



Summary:

Supervision of nuclear power by the Swedish Radiation Safety Authority

Summary and recommendations

The Swedish National Audit Office has audited the effectiveness of the Swedish Radiation Safety Authority's supervision of nuclear power reactors in operation. The audit addresses the use of the appropriation for supervision and its implementation.

Background

Nuclear power constitutes a considerable part (40 per cent of net electricity production in 2016) of Sweden's electricity generation and supplies relatively plannable power generation to the national grid independent of weather conditions.

Safety is essential for public confidence in nuclear power. It is also important that the public has confidence in the role of the State in ensuring safe nuclear power. Safe nuclear power that minimises the risk of emissions of radioactive substances is part of the national environmental quality objective, A Safe Radiation Environment.

The Swedish nuclear reactors were brought into operation in the 1970s and 1980s and have an estimated operating lifetime of 40–60 years, which requires ongoing improvements and maintenance to uphold safety. Physical threats, such as unauthorised access and terrorist attacks, as well as threats to information security have come more into focus in safety work in recent years. At the same time, the international view of a desirable level of safety has meant heightened national security requirements, for example as a consequence of the nuclear power accident in Fukushima 2011. All in all, this means extensive development initiatives and investments at nuclear power plants, which also requires action by the State to encourage safety work and ensure that nuclear power plants live up to the safety requirements.

The Swedish Radiation Safety Authority is the supervisory authority for nuclear power plants in operation and for other types of nuclear facility. The Authority's supervision is

to ensure that those licensed to operate nuclear power plants comply with laws, other regulations and conditions that apply to nuclear activities and other activities involving radiation. Apart from on-site inspections of nuclear facilities, supervision includes examining modifications and conversions the license-holders wish to make and to follow up “incidents” occurring at the facilities. The remit of the Swedish Radiation Safety Authority concerning nuclear facilities in operation also includes licensing, issuing regulations, nuclear emergency preparedness, nuclear non-proliferation and research. All the Swedish Radiation Safety Authority’s activities referring to nuclear power plants are financed through fees levied from the licence holders. Total fees amount to about SEK 270 million per year.

Questions and grounds for assessment

The audit is divided into two overall questions that both aim to illuminate the effectiveness of the Swedish Radiation Safety Authority’s supervision of nuclear reactors in operation.

- Does the Swedish Radiation Safety Authority use its allocated appropriation for supervision of nuclear power in accordance with the intentions of the Riksdag?
- Does the Swedish Radiation Safety Authority use its resources for supervision of nuclear power effectively?

The Swedish National Audit Office’s assessments are based on the Swedish Radiation Safety Authority’s responsibility for supervision of nuclear power under Swedish and international regulations, regulations on fees under public law and the requirement that central government activities must observe a high degree of effectiveness and good economy. The assessments are further based on the necessity expressed by the Government and the Riksdag to strengthen supervision of nuclear facilities. The audit mainly refers to the period 2010–2016. The audit report also includes examples from supervision of nuclear power in Finland.

The audit focused on the Swedish Radiation Safety Authority’s use of appropriations and resources for supervision of nuclear reactors in operation. The audit did not include assessment of the quality of the supervision initiatives or assessing safety at nuclear power plants.

Audit findings

The Swedish National Audit Office’s overall conclusion is that supervision of nuclear power by the Swedish Radiation Safety Authority should be more effective and the

Authority should carry out its supervision on the scale that the Riksdag has given financial scope for and give priority in a more systematic way to the most important supervisory measures from the point of view of safety.

The Swedish Radiation Safety Authority's appropriation for supervision and other activities referring to nuclear power plants has increased since 2010, but the audit shows that the Authority has not made full use of the additional funds. In the opinion of the Swedish NAO this means that the Authority has not exercised supervision to the extent requested by the Government and Riksdag. The audit also shows that the Swedish Radiation Safety Authority does not make systematic risk assessments when supervisory measures are planned and prioritised. Hence it is not clear whether the supervision focuses on the most important supervisory measures. The most important audit findings are presented below for each of the two audit questions.

Does the Swedish Radiation Safety Authority use its allocated appropriation for supervision of nuclear power in accordance with the intentions of the Riksdag?

