Sovereign Green Bonds Impact Report FY 2022-23

Infrastructure Finance Secretariat
Department of Economic Affairs, Ministry of Finance,
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Abbreviation	Full Form
CEEW	Council on Energy, Environment and Water
CFA	Central Financial Assistance
CFI	Consolidated Fund of India
CO_2e	Carbon Dioxide Equivalent
CICERO	Center for International Climate and Environment Resarch-Oslo
DPR	Detailed Project Report
GBI	Generation Based Incentive
GBS	Gross Budgetary Support
GDP	Gross Domestic Product
GFWC	Green Finance Working Committee
GHG	Green House Gases
GIM	National Mission for Green India
ICMA	International Capital Market Association
LED	Light Emitting Diode
MNRE	Ministry of New and Renewable Energy
MoHUA	Ministry of Housing and Urban Affairs
MRTS	Mass Rapid Transport Systems
NAPCC	National Action Plan on Climate Change
NDCs	Nationally Determined Contributions
NRDC	National Research Development Corporation
PDMC	Public Debt Management Cell
PM-KUSUM	Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan
PPM	Parts Per Million
RRTS	Regional Rapid Transit System
SGF	Sovereign Green Fund
SDGs	Sustainable Development Goals
SGrB	Sovereign Green Bonds

1 Executive Summary

The Government of India has taken a transformative step in addressing climate change through the issuance of Sovereign Green Bonds aiming to mobilize resources for low-carbon intensive public sector projects. The bond issued in early 2023, aligns with the country's Nationally Determined Contributions (NDCs) under the Paris Agreement and broader environmental commitments, including targets for reducing emissions intensity and promoting non-fossil fuel sources of energy. This report provides the first comprehensive account of the initial impacts of proceeds from the Sovereign Green Bonds, which amounted to ₹16,000 crore in FY 2022-23 as per the Sovereign Green Bond Framework. The Framework outlines a structured process for the evaluation, selection, and reporting of projects funded by Sovereign Green Bonds, focusing on transparency and accountability. Proceeds are earmarked exclusively for projects in areas which help in achieving the sustainable development goals such as renewable energy, energy efficiency, clean transportation, sustainable water and waste management, and biodiversity conservation. Thus, the Framework reinforces India's commitment to sustainable development, supporting infrastructure that aligns with national priorities and the UN Sustainable Development Goals (SDGs).

In 2022-23, a substantial portion of the Sovereign Green Bond proceeds–78%–was allocated to clean transportation projects, predominantly aimed at expanding urban metro rail systems and the Regional Rapid Transit System (RRTS). These projects support India's goal of reducing emission intensity by promoting environment friendly public transportation options in heavily populated urban areas. The remainder of the funds have been allocated to projects supporting renewable energy installations, sustainable resource management, and other green initiatives.

The potential impact of investing Sovereign Green Bonds proceeds across these sectors has been encouraging. The investments have resulted in installed renewable generation capacity of 14,920.5 MW with savings of ~81.48 million litres of diesel. Across the sectors, the initiatives have resulted in reduction of ~49 million tonnes of CO_2e. In addition, 58.86 kms of new metro rail lines commissioned. Total number of households benefitted from renewable energy initiatives amounts to 2,67,860.

The allocation and impact of the proceeds are overseen by the Green Finance Working Committee (GFWC), which includes members from the Ministry of Finance, Ministry of Environment, Forest and Climate Change, NITI Aayog, and other relevant stakeholders. This committee evaluates project eligibility based on alignment with the Framework and ensures

that projects deliver measurable environmental and social benefits. Projects are assessed on metrics including renewable energy capacity installed (measured in MW), greenhouse gas emissions avoided, energy savings, and improvements in air quality. Social co-benefits, including job creation, improved public health, and enhanced access to sustainable transport, are also integral to the impact assessment.

To support the Framework's transparency commitments, the Ministry of Finance will also establish a dedicated Green Register, which will maintain detailed records of SGrB issuance, allocation, and associated project outcomes. Unallocated proceeds, if any, are retained for future green investments. Additionally, Reserve Bank of India manages the issuance process, maintaining a separate account for the proceeds, which are deposited in the Consolidated Fund of India and subsequently allocated to eligible projects.

This report attempts to report the impact of projects funded through the SGrB landscape. This report provides an analysis of the environmental and social impact of the funded projects, further solidifying India's proactive role in achieving the stated objectives of the Sovereign Green Bonds framework. The impact reporting provides transparency to the investors and promotes accountability establishing a solid foundation for the future development of India's green bond market, marking a significant step toward achieving the country's ambitious targets for emission intensity reduction and, climate resilience.

