Monitoring report form

(Version 05.1)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.

MONITORING REPORT		
Title of the project activity	Small scale Allahabad JFM A/R CDM Project on degraded lands in Allahabad Forest Division, Uttar Pradesh, India	
UNFCCC reference number of the project activity	10181	
Version number of the monitoring report	Version 1	
Completion date of the monitoring report	20/11/2016	
Monitoring period number and duration of this monitoring period	1 01/01/2012 to 06/06/2016	
Project participant(s)	Divisional Forest Officer (DFO), Allahabad Forest Division, Uttar Pradesh State	
Host Party	India	
Sectoral scope(s)	Sectoral scope 14: Afforestation and reforestation	
Selected methodology(ies)	AR-AMS0007: "*Afforestation and reforestation project activities implemented on lands other than wetlands*", Version 03.0	
Selected standardized baseline(s)	Not applicable	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	10,259 tCO_2e	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	0	9,365 tCO_2e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

>>

The SSC A/RCDM project activity was implemented on the severely degraded forest lands of the Allahbad Forest Division. The project sites have faced significant ecological degradation and run-off of fertile soil. Therefore, to restore these degraded lands the Joint Forest Management Committees (JFMCs) along with forest department have established the SSC A/R-CDM plan on these lands through a larger scheme titled "Uttar Pradesh Participatory Forest Management and Poverty Alleviation Project (UP PFMPAP)" funded by the Japan International Cooperation Agency (JICA) as a loan to the Government of India. The UP-PFMPAP is under implementation in the twenty forest divisions of the Uttar Pradesh State in which Allahabad forest division is one of them.

Purpose of the A/R CDM project activity

The purpose of the A/RCDM project activity is to restore degraded forests, secure sustainable forest management by improving forest administration, community organisation and other stakeholders and to improve income of forest dependents and their livelihood options. The selected area under the project activity is degraded and abandoned for the past many decades. The extreme low productivity deterred the forest department from taking up plantations over these lands for at least past three decades. The project restored the degraded areas and enhanced forest cover through reforestation activities in order to improve the livelihood and empower local people[1]. The major aims of the proposed SSC A/R CDM project are to enhance the forest cover, improve local livelihood opportunities, and adopt sustainable forest management practices through JFM activities.

Brief description of the installed technology and equipment;

The small scale project activities were strictly adhered to promote Sustainable Forest Management (SFM) through involving local communities. The SSC A/R CDM Project activity covers eleven village forests. Total 24 native tree species were plantated across eight selected village forest areas of the project. All the JFMCs carried out standard forestry techniques like sowing of seeds, dig pitting, planting, weeding and casualty planting as recommended by the State Forest Department. These activities carried out with the help of human labor to avoid project emissions and also to meet the objectives of employment generation for local communities. The project activities focus on women

[1]Operational Manual, Uttar Pradesh Participatory Forest Management and Poverty Alleviation Project

empowerment, training and capacity building of front line forest staff, JFMC members, Forest User Groups (FUGs), and Self Help Groups (SHGs).

Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.);

The plantation activities of the proposed project were planned in three different phases. The first phase of plantation was started in the year 2012, covering an area of 248.96 ha, second phase of plantation was started in 2013, covering an area of 206.25 ha and the third and final phase of the project will start in 2014, which will cover approximately 51.42 ha area. Thus the total project area is 506.63 ha area..

Total GHG emission reductions or net GHG removals by sinks achieved in this monitoring period is **9,365 t CO2-e**

A.2. Location of project activity

>>

Host Party

India

Region/State/Province etc.

Northern region of India

State - Uttar Pradesh

District - Allahabad

City/Town/Community etc.

City: Allahabad

Town: Allahabad

Communities: Villages represented by the following Joint Forest Management Committees (JFMCs):

1. Gauraiya-Kala
2. Mudpela
3. Baddiha
4. Kharka-Dabar
5. Sukath
6. Dari
7. Unchdiha
8. Gaderiya
9. Sikikala
10. Lakhnauti and
11. Madanpur

Physical/geographical location

The proposed AllahabadSSC A/RCDM project activity has been formed by eleven village forests of Allahabad Forest Division namely Gauraiya-Kala, Mudpela, Baddiha, Kharka-Dabar, Sukath, Dari, Unchdiha, Gaderiya, Sikikala, Lakhnauti andMadanpur. The geo-referencing of each discrete parcel of project land in these JFMCs is carried out whose details are provided in the **Appendix 6.** Further, unique coding system for the identification of each parcel lands is adopted as represented in **Table A.2**. The code ME44101-2012can be decoded as, the first two alphabetsME represents Forest Range i.e. Meja Forest Range, the next three digits 441 indicates the unique JFMC code and the last two digits **01** indicates the discrete site code within the JFMC, while **2012** represents the year of plantation in the given patch. Thus, in general each discrete project site is coded with first two letters indicating forest range, next three digits indicate the JFMC code and the last two digits indicate the discrete site code within each JFMC.

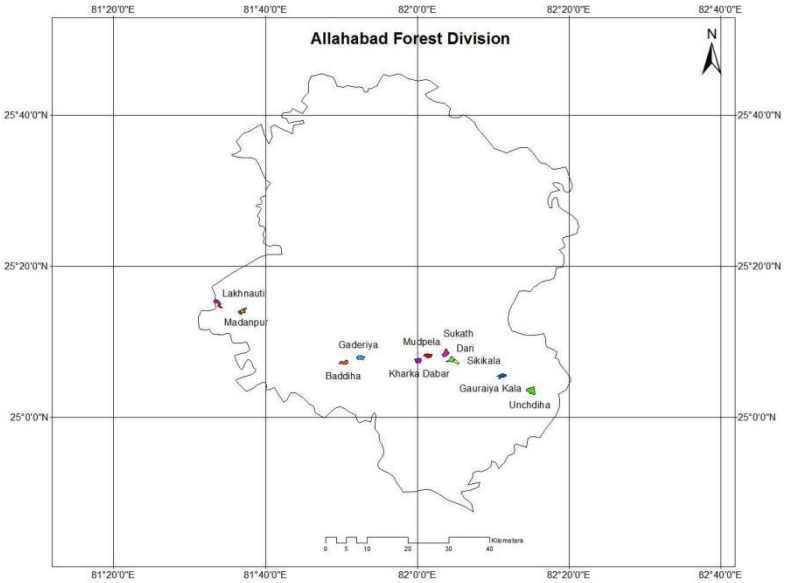


Figure 1.Forest division map of Allahabad

Table A.2: Details of each discrete parcel of the land in all the selected JFMCs village forest.

S.No.	JFMC Village	JFMC AR CDM Code	Recorded village forest area (ha)	Area of each discrete patch (ha)	Total AR CDM project area (ha)
1.	Gauraiya-Kala	ME44001-2013	126	39.58	39.58
2.	Mudpela	ME44101-2012	134	34.47	71.01
		ME44101-2013		21.01	
		ME44101-2014		15.53	
3.	Baddiha	ME44201-2012	151	46.18	75.32
		ME44201-2013		29.14	
4.	Kharka-Dabar	ME44301-2012	149	27.35	67.19
		ME44301-2013		39.84	
5.	Sukath	ME44401-2012	148	27.98	67.69
		ME44401-2013		39.71	
6.	Dari	ME44501-2012	108	12.96	36.82
		ME44501-2013		15.81	

S.No.	JFMC Village	JFMC AR CDM Code	Recorded village forest area (ha)	Area of each discrete patch (ha)	Total AR CDM project area (ha)
		ME44501-2014		8.05	
		ME10101-2012		20.65	
7.	Unchdiha	ME10101-2014	197	11.17	31.82
		ME10401-2012		12.95	
8.	Gaderiya	ME10402-2012	128	12.85	25.8
		KO43901-2012		14.87	
		KO43901-2013		6.07	
9.	Sikikala	KO43901-2014	69.80	9.25	30.19
		SH10701-2012		6.55	
10.	Lakhnauti	SH10702-2012	138	2.58	9.13
		SH44601-2012		29.57	
		SH44601-2013		15.09	
11.	Madanpur	SH44601-2014	122	7.42	52.08
	Total		**1470.80**		**506.63**

The project boundaries of all the eleven JFMCs with their discrete parcel of plantation sites are indicated below in **figures 2 to 13**.

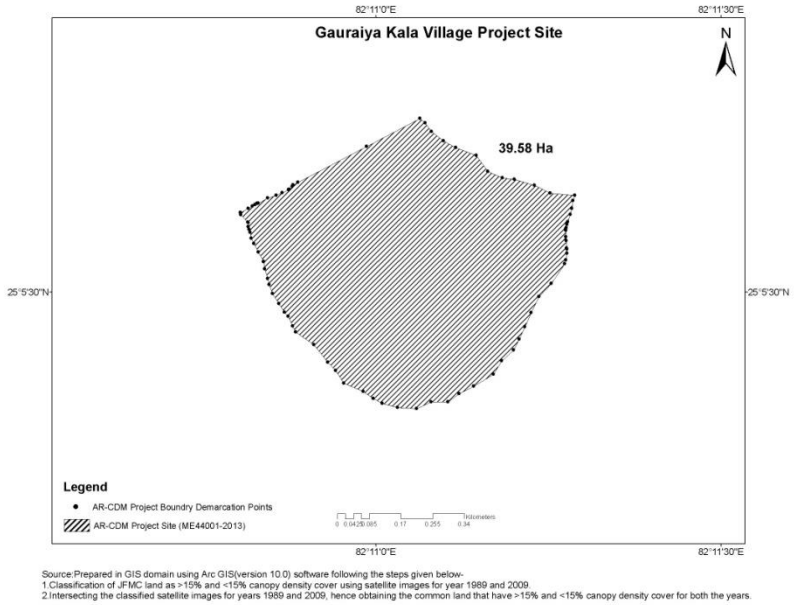
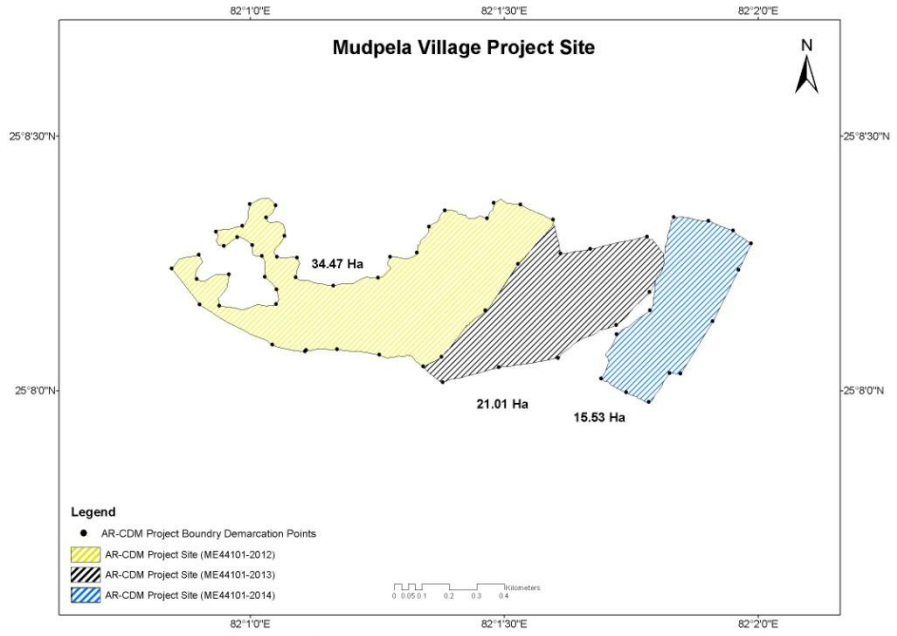
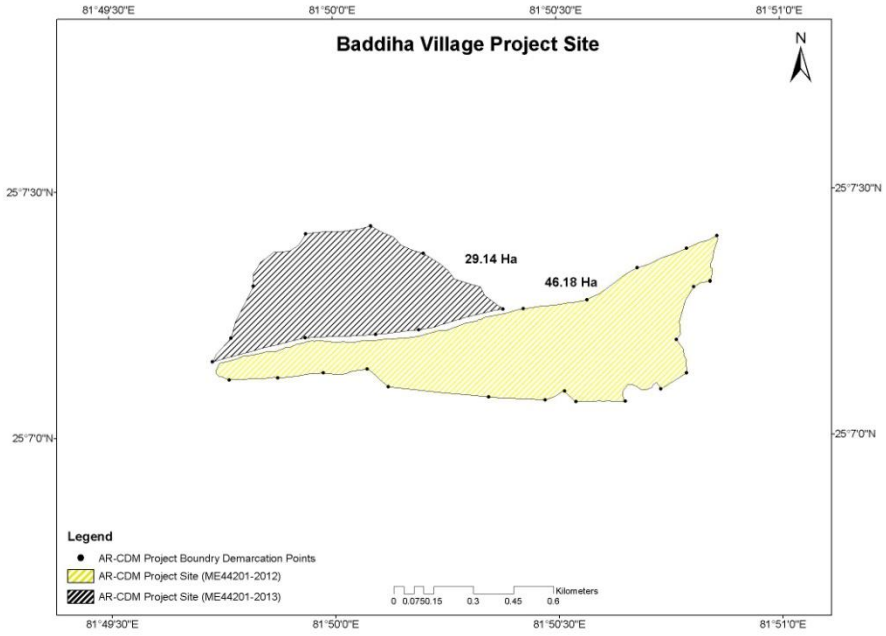


Figure 2.Map of Gauraiya-Kala village forest



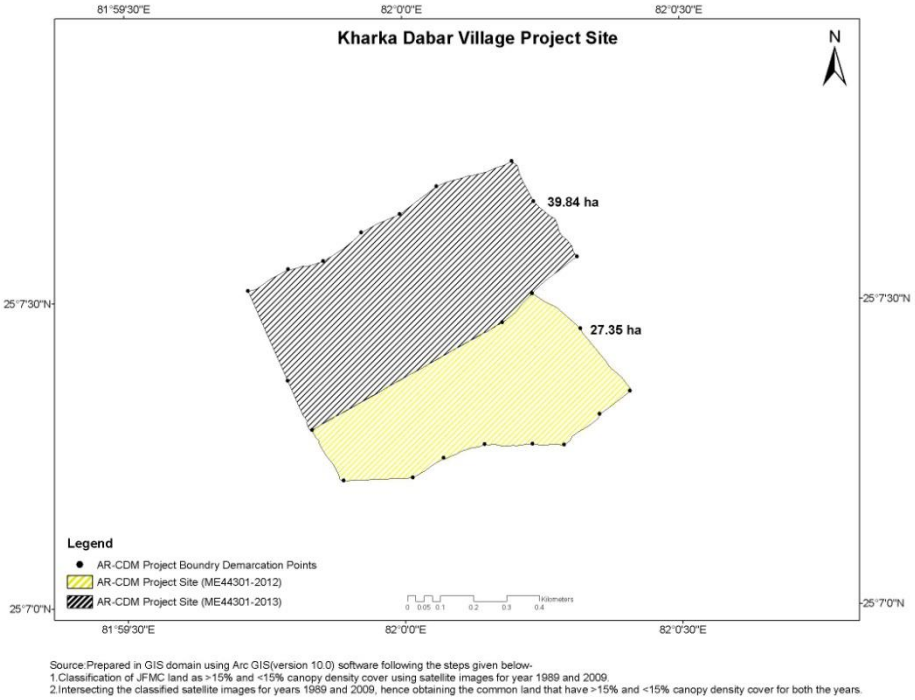
Source:Prepared in GIS domain using Arc GIS(version 10.0) software following the steps given below-
1.Classification of JFMC land as >15% and <15% canopy density cover using satellite images for year 1989 and 2009.
2.Intersecting the classified satellite images for years 1989 and 2009, hence obtaining the common land that have >15% and <15% canopy density cover for both the years.

