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Why CERs generated from nitric acid projects should not be banned or restricted in Phase III of the European Union Emissions Trading System (EU ETS).

Overview

EcoSecurities has read with some concern recent media statements made by the European Commission (EC) in relation to the potential ban of industrial gas projects, including HFC-23 and N_2O gases. Whilst EcoSecurities realises that the EC is still debating proposals around industrial gas CERs being restricted in Phase III of the EU ETS, we would like to point out that a blanket ban with regards to N_2O projects would also encompass CERs generated from nitric acid projects, which are very different to CERs generated from HFC and adipic acid projects.

Prior to any decisions being taken by the European Commission with regards to qualitative restrictions in relation to CERs generated from nitric acid projects, EcoSecurities would like the EC to take into consideration the content of this formal stakeholder submission document. This document lays out the fundamental differences between nitric acid and other industrial gas projects. It should also be noted that the differences which are detailed within this document are not just the opinion of EcoSecurities (a CDM project developer with over 13 years of experience in the carbon offset markets), but they are also substantiated by an independent research report entitled 'Industrial N_2O Projects Under the CDM: The Case of Nitric Acid Production' which was commissioned by CDM Watch and authored by the Stockholm Environmental Institute (SEI).

Why nitric acid projects should be differentiated from other industrial gas projects – the key facts:

1) AM0034 nitric acid projects fulfil the criteria of 'environmental integrity' and are responsible for generating real, permanent, measureable, verifiable and additional reductions. In addition they also represent a real 'CDM success story' showing how carbon finance can be utilised to transfer state-of-the-art abatement technology to be adopted by developing countries. This is also reinforced by the SEI study which stated, 'CDM has successfully fostered innovation and emission reductions in the nitric acid sector which previously had not engaged in abatement practices'.

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2) Independent research commissioned by a NGO and authored by the Stockholm Environmental Institute (SEI) found no evidence of 'windfall profits', 'carbon leakage' or 'perverse incentives'.
3) The AM00034 CDM methodology is a comprehensive and rigorous methodology which applies the strictest quality standards and prevents any potential of gaming.
4) Significant 'at risk' investments have been made by European based project developers and clean technology providers with regards to the set up and operational deployment of nitric acid abatement technology. To a large extent, these investments have provided little financial returns due to the significant delays that these types of projects are experiencing within the CDM EB approval process.

1) Nitric acid projects – a CDM success story and leading example of 'environmental integrity'

a) Nitric acid – a very real CDM success story

Prior to the commencement of the CDM, there was very little voluntary abatement of nitric acid N_2O emissions even in developed countries. The Kyoto Protocol's flexible mechanisms of CDM and JI provided the necessary market incentives and finance to drive the installation of state-of-the-art abatement technology into developing countries. Today the CDM and JI mechanisms combined, have resulted in more than 100 plants installing the new technology, which has resulted in an estimated 12 million tonnes of CO_2e to be abated. Most of the projects are located in developing countries and thus fulfil the overarching sustainable development goals pursued by the Kyoto Protocol of catalysing technology transfer into developing countries.

Table 1: Nitric acid and caprolactam abatement projects in the CDM pipeline as of September 2010

Project Type	At Validation	Registered	Total # of projects	Million credits issued	% of total credits issued
Nitric acid	6	57	63	14.7	3.4
Caprolactum	2	1	3	0	0

Source: UNEP Risoe, Sept (2010), Kollmuss, A & Lazarus, M (2010)

As you can see from table 1 above, the figures that are taken from UNEP Risoe clearly show the success of the CDM in identifying abatement opportunities within the nitric acid sector in developing countries. However, what is interesting to note both from EcoSecurities' experience in developing these projects, but also recognised in the SEI study and substantiated by the figures above, is that many of these environmentally important projects have yet to really start and issue CERs, largely due to the complexities of the very robust methodologies.

b) Nitric acid - an excellent example of 'environmental integrity'

The recent SEI study which examined N_2O emissions from nitric acid projects concluded that the AM0043 methodology was both rigorous and complex and that they could find that 'no evidence of systematic baseline manipulation has occurred'. This reinforces the fact that when a comprehensive methodology such as that used for nitric acid projects is used in conjunction with high quality monitoring systems to generate CERs, any potential buyer of these emissions can be absolutely certain that the CERs are real, permanent, measureable, verifiable and additional reductions in greenhouse gas emissions.

2) No evidence of windfall profits, perverse incentives or carbon leakage – which is substantiated by independent research commissioned by CDM Watch and authored by the Stockholm Environmental Institute

a) N_2O abatement technology transaction and ongoing operational costs

The abatement technology used in N_2O nitric acid projects is expensive and involves high upfront investment cost as well as high ongoing transaction costs associated with the installation of the abatement equipment, N_2O monitoring system and latest quality assurance standards (EN14181) for the monitoring technology and quality assurance and control processes.

