



Summary

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End-of-life solar panels and wind turbine blades

– central government measures for effective management

Summary

In the future, there will be large quantities of end-of-life solar panels and wind turbine blades. These products need to be handled to ensure that they are reused or recycled to the greatest extent possible. The Swedish National Audit Office (Swedish NAO) has examined whether the State ensures that end-of-life solar panels and wind turbine blades are handled effectively. The audit has covered the efforts of the Government, the Swedish Environmental Protection Agency and the Swedish Energy Agency to design policy instruments and prepare supporting documents.

The overall conclusion is that the State has not ensured that end-of-life solar panels and wind turbine blades can be managed effectively to encourage their reuse and recycling, in line with the priorities of the waste hierarchy. Current central government policy instruments are not sufficient for supporting such management of these long-lived products. It is important to have a combination of policy instruments in place so that solar panels and wind turbine blades can be reused or recycled as much as possible at their end of life.

Current policy instruments are ineffective

The central government policy instruments that are currently available are inadequate for dealing with the future substantial quantities of end-of-life solar panels and wind turbine blades in line with the waste hierarchy.

State research grants and rules on ecodesign will only to a limited extent affect the management of solar panels and wind turbine blades that will be installed within the next few years. During consultations and in the permit process under the Environmental Code for the establishment of solar and wind power facilities, specific requirements are rarely set for how end-of-life solar panels and wind turbine blades are to be handled when the facilities are decommissioned.

Producer responsibility for electrical equipment does not guarantee long-term management of solar panels ahead of decommissioning. Under the rules, the producer must cover the costs of waste management, but the Government and the Swedish Environmental Protection Agency have not defined which solar panels are to be covered by producer responsibility. There are shortcomings in the Environmental Protection Agency's supervision and guidance. All in all, there is a risk that producers do not assume producer responsibility and that end-of-life solar panels will therefore not be collected for reuse or recycling.

There are bans on incineration of sorted construction and demolition waste and landfilling of sorted organic waste, but it is not clear whether the bans always apply to end-of-life wind turbine blades. In order to drive handling towards reuse and recycling, the Swedish Environmental Protection Agency needs to clarify how the ban on incineration shall apply and investigate how the ban on landfilling can be followed. Incineration and landfilling are the main treatment methods used today.

Insufficient basis for designing policy instruments

The Swedish Environmental Protection Agency and the Swedish Energy Agency have produced some documentation that could be used to design policy instruments for the management of end-of-life solar panels and wind turbine blades. However, the agencies have not submitted any proposals to the Government for new or amended policy instruments that could lead to the management of end-of-life solar panels and wind turbine blades that are better aligned with the waste hierarchy.

Recommendations

To the Government

- Review what legislative amendments can be made to clarify which types of solar panels are covered by producer responsibility for electrical equipment.

To the Swedish Environmental Protection Agency

- Establish criteria to clarify what determines the agency's assessment in individual cases of whether or not solar panels are covered by producer responsibility.
- Regularly follow up how decommissioned wind turbine blades are handled in Sweden, as a basis for assessing what measures are needed to ensure that end-of-life wind turbine blades to a greater extent than today will be reused or recycled in line with the waste hierarchy.
- In consultation with the Swedish Energy Agency, develop and regularly update the guidance for environmental supervisory authorities on techniques for recycling and on the application of waste regulations regarding the management of end-of-life wind turbine blades.

To the Swedish Energy Agency

- Develop the energy statistics so that they can form the basis for estimates of future quantities of end-of-life solar panels.
- Develop and regularly update the guidance for operators on techniques for recycling end-of-life wind turbine blades.