



Monitoring report form for CDM project activity
(Version 06.0)

Complete this form in accordance with the instructions attached 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 PDD applicable to this monitoring report	06	
Version number of this monitoring report	Version 07	
Completion date of this monitoring report	27/06/2018	
Monitoring period number	01	
Duration of this monitoring period	01/01/2012 to 06/06/2016 (1619 days) (Both Days Included)	
Monitoring report number for this monitoring report	N/A (Single report for this Monitoring)	
Project participants	Divisional Forest Officer, Allahabad Forest Division, Uttar Pradesh.	
Host Party	India	
Sectoral scopes	Sectoral scope 14: Afforestation and Reforestation	
Applied methodologies and standardized baselines	AR-AMS0007: "Afforestation and reforestation project activities implemented on lands other than wetlands", Version 03.0	
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
	0	9,157 tCO ₂ e
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	10,259 tCO ₂ e	

SECTION A. Description of project activity**A.1. General description of project activity**

The SSC A/R-CDM project activity was implemented on the severely degraded forest lands of the Allahabad 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 Major aim 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 dependent communities and their livelihood options.

Brief description of the installed technology and equipment;

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 small scale project activities were strictly adhered to promote Sustainable Forest Management (SFM) through involving local communities as per the standard SOP (Standard Operating procedure). The SSC A/R CDM Project activity covers eleven village forests. Total 36 native tree species (23 species mentioned in the registered PDD and 13 other species) were planted across eleven selected village forest areas of the project. Although, only those species with more than 2 meters in height and more than 10 cm in GBH were taken into consideration for the CER calculations. All the JFMCs carried out standard forestry techniques like sowing of seeds, pit digging, planting, weeding and mortality replacement as recommended by the State Forest Department. These activities carried out with the help of human labour to avoid project emissions and also to meet the objectives of employment generation for local communities. The project activities focus on women 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 completed in three different phases. The first phase of plantation covering an area of 248.96 ha was completed in the year 2012, second phase of plantation covering an area of 206.25 ha was completed in 2013, and final phase of plantation covering an area 51.42 ha was completed in 2014. Thus, the total project area is **506.63** ha.

Net GHG removals by sinks achieved in this monitoring period is **9,157 tCO₂-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
11. Madanpur

Physical/geographical location

Allahabad forest division is one of the south-eastern divisions of Uttar Pradesh State. It lies between the parallels of North latitudes 24°49'55" and 25°40'45" and East longitudes 81°08'58" and 82°21'55" with total geographical area of 5284.68 sq. km. The division is surrounded by the districts Pratapgarh and Jaunpur in the north, Varanasi in east, Fatehpur in west, Mirzapur and Banda forest division in south¹. According to the 2011 census, the district had population of 5,954,391 of which male and female were 3,131,807 and 2,822,584 respectively. The rural and urban population in the district is 75.26% and 24.74% respectively. The population density of the district is recorded as 1086 person per km². Sex ratio in the district is 901 females per 1000 males and average literacy rate is 72.32% in the district².

The Ganges and The Yamuna are the main rivers of the district. The plain area of the district is situated in between Ganges and Yamuna, so these rivers play a pivotal role in agriculture sector. Net sown area in the district is 326000 hectare, area sown more than once is 254398 hectare and fallow land is 66314 hectare. The cropping intensity in the district is 155.89 %³. Major crops grown in the district are *Triticum aestivum* (Wheat), *Oryza sativa* (Paddy), *Sorghum vulgare* (Jowar), *Brassica juncea* (Mustard) and *Pearl millet* (Bajra). While, pulses such as *Cajanus cajan* (Arhar), *Vigna mungo* (Urad) and *Cicer arietinum* (Chana) are also

¹Working plan document, Allahabad Forest Division

²Census. (2011). National Census report of Allahabad District, Uttar Pradesh, India.

³http://allduniv.ac.in/allbuni/ckfinder/userfiles/files/State_Agricultural_Profile_of_UP_2015.pdf

grown in some areas of the district. The principal sources of irrigation are canals and tube-wells in the district⁴.

Allahabad SSC 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 and Madanpur. Detail map of the Allahabad Forest Division is provided below in figure 1 and the geo-referencing of each discrete parcel of project land in these JFMCs is carried out whose details are provided in the Appendix 1. Further, unique coding system for the identification of each parcel lands is adopted as represented in Table 1. The code ME 44101-2012 can be decoded as, the first two alphabets ME represents Forest Range i.e. Meja Forest Range, the next three digits 441 indicate the unique JFMC code and the last two digits 01 indicate 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.

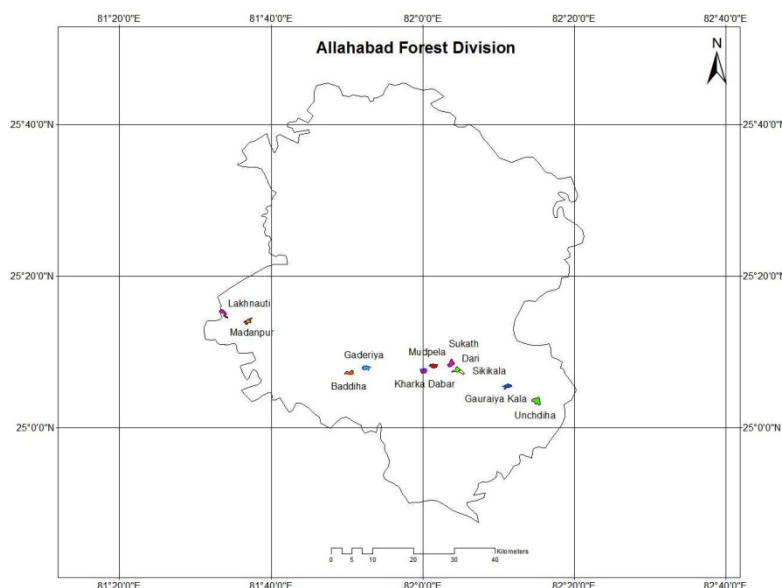


Figure1.Forest division map of Allahabad

Table 1: 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	

⁴http://allduniv.ac.in/allbuni/ckfinder/userfiles/files/State_Agricultural_Profile_of_UP_2015.pdf

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)
		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	
		ME44501-2014		8.05	
7.	Unchdiha	ME10101-2012	197	20.65	31.82
		ME10101-2014		11.17	
8.	Gaderiya	ME10401-2012	128	12.95	25.8
		ME10402-2012		12.85	
9.	Sikikala	KO43901-2012	69.80	14.87	30.19
		KO43901-2013		6.07	
		KO43901-2014		9.25	
10.	Lakhnauti	SH10701-2012	138	6.55	9.13
		SH10702-2012		2.58	
11.	Madanpur	SH44601-2012	122	29.57	52.08
		SH44601-2013		15.09	
		SH44601-2014		7.42	
	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.

