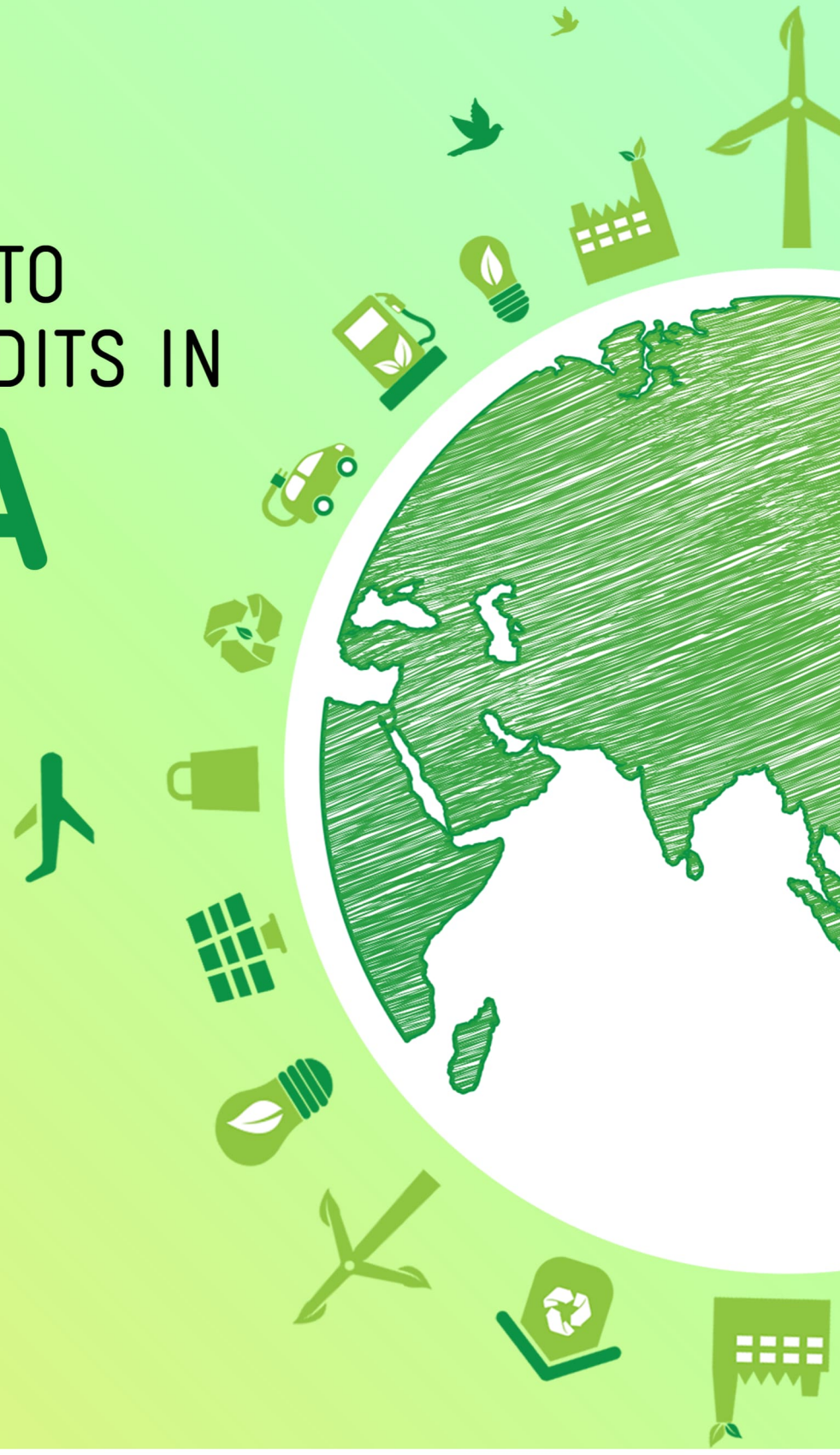
Government of India

Ministry of Environment, Forest and Climate Change

APPROACH TO GREEN CREDITS IN INDIA



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On behalf of:

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

of the Federal Republic of Germany

Approach to Green Credits in India

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Acronyms and Abbreviations

AQI	Air Quality Index
BEE	Bureau of Energy Efficiency
BS VI	Bharat Stage 6 (Bharat Stage Emissions Standards)
CAGR	Compound Annual Growth Rate
CFC	Chlorofluorocarbon
COP25	25th Conference of Parties
COVID-19	Coronavirus disease 2019
CPCB	Central Pollution Control Board
CSO	Civil society organisations
CSR	Corporate Social Responsibility
DC	Direct Consumer
ECBC	Energy Conservation Building Code
EMS	Environmental Management System
ETP	Effluent Treatment Plant
ETS	Emissions Trading Scheme
EU	European Union
EV	Electric vehicle
e-waste	Electronic waste
FSC	Forest Stewardship Council
FY	Fiscal year
GC	Green Credit
GCC	Green Credit Council
GDP	Gross Domestic Product
GHG	Greenhouse gas
GPCB	Gujarat Pollution Control Board
GPDP	Gram Panchayat Development Programmes
GRIHA	Green Rating for Integrated Habitat Assessment
HFC	Hydrofluorocarbon
HH	Household
HVAC	Heating, ventilation and air conditioning
IEA	International Energy Agency

IEP	International Energy Programme
IGBC	Indian Green Building Council
ISO	International Organisation for Standardisation
IT	Information Technology
kg	Kilogram
KW	Kilowatt
KYC	Know Your Customer
LED	Light emitting diode
LEED	Leadership in Energy and Environment Design
LPG	Liquefied petroleum gas
m3	Cubic meter
MoEFCC	Ministry of Environment, Forests and Climate Change
MoHUA	Ministry of Housing and Urban Affairs
MRT	Mass rapid transit
MRV	Measurement, Reporting and Verification
MSE-CDP	Micro & Small Enterprises Cluster Development Programme
MSME	Micro, Small and Medium Enterprise
mtoe	Million tonnes of oil equivalent
NAPCC	National Action Plan for Climate Change
NDC	Nationally Determined Contributions
NGO	Non-governmental organisation
NMEEE	National Mission for Enhancing Energy Efficiency
NOx	Nitrogen oxides
NSS	National Sample Survey
PAT	Perform, Achieve, Trade
PET	Polyethylene terephthalate
PM	Particulate Matter
PMO	Prime Minister's office
PV	Photovoltaic
RE	Renewable energy
REC	Renewable Energy Certificate
RWA	Resident Welfare Association
RWH	Rainwater harvesting
SDG	Sustainable Development Goals
TADF	Technology Acquisition and Development Fund
tCO2	Tonnes of carbon dioxide
tCO2e	Tonnes of carbon dioxide equivalent
TERI	The Energy and Resources Institute
TPD	Tonnes per day
TWh/yr	Terawatt hour per year
ULB	Urban Local Body
UWP	Uniform Web Portal
WCC	Work Completion Certificate
ZDHC	Zero Discharge of Hazardous Chemicals

Foreword

मंत्री
पर्यावरण, वन एवं जलवायु परिवर्तन,
सूचना एवं प्रसारण और
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MINISTER
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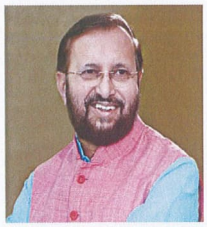

FOREWORD

I am pleased to note that a report on 'Approach to Green Credits in India' has been prepared by Ministry of Environment, Forest and Climate Change at a time when the world is grappling with the twin challenge of climate change and COVID 19. Sustainable lifestyles gained traction under the leadership of Shri Narendra Modi, Hon'ble Prime Minister of India at COP 21 in Paris. With India's efforts, it found a place in the preamble of Paris Agreement and since then have become an important part of the climate change discourse.

The western lifestyle practices have become associated with overproduction and overconsumption and therefore are unsustainable. The impacts of the present day lifestyles are putting a lot of pressure on the natural resources and have adverse environmental, economic, social and health effects. The severity of the lifestyles on the planet is already being felt.

Indian ethos and values promulgate simple living, respect for life and reverence of nature. Indian traditional lifestyle discourages extravagant and wasteful consumption. India's heritage embraces nature, and environmental consciousness is deeply rooted in its traditions. People learnt to live in harmony with nature. However, irresponsible pursuit of materialistic lifestyle is slowly eroding these values resulting in unsustainable consumption of natural resources. The challenge today is to reconcile relative influence of both environmental concern and development simultaneously.

।। प्लास्टिक नहीं, कपड़ा सही ।।

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India has made lifestyle changes an integral part of its solution to climate change in cognizance with its population and economic growth. India's Nationally Determined Contribution (NDC) has a separate goal on Lifestyles 'To put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation. India wishes to propagate a sustainable lifestyle which is based on the principle of 'needs based consumption'. The report highlights opportunities for action towards this outcome.

We as responsible global citizens need to volunteer sustainability. I hope the range of options provided in this report will provide a sound basis for developing a robust framework for operationalizing the Green Credits in India.

I congratulate all those involved in the preparation of the report.

Date: 07.12.2020

(Prakash Javadekar)

आर पी गुप्ता
R P Gupta

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MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

MESSAGE

India's economic growth is guided by key concern for balancing overall development with sustainability. India faces a multitude of challenges arising as a result of climate change and environmental degradation. As a response to this, India has committed itself to encouraging sustainable lifestyles and clean economic development. Sustainable living as a concept and a practice is at the heart of its climate change efforts. India is emphasising greater engagement with private sector, civil society and making climate change a people's movement, to motivate a sharing economy and other collaborative consumption models. Indian society already demonstrates several examples of sustainable models of living at the local level. Indian Industry is also at the forefront in delivering transformational solutions on climate challenge and sustainable development.

Shri Narendra Modi, the Hon'ble Prime Minister of India stated at United Nations General Assembly, "We can achieve the same level of development, prosperity and well-being without necessarily going down the path of reckless consumption. It doesn't mean that economies will suffer; it will mean that our economies will take on a different character". This requires new thinking and innovative approaches. The green credits programme presents a menu of options for different sections of society that can motivate behavioural change. It is a step towards creating a just and sustainable society that presents equitable access to resources and opportunities to all.

I congratulate the Climate Change team in the ministry and our partners for their dedicated efforts to have developed this exhaustive report along-with a comprehensive framework that can be utilised to operationalise the programme at a national scale. I am confident that this step will lay the foundation for mainstreaming sustainability within the public conscience.

[R P Gupta]

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PREFACE

"Green credits" have been conceptualized as a means to drive action and stimulate greater public engagement on climate change and environmental issues. It is envisaged that an incentive-based mechanism will have several advantages over traditional regulatory approaches as it would encourage stakeholders to explore innovative and low-cost solutions to make environmentally efficient choices with less requirement for oversight. Thereby, the green credits would help improve the environmental effectiveness of regulatory approaches while reducing the compliance costs.

The report on 'Approach to Green Credits in India' presents the framework for decentralised action that can mainstream climate change action, build adaptive capacity and improve the overall state of the environment by increasing energy and resource efficiency, promoting resource circularity in the economy, encouraging environmental conservation, and stimulating investments in sustainable infrastructure and technologies through public and private stakeholder action.

The report proposes some green innovative ideas and suggests incentive and institutional structures to support it. The appropriate mix of monetary and non-monetary incentives like tax credits, rebates, refunds, and recognition awards, public announcement and certificates can be considered by the government.

Based on the premise that high levels of resource consumption do not necessarily produce high levels of well-being and that it is possible to produce high well-being without excessive consumption of the Earth's resources, the report highlights that there are different routes to achieving comparable levels of well-being. The emphasis is on the need for increasing responsibilities and greater cooperative efforts by all stakeholders for shaping a sustainable and climate sensitive society.

I thank GIZ-India for supporting the preparation of this report as part of the Indo-German Bilateral Cooperation and EY India for their technical inputs.

Date : 07.12.2020

(Ravi S. Prasad)

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Acknowledgement

The Ministry of Environment, Forest and Climate Change acknowledge the contributions made by individuals and institutions in the preparation and publication of the report on "Approach to Green Credits in India". The Ministry would also like to acknowledge and thank GIZ which provided funding through Indo-German bilateral cooperation project for the report preparation.

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Executive Summary

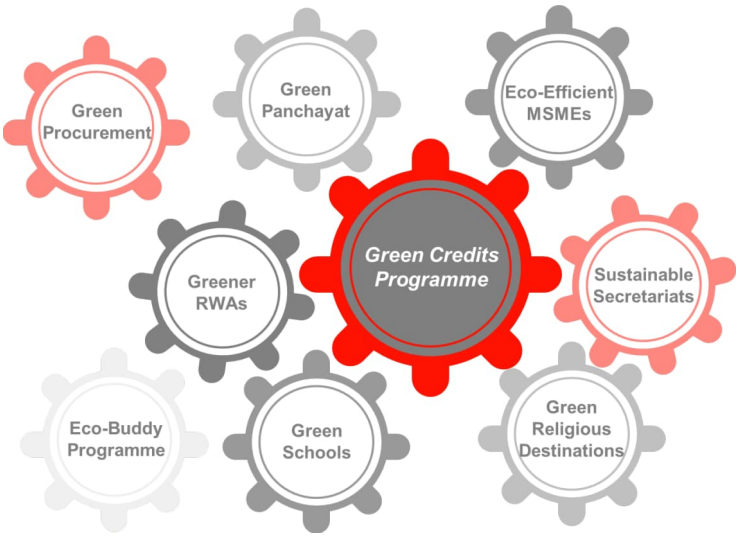
Unabated over-consumption of natural resources has had, among various other triggers, significant negative environmental impact. The macro level effect of mass scale environmental deterioration is causing the government, corporates and individuals to elevate the concept of 'going green' to the top of their agenda. While the sustainability focus is voluntarily being adopted across stakeholders, a balanced system revolving around incentives and disincentives is effective to foster accelerated climate action among all, in particular citizens. Incentive mechanisms in the form of monetary and non-monetary instruments such as green incentives through tax credits, rebates, refunds and non-monetary incentives such as recognition of achievements highlighted on national platforms, awarding of 'green' or 'eco' labels to participating institutions, and certifications also play a key role in promoting sustainable action by stakeholders.

With this overarching idea, the Green Credits Programme is conceptualised to help mitigate climate change, build adaptive capacity and improve the overall state of the environment by increasing energy and resource use efficiency, encouraging environmental conservation among other measures. It is proposed to include a set of economic instruments for verifiable climate and environmental action to attempt at bringing in behavioural shift in consumption patterns for a just and sustainable future.

This report presents a synthesis of the proposed national green credits programme, its key features, the approach for the selection of eight core ideas to mainstream the programme, as well as, the institutional structure for operationalising it.

It conceptualises and attempts at defining green credit to motivate a 'green' culture and ethos in society, targeting varied groups of key stakeholders and bringing about a sustained behavioural change that aids in the transition to a green economy. Within the programme, eight innovative greening ideas have been proposed which capture various approaches to combat climate change and environmental degradation. The study builds on some global and national case studies on incentivising green action that reveal some of the key parameters and best practices to successfully implement programme akin to green credits. Key takeaways from the case study analysis have been utilised to develop proposed ideas with the potential to bring about a green wave of collective action in India through the Green Credits Programme.

The essence of the Green Credits Programme lies within the proposed ideas or incentive schemes that are proposed to be implemented across the



country. The green incentives for the programme were selected based on various criteria and principle for design and implementation in the national context, as well as, their reach to wide swathes of stakeholders. The reward structure for the selected ideas illustrates both monetary and non-monetary instruments that can be adopted. The diagram below presents the eight proposed ideas which are suggested to be considered for operationalising the Green Credits Programme in India.

For each idea or incentive scheme within the programme, a variety of green actions are recommended to be undertaken to earn 'Green Credits', which can be further expanded or altered . A 'Green Credit' is, essentially, a singular unit of an incentive provided for an action or activity delivering a positive impact to the local and/ or global environment. For an illustrative quantum of the intended positive impact of a green activity, the stakeholders that meet the pre-set criteria of categorization receive some number of green credits. These green credits, once accumulated, may make the stakeholders eligible for receiving the recognition proposed under the scheme. Within this programme, rebates on utility bills, cash prizes, certification, and recognition on national platforms are some of the rewards that can be considered.

Green deeds like water conservation, rainwater harvesting, the use of renewable energy sources like solar panels, green cover development and waste composting, adoption of cycling have been identified as being user friendly having high effectiveness. Sample cost-benefit analysis of some activities like rainwater harvesting and organic composting in the study reveals the large cost and resource savings that can be obtained with large-scale adoption of one or more of high-impact green activities by multiple stakeholders. These activities are, therefore, recommended as being key under the green credits programme. Further, in-depth feasibility studies and assessments will be required to operationalise and implement these proposed activities.

The success of the Green Credits Programme depends on effective and robust monitoring and support systems that are easily accessible by stakeholders and provide a ready repository to the overseeing authority to monitor and verify the impact of green activities. For this programme, such a support infrastructure that may be explored is a Uniform Web Portal. This portal is recommended to act as a centralised online system that facilitates communication between the driving body and green credit applicants while providing clear directions for application and subsequent receipt of the benefits associated with activities promoting the eight green ideas. This report elaborates the detailed steps for the application, monitoring and verification of green activities that may be undertaken by stakeholders.

This study also proposes a comprehensive action plan that disaggregates recommended actions on an expected timeline for the design, development, and execution of the national Green Credits Programme. All recommendations under this report are purely suggestive in nature and further in-depth studies are required to be performed for effective implementation.

01

Context and Background

People across the world are facing significant impacts of climate change that include changes in season, weather patterns, melting of glaciers, rising sea levels to name a few. Human activities are also leading to higher greenhouse gas emissions without any mitigating action to curtail in horizon. With the levels at an alarming high, significant efforts with a well-defined action plan are needed to halt the rising world temperatures. Accordingly, the commitments under Paris Agreement aimed to strengthen the global response to the threat of climate change by keeping a rise of global temperatures this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

To meet the commitment towards Paris Agreement, India needs to adopt a country wide strategy impacting stakeholders at the grassroot level. Accordingly, this initiative has been undertaken by the Ministry of Environment, Forest and Climate Change (MoEFCC) to help position India on world map of leading country to meet the commitment. The programme has been conceptualized to effect a change through identification of various stakeholders and design the schemes to promote green behaviour among the participants.

1.1. CONCEPTUALISING GREEN CREDITS

Climate change has affected every living being on earth and effects on the surroundings are alarming in nature. Oceans are getting warmer and sea levels are rising. Diversity of life is at risk from the changing climate as it has affected wildlife, marine life, fresh water supplies and causing mayhem for the farmers. Accordingly, the Paris Agreement was signed with an aim to strengthen the global response to the threat of climate change by keeping a rise of global temperatures this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

To ensure slowdown of the deteriorating environment a positive change is needed towards greening and efforts are required from every stakeholder of the society such as organizations, institutions, workplaces and individuals. This calls for a significant change in the perception and behaviour of the stakeholders towards climate change. Hence positive steps taken in this direction should be incentivized to encourage such actions.

In this context, a singular unit of an incentive provided for an action/ activity delivering a positive impact to the local and/ or global environment can be termed a 'Green Credit'. The Green Credits Programme will act as a formal mechanism in this direction designed to help mitigate climate change, build adaptive capacity and improve the overall state of the environment by increasing energy and resource use efficiency, encouraging environmental conservation among other measures.

The biggest challenge to such a vast programme could be on appropriate monitoring, reporting and verification, avoidance of double counting and tracking of credits rolled out. The best way to navigate around these challenges is observed to take the digital route, wherein a unified web portal to request for, apply for and earn and retire green credits can be applied. This could create case for ease of management of the programme at a larger scale and build in scope for expansion and scalability later.

1.2. PROGRAMME OVERVIEW AND RATIONALE

The Green Credits Programme will be a direct effort towards a country wide adoption towards sustainable way of living inculcating activities helping improve environment in our day to day lives. The green incentive programme will include a set of instruments that would provide monetary and/or non-monetary rewards for verifiable climate and environmental action. The mechanism is conceptualised and designed to be contributed by each faction of the society through contribution of every stakeholder. Green credits programme is designed to motivate the 'green' culture in the civic society and bring about a behavioural change to bring us a sustainable world. The programme is aimed at formulating innovative ideas around various aspects of climate change that will be formalized in a structure monitored by a council overlooking the entire activity. The anchoring of the efforts will be done by MoEFCC and the related departments and the support will be lent by the nodal agencies such as Zila Parishads and Urban Local Bodies. Efforts from all these will contribute to achieving the SDGs and NDC targets set by the Government under the climate action commitments.

Green behaviour minimises harm to the environment as much as possible and even benefits it. Promoting eco-friendly actions amongst stakeholders may be achieved through fostering innovation, enabling cooperation and incentivising action. However, for imbibing green culture a nudge is required in the direction of change through policy and regulatory mechanism or through defined set of efforts creating a win-win situation for all the stakeholders. The incentive programme which will provide the much-needed direction and calls for actions or activities which deliver positive impacts to the local and/or global environment, is known as Green Credits. Incentives will act as means to engage and motivate individuals, group of people, corporates and other bodies to participate in the programme and contribute towards environmental improvement of society.

1.3. METHODOLOGY AND APPROACH

An objective approach is taken towards deciding on the programme framework. It involved understanding the applicable best practices followed across the globe, assessing the applicability in the Indian context and mapping the interest of and defining various stakeholders envisaged to be involved. Policies and regulations are the pillars for successful implementation which entails assessment of supportive policies at various places and its impact in the approach for the incentive programme. The stakeholders are defined on factors such as attractiveness to be involved, the benefits to the stakeholders, the significance of impact on the environment and the derived benefits envisaged to be generated for the participating entities.

The methodology adopted for the defined approach covers detailed assessment of quantitative and qualitative areas most suitable for the implementation. This covered a step wise approach elucidated below.

- Detailed study on economic and non-financial green incentives,
- Assessing best practices being adopted across the globe and in India
- Review of sectoral policies and initiatives (planned and ongoing) in India
- Identification of key takeaways and possible incentives which can be scaled up and adopted in India
- Mapping of tentative stakeholder sets and applicable incentives for further deep dive studies

A laundry list of incentives found from the detailed study is further refined with the help of a shortlisting criteria. A quantitative assessment a scorecard was formulated covering detailed analysis of incentives against each stakeholder category to evaluate suitability of the identified incentives in Indian context. An illustrative scorecard is given in the figure below.