Figure 3.Map of Mudpela village forest



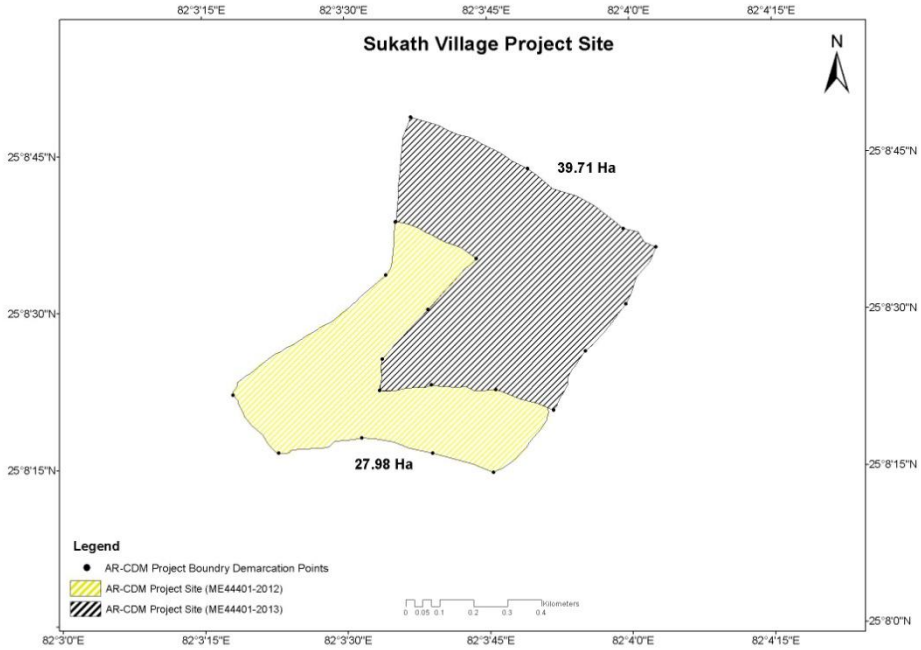
Source:Prepared in GIS domain using Arc GIS(version 10.0) software following the steps given below-
1.Classification of JFMC land as >15% and <15% canopy density cover using satellite images for year 1989 and 2009.
2.Intersecting the classified satellite images for years 1989 and 2009, hence obtaining the common land that have >15% and <15% canopy density cover for both the years.

Figure 4.Map of Baddiha village forest



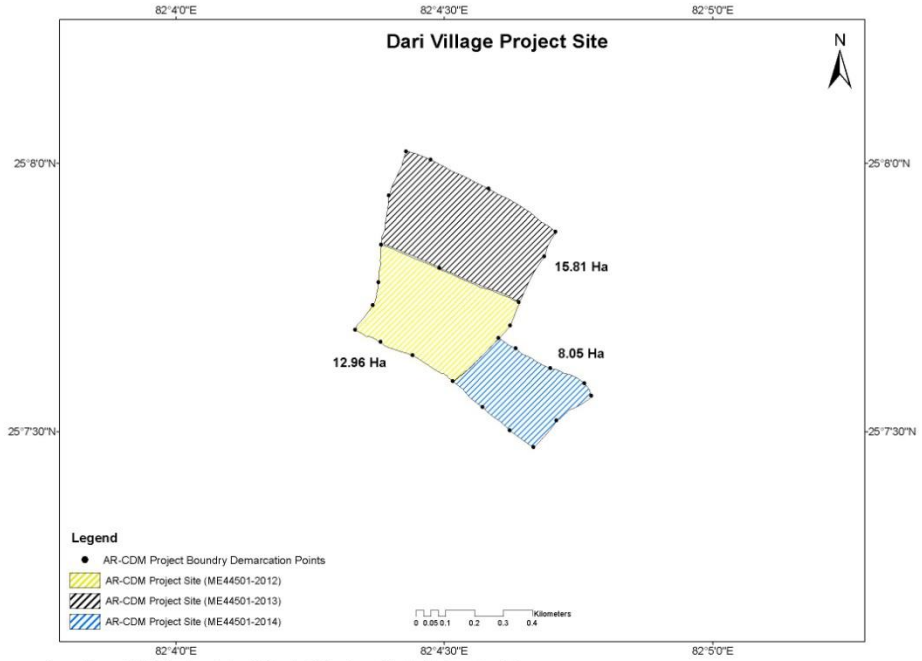
Source:Prepared in GIS domain using Arc GIS(version 10.0) software following the steps given below-
1.Classification of JFMC land as >15% and <15% canopy density cover using satellite images for year 1989 and 2009.
2.Intersecting the classified satellite images for years 1989 and 2009, hence obtaining the common land that have >15% and <15% canopy density cover for both the years.

Figure 5. Map of Kharka Dabar village forest



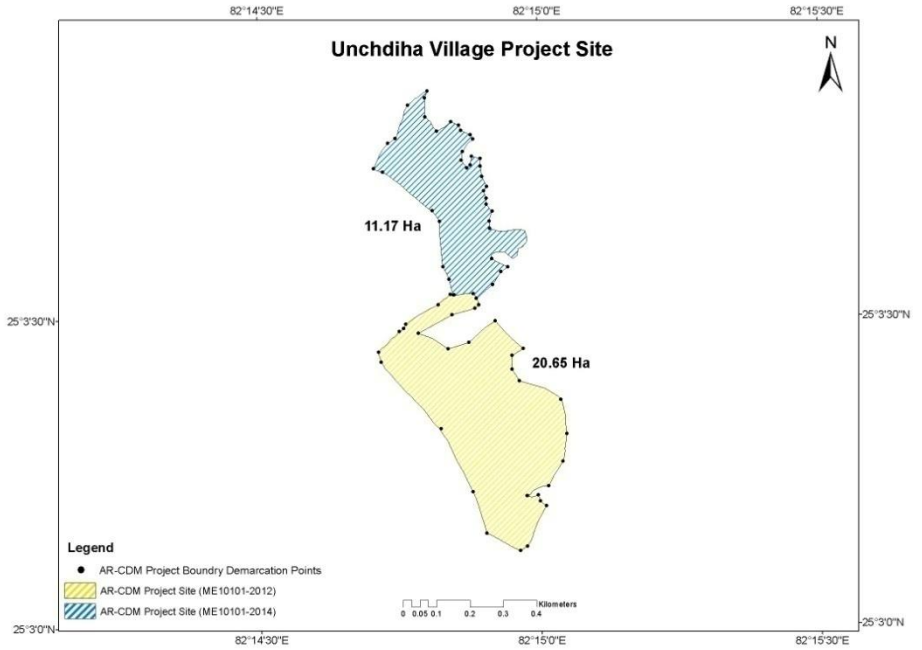
Source:Prepared in GIS domain using Arc GIS(version 10.0) software following the steps given below-
1.Classification of JFMC land as >15% and <15% canopy density cover using satellite images for year 1989 and 2009.
2.Intersecting the classified satellite images for years 1989 and 2009, hence obtaining the common land that have >15% and <15% canopy density cover for both the years.

Figure 6. Map of Sukath village forest



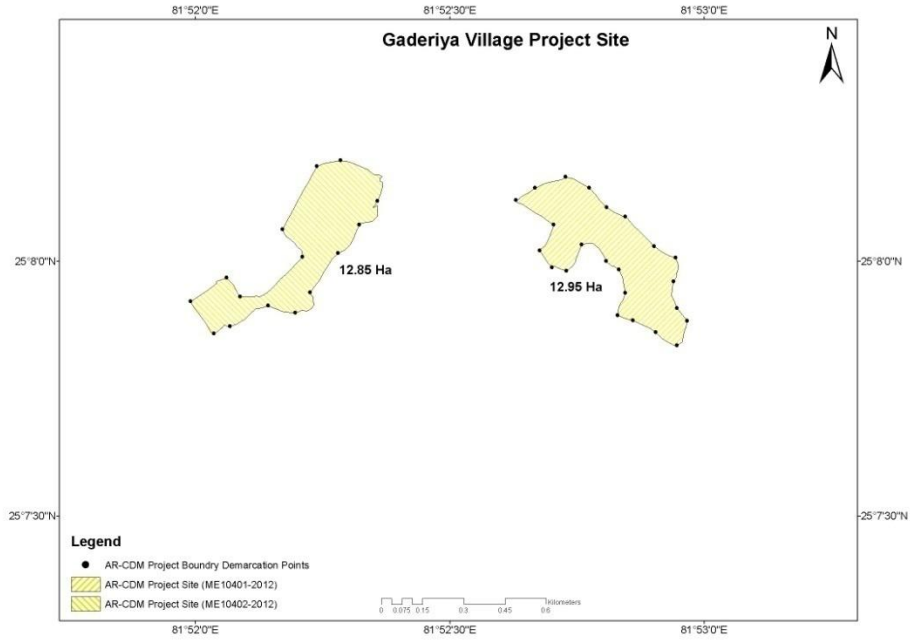
Source:Prepared in GIS domain using Arc GIS(version 10.0) software following the steps given below-
1.Classification of JFMC land as >15% and <15% canopy density cover using satellite images for year 1989 and 2009.
2.Intersecting the classified satellite images for years 1989 and 2009, hence obtaining the common land that have >15% and <15% canopy density cover for both the years.

Figure 7.Map of Dari village forest



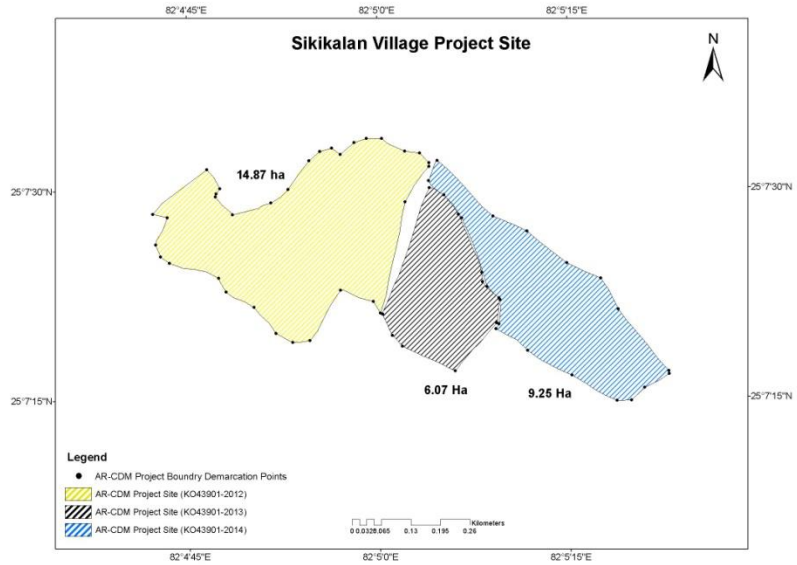
Source:Prepared in GIS domain using Arc GIS(version 10.0) software following the steps given below-
1.Classification of JFMC land as >15% and <15% canopy density cover using satellite images for year 1989 and 2009.
2.Intersecting the classified satellite images for years 1989 and 2009, hence obtaining the common land that have >15% and <15% canopy density cover for both the years.

Figure 8.Map of Unchdiha village forest



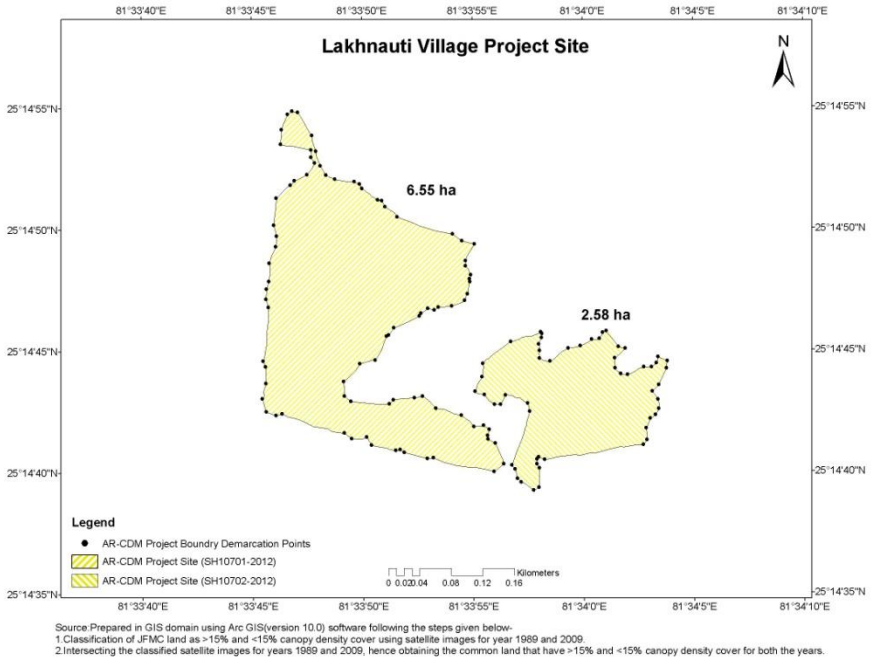
Source:Prepared in GIS domain using Arc GIS(version 10.0) software following the steps given below-
1.Classification of JFMC land as >15% and <15% canopy density cover using satellite images for year 1989 and 2009.
2.Intersecting the classified satellite images for years 1989 and 2009, hence obtaining the common land that have >15% and <15% canopy density cover for both the years.

Figure 9.Map of Gaderiya village forest



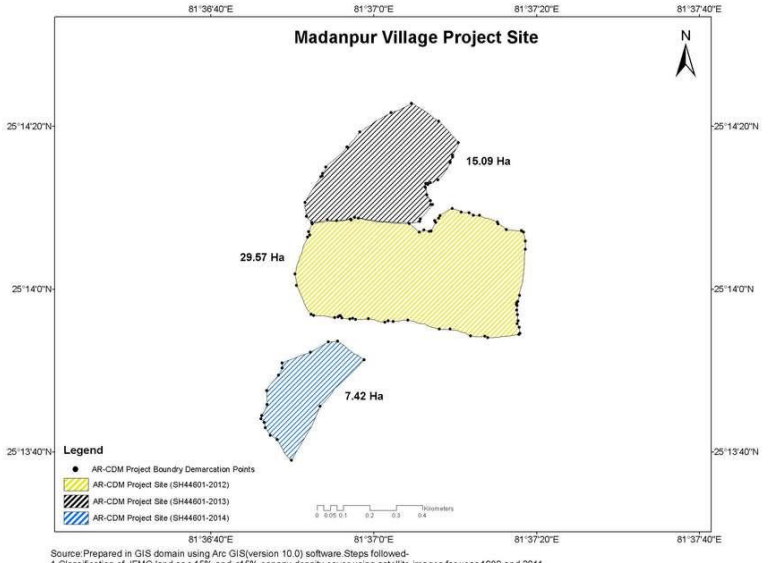
Source:Prepared in GIS domain using Arc GIS(version 10.0) software following the steps given below-
1.Classification of JFMC land as >15% and <15% canopy density cover using satellite images for year 1989 and 2009.
2.Intersecting the classified satellite images for years 1989 and 2009, hence obtaining the common land that have >15% and <15% canopy density cover for both the years.

Figure 10.Map of Sikikalan village forest



Source:Prepared in GIS domain using Arc GIS(version 10.0) software following the steps given below-
1.Classification of JFMC land as >15% and <15% canopy density cover using satellite images for year 1989 and 2009.
2.Intersecting the classified satellite images for years 1989 and 2009, hence obtaining the common land that have >15% and <15% canopy density cover for both the years.

Figure 11.Map of Lakhnauti village forest



Source:Prepared in GIS domain using Arc GIS(version 10.0) software.Steps followed-
1.Classification of JFMC land as >15% and <15% canopy density cover using satellite images for year 1989 and 2011.
2.Intersecting the classified satellite images for years 1989 and 2011, hence obtaining the common land that have >15% and <15% canopy density cover for both the years.

