees has significantly mitigated these challenges, reducing animal-related incidents and effectively addressing the glare issue. This has resulted in improved visibility and enhanced safety for drivers traveling on NH-7 during the night.



# 4. Roadside Shop Owner

Chandra Bhushan Dhoke, a local entrepreneur, has strategically established his shop along the NH-7 national highway, leveraging the roadside tree plantation to his advantage. Initially a modest and inconspicuous business, Dhoke's establishment has transformed over time, thanks to the growth and maturity of the nearby trees. The trees have created a natural oasis along the bustling highway, offering shade and a serene environment for travelers seeking respite from their journeys. This enhanced ambiance has not only improved the aesthetic appeal of the area but has also significantly boosted Dhoke's business. The shaded and inviting atmosphere consistently attracts travelers, who stop to rest, refresh, and explore the offerings at his shop, contributing to its steady growth and success.



### 5. Road Side Worker

The individuals working along the NH-7 highway highlighted the significant impact of tree planting initiatives. They commended the National Highways Authority of India (NHAI) for its commendable efforts in planting trees along the roadside, which have provided them with a source of livelihood. These workers are now employed to maintain the trees, including watering and ensuring their health. Additionally, they noted a positive correlation between the tree plantation and road safety, reporting a noticeable reduction in accidents since the initiative was implemented.



# **Chapter 6: Conclusion**

The CSR Impact Assessment Report for the plantation project along NH-7 in Nagpur highlights its significant positive contributions to the Environment, Society, and Economy. The plantation has effectively reduced air and noise pollution along the highway, enhancing the quality of life for nearby residents and travellers. By mitigating environmental stressors, the project has also created a healthier ecosystem for the region.

Additionally, it has provided sustainable livelihood opportunities for local communities by enabling the commercial use of fruits, leaves, and bamboo, as well as supporting animal husbandry. The reduction in animal-related accidents and improved nighttime visibility are other noteworthy outcomes, making the highway safer for commuters.

A key factor in the project's success is its strong focus on community engagement. By involving diverse stakeholders, including nursery owners, taxi drivers, and roadside shop owners, the initiative has not only benefited individual livelihoods but also fostered a sense of ownership and responsibility among the local population.

Ongoing community involvement, capacity-building initiatives, and training programs will further amplify the project's positive impact, ensuring lasting benefits for both the local environment and the community.

The project has also contributed to creating a green corridor that enhances the aesthetic appeal of the highway while promoting biodiversity by providing a habitat for birds and small wildlife. This holistic approach has strengthened the ecological balance in the area, demonstrating the plantation's farreaching environmental benefits. With its emphasis on sustainability and inclusive development, the project serves as a model for similar initiatives nationwide, showcasing the potential of CSR interventions to address environmental and socio-economic challenges effectively.



**Overall Assessment Score** 

# **ASSESSMENT TEAM**

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