AUDIT REPORT

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Planning of logging in State Forest Management Centre

Tallinn
2007

Summary

Forest covers half of Estonia, while just over a third of it belongs to the State. In the state forest administered by the Ministry of the Environment (98% of all state forest), reforestation, tending, use and protection of forest is organized by a profit-making state agency, the State Forest Management Centre (hereinafter RMK). As state forest is a state asset administered by the Ministry of the Environment, it is the duty of the Minister of the Environment, pursuant to the State Assets Act and the Forest Act, to supervise RMK's activities.

RMK's expenses in managing the state forest are covered with its revenue from selling the products of state forest assigned to its administration. The RMK transfers 26% of its revenue from the sale of the forest harvested for regeneration into the state budget. Sustainable forest management implies observing that current cutting volumes would not damage the environment and decrease prospects of future logging. Thus, accurate data on state forest, the volume of its cuttings and the revenue earned from its sale is needed to manage the forest in a sustainable way.

The National Audit Office (hereinafter NAO) audited RMK's activities in planning the logging during the period of 2003–2006 with a purpose to assess whether the value of state forest is to be retained and whether the planned cutting volumes ensure the sustainable management of state forest. The NAO could not meet all objectives planned in the audit, because the state lacks reliable statistics on state forest and its management.

In the opinion of the National Audit Office, the clear cuttings carried out in state forest during the audited period were not planned in accordance with a long-term plan based on reliable data as it is required by law. There is no coherent data available as to how much state forest is left, how much of it has been already cut and how much of it could be cut in the future. If the situation will proceed where RMK, being financially dependent on the revenue from the sale of forest, exercises the inventory, planning, cutting and sale of state forest at the same time, it may jeopardize the preservation of state forest and its sustainable management.

Main observations

- **RMK's accounting of cuttings in state forest is not accurate.** Comparing RMK's official cutting statistics with the accounting of the sale of timber and the sale of cutting rights of standing crop reveals that, during 2001–2006, 526 000 solid cubic meters (annually 0.8–9,4%) more wood was sold than it was cut at the same time according to RMK's data. As it is not possible to sell more wood than has been cut, the cutting statistics of RMK is not accurate. The RMK lacks an overview of regeneration cuttings in state forest, as according to different data, the extent of regeneration cuttings carried out during 2003–2005 ranges from 17 200 to 21 800 ha in total. In all seven forest districts examined by the NAO, numerous cases were identified, where the data of RMK headquarters differed substantially from the data provided by its Forest Districts. RMK has not analyzed the causes for these differences.

- **State forest management is planned on a short-term basis.** Although the Forest Act provided for the audited period that the logging in sate forest should have been subjected to long-term planning, the RMK has planned cuttings for only one to three years to come. Additionally, RMK has changed these plans every year. Planning cuttings in shorter perspective only and altering these plans annually contradicts the rationale of the Forest Act, compromising the sustainable use of state forest, as forests that qualify better for harvesting may be cut too hastily.

- **In planning the logging in state forest, RMK does not meet several requirements of forest management planning and employs data, which shows larger area of standing crop than is actually available.** The RMK does not prepare comprehensive formal forest management plans for its forest districts. During 2002–2006, the logging in state forest was

not planned on the basis of forest inventory data as required by law, but only by making use of RMK's database, where previous inventory data was adjusted according to the cuttings carried out. The problem is that this database does not reflect adequately the changes occurred in state forest, because RMK has not surveyed the forests to necessary extent and cannot provide correct accounting of cuttings either. Likewise, in planning the logging in longer perspective it has not been considered that in order to meet the objectives of nature conservation, some of the state forest must be allocated for the exchange of lands and designation of sites to be protected within the Natura 2000 network.

