

Title TECHNO-ECONOMIC ASSESSMENT OF FUTURE
PERSPECTIVES OF THE CONCENTRATED SOLAR
POWER PLANT IN MONGOLIA

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Academic Paper Thesis M.S. in Renewable Energy (International Program)
Naresuan University, 2011

Keywords Solar thermal power plant, direct normal irradiance,
parabolic trough CSP, economic assessment

ABSTRACT

This research presents a techno-economic assessment of future perspectives of the concentrated solar power plant in Mongolia. Methodology of the study is the data collection and data analyses, the technical evaluation of parabolic trough CSP plant, the economic and environmental evaluation parabolic trough CSP plant, and the recommendation for CSP technology development in Mongolia. Sainshand and Dalanzadgad cities are sited to assess the direct normal irradiation, land availability, water resources, grid connectivity and infrastructure. The technical evaluation result shows that both sites would be recommended to install the Parabolic Trough Concentrated Solar Power plant in the Gobi Desert of Mongolia.

The economic evaluation was investigated in term of the comparison between 5MW off-grid and grid connected parabolic trough solar thermal power plants in case of FIT and Tax Incentive. It showed that both CSP projects would not be economically viable at 8 % discount rate and project investment of 13.7 to 13.9 million Euro. From the government FIT policy which has already announced to the investors as maximum FIT of € 0.14/kWh, the results from this research showed that the NPV of CSP power plant is 12.7 million Euro while the BCR is 1.35 to 1.38. It is also indicates that IRR is between 6.8 to 7.04 % whereas the payback period is around 8 years. The conclusion of this research is considered to recommend to the Mongolian Government to accept new term similar to “Adder”, subsidy scheme in Thailand. This means regular

consumer energy price plus FIT. However, the Government should consider carefully in a financial model before the Government offers the new subsidy policy to the entrepreneurs CSP projects. If the Government revised Renewable Energy Law adding new policy, CSP projects such as off-grid and grid connected would be economically viable at 8 % discount rate, FIT and Tax Incentive.

This study also aims to encourage the Mongolian government and the private sector to implement the parabolic trough solar power plants for future magnification of power sector due to the increasing electricity demand and environmental degradation.

