

SUMMARY

Manual for Environmental Education Activities The Evrotas river, yesterday, today, tomorrow

(The environmental education, as a mean of distribution of expected advantages from the proposed environmental friendly technologies for rural development, but also for the sensitization of local society in the protection of their environment and the rational management of the Evrotas river watershed)

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The objective of the project Environmental Friendly Technologies for Rural Development (LIFE05ENV/GR/000245 - ENVIFriendly), that it is already carried out in the hydrologic basin of the Evrotas river, is the demonstration of a "toolbox" of environmental friendly technologies for the minimization of non-point source pollution from agricultural lands and integration of their design in the watershed management plan of the Evrotas river basin and its coastal zone. This project is in line with the Rural Development Policy of EU regarding the objectives of axis 2 (land management/environment) and specifically the agri-environmental measures.

The above objectives will be realized through a series of actions that include: (1) Identification and quantification of pollution loads to the watershed; Environmental impact assessment of impacted water bodies; development of preliminary management plans. (2) Installation of stations for monitoring the hydrology and geochemistry; Monitoring natural attenuation. (3) Installation of wells at two drainage canal sites; Systematic sampling (ground, surface waters, sediment and reeds) and evaluation of nitrate loss in the drainage canals; Planting of poplar trees (phytoremediation barrier) and river bank erosion control. (4) Installation of three prototype units: Electro-coagulation unit for separating suspended solids and colloid particles from olive mill effluents; Two-stage electrolytic/biological unit for complete and partial treatment of wastewater prior to discharge; Biopile-composting units for treatment of excess orange production and of olive mill solid wastes. The leachate from the biopiles together with the partially treated olive mill wastewater will be driven to an active phytoremediation area. (5) Hydrologic and geochemical data analysis; Calibration of watershed and coastal zone models; Development of scenarios and model simulations. Furthermore, prior to developing an integrated management plan, the input from local authorities' and NGOs representatives will be gathered, followed by an analysis of the local socio-economic conditions and expectations. In addition, an evaluation of the activities and the degree of social acceptance of the results will be determined following a strong dissemination campaign.

Finally, a “Local Development Observatory” will be created and staffed by permanent Prefecture employees. It will become the “Local Centre for Water Management” of the region and it will play a vital role in the implementation of the Water Framework Directive (2000/60EE) following the completion of this project. The primary result from this project is the expected significant improvement in the implementation of the Water Framework Directive through the integration of the results from the demonstration of environmental friendly technologies and the socio-economic studies through the development and implementation of an integrated management plan for the Evrotas river watershed and coastal zone. Through the implementation of the demonstrated technologies we expect a reduction of nitrate loads from ground- water to drainage canals in the order of 60-80% and in the riparian zone in the order of 40-60%. Furthermore from the successful demonstration of the agricultural waste management technologies we expect at least an 80% reduction of organic load entering the Evrotas watershed due to olive mill wastewater and excess orange production. The ability of the watershed to naturally attenuate nutrients and pesticides will be quantified and we expect the levels of attenuation and load reductions will be of the order of 50-70%. We expect to generate in Laconia the required infrastructure for the implementation of the Water Framework Directive for the long run and in line with the Rural Development Policy of EU.

In the frame of this project, were also included activities of “Environmental Education” (EED) for young people’s awareness and sensitization regarding the protection, maintenance and region’s management. It will be sought, via the EED, the distribution to the local people of expected advantages from the friendly to the environment proposed technologies of the Life project, but also the active attendance of society in the protection of environment and the rural development more generally.

For the active and not only approach of this issue, we created a manual, so as the students to get in touch with Evrotas’s region, as natural ecosystem, cultural deposit and productive sources. The manual for environmental education activities with title “The Evrotas river, yesterday, today, tomorrow”, concerns factual environmental activities for the river, its tributaries and torrents, the riparian and coastal zone, as well as the agricultures, the transformation of rural and agricultural products, the cultural heritage and the history of the region through the centuries. Also, the manual gives accent in the cognitive elements of familiarization with the local environment and its problems, such as the phenomena of floods, the insufficiency of water during the summer months, the pollution etc. However, is particularly important the engagement of schools in the below components that concern:

- the local environmental questions,
- their interconnection with the local society and the economy,
- the cultural deposit of region and
- the friendly technologies to the environment for rural development.