The Riksdag grants annual appropriations for the Swedish Radiation Safety Authority's activities, including activities referring to nuclear power plants. According to Riksdag decisions, all costs of the Swedish Radiation Safety Authority's activities referring to nuclear power plants are to be covered by the fees levied from licence holders. The major part of these fees do not go directly to the Swedish Radiation Safety Authority, but to income headings in the national budget, and thereafter they go back to the Swedish Radiation Safety Authority as part of the appropriations to the Authority. The appropriations and thus the fees have been gradually raised since the Authority was established in 2008, with the need for enhanced supervision of nuclear facilities as the main reason given.

The appropriation has not been used fully, despite the need for enhanced supervision

The Riksdag has strengthened the appropriation to the Swedish Radiation Safety Authority on several occasions since 2008. In all the appropriation increased by just over SEK 42 million between 2010 and 2016. In 2016 the appropriation was almost SEK 372 million. The reason for the increased appropriations has mainly been the need to enhance supervision of nuclear facilities with reference to the increasing age of the nuclear reactors. In its reference material to the Government the Swedish Radiation Safety Authority states that there is a need to increase supervision of nuclear power plants. The audit shows that since 2008 the Swedish Radiation Safety Authority has reported

appropriation savings. These have been in activities referring to nuclear power plants, which include supervision. At the close of both 2012 and 2014 the appropriation savings were more than SEK 12 million and in other years were between SEK 1.6 and 3.1 million. This can be compared with the total cost of SEK 140 million in 2016 for the area of activity the Swedish Radiation Safety Authority calls Safe Nuclear Power.

Despite the fact that the Riksdag, the Government and the Radiation Safety Authority have deemed it necessary to enhance supervision of nuclear power plants, the Authority has not used its appropriation fully and thus not fully carried out the supervision for which the Authority has financial scope. In addition, the audit shows that the share of resources that the Authority has allocated to supervision has not increased in the period 2010–2016. The Swedish NAO notes that the Swedish Radiation Safety Authority has not reported the consequences this may have had, for example if there were areas where supervision could not be conducted or not been sufficiently extensive. Nor has the Swedish Radiation Safety Authority reported the reasons for the appropriation savings.

The fees have been higher than the costs

The fees levied from the nuclear power plants to cover the State's costs for supervision and other activities referring to nuclear power facilities are adjusted annually and are to be calculated to achieve full cost coverage. If the fees charged are higher than the actual costs this implies overpayment. Since the fees for the period 2010–2016 were higher than the Swedish Radiation Safety Authority's costs for activities referring to nuclear power plants, fees have been overpaid. The total, accumulated overpayment at the close of 2016 amounted to just under SEK 130 million. The Swedish Radiation Safety Authority is thus one of the government agencies with the highest accumulated overpayment of statutory fees (which are mandatory). The accumulated overpayment is not at the disposal of the Authority but is reported under an income heading in the central government budget. Ahead of the 2016 financial year the Government instructed the Swedish Radiation Safety Authority to formulate an action plan to ensure that the accumulated overpayment is reduced to bring fees and costs into balance over the next few years.

The principle of full cost coverage applies to fees levied from nuclear power plants. The principle established by the Government that fees must correspond to a clear service in return also applies. The Swedish NAO notes that the overpayment of fees levied from nuclear power plants mean that the full cost coverage principle has not been applied. It also means, according to the Swedish NAO, that services in return in the form of supervision and other activities referring to nuclear power plants, have not fully corresponded to the fees.

Lack of information to the Riksdag on supervision, appropriation savings and overpayment of fees

The Swedish Radiation Safety Authority has not fully used the appropriations and not carried out supervision to the extent the Government and Riksdag have decided is necessary. At the same time, the Government has determined fee levels that were higher than the Authority's actual costs for activities referring to nuclear power plants.

The Swedish NAO notes that the Government has not commented on the appropriation saving or overpayment of fees in connection with the budget bills and has not either used the opportunity to inform the Riksdag in a performance communication about the results of the increased appropriations to the Swedish Radiation Safety Authority. There have been appropriation savings every year since the Authority was established. At the same time the Riksdag has repeatedly supported increased appropriations on the grounds that it is necessary to enhance supervision of nuclear power plants.

