



The European Union's IPA 2010 programme for Albania

***Technical Assistance for Strengthening the
Capacity of the Ministry of Environment, Forests
and Water Administration in Albania for Law
Drafting and Enforcement of National
Environmental Legislation***

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**DEMO projects MONITORING
NATIONAL ENVIRONMENTAL AGENCY
Activity C.3**

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This report has been prepared by a project team working for Grontmij. The findings, conclusions and interpretations expressed in this document are those of Grontmij alone and should not in any way be taken to reflect the opinions and policies of the European Commission.

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List of Abbreviations

DCM	Decision of Council of Ministers
DoPA	Department of Public Administration
DSIP	Directive Specific Implementation Plan
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EIS	Environmental Information System
EPL	Environmental Protection Law
EQS	Environmental Quality Standard
EUD	European Union Delegation to Albania
GHG	Greenhouse Gases
GIS	Geographic Information System
IE	Industrial Emissions
IPPC	Integrated Pollution Prevention and Control
LAN	Local Area Network
MoEFWA	Ministry of Environment, Forestry and Water Administration
NEA	National Environmental Agency
NEL	National Environmental Laboratory
NLC	National Licensing Centre
PMO	Prime Minister Order
PRTR	Pollution Release and Transfer Registry
QA	Quality Assurance
REA	Regional Environmental Agencies
REI	Regional Environmental Inspectorates
SEI	State Environmental Inspectorate
SELEA	Support Environmental Laws Enforcement Albania
SoE	State of Environment
ToR	Terms of reference
WB	World Bank

1 INTRODUCTION

The National Environment Agency (NEA) in agreement with the Ministry of Environment, Forestry and Water Administration (MoEFWA) intends to initiate an internalisation process of environmental monitoring functions.

SELEA has agreed to prepare Demonstration projects to justify the ability of the NEA to undertake some of the tasks – in a first phase - Demonstration projects on Air & Surface water monitoring.

1.1 AIR MONITORING PROPOSAL

Annex A describes in brief the proposal for internalising the Air Monitoring. A plan is proposed for 3 years while the DEMO programme only is proposed for 2013.

1.2 WATER MONITORING PROPOSAL

Annex B describes in brief the proposal for internalising the Surface Water Monitoring. The DEMO programme is proposed for 2013.

1.3 TIMING & COSTS

The proposed costs (Euro) for the demonstrations programs in 2013 are proposed as follows:

COSTS	Training	Investments	Operational	Total
Air Monitoring	11,000	20,000	24,000	55,000
Water Monitoring	7,500	3,700	14,400	25,600
Un-foreseen				5,400
Total				86,000

The proposed budget will be supplemented with a minor budget from NEA (Electricity, additional transport, Per Diem, etc.).

SELEA is proposed to contribute to the budget for the two DEMO programmes amounting to the costs for training and investments as illustrated below:

COSTS	SELEA	NEA	Total
Air Monitoring	31,000	24,000	55,000
Water Monitoring	25,600	0,000	25,600
Un-foreseen (10%)	5,400		5,400
Total	62,000	24,000	86,000

ANNEX A – DRAFT AIR MONITORING PROPOSAL

Proposal for a three year air quality monitoring programme for NEA 2013 - 15

Introduction

The MoEFWA has proposed that the NEA will be responsible for air quality monitoring from the year 2013 and onward. This proposal is a brief technical description for monitoring of air under the full responsibility of NEA.

Compared to a project where all stations are in operation, this proposal contains the below mentioned advantages:

- Reduces in an intermediate period the number of monitoring stations.
- Costs for running the monitoring are radically reduced in the transitional period.
- Monitoring stations are selected to places where air quality problems might exist in Tirana.
- The monitoring stations will have a check up with burglary alarms and data transmission system.
- The NEA laboratory will have a portable calibrator unit to introduce proper quality control.
- Training in technical maintenance and air quality management will be enhanced.

