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Introduction

The project activity involves the distribution of the solar cookers in Bolivia. The availability of high incidence of sola light and high altitude in Bolivia makes the solar energy as one of the alternative source of fuel. The solar cook-stove can cover most of the cooking energy needs of the beneficiaries and can also be used for other purposes such a pasteurization of water.

The purpose of the project is also to improve the living conditions of the Bolivian households, by promoting the use of clean and cost-free energy source for their daily cooking needs, and simultaneously, fight against global warming b reducing deforestation and use of fossil fuels in the country. The project promotes sustainable development activitie through saving considerable time from the collection of firewood, income-savings occurring from less consumption o LPG (some people have to travel for more than 2 hours to purchase their LPG tank), health improvement due to th avoidance of the smoke emissions from firewood, which is the potential cause for lung infections. The solar cook-stov can be used to pasteurize water as well. And finally, the solar cook-stoves also preserve the food nutrients with slow an gradual cooking process.

Implementation of the project:

The project is being locally implemented by the Inti-Illimani (II) & Bolivia Inti Sud Soliel (BISS). The proje implementation is carried out for groups of beneficiaries. Each group consists of maximum 25 beneficiaries. The II tea arranges a construction workshop in the same villages/areas of the beneficiaries and preferably carried out in the villag community hall or in an open public space. These workshops usually last for 4-5 days, where the beneficiaries a trained to construct their solar cookers under the guidance of the technical experts of II. The material required for th construction is provided to each of the beneficiary by the II team. Similar kinds of workshops are carried out as per th demand for the solar cookers by any group of (minimum 20) beneficiaries in Bolivia. Due to the increasing demand o the solar cookers, these workshops are carried out throughout the year with an advanced planning. The II team follow-u each of these groups on a regular basis to be assured that the beneficiaries are using the solar cookers and have not face any technical problems for these cookers.

One the workshops carried out for a group by the II technical experts and the project coordinators.

Monitoring surveys/ Field tests/Follow-up meetings:

a) Kitchen Survey:

The Kitchen surveys have been carried out as per the guidelines given in the GS cookstove methodology. Since th implementation of the project activity is carried out continuously throughout the year, the kitchen survey is carried ou during each of the workshops. A group of at least 5 beneficiaries out of the total 20 beneficiaries are asked the surve questions before the use of the solar cookers and the same 5 beneficiaries are followed up after the construction cours along with the remaining beneficiaries. The kitchen survey data is collected and updated regularly by the II tea members. As per the kitchen survey data, the clusters are accordingly revised for the project activity. There has been n change in the clusters as mentioned in the PDD: 1) LPG cluster and 2) LPG & firewood cluster. All the survey data hav been submitted to the Gold Standard for further verification.

Table 1: Number of Solar Cookers distributed

Year	LPG	LPG Fw	Others	Total
2007	235	161	5	401
2008	233	171	16	420
2009	235	111	54	400
2010	386	137	59	582
2011	242	116	17	375
Total	1089	591	134	2178

A total of 2178 solar stoves have been implemented since 2007. For the ER calculations, a total of 1620 stoves have been taken into accou after considering the usage rate per year.

As per the KS report already submitted to the Gold Standard, the pattern of clusters have not changed with the evolvin baseline surveys. The following table gives the clusters:

		Project Scenario							
		Solar CS and LPG		Solar CS, LPG and Fw		Others		Total	
Baseline Scenario	LPG	222	58%	3	1%	4	1%	60%	229
	LPG and Fw	96	25%	50	13%	1	0%	38%	147
	Other	8	2%	0	0%	0	0%	2%	8
	Total	326	85%	53	14%	5	1%	100%	384

b) Kitchen Tests:

The Kitchen tests have been carried out for each of the mentioned clusters as per the guidelines given in the G methodology. Kitchen tests have been carried out for both the clusters LPG and LPG Firewood, between the months o February and April 2010.

All KTs have been done with a conservative approach and according to the recommendations of the qualitative surve (KS). The KT for the cluster LPG, can be done at any time of the year as explained in the PDD Pg. 14 and 15, step 1.: Therefore the LPG KT conducted in May 2010 could have been done at any time. All KTs carried out for LPG-FW cluster have been done during the rainy season according with KS recommendations.

