Monitoring report form for CDM project activity
(Version 07.0)

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	3
Completion date of this monitoring report	28/02/2020
Monitoring period number	Monitoring period 2
Duration of this monitoring period	01/07/2012 – 15/02/2019
Monitoring report number for this monitoring period	N/A
Project participants	- Ministry of Environment, Forests and Water Administration, Albania - Government of Italy - Ministry for the Environment, Land and Sea - Kingdom of Spain - Ministry for the Ecological Transition and Ministry of Economy and Business - Idemitsu Kosan Co., Ltd.; - The Okinawa Electric Power Co., Inc.; - Suntory Holdings Limited; - Tokyo Electric Power Company Holdings, Inc.; - Sumitomo Joint Electric Power Co., Ltd.; - Japan Iron and Steel Federation (JISF); - Japan Petroleum Exploration Co.,Ltd. (JAPEX); - Sumitomo Chemical - Eco-Carbone S.A.S. - Government of Luxembourg - Ministry of the Environment, Climate and Sustainable Development - International Bank for Reconstruction and Development (IBRD) as Trustee of the BioCarbon Fund (BioCF)
Host Party	Albania
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”
Sectoral scopes	Afforestation and reforestation

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
	N/A	187,883
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 of vegetation loss; soil productivity decreases; erosion and lower water supply and quality. The project purpose was to reforest degraded lands by assisting natural regeneration; improving soil properties and promoting biodiversity values.

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

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

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

The project interventions support natural regeneration of degraded lands by minimizing grazing pressure and promoting reforestation in close collaboration with forest and pasture users' associations. From the start of the project, several consultations were organised with local communities. The project implementation framework was agreed between the former General Directorate of Forest Policy and Pasture Development, Ministry of the Environment, Forests and Water Administration and the communes. The project area was 6,272.36 ha at the design phase and was decreased by 1,493.36 ha in 2004 as some areas were not suitable for the project implementation. From the remaining area of 4,779 ha, the project was actually implemented on 3,990.45 ha during the first and second monitoring periods. The project has not yet been implemented on the remaining 788.55 hectares. The total GHG removals by sinks during the second monitoring period amounted to 187,883 tCO2e.

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 land parcels that have unique geographical identification and boundaries. The list of the discrete areas included in the project is attached to this monitoring report.

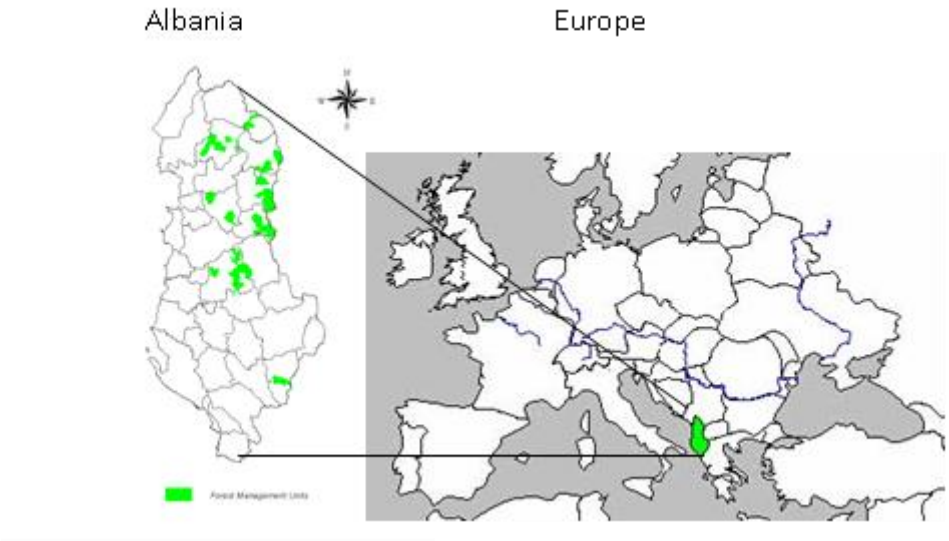


Figure 1. Project sites location in Albania

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 for the Ecological Transition and Environment and Ministry of Economy and Business	Yes
Japan	Idemitsu Kosan Co. Ltd.; The Okinawa Electric Power Co., Inc.; Suntory Holdings Limited; Tokyo Electric Power Company Holdings, Inc.; Sumitomo Joint Electric Power Co., Ltd.; Japan Iron and Steel Federation (JISF); Japan Petroleum Exploration Co.,Ltd. (JAPEX); Sumitomo Chemical	No
France	Eco-Carbone S.A.S.	No
Luxembourg	Government of Luxembourg - Ministry of the Environment, Climate and Sustainable Development	Yes
BioCarbon Fund (BioCF)	International Bank for Reconstruction and Development (IBRD) as Trustee of the BioCarbon Fund (BioCF)	Yes

A.4. References to 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 04[1]”.

[1] https://cdm.unfccc.int/methodologies/DB/U3WW9YEC2X333WW8CPVQ6CGVY6IBPJ

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 01.1) (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)[3]".
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 01.0.0 (EB 65, Annex 28)[4].

• Tool for demonstration and assessment of additionality for afforestation and reforestation CDM project activities (EB21, Annex 16[5]).

• Tool "Procedures to demonstrate the eligibility of lands for afforestation and reforestation project activities", Version 02 (EB26, annex 18[6]).

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.

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

>> The protection of project sites from grazing pressure and silvicultural activities promoted natural regeneration and enhanced biomass productivity through:

a) Assisted natural regeneration over entire project area of 3990.45 ha, including protection 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, vegetative 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 species diversity on 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 seedlings 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

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

[3] https://cdm.unfccc.int/Reference/Guidclarif/ar/methAR_guid32.pdf

[4] https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-17-v1.pdf

[5] https://cdm.unfccc.int/EB/021/eb21repan16.pdf

[6] https://cdm.unfccc.int/EB/026/eb26_repan18.pdf

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 stand composition, increase stand stability and provide more project benefits (and 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 to produce seedlings and the nursery operators have 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 valuable native species such as *Quercus spp.*, *Acer spp.*, *Tilia spp*., *Carpinus spp*. and *Ulmus spp*. Silvicultural measures implemented 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 project activity was operational from 20/12/2004 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 on the implementation of the carbon sequestration project.

The project activity is implemented on discrete areas organized as sub-parcels of forest management units with unique geographical identification and boundaries. The area under project implementation by forest management units is presented in the Annex 1.

B.2. Post-registration changes

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

>> A request for the post registration change to seek approval for the temporary deviation from the monitoring plan and the monitoring methodology applicable for the 2nd monitoring period of the project from 01/07/2012 to 15/02/2019 is submitted with this monitoring report.

This temporary deviation request is for the re-approval of the temporary deviation for second monitoring, which was approved for the first monitoring period covering the following item.

(i) application of the sampling design that enables optimization of sampling effort with 20% precision level and 90% confidence interval to estimate the number of sample plots.

Background to item (i): The AR AM0003, version 04 suggested for calculation of the number of sample plots for monitoring and measurement to meet an allowable error of ±10% of the mean with a 95% confidence level. Subsequent CDM 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) withdrew the sampling design requirements of the early versions of methodologies, including AR AM0003 version 04 (see Table 6 of section B.2.7) and replaced with sampling design to meet ±10% of the mean with a 90% confidence level, which was applied to the estimation of sample size of the project for the first monitoring period.

The 95 sample plots that were estimated in the PDD and laid out for measurement at the end of the first monitoring period did not meet the allowable error of ±10% of the mean at a 90% confidence level but met the allowable error of ±20% of the mean for a 90% confidence level. Applying the guidelines of CDM A/R Working Group 28 (paragraph 37, EB55), a temporary deviation was requested to allow the adoption of the sample size that meets the allowable error of ±20% of the mean for a 90% confidence level and complies. The temporary deviation (PRC-2714-001) was approved by the CDM Executive Board on 12/11/2012.