Figure 1: Illustrative scorecard for incentives

			PROGRAM INDICATORS					COUNTRY CONTEXT INDICATORS					
Stakeholder category / Weightage	Initiative	Urban/ Rural/ Both	How effective is the initiative in solving climate change and environment issues?	How easy is the initiative to implement?	How easy is the initiative to monitor?	How fast can the initiative be rolled out?	Aggregated Score out of 5	How much is this initiative already covered in existing programs/ incentives/ policies?	How strongly is the initiative related to solving environmental problems of India?	How replicable is this initiative in different cities and states of India?	Aggregated Score out of 5	Total score out of 10 (equal weightage on both)	Initiative Priority level
			35%	20%	25%	20%		40%		30%			
Greener RWAs	Rainwater harvesting	Urban											HIGH
	Composting	Urban											MEDIUM

ILLUSTRATIVE

Parameters	Green School India	Eco-efficient SMEs	Sustainable Secretariats	Green Religious Destination	Green Panchayat	Green Procurement	Greener RWAs	Eco-buddy programme	Farmer recognition programme	Responsible NGO
Program indicator score	3	2	3	3	3	3	4	3	2	3
Country context score	4	3	4	2	4	4	4	2	3	3
Initiative priority level	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	MEDIUM	MEDIUM

The selection process of best incentives included:

- **Incentive prioritisation:** Qualitative analysis is fed into a decision scorecard to understand which incentives could be considered for green credits
- **Devise incentive benefit options:** Results of qualitative analysis and decision scoring used to perform deep dive assessment for shortlisted incentives
- **Perform deep dive assessments:** Perform further analysis on cost benefit of the incentive, the feasibility and MRV methodology applicable for prioritised incentive options
- **Define the value of a Green Credit:** Conceptualise Green Credit for each shortlisted incentive and fix a value to make the efforts measurable

1.4. BEST PRACTICES AND SUCCESS STORIES

The concept of incentive-based instruments for green initiatives undertaken by various groups of stakeholders in an economy has undergone various iterations and applications over the years. A variety of credit structures including rebates, tax credits, and other monetary and non-monetary benefits have been tested and institutionalised across the world. In addition, schemes similar to the proposed Green Credits Programme have also been undertaken in India with varying degrees of success.

The analysis of these programmes reveals the best practices and parameters that make the operationalisation and implementation of a programme successful. These best practices may be adopted and customised to fit the Indian context. The analysis focuses on features of implementation that are central to success, as well as, innovative programmes such as the Reef Credit Mechanism, and Wetland Conservation Credits. The distillation of key features can serve as a foundation for developing a successful green credits mechanism in India.

The following tables present an overview of success stories that have emerged as part of the green credits concept across various global regions like USA, Europe, Australia, and India.

Table 1: International green credit case studies and best practices

#	Target Stakeholders	Name of Scheme/ Programme	Incentive/Credit Offered	Country/ Region	Benefits	Relevance to the Indian Context
1	Small scale businesses and residences	**Water Conservation Rebate (through toilet replacement)**	• $50 for each toiled manufactured in 1994 replaced with a WaterSense® labelled high efficiency model	Utah, USA	• Average water savings between 4.5 – 10 litres per flush	• Can apply to 78 million urban households • India uses 10 litres and 6 litres cisterns, on average, for a full-flush and low-flush respectively • Reducing this to 6 litres and 3 litres can reduce water usage in toilets by 40% and city water usage by 10%
2	Citizens, building construction contractors	**Rainwater Harvesting**	• One-time tax credit of 25% on the cost of the water conservation system, up to $1,000 for its residents • Builders are eligible to get a tax credit of up to $2,000 per residence until constructed with a water conservation/RWH system	Australia, USA, Germany	• A typical 8x12 metre roof in Australia received approximately 2,700+ litres of water with moderate rainfall • Fewer chemicals and salt in the rainwater makes it more suitable for domestic use	In India, annual runoff volume potentials per house are: • Small house: 48,000 – 75,000 litres • Medium house: 75,000 – 1,20,000 litres • Large house: 1,20,000+ litres Can apply to water scarce cities and scaled up to other cities and regions
3	Citizens and private sector organizations, non-governmental entities, international institutions	**Green Climate Fund – Green Champions Awards**	Climate Youth Champion, Climate Gender Champion, Climate Community Champion, Transformational Country Champion, Climate Entrepreneur, Climate Lifetime Achievement Champion	Global	• Recognition to outstanding individuals and organisations aggressively pursuing activities that limit GHG emissions and adaptation activities during COP25	Recognition Awards in the form of appreciation from PMO or airing of the award on national television on 2nd October can become a significant driver for motivated citizens to undertake green action

#	Target Stakeholders	Name of Scheme/ Programme	Incentive/Credit Offered	Country/ Region	Benefits	Relevance to the Indian Context
4	House owners with garden space	**Flip Your Strip Rebate**	• $1 per sq. ft. for replacing the lawn or park space with a water efficient design • $1.25 per sq. ft. for attending a free park strip class	USA	• Estimated savings of 22,000 to 36,000 litres of water per year	• Large standalone houses with lawns and residential complexes with open spaces are on a rise in India • This incentive can work well in cities and satellite towns where the construction of such complexes is accelerating.
5	Farmers, private landowners and users, real estate developers	**Natura 2000 European Program**	Exemptions from 3 taxes: • Property tax for undeveloped property on Natura 2000 sites • Inheritance tax via transfer for succession or gift of unbuilt property • Income tax for site management costs	EU member countries (example of France cited)	• Protection of sites of natural importance through farming practices that maintain and improve the natural value of habitats • Promotion of rural tourism • Recognition given to farming community	• India has several biodiversity hot-spots and farmlands that can benefit from agri-environmental measures • These "semi-natural" areas can be created and maintained by responsible human activity
6	Land managers can generate the credits and sell them to the government, private industry and philanthropists seeking to invest in water quality improvements	**Reef Credit Scheme**	• A Reef Credit represents a quantifiable volume of nutrient, pesticide or sediment prevented from entering the Great Barrier Reef catchment • The value of the reef credit, like carbon credits, depends on supply-demand dynamics of open market	Australia	• The intensity of projects to improve water quality through changes in land management in order to generate 'Reef Credit' increased significantly	• Coral ecosystems in India, as elsewhere, face a number of threats from human activity-induced threats like pollution and climate change • India has four major reef areas – the Gulf of Mannar, Gulf of Kachchh, Lakshadweep, and the Andaman and Nicobar Islands where this scheme can be adopted
7	Organic Product Manufacturers and farmers	**Eco-Labelling Certification Scheme**	Certification provided against products which must contain 95%+ organic components, have been produced within the EU and are certified by EN 45011 accredited certifiers	France	• Eco-labelled product fetches a premium price from eco-conscious consumers and businesses increasing the value-added along the supply chain	• India's organic food market is expected to grow at a CAGR of over 25% during 2016-2021 and a larger number of end-consumers are opting for premium eco-products
8	Standalone residences and housing complexes	**Compost Bin Rebate Incentive Program**	$40 rebate for purchase of a home composting bin which can be used for the purchase of a compost bin, worm compost bin, or compost tumbler	California, USA	• 45% of a city's waste that was organic & diverted away from landfill reduced GHG emissions and yielded nutrient-rich fertiliser	• India has the potential to produce 4.3 million tons of compost per year • A compost bin scheme could be applicable to 78 million urban and rural households.

#	Target Stakeholders	Name of Scheme/ Programme	Incentive/Credit Offered	Country/ Region	Benefits	Relevance to the Indian Context
9	Agricultural producers	**Wetland Conservation Credits**	An agricultural producer converting a wetland may regain eligibility for federal crop insurance premium subsidy by purchasing credits from the Wetland Mitigation Banking Program	Nebraska, USA	Wetland mitigation banking offers agricultural producers an option for mitigating wetlands that have been lost to impacts like drainage, dredging, ditching or other types of wetland conversion	• India has over 27,000 wetlands (23,000 are inland wetlands and 4,000 coastal wetlands) which are at increasing risk from agricultural expansion and climate change impacts • Though the concept of wetland mitigation banking has not been explored in India, the potential for a positive impact is high
10	Citizens	**Landscape rebate**	• Rebate of 50% or maximum $150 for a smart irrigation controller to reduce water use on a lawn • Free review of landscape plan	USA	Up to 40,000 litres water expected to be saved annually by replacing standard controllers with smart ones	This scheme can be implemented in large standalone houses with lawns and residential complexes with open spaces construction of which is on a rise in India
11	Citizens	**Anti-pollution Transport Pass**	For days with high pollution the reduced cost of a pass is Euro 3.8 (unlimited on all modes of public transport for all zones) as opposed to Euro 13.2 (one day pass for 3 zones)	Paris, France	Fewer passenger car on road on peak AQI days that reduces air pollution	Can be applied to Metro cards to channelize more people towards MRT during peak seasonal air pollution levels across the country
12	Citizens, NGOs/ CSOs, corporates, philanthropists	**Ethiopia Green Legacy Initiative**	Ethiopia set the World Record for planting 350 million+ trees in one day wherein participating citizens received a Certificate of Appreciation for planting 40 tree saplings per person	Ethiopia	Estimated carbon sequestration of about 800 million tCO2 in a year once the trees mature	This scheme is comparatively easier to implement given greater citizen interest and very high carbon sequestration potential to combat climate change impacts
13	Power utilities, wastewater utilities, state and federal owned agencies	**Water quality trading**	Inter-state and intra-state trading of water quality credits based on annual average loading of total nitrogen and/or total phosphorus	Ohio, Indiana, and Kentucky in USA	Helps in achieving water quality goals for nutrients such as phosphorus and nitrogen through programs that allow permitted emitters to purchase nutrient reductions from another source	• Almost 80% of India's surface water is polluted and groundwater reserves are contaminated by various organic and inorganic pollutants • A mechanism like water quality trading may be beneficial in improving the surface water and ground water quality in India
14	All citizens and vehicle owners	**Clean Air Mobility Scheme**	Phase 1: 500 Euros allocated per household to shift to emission efficient transport (car clubs, bus passes and use of the city's fleet of e-bikes)	Derby	Annual emissions avoided: • 8.83 tonnes NOx • 0.51 tonnes PM2.5 • 0.86 tonnes PM10	There is significant potential of implementing a similar scheme given high vehicular air pollution and the government's strong focus on electric mobility and MRT, as well as, growing interest of citizens in carpooling

#	Target Stakeholders	Name of Scheme/ Programme	Incentive/Credit Offered	Country/ Region	Benefits	Relevance to the Indian Context
15	Employers and employees	**Cycle to Work Scheme**	• Employee benefit that provides discounts to employees of 25-39% on bike & accessories • Employees pay nothing upfront and the payments are taken tax efficiently from the salary by the employer	United Kingdom, Netherlands	• Users of the scheme in the UK abate 133,442 tCO2e of emissions every year • Social benefit estimated to be £72 million a year	• If bicycling is adopted as replacement to 2 and 4 wheelers, India can save over Rs. 1.8 lakh crore annually or 1.6% of the GDP • Additionally, there exist direct pollution reduction health benefits and
16	Residents and small businesses	**Energy Efficiency Rebate Scheme**	Rebates from $40 to $90/ per unit on replacement of freezer, dryer, washer, dishwasher, air conditioner	USA, Australia	Offering energy efficiency rebates rendered it five times cheaper than investing in new power generation	• Primary energy demand is expected to increase from 1,250 to 1,500 million toe by 2030 (estimated in IEP Report by IEA) • Using measures such as LED bulbs and appliance incentives, India can meet ~50% of its electricity demand
17	All citizens and vehicle owners	**Bonus Malus Feebate Scheme**	Maximum bonus of 5,700 Euros for buying zero-emission BEVs and FCEVs to 1,000 Euros for buying vehicles emitting 60 g/km	Sweden	The scheme is projected to increase the plug-in market share in Sweden to 25% in 2021	There is significant potential of implementing a similar scheme given high vehicular air pollution, the government's strong focus on electric mobility and MRT, and the target of 30% electric vehicles by 2030

The following table provides an illustrative snapshot of initiatives tried and tested in India with the similar intent of incentivizing green action.

Table 2: National level green credit initiatives in India

#	Name of Scheme	Region	Details of the Scheme
1	**Cycle to Work**	Bangalore, Karnataka	Bangalore's 'Bicycle Mayor' Sathya Sankaran introduced a Bike to Work Challenge in October 2018. This initiative aimed to encourage bicycling as a form of commuting, while also emphasising the need of the hour to reduce one's carbon footprint. This challenge will be open to companies and teams of participants that represent a company. At the end of six months, the team with the highest number of people commuting to work by cycle, with the highest distance covered, will be presented with a trophy and 'green credits. Employees from a company can also come together and register as a team. Additionally, a chosen ambassador will mentor the participants throughout the challenge.
2	**Deposit Refund Scheme**	Maharashtra	To ensure recycling of plastics that are not banned, the Maharashtra government implemented a buyback scheme for PET bottles and milk pouches. Maharashtra is the first state in India to implement a buyback depository system. In this scheme, a deposit paid to a retailer will be returned on handing bottles or pouches back to the store.
3	**Renewable Energy Certificates**	Pan-India	One Renewable Energy Certificate (REC) is treated as equivalent to 1 MWh. There are two categories of RECs, viz., solar RECs and non-solar RECs. Solar RECs are issued to eligible entities. The solar certificate shall be sold to the obligated entities to enable them to meet their renewable purchase obligation for solar, and non-solar certificate shall be sold to the obligated entities to enable them to meet their obligation for purchase from renewable energy sources other than solar.

#	Name of Scheme	Region	Details of the Scheme
4	**Emissions Trading Scheme**	Surat, Gujarat	The Emissions Trading Scheme (ETS) is a regulatory tool that is aimed at reducing the pollution load in an area and at the same time minimising the cost of compliance for the industry. The Gujarat Pollution Control Board (GPCB) sets a cap on the total emission load from all industries. Various industries can buy and sell the ability to emit particulate matter, by trading permits (in kilograms) under this cap. ETS is called a cap-and-trade market.
5	**National Perform, Achieve, Trade (PAT) Scheme**	Pan-India	The National Mission for Enhanced Energy Efficiency (NMEEE) is one the eight pillars of the National Action Plan for Climate Change (NAPCC) and seeks to strengthen the market for energy efficiency through market-based mechanisms like PAT. There have been, to date, 5 PAT cycles. Cycle 1 of PAT had an energy saving target of 6.686 million tonnes of oil equivalent (mtoe). The outcome of PAT Cycle 1 included energy savings of 8.67 mtoe (1.25% of prime energy need of India) with corresponding greenhouse gas reductions and savings of INR 9,500 crores from reduced energy consumption. Additionally, INR 24,517 crores of investment was made on energy efficient technologies. The energy saving target for PAT Cycle 2 was 8.877 mtoe across 11 sectors. The following figure presents the total GHG reductions achieved by PAT Cycle 1 and 2. PAT Cycle V (2019-20 – 2021-22) covers 15,244 million toe from 100+ Direct Consumers (DCs) and is expected to achieve total energy savings of 0.15 million toe through the duration of implementation of the scheme.

The mapping of global and national level programmes and schemes that incentivise green action has been an important step in the approach to developing this. Case study analysis made it was possible to narrow down key parameters, monetary and non-monetary that have worked in the Indian and global context and increase the possibility of extrapolating and applying these schemes on a larger scale in India, and introduce innovative programmes like reef credits, wetland conservation, etc.

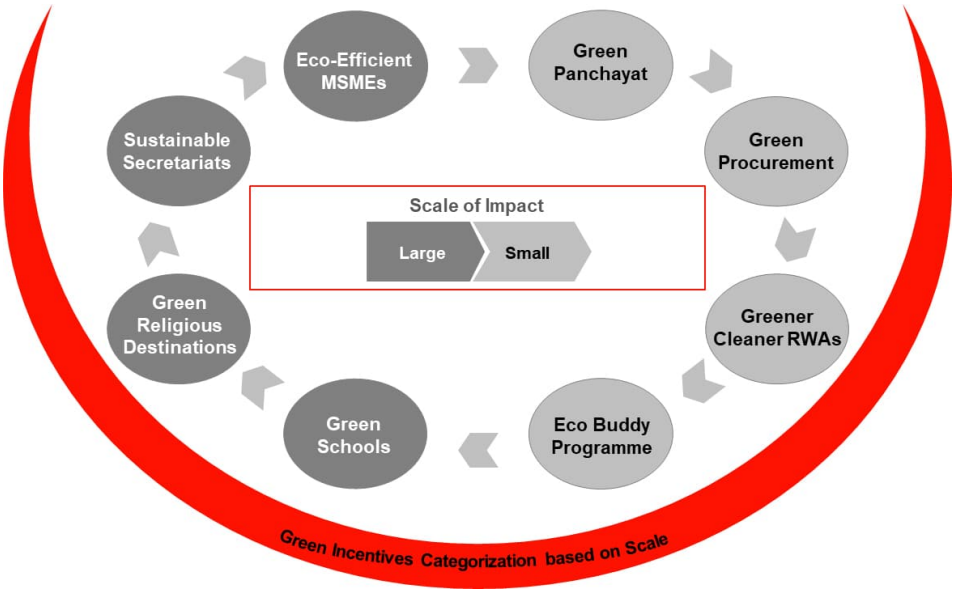
02

Green Credit Initiatives for Sustainable India

India has ambition to effect a positive change with respect to climate change. Incentivizing positive actions towards betterment of environment and instituting discouraging measures causing negative effects on environment will help India in its efforts for a sustainable future. Green Credit initiative programme aims to provide a formalize a structure benefiting the environment while ensuring that sustainable practices are imbibed across the country. Green initiatives will focus on developing practices which are replicable and touch upon areas of society with possibility of significant impact. This entails understanding the areas that can have significant impact, analysing the possible initiatives relevant to identified areas and evaluating the economic aspects of instituting such initiatives. Accordingly, a structured approach is considered to arrive at initiatives which will benefit the sustainable ecosystem. This chapter explores the eight green credit ideas that can be mainstreamed as part of the national Green Credits Programme.

The green initiatives to be considered are chosen meticulously based on the methodology outlined above and prioritizing the ones with significant impacts on the environment while keeping interests of the stakeholders high. These are further categorized based on the section of the society it will cater to, the quantum of contribution and, cost to ex-chequer. The larger umbrella of incentives includes most of the citizens of the country and to ensure the participation and representation from across the country, the incentives are further categorized based on the scale of the programme as large scale and Small Scale. Various ideas and areas, after assessment on quantitative and qualitative basis explained above are narrowed down to eight ideas bifurcated as per the scale presented earlier. Based on the scale of implementation, eight innovative ideas for encouraging climate action have been identified as given in the figure below.

Figure 2: Selected eight green ideas for the Green Credits programme



India is home to nearly 18% of world's population while the resources available are limited. The waste generation poses an increasingly difficult problem to solve. Out of the total waste generated only a minor portion of India's urban waste is processed and is one of the highest emitters of carbon dioxide in the world. However, India has set a formidable target of reducing the emission intensity by 30-35%[1] by 2030. This entails efficient usage of available resources and conserving the ecosystem through implementation of sustainable practices while ensuring a production process that will be energy efficient and light on resources. A sustainable consumption and production-oriented approach will help achieve overall development plans, reduce future economic, environment and social costs and strengthen competitiveness.

The end objective of the programme is to define incentive options which cater to stakeholder who can bring about maximum impact and demonstrate high visibility for others to follow. This, along with a goal to touch every corner of the society forms the foundation of the programme. With this principle in mind, the target stakeholders have been zeroed in on, namely schools, MSMEs, panchayats, religious places, citizens, corporates, secretariats, RWAs ensuring the above criteria are met. This was also evaluated in line with Govt. of India sectoral focus for achieving climate and environment commitments, so that this programme goes hand in hand with the schemes already planned. The eight shortlisted areas are further explained in depth in the following sections:

2.1. GREEN SCHOOLS INDIA

Schools are the education centres that can permeate the message of sustainability throughout the country. Academia can act as significant influencers and enablers to the change. Imparting knowledge about the nature friendly activities and motivating children towards adopting eco-friendly methods will ensure a new generation of '*green soldiers*'.

2.1.1. Concept Overview

Schools are all pervasive institutions and the most basic need of any society. India has more than 1.5 million schools attended by nearly 250 million students. Greening initiative in the schools will drive the idea at the grass root level and inculcate the importance of green living in the country. Schools could carry out highly innovative green measures focussing on high resource efficiency, better quality of life for students and teachers, environmental coaching. Inculcating green habits will build awareness among children and percolate the message of sustainability in the society.

1 https://www.carbonbrief.org/the-carbon-brief-profile-india

Schools can act as a messenger of adoption and implementation of eco-friendly activities that can be undertaken by group of people at large and plant the seeds of sustainable thinking into the next generation

The aim is to imbibe nature friendly living right from childhood to ascertain a long-term impact on the environment.

2.1.2. Key Features of Green Schools

The concept of Green school is a school that creates clean healthy, protective and green surroundings while saving environment, energy and other natural resources. The concept has three pillars are the measurable success metrics for green schools, and they make a real impact on both global sustainability and individual student and teacher health.

- Reduced environmental impact: Reduction of energy usage, water use, cutting back on fossil fuel used in transportation, reducing waste headed to landfill and protecting natural habitats are the activities covered under this aspect.
- Increased health and well-being: Protecting student and teacher health includes ensuring a clean and healthy indoor environment in the school, as well as providing programs and services for good nutrition and physical activity.
- Increased environmental and sustainability literacy for all graduate: Educating children about sustainability and providing them the necessary tools to solve the global climate challenges at local level plays a pivotal role in the concept of green school

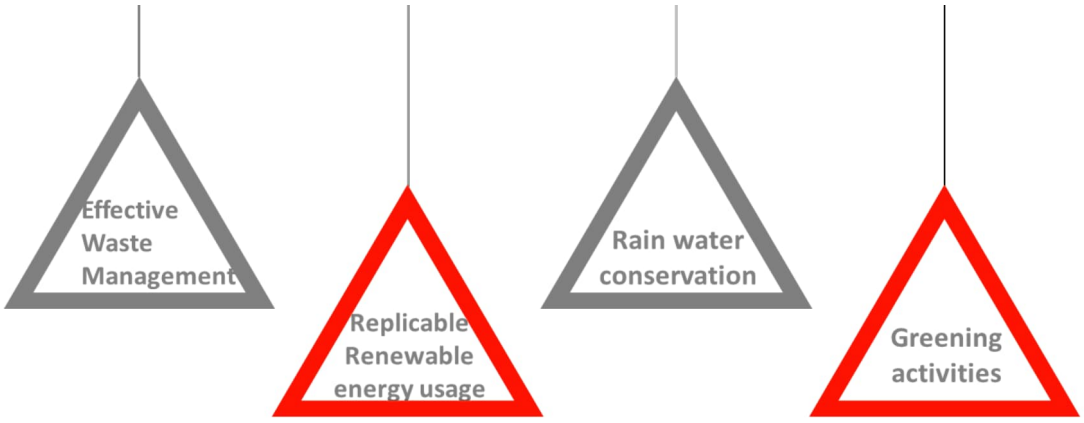
The green school can be visualized as a school guided by the principles of environmental stability. The learning experience in such schools will extend outside the classroom and will encourage the students to get first hand experiences to consolidate and apply knowledge, gain an understanding of environmental processes, inter-relationships and issues, acquire a number of life skills and help foster attitudes, values and sensitivity towards environmental concerns.

