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# VALIDATION AND VERIFICATION REPORT

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PROGRAMA NACIONAL DE  
CAMBIO CLIMATICO

NOEL KEMPF CLIMATE  
ACTION PROJECT

Summary only

**PROJECT No.** VOL0001  
**DATE:** 27 NOVEMBER 2005



Nöel Kempff Climate Action Project  
Validation and Verification Report

## Abbreviations

AR	Afforestation and Reforestation
CAR	Corrective Action Request
CDM	Clean Development Mechanism
(CDM) EB	(CDM) Executive Board
CER	Certified Emission Reduction
FAN	Fundación Amigos de la Naturaleza
GHG	Greenhouse Gas
KP	Kyoto Protocol
LULUCF	Land Use, Land Use Change and Forestry
MP	Monitoring Protocol
MtC	Million tonne Carbon
NIR	New Information Request
NK CAP	Noel Kempff Climate Action Project
NKMNP	Noel Kempff Mercado National Park
NMB	New Methodology for Baselines
NMM	New Methodology for Monitoring
PDD	Project Design Document
PNCC	Programa Nacional de Cambio Climatico
SAVER	Schedule of Achieved Voluntary Emission Reductions
USJI	United States Initiative on Joint Implementation
VER	Voluntary Emission Reductions



# EXECUTIVE SUMMARY

The Government of Bolivia through its National Climate Change Programme (Programa Nacional de Cambio Climático – PNCC), has commissioned SGS to validate and verify the Noël Kempff Climate Action Project. Validation by an independent third party is a process designed to confirm that the project is implemented as documented in the validated Project Design Document (PDD) and meets the stated requirements and identified criteria. In particular the project's additionality, baseline, possible leakage, the monitoring plan and environmental and social impacts are assessed against the relevant UNFCCC, and where appropriate Kyoto Protocol requirements, host country criteria and the guiding principles of completeness, consistency, accuracy, transparency and scientific appropriateness. Verification follows upon successful validation. Verification by an independent third party is a process designed to confirm that (1) the project is implemented as described in the validated Project Design Document (PDD), with particular attention being paid to the monitoring plan; and (2) that the data collected by the monitoring plan have been reported in a manner that is complete, consistent, transparent, accurate and free of material error.

The Noël Kempff Climate Action Project has undergone a validation assessment in August 2004 prior to the verification assessment – also in August 2004 – which resulted in a negative recommendation. Following these assessments the project improved the PDD and some of its methodologies and undertook to remedy the Corrective Action Requests (CARs). Subsequently SGS was invited to reassess the project's documentation and performance in October 2005.

It has to be emphasized that the Noël Kempff Climate Action Project (“the project”) does not constitute an eligible activity under the CDM – which only allows for afforestation and reforestation – and, therefore, will not generate certified emission reductions (CER) as recognised under the Kyoto Protocol. However, the project has been assessed as were it an eligible activity in order to ensure that it is credible and comparable with CDM project activities. Output will be recognised as Voluntary Emission Reductions (VER) which cannot be used by Annex I Parties to meet their quantified emission limitation and reduction commitments under the Kyoto Protocol, but which may be of interest in the voluntary market and have similar qualities as CERs.

## Scope

The scope of the verification covers the activities described in the Proposed New Methodologies for A/R project activities (CDM-AR-NMM or NMM), the proposed new methodologies for A/R project activities: baseline, (CDM-AR-NMB or NMB), the Project Design Document form for A/R project activities (CDM-AR-PDD or PDD) and all appendices and annexes belonging to these documents, all prepared by the project. The versions assessed are as follows: PDD version 01.1, NMB version 01 and NMM version 01. Updated versions (addressing the issues raised in this report) are available from the Project Participants.

## History of validation and verification work

The validation and verification activities in 2004 led to 2 major CARs and 8 minor CARs. Major CARs preclude certification. Most CARs related to the quality of the PDD, the description of the methodologies applied, inaccuracies in activity data, emission factors, calculations and parameters. One of the two major CARs related to the socio-economic aspects of the project.