The 95 sample plots measured at the end of the first monitoring period were used for monitoring and measurement in the second monitoring period. The sample size estimate to meet a maximum allowable error of ±10% of the mean and 90% confidence level for the second monitoring period has been estimated at 286 sample plots needed. Taking into consideration of the field level constraints to the layout of additional sample plots and potential high cost of establishing and measuring the sampling plots made the option of increasing the sample size to meet a maximum allowable error of ±10% of the mean and 90% confidence level for the second monitoring period infeasible.

The sample size needed to meet the allowable error of ±20% of the mean for a 90% confidence level has been assessed at 72 sample plots for the second monitoring period and is the same sample size that was estimated for the first monitoring period.

The sample size of 95 plots estimated in the PDD and measured in the end of the first monitoring period and used for remeasurement at the end of second monitoring period exceed the sample size of 72 plots needed to meet the allowable error of ±20% of the mean for a 90% confidence level (see Table 3).

Table 3. Calculation of sampling plots as of PDD and project monitoring

Strata	Sample plots required to meet 10% precision and 90% confidence	Sample plots required to meet 20% precision and 90% confidence	Sample plots established in the project strata

	interval	interval	
Ecozone 1	50	13	19
Ecozone 2	100	25	28
Ecozone 3	128	32	43
Ecozone 4	8	2	5
Total	286	72	95

This post-registration change requested to cover item (i) above is consistent with the temporary deviation (PRC-2714-001) approved for the first monitoring period of the project in 2012. AENOR verification report, version 02, dated on 26/05/2020 is submitted with the PRC for this temporary deviation.

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 methodological regulatory documents

>> None

B.2.6. Changes to project design

>> None

B.2.7. Changes specific to afforestation or reforestation project activity

>> There are not specific changes to A/R project activities in this second monitoring period. The first Monitoring Report and PRC-2714-002 was accepted by the Executive Board on 23/07/2013 through the request of issuance process.

SECTION C. Description of monitoring system

>> The project activity started as part of the World Bank Natural Resource Development Project (NRDP) and 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 Tourism and Environment (MTE) of the Government of Albania.

The MTE through the project management unit will monitor and evaluate the progress of the Project Activities and coordinate the monitoring 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, field measurements as well as QA/QC measures.

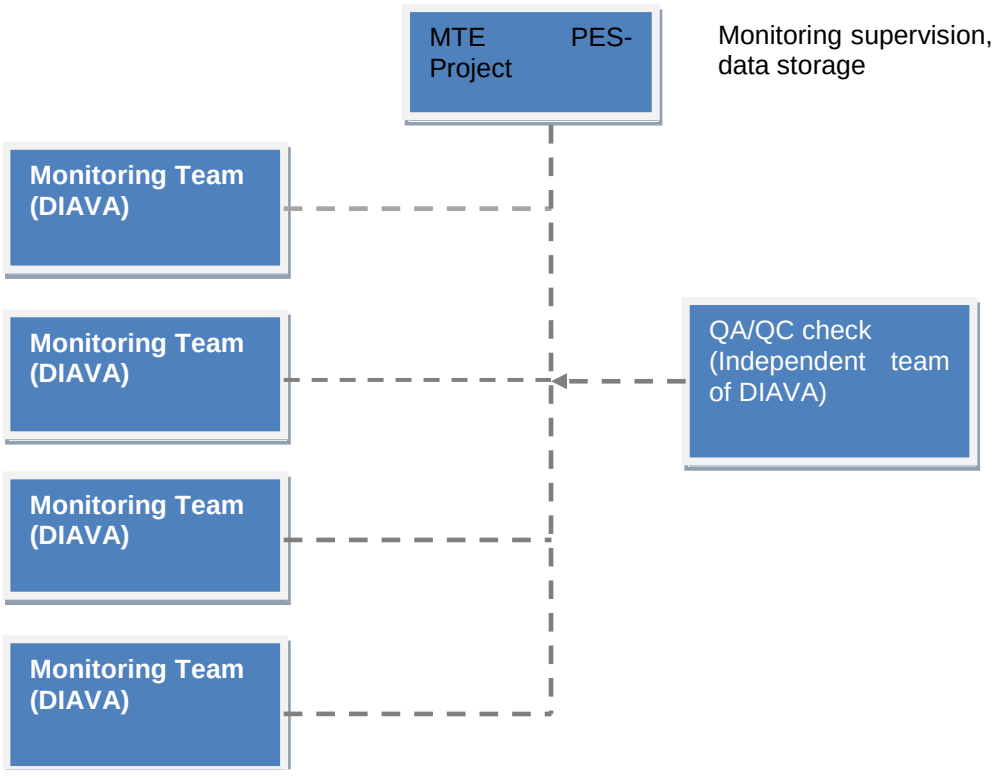
As part of the project monitoring, field measurements for periodic verifications of actual net GHG removals by sinks is coordinated by the DIAVA Consulting company (http://diava-consulting.com/projects/) and were carried out by a qualified well- trained staff. The project management unit has provided field work information to DIAVA staff. The monitoring crews were trained in the methodology and instruments used for field measurements. Training documentation and participants list present are archived by Diava Consulting Company (see sample list attached "Training Participants List_1711").

Each field team composed of 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 person in charge of maintaining the monitoring system is Mr. Erion Istrefi, the project coordinator from MTE.

The sampling design

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 4). The Table 4 shows that the total number of sample plots laid out in the project in four ecozones is 95, which conform to an 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 4. Area and number of sample plots laid out in project strata

Strata	Project area, ha	No plots
Ecozone 1	756.44	19
Ecozone 2	1,218.43	28
Ecozone 3	1,698.48	43
Ecozone 4	317.10	5
Total	**3,990.45**	**95**

Sample design is not updated compared to MR1(in 2012) as far as boundary did not changed and negligible area was affected by biomass loss on linear shape land use events in four different locations (i.e. for construction of roads and electricity power line), i.e. 0.6 ha are lost in Ecozone 1 and 0.2 ha Ecozone 2, which does not affect sampling. According to the Albanian forest law these lands remain as forestland.

To avoid subjective choice of plot locations, the permanent sample plots were located systematically with random start, in line with LULUCF Good Practice Guidance. 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 can find the

landmarks defined within the walking direction and by using the tape to measure the distance to reach the centre of sample plot (r= 8m).

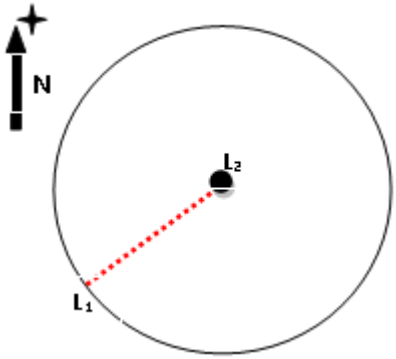


Figure 3. Scheme of plot centre identification (elements registered & described on the field form: L1- specialist's position, L2 center of sample plot; L1-L2 distance of specialist to centre oriented by azimuth

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

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

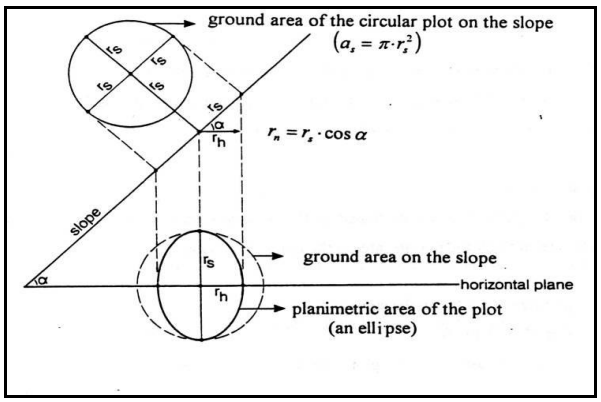


Figure 4. Sample plot radii correction by slope angle

To easily make the sample plot radii correction each field crews were supplied with a table (Table 5) which contain sample plot radii corrected based on the slope values.

Table 5. 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 sample 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.

