International Journal for Research Trends in Social Science & Humanities
Volume 4, Issue 1
Jan-Fed 2026, PP 1-24

Innovative Green Finance Models for Sustainable Development in Chhattisgarh

Nagesh Mandavi
Assistant Professor (Commerce), Naveen Govt. Girls College, Mohla

Abstract - Chhattisgarh, one of India's richest states in minerals and forests, presents a paradox: vast natural wealth coexists with widespread poverty. The central challenge is achieving economic growth while conserving its abundant natural resources—especially given that nearly 44% of the state's land remains under forest cover. This paper explores how innovative green finance models can help Chhattisgarh pursue environmentally responsible and economically inclusive development. After outlining the state's socio-economic and ecological context, the paper reviews major green financial instruments such as green bonds, carbon credits and emissions trading systems, ESG investing, payments for ecosystem services (PES), and green microfinance or blended finance. For each instrument, practical applications suited to Chhattisgarh are proposed: municipal green bonds for clean urban infrastructure, forest-based carbon credit projects, ESG-driven investment in cleaner industrial practices, community PES schemes to support forest conservation, and microfinance products that promote climate-resilient agriculture. The paper draws on successful examples from India and abroad—including Indore's oversubscribed green bonds, Himachal Pradesh watershed PES scheme, and Costa Rica's national PES program—to demonstrate the feasibility of such models. It also identifies key barriers, including limited institutional capacity, regulatory gaps, and investor perceptions of risk, and suggests strategies such as strengthening policy frameworks, improving financial expertise, and encouraging multilateral agencies to share risk. The conclusion emphasizes that with supportive policies and coordinated action among government, investors, and civil society, green finance can unlock substantial investment for sustainable development, helping Chhattisgarh advance toward India's broader climate and green growth goals.

Keywords - Green finance; Sustainable development; Chhattisgarh; Green bonds; Carbon credits; ESG investing; Payments for ecosystem services (PES); Green microfinance; Blended finance.

I. Introduction

Chhattisgarh, which located in the heart of India, is a fantastic example of how growth and sustainability don't necessarily go along. It is one of India's richest states because it possesses a lot of minerals. India only makes tin, but it contains a lot of iron ore, bauxite, limestone, coal, and tin. Chhattisgarh has the most mining of any Indian state, and mining makes up more than 9.4% of the state's gross state domestic product (GSDP). Mining has always been an important element of the economy. It creates jobs and brings in money for the government. For instance, the state's mining income went grown from ₹6,110 crore in 2018–19 to nearly ₹14,000 crore in 2024–25. Chhattisgarh,

on the other hand, has a lot of woods that span roughly 44% of its territory. This state's woods are the third largest in India, behind those in Arunachal Pradesh and Madhya Pradesh. They help millions of people, especially tribal tribes, make a living, store carbon, and provide crucial benefits to ecosystems. The rural economy is made up of a number of different items, like tendu leaves, lac, honey, and plants that are excellent for you. Another major component of the state's culture is sacred trees.

Chhattisgarh is a great area for green finance projects because of its unique social, economic, and environmental status. The state's growth plan needs to do two things at once: protect the environment and the jobs of people in the community while simultaneously fostering economic expansion and industrialization. The problem has gotten a lot worse because of climate change. As India and the rest of the globe shift toward cleaner energy sources, Chhattisgarh's economy, which depends heavily on coal, could lag behind. On the other hand, the state has proved that it is serious about green growth by safeguarding its forests (it just gained almost 68,000 hectares of forest cover, the highest in India) and being the first to link forest ecosystems to "Green GDP" accounting in 2025. Chhattisgarh was the first state in India to incorporate the value of its forests in its GDP. The fact that this worked indicates that the government knows how vital natural capital is for planning for growth. These changes suggest that people are open to new ideas that find a balance between growth and sustainability.

Green finance gives Chhattisgarh the proper tools and approaches to attain both of these aims. Green finance is a wide phrase that covers choices about funding and investing that take into account how they will influence the environment and move money toward initiatives and efforts that are healthy for the climate. It comes from both the public and commercial sectors and includes items like carbon credit markets, emissions trading, green bonds, and climate bonds. It also covers green microfinance, blended finance structures, payments for ecosystem services (PES), and ESG-compliant sustainable investing. After the Paris Agreement and the Sustainable Development Goals (SDGs), people in India and throughout the world have become more interested in green financing. This is because governments and markets are looking for trillions of dollars to spend on low-carbon development that can handle climate change. India's own climate policy is built on raising money from private sources and employing innovative instruments. For example, the Indian government sold its first sovereign green bonds in 2023 to pay for renewable energy and green infrastructure. The Securities and Exchange Board of India (SEBI) wants significant businesses to report on their Business Responsibility and Sustainability Reporting (BRSR). This is an example of a regulation or law that is making companies more open and responsible when it comes to environmental, social, and governance (ESG) issues. This makes it easier for projects that help green financing to get going.

This study looks at how Chhattisgarh can help the economy and the environment by using new green finance models. We start Section 2: Literature Review by talking about the main green finance tools, what they are, and how they are used all over the world. Section 3: Application/Analysis goes into great detail about how these tools are used in Chhattisgarh. We look at the pros and cons of each model (green bonds, carbon credits/trading, ESG investing, PES, green microfinance, and blended finance) and give real or made-up project examples, like using green bonds to manage waste or renewable

energy in cities in Chhattisgarh, community PES schemes in forested areas, and so on. We use case studies from other Indian states and countries, including some with similar mineral-rich or forested profiles, to help us understand how to apply what we learn to Chhattisgarh. Section 4 lists some of the most important institutional, financial, and social barriers that could make it very hard for green finance to grow in the state. Some of these are worries about market risk, holes in regulations, or a lack of local resources. It also gives you ways to deal with these problems. Section 5 gives stakeholders (investors, state legislators, and civil society) suggestions for how to grow green finance programs in Chhattisgarh. Section 6 ends with some suggestions for the future. The paper says that green finance can help Chhattisgarh move toward a more sustainable and inclusive economy if the right conditions are in place. It does this by combining current research with real-world examples.

II. Literature Review

Green Finance Instruments and Their Relevance

In sustainable finance, where you invest in eco-friendly projects, a few simple tools and ideas are vital. This part provides a brief overview of the main types of green finance that are important to this study. Some examples are green bonds, carbon credits, emissions trading schemes, ESG investing, payments for ecosystem services (PES), green microfinance, and blended finance. We discuss the key concepts and demonstrate their application in India and other global regions. We can determine the potential application of many of the insights gained from this process in Chhattisgarh in the future.

Green Bonds and Climate Bonds

Green bonds are fixed-income financial instruments designed specifically to raise capital for projects with environmental benefits. They work like conventional bonds but are earmarked for “green” projects such as renewable energy, energy efficiency, sustainable transport, waste management, or climate adaptation infrastructure. In the last ten years, green bonds have grown quickly around the world as investors look for stable returns and a positive impact on the environment. The global green bond market reached over $500 billion in annual issuance in 2021, reflecting increasing demand for climate-aligned investments (Climate Bonds Initiative, 2022). India is also beginning to sell more green bonds. People are getting money for things like clean energy from solar and wind power, clean transportation, and more. Some of these groups are public, and some are private. The Indian government's first sovereign green bonds in 2023 showed a strong commitment and helped set pricing standard.

