Annex 3

MONITORING PLAN

The objective of this monitoring plan is to describe how the data needed for the assessment of the emission reductions resulting from the project as well as the key sustainable indicators will be collected and archived. It has to be implemented for each of the climate areas of the project.

METHOD OF COLLECTION OF THE DATA

There are three methods for the collection of data: Surveys based on questionnaires, Collection of record sheets regularly filled in and Field investigation.

Surveys based on questionnaires

The surveys concern the assessment of the baseline and project emissions as well as the key sustainable indicators. They're carried out on a representative sample of beneficiaries. The interviews have to be conducted by especially trained personnel who have extensive knowledge about:

- Country or regional customs;
- Local farming practices;
- The technical design of the biodigester system;
- The amount and type of fuel used for each household; and
- How households handle their animal waste.

A team of at least two persons will perform the surveys. The local coordinators will be in charge of the surveys and will be trained by the staff member of ID in charge of all the monitoring of the project.

Selection of beneficiaries to interview

Households will be selected randomly from the project boundary.

Guizhou province is located in the subtropical mountain system, according to the IPCC guidelines (Volume 4 chapter 3) and FAO (FRA2000 – Global Ecological Zones).
However, there are small differences between the two project areas, such as the altitude and the duration of seasons. That is why we consider that Weining and Danzhai are two different "climatic areas".
In a climatic area, the fuel types used by the beneficiaries for their energy needs are identified. The fuel mix is also identified. A survey concerns one climatic area and its sample of beneficiaries should be geographically representative of this global area, so that the geographical repartition of the beneficiaries is needed. Once the repartition is known, the selection of respondents should be locally random.

A survey should be made on a sample of around 100 respondents, and at least 60 respondents.

Questionnaires

Experienced people on fuel consumption patterns in the different climatic areas designed the questionnaires. During the elaboration of the questionnaires, tests are carried out on several beneficiaries to ensure its relevance.

Record sheets

The record sheets are used for the identification of all the beneficiaries, the assessment of the construction stage as well as the beginning date of use of the biogas. These are documents filled in by local coordinators, which are the ones in charge of the implementation of the biogas system for some villages or group of villagers. In each group, the project is coordinated by one of them. Then, the records concern all the beneficiaries of the project.

Field investigation

The field investigation concerns the assessment of the non-renewable rate of the biomass used as a fuel for cooking by beneficiaries.

DATA STORAGE

All the questionnaires, record sheets and reports are archived in the offices of ID in China. They are all available for verification. All the data monitored is also stored in the electronic database (php / mysql). A complete extract is available for verification. ID is in charge of the regular encoding of the data in the electronic database. The data will be kept for two years after the end of the crediting period of the last issuance of the project's VERs.

BASELINE AND PROJECT EMISSIONS SURVEYS

In a year, two periods are considered for the assessment of the emission reductions: winter and summer. Therefore, baseline and project emissions depend on these periods.

Period characterizations and activities monitored

The baseline and project emissions are assessed by asking beneficiaries for their daily traditional fuel consumption for specific activities (including at least cooking activities). In a year, this daily consumption mainly depends on the outside temperature and the activities performed. In order to simplify the assessment of the emission reductions, two periods have been identified in a year, corresponding to specific patterns of energy consumption. They are basically the winter and summer periods.

Winter period

In Guizhou province, winter lasts from about November-December to February-March. The temperatures could vary from 0°C to 15°C. During this period, people use traditional fuels for cooking, boiling water, boiling animal food and space heating. Their eating habits could also vary from season to season. The duration of the winter period is determined with the beginning and ending dates of space heating. These dates are controlled by the person in charge of the monitoring of the project by taking into account the advices of the local coordinators.

Summer period

The summer period lasts from about March-April to October-November. The temperatures could vary from 15°C to 30°C. During this period, people do not heat their houses anymore. In some villages, they do not even boil animal

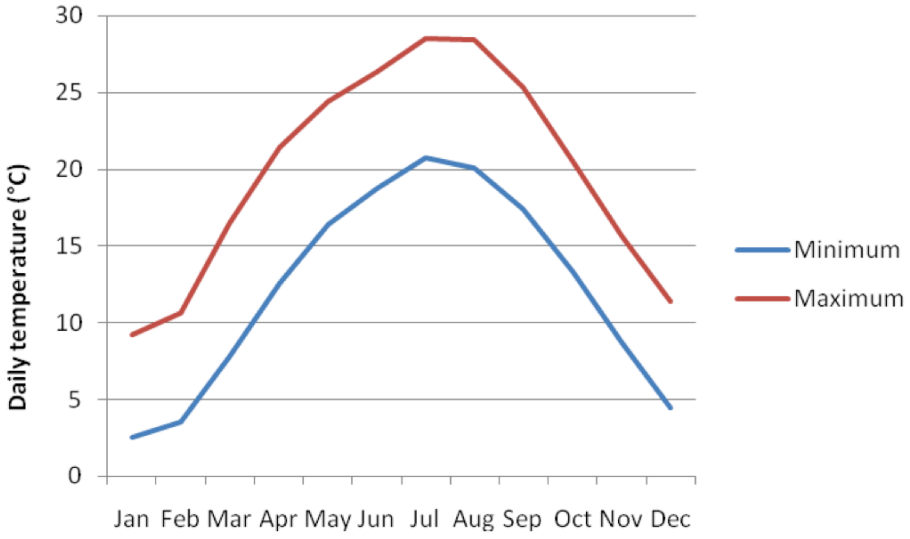
food because grass is available for animals. The duration of this period is also determined by the beginning and ending dates of space heating.

