

Electricity for all: The contribution of large-scale planning tools to the energy-access problem

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Abstract-

There is a huge need for investment for the electrification of rural areas in developing countries. Any effective approach to this enormous task requires strategic planning that combines diverse electrification modes: grid extension, mini-grids, and stand-alone systems. Advanced computer tools are necessary to support planners. This paper reviews the existing techniques, software tools, and approaches that can contribute to this job. We propose a comprehensive but compact mathematical formulation of rural electrification planning as an optimization problem. This general formulation establishes a common ground for a critical review of the different tools and solution methods and allows the identification of the primary research needs in this field.

Index Terms- Electricity access; Rural electrification; Electrification methodology; Energy technology; Planning model; Software tool

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