Template to facilitate the submission of examples/good practices of strategies, policies and measures employed to implement obligations under any of the protocols to the Convention on Long-range Transboundary Air Pollution

Country: Austria	**Pollutant(s):** NO_x
Protocol(s): 1988 Protocol concerning the Control of Nitrogen Oxides or their Transboundary Fluxes	**Sector:** industry
Type of strategy, policy or measure and the level of implementation: voluntary	**Method used for the current analysis:** Voluntary agreement between the Austrian Cement Industry and two Austrian Federal Ministries (Economics & Environment); Data is being collected by an independent third party (professor of the Technical University of Vienna), published by the Association of the Austrian Cement Industry and reported by the ministry under the regulation (EC) No 166/2006.

What is the main objective of the strategy, policy or measure? When has it been implemented/or will be implemented?

A voluntary NO_x emission reduction agreement between the Austrian Cement Industry and two Austrian Federal Ministries (Economics & Environment) has been signed with the aim to reduce the annual average NO_x emissions of the Austrian Cement Industry. The Austrian Cement Industry voluntarily committed to reduce the NO_x emissions of the cement kilns collectively as a sector to a yearly average value of 405 mg/Nm^3 from the year 2010 on with a further reduction to a yearly average value of 395 mg/Nm^3 from the year 2012 on.

Catalytic exhaust gas treatments for two sites have been installed. From 2005 to 2017, the NO_x emissions of the whole cement industry decreased by 50 % while the produced amount of cement clinker increased by 3 %. The current (2017) NO_x emission concentration on average for the cement industry is about 270 mg/Nm³, which is significantly below EU average (450 mg/Nm^3).
A so-called DeCONOx exhaust gas treatment, which provides simultaneous mitigation of CO, TOC and NO_x emissions by combining SCR-DeNOx technology and thermal post-combustion in the same plant, is planned for a third site. On that specific site it is envisaged to reduce NO_x emissions by 50% and the organic carbon compound and CO emissions by 90 %. In total 50–115 t NO_x emission reduction is estimated until 2030.

Background and driving forces: NO_x reduction measure under the National Air Pollution Control Programme which is implementing the Directive 2001/81/EC and Directive (EU) 2016/2284

Description of the strategy, policy or measure:

A voluntary NO_x emission reduction agreement between the Austrian Cement Industry and two Austrian Federal Ministries (Economics & Environment) has been established in order to allow the development of a new and yet unproven technology in the cement industry, which potentially allows NO_x emission reductions beyond legal requirements. The development of the NO_x emissions of the cement sector is published by the Association of the Austrian Cement Industry in the form of yearly emissions and sustainability reports.
The official reporting and measurements by the ministry are following the legal requirements under the Regulation (EC) No 166/2006.

Costs, Funding and Revenue allocation:

Costs for the installation of the selective catalytic reduction technology SCR have not been published in detail as such. For the first site with a production of 1.1 million tons of cement per year the project costs

have been mentioned to be around 12 million euros and running costs have been mentioned to be around 830000 € per year. For the second site with a production capacity of 500000 tons per year the costs for the selective catalytic reduction technology have been mentioned to be around 7.3 million euros. The costs for the third site with a nominal clinker capacity of 1800 tons per day have been announced to be around 10 million euros. The measures do not create any revenue – the SCR technology results in an additional electricity demand of 5-7 kWh due to pressure losses and running costs of 1.25 to 2 € per tonne of clinker.

Effect and impacts on air pollution abatement:
From 2005 to 2017, the NO_x emissions of the whole cement industry decreased by 50 % while the produced cement clinker increased by 3 %. The current (2017) NO_x concentration on average for the cement industry is about 270 mg/Nm³, which is significantly below EU average (450 mg/Nm^3). In total: 50–115 t NO_x emission reduction is projected for the Austrian Cement Industry until 2030 additionally.

References/Further information:
Voluntary agreement regarding the NO_x emissions of the cement industry from the year 2010 on between the Austrian Cement Industry and the Federal Ministry for Agriculture and Forestry, Environment and Water and the Federal Ministry of Economy, Family and Youth

Yearly emission reports of the Association of the Austrian Cement Industry:
www.zement.at > Nachhaltigkeit + Umwelt > Emissionen

Yearly sustainability reports of the Association of the Austrian Cement Industry:
www.zement.at > Nachhaltigkeit + Umwelt > Nachhaltigkeitsbericht

Pilot trials for catalytic reduction of nitrogen oxides in exhaust gases from Austrian cement plants, Cement International 1/2012

The DeCONOx process – an example of advanced exhaust gas cleaning technology in the Austrian cement industry, Cement International 2/2018

Several press releases, web pages and publications in brochures

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Additional comments: -