

Mongolia / Mongolie

(783)

UNITWIN/ UNESCO Chairs Programme

Progress Report

Period of activity: November 2008 - March 2010

UNESCO Chair in Sustainable Groundwater Management

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I. Activities

1. Education/ Training/ Research

Training

During its period of activity, the UNESCO Chair offered special lectures on “Sustainable Groundwater Management in Mongolia at the Institute of Geo-ecology, MAS

Duration: one day -12th March 2010

Target groups: undergraduate students, academics, public administrators, employees from the industry, teachers from technical and vocational education

Geographical coverage: national (the Asia and the Pacific region)

Research

Title: “Groundwater monitoring research study in Tuul river basin and Gobi desert region of Mongolia”

Duration: 2008-2009

Geographical coverage: Asia and the Pacific

Description: Groundwater level monitoring at 5 stations along the Tuul River (1.Upper source of urban water supply, 2.Central source of urban water supply, 3.3rd thermo power plant’s water supply production well, 4.4th thermo power plant’s water supply production well, 5.DornoGobi province-Sainshand Soum); groundwater survey (10-15 August 2009, Ulaanbaatar City, Mongolia) to investigate the interaction between Tuul River’s water and groundwater in the water source region of Ulaanbaatar city by multiple approaches of hydraulic measurement and tracer analysis.

2. Conferences/Congresses/Meetings

- *1st UNESCO Chair Meeting*, 26 March 2009, Institute of Geo-ecology, MAS, Ulaanbaatar, Mongolia. Discussion: work plan, activity-financing contract, UNESCO Chair's *Workshop on Transboundary Aquifers and Integrated Watershed Management* (held in October 2009 at the University of Tsukuba, Japan); Meetings with: the Mongolian National Commission for UNESCO, the Water Authority, Implementing Agency of the Mongolian Government, and with the Mongolian University of Science and Technology (MUST).
- *2nd UNESCO Chair Meeting*, 7 October 2009, University of Tsukuba, Tsukuba City, Japan. Participation of: UNESCO, UNESCO Office in Beijing, Japan's Ministry of Foreign Affairs.
- *UNESCO Chair Workshop 2009 on "International Strategy for Sustainable Groundwater Management: Transboundary Aquifers and Integrated Watershed Management"*, 6 October 2009, Laboratory of Advanced Research A, University of Tsukuba, Tsukuba City, Japan, in conjunction with the JSPS-DGHE Joint Research Project Meeting. The range of topics covered by the papers included groundwater initiatives in UNGA together with UNESCO-IHP, transboundary aquifer issues in Asia and neighboring countries, water management and watershed management in Asian countries and new integrated capacity to solve global environmental issues. 10 scientific papers were presented to 75 participants.

3. Publications/ Interuniversity exchanges/ Partnerships

Publications

In 2009, the UNESCO Chair published several documents and papers:

- Tanaka, T., Jayakumar, R. and Erdenechimeg, B. eds. (2009): *Proceedings of UNESCO Chair Workshop on Sustainable Groundwater Management in Arid and Semi-arid Regions. IHP VII Technical Document in Hydrology No.1, UNESCO Office in Beijing 2009*, UNESCO Office in Beijing and Terrestrial Environment Research Center, University of Tsukuba, 2009, 64p, available at:
<http://unesdoc.unesco.org/images/0018/001851/185125E.pdf>
<http://www.unesco.org/water/news/newsletter/223.shtml>
- Tanaka, T., Tsujimura, M. and Yamanaka, T. (2009): *Characteristics of infiltration and groundwater recharge process in arid and semi-arid regions. Ibid*, 21-30.
- Tsujimura, M. and Tanaka, T. (2009): *Groundwater resources issues in semi-arid regions from the view point of sustainability. Ibid*, 45-50.
- Unrjargal, D. and Bayarmma, P. (2009): *The characteristics of the quaternary aquifer in the Tuul River Basin. Ibid*, 51-55

