JI Monitoring Report
Version No. 01.2, 29th March 2013

Bikin Tiger Carbon Project
Permanent protection of otherwise logged Bikin Forest, in Primorye Russia

Figure 1: River bank on Bikin River

Photo by S. Melnikov

Prepared for
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Bikin Tiger Carbon Project - Permanent protection of otherwise logged Bikin Forest, in Primorye Russia

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SECTION A.   Description of the Project Activity

A.1.   Purpose and General Description of the Project Activity

Project Title. The JI project has the title "Bikin Tiger Carbon Project - Permanent protection of otherwise logged Bikin Forest, in Primorye Russia", hereafter referred to as the 'project'.

Purpose of the Project Activity. The Tribal Commune Tiger (TCT), an economic interest group formed by the local tribe of the Russian ethnic group of Udege people, has leased the Bikin Nut Harvesting Zone (NHZ) and riparian zone of Bikin river (subsequently referred to as "concession area" whereas the project area is a part of the concession area) concession from the Forest Department of Primorsky krai[1]. This allows TCT to protect its area of living from any logging activities and thereby ensures the integrity of forest- and carbon stocks in the project area.

The project setup foresees:

- The protection of the project area from any logging operations as well as the conservation of the existing forest carbon stocks.
- The assessment of the development of forest carbon stocks under a) the baseline scenario (i.e. logging) and b) the protection of the project area from logging.
- The calculation of the difference of carbon stocks of baseline and project scenarios.
- The generation of Emission Reduction Units (ERUs) considering above difference of carbon stocks, project emissions and leakage.
- The ERUs shall be sold in the international emission trading market allowing the TCT in the midterm to pay the annual concession fees to the Forest Department of Primoryski krai and to pay for all necessary conservation measures related to the management plan of the concession.

Description of Installed Technology. By declaring the forest as conservation forest, the extraction of timber with accompanying trees and soil damages and the release of carbon emission will be avoided for the time of the project period. There is no further specific technology applied.

Relevant Dates for the Project Activity. Three dates are considered as relevant for the project activity and its implementation: First, the actual lease of the forest concession by TCT, second the implementation of the anti-poaching brigade and third and finally the establishment of a forest fire monitoring- and fighting approach. The three dates are discussed below in detail:

- The Tribal Commune Tiger leases the project area and thereby protects the land from logging. At the 3rd June 2009, the Tribal Commune Tiger signed a contract for leasing the Bikin concession from the Primorsky Forest Department with the objective to protect the area against logging (Contract of Forest Lease No. 4/34). The concession contract explicitly grants the Tribal Commune Tiger the right to develop an emission reduction project. The concession lease period is 49 years. This shall protect the project area from logging until 2058 and shall conserve the forest stands and avoid the decrease of respective wood volumes - and related - the decrease of forest carbon stocks.
- TCT engaged anti-poaching brigade. This brigade has the purpose to protect the project area against illegal logging and against poaching. Anti poaching activities started to work at the 3rd of March 2009 (main function was anti-poaching). It assumed the activity to control also against illegal logging at the 5th of May 2009.
- On behalf of TCT, WWF Amur Branch engaged the Forest Fire Fighting Service (FFFS) of the Forest Department of the Primorsky krai.
  - The initial contract between WWF Amur Branch and FFFS was undersigned at the 7th May 2009 (date of signature) covering the period of 7th May 2009 until the 15th December 2009.
  - This was renewed twice, at the 14th December 2009 (date of signature) covering the period of 15th December 2009 to 15th December 2010.

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[1] Also referred to as Primorye.

o Second renewal was undersigned at the 13th December 2010 and covers the period of 13th December to 15th December 2012.

Total Emission Reductions of the Monitoring Period. The table below presents the emission reductions achieved during the monitoring period, based on the parameters monitored, as described in Section D.

Table 2: Net Anthropogenic Removals by Sinks over the Monitoring Period	
Year	Determination of Annual Enhancements of Net Anthropogenic Removals by Sinks (in t CO_2e)
2009	43,922
2010	138,135
2011	184,141
2012	153,314
Total Estimated Enhancements of Net Anthropogenic Removals by Sinks over the Monitoring Period (in tCO_2e)	519,512

A.2.	**Location of the Project Activity**

The project is located in Primorsky Krai. Primorsky Krai is located in the Southern Far East of Russia bordering China and North Korea. The exact location of Primorsky Krai is shown in below figure (area marked red).

Figure 2:Location of Primorsky Krai

The project is located north to the settlement of Vostok and east to the village of Krasny Yar.

Figure 3: Location of the Project Area in Primorsky Krai
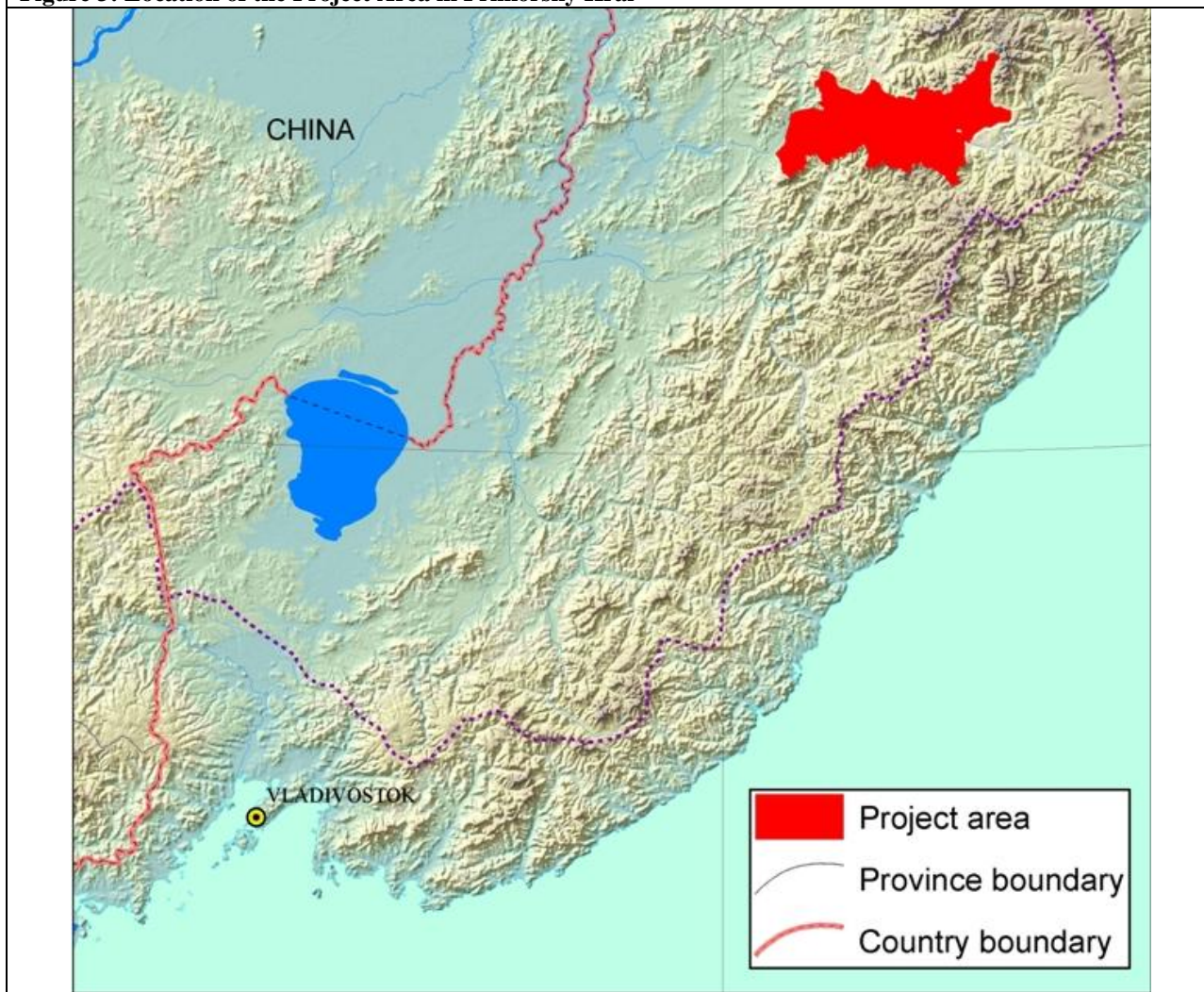
A.3. Parties and Project Participants

