



पेयजल एवं स्वच्छता विभाग
जल शक्ति मंत्रालय
भारत सरकार

DEPARTMENT OF DRINKING WATER AND SANITATION
MINISTRY OF JAL SHAKTI
GOVERNMENT OF INDIA

सत्यमेव जयते

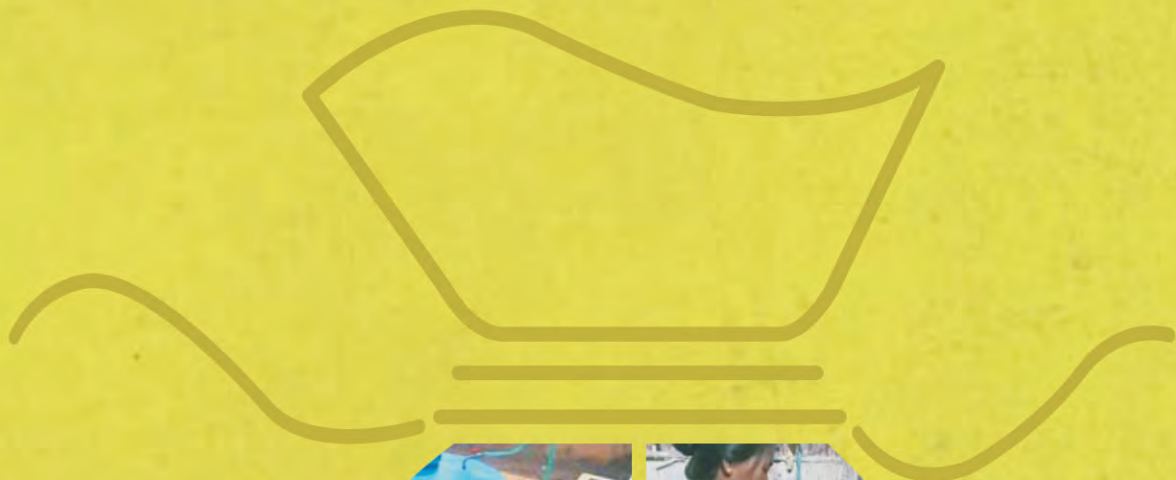


एक कदम स्वच्छता की ओर

GOBARDHAN WASTE TO WEALTH

FRAMEWORK FOR IMPLEMENTATION

2021





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Abbreviations

AIF	Agriculture Infrastructure Fund
AIP	Annual Implementation Plan
BDTC	Biogas Development and Training Centres
BioCNG	Bio-Compressed Natural Gas
CB	Capacity Building
CSR	Corporate Social Responsibility
CBOs	Community Based Organizations
CBG	Compressed Bio-Gas
CFA	Central Finance Assistance
DAY-NRLM	Deendayal Antyodaya Yojana- National Rural Livelihoods Mission
DAHD	Department of Animal Husbandry and Dairying
DACFW	Department of Agriculture, Cooperation and Farmers Welfare
DDWS	Department of Drinking Water and Sanitation
FPOs	Farmer Producer Organizations
GMCs	Gas Marketing Companies
GPDP	Gram Panchayat Development Plan
GP	Gram Panchayat (Village Panchayat)
HH	Households
IEC	Information, Education and Communication
LPG	Liquefied Petroleum Gas
MNRE	Ministry of New and Renewable Energy
MoPNG	Ministry of Petroleum and Natural Gas
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MPLAD	Member of Parliament- Local Area Development
MLALAD	Member of Legislative Assembly- Local Area Development
NGO	Non-Government Organization

NNBOMP	National Biogas and Organic Manure Programme
OMCs	Oil Marketing Companies
ODF	Open Defecation Free
PRIs	Panchayati Raj Institutions
PPP	Public Private Partnerships
PROM	Phosphate Rich Organic Manure
SATAT	Sustainable Alternative Towards Affordable Transportation
SBM (G)	Swachh Bharat Mission (Grameen)
SHGs	Self Help Groups
15th FC	15 th Finance Commission
UTs	Union Territories

Introduction

1.1 Background

GOBARDHAN was launched by the Government of India in April 2018 as a part of the Solid and Liquid Waste Management component under Swachh Bharat Mission (Grameen) to positively impact village cleanliness and generate wealth and energy from cattle and organic waste. The main focus of GOBARDHAN is to keep villages clean, increase the income of rural households, and generate energy and organic manure from cattle waste.

As rural India has already attained the Open Defecation Free (ODF) status, the importance of GOBARDHAN has increased as it supports the villages in achieving ODF-plus status, which is an important objective of Swachh Bharat Mission (Grameen) Phase II.

Presently, various Ministries/Departments are implementing schemes for the management of cattle and agricultural waste through the setting up of biogas plants. However, a unified approach would be beneficial to ensure convergence among various schemes and to get full benefits from them. Accordingly, GOBARDHAN: Waste to Wealth programme has been designed to provide a common platform for schemes of different Ministries/Departments such as the Ministry of New and Renewable Energy (MNRE); Ministry of Petroleum and Natural Gas (MoPNG); Department of Animal Husbandry and Dairying (DAHD); Department of Agriculture, Cooperation and Farmers Welfare (DACFW); Department of Rural Development; and Department of Drinking Water and Sanitation (DDWS).

DDWS is the coordinating Department for implementation of GOBARDHAN: Waste to Wealth programme. DDWS also provides technical and financial assistance to States/UTs for the implementation of GOBARDHAN projects under SBM-G.

