



DISTRIBUTION OF IMPROVED COOK STOVE - PHASE 24



Document Prepared By EKI Energy Services Limited

Contact Information: Office No. 201, EnKing Embassy Plot No. 48, Scheme No. 78
Part II, Vijay Nagar Indore – 452001

Project Title	Distribution of Improved cook stove - Phase 24
Version	03
Date of Issue	16-August-2022
Prepared By	Mr. Pankaj Rajpoot
Contact	Assistant Manager Operations – GHG Services EKI Energy Services Limited Email ID : pankaj@enkingint.org T +91 731 42 89 086, M +91 7828347589 Address: Office no. 201, Plot 48, Scheme 78 part 2, Vijay Nagar Indore - 452010 (M.P, India) Website www.enkingint.org

CONTENTS

1	PROJECT DETAILS.....	3
1.1	Summary Description of the Project	3
1.2	Sectoral Scope and Project Type	6
1.3	Project Eligibility	6
1.4	Project Design	6
1.5	Project Proponent	7
1.6	Other Entities Involved in the Project	7
1.7	Ownership.....	7
1.8	Project Start Date	7
1.9	Project Crediting Period	8
1.10	Project Scale and Estimated GHG Emission Reductions or Removals	8
1.11	Description of the Project Activity	9
1.12	Project Location	12
1.13	Conditions Prior to Project Initiation	25
1.14	Compliance with Laws, Statutes and Other Regulatory Frameworks.....	34
1.15	Participation under Other GHG Programs	34
1.16	Other Forms of Credit.....	35
1.17	Additional Information Relevant to the Project	35
2	SAFEGUARDS	36
2.1	No Net Harm	36
2.2	Local Stakeholder Consultation	36
2.3	Environmental Impact	37
2.4	Public Comments	37
2.5	AFOLU-Specific Safeguards	37
3	APPLICATION OF METHODOLOGY.....	37
3.1	Title and Reference of Methodology	37
3.2	Applicability of Methodology	37
3.3	Project Boundary	40
3.4	Baseline Scenario	41
3.5	Additionality	41
3.6	Methodology Deviations	41
4	QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS	42
4.1	Baseline Emissions	42
4.2	Project Emissions	42
4.3	Leakage.....	42
4.4	Net GHG Emission Reductions and Removals.....	42
5	MONITORING	43
5.1	Data and Parameters Available at Validation	43
5.2	Data and Parameters Monitored.....	44
5.3	Monitoring Plan	44

1 PROJECT DETAILS

1.1 Summary Description of the Project

Purpose of the Project Activity

Purpose of the project activity is to facilitate clean cooking practices and reduce health risk due to indoor air pollution¹ along with household drudgery amongst the tribal households (ST) and families living Below the Poverty Level (BPL category²) in villages of Maharashtra through dissemination of improved cook stoves. The improved cook stoves through replacement of inefficient traditional cook stove will contribute towards reduction of Green House Gases emission and by-products of incomplete combustion like black carbon, conservation of fuel wood and prevent forest degradation. Successful operation of the project activity will encourage rural residents to shift from traditional cook stoves usage to the project improved and modern cook stove.

The improved cook stoves distributed are more efficient with thermal efficiency of 29.88%³ compared to traditional stoves with thermal efficiency of around 10%⁴. Use of efficient cook stove will result in fuel consumption reduction i.e. non-renewable biomass (since the demand of fire wood is considerably higher than the sustainable potential of fire wood extraction and there the wood available through unsustainable extraction is conceived as non-renewable biomass) through minimizing of thermal energy losses by facilitating complete combustion and thereby resulting in GHG emission reduction.

Baseline Scenario:

The higher efficiency portable, single pot cook stoves distributed and conceived under the project activity has replaced prevailing practice of using traditional cook stoves in rural areas across the state (research study reveals that out of 120 million of the total potential of biomass cook stove in India⁵ total number of cook stoves being distributed is around 14.904 million (WHO, UNDP 2009) Separate study report by ESMAP revealed that, improved cook stoves accounted for less than percent of the total biomass stoves used in rural areas. The report also refers to the latest national survey in India which indicates only 5 percent of rural households possess an improved stove (Zhang et al. 2006). The study also highlights over the fact that Maharashtra is one of those few states where, improved cook stoves were distributed under the National Programme of Improved Chulha (NPIC) since 1983-84. The

¹ Household Cook stoves, Environment, Health and Climate Change – World Bank (Executive summary, page 9- 11)

² As per the article in The Hindu dated March 20, 2012 anyone with daily consumption expenditure below Rs. 22.42 is categorised under BPL. The article depicts of 24.5% of the total population in Maharashtra under BPL in 2009-10. The article depicts that Scheduled Tribes (47.4%) suffers the highest level of poverty across the country

³ Thermal Efficiency Test Report of Improved Cook stove tested at Biomass Cook stove Testing Centre, Dept. of Renewable Energy Sources, Udaipur

⁴ Paragraph 6 (Option 2) of approved applicable methodology AMS –II.G., Version 04

distribution of cook stoves also continued after the end of NPIC programme. The distribution was facilitated through Rural Development and Water Conservation (RDWC) Department, Maharashtra Energy Development Agency and Khadi and Village Industries Commission. Even after prolonged period of distribution, around 85% of households in the villages of Maharashtra still rely on traditional cook stoves.

It is worthwhile to note that, Firewood and wood chips contributes as major cooking fuel amongst rural households in India. According to the NSSO⁶ 61st round survey, a considerable percentage of rural population of Maharashtra relies upon fire wood for cooking and the percentage is substantially much higher amongst the lower MPCE (Monthly Per Capita Expenditure) group. Since the beneficiary selected under the project belongs to BPL and ST category of population in terms of capacity of expenditure therefore, improved cook stove use will result in substantial fuel wood saving as the section is the major consumer of fuel wood.

MPCE Groups	Percentage of Population using firewood ⁷
Rs. 0 – 235/-	79.2%
Rs. 235 – 270/-	93.8%
Rs. 270 – 320/-	90.0%
Rs. 320 – 365/-	87.2%
Rs. 365 – 410/-	86.2%
Rs. 410 – 455/-	84.2%
Rs. 455 - 510/-	82.8%

Technology Employed

The cook stove deployed under the project activity is single pot, portable, metallic, improved biomass cook stoves made of cast iron for combustion of solid biomass. The improved cook stoves are manufactured in accordance to IS 13152, Part-1: 1991, CPRI Design Type 1⁸ standard. The design ensures complete combustion of biomass. The cook stove is tested for thermal efficiency of 29.88% as per water boiling test protocol specified in IS 13152, Part 1: 1991.

The project activity plans to disseminate the improved cook stoves over period of time⁹ amongst BPL (Below Poverty Line) and Scheduled Tribes (ST) households in rural areas of Aurangabad, Jalna, Parbhani, Hingoli, Beed, Nanded, Osmanabad, Latur, Buldhana, Akola, Washim, Amravati, Yavatmal, Wardha, Nagpur, Bhandara, Chandrapur, Gadchiroli and Gondia districts which lies in Aurangabad, Amravati and Nagpur Divisions of Maharashtra.

⁶ National Sample Survey Office

⁷ Redefining poverty lines and survey of BPL families the annual income of Rural BPL is considered to be Rs. 30,000.

⁸ The design of the cook stove is certified by Bureau of Indian Standards relating to its appropriateness to, IS 13152 (Part1). The standard was adopted by Bureau of Indian Standard after the draft finalized by the oil burning Appliances Sectional Committee had been approved by Heavy Mechanical Engineering Division Council.

⁹ Each of the cook stoves will be included for the purpose of emission reduction calculation from the day on which it is distributed to the beneficiary and the end user agreement is signed. Thus in the first monitoring period all the cook stoves may not claim the full credits but for ex ante determination it is estimated the same operation period for all the cook stoves.

The project is to consider beneficiaries comprising of 14,100 Nos. of households to whom improved cook stoves are to be disseminated under the programme and has signed the end user Tripartite Agreement¹⁰. The project through conservation of non-renewable biomass will result in annual average greenhouse gas emission reduction of 12,675¹¹ tCO₂e and total GHG emission reductions over the ten years fixed crediting period of 126,750 tCO₂e.

Vikram Stoves and Fabricators (hereafter referred to as Vikram Stoves) is a MNRE (Ministry of New and Renewable Energy) approved manufacturer and distributor of improved cook stoves having operation network in Maharashtra. The agency is selected by the RDWC Department, Government of Maharashtra for distribution of improved cook stoves amongst identified beneficiaries. With an objective of wide spread dissemination (under limited annual budgetary support provision of the Ministry) of improved cook stoves and facilitate continual usage at beneficiary level; the manufacturer conceived VCS in its revenue model. The revenue was considered in deciding upon the capital cost as well as to meet up the cost towards imparting awareness and training, periodic maintenance¹² and post lifetime replacement within the crediting period.

In the baseline scenario, the absence of the project would have led to underneath options for the purpose of cooking

1. Continuation of use of traditional stoves for the purpose of cooking
2. Use of kerosene for cooking
3. Use of LPG for Cooking
4. Use of biomass based improved cook stove

Use of the traditional cook stove is the most plausible baseline option for the target population.

Kindly refer section 1.13 for further details.

M/s. G K Energy Marketers Pvt Ltd (hereafter referred to as GKEMPL) is authorised as Project Participant by Vikram Stoves and the end users for development of VCS project activity for the cook stove dissemination. As a part of the project activity GKEMPL (Project Participant) along with Vikram Stoves will enter into contractual agreement with each

¹⁰ Tripartite Agreement is for transfer the CER right to the Project Participant by each beneficiaries/end users and is signed amongst end user, GKEMPL and Vikram Stoves.

¹¹ The ex-ante estimation of emission reduction is conceived considering that 90% of the cook stove will be in operation and also at desired efficiency. Therefore the number of cook stove conceived for determining the ex-ante estimation of emission reduction is 12,690 instead of 14,100. However, the number of cook stove to be considered for ex post estimation of emission reduction will be determined on basis of survey result and considering the actual number of cook stove disseminated i.e. 14,100.

¹² "The Indian stove programme: an insider's view –the role of society, politics, economics and education" by Bhaskar Sinha, National Institute of Science, Technology & Development Studies (NISTADS), CSIR, New Delhi outlines that the woman are least interested for maintenance as they do not perceive the usefulness of the stove and revert back to traditional practice when the cook stove becomes non-functional therefore timely operation and maintenance are vital.

beneficiaries by virtue of which the end user will confirm use of cook stove as well as transfer the CER right to the Project Participant.

1.2 Sectoral Scope and Project Type

The project activity falls under Sectoral Scope 3: Energy Demand

This project is not grouped project because there is no addition other project activity.

This is non-AFLOU type of project.

1.3 Project Eligibility

The project activity involves replacement of the traditional cook stoves by improved cook stoves. The improved cook stoves owing to its higher combustion efficiency of 29.88% in comparison to 10% efficiency of the traditional cook stoves results in efficiency improvement and same do not exceed equivalent of 20 Giga watt hour (GWh) (60 giga watt hour thermal (GWhth)) per year of energy savings.

Hence the project activity is eligible Sectoral scope 3 i.e. energy demand under the scope of the VCS Program.

The tripartite agreement submitted by the PP is between the end party user, Vikram stoves and G K Energy Marketers Private Limited. The agreement clear states that the rights of the VCU rests with G K energy marketers private limited. The agreement has been signed by all the parties.

Hence as per Section 3.6.1 of the VCS Standard v4.1, the project owner is G K Energy Marketers Private Limited.

1.4 Project Design

The project activity plans to disseminate the improved cook stoves over period of time amongst BPL (Below Poverty Line) and Scheduled Tribes (ST) households in rural areas of Aurangabad, Jalna, Parbhani, Hingoli, Beed, Nanded, Osmanabad, Latur, Buldhana, Akola, Washim, Amravati, Yavatmal, Wardha, Nagpur, Bhandara, Chandrapur, Gadchiroli and Gondia districts which lies in Aurangabad, Amravati and Nagpur Divisions of Maharashtra. The project is to consider beneficiaries comprising of 14,100 Nos. of households to whom improved cook stoves are to be disseminated under the programme and has signed the end user Tripartite Agreement. The project through conservation of non-renewable biomass will result in greenhouse gas emission reduction of 12,675 tCO₂e annually.

Eligibility Criteria

Not applicable to this project activity as this is not a grouped project.