The project is implemented by the following parties and participants:

Table 3: Details on the Project Participants and Host Countries		
Name of Party involved (*)	Legal entity / project participant (as applicable)	Party* involved wishes to be considered as project participant(Yes/No)
Russian Federation*	Tribal Commune Tiger	No
France	CF Partners (UK) LLP	No
* (host) indicates a host Party		

A.4.   Title, Reference and Version of the Baseline and Monitoring Methodology Applied to the Project Activity

A.4.1.   Baseline methodology:

The registered project qualifies as 'Large Scale' under sectoral scope 14: 'Land-use, land-use change and forestry' in accordance with 13th JISC Meeting, Annex 2, §1.

The baseline for the proposed JI project activity was defined in accordance with the JISC Guidance on criteria for baseline setting and monitoring (Version 03). It classifies as a 'JI specific approach'.
Reference is made to the baseline & monitoring methodology "Estimating GHG Emission Reductions from Planned Degradation (Improved Forest Management)[2]" developed under the Verified Carbon Standard (VCS). The methodology is available under the below link:
- www.v-c-s.org/methodologies/VM0011

Prior to being registered by the VCS, any VCS methodology must undergo a two phased validation process. The first and second VCS methodology assessment report may under the following link:
- www.v-c-s.org/sites/v-c-s.org/files/VM0011%20Second%20Assessment%20Report.pdf
- www.v-c-s.org/sites/v-c-s.org/files/VM0011%20First%20Assessment%20Report.pdf

Please note, the VCS methodology allows for considering 'positive leakage'. These emissions are directly attributable to the project activity, occur outside of the project boundary and increase the volume of emission reductions. JISC's Guidance of Criteria for Baseline Setting and Monitoring (JISC26, Version 03) explicitly constrain leakage for Land Use, Land Use Change and Forestry (LULUCF) to 'negative leakage'3. The proposed project determines the volume of these types of emissions but does not include these in the calculation of emission reductions. This was done to ensure consistency with JI rules and procedures and is considered to be conservative.

Complementing above methodology, the following tools and guidelines were applied:
- Tool for testing significance of GHG emissions in A/R CDM project activities, Version 1, CDMEB 31,
- Tool for the demonstration and assessment of additionality in A/R CDM project activities, Version 2, CDM EB35, Annex 17.
- Tool for testing the significance of GHG emissions in A/R CDM project activities, Version 1, CDM EB 31,
- VCS Agriculture, Forestry and Other Land Use (AFOLU) Requirements[4], Version 3.2,
- Guidance of Criteria for Baseline Setting and Monitoring, JISC26, Version 03;

A.4.2.   Monitoring methodology:

The monitoring plan of the JI project is based on the monitoring methodology stipulated in the VCS methodology chosen (VM011). As such, this approach is considered as JI specific approach. The monitoring methodology is in accordance with paragraph 9 (a) of the 'Guidance on criteria for baseline setting and monitoring and its description follows §30 of the 'Guidance on criteria for baseline setting and monitoring'.

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[2] Downloaded at 27th October 2011 from www.v-c-s.org/methodologies/VM0011

[3] JISC26, §17 stipulates: "Leakage is the net change of anthropogenic emissions by sources and/or removals by sinks of GHGs which occurs outside the project boundary, and that can be measured and is directly attributable to the JI project. In the case of JI LULUCF projects, only the increased anthropogenic emissions by sources and/or reduced."

[4] Downloaded at the 13th February 2012 from www.v-c-s.org/program-documents/afolu-requirements-v30#overlay-context=program-documents

A.5.	Technical Description of the Project

By declaring the forest as conservation forest, the extraction of timber with accompanying trees and soil damages and the release of carbon emission will be avoided for the time of the project period. There is no further specific technology applied. Not Applicable.

A.6.	Crediting Period of the Project Activity and related Information

The below section briefly describes the start date, operational lifetime and crediting period of the JI project proposed for verification.

Start Date. The starting date of the project is 03/06/2009.

Operational Lifetime. The expected operational lifetime of the project is 49 years and 0 months which is the timeframe of the concession lease.

Crediting Period. According to the Russian JI Procedures, the crediting period comprises only the first commitment period of the Kyoto Protocol. This is 3 years and 7 months.

A.7.	Name of Responsible Persons and Entities

The monitoring report was completed at the 29/03/2013.

Mr. Martin Burian, GFA ENVEST, martin.burian@gfa-envest.comf
Mr. Evgeny Chuvasov, WWF Russia, Amur Branch, chuu69@gmail.com

Project participants are Tribal Commune Tiger and CF Partners (UK) LLP. GFA ENVEST and WWF Russia, Amur Branch are not project participants.

SECTION B. Implementation of the Project Activity

B.1. Description of the Implemented Registered Project Activity

Starting Date. The JI project started at the 3rd June 2009 by signing the lease contract between TCT and the Forest Department of Primoski krai (Contract of Forest Lease No. 4/34) with the objective to protect the area against logging. This agreement gives TCT the right to develop an emission reduction project. The concession lease period is 49 years. This shall protect the project area from logging until 2058 and shall conserve the forest stands and avoid the decrease of respective wood volumes - and related - the decrease of forest carbon stocks.

Complementing the signature of the lease contract, TCT established an anti poaching brigade to patrol the borders of and the project area itself. This shall protect the project area against any illegal logging and poaching as well as other forms of illegal nature use. The anti poaching brigade was established in March 2009 and its mandate was expanded to protect against illegal logging in May 2009.

In order to support TCT in the conservation of the project area, WWF Amur Branch engaged the Forest Fire Fighting Service of the Forest Department of Primorsky krai. The agreement between FFFS and WWF Amur Branch was undersigned at the 7th May 2009.

Phased implementation is not applicable to the project activity.

Operation of the JI Project. The project was implemented in accordance with the JI PDD. Minor forest fires occurred in 2012 (no forest fires occurred in 2009-2011). The total burnt area amounts to 6.5ha and the burnt volume amounts to 99m^3.

Illegal logging occurred at minor scale: 220.24m^3 (2009), 96.34 m^3 (2010) and 106.83 m^3 (2012). No illegal logging occurred in 2011. Overall it is concluded that the project was successfully protected and conserved.

The overall design of the conservation program foresees that TCT conducts logging operations to meet the demand of the local population. In the course of PDD development, the envisaged logging sites were removed from the JI project area on the basis of the NTFP Management Plan. This plan stipulates which compartments and sub-compartments are foreseen for logging.

In the course of actual logging operations of TCT in 2009, 2010 and 2011 logging sites that were foreseen by the Forest Management Plan were not logged. Instead other sites were logged, which were not initially foreseen for logging and which were partially in the project area.

The JI project design does not foresee the legal logging in the JI project area. In order to ensure consistency with the JI project design and the actual project implementation, these logged areas were excluded. A detailed description of the respective changes was included in Annex 1.

