



# Policy Options for Achieving Long-Term Abatement of N<sub>2</sub>O Emission from Nitric Acid Production





## 1. Background and Objective

## 2. Policy Instruments

## 3. Clustering Approach and Results

## 4. Conclusions



## Background

- NACAG offers financial support for **installation of N<sub>2</sub>O abatement equipment** at nitric acid plants
- Host countries to ensure **continued operation of systems after 2020**
- GIZ to advise host governments **on choice of policy instruments** best suited



# Content

1. Background and Objective

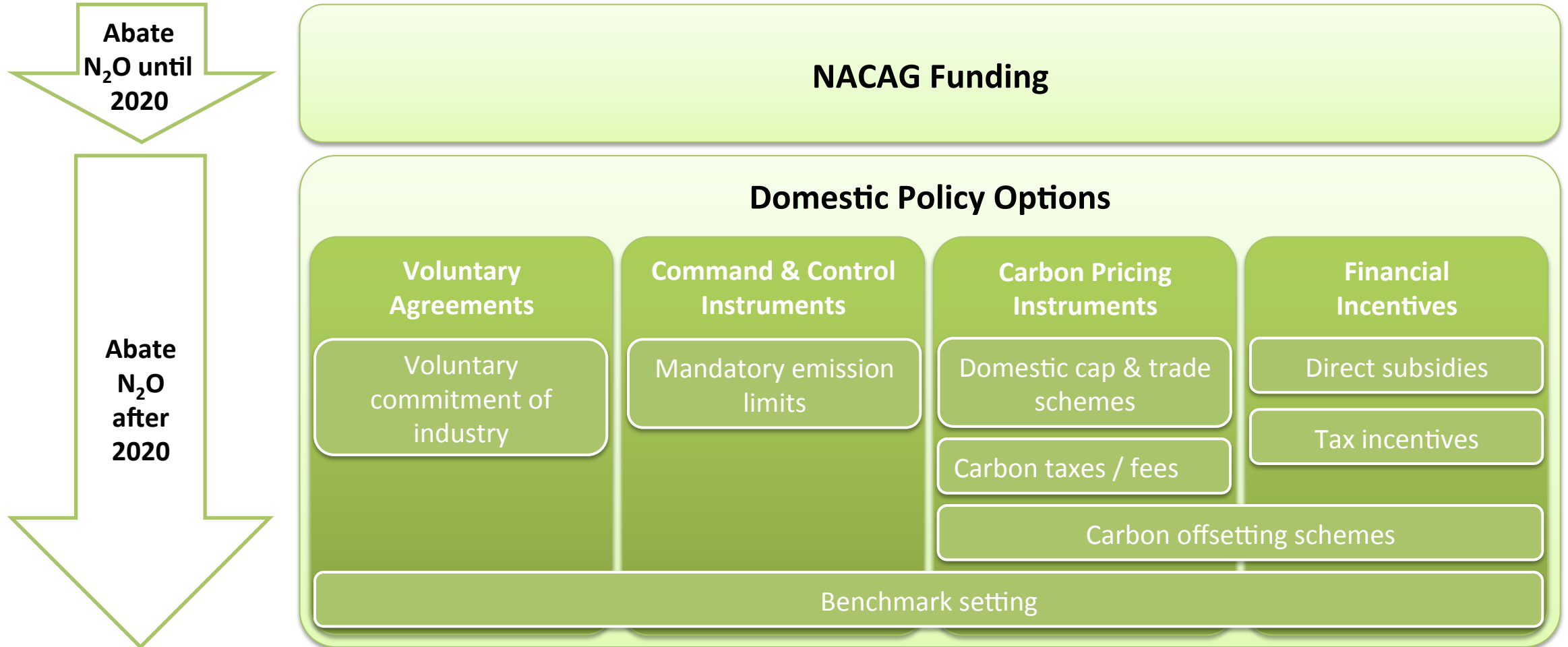
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# Overview of Policy Instruments