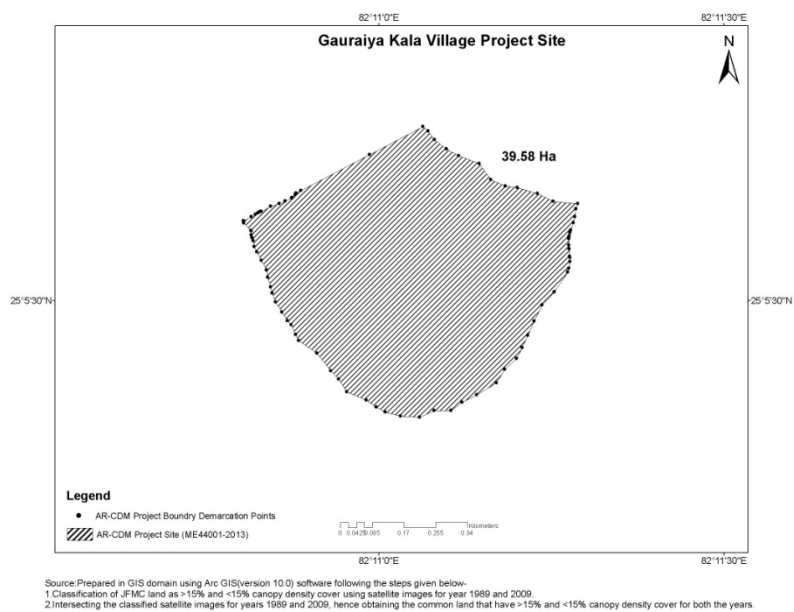


Figure 2: Map of A/R CDM area of Gauraiya-Kala Village Forest

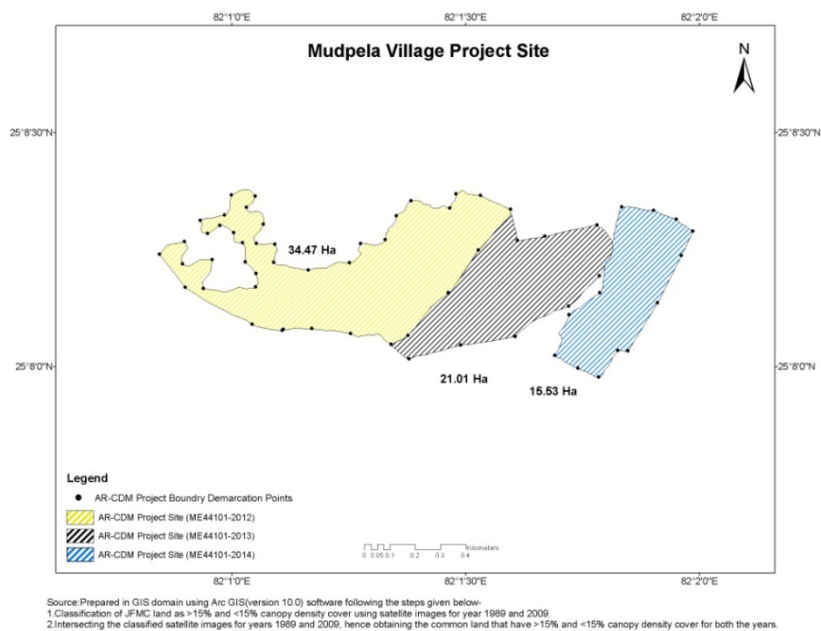


Figure 3: Map of A/R CDM area of Mudpela Village Forest

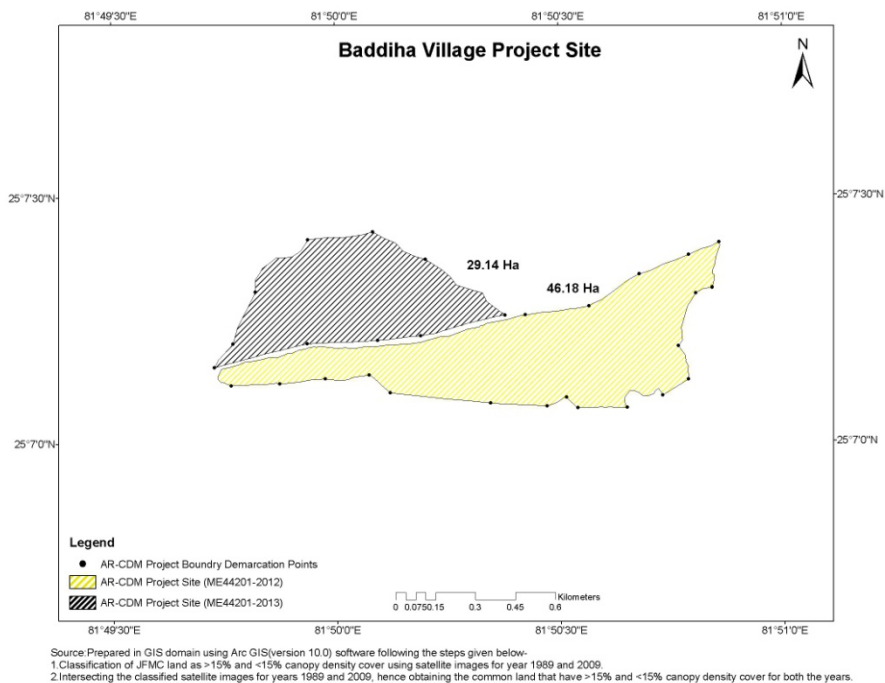


Figure 4: Map of A/R CDM area of Baddiha Village Forest

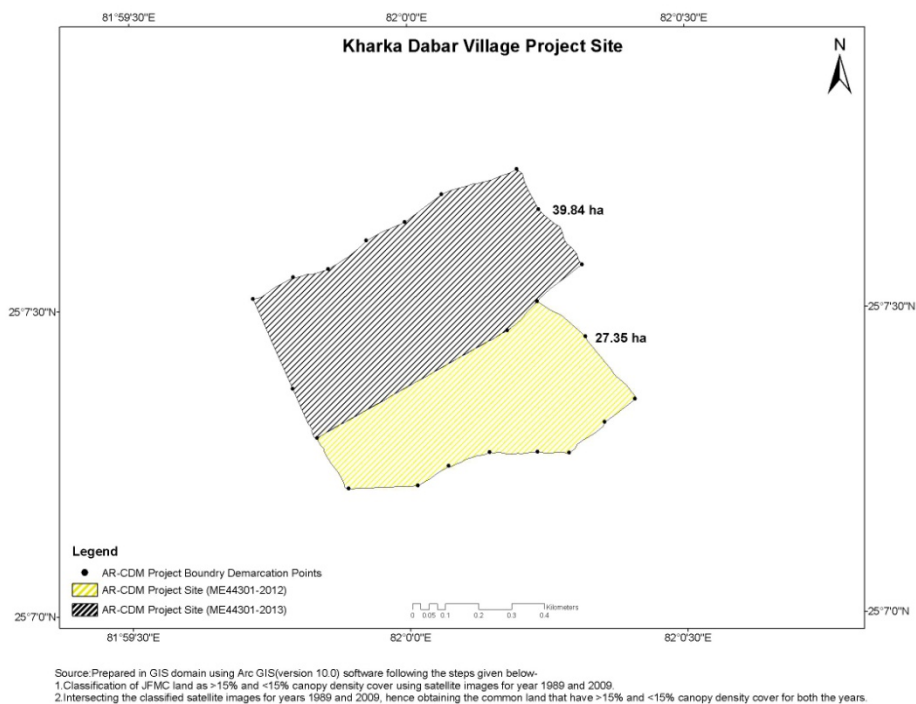


Figure 5: Map of A/R CDM area of Kharka Dabar Village Forest

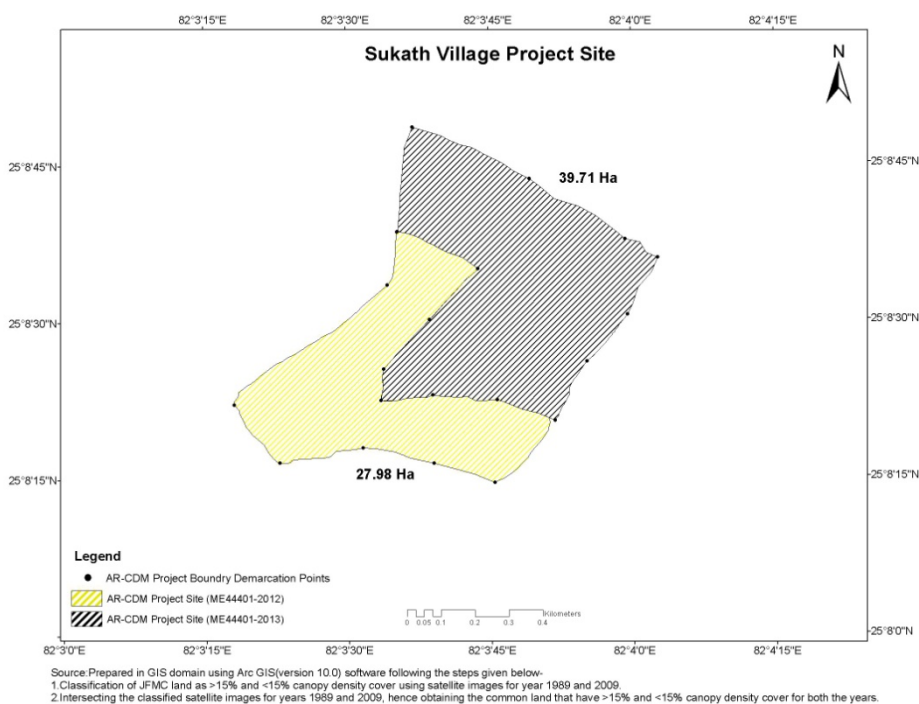


Figure 6: Map of A/R CDM area of Sukath Village Forest

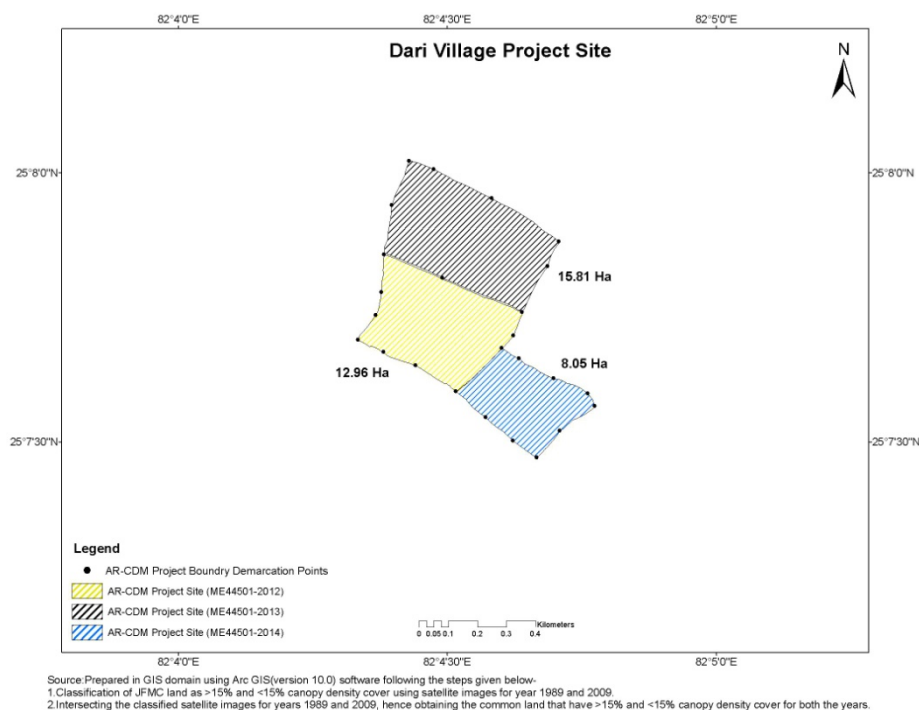


Figure 7: Map of A/R CDM area of Dari Village Forest

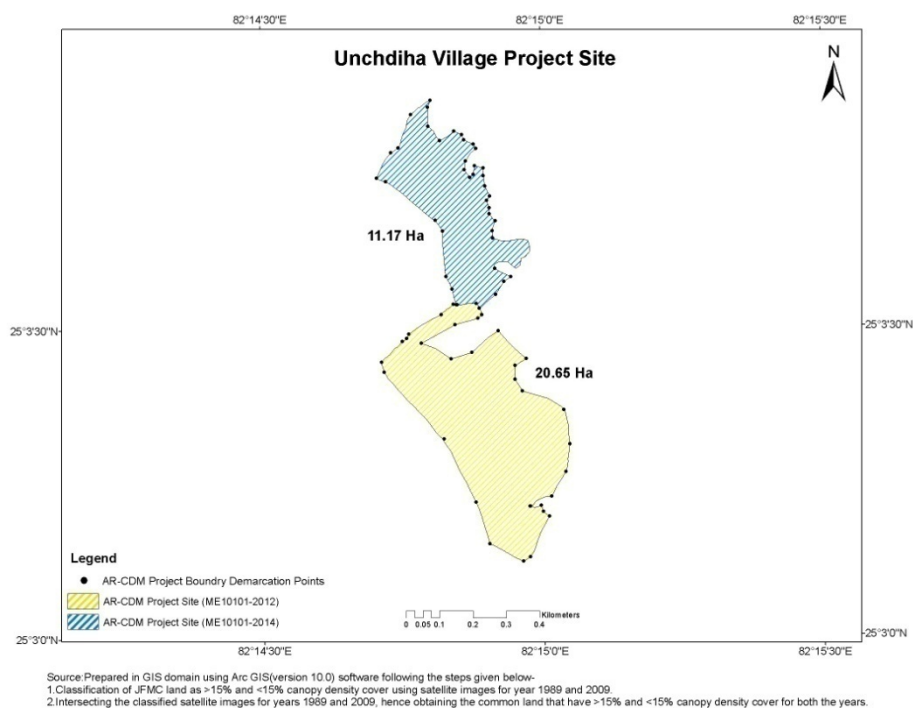