B.2. Post Registration Changes

As outlined above, the legal logging plots amounting to 1,780ha were removed from the project area (approx 0.4% of the total JI project are). Consequently, the baseline AAC was adopted in a conservative manner which leads to a very minor reduction of the baseline emissions. This is outlined in detail in Annex.

The project participant considers above change as a change in the spatial extent. As the project is still located in the same region, this does not qualify as a change in project location. Moreover this approach does not change the emission sources, baseline scenario nor the JI specific approach (specified in the PDD) as required by §7 of the JI Guidelines.

A detailed description of post registration changes is provided in Annex 1.

SECTION C.   Description of the Monitoring System

The monitoring system is implemented by WWF Amur Branch on behalf of the TCT. In this regard, WWF Amur Branch is in charge for the generation of monitoring report as well as the focal point of the aggregation of the monitoring data. The organizational structure and the information flow is presented in below illustration.

Figure 4: Organizational Structure and Information Flow of the Monitoring System
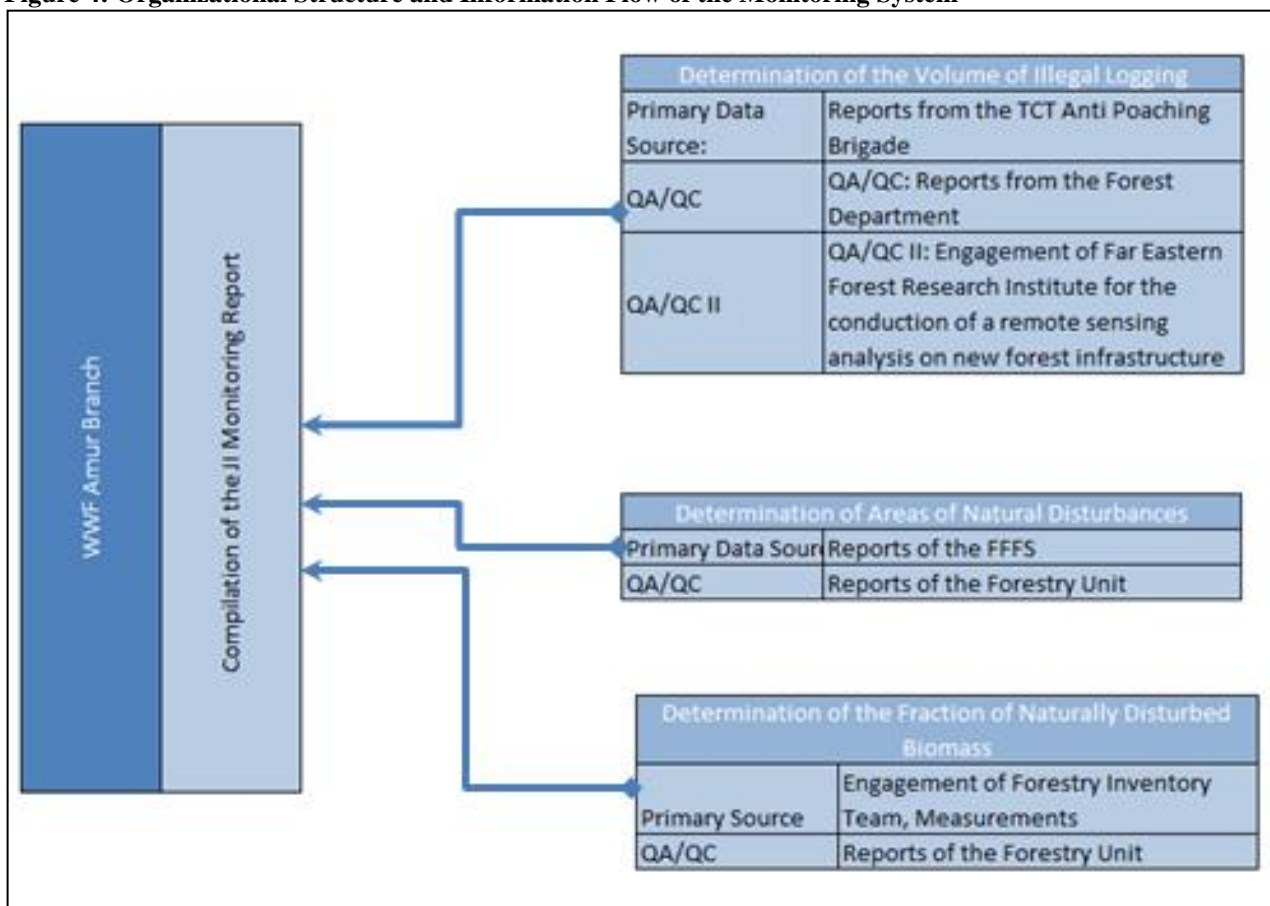
The below section outlines the monitoring system following the structure of the monitoring parameters as defined in the JI PDD:

Determination of the Volume of Illegal Logging. TCT engages an anti poaching brigade which patrols the project boundary and within the project area. If the anti-poaching brigade detects any illegal logging, a report is written and provided to WWF. These reports were aggregated to one general report on illegal logging, used for this monitoring report.
QA/QC: WWF Amur Branch requested official data on illegal logging from the Lesnichestvo and/or Police.
QAQC II: As a second QA/QC procedure, WWF Amur Branch has hired the Far Eastern Forest Research Institute (called 'Dallesproject') to conduct a remote sensing analysis for the project area. This evaluation determined whether any new forest infrastructure was developed during the monitoring period.

Data Management and Data Storage are organized as follows:

- The reports from TCT will be submitted from TCT to WWF Amur Branch where they will be stored electronically at least up to two years after the end of the commitment period.
- The reports on illegal logging from the forestry unit will be requested by WWF Amur Branch and will be stored by WWF Amur Branch electronically at least up to two years after the end of the commitment period.
- The remote sensing analysis will be either conducted by WWF or by a qualified consultant. The remote sensing report will be stored by WWF Amur Branch electronically at least up to two years after the end of the commitment period.
- The above reports are based on several input parameters. This information will be managed as follows:
  - The GPS points of illegal logging sites will be collected by TCT. If they should not be included in the TCT reports, then the data will be provided to WWF Amur Branch where this information will be stored electronically at least up to two years after the end of the commitment period.

Determination of Areas of Natural Disturbances. WWF Amur Branch engaged the Forest Fire Fighting Service of the Primorsky krai (FFFS) to implement the forest fire monitoring system and to conduct fire fighting in case of incidents. In the course of this arrangement, FFFS reports any detected forest fires to WWF Amur Branch.

QA/QC: WWF requests official data on forest fires from the Lesnichestvo for the project area. This data allows for crosschecking the data provided by FFFS.

Data Management and Data Storage is organized as follows:
- The reports from the regional FFFS will be submitted from FFFS to WWF Amur Branch where they will be stored electronically at least up to two years after the end of the commitment period.
- The reports on forest fire from the regional forestry unit will be requested by WWF Amur Branch and will be stored by WWF Amur Branch electronically at least up to two years after the end of the commitment period.
- The above reports are based on several input parameters. This information will be managed as follows:
  - The remote sensing analysis for the detection of forest fires is conducted by the federal FFFS in cooperation with the Ministry of Emergency. The remote sensing evaluation is conducted in accordance with the current procedures (e.g. Rosleshoz, 2007, Guidelines for the Design, Organization and Management of Forest Pathology).
    These procedures currently require that forest fires with a minimum size of 10ha are detected by the remote sensing analysis. A GIS layer on the areas burnt will be gathered and stored by WWF, if these are detected by the remote sensing analysis. Then the GIS layer will be provided by the federal FFFS to WWF Amur Branch where this information will be stored electronically at least up to two years after the end of the commitment period.
  - Evidence on the actual conduction of flights to monitor for forest fires will be provided by WWF Amur Branch from the regional FFFS. This evidence (e.g. flight logs) will be stored by WWF Amur Branch electronically at least up to two years after the end of the commitment period.