The project improved performance over a year's time and was re-invited by SGS to close out the CARs and complete the validation and verification work, and where possible, certify the voluntary emission reductions to date. This visit took place in October 2005.

## Methodology

The methodology applied is consistent with that described in the accredited procedures used for validation and verification / certification of CDM projects and greenhouse gas (GHG) emissions.

The initial validation and verification work was performed as a combination of desk study and onsite visits. During the desk study a strategic review and a risk assessment were conducted, that identified the key parameters and assumptions used by the project to quantify its achievements and the risk associated with the parameters. Those methodologies were validated and corroborated and assumptions were tested and verified during the fieldwork. Furthermore, the site visit led to observations related to the implementation of the project and was used to interview staff and stakeholders and to corroborate data presented in the report.

## Project Description

The project started January 1<sup>st</sup>, 1997 after the formal expansion of the Noël Kempff Mercado National Park which was gazetted in December 1996. The total expanded park is now over 1.58 million ha of which the expansion area is over 0.83 million ha and the project area is 642,458 ha. The project has 4 distinct components: 1) cessation of logging in the project area through the indemnification of logging concessions; 2) avoidance of deforestation in the project area; c) a sustainable development programme developed for the indigenous communities that live in the vicinity of the project area; and, 4) protection of the park financed through an endowment fund.

The Noel Kempff Mercado National Park is located in a climatic transition zone between the Amazonian, the Chaco and Cerrado eco-regions. It is situated in the North-East of Bolivia and the eastern border of the park coincides with the border of Brazil.

The cessation of logging is achieved by indemnifying the logging concessions and deforestation is avoided by the official expansion of the park, the community development component and general measures to protect the park from encroachment. In addition to these measures some general project activities will be undertaken to e.g. establish a project monitoring and verification programme for tracking the project's impacts in terms of GHG emissions.

Investor's seed money is used to kick-start the project after which the sale of carbon offsets will finance the sustainable community development component which includes a leakage prevention component consisting of a series of measures designed to protect against increased GHG emissions beyond the area of the expanded Park resulting from the measures implemented under component A and B. These will focus in particular on ensuring that the net

GHG mitigation achieved by the cessation of logging within the project area is protected from significant leakage. In addition, supporting initiatives will focus on providing alternative, environmentally sustainable economic opportunities for the indigenous communities, and the implementation of sustainable forestry by the indemnified logging concessionaires.

The project is programmed to last for 30 years (1996-2026) and the official project participants are: the Government of Bolivia (Programa Nacional de Cambios Climáticos (PNCC)), Fundación Amigos de la Naturaleza (FAN), The Nature Conservancy (TNC), American Electric Power (AEP), BPAMOCO, and Pacificcorp.

## Component A: cessation of logging

Before the initiation of the project the area consisted of commercial logging concessions. Indemnification has successfully led to the cessation of logging on these concessions. At the time of indemnification the concessionaires agreed not to engage in (alternative) forestry activities for at least the first 5 years after indemnification and accepted that the economic results of their business activities would be monitored to verify how they used the financial compensation received for the indemnification.

The project quantifies leakage through a dynamic optimization model which projects a baseline of timber harvesting: the potential pathway of future harvests in Bolivia both in the project area and within the entire country (4 concessions and 5 Bolivian departments where timber harvesting occurs). In a second run, the productive area of concessions is reduced by the concessions which are indemnified to expand the park area. Removing concessions causes market effects due to price changes and shifting of market actors. This shift will not effect prices on the export market (as a small country like Bolivia is a price taker in terms of timber production), but highly impacts the domestic market. It is assumed that reduced supply and raised prices would stimulate other concessionaires to reduce the gap in the domestic supply by producing additional wood. Thus, the direct impact of the removal of concessions will be accompanied by secondary market adjustments, which are modelled by comparing the baseline and the with project scenario.