- **Planning of logging in RMK is not transparent and the exchange of information between different administrative levels is distracted.** RMK's information regarding the extent of regeneration cuttings annually planned in forest districts is contradictory, as its headquarters and Forest Districts provide different data about the area of regeneration cuttings planned for each year in the audited period. For several times in the course of the audit, RMK provided the NAO with data on the area of regeneration cuttings annually planned by forest districts, but the data submitted at different times varied significantly. In some forest districts, the area of regeneration cuttings planned for the same year but presented to NAO in different occasions differed up to 40%. In case of different plans there is a risk to exceed the planned cutting volumes and the sustainable management of state forest is not ensured.

- **Centre of Forest Protection and Silviculture (hereinafter CFPS) has not fulfilled its purposes in establishing state forest management plans.** The duty of CFPS is to ensure that formal forest management plans are prepared for managing the state forest in a sustainable way, but instead it has established RMK's forest management plans, which do not comply with the requirements and have been prepared for a shorter period of time than required to be due. Likewise, in establishing the forest management plans, the CFPS has not required that the RMK must obtain an approval from the administrators of respective protected areas.

- **The annual volumes maximally permitted to cut from the state forest, as proposed to the Government of the Republic for its approval, are not based on data of sufficient reliability.** Pursuant to the Forest Act, in approving the annual volumes maximally permitted to cut from the state forest, the Government of the Republic must rely on forest management plans. However, this is not possible as RMK forest districts lack required formal forest management plans. The Government of the Republic has been thereby confronted with a situation, where RMK applies for and the Ministry of the Environment presents for approval a project of volumes maximally permitted to cut from the state forest, but both the Ministry of the Environment and the Government of the Republic do not have the opportunity to compare the volumes requested by RMK with forest management plans. Thus, in recent years, the Government of the Republic has not been able to fulfill its duty as provided with the Forest Act to administer the state forest management within a framework determined on the basis of the results of strategic planning.

- **In all seven forest districts included in the audit sample, the audit identified cases of forest stands, where RMK had planned cuttings, which violated the requirements of forestry law.** The National Audit Office notified the Environmental Inspectorate of cuttings with the characteristics of a violation.

Recommendations to the Minister of the Environment

- To organize the management of RMK in a way in which its internal control system would ensure reliable and correct accounting of the areas and volumes of cuttings. For this purpose, the RMK must

  - prior to cuttings, carry out a sufficiently thorough assessment of all areas subject to cutting;

- after cuttings, check the timber volumes sold against the assessment data of the cutting area and descriptions of forest surveys. If differences occur, then RMK must find out the causes for such inconsistencies;

- ensure accurate accounting of the timber volumes produced from state forest;

- ensure full compliance with the requirements of forestry law;

- improve the information system in a way that would enable to compare effectively and quickly the timber volumes cut and sold with the assessment data of cutting areas and descriptions of forest surveys.

If necessary, to pursue an additional independent audit to assess the performance of RMK's internal control system and its accounting of cuttings in order to identify and address the shortcomings in the internal control system and to ensure that the activities in state forest are reported correctly.

- To analyze and, if necessary, to rearrange the organization of state forest inventory, preparation of forest management plans and forest management in a way in which the possible conflict of interests would be eliminated. For example, in order to separate different functions from each other, to purchase forest surveys and the preparation of management plans from private sector or assign the task to conduct forest surveys and management planning to some existing state agency.

- To recommence forest management planning in the state forest managed by RMK, thereby effecting the preparation of formal long-term forest management plans on the basis of a total area forest inventory as follows from the Forest Act. To require that RMK will submit formal forest management plans to CFPS for establishment. For the time being when the required new forest management plans are being prepared, to request, pursuant to the Forest Act, the RMK to submit lists of activities carried out in forests (cuttings, reforestation, etc.) along with the management plans compiled before the year 2004.

  This guarantees that the management is based on and the Forest Register is supplied with the most recent and accurate data, that cuttings are planned pursuant to long-term objectives and that the management activities during the period preceding the plans are assessed as well.

