MONITORING REPORT FORM (F-CDM-MR)
Version 02.0

MONITORING REPORT

Title of the project activity	Assisted Natural Regeneration of Degraded Lands in Albania
Reference number of the project activity	2714
Version number of the monitoring report	Version number 1
Completion date of the monitoring report	30/June/2012
Registration date of the project activity	02/January/2010
Monitoring period number and duration of this monitoring period	Monitoring period 1 and dates (20/12/2004 - 30/06/2012)
Project participant(s)	Republic of Albania: Ministry of Environment, Forests and Water Administration, a public entity of the Republic of Albania Republic of Italy: International Bank for Reconstruction and Development as Trustee of the BioCarbon Fund
Host Party(ies)	Republic of Albania:
Sectoral scope(s) and applied methodology(ies)	Afforestation and Reforestation sectoral scope # 14. Methodology ARAM0003 Version 04
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	175,993.67 from 2005 to 2012
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	**178,598.30**

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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Land degradation has been identified as a major natural resource management issue in Albania. Degraded land is subject to uncontrolled anthropogenic pressure in terms of fuelwood collection and grazing. Furthermore, the loss of vegetative cover leads to soil erosion and loss of productivity..

The project activity consists in the reforestation of degraded lands, by assisting the natural regeneration of vegetation on degraded lands with the objective to reduce soil degradation, conserve biodiversity and enable GHG emission reduction.

The project supports a participatory approach to the selection of sites, and implementation of the interventions needed to promote the regeneration of degraded forests.

The assisted natural regeneration project was registered with the objective of restoring the vegetative on degraded lands distributed in 24 poorest communes over five regions of the country.

Project interventions include: (a) protection from grazing to promote natural regeneration; (b) supplemental planting to enrich species diversity and to stabilize highly eroded areas, and (c) silvicultural works (vegetative cutting to promote growth such as coppicing, cleaning and thinning).

The activities implemented under the assisted natural regeneration fall under the reforestation definition of the Marrakesh Accords.

Considering the threats to regeneration, the key to establishing regeneration is through protection and supplemental planting activities implemented with the community involvement. The meetings with communes and preparation of contracts for protection of land parcels were the real actions that initiated the protection activities at the commune level. After initiating consultations, meetings, and contractual arrangements, the project started on December 20, 2004.

Out of the project area of 6,272.36 registered under the project, 915 ha was excluded from the project area as it was found to be unsuitable for implementing the project. In addition, out of the suitable area (5,357.36 ha), the project was implemented on 3,990.55 ha during the five year period. The project was not yet implemented on the remaining area of 1,366.81.

A.2. Location of project activity

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The project sites are spread over five regions of Albania (Diber, Elbasan, Kukes, Korce, Shkoder). The project boundaries are geographically delineated and represented on the forestry management/ topographic plans. The project consists of discrete areas that have unique geographical identification and boundaries. The data on the discrete areas included in the project are presented in a database attached to this monitoring report.

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Republic of Albania	Ministry of Environment, Forests and Water Administration, a public entity of the Republic of Albania	No
Republic of Italy	International Bank for Reconstruction and Development as Trustee of the BioCarbon Fund	Yes
…	…	

A.4. Reference of applied methodology

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Approved Afforestation and reforestation baseline and monitoring methodology AR-AM0003 "Afforestation and reforestation of degraded land through tree planting, assisted natural regeneration and control of animal grazing – Version 4"

A.5. Crediting period of project activity

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20 years (20yr-00mm) crediting period, renewable twice for a total crediting period of 60 years of the
project period.

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

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The interventions promote natural regeneration under the project; protect the project sites from grazing pressure; support silvicultural activities that enhance biomass productivity through:

a. Protection from grazing and facilitation of natural regeneration through physical and social fencing measures;
b. Supplemental planting at 200-500 (in some cases more) seedlings per ha to enrich species diversity;
c. Silvicultural measures to enhance biomass density.

a. Protection from grazing and facilitation of natural regeneration

To protect the sites from grazing and to facilitate natural regeneration, vegetative fences based on the material from pruning, and thinning have been promoted. In situations that do not require physical fencing, agreements made between the project entity and the village communities under the project serve as social fencing and protective function.

b. Supplementary planting

The forest species proposed for planting are determined as per the site and productive/protective scope of the plantation, and are native and naturalized broadleaf. The supplementary planting is aimed to enrich the species composition, increase the project benefits (and to vegetate barren areas.

There are twenty private and state nurseries that produce tree seedlings for local needs within the vicinity of the project, which supply seedlings for implementing planting activities (see Table 1 below). The nurseries are sufficient for the production of seedlings and the nursery operators have the relevant skills for seedling production.

Table 1 - Distribution of nurseries in the project area

No	Region	District	Commune or Municipality	Area (m²)		Main production
				Private	State	
1	DIBER	BULQIZË	Zerqan	1,000		Forest seedlings
2			Bulqize	1,000		Forest seedlings
3		DIBËR	Kastriot	3,100		Fruit & Forest seedlings
4			Muhurr	1,200		Fruit & Forest seedlings
5			Tomin	600		Fruit & Forest seedlings
6		MAT	Lis	300		Fruit & Forest seedlings
7	ELBASAN	ELBASAN	Elbasan		20,000	Forest & Ornamental seedlings
8			Shirgjan	1,000		Forest & Ornamental seedlings
9			Gjinar	1,000		Forest seedlings
10		GRAMSH	Kukur	6,000		Forest seedlings
11		LIBRAZHD	L-Qendër	3,027		Forest seedlings
12	FIER	FIER	Qendër	20,000		Forest & Ornamental seedlings
13	KORCE	DEVOLL	Progër		50,000	Black pine, Black locust, etc.
14		KOLONJË	Ersekë	1,000		Ornamental seedlings
15		KORCE	Korçë	1,500		Forest seedlings
16			Mollaj	5,000		Forest & Ornamental seedlings
17	KUKES	KUKES	Novoseje	2,000		Forest seedlings
18		HAS	Krumë		1,200	Ornamental seedlings
19	LEZHE	LEZHË	Lezhe	10,000		Forest & Ornamental seedlings
20	SHKODER	PUKE	Puke	4,000		Forest seedlings
		TOTAL		**61,700**	**71,200**	

c. Silvicultural measures

There are different silvicultural interventions such as cleaning, thinning and coppicing conducted on planted sites. The interventions aim to encourage regeneration of native species - Quercus spp Acer spp, Tilia spp., Carpinus spp., Ulmus spp., etc are:

Cleaning - The selective removal of unwanted trees in a stand that has not passed the sapling stage in order to free the saplings from the unnecessary competition.
Thinning - The removal of selected stems from the stand done to enhance the diameter growth and height of the remaining trees.
Coppicing – It is a silvicultural system in which the low quality stands are regenerated through vegetative means.

The starting date of the project activity is **20 December 2004**. The project starting date was established based on the agreement between the General Directorate of Forest Policy and Pasture

Development, Ministry of the Environment, Forests and Water Administration and the communes with regard to the implementation of the carbon sequestration project.

The status of implementation is illustrated in the table below:

Table 2: Status of implementation of the project

Commune	FMU_NO	SUBPARC_NO	CODE	HECTARES	impl	ecozone
BARMASH	01	22a	0122a	37.615395	1	2
BARMASH	01	58a	0158a	59.817125	1	2
BUSHTRICE	02	105b	02105b	21.154989	1	3
BUSHTRICE	02	109b	02109b	16.176670	1	2
BUSHTRICE	02	109c	02109c	21.401116	1	3
BUSHTRICE	02	109c	02109c	1.801900	1	3
BUSHTRICE	02	109c	02109c	0.227767	1	3
BUSHTRICE	02	156b	02156b	9.299454	1	3
BUSHTRICE	02	157a	02157a	28.525147	1	4
BUSHTRICE	02	52b	0252b	33.977510	1	4
BUSHTRICE	02	65a	0265a	34.311699	1	4
BUSHTRICE	02	66a	0266a	49.220571	1	4
BUSHTRICE	02	66a	0266a	7.137309	1	4
BUSHTRICE	02	69a	0269a	26.699221	1	4
BUSHTRICE	02	69a	0269a	17.213081	1	4
BUSHTRICE	02	70a	0270a	23.837776	1	4
BUSHTRICE	02	70a	0270a	6.568769	1	4
BUSHTRICE	02	77a	0277a	8.791605	1	3
BUSHTRICE	02	77a	0277a	2.879868	1	3
BUSHTRICE	02	77a	0277a	10.748924	1	3
BUSHTRICE	02	78c	0278c	9.360092	1	4
BUSHTRICE	02	78c	0278c	0.837004	1	4
BUSHTRICE	02	78c	0278c	5.992452	1	4
BUSHTRICE	02	84a	0284a	12.042519	1	2
BUSHTRICE	02	84a	0284a	0.259864	1	2
BUSHTRICE	02	84a	0284a	9.548986	1	2
BUSHTRICE	02	89a	0289a	14.534426	1	2
BUSHTRICE	02	89a	0289a	2.144779	1	2
BUSHTRICE	02	89a	0289a	8.796503	1	2
BUSHTRICE	02	89a	0289a	0.548297	1	2
BUSHTRICE	02	91b	0291b	11.696665	1	3
DEDAJ-BUHOT	03	104a	03104a	5.442867	1	3
DEDAJ-BUHOT	03	104a	03104a	5.133800	1	3
DEDAJ-BUHOT	03	107a	03107a	15.200615	1	3
DEDAJ-BUHOT	03	111a	03111a	15.936077	1	3
DEDAJ-BUHOT	03	111b	03111b	13.119641	1	3

DEDAJ-BUHOT	03	112d	03112d	2.803871	1	3
DEDAJ-BUHOT	03	112d	03112d	7.728661	1	3
DEDAJ-BUHOT	03	112d	03112d	0.042563	1	3
DEDAJ-BUHOT	03	112d	03112d	0.072692	1	3
DEDAJ-BUHOT	03	112d	03112d	0.250798	1	3
DEDAJ-BUHOT	03	22a	0322a	12.793799	1	3
DEDAJ-BUHOT	03	22a	0322a	0.205593	1	3
DEDAJ-BUHOT	03	27c	0327c	18.735978	1	3
DEDAJ-BUHOT	03	2a	032a	2.974533	1	3
DEDAJ-BUHOT	03	30c/1	0330c/1	10.587299	1	3
DEDAJ-BUHOT	03	31c/1	0331c/1	7.583741	1	3
DEDAJ-BUHOT	03	31c/1	0331c/1	0.413885	1	3
DEDAJ-BUHOT	03	31c/1	0331c/1	0.289569	1	3
DEDAJ-BUHOT	03	31d	0331d	9.281371	1	3
DEDAJ-BUHOT	03	34a	0334a	10.284263	1	3
DEDAJ-BUHOT	03	40a	0340a	13.319040	1	3
DEDAJ-BUHOT	03	47b	0347b	14.506605	1	3
DEDAJ-BUHOT	03	4b	034b	8.994653	1	3
DEDAJ-BUHOT	03	4b	034b	4.941495	1	3
DEDAJ-BUHOT	03	4b	034b	0.709001	1	3
DEDAJ-BUHOT	03	4b	034b	0.325420	1	3
DEDAJ-BUHOT	03	4b	034b	0.591009	1	3
DEDAJ-BUHOT	03	4b	034b	1.049401	1	3
DEDAJ-BUHOT	03	4b	034b	0.766560	1	3
DEDAJ-BUHOT	03	4b	034b	1.713035	1	3
DEDAJ-BUHOT	03	57a	0357a	10.670092	1	3
DEDAJ-BUHOT	03	57a	0357a	0.736205	1	3
DEDAJ-BUHOT	03	57a	0357a	3.188482	1	3
DEDAJ-BUHOT	03	57a	0357a	0.478507	1	3
DEDAJ-BUHOT	03	57a	0357a	0.023978	1	3
DEDAJ-BUHOT	03	57a	0357a	0.350563	1	3
DEDAJ-BUHOT	03	58b	0358b	6.142058	1	3
DEDAJ-BUHOT	03	5a	035b	12.700552	1	3
DEDAJ-BUHOT	03	60b	0360b	7.677548	1	3
DEDAJ-BUHOT	03	60b	0360b	0.342423	1	3
DEDAJ-BUHOT	03	60b	0360b	0.029374	1	3
DEDAJ-BUHOT	03	60b	0360b	1.041043	1	3
DEDAJ-BUHOT	03	7a	037a	2.010617	1	3
DEDAJ-BUHOT	03	7a	037a	1.160219	1	3
DEDAJ-BUHOT	03	7a	037a	2.030621	1	3
DEDAJ-BUHOT	03	7a	037a	2.650171	1	3
DEDAJ-BUHOT	03	7a	037a	1.918265	1	3
DEDAJ-BUHOT	03	7a	037a	1.068124	1	3