The results are as follows:

Cluster	LPG consumption without SC kg/day/hh	Fw consumption without SC kg/day/hh	LPG consumption with SC kg/day/hh	Fw consumption with SC kg/day/hh
Average LPG	0.415		0.286	
Low IC LPG	0.359		0.230	
Average LPG Fw	0.394	7.375	0.394	0.777
Low IC LPG Fw	0.333	6.137	0.333	0.011

Selection of the sample for the Kitchen tests:

Following considerations have been taken into account for KT:

Paired samples have been taken to compare pre- and post-installation consumption in the same houses. The selection c beneficiaries groups have been randomly chosen however practical aspects for carrying out the tests have been taken int account:

a. The user's availability and motivation to participate in the required tests,
b. Dispersion of the households in the communities and ease of accessibility the areas,
c. Distance between households of the same clusters located in different villages.
d. The seasonal variations (to assure conservative approach while calculating the fuel consumption).

The period over which the tests have been carried out is one week of pre- and one week of post-installation to avoid risk of heterogeneity cooking habits and to include weekend cooking in the correct annual ratio to week day cooking. For th emission reduction calculations, the most conservative value has been taken into account.

c) Follow-up meetings with the beneficiaries:

The Inti Illimani team follows up with the group of beneficiaries after each construction workshop. The first follov meeting is carried out after 2 weeks from the end of the workshops. These follow-ups are carried out to ensure that th beneficiaries have started using the solar cookers and are following the instructions given by the II team experts t use/maintain the solar cookers during the training programs. The follow-up meeting are carried out by the local co coordinator from the village and the Inti Illimani team member, where the beneficiaries are asked to discuss about th various problems they might have come across while using the cookers during the first 2 weeks and/or discuss also som new food recipes that they might have tried to cook during this period. These follow-up meetings are carried out for months with each group. After completion of the 4 month follow-up meetings, the Inti Illimani team gives a gift to th beneficiary who has regularly completed all the activities/training/improvements proposed during the previous follow-u meetings. The gifts are usually in the form of plates/cooking pots/cups etc. as recognition of their proactive participatio in the project activity.

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One of the follow-up meeting photos are shown below

The follow-up meetings are carried out by the BISS team member along with the help of the local coordinator of the village. The meeting includes a individual basis consultation with each of the beneficiaries and is concluded with the records/collection of the required information.

Sustainable Development Parameters:

Data / Parameter:	Access to affordable and clean energy services
Data unit:	1620 households
Description:	It has been evaluated by the number of solar cook stoves distributed since 2007 after considering the usage factor. In total since 2007, 2178, solar stoves have been distributed till August 2011. Out of these 2178 stoves – - A total of 1922 solar stoves were defined into clusters. Out of which, total of 1620 stoves taken into account for ER calculations after considering the usage factor. - And the remaining total 137 solar stoves in 'other clusters' were not taken into account.
Source of data used:	Project data base.
Monitoring frequency	Continuous throughout the year.
QA/QC procedures to be applied:	The total number of households is determined by collecting the complete information of each beneficiary and recording them in a systematic database, which is maintained and regularly updated by the Inti Illimani team.
Any comment:	As third party verification, the GoodPlanet team (GPF) visited the project areas and cross-checked the database maintained by the II team members.

Data / Parameter:	Human and institutional capacity
Data unit:	90 workshops carried out from 2007 to 2010 and a total of 2178 solar cookers.
Description:	It has been evaluated by the number of solar cook stoves distributed since 2007. In total since 2007, 2178, solar stoves have been distributed till August 2011. During the construction workshop, apart from training given to construct the solar stoves on their own, the beneficiaries also get a special training from the Inti Illimani staff on nutrition, environment and health benefits due to the use of the solar cook-stoves. After the training workshops, the Inti Illimani team also visits the households as a part of the continuous monitoring of the project.
Source of data to be used:	Trainings programs database.
Monitoring frequency	Continuous throughout the year.
QA/QC procedures to be applied:	The total number of households is determined by collecting the complete information of each beneficiary and recording them in the database maintained by the Inti Illimani team. This database also includes the details of the training programs carried out during the year.
Any comment:	As third party verification, the GoodPlanet team (GPF) visited the project areas and has also checked the database with the details of the total number of training workshops carried out during the year.

