1. **Basic Information**

1.1 CRIS Number: 2003/004-643. Project 1

1.2 Title: Air Pollution Monitoring System of Cyprus

1.3 Sector: Environment

1.4 Location: Ministry of Labour and Social Insurance, Department of Labour Inspection, Section of Industrial Pollution Control, Nicosia-Cyprus

2. **Objectives**

2.1 Overall Objective(s):

To support Cyprus in achieving full harmonization and implementation of the *acquis communautaire* in relation to air quality.

2.2 Project purpose:

The project purpose is to establish in Cyprus an ambient air quality and emissions monitoring network, in line with the relevant *acquis communautaire*.

2.3 Accession Partnership and NPAA priority

**Accession Partnership (AP)**

- It is a priority within the AP (p.9), to reach the complete transposition and implementation of the *acquis* and to strengthen the administrative and enforcement capacity in the field of environment.

**National Programme for the Adoption of the Acquis (NPAA)**

- The NPAA (Chapter 3.6.1.3, p.438) states the following:

> ‘The expansion of the national network of stations to cover measurements, including ozone measurements, in other cities and areas is planned to start by January 2002. It is provisionally planned to include in the system 3 additional complete stations and 3 stations for ozone and NO/NOx measurements. The expansion will also cover the upgrading of the relevant existing laboratory for Quality Control and Quality Assurance. The exact number and location of the stations will be defined after the initial assessment of the ambient air quality and the drawing-up of zones of different levels of pollution, which takes place from mid-2000 to the end of 2001.’

3. **Description**

3.1 Background and justification

The Department of Labour Inspection, operating under the Ministry of Labour and Social Insurance, through its specialised Section for Industrial Pollution Control, is the designated authority in Cyprus for the Control of Atmospheric Pollution. The Department is operating a network of 3 stations for ambient air quality measurements and 1 station for background level measurements within the EMEP (Environmental Monitoring Program in Europe) Programme. In
addition, the Electricity Authority of Cyprus is operating six stations for monitoring the ambient air quality around its three power plants.

At the same time the Department is the competent authority for issuing the Emission Permits. For a number of large industrial plants (cement plants, power plants, refining, foundries etc.) specific conditions are set in permits for self-monitoring of the concentrations of the emission gases for which specific emission limits have been specified on the Emission Permits. The Integrated Pollution Prevention and Control (IPPC) Directive already provides for self-monitoring to be introduced in permits. Operators are obliged to install continuous analysers for measuring the emission concentrations of certain pollutants and the competent authority is responsible for assessing and ensuring the operator’s compliance with the specified emission limits. Certain large industrial installations have already installed continuous analysers for self-monitoring of their emissions. At the moment checking of compliance by the Department is performed by a mobile unit equipped with analysers for emission measurements.

In order to protect Cyprus environment and human health, high concentrations of harmful air pollution should be avoided, prevented or reduced. In achieving this objective, limit values and alert thresholds for ambient air pollution levels should be set. At the same time emissions should be controlled at source by prescribing emission limits for certain pollutants in the relevant permits.

The continuous monitoring of ambient air quality as well as of the emissions of the main industrial sources are key elements of regulatory control and the assessment of the quality of the environment. The collection of these data is also necessary for the information of public as well as to inform the European Commission.

To enhance the existing ambient air quality monitoring system the Department will need to acquire three more monitoring stations for the collection of data, a central data analysing centre, a special software for creating adapted dispersion models as well as a new institutional management unit.

The above investments are necessary to bring Cyprus’s air pollution monitoring system in full compliance with the EU standards. More specifically, the project shall address the implementation of the following Directives:

- 82/884/EEC, 91/692/EEC: Limit value for lead in the air
- 84/360/EEC: Air pollution from industrial plants
- 88/609/EEC: Large combustion plants
- 92/72/EEC: Air pollution by ozone
- 96/61/EEC: IPPC
- 96/62/EEC: Limit values for benzene and carbon monoxide in the air
- 99/30/EEC: Limit values for sulphur dioxide, nitrogen dioxide and oxides, particulates and lead in the air
- 2000/69/EC: Ambient air quality assessment and management
- 2000/76/EC: Incineration of Waste
Furthermore, the increased data quantity will help the Department in creating pollution forecasting, in identifying sensitive and high polluted areas and in preparing forecasts regarding the number of permits and/or licence that can be issued in certain areas.