Climate bonds are a type of bond that is usually the same as green bonds. But they can also mean bonds that are certified by the Climate Bonds Standard and are only for projects that help people confront or adapt to climate change. Cities and towns can use municipal green bonds to fund environmentally friendly projects in their communities. In 2023, the Indore Municipal Corporation used a green bond to pay for a solar power plant that could produce 60 MW of electricity. This project is a great example. This issue was the first green bond from an Indian city to pay for a project that would use clean energy. The Indore bond offering was oversubscribed, bringing in ₹720 crore (about $90 million). The city's excellent credit and the project's eco-friendly features

made investors happy. India's cleanest city is Indore, and it has a solid local government. This evidence shows that there is a need for well-structured sub-sovereign green debt. It also provided a template that other urban local bodies are looking to emulate. Internationally, cities like Johannesburg and Mexico City have also issued green bonds for climate-friendly infrastructure, and national development banks (e.g., in Brazil and China) have floated green bonds to support government climate targets.

Studies show that green bonds can sometimes give issuers a pricing edge (a "greenium") because more and more investors are willing to accept lower returns in exchange for supporting projects that help the environment. But being honest and open is very important. Investors want strict rules about how to report on how the money is spent and what it does to the environment so that "greenwashing" doesn't happen. In short, green bonds are a good way to get money from debt markets for sustainable development, but they will only work if there are policies that support them, projects that can be trusted with credit, and strict monitoring of environmental results.

Carbon Credits and Emissions Trading

Carbon credits are certificates that can be passed around and show that one ton of carbon dioxide (or a similar greenhouse gas) has been cut, avoided, or taken out of the air. They are projects that either cut emissions (like renewable energy, energy efficiency, and methane capture) or improve sequestration (like afforestation/reforestation and soil carbon improvement).Carbon credits can be sold in carbon markets—either compliance markets (driven by regulatory limits on emissions) or voluntary markets (driven by corporate climate commitments or carbon neutrality goals). An emissions trading scheme (ETS) is a regulatory market where a government caps total emissions and allows emitters to trade allowances or credits; the best-known example is the EU Emissions Trading System.

India to date has not implemented a nationwide ETS for carbon dioxide, but it has other market-based mechanisms. People like the Perform, Achieve, and Trade (PAT) program, which started in 2012, as a way to trade energy efficiency. PAT teaches factories that use a lot of energy how to get more done. If they reach these goals, they can sell certificates that say they save energy. They have to pay fines or buy certificates if they don't. By 2020, PAT had covered 956 factories in a wide range of fields and had saved 14% more energy than it had planned to in its first cycle. The PAT program created a market for energy efficiency that worked like the carbon market. The program made it easier for people to buy and sell carbon. The Indian government said it was allowed to build a national carbon trading market in 2022. Initially, it will be optional, but plans call for the addition and expansion of systems such as PAT and renewable energy credit (REC) trading. This means that India is getting closer to having a full carbon market.

Different parts of the world have had different levels of success with carbon credit programs. The Clean Development Mechanism (CDM) of the Kyoto Protocol gave out a lot of carbon credits to renewable energy projects in poor countries. But prices dropped a lot in the 2010s because there was too much supply and not enough demand. More recently, there is growing interest in forest-based carbon credits and REDD+ (Reducing Emissions from Deforestation and Forest Degradation) schemes. For

instance, Brazil's Amazon Fund—financed by performance-based payments from Norway and others—is a large-scale example: Norway paid approximately $1.2 billion into the Amazon Fund between 2008 and 2018 as a reward for Brazil's verified reductions in deforestation. Likewise, Costa Rica's national PES program (started in 1996), which pays landowners to conserve forests, is credited with helping increase that country's forest cover from around 25% in the 1980s to over 50% today. These examples show that carbon finance, especially when structured as results-based finance for ecosystem services, can mobilize significant resources for conservation.

Carbon markets can help Chhattisgarh make money by storing and sequestering carbon in its forests. These markets also push businesses in the state to cut down on pollution. The state's forests hold a lot of carbon, and community-based forest management programs could make carbon offset credits that anyone who wants to offset their own emissions could buy. You could earn these credits by planting new trees or taking better care of the ones you already have. In India, the East Khasi Hills community forestry project in Meghalaya was one of the first REDD+ pilots. Himachal Pradesh also worked on carbon projects in watersheds. Using carbon markets will mean dealing with technical, legal, and ownership issues (for example, making sure that community-managed forests have clear carbon rights), but it could also bring in more money for protecting forests in Chhattisgarh.

ESG Investing and Sustainable Equity

ESG investing is a type of investing that looks at a company's financial performance as well as its performance on environmental, social, and governance criteria. You can invest in ESG in a number of ways, including negative screening (not investing in companies that do poorly on ESG criteria) and positive screening or impact investing (actively choosing companies or projects with excellent sustainability performance). Adding sustainability to their portfolios has caused a huge rise in ESG-oriented assets under management around the world. This includes institutional investors, mutual funds, and even individual investors. People thought that ESG assets around the world would be worth more than $50 trillion by 2025. This was because investors wanted it and the government pushed for it, like the EU's Sustainable Finance Disclosure Regulation.

ESG investing is a new trend in India that is growing quickly. The Business Responsibility and Sustainability Report (BRSR) requires the biggest companies to report on ESG measures. This has made things more open. In the past few years, Indian mutual funds have started offering ESG funds. The assets under management (AUM) in Indian ESG-themed mutual funds quadrupled from around $330 million in 2019 to $1.3 billion by 2023, indicating rising interest among investors in aligning portfolios with sustainability. International investors are also looking at Indian companies based on ESG criteria more and more. This is partially because of global reporting norms and partly because people think that good ESG performance means that a company will be financially stable in the long term. For instance, several foreign pension funds and development financing institutions increasingly require ESG due diligence before putting money into Indian infrastructure projects.

There are two reasons why Chhattisgarh needs to invest in ESG. The mining, metals, and power industries in the state are home to many large companies. They could make more money and pay less for capital if they do better on ESG. More and more companies in "hard" industries are being told to reduce their carbon footprints and deal with social issues. Banks and equity investors that have ESG requirements may be more likely to give money to companies that are good at lowering emissions, getting involved in their communities, and running their businesses. Second, ESG funds are growing, which means there is money available for projects that help the environment. If they meet ESG standards, impact investment funds or green private equity could give money to projects in Chhattisgarh that use renewable energy, clean tech startups, or sustainable agriculture. Companies want to do better when they invest in ESG, and companies that care about the environment can make more money this way.

Payments for Ecosystem Services (PES)

Payments for Ecosystem Services (PES) are agreements that give landowners or communities money or goods in exchange for managing land or resources in ways that protect or improve ecosystem services. These services can include carbon sequestration (forests taking in CO_2), watershed protection (forests making sure water flows and stays clean), biodiversity conservation, and more. PES programs compensate people who take care of natural resources, which helps to include environmental costs in the economy.

PES is now known around the world as a way to protect the environment and help rural areas grow. Costa Rica's statewide PES program, which started in 1997, is a model for other countries. It pays thousands of farmers and landowners to preserve trees intact or reforest land that has been damaged. The program is funded by taxes on fuel and water. Over two decades, this program has helped increase Costa Rica’s forest cover dramatically (from a low of ~21% in the 1980s to about 57% by 2017) while providing income to rural communities. Mexico, Ecuador, Vietnam, and China (through its “Grain for Green” program) have likewise implemented large-scale PES programs for watershed and forest conservation. In a different vein, programs like the U.S. Conservation Reserve Program pay farmers to set aside environmentally sensitive land for conservation.

In India, the PES concept is still emerging, but some pilot projects and state initiatives exist. The watershed PES plan that the city of Palampur and the people upstream in Himachal Pradesh came up with is a good example.

This plan was one of India's first official PES deals, which started in 2010. It has helped the community get clean, reliable water and given the village society money to take care of the forest. The Palampur case shows that even small amounts of money can help everyone involved. For instance, downstream users receive valuable ecosystem services, while upstream providers receive compensation for their environmental protection efforts. Some states, like Meghalaya, have tried paying people to protect holy groves, which are important for cultural and water reasons. The 15th Finance Commission of India also said that governments should receive performance-based rewards for keeping and increasing forest cover.

