

**TECHNO-ECONOMICS OF SELECTED ENERGY
TECHNOLOGIES AND A MODEL FOR THEIR
OPTIMAL INTEGRATION IN RURAL AREAS**

by

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CERTIFICATE

It is hereby certified that the thesis entitled "Techno-economics of Selected Energy Technologies and a Model for Their Optimal Integration in Rural Areas", which is being submitted by Mr. Chandra Shekhar Sinha, is entirely the result of his own efforts. The work was carried out under our supervision and has not been accepted in substance or in part for any degree and is not being concurrently submitted in candidature for any other degree.



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SUMMARY

The present work attempts to accomplish the following:

- (1) develop systematic methodologies for the techno-economics of selected energy technologies
- (2) formulate a mathematical model for obtaining optimal mix of technologies for three major end-use sectors in rural areas, and
- (3) integrate the best options for these end-uses into an overall energy supply system.

The thesis is divided into two parts:

The first part is concerned with the cost of delivered energy from selected renewable and conventional sources for certain important end uses in rural areas (cooking, motive power for irrigation, and lighting). Attempt has been made to incorporate the site specific nature of the economics of not only the renewable but also the conventional sources - for example, the cost of delivered electricity has been worked out in terms of the distance of the area from the grid.

The second part of the thesis uses these site specific expressions for the cost of delivered energy in a mathematical model to work out the optimal mix of the various energy sources available to a given community for a specified level of energy demand. The

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