3.2 Linked activities

- There is a close link between the present project and a LIFE Project (LIFE TCY/98/CY/167) on “Integrated Control of Industrial Pollution and Chemical Substances in Cyprus”, completed in September 2001. The LIFE project has laid the foundations for the current project, by providing:
  - An assessment of the situation concerning the chemical substances and preparations, industrial VOCs emissions and industrial emissions;
  - A database for Best Available Techniques (BATs) to be used by interested bodies;
  - Databases and Geographical Information System (GIS) that are accessible to various authorities at national and European level;
  - A set of proposals for the amendment of legislation concerning chemicals and industrial pollution control according to EU Directives-standards – Drafting of new legislation concerning Air Pollution Control. The LIFE project thus provided the basis for the legal transposition of all relevant EU Directives in the field of air pollution. The present project is the next significant step for the implementation of the EU acquis and more specifically of those provisions related to the ambient air quality monitoring and the monitoring of air emissions;
  - A “Plan for Continuous Integrated Monitoring”. The proposals of this component of the LIFE project indicated the need for a Central data Control System for the monitoring of ambient air quality and emissions. It indicated also the need to encourage self-monitoring of air emission in the large industrial plants. These needs will be effectively promoted with the present project.

- A two-year bicommunal project funded by UNOPS (United Nations Office for Project Services) with the title “Environmental Protection – Initial Assessment of Ambient Air Quality in Cyprus”, has been started in December 2001 by the Department of Labour Inspection in cooperation with the University of Stuttgart, Germany. The bicommunal dimension of the project refers to the co-operation of the experts from the University of Stuttgart both with the Greek Cypriot Community (GCC) and the Turkish Cypriot Community (TCC), during the measurement campaign.

The above bicommunal project will identify background pollution levels but it is not conditional for the initial placing of the mobile units to be acquired within the present project.

The measurement campaigns carried out in the framework of the project will focus primarily on urban areas but will also include rural areas throughout Cyprus (the whole island) to determine the geographical areas, which receive the heaviest pollution load. In total 250 sampling points will be obtained all over Cyprus (170 in urban and 80 in rural areas). Out of the 250 sampling points, 200 will be in the GCC and 50 will be in the TCC. Based on the results from the emission inventories, air quality measurements, meteorological data, topography, land use etc. and by using a statistical correlation modeling the concentration fields for three averaging periods (summer, winter, annual) for NO₂, SO₂, O₃, VOC, PM₁₀ will be calculated.

The results of the UNOPS project will be utilized for the future optimum utilization of the mobile units of the Department of Labour Inspection.

3.3 Results:
• Air quality and emissions monitoring system fully operational.
• Central Data Control System is operational and well functioning.
• Suitable Dispersion Models are adapted to Cyprus requirements and conditions, to be able to provide air pollution predictions, even in areas where no measurements are being carried out, using real-time emission data and emission data from existing databases.
• Institutional set-up is established and staff well trained for the use of new equipment.

3.4 Activities:
The activities of this project will be organised in three components.

Component 1

• **Acquiring three complete air-quality monitoring stations (Automatic analyzers, meteorological sensors, calibration gases, data acquisition system, modem for teletransmission).**

Based on the provisions of the Directive 96/62/EC on “ambient air quality assessment and management”, in order to have a minimum coverage of air quality monitoring, three additional air quality monitoring stations need to be purchased and installed in certain representative zones. For a provisional list of measuring equipment, please refer to Annex 4.

• **Acquiring the necessary hardware and the special software of the Central Data Control System.**

The existing 4 stations of the Department of Labour Inspection, the six stations of the Electricity Authority of Cyprus and the three new stations should operate in a common network connected via an on-line telecommunication system with a Central Data Control System.

