amend

CDM: Recommendation Form for Small Scale Methodologies (version 01)

(To be used for presenting questions/proposals/amendments to the simplified methodologies for small-scale CDM project activity categories)

Date of SSC WG meeting:	24–27 February 2009, SSC WG 19
Title/Subject (give a small title or specify the subject of your submission, maximum 200 characters):	Clarification on the applicable urea emission factor, bundling of farms and acceptable farm management practices in AMS-III.A
Indicative methodology to which your submission relates (refer the items of Appendix B of the Simplified Modalities and Procedures), if applicable.	AMS-III.A
Name of the authors of the query:	Matthias Krey Institution: Perspectives Climate Change GmbH krey@perspectives.cc Institution: Amson Technology peg@tmgmanagement.com

Summary of the query:

Please use the space below to summarize the query related to SSC methodologies/categories SSC Modalities and Procedures provide recommendation/analysis of the SSC WG.

Original text from PP:

As project developers, we would appreciate clarification on the following issues:

(1) Applicable emission factor for urea/N fertilizer (the methodology allows different data vintages that result in very different emission factors)

(2) Suitable organization form of a project (single CDM-project versus bundle of small scale projects)

(3) Accepted farm management practices

Ad (1) emission factor for urea:

In its current version the methodology suggests different sources for determination of the emission factor of urea. Besides a default factor, the methodology allows to use local values, IPCC values or scientific literature (para. 10 of the methodology).

The IPCC guidelines provide the following guidance on the selection of emission factors for fertilizer. The applicable emission factor for ammonia production depends on the technology. For urea production, the ammonia emission factor is discounted due to use of CO_2. But this is only a short-term storage of greenhouse gases (GHG), as the CO_2 contained in urea will be released during/after application. These emissions have to be accounted for as GHG emissions in agriculture *(see 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 3: Industrial Processes and Product Use; Chapter 3.2 Ammonia Production).*

Thus, according to IPCC, total GHG emissions from urea would be GHG emissions during ammonia production – intermediate CO_2 storage in urea + CO_2 release due to urea application. As per IPCC guidelines, 0.733 t CO_2 are required for the production of one tonne of urea. Assuming a CO_2 emission factor 2.104 t CO_2/t NH_3 (average European emission factor for ammonia production with natural gas as hydrocarbon source) the resulting overall emission factor for urea would be 1.54 t CO_2/t urea. This value is also in line with research findings, as e.g. Davis and Haglund, 1999 (see *Davis, J. and Haglund, C. 1999. Life Cycle Inventory (LCI) of Fertiliser Production. Fertiliser Products Used in Sweden and Western Europe. SIK-Report No. 654.Masters Thesis, Chalmers University of Technology*) who calculated a European average for urea emission factor of 1.85 t CO_2/t urea, not accounting for CO_2 credits during production. Other authors determined similar values (see *Kongshaug, G. 1998. Energy Consumption and Greenhouse Gas Emissions in Fertilizer Production. IFA Technical Conference, Marrakech, Morocco, 28 September-1 October, 1998, 18p.; Schlesinger, W.H. 2000. Carbon sequestration in soils: some cautions amidst optimism. Agric. Ecosyst. Environ. 82:121-127.; West, T.O., and M. Marland, 2002. A synthesis of carbon sequestration, carbon emissions, and net carbon flux in agriculture: comparing tillage practices in the United States. Agric. Ecosyst, Environ. 91:217-232.*).

<u>The authors seek clarification, if the procedure as described above for the determination of the urea emission factor is correct and in line with the methodology.</u>

Ad (2) suitable organisation form of a project:

Project activities under AMS III.A typically involve a larger number of farmers at different locations. The farms involved and the corresponding land areas might be at substantial distances to each other. The methodology AMS III.A allows integrating different farmers and classified land areas, without setting any restrictions in terms of number of farmers, distances between classified land areas or else. However, it is unclear if a project activity can be registered as a single CDM-project under AMS III.A irrespective of the distances between the farmers and land areas involved, or if there are any criteria to differentiate between a single CDM project activity and a bundle of projects for this methodology specifically.

<u>Thus, the authors seek clarification what criteria should be applied to differentiate between a single CDM project activity and a bundle of projects.</u>

Ad (3) Accepted farm management practices:

The methodology requires that "no other changes in farming practices affecting fertilizer application, except the change in application of inoculant and urea, are taking place during the crediting period". Furthermore, the methodology states that "adding any other source of N (e.g. synthetic fertilizer or organic fertilizer) on soybean is counterproductive and will make the rhizobia bacteria applied to the soil via inoculation ineffective ".

We understand that this requirement still allows the application of organic fertilizers for soil structure improvement and general farm management practices as long as the organic fertilizer is applied to the field before planting.

Typically, farmers using inoculants on legumes will adopt the following fertilization pattern: during/directly after sowing of legumes, inoculants will be applied. No further nitrogen sources are required during the growing of the legumes. The subsequent crop will then be fertilized with lower amounts of synthetic nitrogen fertilizers, due to increased nitrogen carry over from the inoculated legume.