More specifically, we drew up forty "Work's Sheets". The first ten (A1 to A10) of them concern the familiarization with the environmental education procedures, the environment and its significances, but also with measurements, the fauna, the flora etc. The next "Work's Sheets" (B1 to B30) deal with the attendance of students with applicable activities concerning the local environment and the issue "The Evrotas river, yesterday, today, tomorrow", as well as with the "Environmental Friendly Technologies for Rural Development", for their construction of knowledge and their environmental sensitization to local problems.

However, it is essential to be stressed that when the environmental education includes energetic and applicable activities, it can contribute better cultivating attitudes, behaviours and for promoted proportional messages from the participating children to their schoolmates, but also to their families and the society for upgrading of local environment. Thus, through the "Work's Sheets" is sought a first stimulus for the sensitization and the awareness of students regarding the environment. Moreover, the proposed activities through this procedure, face the whole local environment, which takes into consideration, not only the ecological approach of the region, but also the environmental impacts from the agricultural practices and productive processes, the social perceptions and the economic prospects of the region. Most of the EED activities function, interdisciplinary and multidisciplinary, mainly via the interconnection of objects of natural sciences and their relation with the agronomics, the sociology, the economy, the history, the traditions, the architecture and the aesthetics of the region. Also, the EED's activities, are developed via a questioning which can be in effect for the all stages of education adapted in suitable thematic and methodological modifications. It is obvious that the meetings of students teams are realised, so much in the school order, what in the field -neighbourhood, city, village, parks, fields, industry, dump-sites, rivers, forests e.g.-, necessary and essential alternation for the interconnection and coupling of theory and action, knowledge and production, school and society. The Evrotas river, its tributaries, the torrents, the water's bodies of the region, the riparian forests, the forests in the mountains, the thickets, the fauna and the flora, the climate, the geo-history, the beaches, the coastal zone, but also the productive or even anthropogenic activities, the historical and cultural reserves of region and other elements, determine the physiognomy and the social and economic dimension of the whole area.

In more details, the proposed EED's activities for the young people cover cognitively:

- The Evrotas river as aquatic ecosystem (biotopes, habitats, characteristics of morphology, geology, the biological and ecological values of the area's ecosystems, the local climate and its hydrological regime, the fauna and flora, pollution sources and quality of waters, the friendly technologies for environmental pollution control, e.g.).
- The uses of water and the riverside grounds in the area, but also the human activities and interventions in the course of time (agricultural activities, the water as means of movement, water supply, irrigation, water-mills, passages, bridges, streets, excavation

and extraction of river materials, small dumps, water deviation technical works, economic importance, traditional settlements and occupations e.g.).

- The social, the productive and the cultural deposit of the region (social and economic data and attitudes, culture, popular art and traditional technique, religion, popular tradition, products, natural way of life, archaeological discoveries and historical retrospection).
- The local environmental sources (alternative tourism, athletic activities, recreation, fields for scientific research, environmental education, seminars, congresses, e.g.).
- Therefore, the children-students will have the occasion with the proposed activities among else:
 - to observe, discuss and evaluate their local environment through their own experiences,
 - to approach and study the local practises that are relative with water, the functional role of Evrotas river, its tributaries, the torrents and their neighbouring agricultural fields, as well as the economic, productive and the cultural dimensions of the region,
 - to measure and calculate many of wetlands parameters,
 - to study the historical and biological characteristics of region, its archaeological growth, the whole environment then and today, the problems that are usually caused by the human activities in a such wealth-producing region
 - to find out the ways with which will be propagated the Environmental Friendly Technologies for Rural Development and for the minimization of the local environmental problems.

Closing this note, we would like to believe that the Manual with the "Work's Sheets" still do not constitute a usual mesh of environmental activities, but a completed proposal, with environmental vision and human dimension.