Data / Parameter:	Quantitative employment and income generation
Data unit:	-
Description:	Some of the beneficiaries have shown additional usage of the cookstove for income generating activities like selling peanuts, api, corn, etc. The % of the beneficiaries making an extra economic activity data has not been recorded earlier by the Inti Illimani team. This information will be further updated in the next verification period. There has been no change in the total number of Inti Illimani staff. There are 6 members.
Source of data to be used:	Survey among the beneficiaries
Monitoring frequency	Continuous survey
QA/QC procedures to be applied:	A separate survey sheet has been prepared by the II team to get the data on this parameter.
Any comment:	This parameter will be updated in the next verification period

Data / Parameter:	Technology transfer and technological self-reliance
Data unit:	2178 households
Description:	It has been evaluated by the number of solar cook stoves distributed since 2007, as solar cook-stoves are diffused through the workshops where beneficiaries are trained to carry out the construction of the cookers and also trained on the maintenance of the solar cookers. In total since 2007, 2178, solar stoves have been distributed till August 2011.
Source of data to be used:	Beneficiaries database managed by BISS
Monitoring frequency	Continuous throughout the year
QA/QC procedures to be applied:	The total number of households is determined by collecting the complete information of each beneficiary and recording them in a systematic database maintained by the Inti Illimani team. The cook-stoves are constructed by the beneficiaries themselves under the technical guidance of the Inti Illimani experts. In these workshops the technical experts also train the beneficiaries on the maintenance of the stoves. A total of 90 workshops have been carried out till 2010. This shows that there is a direct transfer of technology
Any comment:	As third party verification, the GoodPlanet team (GPF) has also checked the database of the total number of beneficiaries and also visited some of the workshops where the beneficiaries constructed their own cookstoves.

Data / Parameter:	Biodiversity
Data unit:	61% 6 kg/day/hh.
Description:	There have been no large deforestation or reforestation initiatives observed in the project areas. Therefore the NRB rate is constant.
Source of data to be used:	NRB study. Kitchen tests (Cluster- LPG Fw).
Monitoring frequency	-
QA/QC procedures to be applied:	-
Any comment:	The change in the consumption of firewood among the beneficiaries is about 6 kg/day/hh.

Data / Parameter:	Soil condition
Data unit:	61% 6 kg/day/hh
Description:	The project allows the people to use less firewood, which leads to the reduction in the deforestation rate in the project areas and which also helps conserves the soil as there are less possibilities of soil-erosion in the areas. There has been no large deforestation or reforestation initiative in the project areas. Therefore the NRB rate has been constant.
Source of data to be used:	NRB study. Kitchen tests (Cluster- LPG Fw).
Monitoring frequency	Biennially
QA/QC procedures to be applied:	KT has been carried out as per the guidelines given in the GS methodology.
Any comment:	The change in the consumption of firewood among the beneficiaries is about 6 kg per day.

Data / Parameter:	Air quality
Data unit:	-
Description:	From the present KT we can see that there has been a reduction on firewood consumption of about 6 kg/day/hh for the daily cooking needs of the beneficiaries, therefore there has been a gradual decrease in air pollution in the kitchens due to continuous use of solar cookers. The % of the beneficiaries which find improvement of air quality since they have their solar cook stoves data has not been recorded earlier by the Inti Illimani team, this information will be further in the next verification period. There has been no change in the total number of Inti Illimani staff. There are 6 members.
Source of data to be used:	KT studies.
Monitoring frequency	
QA/QC procedures to be applied:	KT has been carried out as per the guidelines given in the GS methodology.

Data / Parameter:	Livelihood of the poor
Data unit:	-
Description:	There has been a saving on fuel consumption both LPG and firewood. The total amount that has been saved by the beneficiaries has not been recorded/documented by the Inti Illimani team. Therefore this parameter will be updated in the next verification period.
Source of data to be used:	Following up survey
Monitoring frequency	Continuously
QA/QC procedures to be applied:	
Any comment:	This parameter will be updated in the next verification period.

Emission reduction monitoring parameters:

Data / Parameter:	**P.1** Number of Solar cookstoves (SCS)
Data unit:	1620 cookstoves considered for ER calculations.
Description:	Number of beneficiaries by cluster and community since 2007, after considering the usage factor. In total since 2007, 2178, solar stoves have been distributed till August 2011. Out of these 2178 stoves: - A total of 1922 solar stoves were defined into clusters. - The remaining total 137 solar stoves in 'other clusters' were not taken into account. - After considering the usage factor, a total of 1620 stoves taken into account for ER calculations.
Source of data to be used:	Project database
Monitoring frequency	Measured every month according to the planning of the workshops
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and GoodPlanet
Any comment:	The project database has been established from the beginning of the project activity, giving all the all the details of each beneficiary. This database is updated regularly by the Inti Illimani team members.

Data / Parameter:	**P.2** LPG consumption by cluster in the project scenario
Data unit:	LPG cluster: 689 Kg/month/household LPG + FW cluster: 999 Kg/month/household
Description:	Amount of LPG consumed by beneficiaries having solar cookstoves
Source of data to be used:	Kitchen Tests
Monitoring frequency	Study led biennially on a representative sample of beneficiaries
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and GoodPlanet
Any comment:	KT has been done according with guidelines given in the GS methodology.

