Monitoring report form for CDM project activity
(Version 06.0)

Complete this form in accordance with the instructions attached at the end of this form.

MONITORING REPORT	
Title of the project activity	Assisted Natural Regeneration of Degraded Lands in Albania
UNFCCC reference number of the project activity	2714
Version number of the PDD applicable to this monitoring report	6
Version number of this monitoring report	1
Completion date of this monitoring report	26/05/2019
Monitoring period number	Monitoring period 2
Duration of this monitoring period	01/07/2012 – 15/02/2019
Monitoring report number for this monitoring report	1
Project participants	- Albania - Ministry of Environment, Forests and Water Administration - Italy - Government of Italy - Ministry for the Environment, Land and Sea - Spain - Kingdom of Spain - Ministry of Agriculture, Food and Environment and Ministry of Economy and Competitiveness - Canada. *Party withdrawn from KP effective 15/12/2012 – Government of Canada – Ministry of Foreign Affairs and International Trade - Japan - - Idemitsu Kosan Co., Ltd.; - The Okinawa Electric Power Co., Inc.; - Suntory Holdings Limited; - Tokyo Electric Power Co., Inc.;Sumitomo Joint Electric Power Co., Ltd.; - Japan Iron and Steel Federation (JISF); - Japan Petroleum Exploration Co.,Ltd. (JAPEX); - Sumitomo Chemical - France - Eco-Carbon S.A.S. - Luxembourg - Ministry of Sustainable Development and Infrastructure - BioCarbon Fund (BioCF) - International Bank for Reconstruction and Development (IBRD) as Trustee of the BioCarbon Fund (BioCF)
Host Party	Albania

Sectoral scopes	Afforestation and reforestation	
Applied methodologies and standardized baselines	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”	
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
	0	171,924
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	330,478	

SECTION A. Description of project activity

A.1. General description of project activity

Land degradation is a human-induced underlined by natural process which negatively affects the land to function effectively within an ecosystem, while diminish services provided to society. Land degradation is linked to sustainability in terms of keeping its certain level of productivity.

Land degradation caused by anthropogenic exploitation has been considered a critical issue in Albania. It is closely linked with soil loss of productivity and is mainly caused by the human activity. It consists in vegetation loss; soil productivity decreases and erosion and lowering water supply and quality. The project purpose has been reforestation of degraded lands by assisting the natural regeneration of vegetation enabling GHG emission reduction, soil properties improvement and rising of biodiversity values.

The project follows a participatory approach involving various stakeholders starting from the selection of the project sampling sites, up to the implementation of various interventions applied to promote the regeneration of degraded forest lands. The main objective of this project has been to restore the vegetation in degraded lands distributed in 24 disadvantaged administrative units (former communes) over five regions of the country.

The main interventions supported by the project were: (i) protection of degraded lands from continuous grazing to promote natural regeneration; (ii) additional seedling planting to enrich species diversity and to stabilize highly eroded areas, and (iii) silvicultural interventions to promote specie's growth such as: coppicing, young stands cleaning and thinning.

All the activities implemented so far under the assisted natural regeneration fall under the reforestation definition of the Marrakesh Accords.

The key solution to support vegetation regeneration is protection of degraded lands by grazing and reforestation in close collaboration with local communities' forest and pasture users' associations as representative of local communities has been actively engaged in all activities conducted in the project areas based on the contractual arrangements. The starting date of the project is 20/12/2004 and several consultations or meetings have been organised with local communities. The project framework was the agreement between the former 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 project area at the initial phase was 6,272.36 ha (in 2012), but was decreased by 1,493.36 ha, because some areas was considered not suitable for the project implementation. As a consequence, from the remained area of 4,779 ha found suitable for undertaking the project, this project was implemented on 3,990.45 ha during the five-year period. Furthermore, over 2013-2019 the area subjected to project removals reduced to 3,989.65 ha because an area accounted to 0.80 ha has been subject of deforestation which occurred in four forest sub-parcels (19a; 173a; 74a and 166a). The project was not yet implemented on the remaining 788.55 hectares. The total GHG removals over the monitoring period amounted to 171,924 tCO2e[1].

[1] Per the paragraph 42 of the Annex to the modalities and procedures of afforestation and reforestation project activities under the CDM (Decision 19/CP.9), tCERs expire at the end of the commitment period subsequent to the commitment period for which they are issued; and per the CDM Executive Board meeting 89 paragraph 49(b), which is referred in the **CDM Project Standard** page 59, paragraph 265(c)(ii); and **CDM Validation and Verification Standard** page 69, paragraph 383, for tCERs, for any issuance, the DOE shall confirm that all net anthropogenic GHG removals achieved since the start of the project activity are allocated to the commitment period in which the monitoring period ends.

A.2. Location of project activity

The project sites are discrete and spread over five regions of Albania (Diber, Elbasan, Kukes, Korce, Shkoder) (Figure 1). The project boundaries are geographically delineated and represented on the forestry management/ topographic plans. The four extreme coordinate points of the project are North: 20°17' 52.09" E 42°16' 6.346" N, West: 19°45'50.282"E 41°58'50.039"N, East: 20°35'22.498"E 41°57'21.961"N, South: 20°36'55.69"E 40°15'41.499"N. 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.

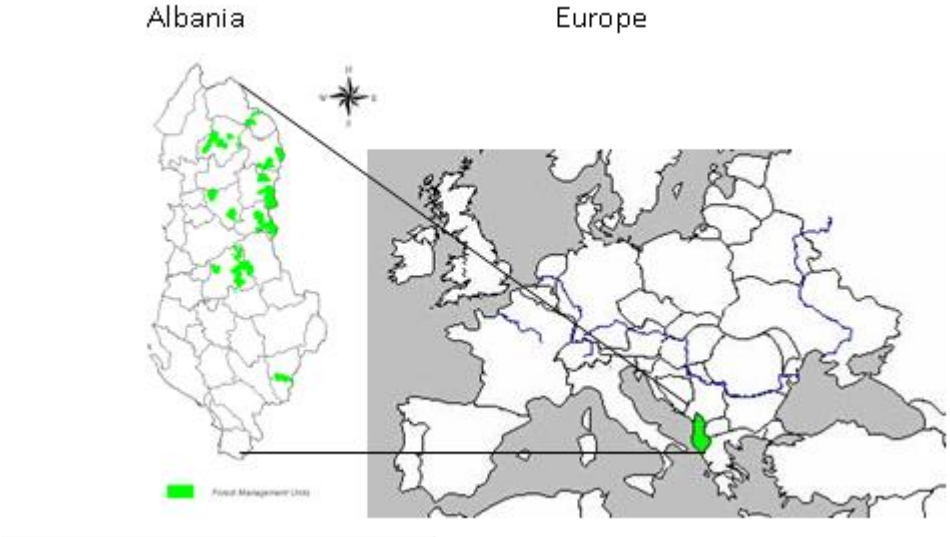

Figure 1. Project sites location in Albania

A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Albania (host)	- Ministry of Environment, Forests and Water Administration	No
Italy	- Government of Italy - Ministry for the Environment, Land and Sea	Yes
Spain	- Kingdom of Spain-Ministry of the Agriculture, Food and Environment and Ministry of Economy and Competitiveness	Yes
Canada. *Party withdrawn from Kyoto Protocol effective 15/12/2012	- Government of Canada – Ministry of Foreign Affairs and International Trade	No

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Japan	- Idemitsu Kosan Co. Ltd.; - The Okinawa Electric Power Co., Inc.; - Suntory Holdings Limited; - Tokyo Electric Power Company, Inc.; - Sumitomo Joint Electric Power Co., Ltd.; - Japan Iron and Steel Federation (JISF); - Japan Petroleum Exploration Co.,Ltd. (JAPEX); - Sumitomo Chemical	No
France	- Eco-Carbon S.A.S.	No
Luxembourg	- Ministry of Sustainable Development and Infrastructure	Yes
BioCarbonFund (BioCF)	- International Bank for Reconstruction and Development (IBRD) as Trustee of the BioCarbon Fund (BioCF)	Yes

A.4. Reference to applied methodologies and standardized baselines

The project has applied the baseline and monitoring methodology AR-AM0003 “Afforestation and reforestation of degraded land through tree planting, assisted natural regeneration and control of animal grazing – Version 04”.

This project complies with the “Guidelines on application of specified versions of A/R CDM methodologies in verification of registered A/R CDM project activities (version 01.0) (EB 63, Annex 31)” [2]; and “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) (EB66, Annex 24)”

Finally, the project is in line with the following A/R Methodological Tools:

- Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities, Version 01.1.0 (EB 65, Annex 28).
- Tool for demonstration and assessment of additionality for afforestation and reforestation CDM project activities (EB21, Annex 16).
- Tool “Procedures to demonstrate the eligibility of lands for afforestation and reforestation project activities”, Version 02 (EB26, annex 18).

A.5. Crediting period type and duration

This project has started on the basis of the agreement MC6-340 dated 23/07/2007 (TF056871) between the International Bank for Reconstruction and Development and the Ministry of Environment, Forestry and Water Administration with main focus on the development of the carbon sequestration component. The crediting period of all activities included in this agreement is 20 years (20yr-00 mm), renewable twice for a total crediting period of 60 years of the project period. The crediting period start date is 20/12/2004 and its end date is 19/04/2024.

[2] http://cdm.unfccc.int/Reference/Guidclarif/ar/methAR_guid30.pdf

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

The interventions promoted natural regeneration under the project, protection of project sites from grazing pressure and support silvicultural activities that enhance biomass productivity through:

a) *Assisted natural regeneration* over entire project area of 3,989.65 ha, including protection, at least limitation, from heavy grazing and facilitation of natural regeneration through physical and social fencing measures; protection from grazing and facilitation of natural regeneration. To protect the sites from grazing and to facilitate natural regeneration, vegetation fences based on the material from pruning, and thinning has 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* on 3,264.2 ha with main purpose to enrich the species diversity in the project sites (Table 1). Planting density varied from 200 seedling per ha (on 1,862.7 ha) to 500 seedlings per ha (on 1,042.5 ha). The forest species proposed for planting are determined per each project site based on respective site conditions.

Table 1. Data about supplementary planting in the project area

Species categories	***Woody species used for supplemental planting***	***Number of seedling used per 1 ha***	***Forest area subject to supplementary planting (ha)***
Native broadleaves	*Betula verrucosa, Cerasus avium, Fagus sylvatica, Faraxinus excelsior, Juglans regia, Quercus cerris, Quercus frainetto, Quercus frainetto, Quercus petraea, Castanea sativa*	200	1,862.7
Native conifers	*Pinus halepensis, Pinus nigra*	500	359.0
Exotic broadleaves	*Robinia pseudoacacia, Populus canadensis*	500	1,042.5
Total			**3,264.2**

Source: PDD of the project.

The supplementary planting aimed to enrich the young stands composition, toward increase of the stand stability and provide more project benefits (and to recover barren areas from within the project area).

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 (Table 2). The nurseries are sufficient for the production of seedlings and the nursery operators have the relevant skills for seedling production.

Table 2. 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.* Silvicultural measures were designed to enhance standing biomass density and promote forest growth. Such interventions aim to encourage regeneration and promote the valuable native species such as *Quercus* spp; *Acer* spp; *Tilia* spp.; *Carpinus* spp.; *Ulmus* spp., etc. Silvicultural measures included:
   - *cleaning* – early intervention consisting in selective removal of unwanted trees in a forest stand that have not passed the sapling stage in order to free the young saplings from the competition for sunlight and space.
   - *thinning* - The removal of selected standing stems to enhance the diameter growth and height of the remaining trees.
   - *coppicing* –as regular regime of management and regeneration in which the stands are regenerated through vegetative saplings.

The starting date of the project activity is **20/12/2004**. 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 project activity is implemented in discrete pieces of land organized as sub-parcels of forest management units which have unique geographical identification and boundaries. The status of implementation is illustrated in the Table 3 below.