Determination of the Fraction of Naturally Disturbed Biomass. If FFFS and/or the Lesnichestvo report any forest fires, WWF Amur Branch would engage a forest inventory team to determine the decrease of biomass.

Alternatively, the project participant may opt to set the fraction of naturally disturbed biomass at 100%, e.g. if the burnt forest sites are located in remote and inaccessible areas.

SECTION D.   Data and Parameters

D.1.   Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data / Parameter:	$BCEF_j$
Data unit:	t.d.m
Description:	Biomass conversion and expansion factor in stratum j
Source of data used:	Calculated based on Tier 2 data, Value was determined in the excel mode, sheet 'ER Model', cell E189 of the JI Project Documentation
Value(s) :	Value Applied: 0.62
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project case
Additional comment:	

Data / Parameter:	CF_{AGB}
Data unit:	tC
Description:	Carbon fraction in the aboveground biomass of trees for the tropical forest
Source of data used:	Calculated based on Tier 2 data. Value was determined in the excel model of the JI Project Documentation, sheet 'ER Model', cell E101
Value(s) :	Various values applied: pls refer to Table 16 of the JI PDD
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline- and project case.
Additional comment:	

Data / Parameter:	$\overline{V}_{gstock,j,t}$
Data unit:	cbm/ha
Description:	Average growing stock per hectare for stratum j,
Source of data used:	Determined by the project's inventory for all 13,514 sub-compartments of the project area. Data source is the inventory for the project area conducted in 2010 by the State Forest Inventory Unit.
Value(s) :	Value applied: 226.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline- and project case.
Additional comment:	

Data / Parameter:	$\overline{G}_{regrowth,ND,j,t}$
Data unit:	t.d.m./ha/yr
Description:	Average regrowth per hectare per year of the aboveground biomass after logging in year t
Source of data used:	Published re-growth model for Russia Far East
Value(s) :	Value applied: 0.46. Value was determined in the excel mode, sheet 'ER Model', cell E100
Indicate what the data are used for (Baseline/ Project/ Leakage emission	Baseline case.

calculations)	
Additional comment:	

Data / Parameter:	R_{CH4}
Data unit:	Dimensionless
Description:	Emission ratio for CH4
Source of data used:	IPCC default
Value(s) :	Value applied: 0.012
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project case
Additional comment:	

Data / Parameter:	R_{N2O}
Data unit:	Dimensionless
Description:	Emission ratio for N2O
Source of data used:	IPCC default
Value(s) :	Value applied: 0.007
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project case
Additional comment:	

Data / Parameter:	$R_{N/C}$
Data unit:	Dimensionless
Description:	Ratio of nitrogen to carbon
Source of data used:	IPCC default
Value(s) :	Value applied: 0.01
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project case
Additional comment:	

Data / Parameter:	GWP_{CH4}
Data unit:	Dimensionless
Description:	Global warming potential of CH4
Source of data used:	IPCC default
Value(s) :	Value applied: 21
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project case
Additional comment:	

Data / Parameter:	GWP_{N2O}
Data unit:	tCO_2e/tN_2O
Description:	Global warming potential of N2O
Source of data used:	IPCC default
Value(s) :	Value applied: 276

Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project Case
Additional comment:	

Data / Parameter:	$A_{project,t=0}$
Data unit:	Ha
Description:	Project Area at time, t=0
Source of data used:	Concession contract, NTFP Mgmt plan and Inventory (the latter for subtraction of specific sub-compartments), provided as GIS data
Value(s) :	Value applied: 448,595, pls refer to excel file, 'Vol' cell E14472.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project- and baseline case
Additional comment:	

Data / Parameter:	$A_{project,j,t=0}$
Data unit:	Ha
Description:	Project Area within each stratum, j, at time, t=0
Source of data used:	Forest inventory specifying the volume of 13,514 sub-compartments
Value(s) :	Value applied: 448,595, pls refer to the excel file, sheet 'Vol', cell E14472.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project- and baseline case
Additional comment:	

Data / Parameter:	$DBH_{n,i,s,j,t=0}$
Data unit:	Cm
Description:	Diameter at breast height t=0 year
Source of data used:	Forest inventory
Value(s) :	Various values applied. Please refer to Bikin Forest Inventory (2010) which provides values for each of the sub-compartments.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline- and project case
Additional comment:	

Data / Parameter:	$H_{n,i,s,t=0}$
Data unit:	M
Description:	Height of trees, t=0 year
Source of data used:	Forest inventory
Value(s) :	Various values applied. The average tree height over all sub-compartments amounts to 23.8m. Please refer to Bikin Forest Inventory (2010) which provides values for each of the 13,514 sub-compartments.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline- and project case

Additional comment:	

Data / Parameter:	$A_{NHA_{annual},t}$
Data unit:	Ha
Description:	Annual net harvest area for the Project Area in year, t
Source of data used:	Baseline Mgmt Plan
Value(s) :	Values applied: 3,255 and 8,584, please refer to the excel file, sheer 'ER Model', cells N26 and N27.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline case
Additional comment:	

Data / Parameter:	**BEF**
Data unit:	dimensionless
Description:	Biomass expansion factor for converting volume of extracted roundwood to total aboveground biomass
Source of data used:	FAO, Forest Resource Assessment for Russia
Value(s) :	Value applied: 1.40 pls refer to Table 16 of the JI PDD
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project case
Additional comment:	

Data / Parameter:	CF_{wood}
Data unit:	tC/t.d.m
Description:	Carbon fraction of wood
Source of data used:	FAO, Forest Resource Assessment for Russia
Value(s) :	Value applied: 0.50 pls refer to Table 16 of the JI PDD
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline case
Additional comment:	

Data / Parameter:	**D**
Data unit:	t.d.m./cdm
Description:	Wood density for the forest with corresponding climate region and ecological zone.
Source of data used:	FAO, Forest Resource Assessment for Russia
Value(s) :	0.45
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline- and project case
Additional comment:	

Data / Parameter:	D_i
Data unit:	t.d.m./cdm
Description:	Species-specific density of wood

Source of data used:	FAO, Forest Resource Assessment for Russia
Value(s) :	Various values applied ranging from 0.35 to 0.51, please refer to table 16 of the JI PDD.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline- and project case
Additional comment:	

Data / Parameter:	k_{decay}
Data unit:	yr^{-1}
Description:	Rate of decay of the deadwood pool
Source of data used:	Yatskov et al., 2003
Value(s) :	Value applied: 0.06, pls refer to Table 18 of the JI PDD
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline case
Additional comment:	

Data / Parameter:	f_{RSD}
Data unit:	Dimensionless
Description:	Factor for residual stand damage
Source of data used:	Kovalev et al., 2011
Value(s) :	Value applied: 0.41
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline- and project case
Additional comment:	

Data / Parameter:	f_{branch_trim}
Data unit:	dimensionless
Description:	Branch-trimming factor
Source of data used:	FAO, Forest Resource Assessment for Russia
Value(s) :	Value applied: 0.40
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline case
Additional comment:	

Data / Parameter:	$f_{lumber\_recovery}$
Data unit:	dimensionless
Description:	Lumber recovery factor
Source of data used:	Primorskstat, 2010
Value(s) :	Value applied 0.45, pls refer to Table 23 of the JI PDD
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline case
Additional comment:	

Data / Parameter:	k_{ltHWP}
Data unit:	yr^{-1}
Description:	Rate of oxidation for long-term harvested wood products
Source of data used:	IPCC Default
Value(s) :	Value applied: 0.023
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline case
Additional comment:	