Figure 8: Map of A/R CDM area of Unchdiha Village Forest

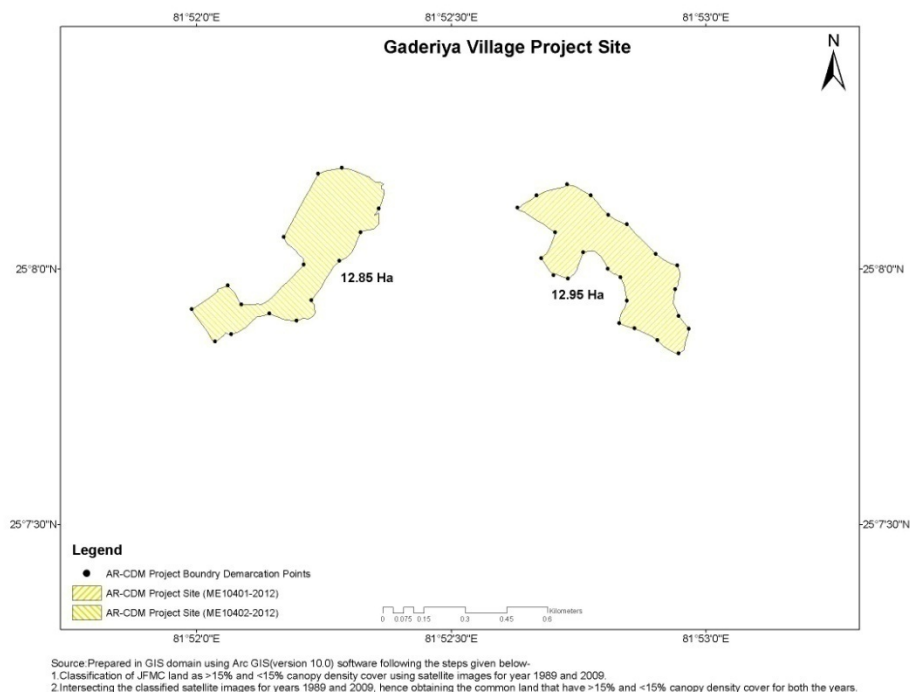


Figure 9: Map of A/R CDM area of Gaderiya Village Forest

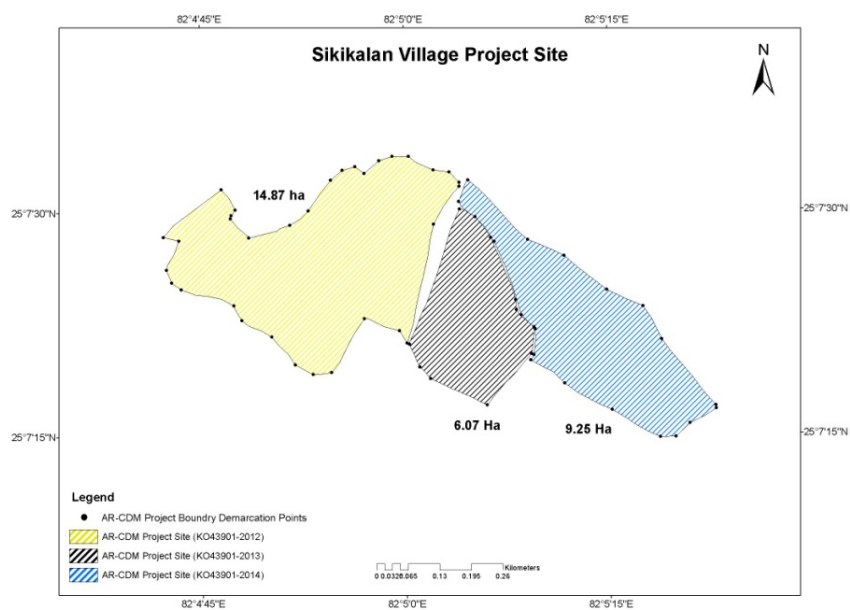


Figure 10: Map of A/R CDM area of Sikikalan Village Forest

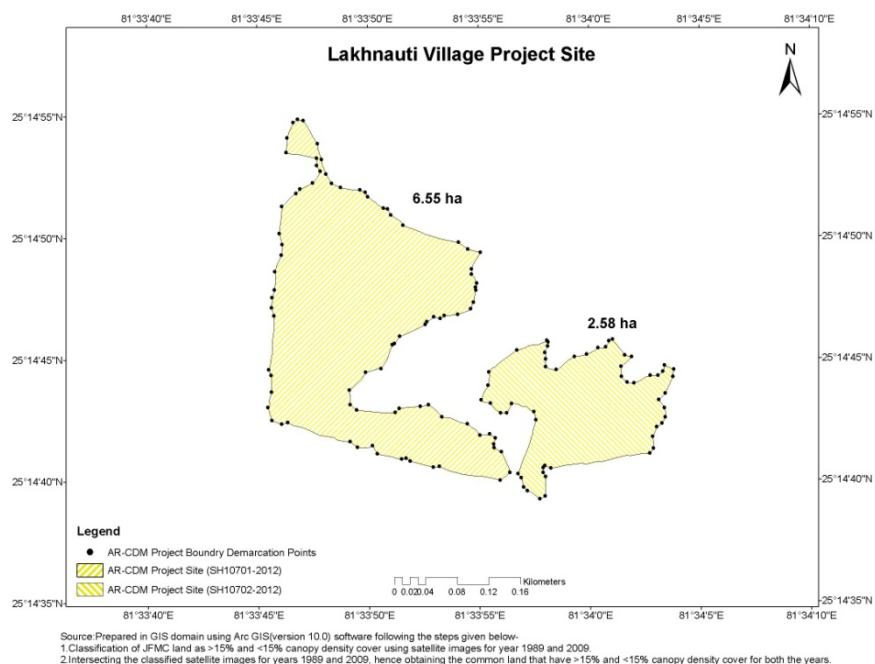


Figure 11: Map of A/R CDM area of Lakhnauti Village Forest

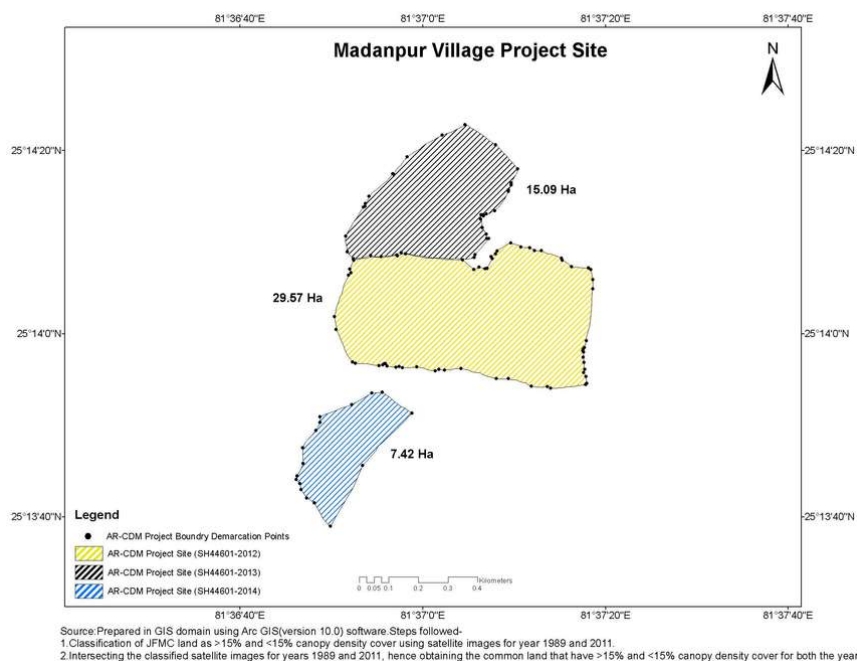


Figure 12: Map of A/R CDM area of Madanpur Village Forest

A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host Party)	Public entity A – Divisional Forest Officer, Allahabad Forest Division, Uttar Pradesh.	No