Chhattisgarh has a lot of forest land (most of which is controlled by indigenous Gram Sabhas under the Forest Rights Act) and the ecosystem services they provide, so PES could be a powerful tool for them. Potential PES models include watershed services (e.g., industries or urban bodies paying communities in upstream forested catchments for maintaining stream flows and water quality), forest carbon services (perhaps linking with carbon credits, where government or donors pay communities for measured carbon sequestration), and biodiversity conservation services (tourism operators or even government paying villages near tiger reserves for conservation actions). The state government's move to include forests in green GDP accounting is a step toward recognizing these services; a logical next step is creating financial incentives around them. When designing PES schemes, it is important to clearly define services, find customers (beneficiaries) and sellers (providers), set up monitoring systems, and make sure payments are fairly distributed. However, there are already successful examples in other areas.

Green Microfinance

People with low incomes use green microfinance to get microloans, micro-savings, and microinsurance for things that are good for the environment or help them deal with climate change better. Traditional microfinance has focused on things that help people make money so they can get out of poverty. Green microfinance builds on this by funding things like solar home lighting, biogas plants, clean cookstoves, sustainable farming, water conservation, and jobs that are good for the environment. The goal is to combine efforts to reduce poverty with efforts to protect the environment at the local level.

There are a growing number of examples of green microfinance in practice. In India, some microfinance institutions (MFIs) and banks have developed "green loan" products. For example, Selco Solar in Karnataka worked with local rural banks and microfinance institutions to pay for solar lights and home systems for families that live off the grid. They often used an end-user financing approach, where the money saved on kerosene is used to pay back the loan. Another example is the Shri Kshetra Dharmasthala Rural Development Project (SKDRDP), which has used microcredit to pay for thousands of biogas digesters and better cookstoves, which has led to better health and less deforestation for firewood. Outside of India, MFIs in Bangladesh (including Grameen Shakti, a Grameen Bank subsidiary) helped spread over a million solar home systems by giving out small loans and technical help. There are also microfinance programs for climate-resilient agriculture around the world. These programs provide small farmers loans to buy things like drip irrigation, drought-resistant plants, or agroforestry. They also often come with training and insurance.

Chhattisgarh, characterized by its substantial rural and tribal demographics, could utilize green microfinance to promote grassroots sustainable development. Significant opportunities encompass financing for clean energy access in remote villages (solar lighting, solar irrigation pumps, and clean cooking solutions), which would enhance quality of life and reduce indoor air pollution; microloans for climate-smart agriculture (such as the System of Rice Intensification, organic farming inputs, or tree plantations on farm bunds) to improve productivity and resilience amid unpredictable rainfall; and community-based eco-enterprises (including processing of non-timber forest products,

beekeeping, and ecotourism homestays) that provide alternatives to destructive forest use. Chhattisgarh has a network of cooperative societies and regional rural banks that could partner with self-help groups to extend such green credit. Integrated microfinance models could also be used, such as combining concessional funds or grants (from government programs or donations from businesses that care about social responsibility) with microloans to make sustainable technologies more affordable for the poorest people. The Climate Policy Initiative says that microfinance can be an important way to pay for big climate adaptation and low-carbon technologies in India if it is in line with climate goals. Capacity building is still very important, though. Borrowers need to know about and be able to use green solutions effectively, and lenders need to come up with the right products and risk assessment frameworks for these new areas.

Blended Finance

Blended finance is the intentional use of public or philanthropic funds to encourage more private sector investment in projects that support long-term development. By strategically combining different types of capital, each with its own risk-return profile, projects that are too risky or have too low returns to be attractive to regular commercial investors can be made financially possible. Common blended finance strategies include concessional junior debt or equity from development banks, first-loss guarantees or insurance to lower project risk, results-based financing, and public co-investment with private investors. The goal is to use limited public funds to get private investment by making environmentally friendly projects more appealing in terms of risk and return.

Integrated finance is becoming more and more important for making up for the lack of investment in green infrastructure and climate-related projects. Integrated finance arrangements often include concessional financing from international programs like the Green Climate Fund and Climate Investment Funds. The National Investment and Infrastructure Fund (NIIF) is a well-known example in India. It is responsible for investing in infrastructure and is backed by both the government and international organizations. The NIIF's Strategic Opportunities Fund and the Green Growth Equity Fund (a partnership with the UK government) have put money into renewable energy platforms like Ayana Renewable Power by buying equity, which made it easier for more investors to join in. For example, the United States Agency for International Development (USAID) and the Development Finance Corporation (DFC), which is OPEC's international development branch, gave partial guarantees to help Indian banks make loans to small-scale solar projects that were otherwise thought to be too risky. Blended finance can help India reach its climate goals by fixing problems with financial viability. A recent study, for instance, found that using concessional capital to cover initial losses could make it possible for a number of renewable energy projects that are currently having trouble getting traditional financing to go ahead.

Integrated finance could change a lot of things in Chhattisgarh, including renewable energy, sustainable transportation, and projects that focus on the fair transition in areas that rely on coal. Many projects that have big social and environmental benefits, like a solar power plant on land that has been cleaned up from mining, a big tree-planting or ecosystem restoration project, or a program to help people who lost their jobs in the coal industry learn new skills, may not be attractive to private investors right away

because they take a long time to pay off or don't have clear plans for how to run them. If state governments or development agencies offered concessional financing or risk mitigation tools, it could encourage private sector participants, such as banks, impact investors, and businesses, to get involved. For example, think about a hypothetical Just Transition Fund for Korba, which is a coal mining area. If the state sets aside a small amount of its mining royalties as subordinate capital, this money could be combined with money from a national development bank and private impact investors to pay for a portfolio of clean energy small and medium-sized businesses, re-skilling centers, and infrastructure in the district. Public capital, which takes on more risk, would make private investors feel more secure about their investments, which would encourage them to get involved. Many green recovery programs stress public-private partnerships and hybrid finance frameworks as ways to get more money into the economy.

Blended finance is basically a strategy that combines different types of funding to make the most of them. Blended finance uses public and philanthropic funds to get a lot more private money for projects that will help the environment. The main problem is figuring out how to make the right financial tools (like guarantees and junior tranches) and governance frameworks to make sure that everyone involved shares the risks and rewards fairly. International experience shows that good implementation can greatly increase the effect of limited public resources.

III. Methodology

This research employs a qualitative, multi-method strategy based on policy analysis and case study examination. We conducted an extensive literature review encompassing academic research, governmental studies, industry publications, and news articles related to green finance instruments and their implementation, both globally and within India. We specifically focused on materials that addressed India's emerging green financing ecosystem and examples from states or nations that share similar circumstances with Chhattisgarh. We subsequently employed an analytical framework to evaluate the applicability of each green financing model to Chhattisgarh's distinct socio-economic and environmental context, utilizing secondary data pertaining to the state (e.g., forest cover metrics, industrial production, current legislation).

Comparative case studies were employed as a methodology to extract insights: for each green finance instrument (green bonds, carbon credits, ESG investing, PES, microfinance, and blended finance), we identified a minimum of one real-world example (domestic or international) that exemplifies its functionality and potential results. The Indore municipal green bond, the Palampur PES scheme, Costa Rica's PES program, and similar cases were analyzed to identify critical success factors and challenges, which are subsequently compared to the situation in Chhattisgarh. Although no primary fieldwork was undertaken, the study is enhanced by triangulating information from many trustworthy sources (policy documents, news releases, expert commentary, and data from institutions such as the World Bank and IEEFA) to provide a comprehensive perspective.

