



Draft revision to the approved consolidated baseline and monitoring methodology ACM0019
“N₂O abatement from nitric acid production”

I. SOURCE, DEFINITIONS AND APPLICABILITY

Sources

This consolidated baseline and monitoring methodology is based on elements from the following approved baseline and monitoring methodologies and proposed new methodologies:

- NM0339 “N₂O abatement in New Capacity nitric acid plants” prepared by N.serve Environmental Services GmbH;
- NM0340 “N₂O abatement in New Nitric Acid Plants” prepared by Carbon Climate Protection GmbH and Enaex S.A.;
- AM0028 “Catalytic N₂O destruction in the tail gas of Nitric Acid or Caprolactam Production Plants”, Version 05;
- AM0034 “Catalytic reduction of N₂O inside the ammonia burner of nitric acid plants”, Version 04;
- AM0051 “Secondary catalytic N₂O destruction in nitric acid plants”, version 02.

This methodology also refers to the latest approved versions of the following tools:

- “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”;
- “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”.

For more information regarding the proposed new methodologies and the tools as well as their consideration by the Executive Board please refer to <http://cdm.unfccc.int/goto/MPappmeth>.

Selected approach from paragraph 48 of the CDM modalities and procedures

“Existing actual or historical emissions, as applicable”.

Definitions

For the purpose of this methodology, the following definitions apply:

Secondary N₂O abatement. Refers to the installation of a catalyst inside the ammonia burner unit with the sole purpose of removing N₂O emissions from the stream.

Tertiary N₂O abatement. Refers to the installation of an abatement system in the tail-gas leaving the absorption column of a nitric acid plant to destroy the N₂O generated in the ammonia burner unit.



Applicability

This methodology applies to project activities that introduce N₂O abatement measures in nitric acid plants.

The methodology is applicable under the following conditions:

- In the case that the nitric acid plant started commercial operation before the implementation of the CDM project activity, the project participants shall demonstrate that there was no secondary or tertiary N₂O abatement technology installed in the respective nitric acid plant;
- Continuous real-time measurements of the N₂O concentration and the total gas volume flow can be carried out in the tail gas stream after the abatement of N₂O emissions throughout the crediting period of the project activity;
- No law or regulation which mandates the complete or partial destruction of N₂O from nitric acid plants exists in the host country where the CDM project activity is implemented.

In addition, the applicability conditions included in the tools referred to above apply.

II. BASELINE METHODOLOGY PROCEDURE

Identification of the baseline scenario and demonstration of additionality

In the absence of regulations requiring the abatement of N₂O emissions, the operator of the nitric acid plant has no economic incentives to take any N₂O abatement measures because this entails capital and operating costs but no financial benefits. Therefore, the CDM project activity is considered **additional** and the baseline scenario is that the N₂O is emitted to the atmosphere with no N₂O abatement measure being implemented.

Project boundary

The **spatial extent** of the project boundary encompasses the facility and equipment for the nitric acid production process from the inlet of the ammonia burner to the outlet of the tail gas section.

If the project activity introduces only secondary and no tertiary N₂O abatement, then the only gas to be included as project emissions is the N₂O that is not destroyed and is still present in the tail gas stream of the plant. The situation using a secondary abatement technology is illustrated below in Figure 1.