Activities monitored

The biogas stove is used for cooking and boiling water purposes. It's possible to monitor the daily consumption of traditional fuel for these specific activities only if there is no leakage. As a matter of fact, there could be a leakage from one activity to another when they're done at the same time. For example, during winter period, people could take advantage of the energy produced when they heat the house for cooking purposes. Even if they stopped cooking with traditional fuel, it would not mean that all the traditional fuel consumption used for cooking purposes would be reduced. Then, for each period, the daily consumption should concern all the activities from which there is a leakage to the cooking and boiling water.

An average daily consumption

In any given period, the daily consumption of traditional fuel could vary due to the variation of the outside temperature. The lower the outside temperature is, the higher the daily fuel consumption will be. Moreover, the production of biogas varies also. The higher the outside temperature is, the more biogas will be produced. In winter, there is clearly less biogas produced than in summer. Then, for the assessment of the baseline and project emissions, the answers given by the beneficiaries should not concern the coldest or the warmest days of a period. They should concern "average" days. The surveyors have to ensure beneficiaries are aware of this specificity.



Daily temperature variations in Guiyang (capital of Guizhou Province)
Source: World Weather Institute, 2007

Baseline emissions surveys

Each year, ID may install biogas systems in new villages. Since the baseline surveys have to be geographically representative of the population of the beneficiaries, the original baseline surveys have to be updated. In case the new beneficiaries are in a new climatic area, a whole new baseline survey should be conducted.

In case a new survey is needed, 100 respondents (at least 60) have to be interviewed.
In case an update of an old baseline survey is needed, less than 100 respondents may be interviewed. X old interviews can be recycled from an old survey and Y new interviews conducted in the new area, with X + Y = 100, and X and Y geographically representative of the new global population of beneficiaries.

The survey should be held before the implementation of the biodigester or within 3 months after the implementation of the biodigester. The main data asked to the beneficiaries is the quantity of traditional fuels daily consumed for specific activities during winter and summer periods before they get the biogas system (surveyors should be able to weigh this quantity). In the case of biomass consumption, the percentage of biomass residues used is asked to the beneficiaries. This data is necessary for the determination of the non-renewability rate of biomass used by the beneficiaries.
During the survey, the type of management of the animal waste is also identified for each beneficiary.

An example of the baseline questionnaire is added in Annexes on the Gold Standard registry.

Project emissions surveys (monitoring surveys)

Monitoring surveys are conducted twice a year, during summer and winter periods. They only target people who haves used biogas for at least three months (in this way, respondents are able to give relevant answers about their consumptions). A monitoring survey is conducted on beneficiaries from one climatic area. The sample should be geographically representative of the climatic area concerned and should contain around 100 respondents (at least 60).

The followings data is collected from the beneficiaries:

- Quantity of traditional fuel consumed in the period during which the survey is conducted
- Number of animals owned and proportion of manure put into the biogas tank (this data is also useful for the assessment of the baseline emissions)
- Social and environmental impacts of the project, from the point of view of the beneficiaries.

An example of the monitoring questionnaire is given in Annexes on the Gold Standard registry.

DATA COLLECTED WITH RECORD SHEETS

The data collected with record sheets is the following:

- Total number of beneficiaries in each village
- Number of beneficiaries who use biogas at the beginning of each season

The total number of beneficiaries and their geographical distribution (in different municipalities) is needed to select the samples for the baseline and project surveys. In the electronic database, each beneficiary will be identified by

name, identity number and the name of the village and climatic area he/she belongs to. The data should be encoded in the electronic database before conducting the baseline and monitoring surveys

FIELD INVESTIGATION

A field investigation is necessary to determine the rate of non-renewable biomass consumed by beneficiaries for their energy needs. The methodology proposed by the Gold Standard is followed. A report should be delivered for each new field investigation done. In the electronic database, a non-renewability rate is associated to a forest, including one or several groups of beneficiaries.

Assessment of the key sustainable indicators

The savings of the beneficiaries as well as the share of the biogas in the whole energy mix consumed by the households are the two sustainable indicators monitored. For this, the following data will be asked to the beneficiaries during the monitoring surveys to assess the project emissions:

- Use of the biogas lamp
- Daily traditional fuels consumption for all their energy needs

The monitoring surveys also ask for the benefits of the project viewed by the beneficiaries.

With the previous data and those specifically needed for the assessment of the project emissions, it's possible to evaluate the sustainable indicators mentioned above.

ASSESSMENT OF THE EMISSION REDUCTIONS

Emission reductions by period and by climatic area

The emission reductions are assessed by subtracting the project emissions from the baseline emissions. They're assessed using a computer with the electronic database.

Every climatic area has at least one corresponding baseline survey (there could be more than one if during the project activity a new survey was conducted in order to keep a representative sample). Then, it's possible to calculate the baseline emissions for each climatic area.

A monitoring survey encompasses one climatic area and a specific period. Then, it's possible to calculate the project emissions for every climatic area.
Consequently, the emission reductions of a specific period can be assessed for every climatic area and from which more than 60 people were interviewed during one or more baseline surveys. Then, the emission reductions are calculated at the frequency of the monitoring survey (twice a year).

Note: The emission reductions depend on the exact duration of the periods and on the number of beneficiaries who started using biogas. This data could be updated in the electronic database after the monitoring survey, correcting the emission reductions calculation.

MAINTENANCE

A biogas committee formed by some beneficiaries is set up in order to facilitate the building of the infrastructures and manage the usual breakdowns of the biogas system. For unusual problems, which cannot be solved by the beneficiaries themselves, a technician from the local Agriculture Bureau will intervene.

Note: The problems are first taken into account thanks to a 5 % correction factor of the ER; second, during a monitoring survey the respondents will answer depending on if they have or haven't had problems, and will give their consumption taking into account that their biodigester might have been deficient. Since the sample is representative, the problems are also taken into account this way.