The methodology is fundamentally interdisciplinary, integrating economics, environmental science, and public policy. It is solution-oriented: instead of hypothesis-

testing, the objective is to delineate concrete strategies for the implementation of green financing in Chhattisgarh. The study seeks to offer a pragmatic yet scholarly roadmap by integrating evidence and expert opinions. All information is referenced in APA format from credible sources, and the recommendations are developed based on recognized gaps and opportunities within the context of Chhattisgarh.

Application/Analysis: Potential Green Finance Models in Chhattisgarh

We need to change the tools we talked about before so that they work with the way things are done in Chhattisgarh and the state's plans for growth. This part talks about how Chhattisgarh could use each type of green funding. We explain how they work by giving similar examples. The most important thing is to know how to use these money tools in real life. For example, you could find out where they can be used in sustainability projects that are already going on or need to happen in the state.

Green Bonds for Green Infrastructure in Cities and Energy Sector

Green bonds could really help cities and energy projects in Chhattisgarh. Bhilai is an industrial city and Raipur is the state capital. Both are good places to live because they both have problems with trash disposal, air pollution, and transportation that is good for the environment. The city or state could use a green bond to help pay for things like more solar power, electric cars for public transportation, sewage treatment and waste-to-energy plants, or making buildings in the city more eco-friendly. The Raipur Municipal Corporation has even said they might issue a green bond. News reports say that RMC wants to make about ₹200 crore by selling green bonds. The money would go toward building a solar power plant and other buildings that are good for the planet. It's almost time to agree to the plan . If this happens, it will be the first green bond from a city in Chhattisgarh. Business Standard says that Raipur's plans are like those of Indore and other cities that have used the stock market to pay for green projects (Das, 2024).

Not just cities, but also Chhattisgarh's energy industry could issue green bonds. Businesses owned by the government and businesses owned by individuals could do it. For example, the Chhattisgarh State Power Distribution Company could sell a green bond to help pay for solar panels on roofs or to put money into smart grids. Green bonds could also help big companies in the state, like steel, aluminum, and cement plants, pay for making things in ways that are better for the environment, like cogeneration or recovering waste heat. If the government or international groups lend them money, they might even get better prices. The Indian government issued sovereign green bonds in 2023, and investors like them because they pay a good interest rate. This proof shows that institutional investors in the US and around the world can buy a well-structured bond from a sub-national issuer (Hussain & Dill, 2023).

For Chhattisgarh to do well, it would need investors to support it. We need to create a clear State Green Bond Framework that lists the kinds of projects that can get money, the reports that need to be made, and maybe even third-party certification using standards like the Climate Bonds Standard or CII's India Green Bond Guidelines. To get a good credit score, you might also need state guarantees or help with credit,

especially for municipal bonds. The national government ran a program that helped the Indore bond by lowering its interest rate and giving it a partial guarantee. Chhattisgarh could benefit from national programs that help cities sell bonds. Investors will trust the state more if it is honest about how it spends its money and has a lot of good plans in the works. For instance, it could put out reports every year about how much money it makes and how that affects the environment. The main goal would be to quickly put a lot of money into Chhattisgarh's green infrastructure for a long time at a low cost, without relying too much on government money.

Carbon Finance for Forest Conservation and Clean Energy

With 44% of its land under forest cover and a coal-heavy economy, Chhattisgarh stands to gain on both ends of carbon finance—conserving/enhancing carbon sinks and reducing emissions from energy and industry. On the forestry side, one application could be developing projects for the emerging domestic or international voluntary carbon market. For instance, a consortium of community forest groups (with support from the Forest Department) might undertake an afforestation or avoided deforestation project in a degraded forest area; the increase in carbon stock over time could be measured and verified to issue carbon credits. These credits could then be sold to companies aiming for carbon neutrality. Given that Chhattisgarh reportedly had the highest increase in forest cover of any Indian state in recent assessments, there is clear potential to monetize such gains. However, one challenge is that India currently does not allow the export of domestically generated forest carbon credits (to avoid double counting in its Paris Agreement targets). This means the market for such credits would likely be within India—for example, corporates seeking to offset emissions for CSR or brand purposes. Still, as corporate net-zero pledges grow, such an investment could be meaningful. The state could also advocate for inclusion of sub-national REDD+ projects in any future national carbon market framework, ensuring that communities and the state are compensated for maintaining carbon sinks.

On the emissions reduction side, Chhattisgarh's industrial firms can leverage carbon markets or certificate trading to finance efficiency improvements. The PAT scheme, as mentioned, is one avenue—if a steel plant in Bhilai or a cement plant in Raipur over-complies with its energy intensity target, selling the surplus Energy Saving Certificates provides an extra revenue that can help pay back the investment in efficient technology. The upcoming national carbon credit trading scheme (likely to be voluntary initially) can further incentivize actions like methane capture from coal mines or installation of renewable energy beyond compliance requirements. Chhattisgarh, being a major coal and power producing state, could pilot a carbon trading simulation within a sector (say, a cap-and-trade among its thermal power plants to gradually reduce emission intensity), which might later integrate into the national market.

Additionally, climate finance from international sources could be sought. The Green Climate Fund (GCF) or bilateral donors might finance a program in Chhattisgarh that has climate mitigation benefits—for example, a program to install energy-efficient irrigation pumps or to promote electric vehicles in public transport. Such programs effectively bring in carbon finance in the form of grants or soft loans. A concrete idea: set up a State Climate Fund where a portion of the revenue from coal/minerals is funneled and matched with international climate finance; this fund could then support

renewable energy in unelectrified villages or provide results-based payments to villages that achieve verified reductions in forest fires and degradation (thus reducing emissions). By aligning local development with carbon outcomes, Chhattisgarh can attract these innovative funding streams.

ESG Investment Opportunities in Chhattisgarh

While ESG investing is a broad trend, its on-ground manifestation in Chhattisgarh will depend on creating investable entities and projects that meet ESG criteria. One area is the corporate sector in Chhattisgarh. Many large companies operating in the state (in mining, power, steel, and cement) have parent companies listed on stock exchanges or tapping global markets. By improving ESG performance—reducing pollution, cutting CO_2 emissions, improving labor practices, and improving community relations—these companies can gain favor with ESG-focused investors. For example, a steel plant in Chhattisgarh that aggressively increases its use of scrap (recycling) and invests in renewable power for its operations might highlight these moves to attract ESG equity funds or to issue a sustainability-linked bond (a bond where the interest rate is tied to achievement of ESG targets). The recent push by SEBI for top companies to disclose ESG metrics via BRSR means stakeholders are watching such metrics closely. In this sense, regulatory nudge and investor scrutiny together could drive Chhattisgarh's firms toward greener practices, essentially leveraging ESG investment as a carrot.

Chhattisgarh may be interesting to committed impact investors and development finance institutions (DFIs) if they come up with good ideas. Look into renewable energy. Chhattisgarh has a lot of coal reserves, but it also has a lot of solar potential, especially in the large areas of land that are not forested. An infrastructure fund that focuses on ESG may want to pay for a solar park or a group of biomass power plants in the state that use rice husk or other agricultural waste, as long as the government is open to it. Chhattisgarh may also seek equity investment from dedicated green funds if it pursues economic initiatives in areas like sustainable forestry (for example, bamboo-based industries) or ecotourism. The International Finance Corporation (IFC) and local impact investors have supported sustainable businesses in different parts of the world. Chhattisgarh could make itself more appealing to these kinds of investments by promoting its forward-thinking projects, such as Green GDP accounting and efforts to protect forests.

On the other hand, ESG investing could lead to businesses with low ESG scores having to pay more for capital or even selling off assets. Chhattisgarh's large coal generation capacity may pose a dual challenge: without effective management, companies may struggle to secure capital for expansion as investors worldwide increasingly avoid coal. Because of this, managing transition risk is a part of leveraging ESG investment. This means planning for economic diversification and showing that the state and its industry have a plan for moving to cleaner options. The recommendations section of the state policy can make sure that ESG factors are taken into account when businesses in Chhattisgarh make decisions. By doing this, the state gets more green investments and protects its economy from the possible effects of being called "high-carbon" or bad for the environment.