- To ensure that CFPS fulfills the duties assigned to it and requests RMK for formal forest management plans. This includes

  - permitting to regard only the cuttings planned in the course of total area forest inventories and described in forest management plans as regeneration cuttings;

  - observing that additional formal lists indicating the cuttings which Forest Districts have carried out after the respective forest management plan was originally prepared are submitted together with the draft management plans proposed to CFPS for establishment;

  - analyzing the lists of performed activities and forest management plans submitted by RMK with a purpose to assess whether RMK has followed these plans when managing state forests.

  If necessary, to change the structure of the Centre of Forest Protection and Silviculture and to ensure that necessary funds are available for performing these tasks.

- To improve the performance of County Environmental Departments and the Environmental Inspectorate in the field of state forest in order to prevent violations of the Forest Act.

- To assess consistently the effect of state forest management on the value of state forest as state's biological assets. Depending on the results of this analysis, to adjust the organisation of state forest management if necessary.

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The Ministry of the Environment complies with the recommendations made by the National Audit Office in general terms and prioritizes the need to improve the control in regard to the compliance with forestry law provisions of in state forest. To ensure the reliability of cutting data, the Ministry intends to assess additionally the organization of RMK's management and the performance of its internal control systems, as well as the accounting of cuttings.

The Minister of the Environment admits in his reply that the state must have a better overview of RMK's activities in state forest management. This requires more effective cooperation between the Forest Department of the Ministry of the Environment, the RMK, the Centre of Forest Protection and Silviculture, County Environmental Departments and the Environmental Inspectorate in adjusting and, if necessary, complementing the monitoring processes, performance of procedures, and respective regulations.

The Minister did not consider it to be reasonable to separate the conducting of forest surveys and management planning from the management of logging in order to eliminate the potential conflict of interests, because private enterprises are not capable to provide forest surveys and management planning on such a large scale. In the opinion of the Minister, the separation of forest surveys from RMK's functions may affect RMK's competitiveness.

The Environmental Inspectorate concurs with all conclusions and recommendations of the NAO and plans closer and more extensive control in respect of the legal compliance of cuttings in RMK forest districts.

The Centre of Forest Protection and Silviculture explains the shortcomings in establishing RMK's forest management plans with a shortage of time and employees. At the same time, it draws attention to the fact that the Minister of the Environment has not established the methodology for the assessment of forest management activities and has not determined the extent of assessments to be carried out in every year, although these duties are also provided with the Forest Act passed in 1998. Due to limited resources, the CFPS has taken the decision to confine its work only to allocating prescribed yields and checking the accuracy of cutting lists.

RMK disagrees with several conclusions made in this audit report and gives the reasons for that in its reply. However, RMK admits problems in operative data management and considers it necessary to improve its internal control systems.

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Introduction

The objective of the audit was to assess how the planning of logging in the state forest administered by the Ministry of the Environment affects the value of state forest, and to answer the question of whether the Sate Forest Management Centre manages the state forest in a way in which the retention of forest's value is ensured.

The institutions audited were the Ministry of the Environment and the State Forest Management Centre as its subordinate agency. In the course of the audit, data was also collected from the Centre of Forest Protection and Silviculture, the Environmental Inspectorate and County Environmental Departments.

The period audited was from 2003 to 2006, but data from previous years was also examined, as well as future plans.

The audit team comprised of Ms Tuuli Rasso, Audit Manager, and Mr Rainer Kuuba, Auditor. The audit was supervised by Mr Olav Lüüs and Mr Tarmo Olgo, the Directors of Audit.

Overview of the subject field

Notions

Prescribed yield – the total area of forest stands annually allocated to regeneration cuttings, which is calculated by forest categories (protected and commercial forests separately) and main tree species pursuant to the regulations established with forest planning guidelines.

Subcompartment – an integrated forest area, which is sufficiently homogeneous by its origin, composition, age, basal area, height, growing stock and habitat type to be subjected to common methods of management. Similar parts of forests can be regarded as distinct subcompartments when they are separated from each other by a bourn, ditch, track, power line or some other type of line element.