A reduced air monitoring system for 2013

In 2013 two automatic air quality monitoring stations can be run by NEA as a demonstration programme with assistance from the SELEA project. The year can be characterised as a transitional period for training of staff members and for introducing quality control and data assessment.

During the first year the staff shall receive basic training and gain experience in running the monitoring programme. The training and experience shall include basic maintenance, repairs, Quality Assurance / Quality Control (QA/QC), data assessment, analyses and reporting. Training will be performed by the SELEA experts as well as technical support from suppliers.

The most important outcome of the 2013 monitoring programme should be to demonstrate skills and capacity to create plausible data from this demo project. However it is not expected that NEA can produce measurements for a full year to be reported in accordance with EU directives.

NEA should establish a small workshop for the air quality monitoring group. The start could be a small room in the laboratory with potential for cleaning and maintaining the automatic monitors.

It is a precondition that a minimal arrangement for QA/QC is introduced by supply of a calibration unit/system. A cheap and reliable calibration unit is a portable calibrator based on permeation tubes for SO₂, NO₂ and Benzene. For CO, NO and other gasses the instrument includes a dilution system where the calibration gasses is based on high concentration pressurised cylinders.

It is foreseen that NEA shall be the national reference laboratory for ambient air quality. In 2014 NEA should be able to make QA/QC for the monitoring performed by other institutions.

Selected Air Monitoring stations in 2013

It is suggested that two monitoring stations in Tirana will be practical for the start of the air quality monitoring performed by staff members with no or little experience in monitoring. At the last half of the year a new position as a mechanical engineer should be filled. And, it should be assessed whether the staff could repair and put more of the available monitoring stations into operation.

Four of the monitoring stations were supplied in October 2012 and it is foreseen that at least two of the stations could be moved to Tirana and be operational without excessive costs.

In addition to the monitoring stations it is also possible to include monitoring programmes by passive sampling tubes – it is not costly and accepted as indicative monitoring. Both StEMA and CEMSA projects in the past have financed supplies of a large number of tubes. Passive sampling can be used to find “hot-spots” in the Tirana streets that are expected to have high pollution levels. Passive sampling can as well be used to estimate air quality problems in the towns of Albania. It is relatively cheap and could be used to explain why the automatic monitoring stations are mostly positioned in Tirana.

Human resources

At the least two staff members of NEA shall participate in the training and take part in all the tasks necessary for running the air quality monitoring programme. When the monitoring system is established the two responsible staff members could work part time on the monitoring system – full time for short periods when problems arise. It is foreseen that there are limited experienced personnel available in Albania. The two staff members in NEA could be a person with a university background related to environmental issues and a person with a practical background in maintenance and repair of electronic or mechanical instruments. The training and education will take into consideration that staffs have limited experience but it is expected that they are committed to monitoring and the involved technicalities.

SELEA is considering having a dedicated consultant on a part time basis to support NEA with hands-on assistance during the demonstration project.

It is foreseen that a mechanical engineer cannot be employed in the first half of 2013. The need for comprehensive maintenance and repairs in 2013 should be covered by assistance from a skilful company with experience in maintaining air quality monitors. It will also be necessary to use technical assistance to disassemble the two monitoring stations, transport to Tirana and to re-establish and sample the monitoring stations in two new sites.

Training

The technical training will primarily be undertaken by the supplier who is experienced with the problems in the present monitoring system. The first training will be hands-on training when the consultant company put the two monitoring stations into operation. A number of technical training sessions will be arranged especially at the first part of the monitoring period.

SELEA will primarily assist on training courses in the Albanian laws and regulations, the EU Directives on ambient air quality, QA/QC systems, data handling, data control, data analyses, presentations and reporting. The use of passive samplers for indicative measurements will be introduced and explained. The SELEA training will be based on examples and experience from various European monitoring programmes.