PES Schemes for Forest Communities and Watersheds

Chhattisgarh's rich forests and the dependence of local communities on them create a ripe context for Payments for Ecosystem Services initiatives. One potential application is a statewide PES program for forest conservation. For example, the state could identify critical forested watersheds that supply water to major towns or irrigated plains (several rivers originate or flow through the state's forests). A scheme could be structured wherein downstream users—perhaps through a small fee on water bills or a contribution from industries/agriculture that use the water—provide funds that are then distributed to upstream communities who agree to certain conservation measures (like assisted natural regeneration, soil and water conservation works, fire prevention, and controlled grazing). This would mirror the logic of the Palampur PES model but on a larger scale, possibly mediated by the Forest Department and local administrative bodies.

The Himachal Pradesh model indicates that even modest payments can motivate communities if the transaction is fair and they have a say in the governance. Chhattisgarh can pilot such a scheme in one watershed (perhaps around a dam or a river like the Mahanadi catchment) and then scale up if successful.

Another area is carbon PES: since India is developing a domestic carbon market framework, the state could facilitate contracts where, say, a power company or a cement company (facing pressure to offset emissions) pays a group of villages to protect a forest patch that sequesters carbon. Essentially, instead of going through formal carbon credit issuance (which is bureaucratic), it could be a simpler PES contract—e.g., "We pay you X lakh rupees per year for 5 years, and in return you reduce deforestation and maintain Y hectares of forest, with third-party verification." This would require legal recognition of communities' rights to carbon services; Chhattisgarh could take the pioneering step of issuing an order or policy that explicitly allows communities with Community Forest Resource rights (under FRA 2006) to receive payments for ecosystem services like carbon. This would empower indigenous communities financially and incentivize conservation.

There is also scope for biodiversity-focused PES. Chhattisgarh has several protected areas and tiger reserves (like Indravati, Udanti-Sitanadi, and Achanakmar). Tourism operators or even the government's own tourism department could create a mechanism to share a part of tourism revenue with local people if they participate in wildlife protection (similar to benefit-sharing schemes elsewhere). Additionally, mining companies in Chhattisgarh (a key part of its economy) could be encouraged or mandated to invest in PES as part of their CSR or compensatory afforestation obligations—instead of just planting monocultures, they could fund community-led conservation of natural forests, which would have higher ecological value.

To use PES on a large scale, we need to be able to measure and verify ecosystem services and have strong institutional arrangements to handle payments in a clear way. Gram Sabhas and other local government bodies should be fully involved so that PES contracts are accepted by society and work. International funding could help the state here by, for example, the UNDP or GEF (Global Environment Facility) supporting a pilot PES scheme in a biodiversity-rich corridor in Chhattisgarh. In general, PES

provides a way to align economic incentives with conservation needs. This is very important for a state that has a lot of resources and is also very ecologically rich.

Green Microfinance for Rural Green Entrepreneurship

Many of Chhattisgarh's development challenges (rural poverty, lack of energy access, primitive agricultural practices, deforestation for fuelwood, etc.) can be addressed by solutions that need micro-level financing. Green microfinance can empower the state's villagers to adopt these solutions. One concrete idea is to expand the reach of solar home systems and clean cooking in remote tribal areas through microloans. Chhattisgarh's government already has programs for solar distribution (e.g., the solar study lamps scheme), but by engaging microfinance institutions or self-help groups, these could scale up commercially. Households could get a loan to buy a solar home lighting kit or an improved biomass cookstove and repay it in small installments out of the savings they make (on kerosene or on wood gathering time). There are successful models in states like Assam, where women's self-help groups act as both distributors and financers of clean cookstoves, achieving both health and forest protection outcomes. The state could partner with NABARD (National Bank for Agriculture and Rural Development), which has a dedicated fund for supporting rural innovations and climate adaptation, to provide low-interest refinancing to MFIs for this purpose.

Climate-resilient agriculture is another area: farmers often need credit to shift to better practices. For instance, switching from flood irrigation to drip irrigation saves water and energy, but you have to buy new equipment first. Microfinance can help with that. Agro forestry, which involves planting fruit or timber trees on field bunds, can give long-term revenue and carbon sinks, but it takes a few years of patience. A small loan or grant in the first few years can motivate farmers to do it. Chhattisgarh can look at the experiences of states like Odisha, where some NGOs have used microloans for promoting millet cultivation and organic farming, yielding better climate resilience.

Green livelihoods for forest-dependent communities also merit support. Many tribal communities in Chhattisgarh collect non-timber forest produce (NTFP) like tamarind, mahua, lac, herbs, etc. If they are given microfinance and training to start small processing units (e.g., making tamarind concentrate, sal seed oil extraction, or crafting leaf plates), it could boost incomes while reducing waste and encouraging sustainable harvesting. The Chhattisgarh Minor Forest Produce Federation already does procurement, but micro-entrepreneurship can happen at the village level for value addition. Green microfinance can underpin such projects by giving collectives the capital to buy machinery or to bridge cash flow between harvest and sale.

It's important that green microfinance programs integrate capacity building and market linkage. Loans alone can turn into debt if the ventures fail. Therefore, any microfinance initiative for green purposes should bundle technical training (say, how to maintain a solar panel or how to practice sustainable forestry) and ensure that there is a market for the produce or savings from the investment. Successful international models often involve an ecosystem approach: e.g., microfinance for biogas in Nepal worked well because NGOs helped build the biogas units and linked users to cattle feed and organic fertilizer markets. Chhattisgarh can replicate such holistic models, possibly through public-private partnerships—the State Rural Livelihood Mission (NRLM) could tie up

with renewable energy companies or NGOs to deploy solutions on the ground, with banks providing the microloans.

Blended Finance for Just Transition and Green Industrialization

Some of Chhattisgarh's biggest needs for sustainable development could be met with blended finance. For example, a "just transition" away from coal and a push for green industrialization could both benefit from it. The state is a big coal producer, but climate policies could mean that coal demand stays the same or even goes down in the future. To get ready for this situation, the economies of coal-dependent areas like Korba and Raigarh need to be more diverse and new jobs need to be created. But putting money into these areas can be risky. For example, private investors might not want to put money into a new solar manufacturing plant or a retraining center in a coal town. Here, blended finance can help. The state government, using its coal royalty revenues, which are at record highs currently, could seed a Just Transition Fund. This fund might provide first-loss capital or guarantees for projects that create green jobs in coal regions—for example, a solar panel factory, a battery assembly plant, or even non-energy sectors like agro-processing parks. With that safety net, banks and venture capital could be drawn in to co-invest in these ventures. A blended structure could also channel international climate finance, such as funds earmarked for "transition" (some multilateral banks currently have such windows). If done proactively, by the time coal revenues start tapering, the state would have kick-started new industries supported by blended capital.

Another domain for blended finance is large infrastructure projects that have clear climate benefits but uncertain returns. For instance, Chhattisgarh might want to invest in an extensive climate-resilient irrigation network, or in interlinking forest areas through wildlife corridors (essentially a green infrastructure project), or in a big solar-wind hybrid park coupled with battery storage. These projects may immediately struggle to attract pure private capital due to either long gestation or externalities not captured in cash flows. Such projects can take off by blending funds—state budget, central schemes, and climate funds—and inviting private players with a partial risk guarantee. One example could be a public transport electrification project: say, converting Raipur’s city bus fleet to electric buses. If done commercially, the high upfront cost of e-buses is a deterrent for the city. But if the government secures a grant or soft loan for part of the cost (as has been done under India’s FAME scheme for e-mobility), and a private bank finances the rest, the project becomes viable with the operational cost savings (electric buses are cheaper to run). The blended element (grant/soft loan) effectively buys down the cost and risk to a level where the private sector is comfortable stepping in.