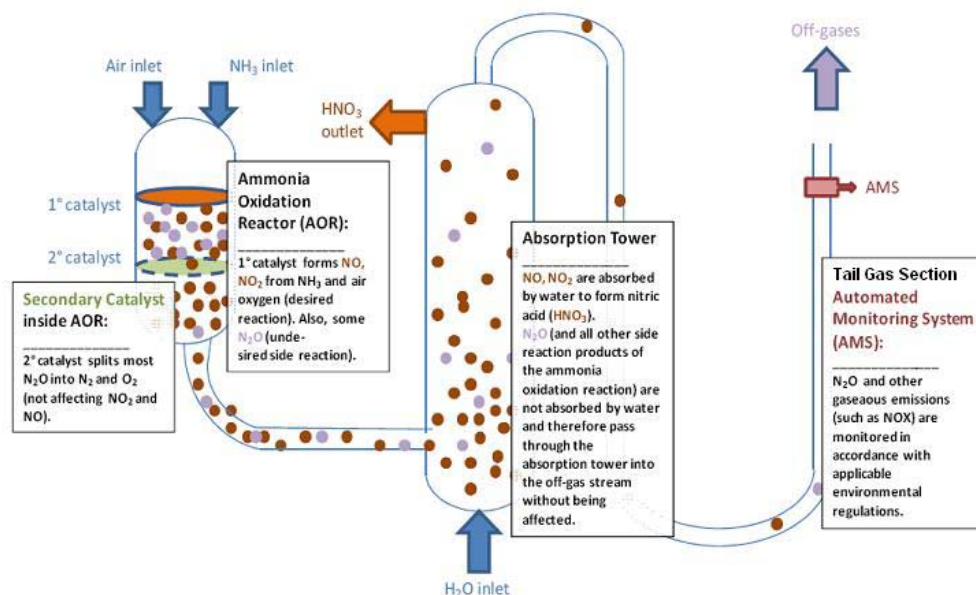


Figure 1: Project boundary if the project activity includes consists of the introduction of a secondary N₂O abatement measure (simplified standard nitric plant layout displaying the location of the N₂O abatement catalyst, process sources of N₂O and the sampling point location for the Automated Monitoring System (AMS))

If the project activity introduces tertiary N₂O abatement, then any remaining N₂O emissions from the project plant and CO₂ emissions arising from the operation of the tertiary abatement system are included as project emissions in the project boundary. The situation using a tertiary abatement technology is illustrated below in Figure 2.

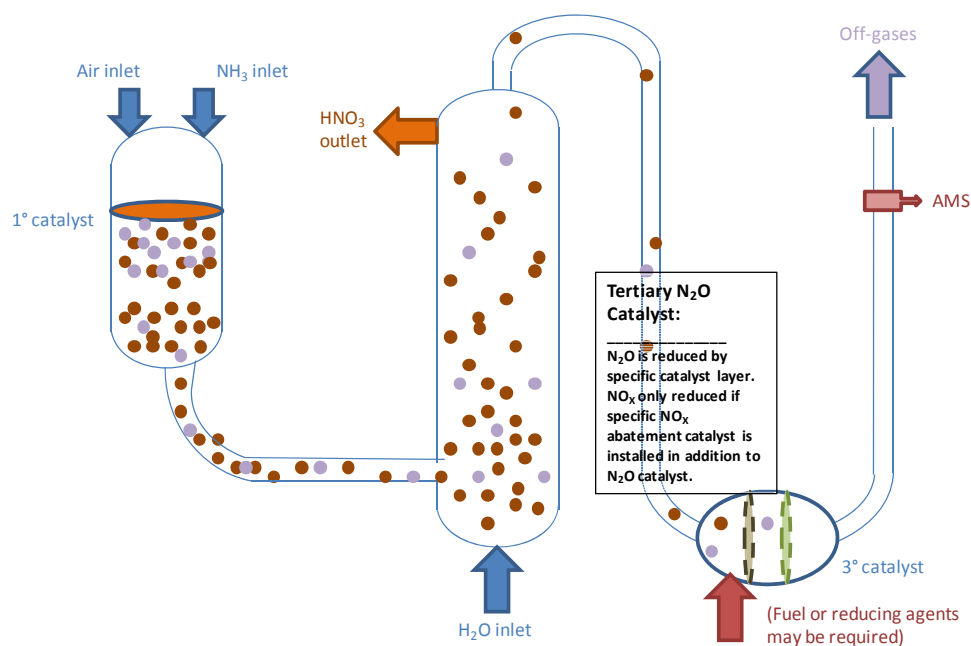


Figure 2: Project boundary if the project activity includes consists of the introduction of a tertiary N₂O abatement measure (simplified standard nitric plant layout displaying the location of the N₂O abatement catalyst, process sources of N₂O and the sampling point location for the Automated Monitoring System (AMS))

The greenhouse gases included in or excluded from the project boundary are shown in Table 1.