1.5 Project Proponent

Organization name	M/s G K Energy Marketers Pvt. Ltd
Contact person	Mr. Gopal Kabra
Title	Authorized Signatory
Address	Lokmanya Nagar, LBS Road, Flat No.- 350, Building No.- 25,Ground Floor, Pune, Maharashtra – 411030 India
Telephone	+91-997045
Email	gopal@energymarketers.in

1.6 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the project	Project Consultant
Contact person	Mr. Pankaj Rajpoot
Title	Assistant Manager- Operations
Address	Office No 201, Plot No 48, Scheme 78, Vijay Nagar Part- II, Indore 452010, India
Telephone	+91- 7828347589
Email	registry@enkingint.org

1.7 Ownership

As per VCS Program Definitions version 4, the project ownership is the legal right to control and operate the project activities.

As per CDM Project Design Document section A.1, M/s. G K Energy Marketers Pvt Ltd (hereafter referred to as GKEMPL) is authorized as Project Participant by Vikram Stoves and the end users for development of VCS project activity for securing carbon financing for the cook stove dissemination. As a part of the project activity GKEMPL (Project Participant) along with Vikram Stoves has entered into contractual agreement with each beneficiaries by virtue of which the end user has confirmed use of cook stove as well as transfer the CER right to the Project Participant

Based on above evidences, the project ownership is demonstrated and M/s. G K Energy Marketers Pvt Ltd is authorized project owner.

1.8 Project Start Date

The start date of the project activity is 09-October-2012.

The project activity relating to improved cook stove usage by the end user does not require any construction or significant pre-project implementation, nor financial commitment on the part of end user. The real action pertaining to the earliest date of handover of improved cook stoves to beneficiary (also considered as date of onset of GHG emission reductions) under

the project activity is considered as the start date as per project start date definition under paragraph 3.7 of the VCS Standard.

The date of supply/ receipt of first lot of improved cookstoves from manufacturer to the regional office of the line department was considered as start date under the CDM registered PDD (evidenced through acknowledgement of the delivery receipt of the line department) as per CDM definition of Start Date. The start date referred to in the registered CDM-PDD was mirrored in the VCS PD(listed). Since the date does not resembles to handover of the cookstoves to beneficiary and does not result in onset of actual emission reduction therefore the same was not considered as start date under VCS mechanism and therefore revised with date of distribution/ handover of improved cookstoves to beneficiary.

1.9 Project Crediting Period

The length of the first crediting period is 09-October- 2012 to 08-October-2022 (both dates inclusive). The improved cookstoves distributions were carried out between 09-October-2012 to 17-December- 2012 amongst 14,100 beneficiaries.

As per errata and clarification, a project is deemed to have met the timelines where Verra confirmed (in writing, to the project proponent or an authorized representative) the project's eligibility on or before 4-February-2021.The listing process has been completed before 04-February-2021 and hence the errata and clarifications are not applicable

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

The project activity falls under small-scale project category since the annual average GHG emission reductions are less than 300,000 tCO₂e.

Project Scale	
Project	√
Large project	

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 1 (09-October-2012 to 08-October-2013)	12,675
Year 2 (09-October-2013 to 08-October-2014)	12,675
Year 3 (09-October-2014 to 08-October-2015)	12,675
Year 4 (09-October-2015 to 08-October-2016)	12,675

Year 5 (09-October-2016 to 08-October-2017)	12,675
Year 6 (09-October-2017 to 08-October-2018)	12,675
Year 7 (09-October-2018 to 08-October-2019)	12,675
Year 8 (09-October-2019 to 08-October-2020)	12,675
Year 9 (09-October-2020 to 08-October-2021)	12,675
Year 10 (09-October-2021 to 08-October-2022)	12,675
Total estimated ERs	126,750
Total number of crediting years	10
Average annual ERs	12,675

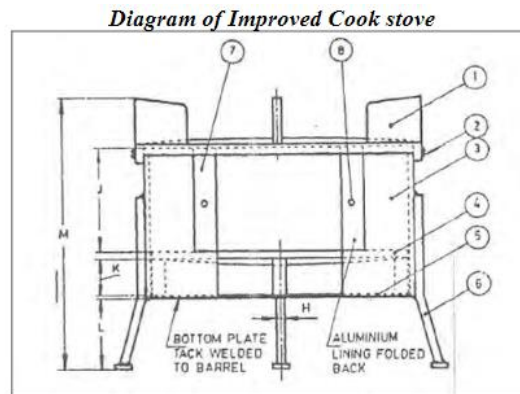
1.11 Description of the Project Activity

The improved cook stove conceived under the project activity is MNRE and BIS (Bureau of Indian Standard) approved state of art and environmentally sound technology. The improved cook stove is manufactured in accordance to IS13152 (Part 1): 1991 (Solid Biomass – Chulha Part 1(Metallic))¹³. This Indian Standard was adopted by the Bureau of Indian Standard after the draft finalized by the oil burning Appliances Sectional Committee had been approved by Heavy Mechanical Engineering Division Council and hence there has no transfer of technology for the project activity. The standard has been prepared in line with the national approach towards fuel conservation, better environment, mitigating health hazards and loss of forest cover caused by burning of wood as cooking fuel and therefore can be conceived as an environmentally sound technology for combustion of solid biomass for the purpose of cooking. Moreover, the materials used in the manufacturing of the cook stove are of iron and steel which is recyclable after end use and hence considered to be environmentally safe after lifetime also.

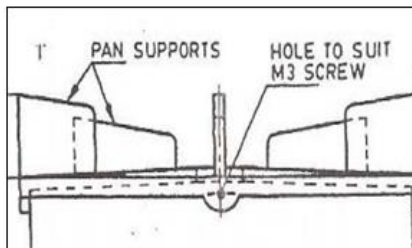
The cook stove distributed under the project activity is a portable, single-pot stove without chimney, natural draft and metal made stove specifically suitable for combustion of solid biomass. The cook stove broadly comprises of a combustion chamber, top plate for holding the utensils, grate for holding fuel during combustion and bottom plate that facilitates ventilation of air. The combustion chamber is cylindrical shaped and made up of mild steel. One side of the chamber of improved cook stove is opened for feeding of fuel. The chamber top plate is die cast and made up of cast iron. All the stoves included in the project activity

¹³ The Standard has been prepared by Indian Standard body in line with the national approach towards fuel conservation and better environment, mitigating health hazards and drudgery and loss of forest cover caused by burning of wood as cooking fuel (Forward: Indian Standard Solid Bio-Mass, Chulha – Specification Part 1Portable (Metallic))

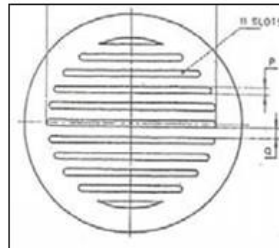
will remain within the project activity and as such no new stoves/ new beneficiaries will be added to the project activity.



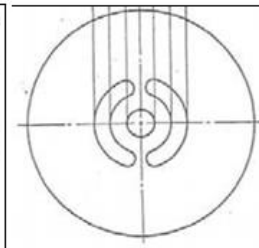
1. Top plate,
2. Screw,
3. Barrel,
4. Grate,
5. Bottom Plate,
6. Legs,
7. Aluminium Lining and
8. Rivet



Top Plate



Grate



Bottom Plate

Improved Cook stove



Material used for manufacturing of each component of the cook stoves are:

Component	Material
Top plate	Cast iron
Grate	Cast iron
Barrel	Mild steel
Bottom Plate	Mild steel
Lining	Aluminum
Perforated Sleeve	Mild steel
Handle	Mild steel
Pan Support	Mild steel sheet-flat-rod
Legs	Mild steel sheet and rod

Measures undertaken

The Rural Development and Water Conservation (RDWC) Department, Government of Maharashtra is involved in promoting betterment of living standard for the tribal household (ST) and families living Below Poverty Line (BPL) in villages of Maharashtra. The department as a part of its aforesaid programme selects households belong to ST and BPL category depending upon level of vulnerability (assessed on basis of 13 parameters: Category and size of usable land, Type of house, Availability of regular usable clothes, Protection of food or food security, Cleanliness, Ownership of required goods, Heights /Level of literacy, Family working capacity, Source of livelihood goods, Number of children in age group (5 to 14), Type of bankruptcy, reason for staying away from family of Earning member, Choice of help /Yojana)62 and provide financial assistance to facilitate better and hygienic living standard. The household selected for financial assistance under the programme is provided with an improved cook stove system. The household considered as end users of cook stoves under the project activity are poor enough to afford for procurement of cook stoves and are also least interested towards investment as wood is available for free. So, in absence of the cook stove the household would have continued with traditional cooking practice. Since, the project activity is conceived under the program of Govt. of Maharashtra which provides cook stove only to BPL and ST category household so there is no chance the cook stove will be

distributed to non-baseline household. Therefore, identification of beneficiaries and distribution of the cook stoves comes under the preview of the Rural Development and Water Conservation Department.

1.12 Project Location

The project is located in state Maharashtra, India.

The list of division is given below:

Division: Aurangabad,

Districts: Aurangabad, Jalna, Parbhani, Hingoli, Beed, Nanded, Osmanabad, Latur

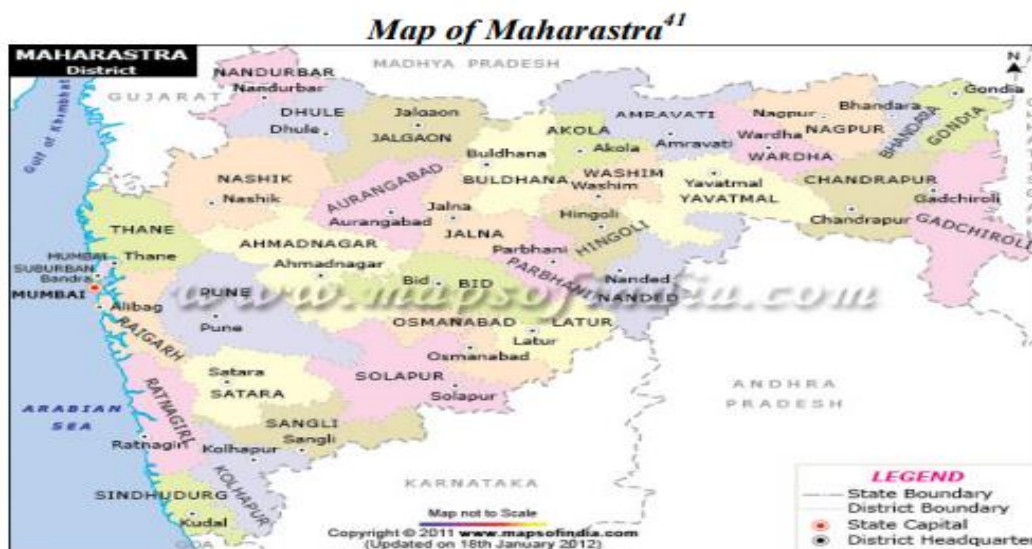
Division: Amravati and

Districts: Buldhana, Akola, Washim, Amravati, Yavatmal,

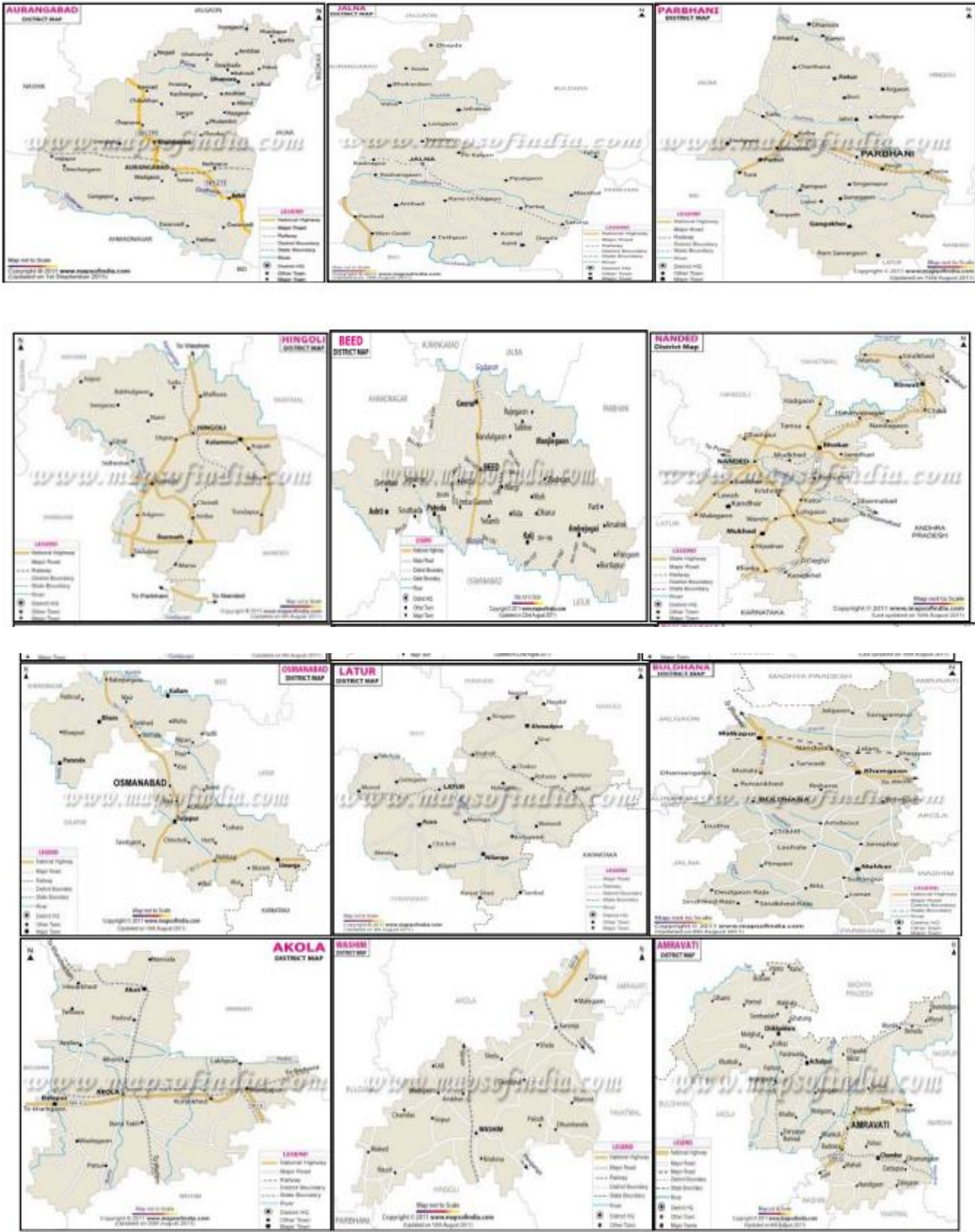
Division: Nagpur

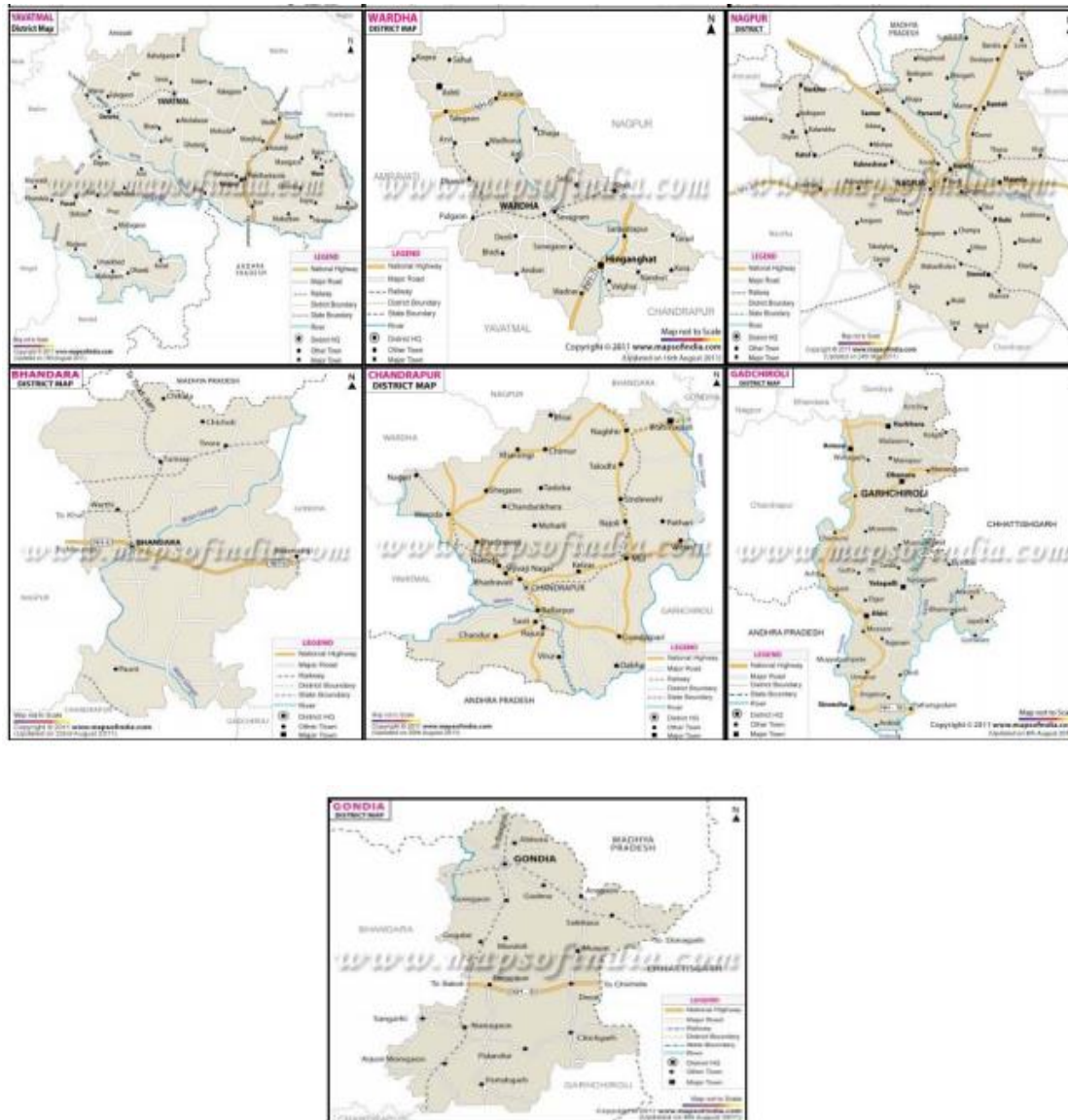
Districts: Wardha, Nagpur, Bhandara, Chandrapur, Gadchiroli and Gondia

Division	District	Latitude	Longitude
Aurangabad	Aurangabad	19.00 – 20.00 °N	74.00 – 76.00 °E
	Jalna	19.10 - 21.30 °N	75.40 - 76.40 °E
	Parbhani	18.45 - 20.10 °N	76.13 - 77.39 °E
	Hingoli	19.43 °N	77.11 °E
	Beed	18.30 - 19.30 °N	74.50 - 76.60 °E
	Nanded	18.25 - 19.91 °N	77.00 - 78.41 °E
	Osmanabad	17.35 - 18.40 °N	75.16 - 76.40 °E
	Latur	17.75 - 18.75 °N	76.25 - 77.25 °E
Amravati	Buldhana	19.85 - 21.28 °N	75.95 - 76.81 °E
	Akola	19.85 - 21.26 °N	76.63 - 77.73 °E
	Washim	19.61 - 21.16 °N	76.70 - 77.40 °E
	Amravati	20.53 - 21.76 °N	76.61 - 78.45 °E
	Yavatmal	19.26 - 20.42 °N	77.18 - 79.98 °E
Nagpur	Wardha	20.30 - 21.35 °N	78.06 - 79.25 °E
	Nagpur	20.35 - 21.44 °N	75.15 - 79.40 °E
	Bhandara	20.65 - 21.63 °N	79.45 - 80.70 °E
	Chandrapu	18.40 - 20.50 °N	78.50 - 80.60 °E
	Gadchiroli	18.43 - 21.50 °N	79.45 - 80.53 °E
	Gondia	20.39 - 21.38 °N	79.27 - 80.42 °E



Maps of Districts:





Aurangabad			Jalna		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
1	Ashrafpur	Aurangabad	1	Hiswan Bk.	Jalna
2	Aurangpur	Aurangabad	2	Hiswan Kh.	Jalna
3	Bagtalab	Aurangabad	3	Hiwara Roshangaon	Jalna
4	Bakapur	Aurangabad	4	Hiwardi	Jalna
5	Balapur	Aurangabad	5	Indewadi	Jalna
6	Bangaon	Aurangabad	6	Islamwadi	Jalna
7	Bebalyachiwadi	Aurangabad	7	Jaitapur	Jalna
8	Bendewadi	Aurangabad	8	Jalgaon	Jalna
9	Bhabarda	Aurangabad	9	Jamwadi	Jalna
10	Bhalgaon	Aurangabad	10	Kacharewadi	Jalna
11	Bhikapur	Aurangabad	11	Kadwanchi	Jalna
12	Bhindaon	Aurangabad	12	Kailasnagar	Jalna

Aurangabad			Jalna		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
13	Bhogalwadi	Aurangabad	13	Kakda	Jalna
14	Borwadi	Aurangabad	14	Karla	Jalna
15	Borwadi Tanda	Aurangabad	15	Kautha	Jalna
16	Chartha	Aurangabad	16	Khambewadi	Jalna
17	Chauka	Aurangabad	17	Khanepuri	Jalna
18	Chaukawadi	Aurangabad	18	Kharpudi	Jalna
19	Chincholi	Aurangabad	19	Khodepuri	Jalna
20	Anad	Sillod	20	Kolwadi	Jalna
21	Andhari	Sillod	21	Kumbephal Bk.	Jalna
22	Anvi	Sillod	22	Kumbhephal Shindkhed	Jalna
23	Asadi	Sillod	23	Londhyachiwadi	Jalna
24	Babhulgaon Bk.	Sillod	24	Majarewadi	Jalna
25	Bahuli	Sillod	25	Malegaon Kh.	Jalna
			26	Mali Pimpalgaon	Jalna
			27	Malshendra	Jalna
			28	Mamdabad	Jalna
			29	Manegaon Jahangir	Jalna
			30	Manegaon Khalsa	Jalna
			31	Maujpuri	Jalna
			32	Mohadi	Jalna
			33	Motigavhan	Jalna
			34	Nagapur	Jalna
			35	Nandapur	Jalna
			36	Nasadgaon	Jalna
			37	Navha	Jalna
			38	Ner	Jalna
			39	Nidhona	Jalna
			40	Nipani Pokhari	Jalna
			41	Nirkheda	Jalna

Parbhani			Hingoli		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
1	Adgaon	Palam	1	Ajalsonda	Aundha (Nagnath)
2	Ajamabad	Palam	2	Amdari	Aundha (Nagnath)
3	Anandwadi	Palam	3	Anjanwada	Aundha (Nagnath)
4	Anjanwadi	Palam	4	Anjanwada Tanda	Aundha (Nagnath)
5	Arkhed	Palam	5	Anjanwadi	Aundha (Nagnath)
6	Bandarwadi	Palam	6	Ankhali	Aundha (Nagnath)
7	Banwas	Palam	7	Asola Traf Aundha	Aundha (Nagnath)
8	Barbadi	Palam	8	Asola traf lakh	Aundha (Nagnath)
9	Bhalkudki	Palam	9	Asonda	Aundha (Nagnath)
10	Bhogaon	Palam	10	Aundha Nagnath	Aundha (Nagnath)
11	Borgaon Bk.	Palam	11	Berula	Aundha (Nagnath)
12	Borgaon Kh	Palam	12	Bhagwa	Aundha (Nagnath)
13	Chatori	Palam	13	Bhosi	Aundha (Nagnath)
14	Chorwad	Palam	14	Borja	Aundha (Nagnath)
15	Dhanewadi	Palam	15	Bramhanwada	Aundha (Nagnath)
16	Digras	Palam	16	Chimegaon	Aundha (Nagnath)
17	Dongargaon	Palam	17	Chincholi Nikoba	Aundha (Nagnath)