Figure 12. Map of Madanpur village forest

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
India (host)	Private entity A – None Public entity A – Divisional Forest Officer (DFO), Allahabad Forest Division, Uttar Pradesh State	Yes

A.4. Reference of applied methodology and standardized baseline

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AR-AMS0007 - *Afforestation and reforestation project activities implemented on lands other than wetlands,*[2]*;(Version 03.0.)*

Tools used in the proposed SSC A/R project activity are:

1. *Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities*[3]*;(Version 04.2)*
2. *Demonstration of eligibility of lands for A/R CDM project activities*[4]*;(Version 02)*
3. *Guidance on application of the definition of the project boundary to A/R CDM project activities*[5]*;(Version 01);*
4. *Estimation of non-CO_2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity*[6]*;(Version 04.0.0)*
5. *Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity*[7]*;(Version 02)*
6. *Guidelines on assessment of debundling for SSC project activities*[8] *; (Version 04)*
7. *Calculation of the number of sample plots for measurements within AR CDM project activities*[9]*"; (Version 02.1.0.)*

A.5. Crediting period of project activity

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Type	:	Renewable Crediting Period
Start Date	:	01/01/2012
Length of first crediting period	:	01/01/2012 to 31/12/2031

A.6. Contact information of responsible persons/entities

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Divisional Forest Officer, Social Forestry Division, Allahabad, Uttar Pradesh State, India.
Complete contact details are available in Appendix 1

[2] https://cdm.unfccc.int/filestorage/2/D/8/2D8GSJ95T6AHQWZCRY3L7EI0U4PNKF/eb85_repan22.pdf?t=SmJ8bnM4bHd4fDAbI3w7V1yVxFJbELgCxfRr

[3] http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-14-v3.0.0.pdf

[4] http://cdm.unfccc.int/Reference/Procedures/methAR_proc03.pdf

[5] http://cdm.unfccc.int/EB/044/eb44_repan16.pdf

[6] http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-08-v4.0.0.pdf

[7] http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-15-v1.pdf

[8] http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid17.pdf

[9] http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-03-v2.1.0.pdf

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

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The starting date of operation of the project activity was 01/01/2012. The plantation activities in 2012 and 2013 were carried out in Gauraiya Kala, Mudpela, Baddiha, Kharka Dabar, Sukath, Dari, Unchdiha, Gaderiya, Sikikala, Lakhnauti and Madanpur villages of Allahabad Forest Division of Uttarapradesh.

The selected area under the project activity is degraded and abandoned and the terrain consists of rocky escarpments in many JFMCs of the Allahabad Division for past many decades[10].

Species planted under the project are selected based on the priority given by the local people and their suitability to the local climatic. Around twenty four different tree species were planted within the project area in two different types of plantation models i.e. Plantation cum Stand Improvement model and Block plantation model. Both the plantation models were applied to increase the forest canopy density, enhance forest productivity and ensure multilayered

Seed collection

High quality seeds of various tree species are collected from the best plantation sources available within the forest division for raising saplings in the nurseries. After collection, quality seeds are screened out manually and sown in the nearby forest nurseries. For some of the tree species are selected from the Candidate Plus Trees identified by the forest department.

Nursery technology

Decentralized nurseries close to the plantation areas have been established to reduce the cost of the transportation and GHGs emissions generated in the process. The seedlings germinated in the nursery beds are transferred into the poly bags and graded at suitable intervals to weed out poor performers. After 6 to 8 months, the saplings became mature and ready for plantation and are transported to the plantation site for reforestation.

Species selection

The species for plantation were selected by the JFMCs members and villagers. They preferred to plant a mixed flora consisting of trees which are economically important and suited for local agro-climatic zone[11]. The main species selected for planting were:

[10] From PRA report

[11] PRA report, FGD, page 61

Botanical Name	Common Name	Family	Uses
Azadirachta indica	Neem	Meliaceae	Medicinal properties that prove to be anthelmintic antifugal. Its oil is used for preparing cosmetics, like soap, shampoo, balms, creams, etc, which prove handy for skin care, such as in treatment of acne, for keeping the elasticity of skin.A decoction can be prepared from the roots of neem tree and ingested to relieve fever.
Haplophragma adenophyllum	Aonla	Euphorbiaceae	The wood is used for fishing roots
Aegle marmelos	Bael	Rutaceae	Leaf juice used in diabetes. Fruit is used as drink and medicines. The unripe fruit is powdered and taken with water in dysentery. Bark decoction is used in fever.
Madhuca indica	Mahua	Sapotaceae	The seed cakes obtained after extraction of oil constitute very good fertilizer. The flowers are used to produce an alcoholic drink in tropical India.
Tamarindus indica	Imli	Fabaceae	The leaves are applied to reduce inflammatory swellings and ringworm. The seeds are astringent and aphrodisiac.
Pongamia pinnata	Kanji	Fabaceae	Juice is used to treat diarrhea, cough, dyspepsia, leprosy and gonorrhea. The oil from seeds is used in making soap.
Holoptelea integrifolia	Chilbil	Ulmaceae	The bruised leaves are applied to boils. Juice of boiled bark is applied to rheumatic swellings.
Acaciaspp	Gujrati Khair	Fabaceae	Bark decoction is used in stomachache. Also used in chronic diarrhoea. The bark is used to prepare tannin and dyes.
Cassia mangium	Mangium	Fabaceae	Used for furniture, doors and window frames. Also used for making export

Botanical Name	Common Name	Family	Uses
			orientated parquet flooring tiles and artifacts
Acacia auriculiformis	Australian Kikkar	Fabaceae	Leaves paste used on boils.
Eucalyptus hybrid	Eucalyptus	Myrtaceae	Oil is used as insecticide. Used for making paper.
Cassia siamea	Sameia	Fabaceae	Plant has medicinal value and it contains a compound named Barakol. The leaves, tender pods and seeds are edible
Butea monosperma	Palas	Fabaceae	The leaves and flowers are astringent, depurative, diuretic and aphrodisiac. These are used against boils, pimples, worms and piles. Gum is used for diarrhoea.
Dalbergia sisso	Sisham	Fabaceae	Decoction of leaves useful in gonorrhoea, roots astringent.
Acacia catechu	Khair	Fabaceae	Bark decoction is used in stomachache. Also used in chronic diarrhea. The bark is used to prepare tannin and dyes.
Pithecellobium dulce	Jangle jalebi	Fabaceae	Bark is used as febrifuge, decoction is given in enema. Aril is edible.
Ziziphus mauritiana	Ber	Rhamnaceae	Fruits are edible. Decoction of roots is used in fever and powder applied to old wounds and ulcers. Bark is used in diarrhoea.
Cordia dichotoma	Lisoda	Boraginaceae	Fruit expectorant, demulcent, astringent, useful in bronchial affections and in irritation of urinary passages.
Bombax ceiba	Semal	Bombacaceae	The root used in the treatment of diarrhoea, dysentery, menorrhagia, styptic and for wounds.
Ailanthus excelsa	Aru	Simaroubaceae	Powdered bark is used to treat intestinal tapeworm, constipation, stomach troubles and dysentery. Root bark is

Botanical Name	Common Name	Family	Uses
			administered to cure epilepsy, heart troubles and asthma.
Terminalia arjuna	Arjun	Combretaceae	The bark is used in heart diseases, antidote to poisons and to control blood pressure. Ash of bark is used in scorpion sting.
Mangifera indica	Mango	Anacardiaceae	The fruits are rich source of vitamin A&C. The bark is astringent and used in diphtheria and rheumatism. The unripe mango is useful in opthalmia and eruptions.
Cassia fistula	Amaltas	Fabaceae	Pods used in pneumonia and in high fever.

Site preparation

The land is prepared for planting by removing rootstocks, bushes etc. and ploughedwith mould board plough. This site preparation under the project activity will be done mainly throughbullock ploughing hence the soil damage is less and it ensures that there will be no long term emissions from soil carbon. Ploughing is done one month before plantation.

Earthwork involves digging of pits and trenches. The size of each pit shall be 45cm in length x 45cm in width x 45cm in depth and of trenches 3m in length x 0.6m in width x 0.45m in depth. A total of 200 trenches and 488 pits are to be dug per hectare. Clearing of existing shrubs and weeds is restricted to the pit area only. The shrubs and herbs in the remaining areas are not be disturbed. Slash and burn practice are not allowed in the project area to avoid the emissions of greenhouse gases. All land preparation activities are to be carried out using the manual labour.

Reforestation activities

The reforestation activities are carried out in two phases i.e. the first phase was in the year 2012 and second phase was in the year 2013. The first phase of plantation activities were carried out during the month of July – August in the year 2012 and the second phase of the plantation has been carried out in the month of July 2013.The plantation activities in 2012 were carried out in Gauraiya Kala, Mudpela, Baddiha, Kharka Dabar, Sukath, Dari, Unchdiha, Gaderiya, Sikikala, Lakhnauti and Madanpur

villages. The replacement for the first year of plantation has been carried out in July 2013 and for the second year plantation it will be in July 2014. It has been estimated that around 20 to 25% of the total plants would be replaced during each phase on account of mortality.

Fertilizer and manure application

Only organic fertilizers are to be applied to the plants within the project area.

Weeding

Weeding around the planted saplings will be carried out manually to reduce competition. Manual weeding will be done once in a year during the month of September. Cultural operations will not be carried out as they may disturb the top soil.

Silviculture operation

Silvicultural operations shall be carried out using standard forestry techniques recommended by the state forest department. These activities will be carried out with the help of human labour so as to avoid project emissions and also to meet the objectives of employment generation for local communities.

B.2. Post-registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

Not Applicable

B.2.2. Corrections

Not Applicable

B.2.3. Changes to start date of crediting period

Not Applicable

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

Detailed MInitoring plan has been described in the registered PDD.

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

Not Applicable

B.2.6. Changes to project design of registered project activity

Not Applicable

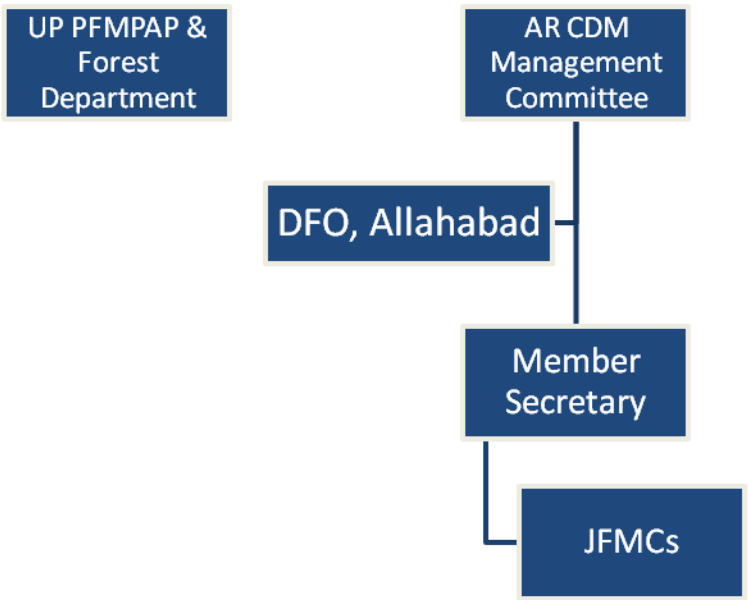
B.2.7. Types of changes specific to afforestation or reforestation project activity

Not Applicable

SECTION C. Description of monitoring system

The AR-CDM project is managed by the A/R CDM Management Committee of the Allahabad forest division with the DFO as the chairperson and another officer not below the rank of Assistant Conservator of Forests (ACF), as member secretary. The A/R CDM Management Committee headed by the DFO is monitoring and coordinating with the participating JFMCs. The A/R CDM committee at the divisional level will ensure that the benefits accrue through this project will directly go to the communities through the DFO. The methodology applied in the project considers the monitoring of following activities related to the implementation of the project, which includes:

Monitoring of the activities	Observations
Monitoring of the project boundaries:.	No changes/deviations were observed during the first monitoring of the project period
Monitoring of the planting of the plantations	
Monitoring plantation management	



Management Structure

QA/QC Training and mobilization of field members

Persons involved in the field measurement work were trained on the procedures to be followed for field data collection and data analysis. Standard Operating Procedures (SOPs) for each step of the field measurements as per the operational manual were followed during the data collection.

- Field staff members are fully aware of all procedures and the importance of collecting data as accurately as possible.
- All field staffs are aware of the plots in the field and measure all pertinent components using the standard operating procedures.
- Staff is adequately trained.

Data Maintaining and archiving

Because of the long-term nature of the A/R CDM project activity, data is archived and maintained safely. Data archived in electronic and paper forms and the copies of all data shall be kept for 2 years beyond the crediting period.

Sample Plot ID	Sr. no.	Species name	Species name	Height (M) Tree3	Height (M) Avera	DBH (M) Tree1	DBH Avera	Total Number of Tre	Average Stem Volume (m^3	Total Stem Volume - V (m	Density (t d.m/m	BEF	Root-Shoot ratio (	Biomass-BTREE,j,p, i, (t d.r	BTREE,p,i (t d.m	APLOT
Sample Plot 1	1	Neem	Azadirachta indica (Neem)		2.25	0.1	0.1	1	0.019464925	0.01946	0.69	3.4	0.25	0.05708	0.41346	0.
	2	imilee	Tamarindus indica		2.25	0.15	0.15	1	0.033108581	0.03311	0.67	3.4	0.25	0.09428		
	8	Kanji	Pongamia pinnata		2.75	0.13	0.14	2	0.032766927	0.06553	0.67	3.4	0.25	0.18661		
	12	Aru	Ailanthus excelsa		2.5	0.1	0.1	1	0.02018525	0.02019	0.88	3.4	0.25	0.07549		
Sample Plot 2	1	Neem	Azadirachta indica (Neem)		2.5	0.12	0.12	1	0.02530476	0.0253	0.69	3.4	0.25	0.07421	0.81243	0.
	2	imilee	Tamarindus indica		3	0.14	0.14	1	0.034178764	0.03418	0.67	3.4	0.25	0.09732		
	8	Kanji	Pongamia pinnata		2.4	0.1	0.11	2	0.022280015	0.04456	0.67	3.4	0.25	0.12688		
	10	A.mangium	Acacia mangium		2	0.12	0.12	1	0.023230224	0.02323	0.88	3.4	0.25	0.08688		
	12	Aru	Ailanthus excelsa		2.25	0.15	0.145	2	0.03149863	0.063	0.88	3.4	0.25	0.23561		
	15	Chilbil	Holopatelia integrifolia		2.25	0.1	0.125	2	0.02560457	0.05121	0.88	3.4	0.25	0.19152		
Sample Plot 3	2	imilee	Tamarindus indica		3	0.14	0.14	1	0.034178764	0.03418	0.67	3.4	0.25	0.09732		
	3	Aonla	Phyllanthus emblica		2.25	0.12	0.11	2	0.021757059	0.04351	0.67	3.4	0.25	0.12391		
	9	Khair	Acacia Catechu		2.25	0.12	0.11	2	0.014927522	0.02986	0.88	3.4	0.25	0.11166		
	10	A.mangium	Acacia mangium		2.25	0.15	0.14	2	0.029943253	0.05989	0.88	3.4	0.25	0.22398		
Sample Plot 4	2	imilee	Tamarindus indica		2.25	0.15	0.14	3	0.029943253	0.08983	0.67	3.4	0.25	0.25579		
	3	Aonla	Phyllanthus emblica		3.25	0.14	0.13	2	0.03186562	0.06373	0.67	3.4	0.25	0.18147		
	12	Aru	Ailanthus excelsa		2.5	0.12	0.12	1	0.02530476	0.0253	0.88	3.4	0.25	0.09464		
Sample Plot 5	1	Neem	Azadirachta indica (Neem)		2	0.15	0.15	1	0.03148785	0.03149	0.69	3.4	0.25	0.09234	0.46235	0.
	3	Aonla	Phyllanthus emblica		3	0.12	0.12	1	0.027379296	0.02738	0.67	3.4	0.25	0.07796		
	4	Mahua	Madhuca indica/latifolia (Mahua)		3	0.14	0.14	1	0.034178764	0.03418	0.74	3.4	0.25	0.10749		

Parameter | Sikikala | Baddiha | Dari | Gauraiyakala | Kharkadabar | Mudpela | Sukath | Unchdiha | Gaderiya | Lakhnauti | Madanpur | GHG Removal

Figure 13: Inventory Database

Monitoring of the project boundaries

As per the registered PDD project boundary during the verification period is monitored using GPS. There have been no changes in the project boundary. GPS coordinates have been provided in APPENDIX 2

Monitoring of leakages:

During the monitoring, JFMC members from the project sites have affirmed that they were no displacement of pre project activities from project sites.