# Carbon Pricing Instruments

## Strengths

Carbon taxes and cap & trade schemes, potentially, **most efficient** instruments

Provides **dynamic incentive** for producers to reduce N<sub>2</sub>O emissions on ongoing basis

Favors **internalization of carbon** price in the market for nitric acid and final products

Well-designed cap & trade can deliver **guaranteed environmental outcome**

## Weaknesses

- Needs to **cover several industries** to work efficiently – no stand-alone for nitric acid
- Can have important distributional effects, making **implementation time consuming**
- Needs to **include credible penalties** and enforcement in case of non-compliance



**Inclusion of nitric acid sector is the preferred choice, where domestic carbon pricing scheme is already in advanced stage of preparation for several industries**



## Voluntary Agreements

- **Flexible instrument**, can be structured to best meet needs of participating industry and government stakeholders
- Best designed as «**negotiated agreements**» under civil law between host government and industry, enforceable in courts of host country or in international arbitration court
  - Could include GIZ or BMU as party



**Most promising fallback option, also to help bridge interims periods where carbon pricing is likely to become operative after 2021**



# Command and Control Instruments

## Mandatory Emission Limits

- Application difficult due to **high variability of N<sub>2</sub>O emissions** between production & abatement technologies
- To ensure sufficient stringency and equal treatment of operators, limits have to be **defined plant by plant**
- **No dynamic incentive for abatement** provided as marginal emission cost below the limit is zero



**Potentially adequate only in countries where (i) nitric acid industry relatively small and homogeneous and (ii) carbon pricing unlikely to be introduced before 2030**





## Financial Incentives

- Financial incentives can be important to **achieve industry buy-in** in countries where running N<sub>2</sub>O abatement cost are perceived as undue burden on industry profitability
- Incentives post-2020 must be **structured as results-based finance** to ensure environmental effectiveness and economic efficiency. Options include:
  - Results-based **climate finance**, and
  - Ability to sell emission reductions below a conservative baseline as "**offsets**", either domestically or internationally
- In the absence of domestic carbon pricing, **international sale of offsets** is deemed the most promising & sustainable way to help cover running cost of abatement and ensure level international playing field
  - Conservative baselines (e.g. near level of European allocation benchmark) will ensure meaningful **contribution to achievement of host country NDC**