## Baseline scenario

### Quantification

The parameters in the baseline scenario are *inter alia* forest type, project area per forest type, timber harvesting levels per forest type, productive project area per forest type, availability of capital to raise production, changes in living biomass stock (due to extraction of timber and damage to the residual stand) measured as an increase in the size of the dead wood pool due to harvesting, average wood density, (re)growth factors, decomposition coefficient for dead wood, proportion of harvested wood that goes into long-term wood products and soil carbon loss.

The methodology establishes the relation between harvesting levels, damage to the residual stand, regrowth of intervened forest, and changes in biomass stocks in the different carbon pools (regrowth, dead wood, etc.). Decomposition rates are based on peer reviewed literature and the quantification of the amount of timber that is stored for the long term in wood products is estimated using the extracted volume times the percent of harvested industrial round wood used for that type of products derived from existing statistics. Measurements are taken of large

and smaller branches of felled trees to determine the wet/dry weight ratios and destructive sampling of tall emergent trees took place to determine allometric equations for tree biomass.

### Monitoring

The baseline scenario has both a biophysical component as well as an economic component. The latter can be monitored without fieldwork, but to monitor the former a reference area was selected: the adjacent concession (Cerro Pelao) which has forest types and a management regime that is considered representative for the department.

The monitoring of the economic component is more complicated. The model requires data about timber species' market potential (commercialised volumes, prices, demand elasticity of domestic and international markets), specifications about the concessions (management regime, availability of commercial timber, etc.), and timber processing (investment, capital, labour, access, harvesting and transportation costs) to estimate the carbon flows in the baseline scenario. Note, that the stop timber harvesting model simulates the whole timber production of Bolivia. Thus, the model covers the risk, that the indemnified concessionaires might re-enter into the production of timber re-investing a certain part of indemnification.

Parameters that will be monitored include domestic timber prices, export prices, inflation rates, regional harvests in timber producing departments of Bolivia, harvested volumes of industrial round wood for export purposes, areas of concession holdings, ratio between quantities of export and domestic timbers, price elasticity of the domestic demand, access costs, harvesting costs for old and second growth forests, administration and marketing costs and transportation costs.

## **With project scenario**

### Quantification

In the with project situation no logging will occur. The concessions have been indemnified and the area is now officially gazetted as National Park: an extension to the Noel Kempff Mercado National Park. The quantification of carbon dynamics in the with project situation is by means of another run of the optimization model.

### Monitoring

The most important monitoring is conducted through some of the parameters listed above plus satellite imagery (to obtain an idea of activities going on inside the project area), "guarda parques" (park guards) that control all movement in and out of the park, monitor activities in the vicinity of the park borders and patrol the boundary rivers (most of the boundaries of the project area are natural and there are no bridges across the rivers).

## **Leakage**

The project experiences 2 types of leakage: 1) increased logging activities by the communities in the communal forestry area (TCO); and 2) logging activities starting, or being perpetuated elsewhere by the indemnified concessionaires or others. The project is designed in such a way that it avoids leakage to the extent possible. The project tracked the activities of former forest

concessionaires with respect to how the indemnification funds were used and the project also worked with one of the ex-concessionaires who went into partnership with another concessionaire to implement sustainable forestry practices.

#### Quantification of leakage

All leakage is quantified by the economic optimization model: even though the indemnified concessionaires continue to be active in the forestry sector, leakage that occurs is taken into consideration.

#### Monitoring of leakage

The monitoring of leakage is conducted through the monitoring of the parameters associated with the model as listed above.