DEDAJ-BUHOT	03	7a	037a	0.804765	1	3
DEDAJ-BUHOT	03	88a	0388a	23.540803	1	3
DESHAT MAQELLARE	04	106b	04106b	1.100931	1	2
DESHAT MAQELLARE	04	137a	04137a	4.156602	1	2
DESHAT MAQELLARE	04	137a	04137a	2.717871	1	2
DESHAT MAQELLARE	04	14a	0414a	4.689774	1	3
DESHAT MAQELLARE	04	154a	04154a	37.813688	1	2
DESHAT MAQELLARE	04	155a	04155a	6.483407	1	2
DESHAT MAQELLARE	04	155a	04155a	0.027846	1	2
DESHAT MAQELLARE	04	155a	04155a	3.189948	1	2
DESHAT MAQELLARE	04	155a	04155a	1.360739	1	2
DESHAT MAQELLARE	04	155a	04155a	0.038364	1	2
DESHAT MAQELLARE	04	155b	04155b	2.290173	1	2
DESHAT MAQELLARE	04	156a	04156a	25.347653	1	2
DESHAT MAQELLARE	04	156a	04156a	2.754494	1	2
DESHAT MAQELLARE	04	156a	04156a	13.136568	1	2
DESHAT MAQELLARE	04	156a	04156a	0.160987	1	2
DESHAT MAQELLARE	04	159c	04159c	1.018125	1	4
DESHAT MAQELLARE	04	159c	04159c	4.485234	1	4
DESHAT MAQELLARE	04	159c	04159c	4.770643	1	4
DESHAT MAQELLARE	04	159c	04159c	0.639379	1	4
DESHAT MAQELLARE	04	159c	04159c	0.181325	1	4
DESHAT MAQELLARE	04	159c	04159c	0.396168	1	4
DESHAT MAQELLARE	04	168a	04168a	5.912660	1	2
DESHAT MAQELLARE	04	16a	0416a	3.794346	1	3

DESHAT MAQELLARE	04	175a	04175a	17.050496	1	2
DESHAT MAQELLARE	04	179a	04179a	27.690264	1	2
DESHAT MAQELLARE	04	183a	04183a	20.792352	1	2
DESHAT MAQELLARE	04	192c	04192c	8.016201	1	3
DESHAT MAQELLARE	04	201c	04201c	13.770271	1	2
DESHAT MAQELLARE	04	242c	04242c	8.065821	1	2
DESHAT MAQELLARE	04	242c	04242c	0.505305	1	2
DESHAT MAQELLARE	04	265d	04265d	2.391163	1	2
DESHAT MAQELLARE	04	279a	04279a	15.475037	1	2
DESHAT MAQELLARE	04	280b	04280b	11.686417	1	2
DESHAT MAQELLARE	04	33a	0433a	12.431097	1	3
DESHAT MAQELLARE	04	33a	0433a	0.374966	1	3
DESHAT MAQELLARE	04	44a	0444a	6.425472	1	2
DESHAT MAQELLARE	04	46a	0446a	0.086284	1	2
DESHAT MAQELLARE	04	46a	0446a	2.865981	1	2
DESHAT MAQELLARE	04	46a	0446a	0.442814	1	2
DESHAT MAQELLARE	04	46a	0446a	8.162083	1	2
DESHAT MAQELLARE	04	48a	0448a	6.191449	1	4
DESHAT MAQELLARE	04	54a	0454a	10.570861	1	2
DESHAT MAQELLARE	04	57	0457	18.356539	1	3
DESHAT MAQELLARE	04	57	0457	0.929635	1	3
DESHAT MAQELLARE	04	61a	0461a	7.051767	1	3
DESHAT MAQELLARE	04	6b	046b	3.168292	1	3
DESHAT MAQELLARE	04	73b	0473b	1.916381	1	3

GALIGAT-STROR	05	19	0519	50.549801	1	1
GALIGAT-STROR	05	19	0519	0.543297	1	1
GALIGAT-STROR	05	1c	051c	21.896360	1	1
GALIGAT-STROR	05	1c	051c	0.000048	1	1
GALIGAT-STROR	05	1c	051c	2.858119	1	1
GALIGAT-STROR	05	1c	051c	2.772135	1	1
GALIGAT-STROR	05	1c	051c	3.085133	1	1
GALIGAT-STROR	05	20a	0520a	9.997702	1	1
GALIGAT-STROR	05	23d	0523d	9.673267	1	1
GALIGAT-STROR	05	30	0530	14.775553	1	1
GALIGAT-STROR	05	30	0530	0.135216	1	1
GALIGAT-STROR	05	31	0531	0.402100	1	1
GALIGAT-STROR	05	31	0531	0.531359	1	1
GALIGAT-STROR	05	31	0531	37.340032	1	1
GALIGAT-STROR	05	32	0532	11.309092	1	1
GALIGAT-STROR	05	51a	0551a	25.309874	1	1
GALIGAT-STROR	05	52a	0552a	34.582898	1	1
GALIGAT-STROR	05	53	0553	31.481880	1	2
GALIGAT-STROR	05	54	0554	23.802954	1	2
GALIGAT-STROR	05	54	0554	1.758136	1	2
GALIGAT-STROR	05	54	0554	0.255842	1	2
GALIGAT-STROR	05	54	0554	0.673465	1	2
GALIGAT-STROR	05	54	0554	0.294766	1	2
GJINAR-ZAVALINE	06	14a	0614a	1.368739	1	2

GJINAR-ZAVALINE	06	14a	0614a	16.759052	1	2
GJINAR-ZAVALINE	06	14b	0614b	13.199436	1	2
GJINAR-ZAVALINE	06	18b	0618b	0.229139	1	2
GJINAR-ZAVALINE	06	18b	0618b	19.119686	1	2
GJINAR-ZAVALINE	06	47	0647	20.581889	1	2
GJINAR-ZAVALINE	06	47	0647	0.720371	1	2
GJINAR-ZAVALINE	06	47	0647	0.170790	1	2
GJINAR-ZAVALINE	06	49a	0649a	15.076468	1	2
GJINAR-ZAVALINE	06	67a	0667a	4.987656	1	2
GJINAR-ZAVALINE	06	72d	0672d	11.454022	1	2
GOSTIME-KOPRIK	28	76a	2876a	0.104212	1	3
GOSTIME-KOPRIK	28	76a	2876a	0.234205	1	3
GOSTIME-KOPRIK	28	76a	2876a	0.072300	1	3
GOSTIME-KOPRIK	28	76a	2876a	0.161765	1	3
GOSTIME-KOPRIK	28	76a	2876a	42.627224	1	3
GRAMSH-VINJE	07	70a	0770a	25.659266	1	1
GRAMSH-VINJE	07	74a	0774a	35.388234	1	1
GRAMSH-VINJE	07	85a	0785a	31.494634	1	1
GRAMSH-VINJE	07	85a	0785a	0.065573	1	1
GRAMSH-VINJE	07	85a	0785a	1.849777	1	1
HELSHAN	08	67	0867	25.776892	1	3
HELSHAN	08	67	0867	0.055784	1	3
HELSHAN	08	76b	0876b	29.573289	1	3
HELSHAN	08	78	0878	20.228954	1	3
HELSHAN	08	87b	0887b	11.832065	1	3
HELSHAN	08	87b	0887b	5.288716	1	3
HELSHAN	08	88	0888	12.336427	1	3
HELSHAN	08	88	0888	7.292427	1	3

HELSHAN	08	91a	0891a	7.357840	1	3
HELSHAN	08	91b	0891b	15.392963	1	3
HELSHAN	08	96a	0896a	4.595618	1	3
HELSHAN	08	96b	0896b	9.323453	1	3
HELSHAN	08	99a	0899a	18.083688	1	3
HELSHAN	08	99a	0899a	4.088001	1	3
HELSHAN	08	99b	0899b	9.259989	1	3
HELSHAN	08	99b	0899b	6.252253	1	3
KAFTALLE-GOMSIQE	09	124a	09124a	10.083762	1	3
KAFTALLE-GOMSIQE	09	125b	09125b	24.855531	1	3
KAFTALLE-GOMSIQE	09	126a	09126a	29.239386	1	3
KAFTALLE-GOMSIQE	09	20a	0920a	32.311972	1	3
KAFTALLE-GOMSIQE	09	28a	0928a	4.793712	1	3
KAFTALLE-GOMSIQE	09	28a	0928a	13.411980	1	3
KAFTALLE-GOMSIQE	09	28a	0928a	0.429905	1	3
KAFTALLE-GOMSIQE	09	28a	0928a	0.639524	1	3
KAFTALLE-GOMSIQE	09	35a	0935a	19.077115	1	3
KAFTALLE-GOMSIQE	09	79a	0979a	69.748084	1	3
KAFTALLE-GOMSIQE	09	81	0981	31.180625	1	3
KAFTALLE-GOMSIQE	09	85a	0985a	24.645278	1	3
KAFTALLE-GOMSIQE	09	85a	0985a	5.035223	1	3
KAFTALLE-GOMSIQE	09	85a	0985a	1.265467	1	3
KAFTALLE-GOMSIQE	09	85a	0985a	1.095708	1	3
KASTRIOT-SLLOVE	10	137b	10137b	1.087330	1	2
KASTRIOT-SLLOVE	10	137b	10137b	3.306799	1	2
KASTRIOT-SLLOVE	10	163b	10163b	13.115772	1	3
KASTRIOT-SLLOVE	10	205b	10205b	0.301269	1	2
KASTRIOT-SLLOVE	10	205b	10205b	1.683551	1	2

KASTRIOT-SLLOVE	10	208b	10208b	0.538634	1	2
KASTRIOT-SLLOVE	10	208b	10208b	1.097361	1	2
KASTRIOT-SLLOVE	10	208b	10208b	0.897845	1	2
KASTRIOT-SLLOVE	10	211b	10211b	12.063023	1	2
KASTRIOT-SLLOVE	10	214b	10214b	7.457345	1	2
KASTRIOT-SLLOVE	10	214b	10214b	1.034169	1	2
KASTRIOT-SLLOVE	10	216c	10216c	0.757741	1	2
KASTRIOT-SLLOVE	10	216c	10216c	2.773385	1	2
KASTRIOT-SLLOVE	10	216c	10216c	0.318441	1	2
KASTRIOT-SLLOVE	10	220b	10220b	8.726323	1	3
KASTRIOT-SLLOVE	10	220b	10220b	0.198366	1	3
KASTRIOT-SLLOVE	10	226b	10226b	10.235839	1	3
KASTRIOT-SLLOVE	10	226b	10226b	0.212474	1	3
KASTRIOT-SLLOVE	10	231b	10231b	8.864674	1	2
KASTRIOT-SLLOVE	10	233b	10233b	1.553667	1	2
KASTRIOT-SLLOVE	10	233b	10233b	0.933199	1	2
KASTRIOT-SLLOVE	10	233b	10233b	0.982776	1	2
KASTRIOT-SLLOVE	10	233b	10233b	2.189665	1	2
KASTRIOT-SLLOVE	10	239a	10239a	4.481660	1	2
KASTRIOT-SLLOVE	10	239a	10239a	0.363584	1	2
KASTRIOT-SLLOVE	10	239a	10239a	1.390990	1	2
KASTRIOT-SLLOVE	10	240a	10240a	7.134995	1	2
KASTRIOT-SLLOVE	10	241b	10241b	5.759975	1	2
KASTRIOT-SLLOVE	10	241b	10241b	1.035680	1	2

