Comments on the Mexico Landfill Protocols version 1.0

Organizations that Submitted Comments on the Mexico Landfill Project Protocols Version 1.0

1. Ecosecurities
2. ETEISA
3. Zeroemissions Technologies (ZT)

A. GENERAL COMMENTS

A1. Legal security for project developers (ETEISA)

To promote the investments proceeding from projects aimed to reduce greenhouse emissions in landfills and guarantee legal security for the developers, the Reserve must ensure that the projects registries will not be duplicated and that there is only one developer that owns the rights of it. This fact can change if two events occur: either the developer renounces to his own project rights or by means of a federal judicial process conducted by the District Collegiate Court.

Since municipal authorities change over each three years, the only way to guarantee the continuance of the project is to ensure the property rights. In fact, within the CDM framework (by means of the National Design Authority) a project can only be registered only once. The historical remembrance of all the projects will allow new developers to become acquaintance of the old projects already registered.

This process would entail more paperwork. However, developers would be certain that their projects will not run the risk of becoming inoperative if a temporary officer (i.e. major, ministries, among others) is not willing to support the project.

> **Response:** The Reserve is initially discussing with the Mexico's Ministry of Environment and Natural Resources (SEMARNAT) the possibility of issuing an official letter to register projects that participate in voluntary GHG registries/carbon markets (such as the Climate Action Reserve, Gold Standard, Voluntary Carbon Standard, Chicago Climate Exchange, etc.) in order to avoid the double-registration of Mexican projects in different international carbon markets (within the Kyoto Protocol framework and voluntary markets). The Reserve is also putting in place policies related to project ownership and title that will guard against unlawful transfer of project ownership.

A2. Regulatory test (ZT)

The condition to register projects in the Climate Action Reserve highlights the necessity of being in fully compliance with the local legislation in Mexico called NOM083. It is

widely known in the Mexican Landfill industry that there is not an external party available in Mexico to validate the compliance with the NOM083 and if this is considered as a condition in registration and verification within the Reserve, this external party should be available in Mexico to substantiate the compliance with the NOM083. Moreover, the NOM083 is conceived as a recommendation based on US standards but the reality is that there are very few landfills in Mexico that would pass the NOM 083.

In addition, it needs to be considered that the functionality in Mexican landfills might be heterogeneous leading to have gaps in responsibilities (closure, restoration, leachate management,…) and the wide and sometimes not practicable application of the NOM083 might increase the risk in developing projects under the Reserve. We would recommend to cap the local legislation requirement of the NOM083 to the part which corresponds with the flaring/utilization activities in order to be consistent with the quantitative estimation of the baseline in equation 5.1.

> **Response:** A $NOM_{discount}$ factor was introduced in equation 5.1 (page 18) to account for the methane destruction that would be destroyed to achieve compliance with NOM-083, based on an analysis conducted by the Reserve and in consultation with Mexican landfill managers, engineers, and industry experts. This factor is explained on pages 15-16. In order to substantiate the compliance with the NOM 083, project developers should apply this adjustment factor.

B. PROJECTS WITH PREVIOUS INSTALLATIONS

B1. Maximum capacity of the destruction device (ZT)

The Performance Standard Test mentions in paragraph 3.c that only the gas from landfill destructed in excess from the maximum capacity of the destruction device installed previous to the project would be considered. We would recommend to consider that the maximum capacity of destruction of methane in installed destruction devices in Mexico vary from the prescribed maximum capacities which can be reached at sea level. This due to the fact that with the high altitude in most of the landfills in Mexico, the oxygen concentration is lower than at sea levels and this implies that the volume of landfill gas needs more volume to completely combust. The greater volume needed reduces the maximum capacity of the destruction device (flare, engine,…) so we recommend to standardise the maximum capacity rated at sea level following manufacturer recommendations on maximum capacity of the installed equipment.

> **Response:** Agree. This recommendation was introduced in the description of the maximum landfill gas flow capacity of the pre-project methane destruction device (LFG_{PPmax}) in Equation 5.3 (page 21).

B2. Fraction of methane present in the landfill (ZT)

The utilization in the equation 5.3 (page 21) of the fraction of methane that was present in the landfill previous to the project (PP_{CH4}) will imply to substantiate a value which was not possible to measure ex ante. We propose to use a 0.5 value based on IPCC recommendations.