1.2 Objectives of GOBARDHAN



To support villages effectively manage their cattle waste, agricultural waste/residue and all other organic waste



To support communities to convert their organic waste (especially cattle dung) to wealth through generation of manure and energy out of waste



To promote environmental sanitation and curb vector-borne diseases through effective disposal of waste in rural areas

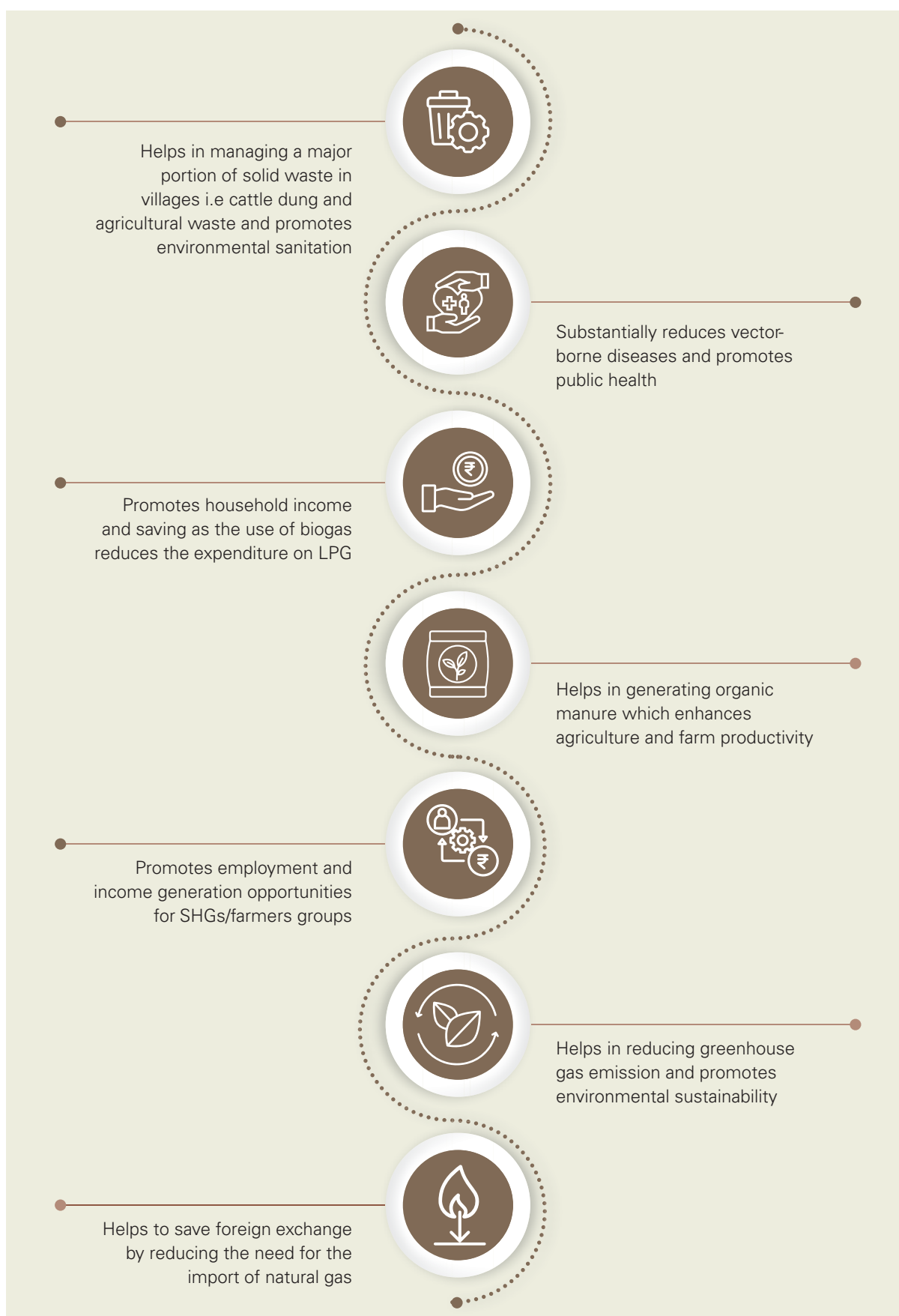


To create livelihood opportunities in rural areas and enhance the income of farmers and other rural people by supporting them to convert their waste to wealth



To promote rural entrepreneurship by involving entrepreneurs, SHGs and Youth Groups in the setting up and operation and management of biogas plants

1.3 Benefits of GOBARDHAN



1.4 Guiding Principles of GOBARDHAN Implementation

GOBARDHAN would be implemented as a people's initiative to make use of animal dung in villages. The community would lead the planning, implementation and management of the GOBARDHAN scheme.



It would address the compelling need for the safe management of cattle dung and other organic waste to be popularized amongst the rural population by the State, District and Block administration so that people realise the importance of the GOBARDHAN initiative.

Intensive IEC at the local level should be undertaken to promote the benefits of GOBARDHAN and the need for community collective action on GOBARDHAN.



Villages with a high population of cattle should be taken on priority.

GOBARDHAN infrastructure should be such that it can be owned, operated and managed by the members of the community themselves.



There should be optimum utilization of available financial resources to cover maximum households and to get the maximum benefit from it.

Various Models of GOBARDHAN

Gobardhan was launched to ensure cleanliness in villages by converting bio waste including waste from cattle, kitchen leftovers, crop residue and market waste to biogas and bio fertilizers through the process of biomethanation. Biomethanation is a process by which organic material is converted under anaerobic conditions to biogas and bioslurry. Based on field visits undertaken by DDWS, biogas plants envisaged under GOBARDHAN can be classified under four broad models:

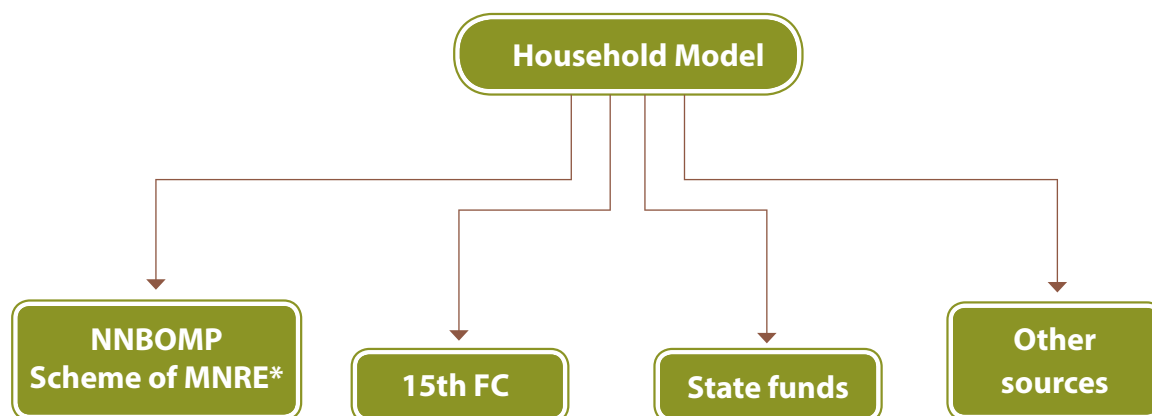
2.1 Individual Household Model

Under this model, GPs will identify potential households for setting up of GOBARDHAN units and arrange to provide technical and financial support for the construction of biogas plants.