Chhattisgarh can also tap blended finance through national and international platforms. The NIIF, as noted, is one such platform at the national level; Chhattisgarh could propose a dedicated “green window” with NIIF to focus on the state’s projects. Globally, there are increasing opportunities like the Climate Investment Platform or the City Climate Finance Gap Fund, which blend donor money to help prepare projects for investment. Engaging with these early can bring technical assistance and co-funding.

In all, blended finance is not a panacea but a means to amplify the reach of public funds and mitigate risk for private investors. The government of Chhattisgarh needs to build the expertise to structure such deals—possibly by establishing a Green Finance cell with finance and legal experts (as recommended later) who can design guarantee mechanisms or layered funds. By doing so, the state can leverage, for example, ₹100 crore of its funds to unlock ₹500+ crore from other sources for its sustainable development priorities—a force multiplier effect that will be crucial given finite public resources.

Challenges and Barriers in Implementing Green Finance in Chhattisgarh

Green finance has a lot of potential in Chhattisgarh, but making it happen on the ground won't be easy. There are a number of institutional, financial, and social barriers that could slow down or stop the state from using new financing models. Finding these problems is an important first step so that plans can be made to fix them. Some of the biggest problems are:

- Limited Local Institutional Capacity: It's still hard to figure out what green bonds, carbon credits, and ESG integration are all about. The city or state governments in Chhattisgarh may not have the technical skills to create projects or financial tools that investors can use. For instance, you need to have detailed financial statements, credit ratings, and a way to sell the bond to investors in order to issue a municipal bond. A lot of the state's Urban Local Bodies (ULBs) are still trying to figure out how to do these things. You need to know a lot about technical math to set a baseline and figure out how to keep track of things for a carbon offset project. Local governments don't know much about it. It's important to build capacity because not all good ideas turn into real projects.
- Regulatory and Policy Gaps: Right now, Chhattisgarh doesn't have a specific state-level policy or structure for green finance. India has rules about municipal bonds, but the states may need to help Urban Local Bodies make sure they can promise certain sources of income. The national policy on carbon trading is still being worked on, but states need to do what is right. The laws aren't very clear about benefit-sharing, especially when it comes to whether or not communities can sell the carbon credits they make and keep the money. If these frameworks aren't clear, investors and project developers might not want to get involved. Some green projects might also have to change the rules. For example, making it easier to sign PES contracts by letting renewable projects have longer land leases or by recognizing community forest rights. Politicians and bureaucrats need to agree with these changes for them to happen.
- Financial Viability and Credit Risks: A lot of eco-friendly projects need a lot of money up front and only a little bit of money back over a long time. People from outside of Chhattisgarh might think that projects there are dangerous, especially in areas that aren't very developed yet. People will only put money into Raipur's green bond if they are sure the city can make enough money to pay the interest. If they don't like how the city is run or how much money it has, they might ask for higher interest rates or not spend at all. Banks may be hesitant to extend loans to a new waste-to-energy facility in Chhattisgarh until they enhance their creditworthiness due to concerns regarding technological risks or the potential for theft of funds from the facility. The problem is that market-driven financing will only give money

to green projects that have a normal risk-return ratio and use strategies to lower risk.

- Investor Perceptions and Awareness: People don't usually think of Chhattisgarh as a place to invest in green businesses. Investors, especially those from other countries, may not know everything there is to know about the state's goals or opportunities. Some people may still think of the state as only a mining center with weak government. This perceived challenge requires Chhattisgarh to enhance its efforts in promoting its initiatives and to reassure investors of the government's commitment to transparency and results. Additionally, concerns about "greenwashing" may make investors wary; they will look for proof that a "green" project in Chhattisgarh is truly sustainable. This problem is a big one because the state doesn't have a proven track record in green finance yet.
- Social and Community Challenges: It can be hard to work with people in your area when you want to do things like PES or microfinance. There are a lot of tribal people in Chhattisgarh who have always been careful not to let other people take their rights and use them. For example, buying land for mining has caused problems. You might not like or care about your green projects if you don't talk to people and get their permission first. If people think that a forest carbon project will make it harder for them to get to the forest, they might not believe in it. If microfinance isn't done right, it could lead to people in communities getting into debt or fighting with each other. So, we need to teach people, build trust, and make things that work for everyone to break down the barrier of social acceptance.
- Coordination and Multi-sectoral Involvement: Green finance is by nature cross-sectoral; it may encompass environment, energy, urban development, finance, and additional domains. Government departments often work in their own little worlds. The energy department, the finance department, and maybe even the industry department in Chhattisgarh all need to work together to make a blended finance project for renewable energy happen. Not having a unified approach can slow things down. If each agency works on its own traditional projects without a common green strategy, they might miss chances to work together, like combining an adaptation project with a livelihoods project.
- These problems can be solved, but they show that green finance needs a good environment to grow. In the next section, we suggest some useful strategies and policy steps that can help Chhattisgarh overcome these problems and put the green finance models we talked about into action.

Policy Recommendations

Based on the study of potential and impediments, this section makes specific suggestions for major stakeholder groups—policymakers (the government and its agencies), investors, and civil society/community organizations—to speed up the use of green finance in Chhattisgarh. To make these changes happen, people from many fields will need to work together, but they may make the state a far better place for green financial flows.

For Policymakers (State Government and Agencies):

- Develop a State Green Finance Roadmap: Create a formal green finance action plan or roadmap for Chhattisgarh that includes specific goals and deadlines, such as "raise ₹X crore through green bonds by 2030," "reach Y MW of renewable

energy through creative financing by 2027," and "carry out PES schemes covering Z hectares of forests by 2025." The 2047 plan for a developed state and the State Action Plan on Climate Change are two of Chhattisgarh's main goals for development. This roadmap needs to fit with those goals. A written plan with goals will help government agencies and show that they are willing to spend money. It can also list a pipeline of priority projects that are good for green finance, such as designated solar parks, sustainable agricultural zones, and programs to plant trees. This can help get the initial work done.

- Enabling Policy and Regulatory Framework: Change or add to state-level rules to make it easier for green funding methods to work. For example, make rules for Chhattisgarh's urban local bodies about green bonds. These could allow ULBs to issue bonds with certain state government guarantees or incentives, including matching funding for interest payments. The state might also look about launching a Green Guarantee program that grants partial credit guarantees to certified green projects to minimize the risk for investors. The state's regulations on renewable energy and industry should make it obvious that there are incentives for green investments. For example, land for renewable projects should be given priority, and projects that acquire money from a green bond or climate funds should be approved more quickly. The government might also amend its policies to acknowledge communal carbon rights. This would mean that communities could sell carbon credits or establish PES agreements on their land, which would give them the power to do so. One strategy to make PES more common is to include it in forest management plans and budgets. For instance, the Forest Department might set aside a certain amount of money each year to pay community groups that reach conservation goals. This would make PES a part of the system.
- Institutionalize Coordination and Capacity: The state government should create a special Green Finance Cell or Task Force. The Forest, Energy, Urban Development, and Rural Development departments could send people to talk to each other. It might be in the Planning or Finance Department. It would be in charge of getting green finance projects off the ground, getting different departments to work together, and talking to outside investors and donors. The cell should also be in charge of improving things. This could mean training municipal officials on how to get ready for bond issuances (with help from partners like SEBI or the World Bank), training forest officers and community leaders on how to handle PES contracts and carbon accounting, and teaching the State Finance Department how to look at blended finance proposals and take climate risk factors into account when making budgets. The government could also add green finance metrics to the performance indicators for every department. For instance, it could ask each important department to tell it each year how much money it has raised for green finance or climate change or how much it supports sustainability goals. This makes the people who work for the company responsible and gives them a reason to look for new ways to make money.
- Project Preparation and Feasibility Support: Alter or add to state-level rules that support green funding tools. For example, create Green Bond Guidelines for the urban local bodies of Chhattisgarh. This will let them issue bonds that are backed by certain state government guarantees or incentives, like matching funds for interest payments. The state should think about a Green Guarantee plan that gives partial credit guarantees to green projects that are approved. This would make it

less risky for investors. Change state laws about renewable energy and industry to include incentives for investments that are good for the environment. For example, give renewable projects first dibs on land and make it easier to get permits for any project that is paid for with green bonds or climate financing. One possible change in policy is for the government to say that community carbon rights should be recognized. This would let communities make money from carbon credit deals or Payment for Ecosystem Services agreements on their land, which would let them join these financial systems. Include Payment for Ecosystem Services (PES) in your budgets and plans for managing forests. For example, the Forest Department could set aside money every year to pay community groups that help protect the environment. This would make PES a permanent part of the system.