For the value of LFG_{PP1}, we would recommend to use the manufacturer's maximum capacity of the previous device.

> **Response:** Thank you for these recommendations. However, with the introduction of the $NOM_{discount}$ factor, the adjustment to account for the methane which would have been combusted in the baseline non-qualifying combustion

device ($NQ_{discount}$) and the parameters required to calculate it (PP_{CH4} and LFG_{PP1}) were eliminated. It is assumed that the passive flare deduction is accounted for under the $NOM_{discount}$.

C. CALCULATION OF PROJECT EMISSIONS REDUCTIONS

C1. Discount factor (ZT)

In equation 5.1 (page 18), the utilization and application of the Discount Factor (DF) is unclear since the 0 uncertainty can be achieved only when continuous methane monitoring is used and the calibration tests is within 5% error. We would recommend to clearly indicate the minimum frequency of data gathering necessary to achieve a DF=0 for a range of uncertainty levels of equipment.

It needs to be mentioned that equipment can be calibrated from the manufacturer with a certain % of error and have a higher % of error when installed. We would recommend to clearly state in the DF factor that the equipment would need to be maintained, operated and calibrated as per manufacturer instructions to achieve a DF=0.

> **Response:** Agree. Language has been modified from “permanente” to “continuo” in equation 5.1 to indicate that the minimum frequency data gathering necessary to achieve a DF=0 is every 15 minutes or at least daily in an accumulated manner (explained in Section 6 – Project Monitoring). Language was also inserted in equation 5.1 to indicate that to achieve a DF=0, the monitoring equipment should be maintained, operated and calibrated according to the manufacturer specifications.

C2. Consolidation approach for the interval of time (ZT)

The interval of time where the measures are consolidated (t) is not very clear. We would recommend to clearly define the consolidation process as required since the simple average of CH_4 of each reading will be different depending on the consolidation approach.

> **Response:** The interval of time (t) consolidation approach for methane concentration and landfill gas flow measurements stated in the Protocol is on a daily basis for continuous monitoring or on a weekly basis for weekly monitoring. As explained on Section 6 (page 25), weekly methane concentration measurements should apply a 10% discount factor to the total quantity of methane collected and destroyed.

D. MONITORING

D1. Punctual gas flow measurements (ZT)

The protocol allows for the utilization of pilot tube and/or portable gas analyzer as a reliable equipment to measure the landfill gas (page 26). Since these measuring devices are designed for punctual readings and their readings can vary depending on the sampling procedure, we would recommend to use them to calculate the Emission Reductions.

> **Response:** A pitot tube (a portable flow velocity instrument) can be utilized to field calibrate gas flow meters, but not to provide a punctual gas flow reading. Biogas flow rates should be measured and recorded in a continuous manner (every 15 minutes) or at least daily in an accumulated manner. Portable gas analyzers are permitted for measuring the methane fraction in the biogas

according to the indications of Section 6 (Project monitoring, pages 24-30). For using the biogas flow rates and the methane fractions to calculate the emission reductions, data should be consolidated in a daily or weekly basis.

D2. Gas flow measurements (Ecosecurities, ZT)
The Protocol indicates that the flow measurements should be recorded each 15 minutes, this frequency is very high. The problem of the continuous flow measurements could be solved installing a flow meter that records the accumulative biogas flow, i.e. the total gas measured in a determined period, instead of the requirement of a very high measurement frequency.

The frequency of continuous reading every 15 minutes can be increased to 30 minutes based on the fact that the start-up time of a destruction device (flare or engine) to achieve steady state conditions from the shutdown event is normally greater than 30 minutes. Moreover, if accumulated LFG (m^3) is considered, the frequency of 15 minutes is not necessarily giving more accuracy but leading to produce more errors and to double data storage capability.

Response: Agree. Modifications in Section 6 (page 24) explains that biogas flows can be measured and recorded continuously (every 15 minutes) or in an accumulated manner at least daily.