Funding source

Funding for Individual household biogas plants is available under New National Biogas and Organic Manure Programme (NNBOMP) of MNRE which can be seen in **Annexure I**.



* Scheme under review

2.2 Cluster Model

Under this model, a cluster of households will be identified by the GPs in association with Cooperatives, Milk Unions, Farmer Producer Organizations (FPOs), SHGs, CBOs developed under DAY-NRLM, Private entrepreneurs, etc. These households should have a minimum of 3 to 4 cattle. Individual household level biogas plants of 2 cum capacity will be installed in each of the identified households. The biogas generated will be used by the households while the slurry will be collected and processed at slurry processing unit which will be managed by the GPs or the identified agencies/organisation.

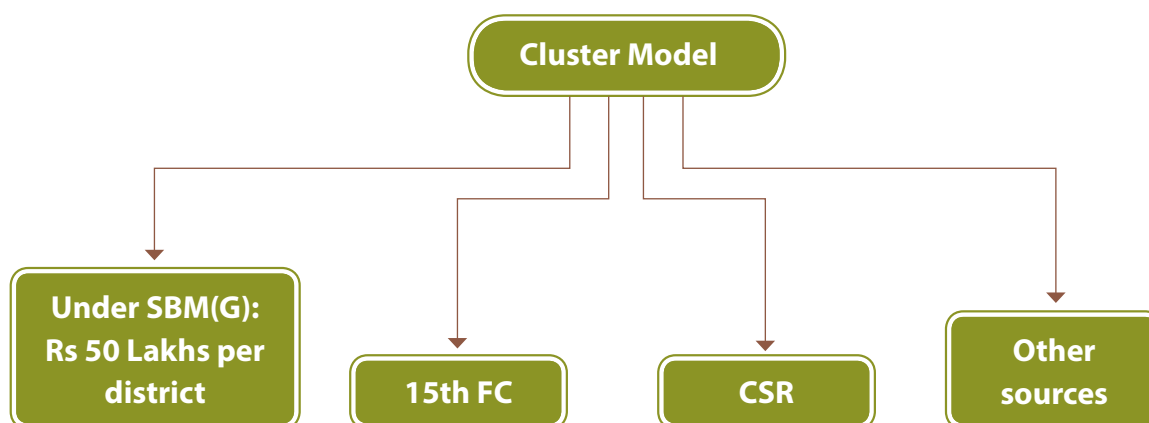
The funding for the individual household biogas plants will be as per the norms of New National Biogas and Organic Manure Programme (NNBOMP) of MNRE*. The slurry processing unit can be funded from 15th Finance Commission and other sources.



Case study and indicative cost details available in Annexure II-A

Funding source

SBM-G (for the biogas plant only), 15th Finance Commission, CSR and other sources.



* Scheme under review

2.3 Community Model

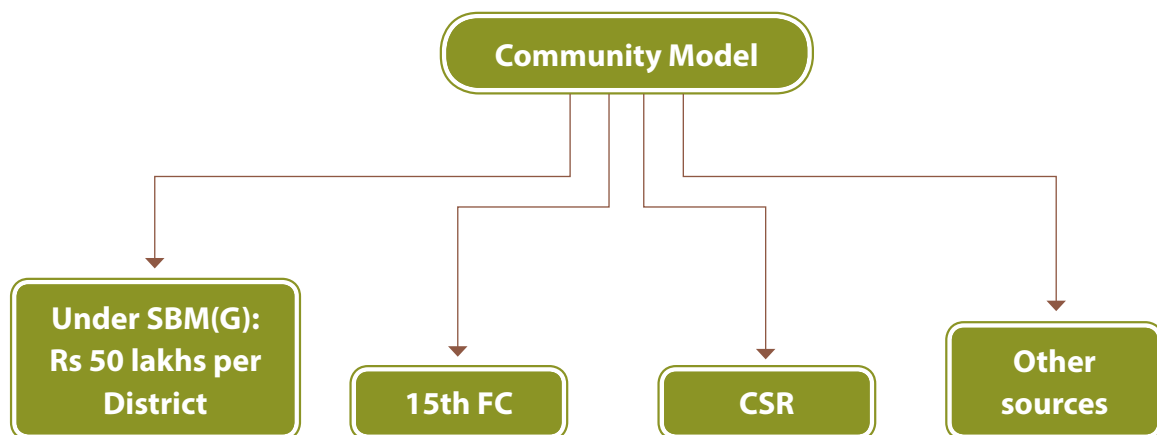
In this model, a biogas plant will be constructed for a minimum of 5–10 households which will also supply the organic waste for the plant. The plant can also be constructed near/at gaushalas/ institutions. For uninterrupted supply of organic wastes, community plant should preferably be located not far from the beneficiary households or near/at gaushalas, market places etc. This will ensure the sustainability of such plant in the long run as well as promote business models. The biogas generated can be supplied to households/restaurants/institutions, etc. It can also be converted to electricity/CBG. The slurry can be used directly in the fields or also can be converted into bio-fertilisers/ organic manure.

Case study and indicative cost details available in Annexure II-B



Funding source

SBM(G), 15th Finance Commission, CSR and other sources.