Data / Parameter:	k_{stHWP}
Data unit:	yr^{-1}
Description:	Rate of oxidation for short-term harvested wood products
Source of data used:	IPCC Default
Value(s) :	Value applied: 1.00
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline case
Additional comment:	

Data / Parameter:	$G_{regrowth,t}$
Data unit:	t.d.m./ha/yr
Description:	Average regrowth per hectare per year of the aboveground biomass after logging in year, t
Source of data used:	Calculated based on Dorofeeva, 1974, FAO FRA and Forest Inventory
Value(s) :	Value applied: 0.46, pls refer to Table 26 of the JI PDD.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline case
Additional comment:	

Data / Parameter:	EF_{fuel}
Data unit:	tCO$_2$e/kL
Description:	Fuel emission factor
Source of data used:	IPCC defaults
Value(s) :	Value applied: 0.29519, pls refer to Table 28 of the JI PDD
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Project- and baseline case
Additional comment:	

Data / Parameter:	$FC_{harvest}$
Data unit:	kL/m3
Description:	Fuel consumption of equipment employed for felling and snigging per m3 of merchantable log harvested
Source of data used:	Klvac and Skoupy, 2009
Value(s) :	Value applied: 0.12

Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline case
Additional comment:	

Data / Parameter:	$FC_{hauling}$
Data unit:	kL/m3
Description:	Fuel consumption of equipment for hauling one m3 of merchantable log
Source of data used:	Provided by Primorski Gok, a logging company in the region
Value(s) :	Value applied: 1.3
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline case
Additional comment:	

D.2.	**Data and Parameters Monitored**

This section documents how the data for 'Area of Natural Disturbance' ($A_{ND,j,t}$), 'Fraction of Forest Naturally Damaged' ($f_{ND,j,t}$) and 'Volume of Wood Sold as Determined by Field Surveys' ($V_{illegal-harvest,t}$) are determined.

Area of Natural Disturbance. TCT and WWF Amur Branch engaged the 'Forest Fire Fighting Service (FFFS)' of Primorye to steadily control for forest fires in the project areas. This was implemented by means of frequent evaluation of remote sensing data and by control flights.

- For the period from 3rd June 2009 to end of 2011, the FFFS confirms that no forest fires were detected.
- For the period from 1st January 2012 until 31st October 2012, the FFFS reports on three forest fires with a total area of 6.5ha and burnt timber volume of 99m3.

Rosleshoz provides guidelines for the 'Design, Organization and Management of Forest Pathology Monitoring'. This document, Section 2.4, §49, page 12 specifies a minimum area for forest fires to be detected equalling 10ha. The occurred fires are significantly smaller (2ha, 2ha and 2.5ha). Such fires are not detected in the remote sensing. Consequently no GIS layer exists for the spatial delineation of the forest fires occurred in the project area, as they are too small. This is in line with the national procedures for fire detection.

The outcome of the remote sensing analysis was documented in a map specifying the spatial location of heat detections as well as an excel file providing detailed information (location, time of detection, classification of heat detection (e.g. as fire). The software of the FFFS produced excel files for all four years, and maps for 2010, 2011 and 2012. But the software showed and error code when asked to produce a map for 2009. Still the analysis of the excel file allows to proof that no fire was detected in the project area in 2009.

The monitoring methodology suggests the application of winter images for the detection of new road infrastructure. Still the remote sensing evaluations partly used summer images for the following reasons:

- As the project start was in June and the end of the monitoring period was in October, images from related time periods were used.
- In addition very high resolution images from summer 2011 were applied. This was done to search for illegal logging (illegal logging may be best detected by summer images, whereas new infrastructure may best be detected by winter images). This was done in addition to analysis of winter images, as described by the monitoring methodology, which is based on a complete set of winter images.

For Quality Assurance and Quality Control, TCT and WWF Amur Branch requested the official statement on forest fires from the forestry units.

- On behalf of the forestry units, the Forest Department confirms that no forest fires were detected in the project area for the period from 3rd June 2009 to end of 2011.
- On behalf of the forestry units, the Forest Department mentions three forest fires in the timer period of 1st January 2012 to 31st October 2012 with a total burnt area of 6.5ha and 99m3 of burnt volume.

The above data is presented in below table.

Category	Year	Lesnichestvo	Comp.	Sub-Comp.	Size (in ha)	Volume (in cbm)	Data Source
Table 4: Determination of $A_{ND,i,t}$							
FFFS Data - Primary Data Source	2009	No forest fires	N.A.	N.A.	0	0	Report from FFFS 2009-2011
	2010	No forest fires	N.A.	N.A.	0.	0.	Report from FFFS 2009-2011
	2011	No forest fires	N.A.	N.A.	0	0	Report from FFFS 2009-2011
	2012	Krasnoyarovskoe	158	33 &34	2.0	39.00	Report from FFFS 2012
	2012	Krasnoyarovskoe	143	21	2.5	0	Report from FFFS 2012
	2012	Krasnoyarovskoe	272	7	2.0	60.00	Report from FFFS 2012
Forest Department Data - QAQC Data Source	2009	No forest fires	N.A.	N.A.	0	0	Information from Forest Department 2009 -2011
	2010	No forest fires	N.A.	N.A.	0.	0	Information from Forest Department 2009 -2011
	2011	No forest fires	N.A.	N.A.	0	0	Information from Forest Department 2009 -2011
	2012	Krasnoyarovskoe	158	33 &34	2.0	39.00	Information from Forest Department 2012
	2012	Krasnoyarovskoe	143	21	2.5	0	Information from Forest Department 2012
	2012	Krasnoyarovskoe	272	7	2.0	60.00	Information from Forest Department 2012
Total	2009	Project Area	N.A.	N.A.	0	0	Calculated
	2010	Project Area	N.A.	N.A.	0	0	Calculated
	2011	Project Area	N.A.	N.A.	0	0	Calculated
	2012	Project Area	158, 143, 272	N.A.	6.5	99	Calculated

Fraction of Forest Naturally Damaged. In a next step, the extent of forest damages is determined. The data collected above presents information on the volume burnt (i.e. in m3/ha). As the areas are small and in remote areas, TCT decides not to measure f_{ND} but to set this value to 100%, which is considered as conservative.

Following above approach, in a next step, the total burnt volume was determined

Table 5: Determination of Volume Burnt based on f_{ND} of 100%						
Year	Lesnichestvo	Comp.	Sub-Comp.	Size of Burnt Area (in ha)	Volume per Sub-C (cbm/ha)	Total Burnt Volume (in cmb/Sub-C)
2012	Krasnoyarovskoe	158	34	2.0	160	360
2012	Krasnoyarovskoe	158	33		200	
2012	Krasnoyarovskoe	143	21	2.5	250	625
2012	Krasnoyarovskoe	272	7	2.0	310	620
Determination of Average Burnt Volume based on f_{ND} = 100%						246.9

Volume of Wood Illegally Logged as Determined by Field Survey. Following the SOPs, the reports from the TCT anti poaching brigade were evaluated. Two summary reports were used, the TCT Anti Poaching Brigade Annual Report 2009 -2011 and the TCT Anti Poaching Brigade Annual Report 2012.

For Quality Assurance and Quality Control, official data on illegal logging from the Forest Department of Primorye was collected. This is provided in two statements: Information from Forest Department 2009 - 2011 and Information from Forest Department 2011. Additionally the statements from the forest police and the Forest Department's calculation of damage were provided.