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## Clustering Approach

**Objective of clustering host countries is to assist rapid initial assessment of suitable policy instruments**

**Assessment** of host countries based on 3 parameters:

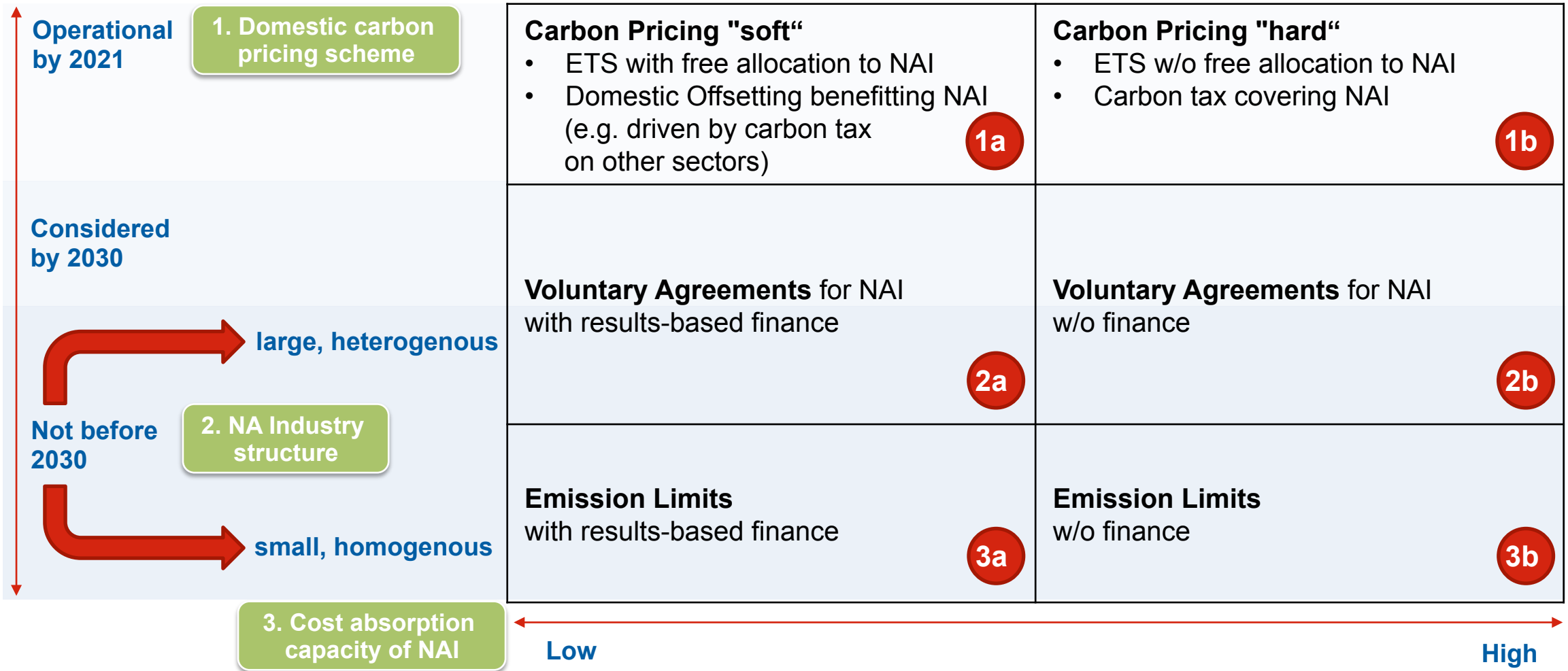
1. The **likelihood of a carbon pricing scheme** being introduced by 2021
2. The **complexity** of the host country's nitric acid industry
3. The nitric acid industry's **capacity to absorb** the running cost of N<sub>2</sub>O abatement

**Underlying assumptions:**

- Including nitric acid industry in a domestic carbon pricing scheme is the preferred option
- Voluntary agreements as the preferred fallback option, unless industry very homogeneous
- Emission limits only in countries with no carbon pricing and homogeneous NA industry
- Financial incentives can play a role to help cover running cost of abatement, where industry's cost absorption capacity is limited



# Cluster Map





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## Critical Assessment of Clustering Approach

- Methodology is **capable of delivering plausible results** with limited resource requirements
- Main restriction concerns the **industry's cost absorption capacity**, where data on the profitability of nitric acid production was not generally available
  - Domestic prices for nitric acid (or N fertilizers) used as proxy



## Conclusion on MRV

- **Continuous emissions monitoring systems (CEMS)** appear indispensable for a robust monitoring of actual N<sub>2</sub>O emissions over time, also after 2020
- **No material difference between policy instruments** with respect to MRV requirements
  - CEMS required also under voluntary agreements and emission limits, for robust monitoring
- **Cost involved for CEMS appears justified** given the strong and complex dependence of N<sub>2</sub>O emissions on operating conditions



## Conclusions



**Inclusion of NAI into carbon pricing policy is the preferred option, if such a scheme already exists or is planned for other sectors**

Otherwise:

- Voluntary agreements as **fallback option** or interim solution
- For countries with **small and homogeneous** NAI, mandatory emission limits recommended
- **Cost absorption capacity** of NAI determines whether financial support is required to cover running cost of N<sub>2</sub>O abatement
  - Ongoing financial support should always be disbursed as **results-based finance**
  - **Offset sales** (domestic or international) below conservative baseline **merit further analysis**