

TECHNICAL ANNEX

1. Information regarding emission performance and costs is based on official documentation of the Executive Body and its subsidiary bodies, in particular documents EB.AIR/WG.3/R.8, R.9 and R.16, and ENV/WP.1/R.86, and Corr.1, as reproduced in chapter 7 of Effects and Control of Transboundary Air Pollution. */ Unless otherwise indicated, the technologies listed are considered to be well established on the basis of operational experience. **/

2. The information contained in this annex is incomplete. Because experience with new engines and new plants incorporating low emission technology, as well as with retrofitting existing plants, is continuously expanding, regular elaboration and amendment of the annex will be necessary. The annex cannot be an exhaustive statement of technical options; its aim is to provide guidance for the Parties in identifying economically feasible technologies for giving effect to the obligations of the Protocol.

I. CONTROL TECHNOLOGIES FOR NO_x EMISSIONS FROM STATIONARY SOURCES

3. Fossil fuel combustion is the main stationary source of anthropogenic NO_x emissions. In addition, some non-combustion processes can contribute relevant NO_x emissions.

4. Major stationary source categories of NO_x emissions may include:

- (a) Combustion plants;
- (b) Industrial process furnaces (e.g., cement manufacture);
- (c) Stationary gas turbines and internal combustion engines; and
- (d) Non-combustion processes (e.g., nitric acid production).

5. Technologies for the reduction of NO_x emissions focus on certain combustion/process modifications, and, especially for large power plants, on flue gas treatment.

6. For retrofitting of existing plants, the extent of application of low-NO_x technologies may be limited by negative operational side-effects or by other site-specific constraints. In the case of retrofitting, therefore, only approximate estimates are given for typically achievable NO_x emission values. For new plants, negative side-effects can be minimized or excluded by appropriate design features.

*/ Air Pollution Studies No. 4 (United Nations publication, Sales No. E.87.II.E.36).

**/ It is at present difficult to provide reliable data on the costs of control technologies in absolute terms. For cost data included in the present annex, emphasis should therefore be placed on the relationships between the costs of different technologies rather than on absolute cost figures.