### **Results of Component A**

The parameters used in the final calculation are:

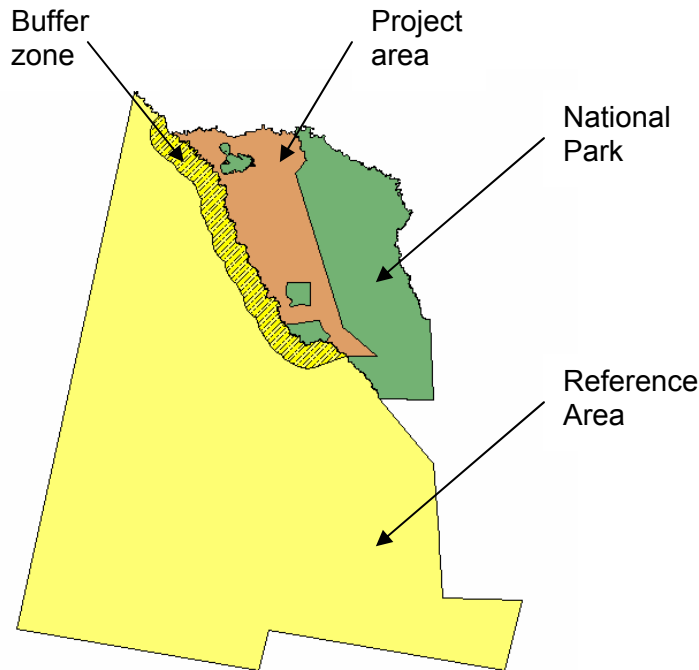
1. Area per vegetation type per indemnified concession before and after indemnification;
2. Net productive forest area per indemnified concession;
3. Total volume of the net productive area per indemnified concession (m<sup>3</sup>);
4. Volume of 5 export species in the net productive area;
5. Volume of other species in the net productive area per indemnified concession;
6. Leakage (on the basis of the economic optimization model of Sohngen and Brown);
7. Total amount of carbon (via living and dead biomass) removed;
8. Carbon in the dead wood pool and in wood products; and,
9. Regrowth in logged-over areas.

### **Component B: avoiding deforestation in the park**

The project avoids further deforestation within the project area. The proposed baseline methodology quantifies the amount of hectares which would have been deforested if no project would exist and identifies where this deforestation would most likely have occurred using historical data on the quantity and location of deforestation. The component includes a monitoring plan, a reference area, a buffer zone and potential leakage is avoided and quantified. The methodology takes anthropogenic fires, uncontrolled deforestation, GHG emissions due to biomass burning, change of carbon stocks in the soil, biomass accumulation due to the land use after forest clearing and double accounting due to component A into account.

The land-use change model GEOMOD was used to simulate the location of deforestation using historic deforestation information to calibrate the model. Once it correctly reflects the past, projections into the future can be made, using a set of driver maps to determine the direction of deforestation for the future. The driver maps are categorized maps which show the distance to roads, towns, rivers, forest edge and disturbance prior to 1992. Based on these driver maps and a land-use map, GEOMOD creates a suitability map where each pixel has a likelihood value to be deforested.

Large scale deforestation is modelled and monitored using a reference area. Leakage is monitored by using a buffer zone around the settlements of indigenous communities adjacent to the project area.