2.4 Commercial Model

Under this model, large biogas/ Compressed Bio-gas (CBG) plants can be set up by Entrepreneurs/ Cooperatives/Gaushalas/Dairies, etc., for generation of CBG on a commercial scale. The CBG can be sold to industries/Oil Marketing Companies (OMCs) or directly through fuel dispensing units etc. Slurry from the plant can be converted to solid and liquid bio-fertilizers/organic manure.

State and Districts will promote the construction of commercial units as part of the GOBARDHAN scheme to promote the use of biogas for multiple needs. In this regard, they would:

- ◆ Create enabling policy provisions for entrepreneurs and businesses to set up commercial units
- ◆ Support entrepreneurs and businesses to avail loans/financial assistance being provided under the schemes of various departments/institutions
- ◆ Create awareness of the business potential of commercial plants so that more such plants are set up.
- ◆ Promote uptake of slurry by Government Departments and other allied organisations.
- ◆ Provide land on lease for the project, wherever needed

Case study and indicative cost details available in Annexure II-C

Funding source

Large CBG plants are to be set up through self-financing. However, financing/assistance can be availed from other sources such as:



I. **Commercial loans** – Loans to entrepreneurs for setting up CBG plants have been included under Priority Sector Lending. SBI and Bank of Baroda have introduced loan products for CBG plants under Sustainable Alternative Towards Affordable Transportation (SATAT) of MoPNG

II. **Waste to Energy programme of MNRE*:**

a. Central Financial Assistance for BioCNG generation (including setting up of biogas plant): Rs 4.0 Crore per 4800 kg/day. For further details please visit the website <https://biourja.mnre.gov.in/>

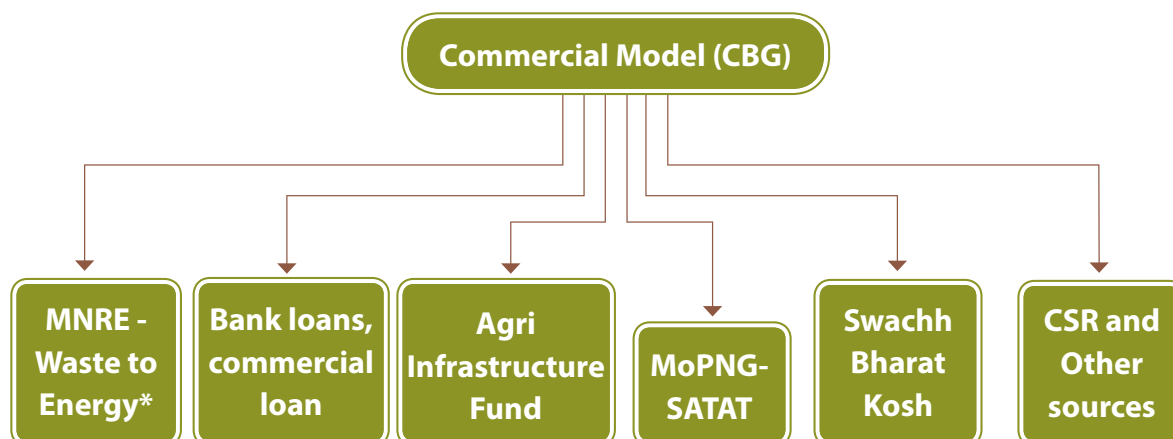
III. **Agriculture Infrastructure Fund (AIF) of DACFW:** AIF provides financial support for investment in viable projects relating to post-harvest management infrastructure and community farming assets. All loans under this financing facility will have an interest subvention of 3 percent per annum up to a limit of loan amount of Rs. 2 crores. This subvention will be available for a maximum period of 7 years.

CBG plants have been included as eligible project of AIF. For further details of the scheme please visit the website <https://agriinfra.dac.gov.in/>

IV. **CSR and other sources**

V. **Swachh Bharat Kosh:** For disbursement of fund under SBK, the operational guidelines of Swachh Bharat Kosh will be followed. For more information visit: <http://sbkosh.gov.in/>

Other support: MoPNG provides support for CBG projects under SATAT in the form of assured offtake of CBG @Rs 46/kg (as on Oct'21) + applicable taxes by OMCs/GMCs. For further details please visit the website <https://satat.co.in/satat/>



* Scheme under review

Implementation Mechanism

3.1 District



The District will be the nodal agency for planning, implementation, monitoring and approval of GOBARDHAN projects.



The District will have the flexibility to decide implementation mechanisms.



Districts can take up model projects at District/Block level and cluster & community models at GP level.



In the case of cluster and community models at the GP level, the District will obtain the proposals from GPs.



The District will examine the proposals of GPs with the support of a technical committee/experts, if needed, and approve the proposal ensuring its long-term sustainability and incorporate the same in the District AIP.



The District will ensure that overall funding under SBM-G will not exceed the cap of Rs. 50 lakhs for the entire programme period i.e. up to 2024–25.



Funds in the case of cluster and community model will be paid to the GP or agency/organisation endorsed by the GP for the implementation of the projects.



The Gram Panchayat or the agency selected by Gram Panchayat, will receive funds from District in an account/ledger opened for the GOBARDHAN project. The funds received for the implementation of GOBARDHAN will always be identifiable and will be subject to audit.



Additional requirements of funds for the cluster and community projects at the District/Block/GP level can be met from other funding sources such as the 15th Finance Commission, MPLAD, MLALAD, CSR, etc.



Business models to be promoted, wherever feasible.

3.2 Gram Panchayat



The GP has to identify the potential beneficiary for the household/cluster and community level projects. It can work with Cooperatives, Milk Unions, Farmer Producer Organizations (FPOs), SHGs, CBOs developed under DAY-NRLM, Private entrepreneurs, etc., for the identification of beneficiaries.



GOBARDHAN projects can be implemented by GPs through SHGs/Farmers Producers Organisations/CBOs developed under DAY-NRLM/Milk Cooperatives/Milk Unions/ Agencies selected or empaneled by States or Districts/Biogas Development and Training Centres (BDTCs), etc.