The Central Data Control System should be designed and developed in such a way to allow data validation, evaluation, assessment and reporting according to the provisions of the relevant EU Directives.

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**Emission Sources**

- Central Data Control System

  - Data Validation
  - Data Evaluation
  - Data Assessment
  - Data Reporting
  - Data Dissemination
  - Early warnings to the public
  - Check of compliance-enforcing
AIR QUALITY MONITORING STATIONS

- Acquiring the necessary hardware and software for the on-line connection with the in-situ emission analyzers.

On-line communication of the Central Data Control System should be achieved with all continuous analyzers operating in-situ at different industrial plants for self-monitoring of stack emissions. This communication will allow the Department to check the compliance of the industrial plants to the specified emission limits as well as to have valid real-time emission data to feed the dispersion models.

Component 2

- Acquiring the appropriate dispersion models.

For the prediction of pollutants behavior certain dispersion models will be acquired and applied. Air quality data and meteorological data from the air quality monitoring network as well as real-time emission data of the large industrial self monitored emitters will be used to run the dispersion models.

Additional emission data from the existing Databases and the Geographical Information System (GIS) will also be used in the dispersion models for air pollution predictions even in areas where no measurements will be carried out.

Component 3

- Establishment of an institutional unit for the management of the new monitoring system.

A new unit in charge of operating the Central Data Control System shall be set up. The Central Data Control System should be responsible for the administration of software and data operation, operation of the telecommunications and the computers that control the whole process of data teletransmission, maintenance of analysers and the operation of a Quality Control Assurance laboratory. All the staff of the unit must be trained in best practices and in operating the equipment. Furthermore, manuals and operating rules and procedures for the new unit shall be prepared.

This component will be implemented through a Twinning Light Project.

4. Institutional Framework

The Department of Labour Inspection of the Ministry of Labour and Social Insurance will provide overall co-ordination and management of the project.

A Project Steering Committee (PSC) shall be set up immediately after the approval of the project by the Phare Committee to oversee the progress of the project and provide input where necessary. The working rules of the PSC will be prepared by the Planning Bureau and communicated to the Implementing Authority before the setting up of the PSC. Representatives of the following institutions shall be members of the PSC:
- Ministry of Labour and Social Insurance, Department of Labour Inspection
- Ministry of Agriculture Natural Resources and Environment
- Planning Bureau
- Delegation of the European Commission in Cyprus (observer)

5. **Detailed Budget**

<table>
<thead>
<tr>
<th></th>
<th>Investment (1)</th>
<th>Institution Building (2)</th>
<th>Total EU financing (=I+IB)</th>
<th>National co-financing (3)</th>
<th>IFI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Component 1.</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- Mobile monitoring stations</td>
<td>0.750</td>
<td>0.110</td>
<td>0.860</td>
<td>0.200</td>
<td>-</td>
<td>1.060</td>
</tr>
<tr>
<td>- Data control centre (hardware/software)</td>
<td></td>
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<td></td>
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<tr>
<td>- On line telecommunication system (hardware/software) wireless network</td>
<td></td>
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</tr>
<tr>
<td><strong>Component 2.</strong></td>
<td></td>
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</tr>
<tr>
<td>Dispersion Models, Specific Measurements, Analysis (predictions of impact)</td>
<td>0.040</td>
<td>0.025</td>
<td>0.065</td>
<td>-</td>
<td>0.065</td>
<td></td>
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<tr>
<td><strong>Component 3</strong></td>
<td></td>
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<tr>
<td>New Institutional Settings (centre for processing 24 hours/day, validating, publishing data) – training, manuals, procedures</td>
<td>-</td>
<td>0.075</td>
<td>0.075</td>
<td>-</td>
<td>0.075</td>
<td></td>
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<tr>
<td><strong>Overhead Expenses</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.130</td>
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<td>0.130</td>
</tr>
</tbody>
</table>

|                          | 0.790          | 0.210                    | 1.000                     | 0.330                      | 1.330 |

(1) - In relation to equipment, software and related services (installation, testing, training etc.);
(2) - In relation to management, organisation, procedures, legislation, training programmes etc.
(3) - EUR 200,000: Parallel co-financing in relation to the upgrading of the existing four air quality monitoring stations and of the existing emissions monitoring station which will be used for calibration of the in-situ operating emissions analysers.
- EUR 130,000 in relation to the overhead expenses of the project which will be considered as being expended according to the payments made against the project.

