UNITWIN/ UNESCO Chairs Programme

Progress Report

Period of activity: 2009

UNESCO Chair on Ecologically Safe Development of Large Regions: the Volga Basin

Report established by: Prof Dr Evgeny Koposov, UNESCO Chairholder, Nizhny Novgorod State University of Architecture and Civil Engineering (NNGASU)

I. Activities

1. Education/ Training/ Research

Education

In 2009, the UNESCO Chair offered courses in the following fields:

- Geocological problems of the Volgo-Vyatksy region (180 hours)
- Geological environment protection (110 hours)
- City environment ecology (180 hours)
- Project expertise (150 hours)
- Computer technologies in ecology and nature management (250 hours)
- Architectural and historical environment of Nizhny Novgorod city (32 hours)
- The role of Nizhny Novgorod in the history of the State (34 hours)
- Creative works of engineer Shukhov on the Nizhny Novgorod land (10 hours)
- Fundamentals of city and settlement planning (124 hours)
- City and settlement planning (76 hours)
- Trees and gardens on city territories (44 hours)
- Introduction to a profession – town-planning (66 hours)
- Natural and scientific fundamentals of town-planning (132 hours)
- Cultural landscape as an object of heritage (126 hours)
- Pre-design analysis of territories (54 hours)
- Reconstruction of green area system (54 hours)
- Morphological substantiation of city layout form (54 hours)
Historic aspects of formation of natural and cultural complexes (54 hours)
Typological variety of cultural landscapes (54 hours)
Multipurpose use of water resources (143 hours)
Monitoring, prediction and management of water quality (31 hours)
Man-made systems and risk assessment (150 hours)
Monitoring of habitat (106 hours)
Information systems in ecology (174 hours)

Target groups: undergraduate, postgraduate students, doctoral candidates, industry representatives, managers, schoolteachers.
Geographical Coverage: national (Volga Federal Region, Volga Basin, Nizhny Novgorod Region), Germany, Netherlands, France.

Research

The UNESCO Chair also conducted research projects on the following themes:

Title: Impact of cities on river water pollution (implemented in the framework of the Volga-Rhine project)
Duration: 2007 – 2010
Intended use of results: Developed methods of assessment of large industrial centres’ impact can be used by nature management organizations.

Title: Development of an interactive information system for risk analysis, environment security management and emergency situations prevention on administrative territories and in river basins
Duration: 2006 – 2009
Intended use of results: The developed online information system can be used for day-to-day ecological safety management in the Nizhny Novgorod region.

Title: Study of adaptation and ecomigration in flood-prone areas
Duration: 2009-2010
Intended use of results: Recommendations for capacity building.

Target groups: Nature management organizations, water supplying companies, population, state bodies responsible for population ecological safety, NGOs, experts, institute and university teachers, federal and municipal decision makers.
Geographical coverage: national, Germany.

2. Conferences/Congresses/Meetings

Title: Great Rivers' 2009 (International scientific and industrial forum)
Date and place: 19-22 May 2009, Nizhny Novgorod, Russia

Title: Traditions and innovations in domestic and world culture in a globalization epoch (Scientific conference)
Date and place: January 2009, Nizhny Novgorod, Russia

Title: The 11th Cannes Water Symposium
Date and place: 23-26 June 2009, Cannes, France
Participants: about 400 representatives of scientific and non-governmental organizations

Title: Problems of multilevel education (International scientific conference)
Date and place: 27-29 January 2009, Nizhny Novgorod, Russia

Title: Environment and human security (Seminar)
Date and place: 18 February 2009, Nizhny Novgorod, Russia

Title: Waste water treatment (Seminar)
Date and place: 23 March 2009, Moscow, Russia

Title: MIPIM-2009 (Exhibition)
Date and place: 9-12 March 2009, Cannes, France

Title: The 100th anniversary of literary critic and publisher B.S. Ryurikov (Scientific seminar)
Date and place: April 2009, Moscow, Russia

Title: Ceremony of presentation of the All-Russian award “Heritage guardians”
Date and place: 2 April, 2009, Nizhny Novgorod, Russia

Title: The 10th Congress of historic cities and regions of Russia
Date and place: May 2009, Nizhny Novgorod, Russia

Title: The dialogue of ideologies: collective social and historic memory and challenges of today (International symposium)
Date and place: May 2009, Nizhny Novgorod, Russia

Title: Problems and prospects of development of higher education in Russia under conditions of economic crisis (conference)
Date and place: 19-22 June 2009, St. Petersburg, Russia

Title: Russian cultural routes in Côte d'Azur (conference)
Date and place: 18-23 September 2009, Nice, France