Measures for Quality Assurance (QA) and Quality Control (QC):

A rigid monitoring plan is developed to ensure completeness and correctness of monitoring data for project emission reduction and leakage analysis. QA and QC methods involving Standard Operating Procedures (SOPs) related to

(i) Reliability of field measurements,
(ii) Authentication of the methods used to collect field data,
(iii) Verification of data entry, data maintenance and analysis techniques shall be followed as discussed below.

Moreover, QA/QC protocol in effect at the project sites was also provisioned to get reviewed internally and externally every five year to ensure appropriateness of SOPs with any technological changes (if any).

The people who were responsible for the carbon measurement work were fully trained in all aspects of the field data collection and its analyses. The SOPs described in detail covering all steps of field measurements and documentation for verification purposes in a consistent fashion. It was ensured that:

a) All the field staffs were aware of all the procedures and understand the importance of collecting data as accurately as possible;
b) Field team installed test plots in the field and measured all pertinent components using the SOPs to estimate measurement errors;
c) New staff members were adequately trained.

After field measurement a comparison was made with the original data and discrepancies were re-verified. Field data collected at this stage was compared to the original data.

QA/QC for data entry

To produce reliable carbon estimates through monitoring sample plots, the proper entry of data into the data analyses excel sheets were used. Steps like data validator function (if applicable) was used to ensure that human errors are minimized through automation. Results were reviewed and cross checked for typing errors.

QA/QC for data archiving

Data storage and maintenance is very important due to the long-term nature of project activities. Therefore, SOPs for data archiving includes storage of original copies of all data, including field measurements, GIS products, and copies of measuring and monitoring reports, in a secure offsite location and provision of these copies of data to all the project participants. All data was archived in paper and electronically in a separate location. Electronic data will be copied and stored by authorized persons in charge. All the staffs were trained in monitoring method to improve accuracy of collecting data. Data was archived in safe place. Copies of all data was also stored on paper in a separate remote location. Procedures also included updating storage onto new data storage technologies, both hardware and software.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

(Copy this table for each piece of data and parameter.)

Data/Parameter	$BEF_{2,j}$
Unit	Dimensionless
Description	Biomass expansion factor for conversion of stem biomass to above ground tree biomass for tree species *j*
Source of data	Values from IPCC Good Practice Guidance for LULUCF (2003) Table 3A.1.10[12]. Default values of biomass expansion factors (BEFs).
Value(s) applied	3.4
Choice of data or Measurement methods and procedures	$BEF_{2,j}$ overbark default value for tropical climatic zone and broad leaf forest type has been chosen. Biomass of tree species in sample plots is calculated through the formulae mentioned in methodological tool i.e. $B_{TREE,j,p,I,t} = V_{TREE,j,p,I,t} * D_j * BEF_{2,j} * (1+R_j)$
Purpose of data	Calculation of carbon stocks and changes in carbon stock in the proposed small scale project activity.
Additional comment	None

Data / Parameter	CF_{Tree}
Unit	tC (tdry matter) $^{-1}$
Description	Carbon fraction of dry matter for species of type j
Source of data	Methodological tool: "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (Version 04.2)". Referred in equation number 13.
Value(s) applied	0.47
Choice of data or Measurement methods and procedures	A default value of 0.47 is used following the A/R CDM methodological tool.
Purpose of data	Calculation of carbon stocks and changes in carbon stock
Additional comment	None

[12] http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf

Data / Parameter	D_j
Unit	t d.m. m^{-3}
Description	Density Overbark of tree stem for tree species *j*.
Source of data	Published literature of Reyes et al. (1992). Wood Densities of Tropical Tree Species. USDA, FAO Data[13] and Global Wood Density Database[14]
Value(s) applied	
Choice of data or Measurement methods and procedures	For species where wood density values are not available, 0.67 is taken as default value from Good Practices IPCC Guidelines, 1996.
Purpose of data	Calculation of carbon stocks and changes in carbon stock
Additional comment	None

Species	**Wood density (t.d.m. m^3)**
Acacia leucophlaea	0.67
Prosopis Juliflora	0.67
Azadirachta indica	0.69
Haplophragma adenophyllum	0.67
Embilica officinalis	0.80
Aegle marmelos	0.75
Madhuca indica	0.74
Tamarindus indica	0.75
Pongamia pinnata	0.67
Holoptelea integrifolia	0.67
Acacia catechu	0.88
Acacia mangium	0.67
Acacia auriculiformis	0.76
Eucalyptus	0.67
Cassia siamea	0.67
Butea monosperma	0.67
Dalbergia sissoo	0.68
Feronia limonia	0.67
Pithecolobium dulce	0.67
Ziziphus jujuba	0.68
Cordia dichotoma	0.67
Bombax ceiba	0.33
Prunus persica	0.67
Terminalia arjuna	0.68
Mangifera indica	0.67
Cassia fistula	0.71
Trewia nudiflora	0.67

[13] http://www.fao.org/docrep/w4095e/w4095e0c.htm

[14] Citation for the database: Zanne, A.E., Lopez-Gonzalez, G.*, Coomes, D.A., Ilic, J., Jansen, S., Lewis, S.L., Miller, R.B., Swenson, N.G., Wiemann, M.C., and Chave, J. 2009. Global wood density database.Dryad. Identifier: http://hdl.handle.net/10255/dryad.235.

Data / Parameter	$V_{TREE,j,p,i,t}$
Unit	m^3
Description	Stem volume of trees of species *j* in sample plot *p* of stratum *i* at time *t* calculated using a volume table or volume equation.
Source of data	Field measurements for tree parameters (i.e. GBH, Height etc.) measured in sample plot *p* of stratum *i* at time *t*. Volume equations of each species were taken from Indian State of Forest Report, 2011[15].
Value(s) applied	

Species	Volume equation (m^3)
Azadirachta indica	$V = 0.00855 + 0.4432*D^2 + 0.28813*D^2*H$
Butea monosperma	$V = (2.95525* D - 0.24276)^2$
Dalbergia sisso	$V = (0.00331/D^2 + 0.000636)*D^2$
Acacia leucophlaea	$V = (-0.00142+2.61911*D-0.54703*D^{0.5})^2$
Prosopis juliflora	$V = 0.00855 + 0.4432*D^2 + 0.28813*D^2*H$
Holoptelea integrifolia	$V = 0.00855 + 0.4432*D^2 + 0.28813*D^2*H$
Cassia siamea	V = 0.05159-0.53331D+ 3.46016 D2 + 10.18473 D3
Trewia nudiflora	$V = (-0.45312-0.41426*D+2.10913*D^{0.5})^2$

Choice of data or Measurement methods and procedures	For most of the tree species, FSI regional volume equations were applied for the volume estimations. For other tree species, common volume equation from the neighbouring forest region is considered for calculating stem volume. The common equation used under rest of species category is as follows: $0.00855 + 0.4432*D^2 + 0.28813*D^2*H$[16]
Purpose of data	Calculation of carbon stocks and changes in carbon stock
Additional comment	None

Data / Parameter	R_j
Unit	Dimensionless
Description	Root-shoot ratio appropriate for biomass stock, for species *j*
Source of data	Values from IPCC Good Practice Guidance for LULUCF (2003) Table

[15] http://fsi.nic.in/details.php?pgID=sb_16 , Annex II

[16] FSI. (1996) Volume Equations For Forest of India, Nepal and Bhutan, Page No. 202

	3A.1.8[17]"*Average belowground to aboveground biomass ratio (root-shoot ratio, r) in natural regeneration by broad category (tons dry matter/ton dry matter)".*
Value(s) applied	A default value of 0.25 has been applied.
Choice of data or Measurement methods and procedures	As indicated in the methodology applied.
Purpose of data	Calculation of carbon stocks and changes in carbon stock
Additional comment	None

Data / Parameter	BDR_{SF}
Unit	Dimensionless
Description	Ratio of shrub biomass per hectare in land having a shrub crown cover of 1.0 and default above-ground biomass content per hectare in forest in the region/country
Source of data	Methodological tool "*Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities; Version 04.2".*
Value(s) applied	A default value of 0.1 has been applied.
Choice of data or Measurement methods and procedures	As indicated in the methodology applied.
Purpose of data	Calculation of baseline carbon stocks and changes in carbon stock
Additional comment	None

Data / Parameter	b_{FOREST}
Unit	t d.m. ha^{-1}
Description	Default above-ground biomass content in forest in the region/country where the A/R CDM project is located;
Source of data	Report on "Carbon Stock in India's Forests" published by FSI, 2013.
Value(s) applied	A default value of 12.82 ton/ ha has been applied[18].

[17] http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf , page 3.168

[18] Carbon Stock in India's Forest Report, 2013, page 34, Table 4.6

Choice of data or Measurement methods and procedures	As indicated in the methodology applied.
Purpose of data	Calculation of baseline carbon stocks and changes in carbon stock
Additional comment	None

Data / Parameter	R_{shrub}
Unit	Dimensionless
Description	Root-shoot ratio appropriate for biomass stock, for shrub species
Source of data	Methodological tool "*Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities Version 04.2*"
Value(s) applied	A default value of 0.4 has been applied.
Choice of data or Measurement methods and procedures	As indicated in the methodology applied.
Purpose of data	Calculation of baseline carbon stocks and changes in carbon stock
Additional comment	None

Data / Parameter	t_{val}
Unit	Dimensionless
Description	Two-sided Student's t-value, at infinite degrees of freedom in the first iteration and at degrees of freedom equal to (n-1) in subsequent iterations, for the required confidence level
Source of data	Student's t-distribution table
Value(s) applied	1.645
Choice of data or Measurement methods and procedures	This is at the 90% confidence level in line with the CDM methodology
Purpose of data	Calculation of actual net GHG removals by sinks
Additional comment	None

Data / Parameter	E
Unit	t d.m.(or t d.m.ha^{-1})
Description	Acceptable margin of error
Source of data	Default data from the tool: "Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity"
Value(s) applied	10%
Choice of data or Measurement methods and procedures	CDM methodology
Purpose of data	Calculation of actual net GHG removals by sinks
Additional comment	None

Data / Parameter	CFs
Unit	tC (tdry matter) -1
Description	Carbon fraction of shrub biomass
Source of data	Methodological tool: "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (Version 04.2)". Referred in equation number 13.
Value(s) applied	0.47
Choice of data or Measurement methods and procedures	A default value of 0.47 is used following the A/R CDM methodological tool.
Purpose of data	Calculation of carbon stocks and changes in carbon stock
Additional comment	None

D.2. Data and parameters monitored

(Copy this table for each piece of data and parameter)

<table>
<tr><td>Data/parameter:</td><td>A_i</td></tr>
<tr><td>Unit</td><td>Ha</td></tr>
<tr><td>Description</td><td>Area of stratum i</td></tr>
<tr><td>Measured/calculated/default</td><td>Measured</td></tr>
<tr><td>Source of data</td><td>Field survey</td></tr>
<tr><td>Value(s) of monitored parameter</td><td>Area of stratum has been detailed in the Emission Reduction worksheets attached with this MR[19]
<table>
<tr><td>Stratum i</td><td>Ai (Ha)</td></tr>
<tr><td>Sukath</td><td>67.69</td></tr>
<tr><td>Mudpela</td><td>71.01</td></tr>
<tr><td>Kharka Dabar</td><td>67.19</td></tr>
<tr><td>Gaderiya</td><td>25.8</td></tr>
<tr><td>Baddiha</td><td>75.32</td></tr>
<tr><td>Dari</td><td>36.82</td></tr>
<tr><td>Sikikala</td><td>30.19</td></tr>
<tr><td>Gauraiya Kala</td><td>39.58</td></tr>
<tr><td>Unchdiha</td><td>31.82</td></tr>
<tr><td>Madanpur</td><td>52.08</td></tr>
<tr><td>Lakhnauti</td><td>9.13</td></tr>
<tr><td>Total (A)</td><td>506.63</td></tr>
</table></td></tr>
<tr><td>Monitoring equipment</td><td>The area is determined based on the GPS measurements.
Two Different GPS machines are used
1. GRAMIN Make eTrex
2. GRAMIN Make GPSMAP 76CSx</td></tr>
<tr><td>Measuring/reading/recording frequency:</td><td>At the start of project and every five years i.e. 2012, 2017, 2022, 2027, and 2032.</td></tr>
<tr><td>Calculation method (if applicable):</td><td>This involves measurement of area of each discrete parcel of land. GPS measurements (i.e. position and co-ordinates) will be taken of all the parcels of land in each strata. Area of each stratum can be determined by using geographical boundaries of each site. GPS coordinates are measured with GPS machine.Measured Coordinates has been initially recorded in to field Survey Sheets by survey team which is later entered in to Excel sheets at the project office.</td></tr>
</table>

[19] Emission Reduction Worksheet has been provided to DOE

QA/QC procedures:	Random cross-checking of boundary measurements will be carried out. In addition the measurements will also be cross checked by comparing it with the validated figures, to see if the values are comparable. GPS machines used for the measurement are self calibarated with magnetic calibration system. The devices will be calibarated automatically once it is switched off anf switch it on. Manual calibrated procedure is clearly mentioned in the Manual to calibrate the machine manually whenever it is required. Filed team was well trained on the same. Measurements and recording will be done by trained personnel.
Purpose of data:	Calculation of the actual net GHG removal by sinks. The same shall be used in equation 13 and 14 of the applied AR Tool 14.
Additional comments:	Trainings to the field staff with regards to collection, compilation and uses of instruments is ensured before proceeding to data collection activity.

Data/parameter:	DBH
Unit	cm
Description	Diameter at breast height of tree
Measured/calculated/default	Measured & calculated
Source of data	Field measurements within the sample plots
Value(s) of monitored parameter	Refer ER calculation excel sheet
Monitoring equipment	GBH is measured in measuring tape
Measuring/reading/recording frequency:	At the start of the project activity and every five years i.e. 2012, 2017, 2022, 2027, and 2032.
Calculation method (if applicable):	Measured all tree species that are equal or more than 10 cm girth within the sample plot. Girth of the tree is measured at 1.37 m height. DBH is measured with measurement tape. Measured data is initially recorded in the survey sheets which is later entered in to Excel format for CER calculation. From the Girth at breast height (GBH), DBH is calculated using the formula DBH= GBH/(PI)
QA/QC procedures:	Standard operating procedures are made to ensure the correct and validating data collection for each of the monitoring parameters.
Purpose of data:	To calculate the stem volume of trees within the sample plot this is then used for estimating carbon sink. The same shall be used in allometric equations to calculate the biomass/volume of the trees.
Additional comments:	None

Data/parameter:	***H***
Unit	cm / mts
Description	Height of the tree
Measured/calculated/default	Measured & calculated
Source of data	*Ex-post* estimation shall be based on actual measurements and recorded field data entry sheets and subsequently data entry spread sheets.

