LIFE + Environment Policy and Governance

TECHNICAL APPLICATION FORMS

Part B – Objectives and expected results

- All forms in this section may be lengthened, so as to include all essential information.

SUMMARY DESCRIPTION OF THE PROJECT (Max. 3 pages; to be completed in English)

Project title: The impact of geological environment on health status of residents of the Slovak Republic

Project objectives: The main objective of the project is to reduce the negative impact of geological environment on the health status of residents in the Slovak Republic. The target objective will be reached by solving following partial goals:

- compilation of data set of environmental indicators (chemical elements/compounds) for groundwater and soil from the whole territory of the Slovak Republic with the greatest impact on human health,
- compilation of data set of health indicators for the Slovak Republic (indicators of demographic evolution and health status of residents) which are to the greatest extent influenced by geological environment,
- linking of data sets of environmental and health indicators and assessment of their relationship,
- specification and characteristics of the areas with impaired health status of residents in the Slovak Republic due to unfavorable (contaminated) geological environment,
- environmental analysis, environmental-health regionalization of the Slovak Republic and definition of limit values for chemical elements/compounds in soil and groundwater based on human health effects,
- elaboration of the proposal of measures to be taken in order to reduce negative impact of geological environment on the health status of residents,
- implementation of proposed measures into practice.

Actions and means involved:

Key activities

Action A1: Compilation of data set of environmental indicators

Environmental indicators – indicators of chemical status of groundwater and soil (chemical elements/compounds/parameters), will be retrieved from existing databases of chemical analyses of groundwater (about 20 000) and soil (about 10 000) samples from the whole territory of the Slovak Republic. Wide scale of chemical elements/compounds from so far performed environmental-geochemical mapping of the Slovak Republic, including parameters of natural radioactivity, will be utilized. Environmental indicators will be set for the smallest administrative units of the Slovak Republic – municipalities (about 2880), further for districts (79) and provinces (8). For every single administrative unit the value of environmental indicator will represent average level of chemical element/compound/parameter for all samples within the administrative unit.

Action A2: Compilation of data set of health indicators

Health indicators will be retrieved from existing databases of indicators of demographic evolution and health status of residents. Health indicators characterizing demography, reproductive health, mortality and the incidence of various diseases, mainly carcinogenic and cardiovascular diseases, with close relation to geological environment will be examined. The final dataset will be compiled in the similar way as environmental indicators, for municipalities, districts and provinces.

Action A3: Elaboration of environmental and health indicators

Environmental and health indicators will be set for single administrative units of the Slovak Republic. Thus integrated and mutually comparable database of geochemical and medical-epidemiological data will be available for further mutual assessment, linking and statistical analysis. The compiled databases of environmental and health indicators will be divided according to the basic geological environment namely carbonates, granitoid rocks, metamorphites, volcanic rocks, flysch sediments and Quaternary and Neogene sediments. Further, contaminated areas of the Slovak Republic will be individually specified and assessed. In this way we shall achieve unbiased base for the evaluation of variability of geological environment with relation to its distinct impact on human health. Further we obtain the basis

information for the impact assessment of impact of contaminated areas on the health status of residents living in contaminated geological environment.

Action A4: Linking of environmental and health indicators

Linking of environmental and health indicators and elaboration of appropriate methodology for the assessment of various contaminants from the point of view of their potential health effects on humans is one of the main objective of the "European Environment and Health Action Plan". Methods of higher statistics – neural networks and fuzzy cluster analysis will be used to link and unify environmental and health indicators in proposed project. Environmental indicators with the most evident impact on human health and health indicators strongly influenced by geological environment will be defined. Linking of the two datasets will be performed first at the level of national databases, further at the level of datasets divided according to the different geological structures as well as datasets specified for contaminated areas of the Slovak Republic. In this way, new methodological approach for linking environmental and health indicators will be elaborated. The obtained results will have direct link and mutual relationship with several projects implemented under the scope of the "European Health and Action Plan". The relevant results can be useful and included in compilation of proposed project, including following projects: "Implementing Environmental and Health Information System in Europe" (ENHIS), Project No 200312, "A European Health and Environment Information System for Risk Assessment and Disease Mapping" (EUROHEIS 2), Project No 2006126, "Improving Knowledge and Communication for decision Making on Air Pollution and Health in Europe" (APHEKOM), Project No 2007105, "Use of Sub-national Indicators to Improve Public Health in Europe" (UNIPHE), Project No 2008304.