Table 1: Emissions sources included in or excluded from the project boundary

Source		Gas	Included?	Justification / Explanation
Baseline	NH ₃ oxidation at the primary catalyst gauze	CO ₂	No	The project activity has no influence on these types of emissions, if present
		CH ₄	No	
		N ₂ O	Yes	
Project activity	NH ₃ oxidation at the primary catalyst gauze	CO ₂	No	The project activity has no influence on these types of emissions, if present
		CH ₄	No	
		N ₂ O	Yes	
	Operation of a tertiary N ₂ O Abatement facility	CO ₂	Yes	In some cases, fossil fuels are used as reducing agent and/or for decomposing the tail gas as part of a tertiary N ₂ O abatement facility. In this case the fossil fuels are mainly converted to CO ₂ . CO ₂ emissions arising from the production of ammonia are assumed to be small and not taken into account
		CH ₄	No	
	N ₂ O	Yes	Included	

**Baseline emissions**

Baseline emissions are calculated as follows:

$$BE_n = P_{NA,n} \times EF_{BL,N_2O,n} \times GWP_{N_2O} \times 10^{-3} \quad (1)$$

Where:

BE_n	=	Baseline emissions in monitoring period n (t CO ₂ e)
$P_{NA,n}$	=	Nitric acid produced in the monitoring period n (t HNO ₃)
$EF_{BL,N_2O,n}$	=	Baseline N ₂ O emission factor for nitric acid production in the monitoring period n (kg N ₂ O / t HNO ₃)
GWP_{N_2O}	=	Global Warming Potential of N ₂ O valid for the commitment period

Determination of the baseline N₂O emission factor ($EF_{BL,N_2O,n}$)

Case 1: For nitric acid plants that have used AM0028 or AM0034 in the first crediting period

For nitric acid plants that have used AM0028 or AM0034 in the first crediting period and apply this methodology in their second or third crediting period, the baseline emissions are calculated as follows:

$$BE_y = \left(\min \left\{ P_{production,y}; P_{product,max} \right\} \times EF_{existing,y} + \max \left\{ P_{production,y} - P_{product,max}; 0 \right\} \times EF_{new,y} \right) \times GWP_{N_2O} \times 10^{-3} \quad (1)$$

Where:

BE_y	=	Baseline emissions in year y (t CO ₂ e)
$P_{product,max}$	=	Design capacity (t HNO ₃)
$P_{production,y}$	=	Production of nitric acid in year y (t HNO ₃)
$EF_{existing,y}$	=	Existing baseline N ₂ O emission factor for nitric acid production
EF_{new}	=	Baseline N ₂ O emission factor for nitric acid production in year y (kg N ₂ O / t HNO ₃)
GWP_{N_2O}	=	Global Warming Potential of N ₂ O valid for the commitment period

The existing baseline emission factor is calculated as the minimum between the maximum historical baseline emission factor during the first crediting period and a default emission factor for existing plants. The emission factor is calculated as follows:

$$EF_{existing,y} = \min (EF_{real}; EF_{existing_plants,y}) \quad (2)$$

Where:

$EF_{existing,y}$	=	Historical baseline N ₂ O emission factor for nitric acid production
EF_{real}	=	Maximum historical baseline N ₂ O emission factor during the first crediting period (kg N ₂ O / t HNO ₃)
$EF_{existing_plants,y}$	=	Default N ₂ O emission factor for nitric acid plants that have used AM0028 or AM0034 in the first crediting period in year y (kg N ₂ O / t HNO ₃)