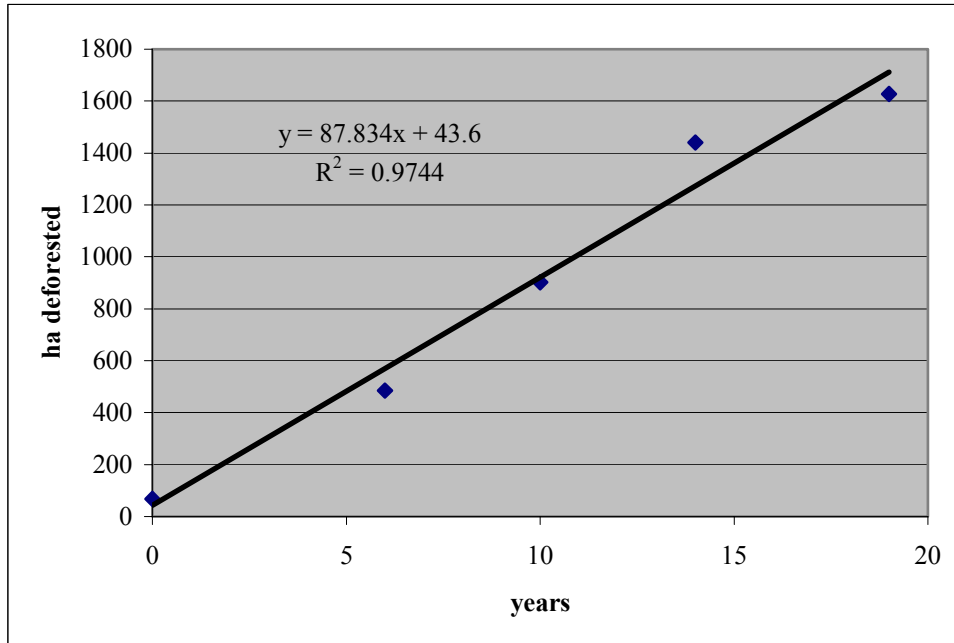
## Baseline scenario

### Quantification

The deforestation rate in the project area is determined by historical information on deforestation inside the project area before the implementation of the project and, deforestation which occurs after the implementation of the project in the reference area.

The baseline deforestation was estimated by a linear extrapolation of hectares deforested inside the project area between the years 1986, 1992 and 1996/97 using bands 3, 4 and 5 of Landsat satellite imagery. The reference area will indicate over time whether the linear extrapolation is over- or underestimating deforestation inside the project area. By comparing proportional deforestation in both areas before project implementation, the relation between the two is expressed as a quotient: a ratio. This makes it possible to adapt the baseline scenario for the time after the project implementation to the deforestation occurring in the reference area. For instance, if the change in deforestation (called here the “velocity” of the deforestation) in the reference area is 6 and in the project area 4, the ratio is 2/3. If in the future the deforestation is measured in the reference area, the deforestation in the project area will be estimated to be 2/3 of what would have occurred normally in the project area in the business as usual scenario. The deforestation rate for the project area will be adapted in every monitoring period (5 or 10 years) using the deforestation patterns in the reference area.

Deforestation is presented in the graph below using real data for 3 points in time ('86, '92 and '96/'97; resp. years 0, 5 and 10 in figure 3) whilst two more points have been calculated on the basis of deforestation in the references area in '00 and '05 (years 15 and 20 in figure 3).



### Monitoring

Monitoring of the baseline is conducted by using the reference area. Carbon stocks are determined on the basis of 609 inventory plots that were measured in 1997, at the start of the project including all carbon pools: trees, palms, understory, litter, standing and lying dead wood, and soils to 30 cm depth. Land-cover classes were based on the map “Formaciones Vegetales del Parque Nacional Noel Kempff Mercado” by Killeen/Schulenberg, 1998, each with their own biomass value assigned on the basis of the inventory of 1996. The assumption used in the baseline is that no additional gains in carbon stock would occur during the 30-year life of the project. This leads to an overall conservative estimate of the carbon stored in the baseline.

The methodology takes account of carbon in the land-use system after forest clearance: fallows, pasture or cropland.

### **With project scenario**

#### Quantification

In the with project scenario deforestation comes to a halt. The quantification of carbon stocks is based on the 609 inventory plots and the system of land-cover types described in the previous section. The remaining risk is fire which has been quantified by MODIS data from 2000 - 2004. The biomass carbon stocks of all forest types were reduced by 5% to cover that risk.

### Monitoring

Fire and deforestation will be monitored according to a monitoring plan. Work will be conducted in conjunction with monitoring activities described above for component A.