Action A5: Environmental analysis

Through the environmental analysis the assessment of the impact of geological environment on the health status of residents in the Slovak Republic will be realized. Further environmental-health regionalization of the Slovak Republic will be elaborated and the areas with markedly impaired health status of residents due to naturally unfavorable, contaminated geological environment will be identified. Then limits of chemical elements/compounds (optimal limit, permissible maximum and also required minimum) in soil and groundwater will be defined and derived based on their human health effects.

Action A6: Elaboration of the proposal of measures

The proposal of measures to reduce the negative impact of geological environment on human health will be elaborated. This proposal will be compiled by method of logical analysis – cause – effect – measure, for all areas/municipalities of the Slovak Republic with impaired health status of residents due to unfavorable (contaminated) geological environment.

Action A7: Realization of measures

Within the realization of measures for reduction of negative impact of geological environment on the health status of residents the edification and environmental-health education of population will be performed. In the last year of the project duration, ten public information meetings for residents living in the risk areas will be held. The impact of unfavorable geological environment will be outlined to the residents. It will also be explained how they can precede such negative impact or eliminate it in daily life. Further within this action "Proposal of legislative measures" for reduction of negative impact of geological environment on the health status of residents of the Slovak Republic will be elaborated.

<u>Accompanying activities</u>

Action B1: Overall project operation

Management of the project will be organized. It will consists of project manager, financial manager, scientific coordinator and coordinators of geology, coordinator of health, coordinator of linking environmental and health indicators, coordinator of website and coordinator of dissemination activities.

Action B2: Monitoring

Monitoring of the project will be performed according to „indicator of progress" (for key activities) and also for all activities based on „deliverable products and milestones" and timetable.

Action B3: Audit

At the end of the project an audit will be performed.

Action B4: Networking with other projects

We will actively collaborate with scientific groups involved in present or new accepted LIFE+ projects focusing on similar topic. The collaboration with the WHO „The European Environment and Health Information System (ENHIS)" as well as the associations "Environmental

Geochemistry and Health" and "Medical Geology and Health and Environment" is also planned. Specifically, communication and information exchange with all mentioned organizations and scientific groups are within our interest. Representatives of the WHO, mentioned associations and scientific groups involved in the LIFE+ projects will be invited to participate in planned workshops and conference. We plan to visit officials responsible for the ENHIS with interest to discuss primarily compilation of environmental and health indicators and their linking.

Action B5: After – LIFE Communication plan

At the end of the project the "After - LIFE Communication plan" will be compiled.

Dissemination activities

Action C1: Notice board

Two notice boards are planned to be displayed. One will be placed in the premises of a beneficiary organization and another in the area of the Open-Air Mining Museum (contaminated area in central part of the Slovak Republic).

Action C2: Website

Within the project new website of the project will be created and regularly updated during the project period.

Action C3: Layman's report

At the end of the project Layman's report will be compiled in paper and electronic form in both English and Slovak language.

Action C4: Any media work

Two press conferences at Ministry of the Environment of the Slovak Republic (one at the very beginning and the second after the end of the project) will be organized.

Action C5: Workshop, seminar, conference

Following events will be organized: one workshop for the experts (international, 20 participants), one seminar for scientific and Layman public (Slovak, about 250 participants), one scientific conference (international, 100 experts), one advertising seminar for administrative employees (Slovak, about 50 participants).

Action C6: Technical publications on the project

The results of the project are planned to be published in a monograph (Slovak language), a brochure (English language), three international (impacted) and six Slovak magazines. They will be also presented in a series of papers on conferences.

Expected results (outputs and quantified achievements):

Expected results of the project will be reached by:

1. producing datasets of those environmental and health indicators that require to be monitored and assessed,
2. delineating and characterizing those areas of the Slovak Republic where the health status of population has been impaired due to unfavorable (contaminated) geological environment,
3. defining limits of all environmental indicators with relation to their effects on human health which will form the basis for their legislative implementation in relevant guidelines,
4. producing a proposal of measures for reduction of unfavorable impact of geological environment on population health status living in the Slovak Republic,
5. implementating of proposed measures in impacted areas and environmental-health education.

Can the project be considered to be a climate change adaptation project?	Yes	□
	No	x