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UNESCO INTERNATIONAL RESEARCH AND TRAINING CENTRE FOR RURAL EDUCATION (INRULED) AND GEOTHERMAL DEVELOPMENT IN RURAL AREAS

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ABSTRACT

This paper describes the basic situation of the UNESCO International Research and Training Centre for Rural Education, including its tasks, guiding principles, action activities, and future plans. The paper then goes on to expound the geothermal utilization level at Xiong County geothermal field.

1. BACKGROUND FOR THE ESTABLISHMENT OF THE CENTRE

At present, 58% of the world population is in rural areas, rural population makes up 67% of the total population in developing countries, and the percentage of rural population is as high as 96%. The people's living standards in rural areas remain very low, therefore, the development of rural education bears special significance for the realization of Education for All, the promotion of economic development, social progress and economic growth, and the improvement of living standards in developing countries in particular.

With many urgent problems to be addressed, rural education is faced with stern challenges. Most of the illiterates of the world are in rural areas; universalization of education and average schooling year per inhabitant in rural areas are low; the average schooling year of women is only 36% of that of men, putting women and girls in a particularly disadvantageous position. Most of the illiterates in developing countries are women and 70% of the dropouts from schools in rural areas are girls. At the same time, rural educational expenditure is gravely insufficient; much remains to be done in terms of educational structure, contents, quality and efficiency and management level of staff, etc. Discrepancy exists between teaching contents and rural, social and economic reality. Technical and vocational education and continuing education for rural adults remain weak; school facilities and laboratory equipment are in great shortage; school enrolling repetition and dropout rates remain high. These problems of universal nature are still hindering the development of rural education in developing countries. Therefore, the priority and difficulty in developing education world wide still lie in rural areas, and the issue of education for the vast developing countries is, essentially speaking, an issue of rural education.

While confronting the above-mentioned serious challenges, rural education in many countries has also made promising headway and achievements since 1980. The World Conference on Education for All,

which took place in spring 1990 under the joint sponsorship of UNESCO, WORLD BANK, UNDP, and UNICEF, was a milestone event with its adoption of ***World Declaration on Education for All***, and ***Framework for Action***, having an extremely positive implication on the development and reform of education worldwide, and tangible results have been made in rural education in various countries. In June 1991, China, in cooperation with UNESCO, organized the International Symposium on Rural Education in Taian, China. In December 1993, UNESCO, UNICEF and UNFPA jointly convened the Summit of Nine High-Population Countries in New Delhi and adopted the ***Delhi Declaration***. All these events have further promoted the development of rural education in developing countries.

With its biggest rural population in the world, China has made tremendous achievements in education, social and economic development in rural areas. Other developing countries have also made important progress and obtained good experience in the field of rural education. With a view to sharing and exchanging experiences on the development of rural education, undertaking research, training, pilot projects and other developmental activities, UNESCO, at its 27th session of the General Conference in 1993, adopted the resolution (DR159) to establish in China the International Research and Training Centre for Rural Education. Following efforts of one year or so, the centre was officially inaugurated in November 1994 in Baoding City, Hebei Province. Concurrently, the Regional Workshop on Urgent Education Needs for Rural Population, the first workshop ever organized by the centre, took place in the centre. Mr. Mayor, Director-General of UNESCO and Mrs. Wei Yu, Vice Minister, Chinese State Education Commission, Chairperson of the National Commission for UNESCO attended the inauguration ceremony in person, signed the Memorandum of Agreement on the International Research and Training Centre for Rural Education and delivered important speeches on the occasion of the regional workshop, during which participants from 16 countries and international organizations discussed the present situation and existing problems in rural education and suggested that it was important to strengthen rural education.

2. THE TASKS AND GUIDING PRINCIPLES OF THE CENTRE

The following describes the tasks and guiding principles of the centre:

a. In view of UNESCO's mission, the practical needs of rural education in its member states, the fundamental goal of the centre is to explore and share the successful stories and strategies of rural education in developing countries, promote the development and innovation of rural education, facilitate the realization of EFA objectives, human resource and economic development in rural areas and the social progress as well as the improvement of people's living standards.

b. The tasks of the centre are to coordinate and promote research on rural education by international and regional training courses, seminars and symposiums so as to upgrade the endogenous capacity of developing countries in the development of rural education; coordinate cooperative activities so as to provide international experts with a venue and facilities for research and training; collect and share information on rural education; finally, publish and disseminate research findings and publications on rural education.

c. To strengthen the cooperation with rural education research and training agencies of UNESCO, other UN agencies, NGOs, member states and various regions so as to gradually shape a network of research and training of rural education.

d. To enhance the cooperation in the field of rural education between the centre and other research institutions of rural education at home and abroad, decision-making bodies of the government, departments of science and technology as well as economic communities so as to facilitate and promote the studies of rural education, training and experiment of the centre.

e. To explore more channels of funds, develop human and financial resources, and improve efficiency of usage of the available resources in order to ensure the realization of the goal and programme implementation of the centre.