The GP will identify a suitable location for community projects through a Gram Sabha resolution.



The GP will prepare a project proposal with the help of a technical agency/experts (to be arranged by the District/State), if required and submit the same to the District for approval before incorporating it in the GPDP.



The project proposal will include the cost of planning, implementation and operation and maintenance.



The GP will identify all the funding sources at the time of planning for convergence.



The GP or the agency identified for implementation of GOBARDHAN will maintain a separate account/ledger for GOBARDHAN.



O&M will be the responsibility of the GP/agency in the case of community projects and centralized management of slurry for cluster projects.



The GP will explore the scope of the revenue generation model for the community project to make the project self-sustaining.


Funding under SBM-G

- ◆ Financial assistance up to Rs. 50 lakhs per District will be provided under SBM-G, to be shared between the Centre and States as prescribed in SBM-G Phase-II Operational Guidelines. States have the flexibility to provide additional State share.
- ◆ The funds will be utilized for the cluster/institutional/community projects as approved by the Districts.
- ◆ Funds for a project can be released in more than one instalment on approval of the plan and at different stages of implementation.
- ◆ For cluster projects, funding norms of NNBOMP* will be followed. For such projects, the District will decide whether the funds should be released to the GP or the implementing agency identified by GP. In case the GP or the agency identified by the GP has to disburse funds to individual households, DBT will be ensured.
- ◆ For community projects including gaushala-based plant, funding will be based on actual requirements and will be released through the GP or directly to the implementing agency identified by the GP, as the case may be.
- ◆ Funds can be dovetailed from other resources such as the 15th Finance Commission funds, MPLAD, MLALAD, CSR funds, State schemes, PPP model, Gap-funding schemes of Gol, etc. to meet additional requirements for a GOBARDHAN project if any.
- ◆ Turn-Key job fee for construction, supervision, commissioning, and free O&M warranty for five years' trouble-free operations of a plant including quality control at all levels will be as per norms of NNBOMP* for plants up to 25 cum and 10% of project cost or actuals, whichever is less, for plants with capacity above 25 cum.
- ◆ Other provisions for release/utilization of SBM-G funds as prescribed in the SBM-G Phase-II Guidelines will also be followed.

* Scheme under review

Indicative Funding Sources and Convergence Matrix

5.1 Sources of Funding



The image shows a banner for 'Sources of funding for Biogas/CBG plants' with logos of the Department of Drinking Water and Sanitation and the Ministry of Jal Shakti. It features an illustration of a biogas plant and a small green plant growing in a pot.

Sr. No	Source	Funding support
1.	Bank loans under Priority Sector Lending(PSL)	Loans to entrepreneurs for setting up Compressed Bio Gas (CBG) plants have been included under PSL (2020) as per master directions issued by RBI on September 04, 2020
2.	MNRE- Waste to Energy (scheme under review)	(i) Central Finance Assistance (CFA) of Rs. 1 cr for 12,000 cum of biogas generation/ day subject to a maximum CFA of Rs.10 crore/project (ii) Central Finance Assistance of Rs. 4 cr per 4800 Kg CBG generation/ day subject to a maximum CFA of Rs.10 crore /project
3.	MNRE- NNBOMP (scheme under review)	Central Financial Assistance of Rs. 7,500 to Rs 35,000 for individual HH biogas plants with capacity 1-25 cum.
4.	Agri-Infrastructure fund	<ul style="list-style-type: none"> ▶ CBG plants have been included as one of the eligible projects under community farming assets. ▶ Bio-fertiliser plants have been included as eligible projects under organic input production. ▶ Loans up to a limit of Rs. 2 crores for eligible projects will have an interest subvention of 3% per annum, which will be available for a maximum period of 7 years. ▶ In the case of loans beyond Rs.2 crores, the interest subvention will be limited up to Rs. 2 crores.
5.	SBM(G)	▶ 50 Lakhs per district for community/cluster projects
6.	Other sources	<ul style="list-style-type: none"> ▶ 15th FC ▶ CSR ▶ GP Fund ▶ MGNREGA ▶ MPLAD Fund ▶ State Govt. Fund
7.	MoPNG provides support for CBG projects under SATAT in the form of assured offtake of CBG @Rs 46/ Kg by OMCs. State Bank of India and Bank of Baroda have launched loan products for financing of CBG Plants under SATAT	

5.2 Convergence Matrix

Model	Source of funding					
	SBM (G)	15 FC	MNRE	Agri Infrastructure Fund	CSR	Loan
Community Model including gaushala based projects	Y	Y	N	N	Y	Y
Cluster Model	Y (For biogas plants only)	Y	N	N	Y	Y
Commercial Model- Large CBG Plant	N	N	Y (Waste to energy)*	Y	Y	Y
Individual/ Home based Model	Funding for individual household biogas plant is available under NNBOMP scheme of MNRE*.					

5.3 15th Finance Commission

As per the Manual prepared by DDWS, the 15th Finance Commission Tied Grants can be utilized for the following GOBARDHAN activities:

- ◆ Construction of biogas plants both community as well as individual units
- ◆ Creation of slurry processing centre/unit
- ◆ O&M of plants/units
- ◆ Transportation of waste from group of villages to plants/units
- ◆ Hiring of support agencies for implementation of GOBARDHAN projects

The 15th FC manual is available on: <https://jalshakti-ddws.gov.in/sites/default/files/manual-for-utilisation-of-15th-fc-tied-grants.pdf>

* Scheme under review

Other Resources

Suggested Project Cycle under GOBARDHAN is at **Annexure III**

Estimated costs for biogas plants of different capacity are given in **Annexure IV**.

List of Technical Agencies is available on the Unified Portal of GOBARDHAN at: <https://sbm.gov.in/gbdw20/ManualPage.aspx>

Detailed Project Report of various models of biogas plant is available at https://sbm.gov.in/gbdw20/SLRM_Media_content.aspx under Department of Drinking Water and Sanitation.