Title: Complex utilization of recycled resources and wastes (conference)
Date and place: 24-25 September 2009, St. Petersburg, Russia

Title: The 8th All-Russian congress of organizations of cultural heritage preservation (congress)
Date and place: September 2009, Ekaterinburg, Russia

Title: Orthodoxy, spirituality, family traditions, culture – a foundation of a happy family (conference)
Date and place: 30 September – 1 October 2009, N. Novgorod, Russia

Title: Sacred places of Nizhny Novgorod land (conference)
Date and place: October 2009, N. Novgorod, Russia

Title: Cultural heritage of Nizhny Novgorod region: crisis of memory
Date and place: October 2009, N. Novgorod, Russia

Title: Practice of use of Russian laws in the sphere of cultural heritage preservation (conference)
Date and place: June 2009, Vyksa, Russia

3. Publications/ Interuniversity exchanges/ Partnerships

Publications
In 2009, the UNESCO Chair published a book, multimedia material and more than 45 articles, among which:

Articles

Title: Multifractal analysis of karst events spatial distribution.
Author(s): E.V. Koposov, D.I. Iudin
Publisher(s): NNGASU, Nizhny Novgorod
Year: 2009
Language(s): Russian
Number of pages: 8

Title: Specific features of effective interaction of primary and secondary institutions of vocational education with employers within the frameworks of a multifunctional multiprofile educational complex
Author(s): E.V. Koposov, V.V. Borodachev
Publisher(s): Nizhny Novgorod
Year: 2009
Language(s): Russian
Number of pages: 10

Title: Specific features of function of vocational education under conditions of the innovational development of Russian economy
Author(s): E.V. Koposov, V.V. Borodachev
Publisher(s): Nizhny Novgorod
Year: 2009
Language(s): Russian
Number of pages: 9

Title: Methods of study of filtration properties of poorly permeable rocks
Author(s): E.V. Koposov, I.N. Grishina, Yu.V. Ronzhina
Publisher(s): NNGASU, Nizhny Novgorod
Year: 2009
Language(s): Russian
Number of pages: 8

Title: Representativeness of engineering-geological properties of loess rocks of Nizhny Novgorod region for the territories of Russia and contiguous states
Author(s): E.V. Koposov, I.N. Grishina
Publisher(s): NNGASU, Nizhny Novgorod
Year: 2009
Language(s): Russia
Number of pages: 39

Title: Geological environment under conditions of man-induced physical impact
Author(s): E.V. Koposov, I.N. Grishina
**Title**: Mechanism of development of the underflooding process in complex engineering-geological conditions  
**Author(s)**: E.V. Koposov, I.N. Grishina  
**Publisher(s)**: NNGASU, Nizhny Novgorod  
**Year**: 2009  
**Language(s)**: Russian  
**Number of pages**: 20

**Title**: Study of a sliding process development in space and time by the example of the Sura-Volga slope at Vasilsursk  
**Author(s)**: E.V. Koposov, T.S. Khromova, A.G. Salov, T.V. Kshumanyova  
**Publisher(s)**: NNGASU, Nizhny Novgorod  
**Year**: 2009  
**Language(s)**: Russian  
**Number of pages**: 26

**Title**: Regional pattern of distribution of filtration properties of poorly permeable rocks of Nizhny Novgorod region  
**Author(s)**: E.V. Koposov, I.N. Grishina, Yu.V. Ronzhina  
**Publisher(s)**: NNGASU, Nizhny Novgorod  
**Year**: 2009  
**Language(s)**: Russian  
**Number of pages**: 17

**Title**: Fractal methods of assessment of sustainable development of territories subject to exogenous process impact  
**Author(s)**: E.V. Koposov, D.I. Iudin, O.V. Kaschenko, N.V. Kaplunov, A.A. Panyutin  
**Publisher(s)**: NNGASU, Nizhny Novgorod  
**Year**: 2009  
**Language(s)**: Russian  
**Number of pages**: 10

**Title**: Socio-cultural organization of city spaces: questions of theory  
**Author(s)**: T.S. Ryzhova  
**Publisher(s)**: NNGASU, Nizhny Novgorod  
**Year**: 2009  
**Language(s)**: Russian  
**Number of pages**: 12

**Title**: Town-planning as an object of modern science research  
**Author(s)**: T.S. Ryzhova  
**Publisher(s)**: NNGASU, Nizhny Novgorod  
**Year**: 2009  
**Language(s)**: Russian  
**Number of pages**: 15
The UNESCO Chair has established partnerships with some 50 higher education institutions of the Russian Federation.