Parbhani			Hingoli		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
18	Dutka	Palam	18	Chondi Tarf Shahapur	Aundha (Nagnath)
19	Fattunaik Tanda	Palam	19	Daregaon	Aundha (Nagnath)
20	Ganeshwadi	Palam	20	Daudgaon	Aundha (Nagnath)
21	Ghoda	Palam	21	Devala	Aundha (Nagnath)
22	Girdharwadi	Palam	22	Dewala	Aundha (Nagnath)
23	Gulkhanda	Palam	23	Dhar	Aundha (Nagnath)
24	Gunj	Palam	24	Dharkheda	Aundha (Nagnath)
25	Jawla	Palam	25	Dhegaj	Aundha (Nagnath)
26	Jogalgaon	Palam			
27	Kandalgaon	Palam			
28	Kapsi	Palam			
29	Khadi	Palam			
30	Kharab Dhanora	Palam			
31	Khoras	Palam			
32	Khurlewadi	Palam			
33	Kolwadi	Palam			
34	Konerwadi	Palam			
35	Landakwadi	Palam			
36	Mahadewadi	Palam			
37	Martandwadi	Palam			
38	Mozamabad	Palam			

Beed			Nanded		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
1	Amalner	Patoda	1	Aloor	Dharmabad
2	Ambewadi	Patoda	2	Atala	Dharmabad
3	Anpatwadi	Patoda	3	Atkur	Dharmabad
4	Antapur	Patoda	4	Babhali	Dharmabad
5	Bedarwadi	Patoda	5	Babhulgaon	Dharmabad
6	Bedarwadi	Patoda	6	Bachegaon	Dharmabad
7	Bedukwadi	Patoda	7	Bamni	Dharmabad
8	Belewadi	Patoda	8	Bannali	Dharmabad
9	Bensur	Patoda	9	Belgulari	Dharmabad
10	Bhaktache Gothe	Patoda	10	Belur Bk.	Dharmabad
11	Bhatewadi	Patoda	11	Belur Kh.	Dharmabad
12	Bhurewadi	Patoda	12	Chikna	Dharmabad
13	Bhusanarwadi	Patoda	13	Chincholi	Dharmabad
14	Bhyala	Patoda	14	Cholakha	Dharmabad
15	Chanderwadi	Patoda	15	Chondi	Dharmabad
16	Chikhali	Patoda	16	Dhanora Kh.	Dharmabad
17	Chincholi	Patoda	17	Digras	Dharmabad
18	Chumbli	Patoda	18	Elegaon	Dharmabad
19	Dagachiwadi	Patoda	19	Haregaon	Dharmabad
20	Daskhed	Patoda	20	Hasnali	Dharmabad
21	Daulatwadi	Patoda	21	Jaflapur	Dharmabad
22	Dhalewadi	Patoda	22	Jarikot	Dharmabad
23	Dhangar Jaulka	Patoda	23	Junni	Dharmabad
24	Dhoparwadi	Patoda	24	Karegaon	Dharmabad
25	Domri	Patoda	25	Karkheli	Dharmabad

Beed			Nanded		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
26	Dongerkinhi	Patoda	26	Mangnali	Dharmabad
27	Gandalwadi	Patoda	27	Manur	Dharmabad
28	Gandhanwadi	Patoda	28	Mashti	Dharmabad
29	Gandhanwadi	Patoda	29	Mokali	Dharmabad
30	Gawalwadi	Patoda			
31	Gayakwadwadi	Patoda			

Osmanabad			Latur		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
1	Bavi	Washi	1	Akharwai	Latur
2	Bori	Washi	2	Akoli	Latur
3	Brahmagaon	Washi	3	Babhalgaon	Latur
4	Dahiphal	Washi	4	Bamni	Latur
5	Dasmegaon	Washi	5	Baswantpur	Latur
6	Dongrewadi	Washi	6	Bhadgaon	Latur
7	Fakarabad	Washi	7	Bhadi	Latur
8	Ghatpimpri	Washi	8	Bhatangali	Latur
9	Ghodki	Washi	9	Bhatkheda	Latur
10	Gojwada	Washi	10	Bhosa	Latur
11	Golegaon	Washi	11	Bhoyara	Latur
12	Hatola	Washi	12	Bhuisamudraga	Latur
13	Indapur	Washi	13	Bindgihal	Latur
14	Isrup	Washi	14	Bodkha	Latur
15	Izora	Washi	15	Bokangaon	Latur
16	Jankapur	Washi	16	Bopala	Latur
17	Jawalka	Washi	17	Borgaon Bk.	Latur
18	Jeba	Washi	18	Bori	Latur
19	Kadakhnathwadi	Washi	19	Borwati	Latur
20	Kanheri	Washi	20	Chandeshwar	Latur
21	Kawadewadi	Washi			
22	Kelewadi	Washi			
23	Khamkarwadi	Washi			
24	Khanapur	Washi			
25	Lakhangaon	Washi			
26	Lonkhas	Washi			
27	Mahaldarpuri	Washi			
28	Mandva	Washi			
29	Masobachiwadi	Washi			
30	Nandgaon	Washi			
31	Pangri	Washi			
32	Para	Washi			
33	Pardi	Washi			
34	Pargaon	Washi			

Buldhana			Akola		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
1	Alampur	Nandura	1	Barshi Takali	Barshitakli
2	Amboda	Nandura	2	Bhambora	Barshitakli
3	Aurangapur	Nandura	3	Bhendgaon	Barshitakli

Buldhana			Akola		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
4	Avdha Bk.	Nandura	4	Bhendi Kaji	Barshitakli
5	Avdha Kh.	Nandura	5	Bhendi Mahala	Barshitakli
6	Barafgaon	Nandura	6	Bhendi Sutrak	Barshitakli
7	Belad Pr.Jalgaon	Nandura	7	Bormali	Barshitakli
8	Belura	Nandura	8	Chelaka	Barshitakli
9	Bhilvadi	Nandura	9	Chinchkhed	Barshitakli
10	Bhogalwadi	Nandura	10	Chinchkhed Bk.	Barshitakli
11	Bhorwand	Nandura	11	Chincholi Devdari	Barshitakli
12	Bhota	Nandura	12	Chincholi Rudrayani	Barshitakli
13	Bhuising	Nandura	13	Chohagaon	Barshitakli
14	Burti Pr.Chandur	Nandura	14	Dagadparwa	Barshitakli
15	Burti Pr.Wadner	Nandura	15	Davdari	Barshitakli
16	Chandur Biswa	Nandura	16	Dhaba	Barshitakli
17	Dadgaon	Nandura	17	Dhakali	Barshitakli
18	Dahigaon	Nandura			
19	Dahivadi	Nandura			
20	Dhadi	Nandura			
21	Dhanora Bk.	Nandura			
22	Dhanora Kh.	Nandura			
23	Dhanora Pr.Chandur	Nandura			

Washim			Amravati		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
1	Ajgaon	Mangrulpir	1	Kaudanyapur	Teosa
2	Ambapur	Mangrulpir	2	Kawadgavhan	Teosa
3	Amgavhan	Mangrulpir	3	Kurha	Teosa
4	Arak	Mangrulpir	4	Maldhur	Teosa
5	Asegaon	Mangrulpir	5	Malegaon	Teosa
6	Baldeo	Mangrulpir	6	Mamdapur	Teosa
7	Belkhed	Mangrulpir	7	Marda	Teosa
8	Bhadkumbha	Mangrulpir	8	Mardi	Teosa
9	Bhur	Mangrulpir	9	Masadi	Teosa
10	Bitoda	Mangrulpir	10	Mozari	Teosa
11	Borwha bk.	Mangrulpir	11	Murtijapur	Teosa
12	Borwha kh.	Mangrulpir	12	Nimbhora Delwadi	Teosa
13	Chakwa	Mangrulpir	13	Palwadi	Teosa
14	Chambhai	Mangrulpir	14	Raghunathpur	Teosa
15	Chandhai	Mangrulpir	15	Salora Bk.	Teosa
16	Chehel	Mangrulpir	16	Sarsi	Teosa
17	Chikhalgad	Mangrulpir	17	Satargaon	Teosa
18	Chikhali	Mangrulpir	18	Shendola Bk.	Teosa
19	Chinchakhed	Mangrulpir	19	Shendola Kh.	Teosa
20	Chinchala	Mangrulpir	20	Shendurjana Bk.	Teosa
21	Chincholi	Mangrulpir	21	Shendurjana Kh	Teosa
22	Chorad	Mangrulpir	22	Shidwadi	Teosa
23	Dabha	Mangrulpir	23	Shirajgaon Mozari	Teosa
24	Dabhadi	Mangrulpir	24	Shiwangaon	Teosa
25	Dastapur	Mangrulpir	25	Sultanpur	Teosa
26	Dhanora bk.	Mangrulpir	26	Surwadi Bk.	Teosa
27	Dhanora kh.	Mangrulpir	27	Surwadi Kh.	Teosa

Washim			Amravati		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
28	Dhotra	Mangrulpir	28	Talegaon Thakur	Teosa
29	Ekamba	Mangrulpir	29	Tarkhed	Teosa
30	Falegaon	Mangrulpir	30	Taroda	Teosa
			31	Teosa	Teosa
			32	Thanathuni	Teosa
			33	Umarkhed	Teosa
			34	Virgavhan	Teosa
			35	Wadhona	Teosa
			36	Wandali	Teosa
			37	Wani	Teosa
			38	Warha	Teosa
			39	Warkhed	Teosa
			40	Waruda	Teosa
			41	Wathoda Kh	Teosa

Yavatmal			Wardha		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
1	Amani Bk.	Mahagaon	1	Dharti	Karanja
2	Amani Kh.	Mahagaon	2	Dhawadi Bk	Karanja
3	Amboda	Mahagaon	3	Dhawadi Kh	Karanja
4	Anandnagar	Mahagaon	4	Dhawasa	Karanja
5	Anantwadi	Mahagaon	5	Dhawasa Bk	Karanja
6	Babasaheb Nagar	Mahagaon	6	Ekamba	Karanja
7	Beldari	Mahagaon	7	Kakaddara	Ashti
8	Bhamb	Mahagaon	8	Kakaddara	Ashti
9	Bhosa	Mahagaon	9	Khadaka	Ashti
10	Bijora	Mahagaon	10	Khadki	Ashti
11	Bondhara	Mahagaon	11	Khambit	Ashti
12	Bori	Mahagaon	12	Kinhala	Ashti
13	Botha	Mahagaon	13	Kolhakali	Ashti
14	Brahmi	Mahagaon	14	Lahan Arvi	Ashti
15	Chilgavhan	Mahagaon	15	Lakhanwada	Ashti
16	Chilli Ijara	Mahagaon	16	Lingapur	Ashti
17	Chincholi	Mahagaon	17	Mamdapur	Ashti
18	Chinchpad	Mahagaon	18	Manik Nagar	Ashti
19	Dagad Thar	Mahagaon	19	Manikwada	Ashti
20	Dahisawali	Mahagaon	20	Milanpur	Ashti
21	Dahiwad Kh.	Mahagaon	21	Moi	Ashti
22	Dhanoda	Mahagaon	22	Mubarakpur	Ashti
23	Dharegaon	Mahagaon	23	Nababpur	Ashti
24	Dharkanha	Mahagaon	24	Narsapur	Ashti
25	Dharmoha	Mahagaon	25	Narsingpur	Ashti
26	Dongargaon	Mahagaon	26	Navin Antora	Ashti
27	Fulsawangi	Mahagaon	27	Navin Ashti	Ashti
28	Fulsing Nagar	Mahagaon	28	Navin Kakaddara	Ashti
29	Gaul	Mahagaon	29	Navin Ramdara	Ashti
30	Ghanmukh	Mahagaon	30	Panchala	Ashti
31	Ghonsara	Mahagaon	31	Pandhurna	Ashti
32	Gunj	Mahagaon	32	Parsoda	Ashti
33	Hingani	Mahagaon	33	Peth	Ashti

