

# Frequently asked questions

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## **1. Why has the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) launched the Nitric Acid Climate Action Group (NACAG)?**

BMU launched the NACAG at the UN Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP) 21 in Paris in order to incentivize both pre-2020 climate action and long-term emission abatement in the nitric acid sector. The abatement of nitrous oxide (N<sub>2</sub>O) emissions from nitric acid production represents a low-cost mitigation potential, which in the past was widely exploited under the Clean Development Mechanism (CDM). However, since the collapse of certificate prices under the CDM, N<sub>2</sub>O abatement projects have been put on hold and this mitigation potential now remains largely unused.

## **2. Why did BMU decide to focus on nitrous oxide emissions from the nitric acid industry?**

N<sub>2</sub>O is formed as an unwanted by-product of the nitric acid production process and has a global warming potential (GWP) 265 times that of CO<sub>2</sub> (see also question 30). However, these N<sub>2</sub>O emissions can be abated relatively easily and usually at a lower cost than most other measures aimed at GHG emission abatement. Effective abatement technology is already widely available and can be installed quickly in existing plants. Given the magnitude of the challenge of climate change, we cannot afford to continue releasing emissions that can be avoided with such moderate effort.

## **3. What is NACAG's vision?**

Around the world, the majority of nitric acid plants are still operated without N<sub>2</sub>O abatement technology. NACAG is therefore incentivizing the installation and sustained operation of N<sub>2</sub>O abatement technology in all existing nitric acid plants worldwide. The group is working to phase out global N<sub>2</sub>O emissions from nitric acid production by supporting quick mitigation efforts and encouraging the regulation of the sector in partner countries after 2023. NACAG's vision is that, all countries worldwide will cover N<sub>2</sub>O abatement from nitric acid production in their Nationally Determined Contributions (NDCs) under the Paris Agreement.

## **4. What does NACAG offer?**

To encourage the nitric acid sector to phase out its N<sub>2</sub>O emissions, NACAG offers technical support to governments, business organizations and companies that are considering this particular mitigation action. It is providing technical advisory services on how to install, operate and maintain the respective abatement technologies.

Moreover, NACAG offers financial support for the implementation of the physical abatement activity . This support does not only cover the procurement and installation of the abatement technology and the monitoring equipment, but also any necessary plant modifications and the labor costs related to monitoring and maintenance. The financial support is provided under the condition that countries commit to sustain the abatement activities after 2023 and is reserved to countries with limited own resources which are eligible for ODA.

## **5. Who can participate in NACAG?**

NACAG is open to all stakeholders – including governments, institutions and representatives from the private sector, who support the goal of abating N<sub>2</sub>O emissions from nitric acid production in a sustainable manner. The group is also inviting countries and organizations to join the initiative as financing partners. In this way, they can help NACAG achieve its ambitious goals by increasing its funds.

## **6. What kind of technical support does NACAG offer?**

NACAG offers technical support at both government level and plant level.

Governments are provided with advice and support on the general technical aspects related to implementing abatement activities in the nitric acid sector as well as on the different options for their integration into national policies and climate change plans (e.g. inclusion in NDCs, national emission trading solutions, etc.). NACAG is supporting governments regarding the implementation of national-level structures required to effectively and sustainably maintain the abatement activities after 2023.

At the plant level, the technical support consists of advisory services and direct support on the physical implementation of the abatement activity (feasibility and technical evaluation, choice of appropriate abatement and monitoring technology, etc.). The NACAG Secretariat will support plant operators through experienced experts. As part of the technical support, and to make sure plant operators have the skills and knowledge they need to meet future requirements, local plant personnel will receive training in the operation of the abatement technology and all its associated monitoring and reporting activities.

## **7. How can I access technical support?**

For any requests on purely technical matters, please contact the [NACAG Secretariat](#). We are happy to enter into a dialogue that may help advance the initiative's goals and to offer support where applicable. All requests will be considered on a case-by-case basis and possible further steps will be discussed. Project owners or plant operators from countries eligible for financial support (under the NACAG Support Facility) will be provided with full technical support alongside any financial support they receive.