Does the Swedish Radiation Safety Authority use its resources for supervision of nuclear power effectively?

The Swedish Radiation Safety Authority has several tasks within the Safe Nuclear Power area of activity, apart from exercising supervision, which together are to contribute to safe nuclear power. Supervision of nuclear reactors in operation is not organisatorially separate from performance of other tasks. Supervision is carried out by staff from three different departments that carry out other tasks and activities in their respective departments in addition to supervision. The Swedish NAO takes the view that the supervision needs to be planned, prioritised and followed up so that measures that are most important from the point of view of safety are performed.

Lack of risk assessments may lead to ineffective use of resources

The Swedish Radiation Safety Authority does not perform any systematic risk assessments to plan and prioritise supervisory measures to ensure they are carried out where the need for supervision is greatest. For example there are no common guidelines for the assessments of supervision needs, despite the fact that the assessments are carried out at a relatively decentralised level in the organisation. This may result in resources not being given priority and used for the supervisory measures that are most important from the point of view of safety.

Difficult to assess the costs and results of supervision

The Swedish Radiation Safety Authority's descriptions of which activities focusing on nuclear power plants that are included in supervision differ between documents and reports. Consequently, according to the Swedish NAO it is unclear what is included when the Authority reports costs of supervision in various contexts. In its annual reports the Swedish Radiation Safety Authority only reports costs of supervision in the activity area of Safe Nuclear Power as a total amount, without specifying the different activities that are included.

The Swedish Radiation Safety Authority's time reporting system is not designed to differentiate between the different parts of supervision. Consequently, the Authority has no data on the size of resources devoted for example to inspections compared with other forms of supervision.

The Swedish Radiation Safety Authority does not follow up and report the number of supervisory decisions made annually in response to supervision carried out. Nor does the Authority follow up or report how long supervisory cases are in progress before they are closed. Consequently it is difficult to determine the focus and results of supervisory measures and also to follow progress over time.

In summary, the lack of reporting and follow-up means that it is difficult to assess whether resources have been used effectively.

The proportion of supervision in relation to all activity focused on nuclear power plants is unchanged

The Swedish Radiation Safety Authority has several tasks within the safe nuclear power area of activity, apart from supervision, which together are to contribute to safe nuclear power. In that implementation of supervision is not organisationally separated from other tasks, several activities compete for resources in the form of staff with relevant skills. The Swedish NAO's analyses of efficient use of resources shows that supervision constitutes about one third of activities in the department that performs most of the Authority's tasks in the activity area Safe Nuclear Power. This share has not increased in the period 2010–2016, despite the fact that appropriations to the Swedish Radiation Safety Authority have increased on the grounds of strengthened supervision.

The Swedish NAO's recommendations

To ensure that funds allocated are used to strengthen supervision of nuclear power plants and that the most important supervisory measures are given priority, the Swedish NAO makes the following recommendations to the Government and the Swedish Radiation Safety Authority.

Recommendations to the Government

The Government should ensure that the Swedish Radiation Safety Authority carries out the supervision of nuclear power that the Government and the Riksdag have requested and given the Authority economic scope to do. Moreover, the Government should inform the Riksdag on how the increased appropriations to nuclear power supervision have been used and how supervision, and ultimately safety, at nuclear power plants may have been impacted by the appropriation not being fully used. The Government should also review fee setting so that fees and actual costs of activities referring to nuclear power plants are balanced, so that the principle of full cost coverage is applied and the fees correspond to services rendered in return.

Recommendations to the Swedish Radiation Safety Authority

The Swedish Radiation Safety Authority should carry out the supervision that the Government and Riksdag have deemed necessary. The Authority should also ensure that supervision is directed towards the most important supervisory measures from the point of view of safety. For example, the Authority should work more systematically with overall risk assessments as a basis for effective prioritisation of supervision. Moreover, the Swedish Radiation Safety Authority should clarify reporting of costs and performance for supervision of nuclear power, both by consistently reporting what is included in the supervision, and by improving reporting so that costs and performance for various types of supervision can be followed up.