6. **Implementation Arrangements**

The **PAO** for the project shall be:

The Director of the Department of Labour Inspection
Ministry of Labour and Social Insurance
Apellis 14,
1480 Nicosia
Cyprus

6.1 Implementing Authority

Department of Labour Inspection

Contact person: Mr. Christos Malikkides
Tel No.: (357) –22 – 300 330
Fax No. (357) –22 – 663 788
E-mail: roc.dli@cytanet.com.cy

6.2 Twinning

A Twinning Light project, anticipated to take place in the second half of 2004, is foreseen for the implementation of new institutional settings (Component 3) (Budget: 0,075 MEURO). With the assistance of expertise and knowledge available within public institutions in EU Member States, a new unit in charge of operating the Central Data Control System shall be set up. The Central Data Control System should be responsible for the administration of software and data operation, operation of the telecommunications and the computers that control the whole process of data teletransmission, maintenance of analysers and the operation of a Quality Control Assurance laboratory All the staff of the unit will be trained in best practices and in operating the equipment. Furthermore, manuals and operating rules and procedures for the new unit shall be prepared.

6.3 Non-standard aspects

The project will be managed according to the Extended Decentralised Implementation System (EDIS).

6.4 Contracts

The project shall be implemented through:

- One supply tender (component 1)
- One simplified procedure (component 2)
- One Twinning Light (component 3)

7. IMPLEMENTATION SCHEDULE

7.1 Start of tendering/call for proposals: March 2003
7.2 Start of project activity: October 2003
7.3 Project completion: December 2005

8. EQUAL OPPORTUNITY

Article 28 of the constitution safeguards the right of all persons to equality before the law, the administration and justice and of equal protection thereof and treatment thereby. Any direct or indirect discrimination against any person on the ground, i.e. of sex, is prohibited. Furthermore, the prevailing legislation with respect to equality of treatment for men and women is partly in conformity with the acquis communautaire. Harmonised legislation is under preparation and full compliance with the acquis communautaire will be achieved gradually by 1/1/2003.

The Ministry of Labour and Social Insurance which is the implementing Authority of this project is an equal opportunity employer.

9. ENVIRONMENT
N/A

10. RATES OF RETURN
N/A

11. INVESTMENT CRITERIA
N/A

12. CONDITIONALITY AND SEQUENCING

Conditionality: completion of implementation should not interfere with compliance with the Acquis in the field concerned by this project. Compliance with the Acquis should be effective from accession.

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ANNEXES
1. Logical framework matrix in standard format
2. Detailed implementation time chart in standard format
3. Contracting and disbursement schedule by quarter for full duration of programme
4. List of Analysers – Instruments of Monitoring Stations
# ANNEX 1

## LOGFRAME PLANNING MATRIX FOR

**PROJECT:**  
**Air Pollution Monitoring System of Cyprus**

<table>
<thead>
<tr>
<th>Overall Objective</th>
<th>Objectively Verifiable Indicators</th>
<th>Sources of Verification</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The <em>acquis communautaire</em> in relation to Air quality fully harmonised and implemented in Cyprus.</td>
<td>• Full compliance verified by the Commission</td>
<td>• Regular Report of the Commission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Purpose</th>
<th>Objectively Verifiable Indicators</th>
<th>Sources of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| • An ambient air quality and emissions monitoring network covering Cyprus established. | • The network collects and analyses air quality and emissions data | • Air quality and emission datasheets | • Full commitment of the involved Services  
• Adequate resources available |