## **8. Why is NACAG of interest to the chemical industry?**

Both from a technical and economic perspective, GHG abatement in the nitric acid sector is generally easier and less costly to achieve than other forms of GHG abatement. It therefore makes sense to tackle the sector's emission reduction potential early on, before moving on to mitigation options, which are more difficult and more expensive to implement. Given the international community's goal to keep global warming below 2°C, it is highly likely that N<sub>2</sub>O emissions from nitric acid production will eventually be abated in all countries. NACAG's offer of support therefore presents chemical industry actors with a rare opportunity to access funding for the implementation of abatement activities. Once national regulations have been established to sustainably mitigate the emissions from this sector, the industry will not have to bear the considerable initial investment costs that these regulations will likely entail. Moreover, plant operators will have already gained experience in operating the technology and in meeting monitoring and reporting standards.

In short, NACAG intends to promote and kick-start the use of relatively cheap and easy-to-harness emission reduction potentials and, at the same time, help the nitric acid sector to prepare for the future task of sustainably mitigating process-related N<sub>2</sub>O emissions.

## **9. What happens if national governments introduce a regulation before 2024 affecting projects under contract with NACAG?**

Should the national governments of partner countries introduce regulations or schemes for sustainably assuring the abatement of N<sub>2</sub>O emissions from nitric acid production before 2024, NACAG will still meet the financial support obligations it has agreed with individual plant owners up until the end of 2025 (maximum, depending on the country). In fact, this scenario would represent a success for NACAG, as its primary objective is to incentivize the long-term inclusion of N<sub>2</sub>O abatement in countries' national mitigation strategies.

## **10. How can I show my support for NACAG and what does the signature of the NACAG Declaration entail?**

Governments, institutions or private sector actors who want to show their support for the initiative and its objective to phase out nitrous oxide emissions from all nitric acid plants worldwide can sign the NACAG Declaration. By signing the Declaration you show your support for the initiative's goals. The signature does not entail any legal obligations. The official [Declaration](#) document can be submitted directly to the NACAG Secretariat. For more detailed information or to discuss your aims, concerns and possible next steps regarding your involvement, please do not hesitate to contact the NACAG Secretariat.

## **11. How do governments officially join NACAG and commit to support its objectives on a national level?**

To join NACAG officially, governments ought to sign a document called [Statement of Undertaking](#). By signing this document, they commit to permanently mitigate nitrous oxide emissions from their country's nitric acid industry from 2024 onwards. The statement includes the pledge to introduce regulations or incentive-based mechanisms, which ensure the long-term mitigation of N<sub>2</sub>O emissions in the nitric acid industry of the country. While NACAG offers technical support to identify appropriate measures to achieve this objective, the final policy choice remains entirely with the sovereign government. The signature of the Statement of Undertaking is the prerequisite for the country's nitric acid industry to be eligible to access funding for mitigation technologies through NACAG.

## **12. Do plants have to fulfill certain requirements to be eligible for support from the NACAG Support Facility?**

Plants are eligible for support if the government of the country in which the plant is located has signed the Statement of Undertaking. Nitric acid plant operators will however, also undergo a technical, legal and financial due diligence assessment. In this process, the plant and its administration will be subject to a screening of aspects such as safety and security, compliance with environmental and quality standards, human rights, technical status of the installation as well as financial stability and others. As NACAG operates with public financial resources, this is a necessary step in order to minimize the risks associated with the investment. All findings of this process will be treated confidentially.

## **13. Does NACAG work with plants producing nitric acid for weaponry or military use?**

Facilities associated with the manufacture of weapons or of explosives that are not produced solely for civilian purposes are not eligible for any support from NACAG.

## **14. Will NACAG support project activities under the joint implementation (JI) mechanism?**

Abatement activities that were previously developed under the JI mechanism can generally be supported. However, only projects in ODA eligible countries can be supported financially.

## **15. Will NACAG support plants which have already generated CERs under the CDM?**

Nitric acid plants for which a monitoring report has been published under the CDM are not eligible for funding through the NACAG Support Facility. However, NACAG cooperates with the World Bank in order to provide a possibility for these plants to benefit from funding. By participating in the [Nitric Acid Climate Auctions Program](#) (NACAP), such plants, if successful in the auction, get the opportunity to be supported through price guarantees for eligible nitrous oxide emission reductions.