Thinning – an improvement cutting undertaken with a purpose to increase the value of the forest by regulating its density and composition in order to enable the use of trees that will fall out in the immediate future in a forest, which has an average breast height diameter over 8 centimetres and higher basal area than the permitted minimum limit. The forest breast height diameter of a forest is the average diameter of trees measured at the height of 1.3 metres from the root collar. The basal area of a forest is the total of the cross-sections of all stems measured at the height of 1.3 metres per hectare.

Clear cutting – a regeneration cutting (see below) undertaken when all trees are cut from the cutting area within one year from the beginning of the logging, with the exception of seed trees and their undergrowth, crop trees and trees that are necessary to ensure the biological diversity or the preserved standing parts of such trees.

Closing time – the period of time, after which a new clear cutting can be commenced next to the existing clear cut area. The minimum closing time is 4 years in the case of reforestation or natural regeneration with pines or valuable broadleaved trees, 3 years in the case of reforestation or natural regeneration with spruces and 2 years in other cases. Cutting years are not included in the closing time. In Estonia, oak, ash, elm, soft-leaved elm and maple are regarded as valuable broadleaved trees.

Merchantable wood – the volume of timber to be realized as a standard industrial assortment or firewood, which is smaller than the growing stock of a standing crop (see below) by the logging waste (top, stump, bark).

National forest inventory (hereinafter NFI) – the inventory of forests using the statistical sampling method, which is comprised of finding an appropriate sample, establishing test areas, carrying out necessary measurements and generalizing the results to the object of the inventory as a whole. Among other purposes, the data collected as an outcome of NFIs has been used for allocating the annual cutting volumes appropriate to Estonia, and they have been reflected in the National Forestry Development Plan (approved by the Parliament resolution in 13 November 2002).

Total area forest inventory (forest survey) – the demarcation of subcompartments within a registered immovable, forest district or some other management unit, identification of the characteristics of forest stands within these subcompartments, and preparation of survey descriptions of these subcompartments based on their characteristics and other data required by the forest planning guidelines. In case of a total area forest inventory, use is made of optical assessments and interpretations of aerial photos or satellite images, which are complemented with measurements or counting necessary to assess the age, height, breast height diameters, basal areas and other characteristics of trees.

Forest planning – collecting data on forest's condition and the volume of its growing stock and, based on this data, preparing a forest management plan and giving a judgment on the previous management of this forest. According to the Forest Act passed in 2006 and entered into force on 1 January 2007, the judgment on previous management is no more regarded as a part of forest planning, but this does not dispute the fact established internationally over decades that forest surveys and planning of further management activities also include the evaluation of previous management.

Forest management plan – a basic document for managing the forest. It is drawn up by registered immovables in private forests, by forest districts in state forests or by other management units. During the audited period, the legislation provided that the forest management plan is prepared at least once in every ten years and the survey data used for preparing the plan must not date from more than ten years ago. The procedures of establishing forest management plans are effected with a regulation of the Minister of the Environment.
The forest management plan shall comprise of the following:

- the plan of the forested land together with descriptions of the forest and the connections of parts of the forest with their surroundings;
- the restrictions on forest management imposed by legislation or planning documents, the purposes of forest use and the respective forest categories, the ways of forest use and the methods of forest management which would foster them;
- the volume of regeneration cuttings and thinnings maximally permitted in protected and commercial forests and the list of forest parts eligible for logging;
- the list of forest parts eligible for being managed with selective cuttings and the volume of the cuttings maximally permitted in them;
- recommendations for reforestation, regulation of the water and nutrition regime of forest soil, forest protection and construction of tracks on forest land, as well as for carrying out cleaning and sanitary cuttings.
- descriptions of the elements of biodiversity and the measures necessary to preserve them.
- the judgment on previous management of the forest.