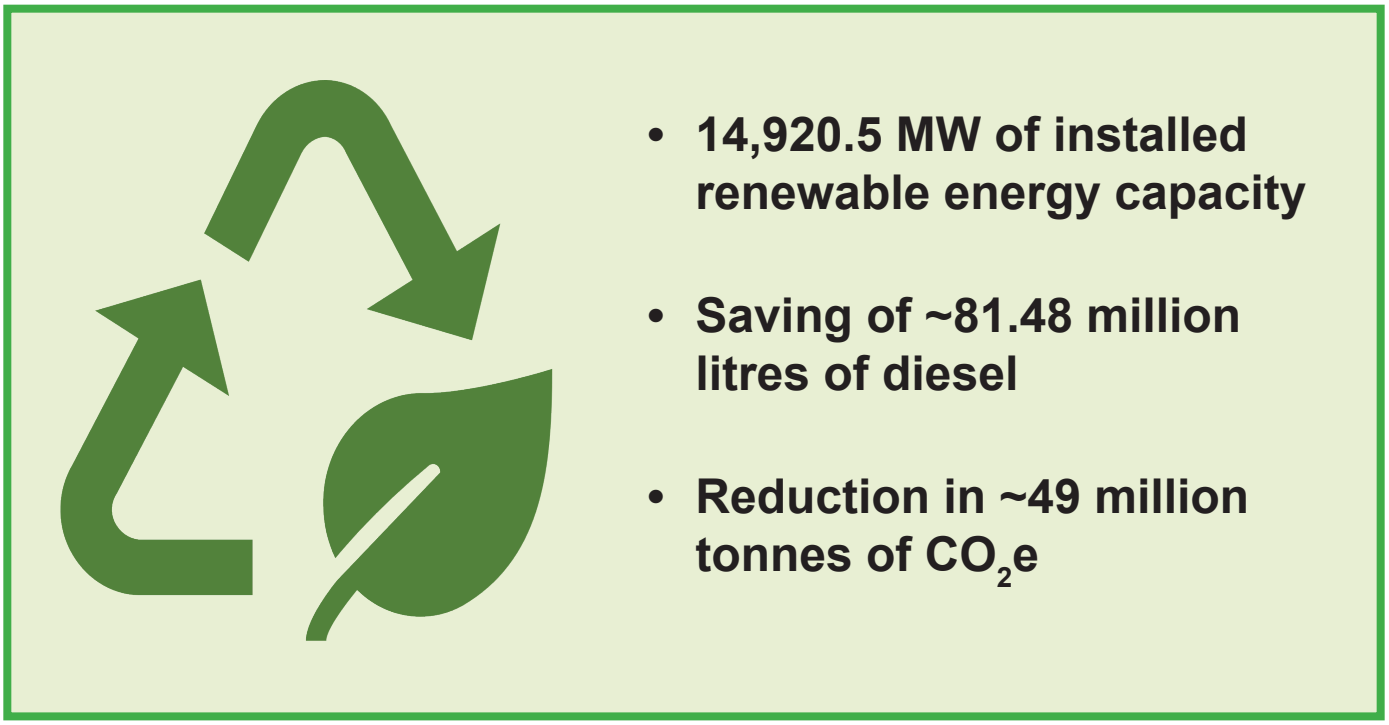

Figure 1: Potential impact of green bonds proceeds

2 Introduction

With its vast population and rapid urbanization, India needs to balance economic growth with environmental sustainability. The country is prone to the impacts of climate change, which includes severe weather patterns and damages thereof, water scarcity, food and energy insecurity and biodiversity loss. Recognizing these challenges, India has established ambitious climate goals under its Nationally Determined Contributions (NDCs) to the Paris Agreement. These goals include reducing the emission intensity of its GDP by 45% from 2005 levels by 2030, achieving 50% of its cumulative electric power from non-fossil fuel sources, and reaching net-zero emissions by 2070. Sovereign Green Bonds issued by the Government of India in FY 2022-23 and subsequently in FY 2023-24 represent a landmark initiative to align public investments with these climate commitments.

The Sovereign Green Bond was first issued in FY 2022-23, and a total of ₹16,000 crores was raised through two tranches, marking a milestone in the green finance strategy of the Government. Announced in the Union Budget 2022-23, the bond is part of a broader effort to deepen India's green bond market and attract private sector participation in green projects. Funds raised through Sovereign Green Bonds are dedicated exclusively to eligible green projects that meet the stringent criteria set forth in India's Sovereign Green Bond Framework.

The first issuance of Sovereign Green Bonds in 2022-23 saw significant investment in clean transportation projects, which received 78% of the total proceeds. This allocation reflects India's focus on transforming its urban mobility landscape by funding metro rail systems, Regional Rapid Transit System (RRTS), and other sustainable transit options that reduce congestion, improve air quality, and lower carbon emissions. The remaining funds supported renewable energy and other green infrastructure projects that contribute to India's energy transition goals and enhance resource efficiency. By focusing on high-impact sectors, the Sovereign Green Bonds program also supports social and economic benefits, such as job creation, improved public health, and expanded access to sustainable services.

This impact report for FY 2022-23 highlights the early successes of the Sovereign Green Bond program, setting the stage for future growth in green investments and establishing India as a leader in sustainable finance. Through continued commitment to transparency, rigorous project evaluation, and alignment with global standards, India's Sovereign Green Bond initiative underscores the country's dedication to achieving its climate goals while fostering inclusive economic development.

3 Overview of the Sovereign Green Bonds Framework

India's Sovereign Green Bonds Framework is a comprehensive and structured mechanism developed by the Government of India to facilitate green financing and mobilize resources for public sector projects that align with the country's ambitious climate and sustainability goals. Launched in 2022, the framework is rooted in India's commitment to sustainable development, and its Nationally Determined Contributions (NDCs). It also aligns with India's national environmental and policy objectives, including National Action Plan on Climate Change (NAPCC) and various sectoral initiatives such as Mission LiFE.

The framework has been designed in accordance with International Capital Market Association (ICMA) Green Bond Principles (2021), ensuring alignment with global standards in green finance. This alignment reinforces India's intent to promote transparent and responsible use of proceeds, rigorous project evaluation, and effective governance and accountability mechanisms.

3.1. Core Components of the Sovereign Green Bonds Framework

The framework is structured around four core components, as recommended by ICMA:

- Use of Proceeds
- Process for Project Evaluation and Selection
- Management of Proceeds
- Reporting

These components ensure that the proceeds are allocated to projects with tangible environmental and social impacts, while maintaining transparency and accountability to investors.