II. Outcomes

The activities led by the UNESCO Chair in 2009 have had important outcomes, among which:

- **Ecological safety management in large river basins:**
  - Elaboration of recommendations to improve water treatment technologies based on regular water sampling on the Oka and Volga near the Nizhny Novgorod industrial agglomeration and updating of a database;
• Development of: methods of detection of natural and man-caused disasters using GIS-technologies and space monitoring systems; assessment methods of technogenic pollution of ground waters in the karst-affected urban areas; assessment methods of interconnection of ground water planes and cross-flows in the karst-affected urban areas;
• Identification of: the mechanism of karst development and proof of its connection with the ground water pollution propagation; optimal methods of study of ground water pollution processes in the karst-affected areas;
• Creation of a data bank of the main sources of ground water and man-caused changes of the underground hydrosphere in the karst-affected areas;
• Use of the research results were to design organizations and municipalities to be used in town-planning and for correcting general layouts of cities and settlements of the Nizhny Novgorod region;
• Creation of an online information system for risk analysis, ecological security management and prevention of emergency situations on administrative territories and in river basins;
• Development of an information module for calculating norms of permissible impact of chemicals on water and launch of an investigation on surface flow formation from urban territories.

• Cultural heritage preservation and intercultural communications

• Implementation of a project on the consolidation of the Oka bank near the Shukhov multisection hyperboloid tower;
• Collaboration with the Nizhny Novgorod regional society of cultural and historic heritage preservation;
• Interaction with the State bodies responsible for cultural heritage preservation;
• Organization of the annual photo exhibition “Heritage of Nizhny Novgorod land”;
• Annual participation in the International Day of Monuments and Sites;
• During summer practice in 2009, monitoring and topographic survey of two cultural sites in the Nizhny Novgorod region.

III. Forthcoming activities

For the coming years, the UNESCO Chair has planned the following activities:

• Preparation of the 12th International scientific and industrial forum “Great Rivers 2010”
• Completion of the second stage of the Volga-Rhine Russian-German project (Assessment of urban impact on water quality in the Oka and Volga)
• Implementation of the next stage of the project, including investigation of surface runoff formation processes on the territory of Nizhny Novgorod region and its impact on the city rivers quality
• Carrying out comparative analysis of settlements' vulnerability and forced migrations in the Volga basin
• To continue the development of a pilot interactive information system for assessment of risk and vulnerability related to the impact of natural and anthropogenic factors on the territory of the Nizhny Novgorod region as well as the creation of theme layers
“Meteorology”, “Geology” and “Emergences” and development of appropriate methods of data analysis

- On the International Day for Monuments and Sites (April 18), to organize an exhibition of photographs dedicated to the cultural heritage of the Nizhny Novgorod region
- Supervision of students’ work on collection and analysis of cadastre information of cultural heritage of Nizhny Novgorod city and region
- To brisk up work with biosphere reserves in the Volga basin
- During the “Great Rivers Forum 2010”, to organize a workshop on the biosphere reserves of the Volga basin and invite representatives of other UNESCO Chairs to take part in it.

IV. Development prospects

Short and medium term

- **Implementation of ecologically-oriented projects:**
  - Second phase of the Russian-German project “Volga-Rhine” (subproject “Impact of cities on river water pollution”)
  - NNGASU / UNU-EHS Cooperation Unit joint project on a pilot online information system for risk and vulnerability assessment of natural and man-caused impact in the Nizhny Novgorod region
  - Human security, risk assessment, mitigation of territory vulnerability to negative natural and man-caused processes and events
  - Development of technologies for the reduction of anthropogenic impact on environment and methods of modeling and forecasting occurrence of hazardous processes
  - Organization of the International Great Rivers Forum and scientific congress.

- **Preservation of the historical and cultural heritage:** The UNESCO Chair plans to open a regional (Nizhny Novgorod) branch of the Russian Committee of the International Council for Monuments and Sites (ICOMOS). Its work as a leading university department in this field will be highlighted at Russian and International conferences, such as:
  - International scientific and industrial forum “Great Rivers 2010” (N.Novgorod, May 2010)
  - Annual meeting of organizations in the field of cultural heritage preservation
  - III Russian cultural congress (St. Petersburg, 27-29 October 2010)
  - International conference “East-West: culture, architecture, language” (University of Seville, Spain, 20-25 September 2010).

- **Dissemination of project results and education:** Organization and participation in various national and international conferences and meetings, publications in Russian and foreign magazines, management of the UNESCO Chair’s website. Participation of students and postgraduates in the UNESCO Chair's research projects in a series of seminars under the general title “Environment and human security”.

**Long term:** Establishment and coordination of a network of UNESCO Chairs as a scientific centre in the Volga region in the field of “Ecologically safe and sustainable development of regions”.