KASTRIOT-SLLOVE	10	243a	10243a	15.019549	1	2
KASTRIOT-SLLOVE	10	244b	10244b	0.141204	1	3
KASTRIOT-SLLOVE	10	244b	10244b	7.438680	1	3
KASTRIOT-SLLOVE	10	244b	10244b	0.055981	1	3
KASTRIOT-SLLOVE	10	244b	10244b	1.305355	1	3
KLENJE	11	41a	1141a	12.638243	1	2
KLENJE	11	49b	1149b	18.930163	1	2
KLENJE	11	7a	117a	27.281822	1	2
KLENJE	11	7a	117a	0.367636	1	2
KLENJE	11	7a	117a	0.294504	1	2
KRYEZI	12	58a	1258a	8.040839	1	3
KRYEZI	12	58a	1258a	0.142649	1	3
KRYEZI	12	58a	1258a	0.193082	1	3
KRYEZI	12	58a	1258a	0.920725	1	3
KRYEZI	12	59c	1259c	4.137611	1	3
KRYEZI	12	59c	1259c	0.077647	1	3
KRYEZI	12	7a	127a	27.436512	1	3
KRYEZI-BICAJ	13	113a	13113a	15.445636	1	3
KRYEZI-BICAJ	13	79a	1379a	31.156761	1	3
KRYEZI-BICAJ	13	91b	1391b	6.041983	1	3
KURDARI-PLANI BARDHE	14	103b	14103b	20.798653	1	3
KURDARI-PLANI BARDHE	14	103b	14103b	11.163355	1	3
KURDARI-PLANI BARDHE	14	103b	14103b	15.771708	1	3
KURDARI-PLANI BARDHE	14	104b	14104b	52.355479	1	3
KURDARI-PLANI BARDHE	14	108b	14108b	30.695341	1	3
KURDARI-PLANI BARDHE	14	60a	1460a	13.968743	1	2
KURDARI-PLANI BARDHE	14	83b	1483b	6.048520	1	3
KURDARI-PLANI BARDHE	14	83b	1483b	2.734938	1	3
KURDARI-PLANI BARDHE	14	83b	1483b	1.935610	1	3
KURDARI-PLANI BARDHE	14	83b	1483b	0.435191	1	3
KURDARI-PLANI BARDHE	14	83b	1483b	1.639290	1	3

KURDARI-PLANI BARDHE	14	84b	1484b	16.723651	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	1.724728	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	13.024692	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	11.435059	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	1.168172	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	5.381172	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	0.243969	1	3
KURDARI-PLANI BARDHE	14	85b	1485b	14.494111	1	3
KURDARI-PLANI BARDHE	14	85b	1485b	2.281726	1	3
KURDARI-PLANI BARDHE	14	85b	1485b	2.540244	1	3
KURDARI-PLANI BARDHE	14	85b	1485b	2.878893	1	3
KURDARI-PLANI BARDHE	14	94b	1494b	14.249889	1	3
KURDARI-PLANI BARDHE	14	94b	1494b	7.265636	1	3
KURDARI-PLANI BARDHE	14	94b	1494b	38.335706	1	3
KURDARI-PLANI BARDHE	14	96b	1496b	0.845875	1	3
KURDARI-PLANI BARDHE	14	96b	1496b	8.676356	1	3
KURDARI-PLANI BARDHE	14	96b	1496b	2.475777	1	3
KURDARI-PLANI BARDHE	14	96b	1496b	1.561609	1	3
LABINOT	15	24a	1524a	21.302977	1	2
LABINOT	15	25a	1525a	42.692685	1	2
LABINOT	15	49a	1549a	19.786970	1	2
LUBINJE-TUNJE	25	120a	25120a	29.496428	1	1
LUBINJE-TUNJE	25	120a	25120a	0.582706	1	1
LUBINJE-TUNJE	25	120a	25120a	3.564757	1	1
LUBINJE-TUNJE	25	127a	25127a	23.259578	1	1
PAPER-SHLLAK	17	15a	1715a	10.569070	1	2

PAPER-SHLLAK	17	168a	17168a	47.930041	1	2
PAPER-SHLLAK	17	168a	17168a	1.056149	1	2
PAPER-SHLLAK	17	169a	17169a	44.824672	1	2
PAPER-SHLLAK	17	171a	17171a	46.521452	1	2
PAPER-SHLLAK	17	172a	17172a	19.508348	1	2
PAPER-SHLLAK	17	173a	17173a	15.091762	1	2
PAPER-SHLLAK	17	174a	17174a	33.448153	1	2
PAPER-SHLLAK	17	175a	17175a	20.181976	1	2
POLIS	18	166a	18166a	41.513092	1	1
POLIS	18	166a	18166a	0.117417	1	1
POLIS	18	166a	18166a	0.165718	1	1
POLIS	18	166a	18166a	0.384185	1	1
POLIS	18	169a	18169a	47.303346	1	1
POLIS	18	169a	18169a	0.345031	1	1
POLIS	18	169a	18169a	0.221394	1	1
POLIS	18	1b	181b	12.117048	1	1
POLIS	18	2a	182a	22.422604	1	1
POLIS	18	2b	182b	13.081630	1	1
POLIS-VASJAN	27	29a	2729a	31.790458	1	1
POLIS-VASJAN	27	58	2758	16.008580	1	1
POLIS-VASJAN	27	58	2758	0.471943	1	1
POLIS-VASJAN	27	59a	2759a	34.221242	1	1
POLIS-VASJAN	27	59a	2759a	0.931573	1	1
POLIS-VASJAN	27	59a	2759a	0.187777	1	1
POLIS-VASJAN	27	59a	2759a	0.309542	1	1
POLIS-VASJAN	27	59a	2759a	0.327623	1	1
POLIS-VASJAN	27	59a	2759a	0.089122	1	1
POLIS-VASJAN	27	59b	2759b	6.557391	1	1
POLIS-VASJAN	27	59b	2759b	0.973453	1	1
POLIS-VASJAN	27	59b	2759b	2.022047	1	1
POLIS-VASJAN	27	59b	2759b	4.696337	1	1
POLIS-VASJAN	27	59b	2759b	0.206162	1	1
POLIS-VASJAN	27	61b	2761b	18.542823	1	1
POLIS-VASJAN	27	61b	2761b	11.652084	1	1
POLIS-VASJAN	27	63a	2763a	24.057335	1	1
POLIS-VASJAN	27	64a	2764a	23.381175	1	1
POLIS-VASJAN	27	81a	2781a	42.906704	1	1
QELEZ	26	17b	2617b	9.241355	1	3
QELEZ	26	49	2649	7.833835	1	3
SHISHTAVEC-ZAPOD	19	60b	1960b	11.166033	1	4
SHISHTAVEC-ZAPOD	19	60b	1960b	0.149200	1	4
SHISHTAVEC-	19	74b	1974b	7.134446	1	4

ZAPOD						
SHISHTAVEC-ZAPOD	19	74c	1974c	3.519029	1	4
SHISHTAVEC-ZAPOD	19	74c	1974c	0.202502	1	4
SHISHTAVEC-ZAPOD	19	89b	1989b	5.098782	1	4
SHISHTAVEC-ZAPOD	19	90b	1990b	4.870954	1	4
SHISHTAVEC-ZAPOD	19	90d	1990d	5.262686	1	4
SHISHTAVEC-ZAPOD	19	90d	1990d	4.576839	1	4
SHISHTAVEC-ZAPOD	19	95e	1995e	3.897126	1	4
SHISHTAVEC-ZAPOD	19	95e	1995e	8.383429	1	4
SHISHTAVEC-ZAPOD	19	95e	1995e	1.474603	1	4
SHPAT-SHTERMEN	20	47/2	2047/2	15.385780	1	3
SHPAT-SHTERMEN	20	61a	2061a	24.055033	1	2
SHPAT-SHTERMEN	20	67d	2067d	4.548881	1	2
SHPAT-SHTERMEN	20	67d	2067d	6.325506	1	2
SHPAT-SHTERMEN	20	69a	2069a	15.687981	1	2
TRODHEN	21	48	2148	39.823439	1	3
TRODHEN	21	48	2148	0.107126	1	3
TRODHEN	21	75a	2175a	7.897885	1	3
TRODHEN	21	75a	2175a	2.940207	1	3
TRODHEN	21	75a	2175a	0.009328	1	3
TRODHEN	21	76a	2176a	15.381586	1	3
TUCEP-OKSHTUN	22	173b	22173b	13.379549	1	2
TUCEP-OKSHTUN	22	182b	22182b	9.354067	1	2
TUCEP-OKSHTUN	22	182b	22182b	5.513139	1	2
TUCEP-OKSHTUN	22	9a	229a	16.366107	1	2
TUCEP-OKSHTUN	22	9a	229a	32.093112	1	2
TUCEP-OKSHTUN	22	9a	229a	0.569179	1	2
TUCEP-	22	9a	229a	6.375121	1	2

OKSHTUN						
ULEZ	23	140a	23140a	28.195108	1	3
ULEZ	23	140a	23140b	1.254333	1	3
ULEZ	23	141	23141	48.533330	1	3
ULEZ	23	141	23141	0.469490	1	3
ULEZ	23	144a	23144a	57.979161	1	3
ULEZ	23	144a	23144a	1.041280	1	3
ULEZ	23	144a	23144a	0.716789	1	3
ULEZ	23	146a	23146a	40.687466	1	3
ULEZ	23	146a	23146a	0.072637	1	3
ULEZ	23	146b	23146b	28.281638	1	3
ULEZ	23	146b	23146b	2.222197	1	3
ULEZ	23	147a	23147a	39.878912	1	3
ULEZ	23	147a	23147a	1.230630	1	3
ULEZ	23	61	2361	0.635569	1	1
ULEZ	23	61	2361	4.464909	1	1
ULEZ	23	61	2361	7.239649	1	1
ULEZ	23	62b	2362b	9.608081	1	1
ULEZ	23	62b	2362b	0.194611	1	1
ULEZ	23	62b	2362b	0.173491	1	1
ULEZ	23	63b	2363b	8.428906	1	3
ULEZ	23	63b	2363b	6.113625	1	3
ZERQAN	24	151b	24151b	0.281119	1	2
ZERQAN	24	151b	24151b	0.532899	1	2
ZERQAN	24	151b	24151b	0.408036	1	2
ZERQAN	24	157b	24157b	6.185369	1	2
ZERQAN	24	157b	24157b	0.189891	1	2
ZERQAN	24	157b	24157b	1.920182	1	2
ZERQAN	24	157b	24157b	5.394253	1	2
ZERQAN	24	157b	24157b	1.411499	1	2
ZERQAN	24	47b	2447b	12.524349	1	2
Total				**3,990.45**		

B.2. Post registration changes

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

>>
N/A

B.2.2. Corrections

>>
Request for deviation to apply 20% precision level and 90% confidence interval has been submitted.

B.2.3. Permanent changes from registered monitoring plan or applied methodology

>>

N/A

B.2.4. Changes to project design of registered project activity

>>

The Monitoring Plan has not been revised.

The project implementation is line with the provisions of the paragraph 6 of the "Procedures for notifying and requesting approval of changes from the project activity as described in the registered project design document (EB 48, annex 66). As per the "Guidelines on accounting of specified types of changes in A/R CDM project activities from the description in registered project design documents" (Version 02.0) (Annex 24, EB 66), the types of changes from the project description of the A/R CDM project activity in the PDD as listed below are identified as minor in nature. The changes have not impacted the baseline scenario and additionality of the project. The changes applicable to the project are to be confirmed by the designated operational entity at the verification stage without the need for submitting a notification of changes to the PDD or a request for revision to the monitoring plan.

Table 3 Types of changes from the description in the registered PDD as outlined in the guidelines (Annex 24, EB66) and their applicability to the implemented project

No.	Types of changes from the project description in the PDD of an A/R CDM project activity	**Applicability to the project**
a)	Changes in year-wise areas planted, possibly resulting in a part of the project area not being planted;	Yes, there have been changes in the schedule of supplemental planting and silvicultural activities intended to assist natural regeneration.
b)	Changes in species composition, if the changes are demonstrated at verification to be consistent with the baseline identification and additionality demonstration made at the validation stage;	Yes, there have been changes to composition of species in supplemental planting. The changes are consistent with the baseline identification and additionality demonstration made at the validation stage
c)	Changes in stocking density, if the changes are demonstrated at verification to be consistent with the baseline identification and additionality demonstration made at the validation stage;	Yes, considering the project is a assisted natural regeneration project, the changes in stocking density are consistent with the baseline idenfication and additionality demonstration made at the validation stage.
d)	Changes in timing and choice of silvicultural operations;	Yes, there have changes in the timing of silvilculatural operations
e)	Changes in timing of harvest occurring before the third verification;	No, changes in timing of harvest is not anticipated prior to the third verification.