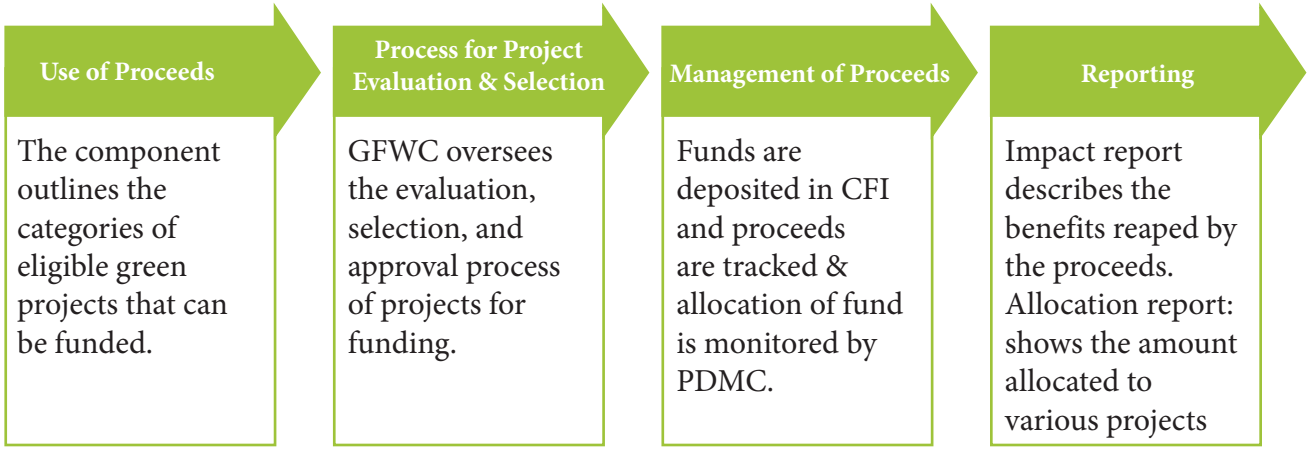

Figure 2: Core Components of the Sovereign Green Bonds Framework

3.2. Use of Proceeds

The Use of Proceeds component defines the eligible green project categories that can be financed under this framework. Each category is selected based on its potential to contribute to India's environmental objectives, including climate change mitigation, resource conservation, and biodiversity protection. The proceeds are dedicated exclusively to green projects, excluding sectors such as fossil fuels which are deemed incompatible with the framework's sustainability goals.

The framework identifies nine eligible categories of projects:

i. **Renewable Energy:** Investments in solar, wind, biomass, and small-scale hydropower projects, focusing on renewable energy generation and storage to support India's non-fossil fuel capacity targets.

ii. **Energy Efficiency:** Initiatives such as energy-saving systems in government buildings, improved public lighting (e.g., LED replacements), and infrastructure upgrades that enhance overall energy efficiency.

iii. **Clean Transportation:** Projects aimed at promoting sustainable public transportation, including the development of metro rail systems and electrification of transport infrastructure.

iv. **Climate Change Adaptation:** Investments that enhance the resilience of infrastructure to climate impacts, such as early warning systems and climate-resilient urban infrastructure.

v. **Sustainable Water and Waste Management:** Projects that conserve water resources, improve waste management systems, and support efficient irrigation.

vi. **Pollution Prevention and Control:** Initiatives that address air pollution, greenhouse gas control, waste recycling, and emission-efficient waste-to-energy projects.

vii. **Green Buildings:** Development and retrofitting of buildings that meet recognized environmental performance standards.

viii. **Sustainable Management of Living Natural Resources and Land Use**: Sustainable forestry management, organic farming, and biodiversity conservation, supporting ecosystems through afforestation and reforestation.

ix. **Terrestrial and Aquatic Biodiversity Conservation**: Conservation projects related to coastal and marine biodiversity, habitat preservation, and ecosystem restoration.

Eligible expenditures include public sector investments, subsidies, grants, and operational costs directly linked to green initiatives. The Ministry of Finance endeavours to allocate the funds to projects within 24 months of issuance and any unallocated proceeds are carried forward to successive years for future green investments.

3.3. Process for Project Evaluation and Selection

The Green Finance Working Committee (GFWC) is responsible for overseeing the evaluation, selection, and approval of eligible green projects. This committee is chaired by the Chief Economic Adviser and comprises representatives from key ministries, including the Ministry of Finance, Ministry of Environment, Forest and Climate Change, and NITI Aayog. GFWC meets at least biannually to review potential projects, ensuring they align with the framework's environmental and social objectives.

Evaluation Process:

Relevant line ministries conduct an initial assessment of green projects based on eligibility criteria and environmental impact metrics. GFWC reviews projects for compliance with the framework and verifies alignment with ICMA Green Bond Principles and India's sustainability objectives.

To ensure adaptability, a surplus of eligible projects is maintained, allowing for easy substitution if any project faces delays or cancellation. GFWC ensures that selected projects adhere to India's national policies, such as the National Conservation Strategy and Policy on Environment and Development (1992), and uphold social safeguards under Indian law, like the Right to Fair Compensation and Transparency in Land Acquisition.

3.4. Management of Proceeds

The Management of Proceeds component ensures that funds raised through Sovereign Green Bonds are allocated transparently and exclusively to eligible green projects. The proceeds from bond issuances are deposited in the Consolidated Fund of India (CFI) and subsequently allocated to green projects through a dedicated account maintained by the Ministry of Finance.

Public Debt Management Cell (PDMC) is responsible for tracking of proceeds within the existing guidelines regarding debt management and monitoring the allocation of funds towards designated projects. To further enhance transparency, a Green Register will be prepared by Ministry of Finance, which will record details of bond issuance, proceeds generated, project allocations, and expected climate impact.

3.5. Reporting

The Reporting component mandates comprehensive and transparent updates on the allocation and impact of the proceeds. This includes:

Allocation Reports: Issued under GFWC supervision, 1st allocation report corresponding to FY 2022-23 was brought out in 2024 and provided information on the status of funded projects, amounts allocated, and any remaining unallocated proceeds. The reports also align expenditures with the framework's stated environmental objectives.

Impact Reports: Impact reports highlight key outcomes such as significant reductions in carbon emissions, contributing to the fight against climate change, and substantial energy savings achieved through the implementation of sustainable practices and technologies. Additionally, they emphasize improvements in public health resulting from cleaner air, better water management, and reduced exposure to environmental pollutants. The report also details secondary benefits, such as job creation in green industries, enhanced community well-being, and progress toward achieving long-term sustainability goals. By presenting detailed data and insights, the impact report will serve as a transparent tool for stakeholders to evaluate the effectiveness and broader implications of the projects.