The auction sells put options which give the option holder the right, but not the obligation, to deliver eligible carbon credits to NACAP in the future. In a reverse auction, eligible bidders compete to determine the level of the put option strike price (the price guaranteed upon redemption for delivery of eligible carbon credits). All plants located in countries which have signed NACAG's Statement of Undertaking are eligible to participate in the NACAP, except those with an expired non-renewable CDM crediting period before 2017.

## **16. Is the initiative targeting existing or new abatement projects?**

The initiative is targeting both existing and new abatement projects. Tailored technical and financial support options have been developed for both cases.

## **17. NACAG requires countries and plant operators to take on the responsibility of reducing their N<sub>2</sub>O emissions in the future. What does this mean in practice?**

The assumption of full responsibility for the sustainable continuation of the abatement activities and related emission reductions after 2023 by the partner countries is part and parcel of the NACAG initiative. Countries benefiting from NACAG's financial support must ensure that N<sub>2</sub>O emissions from nitric acid production will be abated permanently from January 2024 onwards. This can be achieved in a number of different ways. For example, governments could opt for national emissions trading schemes, taxes or enforceable emission limits. The choice of instrument rests entirely with the partner country. Besides, countries are encouraged to include N<sub>2</sub>O abatement in their Nationally Determined Contributions.

## **18. What role do NDCs play in the NACAG approach?**

Nationally Determined Contributions (NDCs) play an important role in the context of NACAG. They are the key instrument in the bottom-up framework of the Paris Agreement. Using NDCs is integral to NACAG's approach because it enables specific emission sources to be included in permanent national mitigation actions. Alongside its vision of incentivizing the installation of effective N<sub>2</sub>O abatement technology in all nitric acid plants worldwide, NACAG aims to ensure

that permanent abatement will be achieved. NDCs constitute the appropriate platform to reach this goal.

### **19. In short, why does NACAG exist and what is it trying to achieve?**

Abating nitrous oxide emissions from nitric acid production is a highly cost-efficient option for mitigating climate change. N<sub>2</sub>O abatement technology can be installed in production facilities relatively easily and at low cost compared to other mitigation options. Looking ahead, countries are to revise their NDCs and increase the ambition of their mitigation targets. NACAG is encouraging countries to integrate nitrous oxide emission abatement into their national policies and revised NDCs. This would lay the foundations for permanent emission reductions in the sector. NACAG incentivizes industrial N<sub>2</sub>O abatement by covering the investment costs associated with the installation of abatement and monitoring technologies and by providing partners with support on the technological, political and financial matters related to these emission reductions.

### **20. Who can benefit from NACAG, and is access to support, and particularly to financial support, limited in any way?**

NACAG offers advisory and general technical support to all countries and interested stakeholders intending to contribute to the attainment of the initiative's goals. Financial support, however, is only offered to countries in need of such support. A country's eligibility for official development assistance (ODA) is a necessary precondition for receiving NACAG funding. Additional criteria may apply. Another precondition for receiving financial support is the political commitment of the government to transform the entire sector in a climate-friendly way. At the plant level, additional eligibility criteria apply and a case-by-case due-diligence evaluation is conducted.

### **21. Which costs does the NACAG Support Facility cover?**

The financial support provided in the framework of the NACAG Support Facility will cover all costs related to the actual technical implementation of the abatement activity. This includes the investment costs related to procuring the abatement technology and carrying out the necessary plant modifications and the procurement of monitoring equipment and its shipping, installation and acceptance test costs. If applicable, also staff costs will be funded.

## **22. How can chemical companies apply for funding from the NACAG Support Facility to finance N<sub>2</sub>O-mitigation technology for their nitric acid plant?**

Plant operators can apply for funding by submitting a [Grant Application Notice](#) (GAN) to the NACAG Secretariat. The document includes detailed explanations of the funding process and an application form that needs to be completed with basic technical information about the plant. After a first assessment and approval of the submitted GAN, the NACAG Secretariat will carry out a comprehensive technical and commercial due diligence process before signing a Grant Agreement with the plant operator, which frames the funding process and the installation of the mitigation technology.

## **23. What happens after having applied for funding?**

After signature of the Grant Application Notice by the plant operator, the NACAG Secretariat initiates the steps towards signing a grant agreement for the abatement technology. The plant operator is free to decide which abatement technology is most appropriate for the individual plant. NACAG will provide technological advice to support this decision.

