

2. THE POTENTIAL IMPACT OF THE INTER-STATE ELECTRIC TIES IN NORTH EAST ASIA ON ENVIRONMENT

Dear participants!

The inter-state electric ties (ISETs) in Northeast Asia (NEA) has an important significance not only in solving the energy security with which each country is faced under a long program, but also in its environmental protection strategy.

Here are the limitation of energy resource with emission of air pollutants including CO₂, its reduction, efficient usage of "clean energy", saving of fund and labor force by interchange of sufficient energy capacity and the reduction of disafforestation area by UHV infrastructure.

The great leader Comrade Kim Jong IL has been formulated environmental policy to give priority to environment in the economic construction and brilliantly leads it to realization.

The task on environment protection of CO₂ is concerned with the special attention for non-emission energy resource.

Prospectively DPRK government will make plan for huge generation capacity in combination of large and small hydro power plants in 2010, 2020.

The hydraulic, thermal, and nuclear power plants will respectively account for 51%, 32%, 17% in the total generation capacity in 2010, and 43%, 25%, 32% in 2020, according to the plan of generation capacity raising by the type of a power plant in the perspective year when the ISETs and its integrated operation are not considered.

This program considers the construction of the nuclear power plant and its inclusion in the system.

The thermal power plant accounting for 30%~25% in the total generating capacity will adversely affect the atmospheric environment.

The ISETs in NEA will provide each country with effective use of its own energy resources and have a positive impact on environment by the electric energy interchange.

The CO₂ emission energy utilization will be reduced and the great strategic significance will be given to extensive development of large hydro power plants and effective usage of hydro energy in DPRK.

The hydraulic generating capacity of DPRK is now over 4million kW, but this figure only accounts for 30% of the total available resources.

We have the hydraulic energy resources of 10million kW with a favourable development condition and high effectiveness of investment.

This hydraulic energy resources can be effectively used in establishment of ISET and its operation.

Particularly the distance between power plant and consumer is shortened and on this we can save largely the fund and period for the construction of huge electric power transmission infrastructure.

As well as the reducing of line loss will give high benefit and it will affect in the environment protection

The DPRK government encourages to meet the local medium and small energy demand on its own by extensively constructing the medium and small power plants and mini power plants using the rich hydraulic resources of the country in parallel with the construction of large power plants.

It has an important significance in solving the shortage of electricity and in the environmental protection by avoiding the environmental damage and reducing air pollution caused by wood and coal uses.

ISETs raises the interchange capacity of electric power by the establishment of UHV infrastructure and brings about an environmental benefit by reducing the disafforestation area in DPRK.

About 80% of the total transmission line passes through the forests in the DPRK, therefore, when constructing the transmission line the relative disafforestation area according to voltage level is as follows.

For example, if it is supposed that the disafforestation area on 220kV transmission line is 100%, the disafforestation area on 500kV UHV transmission line is to be reduced to 17% and that on ± 500 kV DC UHV transmission line reduced to 5.3%.

If we consider the disafforestation area on 220kV transmission line as 9millionm² per 100km, the potential impact of the establishment of the UHV infrastructure on forest protection and environment can never be ignored.

— One of the important problems in the policy of environmental protection is to actively develop renewable energy resources with a low CO₂ emission.

The DPRK government puts a great significance to the development of renewable energy.

The integrated operation of the ISETs will play a great role in perspective solving the energy security of each country, provide more possibilities for increasing the research forces and investment in renewable energy study and development and have greater potential impact on environment.

As a rich and clean energy, solar energy is one of the main energies that the human will depend on in the future.

The development of solar energy is still in the initial stage, but its importance is underlined as a matter of policy, and the team for energy development and study based on solar heat and light has been organized in the DPRK.

According to the perspective plan for energy development, we plan to build up the 1000kW pilot power plant in 2010, and to increase its size in 2020 by intensifying the studies for reducing the power plant cost and raising the conversion efficiency of energy and basic studies for building up the pilot power plant using the solar energy.

Our country has a rich wind resources.

Now according to the preliminary investigation there is theoretical resource of 1,700,000,000kWh

According to the perspective plan for energy development, it is expected to meet the demand of electricity by wind power in the mountainous and seaside regions.

Above all, we plan to raise the output of small wind-turbine generator to 4kW and to annually produce 5000~10,000 units with a safe rated output even in the wind speed of 4~5m/s.

On the other hand, we make a development program for building the wind parks of the total capacity of 200,000~300,000kW in the windy zone with wind speed 18-20m like Chi Ma Tae in Yang Dok county south Pyongan province by installation of thousands of wind-turbine in the capacity of 100~300kW.

We plan a national investment in selecting the places suitable for geothermal development like Kil Zu, Myong Chon, An Zu area and using it for the residential heating.

We also plan basic studies to build up the geothermal power plant in the future.

We pay great attention to the basic studies for developing and utilizing biomass energy.

According to the studies, the biomass energy is expected to account for 12% in the world energy in 2060.

Considering that the nuclear energy accounts for 16%, the biomass energy holds a considerable proportion.

Now the developments of a comprehensive fermentation system, gasification and generating system using biomass, the innovation of biomass direct combustion technology and the cultivation technology of biomass with a high productivity are being internationally advanced in various fields.

The DPRK government makes an effort in organizing the special research team and laying the basis for introducing the advanced technologies.

Above all, it takes a measure to complete, introduce and generalize the biomass fermentation technology using methane and the production centres of methane gas have been building in over 400 areas of the country.

The expansion of renewable energy development and its utilization will remarkably limit the disafforestation and emission of air pollutants caused by wood and coal uses of the local inhabitants and will greatly contribute to the environmental protection of the country.

Additionally, the environmental factors from ISETs and its integrated operation will cause chain reactions to have a greater potential impact.

We greatly expect the success of studies of the experts from various countries in the environmental field.

The estimation about the potential effect of ISET according to environment will be big driving force for the promotion of project.

The organization and management of international work team of member countries has important significance in the economical effect analysis for ISET formation and its operation and composition of various basic system and as well as in the potential effect on environment.

We are going to introduce the successes of the advanced studies and push ahead with the research work in keeping with the actual conditions of DPRK.

Thank you .