While 1st allocation report was brought in 2024, the first impact report for FY 2022-23 is presented herewith.

Para 2.2 of the Framework for Sovereign Green Bonds states that:

"*Impact of projects in respect of reduction in carbon intensity and environmental benefits will also be assessed and reported separately by GFWC.*"

while Paragraph 2.4 of the Framework states that

"*The annual report is expected to consist of the following*: ….

g) Expected impact of the project in quantitative indicators (to the extent possible) indicating reduction in carbon intensity, other environmental benefits and, where possible, social co-benefits."

There are various metrics that have been designed to help gauge the impact of the projects that have been allocated funds. The metrics vary based on the category to which the project belongs to. Green Bond categories encompass various sustainable initiatives, each with specific metrics[1] crucial for assessing their environmental and social impacts.

In Renewable Energy, metrics like installed capacity and emissions avoided help gauge effectiveness and social benefits. Energy Efficiency focuses on installations and savings to measure reduced environmental footprints. Sustainable management highlights the conservation of critical ecosystems. Clean Transportation metrics, such as emissions avoided and infrastructure development, reflect improvements in urban mobility and air quality. Sustainable Water projects address water efficiency and accessibility. Green Buildings are evaluated on certification and energy performance. Selecting the right projects with accurate metrics is vital to ensure meaningful contributions to sustainability goals.

3.6. External Review

An external review process enhances the credibility and robustness of the Sovereign Green Bond Framework. The framework has received a Second Party Opinion from CICERO, which rated it as "Medium Green" with a "Good" governance score. Additionally, post-issuance verification by an independent external reviewer provides annual assessments of the fund allocation's compliance with the framework criteria.

[1] For detailed information on the metrics, refer to the Annexure 1

4 Overview of the Issuances and Allocation of proceeds (FY 2022-23):

The issuance of the Sovereign green bond has helped the Indian government in tapping financial resources from both the public and the private sector for projects that will make conscious efforts to aid in making the upcoming infrastructure more resilient, sustainable and eco-friendly. Through the issuance of the bond in FY2022-23, a total of ₹16,000 crore has been raised, which has been allocated to help provide the nation with greener, cleaner modes of transportation and efficient and renewable sources of energy. This amount has been raised in two tranches issued in January and February 2023, with each totalling ₹8,000 crores. Each tranche consisted of bonds with maturity periods of five and ten years, each valued at ₹4,000 crore.

Issuance Timeline	1st Tranche - Jan 2023[2]		2nd Tranche - Feb 2023[3]	
Bond Tenor	**5-Year**	**10-Year**	**5-Year**	**10-Year**
Maturity Date	27th Jan 2028	27th Jan 2033	27th Jan 2028	27th Jan 2033
Notified Amount (₹ crore)	4000	4000	4000	4000
Competitive Bids Received	96	170	62	91
Competitive Bids Accepted	32	57	24	24
Cut-off Yield	7.10%	7.29%	7.23%	7.30%
Weighted Average Price	100	100	99.46	99.95
Weighted Average Yield	7.10%	7.29%	7.23%	7.30%
Listing	Sovereign Green Bond Indices National Stock Exchange (NSE), India			

These bonds were issued via a Uniform Price Auction, with 5% reserved for retail investors. Recognized as eligible investments for the Statutory Liquidity Ratio (SLR) and repurchase transactions (Repo), they are also qualified for secondary market trading. Further, these securities are designated under the Fully Accessible Route (FAR), allowing non-residents to invest in government securities. Robust demand marked the auctions, with bid-to-cover ratios of 3.04 for the 5-year bonds and 3.93 for the 10-year bonds. Cut-off yields for the bonds

[2] Sovereign Green Bonds Full Action Results – 25th Jan 2023, RBI
[3] Sovereign Green Bonds Full Auction Results – 9th Feb 2023, RBI

were below the market rates of conventional government securities, indicating strong investor confidence and setting a favourable precedent for future issuances.

The proceeds from India's initial SGrBs issuance, totalling ₹16,000 crore, were directed toward projects meeting the criteria outlined in the Sovereign Green Bond Framework, particularly within the categories of Renewable Energy, Clean Transportation, and Sustainable Management of Living Natural Resources and Land Use. These allocations are aligned with the government's overarching goals of climate change mitigation and natural resource conservation.[4]