Table 3. Status of implementation of the project

Forest Management Unit (FMU)	FMU Number	Forest Sub-parcel	CODE	Forest area in 2018 (ha)	Impl	Ecozone
BARMASH	1	22a	0122a	37.62	1	2
BARMASH	1	58a	0158a	59.82	1	2
BUSHTRICE	2	105b	02105b	21.15	1	3
BUSHTRICE	2	109b	02109b	16.18	1	2
BUSHTRICE	2	109c	02109c	21.40	1	3
BUSHTRICE	2	109c	02109c	1.80	1	3
BUSHTRICE	2	109c	02109c	0.23	1	3
BUSHTRICE	2	156b	02156b	9.30	1	3
BUSHTRICE	2	157a	02157a	28.53	1	4
BUSHTRICE	2	52b	0252b	33.98	1	4
BUSHTRICE	2	65a	0265a	34.31	1	4
BUSHTRICE	2	66a	0266a	49.22	1	4
BUSHTRICE	2	66a	0266a	7.14	1	4
BUSHTRICE	2	69a	0269a	26.70	1	4
BUSHTRICE	2	69a	0269a	17.21	1	4
BUSHTRICE	2	70a	0270a	23.84	1	4
BUSHTRICE	2	70a	0270a	6.57	1	4
BUSHTRICE	2	77a	0277a	8.79	1	3

BUSHTRICE	2	77a	0277a	2.88	1	3
BUSHTRICE	2	77a	0277a	10.75	1	3
BUSHTRICE	2	78c	0278c	9.36	1	4
BUSHTRICE	2	78c	0278c	0.84	1	4
BUSHTRICE	2	78c	0278c	5.99	1	4
BUSHTRICE	2	84a	0284a	12.04	1	2
BUSHTRICE	2	84a	0284a	0.26	1	2
BUSHTRICE	2	84a	0284a	9.55	1	2
BUSHTRICE	2	89a	0289a	14.53	1	2
BUSHTRICE	2	89a	0289a	2.14	1	2
BUSHTRICE	2	89a	0289a	8.80	1	2
BUSHTRICE	2	89a	0289a	0.55	1	2
BUSHTRICE	2	91b	0291b	11.70	1	3
DEDAJ-BUHOT	3	104a	03104a	5.44	1	3
DEDAJ-BUHOT	3	104a	03104a	5.13	1	3
DEDAJ-BUHOT	3	107a	03107a	15.20	1	3
DEDAJ-BUHOT	3	111a	03111a	15.94	1	3
DEDAJ-BUHOT	3	111b	03111b	13.12	1	3
DEDAJ-BUHOT	3	112d	03112d	2.80	1	3
DEDAJ-BUHOT	3	112d	03112d	7.73	1	3
DEDAJ-BUHOT	3	112d	03112d	0.04	1	3
DEDAJ-BUHOT	3	112d	03112d	0.07	1	3
DEDAJ-BUHOT	3	112d	03112d	0.25	1	3
DEDAJ-BUHOT	3	22a	0322a	12.79	1	3
DEDAJ-BUHOT	3	22a	0322a	0.21	1	3
DEDAJ-BUHOT	3	27c	0327c	18.74	1	3
DEDAJ-BUHOT	3	2a	032a	2.97	1	3
DEDAJ-BUHOT	3	30c/1	0330c/1	10.59	1	3
DEDAJ-BUHOT	3	31c/1	0331c/1	7.58	1	3
DEDAJ-BUHOT	3	31c/1	0331c/1	0.41	1	3
DEDAJ-BUHOT	3	31c/1	0331c/1	0.29	1	3
DEDAJ-BUHOT	3	31d	0331d	9.28	1	3
DEDAJ-BUHOT	3	34a	0334a	10.28	1	3
DEDAJ-BUHOT	3	40a	0340a	13.32	1	3
DEDAJ-BUHOT	3	47b	0347b	14.51	1	3
DEDAJ-BUHOT	3	4b	034b	8.99	1	3
DEDAJ-BUHOT	3	4b	034b	4.94	1	3
DEDAJ-BUHOT	3	4b	034b	0.71	1	3
DEDAJ-BUHOT	3	4b	034b	0.33	1	3
DEDAJ-BUHOT	3	4b	034b	0.59	1	3
DEDAJ-BUHOT	3	4b	034b	1.05	1	3
DEDAJ-BUHOT	3	4b	034b	0.77	1	3
DEDAJ-BUHOT	3	4b	034b	1.71	1	3
DEDAJ-BUHOT	3	57a	0357a	10.67	1	3
DEDAJ-BUHOT	3	57a	0357a	0.74	1	3
DEDAJ-BUHOT	3	57a	0357a	3.19	1	3
DEDAJ-BUHOT	3	57a	0357a	0.48	1	3

DEDAJ-BUHOT	3	57a	0357a	0.02	1	3
DEDAJ-BUHOT	3	57a	0357a	0.35	1	3
DEDAJ-BUHOT	3	58b	0358b	6.14	1	3
DEDAJ-BUHOT	3	5a	035b	12.70	1	3
DEDAJ-BUHOT	3	60b	0360b	7.68	1	3
DEDAJ-BUHOT	3	60b	0360b	0.34	1	3
DEDAJ-BUHOT	3	60b	0360b	0.03	1	3
DEDAJ-BUHOT	3	60b	0360b	1.04	1	3
DEDAJ-BUHOT	3	7a	037a	2.01	1	3
DEDAJ-BUHOT	3	7a	037a	1.16	1	3
DEDAJ-BUHOT	3	7a	037a	2.03	1	3
DEDAJ-BUHOT	3	7a	037a	2.65	1	3
DEDAJ-BUHOT	3	7a	037a	1.92	1	3
DEDAJ-BUHOT	3	7a	037a	1.07	1	3
DEDAJ-BUHOT	3	7a	037a	0.80	1	3
DEDAJ-BUHOT	3	88a	0388a	23.54	1	3
DESHAT MAQELLARE	4	106b	04106b	1.10	1	2
DESHAT MAQELLARE	4	137a	04137a	4.16	1	2
DESHAT MAQELLARE	4	137a	04137a	2.72	1	2
DESHAT MAQELLARE	4	14a	0414a	4.69	1	3
DESHAT MAQELLARE	4	154a	04154a	37.81	1	2
DESHAT MAQELLARE	4	155a	04155a	6.48	1	2
DESHAT MAQELLARE	4	155a	04155a	0.03	1	2
DESHAT MAQELLARE	4	155a	04155a	3.19	1	2
DESHAT MAQELLARE	4	155a	04155a	1.36	1	2
DESHAT MAQELLARE	4	155a	04155a	0.04	1	2
DESHAT MAQELLARE	4	155b	04155b	2.29	1	2
DESHAT MAQELLARE	4	156a	04156a	25.35	1	2
DESHAT MAQELLARE	4	156a	04156a	2.75	1	2
DESHAT MAQELLARE	4	156a	04156a	13.14	1	2
DESHAT MAQELLARE	4	156a	04156a	0.16	1	2
DESHAT MAQELLARE	4	159c	04159c	1.02	1	4
DESHAT MAQELLARE	4	159c	04159c	4.49	1	4
DESHAT MAQELLARE	4	159c	04159c	4.77	1	4
DESHAT MAQELLARE	4	159c	04159c	0.64	1	4
DESHAT MAQELLARE	4	159c	04159c	0.18	1	4
DESHAT MAQELLARE	4	159c	04159c	0.40	1	4
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DESHAT MAQELLARE	4	16a	0416a	3.79	1	3
DESHAT MAQELLARE	4	175a	04175a	17.05	1	2
DESHAT MAQELLARE	4	179a	04179a	27.69	1	2
DESHAT MAQELLARE	4	183a	04183a	20.79	1	2
DESHAT MAQELLARE	4	192c	04192c	8.02	1	3
DESHAT MAQELLARE	4	201c	04201c	13.77	1	2
DESHAT MAQELLARE	4	242c	04242c	8.07	1	2
DESHAT MAQELLARE	4	242c	04242c	0.51	1	2
DESHAT MAQELLARE	4	265d	04265d	2.39	1	2

DESHAT MAQELLARE	4	279a	04279a	15.48	1	2
DESHAT MAQELLARE	4	280b	04280b	11.69	1	2
DESHAT MAQELLARE	4	33a	0433a	12.43	1	3
DESHAT MAQELLARE	4	33a	0433a	0.37	1	3
DESHAT MAQELLARE	4	44a	0444a	6.43	1	2
DESHAT MAQELLARE	4	46a	0446a	0.09	1	2
DESHAT MAQELLARE	4	46a	0446a	2.87	1	2
DESHAT MAQELLARE	4	46a	0446a	0.44	1	2
DESHAT MAQELLARE	4	46a	0446a	8.16	1	2
DESHAT MAQELLARE	4	48a	0448a	6.19	1	4
DESHAT MAQELLARE	4	54a	0454a	10.57	1	2
DESHAT MAQELLARE	4	57	457	18.36	1	3
DESHAT MAQELLARE	4	57	457	0.93	1	3
DESHAT MAQELLARE	4	61a	0461a	7.05	1	3
DESHAT MAQELLARE	4	6b	046b	3.17	1	3
DESHAT MAQELLARE	4	73b	0473b	1.92	1	3
GALIGAT-STROR	5	19	519	50.55	1	1
GALIGAT-STROR	5	19	519	0.24	1	1
GALIGAT-STROR	5	1c	051c	21.90	1	1
GALIGAT-STROR	5	1c	051c	0.00	1	1
GALIGAT-STROR	5	1c	051c	2.86	1	1
GALIGAT-STROR	5	1c	051c	2.77	1	1
GALIGAT-STROR	5	1c	051c	3.09	1	1
GALIGAT-STROR	5	20a	0520a	10.00	1	1
GALIGAT-STROR	5	23d	0523d	9.67	1	1
GALIGAT-STROR	5	30	530	14.78	1	1
GALIGAT-STROR	5	30	530	0.14	1	1
GALIGAT-STROR	5	31	531	0.40	1	1
GALIGAT-STROR	5	31	531	0.53	1	1
GALIGAT-STROR	5	31	531	37.34	1	1
GALIGAT-STROR	5	32	532	11.31	1	1
GALIGAT-STROR	5	51a	0551a	25.31	1	1
GALIGAT-STROR	5	52a	0552a	34.58	1	1
GALIGAT-STROR	5	53	553	31.48	1	2
GALIGAT-STROR	5	54	554	23.80	1	2
GALIGAT-STROR	5	54	554	1.76	1	2
GALIGAT-STROR	5	54	554	0.26	1	2
GALIGAT-STROR	5	54	554	0.67	1	2
GALIGAT-STROR	5	54	554	0.29	1	2
GJINAR-ZAVALINE	6	14a	0614a	1.37	1	2
GJINAR-ZAVALINE	6	14a	0614a	16.76	1	2
GJINAR-ZAVALINE	6	14b	0614b	13.20	1	2
GJINAR-ZAVALINE	6	18b	0618b	0.23	1	2
GJINAR-ZAVALINE	6	18b	0618b	19.12	1	2
GJINAR-ZAVALINE	6	47	647	20.58	1	2
GJINAR-ZAVALINE	6	47	647	0.72	1	2
GJINAR-ZAVALINE	6	47	647	0.17	1	2