**Case 2: For other nitric acid plants**

Baseline emissions are calculated as follows:

$$BE_y = P_{\text{production},y} \times EF_{\text{new},y} \times GWP_{\text{N}_2\text{O}} \times 10^{-3} \quad (3)$$

Where:

BE_n	=	Baseline emissions in monitoring period n (t CO ₂ e)
$P_{\text{production},y}$	=	Production of nitric acid in year y (t HNO ₃)
$EF_{\text{new},y}$	=	Baseline N ₂ O emission factor for nitric acid production in year y (kg N ₂ O / t HNO ₃)
$GWP_{\text{N}_2\text{O}}$	=	Global Warming Potential of N ₂ O valid for the commitment period

The baseline N₂O emission factor in the monitoring period n ($EF_{\text{BL},\text{N}_2\text{O},n}$) shall be determined as a default emission factor $EF_{\text{default},y}$ given for each calendar year y for which BE_n is calculated (see monitoring tables for $EF_{\text{default},y}$).

Baseline emission factor is determined as follows:

$$EF_{\text{BL},\text{N}_2\text{O},n} = EF_{\text{default},y} \quad (4)$$

Where:

$EF_{\text{BL},\text{N}_2\text{O},n}$	=	Baseline N ₂ O emission factor for nitric acid production in the monitoring period n (kg N ₂ O / t HNO ₃)
$EF_{\text{default},y}$	=	Default N ₂ O baseline emissions factor in the calendar year y of the monitoring period n (kg N ₂ O / t HNO ₃)

If the monitoring period n spans across two (or more) calendar years, the baseline emissions (BE_n) shall be calculated separately for each calendar year, first establishing $EF_{\text{BL},\text{N}_2\text{O},n}$ and then applying this to the nitric acid production of that calendar year.

Project emissions

Project emissions include emissions of N₂O which have not been destroyed by the project activity and, in case of the installation of a tertiary N₂O abatement facility, CO₂ emissions resulting from the operation of the N₂O abatement facility.

Project emissions are calculated as follows:

$$PE_y = PE_{\text{N}_2\text{O},y} + PE_{\text{CO}_2,\text{tertiary},y} \quad (5)$$

Where:

PE_y	=	Project emissions in year y (t CO ₂ e)
$PE_{\text{N}_2\text{O},y}$	=	Project emissions of N ₂ O from the project plant in year y (t CO ₂ e)
$PE_{\text{CO}_2,\text{tertiary},y}$	=	Project emissions of CO ₂ from the operation of the tertiary N ₂ O abatement facility in year y (t CO ₂)

Project emissions of N₂O from the project plant (PE_{N₂O,y})

The amount of N₂O emissions from the project activity include two emission sources are the emissions from the N₂O contained in the tail gas stream of the plant which is released to the atmosphere; and

(a) The N₂O released to the atmosphere due to unusual reasons:

- (1) In the case of secondary N₂O abatement: the N₂O contained in the tail gas stream of the plant when a secondary abatement facility underperforms or it is not installed inside the ammonia burner;
- (2) In the case of tertiary N₂O abatement: the N₂O contained in any by-pass streams to the tertiary N₂O abatement facility. In some situations, the gas stream from the nitric acid plant may not be sent to the tertiary N₂O abatement facility but may be directly vented to the atmosphere through a by-pass.

Accordingly, PE_{N₂O,y} is determined as follows:

$$PE_{N_2O,n} = (Q_{N_2O, tail\ gas,n} + Q_{N_2O, by-pass,n}) \times GWP_{N_2O}$$

$$PE_{N_2O,y} = \left(\sum_1^{h_y - h_{r,y}} F_{N_2O, tail\ gas,h} + \frac{h_{r,y}}{h_y} \left(\min \{ P_{production,y}; P_{product,max} \} \times EF_{project,y} + \max \{ 0; P_{production,y} - P_{product,max} \} \times EF_{new,y} \right) \right) \times GWP_{N_2O} \times 10^{-3}$$

(6)

Where:

PE _{N₂O,n}	=	Project emissions of N ₂ O from the project plant in year y (t CO ₂ e)
Q _{N₂O,tail gas,n}	=	Amount of N ₂ O released through the tail gas of the project plant to the atmosphere in monitoring period n (t N ₂ O)
Q _{N₂O,by-pass,n}	=	Amount of N ₂ O released to the atmosphere due to unusual reasons in monitoring period n (t N ₂ O)
Q _{N₂O,released,n}	=	Amount of N ₂ O released to the atmosphere due to unusual reasons in monitoring period n (t N ₂ O)
GWP _{N₂O}	=	Global warming potential of N ₂ O valid for the commitment period
F _{N₂O,tail gas,h}	=	Mass flow of N ₂ O in the gaseous stream of the tail gas in the hour h (kg N ₂ O/h)
h _v	=	Number of hours in year y during which the plant was in operation (h)
h _{r,y}	=	Number of hours (h) in year y where: <ul style="list-style-type: none"> • For secondary catalyst. The N₂O emissions from the tail gas are higher than the baseline emissions, calculated by multiplying the default N₂O baseline emissions factor applicable to the monitoring period y with the hourly average nitric acid production during year y; or • For tertiary abatement. The tertiary abatement system is by-passed.
P _{production,y}	=	Production of nitric acid in year y (t HNO ₃)
EF _{project,y}	=	Project N ₂ O emission factor for nitric acid production in the year y (kg N ₂ O / t HNO ₃)

Determination of $EF_{project,y}$

$$EF_{project,y} = \begin{cases} EF_{existing,y} ; & \text{when case 1 is used in the baseline section} \\ EF_{new,y} ; & \text{when case 2 is used in the baseline section} \end{cases} \quad (7)$$

Determination of $F_{N_2O,tail\ gas,h}$

The amount of N₂O emissions from the tail gas stream of the project plant shall be determined using the “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”.

In applying the tool, the following provisions apply:

- Throughout the crediting periods of the project activity, the N₂O concentration and volume or mass flow of the tail gas are to be monitored continuously. The monitoring system is to be installed and maintained throughout the crediting period based on the European Norm 14181 (2004), or any more recent update of that standard;
- The monitoring system should provide separate hourly average values for the N₂O concentration and the volume or mass flow of the tail gas based on 2 seconds (or shorter) interval readings that are recorded and stored electronically. These N₂O data sets shall be identified by means of a unique time / date key indicating when exactly the values were observed;
- The correction factors derived from the calibration curve of the QAL2 audit for the monitoring components as determined during the QAL2-test in accordance with EN14181 must be applied to both the N₂O concentration and the volume or mass flow of the tail gas. This can either be applied automatically to the raw data recorded by the data storage system at the plant or it can be applied to the calculated hourly averages as part of the calculation of project emissions;
- If data for either the N₂O concentration or the volume or mass flow of the tail gas are not available for more than 1/3 of any hour while the plant was in operation, the value for that hour shall be replaced with the maximum value of N₂O concentration or volume or mass flow of the tail gas observed during the monitoring period. If data for neither the N₂O concentration nor the volume or mass flow of the tail gas are available for more than 1/3 of any hour while the plant was in operation, the maximum value of mass flow of N₂O calculated during the monitoring period shall be applied to any such hour. Values observed during five operating hours before and after a plant start-up and shut-down shall not be used for the determination of the maximum values;
- In the case that the N₂O concentration and the volume or mass flow of the tail gas and bypass are automatically converted to normal conditions by the AMS during the monitoring process, the parameters P_t and T_t do not need to be monitored except, if applicable, for the purpose of determining the moisture content in the gaseous stream.



The hourly values are then aggregated for the duration of the monitoring period n , as follows:

Project emissions from the operation of the tertiary N₂O abatement facility ($PE_{CO_2, tertiary, y}$)

This emission source only needs to be estimated if a tertiary N₂O abatement facility is installed under the project activity and if fossil fuels are used to operate the facility or re-heat the gas after the facility.