Below in table 2, there is an outline of the cost of production for one tonne of nitric acid, which clearly shows that the cost of producing the nitric acid far outweighs the revenue generated by the sales of subsequent CERs. It is also important to point out that this table is based on financial estimates and does not factor in qualitative considerations such as production risks, CER price fluctuations or political uncertainties.

Table 2: Cost of production for primary product nitric acid versus CER revenues which clearly demonstrates the lack of any windfall profits

Items	**Nitric Acid**
CERs produced per tonne of nitric acid	2 (range 0.5 – 3.8)
Abatement costs per CER (not including CDM transaction costs)	EUR 1- 4
Price per CER once it is issued	EUR 13
Net profit (CER price minus abatement costs) from CDM per tonne of product	Average EUR 18 – 24 (range EUR 3.5 – 45.6)
Production cost per tonne of product	EUR 125
Potential earnings from CERs stand-alone	**Minus 101 Euro (loss)**
Sales price per tonne of product	EUR 100-225 t of ammonium nitrate

Source: Kollmuss, A & Lazarus, M (2010) and N.serve

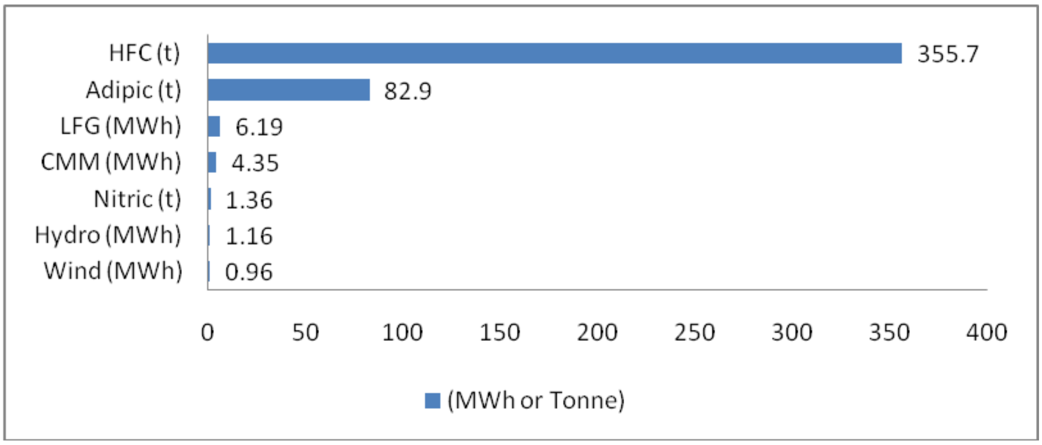
At current market prices, the average nitric acid N_2O project would yield CER revenues in the region of €26 per tonne of nitric acid. However, the production costs for one tonne of nitric acid are in the region of €125 and the cost for the abatement catalyst is on average €8 per tonne of acid (excluding other transaction costs). It is clear from the cost comparison outlined above that nitric acid projects do not result in windfall profits or perverse incentives, allegations which have been made with regards to other industrial gas projects. Revenues, yielded by CERs (both at current prices and also at increased prices), do not exceed the production costs of the main product.

Nitric acid projects are located in 18 different CDM countries. The main revenues from these projects are earned by the project owners i.e. local fertiliser companies that to a large extent use the carbon finance revenues to finance technology and necessary plant modifications (under AM0034). With regards to nitric acid projects then in most circumstances the abatement technology which is used is not end of pipe and therefore involves complex modifications to be made at the core of the nitric acid plant and the production process. Deploying this technology can only happen with significant upfront investment in monitoring systems, the catalyst abatement system, as well as high ongoing operating expenses. Furthermore, the deployment of this technology involves a very real risk to the efficiency and functioning of the plant (several CDM projects have been unable to be implemented because such problems could not be overcome). It is fair to say that without the incentives provided by the CDM (and the associated carbon finance that this brings), many of the nitric acid projects currently within the CDM would cease to abate the N_2O emissions arising from the production of the fertilisers are it would simply be too cost prohibitive to continue to do so.

b) CER productivity and profitability

An even clearer picture emerges when you look at analysis which N.serve has carried out on 20 CDM projects of different technology types and examine in more detail the number of CERs which can be earned per unit of underlying production.

Figure 3: CERs per unit of product (MWh or tonne)



Source: N.serve Environmental Services (2010)

As you can see from figure 3, the output of CERs per unit of production for nitric acid projects is clearly in the same range as that for wind and hydroelectricity, and far lower than projects such as coal mine methane or landfill gas. This chart conclusively shows that there is no economic incentive for ramping up nitric acid production for the sole purpose of generating CERs.