Some of the activities that could be considered and scaled up depending on the size of the schools are below:

- Incorporating green building measures in school designs such as installing energy recovery ventilation equipment
- Providing extensive outdoor spaces including playgrounds, outdoor classrooms in schools.
- Installing rainwater storage capacity for larger schools
- Introducing book banks and uniform banks for reuse of resources

These can be scaled up and replicated for larger education bodies such as colleges and universities. Accordingly, the key features of green schools can be visualized as:

Figure 3: Key features of Green Schools

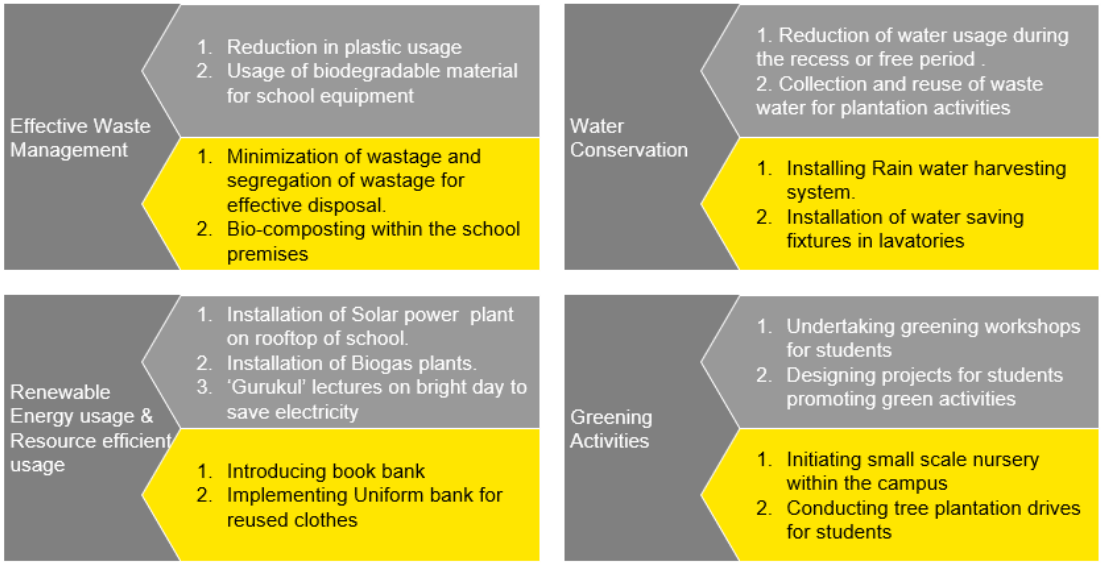


Involvement of small/ medium level schools at village level and Tier-2/3 level and promoting competitions on Green themes with awards will support the cause. The programme can also introduce flexibility of participation of students and teachers as a group of schools as one singular institution.

2.1.3. Incentives envisaged for Green Schools

The following figure illustrates the various types of green initiatives that schools can undertake to benefit from the green credits system. These are however only examples and the schools are free to undertake any green measure if they can be proven. The onus to provide verifiable proof is on the schools.

Figure 4: Incentives envisaged for Green Schools



The above indicative list of initiatives can be considered by schools for undertaking and involve stakeholders for promoting the green cause. These activities can be recognised under the Green Credits platform by offering various options as tabulated below. The school can select their preferred incentive of choice.

Table 3: Rewards and benefits for Green Schools initiatives

	Awarding label and certification of "Green School" A participating school may potentially earn green credits (GCs) by successfully proving that it has undertaken green activities. If the number of GCs earns equals or exceeds a pre-determined threshold specified by the programme, the school may be eligible to receive the label of a Green School India as well as a certificate of the details of GCs earned.
	Featured on Ministry website in Top 10 best-performing Green School If the school participates in multiple initiatives and wish to apply for this award, it may also be eligible to get this award based on number of green credits awarded and demonstrated performance of the green activities
	Monetary rewards for the Top 10 schools Based on the number of overall green credits garnered the top school may be awarded a cash prize annually for implementing green activities in the coming year

2.1.4. Estimation of Green Credits under Initiative

The details of the eligible Schools and the criteria for selection of the schools and eligibility for the applied green credit incentive will be populated on the uniform web portal specifically designed for the incentive program. Applicant can then potentially ascertain the type of green incentive and the number of green incentives it wishes to apply for on the portal. The details about the requirement of documents as proofs and timeline of submission will have to be taken from the website. The applicant could submit the documents as a verifiable proof for claiming the benefit accordingly. Ensuring the timely completion of requirement will be responsibility of applicant.

An indicative table of the sample value of green credit and the related estimation is shown in the table below for representation.

Table 4: Indicative value of green credits for Green Schools

Target Stakeholder	Incentive Name	Sample Value of 1 Green Credit (GC)
Schools (can be scaled up to other educational Institutions like Colleges, University campuses later)	Composting at facility level	1 ton of compost produced = 1 GC Categorization of schools can be done during the implementation of programme while the eligibility for incentives can be defines as below: Small: 10 GC; Medium: 15 GC; Large: 20 GC
	Rainwater Harvesting	1 installation of rainwater harvesting system = 1 GC
	Green Cover Development	100 saplings planted to develop green cover = 1 GC The eligibility to qualify for the incentive can be designed as mentioned below with categorization defined during the programme formulation Small: 10 GC; Medium: 50 GC; Large: 100 GC

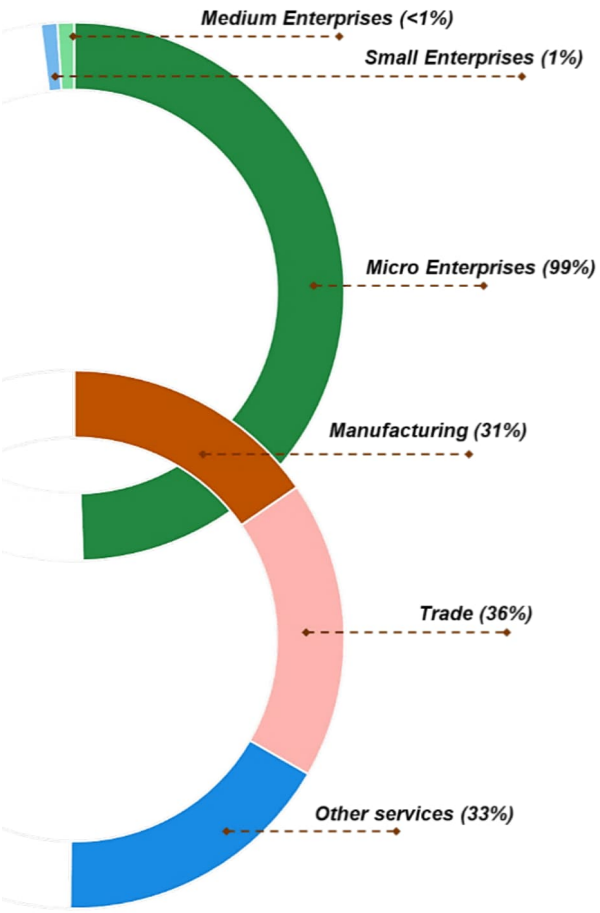
2.2. ECO-EFFICIENT MSMES

Sustainable development in a burgeoning economy like India is intertwined with industrialization that is cognizant of its impact on the environment and its contribution to a sustainable economy. In order to mainstream sustainable industrialization, it is important to adopt the path of green technologies and environmentally friendly operations in the industrial sector in India.

2.2.1. Concept Overview

The large and diverse Micro, Small and Medium Enterprises (MSME) sector in India, accounting for almost half of the manufacturing output employment generated in the country, carries high potential for adopting green practices and innovative resource-efficient technologies.

Figure 5: MSME distribution in India



As per the National Sample Survey (NSS) 73rd round conducted by the Government, in 2015-16 there were 633.38 lakh unincorporated non-agriculture MSMEs in India[2], with Micro Enterprises dominating the sector with 99% of all enterprises. Most of the enterprises are engaged in manufacturing, trade and other services, with a small fraction engaged in the Non-Captive Electricity Generation and Transmission Sector (< 1%).

The Ministry of Micro, Small and Medium Enterprises has recently adopted a cluster development approach for enhancing the productivity and competitiveness of the MSME sector, namely, the **Scheme for Micro & Small Enterprises Cluster Development Programme (MSE-CDP)**.

Additional to promoting the growth and capacity development of MSMEs, one of the broad objectives of the scheme include the promotion of green and sustainable manufacturing technology for the cluster to enable a transition to sustainable and green production processes. This encompasses a top-down approach for incentivise MSMEs to adopt sustainable and environment-friendly production processes.

Simultaneously, MSME businesses are also increasingly aware of the positive impact of promoting sustainability within operations and manufacturing with both investors and consumers. Business performance and brand value are now intricately linked with the ethos of eco-efficiency and sustainability adopted by small and medium businesses.

The conceptualised green credits system allows MSMEs to benefit from the adoption and implementation of measures for energy efficiency, renewable energy generation, and other activities directly benefiting the environment by earning a pre-determined number of green credits for each eco-activity.

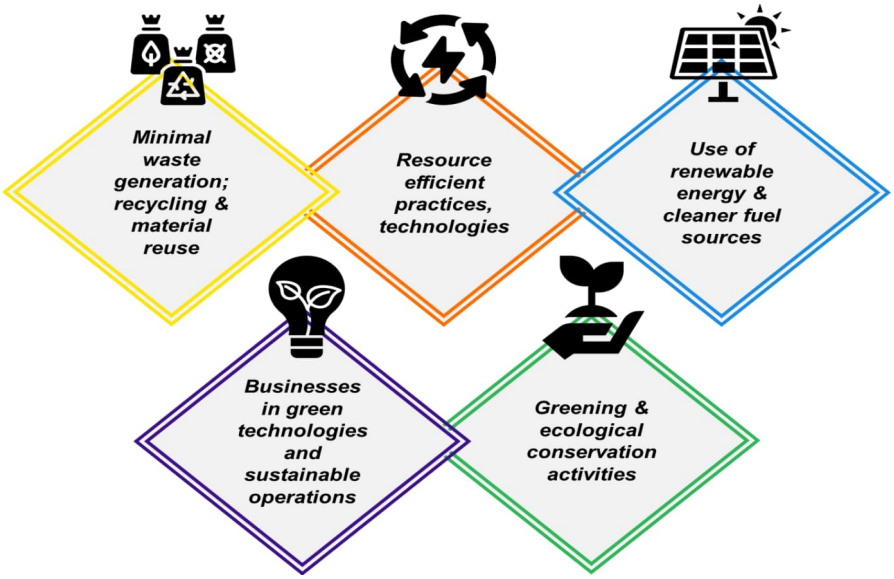
This programme will aim to recognise and encourage accelerated and efficient use of resources and minimising waste generation, as well as, the development of long-term sustainability strategies within the MSME sector with targets for incorporating green practices in both manufacturing and operations of the business. MSMEs that can demonstrate planning and implementation of verifiable green activities would be eligible for non-monetary or monetary incentives of their choice.

2.2.2. Key Features of Eco-Efficient MSMEs

Eco-efficient MSMEs are ideally a holistic system of processes, manufacturing functions and business activities that are underscored by the ethos of environmental and economic sustainability. Typically, an eco-efficient MSME, has the following broad features.

2 https://msme.gov.in/sites/default/files/FINAL_MSME_ENGLISH_AR_2019-20.pdf

Figure 6: Key features of Eco-Efficient MSMEs



Resource efficiency, effective waste management, and the use of cleaner energy sources are central features of eco-efficient MSMEs. In addition, businesses that are operate in the sustainability space, for example, a solar start-up, manufacturing of EV components, clean composting, sustainable packaging organic farming, etc. are examples are eco-efficient MSMEs. Further, proactive incorporation of aspects of sustainability in their day-to-day operations, management, and corporate social responsibility (CSR) activities, for example, greening, afforestation or bio-diversity conservation activities are hallmarks of environmentally conscious businesses.

2.2.3. Incentives envisaged for Eco-Efficient MSMEs

The following figure illustrates the various types of green initiatives that MSMEs can undertake to benefit from the green credits system.

Figure 7: Incentives envisaged for Eco-Efficient MSMEs

Resource Efficient Practices & Technologies	▪ Investment in energy efficient machinery and equipment ▪ Investment in water efficient equipment ▪ Rainwater harvesting system ▪ Waste heat and steam recovery
Use of Renewable Energy & Cleaner Fuel Sources	▪ Electricity generation through rooftop/ground-mounted solar PV ▪ Installation of bio-gas plant ▪ Switch to cleaner fuels (e.g. natural gas) ▪ Use of bio-fuels and bio-char
Minimal Waste Generation; Recycling & Material Reuse	▪ Wastewater treatment and reuse ▪ Hazardous waste treatment and safe disposal ▪ Minimization of waste-to-landfill ▪ Solid waste recycling and by-product reuse
Businesses in Green Technologies & Sustainable Operations	▪ Sustainable packaging and products ▪ Recycling and material upcycling ▪ Solar start-up ▪ Agro-forestry, organic production and commercialization
Greening & Ecological Conservation Activities	▪ Greening of premises and natural landscaping ▪ Afforestation drives involving employees and communities ▪ Giving employee vouchers for using electric scooters, bicycles to work ▪ Incentives or certificates for employee self initiatives like paper and plastic recycling, Bring-your-own-mug

The initiatives presented above are illustrative of the various green and sustainable actions MSMEs can take for earning green credits; the scope and variability of a business' green actions and strategies will be reflective of the industry sector it operates in and its resource use patterns.

The incentive benefits envisaged for MSME business participating in the green credits system can include the following non-monetary options.

Table 5: Rewards and benefits for Eco-Efficient MSMEs

Awarding label and certification of "Eco-Efficient MSME"

A participating MSME may be able earn green credits (GCs) by successfully proving that it has undertaken green activities. If the number of GCs earns equals or exceeds a pre-determined threshold specified by the programme, the MSME may be eligible to receive the label of an Eco-Efficient MSME as well as a certificate with the details of GCs earned.

Featured as Top 10 best-performing Eco-Efficient MSMEs

An MSME that receives the 'Eco-Efficient MSME' label may also be eligible to apply for the annual ranking scheme wherein if the MSME places among the Top 10 of green credits earned nationally, it could potentially be **featured on the MoEFCC website as a top-performer**.

This has the potential to offer high visibility and branding potential to the selected MSMEs and can act as a strong motivator for others to follow.

Incentive benefits for earning green credits for eco-efficiency measures by MSME businesses may include monetary options, for example, tax holiday, cash rewards or rebates or subsidies on utility bills. However, the applicability of these all these monetary measures will require in-depth economic pre-feasibility assessment prior to launch and operationalising of the Green Credits Programme.

2.2.4. Estimation of Green Credits under Initiative

For all eligible incentives for eco-efficient MSMEs, the qualifying number of green credits will be awarded to the businesses. The applicant is free to undertake the green activity of their choice if it can be proved as having an effective outcome through relevant evidence and documentation. The onus of proving the impact of a green activity lies with the MSME.

The definition and categorization of a micro, small or medium enterprise will be adopted from the one provided by the Government of India[3]. Accordingly, the following criteria help in defining the category of an MSME.

Table 6: Categorization of MSMEs

Type of Enterprise	Investment in Plant and Machinery or Equipment	Turnover
Micro Enterprise	Does not exceed INR 1 Crore	Does not exceed INR 5 Crore
Small Enterprise	Does not exceed INR 10 Crore	Does not exceed INR 50 Crore
Medium Enterprise	Does not exceed INR 50 Crore	Does not exceed INR 250 Crore

A sample list of green activities with the corresponding number of green credits awarded is given in the table below. The sample value of green credits presented here are indicative. Exact calculations of the value of green credits awarded for an activity and the threshold levels will need scheme-wise feasibility studies to be done for each activity.

3 https://msme.gov.in/sites/default/files/MSME_gazette_of_india.pdf

Table 7: Sample value of green credits for Eco-Efficient MSMEs initiatives

Target Stakeholder	Incentive Name	Sample Value of 1 Green Credit (GC)
Micro, Small and Medium Enterprises (MSMEs)	Water Conservation	**10 m^3 of water saved upon verification will help MSME earn = 1 GC** To achieve the label of an Eco-Efficient MSME, GCs will need to be earned above the cut-off level (sample cut-offs below) **Micro** 100 GC; **Small** 500 GC; **Medium** 1000 GC
	Rainwater Harvesting	**10 m^3 of rainwater harvested = 1 GC** Threshold value for consideration of reward: **Micro** 50 GC; **Small** 100 GC; **Medium** 500 GC
	Green Cover Development	**100 saplings planted = 1 GC** Threshold value for consideration of reward (annual): **Micro** 5 GC; **Small** 10 GC; **Medium** 50 GC
	Use of renewably generated energy sources	**1 KW of renewable energy generated = 1 GC** Threshold value for consideration of reward (annual): **Micro** 10 GC; **Small** 50 GC; **Medium** 100 GC
	Used oil	**50 litres of used oil = 1 GC** Threshold value for consideration of reward (annual): **Micro** 300 GC; **Small** 600 GC; **Medium** 1200 GC
	Employee incentives for sustainable practices	**10 employees receiving incentives (e.g. vouchers) = 1 GC** Threshold value for consideration of reward (annual % of employees): **Micro** 20%; **Small** 30%; **Medium** 50%
	Solid waste recycling and reuse	**10 kg of waste recycled/reused = 1 GC** Threshold value for consideration of reward: **Micro** 50 GC; **Small** 100 GC; **Medium** 500 GC

2.3. GREEN RELIGIOUS DESTINATIONS

India's religious history is an integral part of the very fabric of the society. Various religious destinations are visited by the citizens for worshipping. Some of these places are of historic importance and attracts tourist making these ideal locations to drive the sustainability message to the people. The environment in such places is adversely affected by such large influx of visitors. These impacts are typically seen in basic services such as water and sanitation, accumulation of both bio-degradable and non-biodegradable waste, high levels of pollution due to increased traffic, open defecation due to non-availability of public toilets, clearing of land and forests for temporary accommodation facilities

for pilgrims, and disturbance to wildlife and habitat. Typically, there is low awareness amongst the pilgrims to these destinations about keeping the sites clean. Hence, transforming religious places into green centres will be leading by example and demonstration influencing the worshippers to emulate in their own society.

A range of pragmatic solutions for greening the premises of religious destinations and environmentally friendly ways to manage waste and water can be thought of for promoting the green culture. Developing green theme-based celebrations and faith based environmental education can provide the desired impetus to bring in the positive change. Some of the areas to focus on could be creating network of sustainable and earth friendly worship places, encourage sharing and replicating of best practices, spread awareness among pilgrims to travel responsibly to sacred sites etc.

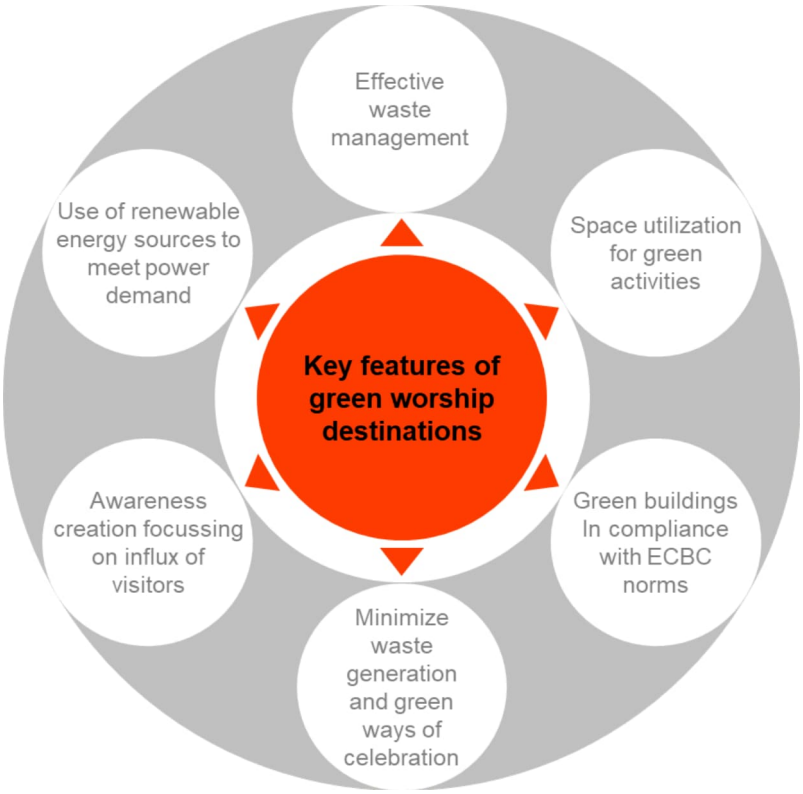
2.3.1. Concept Overview

India is a diverse country with multiple religions Hence, several religious places also form a daily part of lives and act as influencers. Some of the religious places also act as tourist places due to their historical significance and architectural beauty. This draws a large crowd not only from the citizens of the country but also from the admirers offshore. Visitors and other rituals performed at these places generate significant bio waste. Such large congregations can be educated to practice green activities to ensure health of the environment. Designing the places of worship to improve natural cooling mechanisms, using renewable energy sources to meet the power demand, going plastic free are some of the measures that worship places could focus on. Religious destinations could zero down on effective waste management and energy management measures to initiate sustainable practices through activities such as composting of bio waste of flowers, converting cow dung into biogas, hybrid wind and solar power setup, water conservation fixtures to name a few examples.

2.3.2. Key Features of Green Religious Places

Religious destinations are apt places to drive the sustainability message to the common masses who can become agents of change in their neighbourhoods. Broadly, greening a religious destination could consider the following key measures.

Figure 8: Key features of Green Religious Destinations

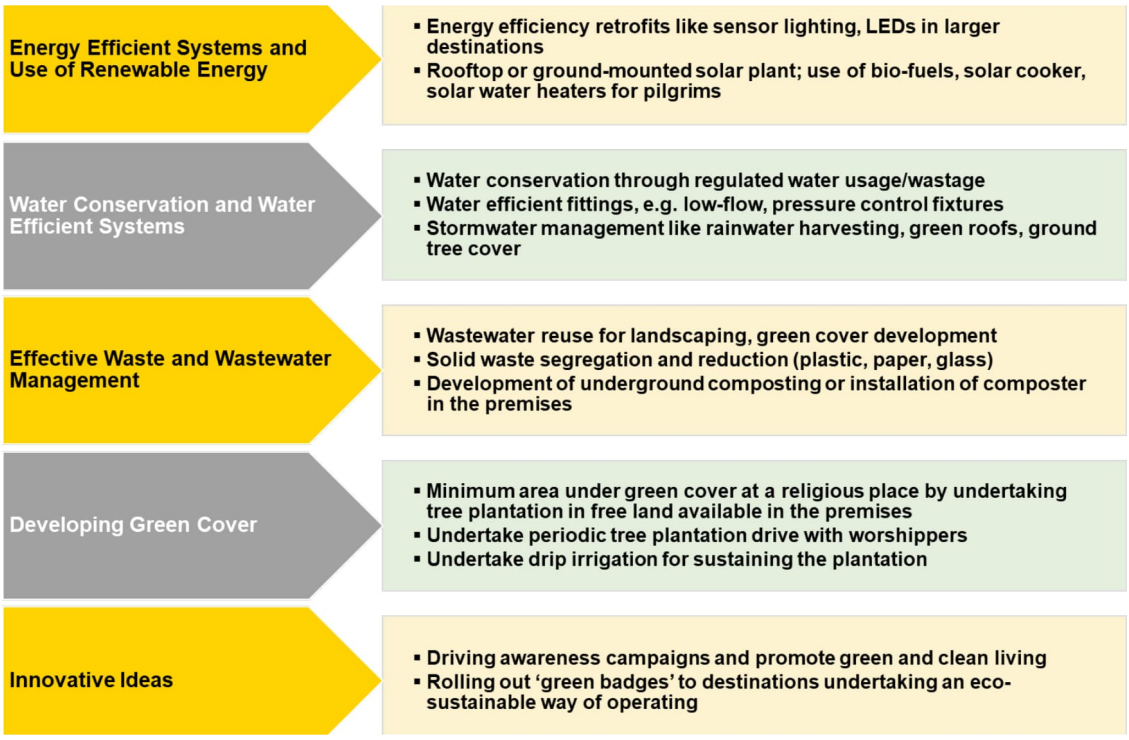


Effective waste management, water conservation and use of cleaner energy sources are pillars of Green religious destinations. Large unutilized spaces within the institutions can be demarcated and outlined for greening, afforestation or bio-diversity conservation which become examples to emulate for other tourist destination and harbinger of sustainable living. Redesigning the existing worship destinations and building the new religious places as per the norms of Energy Conservation Building Code (ECBC) can be explored to adopt energy conservation techniques. A compliance to these norms can make the destination stand apart and set an example for other similar places to follow.

