

Grid-connected versus stand-alone energy systems for decentralized power – A review of literature.

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Abstract

The decentralized power is characterised by generation of power nearer to the demand centers, focusing mainly on meeting local energy needs. A decentralized power system can function either in the presence of grid, where it can feed the surplus power generated to the grid, or as an independent/stand-alone isolated system exclusively meeting the local demands of remote locations. Further, decentralized power is also classified on the basis of type of energy resources used – non-renewable and renewable. These classifications along with a plethora of technological alternatives have made the whole prioritization process of decentralized power quite complicated for decision making. There is abundant literature, which has discussed various approaches that have been used to support decision making under such complex situations. We envisage that summarizing such literature and coming out with a review paper would

greatly help the policy/decision makers and researchers in arriving at effective solutions. With such a felt need 102 articles were reviewed and features of several technological alternatives available for decentralized power, the studies on modeling and analysis of economic, environmental and technological feasibilities of both grid-connected (GC) and stand-alone (SA) systems as decentralized power options are presented.



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Keywords

Decentralized planning; Grid-connected; Stand-alone; Renewable energy; Energy systems

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