Yavatmal			Wardha		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
34	Hiwalani	Mahagaon	34	Peth Ahmadpur	Ashti
35	Hiwara	Mahagaon	35	Pilapur	Ashti
36	Hiwardari	Mahagaon	36	Porgavhan	Ashti
37	Hiwari	Mahagaon	37	Ramdara	Ashti
38	Ijani	Mahagaon	38	Ranwadi	Ashti
39	Januna	Mahagaon	39	Rasulpur	Ashti
40	Kalgaon	Mahagaon	40	Sahur	Ashti
41	Kali	Mahagaon			
42	Kali	Mahagaon			
43	Kalulalnagar	Mahagaon			
44	Kanha	Mahagaon			
45	Karanji	Mahagaon			
46	Karanjkhed	Mahagaon			
47	Kasarbehel	Mahagaon			
48	Kasola	Mahagaon			
49	Katarwadi	Mahagaon			
50	Kaudgaon	Mahagaon			
51	Kaurwadi	Mahagaon			
52	Kaurwadi	Mahagaon			
53	Kawatha Jahagir	Mahagaon			
54	Khadaka	Mahagaon			
55	Khamalwadi	Mahagaon			
56	Kondari	Mahagaon			
57	Kothari	Mahagaon			
58	Leva	Mahagaon			
59	Lohara Kh.	Mahagaon			
60	Mahagaon	Mahagaon			
61	Malegaon	Mahagaon			
62	Malkapur	Mahagaon			
63	Malkinhi	Mahagaon			
64	Malvakad	Mahagaon			
65	Manoharnagar	Mahagaon			
66	Mohadi	Mahagaon			
67	Morath Jahagir	Mahagaon			
68	Morwadi	Mahagaon			
69	Mudana	Mahagaon			
70	Nagarwadi	Mahagaon			
71	Naiknagar	Mahagaon			
72	Nandgavhan	Mahagaon			

Nagpur			Bhandara		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
1	Adyal	Bhiwapur	1	Alesur	Lakhani
2	Alesur	Bhiwapur	2	Bhugaon	Lakhani
3	Bellarpar	Bhiwapur	3	Borgaon	Lakhani
4	Besur	Bhiwapur	4	Channa	Lakhani
5	Bhageburi	Bhiwapur	5	Chichtola	Lakhani
6	Bhagwanpur	Bhiwapur	6	Chikhalbodi	Lakhani
7	Bhivi	Bhiwapur	7	Daitmangli	Lakhani
8	Bhiwapur	Bhiwapur	8	Deori	Lakhani

Nagpur			Bhandara		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
9	Bhowari	Bhiwapur	9	Dhabetekari	Lakhani
10	Bordkala	Bhiwapur	10	Dhanala	Lakhani
11	Borgaon	Bhiwapur	11	Dhwarkheda	Lakhani
12	Botezari	Bhiwapur	12	Dighori	Lakhani
13	Chargaon	Bhiwapur	13	Dongargaon	Lakhani
14	Chargaon	Bhiwapur	14	Dongargaon	Lakhani
15	Chichala	Bhiwapur	15	Gadegaon	Lakhani
16	Chikhalapar	Bhiwapur	16	Gadpendhari	Lakhani
17	Chikhali	Bhiwapur	17	Garada	Lakhani
18	Chorvihara	Bhiwapur	18	Ghodezari	Lakhani
19	Dhamangaon	Bhiwapur	19	Gondegaon	Lakhani
20	Dhamangaon	Bhiwapur	20	Gondi	Lakhani
21	Dhaparla	Bhiwapur	21	Gondsawari	Lakhani
22	Dhaparla	Bhiwapur	22	Gurdha	Lakhani
23	Dongargaon	Bhiwapur	23	Isapur	Lakhani
24	Gadeghat	Bhiwapur	24	Jewanala	Lakhani
25	Gardapar	Bhiwapur	25	Kaneri	Lakhani
26	Gohodli	Bhiwapur	26	Kanhalgaon	Lakhani
27	Gondbori	Bhiwapur	27	Kawadsi	Lakhani
28	Hattibodi	Bhiwapur	28	Kawale Wada	Lakhani
29	Indapur	Bhiwapur	29	Kesalwada	Lakhani
30	Jambhurda	Bhiwapur	30	Kesalwada	Lakhani
31	Jaoli	Bhiwapur	31	Kesalwada	Lakhani
32	Jawrabodi	Bhiwapur	32	Khairi	Lakhani
33	Kaodasi	Bhiwapur	33	Khairi	Lakhani
34	Kargaon	Bhiwapur	34	Kharashi	Lakhani
35	Keslapar	Bhiwapur	35	Khaurshipar	Lakhani
36	Khairgaon	Bhiwapur	36	Khedepar	Lakhani
37	Khandalzari	Bhiwapur	37	Khunari	Lakhani
38	Khapari	Bhiwapur	38	Khurshipar	Lakhani
39	Kharkada	Bhiwapur	39	Kinhi	Lakhani
40	Khatkheda	Bhiwapur	40	Kolara	Lakhani
41	Kholdoda	Bhiwapur	41	Kolari	Lakhani
42	Kinhala	Bhiwapur			
43	Kinhikala	Bhiwapur			
44	Kinhikhurda	Bhiwapur			
45	Kitadi	Bhiwapur			
46	Kolari	Bhiwapur			
47	Lonara	Bhiwapur			
48	Mahalgaon	Bhiwapur			
49	Malewada	Bhiwapur			
50	Mandwa	Bhiwapur			
51	Mandwa	Bhiwapur			

Chandrapur			Gadchiroli		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
1	Adegaon	Gondpipri	1	Abapur	Chamorshi
2	Aksapur	Gondpipri	2	Adyal	Chamorshi
3	Arvi	Gondpipri	3	Alapalli Masahat	Chamorshi
4	Bhanar Heti	Gondpipri	4	Amboli	Chamorshi

Chandrapur			Gadchiroli		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
5	Bhangarpeth	Gondpipri	5	Amgaon Chak No.1	Chamorshi
6	Bhangram Talodhi	Gondpipri	6	Amgaon Chak No.2	Chamorshi
7	Borgaon	Gondpipri	7	Amgaon Mahal	Chamorshi
8	Chak Bapur	Gondpipri	8	Anandgram	Chamorshi
9	Chak Beradi	Gondpipri	9	Anantpur	Chamorshi
10	Chak Borgaon	Gondpipri	10	Ankhoda	Chamorshi
11	Chak Darur	Gondpipri	11	Ashti Nokewada	Chamorshi
12	Chak Ghadoli	Gondpipri	12	Bahadupur	Chamorshi
13	Chak Gojoti	Gondpipri	13	Bamhanidev	Chamorshi
14	Chak Likhitwada	Gondpipri	14	Bamhanpeth	Chamorshi
15	Chak Nandgaon	Gondpipri	15	Bandhona	Chamorshi
16	Chak Navegaon	Gondpipri	16	Bawanchuwa	Chamorshi
17	Chak Pargaon	Gondpipri	17	Belgatta	Chamorshi
18	Chak Pellur	Gondpipri	18	Belgatta Chak	Chamorshi
19	Chak Pipari	Gondpipri	19	Bhadbhidi alias Bilaspur	Chamorshi
20	Chak Somanpalli	Gondpipri	20	Bhadbhidi Mokasa	Chamorshi
21	Chak Sukwasi	Gondpipri	21	Bhendala	Chamorshi
22	Chak Talodhi	Gondpipri	22	Bhendikanhar	Chamorshi
23	Chak Tarada	Gondpipri	23	Bhikshimal	Chamorshi
24	Chak Vithalwada	Gondpipri	24	Bhivapur	Chamorshi
25	Chiwandha	Gondpipri	25	Bhoganbodi	Chamorshi
26	Darur	Gondpipri	26	Chakalpeth	Chamorshi
27	Dhaba	Gondpipri	27	Chamorshi	Chamorshi
28	Dhamangaon	Gondpipri	28	Chandankhedi	Chamorshi
29	Dhamanpeth	Gondpipri	29	Chandankhedi	Chamorshi
30	Dhanapur	Gondpipri	30	Chandeshwar	Chamorshi
31	Dongargaon Mal	Gondpipri	31	Chapalwada	Chamorshi
32	Dubar Peth Chak	Gondpipri	32	Chapalwada Chak	Chamorshi
33	Fulora	Gondpipri	33	Chaparala	Chamorshi
34	Furdi Heti	Gondpipri	34	Chaudampalli	Chamorshi
35	Ganesh Pipari	Gondpipri	35	Chitekanhar	Chamorshi
36	Ganpur	Gondpipri	36	Chitranganpur	Chamorshi
37	Ghadoli	Gondpipri	37	Darpanguda	Chamorshi
38	Gojoli Makta	Gondpipri	38	Dharmpur	Chamorshi
39	Gujari	Gondpipri	39	Dhekani	Chamorshi
40	Heti Nandgaon	Gondpipri	40	Dotkuli	Chamorshi
41	Hiwara	Gondpipri	41	Durgapur	Chamorshi
42	Kanhalgaon	Gondpipri	42	Ekodi	Chamorshi
43	Karanji	Gondpipri	43	Farada	Chamorshi
44	Kharal Peth	Gondpipri	44	Fokurdi	Chamorshi
45	Kirmiri	Gondpipri	45	Fuser	Chamorshi
46	Kondhana	Gondpipri	46	Gahubodi	Chamorshi
47	Korambi	Gondpipri	47	Gandhinagar	Chamorshi
48	Kudesavali	Gondpipri	48	Ganpur Raiyyatwari	Chamorshi
49	Kultha	Gondpipri	49	Gauripur	Chamorshi
50	Kunde Nandgaon	Gondpipri	50	Ghargaon	Chamorshi
51	Lathi	Gondpipri	51	Ghot	Chamorshi
52	Mangal Peth	Gondpipri	52	Gilgaon	Chamorshi
53	Nandgaon	Gondpipri	53	Giripeth	Chamorshi
54	Nandwardhan	Gondpipri	54	Gundapalli	Chamorshi
55	Nawegaon Waghade	Gondpipri	55	Haladi	Chamorshi

Chandrapur			Gadchiroli		
Sr.	Name of the Village	Taluka	Sr.	Name of the Village	Taluka
56	Pachgaon	Gondpipri	56	Haladi Chak	Chamorshi
57	Panora	Gondpipri	57	Haladiwahi	Chamorshi
58	Pardi	Gondpipri	58	Haldawahi Tola	Chamorshi
59	Parsodi	Gondpipri	59	Hivergaon	Chamorshi
60	Sonapur Deshpande	Gondpipri	60	Illur	Chamorshi
61	Supgaon	Gondpipri	61	Jairampur	Chamorshi
62	Surgaon	Gondpipri	62	Jamgiri	Chamorshi
63	Tarda	Gondpipri	63	Janala Tukum	Chamorshi
64	Tarsa Bk.	Gondpipri	64	Jangam Kurul	Chamorshi
65	Tarsa Kh.	Gondpipri	65	Jawaharnagar	Chamorshi
66	Tohogaon	Gondpipri	66	Jaynagar	Chamorshi
			67	Jogana	Chamorshi
			68	Kadholi	Chamorshi
			69	Kalamgaon	Chamorshi
			70	Kanhalgaon	Chamorshi
			71	Kanholi	Chamorshi
			72	Kardel Tola	Chamorshi
			73	Karkapalli Mal	Chamorshi
			74	Khandala	Chamorshi
			75	Khorda Chak	Chamorshi
			76	Kishtapur	Chamorshi
			77	Konsari	Chamorshi
			78	Kothari	Chamorshi
			79	Krishnanagar	Chamorshi
			80	Kunghada Mal	Chamorshi
			81	Kunghada Raiyyatwari	Chamorshi
			82	Kurul	Chamorshi
			83	Kuthegaon	Chamorshi
			84	Lakhamapur Bori	Chamorshi
			85	Laxmanpur	Chamorshi
			86	Lenguda	Chamorshi
			87	Machhalighot	Chamorshi
			88	Made Amgaon	Chamorshi

Gondia		
Sr.	Name of the Village	Taluka
1	Girola	Salekasa
2	Gonditola	Salekasa
3	Gorre	Salekasa
4	Halbitola	Salekasa
5	Halbitola	Salekasa
6	Hititola	Salekasa
7	Isanatola	Salekasa
8	Jamakudo	Salekasa
9	Jambhadi	Salekasa
10	Kadhotitola	Salekasa
11	Kahali	Salekasa
12	Karutola	Salekasa
13	Kawarabandh	Salekasa
14	Khedepar	Salekasa

Gondia		
Sr.	Name of the Village	Taluka
15	Kholgad	Salekasa
16	Kopalgad	Salekasa
17	Kosamtarra	Salekasa
18	Kotara	Salekasa
19	Kotjambhora	Salekasa
20	Kular Bhatti	Salekasa
21	Kumbhartola	Salekasa
22	Kunbitola	Salekasa
23	Labhan Dharni	Salekasa
24	Latori	Salekasa
25	Lohara	Salekasa
26	Makkatola	Salekasa
27	Managad	Salekasa
28	Maramjob	Salekasa
29	Marka Khanda	Salekasa
30	Mohatola	Salekasa
31	Mokasitola	Salekasa
32	Mundipar	Salekasa
33	Murkudoh	Salekasa
34	Nanwha	Salekasa
35	Navegaon	Salekasa
36	Nawatola	Salekasa
37	Nimba	Salekasa
38	Pandhari	Salekasa
39	Pandharwani	Salekasa
40	Pangaon	Salekasa
41	Paol Dawana	Salekasa
42	Pathantola	Salekasa
43	Pathari	Salekasa
44	Pipariya	Salekasa
45	Powaritola	Salekasa
46	Ramatola	Salekasa
47	Rondha	Salekasa
48	Sakaritola	Salekasa
49	Sakharitola	Salekasa
50	Salaitola	Salekasa
51	Salangtola	Salekasa
52	Salekasa	Salekasa
53	Satgaon	Salekasa
54	Serpar	Salekasa
55	Sonartola	Salekasa
56	Sonpuri	Salekasa
57	Tirkhedi	Salekasa
58	Toyagondi	Salekasa
59	Vicharpur	Salekasa
60	Zaliya	Salekasa

1.13 Conditions Prior to Project Initiation

In accordance to the Paragraph 4 of the chosen methodology, AMS - II.G; “Energy Efficiency measures in thermal applications of non-renewable biomass”, EB 68, Version 04.0: baseline

of the project activity is “the use of fossil fuels for meeting similar thermal energy needs”. In absence of the project activity the beneficiaries could have opted for the underneath options for the purpose of cooking

1. Continuation of use of traditional stoves for the purpose of cooking
2. Use of kerosene for cooking
3. Use of LPG for Cooking
4. Use of biomass based improved cook stove

Use of all the above options for purpose of cooking is permitted as per the regulation of the host country. However, use of few of the fuel options stated above faces barriers as their use in the rural areas are concerned and are depicted below.