Data / Parameter:	**P.3** firewood consumption by cluster in the project scenario
Data unit:	LPG + Fw cluster: 0.32 Kg/month/household
Description:	Amount of firewood consumed by beneficiaries having solar cookstoves
Source of data to be used:	Kitchen Tests
Monitoring frequency	Study led biennially on a representative sample of beneficiaries
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and GoodPlanet
Any comment:	KT has been done according with guidelines given in the GS methodology.

Data / Parameter:	**P.4 - X_{NRB}**
Data unit:	61%
Description:	Non-renewable fraction of biomass
Source of data to be used:	NRB study
Monitoring frequency	The NRB fraction may be updated if there any afforestation/deforestation activities are observed in the project areas.
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and GoodPlanet
Any comment:	

Data / Parameter:	**P.5 - Usage in year 2009, 2010**
Data unit:	2009: 85% people who got their solar cookstove in 2007 90% people who got their solar cookstove in 2008 2010: 80% people who got their solar cookstove in 2007 85 % people who got their solar cookstove in 2008 90 % people who got their solar cookstove in 2009 2011: 75% people who got their solar cookstove in 2007 80 % people who got their solar cookstove in 2008 85 % people who got their solar cookstove in 2009 90 % people who got their solar cookstove in 2010
Description:	Percentage of stoves of age x remaining in use in year y
Source of data to be used:	A study carried out by third party for the solar cookers implemented in Bolivia.
Monitoring frequency	Survey led once a year on a representative sample of beneficiaries
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and BISS
Any comment:	A survey will be taken up in the next verification period to get the use of stoves data more precisely.

Data / Parameter:	**P.6 – Age**
Data unit:	2009 Efficiency of solar cookstoves built in 2007: 100 % Efficiency of solar cookstoves built in 2008: 100 % 2010: Efficiency of solar cookstoves built in 2007: 100 % Efficiency of solar cookstoves built in 2008: 100 % Efficiency of solar cookstoves built in 2009: 100 %
Description:	Efficiency compared with a new Solar Cooker
Source of data to be used:	Monitoring Survey
Monitoring frequency	Survey led once every two years on a representative sample of Solar Cookers well maintained.
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and GoodPlanet
Any comment:	All tests results show that older solar cookers are more efficient than new ones.

	consider that efficiency of old solar cookers is the same that new ones.

Data / Parameter:	**P.7** Money savings
Data unit:	LPG cluster: 10 Bs/hh/month
Description:	Amount of money saved by the beneficiaries thanks to the solar cooker
Source of data to be used:	Monitoring survey (scanned copy of the KS with the parameter has been provided)
Monitoring frequency	Calculated from KS data and from price of LPG.
QA/QC procedures to be applied:	Crosschecked by Inti Illimani, BISS and GoodPlanet.
Any comment:	Money savings come from fuel savings. Only money savings coming from LPG savings has been taken into account. Money savings for LPG + Fw cluster will be precisely given in the next verification period.

Data / Parameter:	**P.8** Time savings
Data unit:	44%
Description:	% of people who consider that time savings is one of the main benefits of the solar cooker.
Source of data to be used:	Monitoring survey (scanned copy of the KS with the parameter has been provided)
Monitoring frequency	Continuously done by the Inti Illimani team members
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and BISS
Any comment:	Questions have been asked to the beneficiaries to have a quantitative information about time saved due to the use of the solar cookers, but it was misunderstood by the beneficiaries and the available data does not gives us coherent references, however, they also say that they have more time for other activities. This data will be obtained in the next verification period.

Data / Parameter:	**P.9** Share of the solar energy in the total energy mix
Data unit:	LPG cluster: 31% is solar energy LPG and Fw cluster: 77% is solar energy
Description:	% of solar energy used along with others fuel mix
Source of data to be used:	Monitoring survey
Monitoring frequency	Biennially during the KT studies.
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and GoodPlanet
Any comment:	Calculated from fuel consumption reduction (KT) and its energy equivalence.

Data / Parameter:	**P.10 Distance**
Data unit:	2009: 5102 Km/year 2010: 8043 Km/year

Source of data to be used:	Monitoring survey
Monitoring frequency	Annually.
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and BISS
Any comment:	As the project is carried out throughout the year, this parameter is calculated from distance per course and it is included in the reports from each course.

