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Implementation of a Sustainable Development Program as an Ecological Teaching and Educational Tool

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One of key issues of the concept of sustainable development is urban greening that ensures health of urban population. Sustainable development is a socio-economic structure the mission of which is to preserve natural resources and to rationally use them for the benefit of humans, and to improve the quality of life of generations. A nature conservation aspect of Armenia's sustainable development program, along with other issues includes those of expansion and improvement of public green spaces such as parks, squares, urban forests and so on. It is also essential to apply "multistory" principles of urban greening in order to create favorable microclimate, decrease levels of air basin pollution and noise pollution of the environment, saturate with phytocides (Hovhannisyan, 2015; Vasilenko, 1995; www.ncsd.am).

Yerevan is an industrial center experiencing the load of intense construction and heavy traffic. Wholly, a current status of Yerevan greening is not satisfactory and does not meet present-day requirements to urban greening, composition of plant species is poor and in most cases plants do not have hygienic, ecological and aesthetic roles they destined to. Green urban spaces are extremely important as urban plants have a property to absorb large quantities of different pollutants from soil and atmosphere. For this reason, in recent years the Yerevan Municipality (Abstract from RA, 2014; www.yerevan.am) initiated a number of programs designed for improvement of condition of the city's green belt. One of such programs "The development of a target tree planting program for the city of Yerevan" was implemented as a complex research by the staff of the Center for Ecological-Noosphere Studies (CENS) NAS RA (Publ.: Center for Ecological-Noosphere Studies NAS RA, 2007-2008). Based on the obtained geochemical, ArcGIS information system data and according to pollution levels, strongly, moderately and weakly polluted sites were isolated and ecologically tolerant plant species selected for each street, park and square. Proper implementation of the project results helps both establish and enlarge the Yerevan greening network so essential to the city and ensure longevity and durability of street and park species. Besides, researches of urban plants have a very important applied value as such species are both effective indicators in assessment of environmental pollution levels and economically efficient phytofilters for ambient air cleaning. Also, it is worth mentioning that the staff of Biochemistry Department CENS has

already implemented a lot of studies covering ecological tolerance of plants and their sanitary and hygienic properties. So, urban greening should be implemented based on functions of plants and through creation of a target greening net (Book of statistical data, 2009-2011; Danielyan, 2008; Publ.: Center for Ecological-Noosphere Studies NAS RA, 2007-2008; Mkhitarian, 2014). Target greening takes into account both ecological problems and those emerged in the system of greening. In order to assure sustainable urban development, management of the above mentioned problems requires development of novel approaches.

Ecological education is regarded as a tool for reducing the number of ecological problems the city is facing today. Ecological education can be conveyed in combination with appropriate researches, public awareness and involvement of the community. This all will finally bring to more active implementation of complex measures and more active involvement of the community and improvement of public awareness. In this respect urban greening as one of scientifically sound methods of sustainable development may be regarded as a means of ecological education and ecological culture. Ultimately, implementation of a complex concept of sustainable development is possible only if using education as a powerful tool.

In Armenia ecological education is a constituent of the national educational system and includes different levels: preschool, primary, secondary, college, higher and post-graduate education. Data collected through years about students, awareness of nature management programs and degree of involvement show the advance of students in acquiring more knowledge and skills in sustainable nature management and nature use that helps shape the so-called ecological outlook. Since 2000 a number of national and international programs have been implemented in the system of preschool and secondary nature management education, which are aimed at preservation of Armenia's nature and promotion of her natural and cultural legacy. Secondary education programs include the following nature management topics under a UN "Education for Sustainable Development" program: biological and landscape diversity, environmental conservation, ecosystems, natural resources management, climate change. However, the list of these topics may be added by urban greening so that the students could actively participate in practical works. Similar practice is done in some schools which -when organizing ecological education-pay particular attention to creation of teaching and learning environment, for instance, creation of "educational gardens" in schools where schoolchildren are given an opportunity to practically apply theoretical skills they acquire in looking after plants. Another example is the practice of using Armenia's reserves as an open-air lab for students. To fully apply ecological education, teaching and ecological trips are very important to learn more about the homeland, which also help practically use the gained theoretical knowledge. So, ecological education can help form abilities and skills of carefulness in students towards environment. According to Iakob Gogebashvili,

the main goal of knowing the nature is “developing a sympathy for the nature in a youngster, making him love the nature” (The Door of Nature) foreword to the 1st edition). A student while acquainting with interactions between a man and the nature learns of ways the environment impacts human life and vv. environmental changes caused by a man. Acquaints with a diversity of natural resources, ways of their rational use and methods of proper utilization of household refuse (Abstract from Yerevan, 2014; Oleynik, 1999).

So, ecological education is delivery of ecological knowledge, nature management skills and nature protection abilities, moral qualities through practical skills to younger generations. This all shapes a responsible attitude to the nature, ecological thinking, culture, the morality in students. It is also topical to hold teacher-training courses covering issues of ecology, environmental protection and sustainable development. So, the nature management aspect of sustainable development is of considerable importance, which places a special emphasis on both academic research and proper dissemination of obtained results to different groups in the population. Greening programs accompanied by ecological education can only lead to desirable results and contribute to preservation of the planet Earth. Based on topicality of ecological problems in the concept of sustainable development it is essential to develop novel approaches to greening to underpin academic researches with simultaneous inclusion of teaching and educational elements. It is recommended that when developing analogous programs in the future, two factors should be taken into consideration: awareness of different community groups and their involvement.

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