D3. Consistent frequency for all parameters (ZT)
The readings PR_{CH4}, T and P (if necessary), would need to be gathered with the same frequency (15 or 30 minutes) than the LFG in order to ensure that the tCO_2 calculated in each interval of time is equal to the sum of all LFG burned multiplied by the average PR_{CH4} at the average T and P conditions. The consolidation process would require crosschecking both calculation ways hence a consistent frequency for all parameters is highly recommended.

Response: Agree. The preferred option for a consistent measurement frequency for landfill gas flow and methane concentration would be in a continuous manner (every 15 minutes or totalized at least daily) and a consolidation approach (for emissions reductions calculations) on a daily basis. However, the measurement frequency and consolidation approach will depend on the monitoring equipment available in each landfill.

D4. Measurement of methane concentration (Zeroemissions Technologies)
In the note number 24 (footnote) it states that the methane concentration might be measured in dry or wet basis. Since there is not a clear guidance of what is the threshold of % humidity to ensure the basis of landfill gas and since there is not an analyzer that measures on a wet basis directly (all of them use filters to avoid damaging the equipment), we would recommend to measure the methane concentration in dry basis only. In order to multiply flow and concentration in the same basis, we would also propose to use the Antoine equation to find the partial pressure of the vapour at the known temperature and calculate from this value the % in humidity. More information is available on demand.

Response: Methane readings and flow readings must be taken in the same basis in order to ensure consistency. However, it is left up to project proponents to determine the appropriate arrangement for each specific project, and to verifiers to confirm appropriateness.

D5. Calibration (Ecosecurities)

In page 5 of the Landfill Project Verification Protocol, referring to step 3: Reviewing GHG Management System and Estimation Methodologies, question 11 “Is the landfill gas monitoring equipment calibrated at least each 3 months?” This calibration frequency is too high. For example, thermocouples are not calibrated, they are installed once until they reach their useful life (in general, their lifetime is one year). Some flow meters are not calibrated. Define what calibration means: Does it refer to an internal maintenance? Should the equipment be sent to the manufacturer and obtain a certificate (which will increase the project costs)? Why not specifying that the equipment should be calibrated according to the manufacturer specifications?

> **Response:** Modifications on section 6 (Project Monitoring, pages 24-30) on the Landfill Project Reporting Protocol were conducted in order to provide a clearer guidance on metering, calibration and data substitution.

E. LANDFILL PROJECT VERIFICATION PROTOCOL

E1. Verification frequency (Ecosecurities)

In page 2, it is stated “Project verification occurs annually”. Is it possible that the verification could be conducted in a less frequent period (previously agreed with the verifier)? In some cases, the emissions reductions are so low that it is not worthy to conduct this process in an annual basis.

> **Response:** The Landfill Project Reporting and Verification Protocols state that projects must be verified annually at a minimum, as this is a standing policy of the Climate Action Reserve.

E2. Differentiation of GHG sources (Ecosecurities)

In page 5, referring to step 2: Identifying Emission Sources, question 3 “Are GHG sources within the project boundary correctly organized by source category?” and question 4 “Are the GHG sources differentiated by gas?” Clarify these questions, according to the methodology only methane is quantified.

> **Response:** Landfill GHG sources included in the Assessment Boundary are listed in Table 4.1 of the Landfill Project Reporting Protocol (pages 12-13), these include methane and carbon dioxide. The verifier must be able to distinguish data related to methane and carbon dioxide emissions for the different GHG sources.

E3. Verifiers’ knowledge and understanding (Ecosecurities)

In page 7, referring to step 4: Verifying emissions estimates, question 3 “Are the current year's reported emission reductions significantly different from the prior year's emission reductions? If so, does the verifier understand the reasons for the changes, and to the best of their knowledge, do they explain the differences in emissions?” This phrase can create a conflict within the verifiers’ knowledge and understanding.

> **Response:** Through an accreditation process and training, Reserve’s approved verifiers are expected to demonstrate a full understanding and knowledge of the Landfill Project Reporting and Verification Protocols as well as of the landfills’ equipments and operations.
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> Information about the Reserve’s accreditation process and sector-specific requirements are available at: http://www.climateactionreserve.org/how-it-works/verification/how-to-become-a-verifier/ and http://www.climateactionreserve.org/wp-content/uploads/2009/03/how-to-become-a-verifier_addtional-reserve-requirements.pdf respectively.