A.4. Reference to applied methodologies and standardized baselines

AR-AMS0007 - Afforestation and reforestation project activities implemented on lands other than wetlands⁵; (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 activities⁶; (Version 04.2)
2. Demonstration of eligibility of lands for A/R CDM project activities⁷; (Version 02)
3. Guidance on application of the definition of the project boundary to A/R CDM project activities⁸; (Version 01);
4. Estimation of non-CO₂ GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity⁹; (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 activity¹⁰; (Version 02)
6. Guidelines on assessment of debundling for SSC project activities¹¹; (Version 04)
7. Calculation of the number of sample plots for measurements within AR CDM project activities¹²; (Version 02.1.0.)
8. Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities version 01.0.1¹³

⁵<http://cdm.unfccc.int/methodologies/DB/808WOYH6FWAXP3CQR4PXOLORGZBVRG>

⁶<https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-14-v2.1.0.pdf>

⁷http://cdm.unfccc.int/Reference/Procedures/methAR_proc03.pdf

⁸http://cdm.unfccc.int/EB/044/eb44_repan16.pdf

⁹<http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-08-v4.0.0.pdf>

¹⁰<http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-15-v1.pdf>

¹¹http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid17.pdf

¹²<http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-03-v2.1.0.pdf>

¹³<https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-18-v1.0.1.pdf>

A.5. Crediting period type and duration

Type : Renewable Crediting Period (20 years)
 Length of first crediting period : 01/01/2012 to 31/12/2031

SECTION B. Implementation of project activity**B.1. Description of implemented project activity**

The starting date of operation of the project activity was 01/01/2012. The plantation activities were carried out in three subsequent phases i.e. the first phase was in the year 2012, second phase was in the year 2013 and the final phase was carried out in the year 2014. Plantation activities were carried out in Gauraiya Kala, Mudpela, Baddiha, Khakra Dabar, Sukath, Dari, Unchdiha, Gaderiya, Sikikala, Lakhnauti and Madanpur villages of Allahabad Forest Division of Uttar Pradesh.

The selected area under the project activity was degraded and abandoned and the terrain consisted of rocky escarpments in many JFMCs of the Allahabad Division for past many decades¹⁴.

Species planted under the project were selected based on the priority given by the local people and their suitability to the local climatic. Thirty six (36) 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 vegetation cover to grow for soil and moisture conservation. In Plantation cum Stand Improvement model, total 400 plants per hectare were planted covering 100 pits and 100 trenches. While in Block plantation model, around 888 per hectare plants were planted covering 200 trenches and 288 pits. The size of each pit is 0.45m*0.45m*0.45m and trench is 3m in length x 0.6m in width x 0.45 m in depth in both the plantation models. Three saplings of tree species were planted in each trench and seeds of fodder grasses are sown and grass tufts are also planted along the boundary of each trench in order to stabilize the forest floor and contribute to fodder production as well. Besides, high quality seeds, scientific establishment of nurseries, standard silvicultural operations and avoiding chemical fertilizers were practiced during the preparation of quality saplings.

It should be noted that some of the slow growing species are not accounted for GHG removal calculations as they haven't attained the required size (10 cm girth and 2 m height), however the same will be monitored for next verification.

The following activities were carried out in the project:

Seed collection

High quality seeds of various tree species are collected from the best plantation sources available within the Allahabad 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 (CPT) identified by the Forest Department.

Nursery technology

¹⁴From PRA report

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 were 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 were 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 zone¹⁵.

The main species that were planted in the project with its economic benefits are presented in the table below:

Botanical Name	Common Name	Family	Uses
<i>Acacia auriculiformis</i>	Australian Kikkar	Fabaceae	Leaves paste used on boils.
<i>Acacia catechu</i>	Khair	Fabaceae	Bark decoction is used in stomach ache. Also used in chronic diarrhoea. The bark is used to prepare tannin and dyes.
<i>Acacia sp</i>	Gujrati Khair	Fabaceae	Bark decoction is used in stomach ache. Also used in chronic diarrhoea. The bark is used to prepare tannin and dyes.
<i>Aegle marmelos</i>	Bael	Rutaceae	Leaf juice is 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.
<i>Ailanthus excelsa</i>	Aru	Simaroubaceae	Powdered bark is used to treat intestinal tapeworm, constipation, stomach troubles and dysentery. Root bark is administered to cure epilepsy, heart troubles and asthma.
<i>Azadirachta indica</i>	Neem	Meliaceae	Medicinal properties that prove to be anti helminthic, antifungal. 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.
<i>Bombax ceiba</i>	Semal	Bombacaceae	The root used in the treatment of diarrhoea, dysentery, menorrhagia, styptic and for wounds.

¹⁵PRA report, FGD, page 61

Botanical Name	Common Name	Family	Uses
<i>Butea monosperma</i>	Palash	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.
<i>Cassia fistula</i>	Amaltas	Fabaceae	Pods used in pneumonia and in high fever.
<i>Acacia mangium</i>	Mangium	Fabaceae	Used for furniture, doors and window frames. Also used for making export orientated parquet flooring tiles and artefacts
<i>Cassia siamea</i>	Sameia	Fabaceae	Plant has medicinal value and it contains a compound named Barakol. The leaves, tender pods and seeds are edible
<i>Cordia dichotoma</i>	Lisoda	Boraginaceae	Fruit expectorant, demulcent, astringent, useful in bronchial affections and in irritation of urinary passages.
<i>Dalbergia sissoo</i>	Sisham	Fabaceae	Decoction of leaves useful in gonorrhoea, roots astringent.
<i>Eucalyptus hybrid</i>	Eucalyptus	Myrtaceae	Oil is used as insecticide. Used for making paper.
<i>Haplophragma adenophyllum</i>	Kat sagon	Euphorbiaceae	The wood is used for fishing roots
<i>Holoptelea integrifolia</i>	Chilbil	Ulmaceae	The bruised leaves are applied to boils. Juice of boiled bark is applied to rheumatic swellings.
<i>Madhuca indica</i>	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.
<i>Mangifera indica</i>	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 ophthalmia and eruptions.
<i>Pithecellobium dulce</i>	Jangle jalebi	Fabaceae	Bark is used as febrifuge, decoction is given in enema. Aril is edible.
<i>Pongamia pinnata</i>	Kanji	Fabaceae	Juice is used to treat diarrhoea, cough, dyspepsia and leprosy. The oil from seeds is used in making soap.
<i>Tamarindus indica</i>	Imli	Fabaceae	The leaves are applied to reduce inflammatory swellings and ringworm. The seeds are astringent and aphrodisiac.
<i>Terminalia arjuna</i>	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.

Botanical Name	Common Name	Family	Uses
<i>Ziziphus mauritiana</i>	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.

Apart from the above main species the following *Acacia leucophloea*, *Acacia nilotica*, *Albizia amara*, *Albizia procera*, *Diospyros melanoxylon*, *Hardwickia binata*, *Melia azedarach*, *Phyllanthus emblica*, *Tectona grandis*, *Zizyphus xylopyrus*, *Flacourtia indica*, *Streblus asper* and *Holarrhena antidysenterica* were also planted in the project area.

However the following 26 species *Acacia catechu*, *Acacia leucophloea*, *Acacia mangium*, *Acacia nilotica*, *Ailanthus excelsa*, *Albizia amara*, *Albizia procera*, *Azadirachta indica*, *Butea monosperma*, *Cassia fistula*, *Cassia siamea*, *Cordia dichotoma*, *Dalbergia sissoo*, *Diospyros melanoxylon*, *Flacourtia indica*, *Haplophragma adenophyllum*, *Hardwickia binata*, *Holarrhena antidysenterica*, *Holoptelea integrifolia*, *Melia azedarach*, *Phyllanthus emblica*, *Pithecellobium dulce*, *Pongamia pinnata*, *Streblus asper*, *Tectona grandis* and *Ziziphus xylopyrus* were included in the CER sheets for calculation in this monitoring period, as other species were not upto the measurable growth (that is less than 2m height and 10 cm GBH). During the next verification those trees will be accounted once it is taller than 2 m height and 10 cm GBH.

Site preparation

The land was prepared for planting by removing root stocks, bushes etc. and ploughed with mould board plough. This site preparation under the project activity was done mainly through bullock ploughing hence the soil damage is less and it ensured that there were no long term emissions from soil carbon. Ploughing was done one month before plantation.

Weeding

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

Silviculture operation

Silvicultural operations like weeding especially nearby the trees in the initial years, hoeing, pruning etc., were carried out using standard forestry techniques recommended by the State Forest Department. These activities were 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 the registered monitoring plan, applied methodologies or standardized baselines

It was proposed to have the first monitoring for the monitoring parameters A_i , DBH, and height at every 5 years interval from the start date of the project activity. The first verification was planned in 2017 but instead it was done in May - June, 2016 due to the following reasons :

- The month of January-February was supposed to have good harvest because of favourable climate/ rainfall in 2015-2016 (when compared to 2012-2013 and 2013-2014, are being the drought years). So, the communities were expected to take part in agricultural activities like harvesting in the Kharif season and sowing in the Rabi season. <http://www.imd.gov.in/Welcome%20To%20IMD/Welcome.php> (year wise rainfall data statistics)
- Apart from that, the fog in the winter season in the months of January- February is a hindrance in visibility, also during these months there is short duration of sunlight/ day length to have proper monitoring. Whereas, during summers, days are longer and have clear visibility. Therefore, PP chose to have verification in mid of May to June .