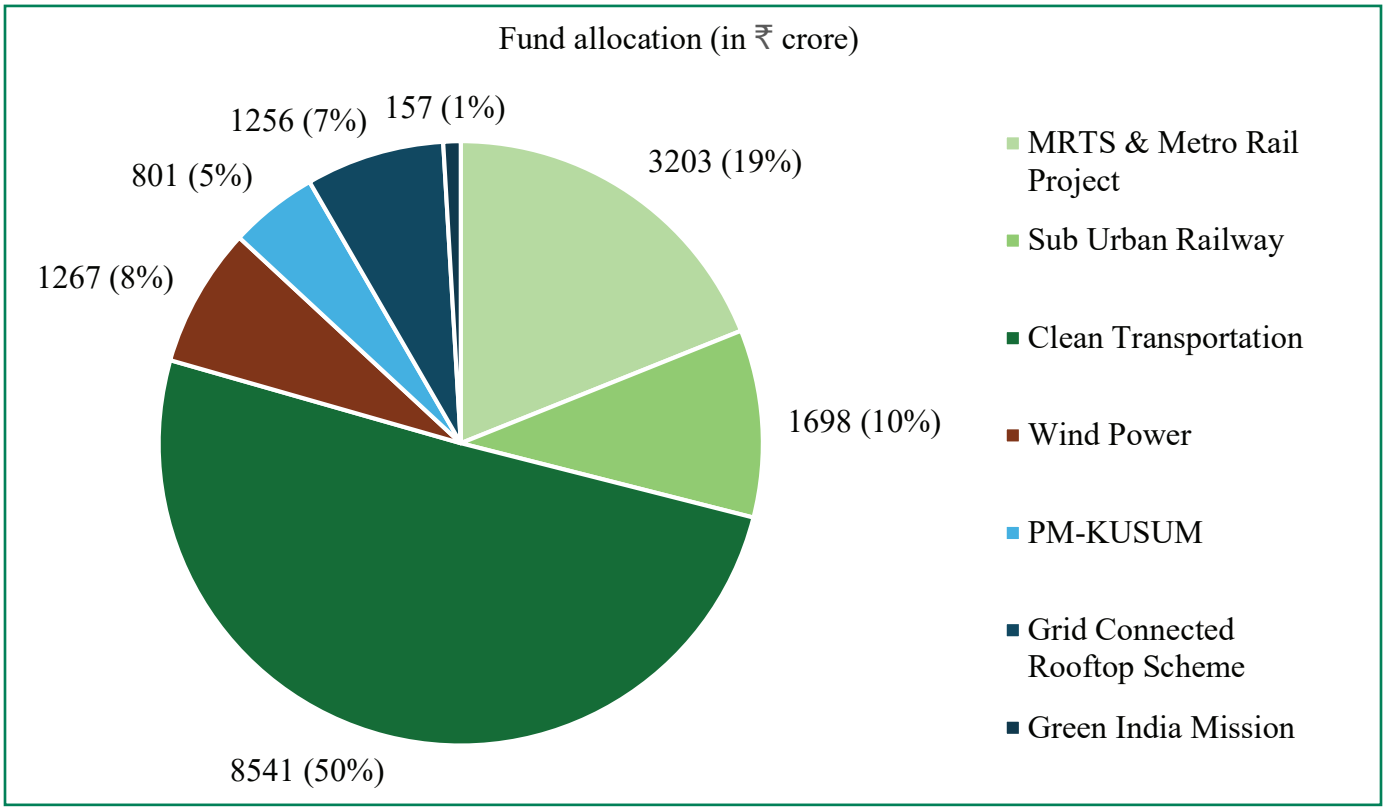

Figure 3: Fund allocation[4]

[4] For the detailed allocations, refer to the Annexures

5 Impact Assessment

The inaugural issuance of Sovereign Green Bonds (SGrBs) by the Government of India has enabled significant progress in advancing nation's environmental and social objectives, reinforcing its commitment to sustainable development and climate action as outlined in the Nationally Determined Contributions (NDCs). The impact assessment aligns with India's Sovereign Green Bond Framework as well as International Capital Market Association (ICMA) Green Bond Principles and follows the Harmonised Framework for Impact Reporting, incorporating its core principles and recommended practices[5]. Impact indicators and metrics in India's Sovereign Green Bond reporting vary according to the expenditure type, sectoral relevance, data availability, and applicable methodologies.

The following section provides detailed reporting for each project funded through the proceeds of green bonds and showcases the outcomes achieved.

5.1 Clean Transportation

The government's commitment to fostering green and eco-friendly public transportation is evident through substantial funding directed toward transformative projects. This strategic focus includes the development of Energy-efficient three-phase electric locomotives and the construction of two pivotal metro railway lines. The first line spans 32 kilometres, connecting Dum Dum Airport to New Garia via Rajarhat, while the second line covers 16.72 kilometres between Joka and Binoy Badal Dinesh Bagh via Majerhat, with an extension to Diamond Park. Nine MMRTS and Metro rail projects have also been funded. These initiatives are designed to significantly enhance urban transit options. Beyond improving mobility, they aim to create a sustainable ecosystem by drastically reducing emissions intensity, and reducing the dependence on fossil fuels. The projects promise not only environmental benefits but also a positive societal impact by increasing employment opportunities and improving access to sustainable public transport systems.

5.1.1 Production of Energy Efficient Three Phase Electric Locos

Table 1: Production of Energy Efficient Three Phase Electric Locos

	Value*
Scheme Name	Central Sector
Name of the Project	Production of energy efficient three phase electric locos

[5] Data for this assessment was provided by the respective ministries.

Table 1: Production of Energy Efficient Three Phase Electric Locos	
	Value*
Budget item	36.02 (Demand No.- 85)
Budget Allocation for FY 22-23	₹8541/- crore
Funds utilised for FY 22-23	₹8541/- crore
Funding share	GBS
Green Bond Project Category	Clean Transportation
**Details filled in as applicable*	
Clean Transportation	
Number of people who use new ecological public transport	Contribution to enhancing freight loading from 1,512 MT in 2022-23 to 1,591 MT in 2023-24.
Number of new electric locomotives manufactured / Kilometres of rail lines commissioned	SGF played a significant role in the induction of 1,086 three-phase electric locomotives into the Indian Railways fleet during FY 2022-23.
Annual GHG emissions avoided in tons of CO_2 emission	Contribution to saving 7,45,11,825 tonnes of CO_2 emissions through freight transportation from April'2022 to Nov'2024.

5.1.2 Dum Dum Airport (Jai Hind) - New Garia (Kavi Subhas) via Rajarhat – Construction of metro railway (32 kms)

Table 2: Dum Dum Airport (Jai Hind) - New Garia (Kavi Subhas) via Rajarhat	
	Value*
Scheme Name	Central Sector
Name of the Project	Dum Dum Airport (Jai Hind)-New Garia (Kavi Subhas) via Rajarhat – Construction of Metro Railway (32 Km)
Budget item	36.03 (Demand No.- 85)
Budget Allocation for FY 22-23	₹904/- crore
Funds utilised for FY 22-23	₹904/- crore
Funding share	MAC
Green Bond Project Category	Clean Transportation
**Details filled in as applicable*	
Clean Transportation	
Number of people who use new ecological public transport	7.1 lakh daily ridership estimated for 2035.