Decision to establish or refuse to establish a forest management plan – checking the compliance of a given forest management plan and the data used for its preparation with legislation and issuing a respective document. Forest management plans are established by the Centre of Forest Protection and Silviculture.

Forest notification – the notification submitted by the owner of the forest or her representative to the respective County Environmental Department of the location of her forest in order to get the permission for logging. The County Environmental Department checks the compliance of the regeneration and selection cuttings and thinnings planned in this notification with the volume of permitted cuttings established in the forest management plan and, in case the cutting is planned in

compliance with legal requirements, leaves a notation “permitted” onto the forest notification. Additionally, the owner of the forest informs the County Environmental Department about all damages occurred in the forest and planned reforestation activities.

Forest Register – a national register for accounting of forest resource, which is established by the resolution no. 294 of the Government of the Republic on 7 October 1999. According to the legislation in force during the audited period, the inventory data used for preparing the forest management plan together with the planned management activities and the data of the forest map had to be entered to the Forest Register within 7 days after the decision to establish the forest management plan was taken.

Main tree species – the most eligible tree species of upper layer. In most cases, the main tree species coincides with the **dominant tree species**, i.e. the tree species with a growing stock, which accounts for the largest part of the growing stock of the upper layer of a forest stand.

Cutting area – a part of forest allocated for cutting or already cut. The assessment of cutting area refers to measuring of trees prior to logging and, based on measuring results, estimating the timber volume to be obtained from logging. When the last tree allocated to logging is cut from the cutting area, the area is no more called cutting area but **clear cut area**, which refers to a treeless site as a stage of forest development.

Growing stock – the cubic measure of a stem or, in case of a forest stand, the total sum of cubic measures of stems, which is measured in solid cubic meters.

Survey data – the description of a forest stand growing in a given subcompartment and its site conditions.

Regeneration cutting – a cutting, in the course of which one or several methods of harvesting are used to cut all trees from the forest stand, except old crop trees and seed trees. Regeneration cutting falls into clear cutting and shelterwood cutting.

Selection cutting – a cutting undertaken in mixed stands of different age, pure pine or spruce stands, as well as in multi-storey stands and grey alder stands, which are managed as permanent forests. To manage a permanent forest means to replace the trees cut or fallen out constantly with new trees without carrying out any clear cutting.

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In the state forest administered by the Ministry of the Environment (about 98% of all state forest), reforestation, tending and use of forest, and forest protection is organized by the State Forest Management Centre (RMK), which is a profit-making state agency. RMK manages lands owned by the state with a total area of 1.063 million hectares, including approximately 815,000 ha of forested land (37% of Estonia’s total forested land).

RMK employs about 1200 people in total. Its headquarters is located in Tallinn, but forest management activities are carried out by 64 Forest Districts, which fall into five Forest Management Regions across Estonia. In recent years, the timber cut from the forests managed by RMK has accounted for about one fourth of all timber harvested in Estonia.

Pursuant to the Forest Act, Article 50, paragraph 2 (passed in 1998), the RMK transfers 26% of its income from the sale of regeneration cutting rights and the sale of timber obtained through regeneration cutting to the state budget. Regarding the proportion of regeneration cuttings in total logging, about 18% of the total revenue from managing the state forest has been transferred to the state budget (see table 1). Since 2007 (pursuant to the Forest Act passed in 2006), the RMK transfers to the state budget 26% of its profit derived from the sale of regeneration cutting rights and the sale of timber obtained through regeneration cutting (costs are subtracted from the income), which in the case of

similar turnover provides 35 million EEK less than has been transferred to the state budget in previous years.