Role of Various Implementing Partners

7.1 Role of DDWS

DDWS is the nodal Department for the implementation of GOBARDHAN in rural areas. The Department will issue necessary guidelines, advisories from time to time and will provide technical and financial assistance to support the States/UTs for smooth implementation of the GOBARDHAN projects under SBM-G. DDWS will also monitor the progress made by the States in the implementation of GOBARDHAN projects.

DDWS as the coordinating Department is working with several Ministries and Departments at the Central level and supporting them to develop effective strategies to converge and leverage each other's strength. It is also working with State Governments, public and private sector institutions to ensure that there are enough resources, funding and technical expertise available to implement GOBARDHAN across the country. Besides, it provides a unified web portal for all stakeholders, Ministries/Departments to report and track the progress on GOBARDHAN implementation.

7.2 Role of Various Implementing Agencies in States/UTs

States and Districts are collectively responsible for the implementation of GOBARDHAN. Their key roles and responsibilities (indicative) are presented below:

State Government	<ol style="list-style-type: none"> 1. Create provisions for the implementation of GOBAR- Dhan Scheme 2. Lead implementation of GOBARDHAN in the State 3. Ensure that plans prepared/approved by the Districts are incorporated in the GPDP and AIP of SBM-G 4. Provide technical support to the Districts/GPs and identify professional agencies, wherever required, for smooth implementation of GOBARDHAN 5. Allocate funds to the District, considering the approved plan for implementation 6. Contribute State share funds
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	<ol style="list-style-type: none"> 7. Undertake IEC campaigns for popularising GOBARDHAN 8. Build capacities of implementers of GOBARDHAN, create a suitable environment for entrepreneurs, gaushalas, etc., and provide them technical assistance for setting up commercial units 9. Monitor progress of implementation
District	<ol style="list-style-type: none"> 1. Lead implementation of GOBARDHAN in the District 2. Develop a plan along with Blocks and Gram Panchayats/SHGs/Farmer Groups (FGs) to implement GOBARDHAN 3. Support implementation of model projects at Block/District 4. Identify GPs for implementation of GOBARDHAN 5. Identification of appropriate sites for construction of GOBARDHAN model projects at Block/District level, with support of GPs, if needed 6. Approval and disbursement of funds for implementation of GOBARDHAN, provide technical support to the GPs and identify professional agencies, wherever required, for smooth implementation of GOBARDHAN 7. Capacity building of GPs/SHGs/FGs 8. Create a suitable environment for entrepreneurs, gaushalas, etc., and provide them technical assistance for setting up commercial units 9. Monitoring and reporting of progress
Gram Panchayat	<ol style="list-style-type: none"> 1. Identify SHGs/FGs/cooperatives/milk unions/Farmer Producer Organisations (FPOs)/CBOs developed under DAY-NRLM/Private entrepreneurs/agencies etc. for implementation of GOBARDHAN 2. Identify potential households which could be mobilized for household/cluster level projects 3. Mobilize households to use biogas and slurry 4. Identify the location for community projects 5. Identify agency/agencies for implementation of GOBARDHAN project. 6. Prepare project proposals, including identification of financial resources and estimation of cost for setting up of projects and cost for O&M of community and cluster projects for 1st five years, and submit them to the District for approval 7. Implement the household/cluster, community, institutional projects, approved by the District, through their available human resources or by engaging professional agencies 8. Own responsibility for O&M/ensure O&M of community/cluster/institutional projects

Monitoring and Evaluation

- 1) The District will have the responsibility of monitoring the implementation of the GOBARDHAN scheme. DWSC will also periodically monitor the progress and address any bottlenecks in the implementation of GOBARDHAN. Officials of the Department responsible for the implementation of GOBARDHAN at the District level will physically verify the functionality, timely O&M etc., of all the plants set up under the GOBARDHAN scheme quarterly.
- 2) The detailed information of the plants (functional/under construction) will be captured through the SBM-G Mobile App and will be uploaded on the unified portal of GOBARDHAN. Key parameters for monitoring can be locally developed. However, indicative parameters can be found on the GOBARDHAN web portal.
- 3) The GOBARDHAN projects will be audited every year as per provisions laid down in the guidelines of SBM-G Phase II.
- 4) The state will set up an independent evaluation mechanism to monitor the functioning of plants installed and the successful operation of the project vis-a-vis the objective of the scheme. This may be a semi-annual exercise, at least for the first two years of the project.
- 5) The State will set up a Grievance Redressal mechanism for GOBARDHAN ensuring prompt redressal of the grievances received.
- 6) A unified portal of GOBARDHAN has been developed and launched on 3rd February 2021 (<http://sbm.gov.in/gbdw20>). The portal will help in monitoring the progress/achievements of the Schemes of all stakeholder Ministries/Departments under the unified approach and will also capture the details of Bio-gas and CBG plants installed/supported under GOBARDHAN initiative of DDWS, SATAT of MoPNG, and the Waste to Energy* Programme.



* Scheme under review

Annexures

ANNEXURE I: Sources of Funding

Pattern of Central Financial Assistance under the New National Biogas and Organic Manure Programme, (NNBOMP)* w.e.f. 30.05.2018 and up to 2020–21 (31.03.2021). Scheme is under Review.

S. No	Particulars of Central Financial Assistance (CFA) and States/UTs, Regions & Categories of beneficiaries	Biogas plants under NNBOMP (size 1 to 25 cubic metre biogas per day) (In Rupees per plant)				
		1 Cubic Metre	2–6 Cubic Metre	8–10 Cubic Metre	15 Cubic Metre	20–25 Cubic Metre
A	Central Subsidy Rates Applicable (In Rs. per plant)					
1	NER States, including Sikkim and including SC and ST Categories of NER.	17,000	22,000	24,000	25,000	35,000
2	Special Category States (Jammu & Kashmir, Himachal Pradesh, Uttarakhand, and Andaman & Nicobar Islands) and Scheduled Castes/Scheduled Tribes of all other States.	10,000	13,000	18,000	21,000	28,000
3	All other States (General Category)	7,500	12,000	16,000	20,000	25,000

* Scheme under review

ANNEXURE II-A:

Cluster Model

Cluster Biogas plant at Zakariyapura, Gujarat*

The cluster model at Zakariyapura in Gujarat was implemented as a pilot project by National Dairy Development Board (NDDB). In this model, flexi biogas plants of 2 cum is provided to 368 women dairy farmers having 2–3 cattle. Biogas generated is used by the household for cooking purposes and the slurry is collected at a centralised location for treatment. The slurry is further separated into solid and liquid part using simple separation method and sold in bulk to non-biogas owner/ needy farmers @Rs 1–2/ltr under the brand name “Su-Dhan”.