Table 2: Dum Dum Airport (Jai Hind) - New Garia (Kavi Subhas) via Rajarhat	
	Value*
Number of km of new electric train/road lines created/ maintained	SGF contributed to the commissioning of 5.4 Km section from Kavi Subhash to Hemanta Mukhopadhyay in March'2024.
Annual GHG emissions avoided in tons of CO_2 emission	7482 MT (Estimated)
Air Quality improvement (PPM)	Pollution reduction (tons/year): Y2025: CO-319.14; HC-296.52; Nox-489.07; PM-4.62; CO_2-69815 Y2035: {CO-456.12; HC-426.19; Nox-703.21; PM-6.20; CO_2-99799}as per DPR (RITES) 2011
Employment generated – number of jobs created/supported	583761 no. of job anticipated by 2025 {(as per DPR (RITES) 2011}
Number of MSMEs supported	8 Nos (approx)
Number of people with access to sustainable public transport systems	7.1 lakh daily ridership estimated for 2035

5.1.3 Joka-Binoy Badal Dinesh Bagh via Majerhat – Construction of Metro Railway (16.72 kms) including material modification for extension from Joka-Diamond Park (Phase-I)

Table 3: Joka-Binoy Badal Dinesh Bagh via Majerhat	
	Value*
Scheme Name	Central Sector
Name of the Project	Joka-Binoy Badal Dinesh Bagh via Majerhat – Construction of Metro Railway (16.72 Km) including material modification for extension from Joka-Diamond Park (Phase-I)
Budget item	36.04 (Demand No.- 85)
Budget Allocation for FY 22-23	₹794/- crore
Funds utilised for FY 22-23	₹794/- crore
Funding share	MAC
Green Bond Project Category	Clean Transportation

Table 3: Joka-Binoy Badal Dinesh Bagh via Majerhat	
	Value*
**Details filled in as applicable*	
Clean transportation	
Number of people who use new ecological public transport	3.8 lakh daily ridership estimated for 2035.
Number of km of new electric train/road lines created/ maintained	SGF contributed to the commissioning of 6.5 Km section from Joka to Taratala (Phase-1) in Dec. 2022 and 1.25 Km section from Taratala to Majerhat (Phase-2) in March'2024.
Annual GHG emissions avoided in tons of CO_2 emission	7538 MT (Estimated)
Air Quality improvement (PPM)	Pollution reduction (tons/year): Y2025; (CO-319.14; HC-296.52; Nox-489.07; PM-4.62; CO_2-69815) Y2035: {CO-456.12; HC-426.19; Nox-703.21; PM-6.20; CO_2-99799} as per DPR
Employment generated – number of jobs created/supported	8,27,282 no. of jobs are anticipated by 2025 & 9,95,315 no. of jobs are anticipated by 2035
Number of MSMEs supported	8 Nos (approx.)
Number of people with access to sustainable public transport systems	3.8 Lakh daily ridership estimated for 2035

5.1.4 MRTS and Metro Rail Projects

Table 4: MRTS and Metro Rail Projects	
	Value*
Ministry	MoHUA
Scheme Name	MRTS and Metro Rail Projects
Name of the Project	9 Projects
Budget Allocation for FY 22-23	₹3202.56 crore
Funds utilised for FY 22-23	₹3202.56 crore
Green Bond Project Category	
**Details filled in as applicable*	Clean Transportation
Clean Transportation	

Table 4: MRTS and Metro Rail Projects	
	Value*
Number of Kilometres of new Metro Rail lines commissioned	45.71 km
Number of metro rail / RRTS projects being funded	9

5.2 Renewable Energy

It is important for a nation as large as India to explore the cleaner alternative sources of energy that have lower emission and address air pollution and climate change. It has the potential to create jobs and investment opportunities, while enhancing energy security by reducing reliance on imported fossil fuels. In light of these potential benefits, significant amount of proceeds have been allocated to the projects that accelerate the process of utilizing renewable energy sources like wind power, solar energy etc.

Under this sector, the projects that have received funds from the sovereign green bond are **PM-KUSUM scheme, Generation based incentive Scheme for Wind Power and Grid connected rooftop scheme**[6]. Under these schemes 14,920.5 MW renewable energy capacity was installed with the potential to reduce 20.99 million tonnes of CO_2e and reduction of about 81.48 million litres of diesel consumption.

5.2.1 Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM)

The PM-KUSUM Scheme was launched by the Government in March 2019 to provide financial support to the farmers for installation of standalone solar pumps and solarization of existing grid-connected agriculture pumps, and to provide the farmers an opportunity to become solar entrepreneurs by installing solar power plants on their barren/ fallow/ agriculture land. The Scheme consists of three components:

- **Component-A:** 10,000 MW of Decentralized Ground Mounted Grid Connected Solar Power Plants.
- **Component-B:** Installation of 14 lakh standalone Solar Powered Agriculture Pumps.
- **Component-C:** Solarisation of 35 Lakh Grid-connected Agriculture Pumps.

All three components combined; the scheme aims to add a solar capacity of 34.8

[6] For detailed information of the schemes, refer to the Annexures

GW with total central financial of ₹ 34,422 crore. The timeline for implementation of the Scheme has been extended till 31.3.2026.

