

POLLUTION, DEVELOPMENT, AND THE LESSONS FROM A HIGHWAY-MAKING ERA! AN ANALYSIS OF KERALA'S CLIMATE PARADOX THROUGH THE LENS OF CARBON (2018)

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ABSTRACT

This paper explores the Malayalam movie Carbon (2018) as a story that reflects the environmental and social problems caused by uncontrolled development. It compares the themes of greed in the film to the environmental damage happening in Kerala due to highway construction. The paper looks at issues like the destruction of mountains, rivers, and rocks for building materials, air pollution from crushing rocks, and health problems faced by workers and locals. While recognizing the need for development, it suggests eco-friendly solutions to protect the environment.

Keywords: Climate Fiction, Highway Development, Carbon (film-2018), Ecological destruction, Western Ghats Conservation, Quarrying and Land Degradation, Green Corrid.

Kerala, often celebrated for its lush greenery and balanced ecosystem, faces a paradox as ambitious development projects such as highway expansions alter its landscape. The highway-making era brings promises of connectivity and economic growth but simultaneously threatens irreversible damage to the state's fragile environment. The Malayalam movie Carbon, directed by Venu, offers a deeply affecting commentary on human ambition and its ecological cost, making it an apt metaphor for Kerala's current situation.

Highway construction in Kerala represents both a boon for economic development and a bane for environmental sustainability. The state, known for

its rich biodiversity, is currently facing massive ecological destruction in the name of infrastructure development. Major highway projects, such as the widening of National Highway 66, aim to improve connectivity and boost trade. Mountains are levelled, rivers are mined for sand, and rocks are crushed into metal aggregates, causing deforestation, pollution, habitat destruction, and social displacement. These actions mirror the central theme of Carbon, where greed blinds the protagonist, Sibi, to the true value of nature, leading to his spiritual and ecological disconnection. He embarks on a treasure hunt in a dense forest, blind to the natural wealth around him, driven solely by his ambition for gold.

Kerala's ongoing highway projects aim to meet the state's growing demand for better transportation networks. The National Highway 66 project is a prime example, involving the widening of the existing road into a six-lane highway stretching across the state. This ambitious project requires extensive land acquisition, deforestation, and large-scale quarrying for construction materials. According to government reports, over 1,000 hectares of land, including agricultural fields, wetlands, and forested areas, have been acquired for highway construction in Kerala. While these projects promise improved connectivity and economic growth, the environmental cost is staggering. The Western Ghats, a UNESCO World Heritage Site and one of the world's eight "hottest hotspots" of biodiversity, faces severe destruction due to indiscriminate land clearing. This sets the

stage for a critical debate: Is rapid infrastructure development worth the ecological damage and long-term consequences it brings?

METHODOLOGY

This study employs a qualitative analytical approach, examining the Malayalam film *Carbon* (2018) as a lens through which to understand Kerala's environmental challenges. The analysis draws parallels between the film's narrative themes and the real-world ecological impacts of highway development in Kerala. The methodology incorporates:

- 1. Textual Analysis:** Close examination of the film *Carbon*'s themes, symbolism, and narrative structure
- 2. Comparative Analysis:** Drawing parallels between the film's portrayal of environmental destruction and Kerala's current development challenges
- 3. Literature Review:** Analysis of government reports, academic studies, and environmental assessments related to highway construction in Kerala
- 4. Case Study Approach:** Examination of specific highway projects, particularly National Highway 66, and their environmental impacts
- 5. Policy Analysis:** Review of existing environmental regulations and sustainable development practices

FINDINGS

3.1 Environmental Impacts of Highway Construction

3.1.1 Deforestation and Habitat Destruction

The construction of highways in Kerala involves the clearing of large tracts of forests to create space for roads. These forests are home to diverse flora

and fauna, including many endemic and endangered species. The Western Ghats, known for its ecological richness, is bearing the burden of this deforestation. Cutting down trees not only leads to habitat destruction but also disrupts the ecological balance, causing the extinction of several species and increased vulnerability to climate change. Deforestation also exacerbates soil erosion and increases the risk of landslides, especially during Kerala's monsoon season. This mirrors the forest in *Carbon*, which acts as both a sanctuary and a warning. In the film, Sibi's inability to appreciate the forest's value reflects the state's negligence toward preserving its natural heritage.