However during next verification which is supposed to be done in 2022 will also be conducted in the month of May-June because of the same reason i.e. day length and clear visibility.

B.2.2. Corrections

- The following species are as follows:

Spelling in the PDD	Corrected Spelling (used in MR)	Page Number in PDD
<i>Cassia mangium</i>	<i>Acacia mangium</i>	Page 16
<i>Dalbergia sisso</i>	<i>Dalbergia sissoo</i>	Page 16 , 43
<i>Acacia leucophlaea</i>	<i>Acacia leucophloea</i>	Page 42 , 43
<i>Prosopis Juliflora</i>	<i>Prosopis juliflora</i>	Page 42
<i>Pithecolobium dulce</i>	<i>Pithecellobium dulce</i>	Page 42
<i>Embilica officinalis</i>	<i>Emblica officinalis</i>	Page 42
Aonla (local name)	Kat sagon (local name)	Page 17

- The notation B_{Tree} mentioned in section B.8.2, page number 53 in the PDD is a typographical error. The correct notation to represent the number of baseline trees is $N_{BSL\ Trees}$. The correction is applied during the verification and now it is used in the MR consistently (Section D.2, Page number 30).

B.2.3. Changes to the start date of the crediting period

Not Applicable

B.2.4. Inclusion of monitoring plan

Detailed Monitoring plan has been described in the registered PDD.

B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools

The following changes / addition to the monitoring plan is included in the proposed A/R CDM Project activity.

- The tree height is not measured using ravi altimeter. Because most of the trees are around 5m (anticipated growth not present). So for this monitoring period the tree heights are measured using graduated poles. Also the project participants plan to use the graduated poles for the trees upto 7m height even for the next verifications. The trees with more than 7m height will be measured using ravi altimeter or any other sophisticated accurate measuring instrument as per the best forest practices available at the time of monitoring. The conservative value of the tree height is used for example if the tree height is 4.8 m, it is rounded down to 4.5 m and if it is 4.4 or 4.1, it is rounded to 4m (nearest 0.5 m) for the usage in volume equations.
- The PP to estimate the shrub biomass have to monitor the shrub crown cover. However during the time of registration the PP didn't include the same under monitoring parameters. Now the the shrub crown cover CC_{SHRUBi} as a proposed change is included under the monitoring parameters as per the A/R tool 14. The Calculations will be based on equation 26 and 27 of the tool and the same is presented in section E.2 of this monitoring report, and the default values are taken as per the tool and the parameters like BDR_{SF} and b_{forest} are taken as fixed parameters in the registered PDD.

B.2.6. Changes to project design

The following are changes are made from the registered PDD specific to A/R CDM project activities. The Volume equations of the following species in the below table are changed from the one in the registered PDD as the volume is not proportional to the GBH. Even though the equations in the registered PDD were taken from the Indian State of Forest Report, 2011 and Forest Survey of India-Volume Equations for forests of India, Nepal and Bhutan (1996),(national forestry inventory) book, those equations considered in the registered PDD are applicable for trees with more DBH. When applying the volume equations as per the registered PDD it is not showing any linear correlation for volume and diameter, so the change was required.

S.	Species name	Old Formula	New Formula
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No.			
1	<i>Butea monosperma</i>	$(2.95525 \cdot D - 0.24276)^2$	$0.00855 + 0.4432 \cdot D^2 + 0.28813 \cdot D^2 \cdot H$
2	<i>Acacia leucophloea</i>	$(-0.00142 + 2.61911 \cdot D - 0.54703 \cdot D^{1/2})^2$	$0.00855 + 0.4432 \cdot D^2 + 0.28813 \cdot D^2 \cdot H$
3	<i>Cassia siamea</i>	$0.05159 - 0.53331D + 3.46016 D^2 + 10.18473 D^3$	$0.00855 + 0.4432 \cdot D^2 + 0.28813 \cdot D^2 \cdot H$
4	<i>Tectona grandis</i>	$0.006 + 2.661999 \cdot D^2 + 0.280538 \cdot D^2 \cdot H$	$0.006 + 2.661999 \cdot D^2 + 0.280538 \cdot D^2 \cdot H$
5	<i>Acacia catechu</i>	$0.00855 + 0.4432 \cdot D^2 + 0.28813 \cdot D^2 \cdot H$	$(0.00817/(D^2 \cdot H) + 0.29886) \cdot D^2 \cdot H$
6	<i>Butea monosperma</i>	$(2.95525 \cdot D - 0.24276)^2$	$0.00855 + 0.4432 \cdot D^2 + 0.28813 \cdot D^2 \cdot H$
7	<i>Acacia catechu</i>	$0.00855 + 0.4432 \cdot D^2 + 0.28813 \cdot D^2 \cdot H$	$(0.00817/(D^2 \cdot H) + 0.29886) \cdot D^2 \cdot H$
8	<i>Diospyros melanoxylon</i>	$0.00855 + 0.4432 \cdot D^2 + 0.28813 \cdot D^2 \cdot H$	$0.042 + 0.246 \cdot D^2 \cdot H$

As per the registered PDD the following main species – *Azadirachta indica*, *Haplophragma adenophyllum*, *Aegle marmelos*, *Madhuca indica*, *Tamarindus indica*, *Pongamia pinnata*, *Holoptelea integrifolia*, *Acacia sp*, *Acacia mangium*, *Acacia auriculiformis*, *Eucalyptus hybrid*, *Cassia siamea*, *Butea monosperma*, *Dalbergia sissoo*, *Acacia catechu*, *Pithecellobium dulce*, *Ziziphus mauritiana*, *Cordia dichotoma*, *Bombax ceiba*, *Ailanthus excelsa*, *Terminalia arjuna*, *Mangifera indica* and *Cassia fistula*) were planted because of more economic value and rest of the species (*Acacia leucophloea*, *Acacia nilotica*, *Albizia amara*, *Albizia procera*, *Diospyros melanoxylon*, *Flacourtia indica*, *Hardwickia binata*, *Holarrhena antidysenterica*, *Melia azedarach*, *Phyllanthus emblica*, *Streblus asper*, *Tectona grandis*, and *Ziziphus xylopyrus*,) were also planted and not listed in the PDD because of the exhaustive list. Also, the wood densities of the species are made in line with FAO data (<http://www.fao.org/docrep/w4095e/w4095e0c.htm>) for those species where wood densities are not available, the default value of 0.67 is taken as per the registered PDD. So, it will not alter the baseline or additionality of the project.

As per the methodology for ex post estimation, the volume table or volume equation used must be demonstrated to be appropriate for the purpose of estimation of tree biomass by applying the tool “Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities” as per the tool “Demonstrating appropriateness of volume equations for estimation of aboveground tree biomass in A/R CDM project activities” (Version 01.0.1).

A species-specific or group-of-species-specific volume table or volume equation derived from trees growing in edapho-climatic conditions similar to those in the project area is considered appropriate, and hence can be used for ex post estimation of tree stem volume, if at least one of the following conditions is satisfied:

- The equation is used in the National Forest Inventory, or the National GHG Inventory, of the host Party;
- The equation has been used in commercial forestry sector of the host Party for 10 years or more;

- c) The equation was derived from a data set of at least 30 sample trees, and the value of coefficient of determination (R^2) was not less than 0.85.

Volumetric equations for all the tree species which have been included in the PDD and also rest of species which are planted in the project but not exclusively mentioned in the registered PDD have been considered from Indian State of Forest Report, 2011 and Forest Survey of India-Volume Equations for forests of India, Nepal and Bhutan (1996), (National forestry inventory). It satisfies the above condition (a). Hence, it is appropriate.

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 Range Forest Officer (RFO), 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 ensured that the benefits accrue through this project will directly go to the communities through the DFO. The methodology applied in the project considered 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

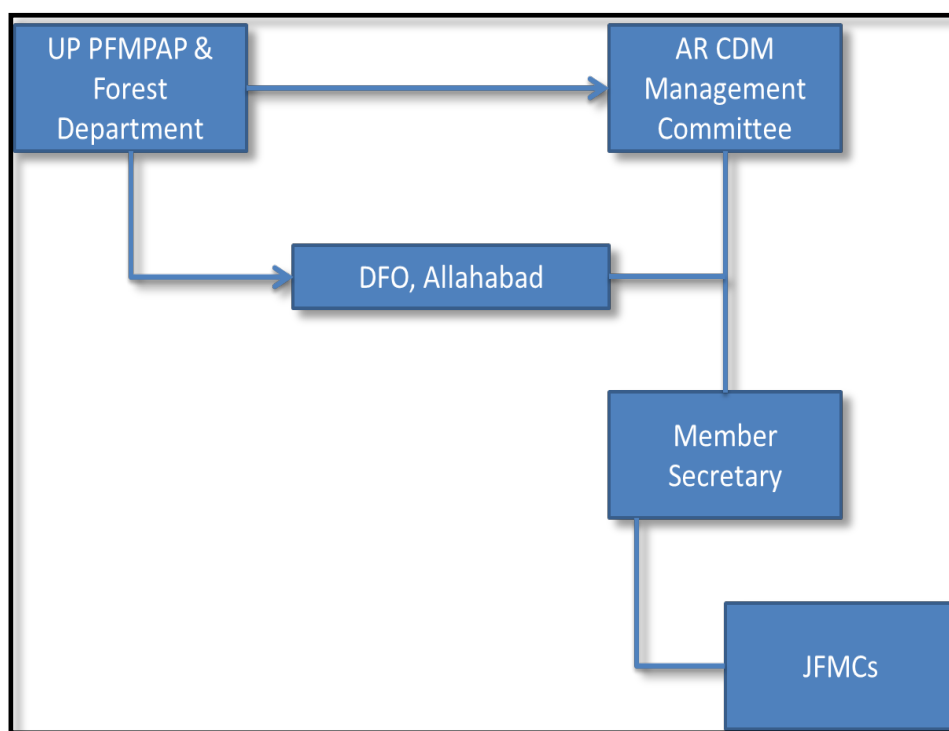


Figure 13: Management Structure

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 is archived in electronic and paper forms and the copies of all data shall be kept for 2 years beyond the crediting period.