GJINAR-ZAVALINE	6	49a	0649a	15.08	1	2
GJINAR-ZAVALINE	6	67a	0667a	4.99	1	2
GJINAR-ZAVALINE	6	72d	0672d	11.45	1	2
GOSTIME-KOPRIK	28	76a	2876a	0.10	1	3
GOSTIME-KOPRIK	28	76a	2876a	0.23	1	3
GOSTIME-KOPRIK	28	76a	2876a	0.07	1	3
GOSTIME-KOPRIK	28	76a	2876a	0.16	1	3
GOSTIME-KOPRIK	28	76a	2876a	42.63	1	3
GRAMSH-VINE	7	70a	0770a	25.66	1	1
GRAMSH-VINE	7	74a	0774a	35.19	1	1
GRAMSH-VINE	7	85a	0785a	31.49	1	1
GRAMSH-VINJE	7	85a	0785a	0.07	1	1
GRAMSH-VINJE	7	85a	0785a	1.85	1	1
HELSHAN	8	67	867	25.78	1	3
HELSHAN	8	67	867	0.06	1	3
HELSHAN	8	76b	0876b	29.57	1	3
HELSHAN	8	78	878	20.23	1	3
HELSHAN	8	87b	0887b	11.83	1	3
HELSHAN	8	87b	0887b	5.29	1	3
HELSHAN	8	88	888	12.34	1	3
HELSHAN	8	88	888	7.29	1	3
HELSHAN	8	91a	0891a	7.36	1	3
HELSHAN	8	91b	0891b	15.39	1	3
HELSHAN	8	96a	0896a	4.60	1	3
HELSHAN	8	96b	0896b	9.32	1	3
HELSHAN	8	99a	0899a	18.08	1	3
HELSHAN	8	99a	0899a	4.09	1	3
HELSHAN	8	99b	0899b	9.26	1	3
HELSHAN	8	99b	0899b	6.25	1	3
KAFTALLE-GOMSIQE	9	124a	09124a	10.08	1	3
KAFTALLE-GOMSIQE	9	125b	09125b	24.86	1	3
KAFTALLE-GOMSIQE	9	126a	09126a	29.24	1	3
KAFTALLE-GOMSIQE	9	20a	0920a	32.31	1	3
KAFTALLE-GOMSIQE	9	28a	0928a	4.79	1	3
KAFTALLE-GOMSIQE	9	28a	0928a	13.41	1	3
KAFTALLE-GOMSIQE	9	28a	0928a	0.43	1	3
KAFTALLE-GOMSIQE	9	28a	0928a	0.64	1	3
KAFTALLE-GOMSIQE	9	35a	0935a	19.08	1	3
KAFTALLE-GOMSIQE	9	79a	0979a	69.75	1	3
KAFTALLE-GOMSIQE	9	81	981	31.18	1	3
KAFTALLE-GOMSIQE	9	85a	0985a	24.65	1	3
KAFTALLE-GOMSIQE	9	85a	0985a	5.04	1	3
KAFTALLE-GOMSIQE	9	85a	0985a	1.27	1	3
KAFTALLE-GOMSIQE	9	85a	0985a	1.10	1	3
KASTRIOT-SLLOVE	10	137b	10137b	1.09	1	2
KASTRIOT-SLLOVE	10	137b	10137b	3.31	1	2
KASTRIOT-SLLOVE	10	163b	10163b	13.12	1	3

KASTRIOT-SLLOVE	10	205b	10205b	0.30	1	2
KASTRIOT-SLLOVE	10	205b	10205b	1.68	1	2
KASTRIOT-SLLOVE	10	208b	10208b	0.54	1	2
KASTRIOT-SLLOVE	10	208b	10208b	1.10	1	2
KASTRIOT-SLLOVE	10	208b	10208b	0.90	1	2
KASTRIOT-SLLOVE	10	211b	10211b	12.06	1	2
KASTRIOT-SLLOVE	10	214b	10214b	7.46	1	2
KASTRIOT-SLLOVE	10	214b	10214b	1.03	1	2
KASTRIOT-SLLOVE	10	216c	10216c	0.76	1	2
KASTRIOT-SLLOVE	10	216c	10216c	2.77	1	2
KASTRIOT-SLLOVE	10	216c	10216c	0.32	1	2
KASTRIOT-SLLOVE	10	220b	10220b	8.73	1	3
KASTRIOT-SLLOVE	10	220b	10220b	0.20	1	3
KASTRIOT-SLLOVE	10	226b	10226b	10.24	1	3
KASTRIOT-SLLOVE	10	226b	10226b	0.21	1	3
KASTRIOT-SLLOVE	10	231b	10231b	8.86	1	2
KASTRIOT-SLLOVE	10	233b	10233b	1.55	1	2
KASTRIOT-SLLOVE	10	233b	10233b	0.93	1	2
KASTRIOT-SLLOVE	10	233b	10233b	0.98	1	2
KASTRIOT-SLLOVE	10	233b	10233b	2.19	1	2
KASTRIOT-SLLOVE	10	239a	10239a	4.48	1	2
KASTRIOT-SLLOVE	10	239a	10239a	0.36	1	2
KASTRIOT-SLLOVE	10	239a	10239a	1.39	1	2
KASTRIOT-SLLOVE	10	240a	10240a	7.13	1	2
KASTRIOT-SLLOVE	10	241b	10241b	5.76	1	2
KASTRIOT-SLLOVE	10	241b	10241b	1.04	1	2
KASTRIOT-SLLOVE	10	243a	10243a	15.02	1	2
KASTRIOT-SLLOVE	10	244b	10244b	0.14	1	3
KASTRIOT-SLLOVE	10	244b	10244b	7.44	1	3
KASTRIOT-SLLOVE	10	244b	10244b	0.06	1	3
KASTRIOT-SLLOVE	10	244b	10244b	1.31	1	3
KLENJE	11	41a	1141a	12.64	1	2
KLENJE	11	49b	1149b	18.93	1	2
KLENJE	11	7a	117a	27.28	1	2
KLENJE	11	7a	117a	0.37	1	2
KLENJE	11	7a	117a	0.29	1	2
KRYEZI	12	58a	1258a	8.04	1	3
KRYEZI	12	58a	1258a	0.14	1	3
KRYEZI	12	58a	1258a	0.19	1	3
KRYEZI	12	58a	1258a	0.92	1	3
KRYEZI	12	59c	1259c	4.14	1	3
KRYEZI	12	59c	1259c	0.08	1	3
KRYEZI	12	7a	127a	27.44	1	3
KRYEZI-BICAJ	13	113a	13113a	15.45	1	3
KRYEZI-BICAJ	13	79a	1379a	31.16	1	3
KRYEZI-BICAJ	13	91b	1391b	6.04	1	3
KURDARI-PLANI BARDHE	14	103b	14103b	20.80	1	3

KURDARI-PLANI BARDHE	14	103b	14103b	11.16	1	3
KURDARI-PLANI BARDHE	14	103b	14103b	15.77	1	3
KURDARI-PLANI BARDHE	14	104b	14104b	52.36	1	3
KURDARI-PLANI BARDHE	14	108b	14108b	30.70	1	3
KURDARI-PLANI BARDHE	14	60a	1460a	13.97	1	2
KURDARI-PLANI BARDHE	14	83b	1483b	6.05	1	3
KURDARI-PLANI BARDHE	14	83b	1483b	2.73	1	3
KURDARI-PLANI BARDHE	14	83b	1483b	1.94	1	3
KURDARI-PLANI BARDHE	14	83b	1483b	0.44	1	3
KURDARI-PLANI BARDHE	14	83b	1483b	1.64	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	16.72	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	1.72	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	13.02	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	11.44	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	1.17	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	5.38	1	3
KURDARI-PLANI BARDHE	14	84b	1484b	0.24	1	3
KURDARI-PLANI BARDHE	14	85b	1485b	14.49	1	3
KURDARI-PLANI BARDHE	14	85b	1485b	2.28	1	3
KURDARI-PLANI BARDHE	14	85b	1485b	2.54	1	3
KURDARI-PLANI BARDHE	14	85b	1485b	2.88	1	3
KURDARI-PLANI BARDHE	14	94b	1494b	14.25	1	3
KURDARI-PLANI BARDHE	14	94b	1494b	7.27	1	3
KURDARI-PLANI BARDHE	14	94b	1494b	38.34	1	3
KURDARI-PLANI BARDHE	14	96b	1496b	0.85	1	3
KURDARI-PLANI BARDHE	14	96b	1496b	8.68	1	3
KURDARI-PLANI BARDHE	14	96b	1496b	2.48	1	3
KURDARI-PLANI BARDHE	14	96b	1496b	1.56	1	3
LABINOT	15	24a	1524a	21.30	1	2
LABINOT	15	25a	1525a	42.69	1	2
LABINOT	15	49a	1549a	19.79	1	2
LUBINJE-TUNJE	25	120a	25120a	29.50	1	1
LUBINJE-TUNJE	25	120a	25120a	0.58	1	1
LUBINJE-TUNJE	25	120a	25120a	3.56	1	1
LUBINJE-TUNJE	25	127a	25127a	23.26	1	1
PAPER-SHLLAK	17	15a	1715a	10.57	1	2
PAPER-SHLLAK	17	168a	17168a	47.93	1	2
PAPER-SHLLAK	17	168a	17168a	1.06	1	2
PAPER-SHLLAK	17	169a	17169a	44.82	1	2
PAPER-SHLLAK	17	171a	17171a	46.52	1	2
PAPER-SHLLAK	17	172a	17172a	19.51	1	2
PAPER-SHLLAK	17	173a	17173a	14.89	1	2
PAPER-SHLLAK	17	174a	17174a	33.45	1	2
PAPER-SHLLAK	17	175a	17175a	20.18	1	2
POLIS	18	166a	18166a	41.41	1	1
POLIS	18	166a	18166a	0.12	1	1
POLIS	18	166a	18166a	0.17	1	1

POLIS	18	166a	18166a	0.38	1	1
POLIS	18	169a	18169a	47.30	1	1
POLIS	18	169a	18169a	0.35	1	1
POLIS	18	169a	18169a	0.22	1	1
POLIS	18	1b	181b	12.12	1	1
POLIS	18	2a	182a	22.42	1	1
POLIS	18	2b	182b	13.08	1	1
POLIS-VASJAN	27	29a	2729a	31.79	1	1
POLIS-VASJAN	27	58	2758	16.01	1	1
POLIS-VASJAN	27	58	2758	0.47	1	1
POLIS-VASJAN	27	59a	2759a	34.22	1	1
POLIS-VASJAN	27	59a	2759a	0.93	1	1
POLIS-VASJAN	27	59a	2759a	0.19	1	1
POLIS-VASJAN	27	59a	2759a	0.31	1	1
POLIS-VASJAN	27	59a	2759a	0.33	1	1
POLIS-VASJAN	27	59a	2759a	0.09	1	1
POLIS-VASJAN	27	59b	2759b	6.56	1	1
POLIS-VASJAN	27	59b	2759b	0.97	1	1
POLIS-VASJAN	27	59b	2759b	2.02	1	1
POLIS-VASJAN	27	59b	2759b	4.70	1	1
POLIS-VASJAN	27	59b	2759b	0.21	1	1
POLIS-VASJAN	27	61b	2761b	18.54	1	1
POLIS-VASJAN	27	61b	2761b	11.65	1	1
POLIS-VASJAN	27	63a	2763a	24.06	1	1
POLIS-VASJAN	27	64a	2764a	23.38	1	1
POLIS-VASJAN	27	81a	2781a	42.91	1	1
QELEZ	26	17b	2617b	9.24	1	3
QELEZ	26	49	2649	7.83	1	3
SHISHTAVEC-ZAPOD	19	60b	1960b	11.17	1	4
SHISHTAVEC-ZAPOD	19	60b	1960b	0.15	1	4
SHISHTAVEC-ZAPOD	19	74b	1974b	7.13	1	4
SHISHTAVEC-ZAPOD	19	74c	1974c	3.52	1	4
SHISHTAVEC-ZAPOD	19	74c	1974c	0.20	1	4
SHISHTAVEC-ZAPOD	19	89b	1989b	5.10	1	4
SHISHTAVEC-ZAPOD	19	90b	1990b	4.87	1	4
SHISHTAVEC-ZAPOD	19	90d	1990d	5.26	1	4
SHISHTAVEC-ZAPOD	19	90d	1990d	4.58	1	4
SHISHTAVEC-ZAPOD	19	95e	1995e	3.90	1	4
SHISHTAVEC-ZAPOD	19	95e	1995e	8.38	1	4
SHISHTAVEC-ZAPOD	19	95e	1995e	1.47	1	4
SHPAT-SHTERMEN	20	47/2	2047/2	15.39	1	3
SHPAT-SHTERMEN	20	61a	2061a	24.06	1	2
SHPAT-SHTERMEN	20	67d	2067d	4.55	1	2
SHPAT-SHTERMEN	20	67d	2067d	6.33	1	2
SHPAT-SHTERMEN	20	69a	2069a	15.69	1	2
TRODHEN	21	48	2148	39.82	1	3
TRODHEN	21	48	2148	0.11	1	3