2.3.3. Incentives envisaged for Green Religious Places

A plethora of activities can be covered under the umbrella of greening the religious places that can be incentivized in multiple ways. Examples of Green initiatives for religious destinations that may be incentivized can cover are presented in the following figure.

Figure 9: Incentives envisaged for green religious destinations



These illustrative activities could be potentially incentivized in ways detailed in the table below.

Table 8: Rewards and benefits for Green Religious Destinations

	Awarding label and certification of "Green religious places" The participating religious place will have to earn a specified number of defined green credits to be eligible for the award. The religious place earning the maximum credit could be awarded the badge of "Green Religious Destination"
	Featured on Ministry website in Top 5 Most Green Religious places Applicant can apply in multiple initiatives and will be eligible to get this award based on number of green credits awarded and demonstrated performance of the green activities. Names of the destinations could be featured on Ministry website as best top 5 based on number of GC accumulated in one year for each religious place
	Monetary rewards for the Top 10 religious places Based on the number of overall green credits garnered the top destination could be awarded a cash prize linked with the greening activities planned in the next year.

2.3.4. Estimation of Green Credits under Initiative

The details of the eligible Religious places and the criteria for selection and eligibility for the applied green credit incentive will be populated on the uniform web portal specifically designed for the incentive program. Applicant can ascertain the type of green incentive and the number of green incentives it wishes to apply for on the portal. The details about the requirement of documents as proofs and timeline of submission will have to be taken from the website. The applicant can submit the documents as a verifiable proof for claiming the benefit accordingly. Ensuring the timely completion of requirement will be responsibility of applicant. An indicative table of the sample value of green credit and the related estimation is shown in the table below for representation.

Table 9: Sample value of green credits for Green Religious Destinations initiatives

Target Stakeholder	Incentive Name	Sample Value of 1 Green Credit (GC)
Religious Destinations	Water Conservation	**5 m^3 of water saved upon verification will help MSME earn = 1 GC** The destination will have to earn above the threshold level as given in sample below to gain the incentive. **Small** 5 GC; **Medium** 10 GC; **Large** 50 GC
	Waste management	**10 kg of compost produced upon verification will earn 1 GC for the religious place** Sample threshold level for eligibility of green Credit can be seen below **Small** 50 GC; **Medium** 300 GC; **Large** 500 GC
	Green Cover development	**100 saplings planted to develop green cover = 1 GC** The eligibility to qualify for the incentive can be designed as mentioned below: **Small** 100 GC; **Medium** 500 GC; **Large** 1000 GC

Religious destinations can be categorized as Small, Medium or Large depending on a host of parameters such as annual influx, the size of the building, number of celebrations, overall waste generated per year etc. which can be decided when the programme is initiated.

2.4. SUSTAINABLE SECRETARIATS

The building sector in India, in 2016, accounted for nearly 32% of the country's total electricity consumption in residential and commercial spaces[4]. As urbanisation grows exponentially, this figure of energy use is set to rise; the India Energy Security Scenario of Niti Aayog estimates that by 2022, the energy demand of the building sector will increase to by 230% 1,100 TWh/yr (from 343 TWh/yr in 2017) which includes residential and commercial lighting, appliances, heating and cooling[5]. The climate change mitigation plan of the Government of

4 http://www.mospi.nic.in/sites/default/files/publication_reports/Energy_Statistics_2017r.pdf.pdf
5 http://iess2047.gov.in/

India also highlights the need of enhancing long-term building energy efficiency and natural resource conservation by adopting the principles of green buildings and sustainable construction practices.

2.4.1. Concept Overview

The plethora of permanent building structures that act as the administrative offices for government agencies and departments therein across major cities and towns in India present a unique opportunity to mainstream the concept of green "sustainable secretariats" within the Green Credits Programme. There exists high potential for adoption and operationalisation of sustainable practices in such secretariats through effective environmental management, water and energy footprint reduction.

National-level adoption of green building principles by the Government in its office and administrative buildings is also expected to serve as a leading example. The visibility of public projects will highlight the economic and environmental value of green buildings and provide impetus to the private and residential building sector to engage in sustainable building practices.

While integrating green measures during the design and construction of buildings is the most effective way of reducing the use of conventional energy and water resources, retrofitting of existing constructions can also reduce the energy and water use intensity of buildings, as well as, reduce secondary sources of emissions from heating and cooling units.

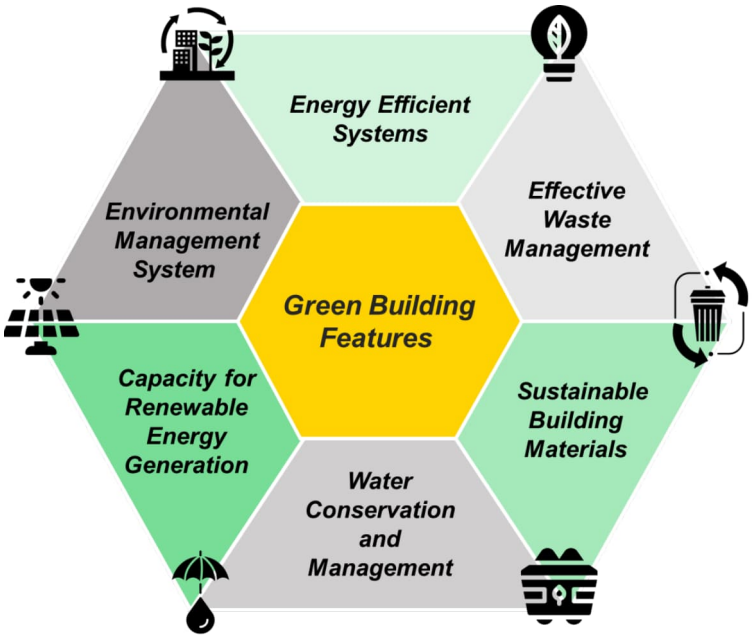
The Green Credits Programme will allow participating secretariats that undertake green building and environmental management activities on their premises to earn a pre-determined number of green credits for each successfully implemented initiative.

This measure within the Green Credits Programme ecosystem aims, not only, to promote the net positive environmental impact of green buildings, but also, create infrastructure that is resilient and lessens the long-term demand for resources. Additionally, the initiative seeks to enhance the economic benefits of green public buildings like government offices and secretariats by reducing the operations and maintenance costs over the life of a building and create market demand for green products and services. Under the Green Credits Programme, Government secretariats that can demonstrate implementation and verify the environmental benefits of green activities would be eligible for the benefits available within the initiative.

2.4.2. Key Features of Sustainable Secretariats

Sustainable secretariat buildings are envisioned to be a single comprehensive system of environmental management processes, resource efficiency and efficient waste management practices that are underscored by key standards and ratings including Energy Conservation Building Code[6] (ECBC), GRIHA (Green Rating for Integrated Habitat Assessment), IGBC Green New Buildings ratings, and LEED ratings. Typically, a sustainable secretariat building will display the broad features as presented in the following graphic.

Figure 10: Key green building features for Sustainable Secretariats



Energy efficiency, water management and integrated waste management systems are central features of sustainable buildings and green activities within these areas can therefore be adopted by secretariats to participate in the Green Credits Programme. Additionally, sustainable secretariats

6 https://beeindia.gov.in/sites/default/files/BEE_ECBC%202017.pdf

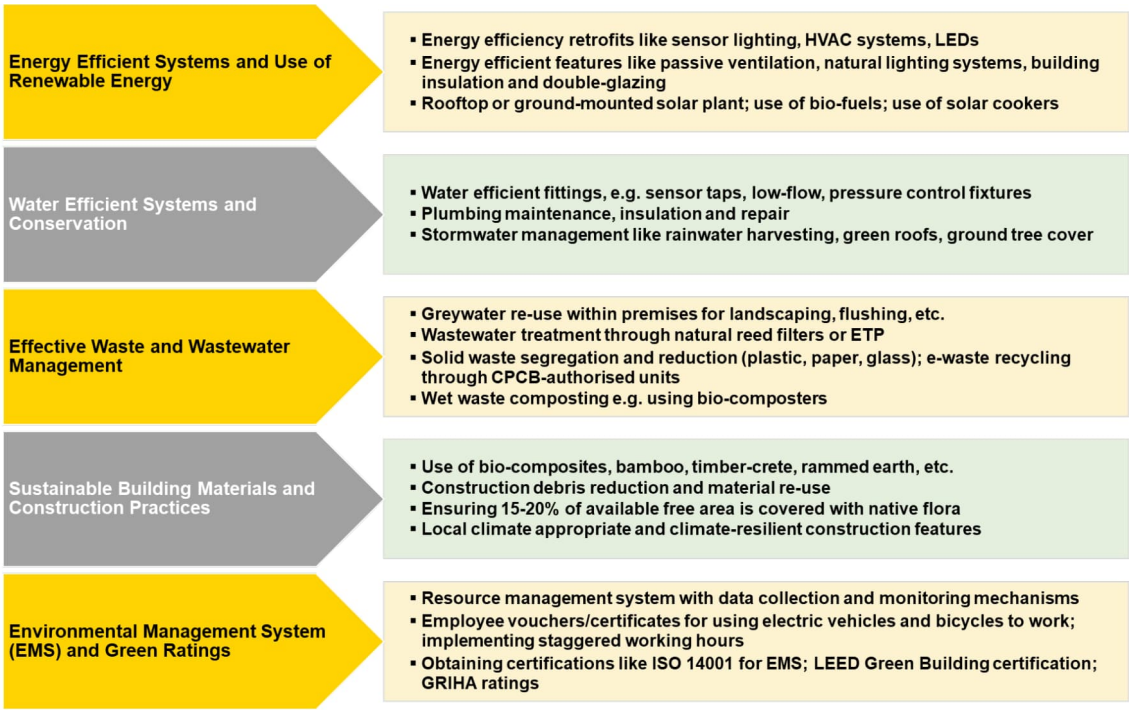
may also adopt an overarching environmental management system that encompasses day-to-day maintenance and operations of the premises. Large secretariat buildings may also strive to obtain certifications or ratings, for example, LEED certifications and GRIHA rating.

The subsequent section lists some of the major activities that Government secretariat buildings may undertake to be eligible for earning green credits and availing the associated benefit options.

2.4.3. Incentives envisaged for Sustainable Secretariats

The following figure illustrates the various types of green initiatives that secretariat buildings can undertake to benefit from the Green Credits Programme.

Figure 11: Incentives envisaged for Sustainable Secretariats



The initiatives presented above are illustrative of the various green activities and sustainable building efforts secretariat buildings can undertake for earning green credits; the scope and variability of the actions of an individual building will be reflective of its size, function, location and resource use patterns.

The incentive benefits envisaged for sustainable secretariats that participate in the Green Credits Programme can include the following non-monetary options.

Table 10: Rewards and benefits for Sustainable Secretariats

	**Awarding label and certification of "Sustainable Secretariat"** A participating secretariat could potentially earn green credits (GCs) by successfully proving that it has undertaken green activities and has had a positive environmental impact. If the number of GCs earns equals or exceeds a pre-determined threshold specified by the programme, the secretariat becomes eligible to receive an award label and certification of a Sustainable Secretariat and could be featured on the MoEFCC website.
	**Recognition as Top 5 Sustainable Secretariats in PM's annual address** A secretariat building that receives the 'Sustainable Secretariat' label could also be eligible to apply for the annual ranking scheme wherein if it places among the Top 5 of green credits earned nationally, it could be recognised as a **top-performer and felicitated in the Prime Minister's annual address on Green Credits.**

2.4.4. Estimation of Green Credits under Initiative

For all eligible initiatives taken by Government secretariats, the qualifying number of green credits will be awarded. The applying secretariat building is free to undertake the green activity and of their choice if it is proved as having the desired positive impact on the environment through relevant evidence and documentation. The onus of proving the impact of a green initiative lies with the secretariat. The eligibility criteria of a secretariat that wishes to participate in the Green Credits Programme may be defined by the MoEFCC; a few sample criteria may include, but are not limited to, the size of the building, the location of the site, logistics related to undertaking green activities, etc.

A sample list of green activities with the corresponding number of green credits awarded is given in the table below. The sample value of green credits presented here are indicative. Exact calculations of the value of green credits awarded for an activity and the threshold levels will need scheme-wise feasibility studies to be done for each activity.

Table 11: Sample value of green credits for Sustainable Secretariats initiatives

Target Stakeholder	Incentive Name	Sample Value of 1 Green Credit (GC)
Government Secretariats	Water Efficiency and Conservation	5 m^3 of water saved upon verification will earn the secretariat = 1 GC To achieve the label of a Sustainable Secretariat, GCs will need to be earned above the cut-off level (sample cut-offs below) <= 50,000 sq. ft. : 250 GC 50,000 - 1,00,00 sq. ft. : 600 GC > 1,00,00 sq. ft. : 1000 GC
	Rainwater Harvesting	Installation of rainwater harvesting system will earn the secretariat = 1 GC 5 m^3 of rainwater harvested will earn the secretariat = 1 GC Threshold value for consideration of reward: <= 50,000 sq. ft. : 100 GC 50,000 - 1,00,00 sq. ft. : 250 GC > 1,00,00 sq. ft. : 600 GC
	Green Cover Development	100 saplings planted or 1% of free area with tree plantation will earn the secretariat = 1 GC Threshold value for consideration of reward (annual): <= 50,000 sq. ft. : 5 GC 50,000 - 1,00,00 sq. ft. : 10 GC > 1,00,00 sq. ft. : 50 GC
	Use of renewable energy sources	Installation of solar plant covering 10% of yearly electricity consumption will earn the secretariat = 1 GC 10 KW of renewable energy generated = 1 GC Threshold value for consideration of reward (annual): <= 50,000 sq. ft. : 10 GC 50,000 - 1,00,00 sq. ft. : 50 GC > 1,00,00 sq. ft. : 100 GC
	Solid waste (including e-waste) recycling	10 kg of waste recycled/reused = 1 GC Threshold value for consideration of reward (annual): <= 50,000 sq. ft. : 50 GC 50,000 - 1,00,00 sq. ft. : 100 GC > 1,00,00 sq. ft. : 200 GC

2.5. GREEN PANCHAYAT PROGRAMME

Depending on factors such as location of villages, the livelihood generating work etc. villages have different uses of natural resources. Agri based villages rely on heavy usage of water while those with moderate level of urbanization will have need of electricity to run the shops and houses. These can be monitored by the Panchayats that are one of the basic features of Indian society. There are approximately 2,60,000 Panchayati Institution in India with more than 90% constituting Village Panchayats[7]. Most of the energy usage of the Panchayats is for domestic purposes and hence effective energy planning and energy efficiency services can develop sustainable living in rural areas.

2.5.1. Concept Overview

Around 65%[8] of Indian population live in rural areas making villages a significant part of Indian society. The fabric of environment can change if the impact is done at this level. The villages are spread across the length and the breadth of the country making it most ideal choice for implementing a green incentive programme. Among various choices for focussing on sustainable activities developing strong means for eco-friendly energy alternatives can help villagers with energy requirements. Use of incandescent bulbs, fans, and machines used by small scale rural businesses consume a large amount of electricity. There is enough scope of reduction of energy usage in these two areas. The location of the panchayats also play an important role in usage of natural resources. Proximity to industrial and commercial belt, semi urbanized villages where consumption will be greater and panchayats near coastal belt and water bodies constitute areas with a possibility to save on natural resources. Panchayats are influential bodies within the villages that have decision taking capabilities making it an entity with power to bring about a positive change at the village level. Panchayats can undertake a host of programmes to achieve dual goal of greener and cleaner premises inculcating sustainable practices in villagers. Gram panchayats can popularize construction of biogas systems in houses, anganwadis and areas of large congregations. Adoption of energy conservation measures such as LED lamps and implementing drip system for conserving energy and water can go a long way.

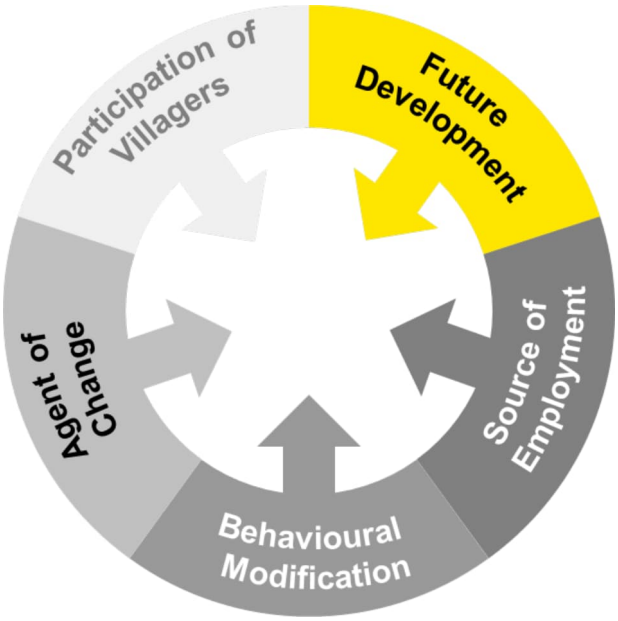
7 www.panchayat.gov.in/documents/20126/
8 https://tradingeconomics.com/india/rural-population-percent-of-total-population-wb-data.html

Gram Panchayats have recently started developing Gram Panchayat Development Programmes (GPDP) to holistically develop the panchayats. These can include water and sanitation issues and measure to use water efficiently as a part of sustainable activities. Facilities for solid and wet waste management and developing environment management frameworks can be a part of such GPDP. An example of a tribal panchayat in Edmalakudy, Thiruvananthpuram can be emulated by other panchayats in which it is set to have eco-friendly panchayat building and staff quarters using traditional architecture. Using mud and bamboo instead of cement for the construction purpose the panchayat building will be an example to follow.

2.5.2. Key Features of Green Panchayats

Panchayats hold the key to turning India into a green land with the sheer representation with respect to population. Even a 10% representation from the villages will have a significant positive impact towards India's efforts towards sustainable practices in the economy. The following figure presents key features for the Green Panchayats.

Figure 12: Key features of Green Panchayats

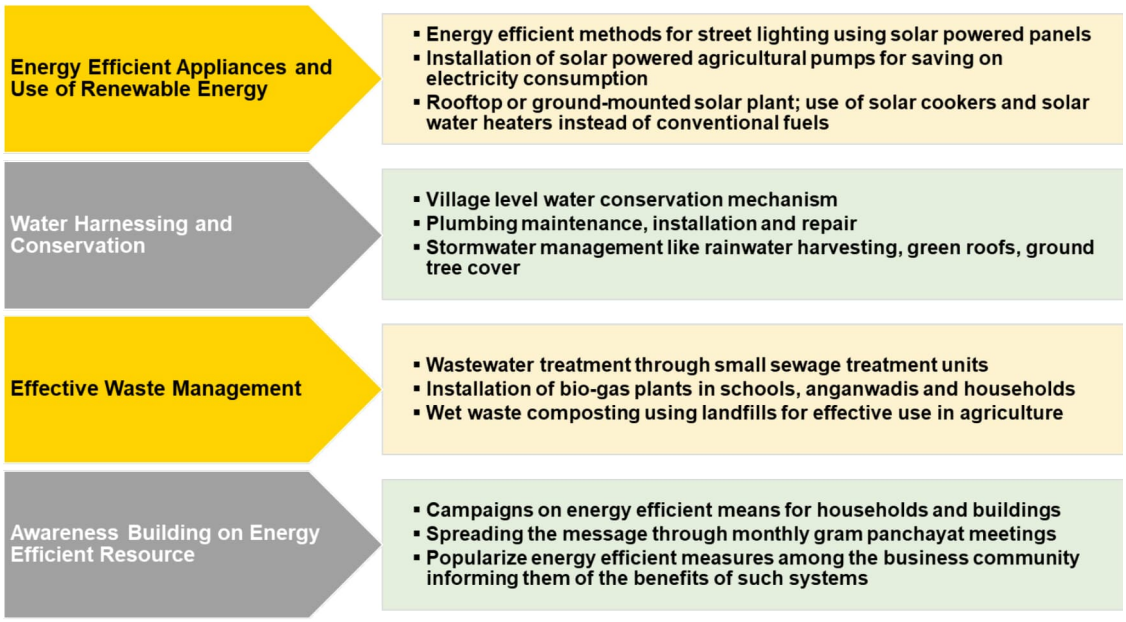


Green Panchayats can ensure enthusiastic participation from the villagers which will help bring scale to the program. The changes recognized through these efforts will act as change agent for the nearby communities to follow the footsteps of. A change in community behaviour can then modify the behaviour of people towards resource conservation and waste management. Recognition on a larger platform will ensure the future development of the village and can provide a source of employment. For example, under greening activity, small nurseries can be set up and sold to nearby cities for getting economic returns. Similarly, villages facing water scarcity can generate immense benefits from undertaking water conservation and harvesting making small scale farming a possibility.

2.5.3. Incentives envisaged for Green Panchayats

Panchayats essentially act as representative of villagers and their interests. Hence, incentivizing green behaviour in villagers can bring about a notable change for the environment. Examples of Green initiatives for the Panchayats that may be incentivized are presented in the following figure.

Figure 13: Green credit incentives envisaged for green panchayats



These activities can be incentivized in ways detailed in the table below:

Table 12: Rewards and benefits for Green Panchayats

Ranking of Panchayats as "Green Panchayat"

The participating Panchayats could potentially earn a specified number of defined green credits to be eligible for the award. A reference case study of the best Panchayat could be made public and populated through media channels to ensure recognition to such panchayat. The rankings of the green Panchayat could be declared annually for other Panchayats and receive Green Panchayat certificate.

Monetary rewards for the Top 10 Panchayats.

Based on the number of overall green credits garnered the top destination will be awarded a cash prize linked with the greening activities planned for the next year.

Featured in the Top 10 'Green Panchayat' on the Ministry Website

A Panchayat that receives the Green certificate will be eligible to participate in the Top 10 panchayats earning green credits. It could be featured a case study on the website of MoEFCC.