## **Leakage**

### Quantification

The most important risk of leakage is when communities continue to deforest at the same rate as before with the only difference that the deforestation is taking place outside the project area instead of inside. The area that could possibly be considered leakage is monitored in the buffer zone: a 15 km wide strip next to the project area. The project argues that if leakage occurs the deforestation rate must be higher compared to the baseline scenario. Therefore, a baseline scenario for the buffer zone was created in the same manner as for the project area itself, using a reference area to calculate the proportional change and compare this result with the true deforestation occurring in the project area. If the deforestation is in reality higher than in the baseline scenario, the difference is considered to be leakage.

### Monitoring

Leakage is monitored directly as described above and accounted for in the quantification of carbon benefits of the project.

## **Results for Component B**

The parameters used in the final calculation are:

1. Area of deforestation per year per forest type;
2. Amount of carbon per ha in biomass and in soils per forest type;
3. Percentage carbon release from soils in tonnes carbon per year; and,
4. Land use after deforestation.

Furthermore a discount factor of 5% has been included to account for anthropogenic fires and the results of component A and B have been balanced to avoid double counting: an area can be deforested after it has been logged, but it cannot be logged after it has been deforested.

## **Component C: Sustainable community development programme**

A number of villages of indigenous communities are located on what is now the western border of the park: the expansions area or project area. These villages used to have virtually unlimited access to the forest resources and some members of the communities found employment with the logging companies, including the sawmills. The indigenous people themselves, however, had no formal land tenure status and/or legal rights to any of the natural resources. Hence, the project, now becoming the close neighbour of these communities, foresaw that a community development programme was required if the concessionaires were indemnified and if the project

were to be successful in protecting the natural resource base. Hence, the project design included a Sustainable Community Development and Leakage Prevention component.

### **The reconstructed baseline scenario for Component C**

The Sustainable Community Development and Leakage Prevention component comprises 4 themes (organizational strengthening and training; land ownership; natural resource management; and, sustainable forest management), each in which activities have been undertaken as of the start of the project.

On the basis of over a dozen of socio-economic studies, impact analysis etc, the project reconstructed the community profile as it existed before the initiation of the project. It provides an overview of the communities' history, the resources it had access to and how those were used to foster the well-being of the villagers, the structure of the livelihoods (type of labour, trade, etc.), the community structures, the local institutions and the community infrastructure.

## **VERIFICATION FINDINGS**

During the validation and verification exercise a document review was conducted of the new PDD, the NMMs, the NMBs and all appendices and annexes. Furthermore, the community forest area was visited where harvesting operations of last year and this year were inspected, 3 out of the 7 communities were visited and interviewed and a number of plots were retraced where the inventory of logging impacts took place in the past. Furthermore, the methodologies applied by the project were assessed and corroborated. All work was conducted as if this were an eligible CDM project activity.

It has to be clear that the project is highly complex: it has several components and uses an enormous amount of activity data and emission factors. The total number of parameters used in equations to compute the net carbon benefits well exceeds a hundred. Hence, the PDD and associated documents have become complex as well and it is not an easy task to figure out what the exact methodologies are and how carbon benefits have been calculated. Although the project documentation has undergone tremendous improvements since the assessment work conducted in 2004, the assessor still felt that the structure of the PDD and associated documents can improve. Therefore, a minor CAR was raised.

**Minor CAR 1: The project design document is not entirely well structured yet and subject headers and paragraph numbers have been altered.**

With respect to Component C three of the seven communities were visited during this last assessment and community meetings were held with all of these three. The communities were consulted broadly and amongst other things asked whether they felt they were better of now in comparison to their situation before the initiation of the project.

Without exception all communities felt there were still a lot of basic needs, such as electricity, clean drinking water, education, health care, awareness raising, etc. not up to the standard where it should be. But they also agreed that it is, in principal, not the role of the project to sort these issues out: the municipalities should. Where the project can, and is assisting the

communities is by strengthening the organisational structures etc. that enable the communities through CIBAPA to fight their cases with the local authorities.