Table 5: PM-KUSUM (Kisan Urja Suraksha evam Utthaan Mahabhiyan) Scheme

	Value*
Ministry	Ministry of New and Renewable Energy (MNRE)
Scheme Name	PM-KUSUM
Name of the Project	
Budget item	
Budget Allocation for FY 22-23	₹ 1325 crore (RE)
Funds utilised for FY 22-23	₹ 801.36 crore
Green Bond Project Category	Renewable Energy
**Details filled in as applicable*	—
Renewable Energy	
Installed renewable energy capacity (in MW)	613.63 MW
Annual renewable energy generation (in MWh)	9,81,801[@]
Annual GHG emissions avoided in tons of CO_2e#	0.80 million tons[#]
Number of households benefitted	1,18,578 farmers
Number of under-privileged households benefitted	NA
Number of jobs created (As per CEEW-NRDC report 2022)	24.5 job-years/MW
Any other indicators	—
Diesel Saved	81.48 million litres[@@]

[@]estimated generation@ 18.3% PLE of 1.6 Million Units/MW/Annum
[#]estimated CO2 mitigation –average emission factor of 0.81 ton CO2/MWh
[@@]For solar pump - assumption of average use of 4.6 litres of diesel per day; utilization @150 days per annum

5.2.2 Generation Based Incentive (GBI) Scheme

The GBI Scheme was available for the wind projects commissioned till 31 March 2017. A total of 708 wind power projects with a total capacity of 13.7 GW have benefitted from the scheme throughout its implementation period. Now the scheme is closed, and the Ministry is disbursing committed liability under the scheme.

Under the GBI scheme (in place from 2009-2012), GBI is being provided to wind electricity producers (@ ₹ 0.50 per unit of electricity fed into the grid) for a period not less than 4 years and a maximum period of 10 years in parallel

with accelerated depreciation on a mutually exclusive manner, with a cap of ₹ 62 lakhs per MW (under GBI-I scheme applicable during 09.12.2009-31.03.2012) and with a cap of ₹100 lakhs per MW (under GBI-II scheme applicable during 01.04.2012 – 31.03.2027).

Table 6: Generation based incentive Scheme for Wind Power

	Value*
Ministry	Ministry of New and Renewable Energy
Scheme Name	Wind GBI Scheme
Name of the Project	Wind power projects
Budget item	Grid Interactive Wind Power
Budget Allocation for FY 22-23	₹ 1413 Crores (RE)
Funds utilised for FY 22-23	₹ 1266.96 Crores
Green Bond Project Category	Renewable Energy
**Details filled in as applicable*	
Renewable Energy	
Installed renewable energy capacity (in MW)	13700
Annual renewable energy generation (in MWh)	2,40,00,000 estimated
Annual GHG emissions avoided in tons of CO_2e#	19.44 million ton of CO_2e
Number of households benefitted	NA
Number of under-privileged households benefitted	NA
Number of jobs created (as per CEEW-NRDC report 2022)	1.27 job-years/MW

Estimated considering weighted average emission factor of 0.81 ton CO_2/MWh

5.2.3 Phase II of The Grid Connected Rooftop Solar Programme

Ministry of New and Renewable Energy is implementing Rooftop Solar Programme Phase II wherein RTS capacity aggregating 4000 MW by 2022 was targeted in residential sector through provision of Central Financial Assistance (CFA) out of the overall target of 40000 MW by 2022. Considering the Covid-19 pandemic conditions and other factors the Programme period has been extended till 31.3.2026. For individual households, CFA upto 40% of the benchmark cost is provided for RTS plants upto 3 kW capacity and upto 20% for RTS plants of capacity beyond 3 kW and up to 10 kW. For Group Housing Societies/ Residential Welfare Associations (GHS/RWA), CFA is limited to 20% of the benchmark cost

for RTS plants of capacity up to 500 kW used for supply of power to common facilities. Based on the proposal received from various Electricity Distribution utilities of various States /UTs.

Table 7: Grid connected rooftop scheme

	Value*
Ministry	MNRE
Scheme Name	Phase-II of RTS Programme
Name of the Project	Phase-II of RTS Programme
Budget item	-
Budget Allocation for FY 22-23 (RE)	₹ 2800 crores
Funds utilised for FY 22-23	₹ 1256 crores
Green Bond Project Category	Renewable Energy
**Details filled in as applicable*	
Renewable Energy	
Installed renewable energy capacity (in MW)	606.9
Annual renewable energy generation (in MWh)	9,03,795 estimated
Annual GHG emissions avoided in tons of CO_2e#	0.732 million tons of CO_2e
Number of households benefitted	149491 households
Number of under-privileged households benefitted	NA
Number of jobs created (as per CEEW-NRDC report 2022)	24.72 job-years/MW

Estimated considering weighted average emission factor of 0.81ton CO_2/MWh

5.3 Sustainable Management of Living Natural Resources and Land use

Sustainable management of living resources and land use is a critical approach aimed at balancing ecological health, economic needs, and social well-being. It is aimed at the responsible use of natural resources, such as forests, fisheries, and wildlife, ensuring they are conserved and utilized in a way that maintains their viability for future generations.

Sustainable management emphasizes the integration of agricultural practices, urban development, and conservation efforts. To recognize and support these efforts, the **Green India**[7] **Mission** has been funded by the proceeds collected through the issuance of the sovereign green bonds.

[7] For detailed information of the schemes, refer to the Annexures

5.3.1 Green India Mission

Table 8: Green India Mission	
	Value*
Ministry	Ministry of Environment, Forest and Climate Change
Scheme Name	National Mission for a Green India
Name of the Project	Green India Mission
Budget item	
Budget Allocation for FY 22-23	₹188.00 crores
Funds utilised for FY 22-23	₹157.31 crores
Green Bond Project Category	Sustainable management of natural resources
**Details filled in as applicable*	
Sustainable management of natural resources	
Area of land or ocean conserved/ recovered (km^2)	1707.45 sq. km (recorded) (from 2015-16 till Date) Afforestation and Eco-restoration is an ongoing activity with the area of 1707.45 sq.km being brought under restoration interventions.
Area (km^2) of marine/forest reserves under active monitoring	
Linked Sustainable Development Goals	1. SDG 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture) 2. SDG 6 (Ensure availability and sustainable management of water and sanitation for all) 3. SDG 15 (Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss)