TRODHEN	21	75a	2175a	7.90	1	3
TRODHEN	21	75a	2175a	2.94	1	3
TRODHEN	21	75a	2175a	0.01	1	3
TRODHEN	21	76a	2176a	15.38	1	3
TUCEP-OKSHTUN	22	173b	22173b	13.38	1	2
TUCEP-OKSHTUN	22	182b	22182b	9.35	1	2
TUCEP-OKSHTUN	22	182b	22182b	5.51	1	2
TUCEP-OKSHTUN	22	9a	229a	16.37	1	2
TUCEP-OKSHTUN	22	9a	229a	32.09	1	2
TUCEP-OKSHTUN	22	9a	229a	0.57	1	2
TUCEP-OKSHTUN	22	9a	229a	6.38	1	2
ULEZ	23	140a	23140a	28.20	1	3
ULEZ	23	140a	23140b	1.25	1	3
ULEZ	23	141	23141	48.53	1	3
ULEZ	23	141	23141	0.47	1	3
ULEZ	23	144a	23144a	57.98	1	3
ULEZ	23	144a	23144a	1.04	1	3
ULEZ	23	144a	23144a	0.72	1	3
ULEZ	23	146a	23146a	40.69	1	3
ULEZ	23	146a	23146a	0.07	1	3
ULEZ	23	146b	23146b	28.28	1	3
ULEZ	23	146b	23146b	2.22	1	3
ULEZ	23	147a	23147a	39.88	1	3
ULEZ	23	147a	23147a	1.23	1	3
ULEZ	23	61	2361	0.64	1	1
ULEZ	23	61	2361	4.46	1	1
ULEZ	23	61	2361	7.24	1	1
ULEZ	23	62b	2362b	9.61	1	1
ULEZ	23	62b	2362b	0.19	1	1
ULEZ	23	62b	2362b	0.17	1	1
ULEZ	23	63b	2363b	8.43	1	3
ULEZ	23	63b	2363b	6.11	1	3
ZERQAN	24	151b	24151b	0.28	1	2
ZERQAN	24	151b	24151b	0.53	1	2
ZERQAN	24	151b	24151b	0.41	1	2
ZERQAN	24	157b	24157b	6.19	1	2
ZERQAN	24	157b	24157b	0.19	1	2
ZERQAN	24	157b	24157b	1.92	1	2
ZERQAN	24	157b	24157b	5.39	1	2
ZERQAN	24	157b	24157b	1.41	1	2
ZERQAN	24	47b	2447b	12.52	1	2
Total				**3989.65**		

B.2. Post-registration changes

B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies or standardized baselines

Request for deviation to apply 20% precision level and 90% confidence interval was submitted to the UNFCCC Secretariat as part of the request for approval of post registration changes (Ref No. PRC-2714-001) on 04/07/2012 and approved on 12/11/2012.

B.2.2. Corrections

N/A

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

N/A

B.2.4. Inclusion of monitoring plan

N/A

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

Changes were approved through PRC-2714-001 dated 12/11/2012.

The Monitoring Plan has not been revised. 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), for early versions of methodologies that contain requirements which were withdrawn during revisions/improvements of these methodologies after the registration of a A/R CDM project, the guidelines allow for the adoption of the revisions/improvements that occurred in the methodology for the purposes of project verification. The applicability of these guidelines to the project is 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 sample plots	AR-AM0003 v.04	(i) Use of temporary sample plots; (ii) Random lay-out of sample plots; (iii) A maximum allowable relative margin of error of the mean, for estimation of above-ground tree biomass, of ± 10% at 90% confidence level shall be allowed.	Per the post registration change, ref No. PRC-2714-001 approved by the UNFCCC on 12 November 2012, allowable margin of error of 20% of the mean and 90% confidence level was applied.
Accounting for uncertainty	AR-AM0003 v.04	Requirements related to uncertainty assessment, uncertainty analysis, methods of combining uncertainties, and uncertainties in expert judgment 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		(i) Instead of field measurement of soil organic carbon, the "Tool for estimation	Not applicable

of soil organic carbon		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.	
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 project boundary, shall not be required. Consequently, monitoring of data and parameters related to the above-mentioned emissions shall not be required.	Yes, emissions from burning of fossil fuel, both within and outside the project boundary were not monitored.

B.2.6. Changes to project design

Changes were approved by the Board for the period prior to this monitoring period through the verification and certification report no. 8000389372 – 10/492 V01 approved for the first monitoring period.

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 (Table 5). 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 5. 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

<table>
<tr><td>a)</td><td>Changes in year-wise areas planted, possibly resulting in a part of the project area not being planted;</td><td>Yes, there have been changes in the schedule of supplemental planting and silvicultural activities intended to assist natural regeneration.
<table>
<tr><th rowspan="2">Years</th><th>Ex-ante</th><th colspan="2">Ex-post</th></tr>
<tr><th>Area, ha</th><th>Area of Supplemental Planting, (ha)</th><th>Total Area of Assisted Natural Regeneration, (ha)</th></tr>
<tr><td>2005</td><td>1,666.00</td><td>-</td><td>3,989.65</td></tr>
<tr><td>2006</td><td>1,615.00</td><td>-</td><td>3,989.65</td></tr>
<tr><td>2007</td><td>2,266.00</td><td>652.8</td><td>3,989.65</td></tr>
<tr><td>2008</td><td>725.36</td><td>652.8</td><td>3,989.65</td></tr>
<tr><td>2009</td><td>-</td><td>652.8</td><td>3,989.65</td></tr>
<tr><td>2010</td><td>-</td><td>652.8</td><td>3,989.65</td></tr>
<tr><td>2011</td><td>-</td><td>652.8</td><td>3,989.65</td></tr>
<tr><td>2012-2019</td><td>-</td><td>-</td><td>3,989.65</td></tr>
<tr><td>Total</td><td>6,272.36</td><td>3264.2</td><td>3,989.65</td></tr>
</table></td></tr>
<tr><td>b)</td><td>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;</td><td>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
<table>
<tr><th></th><th colspan="2">Area, ha</th></tr>
<tr><th>Selected species</th><th>Ex-post</th><th>Ex-ante</th></tr>
<tr><td>Acer spp.</td><td>36.7</td><td>86.5</td></tr>
<tr><td>Castanea sativa</td><td>18.65</td><td>669.3</td></tr>
<tr><td>Cerasus avium</td><td>0</td><td>235.4</td></tr>
<tr><td>Fraxinus excelsior</td><td>59.5</td><td>58</td></tr>
<tr><td>Juglans regia</td><td>15.4</td><td>58</td></tr>
<tr><td>Quercus spp..</td><td>1,012.6</td><td>624.5</td></tr>
<tr><td>Betula verrucosa</td><td>315.54</td><td>579</td></tr>
<tr><td>Pinus spp.</td><td>338.03</td><td>351.5</td></tr>
<tr><td>Populus spp.</td><td>68.24</td><td>82</td></tr>
<tr><td>Robinia pseudoacacia</td><td>156.3</td><td>520</td></tr>
<tr><td>Prunus spp.</td><td>40.82</td><td>-</td></tr>
<tr><td>Fagus spp.</td><td>81.6</td><td>-</td></tr>
<tr><td>Abies spp.</td><td>1</td><td></td></tr>
<tr><td>Total</td><td>2,144.38</td><td>3,264.20</td></tr>
</table></td></tr>
<tr><td>c)</td><td>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;</td><td>Yes, tree population density of trees with DBH > 2cm increased from 3,450 trees per ha in 2012 to 3800 trees per hectare in 2019, representing 95 % of the total project area.
Standing C stock change in living biomass increased in average with 4.2 tC/ha since last verification in 2012. Change in biomass stocking density is an indicator of project activity success. Changes are consistent with the baseline identification and additionality demonstration made at the validation stage.</td></tr>
<tr><td>d)</td><td>Change in timing and choice of silvicultural operations;</td><td>Not applicable. Occasionally trees are cut to meet the needs of local people.</td></tr>
</table>

e)	Changes in timing of harvest occurring before the third verification;	Not applicable, changes in timing of harvest are not anticipated prior to the third verification.
f)	Changes related to collection of non-timber forest products;	Not applicable
g)	Changes in tree/shrubs propagation method;	Not applicable
h)	Changes in post-harvest re-planting/regeneration methods;	Not applicable
i)	Changes in technology employed;	Not applicable
j)	Changes in inputs (e.g. fertilizers, certified seeds, watering);	Not applicable
k)	Changes in stratification for sampling;	Yes, ex post stratification in four strata was implemented in the first monitoring period (see Section C) versus one stratum in ex-ante stratification. The stratification of first monitoring period has been retained for the second monitoring period.
l)	Changes in type of sample plots (e.g. temporary, permanent, point-sampling);	Not applicable
m)	Changes in number of sample plots and their allocation to strata	No change from the first monitoring period that ended in 2012, when an ex post stratification was conducted. The number of sample plots laid out and measured in the first monitoring period was 95, which exceeds the number required (66) to meet 20% precision and 90% confidence. For MR1, the project submitted a request for deviation as part of the post registration change to apply 20 percent precision level and 90 per cent confidence interval and was approved. The same 95 sample plots measured in the first monitoring period were remeasured at the end of the second monitoring period.
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, at the end of second monitoring period in 2019, it was observed that 0.8 ha got converted from forest land included in the project to non-forest land. The conversion is defined as a change from forest to non-forest use.
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;	No.
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 precision 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 "*Estimation of the increase in greenhouse gas (GHG) emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity*". and are accounted for as leakage;	No, there are no changes from provisions related to the shifting of pre-project activities are observed. The project monitoring has followed the guidelines of the methodology to assess the leakage. There is also no need to estimate leakage after the end of first monitoring period.
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	The project monitoring has followed the guidelines of the methodology to assess leakage.
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. emissions;	Yes. Biomass estimation is 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 precision of the estimate of tree biomass.

SECTION C. Description of monitoring system

The project activity started as part of the World Bank Natural Resource Development Project (NRDP) and now continued to be part of the Project for Environment Services (PES) financed by World Bank (International Bank for Reconstruction and Development) and implemented by the Ministry of the Tourism and Environment (MTE) of the Government of Albania.

The MTE through the project management unit will make the monitoring and evaluate the progress of the Project Activities as well as well coordinate the monitoring process to ensure that information and data flow from the sample plot level. The project activities have been implemented 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 pasture resources in their territory. The forest staff at each municipality provides technical assistance on reforestation and forest management, measurements as well as support implementation of project related QA/QC measures.

As part of the project monitoring, field measurements for periodic verifications of actual net GHG removals by sinks is coordinated by the DIAVA Consulting company (http://diava-consulting.com/projects/) and were carried out by a qualified well-trained staff. The project management unit has supported the process by means of all information required by DIAVA staff regarding the field work. The monitoring crews were indoor and outdoor trained regarding the methodology and instruments usage for field measurements. Training documentation and participants list present are archived by Diava Consulting Company.

Each field team composed by three members conducted the sample plot measurements. Field crews were led by a Forest Engineer in each region and assisted by other local forest specialists (either forest engineer and/or forest technicians). FPUAs members supported the monitoring work and were also part of the crews. As part of project monitoring activity, field data on project activities and sample plot measurements were collected by DIAVA staff and archived by PES project entity. This information was stored in paper and digital form and delivered to PES project entity.

As part of the QA/QC procedures, the DIAVA staff verified 10 sample plots (10% of the total sample plots) selected in random way in the districts of Puka, Mati, Elbasani and Dibra municipalities. These sample plots were re-measured independently and were cross-checked with data provided by field crews including sample plot center identification, sample plot radius (area) corrected by slope, tree species recorded, measurements of diameter at breast height (Dbh ≥ 2 cm) and tree height of trees inside sample plots. Based on the proposed methodology were measured the height of 5 trees closest to the center of sample plot.
The DIAVA staff did the data transfer from paper to electronic format, internal re-checks of data entered was achieved among experts.