3. PROGRAMME ACTIVITIES OF THE CENTRE

In accordance with the tasks of the centre and conditions available, along with improvement of its infrastructure, the centre has already undertaken the following activities during the past four years (1995-1998):

a. Research and experiment

- The research programme with the training courses for personnel of geothermal utilization in rural areas;
- Human resources development and management in township enterprises;
- Water-saving irrigation in greenhouses heated by geothermal water;
- Agricultural technologies extension with training courses;
- Educational reform and development in rural areas.

b. Training workshops and seminars

About 30 training workshops and seminars have been held in the centre during the past four years, at regional, sub-regional or national levels.

c. Computer networks

In 1997, the computer network was established with a contribution of $55,000 from UNESCO; local and INTERNET connection have been realized.

d. UNESCO Chair Program

In 1996, The UNESCO Chair Program on Staff Training in Rural and Literacy Education was established in the centre.

e. Publications

- A quarterly periodical named International Rural Education and Research;
- Training materials for geothermal utilization;
- A training textbook for post literacy education.

f. Staff exchange

For the past few years, the centre has sent 18 staff members to different foreign countries for study, visiting and conferences. In addition, many others have been sent to different institutes of China. Meanwhile, around 800 persons including more than 160 foreigners have come to the centre for visiting, taking research programmes, and attending the workshops or seminars.

4. FUTURE DEVELOPMENT AND PLANNING ACTIVITIES

4.1 Research and experiment

Research and experiment are one of the priority fields of the centre's activities and its international cooperation. The centre is going to select the following research and experiment programs in accordance with the tasks of the centre.

a. Studies on an effective strategy to increase educational opportunities, particularly in literacy and primary education, for rural disadvantaged areas and groups. Studies in this field aim at improving

access to education and the educational situation of women and girls, ethnic groups and other disadvantaged groups, mountainous areas, remote and poor areas. At the same time, the right approach and methodology of evaluation of rural education will be tackled in order to raise the efficiency and quality of education. Several counties, townships and villages will be chosen for the experiment in relation to rural literacy and universalization of primary education, solution for educational funds, teachers and materials, etc.

b. Experiments and studies will be conducted on ways and means to speed up the rural economic construction and development by using science and technology, improvement of the qualification of rural labour, and developing human resources.

c. Experiments and studies will be conducted to reform the rural educational structure and management system, innovate curriculum content, develop all types and levels of rural vocational and technical education so that education is more relevant to the needs of rural social-economic development.

d. In accordance with the resources and conditions available in the centre, studies will be gradually introduced on rural population education, health and sanitary education, rural energy education, environmental education, spiritual civilization and community cultural education with a view to improving the living standard of rural areas and population quality.

e. With the help of UNESCO, the centre will identify priority areas and themes of studies in bilateral and multi-lateral cooperation, seek financial support of UNESCO, other international organizations and concerned countries, select and invite researchers for cooperation, provide study grants to researchers and publicize results of research and experiments.

4.2 Training

Training is another important task of the centre. Training will be closely related to the ongoing research and experiment field of the centre. As required, the centre will organize one or more international or regional training workshops/seminars each year; in accordance with its capacity and resources available, the centre shall arrange training or exchange activities among developing counties at a regional level on bilateral or multi-lateral basis.

4.3 Information and Documentation

a. The centre will try to get the support of UNESCO, strengthen the cooperation with IBE, IIEP, UIE, PROAP, ACCU, ILI, UNU and other research institutions of NGOs and member states, collect and exchange information and documentation in relation to rural education, with a view to building the centre into a venue of rural education.

b. The centre will collect and compile a directory of experts and resource persons on rural education at home and aboard.

c. The centre will collaborate with domestic and overseas institutions to build an Information Base for Rural Education and Agro-tech Extension.

d. The centre will welcome and aspire opportunities to strengthen staff exchange with other institutions both at home and overseas, with a view to building the centre into a real international organization.

e. The centre will publish a series of books as training materials both in English and Chinese.

5. GEOTHERMAL DEVELOPMENT IN XIONG COUNTY GEOTHERMAL REGION

5.1 Introduction

Xiong County is located in the middle plain of Hebei Province, south of Beijing and between the cities of Tianjing and Baoding. It, thus, occupies a central position with respect to these major cities. In the southern part of the county is Bai Yang Lake, and Daqing River follows its southern boundary (Figure 1). The total surface area is 524 km^2 and the population about 300,000. The average energy supply is about 395 kg/yr of standard coal per person, which is below the average level of the whole country. Therefore, the energy supply is seriously deficient. Rich reserves of geothermal water are distributed over an area of 300 km^2 in the western part of Xiong County. The geothermal water reserves amount to 10 billion m^3 at a depth various public needs. A total of 16 geothermal wells are in use in the county with a total heat output of 36.2 MWt (above 14°C) (Chen Me-Xiang, 1988; Huang Shang-yao et al., 1986).