The emissions related to the operation of the N₂O destruction facility include only On-site emissions due to the fossil fuel use as input to the N₂O destruction facility:

$$PE_{CO_2, tertiary, y} = PE_{FF, y} \quad (8)$$

Where:

$PE_{CO_2, tertiary, y}$ = Project emissions of CO₂ from the operation of the tertiary N₂O abatement facility in year y (t CO₂)

$PE_{FF, y}$ = Project emissions related to fossil fuel input to the destruction facility and/or re-heater in year y (t CO₂)

Project proponents shall use the latest version of the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” to calculate the project emissions related to fossil fuels used in year y .

Specific guidance on the use of the tool:

- The parameter $PE_{FC, j, y}$ used in the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” corresponds to the parameter $PE_{FF, y}$ in this methodology; and
- The element process j in the tool corresponds to the consumption of fossil fuels for the operation of the tertiary N₂O abatement facility and/or the re-heating of the tail gas.

Leakage

Any leakage emissions sources are deemed to be negligible.

Emission reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad (9)$$

Where:

ER_y = Emission reductions in year y (t CO₂e)

BE_y = Baseline emissions in year y (t CO₂e)

PE_y = Project emissions in year y (t CO₂e)

Data and parameters not monitored

In addition to the parameters listed in the tables below, the provisions on data and parameters not monitored in the tools referred to in this methodology apply.



Data / Parameter:	EF _{existing plants, y}																																																																																			
Data unit:	kg N ₂ O / t HNO ₃																																																																																			
Description:	Default N ₂ O emission factor (for nitric acid plants that have used AM0028 or AM0034 in the first crediting period) in the calendar year y of the monitoring period y (related to 100% pure acid)																																																																																			
Source of data:	<p>This default N₂O baseline emission factor will vary every year. In year 2012 the emission factors will be 4.4; 5.9; and 8.2 kg N₂O / t HNO₃ for low, medium and high pressure ammonia burners and they will decrease every year by 0.2 kg N₂O / t HNO₃ until they reach a value of 2.5 or 2.4. The values of 2.5 or 2.4 will remain constant over time:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Low pressure (0 – 200 kPa)</th> <th>Medium pressure (200 – 600kPa)</th> <th>High pressure (Over 600 kPa)</th> </tr> </thead> <tbody> <tr><td>2012</td><td>4.4</td><td>5.9</td><td>8.2</td></tr> <tr><td>2013</td><td>4.2</td><td>5.7</td><td>8.0</td></tr> <tr><td>2014</td><td>4.0</td><td>5.5</td><td>7.8</td></tr> <tr><td>2015</td><td>3.8</td><td>5.3</td><td>7.6</td></tr> <tr><td>2016</td><td>3.6</td><td>5.1</td><td>7.4</td></tr> <tr><td>2017</td><td>3.4</td><td>4.9</td><td>7.2</td></tr> <tr><td>2018</td><td>3.2</td><td>4.7</td><td>7.0</td></tr> <tr><td>2019</td><td>3.0</td><td>4.5</td><td>6.8</td></tr> <tr><td>2020</td><td>2.8</td><td>4.3</td><td>6.6</td></tr> <tr><td>2021</td><td>2.6</td><td>4.1</td><td>6.4</td></tr> <tr><td>2022</td><td>2.4</td><td>3.9</td><td>6.2</td></tr> <tr><td>2023</td><td>2.4</td><td>3.7</td><td>6.0</td></tr> <tr><td>2024</td><td>2.4</td><td>3.5</td><td>5.8</td></tr> <tr><td>2025</td><td>2.4</td><td>3.3</td><td>5.6</td></tr> <tr><td>2026</td><td>2.4</td><td>3.1</td><td>5.4</td></tr> <tr><td>2027</td><td>2.4</td><td>2.9</td><td>5.2</td></tr> <tr><td>2028</td><td>2.4</td><td>2.7</td><td>5.0</td></tr> <tr><td>2029</td><td>2.4</td><td>2.5</td><td>4.8</td></tr> <tr><td>2030</td><td>2.4</td><td>2.5</td><td>4.6</td></tr> </tbody> </table>				Year	Low pressure (0 – 200 kPa)	Medium pressure (200 – 600kPa)	High pressure (Over 600 kPa)	2012	4.4	5.9	8.2	2013	4.2	5.7	8.0	2014	4.0	5.5	7.8	2015	3.8	5.3	7.6	2016	3.6	5.1	7.4	2017	3.4	4.9	7.2	2018	3.2	4.7	7.0	2019	3.0	4.5	6.8	2020	2.8	4.3	6.6	2021	2.6	4.1	6.4	2022	2.4	3.9	6.2	2023	2.4	3.7	6.0	2024	2.4	3.5	5.8	2025	2.4	3.3	5.6	2026	2.4	3.1	5.4	2027	2.4	2.9	5.2	2028	2.4	2.7	5.0	2029	2.4	2.5	4.8	2030	2.4	2.5	4.6
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Measurement procedures (if any):	None																																																																																			
Any comment:	The decrease in the value for the baseline emission factor over time is to reflect the technological development																																																																																			