C) Some nitric acid projects are just uneconomic

There are significant upfront investment costs and ongoing operational costs with regards to nitric acid projects within the CDM. An important point to note is that EcoSecurities initially originated 28 nitric acid projects where we thought there was the potential to abate N_2O emissions. However, after careful due diligence it became clear that a significant proportion of these projects were uneconomic as the potential CER revenues from the abated N_2O emissions just didn't cover the cost of deploying the abatement catalysts as well as the ongoing operational costs. From the initial 28 projects signed EcoSecurities have developed 13 nitric acid projects which are expected to generate and issue CERs.

3) Comprehensive and rigorous methodology and quality standards which prevent the opportunity for any gaming of CERs

Selected key requirements in nitric acid CDM methodology AM00034 that prevent 'gaming' of CERs include:

- Mandatory use of EN 14181 as quality assurance standard for emission monitoring systems, including external audits by testing laboratories with EN ISO IEC 17025 accreditation
- Full deduction of measurement uncertainty as determined in a separate independent audit from baseline emission factors
- Restricted to plants that were in commercial production before December 31st 2005 and restricted to the actual design capacity
- Using 5 historic campaigns for determination of normal operating conditions (permitted ranges) only data from within that permitted range obtained during the baseline campaign can be used for the determination of the baseline emissions factor. Gaming the permitted range would mean an operator would run the plant outside of its optimal range for a significant time during the historic campaigns and the baseline campaign in order to achieve a higher baseline emissions factor (a campaign is usually between 3 and 12 months long). However, this would mean a very significant loss in nitric acid and wasting of ammonia, since more N_2O means less nitric acid. The economic incentives thus work against such gaming possibilities.
- Using the same primary gauzes during the baseline as were used during the relevant historic campaigns (same composition, or provide technical evidence for no influence on N_2O generation if different gauze was used).
- Application of statistical analysis to baseline campaign monitoring data in order to remove outliers and implausible emissions data
- Practical restrictions to eliminate abnormal historic campaigns from determination of permitted ranges
- Application of conservative emission factor during AMS downtime in the baseline campaign (4.5 $kgN_2O/tHNO_3$)
- Restricting the length of the baseline campaign to the length of the average historic campaign, thereby preventing an overly long baseline campaign that would increase the baseline emissions factor

- Recalculation of the emissions factor baseline in case a project campaign is shorter thereby eliminating the risk of taking advantage of an extraordinarily long baseline campaign, since the respective project campaign would need to be even longer, resulting in higher project emissions (N_2O emissions tend to be higher at the end of a campaign)
- Implementation and application of a moving average emissions factor and minimum project emissions factor after the 10th campaign which in the long run restricts the increases in performance for which the CERs can be earned

In addition to the points laid out above, the recent report written by the Stockholm Environmental Institute (SEI) entitled 'Industrial N_2O projects under the CDM: the Case of Nitric Acid Production' concluded that there was no evidence of manipulation, windfall profits or carbon leakage from this sector. On the contrary the report confirmed the environmental integrity of this project type and the underlying methodologies of AM0034 and AM0028.

4) Significant investments made in CDM nitric acid projects

Many European companies like EcoSecurities, N.serve and Johnson Matthey have invested large amounts of time, expertise and financial resources in ensuring that nitric acid projects under the CDM abate their greenhouse gas emissions. However, as noted in the SEI report, due to the rigorous and complex nature of the AM0034 and AM0028 there have been significant delays in issuing CERs from these projects. According to the SEI report of the 57 nitric acid projects which are registered with the CDM EB, only 10 have actually managed to issue CERs. In addition, many of the project owners on the ground have also not yet received the expected revenues which they anticipated in order to fully finance the abatement technology and ongoing operating costs due to delays within the CDM EB approval process (see table 1).

Conclusion

It is important that the EC fully understands the characteristics of each of the different types of industrial gas projects before making decisions as to their likely inclusion or exclusion from the EU ETS in Phase III. EcoSecurities feels that this paper shows clear and substantiated reasons as to why the CERs generated from the abatement of N_2O emissions from nitric acid plants in particular should not be excluded from the EU ETS in Phase III. Our conclusions are based on extensive knowledge of developing these projects over the last 4 – 5 years and are fully supported by independent NGOs like the Stockholm Environmental Institute and CDM Watch. We can therefore be fully confident with our assertions that in the case of nitric acid projects there is conclusive proof that there are no windfall profits, no carbon leakage and no evidence or incentive to try and game CERs. In addition nitric acid projects are a very strong CDM success story and their 'environmental integrity' cannot be questioned.

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