3.1.2 Air and Noise Pollution

Bypass development significantly contributes to air pollution in Kerala. Dust generated from construction sites, emissions from heavy machinery, and increased vehicular traffic all deteriorate air quality. Workers and nearby residents frequently suffer from respiratory issues, such as asthma and bronchitis, due to prolonged exposure to fine dust particles. Noise pollution is another major concern. The constant roar of machinery and traffic disrupts the daily lives of people living near construction zones. Animals in nearby forests are equally affected, with noise interfering with their natural behaviours and habitats. This disruption in natural harmony parallels the imbalance depicted in *Carbon*, where human greed disturbs the sacredness of the forest.

3.1.3 Water Resource Depletion

Quarrying for highway construction materials, such as sand and rocks, has a direct impact on Kerala's water resources. The indiscriminate extraction of sand from rivers affects water flow and groundwater levels, leading to water scarcity in nearby regions. Kerala, a state dependent on its rivers and backwaters, is increasingly facing challenges as water bodies are polluted or encroached upon. Construction activities also lead

to the contamination of water resources. Chemicals, fuel spills, and wastes from construction sites seep into rivers and groundwater, rendering them unsafe for consumption. The film *Carbon* reflects this issue symbolically through its focus on water scarcity, reminding viewers of the vital role water plays in sustaining life.

3.1.4 Soil Degradation

Roadwork results in the removal of topsoil, which is crucial for agriculture. The loss of fertile soil reduces crop productivity, affecting Kerala's agrarian economy. Additionally, the use of heavy equipment and chemicals during construction contaminates the soil, making it unsuitable for cultivation. The destruction of Kerala's agricultural lands for infrastructure projects echoes the barren landscape encountered by Sibi in *Carbon*. Just as the character finds himself in a hostile and unforgiving environment, Kerala risks losing its agrarian identity to unsustainable development practices.

3.2 Social Impacts

3.2.1 Community Displacement

One of the most significant social impacts of highway construction is the displacement of communities. Land acquisition for highways forces thousands of families, particularly those in marginalized and rural areas, to leave their homes and livelihoods. Inadequate compensation and relocation options add to the economic and psychological stress faced by displaced individuals. Small-scale farmers, fisher folk, and local businesses are among the hardest hit. Many lose access to their land or resources, pushing them into poverty. This mirrors the themes of displacement and loss explored in *Carbon*, where humanity is portrayed as increasingly disconnected from nature.

3.3 Economic vs. Environmental Trade-offs

Carbon emissions from machinery and vehicles increase the state's overall carbon footprint. The

use of materials like asphalt and cement further contributes to air and soil pollution. While highway projects promise economic benefits, such as improved transportation and increased trade opportunities, they come at a high environmental and social cost. The destruction of forests, loss of agricultural land, and displacement of communities represent long-term losses that outweigh short-term economic gains. The film *Carbon* critiques this trade-off by portraying Sibi's relentless pursuit of wealth as futile. His obsession with material gain blinds him to the natural treasures around him, much like Kerala's development model prioritizes growth over sustainability.

DISCUSSION

Carbon offers valuable lessons on the need for a harmonious relationship with nature. The film underscores the importance of balancing human ambition with ecological stewardship. Kerala must adopt eco-conscious development practices to ensure that progress does not come at the expense of its natural and cultural heritage.

4.1 Sustainable Solutions and Recommendations

To mitigate the environmental and social impacts of highway construction, Kerala can adopt sustainable solutions, such as elevated highways, green corridors, and the use of renewable materials, can minimize ecological damage. Policies that prioritize environmental conservation and community involvement are crucial. Just as Sibi learns to appreciate the forest's value, Kerala must recognize the importance of preserving its natural resources for future generations.