A monitoring system for 2014

Two staff members can run a more comprehensive monitoring programme with up to ten automatic stations – depending on transport time necessary for remote stations, access to facilities for transport and maintenance. Depending on the experience gained during the first year it should be possible to include at least two more monitoring stations in the monitoring programme.

The two remaining stations delivered in October 2011 have been checked and maintained for the Final Acceptance in October/November 2012. It is assumed that they can be ready for use after one year of non-operation with a limited investment. One of the stations could remain in the town where it is situated – to include monitoring sites outside Tirana. Another station could be situated in Tirana or could serve as a rural background station for a site far away from any important sources of air pollution.

When four monitoring stations are in continuous operation, the staff members should make a detailed check of the conditions for the remaining two fixed stations (in the Directorate for Public Health and in Elbasan) and for the mobile monitoring station situated in the premises of the NEA. In the autumn 2014 it shall be decided to make two of the remaining three monitoring stations operational.

Since particulates are considered as a major problem in Albania, it is important to estimate the price for making the TECORRA monitors operational.

A monitoring system for 2015

Two more automatic monitoring stations should be operational in 2015. It is possible that the remaining monitoring station will be too expensive to put in operation but the instruments and other equipment could be used as spare instruments or spare parts for bringing two monitoring stations in operation.

The necessary equipment for each station will depend on the positioning and purpose of the monitoring station. A CO monitor will not be needed in a rural background station and a SO₂ monitor has not a high priority in many cases.

Investments and costs

The supplier traditionally estimates the costs for consumables and spare parts to 5% of the costs for a monitoring station. This corresponds to an approximate price of 5,000 Euro per year per monitoring station. With a skilful technician the costs could most probably be reduced. For 2014 and 2015 we will use the overall estimate of 5,000 Euro per station per year for consumables and spare parts.

The actual electricity consumption for running one automatic monitoring station in one year should be verified by NEA. Until this has been confirmed we will assume that the electricity consumption per year per station is 5,000 Euro. This means that the yearly running costs for one monitoring station is about 10,000 Euro.

In 2015 it is foreseen that the investments for repairing the monitoring equipment will be of the order 10,000 Euro.

Costs first year (2013) - 2 monitoring stations

Investments 2013 (one time investment):

Financed by	SELEA	NEA
Workshop tools and equipment	2,000	-
Portable Calibration Unit & permeation tubes	10,000	-
Relocate and reinstalling two monitoring stations (basic training)	6,000	-
Burglary alarms installed	1,000	-
Connection for electricity	1,000	-
Total (Euro)	20,000	-

Running costs (2013):

Financed by	SELEA (euro)	NEA (euro)
SIM cards & Data transmission		400
Reference gases in laboratory. N ₂ , NO, CO and BTEX		3,000
Consumables. Filters, tubes, charcoal, repair kits etc.		1,000
Span gas cylinders for monitoring stations. SO ₂ , NO ₂ , CO, BTEX		3,000
Transport		600
Repairs and three-months service		6,000
Electricity. Yearly electricity consumption (estimated) 2 stations		10,000
Total (Euro)		24,000

Training:

Financed by	SELEA (euro)	NEA (euro)
Supplier (3-4 two day international technical courses)	10,000	-
SELEA training	1,000	-
Total	11,000	-
Total costs	31,000	24,000

Costs second year (2014) - 4 monitoring stations

Investments: 30,000 Euro

Running costs: 40,000 Euro

Costs third year (2015) - 6 monitoring stations

Investments: 10,000 Euro

Running costs: 60,000 Euro

ANNEX B - DRAFT WATER MONITORING PROPOSAL

Proposed NEA 2013 Ishem river basin DEMO project for internalisation of surface water monitoring

The Water Framework Directive (WFD) is currently being transposed into Albanian law. It requires monitoring to be an integrated part of the planning process and the preparation of River Basin Management Plans (RBMP) to improve ecological status and safeguard resources.