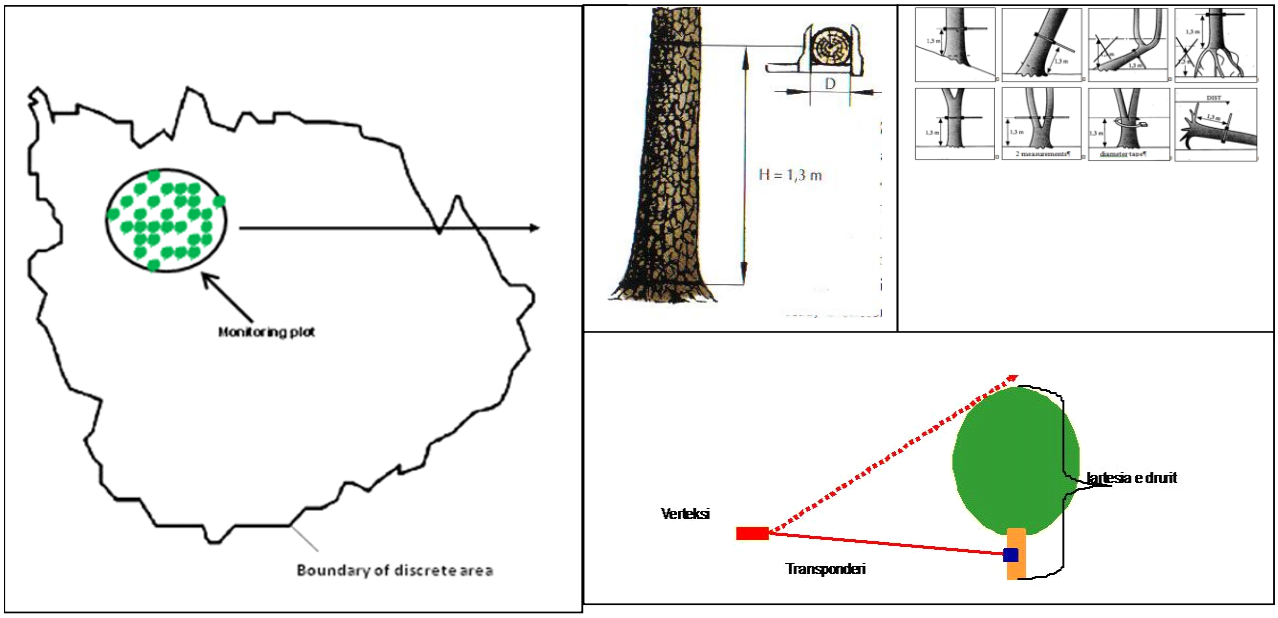


Figure 5. Tree measurements inside sample plots

The Vertex instrument is calibrated by field crews prior to conducting height measurement to ensure accurate measurement and that the instrument should have time to stabilize at ambient temperature. Calibration was done in the field before the measurements started.

Calliper instruments were used to measure DBH at 1.3 m, one member responsible for Dbh measurements marked this value (1.3 m from the ground) on his breast by a coloured strip to measure accurately the tree Dbh.

GPSMAP 64 used with a built-in national base map with shaded relief to navigate with ease. Calibration was made with incorporated function. An alternative method to Compass and Vertex is to find the exact centre of sample plots at a fixed distance of 8 m from the centre.

Monitoring of the 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 checked 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 and tree cover loss);
- Cross-checking of consistency between actual boundary and PDD description of boundaries, for the areas left in the project after MR2.

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). The procedure followed to measure geographical positions using GPS are noted in *Standard Operating Procedure for collection and organization of data using GPS,* as follows:

- GPS use:
  - o The GPS gathered location information and identified GPS satellites.
  - o 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.
  - o 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.
  - o The team followed the perimeter of the area converted to non-forest land by tracking the boundaries and returning to the beginning waypoint.
  - o 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:
  - o The team set a waypoint at the center of the plot which is marked with an iron stick in the field.
  - o Uploaded the coordinates of sample plot center to GPS via computer.

Monitoring of forest establishment and supplementary planting

Forest has been established, it was no planting during this monitoring period.

Monitoring of forest management

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 to identify the biomass loss from harvest.

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 are insignificant and are considered zero. No fossil fuels and fertilizers are used in the project.

Therefore, there are no emissions associated with them. Based on monitoring data, it is concluded that 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. Surveys were used to monitor the leakage and data from surveys is analysed to assess the prevalence of leakage in section E.3.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex-ante

Data/Parameter	C_{BSL}
Unit	*t CO2-e*
Description	Baseline net greenhouse gas removals by sinks
Source of data	PDD, p. 62, Table 24: Baseline net GHG removals by sinks (t CO2e)
Value(s) applied	4,512.54 t CO2 e (for the period 2005 to 2019)
Choice of data or measurement methods and procedures	According to PDD
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals
Additional comments	Data based on project area and Albania National Forest Inventory are used for calculation of baseline net GHG removals by sinks.

Data/Parameter	R_j
Unit	Dimensionless
Description	Description Root-shoot ratio for species *j*
Source of data	Source of data Table 3A.1.8, GPG LULUCF IPCC (2003)
Value(s) applied	0.35
Choice of data or measurement methods and procedures	According to PDD

Purpose of data/parameter	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 comments	

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)
Choice of data or measurement methods and procedures	According to PDD
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals. Calculation of project emissions or actual net GHG removals.
Additional comments	Carbon fraction default value is used to convert biomass in to carbon stock

Data/Parameter	***p***
Unit	*percent*
Description	Desired level of precision
Source of data	
Value(s) applied	20%
Choice of data or measurement methods and procedures	According to PRC
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	Not monitored, request for deviation to use 20% precision approved. Therefore, this parameter is revised to 20%

Data/Parameter	Confidence level of the mean of total standing biomass (aboveground and belowground biomass)
Unit	*Percent*
Description	
Source of data	Defined
Value(s) applied	90%
Choice of data or measurement methods and procedures	According to PRC
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals.
Additional comments	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”
Choice of data or measurement methods and procedures	According to MR1
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	Not monitored

Data/Parameter	***ni***
Unit	*Dimensionless*
Description	Sample size for stratum i
Source of data	Calculations
Value(s) applied	Strata: Sample size required to meet 20% precision and 90% CI Ecozone 1: 13 Ecozone 2: 25 Ecozone 3: 32 Ecozone 4: 2 Total: 72
Choice of data or measurement methods and procedures	According to PRC.
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	Not monitored

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
Choice of data or measurement methods and procedures	
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	Not monitored

Data/Parameter	***zα/2***
Unit	*Dimensionless*
Description	Value of the statistic z (normal probability density function), for α = 0.1 (implying a 90% confidence level)
Source of data	Statistics reference
Value(s) applied	1.645
Choice of data or measurement methods and procedures	
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	Not monitored

D.2. Data and parameters monitored

Data/Parameter	***t ID***
Unit	*years*
Description	Age of plantation (1, 2, 3,… years)
Measured/calculated/ default	
Source of data	Project implementation report
Value(s) of monitored parameter	
Monitoring equipment	
Measuring/reading/recording frequency	
Calculation method (if applicable)	
QA/QC procedures	
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	Not monitored

Data/Parameter	$A_i = A_{ikt}$
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 — 756.44; Ecozone 2 — 1,218.43; Ecozone 3 — 1,698.48; Ecozone 4 — 317.10; **Total** — **3,990.45**
Monitoring equipment	Garmin Etrex-30 Serial number: 2DV041055. Preparation for measurements and calibration procedure (see attached file “Training Lectures - slide 16 on calibration_1711” and sample proofs for the implementation of the procedure “Calibration_equipment_ALB” by the filed teams).
Measuring/reading/recording frequency	Parameter measured at the start of the project and checked thereafter at monitoring intervals, prior to each verification event.
Calculation method (if applicable)	GIS software
QA/QC procedures	Checked during monitoring period
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	

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) of monitored parameter	**3,990.45**
Monitoring equipment	Garmin Etrex-30 GIS or/and GPS Serial number: 2DV041055. Preparation for measurements and calibration procedure (see attached file "Training Lectures - slide 16 on calibration_1711" and sample proofs for the implementation of the procedure "Calibration_equipment_ALB" by the field teams involved in files measurements).
Measuring/reading/recording frequency	Parameter measured 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)	ArcGIS software
QA/QC procedures	Checked during monitoring period
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	