f)	Changes related to collection of non-timber forest products;	No
g)	Changes in tree/shrubs propagation method;	No
h)	Changes in post-harvest re-planting/regeneration methods;	No, changes in the post harvest replanting/regeneration methods are not antcipated
i)	Changes in technology employed;	No
j)	Changes in inputs (e.g. fertilizers, certified seeds, watering);	No
k)	Changes in stratification for sampling;	Yes, *ex post* stratification has been implemented taking into account the changes to *ex-ante* stratum adopted at the project design.
l)	Changes in type of sample plots (e.g. temporary, permanent, point-sampling);	No
m)	Changes in number of sample plots and their allocation to strata;	Yes, as a follow up to *ex post* stratification, the calculation of number sample plots and their allocation has been revised.
n)	Changes in the project boundary (limited to reduction in project area), if the changes are demonstrated at verification to be consistent with the baseline identification and additionality demonstration made at the validation stage;	Yes, changes resulting from exclusion of some areas that are not suitable for implementing the project have reduced the project area. These changes are consistent with the baseline identification and additionality demonstration made at the validation stage.
o)	Changes in quality assurance/quality control (QA/QC) procedures, where it can be demonstrated that the changed QA/QC procedures are used by the National Forest Inventory or were applied in another registered A/R CDM project activity;	Yes, Changes in quality assurance/quality control procedures are consistent with procedures used by the national forest inventory.
p)	Changes in parameters, equations, or methods used in tree biomass estimation, if the applicability of the changed parameters, equations, or methods is demonstrated at verification using the .Tool for demonstration of applicability of allometric equations and volume equations in A/R CDM project activities" when available, or if the changed parameters, equations, or methods do not result in a decrease in precision of the estimate of tree biomass;	Yes, changes in parameters, equations, or methods used in tree biomass estimation are consistent with A/R Tool – "Tool for demonstration of applicability of allometric equations in A/R CDM project activities" The changed parameters, equations or methods do not result in a decrease in precison of the estimate of tree biomass.
q)	Changes from provisions regarding shifting of pre-project activities, if the related emissions are estimated at verification using the tool "Changes from provisions regarding shifting of pre-project activities, if the related emissions are estimated at verification using the tool "Estimation of the increase in greenhouse gas (GHG) emissions	No, changes from provisions regarding the shifting of pre-project activities are not observed. The project monitoring has followed the guidelines of the methodology to assess the leakage.

	attributable to displacement of pre-project agricultural activities in A/R CDM project activity". and are accounted for as leakage;	
r)	Changes in use of fire in site preparation, if the related emissions are estimated at verification using the tool "Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity" and are accounted for as project emissions;	Not Applicable
s)	Changes in extent of soil disturbance in site preparation, if the related emissions are estimated at verification using Equation (2) of the "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities" and are accounted for as project emissions;	Not applicable
t)	Changes in methods of estimation of changes in any carbon pool, if the method applied at verification uses the latest version of the relevant approved tool and the applicability conditions of the methodology applied are consistent with the applicability conditions of the tool.	Yes.

As per the "Guidelines on application of specified versions of A/R CDM methodologies in verification of registered A/R CDM project activities" (Version 01.0) (EB63, Annex 26), early versions of methodologies applied in the registered A/R CDM project activities contain requirements that were withdrawn during revisions/improvements of these methodologies. The guidelines allow a registered A/R CDM project activity to apply, at the time of verification, the revisions/improvements that occurred in the methodology after the date of registration of the project activity. The applicability of these guidelines to the project are presented in Table 4 below.

Table 4 Applicability of guidelines to the implemented project

Requirement	Methodology	Guidelines	Applicability to the project
Monitoring of data and parameters	AR-AM0003 v.04	(i) Only data and parameters obtained from field measurement are required to be monitored; (ii) Monitoring is not required for data, parameters, or variables appearing as intermediate values in calculation steps and those taken from existing sources (e.g. published literature)	Yes, (i) Only data and parameters obtained from field measurement are monitored; (ii) intermediate values are not considered in monitoring
Sampling design, sample plot lay-out, and marking of permanent	AR-AM0003 v.04	(i) Use of temporary sample plots; (ii) Random lay-out of sample plots; (iii) A maximum allowable	Yes, maximum allowable margin of error of 10% of the mean and 90% confidence level was

sample plots		relative margin of error of the mean, for estimation of aboveground tree biomass, of ± 10% at 90% confidence level shall be allowed.	applied
Accounting for uncertainty	AR-AM0003 v.04	Requirements related to uncertainty assessment, uncertainty analysis, methods of combining uncertainties, and uncertainty in expert judgement are superfluous and compliance with these requirements shall not be enforced.	Yes, uncertainty analysis is not conducted as sampling approach implemented in the addresses these issues.
Field measurement of soil organic carbon		(i) Instead of field measurement of soil organic carbon, the "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities" shall be used for areas which meet the applicability conditions of the tool; or (ii) The value of change in soil organic carbon shall be set to zero. Consequently, monitoring of data and parameters related to estimation of changes in soil organic carbon shall not be required.	Not applicable
Clearance or burning of herbaceous vegetation	AR-AM0003 v.04	(i) Changes in carbon stocks resulting from clearance of herbaceous vegetation shall be set to zero; (ii) Emissions resulting from clearance or burning of herbaceous vegetation shall be set to zero. Consequently, monitoring of data and parameters related to (i) and (ii) above shall not be required.	Yes, loss of carbon in living herbaceous vegetation has not been monitored.
Estimation of emissions of nitrous oxide from use of fertilizers	AR-AM0003 v.04	Estimation and accounting of emissions of nitrous oxide from use of fertilizers shall not be required. Consequently, monitoring of data and parameters related to the above-mentioned emissions shall not be required.	Not applicable, as fertilizers are not used in the project.
Burning of fossil fuel	AR-AM0003 v.04	Estimation and accounting of emissions from burning of fossil fuel, both within and outside the	Yes, emissions from burning of fossil fuel, both within and

		project boundary, shall not be required. Consequently, monitoring of data and parameters related to the above mentioned emissions shall not be required.	outside the project boundary were not monitored.

B.2.5. Changes to start date of crediting period

>>
N/A

B.2.6. Types of changes specific to afforestation or reforestation project activity

>>
N/A

SECTION C. Description of monitoring system

>>

The BioCarbon Fund has developed a tool for the monitoring of the A/R CDM portfolio – the Simplified Monitoring Afforestation / Reforestation Tool (SMART). The tool is comprised of several modules, which are tailored to the specific methodology used by the project. Each module indicates the data parameters that the project needs to measure and record in order to successfully monitor the carbon pools as required by its CDM A/R methodology.

The Project Entity uses excel forms for digitalizing field data. The data for 20 sample plots will be shared with the DOE in smart excel forms.

The BioCarbon Fund is currently developing a web-based platform for data storing and all-time data access. The web-based platform is the core of the monitoring system, where users can directly input data and obtain calculations at plot and project levels.

A presentation of the smart tool will be given to TueV Nord during the initial verification site visit.

The person in charge of maintaining the monitoring system is Erion Istrefi, the project coordinator.

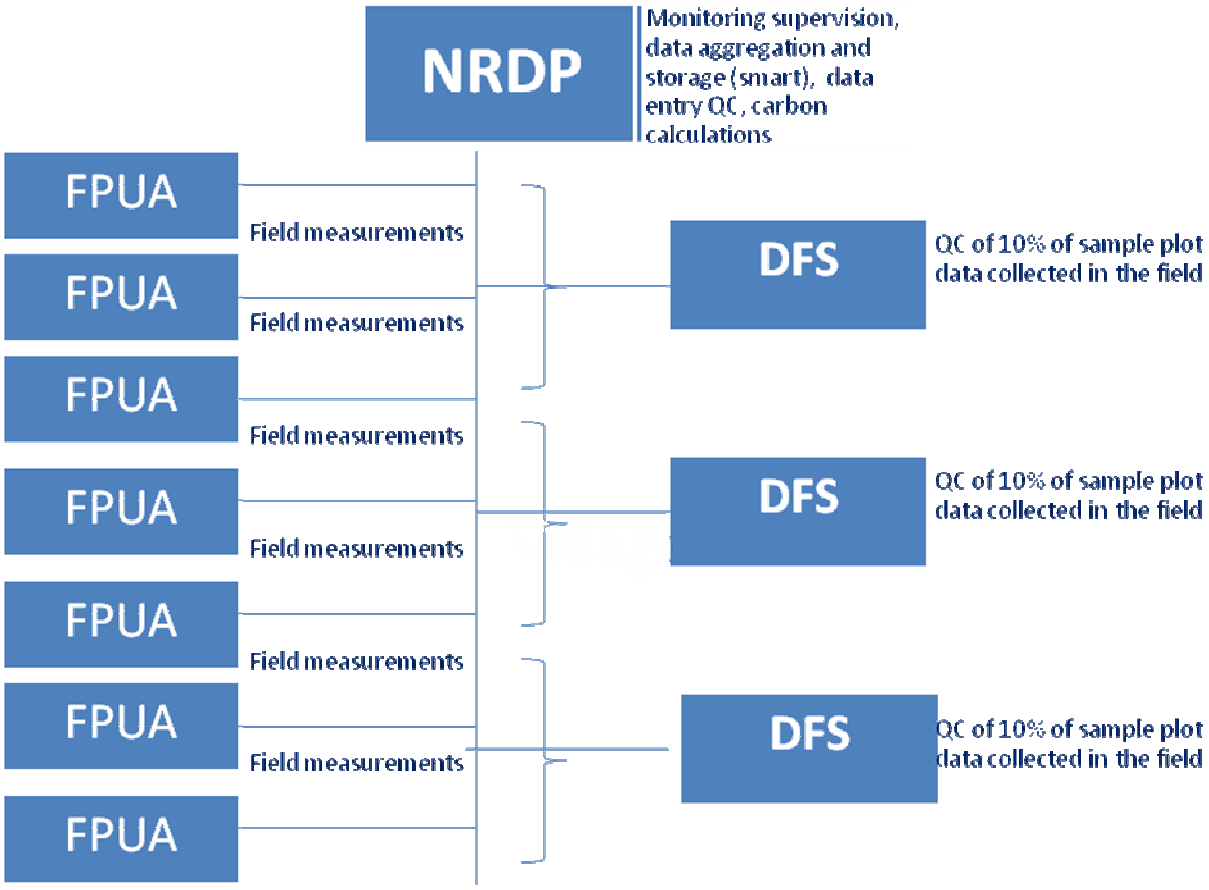
Operational Structure

The project activity is implemented as part of the World Bank Natural Resource Development Project (NRDP) by the Ministry of the Environment, Forests and Water Administration (MoEFWA) of the government of Albania. The MoEFWA appointed a carbon specialist to coordinate and supervise implementation of the project, and to ensure that information and data flow from the local to the central level. The project is implemented by the MoEFWA through Forest and Pasture User Associations (FPUAs) that operate at the village level. These associations are non-government organizations and are formed by village members who use forest and pastoral resources in the territory.

The FPUA signed agreements with the Directorate of Forest and Pasture Policies (DFPP) to use a part of the communal forest under the management of the commune for the purposes of the project. The DFPP and its district forestry offices will provide technical instruction on reforestation and forest management, as well as QA/QC.

With assistance by the MoEFWA, the FPUA will be responsible for the planting and tending of the trees, and the organization and coordinating the measuring and monitoring of the actual GHG removals by sinks and any leakage generated by the A/R CDM project activity. Any activity data and monitoring and measuring data will be reported to and archived at the FPUA level, and aggregated, cross checked and stored at the MoEFWA in paper and electronic forms. As part of the QA/QC procedures, District Forestry Staff (DFS), i.e. regional coordinators will verify that plots are installed and measurements are taken correctly. 10% of the plots will be randomly selected and re-measured independently. The re-measurements include the location of the plots, DBH and tree height.