A Sakhi Khad cooperative society is engaged for:

- ◆ Quality based slurry procurement
- ◆ Create fund for maintenance and plant replacement

S. No	Particulars	Details
1.	Total no. of household	368
2.	Plant capacity (biogas)	2 cum/day/household
3.	Feedstock type	Cow dung and biodegradable waste
4.	Cost	Total Cost: 123 lakhs 88 lakhs for biogas plants (368 HH* Rs. 24,000) 35 lakhs for slurry processing unit
5.	Funding source	Fully funded by NDDB 50% contribution will be collected from beneficiaries for biogas plants. The amount being collected in instalments from beneficiaries by the cooperative for O&M

* Information provided by NDDB.



Indicative Cost

S. No	Head	Indicative cost
1	Biogas plant for 100 household cluster @ 2 cum/HH	Rs 24 lakhs (@Rs 24,000 per HH)
2	Slurry processing unit	Rs 30–35 lakhs
3	Total	Rs 55–60 lakhs

ANNEXURE II-B:

Community Model

A. Community biogas plant at Bancharouda, Raipur, Chhattisgarh*

The community biogas plant with capacity ranging from 25 m³ has been constructed in Chhattisgarh under SBM-G. The plant is located in the Bancharouda Gothan campus within the village. Cowdung is purchased from individual households @Rs. 2/kg under the state scheme Godhan Nyay Yojana. Biogas generated from the plant is provided to households/institutions located in the vicinity of the Gothan. In Bancharouda village, Raipur District the biogas generated is converted to electricity for lighting the Gothan campus. Slurry is used as manure or sold to farmers @Rs. 10 per kg.

S. No	Particulars	Details (Chhattisgarh)
1.	Plant capacity	25 cubic metre/day (biogas)
2.	Feedstock capacity	500 kg/day
3.	Feedstock type	Cow dung from households collected under the Godhan Nyay Yojana
4.	Cost	Rs.10 lakhs (approx.)
5.	Biogas utilization	Electricity generation for lighting in Gothan compound and cooking
6.	Slurry production	1000 Ltr./day
7.	Slurry utilization	Sold to farmers at Rs. 10 per kg after drying



* Provided by State Government.

B. Community Biogas plant at Nayagaon, Hisar, Haryana*

Community biogas plant at Nayagaon, Hisar, Haryana has been constructed under SBM(G). It is being operated and managed by the Gram Panchayat. Cattle dung for the plant is collected from village and transported to the plant using a tractor. The villagers will be paid @10 paisa per kg for cattle dung. The gas is distributed to households of the villages through a network of overhead pipeline. The slurry is being sold to the local farmers @ Rs. 1000/tanker and @ Rs. 1500/tanker to farmers of other villages. The Biogas Plant is designed to cater to the needs of 150 households in the village.

S. No	Particulars	Details
1	Plant capacity (feedstock)	10000 kg per day
2	Biogas generation	400 cum per day
3	Feedstock type	Cattle dung
4	Capital cost	Rs. 75 lakhs (approx.)
5	O&M cost	Rs. 30,000 per month
6	Feedstock collection	Cattle dung is collected from households and transported to the plant by a tractor-trolley.
7	Source of funding	Swachh Bharat Mission (Grameen) <ul style="list-style-type: none"> ◆ Gram Panchayat Fund ◆ MGNREGA ◆ MPLAD Fund ◆ State Govt. Fund



* Provided by State Government.



Indicative Cost

S. No	Plant capacity (m ³)	No. of animal	Quantity of cowdung (kg)	Approx. participatory beneficiaries	Indicative cost (Rs lakhs)
1	10-20	25-50	250-500	10-20 H/Hs	7-10
2	25-40	60-100	700-1000	24-40 H/Hs	12-18

ANNEXURE II-C:

Commercial CBG Model

A. BioCNG plant at Haridwar, Uttarakhand*

The BioCNG project located in Haridwar, Uttarakhand is being managed by Shri Krishnayan Desi Gauraksha & Golok Dham Sewa Samiti. The plant is spread across an area of 0.69 acre and feedstock for the plant is collected from three gaushalas. The raw biogas generated is stored in a small horizontal balloon and compressed to produce CBG. The purified methane/CBG is stored in cascades and supplied to Ayurveda factories located at industrial estate developed by State Industrial Development Corporation of Uttarakhand Limited (SIDCUL), Haridwar. The slurry is separated into solid and liquid parts. The solid part is fortified and converted to biofertilizers, while liquid part is used by the samiti in their own farm. Bio fertilizers are packed in bags of 5 kg, 10 kg, & 50 kg capacities and sold under brand name "Surabhi Sudha." 36 different products have been developed after enriching bio fertilizer with microbes into bio-pesticide, growth promoter, PROM, fungicide etc.

S. No	Particulars	Details
1.	Capacity (CBG)	400 kg/day.
2.	Feedstock capacity	20 ton per day
3.	Feedstock	Cow dung
4.	Cost	Rs. 3.0 cr. (excluding land cost)
5.	O&M cost	Rs. 2 lakhs (approx.)
6.	Feedstock collection	Cow dung is collected from three gaushalas and transported to the plant using 4 tractors.
7.	Funding source	<ul style="list-style-type: none">◆ Rs. 1.75 Cr from ONGC under CSR◆ Self-financing◆ Central Finance Assistance under Waste to Energy Programme of MNRE (awaited)

* Provided by the plant owner.