As per the study by “National Institute of Science, Technology & Development Studies (NISTADS), CSIR, New Delhi” it is highlighted that poor rural household could not afford and also not willing to opt for the improved cook stoves since wood are available for free. The household that opts for the improved stoves only opts for subsidy hence the use of biomass based cook stoves in not a pertinent or plausible scenario. The percentages of population relying on different fuel type in rural areas of Maharashtra for the purpose of cooking are as follows¹⁴ –

	Firewood	LPG	Kerosene	No cooking arrangement	Others
Percentage of population	78%	15%	1%	3%	2%

From above figures it is quite evident that, the percentages of population depending on firewood in the rural areas are quite high in the state. Publication titled “Household Energy and the Environment”¹⁵ depicts that, although nationally there has been a decrease in the share of traditional fuels, as biomass is being increasingly substituted by commercial fuels, the shift to commercial fuels has been negligible in rural areas. The energy consumption in rural areas is guided by the availability and accessibility of local biomass resources; the competing uses for biomass; availability of commercial energy sources; the cost of commercial fuels such as LPG and kerosene (NCAER 1985); absence of an effective supply especially in the rural areas (TERI 1998); and inadequate production and refining capacity of LPG (Ravindranath and Ramakrishna 1997). Over and above the above barriers the issues of affordability of commercial fuel is quite a bigger issue amongst the populations conceived under the project activity and hence the use of commercial fuel is not usual scenario amongst the BPL and ST population. Therefore, use of LPG or Kerosene is not the plausible baseline option.

From above it can be concluded that the use of biomass in the traditional cook stove is the most plausible baseline option for the target population.

The methodology identifies the baseline and suggests for baseline emission factor therefore, the same is considered as precedence and assessment of alternatives is not carried out for

¹⁴ TERI Energy Data Directory & Yearbook 2010

¹⁵ Preeti Malhotra, http://www.hedon.info/BP42_EnvironmentalImplicationsOfTheEnergyLadderInRuralIndia

the purpose of determination of baseline and emission factor. According to Paragraph 5 of the applicable methodology, default emission factor of 81.6 tCO₂e/TJ is considered for estimation of emission reduction. Emission reductions would be calculated as:

$$ER_y = B_{y,savings} \times f_{NRB,y} \times NCV_{biomass} \times EF_{projectedfossilfuel}$$

Where:

ER_y	Emission reductions during the year y in tCO ₂ e
$B_{y,savings}$	Quantity of woody biomass that is saved in tonnes
$f_{NRB,y}$	Fraction of woody biomass saved by the project activity in year y that can be established as non-renewable biomass
$NCV_{biomass}$	Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.015 TJ/tonne)
$EF_{projectedfossilfuel}$	Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 81.6 tCO ₂ /TJ ³

$$B_{y,savings} = B_{old} * (1 - \eta_{old}/\eta_{new})$$

Where,

$B_{y,savings}$	Quantity of woody biomass that is saved in tonnes
B_{old}	Quantity of woody biomass used in the absence of the project activity in tonnes
η_{old}	A default value of 0.10 may be optionally used if the replaced system is a three stone fire, or a conventional system with no improved combustion air supply or flue gas ventilation system, i.e. without a grate or a chimney.
η_{new}	Efficiency of the system being deployed as part of the project activity (fraction), as determined using the Water Boiling Test (WBT) protocol.

Determination of Bold:

According to Paragraph 7 of the chosen methodology; Bold is determined by using the Option (a) "Calculated as the product of the number of systems multiplied by the estimated average annual consumption of woody biomass per appliance (tonnes/year). This can be derived from historical data or a survey of local usage."

According to the Wood Fuel Trade in India – Food and Agricultural Organisation of the United Nation, July 2001; per capita per day biomass consumption is 1.52 kg and per household per day fuel wood consumption is 5.60 kg. Annual consumption per household per day is therefore estimated at 2.044 tonnes.

Further, following the TERI Energy Data Directory and Yearbook 2010; per capita per month consumption of fire wood in Maharashtra is 25.51 kg¹⁶. With average population size of 4.8

¹⁶ Ref: TERI Energy Data Directory and Year book 2010

person/ household¹⁷ (the population size of 4.8 persons per household is obtained from the secondary literature publication that indicates the average number of personnel per household in rural areas of Maharashtra as 4.8); annual consumption of firewood is estimated at 1.469 tonnes.

Being the annual household fuel consumption data estimated on the basis of the TERI Energy Data Directory is most conservative the value of 1.469 tonnes/household/year is considered. Therefore,

$$B_{old} = 1.469 \text{ tonnes/ household/ year.}$$

Determination of η_{old}

Since, the project is replacing traditional cooking system¹⁸ with no improved combustion air supply or flue gas ventilation system therefore, efficiency of the system being replaced is chosen as per Alternative 2 of Option 2 of Paragraph 6 as default value of 0.10.

Determination of η_{new}

Efficiency of the system being deployed in the project activity is chosen as 29.88%¹⁹ following the Performance Test of Improved Cook stove done by Department of Renewable Energy Sources, Maharana Pratap University of Agriculture & Technology.

$$\eta_{new} = 29.88\%$$

$f_{NRB, y}$ is determined as follows:

According to Paragraph 8 of the chosen methodology, "Project participants shall determine the shares of renewable and non-renewable woody biomass in Bold (the quantity of woody biomass used in the absence of the project activity) the total biomass consumption using nationally approved methods (e.g., surveys or government data if available) and then determine $f_{NRB, y}$ ".

The fraction of woody biomass saved due to the project activity that can be established as non-renewable is estimated as –

$$f_{NRB, y} = NRB / (NRB + DRB)$$

Where,

NRB: Non Renewable Biomass (NRB) is the quantity of woody biomass used in the absence of the project activity (Bold) minus the DRB component.

According to the Paragraph 9 of the applicable methodology; Demonstrably Renewable woody Biomass (DRB) is justified by satisfying the condition no. (1) in following manner –

¹⁷ Ref: Pg.No. -3 of A Report on "Morbidity & Health Care Based on Data Collected in Central, State & Pooled Samples of 60th Round of National Sample Survey Jan - Jun2004"

¹⁸ Traditional cookstove is being used among all households prior to the project activity as per the baseline survey.

¹⁹ Thermal Efficiency Test Report of Improved Cook stove tested at Biomass Cook stove Testing Centre, Dept. of Renewable Energy Sources, Udaipur

The wood extracted from forest land in a sustainable quantity is considered as renewable. The wood extracted from forest land in a sustainable quantity is considered as renewable. Further, to demonstrate the woody biomass is renewable the following conditions as per paragraph 9, are satisfied.

1. Land Area Remain a Forest: The forest area (also termed as recorded forest area and represents the total area of land as per the Government records) in Maharashtra across the last five years is as follows –

Study Period	Total area under forest (sq.km)	Reporting Year (Economic Survey Report)
2010-11	61,939	2011-12
2009-10	61,939	2010-11
2008-09	61,939	2009-10
2007-08	61,939	2008-09
2006-07	61,939	2007-08

The table above represents the total area of land under forest in Maharashtra and confirms that, the land under forest continued to remain under forest.

Therefore, it is evident from above information that, the land area under forest continued to remain under forest.

2. Sustainable management practices are undertaken on these land areas to ensure, in particular, that the level of carbon stocks on these land areas does not systematically decrease over time (carbon stocks may temporarily decrease due to harvesting). Sustainable management practices like afforestation, reforestation, preservation and conservation of forest land is undertaken in the country as a part of the National Forest Policy, 1988 by Ministry of Environment & Forests, Govt. Of India. The National Mission for Green India is one of the eight Missions of National Action Plan on Climate Change; that calls for forest conservation policy as policy decision to be implemented by the state government.

In order to prevent illicit cutting of trees and following the request of the government of India, the Maharashtra State had taken an important and pioneering decision regarding forest management with the active participation of the rural people²⁰. The Joint Forest Management/Forest Protection Committee has selected forest land including degraded and barren forest land and similar other land in rural areas for sustainable management.

3. Any national or regional forestry and nature conservation regulations are complied with. According to the Circular No. FLD/1000/CR 243/F-3 of Government of Maharashtra, the forest land under the state of Maharashtra is abided by Forest Conservation Act 1980. The Forest (Conservation) Act, 1980 and amended in 1988²¹ was enacted with a view to check further deforestation which ultimately results in ecological imbalance; and therefore, the provisions made therein for the conservation of Forests and for matters

²⁰ <http://www.iifm.ac.in/databank/jfm/mahfdres.html>

²¹ <http://www.moef.nic.in/legis/forest/forest2.html>

connected therewith, must apply to all forests irrespective of the nature of ownership or classification thereof. This definition of forest covers all statutorily recognized forests, whether designated as reserved, protected or otherwise for the purpose of section 2 (i) of the Forest (Conservation) Act. The Forest Conservation Act vide paragraph 2 also impose restriction on the de-reservation of forests or use of forest land for non-forest purpose.

Since, the woody biomass originating from land area under forest fulfils the specified conditions the same is considered to be renewable.

Fuel Wood Demand

The demand of fuel wood in context of Maharashtra is estimated from percentage share of the rural population relying on fire wood and average per-capita fuel wood consumption. The demand of fire wood in the state is estimated as follows:

Particulars	Data	Unit	Reference
Rural Population	55,778,000.00	Nos.	Economic Survey of Maharashtra 2010-11 (Pg.No.-3)
Percentage of households reliant on biomass for cooking	78.00	%	Teri Energy Data Directory & Yearbook 2010(Pg. No. 294) Although study by NSSO depicts higher percentage of dependency of the rural population in lower strata of MCPE group the conservative figure is used for the purpose of calculation
Population Dependent on the Fuel Wood	43,506,840.00	Nos.	Calculated
Per capita fuel wood consumption for cooking	25.51	kg/ month	Teri Energy Data Directory & Yearbook 2010(Pg. No.-293)
Fuel Wood requirement	13,318,313.86	tonne /year	Calculated

Supply of Fire Wood

Forest is the major source of fire wood supply followed by Tree outside Forest. The amount of fire wood that can be sustainably extracted from the forest and Tree outside Forest land is estimated from the area under different forest type and sustainable rate of extraction from forest and plantation. The same method is applied for estimation of sustainable extraction potential from Tree outside Forest.

As a conservative approach, the land under open forest and scrub are also included.