Value(s) of monitored parameter	Refer ER calculation excel sheet
Monitoring equipment	Measurement Tape
Measuring/reading/recording frequency:	At the start of the project activity and every five years since the initial verification and certification of an A/R project activity under the CDM
Calculation method (if applicable):	Measured height of all tree within the sample plot with measuring tape. Measured data is initially recorded in the survey sheets which will be later entered in to Excel format for CER calculation.
QA/QC procedures:	Standard operating procedures are made to ensure the correct and validating data collection for each of the monitoring parameters.
Purpose of data:	To measure the height of the tree existing within the sample plot. To be used to calculate volume (and subsequently the biomass) of trees during verification. Instead of volume equations algometric equations may also be used.
Additional comments:	None

Data/parameter:	B_{Trees}
Unit	Number/dimensionless
Description	Number of Baseline Trees
Measured/calculated/default	Measured
Source of data	Field monitoring within the sample plots
Value(s) of monitored parameter	Refer ER calculation excel sheet
Monitoring equipment	Measured number of baseline tree within the sample plot. No equipment is involved.
Measuring/reading/recording frequency:	At the start of the project activity and every five years since the initial verification and certification of an A/R project activity under the CDM
Calculation method (if applicable):	NA
QA/QC procedures:	Standard operating procedures are made to ensure the correct and validating data collection for each of the monitoring parameters.
Purpose of data:	To monitor the baseline tree
Additional comments:	None

Data/parameter:	N
Unit	Number/dimensionless
Description	Total number of possible sample plots within the project boundary
Measured/calculated/default	Calculated
Source of data	PDD
Value(s) of monitored parameter	10,132
Monitoring equipment	NA
Measuring/reading/recording frequency:	Measured at each verification events

Calculation method (if applicable):	N is equal to project area divided by the size of the sample plots Total area = 506.63 ha Sample plot area = 0.05 ha N = 10132.6
QA/QC procedures:	NA
Purpose of data:	Calculation of actual net GHG removals by sinks
Additional comments:	None

Data/parameter:	w_i
Unit	Number/dimensionless
Description	Relative weight of the area of stratum i
Measured/calculated/default	Calculated
Source of data	Calculated value (Refer calculation in PDD)
Value(s) of monitored parameter	
Monitoring equipment	NA
Measuring/reading/recording frequency:	Measured at each verification event
Calculation method (if applicable):	The relative weight of the area of a stratum i is equal to the area of the stratum i divided by the project area
QA/QC procedures:	NA
Purpose of data:	Calculation of actual net GHG removals by sinks
Additional comments:	None

Stratum i	wi
Sukath	0.134
Mudpela	0.140
Kharka Dabar	0.133
Gaderiya	0.051
Baddiha	0.149
Dari	0.073
Sikikala	0.060
Gauraiya Kala	0.078
Unchdiha	0.063
Madanpur	0.103
Lakhnauti	0.018

Data/parameter:	s_i^2
Unit	$(t\ d.m.ha^{-1})^2$
Description	Variance of tree biomass per ha in stratum i
Measured/calculated/default	Calculated
Source of data	Data obtained from the plantation or from similar plantations

Value(s) of monitored parameter	<table><tr><th>Stratum i</th><th>wi</th></tr><tr><td>Sukath</td><td>0.134</td></tr><tr><td>Mudpela</td><td>0.140</td></tr><tr><td>Kharka Dabar</td><td>0.133</td></tr><tr><td>Gaderiya</td><td>0.051</td></tr><tr><td>Baddiha</td><td>0.149</td></tr><tr><td>Dari</td><td>0.073</td></tr><tr><td>Sikikala</td><td>0.060</td></tr><tr><td>Gauraiya Kala</td><td>0.078</td></tr><tr><td>Unchdiha</td><td>0.063</td></tr><tr><td>Madanpur</td><td>0.103</td></tr><tr><td>Lakhnauti</td><td>0.018</td></tr></table>
Monitoring equipment	NA
Measuring/reading/recording frequency:	Measured at each verification event
Calculation method (if applicable):	NA
QA/QC procedures:	Approximate value of the variance of tree biomass in each stratum is either known from existing data related to the project area or estimated from existing preliminary samples.
Purpose of data:	Calculation of actual net GHG removals by sinks. The same shall be used in the equation 1 of the tool "Calculation of the number of sample plots for measurements within A/R CDM Project Activities"
Additional comments:	NA

D.3. Implementation of sampling plan

>>

As per the registered PDD Sample plots determined during the project validation were used for the first monitoring period. The post-stratification map will be created with the help of GIS after the first monitoring to concentrate on the possible changes of the project boundary and planting timing with respect to the project design, and to respond any differences in growth conditions in comparison with the expected values in Project Design Document. The following factors wil be considered in the post stratification:

- Catastrophic disturbances such as fire, pest, or disease outbreaks will be taken into account that modifies the homogeneous character of a stratum
- The grassland vegetation influence on stand development
- Silvicultural and management activities will be implemented at different intervals and locations than those proposed at the beginning of the project

The first project monitoring started from 2016 while subsequent monitoring of project sites will be scheduled after every five year till the project duration. Stratified random sampling design in each of the project stratum has been adopted for laying out sample plots for measuring field data i.e. measurement of GBH,

Height etc. Monitoring plan for the project is developed for systematic and scientific monitoring of the project data comprising various parameters.

Sampling design:

The sampling design for monitoring the changes in carbon stocks of above ground biomass and below ground biomass is adopted from the *Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities; (Version 04.2)* and further referred with *Calculation of the number of sample plots for measurements within AR CDM project activities; (Version 02.1.0.)*[20]

Sampling Frame:

To measure and monitor the changes in carbon stocks of above ground biomass and below ground biomass, permanent sampling plots were used for sampling over time. The plots were located with the help of GPS and were treated as in other lands within the project boundary, e.g., during site and soil preparation, weeding, fertilization, harvesting, etc. All of the plots were duly numbered and geo-referenced within the project area.

Sample Size:

The number of plots were established depending number of stratums identified, monitoring precision and confidence interval, with the appropriate associated cost-effectiveness criteria. The sample size (n) was estimated with fixed levels of precision (10% of mean biomass of a specific strata), and t value at 90% of the confidence interval with the assumption of no cost differences exist between strata and sub-strata, as described by the tool ("*Calculation of the number of sample plots for measurements within A/R CDM project activities*") in methodology used for calculating sample size. With the fundamentals from the project and the biomass stock estimates, the calculation was made using equation 1 from the tool.

$$n = \frac{N * {t_{VAL}}^2 * \left(\sum_i w_i * s_i\right)^2}{N * E^2 + {t_{VAL}}^2 * \sum_i w_i * {s_i}^2}$$

n = Number of sample plots required for estimation of biomass stocks within the project boundary; dimensionless

N = Total number of possible sample plots within the project boundary (i.e. the sampling space or the population); dimensionless

t_{VAL} = Two-sided Student's t-value, at infinite degrees of freedom, for the required confidence level; dimensionless

w_i = Relative weight of the area of stratum i (i.e. the area of the stratum i divided by the project area); dimensionless

s = Estimated standard deviation of biomass or volume (t d.m. ha-1) in stratum i (when it is not available, instead 50% of the estimated volume, biomass, etc. Good Practice Guidance, 2003).

[20] http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-03-v2.1.0.pdf

i = 1, 2, 3, Biomass stock estimation for strata i within the project boundary.

Total area = 506.63 ha

Sample plot area = 0.05 ha

N = 10132.6

tval ∞ = 1.645

Error (E) = 0.4

Stratum	Stratum area	Wi	Si	ni	(wi^ * Si)^2/ni	(Wi*Si)^2	WI*Si^2
Sukath	67.69	0.133608	0	4	0	0	0
Mudpela	71.01	0.140161	0.454542	5	0.000811774	0.004059	0.02896
Kharka Dabar	67.19	0.132621	0	4	0	0	0
Gaderiya	25.8	0.050925	0	4	0	0	0
Baddiha	75.32	0.148669	0	6	0	0	0
Dari	36.82	0.072676	0	4	0	0	0
Sikikala	30.19	0.05959	0	4	0	0	0
Gauraiya Kala	39.58	0.078124	2.828004	4	0.012203089	0.048812	0.62481
Unchdiha	31.82	0.062807	1.072004	5	0.000906653	0.004533	0.65376
Madanpur	52.08	0.102797	0.411759	6	0.000298604	0.001792	0.01743
Lakhnauti	9.13	0.018021	0.903927	4	6.63387E-05	0.000265	0.01472
	506.63			**50**	**0.014286459**	**0.059461**	**1.33968**

Hence,

$N \times t_{val}^2 \times (\sum_i w_i \times s_i)^2$ = $10132.6 \times 1.645^2 \times 0.059461$

= 1630.37

$N \times E^2 + t_{val}^2 \times \sum_i w_i \times s_i{}^2$ = $10132.6 \times 0.042^2 + 1.645^2 \times 1.33968$

= 21.45

N = 76

Number of Sample Plot Required at first verification = **76**

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

>>

In accordance with the latest version 03 of the methodology AR-AMS0007, the baseline net GHG removals by sinks is estimated using equation 1 of the methodology as follows:

$$\Delta C_{BSL,t} = \Delta C_{TREE\_BSL,t} + \Delta C_{SHRUB\_BSL,T} + \Delta C_{DW\_BSL,t} + \Delta C_{LI\_BSL,T}$$

However with reference to paragraph 11 of the methodological tool "*Estimation of carbon stocks and change in carbon stocks of trees* and shrubs in A/R CDM project activities" baseline carbon stocks of SSC A/R CDM project can be considered to be zero conservatively.. As per this, the tool lays three conditions so that carbon stock in baseline trees can be considered as zero. The justification is provided in the table below.

As per Paragraph 11 of AR-TOOL 14	SECTION A. Justification
The pre-project trees are neither harvested, nor cleared, nor removed throughout the crediting period of the project activity;	The pre project tress were not harvested or removed during th monitoring period. They will not be removed during the whole of the crediting period of the project activity.
The pre-project trees do not suffer mortality because of competition from trees planted in the project, or damage because of implementation of the project activity, at any time during the crediting period of the project activity	Plantation activities were done in such a way that these pre-project trees donot suffer mortality due to competition. All existing trees are left as it is, and a clear spacing is left to ensure there is no competition to the pre-project trees from the project trees.
The pre-project trees are not inventoried along with the project trees in monitoring of carbon stocks but their continued existence, consistent with the baseline scenario, is monitored throughout the crediting period of the project activity	The pre-project trees **not** inventoried along with the project trees. In fact to ensure conservative value, the carbon content of all the pre-project trees are subtracted in year 1 itself. These were not part of the measurement and reporting of the SSC A/R CDM project activity.

Hence the carbon stock change in pre-project trees is estimated as zero.

$$\Delta C_{BSL,t} = 0$$

However to be conservative project proponent is deducting the total carbon stock in the preprojct scenario from the first year actual net GHG removals by sinks.

Verification Period	Baseline Emissions
01/01/2012 to 06/06/2016	1085

E.2. Calculation of project emissions or actual net GHG removals by sinks

>>

As per §19 of the methodology, the actual net GHG removals by sinks is calculated as follows:

$$\Delta C_{ACTUAL,t} = \Delta C_{P,t} - GHG_{E,t}$$

Where:

$\Delta C_{ACTUAL,t}$ Actual net GHG removals by sinks, in year *t*; tCO_2-e

$\Delta C_{P,t}$ Change in the carbon stocks in project, occurring in the selected carbon pools, in year *t*; tCO_2-e

$GHG_{E,t}$ Increase in non-CO_2 GHG emissions within the project boundary as a result of the implementation of the A/R CDM project activity, in year *t*, as calculated in the tool "Estimation of non-CO_2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity"; tCO_2-e

As per §9 of the applied methodology, increase in non-CO_2 GHG emissions within the project boundary as a result of the implementation of the project activity is calculated as per the tool "*Estimation of non-CO_2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity*" (version 4.0.0). The pre and post project activities does not involve in the burning of biomass or forest fires, or usage of fire for site preparation or usage of fire to clear land of harvest residue prior to replanting of land. The area affected by fire is estimated to be 0% or extremely negligible.

Hence $GHG_{E,t} = 0$

As per the equation 3 of the methodology:

$$\Delta C_{p,t} = \Delta C_{TREE_{PROJ},t} + \Delta C_{SHRUB_{PROJ},t} + \Delta C_{DW_{PROJ},t} + \Delta C_{LI_{PROJ},t} + \Delta SOC_{AL,t}$$

Where

$\Delta C_{p,t}$ Change in the carbon stocks in project, occurring in the selected carbon pools, in year t; t CO2-e

$\Delta C_{TREE_{PROJ},t}$ Change in carbon stock in tree biomass in project in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO2-e

$\Delta C_{SHRUB_{PROJ},t}$ Change in carbon stock in shrub biomass in project in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO2-e

$\Delta C_{DW_{PROJ},t}$ Change in carbon stock in dead wood in project in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; t CO2-e

$\Delta C_{LI_{PROJ},t}$ Change in carbon stock in litter biomass in project in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; t CO2-e

$\Delta SOC_{AL,t}$ Change in carbon stock in SOC in project, in year t, as estimated in the tool "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R

CDM project activities"; tCO2-e

As per methodology, the changes in carbon stock in the project are equal to the changes in carbon stock in all the carbon pools.

Only changes in the carbon stock in trees are accounted for in the project scenario. This is also conservative. Carbon content of the pre-project scenario is deducted for reasons of conservativeness.

Hence,

$$\Delta C_{p,t} = \Delta C_{TREE_{PROJ},t}$$

Where:

$\Delta C_{p,t}$ Change in the carbon stocks in project, occurring in the selected carbon pools, in year t; t CO2-e

$\Delta C_{TREE_{PROJ},t}$ Change in carbon stock in tree biomass in project in year t, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO2-e

$\Delta C_{TREE_{PROJ},t}$ is calculated as per equation 12, §35 of the AR-TOOL 14

$$C_{TREE\_PROJ,t} = \frac{44}{12} \times CF_{TREE\_PROJ,t} \times B_{TREE\_PROJ,t}$$

$CF_{TREE\_PROJ,t}$	0.47
44/12	Carbon to carbon dioxide conversion factor
$B_{TREE\_PROJ,t}$	Tree biomass in the tree biomass estimation strata; t d.m; given in the ER calculation spread sheet

In the project scenario, the stratification is based on the species. Even though the harvesting cycle is ofmore than 25 years, the management practice depends on the species planted. The carbon change in each of the strata (as per the species) shall be quantified.

As per equation 13 and 14 of §35 of the AR-TOOL 14:

$$B_{TREE} = A \times b_{TREE}$$

$$b_{TREE} = \sum_{i=1}^{M} w_i \times b_{TREE,i}$$

Where:

$C_{TREE\_PROJ,t}$	Carbon stock in the tree biomass estimation strata; tCO_2e
CF_{TREE}	Carbon fraction of tree biomass; t C $(t\ d.m.)^{-1}$
B_{TREE}	Tree biomass in the tree biomass estimation strata; t d.m.
w_i	Ratio of the area of the stratum I to the sum of areas of tree biomass estimation strata (i.e $w_i = A_i/A$); dimensionless
$b_{TREE,i}$	Mean tree biomass per hectare in stratum I; t d.m. ha^{-1}

A Sum of areas of the tree biomass estimation strata; ha

Mean tree biomass per hectare has been calculated from mean tree volume per hectare. From the mean tree biomass per hectare, total tree biomass per stratum per species ($B_{TREE\_PROJ,t}$) has been calculated. The ex-ante calculations have been done for 20 years and the calculations are presented in the ER sheet. The assumptions and the default values used for the calculations are provided in sections B.7.1 and B.7.2.