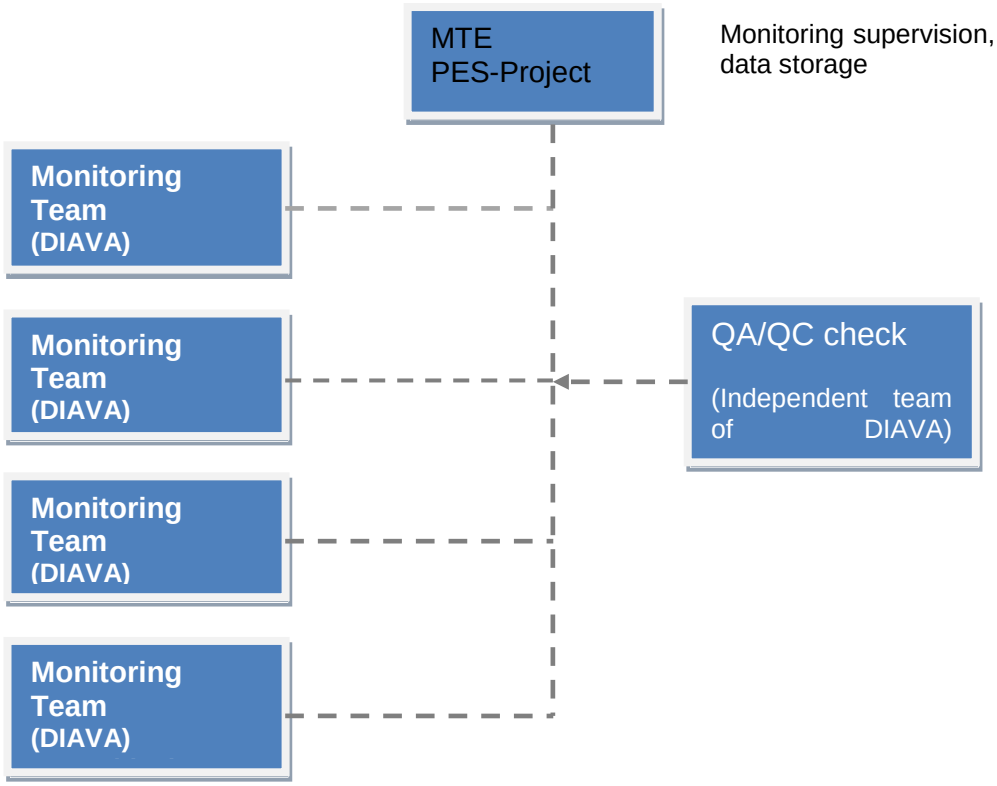

Figure 2. Flow Chart: Overview of monitoring procedure

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 95 sample plots will be shared with the DOE in smart excel forms. The BioCarbon Fund has developed 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 input data and obtain calculations at plot and project levels. The person in charge of maintaining the monitoring system is Mr. Erion Istrefi, the project coordinator from MTE.

The sampling designs

As carbon storage significantly varies in different ecozones, they were used as basis for the ex-post stratification of the project. Four strata with different area and carbon content were identified; Ecozone 1; 2; 3 and 4 (see Table 6). The Table 5 shows that the total number of sample plots laid out in the project in four ecozones is 95, which conform to a allowable error of ± 20% of the mean at 90% confidence level. The section D.3 presents a comparison of sample size requirements and the actual number of sample plots laid out by ecozone in the project.

Table 6. Area and number of sample plots laid out in project strata

Strata	Area, ha	No plots
Ecozone 1	755.84	19
Ecozone 2	1,218.23	28
Ecozone 3	1,698.48	43
Ecozone 4	317.10	5
Total	**3,989.65**	**95**

Overview of the method used to allocate the sampling plots

To avoid subjective choice of plot locations, the permanent sample plots were located systematically with random start, in line with LULUCF Good Practice Guidance and according to the following steps.

- Preparing the printed-out maps with boundary of the carbon parcels and orthophotos (2007, 0.2 m resolution) as background in order to help the working group in the field for the stratification process
- Re designing of the carbon parcel boundaries excluding the roads, urban areas, agricultures areas, rocky lands, body waters, based on orthophotos, maps of stratification of carbon parcels from field work and consultations with the foresters who know the area very well.
- Generating the data in the attribute table of the carbon parcels shape file in terms of implemented and unimplemented parcels, and by eco-zone
- Creation of the new shape file only for the implemented carbon parcels.
- Creating grid points with distance 100 m x 100 m, which cover all the implemented carbon parcels using Hawth's Analysis Tools / Sampling tools / Generate regular points.
- Selecting the points within the implemented carbon parcels.
- Selecting the first point randomly using the Hawth's Analysis Tools/ Create Random Selection
- Selecting the 95 sample plots in systematic way starting from the first random point counting 42 points from west to east.

All sample plots, their GPS coordinates, location, names of village, commune, district and region are recorded and archived in the project database. Each plot is identified by an ID and included in the project documents.

Circular sample plots of 200 m^2 were located and plot centres were recorded using GPS. The geographical position, administrative location, stratum number of each plot was recorded and archived physically and electronically.

Starting MR2 in order to identify the plot centre, a faster and more precise method is applied: as first step plot zone is identified by available GPS coordinates, while plot centre is determined based on distance and azimuth from two trees/other landmarks within the plot (azimuth and distances of the two landmarks to centre were recorded on every field form by filed crew) (Figure 3). An alarm was recorded for each sample plot centre referring a distance of 8 m that is equal to circular sample plot radius (area 200 m^2). Based on the distance and azimuth that GPS shows the forest specialist used two additional instruments (compass and tape) to easily and accurately find the centre of sample plots. Both these instruments are not affected in their accuracy by geometry of satellites, weather conditions, stand characteristics (density, crown density) to accurately allocate the centre of sample plots. By using the compass, the forest specialist will find the landmarks defined within the walking direction and by using the tape he measures the distance to reach the centre of sample plot (r= 8m).

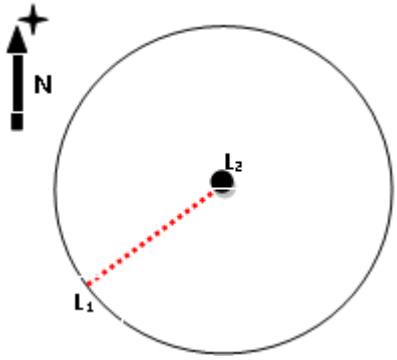

Figure 3. Scheme of plot centre identification (elements registered & described on the field form: L1- specialist's position, L2 center of sample plot; L1-L2 distance of specialist to centre oriented by azimuth)

In order to define sampling plot area subject to trees measurements, the plot radii along the slope direction were adjusted and corrected based on the slope angle using a correction factor estimated by following equation and represented graphically in Figure 4.

$$k = \frac{a_s}{a_h} = \frac{\pi \cdot r_s^2}{\pi \cdot r_s^2 \cdot \cos\alpha} = \frac{1}{\cos\alpha}$$

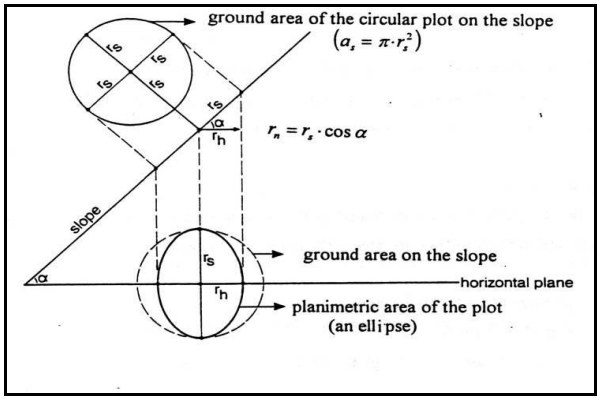

Figure 4. Sample plot radii correction by slope angle

To easily make the sample plot radii correction each field crews were supplied with a table (Table 7) which contain sample plot radii corrected based on the slope values.

Table 7. Sample plot radius correction by slope angle

Slope (%)	**Slope** (degree)	**Radius (m)** 200 m²
0-10	-	7.98
15	8.50	8.02
20	11.30	8.06
25	14.00	8.1
30	16.70	8.15
35	19.30	8.21
40	21.80	8.28
45	24.20	8.36

50	26.60	8.44
55	28.80	8.52
60	31.00	8.62
65	33.00	8.71
70	35.00	8.82
75	36.90	8.92
80	38.70	9.03
85	40.40	9.14
90	42.00	9.25
95	43.50	9.37
100	45.00	9.49
105	46.40	9.61
110	47.70	9.73
115	49.00	9.85
120	50.20	9.97
125	51.30	10.09
130	52.40	10.22
135	53.50	10.34
140	54.50	10.47
145	55.40	10.59

The centres 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 the subsequent inventories.

Procedure for data collection on sampling plots

1- Tree diameter: Measurements for diameter at breast height (DBH, 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 calliper to the nearest lower mm.

2- Tree height - Height of five trees close to the centre of a sample plot were measured with Vertex Ultrasound Instrument (Figure 5). 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.

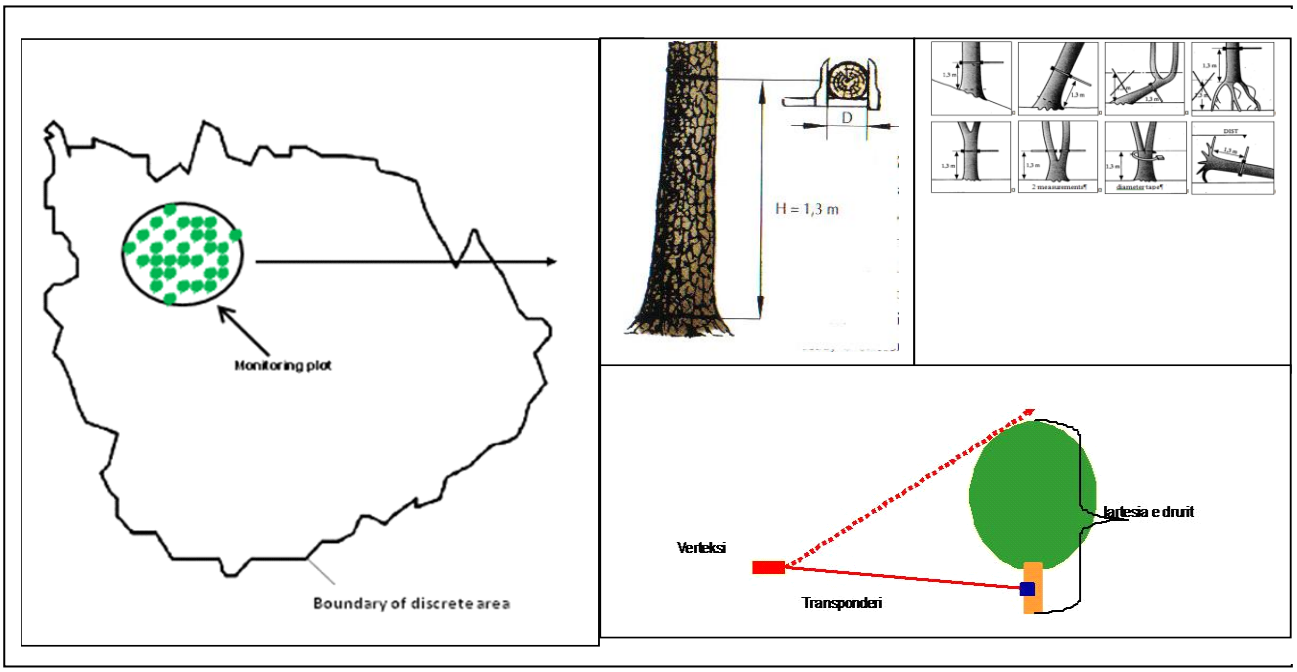

Figure 5. Tree measurements inside sample plots

Monitoring of project boundaries, forest establishment and management

Project boundary

Project boundary monitoring means that project area subjected to supplementary planting or natural regeneration has not been changed between two monitoring. The following activities were carried out for this purpose:

- DIAVA GIS expert controlled the forest parcels and ecozone areas based on the information provided from MR1;
- Field crews were trained to identify and record all changes in the forest parcel area to other land uses (i.e. deforestation);
- Cross-checking of consistency between actual boundary and PDD description of boundaries, for the areas left in the project after MR2.