Data/Parameter	***AP***
Unit	m^2
Description	Sample plot area
Measured/calculated/ default	Measured
Source of data	According to PDD
Value(s) of monitored parameter	**200**
Monitoring equipment	Vertex CE-2-5308 (with slope correction). Preparation for measurements and calibration procedure (see attached file "Training Lectures - slide 16 on calibration_1711" and sample proofs for the implementation of the procedure "Calibration_equipment_ALB"). Tape (producer: Talmeter). Calibrated by the producer. Preparation for measurements by the field teams (see attached sheet "Calibration_equipment_ALB").
Measuring/reading/recording frequency	5-year
Calculation method (if applicable)	N/A
QA/QC procedures	Plot location and area checked and verified during monitoring period
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	

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) of monitored parameter	Shape file

Monitoring equipment	Garmin Etrex-30 GIS or/and GPS Serial number: 2DV041055. Preparation for measurements and calibration procedure (see attached file “Training Lectures - slide 16 on calibration_1711” and sample proofs for the implementation of the procedure “Calibration_equipment_ALB”).
Measuring/reading/recording frequency	5 years
Calculation method (if applicable)	
QA/QC procedures	Sample plot locations are checked and verified using GPS coordinates
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	

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) of monitored parameter	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	Calliper Nestle and mini-calliper UIK. Preparation for measurements and calibration procedure (see attached file “Training Lectures - slide 16 on calibration_1711” and sample proofs for the implementation of the procedure “Calibration_equipment_ALB”).
Measuring/reading/recording frequency	5 year
Calculation method (if applicable)	
QA/QC procedures	Diameter measurements are randomly checked during monitoring period
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	

Data/Parameter	***Tree species***
Unit	*dimensionless*
Description	N/A
Measured/calculated/ default	N/A
Source of data	Project

Value(s) of monitored parameter	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	N/A
Measuring/reading/recording frequency	5 years
Calculation method (if applicable)	N/A
QA/QC procedures	Implementation of forest plan checked right after planting and three years after planting
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	

Data/Parameter	***Total number of sample plots***
Unit	*Absolute 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) of monitored parameter	<table><tr><th>Strata</th><th>Area, ha</th><th>No plots</th></tr><tr><td>Ecozone 1</td><td>756.44</td><td>19</td></tr><tr><td>Ecozone 2</td><td>1,218.43</td><td>28</td></tr><tr><td>Ecozone 3</td><td>1,698.48</td><td>43</td></tr><tr><td>Ecozone 4</td><td>317.10</td><td>5</td></tr><tr><td>Total</td><td>3,990.45</td><td>95</td></tr></table>
Monitoring equipment	Garmin Etrex-30 GIS or/and GPS Serial number: 2DV041055. Preparation for measurements and calibration procedure (see attached file “Training Lectures - slide 16 on calibration_1711” and sample proofs for the implementation of the procedure “Calibration_equipment_ALB”).
Measuring/reading/recording frequency	5 year
Calculation method (if applicable)	N/A
QA/QC procedures	N/A
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	

Data/Parameter	***Number of trees in the sample plot***
Unit	*Absolute number*
Description	Trees measured in every sample plot
Measured/calculated/ default	Measured
Source of data	Monitoring

Value(s) of monitored parameter	

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	N/A
Measuring/reading/recording frequency	5 year
Calculation method (if applicable)	N/A
QA/QC procedures	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.
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	

Project emissions

Data/Parameter	$A_{B,ikt}$
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 living biomass was affected, only ground litter was burning.
Measured/calculated/ default	Measured
Source of data	N/A
Value(s) of monitored parameter	**19.65 ha** area affected by the wildfire
Monitoring equipment	GIS or/and GPS
Measuring/reading/recording frequency	At the start of project and annually
Calculation method (if applicable)	n.a
QA/QC procedures	
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	

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 direct measurements
Source of data	Project implementation records and IPCC (2003) Good Practice Guidance for LULUCF as follows: combustion factor from TABLE 3A.1.12 and emission factors from TABLE 3A.1.16
Value(s) of monitored parameter	**8.75 t dm/ha** (average stock for project strata 3)
Monitoring equipment	N/A
Measuring/reading/recording frequency	
Calculation method (if applicable)	Average biomass estimated from all plots pooled together
QA/QC procedures	
Purpose of data/parameter	Calculation of project emissions or actual net GHG removals
Additional comments	

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 6. This ex-post stratification and sampling plots are consistent with MR1.

Table 6. 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 in the past. 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

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

Equation 57 of AR AM0003, Version 04

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

Where

L = total number of strata
z = z value for a confidence level (90%)
E = allowable error (±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 estimates of sample plots by strata are presented in Table 9. The number of sample plots required to meet 10% allowable error in the mean with 90 percent confidence interval for the second monitoring period were estimated at 286. Considering the field level constraints, high cost and disproportionate effort needed in establishing and measuring 286 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) and in conformity with the approved temporary deviation (PRC-2714-001).

As described in detail in the section B.2.1, a request for a temporary deviation for the second monitoring period is being submitted to the UNFCCC Secretariat to apply 20% precision level and 90% confidence interval as part of the request for approval of post registration change. As a follow up to the approval of this post registration change, the sample size of 95 sample plots is applicable to meet the 10% allowable error in the mean with 90 percent confidence interval requirements for the project. Considering the number of sample plots established in each stratum is greater than those required to meet the 20% precision, the number of sample plots laid out in the project is appropriate as shown in the table 7 below.

Table 7. 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	50	13	19
Ecozone 2	100	25	28
Ecozone 3	128	32	43
Ecozone 4	8	2	5
Total	286	72	**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.

Management of field data

Management and 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 8 below presents the values presented in the PDD at project registration.

Table 8. 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.
2005 (from 20.12.2004)	88.60
2006	259.16
2007	531.09
2008	441.60
2009	324.41
2010	322.16
2011	319.93
2012	317.72

2013	315.52
2014	313.33
2015	311.16
2016	309.00
2017	306.86
2018	304.74
2019 (until 15.02.2019)	47.26
Total estimated baseline net GHG removals by sinks (tonnes of CO_2 e)	**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 20.12.2004 to 15.02.2019 are 4,512.54 t CO2e.

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 part of monitoring, 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 CO2e 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 (CAR-CDM), in tonnes CO2-e:

CAR-CDM = C ACTUAL – CBSL – LK (**Equation 101 ARAM0003-v.04**)

Where:

CAR-CDM Net anthropogenic greenhouse gas removals by sinks; tonnes CO2-e
C ACTUAL Actual net greenhouse gas removals by sinks; tonnes CO2-e
CBSL Baseline net greenhouse gas removals by sinks (as pre-determined in the PDD); tonnes CO2-e
LK Leakage; tonnes CO2-e

To estimate the amount of CERs that can be issued at time t*= t2 (the date of verification) for the monitoring period T = t2 – t1, this methodology uses the EB approved equations 29, which produce the same estimates as the following:

tCERs = C ACTUAL, t2 – CBSL – LK - C ACTUAL, t1 (**Equation 102 ARAM0003-v04**)

Thus, the amount of tCERs generated by the project activity since the start date of the project is 187,883.

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 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".