- Financial Incentives and Risk Mitigation: Use state financial resources to make green initiatives more appealing from a financial point of view. This includes putting money into viability gap funding (VGF) for important green infrastructure. This is like how the central government helped the Indore solar bond project by paying for part of the project cost to make the bond work. For instance, Chhattisgarh could give VGF to build the first waste-to-energy plant or to construct up charge stations for electric vehicles. Another option is to provide green microbusinesses and MSMEs tax advantages or lower interest rates. For example, the state may pay 3% of the interest on loans that farmers take out for solar pumps or that clean tech firms take out. The state might also create a Green Risk Mitigation Fund that protects loans or bonds used to pay for authorized green projects from the first loss (essentially, a fund to cover first losses if a project fails, which gives senior lenders/investors confidence). In addition to these, implementing green budgeting at the state level—marking and gradually raising the percentage of the state budget that goes to climate-related spending (renewables, forestry, sustainable agriculture, etc.)—will show commitment and often work with private finance by providing co-funding.
- Just Transition Planning: Put the money you make now into the future so you're ready for the social and economic changes that will happen in places that depend on coal. People have already talked about putting some of the record-high mining royalties (which reached about ₹13,000 crore in 2022–23) into a Just Transition Fund. This fund can help with things like giving coal miners new skills so they can work in other fields like solar, construction, and services. It can also help new industries or agricultural value chains grow, which makes the economy more diverse in mining areas, and it can restore land that has been mined. It can use a mixed finance model, where the government gives some money to get things going and then asks for matching contributions from central schemes (like the District Mineral Foundation funding) and climate financiers (who are becoming more interested in projects that help the environment). By doing this now, Chhattisgarh can avoid a lot of trouble in the future. It could also make its request for international climate finance stronger by showing that it is serious about making the change and has a clear plan for how to do it.
- Monitoring and Transparency: Make sure that all green financing projects have strong systems in place for monitoring, reporting, and verifying. The state needs to make sure that any group that sells a green bond or runs a PES program in its area follows the best rules for being open. For bonds, this means giving an annual report on how the money was spent and what the effects on the environment were (for

example, less pollution, more energy produced, and more trees planted)—things that investors will want to see. Independent audits or satellite monitoring can help PES build trust and make it possible to change management when necessary. Chhattisgarh might also release an annual State Green Finance Report. This would show how much money was raised, what projects were completed, and what effects they had (for example, how many jobs were created or how many tons of CO_2 were removed through green projects). People and investors will trust Chhattisgarh more because of this public reporting. It will also make it a leader in being responsible for green outcomes.

For Investors (Domestic and International, including Banks and Funds):

- Recognize Opportunities Beyond the Traditional: Investors shouldn't ignore Chhattisgarh just because it has a history of mining. The state is getting ready for long-term growth by adopting Green GDP accounting and making big gains in forest cover, which shows a shift in policy toward sustainability. People that act quickly can get into a market that isn't very well served. For example, being the first to invest in Chhattisgarh's first green bond or first big renewable project might get you good terms and good will. Municipal green bonds or infrastructure in Chhattisgarh could give long-term institutional investors (like insurance firms or pension funds) steady, long-term profits while also meeting ESG requirements. Investors should not be afraid to talk to the state about finding good opportunities and possibly shaping them to fit their risk-return expectations. Instead, they should not be afraid to talk to the state.
- Demand Quality and Impact (Mitigate Greenwashing): People in Chhattisgarh who buy "green" products should expect the companies to be honest about how much money they make and how much of a difference they make. There should be clear rules about how to choose projects (like what makes something "green"), approvals from outside parties or at least following well-known rules (like the Green Bond Principles), and regular updates on how the projects are doing. Investors can help local issuers keep their green label by doing a lot of research and asking tough questions. This makes it less likely that money will go to projects that don't really help, which is called greenwashing. This also makes people feel more confident about the market. IEEFA's research shows that Indian investors are more interested in and confident about green bond projects when they know a reliable group is watching over them. Those models can help investors get businesses in Chhattisgarh to do the same thing. In short, investors need to do something to make sure that their money is really helping the planet. This will also help them keep their good name.
- Leverage Blended Finance Structures: Large investors, including development finance institutions (DFIs), climate funds, and impact investors, should be open to collaborating in blended finance initiatives in Chhattisgarh. As discussed, many high-impact projects might need a concessional piece to become viable. Investors could, for example, partner with the state's proposed Green Fund or Just Transition Fund by co-investing in a portfolio of projects where the state or a DFI takes a junior/subordinated position. This structure can provide the senior investors (like pension funds or commercial banks) with higher security and stable returns, making them comfortable investing in sectors or regions they otherwise might consider too risky. An illustration might be a blended finance deal for a set of 50

MW solar mini-grids in remote areas: a concessional loan from an international climate fund could cover first loss, a DFI could provide debt at near-market rates, and an Indian bank could provide the remainder of the debt—together funding the project, whereas individually none might have taken it all on. Investors should express interest in such models and engage with platforms like NIIF or even propose new blended vehicles focused on states like Chhattisgarh.

- Engage in Dialogue and Technical Assistance: For ESG-driven investors and DFIs, providing capital is just one aspect; the other involves fostering an environment that enables effective utilization of that capital. Investors with expertise in, say, renewable energy finance or social impact measurement can work with Chhattisgarh's stakeholders to transfer knowledge. This could mean co-hosting workshops with the state on project finance, helping local banks develop green lending products (some foreign DFIs have credit lines with technical assistance to local banks for this purpose), or advising on setting up measurement systems for outcomes. By contributing technical assistance (often a part of DFI mandates) or even just engaging in policy dialogue (sharing what conditions would make them invest more), investors can shape a more investment-friendly climate. In Chhattisgarh, where capacities are still growing, such engagement by investors can make a significant difference in getting productive projects off the ground. It is in the investors' own interest too—a better ecosystem means a stronger pipeline of investable opportunities in the future.

For Civil Society and Communities:

- Participatory Planning and Advocacy: In Chhattisgarh, civil society organizations (CSOs) like NGOs, schools, and community groups should all help plan green finance projects. They can put policymakers in touch with people in the area to make sure that projects meet real needs and get community support. For example, if the government wants to build a new solar park or a PES scheme, CSOs can help people in the area talk about the plan so that local views and traditional knowledge are heard. This will make the project better and help keep things from getting worse in the future. CSOs can also push for green finance that is fair and helps poor people. They can ask for some of the money from green bonds to be used for off-grid renewable solutions in tribal villages instead of just big infrastructure projects. Being at the table can help civil society make green finance work with goals for inclusive development.
- Capacity Building at the Community Level: Many green finance projects, such those that have to do with forests, agriculture, or micro-enterprises, will be carried out by communities. Nonprofits and grassroots groups should help community people learn how to participate in a meaningful way. If villagers are joining a forest carbon project, they might need to learn the basics of carbon accounting. If they are taking green micro-loans, they might need to learn about money and business. If they are joining a PES program, they might need to learn how to monitor the forest. People are more likely to support and keep on with projects when they understand the ideas and see how they can help. In Chhattisgarh, where a lot of people are tribal and may not have much formal education, CSOs are well-suited to translating the technical terminology of "green finance" into local languages and ideas that people can understand.