	Sr.No	Sample Plot Number	Local Name	Species name	Height (M)	GBH (Cm)						
1												
2	1	Sample Plot 1	Khair	Acacia catechu	3	11						
3	2		Khair	Acacia catechu	3	12						
4	3		Khair	Acacia catechu	2.5	13						
5	4		Khair	Acacia catechu	2.5	10.5						
6	5		Khair	Acacia catechu	3	11						
7	6		Khair	Acacia catechu	2.5	12						
8	7		Khair	Acacia catechu	2	11						
9	8		Khair	Acacia catechu	2.5	11.5						
10	9		Khair	Acacia catechu	2.5	12						
11	10		Khair	Acacia catechu	2	12.5						
12	11		Khair	Acacia catechu	3	11						
13	12		Khair	Acacia catechu	2.5	10.5						
14	16		Khair	Acacia catechu	2	12.5						
15	20		Chilbil	Holoptelia integrifolia	2	10						
16	21		Chilbil	Holoptelia integrifolia	2	11						
17	24		Chilbil	Holoptelia integrifolia	2	12.5						
18	25	Sample Plot 2	Khair	Acacia catechu	3	11						
19	26		Khair	Acacia catechu	2.5	10.5						
20	27		Khair	Acacia catechu	2.5	11						
21	32		Khair	Acacia catechu	2	12.5						
22	33		Khair	Acacia catechu	2.5	13						
23	34		Khair	Acacia catechu	2.5	14						
24	35		Khair	Acacia catechu	2.5	12						
25	36		Khair	Acacia catechu	2	10						
26	37		Khair	Acacia catechu	2	11						
27	38		Khair	Acacia catechu	2.5	11.5						
28	39		Khair	Acacia catechu	2.5	12						
Parameter GPS Details Sukath Mudpela Kharkadabar Gaderiya Baddiha Dari Sikkala Gauraiyakala Unchdiha Madanpur												

Figure 14: 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 1.

Monitoring of leakages

During the monitoring, JFMC members from the project sites have affirmed that there was 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 was ensured by randomly checking some plots and by ocular measurement.
- (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 years 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 analysis. 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.
- d) The document will list all names of the field team and the project leader will certify that the team is 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 analysis excel sheets were used.

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 off-site 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 was 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

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 ¹⁶ . Default values of biomass expansion factors (BEFs).
Value(s) applied	3.4

¹⁶http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf

Data/Parameter	BEF_{2j}
Choice of data or measurement methods and procedures	<p>BEF_{2j} overbark default value for tropical climatic zone and broad leaf forest type has been chosen.</p> <p>Biomass of tree species in sample plots is calculated through the formulae mentioned in methodological tool i.e.</p> $B_{TREE,j,p,l,t} = V_{TREE,j,p,l,t} * D_j * BEF_{2j} * (1+R_j)$
Purpose of data/parameter	Calculation of carbon stocks and changes in carbon stock in the proposed small scale project activity.
Additional comments	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/parameter	Calculation of carbon stocks and changes in carbon stock
Additional comments	None

Data/Parameter	D_j																
Unit	t d.m. m ⁻³																
Description	Density Over bark 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 ¹⁷ and Global Wood Density Database ¹⁸																
Value(s) applied	<table border="1"> <thead> <tr> <th>Species</th><th>Wood density (tdm/m3)</th></tr> </thead> <tbody> <tr> <td><i>Acacia catechu</i></td><td>0.88</td></tr> <tr> <td><i>Azadirachta indica</i></td><td>0.69</td></tr> <tr> <td><i>Butea monosperma</i></td><td>0.48</td></tr> <tr> <td><i>Cassia fistula</i></td><td>0.71</td></tr> <tr> <td><i>Diospyros melanoxylon</i></td><td>0.68</td></tr> <tr> <td><i>Phyllanthus emblica</i></td><td>0.67</td></tr> <tr> <td><i>Tectona grandis</i></td><td>0.50</td></tr> </tbody> </table>	Species	Wood density (tdm/m3)	<i>Acacia catechu</i>	0.88	<i>Azadirachta indica</i>	0.69	<i>Butea monosperma</i>	0.48	<i>Cassia fistula</i>	0.71	<i>Diospyros melanoxylon</i>	0.68	<i>Phyllanthus emblica</i>	0.67	<i>Tectona grandis</i>	0.50
Species	Wood density (tdm/m3)																
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<i>Phyllanthus emblica</i>	0.67																
<i>Tectona grandis</i>	0.50																
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.																

¹⁷ <http://www.fao.org/docrep/w4095e/w4095e0c.htm>

¹⁸ 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	D_j
Purpose of data/parameter	Calculation of carbon stocks and changes in carbon stock
Additional comments	None

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 ¹⁹ .	
Value(s) applied		
	Scientific Name	Volume Equations
	<i>Acacia catechu</i>	$(0.00817/(D^2 \cdot H) + 0.29886) \cdot D^2 \cdot H$
	<i>Cassia fistula</i>	$0.066 + 0.287 \cdot D^2 \cdot H$
	<i>Cassia siamea</i>	$0.00855 + 0.4432 \cdot D^2 + 0.28813 \cdot D^2 \cdot H$
	<i>Dalbergia sissoo</i>	$(0.00331/D^2 + 0.000636) \cdot D^2$
	<i>Diospyros melanoxylon</i>	$0.042 + 0.246 \cdot D^2 \cdot H$
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: $0.00855 + 0.4432 \cdot D^2 + 0.28813 \cdot D^2 \cdot H$ ²⁰	
Purpose of data/parameter	Calculation of carbon stocks and changes in carbon stock	
Additional comments	The change in volume equations for some of the species for which the volume is not directly proportional to increase is changed. The same is mentioned in section B.1 of this MR.	

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 3A.1.8 ²¹ "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/parameter	Calculation of carbon stocks and changes in carbon stock
Additional comments	None

Data/Parameter	BDR_{SF}
Unit	Dimensionless

¹⁹ http://fsi.nic.in/details.php?pgID=sb_16 , Annex II

²⁰ FSI. (1996) Volume Equations For Forest of India, Nepal and Bhutan, Page No. 202

²¹ http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp3/Anx_3A_1_Data_Tables.pdf , page 3.168

Data/Parameter	BDR_{SF}
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/parameter	Calculation of baseline carbon stocks and changes in carbon stock
Additional comments	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 ²² .
Choice of data or measurement methods and procedures	As indicated in the methodology applied.
Purpose of data/parameter	Calculation of baseline carbon stocks and changes in carbon stock
Additional comments	None

Data/Parameter	R_{Shrub}
Unit	Dimensionless
Description	Root-shoot ratio appropriate for biomass stock, for shrub species
Source of data	Methodological tool “ <i>Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities Version 04.2</i> ”
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/parameter	Calculation of baseline carbon stocks and changes in carbon stock
Additional comments	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

²²Carbon Stock in India’s Forest Report, 2013, page 34, Table 4.6

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/parameter	Calculation of actual net GHG removals by sinks
Additional comments	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-CO ₂ 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/parameter	Calculation of actual net GHG removals by sinks
Additional comments	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/parameter	Calculation of carbon stocks and changes in carbon stock
Additional comments	None

D.2. Data and parameters monitored

Data/Parameter	A_i																										
Unit	Ha																										
Description	Area of stratum i																										
Measured/calculated/default	Measured																										
Source of data	Field survey																										
Value(s) of monitored parameter	<p>Area of stratum has been detailed in the Emission Reduction worksheets attached with this MR²³</p> <table border="1"> <thead> <tr> <th>Stratum i</th><th>A_i (Ha)</th></tr> </thead> <tbody> <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> </tbody> </table>	Stratum i	A_i (Ha)	Sukath	67.69	Mudpela	71.01	Kharka Dabar	67.19	Gaderiya	25.8	Baddiha	75.32	Dari	36.82	Sikikala	30.19	Gauraiya Kala	39.58	Unchdiha	31.82	Madanpur	52.08	Lakhnauti	9.13	Total (A)	506.63
Stratum i	A_i (Ha)																										
Sukath	67.69																										
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Madanpur	52.08																										
Lakhnauti	9.13																										
Total (A)	506.63																										
Monitoring equipment	<p>The area is determined based on the GPS measurements. Two Different GPS machines are used</p> <ol style="list-style-type: none"> 1. GRAMIN Make eTrex 2. GRAMIN Make GPSMAP 76CSx 																										
Measuring/reading/recording frequency	At the start of project and every five years i.e. 2012, 2017, 2022, 2027, and 2032. Measurement happened in 2012 at the start of the project for this monitoring.																										
Calculation method (if applicable)	This involves measurement of area of each discrete parcel of land. GPS measurements (i.e. position and co-ordinates) of all the plots were taken. GPS coordinates were measured with GPS machine. Measured Coordinates have been initially recorded in to field Survey Sheets by survey team which is later entered in to Excel sheets at the project office. Random field checking was carried out.																										
QA/QC procedures	<p>Random cross-checking of boundary measurements was carried out. In addition the measurements were also cross checked by comparing it with the validated figures, to see if the values are comparable.</p> <p>GPS machines used for the measurement are self calibrated with magnetic calibration system. The devices will be calibrated automatically once it is switched off and switched 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.</p> <p>Measurements and recording was done by trained personnel.</p>																										