Many measures like use recycled and locally sourced materials to reduce the need for quarrying and also we can replant trees in cleared areas to offset deforestation. Try to involve local communities in the planning and execution of highway projects to address their concerns and

also strengthen environmental laws and ensure strict compliance during construction. Instead of using natural mountain soil for filling, we can use industrial by-products like fly ash or synthetic materials. These alternatives help conserve natural resources while being environmentally friendly. For river sand, we should use alternatives such as manufactured sand (M-sand), copper slag, or quarry dust. This can reduce the harmful effects of river sand mining and protect ecosystems. In terms of rock quarrying, it's important to set up rules and monitor activities to make sure mining is done in an eco-friendly way, reducing damage to the environment.

To reduce air pollution, dust suppression systems like water spraying can be used at crusher units. This helps to control dust and keep the air cleaner. Workers should always wear protective gear like masks and respirators to stay safe, and regular health check-ups should be mandatory to monitor their well-being. Additionally, planting green barriers around quarries and crushers can help keep dust from spreading into the surrounding areas, improving air quality for nearby communities.

Before starting construction projects, it's crucial to carry out Environmental Impact Assessments (EIAs) to identify potential harm to the environment and find ways to reduce it. These assessments should include input from experts like ecologists and geologists, as well as local communities, to ensure that everyone has a say in how projects affect the environment. After construction, it's important to restore areas that have been affected by activities like soil mining. This can be done by planting trees and other plants to bring the area back to life. Additionally, we should work on improving rivers and groundwater levels through methods like watershed management and rainwater harvesting to ensure sustainable water resources for the future. To raise awareness about the environmental impact of unregulated development, we can launch campaigns that educate the public on these issues. Stronger

environmental laws should also be put in place, and penalties should be enforced for anyone who violates these rules. This will help protect the environment and ensure long-term sustainability.

4.2 Success Stories and Best Practices

There are some success stories where environmental solutions have made a real difference. In Tamil Nadu, roads have been built using recycled plastic, which has turned out to be a great success. These plastic roads are not only strong and long-lasting but also eco-friendly. By using recycled plastic, this project has helped reduce the amount of waste going into landfills and lessened the pressure on natural resources, making it both cost-effective and sustainable. Maharashtra took a big step to protect its rivers by banning excessive sand mining. To replace river sand, the state promoted the use of M-sand, which is manufactured sand. This move helped prevent damage to riverbeds, protecting aquatic life and reducing environmental harm. The switch to M-sand has been a successful example of finding eco-friendly alternatives for construction materials. In Karnataka, green corridors were created along highways by planting trees, helping to reduce the environmental impact of road construction. These tree-lined highways have restored biodiversity, improved air quality, and provided habitats for local wildlife. This initiative is an excellent example of how development can coexist with nature when planning for sustainability. By integrating these eco-friendly alternatives into Kerala's highway construction projects, the state can achieve development without compromising its rich ecological heritage.

CONCLUSION

Development is essential for progress, but it must not come at the cost of environmental destruction. Kerala, with its unique geographical and ecological features, must adopt a balanced approach that prioritizes both growth and sustainability. The parallels between the ecological destruction caused

by highway projects and the themes explored in *Carbon* highlight the urgent need for change.

Carbon is not just a tale of one man's greed but a critique of humanity's disregard for the environment. The forest in the film symbolizes the richness and fragility of Kerala's ecological landscape. Its beauty and mystery are contrasted with Sibi's materialistic ambitions, mirroring the state's development paradox. The treasure Sibi seeks serves as a metaphor for the promises of economic growth offered by highway projects. However, just as his pursuit leads to his downfall, Kerala's unchecked development risks causing irreparable harm to its environment. The film's ending, where Sibi is left empty-handed, is a powerful reminder of the futility of greed and the importance of living in harmony with nature.

By embracing sustainable practices, involving local communities, and investing in eco-friendly technologies, Kerala can achieve progress without compromising its natural heritage. Kerala must learn from the cautionary tale presented in *Carbon* and recognize the long-term consequences of unchecked ambition. By adopting innovative solutions, engaging communities, and respecting its natural resources, the state can pave the way for a future where development and nature coexist harmoniously.

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