Estimated considering weighted average emission factor of 0.81 ton CO_2/MWh

Green India Mission

National Mission for a Green India (GIM) is one of the eight Missions outlined under the National Action Plan on Climate Change. It aims at protecting, restoring, and enhancing India's forest cover and responding to Climate Change by undertaking plantation activities in the forest and non-forest areas. It recognizes the vital impact of forestry on ecological sustainability, biodiversity conservation and food-, water- and livelihood-security and aims to safeguard the biological resources and associated livelihoods against the threat of adverse climate change. Landscapes/Intervention areas under the Mission are selected based on their vulnerabilities and accordingly eco-restoration activities for their restoration are undertaken. The mission was initially launched in 2014 and has been extended to 2021-22 to 2029-30. This project strives to enhance carbon sinks in sustainably managed forests and other ecosystems and enable adaptation of vulnerable species/ecosystems to the changing climate. This is being done by increasing forest/tree cover with improved quality of forests on forest/non-forest lands, improving ecosystem services like biodiversity, carbon sequestration and hydrological services along with provisioning services like fuel, fodder, and timber and non-timber forest produces. The project also promotes adaptation of forest-dependent communities by stimulating increase in forest-based livelihood income of households living in and around the forests. GIM activities were started in the FY 2015-16. So far, a sum of ₹ 962.87 crore have been released to seventeen States and one union territory for creation of plantation and undertaking eco-restoration interventions over an area of 170745 ha.

Annexure I	
Green Bond Category	**Examples of potential metrices**
Renewable Energy	• Installed renewable energy capacity (in MW) • Annual renewable energy generation (in MWh) • Annual GHG emissions avoided in tons of CO_2e • Social Co-Benefits (wherever possible to quantify) • Number of households benefitted • Number of under-privileged households benefitted • Number of jobs created
Energy Efficiency	• Number of energy efficiency equipment and appliances installed • Annual energy savings (in MWh) • Annual GHG emissions avoided in tons of CO_2 emission
Sustainable management of natural resources	• Area of land or ocean conserved/recovered (km^2) • Area (km^2) of marine/forest reserves under active monitoring
Clean transportation	• Number of people who use new ecological public transport • Number of km of new electric train/road lines created/maintained • Annual GHG emissions avoided in tons of CO_2 emission • Air Quality improvement (PPM) • Employment generated – number of jobs created/ supported • Number of MSMEs supported • Number of people with access to sustainable public transport systems

Annexure I	
Green Bond Category	**Examples of potential metrices**
Sustainable Water	• Volume of water collected and/or treated (m^3) • Increased water efficiency of systems (% reduction in water consumption/loss) • Number of households that have access to new potable water supply
Green Building	• Level of certification by property • Annual energy savings (in MWh) • Annual GHG emissions avoided in tons of CO_2e

Annexure II

Breakdown of Allocation in ₹ Crore

SN	Scheme/ Programme	Project Name/ Description	Funds Utilised	Type of Expenditure*	Project Implementation Status#
1.	**Clean Transportation**				
i.	MRTS and Metro Projects	Delhi Metro Rail Project Phase-IV (3 Priority Corridors)	1,025	Equity	Under Implementation
ii.		Patna Metro Rail Project	348	Equity	Under Implementation
iii.		Bangalore Metro Rail Project Phase - 2A &2B	506	Equity	Under Implementation
iv.		Ahmedabad Metro Rail Project Phase-1 & 2	87	Equity	Under Implementation
v.		Surat Metro Rail Project	274	Equity	Under Implementation
vi.		Bhopal Metro Rail Project	43	Equity	Under Implementation
vii.		Indore Metro Rail Project	200	Equity	Under Implementation
viii		Kanpur Metro Rail Project	416	Equity	Under Implementation
ix.		Agra Metro Rail Project	304	Equity	Under Implementation
x.	Suburban Railways	Joka - Binoy Badal Dinesh Bagh via Majerhat – Construction of Metro Railway (16.72 Km) including material modification for extension from Joka-Diamond Park (Phase-I)	794	Capex	Under Implementation

Annexure II

Breakdown of Allocation in ₹ Crore

SN	Scheme/ Programme	Project Name/ Description	Funds Utilised	Type of Expenditure*	Project Implementation Status#
xi.		Dum Dum Airport (Jai Hind) - New Garia (Kavi Subhas) via Rajarhat – Construction of Metro Railway (32 Km)	904	Capex	Under Implementation
xii.	Clean Transportation	Production of energy efficient three-phase electric locos – 657 nos. electric locos	8541	Capex	Under Implementation
Sub-total (₹ crore)			**13442**		
2.	**Renewable Energy**				
i.	Generation based incentive Scheme for Wind Power	Wind Energy Projects	1267	Subsidy	Under Implementation
ii.	PM-KUSUM (Kisan Urja Suraksha evam Utthaan Mahabhiyan) Scheme	• 10,000 MW of decentralized ground mounted grid connected solar power plant • Installation of 20 lakh standalone Solar Powered Agriculture Pumps • Solarization of 15 lakh Grid-connected Agriculture Pumps	801	Grant-in Aid	Under Implementation

Annexure II					
Breakdown of Allocation in ₹ Crore					
SN	**Scheme/ Programme**	**Project Name/ Description**	**Funds Utilised**	**Type of Expenditure***	**Project Implementation Status#**
iii.	Grid connected rooftop scheme	Phase-II of Grid connected Rooftop Solar (RTS) programme	1256	Grant- in Aid	Under Implementation
Sub-total (₹ crore)			**3324**		
2.	**Sustainable Management of Living Natural Resources and Land use**				
i.	Green India Mission	Enhancing quality of forest cover and improving ecosystem services	**157**	Grants released to the States for taking up the Eco-restoration activities as per the approved Annual Plan of Operations for the particular year In addition to the administrative costs of the Mission Directorate	Under implementation
Sub-total (₹ crore)			**157**		
Sub-total (₹ crore)			**16,923**		

Note: In FY 2022-23, Government raised ₹16,000 crore through Sovereign Green Bonds (SGrB). Actual amount spent under the schemes eligible for financing through SGrB is ₹16,923 crore. Expenditure of ₹923 crore over and above ₹16,000 crore is incurred from general revenues of the Government