The project also conducted a fully fledged socio-economic impact assessment and reconstructed the community profile at the time of the commencement of the project on the basis of over a dozen of existing studies. Even though it is an analysis conducted in retrospect, the quality is exceptionally good for this type of project. It must be emphasized here that in 1997, when the project started, there was no requirement to conduct an impact assessment. The main conclusion of the assessment was:

“The qualitative balance, in general, is positive (i.e. more positive impacts than negative impacts on livelihoods). However, some negative impacts have been identified: loss of access to the resources, no abatement of the use of the fauna for hunting, loss of transport and roads’ infrastructure, and the loss of income from employment and services provided to Moira sawmill. The project has offered alternatives to minimize these negative impacts but the task of designing a new action plan that sets targets, including associated timetables and indicators to be monitored still remains. This new action plan must show how the project is addressing the negative impacts and reinforcing the positive ones.”

The assessors can fully support this conclusion. Since then, the project has amended the PDD and included socio-economic parameters in the monitoring plan, such as the number of rangers drawn from each community and the income from their wages, number of workers in the TCO and the income from their wages, profits for the community from timber sales, number of local eco-tourism guides and associated income, and the project has committed itself to conduct an annual livelihood impact assessment.

With respect to the community activities in the forestry sector a minor CAR has been raised. During the fieldwork in 2004, forest operations were not conducted in good practice style. This issue was raised and in the mean time the leakage has been quantified and taking into consideration. However, as these activities are undertaken in the context of a sustainable community development programme, unsustainable logging is not acceptable. Even though the assessor verified in the reference area that the ‘normal’ damage to the residual stand caused by ‘normal’ (Bolivian-style) logging operations is more severe than what was observed in the project area, this is still not acceptable.

The main problem seems to lie in changing weather patterns and temporary staffing. Logging takes place during the 4 dry months but both in 2004 and this year, the rains started about 2 to 4 weeks earlier. This creates a number of problems. First of all, supervising logging isn’t a year-round job and every year a new supervisor has to be found to overlook the fieldwork. Hence, there is no continuity in supervision, nor time to train internal staff. Secondly, at the time the rains start it is tempting to salvage the already logged but not yet extracted timber in conditions under which you would normally not enter the forest anymore. Hence, a minor CAR.

**Minor CAR 2: The harvesting practice in the TCO is not well controlled leading to more damage to the residual stand and subsequent GHG emissions then necessary.**

## VALIDATION AND VERIFICATION STATEMENTS

Context: the project does not constitute an eligible activity under the CDM – which only allows for afforestation and reforestation – and, therefore, will not generate certified emission reductions (CER) as recognised under the Kyoto Protocol. However, the project has been

assessed as were it an eligible activity in order to ensure that it is credible and comparable with CDM project activities. The project's output will be recognised as Voluntary Emission Reductions (VER) which cannot be used by Annex I Parties to meet their quantified emission limitation and reduction commitments under the Kyoto Protocol, but which may be of interest in the voluntary market and have similar qualities as CERs.

The process of assessment has been completed as if it were an eligible CDM project activity with the exception of the public stakeholder consultation. The stakeholders directly involved in the project have been consulted.

## VALIDATION STATEMENT

SGS has undertaken a validation of the Noel Kempff Climate Action Project in Bolivia. The engagement involved document review and visits to the offices of the project participants in Bolivia, interviews with staff and stakeholders, site visits to parts of the Park itself, the adjacent indigenous communities and inspections of reference areas.

The project is a voluntary project and is not eligible under the CDM. Accordingly, it was assessed against the current UNFCCC and CDM criteria for Land Use, Land Use Change and Forestry projects, and where these could not be applied (for example the use of an approved methodology), the principles of completeness, consistency, accuracy, transparency and scientific appropriateness were used.

The scope of the validation exercise encompassed the spatial and temporal boundaries described in the PDD, the NMM, the NMB, the annexes and the appendices. Where possible, data from external sources was traced and corroborated.

During the first visit in 2004, several findings were raised, requesting additional external data and further explanation/clarification of some elements of the methodologies. The Project responded adequately to those requests by presenting a revised PDD and associated documentation.