The summary of $\Delta C_{TREE_{PROJ,t}}$ calculation for the monitoring period given below:

	Stratum i	Ai (Ha)	wi	bTREE,I (t d.m./ha)	wi *bTREEi	bTREE (t d.m./ha)	BTREE (t d.m.)	CFTREE (tC t d/m^3)	CTREE (t CO2e)
1	Sukath	67.69	0.13	11.01	1.47				
2	Mudpela	71.01	0.14	16.70	2.34				
3	Kharka Dabar	67.19	0.13	10.58	1.40				
4	Gaderiya	25.80	0.05	11.63	0.59				
5	Baddiha	75.32	0.15	15.51	2.31				
6	Dari	36.82	0.07	12.79	0.93	11.97	6064.18	0.47	10450
7	Sikikala	30.19	0.06	11.45	0.68				
8	Gauraiya Kala	39.58	0.08	15.12	1.18				
9	Unchdiha	31.82	0.06	11.19	0.70				
10	Madanpur	52.08	0.10	2.10	0.22				
11	Lakhnauti	9.13	0.02	8.07	0.15				

E.3. Calculation of leakage

As per §21 of the methodology, leakage emission is calculated as follows:

$$LK_t = LK_{AGRIC,t}$$

Where:

LK_t GHG emissions due to leakage, in year *t*; tCO_2-e

$LK_{AGRIC,t}$ Leakage due to the displacement of agricultural activities in year *t*, as calculated in the tool "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity"; tCO_2-e

Shifting of grazing activities was the only applicable leakage for the project. According to the PDD, it was considered to be zero.Hence, the leakage for the project is zero.

$$LK_t = LK_{AGRIC,t} = 0$$

E.4. Summary of calculation of emission reductions or net GHG removals by sinks

As per §22 of the methodology, the net anthropogenic GHG removals by the sinks is calculated as follows:

$$\Delta C_{AR-CDM,t} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t$$

Where:

$\Delta C_{AR-CDM,t}$ Net anthropogenic GHG removals by sinks, in year *t*; tCO_2-e
$\Delta C_{ACTUAL,t}$ Actual net GHG removals by sinks, in year *t*; tCO_2-e
$\Delta C_{BSL,t}$ Baseline net GHG removals by sinks, in year *t*; tCO_2-e
LK_t GHG emissions due to leakage, in year *t*; tCO_2-

Item	Baseline emissions or baseline net GHG removals by sinks (t CO_2e)	Project emissions or actual net GHG removals by sinks (t CO_2e)	Leakage (t CO_2e)	GHG emission reductions or net GHG removals by sinks (t CO_2e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount (t CO_2e)
Total	**1085**	**10450**		**-**		**9365**

E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO_2e)	**10,259 (t CO_2e)**	**9365 (t CO_2e)**

E.6. Remarks on difference from estimated value in registered PDD

The actual GHG removal by sink is less than the estimatated GHG removal by sink. Hence, no more justification is required.

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	☒ Project participant ☐ Responsible person/ entity for application of the selected methodology (ies) and, where applicable, the selected standardized baselines to the project activity
Organization name	Divisional Forest Officer, Social Forestry Division, Allahabad, UP
Street/P.O. Box	Minto Park, Kydganj, Allahabad
Building	Forest Department Building
City	Allahabad
State/Region	Uttar Pradesh
Postcode	211003
Country	India
Telephone	+91-9415084964
Fax	+91-0532- 2418233
E-mail	dfoallahabad@yahoo.co.in
Website	www.uppfmpap.org
Contact person	Mr.B C Tiwari
Title	Project Director (M &E), Conservation of Forests
Salutation	Mr.
Last name	Tiwari
Middle name	Chandra
First name	Brijesh
Department	Uttar Pradesh Forest Department
Mobile	+91-7379009900
Direct fax	+91-522-2718301
Direct tel.	+91-522-2718305
Personal e-mail	bc_tiwari08@rediffmail.com, cdmup1@gmail.com, jicapdme@gmail.com

Appendix 2. Geographic delineation of project boundary

Table 1: Gauaraiya Kala JFMC of Meja Forest Range, Plantation in 2013

JFMC	Longitude	Latitude	Project Area (ha)	Year
Gauaraiya Kala	82.186010	25.095667	39.58	2013
Gauaraiya Kala	82.186740	25.095140		
Gauaraiya Kala	82.187393	25.095036		
Gauaraiya Kala	82.187600	25.095126		
Gauaraiya Kala	82.187672	25.095113		
Gauaraiya Kala	82.187731	25.094991		
Gauaraiya Kala	82.188045	25.094765		
Gauaraiya Kala	82.188200	25.094580		
Gauaraiya Kala	82.188244	25.094431		
Gauaraiya Kala	82.188163	25.094263		
Gauaraiya Kala	82.188025	25.093540		
Gauaraiya Kala	82.187914	25.093199		
Gauaraiya Kala	82.187945	25.092703		
Gauaraiya Kala	82.187885	25.092354		
Gauaraiya Kala	82.187829	25.092243		
Gauaraiya Kala	82.187627	25.091384		
Gauaraiya Kala	82.187566	25.091266		
Gauaraiya Kala	82.187539	25.091142		
Gauaraiya Kala	82.187495	25.091061		
Gauaraiya Kala	82.187436	25.090765		
Gauaraiya Kala	82.187221	25.090320		
Gauaraiya Kala	82.187208	25.090227		
Gauaraiya Kala	82.187114	25.090002		
Gauaraiya Kala	82.187043	25.089950		
Gauaraiya Kala	82.187053	25.089898		
Gauaraiya Kala	82.187017	25.089823		
Gauaraiya Kala	82.186945	25.089716		
Gauaraiya Kala	82.186947	25.089639		
Gauaraiya Kala	82.186813	25.089502		
Gauaraiya Kala	82.186741	25.089498		
Gauaraiya Kala	82.186542	25.089309		
Gauaraiya Kala	82.186360	25.089194		
Gauaraiya Kala	82.186275	25.089195		
Gauaraiya Kala	82.186224	25.089138		
Gauaraiya Kala	82.186111	25.089105		
Gauaraiya Kala	82.185642	25.088670		
Gauaraiya Kala	82.185192	25.088375		
Gauaraiya Kala	82.185056	25.088184		
Gauaraiya Kala	82.183515	25.088270		
Gauaraiya Kala	82.182225	25.089207		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Gauaraiya Kala	82.182026	25.089687		
Gauaraiya Kala	82.181494	25.090552		
Gauaraiya Kala	82.180832	25.091636		
Gauaraiya Kala	82.180618	25.092398		
Gauaraiya Kala	82.180617	25.092406		
Gauaraiya Kala	82.180246	25.093242		
Gauaraiya Kala	82.180249	25.093344		
Gauaraiya Kala	82.180060	25.093592		
Gauaraiya Kala	82.180715	25.093937		
Gauaraiya Kala	82.181223	25.094134		
Gauaraiya Kala	82.181330	25.094256		
Gauaraiya Kala	82.183106	25.095186		
Gauaraiya Kala	82.185459	25.096184		
Gauaraiya Kala	82.185820	25.096016		

Table 2: Mudpela JFMC of Meja Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Mudpela	82.021166	25.137452	34.47	2012
Mudpela	82.021164	25.137528		
Mudpela	82.021252	25.137703		
Mudpela	82.021788	25.137660		
Mudpela	82.022001	25.137723		
Mudpela	82.022136	25.137838		
Mudpela	82.022146	25.138092		
Mudpela	82.022188	25.138100		
Mudpela	82.022238	25.138176		
Mudpela	82.022246	25.138237		
Mudpela	82.022491	25.138496		
Mudpela	82.022524	25.138695		
Mudpela	82.022737	25.138827		
Mudpela	82.022833	25.138909		
Mudpela	82.022877	25.138992		
Mudpela	82.022888	25.139085		
Mudpela	82.023056	25.139223		
Mudpela	82.023173	25.139243		
Mudpela	82.023422	25.139208		
Mudpela	82.023482	25.139127		
Mudpela	82.023725	25.139089		
Mudpela	82.023769	25.139007		
Mudpela	82.023838	25.138965		
Mudpela	82.024017	25.138976		
Mudpela	82.024184	25.139053		
Mudpela	82.024271	25.139040		
Mudpela	82.024431	25.138975		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Mudpela	82.024538	25.139201		
Mudpela	82.024622	25.139265		
Mudpela	82.024658	25.139482		
Mudpela	82.024874	25.139610		
Mudpela	82.025072	25.139479		
Mudpela	82.025534	25.139426		
Mudpela	82.025537	25.139425		
Mudpela	82.026602	25.138930		
Mudpela	82.026617	25.138861		
Mudpela	82.026580	25.138815		
Mudpela	82.026571	25.138738		
Mudpela	82.025461	25.137507		
Mudpela	82.024382	25.135948		
Mudpela	82.023847	25.135538		
Mudpela	82.023830	25.135481		
Mudpela	82.023766	25.135469		
Mudpela	82.022946	25.134435		
Mudpela	82.022296	25.134117		
Mudpela	82.021948	25.134457		
Mudpela	82.021780	25.134500		
Mudpela	82.021671	25.134445		
Mudpela	82.021525	25.134475		
Mudpela	82.021125	25.134408		
Mudpela	82.020896	25.134507		
Mudpela	82.019508	25.134675		
Mudpela	82.018492	25.134647		
Mudpela	82.018460	25.134611		
Mudpela	82.017390	25.134829		
Mudpela	82.015008	25.136143		
Mudpela	82.014083	25.137323		
Mudpela	82.014312	25.137639		
Mudpela	82.014969	25.137775		
Mudpela	82.015096	25.137543		
Mudpela	82.014869	25.137195		
Mudpela	82.014901	25.136976		
Mudpela	82.015145	25.136919		
Mudpela	82.015591	25.137147		
Mudpela	82.015968	25.137130		
Mudpela	82.015889	25.136723		
Mudpela	82.015611	25.136369		
Mudpela	82.015651	25.136110		
Mudpela	82.016396	25.135980		
Mudpela	82.016893	25.136158		
Mudpela	82.017164	25.136102		
Mudpela	82.017513	25.136158		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Mudpela	82.017600	25.136318		
Mudpela	82.017532	25.136634		
Mudpela	82.017142	25.137048		
Mudpela	82.017124	25.137583		
Mudpela	82.017043	25.137734		
Mudpela	82.016889	25.137733		
Mudpela	82.016728	25.137818		
Mudpela	82.016734	25.138095		
Mudpela	82.016337	25.138370		
Mudpela	82.016242	25.138357		
Mudpela	82.015795	25.138071		
Mudpela	82.015611	25.138110		
Mudpela	82.015537	25.138262		
Mudpela	82.015603	25.138375		
Mudpela	82.015541	25.138534		
Mudpela	82.015599	25.138603		
Mudpela	82.016403	25.138729		
Mudpela	82.016592	25.139005		
Mudpela	82.016594	25.139211		
Mudpela	82.016647	25.139431		
Mudpela	82.016960	25.139614		
Mudpela	82.017253	25.139638		
Mudpela	82.017499	25.139396		
Mudpela	82.017382	25.139164		
Mudpela	82.017186	25.138991		
Mudpela	82.017229	25.138880		
Mudpela	82.017287	25.138853		
Mudpela	82.017579	25.138857		
Mudpela	82.017733	25.138789		
Mudpela	82.017796	25.138572		
Mudpela	82.017792	25.138397		
Mudpela	82.017458	25.137964		
Mudpela	82.017441	25.137837		
Mudpela	82.017543	25.137706		
Mudpela	82.018021	25.137716		
Mudpela	82.018199	25.137676		
Mudpela	82.018280	25.137503		
Mudpela	82.018164	25.137236		
Mudpela	82.018157	25.137040		
Mudpela	82.018296	25.136950		
Mudpela	82.019385	25.136760		
Mudpela	82.019677	25.136843		
Mudpela	82.020028	25.136843		
Mudpela	82.020450	25.137045		
Mudpela	82.020854	25.137021		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Mudpela	82.020997	25.137057		
Mudpela	82.021264	25.137370		

Table 3: Mudpela JFMC of Meja Forest Range, Plantation in 2013

JFMC	Longitude	Latitude	Project Area (ha)	Year
Mudpela	82.030219	25.137819	21.01	2013
Mudpela	82.030237	25.137533		
Mudpela	82.030142	25.137216		
Mudpela	82.029762	25.136559		
Mudpela	82.028665	25.135468		
Mudpela	82.028105	25.135317		
Mudpela	82.027926	25.135174		
Mudpela	82.027428	25.134957		
Mudpela	82.026870	25.134560		
Mudpela	82.026768	25.134396		
Mudpela	82.024814	25.134094		
Mudpela	82.023546	25.133747		
Mudpela	82.023113	25.133670		
Mudpela	82.022986	25.133589		
Mudpela	82.022332	25.134113		
Mudpela	82.022946	25.134435		
Mudpela	82.023766	25.135469		
Mudpela	82.024382	25.135948		
Mudpela	82.025451	25.137475		
Mudpela	82.026611	25.138775		
Mudpela	82.026841	25.137814		
Mudpela	82.027821	25.137963		
Mudpela	82.029684	25.138362		
Mudpela	82.029775	25.138273		
Mudpela	82.029853	25.138292		

Table 4: Mudpela JFMC of Meja Forest Range, Plantation in 2014

JFMC	Longitude	Latitude	Project Area (ha)	Year
Mudpela	82.033094	25.138151	15.53	2014
Mudpela	82.032689	25.137288		
Mudpela	82.031831	25.135592		
Mudpela	82.030784	25.133882		
Mudpela	82.030423	25.133902		
Mudpela	82.030285	25.133713		
Mudpela	82.030258	25.133695		
Mudpela	82.030176	25.133544		
Mudpela	82.030176	25.133509		
Mudpela	82.030096	25.133420		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Mudpela	82.030077	25.133358		
Mudpela	82.029945	25.133206		
Mudpela	82.029822	25.132985		
Mudpela	82.029733	25.132945		
Mudpela	82.029395	25.133070		
Mudpela	82.029352	25.133130		
Mudpela	82.029000	25.133272		
Mudpela	82.028395	25.133623		
Mudpela	82.028183	25.133720		
Mudpela	82.028383	25.134156		
Mudpela	82.028384	25.134190		
Mudpela	82.028435	25.134254		
Mudpela	82.028403	25.134323		
Mudpela	82.028420	25.134360		
Mudpela	82.028320	25.134546		
Mudpela	82.028500	25.134754		
Mudpela	82.028682	25.135172		
Mudpela	82.029056	25.135424		
Mudpela	82.029785	25.135954		
Mudpela	82.029873	25.136148		
Mudpela	82.029951	25.136916		
Mudpela	82.030142	25.137216		
Mudpela	82.030237	25.137533		
Mudpela	82.030222	25.137767		
Mudpela	82.030274	25.137832		
Mudpela	82.030279	25.138008		
Mudpela	82.030255	25.138052		
Mudpela	82.030338	25.138250		
Mudpela	82.030466	25.138849		
Mudpela	82.030453	25.138880		
Mudpela	82.030569	25.139006		
Mudpela	82.030737	25.139021		
Mudpela	82.031700	25.138889		
Mudpela	82.032510	25.138566		
Mudpela	82.033094	25.138151		

Table 5: Baddhia JFMC of Meja Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Baddhia	81.844043	25.118135	46.18	2012
Baddhia	81.844080	25.117888		
Baddhia	81.844157	25.117804		
Baddhia	81.842325	25.117805		
Baddhia	81.841889	25.118159		
Baddhia	81.841167	25.117872		
Baddhia	81.839060	25.117976		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Baddhia	81.835317	25.118338		
Baddhia	81.834533	25.118951		
Baddhia	81.833629	25.118777		
Baddhia	81.832908	25.118832		
Baddhia	81.831200	25.118664		
Baddhia	81.829391	25.118609		
Baddhia	81.828886	25.118833		
Baddhia	81.829020	25.119170		
Baddhia	81.829955	25.119433		
Baddhia	81.831141	25.119573		
Baddhia	81.832359	25.119908		
Baddhia	81.836206	25.120021		
Baddhia	81.840376	25.120965		
Baddhia	81.842750	25.121246		
Baddhia	81.844625	25.122329		
Baddhia	81.846482	25.122977		
Baddhia	81.847611	25.123397		
Baddhia	81.847634	25.123290		
Baddhia	81.847432	25.122585		
Baddhia	81.847386	25.122518		
Baddhia	81.847373	25.122312		
Baddhia	81.847428	25.122280		
Baddhia	81.847429	25.122138		
Baddhia	81.847344	25.121867		
Baddhia	81.847343	25.121861		
Baddhia	81.847007	25.121814		
Baddhia	81.846735	25.121675		
Baddhia	81.846423	25.121219		
Baddhia	81.846186	25.120516		
Baddhia	81.846231	25.120084		
Baddhia	81.846081	25.119881		
Baddhia	81.846323	25.119572		
Baddhia	81.846344	25.119381		
Baddhia	81.846456	25.119165		
Baddhia	81.846448	25.118755		
Baddhia	81.845483	25.118212		
Baddhia	81.845310	25.118439		
Baddhia	81.845135	25.118267		
Baddhia	81.844920	25.118187		
Baddhia	81.844731	25.118207		
Baddhia	81.844443	25.118371		
Baddhia	81.844249	25.118372		
Baddhia	81.844043	25.118135		