A conservative approach was applied for the determination of the annual volume of illegal logging:
- For the year 2009, TCT does not report on illegal logging, whereas the Forest Department reports on a total of 220.24 m3. The latter was used for the annual total.
- For 2010 TCT reports on 96.34m3, whereas the Forest Department does not report illegal logging. The first was used for the determination of the annual total.
- For 2011, no illegal logging was detected, not by TCT nor by the Forest Department.
- For 2012, TCT and the Forest Department report on illegal logging, whereas the figures determined by TCT are slightly higher. The higher value was used for the determination of the annual total.

The data and related sources as well as the determination of the annual total are presented in below table.

As second Quality Assurance and Quality Control-measure, WWF Amur branch conducted two remote sensing evaluations. These analyses shall determine whether new roads were constructed to prepare the ground for new illegal logging sites.
- The first study covers the period 2009 to 2011 and was conducted by 'Dallesproject', the far eastern branch of the state forest inventory service.
- The second study covers January to October 2012 and was conducted by WWF Amur Branch.

Both studies used images with a minimum resolution of 10m, a cloud ratio below 20% and a minimum accuracy of 85%. Both studies prove that no new infrastructure was developed.

Category	Year	Lesnichestvo	Compartment	Sub-Comp.	Volume (in cbm)	Data Source
Table 6: Determination of $V_{illegal-harvest,\,t}$						
TCT Data - Primary Data Source	2009	N.A.	N.A.	N.A.	0	TCT Anti Poaching Brigade Annual Report 2009 -2011
	2010	Krasnoyarovskoe	152	11	96.34	TCT Anti Poaching Brigade - Illegal Logging Report 2010
	2011	N.A.	N.A.	N.A.	0	TCT Anti Poaching Brigade Annual Report 2009 -2011
	2012	Krasnoyarovskoe	132	5 & 6	106.83	TCT Anti Poaching Brigade Annual Report 2012
Forest Department Data - QAQC Data Source	2009	Krasnoyarovskoe	131	N.A.	23.58	Forestry Unit Report on Illegal Logging
	2009	Sobolinskiy	112	N.A.	11.54	Forest Department Report on Illegal Logging
	2009	Krasnoyarovskoe	132	N.A.	185.12	Forestry Unit Report on Illegal Logging
	2010	Krasnoyarovskoe	152	N.A.	55.43	Forestry Illegal Logging Report
	2011	N.A.	N.A.	N.A.	0	Information from Forest Department 2009 -2011
	2012	Krasnoyarovskoe	132	5 & 6	61.95	Forestry Unit Report on Illegal Logging
Total	2009	Project Area		N.A.	220.24	Calculated
	2010	Project Area	152	11	96.34	TCT Anti Poaching Brigade - Illegal Logging Report 2010
	2011	Project Area	N.A.	N.A.	0	Information from Forest Department 2009 -2011
	2012	Project Area	132	5 & 6	106.83	TCT Anti Poaching Brigade Annual Report 2012

Data / Parameter:	$A_{ND,j,t}$
Data unit:	Ha
Description:	Area of natural disturbance ND, in stratum j in year t
Measured /Calculated /Default:	Measured
Source of data:	High resolution remote sensing analysis combined with firefighting control flights by the Forest Department
Value(s) of monitored parameter:	0 ha (2009), 0 ha (2010), 0 ha (2011) and 6.5ha (2012)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Value applied for ex-ante estimate: 17.7 provided in Table 37 of the JI PDD.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N.A.
Measuring/ Reading/ Recording frequency:	Several times per year
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	The report from the forest fire fighting service was crosschecked with data from the forestry units. Both sources indicate no forest fires in 2009-2011. For 2012, the data (compartment, sub-compartment, spatial extent of areas burnt) is identical in both data sources.

Data / Parameter:	$f_{ND,j,t}$
Data unit:	Dimensionless
Description:	Fraction of the forest naturally damaged in stratum j, in year t
Measured /Calculated /Default:	Measured
Source of data:	Collected by a forest inventory team sent to the disturbed areas identified under (1) above
Value(s) of monitored parameter:	0.00 (2009), 0.00 (2010), 0.00 (2011) and 100% (2012).
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Value applied for ex-ante estimate: 0.15 provided in Table 37 of the JI PDD.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N.A.
Measuring/ Reading/ Recording frequency:	Each time, if disturbed areas are detected under (1) above
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	Maximum value applied, not applicable.

Data / Parameter:	$V_{illegal-harvest,t}$

Data unit:	Cbm
Description:	Volume of wood sold as determined from field surveys in year t
Measured /Calculated /Default:	Measured
Source of data:	Collected by a forest inventory team sent to the illegally logged areas if logged areas are identified under (1) above or are identified by WWF's border patrol tours.
Value(s) of monitored parameter:	220.24 (2009), 96.34(2010), 0 (2011) and 106.83 (2012).
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Value applied for ex-ante estimate: 70cbm/yr.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	N.A.
Measuring/ Reading/ Recording frequency:	Several times per year
Calculation method (if applicable):	N.A.
QA/QC procedures applied:	Following QA/QCs were applied: - The analysis was based on measurements of all (i.e. 100%) tree stumps. No need for extrapolation and statistical approaches (e.g. confidence intervals) are needed. - The reports from the anti-poaching brigade were compared with reports from the Police and the Forestry Unit. If data is inconsistent, the higher data (i.e. volume) shall be applied. - WWF ordered a remote sensing analysis in order to cross-check for new infrastructure developments, indicating illegal logging sites. - The remote sensing analysis was conducted in compliance with the requirements as defined in the JI PDD (i.e. minimum resolution of 10m, cloud cover of below 20%, use of images for one forest area map which were taken within a time frame of 5 months, accuracy level of 85% or higher). - This evaluation showed that no new forest infrastructure was developed in the course of this monitoring period. - As additional QAQC for the logging conducted by TCT, the PP compares the logging volume as stipulated in the agreement between the State Forest Logging Company with the volumes stipulated in the post felling reports, as developed by the divisional forestry.

SECTION E. Calculations of Emission Reductions or GHG Removals by Sinks

E.1. Calculation of Baseline Emissions or Baseline Net GHG Removals by Sinks

The baseline was fixed ex-ante. As the AAC for the project territory is still valid, the baseline emission calculation is identical with the JI PDD. The formula used for the quantification of the baseline emission are presented subsequently. Please note the numbers in brackets (e.g. '3-1') refer to the formula's id as specified in the VCS methodology.

The annual baseline emissions in tCO_2 are calculated based on the quantification of the annual CO2e emissions arising of forest degradation and the annual CO_2e emissions of logging operations (i.e. hauling, skipping, etc.):

$$C'_{baseline,t} = C'_{degradation,t} + C'_{emissions,t} \quad (3\text{-}1)$$

Parameter	Description	Unit
$C'_{baseline,t}$	Annual total carbon emissions associated with the baseline scenario in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tCO_2-e
$C'_{degradation,t}$	Annual total carbon emissions associated with degradation as a result of the baseline activity in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tCO_2-e
$C'_{emissions,t}$	Annual total carbon emissions associated with the baseline activity of selective logging operations in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tCO_2-e

The emissions of forest degradation are determined based on the quantification of emissions due to the decay of deadwood, the emissions from long-term harvested wood products (ltHWP) and re-growth after logging operations. The detailed approach is presented in below formula 3.2:

$$C'_{degradation,t} = \left[(C_{DW_{decay},t} + C_{ltHWP_{oxidation},t} + C_{stHWP_{oxidation},t} + C_{regrowth,t}) \, x \, \frac{44}{12} \right] \quad (3\text{-}2)$$

Parameter	Description	Unit
$C'_{degradation,t}$	Annual total carbon emissions associated with degradation as a result of the baseline activity in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tCO_2-e
$C_{DW_{decay},t}$	Annual carbon leaving the deadwood pool due to the decay of deadwood in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tC
$C_{ltHWP_{oxidation},t}$	Annual carbon due to the combined delayed oxidation of long-term harvested wood products and immediate oxidation of long-term harvested wood products residues in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tC
$C_{stHWP_{oxidation},t}$	Annual carbon due to the combined delayed oxidation of short-term harvested wood products and immediate oxidation of long-term harvested wood products residues in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tC
$C_{growth_{foregone},t}$	Annual carbon lost due to growth foregone in the aboveground biomass in the Project Area in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tC
$C_{regrowth,t}$	Annual carbon increase in the biomass due to regrowth following logging in year t, (where t=1,2,3 ... t* years elapsed since the start of the	tC

	IFM-LtPF project activity)	
$\dfrac{44}{12}$	The ratio of molecular weight of carbon dioxide to carbon, see Appendix C of the VCS methodology	tCO$_2$-e tC^{-1}

The actual values of the baseline emissions, sources and sinks are presented in the below table.