In order to develop any RBMP, information is required on the status of the river basin. The proposed project is a pilot exercise for the Ishem river basin taking into account many but not all of the WFD requirements.

The Ishem River has been selected because its basin is the most highly populated area of Albania. It includes Tirana, and is subject to severe pressure from human activities including residential wastewater, industry and agriculture. Because the river basin is relatively small and also close to the Agency, travelling costs will be limited. It is also proposed to use the project as a practical and theoretical training study for laboratory staff together with NEA river basin planning experts and the inspectors due to be transferred to the Agency.

The most significant aspect of the WFD is its integrated approach to monitoring as a tool for assessing the overall ecological condition of a river basin. The monitoring program shall be based on the WFD characterisation of the basin and provide central inputs to the WFD river basin management plan and program of measures as outlined below.

The **objective** is to provide information to local and national government for planning purposes, incl. building of sewerage systems and urban wastewater treatment plants, and improvement of beneficial uses such as fishing, swimming, and the supply of drinking water.

The proposed **DEMO project** will combine internalised surface water physic-chemical monitoring and bio-monitoring at the Agency laboratory with external hydrometrological flow measurements (done completely as a subcontract) at the same sampling sites.

Between 16 and 20 sites will be needed for complete coverage of the Ishem basin and monitoring will be carried out monthly. Thus the laboratory will receive an additional 196-240 samples in 2013, carrying out the same analyses as for the Eight - Cities project (140 samples), plus 'total nitrogen'.

The **outcome** will be an evaluation of surface water quality of the Ishem basin with data which would be suitable for transmission to the European Environment Agency and valuable for the planning of sewerage systems and urban wastewater treatment plants.

A full WFD assessment would require extended biomonitoring, monitoring of groundwater, lakes, transitional and coastal waters, and preparation of an economic assessment and an action plan for the river basin.

The first requirement for compliance with the WFD is to get an overview of the situation of the water resources of the Ishem river basin (characterisation), which includes the mapping of pollution sources such as urban sewage/wastewater outfalls, industrial activity and farming run-off. Based on this characterisation the appropriate sampling locations are identified. The practical consideration of access to the water

courses will also be taken into account. For reference it is necessary to select a small number of baseline sites anticipated to remain in a largely natural, unpolluted, condition. A proposed initial set of sites is shown on the attached map. It is expected that this will undergo substantial modification by Agency staff during the training exercise before implementation of the project during the 2013 calendar year. The locations of individual sites should also be reviewed during the year as data is accumulated on river basin conditions.

COSTS

Costs in Euro for SELEA to fund a half of the water component of the project (2013).

Item	Training	Investments	Operational	Subtotal
Chemical-physical analysis	0	0	3,900 ¹	3,900
Biomonitoring ²	3	3,700 ⁴	1,500 ⁵	5,200
Flow monitoring ^{6,7}	8	0	9,000	9,000
Total				18,100

1. Composed of 2800 Euro for analytical consumables; plus 600 litres fuel (900 Euro); plus additional winter clothing/footwear for sampling team (200 Euro) - sampling previously has been done only during April-December.
2. Sampling and identification done by a project local expert and a biologist to be recruit at the Agency. The project will cover transport for the local expert, so no additional staff costs are foreseen. Two visits to each sampling point, one in the spring (funded by SELEA) and one in the autumn (funded by NEA).
3. A 15 day's training from a short-term senior expatriate expert is recommended; 10 days in the spring and a further 5 days in the autumn. The cost of such training is not included.
4. The investment is for a suitable microscope and sampling nets and goes to the Agency.
5. Diesel for transport has not been included.
6. Done completely as a subcontract, either to Albanian Geological Survey or to IGEWE (Polytechnic University – old Hydrometeorology Institute).
7. The possibility of internalising the flow monitoring has been discussed. This will require new equipment and training. The cost of such equipment and training is not included in the above budget.
8. If the flow monitoring is internalised there will be a need for say 5 days' training from a short-term senior expert.