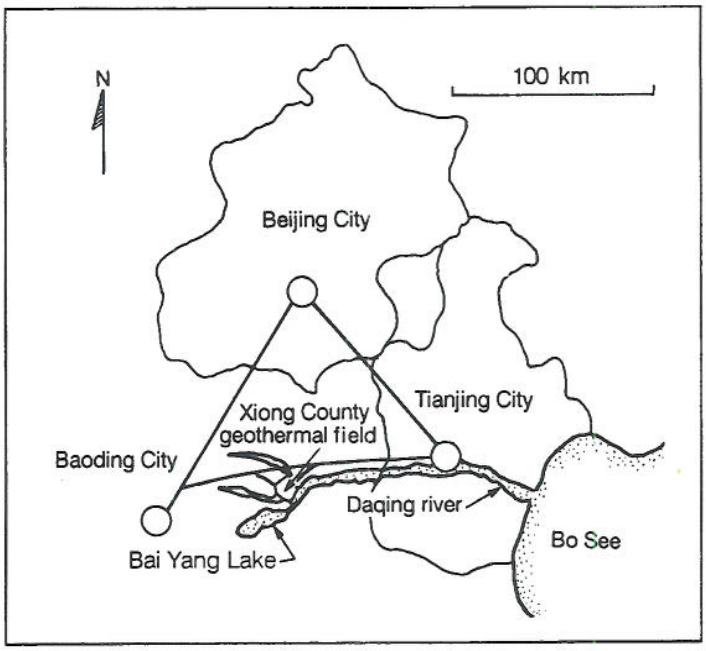

Figure 1: The location of the Xiong County geothermal field

5.2 The present geothermal utilization level in Xiong County

Since 1985, the geothermal development in Xiong County has been included in the "No. 7 Five Years Plan" for national science and technology. With co-operation between the National Geology and Mineral Department, and the National Petroleum Department, 9 wells have been drilled bringing the total number of geothermal wells in Xiong County to 16, supplying 12,026 m^3 of hot water per day; that is 5.2 times that of the 1970's.

By the end of 1997, the geothermal utilization in Xiong County involved many fields, such as agriculture, industries, business, scientific research and public needs.

Agriculture: A prototype vegetable and non-staple food production facility based on geothermal heating has been built, which includes geothermal greenhouses, open shelters, aquiculture, chicken hatching, and so on. The total heating area is 68,450 m^2, i.e. 53% of the total geothermal heating area of the county.

Industries: Two leather factories and two natural mineral water factories have been built, comprising some 2,596 m^2 floor area and 3% of the total geothermal heating area of the county.

Business: Two hot spring hotels with superior accommodations have been built, comprising 80 apartments and other accommodations. In addition, 8 geothermal bathhouses have also been finished. The total floor area is 7,037 m^2, or 9% of the total geothermal heating area of the county.

Scientific research: Three earthquake and 5 geothermal water monitoring stations have been established.

Public needs: Two schools that use geothermal water for space heating have been built. The county's government buildings and their staff dormitories are also heated by the geothermal water. The total area for public utilization is 31,879 m^2, or 35% of the total geothermal heating area of the county.

5.3 Future planning of the Xiong county geothermal region

According to the characteristics of the geothermal resources and the requirements of economic development, the future geothermal utilization in Xiong County will be divided between three areas of the county, that is the southern part, the central part, and the northern part.

1. **Southern part:** Based on the geothermal resources of the Bai Yang Lake region and surroundings having a surface area of 366 km^2, the Bai Yang Lake Hot Spring Town will be constructed. It will include a tourist and holiday village, a medical treatment and recuperation centre, and business and culture fields. The total planned area of the above facilities is 3.3 km^2.

2. **Central part:** Water from 8 geothermal wells will be used for a centralized geothermal space heating system in the Xiong County Town. This will make the town the first "Geothermal City" in China using modern exploitation methods and giving due regard to environmental considerations.

3. **Northern part:** Geothermal industries and agricultural regions will be located here, including vegetable growing, hatching of chickens, aquaculture, production of mineral water and some other manufacturing industries. This area will be intended as a reference project for the whole county for further vegetable and non-staple food production, to stimulate economic development, and to turn the whole county into one of the far-suburban production bases around the Beijing and Tianjing metropolitan areas.

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