Sustainable Fuel wood Extraction From Forest Area				
Particulars	Data	Unit	Reference	Remarks
Very Dense Forest	8,736	sq. km.	Pg. No. -173, Ch -9.16. of India State of Forest Report 2011 -FSI	Land with forest cover having canopy density above 70%
Medium	20,815	sq. km.	Pg. No. -173, Ch -9.16. of	All Lands with forest cover

DenseForest			India State of Forest Report 2011 -FSI	having a canopy density of40%- 70%
Open Forest	21,095	sq. km.	Pg. No. -173, Ch -9.16. of India State of Forest Report 2011 -FSI	Land with forest cover havingdensity between 10-40%
Scrub	4,157	sq. km.	Pg. No. -173, Ch -9.16. of India State of Forest Report 2011 -FSI	Degraded forest land with canopy cover less than 10%
Total area underforest	54,803	sq. km.		Calculated
Forest Cover In Different Forest Type				
Tropical dry deciduousforest	57.40%	Pg. No. -174, Ch -9.16. of India Stateof Forest Report 2011 –FSI	FSI Report Title: India State of Forest Report 2011 By: Forest Survey ofIndia Link: www.fsi.nic.in Report No: 12th Data Period: October2008 - March 2009	
Tropical moist deciduousforest	29.85%	Pg. No. -174, Ch -9.16. of India Stateof Forest Report 2011 –FSI		
Tropical semi evergreen	7.72%	Pg. No. -174, Ch -9.16. of India Stateof Forest Report 2011 –FSI		
Tropical thorn forest	1.02%	Pg. No. -174, Ch -9.16. of India Stateof Forest Report 2011 –FSI		
Sub-tropical broad leavedhill forest	1.54%	Pg. No. -174, Ch -9.16. of India Stateof Forest Report 2011 –FSI		
Littoral and Swamp	0.09%	Pg. No. -174, Ch -9.16. of India Stateof Forest Report 2011 –FSI		
Tropical dry deciduous forest		31,457	sq. km.	Calculated
Tropical moist deciduous forest		16,359	sq. km.	Calculated
Tropical semi evergreen		4,231	sq. km.	Calculated
Tropical thorn forest		559	sq. km.	Calculated
Sub-tropical broad leaved hill forest		844	sq. km.	Calculated
Littoral and Swamp		49	sq. km.	Calculated
Sustainable Rate Of Extraction From Forests And Plantation				
Tropical dry deciduous forest	0.22	tonne /ha/yr	Pg. No. 254 of Forestry for sustainable biomass production and carbon sequestration in India- N. H. Ravindranath (Centre for Ecological Sciences, IISc, Bangalore), P. Sudha (Centre for Ecological Sciences, IISc, Bangalore), Sandhya Rao (Dept. of Civil Engineering IIT Delhi)	
Tropical moist deciduous forest	0.27	tonne/ha/yr		
Tropical semi evergreen	0.39	tonne /ha/yr		
Tropical thorn forest	0.24	tonne/ha/yr		
Sub-tropical broad leaved hillforest	0.36	tonne /ha/yr		
Littoral and Swamp	0.36	tonne /ha/yr		
Renewable Biomass Extraction From Forest Area				
Tropical dry deciduous forest		692,052	tonne /year	Calculated
Tropical moist deciduous forest		441,684	tonne /year	Calculated
Tropical semi evergreen		165,000	tonne /year	Calculated
Tropical thorn forest		13,415	tonne /year	Calculated
Sub-tropical broad leaved hill forest		30,382	tonne /year	Calculated
Littoral and Swamp		1,775	tonne /year	Calculated
Total Renewable Biomass Extractionfrom Forest		1,344,308	tonne /year	Calculated
Sustainable Extraction from Plantation and ToF				
Plantation /TreeOutside Forest	1,304	sq. km	India State of Forest Report 2011 - FSI (Calculated considering the area under Plantation/ToF as 2.38%)	
Sustainable	2.00	tonne /ha/yr	Pg. No. 254 of Forestry for sustainable biomass	

Extraction rate from plantation			production and carbon sequestration in India - N. H. Ravindranath (Centre for Ecological Sciences, IISc, Bangalore), P. Sudha (Centre for Ecological Sciences, IISc, Bangalore), Sandhya Rao (Dept. of Civil Engineering IIT Delhi)
---------------------------------	--	--	---

Estimation of f_{NRB}

Total Renewable Biomass Extraction from Plantation/ ToF	260,862.28	tonne /year
Total Sustainable biomass available	1,605,170.28	tonne /year
Fuel Wood requirement	13,318,313.86	tonne /year
NRB	11,713,143.58	tonne /year
f_{NRB}	87.90%	

Following the Paragraph 10 of the applicable methodology, the f_{NRB} estimation is estimated as above and also two supporting indicators are established through the following –

- Survey results, national or local statistics, studies, maps or other sources of information, such as remote-sensing data, that show that carbon stocks are depleting in the project area.
- Increasing trends in fuel wood prices indicating a scarcity of fuel-wood

1. Depletion of Carbon Stock

According to the India State of Forest Report by Forest Survey of India, Ministry of Environment & Forests, Govt. of India there has been a conversion of the dense and moderately dense forest, to open forest due to felling, pruning or thinning of trees in the forest areas. An increase in the area of open forest is related to diversion of very dense and moderate dense forest to open forest. As per the Government of India Sustainable Forest Management Policy Land converted to open forest are taken up for plantation activity or promote natural or artificial regeneration. In this context it is also worthwhile to note that, the department of forest is undertaking initiatives towards plantation activity.

The table below represent the area under different forest cover:

				All area in km ²
Year	Very Dense	Moderately Dense	Open Forest	Total
2011	8,736	20,815	21,095	50,646
2009	8,739	20,834	21,077	50,650
2005	8,747	20,847	21,067	50,661

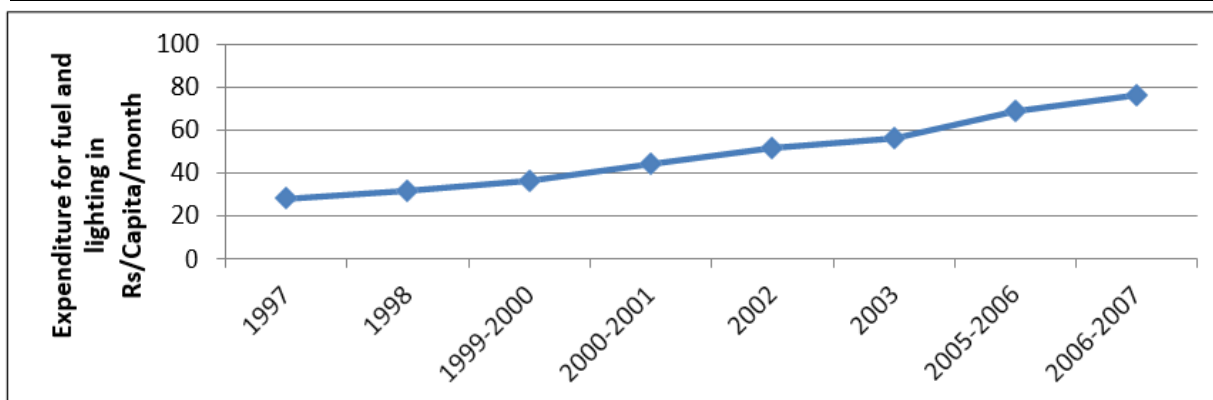
In accordance to the **Population Pressure and Deforestation in India- Population Research Centre, Institute of Economic Growth – Delhi**; the forest's growing stock reflects the quality of forest cover in terms of crown densities. The study exhibits the depletion in the forest stock in 1997 over 1989. Considering the dense forest growing stock is 67.6 cubic metre/hectare and open forest growing stock as 28.5 cubic metre/hectare; the volume of the growing stock in 1989 is estimated to be 227,592,000 cubic metres which is lowered to 223,516,000 cubic metres in 1997. The reduction in the volume of growing stock is estimated at 2% from 1997 in compared to 1989.

State	Volume of growing stock in 1989 (cubic metres)	Volume of growing stock in 1997 (cubic metres)	Percentage change in volume of growing stock
Maharashtra	227,592,000	223,516,000	-2%

2. Increase in fuel wood price trend

As per the consumer expenditure survey carried out by National Sample Survey Organisation in 2004; it has been portrayed that 54% of the total consumption expenditure for cooking and lighting in rural areas pertains to fuel wood consumption. The expenditure across the year is presented as follows:

Year	1997	1998	1999-2000	2000-2001	2002	2003	2005-2006	2006-2007
Average Monthly Per Capita Expenditure (Rs.)	27.97	31.79	36.45	44.14	51.70	56.20	68.77	76.20



Since expenditure on fuel wood comprises of 43% of the total expenditure on fuel and lighting (considering 2004-05 data) it can be assumed that the cost of fire wood will increase in line with the increase in expenditure on fuel and light. Moreover the fact is also established from the mean annual increase in the price of the different energy products use for cooking and lighting and is as follows:

The trend in depletion of the carbon stock and rise of the fuel wood price is mainly due to increased demand and supply gap and unsustainable extraction or felling thereof. With the increase in demand of fire wood owing to population pressure and –limited and decreased potential for supply gap of fuel wood due depletion of carbon stocks (forest cover) the price is increasing. As the total biomass availability is unable to cater the demand of unsustainable extraction and pilferage is on the way towards depletion of the forest cover. The depletion of the carbon stock is due to the unsustainable extraction of biomass from the forest land and not due to any national policy. The national policy is aimed towards increasing of the forest area as the total area of forest at present is lower than the projected and required forest area as stipulated by the Govt. of India. Therefore, depletion of carbon stock or rise of the fuel wood price is not due to any national and Sectoral regulations but due to the stiffening of the gap between the demand and supply of fire wood in the region.

Please refer to section B 4 of PDD of the UNFCCC registered CDM project with Ref No. 9444 through the web link

Web-link: <https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

There has been no policy regulation or legal enforcement that promotes deforestation of forest degradation in host country as well as in the region. National forest policy 1988, Government of India, Ministry of Environment and Forest, points out the requirement of forest conservation in the light of forest depletion in the country. Revenue and Forest Department, Government of Maharashtra vide circular no. FLD/1000/CR 243/F-3 16-December-2004, paragraph 3 has directed to prevent further deforestation in line with section 2 of the Forest Conservation Act 1980. The National mission for Green India, one of the eight Missions on National Action plan on Climate Change has also pointed out use of efficient biomass stoves as a measure towards preventing forest degradation.

The trend in depletion of the carbon stock and rise of the fuel wood price is mainly due to increased demand and supply gap and unsustainable extraction or felling thereof. With the increase in demand of fire wood owing to population pressure and –limited and decreased potential for supply gap of fuel wood due depletion of carbon stocks (forest cover) the price is increasing. As the total biomass availability is unable to cater the demand of unsustainable extraction and pilferage is on the way towards depletion of the forest cover. The depletion of the carbon stock is due to the unsustainable extraction of biomass from the forest land and not due to any national policy. The national policy is aimed towards increasing of the forest area as the total area of forest at present is lower than the projected and required forest area as stipulated by the Govt. of India. Therefore, depletion of carbon stock or rise of the fuel wood price is not due to any national and Sectoral regulations but due to the stiffening of the gap between the demand and supply of fire wood in the region.

The design of the cook stove is certified by Bureau of Indian Standards relating to its appropriateness to, IS 13152 (Part1). The standard was adopted by Bureau of Indian Standard after the draft finalized by the oil burning Appliances Sectional Committee had been approved by Heavy Mechanical Engineering Division Council.

The Project has received necessary approvals for development and commissioning for cook stove project from the state Nodal agencies and is in compliance to the local laws and regulations.

1.15 Participation under Other GHG Programs

1.15.1 Projects Registered (or seeking registration) under Other GHG Program(s)

Project has been registered with UNFCCC under Clean Development Mechanism program, Registration reference number is 9444.

1.15.2 Projects Rejected by Other GHG Programs

The Project is not rejected by any other GHG programs.

1.16 Other Forms of Credit

1.16.1 Emissions Trading Programs and Other Binding Limits

India is Non-annex1 country and there is no compliance with an emission trading program or to meet binding limits on GHG emissions for this project activity. The project is registered under CDM with registration ID 9444. Project Proponent has submitted undertaking that they will not claim same GHG emission reductions of the project from CDM and VCS. PP would not use net GHG emission reductions by the projects for compliance with emission trading program to meet binding limits on GHG emissions. PP has also submitted an undertaking stating that they will not take REC benefits for the same Emission Reductions.

1.16.2 Other Forms of Environmental Credit

Project has been registered with UNFCCC under Clean Development Mechanism program. Registration reference number is 9444. Project Proponent has submitted undertaking for not availing other forms of environmental credit for the same crediting period under consideration. Project Participant is not taking REC benefits for the same emission reductions.

