

**WORKING GROUP ON ENVIRONMENTAL MONITORING AND
ASSESSMENT**

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*Round Table on Latest Developments in Environmental Monitoring and
Assessment at the National, Subnational and Company Levels*

Submitted by Albania¹

A. MODERNIZATION AND UPGRADING OF MONITORING NETWORKS

The main development under this topic is related to the project of EU Delegation of EC in Albania: Strengthening of the Environmental Monitoring System in Albania (StEMA).

One of the components of this project was preparation of The Albanian Integrated Environmental Monitoring System Network Regarding Selected Sampling Areas, Stations, Parameters and Frequencies

It is expected the next phase of StEMA project in Albania for implementation of IEMS Monitoring program.

An overview of IEMS prepared by StEMA is given below:

Utilising existing Albanian experience and expertise as well as the experience of the project team in establishing monitoring systems in other countries, the StEMA project has proposed an integrated environmental monitoring programme which meets Albania's environmental monitoring needs and has been specifically tailored to the Albanian present economic situation. The proposed programme harmonises with the main requirements of the EU. In addition, it is easily expandable and offers good possibilities for phased improvement.

The IEMS network, established through the Europe Aid "Strengthening of the Environmental Monitoring System in Albania" (StEMA) project, selected 63 separate monitoring areas for monitoring of environmental constituents, covering the entire territory of Albania.

The size of each of the areas is not the same. The extent of the sampling area is influenced by natural conditions and variations as well as by biodiversity, land cover, slope, rainfall, geography, geology, hydrogeology, hydromorphology, typology,

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intensity of anthropogenic and lithogenic activities and other relevant characteristics. The variation in the sizes of the sampling areas is to ensure that representative samples of different environmental constituents (water, soil, sediment, fish tissue, etc.), can be taken, as required, so as to enable evaluation of the extent and impact of pollutant emissions on flora and fauna, air, water, land, soil, sediment and the natural environment. For example, a specific sampling point where it is necessary to measure chemical constituents in water may not have adequate sediment available to undertake representative sediment sampling or may not be a suitable point for collecting soil or fish tissue for elemental analysis or as a suitable site for evaluation of biological numeracy and diversity or to examine the concentration of pollutants in gaseous emissions. The project has established some dedicated biodiversity monitoring stations, the proposed number of these stations is still under consideration.

Larger sampling areas are generally found in locations that are less adversely affected by intensive anthropogenic inputs or more remote rural locations. Smaller sampling areas are generally found in urban areas or where there is evidence of more concentrated anthropogenic activities and associated inputs. Great efforts have been made to cover all of the territory of Albania with respect to bio-geographical regions, urbanisation and anthropogenic pressures.

It is proposed that the environmental monitoring system network established will include a number of environmental 'hot spots'. The number of these stations will be outlined as a result of the emission inventory undertaken as part of the project. The inclusion of individual 'hot spot' monitoring stations was not within the context of the project initially but such investigative monitoring is necessary to allow evaluation of the extent and impact on the environment of significant adverse pollutant inputs.

Approach

Although the StEMA project proposal has commenced by evaluating Albania's monitoring needs to meet national statutory requirements as well as harmonisation with EU legislation and the requirements of international agreements, the proposal has given due consideration to existing monitoring activities and available environmental data which provide historical evidence of pollutant inputs.

The StEMA approach is based on integrated environmental monitoring areas, each of which may include several monitoring stations for air, water and other environmental constituents. Station areas can represent a single location from which one or more samples can be taken for specific purposes or from which a series of different sample types can be collected for assessment of impacts on various environmental constituents. In some larger geographical areas it is considered necessary to provide more extensive and comprehensive information on environmental constituent components deemed necessary to provide data for adequate environmental evaluation.

The main benefits of the proposed integrated approach are that the system provides for:

- A rapid overview of the environmental situation in different parts of the country without the use of GIS based methodologies, initially;
- The establishment of a data warehouse that can be used in future to interface with GIS;

- Excellent possibilities for implementing the DPSIR (**D**rivers, **P**ressures, **S**tate, **I**mpacts, **R**esponses) methodology.

Types of Monitoring Station Areas

The proposed IEMS network has established 63 monitoring areas as follows:

19 **Integrated Intensive (I)** station areas, situated in representative bio-geographical restricted zones, where as a general rule, all relevant parameters in all matrices should be measured. These monitoring locations should be without any known point sources of pollution. The 19 intensive station areas include 5 dedicated **Integrated Background (IB)** (reference) station areas with negligible anthropogenic impacts;

16 **Confined (C)** station areas with the same restrictions as Intensive station areas regarding negligible anthropogenic impacts, but where only a restricted number of parameters will be measured;

25 **Urban (U)** station areas for measuring diffuse pollution from emissions, e.g. traffic, wastewater from unsewered dwellings, run-off from roads, etc.;

3 **Biodiversity (B)** station areas have been selected for the present. A number of additional station areas may be considered after further assessment of the need to include additional areas of special ecological significance;

In addition to the 63 monitoring areas afore-mentioned, it is proposed that an supplementary number of areas will be selected for the purpose of monitoring emissions from '**hot spots**' (**H**); the exact number of these will be considered in future projects, primarily based on the outcome of the emission inventory.