<table>
<thead>
<tr>
<th>Results</th>
<th>Objectively Verifiable Indicators</th>
<th>Sources of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| • Air quality monitoring stations and Central Data Control System established  
• Existing dispersion models adapted to Cyprus  
• Institutional set-up established and staff of CDCS fully conversant with new tasks | • 3 monitoring stations and a CDCS are fully operational  
• Dispersion model functioning  
• Trained staff to meet the requirements for the efficient and effective operation of the CDCS | • Required reports produced by the stations and by the CDCS  
• Contractors and CDCS report  
• Concluding Report of Twinning Light Project  
• Training certificates issued by Twinners | • Monitoring stations well functioning  
• The hardware, software and telecommunication infrastructure is working smoothly  
• Successful adaptation of Dispersion model  
• Staff of unit in place |
<table>
<thead>
<tr>
<th>Activities</th>
<th>Means</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Purchase of 3 Monitoring Stations</td>
<td>• One supply tender</td>
<td>• Successful implementation of the tendering procedures and conclusion of the contracts.</td>
</tr>
<tr>
<td>• Acquiring the necessary hardware and the special software of the CDCS</td>
<td>• One simplified procedure</td>
<td>• Smooth and timely delivery of the equipment</td>
</tr>
<tr>
<td>• Acquiring the necessary hardware and software for the on-line connection with the in-situ emission analyzers</td>
<td>• One Twinning Light</td>
<td></td>
</tr>
<tr>
<td>• Acquiring the appropriate dispersion models</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Establishment of an institutional unit for the management of the new monitoring system</td>
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</tbody>
</table>

| Preconditions                                                           |
|--------------------------------------------------------------------------|----------------------------------------------------------------|
| • Full commitment of all the services involved                          |
| • Budgets approved and available.                                         |
# ANNEX 2

## DETAILED TIME IMPLEMENTATION CHART FOR THE PROJECT

**Title:** Air Pollution Monitoring System of Cyprus

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 2</td>
<td>D</td>
<td>D</td>
<td>C</td>
</tr>
</tbody>
</table>
| Component 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | D = Design (Preparation of Tender Documents to be undertaken by the Department prior to the launching of tenders) | C = Tendering and Contracting | I = Implementation | X = Closure
ANNEX 3

CUMULATIVE CONTRACTING AND DISBURSEMENT SCHEDULE

Title: Air Pollution Monitoring System of Cyprus

<table>
<thead>
<tr>
<th></th>
<th>01/01/03</th>
<th>01/04/03</th>
<th>01/07/03</th>
<th>01/10/03</th>
<th>01/01/04</th>
<th>01/04/04</th>
<th>01/07/04</th>
<th>01/10/04</th>
<th>01/01/05</th>
<th>01/04/05</th>
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<tbody>
<tr>
<td><strong>CONTRACTED</strong></td>
<td>-</td>
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<td>0.075</td>
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<tr>
<td><strong>DISBURSEMENT</strong></td>
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<td>-</td>
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<td>0.022</td>
<td>0.082</td>
<td>0.618</td>
<td>0.618</td>
<td>0.618</td>
<td>0.618</td>
<td>0.982</td>
<td>1.0</td>
</tr>
</tbody>
</table>

(Million Euro)
ANNEX 4 - LIST OF ANALYSERS – INSTRUMENTS OF MONITORING STATIONS

I. ANALYSERS

NO / NOx (Chemiluminescence Analyzer)
O3 (Ultraviolet Absorption – UV Photometer)
CO (Infared Absorption)
SO2 (Ultraviolet Fluorescence)
CnHm (Flame Ionization)
PM 10 (TEOM : Tappered Element Oscillating Microbalancing)

II. DATALOGGER

III. METEOROLOGICAL INSTRUMENTS

W/S (Wind Speed)
W/D (Wind Direction)
RH (Relative Humidity)
BP (Barometric Pressure)
T (Temperature)
SR (Solar Radiation)