2.5.4. Estimation of Green Credits under Initiative

Across the country Panchayats will vary widely as per the geography and the scale of the Panchayat. The details of the eligible Panchayats and the criteria for selection and eligibility for the applied Green credit incentive will be populated on the Uniform web Portal specifically designed for the incentive program. These shall also be provided at each panchayat office to act as guidelines for the villagers to understand and avail the benefits from.

An indicative table of the sample value of green credit and the related estimation is shown in the table below for representation.

Table 13: Sample value of green credits for Green Panchayats initiatives

Target Stakeholder	Incentive Name	Sample Value of 1 Green Credit (GC)		
Panchayats	Water Conservation	**5 m^3 of water saved upon verification will earn the village = 1 GC** Villages can apply for green credits based on the size of the villages that will be defined on the portal. Illustrative eligibility for claiming the incentives can be tabulated based on population of village as below		
		<1000	**1000-5000**	**>5,000**
		5 GC	10 GC	15 GC
	Green Cover Development	**100 saplings planted and sustained over a period of one year = 1 GC** Illustrative threshold green credits to be earned for claiming the incentives based on population of villages can be as below		
		<1000	**1000-5000**	**>5,000**
		50 GC	100 GC	150 GC

2.6. GREENER RWA INITIATIVE

While the concept of green buildings was initially targeted at the commercial building sector but is now extending into the residential building sector that encompass various types of buildings and community structures. In 2017, residential sector heating and cooling plus domestic lighting and appliances accounted for 246 TWh/yr[9]. Under national missions like Housing for All, Smart Cities and Solar Cities, the national stock of residential building is expected to rise dramatically with expected lock-in periods of several decades. To that end, it is estimated by the Government, that the energy demands from the housing sector will increase to increase six-fold by 2047 to 1,547 TWh/yr.

Increasing urbanisation is also expected to increase domestic and residential water needs exponentially, putting additional stress on already water-scare regions in India. Projections from Niti Aayog envision

9 http://iess2047.gov.in/

more than 25% increase in rural and urban residential water needs (litre per capita per day) in the next 30 years. National water scarcity threatens nearly 100 million Indians with major Indian cities faced with dangerously low groundwater levels, according to Niti Aayog[10].

In addition to energy and water concerns, urban India is also faced with the growing problem of municipal waste and dumping in landfills. The Ministry of Housing and Urban Affairs (MoHUA) estimates that of the recyclable and non-recyclable waste collected from households, only 51% is processed as per waste management guidelines[11]. Additionally, while in FY 2019-20, India generated 1.01 million tonnes of e-waste, piecemeal nationwide inventorization of e-waste streams and information their safe processing and disposal leads to most e-waste being dumped in landfills.

2.6.1. Concept Overview

The concept of greener, cleaner Resident Welfare Associations (RWAs) is to enable and encourage the incorporation of distributed, but cohesive bottom-up system of environment friendly practices in the residential sector in India. Given that the existing residential stock in India is a significant consumer of resources, there exists a wealth of opportunities to enhance resource efficiency while also improving the quality of life of residents. Therefore, the promotion of sustainable RWAs through the integration of green practices in the associations' management and operations has been identified as an important lever within the Green Credits Programme to mainstream sustainability.

Cleaner, greener RWAs may enact a number of environment-friendly activities that have a positive impact in terms of reducing the residents' demand for energy, water and fossil fuels, reduce the quantum of solid waste that is generated and sent to landfill. The resident societies may also undertake initiatives that reduce the long-term cost of maintenance and provide green spaces for the community.

The Green Credits Programme will allow participating RWAs that undertake initiatives for a greener, cleaner RWA and other environmental management practices to earn a pre-determined number of green credits for each successfully implemented initiative.

This measure within the Green Credits Programme aims to promote clean and green living environments for residents in urban and semi-urban areas. By creating a system of reward and recognition, this will also incentivize the development of model RWAs that can be replicated in across the country in existing and upcoming residential areas. In addition to the direct impact of greener and more sustainable residential living areas of reducing the energy and water demands of the building sector, lower emissions and better municipal waste management, the indirect impacts of this measure can include greater health and well-being of communities, creation of local supply chains of green products and services, as well as, an uptick in innovative communal green ideas.

Under the Green Credits Programme, RWAs that are able to demonstrate the implementation and verify the positive impact of green activities that they undertake would be eligible to receive the benefits available within the initiative.

2.6.2. Key Features of Clean Green RWAs

Clean and green RWAs are typically exemplified as a cohesive actions and initiatives with an overarching environmental management system that encompasses natural resource efficiency, waste management and green space development. For existing, maintenance and retrofitting also fall under the umbrella of green initiatives that can be undertaken at the residential block level. The following figure illustrates the broad features that are present in a green, sustainable RWAs and housing societies.

10 https://niti.gov.in/writereaddata/files/document_publication/2018-05-18-Water-index-Report_vS6B.pdf
11 http://mohua.gov.in/pdf/5c80e2225a124Handbook%20of%20Urban%20Statistics%202019.pdf

Figure 14: Key features of Cleaner Greener RWAs

The success of cleaner, greener RWAs and housing societies will depend on the complementarity of various initiatives under the areas presented in the figure above. In addition to day-to-day maintenance and operations, identification and planning for achieving medium-term goals will be useful for consistently performing well in the Green Credits Programme. Through their initiatives, RWAs may also seek to obtain green building certifications like the IGBC's Green Residential Society ratings[12] which may garner may a larger number of green credits in the programme.

The following sections presents some of the activities that RWAs can undertake to be eligible for earning green credits and the associated rewards and benefits.

2.6.3. Incentives envisaged for Clean Green RWAs

The following figure illustrates the various types of green initiatives that RWAs and housing societies can undertake to benefit from the Green Credits Programme.

Figure 15: Incentives envisaged for Cleaner Greener RWAs

Facility Environmental Management	▪ Green cover development in common areas using native flora ▪ Use of green eco-friendly housekeeping materials, e.g. chemicals ▪ Reduce heat-island effect and reduce cooling needs through green roof ▪ Regular maintenance and repair of residential buildings
Water Conservation Practices	▪ Installation of rainwater harvesting system on roof and non-roof areas ▪ Water efficient fittings, e.g. tap aerators, low-flow fixtures, dual flushing ▪ Automatic water level controllers in overhead tanks ▪ On-site wastewater treatment facility; reuse in landscaping / gardening
Energy Efficiency and Renewability	▪ HFCs and CFCs free HVAC systems; BEE 3-star+ rated appliances ▪ Efficient lighting fixtures in residential apartments / common areas ▪ Installation of solar plants for street/common lighting, water heating ▪ Features like natural lighting, building insulation, double-glazing
Waste Management and Circularity	▪ Waste segregation at source to reduce waste-to-landfill ▪ Organic waste management through composting and mulching ▪ E-waste collection service; recycling through CPCB-authorised units ▪ Vegetable gardens using composted organic waste from RWA
Innovative Practices	▪ Individual water and LPG meters for residential units ▪ Electric vehicle charging points in parking areas ▪ Daylight motion sensors in common areas ▪ Incorporating green design & architecture during building construction

12 https://igbc.in/igbc/html_pdfs/abridged/IGBC_Green_Residential_Societies_Rating_System.pdf

The initiatives presented above are illustrative of the various green activities and sustainable building efforts RWAs can potentially undertake for earning green credits; the scope and variability of the actions of an individual building will be reflective of their size, location and resource use patterns.

The incentive benefits envisaged for clean, green RWAs participating in the Green Credits Programme can include the following monetary and non-monetary options.

Table 14: Rewards and benefits for Cleaner Greener RWAs

Green Rating and Certificate for the RWA/Housing Complex

A participating RWA or housing society could potentially green credits (GCs) by successfully proving that it has undertaken green activities and has had the desired positive environmental impact. If the number of GCs earned equals or exceeds a pre-determined threshold specified by the programme, the RWA becomes eligible to receive a Green Rating and Certificate by MoEFCC.

Rebate on Water Bills

If the green credits earned by a participating RWA by successfully implementing water efficiency and conservation initiatives equal or exceed the pre-determined threshold specified by the programme could be given a **rebate on the water bills of the complex**. The rebate may be calculated on the yearly water savings of the RWA or housing society and applied at the end of the annual billing cycle.

Featured in the Top 10 'Clean Green RWAs' on the Ministry Website

An RWA or housing complex that that receives the Green Rating and Certificate will also be eligible to be entered into the annual ranking scheme wherein if it places among the Top 10 RWAs earning green credits, it could be featured a case study on the website of MoEFCC.

This has the potential to offer high visibility and branding to the RWA making it more lucrative with potential home buyers and can act as a strong motivator for other RWAs.

2.6.4. Estimation of Green Credits under Initiative

For all eligible initiatives taken by RWAs, a pre-determined number of green credits will be awarded for each activity. RWAs and housing societies participating in the Green Credits Programme may choose to undertake a green activity within the scope of definition of the programme and provide relevant evidence and documentation of the outcome and environmentally beneficial impact of the activity. The onus of proving the impact of a green activity lies with the participating RWA. The criteria for eligibility of an RWA to participate may be defined by the MoEFCC; sample criteria may include, but are not limited to, the area covered by the RWA, number of residential occupants, location of the site, etc.

The following table presents a sample list of green activities that may be undertaken by an RWA and the associated number of green credits that may be awarded for each. The sample value of green credits presented here are indicative. Exact calculations of the value of an activity's impact in number of green credits and threshold (cut-off) levels for eligibility for rewards will require scheme-wise feasibility studies to be conducted.

Table 15: Sample value of green credits for Cleaner Greener RWAs initiatives

Target Stakeholder	Incentive Name	Sample Value of 1 Green Credit (GC)
Resident Welfare Associations (RWAs) and Housing Societies	Use of renewable energy	**Installation of solar plant covering 10% of yearly electricity consumption will earn the RWA = 1 GC** **10 KW of renewable energy generated = 1 GC** Threshold value for consideration (annual): **Up to 100 residential units** — 5 GC **100 - 200 residential units** — 10 GC **› 200 residential units** — 50 GC
	Water Conservation	**5 m^3 of water saved upon verification will earn the RWA = 1 GC** To achieve a rebate on water bills, GCs will need to be earned above the cut-off level (sample cut-offs below) **Up to 100 residential units** — 10 GC **100 – 200 residential units** — 50 GC **› 200 residential units** — 100 GC
	Rainwater Harvesting	**Installation of rainwater harvesting system covering 10% of water requirement will earn the RWA= 100 GC** On earning 500 GC, 50% of the total installation cost of the system will be reimbursed
	Green Cover and Tree Plantation	**5% of free area with green cover or tree plantation will earn the RWA = 1 GC** Threshold value for consideration: **Up to 100 residential units** — 5 GC **100 - 200 residential units** — 10 GC **› 200 residential units** — 50 GC
	Composting and E-Waste Recycling	**1 tonne of organic waste composted will earn the RWA = 1 GC** Threshold value for consideration: **Up to 100 residential units** — 150 GC **100 - 200 residential units** — 250 GC **› 200 residential units** — 500 GC **10 kgs of e-waste recycled through authorised units will earn the RWA = 1 GC** Threshold value for consideration: **Up to 100 residential units** — 10 GC **100 - 200 residential units** — 50 GC **› 200 residential units** — 100 GC
	Wastewater Treatment and Reuse	**10% of wastewater treated on site upon verification will earn the RWA = 1 GC** **5 m^3 of treated wastewater and reused on-site will earn the RWA = 1 GC** Threshold value for consideration: **Up to 100 residential units** — 50 GC **100 - 200 residential units** — 100 GC **› 200 residential units** — 500 GC

2.7. GREEN PROCUREMENT PROGRAMME

Green procurement encompasses the ideals of low-carbon and environmentally sustainable supply chains that reduces the negative impacts of goods and services that form the value chain of products and services that are purchased by end-use consumers. Sustainable supply chains focus on the operations of complex value chains of businesses and corporate establishments that recognise the negative environmental impact of business-as-usual activities and incorporate mechanisms to minimise that impact.

These mechanisms and initiatives typically address the various environmental issues including embedded carbon i.e. the greenhouse gas emissions (tonnes of CO_2 equivalent) associated with the use of purchased raw materials; resource (energy, water) inefficiencies, pollution streams (air, water, land), soil degradation, destruction of natural habitats, threat to wildlife, as well as, lifecycle impacts of products (use, disposal and waste reduction). Additionally, green procurement also entails that businesses monitor and enforce the concepts of resource efficiency and sustainable practices with their vendors and suppliers through regular supplier sustainability assessments and verifications.

In India, green purchasing, crucially, can also act a powerful driver for influencing the market to transition to sustainable consumption and production through higher production of and innovation in green materials, technologies and services. A sustained long-term push by the private and public sectors can provide the market with the impetus for accelerated eco-innovation.

This is also relevant in the era of "Make in India" whereby local producers in MSMEs, as well as, large businesses are incentivised to develop robust local supply chains. For example, at the manufacturing stage, the Technology Acquisition and Development Fund (TADF) provide special assistance to energy and water efficient and pollution control technologies. The element of voluntary adoption of sustainable and green procurement incentivised by a scheme such as green credits can bolster this programme.

2.7.1. Concept Overview

For corporate organisations, national and international brands, increasing urban integration and globalisation has created a system of intricate local, national and international supply network that makes it challenging to track sustainability in production and operations deep within the value chains. The current scenario of high global consumer awareness on the environment impact of production of goods and services in an economy has thrust businesses and brands in the spotlight of governments, investors, consumers and other public stakeholders.

There is a concerted call for large businesses and corporate entities to acknowledge their role in promoting environmental sustainability, starting with a green overhaul of their supply chains. Green purchasing, closed loop and circularity in production are at the forefront of the strategy sought after by the key stakeholders of companies because of the multi-dimensional benefits offered by these practices.

It is worthwhile to also note the business case for incorporating green procurement into the business model. By purchasing sustainably and managing the environmental performance of key vendors along supply chains, businesses can improve resource efficiency, optimize processes and associated costs, discover product innovations while also increasing productivity. Additionally, brands can leverage the positive perception impacts of a sustainable business with consumers, enhancing existing brand loyalty and broadening their market to include environmentally conscious consumers.

While corporates and brands and increasingly expanding their policies to incorporate sustainability, there is a need to accelerate this transition by incentivizing concrete, measurable actions that can be modelled and scaled-up at a regional and national level. To this end, this Green Credits Programme is envisioned as an important lever to promote and encourage green procurement within businesses.

Under the Green Credits Programme, corporate organisations and businesses will be encouraged proactively design and implement a green procurement policy. Such a policy is expected to knit together a host of procurement processes and activities that prioritise the purchasing and use of environmentally friendly products and services, selection of contractors and vendor contracts that incorporate environmental requirements.

The green credits scheme will allow participating corporates and businesses that undertake initiatives for green procurement to earn a pre-determined number of green credits for each successfully implemented initiative.

2.7.2. Key Features of Green Procurement

A comprehensive green procurement policy of businesses is typified by comprehensive company-level initiatives that address the concepts of supply chain emissions, pollution and waste reduction, operational resource efficiency and low-carbon growth, sustainable purchasing vendor agreements, and incorporation of tools like life-cycle assessment and environmental management standards. The following figure presents the broad categorization of green procurement practices that can be undertaken by corporate organisations and brands.

Figure 16: Key features of a Green Procurement Policy

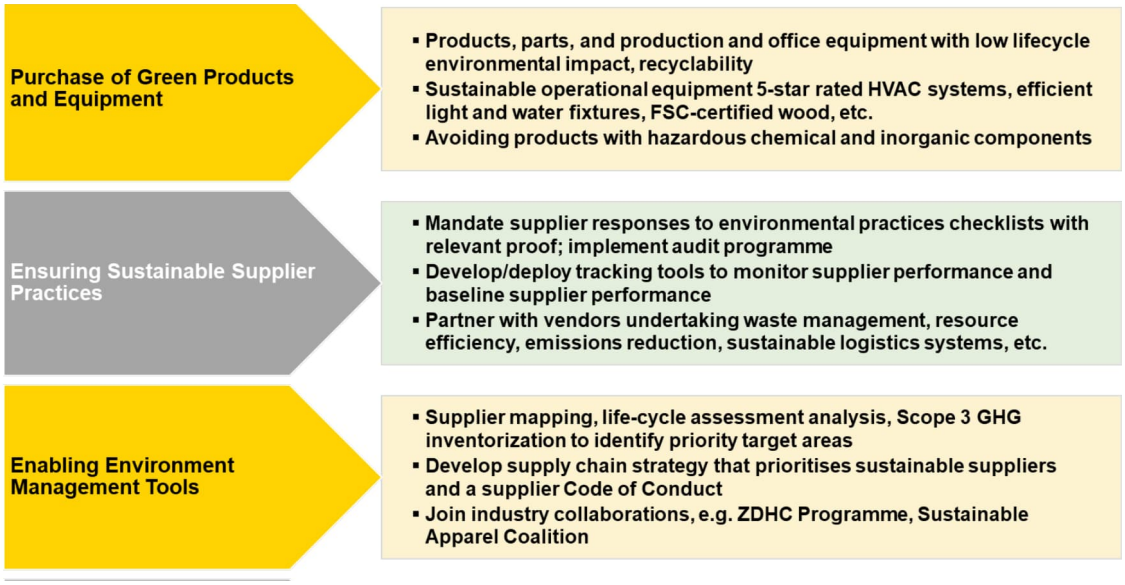
The success of any a business' green procurement policy will necessarily require synergies between the various components of the policy as depicted in the figure above, as well as, complementarity of the practices and initiatives therein. A comprehensive green procurement policy may also help pave the way for corporates and brands to develop comprehensive sustainability targets to improve resource efficiency in the supply chain, improve resource efficiency of operations and drive the creation of sustainable value chains by partnering with vendors exhibit environmentally sound practices.

The following sections presents some green procurement initiatives businesses can take to be eligible for earning green credits and the associated rewards and benefits.

2.7.3. Incentives envisaged for Green Procurement

The figure below presents a sample of the types of green initiatives that corporates and brands can undertake to benefit from the Green Credits Programme.

Figure 17: Incentives envisaged for a Green Procurement Policy



The initiatives presented above are illustrative of the components that may be added to develop a comprehensive green procurement policy by corporate businesses and brands for earning green credits. The scope and variability of actions of an individual business will be reflective of their industry domain, business model, market cap, material use patterns, complexity of supply chains, etc.

The incentive benefits envisaged for businesses developing a green procurement policy participating in the Green Credits Programme can include the following options.

Table 16: Rewards and benefits for implementing Green Procurement Policy

	**Certificate of Recognition for Implementing Green Procurement Policy** A participating corporate organisation business or brand could potentially earn green credits (GCs) by successfully proving that it has successfully designed and implemented various components of its green procurement policy. If the number of GCs earned equals or exceeds a pre-determined threshold specified by the programme, the business will be eligible to receive a Certificate of Recognition from the PMO.
	**Featured in radio programme Mann Ki Baat as First 3 Businesses Implementing Green Procurement Policy** A corporate or brand that receives the Certificate of Recognition from the PMO and garners more than a threshold number of green credits will be eligible to be entered into a ranking scheme where if it becomes one of the first 3 businesses to enact the green procurement policy, it will be **featured and felicitated on the Mann Ki Baat radio programme Honourable Prime Minister.** This has the potential to offer high visibility and branding leverage with the potential of the business benefitting economically and can also act as a strong motivator for others.

The Green Credits Programme leverages the use of existing platforms like Mann Ki Baat to reach an established wide audience, as well as, to efficiently manage implementation challenges, save financial and human resources in the implementation of the programme.

2.7.4. Estimation of Green Credits under Initiative

A pre-determined number of green credits will be awarded to a business that has successfully designed and implemented a green procurement policy. The criteria for relevant documentation and proofs that verify that a green procurement policy has been enacted and operationalised will be defined by the MoEFCC.

The following table presents a sample value of a green credit for developing a green procurement policy enacted by a business. The sample values of green credits presented here are indicative and exact calculations of the value of various components in the process of implementing a green procurement policy, and the threshold (cut-off) levels for eligibility of benefits will require feasibility studies to be conducted.

Table 17: Sample value of green credits for implementing a Green Procurement Policy

Target Stakeholder	Incentive Name	Sample Value of 1 Green Credit (GC)
Resident Welfare Associations (RWAs) and Housing Societies	Green Procurement Policy Development and Implementation	Design of a comprehensive green procurement policy upon verification will earn the business = 50 GC Implementation of green procurement policy with proofs submitted will earn the business = 100 GC Threshold value for earning Certificate of Recognition: 150 GC

2.8. ECO-BUDDY RECOGNITION PROGRAMME

With a population of 1.34 billion Indian citizens are a force to reckon with. Being a developing country, the tremendous energy needs of the citizens are largely met by the consumption of fossil fuels. Water consumption for the growing industries are also depleting the ground water levels and surface water bodies. To restrict the excessive usage of natural resources and optimal reuse of the waste streams citizens have a significant role to play. Human contribution to wastage is staggering and responsible for polluting water bodies, land bodies and air. Engaging citizens for sustainable development and taking active participation and cognizance of reduction of waste will not only help the environment but also lead to healthier living. This forms the foundation of the eco buddy programme wherein an active participation from the citizens in inculcating sustainable living and influencing the governing bodies to inculcate low carbon choices and implement individual action to mitigate climate change.

2.8.1. Concept Overview

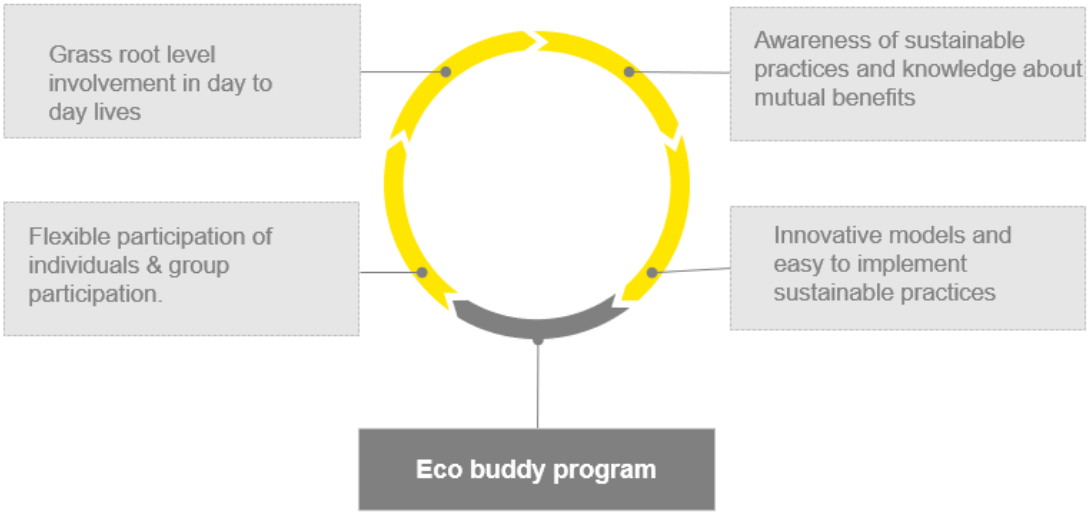
Citizens are the foundation of any society. Small changes in the behaviour of individual can bring notable change at a larger scale. Swachh Bharat Abhiyan by Government of India is a good initiative to work towards this cause. Eco buddy programme aims to build the green network among individual citizen and groups to ingrain the green behaviour in their day to day activities and inculcate 'sustainable' living habits. Citizens can popularize sustainable living practices among peers through discussions, media social interactions etc. Reducing the usage of the conventional vehicles to visit places and instead walking to places can help improve health of self and environment. Shifting towards electric mobility can help save money and reduce the usage of conventional fuels.