- Williams, M., Unurjargal, D. and Erdenechimeg, B. (2009): *Geo-database for a groundwater monitoring study. Ibid*, 31-37.
- Tanaka, T. ed. (2009): *Extended Abstracts of UNESCO Chair Workshop on International Strategy for Sustainable Groundwater Management: Transboundary Aquifers and Integrated Watershed Management*. Terrestrial Environment Research Center, University of Tsukuba, 68p.
- Janchivdorj, L. and Erdenechimeg, B. (2009): *Groundwater monitoring system in Tuul river basin, Mongolia. Ibid*, 56-57.
- Tsogtbaatar, J. (2009): *Groundwater problem in Mongolia. Ibid*, 18.
- Tsujimura, M. (2009): *Education program of environment diplomatic leader: A new integrated capacity to solve global environmental issues. Ibid*, 58-60.
- Tsujimura, M. and Tanaka, T. eds. (2009): *For the Sustainable Groundwater Resources Management: Trough the Japanese Activities on Countermeasures for the Remediation of Public Hazards*. 2008 University Students Exchange Programme, Japanese Funds-in-Trust, Terrestrial Environment Research Center, University of Tsukuba, 85p. + ANNEX + CD-ROM.
- Tsujimura, M., Tanaka, T., Janchivdorj, L. and Erdenechimeg, B. (2009): *Proposal for the 2010-2011 activities of the UNESCO Chair on Sustainable Groundwater Management in Mongolia*. 4p.

II. Outcomes

During its most recent period of activity, the UNESCO Chair established a fifth monitoring point along the Tuul River, in Dornogobi, in the province of Sainshand Soum, as a control point of groundwater-level change and its draw down in the Gobi-desert area of Mongolia.

The objective of establishing a groundwater monitoring network is to collect data on groundwater levels and to interpret it to study the determination of groundwater flow direction, interaction of surface water and groundwater. The UNESCO Chair realizes a regular observation of the monitoring points as well as statistical analyses.

The main effects of the monitoring activities are the following:

- description of the condition that the sources of Ulaanbaatar city's urban water supply perhaps to enter groundwater resources deficit;
- description of the capability of utilization of groundwater resources by ecological (balance) parity;

- description of basic information and documents for rational management of water utilization and its protection;
- the groundwater resources in the Tuul river basin recharge with the groundwater coming from the Tuul river valley and small streams. Ulaanbaatar City is one of the biggest consumers of water in the Tuul river basin. Fast population growth and expanding urban area and industries have led to a rapid increase in water demand. Urbanization and industrialization have reduced groundwater recharge as a result of over exploitation. Groundwater monitoring plays an important role in the management of water resources. The groundwater monitoring program needed for a particular area depends on the type of the water-quality problem faced, sources of contamination, hydro-geological conditions and extent of groundwater use. Monitoring activities can help identify and solve the problems in time;
- description of the possibility of scarce water period for water consumption and water balance of groundwater resources and its current situation;
- the obtained data can help describing the decision-making issues of sustainable groundwater management.

III. Forthcoming activities

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

- Education and training: The international symposium will be conducted in October 2010.
The tentative theme of the exercise is “the environmental issues on water resources, bio diversity and public health in arid/semi-arid regions”. Specialists from Japan and Mongolia will discuss these topics focusing on the sustainable management system of water and bio resources and the enlightenment of public health. Graduate students from Japan and Mongolia will also participate in the symposium and present their research activities in the poster session.
- Monitoring and research: Two more monitoring sites of groundwater will be added to the existent sites in the Ulaanbaatar City area. The filed observation and sampling of the groundwater will also be performed in Ulaanbaatar in August. It will focus on the gel area in the northern region of Ulaanbaatar City and the southern region of the Tuul River. Besides, the existent data and basic information on Transboundary aquifers in Mongolia will be organized for contributing to “Transboundary Aquifers in Asia - A Preliminary Assessment and Inventory”, which is now edited by UNESCO Office in Jakarta and Beijing. The information should include explanation of Mongolia’s hydrogeology and groundwater resources and inventory details of its transboundary aquifers.
- Publication and outreach: the report of the international symposium will be published at the end of 2010 or beginning of 2011. The activity of the UNESCO Chair will also be introduced by the newsletter and website of the EDL program

at the University of Tsukuba. In addition, a book will be edited and published in English, Mongolian and Japanese to prevail the outcomes of the UNESCO Chair's activities at the end of 2011.