Field crews noted that project area was decreased with 0.8 ha due to construction of new village roads.

In monitoring project boundaries and locating permanent plots centres the project entity followed Standard Operational Procedures cited in the BioCarbon Fund Manual for Monitoring of CDM Afforestation and Reforestation Projects (Part 1) [3]. The procedure followed to measure geographical positions using GPS are explained below:

Standard Operating Procedure for collection and organization of data using GPS.

- GPS use:
    - The GPS gathered location information and identified GPS satellites.
    - Following the GPS manual, the field crew noted the dilution of precision (DOP) error, which measures the error caused by the geometry between the user and the satellites and indicates map accuracy.
    - Following the GPS user's manual, the field crew set a waypoint at starting location. A waypoint records the GPS coordinates of a user-defined location.
    - The team followed the perimeter of the area converted to non-forest land by tracking the boundaries and returning to the beginning waypoint.
    - Finally, the DIAVA GIS expert uploaded the GPS coordinate data to the computer and processed it with mapping software to correct the forest parcel area.

- Permanent plot location:
    - The team set a waypoint at the center of the plot which is marked with an iron stick in the field.
    - Upload the coordinates of sample plot center to GPS via computer.

Forest establishment and supplementary planting

Planting activity is not any more actual since it was only scheduled in the first three years since project started in 2012. Thus, this activity was not anymore subject of monitoring for MR2. In any case planted trees in the past, i.e. valuable species, can be occasionally identified by the field crews.

Forest management

Stand interventions activities were not monitored as part of the monitoring activity. Explicit information can be provided from municipality forest specialists and FPUAs, but it is not needed to estimate the actual CO_2 removals/emissions from the project activity. Enforcing forest management implementation in conformity with the PDD was achieved by the forest service through its rangers. Adequate management resulted in biomass accumulation, MR2 show an increase in tree number (35 additional trees) and dbh (4.99 cm > 4.86 cm) compare to MR1. Monitoring forms for 2nd verification was designed to record information on tree stumps proving

[3] World Bank, 2011. Manual for Monitoring of CDM Afforestation and Reforestation Projects: Part 1 – Standard Operational Procedures. 75 p. Available online at https://wbcarbonfinance.org/docs/Manual_for_Monitornig_of_CDM_AR_Projects_Part_I-SOPs.pdf

logging. Information recorded by field crews showed that logging was present in some forest parcels, but their number was not significant.

Monitoring of project GHG 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 controlled biomass burning is not allowed or practiced as part of regular forest management. However, the occurrence of natural fires is monitored by the personnel in charge with forest guarding and management. It was reported that the project area affected by wildfires during the monitoring period was 19.65 ha (forest parcel ID 127a) in 2013, where only litter was affected. As per the *Tool for testing significance of GHG emissions in A/R CDM project activities" (Version 01)* (EB31, Annex 16), the emissions of the biomass burning from these natural fires is insignificant, and are considered zero. 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

Per the methodology, leakage due to conversion of land (outside the project boundary) 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 was therefore necessary only up to the fifth year after the measures to control grazing control measures, thus captured in MR1. 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. No other measures for grazing control, except regular forest guarding were taken after 2009, a period long enough to stabilize to minimum or inexistent grazing in the forest. Surveys were used to monitor the leakage and data from surveys is analyzed to assess the prevalence of leakage in section E.3.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

(1)

Data / Parameter	C_{BSL}
Unit	*t CO_2-e*
Description	Baseline net greenhouse gas removals by sinks
Source of data	PDD, p. 62, Table 24: Baseline net GHG removals by sinks (t CO_2e)
Value(s) applied	4,512.54 t **CO_2 e** (for the period 2005 to 2019)
Purpose of data	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	**Rj**
Unit	Dimensionless
Description	Root-shoot ratio for species *j*
Source of data	Table 3A.1.8, GPG LULUCF IPCC (2003)
Value(s) applied	0.35
Purpose of data	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	**CFj**
Unit	tonnes C (tonne d.m.)-1
Description	Carbon fraction for species *j*
Source of data	IPCC (2003)
Value(s) applied	0.5 (default)
Purpose of data	Carbon fraction default value is used to convert biomass in to carbon stock
Additional comment	

Data / Parameter:	p
Unit	percent
Description	Desired level of precision
Source of data	
Value(s) applied	20%
Purpose of data	For the purpose of QA/QC of measurement
Additional comment	Not monitored, request for deviation to use 20% precision approved. Therefore, this parameter is revised to 20%

Data / Parameter:	Confidence level
Unit	Percent
Description	
Source of data	Defined
Value(s) applied	90%
Purpose of data	Sample size calculation
Additional comment	Not monitored

Data / Parameter:	*fj(DBH,H)*
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	See notes to Table 9 on sources of published literature on allometric equations
Value(s) applied	See worksheet “Standard Values” in Excel spreadsheet Albania_Calculation of Net GHG Removals
Purpose of data	Calculation of carbon stock change
Additional comment	Not monitored

Data / Parameter:	*ni*
Unit	Dimensionless
Description	Sample size for stratum *i*
Source of data	Calculations
Value(s) applied	
Purpose of data	For conducting sample plot measurements
Additional comment	Not monitored

Strata	Sample size required to meet 20% precision and 90% CI
Ecozone 1	10
Ecozone 2	23
Ecozone 3	36
Ecozone 4	2
Total	71

Data / Parameter:	*XF*
Unit	Dimensionless

Description	Plot expansion factor from per plot values to per hectare values
Source of data	Calculations
Value(s) applied	50
Purpose of data	Biomass estimation per hectare
Additional comment	Not monitored

Data / Parameter:	*zα/2*
Unit	Dimensionless
Description	Value of the statistic z (normal probability density function), for $\alpha = 0.1$ (implying a 90% confidence level)
Source of data	Statistics reference
Value(s) applied	1.645
Purpose of data	Calculation of sample size
Additional comment	Not monitored

D.2. Data and parameters monitored

General parameters and parameters related to estimation of C stock change (i.e. CO2 emissions and removals)

Data / Parameter:	***t ID***
Unit	years
Description	Appendix 1: Age of plantation (1, 2, 3,… years)
Source of data	Project implementation report
Value(s) applied	
Purpose of data	Calculate average annual GHG removals by sinks
Additional comment	Not monitored

Data / Parameter	$\mathbf{A_{i}}$ = $\mathbf{A_{ikt}}$
Unit	Hectares
Description	Area of stratum i
Measured/Calculated/Default	Measured/ Calculated
Source of data	GIS shapefile
Value(s) of monitored parameter	**Strata 1** / **Area, ha**: Ecozone 1 — 755.84; Ecozone 2 — 1,218.23; Ecozone 3 — 1,698.48; Ecozone 4 — 317.10; **Total** — **3,989.65**
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GIS or/and GPS
Measuring/ Reading/ Recording frequency	Measured at the start of the project and checked thereafter at monitoring intervals, prior to each verification event. Considering any deforestation or area correction between MR2 and MR1
Calculation method (if applicable)	GIS software
QA/QC procedures applied	Checked during monitoring period

Data / Parameter:	**A**
Unit	Hectares
Description	Total size of all strata (A), e.g. the total project area

Measured/Calculated/Default	Measured/ Calculated
Source of data	Project
Value(s) applied	**3,989.65**
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, checked. Conversions from forest to be reported and excluded from calculation as CO2 emissions. Any area correction in MR2 is also considered.
Calculation method (if applicable)	N/A
QA/QC procedures applied	Checked during monitoring period
Data / Parameter:	**AP**
Unit	**m^2**
Description	Sample plot area
Measured /Calculated /Default:	Measured
Source of data	PDD
Value(s) applied	**200**
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Vertex (with slope correction), Tape
Measuring/ Reading/ Recording frequency:	5-year
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Plot location and area checked and verified during monitoring period

Data / Parameter:	**Latitude/longitude of sample plot location**
Unit	lat/long coordinates
Description	Location of sample plots
Measured /Calculated /Default:	Measured
Source of data	Project and plot maps, GPS, GIS
Value(s) applied	See shape file
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GPS and GIS
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**
Unit	cm
Description	Diameter at breast height of living trees (1.37m)
Measured /Calculated /Default:	Measured
Source of data	Sample plot measurement.
Value(s) applied:	Diameter of trees measured and recorded as part of sample plot measurement. See excel spreadsheet Albania_Calculation of Net GHG Removals. Only trees having a DBH larger than 2cm were

	recorded.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Diameter tape, calliper
Measuring/ Reading/ Recording frequency:	5 year
Calculation method (if applicable):	
QA/QC procedures applied:	Diameter measurements are randomly checked during monitoring period

Data / Parameter:	**Tree species**
Unit	dimensionless
Description	N/A
Measured /Calculated /Default:	N/A
Source of data	Project
Value(s) applied:	Scientific names of tree species:

Nr	**Species name**	**Nr**	**Species name**	**Nr**	**Species name**
1	*Carpinus betulus*	21	*Pyrus sp.*	41	*Pinus nigra*
2	*Carpinus orientalis*	22	*Rhus coriaria*	42	*Juglans regia*
3	*Carpinus sp.*	23	*Acer tataricum*	43	*Alnus sp.*
4	*Castanea sativa*	24	*Acer monspelanum*	44	*Sambucus nigra*
5	*Castanea sp.*	25	*Acer optusatum*	45	*Prunus sp.*
6	*Fraxinus excelsior*	26	*Acer sp.*	46	*Erica arborea*
7	*Fraxinus ornus*	27	*Acer pseudoplatanus*	47	*Pyrus amygdaliformes*
8	*Ostrya sp.*	28	*Corylus avellana*	48	*Populus sp.*
9	*Pinus nigra*	29	*Corylus colurna*	49	*Betula pendula*
10	*Pinus sp.*	30	*Cotinus coggygria*	50	*Malus sylvestris*
11	*Quercus petraea*	31	*Juniperus sp.*	51	*Paliurus spina christi*
12	*Quercus sp.*	32	*Juniperus oxycedrus*	52	*Spartum junceum*
13	*Quercus trojana*	33	*Arbutus unedo*	53	
14	*Robinia sp.*	34	*Phyllorea latifolia*	54	
15	*Ficus sp.*	35	*Pistacia terebinthus*	55	
16	*Ulmus sp.*	36	*Cercis siliquastrum*	56	
17	*Crataegus monogyna*	37	*Pinus sp.*	57	
18	*Cornus sp.*	38	*Fagus sylvatica*	58	
19	*Cornus mas*	39	*Sorbus aucuparia*	59	
20	*Buxus sp.*	40	*Ostrya carpinifolia*	60	

Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N/A
Measuring/ Reading/ Recording frequency:	5 years
Calculation method (if applicable):	N/A

QA/QC procedures applied:	Implementation of forest plan checked right after planting and three years after planting

Data / Parameter:	**Total number of sample plots**
Unit	Number
Description	Permanent sample plots
Measured /Calculated /Default:	Calculated
Source of data	Calculated using the tool "Sample plots" (EB31 R15/EB46 R19, for Executive Board 31/46 Repan 15/19)
Value(s) applied:	

Strata	**Area, ha**	**No plots**
Ecozone 1	755.84	19
Ecozone 2	1,218.23	28
Ecozone 3	1,698.48	43
Ecozone 4	317.10	5
Total	**3,989.65**	**95**

Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	GPS
Measuring/ Reading/ Recording frequency:	5 year
Calculation method (if applicable):	N/A
QA/QC procedures applied:	N/A