Table 7: Quantification of Baseline Emissions

$$C'_{degradation,t} = \left[(C_{DW_{decay},t} + C_{ltHWP_{oxidation},t} + C_{stHWP_{oxidation},t} + C_{regrowth,t}) \; x \; \frac{44}{12}\right] \qquad C'_{baseline,t} = C'_{degradation,t} + C'_{emissions,t}$$

Year t	$C_{DW_{decay},t}$	$C_{ltHWP_{oxidation},t}$	$C_{stHWP_{oxidation},t}$	$C_{regrowth,t}$	$C'_{degradation,t}$	$C'_{emissions,t}$	$C'_{baseline,t}$
1	1,330	5,193	20,080	1,318	92,715	1,802	94,517
2	4,986	27,789	32,820	4,792	222,945	5,052	227,997
3	8,435	28,283	32,820	8,266	224,661	5,052	229,714
4	11,690	28,765	32,820	11,741	225,625	5,052	230,677

Please note, the above table quantifies the emission reductions for full years (i.e. 365 days). As the project did start in June 2009, e.g. year 1 does not match the value of 2009 etc. Please refer to Sections A.1 and E.5 for values adapted to the calendar year.

E.2. Calculation of Project Emissions or Actual Net GHG Removals by Sinks

The project emissions comprise emissions due to illegal logging as well as emissions due to natural disturbances. The formula used to quantify the project emissions is presented below. Please note the numbers in brackets (e.g. '4-1') refer to the formula's id as specified in the VCS methodology.

$$C'_{actual,t} = \left[(C_{nat-distrurb,t} + C_{illegal-harvest,t}) \; x \; \frac{44}{12}\right] \qquad (4-1)$$

Parameter	Description	Unit
$C'_{actual,t}$	Annual total carbon emissions associated with the project activity in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tCO$_2$-e
$C_{nat-disturb,t}$	Annual carbon losses due to natural disturbance(s) in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tC
$C_{illegal_{harvest},t}$	elapsed since the start of the IFM-LtPF project activity)	tC
$\dfrac{44}{12}$	The ratio of molecular weight of carbon dioxide to carbon, see Appendix C	tCO2-e tC^{-1}

The below table presents the results of the quantification of the emission reductions based on the monitored input parameter.

Table 8: Quantification of Project Emissions

$$C'_{actual,t} = \left[(C_{nat-distrurb,t} + C_{illegal-harvest,t}) \; x \; \frac{44}{12}\right]$$

Year t	$C_{nat-distrurb,t}$	$C_{illegal-harvest,t}$	$C'_{actual,t}$	Leakage

1	-	97	354	18,543
2	-	42	155	44,589
3	-	-	-	44,932
4	550	47	2,187	45,125

Please note, the above table quantifies the emission reductions for full years (i.e. 365 days). As the project did start in June 2009, e.g. year 1 does not match the value of 2009 etc. Please refer to Sections A.1 and E.5 for values adapted to the calendar year.

E.3. Calculation of Leakage

This section presents the quantification of leakage. In the JI PDD a default leakage factor of 20% was established. This value is applicable to the net anthropogenic removals by sinks (i.e. $C'_{degradation,t}$).
As the baseline is fixed ex-ante and as the AAC did not change during the monitoring report, the leakage emissions equal those determined in the ex-ante estimate provided in JI PDD.

Table 9: Leakage Emissions	
Year t	Leakage
1	18,543
2	44,589
3	44,932
4	45,125

Please note, the above table quantifies the emission reductions for full years (i.e. 365 days). As the project did start in June 2009, e.g. year 1 does not match the value of 2009 etc. Please refer to Sections A.1 and E.5 for values adapted to the calendar year.

E.4. Summary of Calculation of Emission Reductions or Net Anthropogenic GHG Removals by Sinks

Based on the findings of sections E.1 to E.3, the emission reductions are determined following below formula:

$$Emission\ Reductions_t = C'_{degradation,t} + C'_{emissions,t} - C'_{acutual,t} - Leakage_t$$

Parameter	Description	Unit
$Emission\ Reductions_t$	Annual net emission reductions of the proposed project activity year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tCO$_2$-e
$C'_{degradation,t}$	Annual total carbon emissions associated with degradation as a result of the baseline activity in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tCO$_2$-e
$C'_{emissions,t}$	Annual total carbon emissions associated with the baseline activity of selective logging operations in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tCO$_2$-e
$C'_{actual,t}$	Annual total carbon emissions associated with the project activity in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tCO$_2$-e
$Leakage_t$	Annual total carbon emissions associated with leakage in year t, (where t=1,2,3 ... t* years elapsed since the start of the IFM-LtPF project activity)	tCO$_2$-e

Based on above formula, the actual emission reductions, are determined in below section.

Table 10: Emission Reductions Year 1 to Year4				
$Emission\ Reductions_t = C'_{degradation,t} + C'_{emissions,t} - C'_{acutual,t} - Leakage_t$				
Year t	$C'_{degradation,t}$	$C'_{emissions,t}$	$C'_{actual,t}$	Leakage	Emission Reductions
1	92,715	1,802	354	18,543	75,620
2	222,945	5,052	155	44,589	183,253
3	224,661	5,052	-	44,932	184,781
4	225,625	5,052	2,187	45,125	183,365

Please note, the above table quantifies the emission reductions for full years (i.e. 365 days). As the project did start in June 2009, e.g. year 1 does not match the value of 2009 etc. Please refer to Sections A.1 and E.5 for values adapted to the calendar year.

E.5.   Comparison of Actual Emission Reductions or Net Anthropogenic GHG Removals by Sinks with Estimates in the Registered JI PDD

The below table provides the comparison of the Ex-ante estimate of emission reductions with the actual emission reductions, based on the monitoring parameters, as determined in Section D.2.

Table 11: Comparison of Actual Emission Reductions with Estimates in the JI PDD		
Item	Values applied in ex-ante calculation of the registered PDD	Actual values reached during the monitoring period
2009 Emission reductions (tCO$_2$e)	44,577	43,922
2010 Emission reductions (tCO$_2$e)	140,455	138,135
2011 Emission reductions (tCO$_2$e)	187,246	184,141
2012 Emission reductions (tCO$_2$e) (Up to 31st October 2012)	156,768	153,314

E.6.   Remarks on Difference from Estimated value in the Registered JI PDD

The actual volume of emission reductions did not increase, it decreased by 9,534 ERUs. The Parameters for A_{ND}, f_{ND}, and $V_{illegal-harvest}$ were slightly overestimated in the course of JI PDD development. The table below compares the input parameters used for the ex-ante estimation of emission reduction volumes with the actual volume as determined in the course of the monitoring.