Data / Parameter:	**P.11** Fraction of the distance using common transport
Data unit:	100 %
Description:	Fraction of the distance using common transport (bus)
Source of data to be used:	Monitoring survey
Monitoring frequency	Calculated from distance per course and kind of transport used included in the reports from each course.
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and BISS
Any comment:	As Inti Illimani doesn't have their own vehicle, the team uses the public transports during the travel.

Data / Parameter:	**P.12**
Data unit:	2009: 100% 2010: 100%
Description:	Fraction of the courses where measures have been taken to ensure that not damage to soil is being caused by the paint
Source of data to be used:	Monitoring survey
Monitoring frequency	Final evaluation course questionnaire made by beneficiaries
QA/QC procedures to be applied:	Parameter double-checked by Inti Illimani and BISS
Any comment:	During the courses the instructors make sure that during painting soil is protected by a plastic sheet or the activity is carried out in a large community hall. This parameter will also be separately documented during the courses in the next verification period.

Emission Reductions Calculations:

The project activity has been carried out since the year 2007. As per the Gold Standard rules the emission reductions have been considered since the year 2009. This monitoring report gives the emission reduction calculations for 2009 & 2010. The ER data for each year are given in following tables:-

Emission Reduction 2009

	Baseline Emissions kg CO2/month		Project Emissions kg CO2/month		Emission Reductions kg CO2/month		Total ER T CO2/month
	LPG	LPG Fw	LPG	LPG Fw	LPG	LPG Fw	
Jan	0	0	0	0	0	0	0
Feb	0	0	0	0	0	0	0
Mar	0	0	0	0	0	0	0
Apr	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0
Jun	0	0	0	0	0	0	0
Jul	0	0	0	0	0	0	0
Aug	21149	76343	13530	18977	7619	57365	65
Sep	21700	82672	13882	20551	7818	62121	70
Oct	22177	82672	14187	20551	7989	62121	70
Nov	22910	84620	14657	21035	8254	63585	72
Dec	23644	84620	15126	21035	8518	63585	72
Total							349

Emission Reduction 2010

	Baseline Emissions kg CO2/month		Project Emissions kg CO2/month		Emission Reductions kg CO2/month		Total ER T CO2/month
	LPG	LPG Fw	LPG	LPG Fw	LPG	LPG Fw	
Jan	21923	72922	14025	18127	7898	54795	63
Feb	22547	74139	14424	18430	8123	55710	64
Mar	22987	85338	14706	21213	8282	64124	72
Apr	23244	88746	14870	22060	8374	66685	75
May	23941	90450	15316	22484	8625	67966	77
Jun	25115	91911	16067	22847	9048	69063	78
Jul	26913	95806	17217	23815	9696	71990	82
Aug	28491	97753	18226	24299	10264	73454	84
Sep	29481	100918	18860	25086	10621	75832	86
Oct	31059	100918	19869	25086	11189	75832	87
Nov	32233	103352	20621	25691	11612	77661	89
Dec	34691	106273	22193	26417	12498	79856	92
Total							949

Emission Reduction 2011

	Baseline Emissions kg CO2/month		Project Emissions kg CO2/month		Emission Reductions kg CO2/month		Total ER T CO2/month
	LPG	LPG Fw	LPG	LPG Fw	LPG	LPG Fw	
Jan	33379	94661	21354	23531	12025	71131	83
Feb	33379	94661	21354	23531	12025	71131	83
Mar	34223	98070	21894	24378	12329	73691	86
Apr	35874	98800	22950	24560	12924	74240	87
May	36351	105860	23255	26315	13096	79545	93
Jun	37635	113163	24077	28130	13559	85033	99
Jul	40901	122900	26166	30551	14735	92350	107
Aug	0	0	0	0	0	0	0
Sep	0	0	0	0	0	0	0
Oct	0	0	0	0	0	0	0
Nov	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0
Total							638

Conclusion:

A total of 2178 solar stoves have been implemented from 2007 till August 2011. The emission reduction calculations have been considered for the year 2009 till august 2011. The project activity not only promotes sustainable developmen but also reduces the demand for firewood and LPG in the project areas. The following table summarizes the emission reductions for the respective year.

Emission reduction for the year 2009	: **349 tCO2/yr**
Emission reduction for the year 2010	: **949 tCO2/yr**
Emission reduction for the year 2011	: **638 tCO2/yr**
Total emission reductions	: 1936 **tCO2/yr**

Annexe 1

Kitchen survey scanned copies from the project database have been uploaded on the Gold Registry for further verification.