²³Emission Reduction Worksheet has been provided to DOE

Data/Parameter	A_i
Purpose of data/parameter	Calculation of the actual net GHG removal by sinks as per the equation 13 and 14 of the applied AR Tool 14.
Additional comments	<p>Trainings to the field staff with regards to collection, compilation and uses of instruments is ensured before proceeding to data collection activity.</p> <p>The PRA (participatory rural appraisal) exercise conducted for the project activity at the starting of the project revealed that the area under the forest is dry deciduous and thus it is not under wet land category as the project was developed from degraded lands. The same is mentioned in section B,2 of the registered PDD. Hence the applicability as per the methodology paragraph 3 and 4 is satisfied. Also the land is under the control forest department and the same classification still exists as per the land records.</p>

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 with measuring tape
Measuring/reading/recording frequency	At the start of the project activity and every five years Dates of monitoring were from – 01 May 2016 to 06 June, 2016.
Calculation method (if applicable)	<p>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.</p> <p>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.</p> <p>From the Girth at breast height (GBH), DBH is calculated using the formula $DBH = GBH / (22/7)$</p>
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/parameter	To calculate the stem volume of trees within the sample plot, this is then used for estimating carbon sink. The same has been 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
Source of data	<i>Ex-post</i> 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 and Graduated pole.
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 Dates of monitoring were from – 01 May 2016 to 06 June, 2016.

Data/Parameter	<i>H</i>
Calculation method (if applicable)	This involved measurement of area of each discrete parcel of land. GPS measurements (i.e. position and co-ordinates) were taken of all the parcels of land in each strata. Area of each stratum was determined by using geographical boundaries of each site. The saved tracks were then being imported into the software installed in the Personal Computer.
QA/QC procedures	Standard operating procedures were made to ensure the correct and validating data collection for each of the monitoring parameters. Validation was done by randomly checking the sample plots and also using oculatory measurements
Purpose of data/parameter	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	<p>The Ravi altimeter was planned for use to measure the height of the trees. But the anticipated growth of trees were not there, the Project proponent used graduated poles to measure the tree height. The PP is planned to use the bamboo sticks for the height measurement in future for trees upto the height of 7m. The trees with more than 7m height will be measured using ravi altimeter or any other sophisticated accurate measuring instrument as per the best forest practices available at the time of monitoring, for having a conservative and correct estimate.</p> <p>As per SOP Ravi altimetre is used for trees with more than 5 metres height. Pole method is used and on conservative basis the height is rounded down to the multiple of 0.5 i.e., if the height is 4.7 m it has been taken to be 4.5 m and if the height is 4.4 m it will be taken as 4 m. Also for next verification the same approach will be used for smaller trees.</p>

Data/parameter:	N _{BSL TREES}		
Unit	Number/dimensionless		
Description	Number of Baseline Trees		
Measured/calculated/default	Measured at the time of validation, and will be done every five years from the start of the project activity.		
Source of data	Field monitoring within the sample plots laid at the time of registration.		
Value(s) of monitored parameter	Refer to the baseline sheet submitted at the time of Registration for the details		
	JFMC	No Sample plots at the time of registration	Number of baseline trees
	Sukath	4	0
	Mudpela	5	5
	Kharka Dabar	4	0
	Gaderiya	4	0
	Baddiha	6	0
	Dari	4	0
	Sikikala	4	0
	Gauraiya Kala	4	10
	Unchdiha	5	9
	Madanpur	6	4
	Lakhnauti	4	12

Monitoring equipment	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 Dates of monitoring were from – 01 May, 2016 to 06 June, 2016.
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/parameter	To monitor the baseline tree
Additional comments	During the time of validation itself the number of baseline trees is counted in the sample plots and the baseline tree biomass is deducted in the overall emission removals in the first year as a conservative approach. For the next monitoring the number of baseline trees will be monitored by counting the same in the sample plots. But the baseline tree biomass will not be added or included in the project tree biomass for emission removals estimation. This is only to ensure that the baseline trees are also protected in the project area.

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	10,132.6 (~10133)
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 = 101323
QA/QC procedures	NA
Purpose of data/parameter	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 at each verification
Source of data	Calculated value (Refer calculation in CER Sheets)

Data/Parameter:	w_i																								
Value(s) of monitored parameter	<table> <tr> <th>Stratum i</th><th>Wi</th></tr> <tr><td>Sukath</td><td>0.13</td></tr> <tr><td>Mudpela</td><td>0.14</td></tr> <tr><td>Kharka Dabar</td><td>0.13</td></tr> <tr><td>Gaderiya</td><td>0.05</td></tr> <tr><td>Baddiha</td><td>0.15</td></tr> <tr><td>Dari</td><td>0.07</td></tr> <tr><td>Sikikala</td><td>0.06</td></tr> <tr><td>Gauraiya Kala</td><td>0.08</td></tr> <tr><td>Unchdiha</td><td>0.06</td></tr> <tr><td>Madanpur</td><td>0.10</td></tr> <tr><td>Lakhnauti</td><td>0.02</td></tr> </table>	Stratum i	Wi	Sukath	0.13	Mudpela	0.14	Kharka Dabar	0.13	Gaderiya	0.05	Baddiha	0.15	Dari	0.07	Sikikala	0.06	Gauraiya Kala	0.08	Unchdiha	0.06	Madanpur	0.10	Lakhnauti	0.02
Stratum i	Wi																								
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Unchdiha	0.06																								
Madanpur	0.10																								
Lakhnauti	0.02																								
Monitoring equipment	NA																								
Measuring/reading/recording frequency	Calculated 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/parameter	Calculation of actual net GHG removals by sinks																								
Additional comments	None																								

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	Calculated based on the verification data at each verification refer CER sheets																								
Value(s) of monitored parameter	<table> <tr> <th>Stratum name</th><th>Si^2</th></tr> <tr><td>Sukath</td><td>4.75</td></tr> <tr><td>Mudpela</td><td>15.33</td></tr> <tr><td>Kharka Dabar</td><td>19.08</td></tr> <tr><td>Gaderiya</td><td>25.28</td></tr> <tr><td>Baddiha</td><td>4.72</td></tr> <tr><td>Dari</td><td>21.12</td></tr> <tr><td>Sikikala</td><td>26.76</td></tr> <tr><td>Gauraiya Kala</td><td>25.10</td></tr> <tr><td>Unchdiha</td><td>2.62</td></tr> <tr><td>Madanpur</td><td>5.66</td></tr> <tr><td>Lakhnauti</td><td>98.96</td></tr> </table>	Stratum name	Si^2	Sukath	4.75	Mudpela	15.33	Kharka Dabar	19.08	Gaderiya	25.28	Baddiha	4.72	Dari	21.12	Sikikala	26.76	Gauraiya Kala	25.10	Unchdiha	2.62	Madanpur	5.66	Lakhnauti	98.96
Stratum name	Si^2																								
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Unchdiha	2.62																								
Madanpur	5.66																								
Lakhnauti	98.96																								
Monitoring equipment	NA																								
Measuring/reading/recording frequency	Measured at each verification event																								
Calculation method (if applicable)	NA																								

Data/Parameter	s_i^2
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/parameter	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

Data/Parameter	$CC_{SHRUB,i}$
Unit	Dimensionless
Description	Crown cover of shrubs in shrub biomass stratum i
Measured/calculated/default	Field measurement
Source of data	Field Measurement
Value(s) of monitored parameter	0
Monitoring equipment	NA
Measuring/reading/recording frequency	Measured at each verification events
Calculation method (if applicable)	N/A
QA/QC procedures	Considering that shrub biomass is lesser than tree biomass, simplified method of measurement of shrub crown cover through ocular method is used as per procedures prescribed under national forest inventory for calculating shrub biomass.
Purpose of data/parameter	To estimate the Shrub Biomass in the project Area.
Additional comments	This monitoring the Crown Cover of Shrub biomass is very insignificant, so the crown cover is considered as zero. However for next verification the same will be included.

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. Stratified Random sampling was adopted based on the wi value to lay the sample plots. Grains of rice were spread randomly on the map of the JFMC A/R CDM area and wherever the grains fell, that area was taken as sample plot. For example, in case of Sukath the number of plots to be laid were eleven. For year 2012 the number of sample plots were 5, therefore, five rice grains were randomly spread over the map of parcel of Sukath (for first phase) and wherever those rice grains fell, there the sample plot centre point was taken and the sample plot was laid. For the year 2013, number of sample plots to be laid were 6 and therefore, six rice grains were spread over the map of the parcel land. Likewise for all JFMCs the sample plot was laid. The plots were rectangular and of the size 25 mx20 m, if the grains fall outside the map, the exercise was repeated. The point of grain will be centre point taken for rectangular sample plot. Also care is taken that the sample plot will be at least 7.5 meters away from the boundary of the JFMC as per the SOP. The post-stratification map was to 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 were considered in the post stratification:

Catastrophic disturbances such as fire, pest, or disease outbreaks were taken into account.

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

But however no stratification is required as the above factors were not there during the monitoring period.

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 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.)²⁴

The sampling design and the calculation of sample plots for the verification is based on the approach described in the registered PDD.