Data / Parameter:	**Number of trees in the sample plot**
Unit	Number
Description	Trees measured in every sample plot
Measured /Calculated /Default:	Measured
Source of data	Monitoring
Value(s) applied:	

Plot ID	**No. of trees**	**Plot ID**	**No. of trees**	**Plot ID**	**No. of trees**
1	**4**	33	**83**	65	**109**
2	**4**	34	**4**	66	**12**
3	**23**	35	**9**	67	**328**
4	**83**	36	**9**	68	**338**
5	**93**	37	**0**	69	**291**
6	**0**	38	**60**	70	**1**
7	**19**	39	**14**	71	**271**
8	**0**	40	**0**	72	**215**
9	**13**	41	**11**	73	**201**
10	**69**	42	**2**	74	**69**
11	**6**	43	**0**	75	**18**
12	**13**	44	**68**	76	**2**
13	**75**	45	**5**	77	**166**
14	**96**	46	**96**	78	**23**
15	**76**	47	**0**	79	**152**
16	**2**	48	**68**	80	**50**

	17	**68**	49	**87**	81	**144**
	18	**27**	50	**52**	82	**200**
	19	**6**	51	**94**	83	**306**
	20	**3**	52	**43**	84	**284**
	21	**2**	53	**42**	85	**90**
	22	**3**	54	**25**	86	**4**
	23	**216**	55	**5**	87	**87**
	24	**13**	56	**116**	88	**7**
	25	**44**	57	**168**	89	**31**
	26	**127**	58	**73**	90	**69**
	27	**0**	59	**36**	91	**82**
	28	**0**	60	**86**	92	**70**
	29	**0**	61	**153**	93	**43**
	30	**12**	62	**147**	94	**139**
	31	**17**	63	**121**	95	**73**
	32	**101**	64	**31**		

Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N/A
Measuring/ Reading/ Recording frequency:	5 year
Calculation method (if applicable):	N/A
QA/QC procedures applied:	Number of trees and other variables are remeasured as part of the 10 per cent of the sample plots which are randomly selected and re-measured independently.

Project emissions

Data / Parameter:	$\mathbf{A_{deforestation}}$
Unit	Hectare
Description	Area of forest converted to non-forest land
Measured /Calculated /Default:	Measured
Source of data	N/A
Value(s) applied	**0.80 ha,** affected by conversion from forest to non-forest land
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):	Monitored in the field, GIS measurements

Data / Parameter:	$\mathbf{A_{B,ikt}}$
Unit	Hectare
Description	Area of wildfire / natural fire in stratum i, species j, at time t. No slash and burn practiced in the project. The area affected by the natural fire is monitored. No slash and burn.
Measured /Calculated /Default:	Measured
Source of data	N/A
Value(s) applied	**19.65 ha** area affected by the wildfire

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):	n.a

Data / Parameter:	**B_{ijt}**
Unit	tonnes d.m. ha-1
Description	Average above-ground biomass burnt in wildfire / natural fire for stratum i, species j, time t
Measured /Calculated /Default:	Project specific amount of biomass estimated from measurements
Source of data	Project implementation records and 2006 IPCC Guidelines, "Table 2.5 Emission factors (g kg-1 dry matter burnt) for various types of burning. Values are means ± sd and are based on the comprehensive review by andreae and merlet (2001)" and "Table 2.6 combustion factor values (proportion of prefire fuel biomass consumed) for fires in a range of vegetation types"
Value(s) applied:	**0.54 t.d.m./ha**
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N/A
Measuring/ Reading/ Recording frequency:	After burning
Calculation method (if applicable):	BEF method

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 considered 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 as shown in the table below.

Table 8. Project ex-post stratification

Strata	Characteristics
Ecozone 1	Mediterranean scrub (maquis) and garrigues. The vegetation is affected by overgrazing and intensive cutting. It represents the degraded Holly Oak (*Quercus ilex)* forests. degradation processes favor 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. Subsequently "Guidelines on application of specified versions of A/R CDM methodologies in verification of registered A/R CDM project activities" (Version 01.0) required the use of were approved, which require the sample size to meet the permissible error of ±10% of the mean, at a 90% confidence level. Considering the large number of sample plots required to meet 10%, the guidelines of the paragraph 11 of the AR WG 28 (paragraph 37, EB55) were applied to meet the required permissible error of ±20% of the mean and a 90% confidence level 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

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

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 (±20% 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. 20%); dimensionless
zα/2 = Value of statistic z (normal probability density function), for α = 0.1 (implying a 90% confidence level)

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 reflects 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.

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). The number of sample plots required to meet 10% were estimated at 292. Considering the high cost of establishing and measuring 292 plots, the number of sample plots to meet the 20% precision and 90% confidence interval was adopted per the paragraph 11 of the AR WG 28 (paragraph 37, EB55). As the temporary deviation from the MP/MM applicable for the first monitoring period, a request to adopt the sample size required to meet 20% precision was submitted to the UNFCCC as part of the request for post-registration change. The post-registration change (PRC ref No. PRC-2714-001) was approved by the UNFCCC on 12 November 2012. As a follow up to the approval of this post registration change, the sample size of 71 sample plots are adopted to meet the precision and confidence interval requirements for the project. Considering the number of sample plots established in each stratum is greater than those required meet the 20% precision, the number of sample plots laid out in the project is adequate as shown in the table below.

Table 9. 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	10	19
Ecozone 2	132	23	28
Ecozone 3	125	36	43
Ecozone 4	0	2	5

Total	**292**	**71**	**95**

QA/AC procedures

Quality assurance and quality control (QA/QC) procedures are implemented to ensure accurate estimation of the net anthropogenic GHG removals by sinks. They followed the approved methodology, e.g. measured and monitored precisely, credibly, and transparently. Quality assurance (QA) activities were performed by a person not involved in the respective operation of collecting data, and quality control (QC) which means that the person/s involved in some operation recheck field crew performance based on a predefined list of checks.

a) Quality checks on field measurements. To ensure the reliable field measurements there were performed following activities:

- Standard Operating Procedures (SOPs) followed for each step of the field measurements.
- Trainings on field data collection for persons involved in the field measurement work using the same devices by all crews. Re-measurement of at least one (randomly selected) plot per every 10 plots by another filed crew, and comparison of the measurements to check for possible errors; any errors found in the data were recorded, double checked and corrected. In 10% of plots DBH and H will be remeasured by other crews and/or DC supervising staff. The re-measurement was done in presence of the local team leader and team. Such checks started just after the field crews finished their measurements. Re-measured elements include the location of plot center, check of species, DBH and H of all trees within the sampling plot. The procedures implemented as part of the re-measurement aiming to verify and check the field records discrepancies between original measurements by field crews and re-measurements by quality control crew. If any error is found, it is checked and corrected. Following criteria of allowable errors was applied, namely: Any deviation between measurement and re-measurement below 5 percent was considered tolerable. Errors were expressed as a percentage of all plots that have been rechecked to provide an estimate of the measurement error.

b) Quality checks of field data collected

Project boundary:

- verified quality of GPS data collection by the project team following the Standard Operating Procedure 1 of the BioCarbonFund Monitoring Manual, including training of the personnel involved in the monitoring to verify the geographic boundary.
- area of conversions from forest reported were rechecked and analyzed individually to avoid any over or under estimation of the area concerned;
- the monitored data and information on the boundary were checked to ensure consistency with the data recorded in the project database and the registered PDD;
- team ensured that field crews returning from the field transferred data to the operator in charge with compilation of excel database and backed-up storage;

Plot center identification

To verify that plots have been allocated and measured correctly, regarding the identification of the plot center, check of the plot coordinate and azimuth and distances to landmarks were rechecked for the 10% of total sample plots where re-measurements were performed.

Forest management and interventions data

As part of the project monitoring, the project team conducted checks and recorded data and information with regard to:

- database with the species growing on the sites
- recording of the stumps in the plot area with the occasion of re-measurement. This is expression of both management, protection and tending activities implemented on the project forest parcels in different strata, while it may also reflect any illegal cut;
- occurrence of natural events such as fires in the project area.

Bureaucratic manipulation of data, spreadsheets and calculations

Transfer of data from field forms to spreadsheets was checked by Diava Consulting supervisors, e.g. counting number of trees entered per each plot vs. original field form, sorting entries by highest and smallest values entered, and sum-up the values entered in order to ensure number format is right (e.g. comma format is used correctly and consistent across spreadsheets).
c) Data maintenance and archiving
In order to ensure adequate transparency data of entire project database is archived. Data were archived in both electronic and paper forms, and copies of all data shared with each project participant to store in multiple locations (next to data from PDD and MR1). The archives include:

- copies of all original field measurement data, data analysis spreadsheets;
- 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.
- hand notes by field crews.

SECTION E. Calculation of emission reductions or net anthropogenic removals

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

The baseline net GHG removals are not monitored. Therefore, the table 10 below presents the values presented in the PDD at project registration.

Table 10. Baseline net GHG removals by sinks (as of Table 24: Baseline net GHG removals by sinks (t CO2eq.))

Year	Annual estimation of baseline net anthropogenic GHG removals by sinks in tonnes of CO_2eq.
Total estimated baseline net GHG removals by sinks (tonnes of CO_2 e) from 20.12.2004 to 15.02.2019	**4,512.54**
Total number of crediting years	**14.16**
Annual average over the crediting period of estimated baseline net GHG removals by sinks (tonnes of CO2 e)	**318.58**

The baseline net GHG removals by sinks for the monitoring period 2005 to 2019 are 4,512.54 t CO_2e.

Few solitary or groups of trees were recorded as pre-existing vegetation during sample plot measurements in 2012 and 2019. Considering that isolated trees existed prior to the project, biomass of trees with DBH greater than 18.4 cm in 2012 (according to MR1) were considered as pre-existing trees based on height and diameter relationship established through height-diameter regression equations and excluded from the calculations of actual net GHG removals by sinks.

As of monitoring methodology, pre-existing trees were recorded during sample plot measurements again in MR2, but excluded from project's actual CO2 emissions/removals estimation. While trees with DBH greater than 18.4 cm were considered as pre-existing trees in 2012, with the occasion of latest monitoring in 2019, such trees were expected to reach a higher DBH given age-DBH relationship. This updated DBH value is 20.0 cm. This new threshold was constructed based on age - diameter relationship established through age-diameter regression equations from Albanian

forest yield table (see MR2_age-DBH relationship.xls attached). This threshold is the average of 18 tree species (range from 18.7 to 20.7 cm).

Therefore, for the purpose of accounting baseline, subtraction of *baseline net GHG removals by sinks* of 4,512.54 t CO_2e from the calculations of *actual net GHG removals by sinks*; and exclusion of the GHG removals by sinks associated with pre-existing trees from the calculations of actual net GHG removals by sinks is conservative.

The net anthropogenic GHG removals by sinks is the actual net GHG removals by sinks minus the *baseline net GHG removals by sinks* minus *leakage*, therefore, the following general formula can be used to calculate the net anthropogenic GHG removals by sinks of an A/R CDM project activity ($C_{AR\text{-}CDM}$), in tonnes CO_2-e:

$C_{AR\text{-}CDM} = C_{ACTUAL} - C_{BSL} - LK$ (Equation 101 ARAM0003-v.04)

Where:

$C_{AR\text{-}CDM}$	Net anthropogenic greenhouse gas removals by sinks; tonnes CO_2-e
C_{ACTUAL}	Actual net greenhouse gas removals by sinks; tonnes CO_2-e
C_{BSL}	Baseline net greenhouse gas removals by sinks (as pre-determined in the PDD); tonnes CO_2-e
LK	Leakage; tonnes CO_2-e

To estimate the amount of CERs that can be issued at time t*= t2 (the date of verification) for the monitoring period $T = t_2 - t_1$, this methodology uses the EB approved equations 29, which produce the same estimates as the following:

$tCERs = C_{ACTUAL, t2} - C_{BSL} - LK - C_{ACTUAL, t1}$ (Equation 102 ARAM0003-v04)

The amount of tCERs for the current reporting period is 171,924.