Data / Parameter:	$EF_{new,y}$ / $EF_{default,y}$																																												
Data unit:	kg N ₂ O / t HNO ₃																																												
Description:	Default N ₂ O baseline emissions factor in the calendar year y of the monitoring period y (related to 100% pure acid)																																												
Source of data:	<p>The default N₂O baseline emission factor will vary every year. In year 2005 the emission factor will be 5.1 and then it will decrease every year until it reaches a final value of 2.5 in the year 2020. The value of 2.5 will remain constant after 2020, as provided in the following table:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Emission factor (kgN₂O/tHNO₃)</th> </tr> </thead> <tbody> <tr><td>2005</td><td>5.10</td></tr> <tr><td>2006</td><td>4.90</td></tr> <tr><td>2007</td><td>4.70</td></tr> <tr><td>2008</td><td>4.60</td></tr> <tr><td>2009</td><td>4.40</td></tr> <tr><td>2010</td><td>4.20</td></tr> <tr><td>2011</td><td>4.10</td></tr> <tr><td>2012</td><td>3.90</td></tr> <tr><td>2013</td><td>3.70</td></tr> <tr><td>2014</td><td>3.50</td></tr> <tr><td>2015</td><td>3.40</td></tr> <tr><td>2016</td><td>3.20</td></tr> <tr><td>2017</td><td>3.00</td></tr> <tr><td>2018</td><td>2.80</td></tr> <tr><td>2019</td><td>2.70</td></tr> <tr><td>2020</td><td>2.50</td></tr> <tr><td>2021</td><td>2.50</td></tr> <tr><td>2022</td><td>2.50</td></tr> <tr><td>2023</td><td>2.50</td></tr> <tr><td>:</td><td>:</td></tr> <tr><td>Year n</td><td>2.50</td></tr> </tbody> </table>	Year	Emission factor (kgN ₂ O/tHNO ₃)	2005	5.10	2006	4.90	2007	4.70	2008	4.60	2009	4.40	2010	4.20	2011	4.10	2012	3.90	2013	3.70	2014	3.50	2015	3.40	2016	3.20	2017	3.00	2018	2.80	2019	2.70	2020	2.50	2021	2.50	2022	2.50	2023	2.50	:	:	Year n	2.50
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Measurement procedures (if any):	None																																												
Any comment:	The decrease in the value for the baseline emission factor over time is to reflect the technological development																																												



Data / Parameter:	$P_{\text{product,max}}$
Data unit:	t Product
Description:	Design capacity of nitric acid production
Source of data:	Project operator and/or technology provider
Measurement procedures (if any):	
Any comment:	

