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Life-cycle assessment of electricity generation options: The status of research in year 2001

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Abstract

This article presents the environmental impacts of electricity generation systems, based on life-cycle assessments (LCAs). These assessments normally include impacts from extraction, processing and transportation of fuels, building of power plants and generation of electricity.

The LCAs show that the following options have an excellent performance: hydropower (run-of-river and with reservoir), nuclear energy and windpower.

Hydropower with reservoir does have high land requirements, but in spite of this, it is possible to conclude that it has the highest performance, if we consider 2 factors not always included in LCAs: firstly, reservoirs can provide secondary benefits such as irrigation or flood control; and secondly, hydropower has a high operating flexibility that can improve the reliability of electricity supply.



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Keywords

Electricity; Life-cycle; Environment; Impact

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