Flow Chart: Overview of Monitoring Procedure



SECTION D. Data and parameters

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

>>

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

Data / Parameter:	C_{BSL}
Data unit:	*t CO_2-e*
Description:	Baseline net greenhouse gas removals by sinks
Source of data used:	PDD, p. 62, Table 24: Baseline net GHG removals by sinks (t CO_2e)
Value(s) :	6249.88 t **CO_2 e**
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data based on project area and Albania National Forest Inventory are used for calculation of baseline net GHG removals by sinks

Additional comment:	

Data / Parameter:	**$BEF_{2,j}$**
Data unit:	Dimensionless
Description:	Biomass expansion factor for species j
Source of data used:	Calculated based on the data of Albania National Forest Inventory and root shoot ratio of Table 3A.1.8, GPG LULUCF IPCC (2003)
Value(s) :	1.44
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Biomass expansion factor is used to calculate the above ground biomass
Additional comment:	

Data / Parameter:	**Rj**
Data unit:	Dimensionless
Description:	Root-shoot ratio for species *j*
Source of data used:	Table 3A.1.8, GPG LULUCF IPCC (2003)
Value(s) :	0.35
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Root-shoot ratio of temperate broad leaved forests/plantations as specified in GPG LULUCF IPCC (2003) is used to calculate the below ground biomass
Additional comment:	

Data / Parameter:	**Dj(Oak)**
Data unit:	tonnes d.m. m^{-3}
Description:	Basic wood density for species *j* (Oak)
Source of data used:	TABLE 3A.1.9-1, GPG LULUCF IPCC (2003)
Value(s) :	0.58
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Wood density is used to convert the volume of wood into biomass
Additional comment:	

Data / Parameter:	**Dj (Hornbeam)**
Data unit:	tonnes d.m. m^{-3}
Description:	Basic wood density for species *j* (Hornbeam)
Source of data used:	TABLE 3A.1.9-1 ,GPG LULUCF IPCC (2003)
Value(s) :	0.63
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Wood density is used to convert the volume of wood into biomass
Additional comment:	

Data / Parameter:	**CFj**
Data unit:	tonnes C (tonne d.m.)-1
Description:	Carbon fraction for species *j*
Source of data used:	IPCC (2003)
Value(s) :	0.5 (default)
Indicate what the data are used for	Carbon fraction default value is used to convert biomass in

(Baseline/ Project/ Leakage emission calculations)	to carbon stock
Additional comment:	

D.2. Data and parameters monitored

(Copy this table for each data and parameter. To report multiple values, a table may be used)

Net GHG Removals by sinks	
Data / Parameter:	**A_i**
Data unit:	Hectares
Description:	Area of stratum i
Measured /Calculated /Default:	Measured
Source of data:	Project
Value(s) of monitored parameter:	6272.36 (one project stratum)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks, Project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or/and GPS
Measuring/ Reading/ Recording frequency:	At the start of the project and thereafter at monitoring intervals prior to each verification
Calculation method (if applicable):	
QA/QC procedures applied:	Checked during monitoring period

Data / Parameter:	**A**
Data unit:	Hectares
Description:	Total size of all strata (A) , e.g the total project area
Measured /Calculated /Default:	Calculated
Source of data:	Project
Value(s) of monitored parameter:	6272.36
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks,
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or/and GPS
Measuring/ Reading/ Recording frequency:	At the start of the project and thereafter at monitoring intervals prior to each verification
Calculation method (if applicable):	
QA/QC procedures applied:	Checked during monitoring period

Data / Parameter:	**$A_{N, ikt}$**
Data unit:	Hectares
Description:	Area of with N applied in stratum *i*, stand model *k*, at time *t*
Measured /Calculated /Default:	Measured/calculated
Source of data:	Project
Value(s) of monitored parameter:	6272.36 (one stand model)

Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks, Project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or/and GPS
Measuring/ Reading/ Recording frequency:	At the start of the project and adjusted thereafter every 5-year
Calculation method (if applicable):	
QA/QC procedures applied:	Checked during monitoring period

Data / Parameter:	$\mathbf{A_{ikt}}$
Data unit:	Hectares
Description:	Area of stratum i , stand model k, at time t
Measured /Calculated /Default:	Measured/calculated
Source of data:	Project
Value(s) of monitored parameter:	6272.36 (one stand model)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks, Project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or/and GPS
Measuring/ Reading/ Recording frequency:	At the start of the project and adjusted thereafter every 5-year
Calculation method (if applicable):	
QA/QC procedures applied:	Checked during monitoring period

Data / Parameter:	**AP**
Data unit:	$\mathbf{m^2}$
Description:	Sample plot area
Measured /Calculated /Default:	Measured
Source of data:	Project
Value(s) of monitored parameter:	200
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or and GPS, compass
Measuring/ Reading/ Recording frequency:	5-year
Calculation method (if applicable):	
QA/QC procedures applied:	Plot location and area checked and verified during monitoring period

Data / Parameter:	Latitude/longitude of sample plot location
Data unit:	lat/long coordinates

Description:	Location of sample plots
Measured /Calculated /Default:	Measured
Source of data:	Project and plot maps, GPS, GIS
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	GPS coordinates
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GPS
Measuring/ Reading/ Recording frequency:	5 years
Calculation method (if applicable):	
QA/QC procedures applied:	Sample plot locations are checked and verified using GPS coordinates

Data / Parameter:	DBH
Data unit:	cm
Description:	Diameter at breast height of living trees
Measured /Calculated /Default:	Measured
Source of data:	Sample plot measurement
Value(s) of monitored parameter:	Diameter of trees measured and recorded as part of sample plot measurement
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Diameter tape, caliper
Measuring/ Reading/ Recording frequency:	5 year
Calculation method (if applicable):	
QA/QC procedures applied:	Diameter measurements are randomly checked during monitoring period

Data / Parameter:	Hj
Data unit:	meters
Description:	Height of species j
Measured /Calculated /Default:	Measured
Source of data:	Sample plot measurement
Value(s) of monitored parameter:	Height of trees measured and recorded as part of sample plot measurement
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Laser instrument

Measuring/ Reading/ Recording frequency:	5 year
Calculation method (if applicable):	
QA/QC procedures applied:	Height measurements are randomly checked during monitoring period

Project emissions

Data / Parameter:	$A_{B,ikt}$
Data unit:	
Description:	Area of slash and burn in stratum i , species j , at time t
Measured /Calculated /Default:	Measured
Source of data:	Project
Value(s) of monitored parameter:	0
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Area affected in the natural fires is used to calculate the project emissions from biomass burn in natural fires
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or/and GPS
Measuring/ Reading/ Recording frequency:	At the start of project and annually
Calculation method (if applicable):	
QA/QC procedures applied:	Checked during monitoring period

Data / Parameter:	B_{ijt}
Data unit:	tonnes d.m. ha-1
Description:	Average above-ground biomass burnt in natural fire for stratum i , species j , time t
Measured /Calculated /Default:	Measured
Source of data:	Sample plot measurement
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	
Measuring/ Reading/ Recording frequency:	Before burning
Calculation method (if applicable):	BEF method
QA/QC procedures applied:	Biomass measurement is checked and verified during monitoring period

Leakage

Data / Parameter:	dNa_{EGlt}
Data unit:	Dimensionless
Description:	Number of animals displaced in EGL areas at time t

Measured /Calculated /Default:	
Source of data:	Survey of communes
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data with regard to the number of animals displaced for the purpose of grazing outside the project.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	
Measuring/ Reading/ Recording frequency:	During the first monitoring period
Calculation method (if applicable):	
QA/QC procedures applied:	10% of the land/animal owners shall be questioned on number of displaced animals.by year. For the early start projects monitoring of leakage once durng the first monitoring is sufficient as year of displacement is known through surveys.

Data and parameters – Not monitored and/or not applicable to project

Data / Parameter:	p
Data unit:	percent
Description:	Desired level of precision
Source of data used:	
Value(s) :	10%
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	For the purpose of QA/QC of measurement
Additional comment:	Not monitored

Data / Parameter:	PBB_{ikt}
Data unit:	dimensionless
Description:	Avg. proportion of biomass burnt for stratum *i*, stand model *k*, time *t;*
Source of data used:	
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not applicable

Data / Parameter:	PL_{ID}
Data unit:	Alpha numeric
Description:	Sample plot ID
Source of data used:	Project and plot map, GIS
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage	

emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	P_{Lik}
Data unit:	Dimensionless
Description:	Total number of plots in stratum i, stand model k
Source of data used:	Field measurement
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	*16/12*
Data unit:	Dimensionless
Description:	Ratio of molecular weights of CH_4 and carbon
Source of data used:	Universal constant
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	*44/12*
Data unit:	Dimensionless
Description:	Ratio of molecular weights of carbon and CO_2
Source of data used:	Universal constant
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	*44/28*
Data unit:	Dimensionless
Description:	Ratio of molecular weights of N2O and nitrogen
Source of data used:	Universal constant
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	Confidence level
Data unit:	Percent
Description:	
Source of data used:	Defined
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage	

emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	*N/C ratio*
Data unit:	Dimensionless
Description:	Nitrogen-carbon ratio
Source of data used:	Literature
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	*CE*
Data unit:	Dimensionless
Description:	Average biomass combustion efficiency
Source of data used:	GPG LULUCF, National inventory
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	*CF*
Data unit:	tonnes C (tonne d.m.)-
Description:	Carbon fraction of biomass burnt
Source of data used:	Local, national, IPCC
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	*E*
Data unit:	As per the variable calculated
Description:	Allowable error
Source of data used:	Calculations
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	$E_{BiomassBurn}$
Data unit:	Tonnes CO_2-e
Description:	Increase in GHG emission as a result of biomass burning within the project boundary

Source of data used:	Calculations
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	$E_{BiomassBurn, CH4}$
Data unit:	Tonnes CO_2-e
Description:	CH_4 emission from biomass burning in slash and burn
Source of data used:	Calculations
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	$E_{BiomassBurn, N2O}$
Data unit:	Tonnes CO_2-e
Description:	N_2O emission from biomass burning in slash and burn
Source of data used:	Calculations
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	$E_{BiomassBurn,CO_2}$
Data unit:	Tonnes CO_2-e
Description:	CO_2 emission from biomass burning in slash and burn
Source of data used:	Calculations
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	$f_j(DBH,H)$
Data unit:	kg tree^{-1}
Description:	Allometric equation for species j linking aboveground tree biomass (kg tree^{-1}) to diameter at breast height (DBH) and possibly tree height (H) measured in plots for stratum i, species j, time t
Source of data used:	Literature or field measurements
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage	

emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	$f_j(DBH,H)$
Data unit:	kg tree^{-1}
Description:	Allometric equation for species j linking aboveground tree biomass (kg tree^{-1}) to diameter at breast height (DBH) and possibly tree height (H) measured in plots for stratum i, species j, time t
Source of data used:	Literature or field measurements
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	GHG_E
Data unit:	Tonnes CO_2-e
Description:	Increase in GHG emission as a result of the implementation of the proposed A/R CDM project activity within the project boundary
Source of data used:	Calculations
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	GWP_{CH4}
Data unit:	
Description:	Global Warming Potential for CH_4
Source of data used:	IPCC literature - EB decisions
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	GWP_{CH4}
Data unit:	Dimensionless
Description:	Global Warming Potential for CH_4
Source of data used:	IPCC literature - EB decisions
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	GWP_{N2O}

Data unit:	Dimensionless
Description:	Global Warming Potential for N_2O
Source of data used:	IPCC literature - EB decisions
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	H_{ijt}
Data unit:	m^3
Description:	Annually harvested volume and fuel wood for stratum *i*, species *j*, at time *t*
Source of data used:	Harvesting statistics
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	*iID*
Data unit:	Alpha numeric
Description:	Stratum ID (1, 2, 3, … m_{SP} project scenario (*ex post*) strata)
Source of data used:	Stand map, GIS
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	*IDikt*
Data unit:	Alpha numeric
Description:	Stand ID
Source of data used:	Stand map, GIS
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	j
Data unit:	
Description:	Tree species
Source of data used:	Project list
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	

Additional comment:	Not monitored

Data / Parameter:	*klD*
Data unit:	Dimensionless
Description:	Stand model ID (1, 2, 3, … *l* …S_{PS})
Source of data used:	
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	$_N$
Data unit:	Dimensionless
Description:	Maximum possible number of sample plots in the project area
Source of data used:	Calculations
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	*n*
Data unit:	Dimensionless
Description:	Sample size (total number of sample plots required) in the project area
Source of data used:	Calculations
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	N_i
Data unit:	Dimensionless
Description:	Maximum possible number of sample plots in stratum *i*
Source of data used:	Calculations
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	n_i
Data unit:	Dimensionless
Description:	Sample size for stratum *i*
Source of data used:	Calculations

Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	nTR_{PLikt}
Data unit:	Number
Description:	Number of trees in the sample plot
Source of data used:	Plot measurement
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	st_i
Data unit:	
Description:	Standard deviation for each stratum i; dimensionless
Source of data used:	
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	tID
Data unit:	
Description:	Age of plantation (1, 2, 3,… years)
Source of data used:	GIS
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	tr_{ID}
Data unit:	Dimensionless
Description:	Tree ID (1, 2, 3, … tr …TR = total number of trees in the plot
Source of data used:	Field measurement
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	XF

Data unit:	Dimensionless
Description:	Plot expansion factor from per plot values to per hectare values)
Source of data used:	Calculations
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

Data / Parameter:	$z_{\alpha/2}$
Data unit:	Dimensionless
Description:	Value of the statistic z (normal probability density function), for α = 0.1 (implying a 90% confidence level)
Source of data used:	Statistics reference
Value(s) :	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	
Additional comment:	Not monitored

D.2. Data and parameters monitored

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

>>

Data / Parameter:	C_{BSL}
Data unit:	*t CO_2-e*
Description:	Baseline net greenhouse gas removals by sinks
Source of data used:	PDD, p. 62, Table 24: Baseline net GHG removals by sinks (t CO_2e)
Value(s) :	6249.88 t **CO_2 e**
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data based on project area and Albania National Forest Inventory are used for calculation of baseline net GHG removals by sinks
Additional comment:	