- Accountability and Monitoring: People in civil society may make sure that the money received for green finance is spent in a clear and meaningful way. NGOs may be a lot more responsible if they check on their own initiatives to make sure they are being done as promised. They can make sure that the promised solar plant was built and is running, or that the PES payments were made to the proper persons and used as promised. CSOs might write "citizens' reports" in addition to formal reports to say how well the government is doing with green finance. They can reveal any disparities or greenwashing, which makes it seem like the system has to be modified. Civil society has done a lot to make sure that climate finance initiatives all over the world are safe for people and the environment. NGOs in Chhattisgarh can also warn the government if a project that is designed to improve the environment is actually destroying it or if the benefits are not going to the proper people. People will support green financing projects if they obtain this helpful feedback.
- Grassroots Innovation and Pilot Projects: A lot of the time, new ideas come from the bottom up. Civil society groups can test out small-scale models, and if they work, they can get more money to make them bigger. For instance, an NGO could show off a micro-hydro project that the people in the village own and pay for through a local cooperative. This could then draw in bigger impact investors who want to do the same thing in other villages. Or a federation of women's self-help groups could run a successful revolving fund for clean energy products. This would show a bank that lending for clean energy products on a larger scale is possible. CSOs in Chhattisgarh are trusted and have a presence on the ground, which is good for trying new things. By writing about and sharing these successes, they can change policy and get more money. The state government and investors should also be able to learn from these pilots. Civil society can be the R&D engine for green finance at the grassroots level by testing out ideas in real-life situations that big organizations might not think of.
- In summary, each stakeholder has a distinct but interlinked role in operationalizing green finance in Chhattisgarh. Policymakers set the stage with frameworks and support, investors bring in capital and demand standards, and civil society ensures inclusivity and accountability. If all three work in concert, the probability of scaling up effective green finance models in the state is greatly enhanced. In short, each stakeholder has a different but connected job to do in making green finance work in Chhattisgarh. Policymakers set the rules and provide support, investors provide money and demand standards, and civil society makes sure that everyone is included and held accountable. If all three work together, the chances of expanding successful green finance models in the state go up a lot.

IV. Conclusion

Chhattisgarh is at a crossroads on its path to using green finance to boost its economy in the long term. The study in this paper shows that the state can move toward a green economy, and that will be good for everyone. From the beginning, policymakers should make things easier and include sustainability in their plans and budgets. When investors put money into something, they need to be careful and patient. They should want to make money now and later. People in communities and civil society need to make sure

that these efforts are based on real life so that everyone can take part and get a fair share of the benefits.

There will be problems on the road ahead, such as getting people with different goals to work together, learning new skills, and building new institutions. But a lot of good things could happen. Chhattisgarh could show other Indian states with a lot of money how to do things right. It could show them how to turn the "resource curse" into a "green dividend." The state can protect its rivers and forests, help people make a living, and help fix problems with the world's climate by paying for its growth in new, environmentally friendly ways. The plan is good for the environment and also meets India's Sustainable Development Goals and the promises made in the Paris Agreement. It also fits with the bigger goal of making Chhattisgarh a developed state by 2047.

In conclusion, green money will be good for Chhattisgarh. Things are already getting better because of changes in policy, new projects, and more people learning about the problems. You can do these things and help the economy and the environment work together if you follow the rules above. Chhattisgarh can change how it has grown in the 21st century, and new green finance models will be a big part of that new story.

References

1. Das, R Krishna. “Chhattisgarh’s Raipur Municipal Corporation Plans to Issue Green Bonds.” @Bsindia, Business Standard, 29 Jan. 2024, www.business-standard.com/india-news/chhattisgarh-s-raipur-municipal-corporation-plans-to-issue-green-bonds-124012900634_1.html. Accessed 5 Dec. 2025.
2. Dash, Ashish. “Payment for Ecosystem Services: Palampur in Himachal Has a Model in Place.” Down to Earth, 30 July 2019, www.downtoearth.org.in/news/environment/payment-for-ecosystem-services-palampur-in-himachal-has-a-model-in-place-65908. Accessed 5 Dec. 2025.
3. Rashmi Drolia. “Chhattisgarh Now Tops GSDP Share from Mining, Leads in Forest Gain.” The Times of India, The Times Of India, 29 July 2025, timesofindia.indiatimes.com/city/raipur/chhattisgarh-now-tops-gsdp-share-from-mining-leads-in-forest-gain/articleshow/122979329.cms.
4. “Chhattisgarh Links Forest Ecosystem to Green GDP.” Drishti IAS, 2025, www.drishtiias.com/daily-updates/daily-news-analysis/chhattisgarh-links-forest-ecosystem-to-green-gdp. Accessed Dec. 2025.
5. Hussain, F. I., and Helena Dill. “India Incorporates Green Bonds into Its Climate Finance Strategy.” World Bank Blogs, 12 June 2023, blogs.worldbank.org/en/climatechange/india-incorporates-green-bonds-its-climate-finance-strategy.
6. Jena, L. P., and Vandana Vuppuluri. “Green Bonds Key to Climate Finance, but Challenges Remain.” Ieefa.org, 30 July 2025, ieefa.org/articles/green-bonds-key-climate-finance-challenges-remain.
7. Konyn, Carol. “How Costa Rica Reversed Deforestation and Became an Environmental Model.” Earth.org, 19 Oct. 2021, earth.org/how-costa-rica-reversed-deforestation/. Accessed 2025.
8. PTI. “Chhattisgarh Earns Record Mineral Revenue of Rs 12,941 Crore in 2022-23.” The Economic Times, 23 Apr. 2023,

economictimes.indiatimes.com/industry/indl-goods/svs/metals-mining/chhattisgarh-earns-record-mineral-revenue-of-rs-12941-crore-in-2022-23/articleshow/99711984.cms. Accessed 2025.

9. Kaushik, Sneha Seth ; Hans. "Examining Interactions among Challenges of Green Financing in India." Ecological Civilization, vol. 2, no. 4, 1 Jan. 2025, pp. 10012–10012, www.sciepublish.com/article/pii/629, https://doi.org/10.70322/ecolciviliz.2025.10012.
10. Fouche, Gwladys. "Norway Ready to Resume Amazon Payments to Brazil If Elections Change Government -Minister." Reuters, 22 June 2022, www.reuters.com/business/environment/norway-ready-resume-amazon-payments-brazil-if-elections-change-government-2022-06-22/.
11. Vats, Sukriti. "Indore, Country's Cleanest City, Gets Rs 720 Crore on Green Bonds to Build Largest Solar Plant." ThePrint, 14 Feb. 2023, theprint.in/india/governance/indore-countrys-cleanest-city-gets-rs-720-crore-on-green-bonds-to-build-largest-solar-plant/1371439/.
12. Standard, Business. "Business Standard." @Bsindia, www.business-standard.com/author/r-krishna-das/undefined/page-7. Accessed 2025.
13. Strengthening India's Forest Sector Recommendations to the Fifteenth Finance Commission. https://fincomindia.nic.in/asset/doc/commission-reports/15thFC/reports/studies/Strengthening_India's_Forest_Sector.pdf