The NACAG Secretariat will conduct a due diligence assessment. If the outcome of this assessment is positive, a grant agreement can be signed between GIZ and the plant operator, which will cover all costs related to the abatement of N<sub>2</sub>O emissions (under the condition that the country's government has signed the Statement of Undertaking (SoU)).

As a next step, the plant operator will collect offers for the abatement technology through a competitive tender process. Once a supplier has been selected, that plant operator will directly conclude a contract with the supplier of the abatement technology.

## **24. Who will decide on the choice of abatement technology?**

In general, the choice on which technological approach (secondary or tertiary catalyst) to be employed, will be left to the plant operator. BMU and NACAG are both technology-neutral and provider neutral, which means they will not prescribe any specific technology or provider to plant owners. However, to secure financial support, the owners must consider all relevant technical and economic aspects and demonstrate that their requirements are reasonable. The NACAG Secretariat can provide interested parties with access to experts who can offer advice and consultancy on the choice of appropriate technology.

It is required that companies set up an official public tender process and select the technology provider in this process.

## **25. What is the annual emission reduction potential of the nitric acid sector in developing countries?**

Estimates suggest that the emission reduction potential in developing countries ranges from 60 to 80 million tons of CO<sub>2</sub> equivalents per year.

## **26. What is the global warming potential (GWP) of N<sub>2</sub>O?**

The GWP on a 100-year time horizon is expressed in relation to the potential climate impact of CO<sub>2</sub>. Currently three different values for the GWP of N<sub>2</sub>O are being used. All of these have been determined by the IPCC but have been updated over time, resulting in a situation where different regulations refer to different values (usually the most recent at the time of release). In its Fifth Assessment Report (the most recent, published in 2013), the Intergovernmental Panel on Climate Change (IPCC) lists N<sub>2</sub>O as having a GWP of 265. While this value represents the latest scientific findings, all emission reductions generated under the regulations of the second commitment period (2013–20) of the Kyoto Protocol (CMP Decision 4/CMP.7 paragraph 5) are calculated using a GWP for N<sub>2</sub>O of 298. Meanwhile, under the EU's emissions trading system (ETS) and regulations on its third commitment period, the previously employed value of 310 remains valid and is still being applied. In any event, it can be concluded that the GWP of N<sub>2</sub>O is significantly higher than that of CO<sub>2</sub>, meaning that nitrous oxide is a very potent GHG.

## **27. What is the abatement efficiency of secondary and tertiary catalysts?**

The abatement efficiency of secondary catalysts can reach up to 98%. Practical experience, however, has shown that the abatement efficiency of secondary catalysts often only ranges between 70% and 90%. Tertiary catalysts operating under perfect conditions reach up to 99% abatement efficiency. It must be stressed that the efficiency levels that are ultimately achieved for both kinds of catalyst depend on the specific situation and condition of the nitric acid plant. It should be noted that the secondary catalyst material is gradually consumed during operation, thus leading to decreasing abatement efficiency over time. As a result the catalyst material needs to be replaced (in parts or completely) at some point. Replacement cycles range from 3 to 10 or more years, depending on the employed technology and plant conditions.

## **28. What actions are countries taking to tackle N<sub>2</sub>O emissions?**

The most successful example of comprehensive N<sub>2</sub>O abatement to date is the EU where nitrous oxide emissions from nitric acid production are covered by the EU Emissions Trading System. Over recent years, this has achieved the consistent abatement of around 90% of N<sub>2</sub>O emissions in the EU. A number of countries intend to follow the EU's example.

## **29. What is the difference between the NACAG Support Facility and the Nitric Acid Climate Auctions Program (NACAP)?**

The NACAG Support Facility is supporting newly set up projects through grants. All costs related to the abatement activities are covered by the grants. [The Nitric Acid Climate Auctions Program \(NACAP\)](#) is supporting all projects, new and old ones. The program is organizing auctions, which sell put options, which give the option holder the right, but not the obligation, to deliver eligible carbon credits to NACAP in the future. In a reverse auction, eligible bidders compete to determine the level of the put option strike price (the price guaranteed upon redemption for delivery of eligible carbon credits).