Data / Parameter:	**$BEF_{2,j}$**
Data unit:	Dimensionless
Description:	Biomass expansion factor for species j
Source of data used:	Calculated based on the data of Albania National Forest Inventory and root shoot ratio of Table 3A.1.8, GPG LULUCF IPCC (2003)
Value(s) :	1.44
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Biomass expansion factor is used to calculate the above ground biomass
Additional comment:	

Data / Parameter:	**Rj**
Data unit:	Dimensionless
Description:	Root-shoot ratio for species *j*

Source of data used:	Table 3A.1.8, GPG LULUCF IPCC (2003)
Value(s) :	0.35
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Root-shoot ratio of temperate broad leaved forests/plantations as specified in GPG LULUCF IPCC (2003) is used to calculate the below ground biomass
Additional comment:	

Data / Parameter:	**Dj(Oak)**
Data unit:	tonnes d.m. m^{-3}
Description:	Basic wood density for species *j* (Oak)
Source of data used:	TABLE 3A.1.9-1, GPG LULUCF IPCC (2003)
Value(s) :	0.58
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Wood density is used to convert the volume of wood into biomass
Additional comment:	

Data / Parameter:	**Dj (Hornbeam)**
Data unit:	tonnes d.m. m^{-3}
Description:	Basic wood density for species *j* (Hornbeam)
Source of data used:	TABLE 3A.1.9-1 ,GPG LULUCF IPCC (2003)
Value(s) :	0.63
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Wood density is used to convert the volume of wood into biomass
Additional comment:	

Data / Parameter:	**CFj**
Data unit:	tonnes C (tonne d.m.)-1
Description:	Carbon fraction for species *j*
Source of data used:	IPCC (2003)
Value(s) :	0.5 (default)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Carbon fraction default value is used to convert biomass in to carbon stock
Additional comment:	

D.2. Data and parameters monitored	
(Copy this table for each data and parameter. To report multiple values, a table may be used)	
Net GHG Removals by sinks	
Data / Parameter:	**A_i**
Data unit:	Hectares
Description:	Area of stratum i
Measured /Calculated /Default:	Measured
Source of data:	Project
Value(s) of monitored parameter:	6272.36 (one project stratum)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks, Project emissions
Monitoring equipment (type,	GIS or/and GPS

accuracy class, serial number, calibration frequency, date of last calibration, validity)	
Measuring/ Reading/ Recording frequency:	At the start of the project and thereafter at monitoring intervals prior to each verification
Calculation method (if applicable):	
QA/QC procedures applied:	Checked during monitoring period

Data / Parameter:	**A**
Data unit:	Hectares
Description:	Total size of all strata (A) , e.g the total project area
Measured /Calculated /Default:	Calculated
Source of data:	Project
Value(s) of monitored parameter:	6272.36
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks,
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or/and GPS
Measuring/ Reading/ Recording frequency:	At the start of the project and thereafter at monitoring intervals prior to each verification
Calculation method (if applicable):	
QA/QC procedures applied:	Checked during monitoring period

Data / Parameter:	$\mathbf{A_{N,\,ikt}}$
Data unit:	Hectares
Description:	Area of with N applied in stratum *i*, stand model *k*, at time *t*
Measured /Calculated /Default:	Measured/calculated
Source of data:	Project
Value(s) of monitored parameter:	6272.36 (one stand model)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks, Project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or/and GPS
Measuring/ Reading/ Recording frequency:	At the start of the project and adjusted thereafter every 5-year
Calculation method (if applicable):	
QA/QC procedures applied:	Checked during monitoring period

Data / Parameter:	$\mathbf{A_{ikt}}$
Data unit:	Hectares
Description:	Area of stratum i , stand model k, at time t
Measured /Calculated /Default:	Measured/calculated
Source of data:	Project

Value(s) of monitored parameter:	6272.36 (one stand model)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks, Project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or/and GPS
Measuring/ Reading/ Recording frequency:	At the start of the project and adjusted thereafter every 5-year
Calculation method (if applicable):	
QA/QC procedures applied:	Checked during monitoring period

Data / Parameter:	**AP**
Data unit:	**m^2**
Description:	Sample plot area
Measured /Calculated /Default:	Measured
Source of data:	Project
Value(s) of monitored parameter:	200
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or and GPS, compass
Measuring/ Reading/ Recording frequency:	5-year
Calculation method (if applicable):	
QA/QC procedures applied:	Plot location and area checked and verified during monitoring period

Data / Parameter:	Latitude/longitude of sample plot location
Data unit:	lat/long coordinates
Description:	Location of sample plots
Measured /Calculated /Default:	Measured
Source of data:	Project and plot maps, GPS, GIS
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	GPS coordinates
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GPS
Measuring/ Reading/ Recording frequency:	5 years
Calculation method (if applicable):	
QA/QC procedures applied:	Sample plot locations are checked and verified using GPS coordinates

Data / Parameter:	DBH
Data unit:	cm
Description:	Diameter at breast height of living trees
Measured /Calculated /Default:	Measured
Source of data:	Sample plot measurement
Value(s) of monitored parameter:	Diameter of trees measured and recorded as part of sample plot measurement
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Diameter tape, caliper
Measuring/ Reading/ Recording frequency:	5 year
Calculation method (if applicable):	
QA/QC procedures applied:	Diameter measurements are randomly checked during monitoring period

Data / Parameter:	Hj
Data unit:	meters
Description:	Height of species j
Measured /Calculated /Default:	Measured
Source of data:	Sample plot measurement
Value(s) of monitored parameter:	Height of trees measured and recorded as part of sample plot measurement
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Net GHG removals by sinks
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Laser instrument
Measuring/ Reading/ Recording frequency:	5 year
Calculation method (if applicable):	
QA/QC procedures applied:	Height measurements are randomly checked during monitoring period

Project emissions

Data / Parameter:	$A_{B,ikt}$
Data unit:	
Description:	Area of slash and burn in stratum i , species j , at time t
Measured /Calculated /Default:	Measured
Source of data:	Project
Value(s) of monitored parameter:	0
Indicate what the data are used for (Baseline/ Project/ Leakage	Area affected in the natural fires is used to calculate the project emissions from biomass burn in natural fires

emission calculations)	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or/and GPS
Measuring/ Reading/ Recording frequency:	At the start of project and annually
Calculation method (if applicable):	
QA/QC procedures applied:	Checked during monitoring period

Data / Parameter:	B_{ijt}
Data unit:	tonnes d.m. ha-1
Description:	Average above-ground biomass burnt in natural fire for stratum i , species j , time t
Measured /Calculated /Default:	Measured
Source of data:	Sample plot measurement
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	
Measuring/ Reading/ Recording frequency:	Before burning
Calculation method (if applicable):	BEF method
QA/QC procedures applied:	Biomass measurement is checked and verified during monitoring period

Leakage

Data / Parameter:	dNa_{EGlt}
Data unit:	Dimensionless
Description:	Number of animals displaced in EGL areas at time t
Measured /Calculated /Default:	
Source of data:	Survey of communes
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data with regard to the number of animals displaced for the purpose of grazing outside the project.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	
Measuring/ Reading/ Recording frequency:	During the first monitoring period
Calculation method (if applicable):	
QA/QC procedures applied:	10% of the land/animal owners shall be questioned on number of displaced animals.by year. For the early start projects monitoring of leakage once durng the first

	monitoring is sufficient as year of displacement is known through surveys.

D.3. Implementation of sampling plan

>>

Stratification

At the start of the project, the project was proposed for implementation under one ex ante stratum. The changes in project implementation were taken into account in the *ex post* stratification.

***Ex post* stratification**

As part of the *ex post* stratification, area of the *ex ante* stratum organized into the four ecozones.

Strata	Characteristics
Ecozone 1	Mediterranean scrub (maquis) and garrigues. The vegetation isaffected by overgrazing and intensive cutting. It represents the degraded Holly Oak (*Quercus ilex)* forests. degradation processes favour dry tolerant dwarf species such as *Spartium junceum, Salvia officinalis, Phlomis fruticosa, Paliurus spina-christi, Erica arborea, Cottynus coggygria etc.*
Ecozone 2	Mixed oak, hornbeam or Macedonian oak, ash and hornbeam. This ecozone represents moderate to severely degraded areas subjected to deforestation, overgrazing and intensive harvest. Major species include Turkey Oak *(Quercus cerris),* Hungarian Oak (*Quercus frainetto*), Oriental Hornbeam (*Carpinus orientalis)*, Flowering Ash (*Fraxinus ornus)*. Oak forests are the potential vegetation type of this ecozone.
Ecozone 3	It represents the degraded stage of the former oak forests as a result of long-term intensive harvests and overgrazing. The characteristic vegetation of this ecozone includes Box-Tree (*Buxus sempervirens),* Prickly Juniper *(Juniperus oxycedrus),* Flowering Ash (*Fraxinus ornus),* Oriental Hornbeam *(Carpinus orientalis),* European Forsythia *(Forsythia europaea),* Wig Tree *(Cotynus coggygria), Alison (Alyssum murale),* Bertolon's Alison *(Alyssum bertoloni)* and oaks (*Quercus sp*.). The black pine is the pioneer species and Turkey Oak and Hungarian Oak are the potential species of the vegetation type.
Ecozone 4	Shrub and small tree species or grassland with Juniper *(Juniperus nana*). This ecozone represents the most degraded stage of former beech forests. Major species of this vegetation type are Common Juniper (*Juniperus communis spp. Nana),* Mat-Grass *(Nardus stricta*), Birch *(Betula pendula),* Hezel *(Corylus avellana),* Hornbeam *(Carpinus betulus),* Goat Willow *(Salix caprea),* Mouse-Ear Hawkweed *(Hieracium pilosella),* Blackthorn Tree *(Prunus spinosa),* Rose *(Rosa sp).*

Sample frame

Calculation of number of sample plots for monitoring and measurement

The methodology AR AM0003 version 04 presents equations to assess the number of sample plots required for monitoring to keep a maximum permissible error of ±10% of the mean, at a 95% confidence level. The "Guidelines on application of specified versions of A/R CDM methodologies in verification of registered A/R CDM project activities" (Version 01.0) have been applied to meet

the required permissible error of ±20% of the mean and a 90% confidence level, and adopted for the calculation of the number of sample plots required for monitoring of the project. The following equations of the methodology were used to calculate the number of sample plots required under *ex post* stratification.

Equation 56 of AR AM0003, Version 04

$$n = \frac{\left[\sum_{h=1}^{L} N_i \cdot st_i\right]^2}{\left(N \cdot \frac{E_1}{z_{\alpha/2}}\right)^2 + \sum_{i=1}^{L} N_i \cdot (st_i)^2}$$

Equation 57 of AR AM0003, Version 04

$$n_i = \frac{\sum_{i=1}^{L} N_i \cdot st_i}{\left(N \cdot \frac{E_1}{z_{\alpha/2}}\right)^2 + \sum_{i=1}^{L} N_i \cdot (st_i)^2} \cdot N_i \cdot st_i$$

Where
L = total number of strata
z = z value for a confidence level (90%)
E = allowable error (±10% of the mean), E = Q * DLP;
st_i = standard deviation of stratum i
n_i= number of samples per stratum allocated
N = number of total sample units (all stratum), $N = \sum N_i$
N_i= number of sample units for stratum i, calculated by dividing the area of stratum i by the area of the sample plot of 200 m^2.
Q = Average biomass quantity *Q,*; tonnes ha^{-1}
DLP = Desired level of precision (e.g. 10%); dimensionless

The parameters of the strata in terms of their area, mean carbon stock, and standard deviation under the ex post stratification are used for calculation of the number of sample plots.

Area of strata: The area of the strata reflect the area with standing stock at the end of the monitoring period.

Mean carbon stock of strata (Qi): Mean carbon stock of a stratum reflects the quantity of biomass present on the land parcels of the strata.

Standard deviation of the carbon stock of strata (sti): Standard deviation in the carbon stock of strata is expected to vary because of the differences in the growth rates of stands on different lands parcels.

Coefficient of variation (CV): Coefficient of variation as the ratio of standard deviation and mean carbon stock of a stratum expressed in percent reflects the variability of carbon stock of different strata of the project.

Table C.5 presents the parameters in the calculation of number sample plots required for calculation of carbon stock change during the first monitoring period. The area of strata indicates the area of standing stock and regeneration during this period. The mean carbon stock and standard deviation are based on the measurements conducted on the sample plots laid out on the project land parcels.
The number of sample plots by strata calculated based on mean carbon stock and standard deviation of the carbon stock based on the sample plot measurements to meet the permissible error limit of 10% and 20% of the mean and a confidence interval of 90% is presented in Table 5. The sample plot calculation sheet is attached as Annex 2 (separate file).