The aim of the eco buddy programme is to imbibe a sustainable culture in daily lives of the people that will have a waterfall effect to influence other people to follow on their footpaths. Inculcating a sense of responsible growth and incentivizing green deeds form the pillar of the eco-buddy programme. Collective efforts in the form of small to large citizen group can impact nature in a positive way. Successful collective efforts can act as a prototype for replicating the efforts in other similar areas. Incentivizing these actions will nudge the people into developing innovative ideas such as reuse of coconut shells, curtailing the non-decomposing plastic usage which can become a movement or ideal models for other citizens to choose from.

2.8.2. Key Features of Eco-Buddy Recognition Programme

Eco buddy recognition programme rides on its simplicity and easy to implement methods to bring about a positive change in the ecosystem. Some of the key features for the eco buddy programmes are highlighted in the figure below.

Figure 18: Key features of Eco-Buddy Recognition Programme

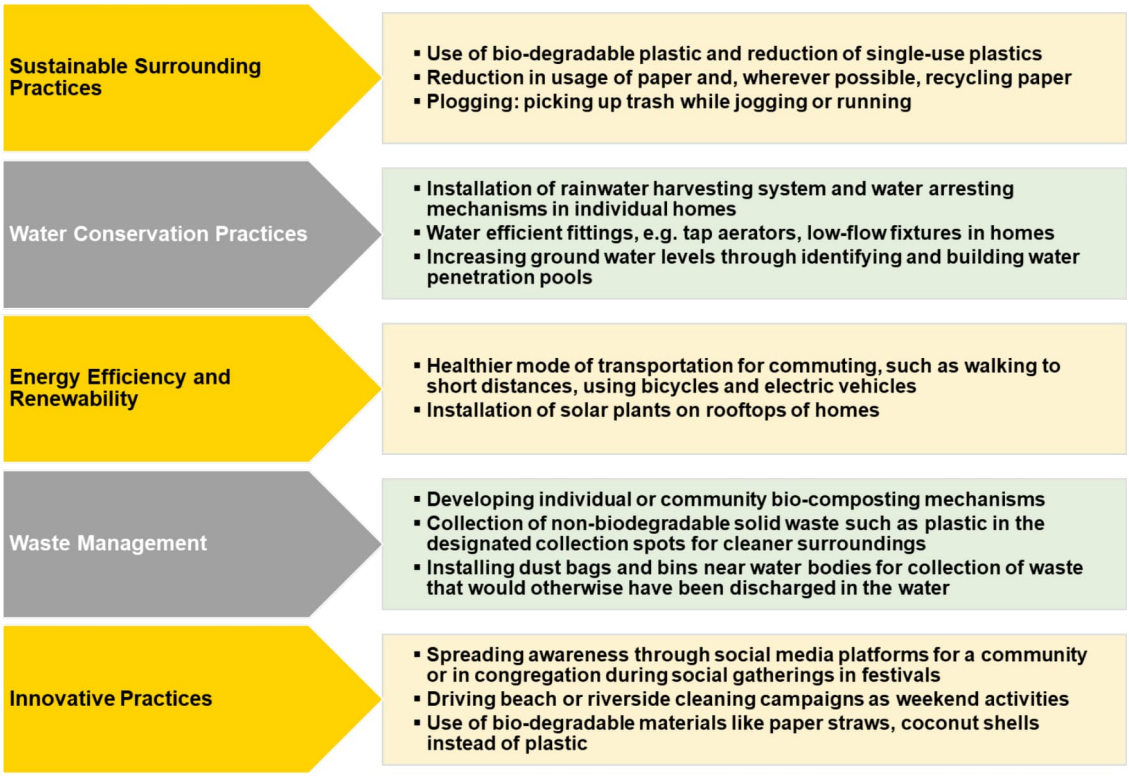


Providing flexible options to participate individually or in groups constitute an important feature of the eco buddy programme which will help citizens in choosing the initiative as per their comfort. Spreading awareness through social media platforms and discussions among individuals highlighting the benefits of such programme will provide impetus to the change country aims to achieve. Replicable innovative models may emerge through such programme for the benefit of the society making it one of the key features for the programme.

2.8.3. Incentives envisaged for Eco-Buddy Programme

The Eco-Buddy programme impacts the grass root level stakeholders ensuring that people develop green habits. Examples of green activities for individuals that may be incentivized are presented in the figure below.

Figure 19: Incentives envisaged for the Eco-Buddy Programme



These activities can be incentivized in ways detailed in the table below:

Table 18: Rewards and benefits for the Eco-Buddy Programme

	**Awarding through Media** Announcement in newspapers and radio talk shows (Mann Ki Baat) and short interviews could be conducted for the top 50 individuals and 10 group of citizens as a recognition towards the efforts
	**Featured on Ministry Website** Individual or group of individuals with noteworthy contribution assessed through generated green credits could be featured on the Ministry website for every citizen to see and replicate the novel approach in their own stead.
	**Certificate from Prime Minister's Office** Based on the number of overall green credits garnered the identified citizens and group could be potentially be awarded a certificate from PMO.

2.8.4. Estimation of Green Credits under Initiative

The details of eligibility and criteria for selection of Green credit incentive will be populated on the uniform web portal. Each individual will be able to apply for a single or more than one initiative depending upon the criteria set on the web portal. Participating entity will be able to claim the credit only after providing satisfactory proof of achieving the required efforts. Participants will have to ensure timely submission and veracity of the documents provided for availing the benefits.

An indicative table of the sample value of green credit and the related estimation is shown in the table below for representation.

Table 19: Sample value of green credits for Eco-Buddy Programme initiatives

Target Stakeholder	Incentive Name	Sample Value of 1 Green Credit (GC)
Individual Citizens / Citizen Groups	Green Cover Development	Individual: 500 saplings planted and nurtured in a year = 1 GC Group: 1000 saplings planted and nurtured in a year = 1 GC A group participation will have to earn a minimum number of GCs as shown in sample below based on number of group members <20 members: 5 GC 20-50 members: 10 GC > 50 members: 50 GC
	Beach/ Riverbank Clean Up	Individual: 1 large beach/ 2 large Ghats cleaned in India in a year = 1 GC Group: 2 large beach/ 5 large Ghats cleaned in India in a year = 1 GC A group participation will have to earn a minimum number of GCs as shown in sample below based on number of group members <20 members: 2 GC 20-50 members: 5 GC > 50 members: 8 GC
	Plastic Repository for single use plastics/multi-layer plastics	Individual - 100 kg of plastics collected in a year = 1 GC Groups - 500 kg of plastics collected in a year = 1 GC A group participation will have to earn a minimum number of GCs as shown in sample below based on number of group members <20 members: 5 GC 20-50 members: 10 GC > 50 members: 50 GC
	Plogging	Individual - 2 medium sized parks cleaned in India in a year while jogging Group - 5 notable parks cleaned in India in a year while jogging A group participation will have to earn a minimum number of GCs as shown in sample below based on number of group members <20 members: 2 GC 20-50 members: 5 GC > 50 members: 10 GC

03

Operational framework of Green Credits Programme

A robust operational structure will be required to launch and make the green initiatives platform a success. Operational structure will consist of design and infrastructure of the green credit initiatives supported by the active participation from the prospective applicants. The incentives will be potentially be designed to drive the participants to take up the green cause. Accordingly, the incentives shall be simple, readily available and convert into significant impact for the ecosystem. Keeping in mind the economic angle to undertaking the green activities, monetary reward could be designed for increased interest and to cover the cost incurred. The designed incentives shall be supported by a well-structured support infrastructure to make it convenient for users to access and apply the incentives in a hassle-free manner. Ease of accessibility becomes a crucial factor considering that participants may be from a location geographically difficult to access. Hence it shall also be modular for use of applicants of the programme. The infrastructure is also bolstered when the measures are quantifiable for easy evaluation and mapping the results making it pivotal for the green initiatives to be measurable through a defined scale wherein the impact created can easily be verified and calculated.

3.1. INCENTIVIZING GREEN ACTION AND PARTICIPATION

India has committed to reducing its emissions intensity (emissions per unit of GDP) by 33-35% by 2030 as part of the Paris Climate Change Agreement. In addition, national concerns have also led to the conception and implementation of programmes like Swachh Bharat Abhiyan (Clean India Mission), The National Mission for Clean Ganga, Smart Cities Mission, National Clean Air Programme, among others to holistically tackle a host of environmental issues facing India. A slew of other regulatory and policy initiatives like setting transport fuel standards (BS VI), making mining operations cleaner, developing eco-industrial zones are being undertaken with the objective of mitigation the adverse impact of climate change and environmental degradation.

Most of these measures have aligned with the broad idea of "polluter pays" wherein stakeholders are subject to restrictive regulations and fine-based enforcement of standards and regulations. Although, regulatory enforcement serves the purpose of dis-incentivizing activities that generate negative environmental impacts, large-scale integrated implementation of these measures has been flawed. Variable methods of calculating the amount of negative externality associated with actions of an agent and difficulties in imposing commensurate fines, as well as, the administrative hurdles in collecting information, all present challenge to effective implementation.

In recent years, a growing movement has emerged wherein different stakeholder groups are motivated

to proactively undertake pollution and emission reduction activities through the introduction of incentive- Incentive-based instruments that use financial means, directly or indirectly, to motivate polluters to reduce the health and environmental risks posed by their facilities, processes, or products. These instruments typically provide monetary and near-monetary rewards for polluting less like rebates, refunds, high-visibility rewards and recognition, etc.

Incentivizing green activities have a variety of benefits as detailed below.

- Incentives provide a clear reward-based signal to stakeholders for investing effort in sustainability initiatives, while simultaneously offering direct benefits in terms of lowering medium- to long-term costs of use of energy, water, equipment and infrastructure and improve return on investment
- The simplicity of a reward model is more palatable to an average citizen and businesses
- Incentive-based forms of regulation have strong potential to provide a stimulus for technological change and green innovation
- Incentive-based approaches also can address small sources of pollution such as households that are not easily controlled with traditional forms of regulation, as well as provide a reason for polluters to improve performance relative to existing regulatory requirements
- Economic instruments are mass tools to effect a change at grassroot level and can be scaled up to large population sizes also creating a sense of community and participation

3.2. APPLYING FOR GREEN CREDIT INCENTIVES

Success of the green credit initiatives will possibly depend significantly on the support infrastructure and easy to access systems. The systems shall be designed which are easy to understand, clear in driving the message, exhaustive in directions, accessible for all and responsive in nature. Designing a countrywide system that satisfies all the above condition will need further detailed assessment of not only the capability to manage the overall system, but also effective management of outside parties involved in developing the structure. Providing a centralized system over the internet will possibly facilitate such a platform that will act as an interface between the driving body and the applicants. The stakeholders could then possibly dynamically communicate and resolve queries while not being inconvenient to any of the involved parties. Such a platform could have defined processes populated which are accessible to all with directions on timelines and procedures to follow.

While a set of illustrative incentive ideas has been arrived at, it is imperative that their sound monitoring, and management also takes place. Deployment of IT based platforms like a web portal could help this programme's implementation reach fruition and enable scalability for covering more options or schemes, going forward. In such a case, each applicant accesses their earned green credit through this portal and the management and monitoring control may rest with MoEFCC as the nodal ministry.

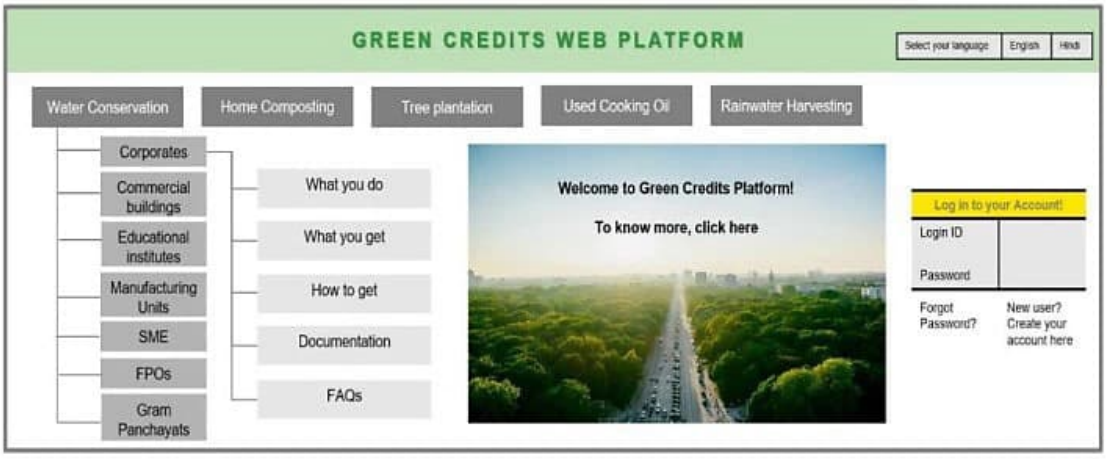
3.2.1. Unified Web Portal (UWP)

A dedicated Green Credits Portal (web-based platform) could be eventually designed for participants to choose a suitable initiative from a bouquet of initiatives. A UWP could potentially act as a central point for all the stakeholders in the green incentive program; covering aspects such as all the information related to incentives and its application, submission process, documentation and verification procedure, query resolution, contact option in case of dispute, list of regional responsible authorities and display of successful initiatives.

For any type of applicant, UWP may act as a primary source of contact and a bridge between the GCC and the applicant. UWP could outline the covered incentives and the related information could be updated on a timely basis for participants to refer to. Applicant may have to register on the UWP to participate in the green incentive program. Post registration a unique Login id and password would be generated for the applicant that will be used to access the data catering to the incentive the applicant has chosen to apply. Within the account, applicant would be able to check the progress, submit the

application, verify the claims etc. Details of suggested activities for applicant on UWP are outlined in the figure below.

Figure 20: Details of applicant activities on Green Credits Unified Web Portal



Activities for Applicants on UWP:

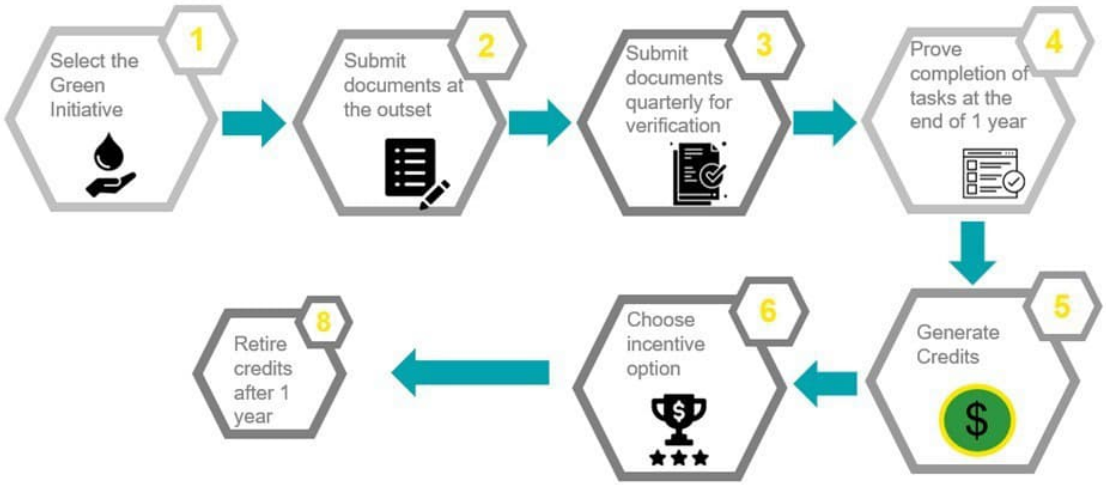
- Applicants can choose any initiative on Green Credits Portal as per their preference from the available list of initiatives.
- Applicant will have to abide by instructions provided on portal and submit document proofs as mentioned on portal to get credits.
- The proposed Green Credit Council (GCC - steering committee to manage the Green Credits Programme in India) will monitor and verify applications with respect to claims and proofs and approve disbursement to applicants
- Participating entity will be able to choose from a host of incentives for which it can be eligible. It will have to ensure that no discrepancy is observed while filing the application

The Green Credit Council will have sole authority to decide on any matter relate to application, eligibility, veracity of the claim, successful implementation of directives and deciding the award of incentives to the successful entity. Any decisions, information thus shall be communicated through the Uniform Web Portal only.

3.2.2. Lifecycle of Green Incentives and Application Process

Green credit initiative(s) chosen by the applicant will follow a process from selection to availing the benefits at the end of the cycle. The lifecycle of a typical green credit incentive can be accordingly envisioned as presented in the figure below.

Figure 21: Illustrative life cycle of a green incentive

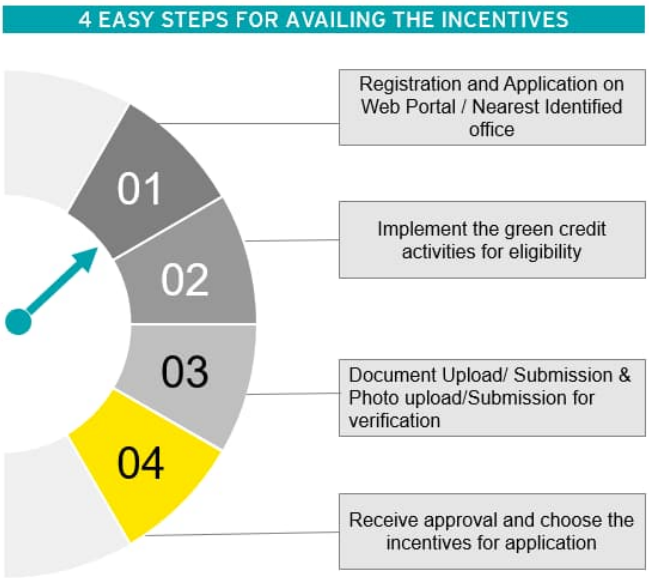


The above self-explanatory diagram indicates the 8 steps an incentive will go through before retiring. Once the green incentive of choice is selected, applicant will ensure that the requirements for earning the incentives are met. Accordingly, as an evidence of accomplishing the desired activities, requisite documents populated on the web portal will have to be submitted into the online account created. The progress of which will be further vet through a quarterly progress document submission. These documents will form the foundation of task completion certifying activities at the end of one year. Once these are submitted the incentives will be verified by the Green Credit Council and credits will be generated. These will introduce flexibility to choose the incentive option retiring after one year wherein efforts for new credit cycle will start.

All along this value chain, stakeholders will earn green credits, which will be predefined on the web portal of the green credits. Accordingly, the credits will reflect into account of the applicant. For convenience of the applicant the procedure for the application will be simplified in four easy steps outlined in the figure below.

1. Applicant will register through the portal giving all the details such as KYC details, location etc. which will ensure completion of registration. Applicant will be provided with a unique ID and password will be generated unique for the account. For specified few applicants' registration facility will be provided at predefined locations.

Figure 22: Steps for application for green incentives



2. Once applicant logs in her/ his account, list of available green credits will be populated based on the details provided during registration. Applicant will be able to choose the green credit he/she envisages to participate in. Once chosen account dashboard will display the host of green incentives chosen and outline the timeline to fulfil the obligation for documents submission

3. Based on the timeline displayed and the requirement of document for the respective green credits, applicant will have to ensure submission of details within the stipulated period. This will be the responsibility of the applicant. The documents and images uploaded should be legible and discernible for the verifier to assess.

4. The uploaded documents will be verified by the team working in the backend supporting the council. Once the verification is complete, a notification will be displayed on the portal to credit the account of the applicant. In case of any discrepancy, applicant will receive an email along with notification on its unique account to clarify/ resubmit the documents within a specified timeframe. Applicant should dynamically monitor the progress of its application.

3.3. WHAT MAKES GREEN ACTION MEASURABLE

This report highlights the suitability of certain initiatives within the green credits system that can be operationalized and implemented in the Indian context. The selection of these hinge on priority issues related to environmental and resource conservation, as well as, their ease of implementation and degree of innovativeness.

For effective operationalization of the Green Credits Programme, it is important that green actions taken individuals, businesses and communities to be measurable and verifiable. To this end, it is important that a robust Measurement, Reporting and Verification (MRV) system is institutionalised in order to accurately measure the impact of sustainable actions, as well as, develop methods for calculating the value of a specified quantum of positive impact generated from the actions.

The following section provides an overview of the MRV mechanisms that could be potentially employed for selected green actions that can be undertaken across the 8 selected initiatives within the Green Credits Programme. Descriptions of MRV mechanisms have been elaborated for four sample activities: water conservation; rainwater harvesting; tree plantation; and organic composting (household level). These are illustrative and similar MRV mechanisms will be developed over the course of implementation of the Green Credits Programme for other green activities. While the overarching idea remains that stakeholder, green action should be measurable, reportable and verifiable, the specifics of the mechanism may differ across the initiatives.

MRV Mechanism for Water Conservation Initiatives

Incentive monitoring will be conducted based on data submitted of water savings verified by water bills generated at the end of the month. The following table presents the potential monitoring mechanism that may be employed for water conservation activities undertaken by stakeholders like RWAs, schools, secretariats, commercial enterprises, etc.

S. No.	Details of Mechanism
1.	**Application Form** ◇ The form on the website must be filled and submitted online with details such as proposed units to be installed, estimated water savings, available vendors, etc. with an appointment request with the verification team ◇ The form will include an option of requesting a pre-verification visit for assistance in installation ◇ Each submitted application will have a unique identification number for tracking progress of the activity; a pre- and post-installation visit of the relevant authorities for understanding the scope of the setup and use of suitable equipment ◇ For pre-installation, the verification team will confirm the appointment and an authorised representative should visit the site on the said date and verify the installations/ fittings/ bio-blocks presence, etc. and that they meet the norms specified by the eligibility criteria ◇ The verification team will issue a sign-off and will upload pictures of the completed installation on the portal for generating records; post this the monitoring of water savings will commence ◇ Monthly water savings will be calculated and updated on the portal ◇ At the end of a year, the applicant will receive a verified certificate and associated incentive rewards post submission of the relevant documentation and recording of data
2.	**Water Bills** ◇ Submission of the online form on the portal will need to be accompanied with the water bills for one year (12 months) before the start of the initiative; for businesses, for e.g., the bills should also be accompanied with the number of employees per month of the year to calculate per capita water consumption ◇ Post the introduction of the efficient fixtures and verification by the team, the water bills will be uploaded and monitored on the online portal to calculate post installation per capita consumption ◇ A reduction in per capita water consumption will be one of the measures to verify that the installations have been working and providing water savings benefit

MRV Mechanism for Rainwater Harvesting

The following table provides a potential monitoring mechanism that may be employed for rainwater harvesting (RWH) systems in participating RWAs, housing societies or secretariat buildings.