SGS was able to validate and verify the revised information during a second site visit in 2005.

It is SGS' unqualified opinion that the project currently meets the relevant criteria for voluntary and potentially CDM-compliant project activities and fulfils the principles detailed above.

## VERIFICATION STATEMENT

SGS has undertaken the verification of the validated Noel Kempff Climate Action Project in Bolivia. The engagement involved document review and visits to the offices of the project participants in Bolivia, interviews with staff and stakeholders, site visits to parts of the Park itself, the adjacent indigenous communities and inspections of reference areas.

The project is a voluntary project and is not eligible under the CDM. Accordingly, it was assessed against the current UNFCCC and CDM criteria and where these could not be applied (for example the use of an approved methodology), the principles of completeness, consistency, accuracy, transparency and scientific appropriateness were used.

The scope of the verification exercise was limited to the spatial and temporal boundaries described in the PDD, the NMM, the NMB, the annexes and the appendices. Where possible, data from external sources was traced and corroborated.

During the first visit in 2004, several findings were raised, requesting additional external data and further explanation/clarification of some elements of the methodologies. The Project responded adequately to those requests by presenting a revised Monitoring Report and associated documentation.

SGS was able to verify the revised information during a second site visit in 2005.

It is SGS' unqualified opinion that the project has implemented a monitoring plan and prepared a monitoring report that determines additional sequestration and emission reductions due to the project's activities in a manner consistent with the principles detailed above.

Consequently, SGS verifies the voluntary emission reductions claimed by this project and outlined in the Schedule of Achieved Voluntary Emission Reductions (SAVER) that accompanies this verification opinion.

## **SCHEDULE OF ACHIEVED VOLUNTARY EMISSION REDUCTIONS:**

### **the “SAVER”**

After having completed the documentation review, the fieldwork, the assessment of the scientific methodology, the stakeholder consultation and the internal technical review the total number of net emission reductions that have been achieved voluntarily by the Noël Kempff Climate Action Project over the period 1997 – 2005 are independently verified. The table below presents the results.

### **Voluntary Emission Reductions achieved by the project over the period 1997 - 2005.**

<b>Year</b>	<b>Carbon offset* Component A w/o leakage (tC)</b>	<b>Leakage Comp A (tC)</b>	<b>Carbon Offsets Comp B (tC)</b>	<b>Total Carbon Offsets (tC)</b>	<b>Total Carbon Offsets (tCO<sub>2</sub>)</b>	<b>Emissions (tCO<sub>2</sub>)</b>	<b>Net Carbon Offsets (tCO<sub>2</sub>)</b>
1997	13.140	1.981	15.382	26.541	97.317	214,56	97.102
1998	16.193	2.493	10.992	24.692	90.539	265,85	90.273
1999	19.072	2.989	10.850	26.933	98.753	349,56	98.404
2000	21.788	3.472	11.841	30.158	110.578	255,13	110.322
2001	24.354	3.942	11.225	31.637	116.003	209,88	115.793
2002	26.779	4.399	10.974	33.354	122.298	168,12	122.130
2003	29.204	4.797	9.265	33.671	123.462	139,83	123.322
2004	31.536	5.174	8.641	35.004	128.347	128,56	128.218
2005	33.782	5.530	12.189	40.441	148.282	121,20	148.161
<b>1997 till 2005</b>	<b>215.848</b>	<b>46.805</b>	<b>101.359</b>	<b>270.402</b>	<b>991.474</b>	<b>1.853</b>	<b>989.622</b>
<b>1997 till 2026</b>	<b>1.499.680</b>	<b>276.092</b>	<b>368.815</b>	<b>1.592.404</b>	<b>5.838.813</b>	<b>1.853</b>	<b>5.836.961</b>

\*: Discounted = reduced for possible double accounting of carbon offsets in areas of intersection between Component A & B