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

Calculation of biomass, carbon stock and carbon stock change

AR-AM0003-v.04 is implemented. There is no any renewable crediting period associated to this project, so baseline carbon stock changes do not need to be monitored after the project is established. According to this “actual net greenhouse gas removals by sinks represents the sum of the verifiable changes in carbon stocks in the carbon pools within the project boundary, minus the increase in GHG emissions measured in CO2 equivalents by the sources that are increased as a result of the implementation of an A/R CDM project activity”.

Methodology used for calculation of biomass and carbon stock change

Calculation of biomass/carbon stock and carbon stock change are based on the tree measurements in the sampling plots and stock change (“stock difference” method, as of IPCC 2006 Guidelines) approach. Using “stock difference” implied area is equal in time, which implicitly means that any land conversion from forest between 2019 and end of 2012 is properly dealt with.

Post-stratification of the project area

Because of existing vegetation cover and minimal intervention by planting, natural regeneration and missing significant both natural and anthropogenic disturbances, there is no a post-stratification of the project land (as defined in the 2.1 Monitoring of strata of the Section III: Monitoring methodology description).

Methodology used for calculation of biomass and carbon stock change

“Allometric equation” method (pag. 57 in AR-AM0003v.04) is used to calculate the carbon stock in standing living biomass in four “stand model” for 2019. The aboveground biomass is estimated for every individual tree based on DBH measured in the sampling plot.

If area of sampling plot is 200 m^2, the resulted change in C stock of aboveground biomass is multiplied by 50 to obtain the aboveground biomass of forest stand per 1 hectare. From the aboveground biomass of stand, total C stock in living biomass pool is calculated using the parameters on “root-to-shoot” ratio, and carbon fraction (CF) from IPCC 2006 Guidelines. Further on, the differences of C stocks in 2019 are pooled together for each of the four project strata in order to obtain the average C stock change per strata. This is multiplied with area (*nota bene*: the area in 2019 is considering any conversion from forest). Finally, C stock change on entire project area is converted to CO_2eq (by multiplication with 44/12). Eventually it can be annualized if total estimate is divided by no. of years within the current verification period.

Adequacy of various allometric equations, published in peer reviewed journals, to the edapho-climatic conditions corresponding to Albania were assessed. The "site equivalence" is established using 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 analysed. The allometric equations meeting the applicability with regard to climatic and edaphic conditions, sample size, and R-square criteria (R^2) were adopted for the application of sample plot diameter measurements. Below it is shown the application of the AR Methodological Tool on the appropriateness of allometric equations for the project context. The most widely used allometric equation for biomass, a power function, with DBH as the single independent variable was applied.

$$DW = a * DBH^{\wedge b} \qquad \text{(equation 1)}$$

where: DW - dry-weight of above-ground biomass in kg; a - scale parameter; DBH - Diameter at breast-height,1.3 m above-ground; b - shape parameter, usually between 2 and 3

Table 11 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 reference. 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 11. Parameters of allometric equations used in biomass assessment

Species	Origin	DBH range* (in cm)	a	b	Correction factor	Sample tree number	R^2	Source
Quercus	NE-Spain	5-24	0.2208	2.217	1.0	69	0.908	[1]
Fraxinus	Italy	5-30	0.17	2.46	1.0	40	0.97	[2]
Castanea	Mediterranean	1-35	0.08	2.421	1.0	49	0.916	[3]
Pinus	Southern France	2-44	0.134	2.214	1.0	56	0.99	[4]
Robinia	Romania	2-16	0.1211	2.0594	1.0806	36	0.9272	[5]
Generic equation for all juvenile trees	n.a.	2-16	0.1944	2.08	1.0	63	0.88	[3]

Note: *Allometric equations developed for DBH ≥=5cm are applicable to trees with DBH ≥=2cm because the allometric equation, a power function rising from the origin, is strictly monotonic increasing function whose shape between DBH 2 cm and DBH 5 cm is essentially fixed. The estimate of the power function shape parameter approximates the biomass growth of stems between 0 cm and 5 cm. Considering that the growth pattern of stems in this diameter range, the difference or error in the actual biomass growth and the parameter estimate of the power function estimate for the stem diameters between 2 cm and 5 cm is insignificant. Therefore, allometric equation for diameters above 5 cm DBH can be extrapolated to the range 2-5cm and the origin without introducing error. Some

references do not publish the correction factor subject to underlying statistical processing method, if that is not provided a value of 1 is considered.

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.

Sources of allometric equations are the following:

1. Canadell, J., M. Riba, and P. Andras, *Biomass Equations for Quercus ilex L. in the Montseny Massif, Northeastern Spain*, Forestry, 1988. 61(2): p. 137-147.
2. Alberti, G., P. Candido, A. Peressotti, S. Turco, P. Piussi, and G. Zerbi, *Aboveground biomass relationships for mixed ash (Fraxinus excelsior L. and Ulmus glabra Hudson) stands in Eastern Prealps of Friuli Venezia Giulia (Italy)*, Ann. For. Sci., 2005. 62(8): p. 831-836.
3. Leonardi, S., I. Santa Regina, M. Rapp, H. Gallego, and M. Rico, *Biomass, litterfall and nutrient content in Castanea sativa coppice stands of southern Europe*, Ann. For. Sci., 1996. 53(6): p. 1071-1081.
4. Porté, A., P. Trichet, D. Bert, and D. Loustau, *Allometric relationships for branch and tree woody biomass of Maritime pine*, Forest Ecology and Management, 2002. 158: p. 71-83
5. Blujdea, V.N.B., R. Pilli, I. Dutca, L. Ciuvat, and I.V. Abrudan, *Allometric biomass equations for young broadleaved trees in plantations in Romania,* Forest Ecology and Management, 2012. 264(0): p. 172-184.

The allometric equation using a Dbh ≥ 2 cm are conducted for the purpose of assessing the changes in the aboveground biomass. The procedures outlined in the monitoring plan are followed in implementing the field measurements.

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 (i=1),

k 1, 2, 3, … *K* stand models (k=4),

t 1, 2, 3, …*t** years elapsed since the start of the A/R project activity (6 calendar years since end of first verification until the end of current verification in 2018)

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

(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), allometric equation is used for calculate the carbon stock change of the project.

The allometric equations adopted to the project confirm 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.

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

where:

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

$f_j(DBH)$ An allometric equation for species *j* linking above-ground tree biomass (kg tree^{-1}) to diameter at breast height (*DBH*) measured in plots for stratum *i,* species *j*, time *t.* Despite available for some 10% of the trees in the plots, tree heights (H) were not used for estimation.

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 = 0.47); t C (t d.m.)$^{-1}$

The *increment of above-ground biomass carbon accumulation* is assessed 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 (as of 2006 IPCC Guidelines)*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

CO2 emissions from forest conversion to non-forest land

Emissions from 0.8 ha of *forest conversion to non-forest land* is accounted in the project's C stock change in living biomass. Area of forest land converted to non-forest land is reported in the field monitoring forms. Total amount of emissions is 42.23 tCO_2. Estimation assumes that a strata average amount of standing biomass (both belowground and aboveground) before the conversion (B_{before}) is lost and there is no gain in the new land use.

Project Emissions

As the project implementation focuses on assisted natural regeneration, there is no site preparation. Therefore, there is an assumption there are no GHG emissions from soil disturbance. The soil disturbance caused by supplemental planting associated with site preparation is insignificant (i.e. 0.3% per ha as of 500 trees x 0.25m*0.25m) 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.
However, the occurrence of wildfires was monitored. As per the Fire Management Plan report natural fire incidents occurred in 19.65 hectare located in the forest parcel 12 7a in Qafe-Mali Administrative Unit (village Orosh, Fushe-Arrez Municipality) during the monitoring period.

Equations 84 - 87 of the methodology were applied to estimate GHG emissions from biomass burnt, as follows:

Equation 84 of the methodology:

$$L_{BiomassBurn} = L_{BiomassBurn,\ CO2} + L_{BiomassBurn,\ N20} + L_{BiomassBurn,\ CH4}$$

where:

$L_{BiomassBurn}$ Total amount of greenhouse gas emissions from fire; tonnes CO_2e

$L_{BiomassBurn,\ CO2}$ CO_2 amount of greenhouse gas emissions from fire; tonnes CO_2e

$L_{BiomassBurn,\ N20}$ NO_2 amount of greenhouse gas emissions from fire; tonnes CO_2e

$L_{BiomassBurn,\ CH4}$ CH_4 amount of greenhouse gas emissions from fire; tonnes CO_2e

A 2006 IPCC methodology is involved to estimate the emissions of individual greenhouse gases loss from biomass wildfire (eq. 2.27 of 2006 IPCC Guidelines).

$$L_{fire} = A \bullet M_B \bullet C_f \bullet G_{ef} \bullet 10^{-3}$$

where:

L_{fire} = amount of greenhouse gas emissions from fire, tonnes of each GHG e.g., CH4, N2O, etc.

A = area burnt, ha

M_B = mass of fuel available for combustion, tonnes ha-1. This includes biomass, ground litter and dead wood. When Tier 1 methods are used then litter and dead wood pools are assumed zero, except where there is a land-use change. Project strata 3 average amount of dry matter for aboveground biomass is used.

C_f = combustion factor, dimensionless (0.45 default values in Table 2.6 of 2006 IPCC Guidelines)

G_{ef} = emission factor, g kg-1 dry matter burnt (default values for each GHG in Table 2.5 of 2006 IPCC Guidelines, namely: 1569 gCO_2kg-1 dry matter burnt, 4.74 g N_2O kg-1 dry matter burnt and 0.26 gCH_4kg-1 dry matter burnt).

GWP values applied for each GHG: 1 for CO2, 310 for N2) and 21 for CH4 (as of IPCC's Fourth Assessment Report (AR4)).

Total amount of GHG emissions from wildfire is 14.65tCO2eq. for 2013-2019.

Per AR-AM0003-v.04 methodology, accounting for increases in emissions by sources is only required if significant (>2 per cent of the actual net GHG removals by sinks). In addition, per the *Tool for testing significance of GHG emissions in A/R CDM project activities" (Version 01)* (EB31, Annex 16), the emissions of the biomass burning from these natural fires are insignificant (less than 5% of net anthropogenic removals by sinks), and are considered zero.

There is a small amount of *emissions from fossil fuel use* by forest guard personnel, as reported in the monitoring forms. The total amount of emissions is 25.97 tCO_2 eq. over 2013-2019. Calculation assumed passenger car, rural, Euro 3 from "Table 3.2.5 emission factors for European gasoline and diesel vehicles (mg/km), COPERT IV model" of Volume 2: Energy of 2006 IPCC Guidelines.

There is no *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 are not needed to be considered. Therefore, no project emissions occurred as a consequence of the project implementation and are reported as zero.

E.3. Calculation of leakage emissions

The only potential source of leakage was expected to be displacement of grazing animals. Leakage is not relevant for 2nd verification period over 2013-2019 as there was no record of reducing animal population since 2013. Meanwhile the leakage was zero over the first monitoring period as well.

E.4. Calculation of emission reductions or net anthropogenic removals

	Baseline GHG emissions or baseline net GHG removals (t CO_2e)	Project GHG emissions or actual net GHG removals (t CO_2e)	Leakage GHG emissions (t CO_2e)	GHG emission reductions or net anthropogenic GHG removals (t CO_2e)		
				Before 01/01/2013	From 01/01/2013	Total amount
	4,513	176,437	0	0	171,924	171,924

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

Amount achieved during this monitoring period ($t CO_2e$)	Amount estimated ex ante ($t CO_2e$)
171,924	330,478

E.6. Remarks on increase in achieved emission reductions

Not Applicable

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Document information

Version	*Date*	*Description*
06.0	7 June 2017	Revision to: • Ensure consistency with version 01.0 of the "CDM project standard for project activities" (CDM-EB93-A04-STAN); • Make editorial improvements.
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from *F-CDM-MR* to *CDM-MR-FORM*; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB 70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).

Version	*Date*	*Description*
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.

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