Table 20: Illustrative MRV mechanism for rainwater harvesting initiative

S. No.	Details of Mechanism
1.	◇ For new societies, the construction of an RWH system by the builders may be made mandatory, in accordance with the bye-law regulations ◇ The construction of the RWH system may be done by approved private players listed on the MoEFCC website. The players may be approved pending a formal procurement process and empanelment that can be renewed once in two years ◇ The builder may then submit a Work Completion Certificate post which officials from the local municipality or municipal corporation may visit for inspection ◇ Refunds for the cost of installation may be initiated once the WCC is verified and the site inspected and credited to the builder's account ◇ Mandatory requirement of installing RWH systems will improve their penetration across the country and also help in implementing and tracking the initiative
2.	◇ For existing housing societies mandated to construct an RWH system, an application form will need to be submitted on the MoEFCC website wherein the society can choose the end-use of harvested rainwater ◇ End uses can include recharging of groundwater aquifers or use within the society premises for gardening or other potable use ◇ If selected end use is the recharging of aquifers, the rebate may be initiated post the construction of the RWH system and periodic checks to ensure functioning and efficiency of the equipment
3.	◇ For RWH systems installed on a voluntary basis, an application may be made online on the Ministry website; collated applications may be prioritised based on factors like catchment area, location of society, etc. ◇ A stepwise work progress declaration chart may be made available to the applicants; stepwise progress may be submitted online on the applicant's account with supporting documentary proof ◇ A Work Completion Certificate will be provided to the applicant upon completion of construction; accordingly, a pay-out may then be sent to the applicant upon verification from municipal officials ◇ These systems may be tagged with pre- and post-monsoon audit to ensure smooth functioning of the equipment

MRV Mechanism for Tree Plantations

The following table provides a potential monitoring mechanism that may be employed for tree plantation activities undertaken by stakeholders such as Panchayats. A similar MRV mechanism may be adopted for green cover development undertaken by RWAs, housing societies, MSMEs, etc.

Table 21: Illustrative MRV mechanism for tree plantations

S. No.	Details of Mechanism
1.	◇ The Panchayat will bear the responsibility of sustaining planted saplings and ensuring their survival, with support from local authorised bodies, and the Central and State Ministries
2.	◇ A local team tasked with monitoring the progress of the plantation will be required to submit photographic proof of the saplings every 6 months, with a sign-off obtained from the Panchayat to ensure verifiability
3.	◇ The local team members will be required to present a report on the surviving and tagged saplings to the Panchayat post which a Panchayat authority can update the status of the plantation online
4.	◇ The local population may be encouraged to participate and get involved in the plantation monitoring exercise by incentivizing the survival of each sapling during a year
5.	◇ Each surviving tree may also accrue some tax benefits for team members from the nearest city involved in the monitoring exercise

MRV Mechanism for Organic Composting Initiative

The following tables provide a potential monitoring and data collection mechanism for organic composting initiatives that may be undertaken by housing societies and RWAs as part of their waste management plan. Similar MRV mechanisms may be adopted for other stakeholders like secretariat buildings and MSMEs undertaking green composting activities.

Table 22: Illustrative MRV mechanism for composting initiative

S. No.	Details of Mechanism
1.	◇ An application form to be filled by the applicant and submitted to the Ministry website will require primary information (name, phone number, email ID, etc.), proposed number of compost kits that will be purchased, amount of wet waste utilised, and amount of compost generated with an appointment request from a vendor empanelled with the Ministry
2.	◇ Each submitted application form will generate a unique identification number to track progress; the applicant will receive progress updates through email and SMS; the identification number will be printed as a barcode on the compost bins that can be scanned during verification visits
3.	◇ A verification team will conduct quarterly visits to the society and conduct a thorough examination of the compost kits, the type and quantity of waste being composted, and quality of compost generated; the team may also cross-verify with housekeeping staff
4.	◇ A sign-off will be issued by the verification team upon completion of visit along with images of the composting set-up that can be uploaded to the website against the account of the applicant
5.	◇ Data collection, the schedule and frequency of monitoring can be conducted on the basis of the following table.

Table 23: Illustrative data collection for composting initiative

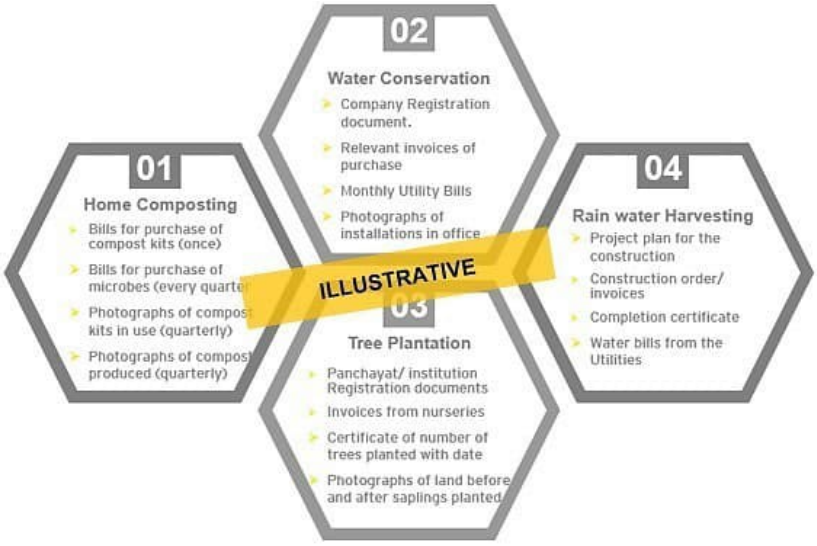
Intervention Benefit	Indicators	Data Source & Collection	Schedule & Frequency of Data Collection	Responsibilities and Time Needed
Improve segregation of waste at source	**Indicator:** Quantity (kg) of mixed waste collected from households and schools **Baseline:** Existing monitoring data from primary collection vehicles **Target:** 100% segregation of waste in 5 years	Existing record sheets of residential complexes & schools and logbooks of primary collection vehicles	Data recorded as per the existing waste collection schedule	**Data collection:** housekeeping staff of residential complexes and ULB/ Waste management agency **Data analysis and verification:** Independent agency **Data use:** Monthly, quarterly, annual reporting
Increase composting at the household level	**Indicator:** Quantity (kg) of compost generated from households and schools **Baseline:** N/A **Target:** 85% home composting in 5 years	Record sheets of residential complexes and schools	Monthly	**Data collection:** housekeeping staff of residential complexes and waste management contractor **Data analysis and verification:** Independent verification agency **Data use:** Monthly, half-yearly, annual reporting

Intervention Benefit	Indicators	Data Source & Collection	Schedule & Frequency of Data Collection	Responsibilities and Time Needed
Reduce the collection and transportation of wet waste and decrease the burden on the municipal authority	**Indicator:** Quantity (kg) of wet waste collected from households and schools **Baseline:** Existing monitoring data from primary collection vehicles **Target:** Reduce wet waste by 85% in 5 years	Existing record sheets of residential complexes and logbooks of primary collection vehicles	Data recorded as per the existing waste collection schedule	**Data collection:** housekeeping staff of residential complexes and ULB/ Waste management agency **Data analysis and verification:** Independent verification agency **Data use:** Monthly, quarterly, annual reporting
Increase demand and use for end products (compost)	**Indicator:** Quantity (kg) of compost used and sold **Baseline:** N/A Target: 100% of compost produced is used or sold	Existing record sheets of residential complexes and waste management contractor's database	Data recorded as per the existing compost collection schedule	**Data collection:** Data from reports provided by waste management contractor **Data analysis and verification:** Independent verification agency **Data use:** Annual reporting
Reduce volume of waste going to landfill	**Indicator:** Weight (TPD) of waste going to landfill **Baseline:** Existing monitoring data from landfill weighbridge and daily records of waste collection vehicles **Target:** 85% reduction in wet waste in 5 years	Weighbridge database and waste collection vehicles' records	Data recorded as per the existing waste collection schedule	**Data collection:** ULB/ Waste management agency/ contractor **Data analysis and verification:** Independent agency **Data use:** Monthly, quarterly, annual reporting
Targeted awareness initiatives for home composting and segregation delivered	**Indicator:** Number of residential complexes and schools that received awareness training in home composting and segregation **Baseline:** 0 **Target:** All schools and residential complexes	Awareness training event reports	Quarterly	**Data collection:** ULB/ independent third party **Data analysis and verification:** Independent verification agency **Data use:** Quarterly, annual reporting
Collection of user charges enforced	**Indicator:** Amount of user charges collected from households and schools **Baseline:** Existing records of ULB **Target:** 100% collection of user charges in 1 year	Existing records of ULB/ waste management agency	Monthly	**Data collection:** ULB/ Waste management agency/ contractor **Data analysis and verification:** Independent verification agency **Data use:** Monthly, quarterly, annual reporting
Production of compost	**Indicator:** Quantity (kg) of compost produced by households and schools **Baseline:** 0 **Target:** 100% composting at the household level in 5 years	ULB database	Monthly	**Data collection:** ULB/ Independent third party **Data analysis and verification:** Independent verification agency **Data use:** Monthly, quarterly, annual reporting

3.4. DOCUMENTATION STRUCTURE FOR GREEN ACTIVITIES

As a proof of green activities conducted, the applicant will have to produce unique set of documents as prescribed on the web portal. An illustrative list for some of the possible initiatives is shown below.

Figure 23: Illustrative list of documentation proof for earning green credits



For every green credit initiative, applicant will have checklist of documents populated under the 'verification proof' for the undertaken green deeds. The details of the type and the format of the documents will also be mentioned. It will be the responsibility of the applicant to ensure all the required documents and verification proof be submitted per the list provided. Without the evidence in proper format the application may not considered. The documentation process can be seen in three steps:

Preparation: Once the applicant logs in the web portal, it will populate the list of documents required. Applicant should ensure whether the proof for submission needs to be attested by a relevant authority. Details of such authority will be provided in the web portal. If the applicant is unable to reach the designated authority, a service request can be raised on the portal which will receive a reply. Based on the response received, the documents should be submitted. For example, for a rainwater harvesting installation, the documents may seek approval from a relevant panchayat officer to prove the veracity of the documents.

Submission: Once the documents are prepared as per the checklist, applicant must ensure that the documents are in correct format for submission. For example, a green cover development may require monthly submission of photographs in .jpg format with a time stamp to ensure the growth of plantation and proof of claim. Applicant should submit the documents in the relevant format only. It will be the responsibility for the applicant to submit all the required details within the prescribed time limit failing which the application may be rejected

Confirmation: Applicant will receive a confirmation once the submission is completed. The unique account on the web portal will show all the green initiatives the applicant has participated in and indicate status of the documentation across each initiative. The confirmation received by the applicant will be reflected against the relevant initiative. Post submission of the documents, relevant authorities will verify the submitted evidences and may raise queries or ask for clarifications. Such clarifications will reflect against the selected initiative in the account of web portal created by applicant. Applicant should check the web portal from time to time to check for such messages. Post satisfactory verification of the submitted proofs is complete by the relevant authorities, an indication of 'Verified' will reflect for the chosen initiative.

04

Economic Feasibility of Sample Green Initiatives

Economic feasibility is the most important parameter on which hinges the success of the programme. It acts as a fulcrum to decide on whether the choosing the initiative is a win - win situation for all the stakeholders involved. While there will be cost component involved during the initial phase of the efforts, it is imperative that it should make economic sense for all stakeholders to see the social long-term impact. It will involve the assessment and analysis of a project's potential to support the decision-making process by objectively and rationally identifying its strengths, weaknesses, opportunities and risks associated with it, the resources that will be needed to implement the project, and an assessment of its chances of success. The respective subsections aim to discuss about the feasibility analysis for some of the identified incentives and to make a case for its social impact vis a vis benefits it will provide to the common masses.

4.1. SAMPLE MEASURES WITH HIGH ENVIRONMENTAL EFFECTIVENESS

The analysis conducted as part of this report includes qualitative research of a list of initiatives that may be incorporated in the Green Credits Programme. To this end, the initiatives were evaluated to give a rating of "High', 'Medium', or 'Low' based on the score obtained by each on various parameters. The score card so developed will be used to assess and evaluate each of the activities.

- **Applicability to rural and urban areas:** Measures that have similar levels of applicability and context appropriateness to rural and urban areas score high on the scorecard. Given the large scale of environmental issues faced by the country and the need for implementing a variety of complementary climate-oriented action across various locales and regions, measures that carry the potential of achieving wider coverage across rural and urban are preferable.
- **Climate potential:** An activity creates an environmental benefit by removing more GHG emissions upon implementation and/ or creating other positive benefits like water conservation, reduction of waste, etc. receives high scores on the scorecard.

- **Ease of implementation:** Climate-resilient, low-carbon and other sustainability activities that require nominal technical expertise and that can be implemented at a disaggregated and local level without extensive dependency on state or national-level support are favourable in the context of citizen- and stakeholder-led green action that may not possess the means or resources to implement complex initiatives. These actions therefore score high on the scorecard.
- **Ease of monitoring:** Climate action and green activities are ongoing processes and gauging the impact of an initiative requires continued monitoring over an extended time period and assessing the need for modification. Green activities wherein nominal time and personnel resources needed for data collection and impact monitoring score high on the scorecard.
- **Time frame for roll-out:** Green activities that can be designed and implemented in a short- to medium- time frame score high on the scorecard for as they are preferred by stakeholder groups that seek visible results to their efforts and investments in undertaking the activities. A shorter time frame for roll-out also align with general consumer need of convenience.
- **Additionality potential:** For an innovative programme such as Green Credits, it is important to select eligible initiative that can add to the current network of existing initiatives within ongoing programmes. To this end, activities that have medium-to-high degree of non-coverage in current climate action programmes bolster the pitch of a unique national-level green credits scheme and, thus, score high on the scorecard.
- **Degree of national focus and country needs:** Green activities wherein the objective and outcome are aligned with those of national green programmes and climate change commitments, as well as, those that directly address pressing national environmental issues are scored high on the scorecard.
- **Potential for scalability:** Climate action and sustainability initiatives that have the potential of applicability across a number of economic sectors, geographical location, and at operational scales ranging from low to high are considered to be effective and impactful means of change. Green initiatives that can be scaled up and replicated across a large country like India, therefore, score high on the green credits scorecard.

In addition to identifying green incentives that have the potential to have high positive impact on the environment, it is also crucial to assess the economic and financial feasibility of a programme and the initiatives therein. Beyond the various scoring parameters, feasibility analyses are central to determining project viability, administrative expediency and level of investment (and commensurate risk) that needs to be borne by stakeholder implementing the initiative. Further, the impact of sustainability-oriented actions extends beyond environmental to include economic impacts; a transition towards a holistic national programme that incentivises green action through monetary and non-monetary instruments should be supported by a description of the associated economic interactions, as well as, potential costs and savings.

Cost-benefit assessments and resource savings analyses conducted for a sample of green activities identified within the Green Credits Programme are also expected to provide a foundation for in-depth studies for the calculation of value of green credits that will be associated with the successful implementation of green activities. Here, a few examples of green activities which the stakeholders could carry out under any of the eight ideas and their broad level economics are explored.

The following sections given details on the high-level cost-benefit assessments conducted for three selected activities that are envisaged as being employed in the 8 selected ideas of the Green Credits Programme, namely: **Water Conservation**; **Rainwater Harvesting**; and **Compost Bin Initiative.**

4.1.1. Cost Benefit Analyses of Water Conservation

Water conservation is at the forefront of green actions that can be used to maintain ecological balance and conserve a limited resource like water, especially in water-stressed regions of India. The green credits incentive associated with water conservations includes the installation of water efficient fixtures that ensure optimum dispensing of water and reduce wastage. These fixtures may include water sensor taps, aerators, low-flow fittings, dual-flush cisterns, etc.

The use of water in commercial, office and residential buildings is significantly higher in washrooms and urinals. Traditional water flush urinals in India use an average of 4 litres of water per flush; this rises to 15 litres when a toilet pan with cisterns is used for urination. The installation of water-efficient fixtures is expected to avoid excess water use and prevent wastage.

The costs associated with the installation of such fixtures borne will include direct costs of purchase of fixtures, and labour costs, and indirect costs of administration and man-hours allocated to maintenance of these fittings. A portion of these costs will be offset by savings in water utility bills, as well as, by rebate incentives received on bills as part of the Green Credits Programme.

As per the illustrative analysis conducted by EY, for a multi-city large scale organisation with more than one office on one dedicated building floor in a city, there exists high potential accruing a large amount of savings. Cost savings for such an organisation are estimated to be nearly INR 86 lakh per year. The figures below present a detailed analysis on water savings and cost savings conducted for this example of water conservation.

Figure 24: Illustrative exhibit: estimated water savings from water conservation initiatives

S No.	Parameters	Details	Details	Details	Details	Remarks
1	Type of Organization	Large	Mid	Small	Micro	
2	Basis (number of employees)	10000	100-500	10-100	1-9	
3	Total number of organizations	4200	31212	720223	44608174	
4	Total number of Employees	42000000	9363600	39612265	223040870	##
5	Number of Urinals (Max)	840000	187272	792245.3	4460817.4	urinal per 50 employees per
6	Number of washrooms (Max)	1200000	267532	1131779	6372597	per washroom
7	Actual implementation ratio	90%	70%	50%	10%	Assumption
7	Total water saved per urinal	45,36,00,00,000	7,86,54,24,000	23,76,73,59,000	26,76,49,04,400	litres per annum
8	Total water saved per washroom	37,80,00,000	6,55,45,340	19,80,61,325	22,30,40,895	litres per annum
9	Total water saved annual	4,57,38,000	79,30,969	2,39,65,420	2,69,87,945	m3 per annum
10	Overall water saving potential	10,46,22,335	m3/annum			
11	Water requirement in India	3000	billion m3			
12	Saving ratio	0.0035	%			
##	Formal sector employees	58.5	million	https://carnegieindia.org/2019/10/09/india-s-quest-for-jobs-policy-agenda-pub-79967		

Figure 25: Illustrative cost savings analysis for water conservation

Savings Calculations		
Parameters	Value	Unit
Total Locations	9	
Average Number of locations in a city	1	
Number of floors per location	2	
Number of washrooms per floor	3	
Average number of urinals per bathroom	3	
Average number of wash basins	2	
Total Urinals	162	
Water saved per Urinal	60000	litres
Water saved per Urinal	60	m3
Total water saved from one office	9720	m3
Rate of water (will vary)	120	Rs/m3
Total savings	11,66,400	Rs
Total Savings	0.1	INR Cr.
Total Wash Basins	108	
Transactions per day	500	
Per transaction water used	0.7	Litres
Total water conserved epr day	350	litres
Total water conserved per year	1,27,750.00	litres
Total savings	15,330	INR
Grand savings	11,81,730	INR
Pune, Mumbai, Delhi, Gurgaon, Hyderabad, Chennai, Bengaluru, Kolkata		

Cost calculations		
Parameters	Value	Unit
Cost per bio blocks	50	INR
Cost per Sprinkler	250	INR
Total Wash Basins	108	Numbers
Total Urinals	162	Numbers
Usage of bio block	1	per 7 days
Bio blocks per month	4	numbers
Total Bio blocks	648	numbers
Total bio block cost	32400	INR
Bio block cost per year	3,88,800	INR
Total cost of Sprinklers	27,000	INR
Total cost	4,15,800	INR
Other costs involved		
Procurement cost	3%	Of cost
Labour charges	7%	Of cost
Admin charges	3%	Of cost
Total cost for other iten	54,054	INR
Total cost component	4,69,854	INR
Total benefit	7,11,876	INR

4.1.2. Potential Savings Analysis for Rainwater Harvesting

Rainwater harvesting (RWH) may either be used to recharge groundwater aquifers or used for domestic purposes like gardening, landscaping, and other potable water uses. The incentive under the Green Credits Programme for rainwater harvesting focuses on RWH systems that can be installed in RWAs, housing societies, and other commercial and office buildings, both in urban and rural areas.

For builders and new upcoming societies, a lump-sum payment covering 100% of the cost of installation of an RWH system can be paid out on submission and subsequent verification of the Work Completion Certificate on the online application portal. For individual applicants and households, 90% of the effective installation cost may be incentivised and covered in a staggered manner. The following figure presents the analysis of potential water savings from implementing RWH across urban and rural households in India.

Figure 26: Illustrative potential water savings from implementing RWH systems

S No.	Prameter	Value	Unit	
1	Total Households in India	24.95	Crore (2011)	
2	Total urban Households	8.08	Crore (2011)	
3	Total rural Households	16.87	Crore (2011)	
4	Total Households in India	27.09	Crore (2019)	
5	Total urban Households	8.68	Crore (2019)	
6	Total rural Households	18.41	Crore (2019)	
7	Structure of House	Weak	Semi- Good	Good
7.1	Rural	28%	20%	52%
7.2	Urban	6%	12%	82%
7.3	Rural (In Crore)	5.15	3.68	9.57
7.4	Urban	0.52	1.04	7.12
8	Total Urban houses for RWH	8.16	Crore	
9	Total Rural houses for RWH	13.26	Crore	
	Considering 50% urban and 30% rural houses to be the type which can collect Rain water			
10	Total available Urban houses for RWH	4.08	Crore	
11	Total available Rural houses for RWH	3.98	Crore	
12	Type of Houses	Rural	Urban	
12.1	Small	50%	40%	
12.2	Medium	35%	30%	
12.3	Large	15%	30%	
12.4	Small (In Crore)	1.99	1.63	
12.5	Medium (In Crore)	1.39	1.22	
12.6	Large (In Crore)	0.60	1.22	
13	Average Runoff in small houses	50000	litres / year	
14	Average Runoff in medium houses	80000	litres / year	
15	Average runoff in large houses	120000	litres / year	
16	Total Water saving potential (Small houses)	18101	Billion lit/ year	
17	Total Water saving potential (Medium houses)	20925	Billion lit/ year	
18	Total Water saving potential (Large houses)	3809	Billion lit/ year	

4.1.3. Potential Savings Analysis for Compost Bin Incentive

In India, the responsibility of waste management lies with Urban Local Bodies (ULBs) due to the public and local nature of the service. However, with most cities/towns urbanizing rapidly, there has been a marked increase in the quantities and quality of waste generated across the country outstripping the current capacities of MSW services and ULBs for waste collection and processing across cities. This has led to high inefficiencies in the collection, transportation and processing of municipal waste leading to indiscriminate waste dumping and accumulation along streets and empty land.

Waste segregation at source and processing of organic waste reduced waste sent to landfill thereby resulting in significant financial savings from avoiding disposal costs. For organic waste, the quantum of savings depends on the difference in costs between landfill disposal and resource recovery, as well as, the amount of processed organic material available for reuse and sale.

Potential Financial Savings

Organic waste composting in residential complexes, schools and community buildings reduces the financial costs of disposal borne by local municipal authorities. The following tables present cost savings for a sample city and a sample residential complex where home composting is introduced. For the purposes of this analysis, a typical compost kit consists of two bins each with a capacity of 50 litres and a 5 litre bag of microbes. One bin accommodates 1.5 kg of waste per day and reaches capacity in 30 days.