Table 5: Sample plots in project area by strata.

Strata	Sample plots required to meet 10% precision and 90% confidence interval	Sample plots required to meet 20% precision and 90% confidence interval	Sample plots established in the project strata
Ecozone 1	34	12	20
Ecozone 2	132	19	28
Ecozone 3	125	34	42
Ecozone 4	0	1	5
Total	**292**	**66**	**95**

Location of sample plots

To avoid subjective choice of plot locations, the permanent sample plots are located systematic location of sample plots with random start. All sample plots, their GPS coordinates, location of stand, name of farmer, village name, district name and the state recorded and archived in the project database. Each plot is given a sample plot ID were included in the project documents.

Circular sample plots of 200 m2 were located and plot centers were recorded using GPS. The geographical position, administrative location, stratum number of each plot was recorded and archived physically and electronically. The plot radii were adjusted for slope in the direction of the slope. The Vertex instrument compensates automatically. The centers of the sample plots are marked by a metal rod to facilitate the measurement of trees on the plot and for later re-measurement of the permanent sample plot in subsequent inventories.

Procedure for data collection on sample plots

i) Measurement of tree biomass

Tree diameter: Measurements for diameter at breast height (1.37 m) were conducted. The trees with DBH greater than 2.0 cm on sample plots were measured. The diameter was measured with a caliper to the nearest lower mm.

Tree height - Height of **five** trees close to the centre of as ample plot were measured with vertex instrument. Calibration of vertex was conducted prior to the plot and tree height measurements on each sample plot.

Calibration of measuring equipment was done and sample plot measurements, data recording and processing were carried out in accordance with QA/QC procedures.

ii) Calculation of biomass, carbon stock and carbon stock change

Calculation of biomass, carbon stock and carbon stock changes is based on the biomass measurements of sample plots is calculated following the stock change approach.

Growth data and equations for calculation of biomass and carbon stock change

Allometric equation method is used to calculate the biomass and carbon stock change. The biomass estimated from allometric equation is multiplied by number of trees on the sample plot to obtain above ground biomass per sample plot and hectare. From the aboveground biomass of trees, carbon stock is calculated using the parameters on root shoot ratio, wood density, and carbon fraction (CF) and converted to CO_{2e}.

Allometric equations published in the edapho-climatic conditions corresponding to Albania were assessed. The "site equivalence" is established height/diameter relationships of species which meet the edapho-climatic criteria and applicability criteria of the A/R Methodological Tool: Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities (Version 01.0.0) were analyzed. The allometric equations meeting the applicability with regard to climatic and edaphic conditions, sample size, and R^2 were adopted for the application of sample plot diameter measurements. Annex 3 shows the application of the AR Methodological Tool on the appropriateness of allometric equations for the project context.

Table 2 lists parameters of all allometric equations representing the edapho-climatic region and the DBH range to which the equation was originally applied, the number of sample trees used in its establishment, the R^2, and the source. In some cases, additional equations for the same species were graphed and compared and conservative allometric equations that meet the relevant criteria were then chosen.

Table 6: Parameters of allometric equations employed in biomass assessment

Species	Origin	DBH range cm	a	b	Sample tree number	R^2	Source
Quercus	**NE-Spain**	**5-24**	**0.2208**	**2.217**	**69**	**0.908**	**[2]**
Carpinus, Ostrya	see text	n.a.	0.2208	2.217	n.a	n.a	[6]
Fraxinus	Italy -see text	5-30	0.17	2.46	40	0.97	[7]
Castanea	Mediterranean	1-35	0.08	2.421	49	0.916	[8]
Pinus	Southern	2-44	0.134	2.214	56	0.99	[9]

	France						
Robinia	Romania	2-16	1.0556	2.0594	52	0.9569	[1]
Generic equation for all juvenile trees	n.a.	2-16	0.1944	2.08	63	0.88	[10]

It was assessed that the allometric equation of oak meets all the criteria of the AR Methodological Tool on appropriateness of allometric equations. Therefore, the oak allometric equation was adopted for major species – oak, hornbeam and ash. For "minor species" a generic equation applicable to those species was adopted.

Wood densities of major species in the project are given in Table 7.

Table 7: Basic wood densities of major species in the project area

Species	Average density (g/cm^3)	Source
Quercus spec.	0.65	[5]
Carpinus spec.	0.79	"
Fraxinus spec.	0.66	"
Robinia	0.73	"
Castanea	0.56	"
Prunus avium	0.57	"
Alnus	0.49	"
Acer	0.59	"
Wild pear	0.70	"
Poplar	0.41	"
Betula	0.61	"
Sorbus	0.73	"
Pine	0.49	"
Juniper	0.52	"

The measurements of diameter at breast height of trees with 2 cm or more are conducted for the purpose of assessing the changes in the aboveground and below-ground carbon stocks. The procedures outlined in the monitoring plan are followed in implementing the measurements.

QA/AC procedures

Quality assurance and quality control (QA/QC) procedures are implemented to ensure the net anthropogenic GHG removals by sinks are measured and monitored precisely, credibly, and transparently.
a) Quality checks on field measurements
To ensure the reliable field measurements,

- Standard Operating Procedures (SOPs) followed for each step of the field measurements.
- Trainings on field data collection for persons involving in the field measurement work were held.

b) Quality checks of field data collected
To verify that the plots have been installed and the measurements taken correctly, the following measures have been undertaken:

- Re-measurement of at least one (randomly selected) plot per every 10 plots by another team, and comparison of the measurements to check for errors; any errors found are recorded, resolved and corrected.
- Key re-measurement elements include the location of plots, DBH and tree height of all trees present. The procedures implemented as part of the re-measurement are checking of the field record of both original measurement and re-measurement. If any calculation error is found, it is checked and corrected. Following criteria of allowable errors shall be applied:

c) Data maintenance and archival
Data were archived in both electronic and paper forms, and copies of all data shared with each project participant to store in multiple locations. The archives include:

- Copies of all original field measurement data, laboratory data, data analysis spreadsheet;
- Estimates of the carbon stock changes in all pools and non-CO_2 GHG emissions covered by the project and corresponding calculation spreadsheets;
- GIS products;
- Copies of the measuring and monitoring reports.

Monitoring of project emissions by sources

There are no GHG emissions associated with the implementation of the project as there was no soil disturbance related to site preparation as supplemental planting activities were carried out using manual methods. The biomass burning is not practiced in project implementation; therefore, emissions from biomass burning are non-existent. No fossil fuels and fertilizers are used in the project. Therefore, there are no emissions associated with them.

Therefore, no project emissions occurred as a consequence of the project implementation and are reported as **zero**

Monitoring of leakage due to activity displacement

As per the methodology leakage due to conversion of land to grazing land is attributable to the A/R CDM project activity if the conversion of land to grazing land occurs 5 years within the last measure taken to reduce animal populations in the project area. Monitoring of leakage due to the conversion of land to grazing land is therefore necessary only up to the fifth year after the measures to control grazing control measures. As the project was implemented at the end of 2004, the protection measures implemented to control grazing in the form of social fencing were initiated from the start of the project. These were supplemented with the physical protection measures in the form of fencing

Assessment of grazing leakage

As part of monitoring, assessment of the grazing leakage was done using 33 randomly selected parcels. Surveys on the number of animals from the different livestock groups present in the project area: Where do they graze? How big is the EGL outside of the project? Is fodder being collected on

the project parcels? How does the number of animals present in the project area compare to the Ex ante estimated pre-project number of animals?

Assessment of fuel-wood leakage

Assessment of displacement of the firewood collection was done using questionnaires based on the 33 sample plots to assess whether fuel-wood has been collected on the project parcels before and after the implementation of the project? How much per week? Where do people collect fuel-wood now? How much per week etc.

SECTION E. Calculation of emission reductions or GHG removals by sinks
E.1. Calculation of baseline emissions or baseline net GHG removals by sinks
>>
Baseline net GHG removals by sinks

The baseline net GHG removals are not monitored. Therefore, the table below presents the values presented in the PDD at project registration.

Year	Annual estimation of baseline net anthropogenic GHG removals by sinks in tonnes of CO_2 e
2005	88.60
2006	259.16
2007	531.09
2008	441.60
2009	324.41
2010	322.16
2011	319.93
2012	317.72
2013	315.52
2014	313.33
2015	311.16
2016	309.00
2017	306.86
2018	304.74
2019	302.63
2020	300.53
2021	298.45
2022	296.38
2023	294.33
2024	292.29
Total estimated baseline net GHG removals by sinks (tonnes of CO_2 e)	**6249.88**
Total number of crediting years	**20**
Annual average over the crediting period of estimated baseline net GHG removals by sinks (tonnes of CO2 e)	**312.49**

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

As the project implementation focuses on assisted regeneration, there is no site preparation. Therefore, the soil disturbance is non-existent. The supplemental planting is small, the soil disturbance associated with site preparation is insignificant as site preparation has been done manually and no machinery or fertilization has been used in the project.

The biomass burning is not practiced in project implementation; therefore, emissions from biomass burning are non-existent.

There is no fossil fuel use and fertilizer application in the project. Therefore, there are no emissions associated with them. Moreover, as per annex 26, EB63, emissions from use of fertilizer use and fossil fuel emissions are not needed to be considered.

Therefore, no project emissions occurred as a consequence of the project implementation and are reported as zero

Actual Net GHG Removals by Sinks

Actual net GHG removals by sinks are calculated based on the measurements of circular sample plots of 200 sq. mts located in project area. The measurements on 95 sample plots are used for the purpose of calculation of actual GHG removals by sinks.

The steps and equations outlined in the methodology for calculation of ***ex post*** **actual net GHG removal by sinks** in the section 5 of the methodology are applied. The **allometric equation method** is used in the calculation of carbon stock changes.

The emission reductions are calculated applying the equations of the AR AM0003 version 04 methodology to the data collected from the measurement of trees on the sample plots of the discrete project.

The verifiable changes in carbon stock represent the carbon stock changes in above-ground biomass and below-ground biomass within the project boundary, estimated using the equations:

$$\Delta C_{P,LB_T} = \sum_{t=1}^{t^*} \sum_{i=1}^{m_{PS}} \sum_{k=1}^{K} \Delta C_{P,ikt}$$

(Equation 60 of the methodology)

where:

$\Delta C_{P,LB}$	Sum of the changes in living biomass carbon stocks (above- and below-ground); t CO_2-e
$\Delta C_{P,ikt}$	Annual carbon stock change in living biomass for stratum *i,* stand model *k*, time *t;* t CO_2-e yr^{-1}
i	1, 2, 3, … S_{ps} strata of the project activity
k	1, 2, 3, … *K* stand models
t	1, 2, 3, …*t** years elapsed since the start of the A/R project activity

$$\Delta C_{P,ikt} = (\Delta C_{AB,ikt} + \Delta C_{BB,ikt}) \cdot \frac{44}{12}$$

(Equation 61 of the methodology)

where:

$\Delta C_{P,ikt}$ Annual carbon stock change in living biomass for stratum *i,* stand model *k*, time *t;* t CO_2-e. yr^{-1}

$\Delta C_{AB,ikt}$ Annual carbon stock change in above-ground biomass for stratum *i,* stand model *k*, time *t;* t C yr^{-1}

$\Delta C_{BB,ikt}$ Annual carbon stock change in below-ground biomass for stratum *i,* stand model *k*, time *t;* t C yr^{-1}

The mean change in carbon stocks in above-ground biomass and below-ground biomass per unit area are based on the measurements of sample plots.

As per the Annex 27, EB63, paragraph 3(p), and allometric equation is used for calculate the carbon stock change of the project.