Animal waste on cropland is a common agricultural practice in most agricultural systems. Therefore, many of the farmers that will be involved with this project may have animal waste that they will need to dispose of and it will mostly be applied to cropland. It is critical to these farmers to be able to dispose of the waste in this way and the project should account for this need.

Livestock raising is carried out in many forms, usually referred to as production systems or agro ecosystems. These systems are: 1.) grazing systems; 2.) mixed farming systems; and industrial systems. Grazing systems are almost exclusively livestock production, with little or no integration with crops. Mixed farming systems include livestock and crops integrated on the same farm. Industrial systems are industrial types of production and small-scale urban or peri-urban production in developing countries. These systems usually do not include crops but crops and cropland for manure spreading are contracted (see *Argrifood-Forum (2003)*: Animal Waste Management in Livestock Farms: Practical Environmental Policies and Reviews). The ratio of total meat production from different production systems is as follows: grazing – 9%; mixed farming – 54%; and industrial – 37%. (see FAO (1997): Livestock and the Environment: Finding a Balance. Henning Steinfeld, Cees de Haan and Arvey Blackburn. 115p.).

Adding manure to the soil increases the nutrient retention policy (or cation exchange capacity). Improves the physical condition by increasing the water-holding capacity and improves soil structure stability. This is a crucial contribution because, in many systems, it is the only means available to farmers for improving soil organic matter. Not only does animal manure replenish soil fertility but it also helps to maintain or create a better climate for soil micro-flora and fauna (see Argrifood-Forum (2003). Animal Waste Management in Livestock Farms: Practical Environmental Policies and Reviews).

Animal manure, especially solid and slurry manure, contains a large amount of organic matter which contributes to the productivity of soils (see: *Animal Manure and Soil Quality, Hailin Zhang and Jim Steigler, Production Technology, Oklahoma Cooperative Extension Service, PT98-8, February, 1998, Vol. 10 No. 8.*)

It should also be known that it is common in many cropping systems to spread human waste in order to dispose of it. Human and animal excreta has been used since ancient times as a fertilizer and soil conditioner In Europe and North America it has been virtually replaced with waste treatment plants and artificial fertilizers, but in many other parts of the world it still plays a major role in the provisions of soil nutrients (see Water and Environmental Health at London and Loughborough, United Kingdom, Technical Bulletin 63: Using Human Waste).

The application of animal waste (and in some countries, human waste) is a common practice in many of the geographies where this project would be established. It is a part of the soil quality and water retention plans for the farm. This also seems to be in line with the wording of the methodology which species that "no other changes in farming practices affecting fertilizer application, except the change in application of inoculant and urea, are taking place during the crediting period".

The authors seek confirmation of the SSC-WG that our understanding of the accepted farm management practices is correct.

Recommendation by the SSC WG:

Please use the space below to provide amendments/change (in your expert view, if necessary).

Please refer to paragraph 9 of the meeting report of the SSC WG 19 (http://cdm.unfccc.int/Panels/ssc_wg).

Answer to authors of query by the SSC WG:

Please use the space below to provide answer to the authors of the above query

The small-scale working group of the CDM Executive Board would like to thank the author for the submission.

The SSCWG agreed to clarify as follows:

1. **Applicable emission factor for urea/N fertilizer (the methodology allows different data vintages that result in very different emission factors)**

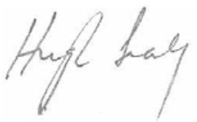
   The default emission factor adopted by the current version of AMS-III.A is based in the production of urea, deducting the CO_2 chemical fixation (intermediate storage), but excluding any release of CO_2 during its use. In case the query author wishes to suggest a revision of the methodology based in the technical literature, it will be considered by SSC-WG in a next review of the category.

2. **Suitable organization form of a project (single CDM-project versus bundle of small scale projects)**

There is no restriction to apply AMS-III.A to any number of farms, at any distance to one another, as long as the project size is bellow the SSC limits, and all farms are located in the same host country where the project is registered.

3. **Accepted farm management practices**

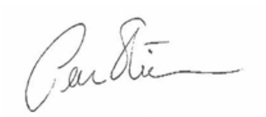
The methodology is applicable as stated in paragraph 2 (c) to any farm where "no other changes in farming practices affecting fertilizer application, except the change in application of inoculant and urea, are taking place during the crediting period". In other words, if the farm applied any other organic fertilizer or had any management practice before the project, and will remain using the same practice after the project, the farm is eligible for the project activity. In case during the crediting period there is any change in the management practice, for instance the introduction or increased application of organic fertilizers or animal wastes to any land parcel, the condition is not fulfilled in that area.



Signature of SSC WG Chair ……………………………………………..

(Hugh Sealy)

Date: 27/02/2009



Signature of SSC WG Vice-Chair ……………………………………………..

(Peer Stiansen)

Date: 27/02/2009

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