1.17 Additional Information Relevant to the Project

Leakage Management

Not applicable to this project activity.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

Sustainable Development

The project contribution towards sustainable development is established in line with the sustainable development indicator framed by the host country DNA:

Social benefits:

- Reduces drudgery of women and children of rural areas (due to reduced fuel wood use) by reducing time spent and distance travelled for fuel wood collection.

Reduction in firewood requirement would help in spending more time in productive activities such as education, employment etc.

- Improves overall health (particularly diseases related to respiratory system) of women and children by reducing smoke in the kitchen.

Environmental benefits:

- Improves the local environment by reducing rate of forest degradation /deforestation in the project area. Conservation of forest will not only reduce non-renewable biomass demand and also reduce soil erosion and loss of biodiversity as a consequence of deforestation.
- Reduces emission of black carbon to the atmosphere.
- Reduces Green-house gas emissions.

Economic benefits:

- Employment opportunities for local communities involved in monitoring, training of users, undertaking periodic maintenance and post life time replacement.
- Reduces the expenditure involved in the pre project scenario for purchase of fuel wood.

Technological benefits:

- Introduction of new technology to the rural communities
- Knowledge transfer to trainers including technicians for pertaining training to users, maintenance of system.
- Demonstration of a successful project at household level will create replication potential in other states and countries.

In view of the above, the project proponent considers that, the project activity profoundly contribute towards sustainable development of the region as well as of the nation.

[Further Information](#)

There are no information or incidents that will have bearing on the eligibility of the project, the net GHG emission reductions or removals, or the quantification of the project's net GHG emission reductions or removals.

2 SAFEGUARDS

2.1 No Net Harm

According to the Ministry of Environment and Forests (MoEF), Government of India, under the Environment Impact Assessment Notification vide S .O.1533(E), dated 14/09/2006; the project activity of utilization of Improved Cook stove for cooking in rural households does not require environmental impact assessment study to be carried out.

2.2 Local Stakeholder Consultation

Please refer to sections E 1 and E 2 of PDD of the UNFCCC registered CDM project with reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

2.3 Environmental Impact

Please refer to D 1 of PDD of the UNFCCC registered CDM project with reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

2.4 Public Comments

The commenting period for the Project Activity was from 22-March-2021 to 21-April-2021. No comments have been received during this period.

2.5 AFOLU-Specific Safeguards

Not Applicable

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

Consolidated baseline methodology for “Energy efficiency measures in thermal applications of non-renewable biomass”; AMS II-G, Version 04.0.0 Sectoral Scope: 03, EB 68.

3.2 Applicability of Methodology

The project activity involves replacement of traditional cook stoves by improved cook stoves. The improved cook stoves owing to its higher combustion efficiency of 29.88% in comparison to the 10%²² efficiency of the traditional cook stoves results in energy efficiency improvement and same do not exceed the equivalent of 60 giga watt hour thermal (GWhth) per year of energy savings. The project is selected for applying small scale methodologies under Type II. As the cumulative energy saving from the project activity is less than 20 GWh/annum or 60 GWhth/annum and each of the independent subsystems i.e. Improved cook stove used

²² Traditional cookstove is being used among all households in the baseline as per the survey, thus thermal efficiency is considered 10% for traditional stove according to the methodology.

in household for the purpose of cooking results an estimated annual energy savings of 4.073 MWhth or 1.358 MWh (detailed calculation presented in section B.5 of the PDD) which is well smaller than the permissible limit of 600 MWhth. Therefore, the project is consider appropriate to be developed under micro small scale guidelines. The applicability criteria of the chosen methodology AMS-II. G. (Version 04) is satisfied by the project activity in following manner:

Criteria 1

This category comprises appliances involving the efficiency improvements in the thermal applications of non-renewable biomass. Examples of these technologies and measures include the introduction of high efficiency biomass fired cook stoves or ovens or dryers and/or improvement of energy efficiency of existing biomass fired cook stoves or ovens or dryers.

Justification: The project activity involves dissemination of higher efficiency biomass fired cook stoves use as household appliances (29.88% as tested from MNRE approved centre) for cooking purpose⁶⁸. This will contribute in reduction of non-renewable biomass consumption which would have been otherwise consumed by less efficient cook stoves. Since, it is an introduction of high efficiency cook stove the above condition is justified.

Criteria 2:

Project participants are able to show that non-renewable biomass has been used since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.

Justification: Use of non-renewable biomass is established through demonstration of gap between the demand of fire wood and silviculturally permissible production of biomass from forest and tree outside forest. The fact is established using published literature referring to the following studies:

Food and Agricultural Organisation of United Nation⁶⁹ - Regional Wood Energy Development Programme in Asia

The literature highlights gap in demand and supply of fuel wood across the country as well as across the state of Maharashtra. In accordance to the study, fuel wood consumption in real terms is much higher than the recorded production of about 30%; thus, leaving a wide gap leading towards unsustainable extraction of fire wood. Moreover, on account of population pressure, demand for firewood has outstripped natural regeneration and planting, so much so that in some areas there is food to eat but not enough wood is available to cook it (Mathur, 1987)". The report also highlights the statistics from Forest Survey of India (FSI 1988:46) which estimated a gap of 130 million tonne between the demand and internal production of firewood in the country in 1987. The study also highlight demand for fuel-wood across Maharashtra in 1980 around 17 million cu. m. as against the production of 1.5 million cu. m. from the recorded forest (Pethiya & Luthra, 1991). The quoted demand supply gap of fire wood is also highlighted in the finding of the National Council for Applied Economic Research (NCAER).

State of Forest Report 1987⁷¹, MoEF, Govt. of India

The report highlights gap between the demand and production of fire wood as major cause of deforestation. The reported consumption and production across the country within silviculturally permissible limit across the following years is indicated as follows -

Year	Consumption in million tones	Recorded Production in million tonnes
1953-54	86.3	6.49
1960-61	99.6	8.15
1965-66	109.3	9.16
1970-71	117.9	11.62
1975-76	133.1	19 m. from forest and 30 m. from tree outside forest

In accordance the gap between demand and production is met through pilferage leading to continuous depletion of forest land.

Wood Fuel Trade in India: Food and Agricultural Organisation of United Nation

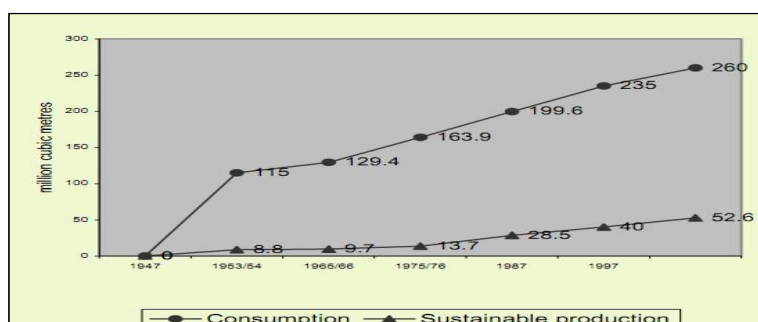
The report outlines demand- supply gap which has referred the expert committee report of MoEF dated 30.01.1998 as below –

In million cubic metre			
Year	Consumption	Sustainable Production	Gap
1953-54	115.0	8.8	106.2
1965-66	163.9	13.7	150.2
1975-76	199.6	28.5	171.4
1987-88	235.0	40.0	195.0

Rural energy data sources and estimations in India - TERI

The report refers to gap between consumption and recorded production of fuel-wood has however increasing, indicating seriousness of the fuel-wood scarcity in India.

Fuel wood consumption and sustainable production since 1947



Conclusion:

Therefore, it is established from the above studies that, a staggering gap exists between the demand and potential for sustainably extractable fuel wood from forest land. While the first three studies refer to the fuel wood supply scenario and the gap that were precedent before 1989; the study by TERI highlight the widening of gap between the demand and supply of biomass after 1989. The widening of the gap has been both due to the increased population pressure as well as the conversion of dense forest to medium dense, scrub and open type forest land due to unsustainable extraction even after the government's initiative towards promotion of afforestation. Thus, it can therefore be concluded that the gap exists from and before 1989 and continued thereafter, forcing the population in using biomass extracted in un- sustainable manner which is identified as non-renewable component.

As demonstrated above, the project activity satisfies qualifying criteria of the selected methodology AMS

- II.G. Hence, the choice of the methodology is justified.

3.3 Project Boundary

According to the Paragraph 3 of approved methodology AMS-II.G., "The project boundary is the physical, geographical site of the efficient systems using biomass".

The project boundary is therefore, encompasses physical, geographical sites of all 14,100 individual households possessing efficient cook stove in districts of Aurangabad, Jalna, Parbhani, Hingoli, Beed, Nanded, Osmanabad, Latur, Buldhana, Akola, Washim, Amravati, Yavatmal, Wardha, Nagpur, Bhandara, Chandrapur, Gadchiroli and Gondia of Aurangabad, Amravati and Nagpur Divisions, Maharashtra.. Based on the methodology, GHG included for the baseline and project scenario, leakage for the project activity is CO₂.

Source		Gas	Included?	Justification/Explanation
Baseline	Emission combustion fuel wood traditional stove from of in cook	CO ₂	Yes	This is the major Green-house gas emitting from combustion of fuel wood in the baseline scenario.
		CH ₄	No	Not Applicable as per the applicable methodology
		N ₂ O	No	Not Applicable as per the applicable methodology
Project	Emission from consumption of	CO ₂	No	Not Applicable as per the applicable methodology

Source		Gas	Included?	Justification/Explanation
	fuel wood in efficient cook stoves	CH ₄	No	Not Applicable as per the applicable methodology
		N ₂ O	No	Not Applicable as per the applicable methodology
Leakage Emissions	Leakage related to the use/ diversion of non-renewable woody biomass saved under the project activity by non – project households/users	CO ₂	Yes	Baseline fuel wood consumption is multiplied by a net to gross adjustment factor of 0.95 to account for leakages.
		CH ₄	No	Not Applicable as per the applicable methodology
		N ₂ O	No	Not Applicable as per the applicable methodology
	Leakage related to if equipment utilised under the project activity is transferred from outside the boundary	CO ₂	No	Not Applicable as per the applicable methodology
		CH ₄	No	Not Applicable as per the applicable methodology
		N ₂ O	No	Not Applicable as per the applicable methodology

3.4 Baseline Scenario

Please refer to section B 4 of PDD of the UNFCCC registered CDM project reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

3.5 Additionality

Please refer to section B 5 of PDD of the UNFCCC registered CDM project with reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

3.6 Methodology Deviations

Not Applicable, as there are no methodological deviations for this project activity.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

Please refer to section B 6.1 of PDD of the UNFCCC registered CDM project with reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

4.2 Project Emissions

Please refer to section B 6.1 of PDD of the UNFCCC registered CDM project with reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

4.3 Leakage

Please refer to section B 6.1 of PDD of the UNFCCC registered CDM project with reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

4.4 Net GHG Emission Reductions and Removals

Please refer to section B 6.4 of PDD of the UNFCCC registered CDM project with reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
Year 1 (09-October-2012 to 08-October-2013)	12,675	0	0	12,675
Year 2 (09-October-2013 to 08-October-2014)	12,675	0	0	12,675
Year 3 (09-October-2014 to 08-October-2015)	12,675	0	0	12,675
Year 4 (09-October-2015 to 08-October-2016)	12,675	0	0	12,675
Year 5 (09-October-2016 to 08-October-2017)	12,675	0	0	12,675
Year 6 (09-October-2017 to 08-October-2018)	12,675	0	0	12,675
Year 7 (09-October-2018 to 08-October-2019)	12,675	0	0	12,675
Year 8 (09-October-2019 to 08-October-2020)	12,675	0	0	12,675
Year 9 (09-October-2020 to 08-October-2021)	12,675	0	0	12,675
Year 10 (09-October-2021 to 08-October-2022)	12,675	0	0	12,675
Total	126,750	0	0	126,750

5 MONITORING

5.1 Data and Parameters Available at Validation

Please refer to section B 6.2 of PDD of the UNFCCC registered CDM project with reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

5.2 Data and Parameters Monitored

Please refer to section B.7.1 of PDD of the UNFCCC registered CDM project with reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>

5.3 Monitoring Plan

Please refer to section B.7.3 of PDD of the UNFCCC registered CDM project with reference no. 9444.

The web link of the same is given below:

<https://cdm.unfccc.int/Projects/DB/RWTUV1356888981.65/view>