Allometric equation method

The allometric equation adopted to the project confirms to the A/R Methodological Tool: Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities (Version 01.0.0). The steps of the methodology relevant to the allometric equation method are applied to calculate the carbon stock change in the project.

$$TB_{ABj} = f_j(DBH, H)$$ **(Equation 68 of the methodology)**

where:

TB_{ABj} Above-ground biomass of a tree; kg $tree^{-1}$

$f_j(DBH,H)$ An allometric equation for species *j* linking above-ground tree biomass (kg $tree^{-1}$) to diameter at breast height (*DBH*) and possibly tree height (*H*) measured in plots for stratum *i,* species *j*, time *t*

The carbon stock in above-ground biomass per tree is calculated by applying the allometric equation to the tree measurements.

$$TC_{ABj} = TB_{ABj} \cdot CF_j$$ **(Equation 69 of the methodology)**

where:

TC_{AB} Carbon stock in above-ground biomass per tree; kg C $tree^{-1}$

TB_{ABj} Above-ground biomass of a tree of species *j*; kg $tree^{-1}$

CF Carbon fraction (IPCC default value = 0.5); t C (t d.m.)$^{-1}$

The increment of above-ground biomass carbon accumulation is done by subtracting the biomass carbon at time 2 from the biomass carbon at time 1.

$$\Delta TC_{ABjT} = TC_{ABj,t2} - TC_{ABj,t1}$$ **(Equation 70 of the methodology)**

where:

ΔTC_{ABjT} Carbon stock change in above-ground biomass per tree of species *j* between two monitoring events; kg C $tree^{-1}$

$\Delta TC_{ABj,t2}$ Carbon stock change in above-ground biomass per tree of species *j* at monitoring event t_2; kg C $tree^{-1}$

$\Delta TC_{ABj,t1}$ Carbon stock change in above-ground biomass per tree of species *j* at monitoring event t_1; kg C $tree^{-1}$

The change in biomass carbon per tree within each plot is calculated by multiplying with plot expansion factor which is proportional to the area of the measurement plot.

$$\Delta PC_{ABikT} = \frac{XF \cdot \sum_{tr=1}^{TR} \Delta TC_{ABjT,tr}}{1000}$$ **(Equation 71 of the methodology)**

$$XF = \frac{10{,}000}{AP}$$ **(Equation 72 of the methodology)**

where:

$\Delta PC_{AB,ijT}$	Plot level carbon stock change in above ground biomass in stratum *i*, species *j*, between two monitoring events; t C ha^{-1}
ΔTC_{ABjT}	Carbon stock change in above-ground biomass per tree of species *j* between two monitoring events; kg C tree^{-1}
XF	Plot expansion factor from per plot values to per hectare values
AP	Plot area; m^2
tr	Tree (*TR* = total number of trees in the plot)

The mean carbon stock change within each stratum is calculated by averaging across plots in a stratum.

$$\Delta MC_{ABikT} = \frac{\sum_{pl=1}^{PL_{ik}} \sum_{j}^{J} \Delta PC_{ABikT,pl}}{PL_{ik}}$$ **(Equation 73 of the methodology)**

where:

ΔMC_{ABikT}	Mean carbon stock change in above-ground biomass in stratum *i*, stand model *k*, between two monitoring events; t C ha^{-1}.
ΔPC_{ABijT}	Plot level mean carbon stock change in above-ground biomass in stratum *i*, species *j*, between two monitoring events; t C ha^{-1}.
pl	Plot number in stratum *i*, species *j*; dimensionless
PL_{ik}	Total number of plots in stratum *i*, stand model *k*; dimensionless
j	Species *j* (*J* = total number of species)

The carbon stock in below-ground biomass is estimated by applying the root-shoot ratio to the above-ground carbon stock.

$$TC_{BBj} = TC_{ABj} \cdot R_j$$ **(Equation 74 of the methodology)**

$$\Delta TC_{BBjT} = TC_{BBj,t2} - TC_{BBj,t1}$$ **(Equation 75 of the methodology)**

$$\Delta PC_{BB,ikT} = \frac{XF \cdot \sum_{tr=1}^{TR} \Delta TC_{BBjT}}{1000}$$ **(Equation 76 of the methodology)**

$$\Delta MC_{BB,ikT} = \frac{\sum_{pl=1}^{PL_{ik}} \Delta PC_{BBikT,pl}}{PL_{ik}}$$ **(Equation 77 of the methodology)**

where:

TC_{BBj} Carbon stock in below-ground biomass per tree of species *j*; kg C tree^{-1}
TC_{ABj} Carbon stock in above-ground biomass per tree of species *j* as calculated in Step 1; kg C tree^{-1}
R_j Root-shoot ratio appropriate to increments for species *j*; dimensionless
ΔTC_{BBjT} Carbon stock change in below-ground biomass per tree of species *j* between two monitoring events; kg C tree^{-1}
$\Delta PC_{BB,\,ijT}$ Plot level carbon stock change in below-ground biomass of species *j* between two monitoring events; t C ha^{-1}
XF Plot expansion factor from per plot values to per hectare values (see equation 80); dimensionless
tr Tree (*TR* = total number of trees in the plot)
ΔMC_{BBikT} Mean carbon stock change in below-ground biomass for stratum *i*, stand model *k*, between two monitoring events; t C ha^{-1}
ΔPC_{BBikT} Plot level carbon stock change in below-ground biomass for stratum *i*, stand model *k*, between two monitoring events; t C ha^{-1} *pl* = plot number in stratum *i*, stand model *k*; dimensionless
PL_{ik} Total number of plots in stratum *i*, stand model *k*; dimensionless

The annual carbon stock change is calculated by dividing the carbon changes between two monitoring events by the number of years between monitoring events.

$$\Delta MC_{ABikt} = \frac{\Delta MC_{ABikT}}{T}$$ **(Equation 78 of the methodology)**

$$\Delta MC_{BBikt} = \frac{\Delta MC_{BBikT}}{T}$$ **(Equation 79 of the methodology)**

where:
$\Delta MC_{AB,ikt}$ Annual mean carbon stock change in above-ground biomass for stratum *i*, stand model *k,* at year *t*; t C ha^{-1} yr^{-1}
$\Delta MC_{BB,ikt}$ Annual mean carbon stock change in below-ground biomass for stratum *i*, stand model *k,* at year *t*; t C ha^{-1} yr^{-1}
ΔMC_{ABikT} Mean carbon stock change in above-ground biomass for stratum *i*, stand model *k,* between two monitoring events; t C ha^{-1} yr^{-1}
ΔMC_{BBikT} Mean carbon stock change in below-ground biomass for stratum *i*, stand model *k,* between two monitoring events; t C ha^{-1} yr^{-1}
T Number of years between two monitoring events which in this methodology is 5 years

The annual carbon stock change in living biomass for each stratum *i*, species *j*, stand model *k*, at time *t* is calculated from the area of each stratum *i*, species *j*, stand model *k*, at time *t* and the annual mean carbon stock change in above-ground biomass and below-ground biomass per unit area.

$$\Delta C_{AB,ikt} = A_{ikt} \cdot \Delta MC_{AB,ikt}$$ **(Equation 80 of the methodology)**

$$\Delta C_{BB,ikt} = A_{ikt} \cdot \Delta MC_{BB,ikt}$$ **(Equation 81 of the methodology)**

where:
A_{ikt} Area of stratum *i*, stand model *k,* at time *t*; hectare (ha)
$\Delta C_{AB,ikt}$ Changes in carbon stock in above-ground biomass for stratum *i*, stand model *k,* at time *t*;

t C yr^{-1}

$\Delta C_{BB,ikt}$ Changes in carbon stock in below-ground biomass for stratum *i*, stand model *k,* at time *t*; t C yr^{-1}

$\Delta MC_{AB,ikt}$ Annual mean carbon stock change in above-ground biomass for stratum *i*, stand model *k,* at year *t*; t C ha^{-1} yr^{-1}

$\Delta MC_{BB,ikt}$ Annual mean carbon stock change in below-ground biomass for stratum *i*, stand model *k,* at year *t*; t C ha^{-1} yr^{-1}

Note that stand models will most often be one of the strata, and therefore will be included as such rather than as a separate consideration.

E.3. Calculation of leakage

>>

The surveys of households to assess the leakage from potential shift of grazing and fuelwood collection activities was conducted.

The two sources of activity displacement leakage relevant for the project – conversion of land to grazing land and fuelwood collection are assessed as per the guidance of the monitoring methodology

This 'activity shifting' or 'activity displacement' of grazing resulting in leakage in the immediate years after the start of the project activity when activities are displaced to areas outside the project boundary. $LK_{conversion}$ occurs:

$$LK_{conversion} = LK_{conv-graz}$$ **(Equation 89 of the methodology)**

where:

$LK_{conv-graz}$ Leakage resulting from the conversion for grazing

Leakage from conversion of land to grazing land

The ex-ante assessment of the leakage associated with grazing presented in pages 71 to 85 of the PDD was used to evaluate this leakage as part of project monitoring.

The steps of the AR AM0003 version 04 to assess the leakage associated with grazing during the project implementation period.

Step 1*:* Information pertaining to forest protection and grazing control measures specified in the AR-CDM-PDD was as part of project monitoring to evaluate the leakage related to grazing. As per the methodology, monitoring of leakage due to conversion of land to grazing land is necessary until 5 years after the implementation of grazing control measures.

As part of the leakage assessment due to grazing, detailed questionnaires were designed and data were collected on animal population, grazing patterns, surveys of 33 parcels as per the guidance of the methodology (i.e.,. the sample size should not be less than 10% of the randomly selected parcels or 30 parcels).

Step 2: For first verification period, based on the surveys as part of monitoring, the animal population animals subject to displacement to outside the project boundary was done by surveying 33 discrete areas /land parcels selected randomly as well as by interviewing the animal owners.

$$Na_{outside,t} = Na_{BL} - Na_{AR,t}$$ **(Equation 90 of the methdology)**

where:

$Na_{outside,t}$ Number of animals displaced outside the project area at year *t*; dimensionless

Na_{BL} *Ex ante* estimated pre-project number of animals from the different livestock groups that would be grazing in the project area under the baseline scenario; dimensionless. This estimate is fixed for the entire crediting period and is specified in the AR-CDM-PDD

$Na_{AR,t}$ Monitored number of animals present in the project area at year *t*; dimensionless

If:

- $Na_{BL} < Na_{AR,t}$ then, it can be assumed that the AR-CDM project activity has not displaced grazing animal populations. Leakage due to conversion of land to grazing land can be set as zero ($LK_{conversion} = 0$) and no further monitoring step is needed;
- $Na_{BL} > Na_{AR,t}$ then it is necessary to monitor the animal populations in the *EGL* areas specified in the AR-CDM-PDD.

Step 3: For first verification period, the average animal population size displaced in the *EGL* areas specified in the AR-CDM-PDD was assessed through surveys of land parcels and interviews of animal owner households to assess the displacement. The surveys indicated that the displacement of grazing has not occurred as a result of the project. Random sample of 33 animal owner households were selected to conduct survey. The results of the surveys showed that leakage associated with the displacement of grazing is insignificant

$$dNa_{EGL,t} = \frac{Na_{EGL,t} - Na_{EGL,t=1}}{SFR_{EGL}}$$ **(Equation 91 of the methodology)**

where:

dNa_{EGLt} Number of animals displaced in *EGL* areas at time *t*; dimensionless

$Na_{EGL,t}$ Number of animals present in the sampled *EGL* areas at time *t*; dimensionless

$Na_{EGL,t=1}$ Number of animals present in the sampled *EGL* areas at time *t=1,* as specified in the AR-CDM-PDD; dimensionless

SFR_{EGL} Fraction of sampled *EGL* areas sampled with respect to total, as specified in the AR-CDM-PDD; dimensionless

As $Na_{BL} < (Na_{AR,t} + dNa_{EGL,t})$, it can be assumed that the animal populations displaced due to the AR CDM project activity have not occasioned leakage due to conversion of land to grazing land ($LK_{conversion} = 0$).

The report on the assessment will be presented at the verification site visit.

Displacement of fuelwood collection

As the project produces more fuel-wood in comparison to the baseline, there has been no fuel-wood leakage. As stated in the PDD, the project produces more fuel-wood through thinning and cleaning activities. Therefore, no displacement of fuel-wood is anticipated.

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

Time Period	Baseline emissions or baseline net GHG removals by sinks (tCO_2e)	Project emissions or actual net GHG removals by sinks (tCO_{2e})	Leakage (tCO_2e)	Emission reductions or net anthropogenic GHG removals by sinks (tCO_2e)
2005	88.6	6783.3	0	6694.7
2006	259.16	13971.62	0	13712.46
2007	531.09	23597.25	0	23066.16
2008	441.6	27382.68	0	26941.08
2009	324.41	27392.71	0	27068.30
2010	322.16	26936.46	0	26614.30
2011	319.93	26487.78	0	26167.95
2012	317.72	26046.54	**0**	**26046.54**
Total				**175,993.67**

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

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (tCO_2e)		

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

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Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO_2e)	**175,993.67**	**178,598.30**

The ex-ante emission reduction values presented in the PDD are based on the estimates of forest growth while the actual values are based on the measurements conducted on the sample plots. The *ex post* actual net GHG removals by sinks are in the range corresponding to the ex-ante projections presented in the registered project and the differences between the ex post and ex ante estimates seem marginal considering the spatial distribution of the project in different ecozones.

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History of the document

Version	Date	Nature of revision
02.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	EB 54, Annex 34 28 May 2010	Initial adoption.
Decision Class: Regulatory **Document Type**: Form **Business Function**: Issuance		