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Life cycle analysis of power cables in Norway

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New national legislation, recently introduced, enforces utilities to take greater responsibility for the environmental impact of power cables. Cable waste is to be collected and recycled. The new legislation is conducive to the holistic mindset of life cycle analysis, considering environmental aspects of a product from "cradle to grave". Already at the design- and production phase of a cable, environmental matters as the rate of recovery should be taken into account.

Within the framework of Life Cycle Assessment we have analysed the distribution network in Norway. The LCA Method is very comprehensive, however, the analysis presented here merely identifies some key features of the life cycle. The analysis also serves the purpose of establishing an environmental documentation of power cables that can be used in "green marketing" or in discussions with authorities. To our knowledge, this kind of analysis has not been carried out previously for Norwegian distribution networks.

The paper points out different options for improvements or strategies that minimise any negative environmental performance of energy distribution. In this respect the choice between underground cables versus overhead lines plays a pivotal role. It has also been a key goal of this work to evaluate environmental improvements from a cost-efficiency point of view. Traditionally, choosing cables in preference to overhead lines has represented the most expensive solution, mainly due to the large costs attended with laying of the cables. However, environmental trends point in the direction that, e.g., aesthetic considerations will gain increased importance in the future.