Post-stratification of the project area

Because of existing vegetation cover and minimal intervention by planting, natural regeneration and without significant 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 (page 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 at plot level 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 at the end of the second monitoring period. Finally, C stock change on entire project area is converted to CO2eq (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 (R2) 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^ b (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 9 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 R2, 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 9. 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 2-5 cm 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. Available at: https://pdfs.semanticscholar.org/b34f/5b76e408da4ea3985cc763f415bf0851dc06.pdf (02.04.2020)
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. Available at: https://hal.archives-ouvertes.fr/hal-00883943/document (02.04.2020)
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. Available at: https://hal.archives-ouvertes.fr/hal-00883118/document (02.04.2020)
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. Available at: https://www.researchgate.net/publication/222571717_Allometric_relationships_for_branch_and_tree_woody_biomass_of_Maritime_pine_Pinus_pinaster_At (02.04.2020)
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. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0378112711006013?via%3Dihub (02.04.2020)

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 (15 calendar years since beginning of the project until the end of current verification in 15.02.2019)

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

(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 to 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 = 0.5); 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 *j* (as of 2006 IPCC Guidelines); 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

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 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:

$L_{BiomassBurn} = L_{BiomassBurn,\ CO2} + L_{BiomassBurn,\ N20} + L_{BiomassBurn,\ CH4}$ (**Eq. 84 of methodology**):

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

Equation 85 of the methodology:

$$E_{BiomassBurn,CO_2} = \sum_{t=1}^{t^*} \sum_{i=1}^{s_{PS}} \sum_{k=1}^{k} (A_{B,ikt} \cdot B_{ikt} \cdot PBB_{ikt} \cdot CE \cdot CF) \cdot \frac{44}{12}$$

$E_{BiomassBurn,\ CO2}$	CO_2 emission from biomass burning in slash and burn; tonnes CO_2e
$A_{B,ikt}$	Area of slash and burn for stratum i, stand model k, time t; ha
B_{ikt}	Average above-ground biomass stock before burning of stratum I, stand model k, time t, tonnes d.m.ha^{-1}. Forest fires affect only litter which is assumed 5% of stand living biomass.
PBB_{ikt}	Average proportion of biomass burnt in stratum i, stand model k, time t; dimensionless
CE	Average biomass combustion efficiency (0.5)
CF	Carbon fraction; tonnes C (tonnes d.m.)$^{-1}$
i	1,2,3…m_{ps} strata in the project scenario
k	1,2,3…K stand model in the project scenario
t	1,2,3…t* years elapsed since the start of the A/R project activity

Equations 86 and 87 of the methodology:

$$E_{BiomassBurn,N_2O} = E_{BiomassBurn,CO_2} \cdot \frac{12}{44} \cdot (N/C\ ratio) \cdot ER_{N_2O} \cdot \frac{44}{28} \cdot GWP_{N_2O}$$

$$E_{BiomassBurn,CH_4} = E_{BiomassBurn,CO_2} \cdot \frac{12}{44} \cdot ER_{CH_4} \cdot \frac{16}{12} \cdot GWP_{CH_4}$$

Where:

$E_{BiomassBurn,\ NO2}$	NO_2 emission from biomass burning in slash and burn; tonnes CO_2e
$E_{BiomassBurn,\ CH4}$	CH_4 emission from biomass burning in slash and burn; tonnes CO_2e
$E_{BiomassBurn,\ CO2}$	CO_2 emission from biomass burning in slash and burn; tonnes CO_2e
N/C ratio	Nitrogen-carbon ratio; dimensionless (IPCC default value = 0.01)
ER_{N2O}	Emission ratio for N_2O (IPCC default value = 0.007)
ER_{CH4}	Emission ratio for CH_4 (IPCC default value = 0.012)
GWP_{N20}	Global warming potential for N_2O (310 for the first commitment period)
GWP_{CH4}	Global warming potential for CH_4 (21 for the first commitment period)

Applying equation 85, the CO_2 emissions from biomass burning are estimated as follows:
$E_{BiomassBurn,\ CO2}$ = 118.57 tonnes CO_2e

Note: the average proportion of biomass burnt in stratum i, stand model k, time t was conservatively assumed as 1. Combustion efficiency used is the IPCC default value 0.5 as no values are presented for non-tropical areas in Table 3.A.14 of IPCC GPG-LULUCF.

Applying equation 86, the NO_2 emissions from biomass burning are estimated as follows:
$E_{BiomassBurn,\ NO2}$= 2.64 tonnes CO_2e

And applying equation 87, the CH_4 emissions from biomass burning are estimated as follows:
$E_{BiomassBurn,\ CH4}$= 11.55 tonnes CO_2e

Summarizing, the total GHG emission from biomass burning is calculated by applying equation 24, as follows:
$E_{BiomassBurn} = E_{BiomassBurn,\ CO2} + E_{BiomassBurn,\ N20} + E_{BiomassBurn,\ CH4}$
$E_{BiomassBurn}$ = 132.75 tonnes CO_2e

Total amount of GHG emissions from wildfire is 132.75 tCO2eq. for 01.07.2012-15.02. 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 01.07.2012-15.02.2019. 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 01.07.2012-15.02.2019 as there was no record of reducing animal population since the end of previous monitoring period.

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
Total	**4,513**	**192,396**	**0**	**N/A**	**187,883**	**187,883**

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

>> Provide a comparison of the GHG emission reductions or net anthropogenic GHG removals achieved by the project activity during this monitoring period with the corresponding amount for the same period based on the ex-ante estimation in the registered PDD.

Amount achieved during this monitoring period (t CO_2e)	Amount estimated ex ante for this monitoring period in the PDD (t CO_2e)
187,883	**330,478**

>> Explain the calculation of "amount estimated ex ante for this monitoring period in the PDD" transparently.

The difference in the estimated value of net anthropogenic GHG removals by sinks in the registered PDD and calculated at the end of the monitoring period is due to several factors. First, the area implemented under the project is lower than the project area in the registered PDD. Second, ex-ante estimation of sum of the changes in living biomass carbon stocks under the project scenario was based on stand models from Albanian National Forestry Inventory (ANFI) and were used to estimate the ex-ante emission reduction values presented in the PDD (330,478 tCO2e); while the ex post net GHG removals by sinks for the second monitoring period are based on the measurements conducted on the sample plots. The ex-post net GHG removals by sinks (187,883 tCO2e) are in the range corresponding to the ex-ante projections adjusted for the reduced area under project implementation. The differences between the ex post and ex ante estimates seem reasonable considering the diverse species composition and distribution of the project covering different ecozones.

E.6. Remarks on increase in achieved emission reductions

>> NA

E.7. Remarks on scale of small-scale project activity

>> NA

Document information

Version	*Date*	*Description*
07.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Add a section on remarks on the observance of the scale limit of small-scale project activity during the crediting period; • Add "changes specific to afforestation or reforestation project activity" as a possible post-registration changes; • Clarify the reporting of net anthropogenic GHG removals for A/R project activities between two commitment periods; • Make editorial improvements.
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).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.

Version	*Date*	*Description*

Decision Class: Regulatory
Document Type: Form
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Annex 1. Project implementation area by land sub-parcels and forest management unit.

Forest Management Unit (FMU)	FMU Number	Forest Sub-parcel	CODE	Forest area in 15.02.2019 (ha)	Ecozone
BARMASH	1	22a	0122a	37.62	2
BARMASH	1	58a	0158a	59.82	2
BUSHTRICE	2	105b	02105b	21.15	3
BUSHTRICE	2	109b	02109b	16.18	2
BUSHTRICE	2	109c	02109c	21.40	3
BUSHTRICE	2	109c	02109c	1.80	3
BUSHTRICE	2	109c	02109c	0.23	3
BUSHTRICE	2	156b	02156b	9.30	3
BUSHTRICE	2	157a	02157a	28.53	4
BUSHTRICE	2	52b	0252b	33.98	4
BUSHTRICE	2	65a	0265a	34.31	4
BUSHTRICE	2	66a	0266a	49.22	4
BUSHTRICE	2	66a	0266a	7.14	4
BUSHTRICE	2	69a	0269a	26.70	4
BUSHTRICE	2	69a	0269a	17.21	4
BUSHTRICE	2	70a	0270a	23.84	4
BUSHTRICE	2	70a	0270a	6.57	4
BUSHTRICE	2	77a	0277a	8.79	3
BUSHTRICE	2	77a	0277a	2.88	3
BUSHTRICE	2	77a	0277a	10.75	3
BUSHTRICE	2	78c	0278c	9.36	4
BUSHTRICE	2	78c	0278c	0.84	4
BUSHTRICE	2	78c	0278c	5.99	4
BUSHTRICE	2	84a	0284a	12.04	2
BUSHTRICE	2	84a	0284a	0.26	2
BUSHTRICE	2	84a	0284a	9.55	2
BUSHTRICE	2	89a	0289a	14.53	2
BUSHTRICE	2	89a	0289a	2.14	2
BUSHTRICE	2	89a	0289a	8.80	2
BUSHTRICE	2	89a	0289a	0.55	2
BUSHTRICE	2	91b	0291b	11.70	3
DEDAJ-BUHOT	3	104a	03104a	5.44	3
DEDAJ-BUHOT	3	104a	03104a	5.13	3
DEDAJ-BUHOT	3	107a	03107a	15.20	3
DEDAJ-BUHOT	3	111a	03111a	15.94	3
DEDAJ-BUHOT	3	111b	03111b	13.12	3
DEDAJ-BUHOT	3	112d	03112d	2.80	3
DEDAJ-BUHOT	3	112d	03112d	7.73	3
DEDAJ-BUHOT	3	112d	03112d	0.04	3
DEDAJ-BUHOT	3	112d	03112d	0.07	3
DEDAJ-BUHOT	3	112d	03112d	0.25	3
DEDAJ-BUHOT	3	22a	0322a	12.79	3
DEDAJ-BUHOT	3	22a	0322a	0.21	3