Data / Parameter:	$EF_{\text{real,y}}$
Data unit:	t HNO ₃
Description:	Nitric acid produced in year y
Source of data:	Measurements by project participants and production reports
Measurement procedures (if any):	
Monitoring frequency:	Every monitoring period
QA/QC procedures:	Measurement devices such as weight scales shall follow QA/QC supplier recommendations
Any comment:	

Data / Parameter:	$EF_{\text{real,y}}$
Data unit:	kg N ₂ O / t HNO ₃
Description:	Maximum historical baseline N ₂ O emission factor during the first crediting period
Source of data:	Monitoring reports from first crediting period for projects using AM0028 and baseline campaign for projects using AM0034
Measurement procedures (if any):	None
Any comment:	



Data / Parameter:	GWP _{N₂O}
Data unit:	t CO ₂ e / t N ₂ O
Description:	Global warming potential of N ₂ O valid for the commitment period
Source of data:	Relevant decisions by the CMP
Measurement procedures (if any):	None
Any comment:	

III. MONITORING METHODOLOGY

All data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period. 100% of the data should be monitored if not indicated otherwise in the tables below. All measurements should be conducted with calibrated measurement equipment according to relevant industry standards.

In addition, the monitoring provisions in the tools referred to in this methodology apply.

Data and parameters monitored

Baseline emissions

Data / Parameter:	P _{production, y}
Data unit:	t HNO ₃
Description:	Nitric acid produced in year y
Source of data:	Measurements by project participants and production reports
Measurement procedures (if any):	
Monitoring frequency:	Every monitoring period
QA/QC procedures:	Measurement devices such as weight scales shall follow QA/QC supplier recommendations
Any comment:	

Project emissions

Data / Parameter:	h_p h_y
Data unit:	H
Description:	Number of hours of operation in year y
Source of data:	Measured
Measurement procedures (if any):	
Monitoring frequency:	Every monitoring period
QA/QC procedures:	
Any comment:	Records to be maintained during project's lifetime



Data / Parameter:	$h_{r,n}$ $h_{r,y}$
Data unit:	h
Description:	<p>Number of hours (h) in year y where:</p> <ul style="list-style-type: none"> • For secondary catalyst. The N₂O emissions from the tail gas are higher than the baseline emissions, calculated by multiplying the default N₂O baseline emissions factor applicable to the monitoring period n with the hourly average nitric acid production during monitoring period n; or • For tertiary abatement. The tertiary abatement system is by-passed.
Source of data:	Measured
Measurement procedures (if any):	
Monitoring frequency:	Every monitoring period
QA/QC procedures:	
Any comment:	Records to be maintained during project's lifetime

Data / Parameter:	$T_{\text{released},n}$ $T_{\text{open},n}$
Data unit:	hours %
Description:	<p>Number of hours where the N₂O was released to the atmosphere for unusual reason in monitoring period n</p> <p>Fraction of time in monitoring period n during which the by pass valve on the line feeding the tertiary N₂O abatement facility was open to vent the gas directly to the atmosphere</p>
Source of data:	Measured
Measurement procedures (if any):	
Monitoring frequency:	Every monitoring period
QA/QC procedures:	
Any comment:	$T_{\text{released},n}$ cannot occur for more than 48 hours continuously and it only can occur for a maximum of 168 hours per year

IV. REFERENCES AND ANY OTHER INFORMATION

Methodology proposal "Standardized N₂O baselines for new nitric acid plants" prepared by N.serve Environmental Services GmbH.



History of the document

Version	Date	Nature of revision(s)
02.0.0	21 September 2012	EB 69, Annex # Revision to: <ul style="list-style-type: none">• Provide default emission factors that can be adopted at the renewal of the crediting period for projects currently using AM0028 and AM0034 for nitric acid production project activities;• Allow project participants to assume reductions as zero whenever the project emissions exceed the baseline emission benchmark.
01.0.0	EB 61, Annex 4 3 June 2011	Initial adoption.
Decision Class: Regulatory Document Type: Standard Business Function: Methodology		