Table 6: Baddhia JFMC of Meja Forest Range, Plantation in 2013

JFMC	Longitude	Latitude	Project Area (ha)	Year
Baddhia	81.828764	25.119232	29.14	2013
Baddhia	81.829475	25.12002		
Baddhia	81.829625	25.120554		
Baddhia	81.830305	25.121783		
Baddhia	81.830308	25.122211		
Baddhia	81.830586	25.122601		
Baddhia	81.831081	25.122938		
Baddhia	81.831663	25.122966		
Baddhia	81.832021	25.12319		
Baddhia	81.832278	25.123547		
Baddhia	81.833651	25.123623		
Baddhia	81.834702	25.123797		
Baddhia	81.835839	25.123133		
Baddhia	81.836664	25.122866		
Baddhia	81.837812	25.121987		
Baddhia	81.83878	25.121724		
Baddhia	81.838945	25.121414		
Baddhia	81.839623	25.120956		
Baddhia	81.836473	25.120269		
Baddhia	81.834855	25.120119		
Baddhia	81.832236	25.120029		
Baddhia	81.828764	25.119232		

Table 7: Kharka Dabar JFMC of Meja Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Kharka Dabar	82.005288	25.124227	27.35	2012
Kharka Dabar	82.006393	25.122980		
Kharka Dabar	82.006751	25.122611		
Kharka Dabar	82.006766	25.122508		
Kharka Dabar	82.005847	25.121893		
Kharka Dabar	82.005793	25.121769		
Kharka Dabar	82.005012	25.121287		
Kharka Dabar	82.004773	25.121050		
Kharka Dabar	82.004419	25.121078		
Kharka Dabar	82.003822	25.121080		
Kharka Dabar	82.002893	25.121042		
Kharka Dabar	82.002638	25.121090		
Kharka Dabar	82.002391	25.121077		
Kharka Dabar	82.001194	25.120702		
Kharka Dabar	82.001148	25.120718		
Kharka Dabar	82.000227	25.120191		
Kharka Dabar	81.998145	25.120115		
Kharka Dabar	81.998022	25.120163		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Kharka Dabar	81.998020	25.120221		
Kharka Dabar	81.997836	25.120546		
Kharka Dabar	81.997394	25.121180		
Kharka Dabar	81.997392	25.121217		
Kharka Dabar	81.997209	25.121506		
Kharka Dabar	82.002376	25.124126		
Kharka Dabar	82.003337	25.124701		
Kharka Dabar	82.003841	25.125202		
Kharka Dabar	82.005288	25.124227		

Table 8: Kharka Dabar JFMC of Meja Forest Range, Plantation in 2013

JFMC	**Longitude**	**Latitude**	**Project Area (ha)**	**Year**
Kharka Dabar	82.003263	25.128810	39.84	2013
Kharka Dabar	82.003427	25.128690		
Kharka Dabar	82.003457	25.128551		
Kharka Dabar	82.003902	25.127707		
Kharka Dabar	82.004544	25.127235		
Kharka Dabar	82.004651	25.126898		
Kharka Dabar	82.005033	25.126494		
Kharka Dabar	82.005087	25.126336		
Kharka Dabar	82.005202	25.126191		
Kharka Dabar	82.003518	25.124906		
Kharka Dabar	82.002943	25.124408		
Kharka Dabar	82.002942	25.124405		
Kharka Dabar	81.997159	25.121501		
Kharka Dabar	81.997024	25.121709		
Kharka Dabar	81.997065	25.121737		
Kharka Dabar	81.996487	25.122845		
Kharka Dabar	81.995307	25.125312		
Kharka Dabar	81.996517	25.125899		
Kharka Dabar	81.997579	25.126113		
Kharka Dabar	81.998725	25.126891		
Kharka Dabar	81.999886	25.127383		
Kharka Dabar	82.000988	25.128138		

Table 9: Sukath JFMC of Meja Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Sukath	82.064152	25.139088	27.98	2012
Sukath	82.064196	25.139037		
Sukath	82.064206	25.138951		
Sukath	82.064147	25.138803		
Sukath	82.064166	25.138754		
Sukath	82.063547	25.138010		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Sukath	82.063045	25.137588		
Sukath	82.062592	25.137365		
Sukath	82.060809	25.137887		
Sukath	82.058739	25.138300		
Sukath	82.057953	25.138225		
Sukath	82.057781	25.138081		
Sukath	82.056707	25.137997		
Sukath	82.056612	25.137919		
Sukath	82.056305	25.137912		
Sukath	82.055837	25.138398		
Sukath	82.055322	25.138872		
Sukath	82.054983	25.139468		
Sukath	82.054991	25.139571		
Sukath	82.055085	25.139673		
Sukath	82.055120	25.139808		
Sukath	82.056212	25.140561		
Sukath	82.057956	25.141452		
Sukath	82.059478	25.142629		
Sukath	82.059641	25.142898		
Sukath	82.059771	25.144044		
Sukath	82.060429	25.143880		
Sukath	82.061669	25.143354		
Sukath	82.062126	25.143055		
Sukath	82.061778	25.142776		
Sukath	82.060831	25.141834		
Sukath	82.059334	25.140334		
Sukath	82.059276	25.139560		
Sukath	82.060588	25.139631		
Sukath	82.060783	25.139696		
Sukath	82.061805	25.139641		
Sukath	82.062036	25.139544		
Sukath	82.062676	25.139558		
Sukath	82.064152	25.139088		

Table 10: Sukath JFMC of Meja Forest Range, Plantation in 2013

JFMC	Longitude	Latitude	Project Area (ha)	Year
Sukath	82.067192	25.142924	39.71	2013
Sukath	82.066810	25.142525		
Sukath	82.066489	25.141811		
Sukath	82.066049	25.141268		
Sukath	82.065295	25.140568		
Sukath	82.064914	25.140097		
Sukath	82.064777	25.139865		
Sukath	82.064770	25.139681		
Sukath	82.064463	25.139186		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Sukath	82.064460	25.139130		
Sukath	82.064355	25.139007		
Sukath	82.062676	25.139558		
Sukath	82.062036	25.139544		
Sukath	82.061805	25.139641		
Sukath	82.060783	25.139696		
Sukath	82.060588	25.139631		
Sukath	82.059276	25.139560		
Sukath	82.059317	25.139826		
Sukath	82.059322	25.140200		
Sukath	82.059358	25.140392		
Sukath	82.060705	25.141710		
Sukath	82.061778	25.142776		
Sukath	82.062126	25.143055		
Sukath	82.061669	25.143354		
Sukath	82.060224	25.143954		
Sukath	82.059778	25.144044		
Sukath	82.060004	25.146293		
Sukath	82.060244	25.146829		
Sukath	82.061968	25.146285		
Sukath	82.063654	25.145437		
Sukath	82.064371	25.144894		
Sukath	82.065078	25.144698		
Sukath	82.066435	25.143816		
Sukath	82.066867	25.143729		
Sukath	82.067049	25.143453		
Sukath	82.067389	25.143324		

Table 11: Dari JFMC of Meja Forest Range, Plantation in 2012

JFMC	**Longitude**	**Latitude**	**Project Area (ha)**	**Year**
Dari	82.073038	25.130797	12.96	2012
Dari	82.074836	25.130055		
Dari	82.077311	25.129006		
Dari	82.077043	25.128292		
Dari	82.075269	25.126554		
Dari	82.074987	25.126805		
Dari	82.074900	25.126814		
Dari	82.074019	25.127364		
Dari	82.073250	25.127614		
Dari	82.073023	25.127774		
Dari	82.072960	25.127790		
Dari	82.072832	25.127884		
Dari	82.072680	25.127947		
Dari	82.072593	25.127945		
Dari	82.072233	25.128154		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Dari	82.072281	25.128319		
Dari	82.072783	25.128916		
Dari	82.072958	25.129628		

Table 12: Dari JFMC of Meja Forest Range, Plantation in 2013

JFMC	Longitude	Latitude	Project Area (ha)	Year
Dari	82.073056	25.131045	15.81	2013
Dari	82.073144	25.13127		
Dari	82.073155	25.131495		
Dari	82.073243	25.131908		
Dari	82.073273	25.132328		
Dari	82.073647	25.133193		
Dari	82.073809	25.133689		
Dari	82.073912	25.133699		
Dari	82.074581	25.133443		
Dari	82.076372	25.132539		
Dari	82.078456	25.131195		
Dari	82.078102	25.130435		
Dari	82.077313	25.129031		
Dari	82.074851	25.130072		
Dari	82.074746	25.130154		
Dari	82.074669	25.130165		
Dari	82.073040	25.130855		

Table 13: Dari JFMC of Meja Forest Range, Plantation in 2014

JFMC	Longitude	Latitude	Project Area (ha)	Year
Dari	82.077217	25.127574	8.05	2014
Dari	82.078290	25.126964		
Dari	82.078940	25.126758		
Dari	82.079358	25.126487		
Dari	82.079499	25.126307		
Dari	82.079574	25.126097		
Dari	82.078862	25.125661		
Dari	82.078478	25.125335		
Dari	82.077769	25.124505		
Dari	82.077031	25.125024		
Dari	82.076196	25.125747		
Dari	82.075561	25.126336		
Dari	82.075294	25.126538		
Dari	82.076691	25.127897		

Table 14: Unchdiha JFMC of Meja Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Unchdiha	82.249470	25.057499	20.65	2012
Unchdiha	82.249129	25.057316		
Unchdiha	82.249125	25.056937		
Unchdiha	82.249349	25.056625		
Unchdiha	82.250576	25.056112		
Unchdiha	82.250738	25.055183		
Unchdiha	82.250616	25.054433		
Unchdiha	82.250185	25.053776		
Unchdiha	82.249549	25.053511		
Unchdiha	82.249546	25.053508		
Unchdiha	82.249878	25.053528		
Unchdiha	82.249878	25.053531		
Unchdiha	82.249933	25.053364		
Unchdiha	82.250114	25.053237		
Unchdiha	82.249543	25.052139		
Unchdiha	82.249332	25.052028		
Unchdiha	82.248336	25.052501		
Unchdiha	82.247942	25.053632		
Unchdiha	82.247004	25.055344		
Unchdiha	82.245232	25.057164		
Unchdiha	82.245160	25.057433		
Unchdiha	82.245788	25.057984		
Unchdiha	82.245909	25.058068		
Unchdiha	82.245977	25.058183		
Unchdiha	82.246954	25.058707		
Unchdiha	82.247311	25.058980		
Unchdiha	82.247423	25.058961		
Unchdiha	82.247997	25.058992		
Unchdiha	82.248160	25.058688		
Unchdiha	82.248045	25.058600		
Unchdiha	82.247362	25.058433		
Unchdiha	82.246345	25.057937		
Unchdiha	82.247229	25.057506		
Unchdiha	82.247846	25.057671		
Unchdiha	82.248635	25.058255		
Unchdiha	82.249470	25.057499		

Table 15: Unchdiha JFMC of Meja Forest Range, Plantation in 2014

JFMC	Longitude	Latitude	Project Area (ha)	Year
Unchdiha	82.250609	25.056036	11.17	2014
Unchdiha	82.250397	25.056414		
Unchdiha	82.250335	25.056448		
Unchdiha	82.250280	25.056521		
Unchdiha	82.250273	25.056592		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Unchdiha	82.249974	25.056994		
Unchdiha	82.249927	25.057205		
Unchdiha	82.249819	25.057314		
Unchdiha	82.249679	25.057356		
Unchdiha	82.248470	25.058392		
Unchdiha	82.248664	25.058556		
Unchdiha	82.248636	25.058602		
Unchdiha	82.248636	25.058603		
Unchdiha	82.249013	25.058732		
Unchdiha	82.249452	25.059183		
Unchdiha	82.249473	25.059319		
Unchdiha	82.249884	25.059785		
Unchdiha	82.250104	25.059803		
Unchdiha	82.250670	25.059650		
Unchdiha	82.250713	25.059592		
Unchdiha	82.250781	25.059559		
Unchdiha	82.250835	25.059466		
Unchdiha	82.251035	25.059426		
Unchdiha	82.251478	25.058948		
Unchdiha	82.251558	25.058764		
Unchdiha	82.251597	25.058737		
Unchdiha	82.251760	25.058394		
Unchdiha	82.251770	25.058016		
Unchdiha	82.251706	25.057832		
Unchdiha	82.251779	25.057672		
Unchdiha	82.251806	25.057500		
Unchdiha	82.251872	25.057354		
Unchdiha	82.251881	25.057218		
Unchdiha	82.251823	25.057095		
Unchdiha	82.251825	25.057015		
Unchdiha	82.251788	25.056984		
Unchdiha	82.251518	25.056965		
Unchdiha	82.250609	25.056036		

Table 16: Gaderiya JFMC of Meja Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Gaderiya	81.869532	25.134379	12.95	2012
Gaderiya	81.870644	25.136449		
Gaderiya	81.871421	25.136639		
Gaderiya	81.872942	25.136183		
Gaderiya	81.872635	25.135314		
Gaderiya	81.87204	25.134527		
Gaderiya	81.871734	25.133877		
Gaderiya	81.871338	25.13360		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Gaderiya	81.870431	25.132311		
Gaderiya	81.870152	25.131786		
Gaderiya	81.869946	25.131651		
Gaderiya	81.869645	25.131668		
Gaderiya	81.869047	25.131882		
Gaderiya	81.868634	25.131777		
Gaderiya	81.867810	25.131203		
Gaderiya	81.867615	25.131255		
Gaderiya	81.867276	25.130963		
Gaderiya	81.867177	25.131001		
Gaderiya	81.866521	25.132018		
Gaderiya	81.867364	25.132615		
Gaderiya	81.867362	25.132690		
Gaderiya	81.867687	25.132795		
Gaderiya	81.867914	25.132558		
Gaderiya	81.868134	25.132166		
Gaderiya	81.868698	25.132205		
Gaderiya	81.868698	25.132205		
Gaderiya	81.868721	25.132170		
Gaderiya	81.86872	25.132172		
Gaderiya	81.870181	25.133476		
Gaderiya	81.870162	25.133671		
Gaderiya	81.869590	25.134217		
Gaderiya	81.869532	25.134379		

Table 17: Gaderiya JFMC of Meja Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Gaderiya	81.877793	25.135745	12.85	2012
Gaderiya	81.878695	25.136027		
Gaderiya	81.878789	25.136104		
Gaderiya	81.879576	25.135735		
Gaderiya	81.880146	25.135102		
Gaderiya	81.880751	25.134800		
Gaderiya	81.881689	25.133820		
Gaderiya	81.882402	25.133451		
Gaderiya	81.882478	25.133245		
Gaderiya	81.882455	25.132987		
Gaderiya	81.882419	25.132936		
Gaderiya	81.882432	25.132832		
Gaderiya	81.882340	25.132677		
Gaderiya	81.882258	25.132218		
Gaderiya	81.882451	25.131791		
Gaderiya	81.882777	25.13138		
Gaderiya	81.882661	25.13100		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Gaderiya	81.882618	25.130699		
Gaderiya	81.882440	25.130578		
Gaderiya	81.881755	25.131006		
Gaderiya	81.881006	25.131394		
Gaderiya	81.880504	25.131561		
Gaderiya	81.880524	25.131834		
Gaderiya	81.880753	25.132299		
Gaderiya	81.880545	25.13306		
Gaderiya	81.880128	25.133333		
Gaderiya	81.879897	25.133754		
Gaderiya	81.879699	25.133926		
Gaderiya	81.879319	25.133875		
Gaderiya	81.879022	25.133179		
Gaderiya	81.878822	25.133019		
Gaderiya	81.878411	25.133179		
Gaderiya	81.878354	25.133132		
Gaderiya	81.877943	25.133685		
Gaderiya	81.878099	25.13384		
Gaderiya	81.878403	25.134537		
Gaderiya	81.877172	25.135336		