DEDAJ-BUHOT	3	27c	0327c	18.74	3
DEDAJ-BUHOT	3	2a	032a	2.97	3
DEDAJ-BUHOT	3	30c/1	0330c/1	10.59	3
DEDAJ-BUHOT	3	31c/1	0331c/1	7.58	3
DEDAJ-BUHOT	3	31c/1	0331c/1	0.41	3
DEDAJ-BUHOT	3	31c/1	0331c/1	0.29	3
DEDAJ-BUHOT	3	31d	0331d	9.28	3
DEDAJ-BUHOT	3	34a	0334a	10.28	3
DEDAJ-BUHOT	3	40a	0340a	13.32	3
DEDAJ-BUHOT	3	47b	0347b	14.51	3
DEDAJ-BUHOT	3	4b	034b	8.99	3
DEDAJ-BUHOT	3	4b	034b	4.94	3
DEDAJ-BUHOT	3	4b	034b	0.71	3
DEDAJ-BUHOT	3	4b	034b	0.33	3
DEDAJ-BUHOT	3	4b	034b	0.59	3
DEDAJ-BUHOT	3	4b	034b	1.05	3
DEDAJ-BUHOT	3	4b	034b	0.77	3
DEDAJ-BUHOT	3	4b	034b	1.71	3
DEDAJ-BUHOT	3	57a	0357a	10.67	3
DEDAJ-BUHOT	3	57a	0357a	0.74	3
DEDAJ-BUHOT	3	57a	0357a	3.19	3
DEDAJ-BUHOT	3	57a	0357a	0.48	3
DEDAJ-BUHOT	3	57a	0357a	0.02	3
DEDAJ-BUHOT	3	57a	0357a	0.35	3
DEDAJ-BUHOT	3	58b	0358b	6.14	3
DEDAJ-BUHOT	3	5a	035b	12.70	3
DEDAJ-BUHOT	3	60b	0360b	7.68	3
DEDAJ-BUHOT	3	60b	0360b	0.34	3
DEDAJ-BUHOT	3	60b	0360b	0.03	3
DEDAJ-BUHOT	3	60b	0360b	1.04	3
DEDAJ-BUHOT	3	7a	037a	2.01	3
DEDAJ-BUHOT	3	7a	037a	1.16	3
DEDAJ-BUHOT	3	7a	037a	2.03	3
DEDAJ-BUHOT	3	7a	037a	2.65	3
DEDAJ-BUHOT	3	7a	037a	1.92	3
DEDAJ-BUHOT	3	7a	037a	1.07	3
DEDAJ-BUHOT	3	7a	037a	0.80	3
DEDAJ-BUHOT	3	88a	0388a	23.54	3
DESHAT MAQELLARE	4	106b	04106b	1.10	2
DESHAT MAQELLARE	4	137a	04137a	4.16	2
DESHAT MAQELLARE	4	137a	04137a	2.72	2
DESHAT MAQELLARE	4	14a	0414a	4.69	3
DESHAT MAQELLARE	4	154a	04154a	37.81	2
DESHAT MAQELLARE	4	155a	04155a	6.48	2
DESHAT MAQELLARE	4	155a	04155a	0.03	2
DESHAT MAQELLARE	4	155a	04155a	3.19	2
DESHAT MAQELLARE	4	155a	04155a	1.36	2

DESHAT MAQELLARE	4	155a	04155a	0.04	2
DESHAT MAQELLARE	4	155b	04155b	2.29	2
DESHAT MAQELLARE	4	156a	04156a	25.35	2
DESHAT MAQELLARE	4	156a	04156a	2.75	2
DESHAT MAQELLARE	4	156a	04156a	13.14	2
DESHAT MAQELLARE	4	156a	04156a	0.16	2
DESHAT MAQELLARE	4	159c	04159c	1.02	4
DESHAT MAQELLARE	4	159c	04159c	4.49	4
DESHAT MAQELLARE	4	159c	04159c	4.77	4
DESHAT MAQELLARE	4	159c	04159c	0.64	4
DESHAT MAQELLARE	4	159c	04159c	0.18	4
DESHAT MAQELLARE	4	159c	04159c	0.40	4
DESHAT MAQELLARE	4	168a	04168a	5.91	2
DESHAT MAQELLARE	4	16a	0416a	3.79	3
DESHAT MAQELLARE	4	175a	04175a	17.05	2
DESHAT MAQELLARE	4	179a	04179a	27.69	2
DESHAT MAQELLARE	4	183a	04183a	20.79	2
DESHAT MAQELLARE	4	192c	04192c	8.02	3
DESHAT MAQELLARE	4	201c	04201c	13.77	2
DESHAT MAQELLARE	4	242c	04242c	8.07	2
DESHAT MAQELLARE	4	242c	04242c	0.51	2
DESHAT MAQELLARE	4	265d	04265d	2.39	2
DESHAT MAQELLARE	4	279a	04279a	15.48	2
DESHAT MAQELLARE	4	280b	04280b	11.69	2
DESHAT MAQELLARE	4	33a	0433a	12.43	3
DESHAT MAQELLARE	4	33a	0433a	0.37	3
DESHAT MAQELLARE	4	44a	0444a	6.43	2
DESHAT MAQELLARE	4	46a	0446a	0.09	2
DESHAT MAQELLARE	4	46a	0446a	2.87	2
DESHAT MAQELLARE	4	46a	0446a	0.44	2
DESHAT MAQELLARE	4	46a	0446a	8.16	2
DESHAT MAQELLARE	4	48a	0448a	6.19	4
DESHAT MAQELLARE	4	54a	0454a	10.57	2
DESHAT MAQELLARE	4	57	457	18.36	3
DESHAT MAQELLARE	4	57	457	0.93	3
DESHAT MAQELLARE	4	61a	0461a	7.05	3
DESHAT MAQELLARE	4	6b	046b	3.17	3
DESHAT MAQELLARE	4	73b	0473b	1.92	3
GALIGAT-STROR	5	19a	519	50.85	1
GALIGAT-STROR	5	19a	519	0.24	1
GALIGAT-STROR	5	1c	051c	21.90	1
GALIGAT-STROR	5	1c	051c	0.00	1
GALIGAT-STROR	5	1c	051c	2.86	1
GALIGAT-STROR	5	1c	051c	2.77	1
GALIGAT-STROR	5	1c	051c	3.09	1
GALIGAT-STROR	5	20a	0520a	10.00	1
GALIGAT-STROR	5	23d	0523d	9.67	1