Table 25: Illustrative cost analysis of organic composting for sample Indian city

Description	Unit	2019	2020	2021	2022	2023
Population (Projection)	No.	17,49,839	17,72,045	17,94,532	18,17,305	18,40,366
MSW generated	kg/day	8,88,918.36	9,00,198.73	9,11,622.25	9,23,190.74	9,34,906.03
No. of individuals per HH	No.	5	5	5	5	5
Waste generated per HH	kg/day	0.508	0.508	0.508	0.508	0.508
No. of households	No.	3,49,968	3,54,409	3,58,906	3,63,461	3,68,073
Density of wet waste	kg/m^3	300	300	300	300	300
Cost per compost kit	INR	10,000	10,500	11,025	11,576	12,155
Incentive in the form of refund offered	%	40%	40%	40%	40%	40%
Compost Kits at City Level						
50 ltr bins (4-7 family members)						
Penetration rate for 50 ltr bins (additional households that receive incentive per year)	%	10%	15%	18%	20%	22%
Capacity of each bin	m^3	0.05	0.05	0.05	0.05	0.05
Quantity of input waste in 1 bin per day	kg	1.5	1.5	1.5	1.5	1.5
Quantum of wet waste input in 1 kit per year	kg	450	450	450	450	450
No. of kits	No.	34,997	53,161	64,603	72,692	80,976
Total Cost of kit	INR	34,99,68,000	55,81,94,094	71,22,49,747	84,15,02,896	98,42,69,711
Cost of Microbes (20 ltrs; 3 months) for 1 kit	INR	508	533	560	588	617
Annual operational cost (microbes) for 1 kit	INR	2,032	2,134	2,240	2,352	2,470
Annual operational cost (microbes) for the city	INR	7,11,13,498	11,34,25,040	14,47,29,149	17,09,93,389	20,00,03,605

Description	Unit	2019	2020	2021	2022	2023
Requirement of Investment from Govt.	INR	13,99,87,200	22,32,77,638	28,48,99,899	33,66,01,159	39,37,07,884
Percent of compost generated per kg of wet waste	%	18%	18%	18%	18%	18%
Compost generated from 1 bin	kg	81	81	81	81	81
Number of compost cycles in 1 year	No.	7	8	8	8	8
Amount of compost generated in 1 year from 1 kit	kg	567	648	648	648	648
Amount of compost generated in 1 year for the city	kg	1,98,43,186	3,44,48,550	4,18,62,842	4,71,04,535	5,24,72,521
Total compost generated in 5 years		**1,95,732 Metric Tons**				
Total compost generated in 5 years from 1 kit		**3,159 kg**				
Total sale price in 5 years for 1 kit (@ Rs. 6 per kg)		**INR 18,954/-**				
Total cost price in 5 years for 1 kit		**INR 21,228/-**				

Table 26: **Illustrative 5 year cost analysis of organic composting for sample residential complex in India**

Criteria	Windrow Composting	Vermi-Composting	Mechanised organic waste composter	In-vessel Composting	Pit composting	Household Bin Composting*
Description	Production of compost by piling biodegradable waste in long rows (windows)	Composting using various species of earthworms that feed on organic waste and release droppings called vermi-cast (also called worm castings, worm humus or worm manure)	Composting in a machine that maintains the right temperature, air flow and moisture	Composting in metal or plastic tanks or concrete bunkers in which air flow and temperature can be controlled	Composting through the process of burying organic waste directly into the soil.	Composting in a fibreglass bin at home in which microbes are added and air/ oxygen flow and moisture are controlled.
Waste Quantity	100 TPD – 1000 TPD	100 kg/day – 2 TPD	100 kg/day – 5 TPD	500 kg/day – 5 TPD	100 kg/day – 2 TPD	**1.5 kg/day**
Area Required	12,500 – 18,500 m^2	100 – 2500 m^2	100 – 1000 m^2	200 – 500 m^2	100 – 2500 m^2	**0.2 – 0.5 m^2**
Approx. capital investment (INR)	650 – 5500 lakhs	0.25 – 2.5 lakhs	3.0 – 90 lakhs	2.50 – 60 lakhs	0.25 – 3 lakhs	**10,000**
Approx. operational cost (INR)	750 per ton of compost	5,000 per ton of compost	1,500 per ton of compost	1,700 per ton of compost	1,050 per ton of compost	**2,032 per annum**

Potential GHG Savings

In India, landfilling is the most widely accepted method of disposing of organic waste. Unscientifically planned and managed landfill sites are usually built without the use of engineered liners or methane collection systems. Indiscriminate dumping leads to anaerobic decomposition of organic waste that releases methane and other greenhouse gases into the atmosphere, as well as, having other adverse impacts on surrounding soil and groundwater quality, and on human health.

The global warming potential of methane, as a greenhouse gas, is 20 times that of carbon dioxide; TERI estimates that, by 2047, 39 million tonnes of methane can be releases from landfills in India if no efforts are made to reduce the waste-related emissions through better waste management and processing (through composting, recycling, etc.).

Composting of wet organic waste can result in the significant reduction of GHG emissions over time. For instance, for a city generating 26,670 tonnes of waste per month of which 12,802 tonnes is wet waste, the amount of GHG emissions that can be avoided (expressed in tonnes of carbon dioxide equivalent – tCO_2e) is presented below.

GHG/month avoided by recycling or composting instead of landfilling (using EPA WARM Model[13]):

$$12{,}802 \ \frac{\text{tonnes}}{\text{month}} \times 0.8808 \ \frac{tCO_2e}{\text{month}} \text{ recycled} = 11{,}276 \text{ metric } \frac{tCO_2e}{\text{month}} \text{ avoided emissions}$$

4.2. CHALLENGES AND BENEFITS OF SAMPLE MEASURES

As part of the Green Credits programme, undertaking sustainability-oriented and green activities undertaken by MSMEs may present challenges in implementation. The following table presents an overview of the challenges associated with a sampling of green activities that may be undertaken by stakeholders.

Figure 27: Potential challenges in implementation of green initiatives

Type of Initiative	Potential Challenges to Implementation
Water Conservation	▸ Inadequate trained worker capacity or dedicated man-hours for installation of new water systems or retrofitting existing systems ▸ Hurdles in obtaining clearances for installing new systems ▸ Lack of initial capital resources available to MSMEs ▸ Inadequate monitoring systems for collecting and monitoring water use data
Rainwater Harvesting	▸ Initial cost of installation of rainwater harvesting (RWH) system may be high ▸ Maintenance of hydraulics and storage tanks requires trained worker capacity which may not available to MSMEs ▸ Limited or low seasonal rainfall may impede recoupment of costs and limit water supply
Use of renewable energy (RE) sources	▸ High initial cost of building, installing RE systems like solar PV, bio-gas plant ▸ Potential high operating cost of maintaining RE systems and inadequately trained manpower ▸ Oversupply of traditionally-sourced grid electricity, as well as, lack of energy storage options for renewably generated energy may present barriers
Organic Waste Composting	▸ Low awareness on composting processes and maintenance, and quality of organic material that can be composted ▸ High cost of specialised composting bins; foul smell and fear of disease spread ▸ Lack of robust monitoring and verification systems to gauge amount of wet waste composted
Green Cover Development	▸ Finding available fertile land location for the tree plantation ▸ Lack of widespread and robust safety and protection measures for young saplings against the natural elements, animals, and pests ▸ High initial costs of arranging live saplings and issues with transportation and logistics, and other costs for sustaining the saplings

13 http://www.stopwaste.co/calculator/

The benefits associated with the implementation of some illustrative green activities within the Green Credits Programme are presented in the figure below.

Figure 28: Potential benefits of implementing green initiatives

Type of Initiative	Benefits of Implementation
Water Conservation	▸ Water savings that are especially beneficial for water-stressed areas or areas where costs of municipal water is high ▸ Financial savings generated from lower water bills, that are particularly relevant in low-income housing communities and rural areas ▸ For local businesses and MSMEs, monetary gains will offset investment cost in water efficient equipment ▸ Higher awareness in the community as a whole
Rainwater Harvesting	▸ Financial savings from reduction in water utility bills ▸ Improvement in groundwater table levels when captured rainwater is used to recharge aquifers that is especially beneficial for water-stressed areas ▸ Increased availability and access to water resources in case of shortages (e.g. drought) ▸ Overall reduction in the costs borne by public works authorities and local governments for maintaining sewer systems
Green Cover Development	▸ Involvement of urban and rural communities that presents a source of income for local residents and also meets India's NDC targets of increasing green cover ▸ Improvement in ambient air quality, dust and pollution levels in the area ▸ Reduction in ground-water runoff prevents soil erosion and flooding ▸ Increase in natural groundwater tables due to larger green cover ▸ Biodiversity conservation and enhancement of local flora and fauna
Use of Renewable Energy (RE) Sources	▸ Direct impact of zero lower greenhouse gas emissions ▸ Disaggregated off-grid systems for domestic use can improve energy access across semi-urban and urban-peripheral areas ▸ Deepening and expansion of supply and value chains associated with products and services that generate or use renewable energy at a small scale ▸ At national scale, a reduction in the demand for oil and gas can reduce the trade deficit for India due to lower imports of fossil fuels
Organic Waste Composting	▸ Lower organic wet waste dumped in landfills reduces the amount of GHGs (like methane) released into the atmosphere ▸ Reduction in financial costs associated with waste collection and disposal for local municipal corporations ▸ High ease of implementation and low capital costs ▸ Provides a source of organic manure and fertilizer and can lead to the development of local supply chains for the product

The benefits of green initiatives presented above cover only a sample of various green activities stakeholders can undertake within the Green Credits Programme. Overall, the cumulative benefits to the country from the plethora of green actions available for individuals, communities and businesses to undertake will have a significant positive impact on the natural environment, and in the long run contribute to alleviation of environmental issues faced by the country, as well as, the national commitments to mitigating the adverse impacts of climate change.

05

Institutionalising National Green Credits

It is imperative to establish green credits as a norm in India if it needs to have a widespread reach and impact. The green credit incentive structure could have multiple stakeholders interacting through a uniform platform to achieve a single objective of bringing about a positive change in the ecosystem. This will be a part of a bigger ecosystem that will help achieve goals India set towards Paris agreement.

Each stakeholder will have a crucial role to play and by acting as enablers and enhancers, will eventually become a role model for the new batch of stakeholders to make the programme a success. More so, acting as pillars, the stakeholders will give shape to the programme by generating innovative ideas that can be replicated in other areas of the country. A well-defined structure will ensure evaluation of the stakeholder's capability using an outlined framework, identification of barriers and prioritization of key performance indicators to dynamically modify the green initiatives as and when required.

5.1. NATIONAL GREEN CREDITS PROGRAMME: ACTOR INTERPLAY AND IMPACT

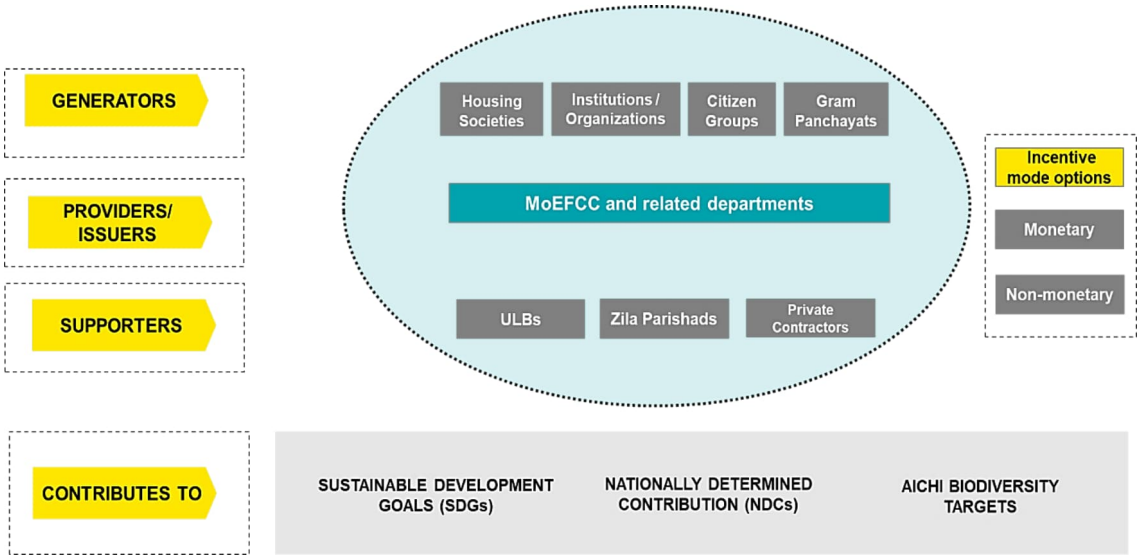
The national Green Credits Programme is envisioned as a universe with a number of different actors and the interplay of different groups of stakeholders. The programme can be anchored at the national level by the Ministry of Environment, Forest and Climate Change (MoEFCC), related departments and agencies.

At the disaggregate national level, programme implementation could be undertaken by a variety of stakeholders including RWAs and housing societies, citizens groups and communities, Gram Panchayats, businesses and MSMEs, and other institutions like schools, national and state secretariats, religious places, etc. The programme will be supported through the work of Urban Local Bodies (ULBs), Zila Parishads, and private contractors tasked with the technical and logistical aspects of operationalising green initiatives for stakeholders. Both monetary and non-monetary incentive options issued by the Ministry shall be employed for driving the programme.

The he Green Credits Programme could also contribute to India's Nationally Determined Contribution (NDC), especially by encouraging use of renewable energy like solar power, enhancing energy efficiency through deeper penetration of efficient lighting systems in residential complexes, in industries (MSMEs) through energy efficient equipment and processes.

The following figure depicts the possible components of the national Green Credits Programme.

Figure 29: Illustrative key actors and impacts of the national Green Credits Programme



Incentivised green action has huge potential of large cross-cutting impact on various targets and indicators of the 2030 Sustainable Development Goals (SDGs). Some of the indicators expected to be positively impacted through the national Green Credits Programme are presented in the following table.

Table 27: Alignment of Green Credits Programme with global SDGs

Goal	Targets/Indicators
SDG 6: Ensure availability and sustainable management of water and sanitation for all	◇ Target 6.1: Achieve universal and equitable access to safe and affordable drinking water for all ◇ Target 6.4: Increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater
SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all	◇ **Indicator 7.2.1**: Renewable energy share in the total final energy consumption ◇ **Indicator 7.3.1**: Energy intensity measured in terms of primary energy and GDP
SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	◇ **Target 9.4**: Upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes
SDG 12: Ensure sustainable consumption and production patterns	◇ **Target 12.2**: Achieve the sustainable management and efficient use of natural resources ◇ **Target 12.5**: Substantially reduce waste generation through prevention, reduction, recycling and reuse ◇ **Indicator 12.a.1**: Installed renewable energy-generating capacity in developing countries (in watts per capita) ◇ **Target 12.b**: Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products
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	◇ **Indicator 15.1.1**: Forest area as a proportion of total land area

5.2. GREEN CREDIT COUNCIL

Constitution of the Green Credit Council (GCC) can be one of the ways for implementing green credits as a programme. It could function as an independent body that would be under the direct supervision of the Ministry of Environment, Forest and Climate Change (MoEFCC) working in close conjunction experts from relevant sectors supported by line ministries, state pollution control boards, citizen groups etc.

Its primary function will be to manage, monitor and operate the entire green credits programme through the Green Credits Portal. It will also liaise with the state nodal agencies and report to the MoEFCC regularly. Overall, the Green Credit Council shall oversee the following aspects.

- Operation and management of programme
- Regular review of GC metrics and updating of MRV framework and mechanism
- Integration of new incentives with the old ones
- Capacity building, media & outreach activity for propagation of the concept
- Auctioning through State Nodal Agencies/State Climate Change knowledge centres/ private contractors for successful implementation of the program
- Implementation of Third-Party agency for implementing UWP and regular monitoring of its activities

GCC would help ensure a dynamic monitoring of the green credit metrics through regular consultations with the advisory boards while receiving inputs to improvise on the existing systems. A troubleshooting cell to resolve the issues and challenges faced by the applicants and internal stakeholders of the GCC council will also form a part of the activities of GCC. Assessing the response time to induce confidence in stakeholders will be an important factor while instituting the structure of GCC.

Furthermore, keeping track of retiring credits after completion of lifecycle of the green credit while assuring the stakeholders of the compensated incentives in case of an error or delay on the part of GCC will be in the work folio of the council. Accordingly, operationalizing the Green Credits Programme can be achieved through two main approaches, namely:

- **State-Level Implementation:** In state level implementation, MoEFCC will act as nodal Ministry and host the green credits portal and anchor the Programme. The ministry shall be the ultimate deciding authority in the matter for deciding all the important modalities and operational parameters of the programme.
  MoEFCC will chalk out the overview and details of the programme and finalize the guidelines for Monitoring Reporting and Verification and crediting process. However, the implementation direction and the necessary steps for its completion will be implemented by the state nodal agencies through the advisory issued by the MoEFCC. Accordingly, states could carry out all the activities as laid out in the guidelines while vying for best possible means to make the programme a success. Performance of the states will be assessed yearly resulting in raking of the states with the best outcomes in different category. Accordingly, these states will be recognized for their efforts through awards and special mention.
- **Implementation through Hybrid Model:** In the hybrid model too, MoEFCC will act as nodal Ministry and host the green credits portal and anchor the programme. However, to induce flexibility it will implement few of the initiatives, that are relevant and shall be moderated at MoEFCC level such as 'Green Schools' and 'Sustainable Secretariats' that will make the ministry play a role as the implementing agency at a central level. The initiatives can be chosen as per the criteria set the MoEFCC considering the criticality, applicability and feasibility of implementation. Accordingly, MoEFCC will issue an advisory to other line ministries for implementation of other initiatives. MoEFCC will then design the programme and finalize the guidelines for MRV, crediting process in close association with other line ministries ensuring their support and getting them onboard for such implementation. Next, the ministries could approach MoEFCC for any clarifications, modifications with respect to the programme guidelines set.

5.2.1. Indicative Organisational Structure

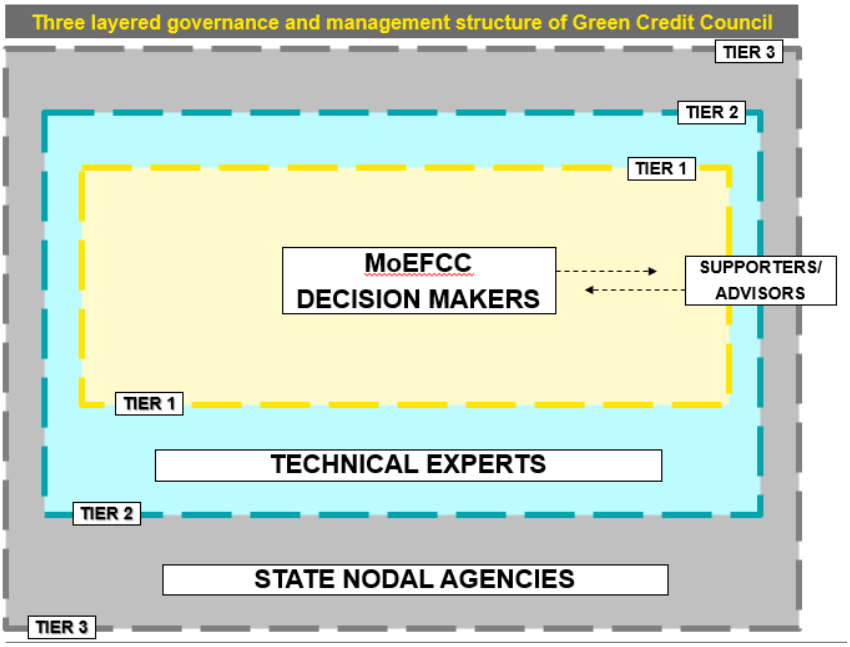
GCC can be conceptualized and designed to have a three-tier structure with Tier 1 and 2 playing the most critical roles and supported by advisors from each stakeholder category. Three tiered structure considers the complexity involved in the process and the need for integration of all stakeholders at multiple levels. Such a structure will have an effective interplay among the actors of the system while ensuring the common goal is achieved.

Tier 1 forms the core and the most key part of the organizational structure. It will act as driver and steering committee of the entire programme. In the pivotal role it plays, it will engage with all the levels and enlist support of a third party as and when required making it role of tier 1 to assess the need of external support and increase of decrease the number of people supporting it in this endeavour.

Tier 2 will consist of pool of technical experts providing technical input and advice at regular times. Providing market intelligence on evolving technical scenario will be an important part of the green initiative programme. It will also involve assessing the existing green initiatives as suggested by the MoEFCC and provide views on the new initiatives that can be included.

Tier 3 will mainly be formed as a support cum implementing structure. It will also provide support in conducting regular and focused capacity building programmes within its ambit of authority. A two-pronged support is envisaged to Tier 1 and Tier 2 on one side and the participants on the other. For the participants it will act as interface with agenda to resolve any hiccups faced during the life cycle of green credit initiative while providing the on-ground feedback to the Tier 1 and Tier 2 stakeholders for bringing in dynamic changes to the system. A description of the roles and responsibilities follows in the subsequent section. A diagrammatic representation of the governance structure is presented in the figure below.

Figure 30: Green Credit Council - Indicative organisation structure



The Green Credit Council can have a board headed by one leader from the relevant department of MoEFCC who will be supported by an additional 3-4 members. The suggested headcount and suggested total number of core committee members can be eight to ten. The GCC will work holistically across the three tiers for proper management and implementation of the Programme. They will convene for meetings as and when directed by the MoEFCC.

Table 28: Indicative number of stakeholders, part of GCC

S. No.	Stakeholder	Suggested No. of Personnel
1.	**Decision Makers** MoEFCC	4-5 1 Leader with support team of 3-4
2.	**Technical Experts** Education Institutions; Think Tanks; Policy Makers; Development Agencies	2 representatives
3.	State Nodal Agencies / State Climate Change Knowledge Centres / Private contractors	To be consulted on need basis
4.	**Supporters** Line Ministries, PCBs, State dept., ULB, Industry associations, citizen groups	To be consulted on a need basis
Total Personnel		8 - 10

5.2.2. Indicative Roles and Responsibilities

MoEFCC

MOEFCC will act as the governing body for the entire green credit council. The Ministry will take decisions on approval of any requisition or dispute or clarification on any significant matter related to program. It will also be the final authority to decide on any changes with respect to structure, incentive mechanism, benefits envisaged thereon etc.

Supporters/ Advisors

A strong representation from State/Central bodies; state departments & ULBs; industry associations; citizen group representatives is envisioned to provide support in strategic review of the decided credit structure and suggest timely modifications in the processes as and when required. The representation will also ensure in coordinating and networking at the stakeholder level for developing understanding of the on-ground situation to refine the existing structure further. It will also act as advisor on the matters of election/ suspension of additional/ existing support member at the regional level.

Technical Experts

Education institutions (schools, universities); policymakers; think tanks; development agencies will provide technical expertise for the Green Credits Programme. The representation will provide an eye for the MoEFCC on the improvements with respect to the technical aspects associated with the program. For example, if an incentive has defined a particular fixture as suitable for water conservation, and the market improvements lead to a better available option for the applicants, the experts will provide their views to MoEFCC and suggest changes in the existing mechanism.