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TRAINING FOR SUSTAINABLE DEVELOPMENT

Integrated interdisciplinary training of specialists teams for the management of sustainable development. Adaptation and practical utilization of post-university training experience for the ecology teachers training and for initial professional orientation.

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Scientists, experts and decision-makers are not only aware of the environmental damage caused by technogenic and other activities, but also propose methods and ways out of the present environmental crisis. Quite a few people realize close links between human activities and the environment. It is necessary to increase people awareness and involvement in solving the environment and development issues.

Education may assist people in mastering the environmental and ethical principles, values and attitudes necessary for sustainable development. People should be informed not only on physical and biological environment but understand socioeconomic situation and human development issues.

The main goals of education for sustainable development are:

- To provide education on environment and development to people of all ages.
- To introduce the environment and development concepts in all curriculums together with analysis of reasons causing major problems.
- To ensure involvement of schoolchildren in local and regional studies of the environment.

The world community needs flexible and adaptable labor force capable of solving the problems of environment and development during a transition to sustainable society. Important steps forward in the environmental education were creating UNESCO/UNEP Environmental Education Program (EEP) and international inter-agency transdisciplinary UN project Environment and Population Education and Information for Development.

Progress in science, education and technology necessitates a transfer to a new standard of technologies based on the analysis of interactions between man, society and nature. Today science, technology, education, culture and social sphere are highly internationalized.

Combined efforts are needed to train specialists capable of making key decisions with due account for the international experience. It is possible only on an interdisciplinary basis. UNESCO should play the lead in creating the modern integrated and transdisciplinary approach to solving the issues of sustainable development of mankind. Speaking of sustainable development we usually imply social, economic and environmental aspects of development. These spheres are certainly inseparable.

Experience of various countries shows that introducing environmental issues in curriculums is obviously insufficient. There is a vital need not only for strategic, but also for regional and inter-regional planning of sustainable development to combine planning in social, economic and environmental spheres.

Obviously, that would require professionals capable of solving the issues of

development on a regional or national level. They should possess relevant databases, have skills in data acquisition and processing, analyze the situation and provide scientifically based recommendations to regional authorities.

The International Center of Educational Systems (ICES), an international non-governmental and non-profit organization was established in 1989 following the USSR proposals during the 25-th UNESCO General Conference.

It's main objectives are:

- international cooperation and comprehensive training of specialists;
- educational, cultural, business, scientific and technological co-operation between Russian, international and foreign organizations;
- holding training and retraining courses in Russia and abroad, international and national conferences, seminars, etc.

The International UNESCO Chair-Network "*Transfer of Technologies for Sustainable Development (TTSD)*" was created at the Centre in 1993.

In 1994 the Centre became an appointed agency in the Russian Federation of the UNESCO Project on Technical and Vocational Education (UNEVOC).

The International UNESCO Chair-Network "*Technical and Vocational Education and Training (TVET)*" was created at the Centre in August 1996.

ICES is a member of the International Association of Continuing Engineering Education (IACEE) and maintains business contacts with organizations of European Community (Council of Europe, etc.), the UN system (UNESCO, UNEP, UNDP, UNIDO, IAEA, etc.) and governmental, non-governmental and international organizations in Russia and abroad.

Today there are practically no experts on integrated aerospace and ground monitoring. Decision-makers and local authorities have no skills in using such data. It hampers introducing modern technological and ecoinformation programs. Another serious drawback is sectorial disintegration. Decisions are based on inadequate and unreliable data resulting in negative economic and environmental impacts.

Universities, colleges and vocational training schools do not offer courses on integrated (ground, underground and aerospace) monitoring and its application for sustainable development of regions. Astronauts are not trained in this field either. At the same time experts in the field are demanded by all sectors of economy.

In 1992 the Gagarin Cosmonaut Training Center offered its aerospace facilities for environmental research programs in Russian regions. ICES launched a project on interdisciplinary integrated training of engineers and specialists, managers and decision-makers in ground and aerospace applications for sustainable development.

The idea of a training course is making up a team of ten or twenty trainees living and working in a selected region, having different skills and related to sustainable development of a region.

Interdisciplinary and integrated methods are used to train experts capable of obtaining and interpreting underground, ground and aerospace data and working out recommendations for sustainable development of a region.

Training combines interdisciplinary and sectorial approaches. Teaching is conducted by experts in various fields from various scientific schools and institutions. The goal is a reasonable equilibrium between:

- a) general compulsory knowledge of all trainees required for a certificate of second higher education and UNESCO International Chair certificate
- b) a possibility of in-depth studies on selected subjects with due account of professional skills.

A course is based on the Cosmonaut Training Center. Sessions, diploma thesis preparation and in-service training are held jointly with local scientists on the site of trainees future work. It is possible to train specialists on especially designed curriculum to meet specific demands.

In June 1993 a regional program on underground - ground -aerospace monitoring was carried out in Orenburg district. A team of trainees included fifteen physicians, geologists, land use planners, agrarians, engineers, decision-makers and six cosmonauts. The data were collected using the "Mir" space orbital station and a Tupolev-154 Flying Lab. The project results were used by local administration in housing construction and other programs. In 1995-96 a training course was organized for specialists from Perm district. As a result of the course an information and analytical center on sustainable development was created. In 1997 the third training course for specialists from Tyumen district was also successfully completed. In 1999 the fourth training course for specialists from Yaroslavl district was also completed.

Presently ICES organizes on a permanent basis an 8-month training course on integrated interdisciplinary training of expert teams for sustainable development of regions. Course graduates make up transdisciplinary team of experts with second higher education and sufficient skills to work at a regional information and analytical center for sustainable development.

As a result of the training courses four regional analytical centers were set up manned by experts on sustainable development management of regions.

Apart from the basic training the Department offers 4 educational levels:

- improving skills of decision-makers;
- retraining of specialist;
- review course for secondary school teachers of ecology and
- review course for senior schoolchildren and students.

Our experience shows that integrated multidisciplinary training of specialists for sustainable development is not only a new and useful form of education but also a proof to the economic efficiency of investments in such education.

ICES and UNESCO/ICES Chairs organize also on the regular base:

- the International Conferences of Young Scientists and
- annual All-Russian Olympiad "Constellation" of scientific, research and arts projects of youth and children on the ecological problems of sustainable development "Man – Earth – Space",

which were highly appreciated by UNESCO Secretariat and Council of Europe.

The results of Olympiad "Constellation" were demonstrated also at UNESCO Secretariat for Executive Council and Director General of UNESCO (Paris, 2000) and at World Exhibiton (Tokio, Japon, 2005).