GALIGAT-STROR	5	30	530	14.78	1
GALIGAT-STROR	5	30	530	0.14	1
GALIGAT-STROR	5	31	531	0.40	1
GALIGAT-STROR	5	31	531	0.53	1
GALIGAT-STROR	5	31	531	37.34	1
GALIGAT-STROR	5	32	532	11.31	1
GALIGAT-STROR	5	51a	0551a	25.31	1
GALIGAT-STROR	5	52a	0552a	34.58	1
GALIGAT-STROR	5	53	553	31.48	2
GALIGAT-STROR	5	54	554	23.80	2
GALIGAT-STROR	5	54	554	1.76	2
GALIGAT-STROR	5	54	554	0.26	2
GALIGAT-STROR	5	54	554	0.67	2
GALIGAT-STROR	5	54	554	0.29	2
GJINAR-ZAVALINE	6	14a	0614a	1.37	2
GJINAR-ZAVALINE	6	14a	0614a	16.76	2
GJINAR-ZAVALINE	6	14b	0614b	13.20	2
GJINAR-ZAVALINE	6	18b	0618b	0.23	2
GJINAR-ZAVALINE	6	18b	0618b	19.12	2
GJINAR-ZAVALINE	6	47	647	20.58	2
GJINAR-ZAVALINE	6	47	647	0.72	2
GJINAR-ZAVALINE	6	47	647	0.17	2
GJINAR-ZAVALINE	6	49a	0649a	15.08	2
GJINAR-ZAVALINE	6	67a	0667a	4.99	2
GJINAR-ZAVALINE	6	72d	0672d	11.45	2
GOSTIME-KOPRIK	28	76a	2876a	0.10	3
GOSTIME-KOPRIK	28	76a	2876a	0.23	3
GOSTIME-KOPRIK	28	76a	2876a	0.07	3
GOSTIME-KOPRIK	28	76a	2876a	0.16	3
GOSTIME-KOPRIK	28	76a	2876a	42.63	3
GRAMSH-VINE	7	70a	0770a	25.66	1
GRAMSH-VINE	7	74a	0774a	35.39	1
GRAMSH-VINE	7	85a	0785a	31.49	1
GRAMSH-VINJE	7	85a	0785a	0.07	1
GRAMSH-VINJE	7	85a	0785a	1.85	1
HELSHAN	8	67	867	25.78	3
HELSHAN	8	67	867	0.06	3
HELSHAN	8	76b	0876b	29.57	3
HELSHAN	8	78	878	20.23	3
HELSHAN	8	87b	0887b	11.83	3
HELSHAN	8	87b	0887b	5.29	3
HELSHAN	8	88	888	12.34	3
HELSHAN	8	88	888	7.29	3
HELSHAN	8	91a	0891a	7.36	3
HELSHAN	8	91b	0891b	15.39	3
HELSHAN	8	96a	0896a	4.60	3
HELSHAN	8	96b	0896b	9.32	3

HELSHAN	8	99a	0899a	18.08	3
HELSHAN	8	99a	0899a	4.09	3
HELSHAN	8	99b	0899b	9.26	3
HELSHAN	8	99b	0899b	6.25	3
KAFTALLE-GOMSIQE	9	124a	09124a	10.08	3
KAFTALLE-GOMSIQE	9	125b	09125b	24.86	3
KAFTALLE-GOMSIQE	9	126a	09126a	29.24	3
KAFTALLE-GOMSIQE	9	20a	0920a	32.31	3
KAFTALLE-GOMSIQE	9	28a	0928a	4.79	3
KAFTALLE-GOMSIQE	9	28a	0928a	13.41	3
KAFTALLE-GOMSIQE	9	28a	0928a	0.43	3
KAFTALLE-GOMSIQE	9	28a	0928a	0.64	3
KAFTALLE-GOMSIQE	9	35a	0935a	19.08	3
KAFTALLE-GOMSIQE	9	79a	0979a	69.75	3
KAFTALLE-GOMSIQE	9	81	981	31.18	3
KAFTALLE-GOMSIQE	9	85a	0985a	24.65	3
KAFTALLE-GOMSIQE	9	85a	0985a	5.04	3
KAFTALLE-GOMSIQE	9	85a	0985a	1.27	3
KAFTALLE-GOMSIQE	9	85a	0985a	1.10	3
KASTRIOT-SLLOVE	10	137b	10137b	1.09	2
KASTRIOT-SLLOVE	10	137b	10137b	3.31	2
KASTRIOT-SLLOVE	10	163b	10163b	13.12	3
KASTRIOT-SLLOVE	10	205b	10205b	0.30	2
KASTRIOT-SLLOVE	10	205b	10205b	1.68	2
KASTRIOT-SLLOVE	10	208b	10208b	0.54	2
KASTRIOT-SLLOVE	10	208b	10208b	1.10	2
KASTRIOT-SLLOVE	10	208b	10208b	0.90	2
KASTRIOT-SLLOVE	10	211b	10211b	12.06	2
KASTRIOT-SLLOVE	10	214b	10214b	7.46	2
KASTRIOT-SLLOVE	10	214b	10214b	1.03	2
KASTRIOT-SLLOVE	10	216c	10216c	0.76	2
KASTRIOT-SLLOVE	10	216c	10216c	2.77	2
KASTRIOT-SLLOVE	10	216c	10216c	0.32	2
KASTRIOT-SLLOVE	10	220b	10220b	8.73	3
KASTRIOT-SLLOVE	10	220b	10220b	0.20	3
KASTRIOT-SLLOVE	10	226b	10226b	10.24	3
KASTRIOT-SLLOVE	10	226b	10226b	0.21	3
KASTRIOT-SLLOVE	10	231b	10231b	8.86	2
KASTRIOT-SLLOVE	10	233b	10233b	1.55	2
KASTRIOT-SLLOVE	10	233b	10233b	0.93	2
KASTRIOT-SLLOVE	10	233b	10233b	0.98	2
KASTRIOT-SLLOVE	10	233b	10233b	2.19	2
KASTRIOT-SLLOVE	10	239a	10239a	4.48	2
KASTRIOT-SLLOVE	10	239a	10239a	0.36	2
KASTRIOT-SLLOVE	10	239a	10239a	1.39	2
KASTRIOT-SLLOVE	10	240a	10240a	7.13	2
KASTRIOT-SLLOVE	10	241b	10241b	5.76	2

KASTRIOT-SLLOVE	10	241b	10241b	1.04	2
KASTRIOT-SLLOVE	10	243a	10243a	15.02	2
KASTRIOT-SLLOVE	10	244b	10244b	0.14	3
KASTRIOT-SLLOVE	10	244b	10244b	7.44	3
KASTRIOT-SLLOVE	10	244b	10244b	0.06	3
KASTRIOT-SLLOVE	10	244b	10244b	1.31	3
KLENJE	11	41a	1141a	12.64	2
KLENJE	11	49b	1149b	18.93	2
KLENJE	11	7a	117a	27.28	2
KLENJE	11	7a	117a	0.37	2
KLENJE	11	7a	117a	0.29	2
KRYEZI	12	58a	1258a	8.04	3
KRYEZI	12	58a	1258a	0.14	3
KRYEZI	12	58a	1258a	0.19	3
KRYEZI	12	58a	1258a	0.92	3
KRYEZI	12	59c	1259c	4.14	3
KRYEZI	12	59c	1259c	0.08	3
KRYEZI	12	7a	127a	27.44	3
KRYEZI-BICAJ	13	113a	13113a	15.45	3
KRYEZI-BICAJ	13	79a	1379a	31.16	3
KRYEZI-BICAJ	13	91b	1391b	6.04	3
KURDARI-PLANI BARDHE	14	103b	14103b	20.80	3
KURDARI-PLANI BARDHE	14	103b	14103b	11.16	3
KURDARI-PLANI BARDHE	14	103b	14103b	15.77	3
KURDARI-PLANI BARDHE	14	104b	14104b	52.36	3
KURDARI-PLANI BARDHE	14	108b	14108b	30.70	3
KURDARI-PLANI BARDHE	14	60a	1460a	13.97	2
KURDARI-PLANI BARDHE	14	83b	1483b	6.05	3
KURDARI-PLANI BARDHE	14	83b	1483b	2.73	3
KURDARI-PLANI BARDHE	14	83b	1483b	1.94	3
KURDARI-PLANI BARDHE	14	83b	1483b	0.44	3
KURDARI-PLANI BARDHE	14	83b	1483b	1.64	3
KURDARI-PLANI BARDHE	14	84b	1484b	16.72	3
KURDARI-PLANI BARDHE	14	84b	1484b	1.72	3
KURDARI-PLANI BARDHE	14	84b	1484b	13.02	3
KURDARI-PLANI BARDHE	14	84b	1484b	11.44	3
KURDARI-PLANI BARDHE	14	84b	1484b	1.17	3
KURDARI-PLANI BARDHE	14	84b	1484b	5.38	3
KURDARI-PLANI BARDHE	14	84b	1484b	0.24	3
KURDARI-PLANI BARDHE	14	85b	1485b	14.49	3
KURDARI-PLANI BARDHE	14	85b	1485b	2.28	3
KURDARI-PLANI BARDHE	14	85b	1485b	2.54	3
KURDARI-PLANI BARDHE	14	85b	1485b	2.88	3
KURDARI-PLANI BARDHE	14	94b	1494b	14.25	3
KURDARI-PLANI BARDHE	14	94b	1494b	7.27	3
KURDARI-PLANI BARDHE	14	94b	1494b	38.34	3
KURDARI-PLANI BARDHE	14	96b	1496b	0.85	3