B. BioCNG plant at Banaskantha, Gujarat*

The Banaskantha BioCNG plant located at Banaskantha in Gujarat is being managed by the Banaskantha District Co-operative Milk Producer's Union Ltd. Waste is collected from around 254 households having more than 5 cows/buffaloes from across 12 villages. The cow dung collected from these households is weighed and the quantity is marked using a mobile App. Along with the payment for milk, Rs.1/kg for the cowdung is credited every 15 days to the beneficiary account.

The biogas generated is stored in a balloon having capacity of 1000 cum. The plant generates a total of 800 kg of BioCNG per day and the purified gas is filled in vehicles through a dispensing system. Around 100 vehicles can be filled through the gas station (8 kg per vehicle). The solid part of the slurry is converted to vermicompost or converted into PROM by adding rock phosphate and sold to farmers. The liquid part is reused for treatment.

* Provided by BANAS Dairy.

S. No	Particulars	Details
1.	Capacity of plant (CBG)	800 kg/day
2.	Feedstock capacity	40 ton
3.	Type of feedstock	Cow dung and potato waste
4.	Cost	<ul style="list-style-type: none"> ◆ Rs. 8,04,00,000 (excluding land cost) ◆ Civil work – Rs. 4,56,50,000 ◆ Mechanical work – Rs 3,47,50,000
5.	O&M cost	Rs. 38 lakhs per month (approx.)
6.	Feedstock collection	Daily collection of waste from 254 households of 12 villages by around 7 tractors
7.	Source of funding	Banaskantha District Co-operative Milk Producers' Union Ltd



Indicative Cost

S. No	Input cowdung (kg/day)	Raw biogas generation m3/day	Purified biogas generation kg/day	Manure generation (kg/day)	Slurry generation (l/day)	Indicative civil cost (in crore)	Indicative mechanical cost (in crore)	Indicative total capex* (in crore)
1	20000	1000	400	4000	36000	2.68	2.43	5.11

ANNEXURE III:

Suggested Project Cycle

Following is the suggested project cycle for implementation of GOBARDHAN. The project cycle is advisory in nature and implementers can combine activities and phases to fast-track implementation of GOBARDHAN.

Phases	Key activities	Tentative timeline
Inception phase	<p>Community to collectively undertake a situation analysis to identify:</p> <ul style="list-style-type: none"> ◆ Quantity of cattle dung waste and agri waste in the village ◆ Hotspots – where cattle waste/agri waste is currently piled in the village ◆ Identify site(s) for construction of GOBARDHAN unit ◆ Agree on the use of gas and slurry in the village ◆ Pass a resolution to make their village clean and convert cattle dung to biogas and manure 	15 days
Planning phase	<ul style="list-style-type: none"> ◆ GP to identify the beneficiaries with the support of SHGs/FPOs/milk cooperatives/milk unions/private entrepreneurs/CBOs developed under DAY-NRLM/agencies selected or empanelled by States/Districts/BDTCs etc. ◆ Preparation of project plan document with the support of identified/empanelled agencies/BDTCs etc. ◆ Identify masons/barefoot technicians/engineers who would construct the biogas plants ◆ Seek approval for administrative and technical proposals from competent authorities. O&M plan should also be part of the project proposal 	30 days

Phases	Key activities	Tentative timeline
	<ul style="list-style-type: none"> ◆ Open a ledger in the existing GP account for receipt and management of funds for implementation of the GOBARDHAN project. 	
Implementation phase	<ul style="list-style-type: none"> ◆ Initiate construction of biogas plant based on approved project proposal ◆ Ensure supervision of the construction of the biogas plant at each stage ◆ Ensure timely completion and commissioning of GOBARDHAN unit ◆ Train an identified set of local people for preventive and corrective maintenance of biogas plant 	60 days
O&M phase	<ul style="list-style-type: none"> ◆ Initiate payment and revenue generation mechanism as provided in the project proposal (payment for cow dung and slurry, collection of user charges, etc.) ◆ Undertake regular preventive maintenance ◆ Dispose of/use slurry as agreed 	Continuous

ANNEXURE IV:

Estimated Cost of Biogas Plants

Estimated costs (rate varies according to location, construction material cost, model like Deenbandhu, KVIC, Janta etc.)

S. No	Plant type	Capacity	Approximate cost (Rs.)	Details/remarks
1	Pre-fabricated (Portable plant)	1 cum	12,000	Unit without water jacket and made of PVC/LLDP/HDPE tanks circular digester and floating gas holder
2	Pre-fabricated (Portable plant)	1 cum	12,500	Unit without water jacket and made of FRP, circular digester and floating gas holder
3	Pre-fabricated (Portable plant)	1 cum	13,000	Unit with water jacket and made of PVC/LLDP/HDPE tanks circular digester and floating gas holder
4	Pre-fabricated (Portable plant)	1 cum	13,500	Unit with water jacket and made of FRP, circular digester and floating gas holder
5	Flexi biogas unit	2 cum	25,000	Unit made of HDPE/LLDP and consists of a filter, stove and booster pump
6	Fixed dome	50 kg	2 lakhs	This cost varies with location and different models
7	Fixed dome	100 kg	2.75 lakhs	This cost varies with location and different models
8	Fixed dome	200 kg	4.25 lakhs	This cost varies with location and different models
9	Fixed dome	300 kg	7 lakhs	This cost varies with location and different models
10	Fixed dome	500 kg	10 lakhs	This cost varies with location and different models
11	Fixed dome	1000 kg	15 lakhs	This cost varies with location and different models
12	Fixed dome	2000 kg	30 lakhs	This cost varies with location and different models

(Source: Suchitwa Mission, LSGD, Govt. of Kerala)



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जल शक्ति मंत्रालय
भारत सरकार

DEPARTMENT OF DRINKING WATER AND SANITATION
MINISTRY OF JAL SHAKTI
GOVERNMENT OF INDIA

सत्यमेव जयते



एक कदम स्वच्छता की ओर