

Lights on in the Nordic countries

Nordic cooperation in electricity emergency preparedness

Modern society is completely dependent on the supply of electricity. Electricity is an essential commodity for individual consumers as well as society's vital systems.

Electrical systems are subject to many risks, as a result of which the transfer and distribution of electricity can be disturbed and normal life in society can be paralysed. Disturbances can be caused by technical malfunctions or human error, for example. The biggest risks to the grid are linked to weather conditions (storms and super-cooled rain). The grid is clearly less susceptible to disturbances than the distribution network, however.

At the grid level the national electrical systems in the Nordic countries have been linked to form a Nordic electrical system, and each year large amounts of electricity are transmitted across borders in the Nordic region. The probability of a power outage in the entire Nordic electrical system or a large part of it is not very high, but in view of the social impacts this would have, the risk of a collapse cannot be considered insignificant. According to a study, statistically such an outage takes place in the Nordic countries' electrical system at intervals of 10-15 years. Estimates of the risk of a grid failure in Finland vary, but according to Fingrid a major nationwide disturbance could happen perhaps once in 30 years.

In the view of the Ministry of Employment and the Economy, uncertainty factors regarding preparedness for an emergency in Finland's electrical system during the 2000s have been the adequacy of power production in peak consumption periods and the reliability of distribution networks in relation to modern society's requirements and changing climate conditions. The ministry has allocated resources particularly to these two areas. On the basis of the probability of risks, the ministry's priorities can be considered justified. Experience of disturbances in other countries' electricity transmission networks, however, shows that the risk of large-scale damage for

instance as a result of exceptional weather conditions cannot be ruled out in Finland.

A parallel audit that was conducted by the national audit offices of Finland, Denmark and Norway examined Nordic cooperation in electricity emergency preparedness to respond to large-scale disturbances in the grid and to repair damage effectively. The audit also examined national preparedness for emergencies in electrical supply and emergency planning.

On the basis of the audit, Nordic emergency planning is seen more from a national viewpoint in each country than from the viewpoint of the Nordic electrical system as a whole. In all the Nordic countries electricity emergency preparedness and emergency planning fall within the scope of national responsibility, nor have the Nordic countries concluded agreements that would require the commitment of resources to obligatory cooperation. Nevertheless, technical infrastructures such as power transmission networks cross national borders in a way that requires cooperation among different actors to ensure the functioning of systems and respond to crisis situations.

The loose nature of Nordic cooperation in electricity emergency preparedness is due partly to national differences in legislation as well as the way in which emergency preparedness and planning are organised. Strong national traditions in emergency preparedness and planning also play a part. On the other hand agreements have not been considered necessary because help is expected to be available in an emergency with or without agreements.

Public authorities have been cautious about putting cooperation on an official basis and agreeing on formal cooperation arrangements. Practical cooperation has largely been on the shoulders of the Nordic grid companies that are responsible for the system, which have concluded an agreement on common principles in the use of the electrical system and participate in two cooperation bodies.

The audit indicated that cooperation regarding preparedness to repair damage has not been a key area of Nordic cooperation in the electricity field, although system operators have recently strived to develop it. A letter of intent is being prepared concerning mutual help between the Nordic grid companies in case of a major disturbance. This particularly involves cooperation in repairing overhead

power lines. It is uncertain whether the parties will sign the letter of intent, however. The responsible national authorities have not taken part in this work, nor did they have precise information concerning the content of the letter of intent.

On the basis of the audit findings, joint Nordic or national risk and vulnerability analyses and preparedness plans dealing with help in the form of repair resources have not been prepared. In 2007 a joint drill that was conducted by the grid companies and some network service companies in Norway showed that Nordic cooperation lacks models for agreements and internal decision-making regarding the giving and handling of repair help. The audit indicated that national preparedness authorities were not aware of the weaknesses that were revealed by the drill.

The national audit offices of Finland, Norway and Denmark concluded that there is not sufficient cooperation among the Nordic countries regarding preparedness to repair serious damage to the grid. Consideration should be given to whether repair preparedness cooperation in case of a serious disturbance in the Nordic electrical system should be given priority and strengthened as part of Nordic electricity emergency preparedness. In the national audit offices' opinion, consideration should also be given to linking the responsible national authorities more clearly to Nordic electricity emergency preparedness.

In Finland the practical implementation of supply security has been based on cooperation between the public sector and business. Electricity emergency preparedness and emergency planning have been regulated more lightly than in the other Nordic countries, and the goal has been to maintain preparedness within a voluntary framework.

On the basis of the audit findings, the state has a smaller role in electricity emergency preparedness matters in Finland than in the other Nordic countries, and the way administration is presently organised does not give a lot of weight to electricity emergency preparedness. The situation is different partly because in the other Nordic countries the grid companies are mainly owned and controlled by the state. In Finland the Energy Market Authority, which otherwise supervises the activities of the grid company that is responsible for the system, does not have authority to supervise preparedness and emergency planning. In practice the National Emer-

gency Supply Agency plays a fairly small role in electricity emergency preparedness matters, although legislation makes it responsible for ensuring the functioning of technical systems. On the basis of the audit findings, it also appears that it may be difficult for the Ministry of Employment and the Economy to meet the requirements that were set in the Strategy for Securing the Functions Vital to Society that was approved in the form of a Government resolution in 2006 regarding emergency planning, since the ministry's role in electricity emergency preparedness has remained quite limited in practice.

In connection with the audit Finnish actors considered it important that Finland has one party, Fingrid, that is responsible for restoring the electrical system to a normal state in case of a major disturbance. Fingrid's scope for action was considered adequate in other respects, but it is uncertain how well labour can be procured for repair work in case of a large disturbance or damage situation. Fingrid is not a public authority and cannot order people to take part in repairing the grid in an emergency.

On the basis of the audit, electricity emergency preparedness and emergency planning in Finland can be considered binding only to a limited extent particularly considering the risks that are involved owing to society's dependence on electricity. Electricity networks are part of the critical infrastructure on which the functioning of other systems depends to a greater or lesser extent. In the opinion of the National Audit Office of Finland, consideration should be given to developing electricity emergency preparedness and emergency planning in a more binding direction in Finland. Some degree of tightening of legislation, official steering and supervision is needed.

On the basis of the audit findings, there has been less systematic analysis of risks and vulnerabilities regarding the electrical system in Finland than in the other Nordic countries - nor has it been required of Finnish authorities and actors. The lack of broad and summary analyses can, in the opinion of the national audit offices, lead to a situation in which the necessary information basis to evaluate the adequacy of implemented measures is lacking. Additional challenges for risk management are presented by the increased use of outsourcing, as a result of which ensuring electricity emergency preparedness will be more difficult and complicated in future.

The National Audit Office of Finland also points out that Parliament has received very little information on Nordic cooperation in electricity emergency preparedness, if any. Nor has Parliament discussed strategies concerning national preparedness and emergency planning in electrical supply, which means that clear policies regarding the desired level of electricity emergency preparedness have not been set. A political decision regarding a tolerable level of risk may also be necessary.

Finally the National Audit Office of Finland notes that the possible lack of summary analyses does not necessarily mean that actors' ability to respond to a large-scale power outage is poor. The present system simply does not provide good preconditions to ensure that capacity to act will supposedly be good in a crisis situation.