The monitoring areas are generally numbered from south to north and from west to east and colour coded to reflect monitoring types. The monitoring areas and station coding system introduced consists of an 8-digit code to enable exact identification of each monitoring station within the selected areas.

The integrated "I" stations together with the confined "C" stations and, as a general rule, the dedicated biodiversity stations will be utilised for long-term trend monitoring (LT) (e.g. as required by the WFD "surveillance monitoring"). At a number of these stations it is planned to undertake "investigative monitoring" for selected parameters or parameter groups as a part of a general screening of the Albanian environment for priority substances which may not be part of the routine monitoring programmes.

The data obtained from long-term monitoring is very important for policy and decision makers and to identify general environmental trends as a means of indicating environmental improvement, stabilisation or deterioration. Such data may also be required for national 'State of Environment' or 'Environmental Indicators' reports or for international fora, e.g. figures for long distances transportation of pollutants or to indicate improvements due to improved legislation, more effective enforcement or more effective treatment of discharge emissions. At the present time this type of monitoring station is to a great extent missing from current Albanian monitoring programmes.

The urban stations “U” and the hot-spot monitoring stations “H” will generally be used for spatial-trend (ST) monitoring (e.g. as required by the WFD “operational monitoring”).

A major part of the planned screening surveys will also be undertaken at these stations in harmonisation with WFD “investigative monitoring”.

In many EU countries at present there is a tendency to decrease long-term monitoring and instead to develop further monitoring programmes utilising biological quality indicators combined with the results of physico-chemical operational and investigative monitoring. However, many of these countries are different from Albania in that they already have good historical records obtained from data collected over many decades that provide an indication of long-term environmental trends. Quality assured historical data allow establishment of good correlations between biological quality elements, which indicate the effects of pollution and the actual pollutants which cause the measured effects. In addition, the data obtained allows different water bodies to be classified according to their quality classes or pollution status. Since this is not the case in Albania, the monitoring programme proposed by StEMA places a major emphasis on long-term surveillance which, it is expected, will form the future backbone of the Albanian environmental monitoring and information system.

The station areas proposed and the list of environmental constituent components sampled as well as the parameters to be measured take a pragmatic approach to the national situation in Albania where a few bigger industries, activities and enterprises cause major pollution of the environment. It is anticipated that many priority substances of concern, which may be present in large concentrations in the Western European countries, will be present in the Albanian environment only through importation or by transboundary transport in air or transboundary waters.

As far as possible, the stations in the proposed in the StEMA project are stations already being monitored by different Albanian monitoring programmes. This relates particularly to selected air and river monitoring stations which are part of the Urban Station Program, although the precise sampling positions for the StEMA project may differ slightly from those of the Urban Station Programme.

B. IMPROVEMENT OF DATA MANAGEMENT AND USE OF DATA IN DECISION-MAKING

An Access database enabling additions of monitoring areas, monitoring stations, monitoring sites, types of monitoring (monitoring programmes), monitoring parameters and sample information per monitoring programme by database users was established within StEMA project to meet the needs of the Integrated Environmental Monitoring System (IEMS). The system is based on the 63 monitoring areas, the monitoring programmes (compartments) and their parameters identified in IEMS descriptions by the StEMA expert team during the project.

Each monitoring area can have several monitoring stations and each monitoring station can have several monitoring sites. The database enables addition of river basins and is suited for various parameters ranging from water chemistry and microbiology to

sediments. Structures (access tables) have been established also for water bodies (water body name, water body type), which makes later additions of these features possible. The user can also add more parameters and establish new monitoring programmes, which enables expansion of the database based on monitoring needs still to arise. Also, the database structure enables operability with Eurowaternet (EIONET) and Albanian Wetland Inventory (Medwet) databases, since the monitoring stations can be identified also with these codes. Currently, the database enables sample data input and storage, while aggregation and analysis of data are to be constructed by local expert involvement.

A next phase of StEMA project is expected for full implementation of this new monitoring data management.

C. PUBLICATION OF ENVIRONMENTAL INDICATORS AND INDICATOR-BASED ASSESSMENTS

Agency of Environment and Forestry prepares an annual State of Environment Report in Albania. State of Environment Report 2008 is prepared and published (in Albanian).