Sampling Frame

To measure and monitor the changes in carbon stocks of above ground biomass, permanent sampling plots were laid out. The sample plots were laid out with the help of the geo coordinates taken through the GPS. All the plots were duly numbered and geo-referenced within the project area. Number of sample plots as

²⁴<http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-03-v2.1.0.pdf>

estimated through tool “Calculation of the number of sample plots for measurements within AR CDM project activities; (Version 02.1.0.)” is 40 for monitoring the continuous changes in carbon stocks over a period of time.

Sample Size

The number of plots were established depending number of strata 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).
- 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	=	10133
tval ∞	=	1.645

The required sample plots for each JFMC is taken from registered PDD for the first verification is shown from the below table.

Stratum	Stratum area	Wi	Si	ni
Sukath	67.69	0.133608	0	4
Mudpela	71.01	0.140161	0.454542	5
Kharka Dabar	67.19	0.132621	0	4
Gaderiya	25.8	0.050925	0	4
Baddiha	75.32	0.148669	0	6
Dari	36.82	0.072676	0	4
Sikikala	30.19	0.05959	0	4
Gauraiya Kala	39.58	0.078124	2.828004	4
Unchdiha	31.82	0.062807	1.072004	5
Madanpur	52.08	0.102797	0.411759	6
Lakhnauti	9.13	0.018021	0.903927	4
Total	506.63			50

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**

However the sample size are increased to accommodate more samples to proportionately take the sample plots as per the year of plantation. The sample plots are given in the excel sheets.

S.No.	Name of the JFMC	No of Sample Plots
1	Sukath	11
2	Mudpela	12
3	Kharka Dabar	11
4	Gaderiya	5
5	Baddiha	12
6	Dari	7
7	Sikikala	6
8	Gauraiya Kala	7
9	Unchdiha	6
10	Madanpur	9
11	Lakhnauti	2
	Total	88

SECTION E. Calculation of emission reductions or net anthropogenic removals

E.1. Calculation of baseline emissions or baseline net removals

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 trees were not harvested or removed during the 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 do not 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 pre-project scenario from the first year actual net GHG removals by sinks.

Verification Period	Baseline Emissions
01/01/2012 to 06/06/2016	1085 tCO ₂ e

E.2. Calculation of project emissions or actual net removals

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-CO₂ 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-CO₂ 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.

$$\text{Hence, } GHG_{E,t} = 0$$

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 CO ₂ -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 CO ₂ -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 CO ₂ -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; tCO₂-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

$$C_{TREE_{PROJ},t} = \frac{44}{12} \times CF_{TREE_{PROJ},t} \times B_{TREE_{PROJ},t}$$

$CF_{TREE_{PROJ},t}$ 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 of more 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:

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

For calculating the B Tree value, the height (H) and Girth at breast height (GBH) of the trees were measured. GBH was then converted into DBH by using the formula

DBH = GBH/ (22/7) (All the values were in metre)

The appropriate volume equations were used to calculate the stem volume of each tree using the height and DBH of the trees. The stem volume equations were derived from Indian State of Forest Report, 2011 and Forest Survey of India-Volume Equations for forests of India, Nepal and Bhutan (1996). Using the stem volume of each tree the $B_{(TREE,i)}$ value for each tree was calculated using the formula:

$B_{(TREE,i)} = \text{Stem volume} \times \text{Density} \times \text{BEF} \times \{1 + \text{Root shoot ratio}(\text{Above ground Biomass} : \text{Below ground Biomass})\}$

Further, the $B_{(TREE,i)}$ value of each tree in a sample plot were added and divided by the sample plot area (0.05 Ha) to calculate the $b_{TREE,p,i}$ value. Similarly the $b_{TREE,p,i}$ value were calculated for all the sample plots of the particular JFMC and were summed up to calculate the biomass value of the total area which was then added to the shrub biomass.

S. No.	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/m3)	CTREE (t CO2e)
1	Sukath	67.69	0.13	11.51	1.5380	11.7312	5943.41	0.47	10242.48
2	Mudpela	71.01	0.14	14.78	2.0711				

3	Kharka Dabar	67.19	0.13	9.26	1.2274				
4	Gaderiya	25.8	0.05	12.78	0.6510				
5	Baddiha	75.32	0.15	6.09	0.9048				
6	Dari	36.82	0.07	14.52	1.0551				
7	Sikikala	30.19	0.06	16.22	0.9663				
8	Gauraiya Kala	39.58	0.08	14.75	1.1526				
9	Unchdiha	31.82	0.06	12.07	0.7581				
10	Madanpur	52.08	0.10	10.27	1.0556				
11	Lakhnauti	9.13	0.02	19.46	0.3507				
	Total (A)	506.63							

The Shrub biomass calculation is presented below, as per the equation 26 and 27 of the AR tool 14.

The equation 26 is

$$C_{\text{SHRUB}, t} = 44/12 \times CF_S \times (1+R_s) \times \sum (A_{\text{SHRUB}, i} \times b_{\text{SHRUB}, i})$$

$$b_{\text{SHRUB}, i} = BDR_{\text{SF}} \times b_{\text{FOREST}} \times CC_{\text{SHRUB}, i}$$

where

$C_{\text{SHRUB}, t}$ = Carbon stock in shrubs within the project boundary at a given point of time in year t ; tCO₂-e

CF_S = Carbon fraction of shrub biomass; t C (t.d.m.)⁻¹

A default value of 0.47 is used unless transparent and verifiable information can be provided to justify a different value.

R_s = Root-shoot ratio for shrubs; dimensionless.

The default value of 0.40 is used unless transparent and verifiable information can be provided to justify a different value.

$A_{\text{SHRUB}, i}$ = Area of shrub biomass estimation stratum i ; ha

$b_{\text{SHRUB}, i}$ = Shrub biomass per hectare in shrub biomass estimation stratum i ; t d.m. ha⁻¹

BDR_{SF} = Ratio of shrub biomass per hectare in land having a shrub crown cover of 1.0 (i.e. 100 per cent) and the default above-ground biomass content per hectare in forest in the region/country where the A/R CDM project activity is located; dimensionless.

A default value of 0.10 should be used unless transparent and verifiable information can be provided to justify a different value.

b_{FOREST} = Above-ground biomass content in forest in the region/country where the A/R CDM project activity is located; t d.m. ha⁻¹. Above Ground Biomass of the stratum is used.

$CC_{SHRUB, i}$ = Crown cover of shrubs in shrub biomass estimation stratum i at the time of estimation, expressed as a fraction (e.g. 10 per cent crown cover implies $CC_{SHRUB, i} = 0.10$); dimensionless

However the Crown cover shrub biomass estimated was very insignificant and the PP did not consider the shrub biomass for this verification but the same will be estimated by monitoring the crown cover of shrubs for the next verification.

So the monitored parameter $CC_{SHRUB, i}$ is taken as 0 and accordingly shrub biomass is also taken as zero. .

Thus

$$\begin{aligned}\Delta C_{ACTUAL, t} &= \Delta C_{TREE_{PROJ}, t} + \Delta C_{SHRUB_{PROJ}, t} \\ &= 10,242 + 0 = 10,242\end{aligned}$$

Also the uncertainty is calculated is as per AR tool 14 and it is 5.728% (refer to the CER calculation). “uncertainty and shrub biomass* sheet). Hence discount factors are not applied.

E.3. Calculation of leakage emissions

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. Calculation of emission reductions or net anthropogenic removals

As per §22 of the methodology, the net anthropogenic GHG removals by the sinks are 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 ; tCO₂-e
 $\Delta C_{BSL,t}$ Baseline net GHG removals by sinks, in year t ; tCO₂-e
 LK_t GHG emissions due to leakage, in year t ; tCO₂-e

	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG Emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (tCO ₂ e)		
				Before 31/12/2012	From 01/01/2013	Total amount
Total	1,085	10, 242	0	0	9,157	9,157

E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD

Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante (t CO ₂ e)
9,157 (tCO₂e)	10,259 (tCO₂e)

E.6. Remarks on increase in achieved emission reductions

For A/R CDM project activities this section is not applicable as per the MR filling guidelines.

Appendix 1. 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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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

1.1. JFMC	1.2. Longitude	1.3. Latitude	1.4. Project Area (ha)	1.5. 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		

1.1. JFMC	1.2. Longitude	1.3. Latitude	1.4. Project Area (ha)	1.5. 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

1.6. JFMC	1.7. Longitude	1.8. Latitude	1.9. Project Area (ha)	1.10. 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		
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		

1.6. JFMC	1.7. Longitude	1.8. Latitude	1.9. Project Area (ha)	1.10. Year
Sukath	82.064152	25.139088		

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

1.11. JFMC	1.12. Longitude	1.13. Latitude	1.14. Project Area (ha)	1.15. 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		
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		

1.11. JFMC	1.12. Longitude	1.13. Latitude	1.14. Project Area (ha)	1.15. Year
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		
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

1.16. JFMC	Longitude	1.17. Latitude	1.18. Project Area (ha)	1.19. 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		

1.16. JFMC	Longitude	1.17. Latitude	1.18. Project Area (ha)	1.19. Year
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		
Unchdiha	82.249974	25.056994		
Unchdiha	82.249927	25.057205		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Gaderiya	81.871734	25.133877		
Gaderiya	81.871338	25.13360		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
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		

JFMC	Longitude	Latitude	Project Area (ha)	Year
Madanpur	81.616496	25.232317		
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		
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		

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

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
06.0	7 June 2017	Revision to: <ul style="list-style-type: none"> Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); Make editorial improvements.
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> 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.

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • 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 <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • 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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