Still the removal of some sites from the JI project area leads to a minor decrease of the baseline emissions. This over-compensates the good performance of the JI project, so that the actual emission reductions are slightly below the ex-ante estimate.

Table 12: Comparison of Input Parameters		
Parameter	Ex-Ante Estimate	Monitoring Result
$V_{illegal-harvest,t}$	70 cbm/yr	220.24 (2009), 96.34(2010), 0 (2011) and 106.83 (2012).
$f_{ND,j,t}$	0.15	0% (2009) 0% (2010) 0% (2011) and 100% (2012)
$A_{ND,j,t}$	17.7ha/yr	0ha (2009), 0ha, 2010, 0ha (2011) and 6.5ha/yr

Annex 1

CHANGES DURING PROJECT IMPLEMENTATION

This section describes changes to the project implementation which are in line with the 'Procedures regarding Changes during Project Implementation' (Version 1, JISC22, Annex 2). The procedures require meeting the following criteria:

a) **The Physical Location of the Project has not changed:**

The physical location of the project area has not changed. The project is located in the same country, the same krai and the same region.

Still the project area was reduced insignificantly (i.e. by 0.4%) which qualifies as a change of spatial extent, not a change of location.

This was done with reference to CDM EB66, Annex 24 which may serve as guidance for JI processes. CDM EB66, Annex 24 § 4.a states for a forest project that 'Changes in year-wise areas planted, possibly resulting in a part of the project area not being planted' which results in a reduction of the project area does not require approval by the Board. Against this background, the project participant does not consider an insignificant reduction of the project area as a change of location.

b) **If the Emission Sources have changed, they are reflected in an updated Monitoring Plan:**

The proposed changes do not result in any changes of the project's emission sources. The sources are identical with those specified in the PDD.

c) **Baseline Scenario has not changed:**

The proposed changes do not result in any changes of the project's baseline scenario. The baseline scenario is the logging of the project area under intermediate logging and selective commercial logging schemes.

d) **Changes are consistent with the JI specific Approach:**

The proposed changes do not involve nor imply any methodological changes. All changes are consistent with the JI specific approach.

TCT Logging Operations. The overall design of the conservation program always foresaw that TCT conducts logging operations to meet the fire and timber demand of the local population. It is important to note that this focuses on the local demand and is not applied in an industrial scale. This local demand is determined by the Non-Timber Forest Product (NTFP) Management Plan for the concession area. According to the Russian forest regulation, this is implemented in the following way:

- TCT, as the NTFP lease holder, signs an agreement with the State Forest Logging Company for each specific logging site.
- The State Forest Logging Company subsequently issues logging permit to TCT.
- Having acquired the permit, TCT then logs the forest site and sells the logs and/or boards to the local market/Krasny Yar and surrounding villages.

The objective of this activity is to supply the local communities with fire wood and timber for construction purposes.

Legal Logging in the Project Area. The actual logging operations in 2009, 2010 and 2011 were not implemented on the logging sites foreseen for logging (which were excluded from the JI project area). This was due to the following reasons:

- The forest inventory was conducted in 2009 and 2010 by the State Forestry Inventory Service.
- On the basis if the new inventory data, The NTFP Management Plan was developed in 2010, approved by Forest Department at the 19th July 2010.
- The actual Sub-Compartments subject to logging are determined by the Forest Department.
- As in 2009 and 2010, no new forest inventory data and no NTFP Management Plan was available, the Forest Department selected the Sub-Compartments on the basis of the old inventory data.
- Late 2010 the new forest inventory data and the NTFP Management Plan was submitted to the Forest Unit to support the further selection of Sub-Compartments for logging.

- Due to a long transition period to the new forest data, the Forest Department determined the Sub-Compartments subject to logging also in 2011 on the basis of old inventory data (1993).
- The old inventory has a different delineation and number of the Sub-Compartments. Hence the actual logging operations were not in line with the existing NTFP Management Plan and occurred in the JI project area.

For 2012, the logging operations followed the new inventory data, and the logging took place in the sites envisaged for cutting. The cutting volumes amount to a total of 242 cbm over six sub-compartments. All sub-compartments subject to legal logging are listed in below table.

As a consequence, TCT's logging operations were conducted to some extent in the initial JI project area. As the JI project approach and the applied methodology do not allow for legal logging in the project area, these areas (i.e. the whole sub-compartments, not only the logging sites) were removed from the JI project area.

	Year	Lesnichestvo	Compartment	Sub-C.	Log. Vol.	Data Source
Table 13: Sub-Compartments Removed From the Project Area						
Erroneously Logged	2009	Krasnoyarovskoe	121	18	4,500	Contract TCT - State Forest Comp.
	2010	Krasnoyarovskoe	122	1	2,729	Contract TCT - State Forest Comp.
	2010	Krasnoyarovskoe	123	19	3,147	Contract TCT - State Forest Comp.
	2010	Krasnoyarovskoe	131	1	4,797	Contract TCT - State Forest Comp.
	2010	Krasnoyarovskoe	154	6	1,557	Contract TCT - State Forest Comp.
	2011	Krasnoyarovskoe	131	18	2,072	Contract TCT - State Forest Comp.
	2011	Krasnoyarovskoe	154	12	2,159	Contract TCT - State Forest Comp.
Erroneously Logged	2009	Krasnoyarovskoe	121	18	4,500	Post Felling Report
	2010	Krasnoyarovskoe	122	1	2,729	Post Felling Report
	2010	Krasnoyarovskoe	123	19	3,147	Post Felling Report
	2010	Krasnoyarovskoe	131	1	4,797	Post Felling Report
	2010	Krasnoyarovskoe	154	6	1,557	Post Felling Report
	2010	Krasnoyarovskoe	154	10	490	Post Felling Report
	2011	Krasnoyarovskoe	131	18	2,072	Post Felling Report
	2011	Krasnoyarovskoe	154	9	685	Post Felling Report
	2011	Krasnoyarovskoe	154	12	2,159	Post Felling Report
Logged for Access	2012	Krasnoyarovskoe	124	28, 29, 5	89	Contract TCT - State Forest Company
	2012	Krasnoyarovskoe	124	29	0	Contract TCT - State Forest Company
	2012	Krasnoyarovskoe	129	17, 18, 34	153	Contract TCT - State Forest Company

Table 14: Reduction in JI Project Area	
Project Area as per Registered PDD (in ha)	450,374
Revised Project Area (in ha)	448,595
Areas Removed (in ha)	1,780

The removal of above sub-compartments leads to a reduction of the JI project area. This reduction is determined in the left table and amounts to 1,780ha. The reduced project area amounts to 448.595ha.

In order to account for above change, the baseline logging area and volumes have to be adopted accordingly.

- The legal logging area, as specified in the JI PDD, Table 5, was increased by 1,780ha and now amounts to 7,033ha over ten years and 703ha per year.

Table 15: Legal Logging Parameters	
Area	Area
in ha	in ha/yr
7,033	703
Discount Factor	7.57%

- Table for of the JI PDD determines a baseline logging area of 9,287ha for the total concession. Dividing the 703ha/yr by the concession baseline logging area results in a discount factor of 7.57% (previously 5.66% based on 525ha/yr).
- The discount factor of 7.57% was subsequently applied to conservatively reduce the baseline logging area and volumes.

The results are presented in below table. These reduced figures were subsequently used to determine the baseline emissions.

Table 16: Baseline Logging Area and Volumes for the Project Area					
Validity		Days	Volume	Area	Merchantable Volume
From	To	D	in m^3/yr	in ha/yr	in m^3/ha
03.06.2009	25.01.2010	236	131,543	3,255	40.41
26.01.2010	31.12.2012	339	368,785	8,584	42.96