Table 18: Sikikala JFMC of Koraw Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Sikikala	82.081052	25.122144	14.87	2012
Sikikala	82.080569	25.122671		
Sikikala	82.079967	25.122983		
Sikikala	82.079800	25.123256		
Sikikala	82.078726	25.123558		
Sikikala	82.078534	25.123687		
Sikikala	82.078431	25.123930		
Sikikala	82.078683	25.124464		
Sikikala	82.078373	25.124538		
Sikikala	82.079556	25.125417		
Sikikala	82.079844	25.125042		
Sikikala	82.079756	25.124932		
Sikikala	82.079747	25.124877		
Sikikala	82.080111	25.124515		
Sikikala	82.080956	25.124747		
Sikikala	82.081335	25.125013		
Sikikala	82.081799	25.125584		
Sikikala	82.082037	25.125765		
Sikikala	82.082294	25.125833		
Sikikala	82.082483	25.125701		
Sikikala	82.082785	25.125937		
Sikikala	82.083061	25.126017		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Sikikala	82.083391	25.126017		
Sikikala	82.083895	25.125761		
Sikikala	82.084220	25.125720		
Sikikala	82.084422	25.125523		
Sikikala	82.084428	25.125454		
Sikikala	82.083895	25.124748		
Sikikala	82.083338	25.122535		
Sikikala	82.083187	25.122767		
Sikikala	82.082472	25.122997		
Sikikala	82.081792	25.121998		
Sikikala	82.081415	25.121968		

Table 19: Sikikala JFMC of Koraw Forest Range, Plantation in 2013

JFMC	Longitude	Latitude	Project Area (ha)	Year
Sikikala	82.083388	25.122515	6.07	2013
Sikikala	82.084426	25.125024		
Sikikala	82.084750	25.124882		
Sikikala	82.085065	25.124499		
Sikikala	82.085566	25.123330		
Sikikala	82.085580	25.123144		
Sikikala	82.085935	25.122826		
Sikikala	82.085882	25.122328		
Sikikala	82.084964	25.121371		
Sikikala	82.083814	25.121874		
Sikikala	82.083597	25.122089		

Table 20: Sikikala JFMC of Koraw Forest Range, Plantation in 2014

JFMC	Longitude	Latitude	Project Area (ha)	Year
Sikikala	82.08475	25.12488	9.25	2014
Sikikala	82.08442	25.12517		
Sikikala	82.08460	25.12557		
Sikikala	82.08582	25.12445		
Sikikala	82.08656	25.12415		
Sikikala	82.08743	25.12351		
Sikikala	82.08817	25.12320		
Sikikala	82.08854	25.12258		
Sikikala	82.08964	25.12135		
Sikikala	82.08966	25.12129		
Sikikala	82.08911	25.12101		
Sikikala	82.08882	25.12076		
Sikikala	82.08851	25.12076		
Sikikala	82.08752	25.12127		
Sikikala	82.08655	25.12177		
Sikikala	82.08586	25.12221		
Sikikala	82.08593	25.12230		

Sikikala	82.08596	25.12279		
Sikikala	82.08568	25.12305		
Sikikala	82.08513	25.12442		

Table 21: Lakhnauti JFMC of Sankargarh Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Lakhnauti	81.562945	25.248538	6.55	2012
Lakhnauti	81.562999	25.248575		
Lakhnauti	81.563068	25.248560		
Lakhnauti	81.563247	25.248294		
Lakhnauti	81.563297	25.248115		
Lakhnauti	81.563351	25.247947		
Lakhnauti	81.563426	25.247838		
Lakhnauti	81.563533	25.247792		
Lakhnauti	81.563782	25.247764		
Lakhnauti	81.563848	25.247735		
Lakhnauti	81.563876	25.247683		
Lakhnauti	81.564074	25.247557		
Lakhnauti	81.564125	25.247547		
Lakhnauti	81.564165	25.247477		
Lakhnauti	81.564318	25.247361		
Lakhnauti	81.565017	25.247162		
Lakhnauti	81.565130	25.247085		
Lakhnauti	81.565289	25.247046		
Lakhnauti	81.565176	25.246855		
Lakhnauti	81.565176	25.246795		
Lakhnauti	81.565242	25.246694		
Lakhnauti	81.565224	25.246648		
Lakhnauti	81.565229	25.246615		
Lakhnauti	81.565200	25.246476		
Lakhnauti	81.565162	25.246403		
Lakhnauti	81.565002	25.246337		
Lakhnauti	81.564833	25.246323		
Lakhnauti	81.564780	25.246291		
Lakhnauti	81.564701	25.246311		
Lakhnauti	81.564611	25.246257		
Lakhnauti	81.564595	25.246222		
Lakhnauti	81.564271	25.246091		
Lakhnauti	81.564206	25.246006		
Lakhnauti	81.564177	25.245995		
Lakhnauti	81.564035	25.245722		
Lakhnauti	81.563840	25.245681		
Lakhnauti	81.563637	25.245478		
Lakhnauti	81.563647	25.245310		
Lakhnauti	81.563727	25.245249		
Lakhnauti	81.564213	25.245221		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Lakhnauti	81.564263	25.245264		
Lakhnauti	81.564526	25.245286		
Lakhnauti	81.564629	25.245308		
Lakhnauti	81.564796	25.245168		
Lakhnauti	81.565116	25.245086		
Lakhnauti	81.565277	25.244955		
Lakhnauti	81.565396	25.244972		
Lakhnauti	81.565468	25.244922		
Lakhnauti	81.565446	25.244854		
Lakhnauti	81.565454	25.244812		
Lakhnauti	81.565543	25.244768		
Lakhnauti	81.565650	25.244527		
Lakhnauti	81.565525	25.244443		
Lakhnauti	81.564764	25.244600		
Lakhnauti	81.564688	25.244593		
Lakhnauti	81.564395	25.244661		
Lakhnauti	81.564345	25.244696		
Lakhnauti	81.564289	25.244685		
Lakhnauti	81.563987	25.244749		
Lakhnauti	81.563926	25.244840		
Lakhnauti	81.563737	25.244824		
Lakhnauti	81.563643	25.244889		
Lakhnauti	81.562861	25.245107		
Lakhnauti	81.562785	25.245090		
Lakhnauti	81.562661	25.245133		
Lakhnauti	81.562611	25.245283		
Lakhnauti	81.562661	25.245458		
Lakhnauti	81.562653	25.245646		
Lakhnauti	81.562626	25.245712		
Lakhnauti	81.562692	25.246327		
Lakhnauti	81.562665	25.246421		
Lakhnauti	81.562670	25.246536		
Lakhnauti	81.562700	25.246626		
Lakhnauti	81.562704	25.246831		
Lakhnauti	81.562787	25.247021		
Lakhnauti	81.562798	25.247145		
Lakhnauti	81.562762	25.247267		
Lakhnauti	81.562794	25.247579		
Lakhnauti	81.562977	25.247724		
Lakhnauti	81.563027	25.247776		
Lakhnauti	81.563182	25.247847		
Lakhnauti	81.563283	25.247978		
Lakhnauti	81.563237	25.248043		
Lakhnauti	81.563234	25.248128		
Lakhnauti	81.562856	25.248192		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Lakhnauti	81.562866	25.248359		
Lakhnauti	81.562945	25.248538		

Table 22: Lakhnauti JFMC of Sankargarh Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Lakhnauti	81.567182	25.245847	2.58	2012
Lakhnauti	81.567051	25.245739		
Lakhnauti	81.567055	25.245623		
Lakhnauti	81.567127	25.245557		
Lakhnauti	81.567213	25.245546		
Lakhnauti	81.567418	25.245634		
Lakhnauti	81.567512	25.245632		
Lakhnauti	81.567577	25.245678		
Lakhnauti	81.567596	25.245749		
Lakhnauti	81.567714	25.245701		
Lakhnauti	81.567704	25.245621		
Lakhnauti	81.567607	25.24543		
Lakhnauti	81.567525	25.245354		
Lakhnauti	81.567595	25.245261		
Lakhnauti	81.567603	25.245157		
Lakhnauti	81.567562	25.245088		
Lakhnauti	81.567494	25.245047		
Lakhnauti	81.567442	25.244933		
Lakhnauti	81.567454	25.244798		
Lakhnauti	81.567407	25.244744		
Lakhnauti	81.566164	25.244576		
Lakhnauti	81.566089	25.244605		
Lakhnauti	81.566069	25.244583		
Lakhnauti	81.566064	25.244528		
Lakhnauti	81.566096	25.244479		
Lakhnauti	81.566093	25.24426		
Lakhnauti	81.566026	25.244224		
Lakhnauti	81.565866	25.244319		
Lakhnauti	81.56582	25.244359		
Lakhnauti	81.565792	25.244467		
Lakhnauti	81.565749	25.244514		
Lakhnauti	81.565976	25.24513		
Lakhnauti	81.565953	25.245225		
Lakhnauti	81.565675	25.245317		
Lakhnauti	81.565612	25.24521		
Lakhnauti	81.565534	25.245212		
Lakhnauti	81.565409	25.245323		
Lakhnauti	81.565292	25.24536		
Lakhnauti	81.56538	25.245527		
Lakhnauti	81.565391	25.245677		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Lakhnauti	81.56574	25.245928		
Lakhnauti	81.566119	25.246038		
Lakhnauti	81.566137	25.246017		
Lakhnauti	81.566131	25.245972		
Lakhnauti	81.566092	25.245899		
Lakhnauti	81.566106	25.245822		
Lakhnauti	81.566104	25.245738		
Lakhnauti	81.566238	25.245701		
Lakhnauti	81.566463	25.245848		
Lakhnauti	81.566619	25.245876		
Lakhnauti	81.56676	25.24595		
Lakhnauti	81.566856	25.24596		
Lakhnauti	81.566899	25.246027		
Lakhnauti	81.566946	25.246049		
Lakhnauti	81.567097	25.245866		
Lakhnauti	81.567182	25.245847		

Table 23: Madanpur JFMC of Sankargarh Forest Range, Plantation in 2012

JFMC	Longitude	Latitude	Project Area (ha)	Year
Madanpur	81.621702	25.235326	29.57	2012
Madanpur	81.621781	25.235271		
Madanpur	81.621843	25.234974		
Madanpur	81.621839	25.234694		
Madanpur	81.621644	25.233115		
Madanpur	81.621587	25.232906		
Madanpur	81.621544	25.232859		
Madanpur	81.621535	25.232804		
Madanpur	81.621566	25.232769		
Madanpur	81.621544	25.232618		
Madanpur	81.621578	25.232453		
Madanpur	81.621593	25.232244		
Madanpur	81.621559	25.232146		
Madanpur	81.621636	25.232030		
Madanpur	81.621657	25.231819		
Madanpur	81.621615	25.231781		
Madanpur	81.620563	25.231676		
Madanpur	81.620463	25.231721		
Madanpur	81.619973	25.231731		
Madanpur	81.619279	25.231961		
Madanpur	81.618910	25.231967		
Madanpur	81.617840	25.232271		
Madanpur	81.617334	25.232220		
Madanpur	81.617166	25.232251		
Madanpur	81.617048	25.232195		
Madanpur	81.616496	25.232317		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Madanpur	81.616049	25.232298		
Madanpur	81.615954	25.232330		
Madanpur	81.615860	25.232310		
Madanpur	81.615593	25.232346		
Madanpur	81.615535	25.232413		
Madanpur	81.615501	25.232416		
Madanpur	81.615460	25.232379		
Madanpur	81.615341	25.232359		
Madanpur	81.614626	25.232423		
Madanpur	81.614532	25.232463		
Madanpur	81.614040	25.233457		
Madanpur	81.613984	25.233840		
Madanpur	81.614418	25.235105		
Madanpur	81.614486	25.235172		
Madanpur	81.614450	25.235288		
Madanpur	81.614578	25.235556		
Madanpur	81.615882	25.235711		
Madanpur	81.615905	25.235691		
Madanpur	81.616149	25.235756		
Madanpur	81.617888	25.235565		
Madanpur	81.618230	25.235280		
Madanpur	81.618389	25.235344		
Madanpur	81.618562	25.235294		
Madanpur	81.618626	25.235309		
Madanpur	81.618788	25.235601		
Madanpur	81.618755	25.235665		
Madanpur	81.618881	25.235750		
Madanpur	81.618940	25.235836		
Madanpur	81.619346	25.236082		
Madanpur	81.619650	25.235953		
Madanpur	81.619920	25.235938		
Madanpur	81.620074	25.235845		
Madanpur	81.620278	25.235844		
Madanpur	81.620882	25.235621		
Madanpur	81.620911	25.235558		
Madanpur	81.621189	25.235361		
Madanpur	81.621702	25.235326		

Table 24: Madanpur JFMC of Sankargarh Forest Range, Plantation in 2013

JFMC	Longitude	Latitude	Project Area (ha)	Year
Madanpur	81.618675	25.236210	15.09	2013
Madanpur	81.618262	25.235725		
Madanpur	81.618241	25.235639		
Madanpur	81.616010	25.235782		
Madanpur	81.615401	25.235664		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Madanpur	81.615091	25.235699		
Madanpur	81.614560	25.235604		
Madanpur	81.614380	25.235814		
Madanpur	81.614325	25.236284		
Madanpur	81.614868	25.237163		
Madanpur	81.614918	25.237193		
Madanpur	81.614929	25.237278		
Madanpur	81.615045	25.237500		
Madanpur	81.615762	25.238179		
Madanpur	81.615793	25.238150		
Madanpur	81.616204	25.238693		
Madanpur	81.617260	25.239352		
Madanpur	81.617959	25.239671		
Madanpur	81.618885	25.239061		
Madanpur	81.619552	25.238333		
Madanpur	81.619359	25.237895		
Madanpur	81.619358	25.237840		
Madanpur	81.619281	25.237691		
Madanpur	81.619280	25.237637		
Madanpur	81.618857	25.237052		
Madanpur	81.618602	25.236962		
Madanpur	81.618519	25.236904		
Madanpur	81.618522	25.236920		
Madanpur	81.618488	25.236941		
Madanpur	81.618445	25.236933		
Madanpur	81.618434	25.236799		
Madanpur	81.618481	25.236543		
Madanpur	81.618604	25.236349		
Madanpur	81.618617	25.236212		

Table 25: Madanpur JFMC of Sankargarh Forest Range, Plantation in 2014

JFMC	Longitude	Latitude	Project Area (ha)	Year
Madanpur	81.616339	25.230917	7.42	2014
Madanpur	81.614848	25.22933		
Madanpur	81.613863	25.227479		
Madanpur	81.613374	25.228195		
Madanpur	81.613146	25.228343		
Madanpur	81.612977	25.2286		
Madanpur	81.612942	25.228774		
Madanpur	81.612829	25.228896		
Madanpur	81.612848	25.229015		
Madanpur	81.613038	25.22939		
Madanpur	81.613021	25.229864		
Madanpur	81.613429	25.230391		
Madanpur	81.613553	25.230639		
Madanpur	81.613549	25.230809		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Madanpur	81.614519	25.231166		
Madanpur	81.615127	25.231526		
Madanpur	81.615445	25.231544		
Madanpur	81.616339	25.230917		

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Document information

Version	*Date*	*Description*
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from *F-CDM-MR* to *CDM-MR-FORM*; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
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