KURDARI-PLANI BARDHE	14	96b	1496b	8.68	3
KURDARI-PLANI BARDHE	14	96b	1496b	2.48	3
KURDARI-PLANI BARDHE	14	96b	1496b	1.56	3
LABINOT	15	24a	1524a	21.30	2
LABINOT	15	25a	1525a	42.69	2
LABINOT	15	49a	1549a	19.79	2
LUBINJE-TUNJE	25	120a	25120a	29.50	1
LUBINJE-TUNJE	25	120a	25120a	0.58	1
LUBINJE-TUNJE	25	120a	25120a	3.56	1
LUBINJE-TUNJE	25	127a	25127a	23.26	1
PAPER-SHLLAK	17	15a	1715a	10.57	2
PAPER-SHLLAK	17	168a	17168a	47.93	2
PAPER-SHLLAK	17	168a	17168a	1.06	2
PAPER-SHLLAK	17	169a	17169a	44.82	2
PAPER-SHLLAK	17	171a	17171a	46.52	2
PAPER-SHLLAK	17	172a	17172a	19.51	2
PAPER-SHLLAK	17	173a	17173a	15.09	2
PAPER-SHLLAK	17	174a	17174a	33.45	2
PAPER-SHLLAK	17	175a	17175a	20.18	2
POLIS	18	166a	18166a	41.51	1
POLIS	18	166a	18166a	0.12	1
POLIS	18	166a	18166a	0.17	1
POLIS	18	166a	18166a	0.38	1
POLIS	18	169a	18169a	47.30	1
POLIS	18	169a	18169a	0.35	1
POLIS	18	169a	18169a	0.22	1
POLIS	18	1b	181b	12.12	1
POLIS	18	2a	182a	22.42	1
POLIS	18	2b	182b	13.08	1
POLIS-VASJAN	27	29a	2729a	31.79	1
POLIS-VASJAN	27	58	2758	16.01	1
POLIS-VASJAN	27	58	2758	0.47	1
POLIS-VASJAN	27	59a	2759a	34.22	1
POLIS-VASJAN	27	59a	2759a	0.93	1
POLIS-VASJAN	27	59a	2759a	0.19	1
POLIS-VASJAN	27	59a	2759a	0.31	1
POLIS-VASJAN	27	59a	2759a	0.33	1
POLIS-VASJAN	27	59a	2759a	0.09	1
POLIS-VASJAN	27	59b	2759b	6.56	1
POLIS-VASJAN	27	59b	2759b	0.97	1
POLIS-VASJAN	27	59b	2759b	2.02	1
POLIS-VASJAN	27	59b	2759b	4.70	1
POLIS-VASJAN	27	59b	2759b	0.21	1
POLIS-VASJAN	27	61b	2761b	18.54	1
POLIS-VASJAN	27	61b	2761b	11.65	1
POLIS-VASJAN	27	63a	2763a	24.06	1
POLIS-VASJAN	27	64a	2764a	23.38	1

POLIS-VASJAN	27	81a	2781a	42.91	1
QELEZ	26	17b	2617b	9.24	3
QELEZ	26	49	2649	7.83	3
SHISHTAVEC-ZAPOD	19	60b	1960b	11.17	4
SHISHTAVEC-ZAPOD	19	60b	1960b	0.15	4
SHISHTAVEC-ZAPOD	19	74b	1974b	7.13	4
SHISHTAVEC-ZAPOD	19	74c	1974c	3.52	4
SHISHTAVEC-ZAPOD	19	74c	1974c	0.20	4
SHISHTAVEC-ZAPOD	19	89b	1989b	5.10	4
SHISHTAVEC-ZAPOD	19	90b	1990b	4.87	4
SHISHTAVEC-ZAPOD	19	90d	1990d	5.26	4
SHISHTAVEC-ZAPOD	19	90d	1990d	4.58	4
SHISHTAVEC-ZAPOD	19	95e	1995e	3.90	4
SHISHTAVEC-ZAPOD	19	95e	1995e	8.38	4
SHISHTAVEC-ZAPOD	19	95e	1995e	1.47	4
SHPAT-SHTERMEN	20	47/2	2047/2	15.39	3
SHPAT-SHTERMEN	20	61a	2061a	24.06	2
SHPAT-SHTERMEN	20	67d	2067d	4.55	2
SHPAT-SHTERMEN	20	67d	2067d	6.33	2
SHPAT-SHTERMEN	20	69a	2069a	15.69	2
TRODHEN	21	48	2148	39.82	3
TRODHEN	21	48	2148	0.11	3
TRODHEN	21	75a	2175a	7.90	3
TRODHEN	21	75a	2175a	2.94	3
TRODHEN	21	75a	2175a	0.01	3
TRODHEN	21	76a	2176a	15.38	3
TUCEP-OKSHTUN	22	173b	22173b	13.38	2
TUCEP-OKSHTUN	22	182b	22182b	9.35	2
TUCEP-OKSHTUN	22	182b	22182b	5.51	2
TUCEP-OKSHTUN	22	9a	229a	16.37	2
TUCEP-OKSHTUN	22	9a	229a	32.09	2
TUCEP-OKSHTUN	22	9a	229a	0.57	2
TUCEP-OKSHTUN	22	9a	229a	6.38	2
ULEZ	23	140a	23140a	28.20	3
ULEZ	23	140a	23140b	1.25	3
ULEZ	23	141	23141	48.53	3
ULEZ	23	141	23141	0.47	3
ULEZ	23	144a	23144a	57.98	3
ULEZ	23	144a	23144a	1.04	3
ULEZ	23	144a	23144a	0.72	3
ULEZ	23	146a	23146a	40.69	3
ULEZ	23	146a	23146a	0.07	3
ULEZ	23	146b	23146b	28.28	3
ULEZ	23	146b	23146b	2.22	3
ULEZ	23	147a	23147a	39.88	3
ULEZ	23	147a	23147a	1.23	3
ULEZ	23	61	2361	0.64	1

ULEZ	23	61	2361	4.46	1
ULEZ	23	61	2361	7.24	1
ULEZ	23	62b	2362b	9.61	1
ULEZ	23	62b	2362b	0.19	1
ULEZ	23	62b	2362b	0.17	1
ULEZ	23	63b	2363b	8.43	3
ULEZ	23	63b	2363b	6.11	3
ZERQAN	24	151b	24151b	0.28	2
ZERQAN	24	151b	24151b	0.53	2
ZERQAN	24	151b	24151b	0.41	2
ZERQAN	24	157b	24157b	6.19	2
ZERQAN	24	157b	24157b	0.19	2
ZERQAN	24	157b	24157b	1.92	2
ZERQAN	24	157b	24157b	5.39	2
ZERQAN	24	157b	24157b	1.41	2
ZERQAN	24	47b	2447b	12.52	2
Total				**3990.45**	