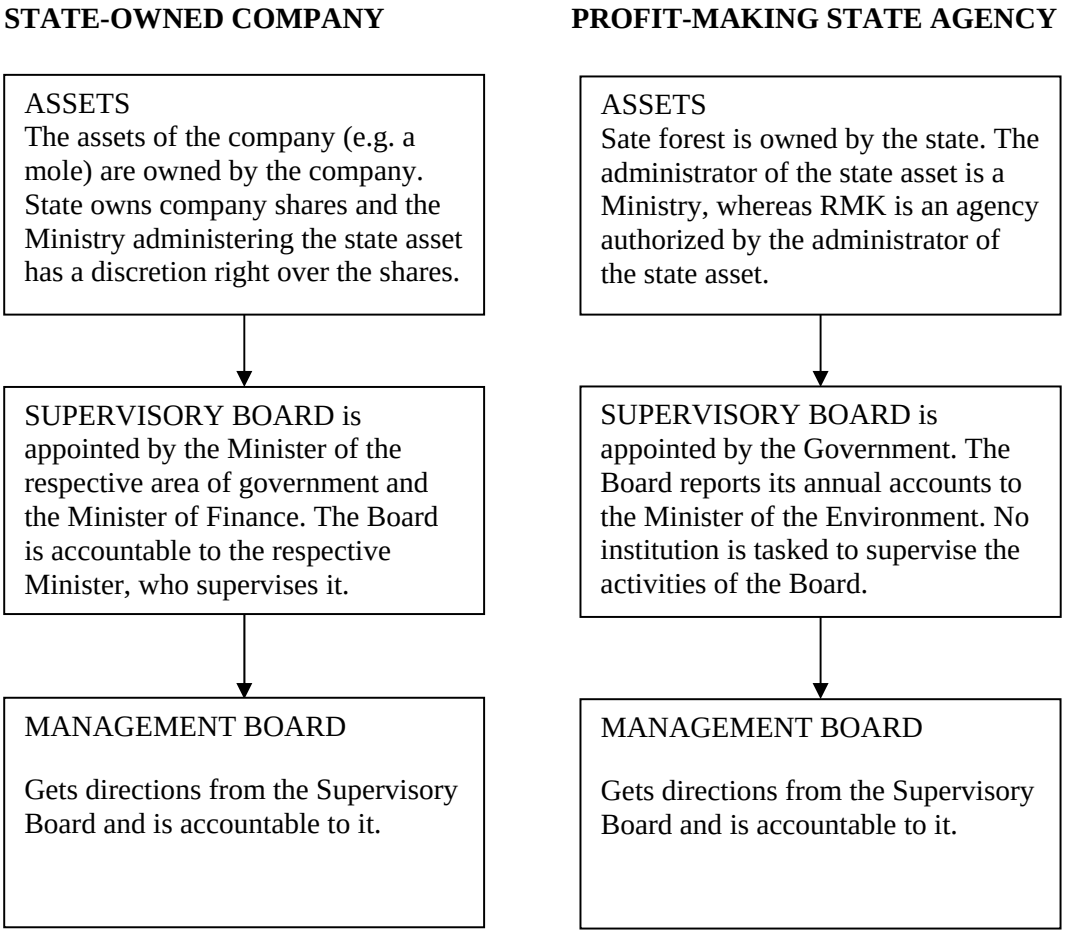
Table 1. RMK's turnover and the revenue from logging transferred to the state budget (million EEK)

	2002	2003	2004	2005
RMK's turnover	931	959	978	1 118
Revenue from logging transferred to the state budget	172	174	179	178

Source: RMK

As state forest is a state asset administered by the Ministry of the Environment, it is the duty of the Minister of the Environment to supervise RMK's activities pursuant to the State Assets Act and the Forest Act. The management of the RMK as a profit-making sate agency differs from the management of state-owned commercial enterprises and state hold companies (hereinafter state-owned companies, see figure 1).

Figure 1. Management schemes of state-owned companies and the profit-making state agency



The management of state forests is based on forest management plans[1], which since 1 January 2005 have to be formally established by the Centre of Forest Protection and Silviculture.[2] Among other criteria, the forest management plans also indicate the volume of regeneration cuttings and thinnings

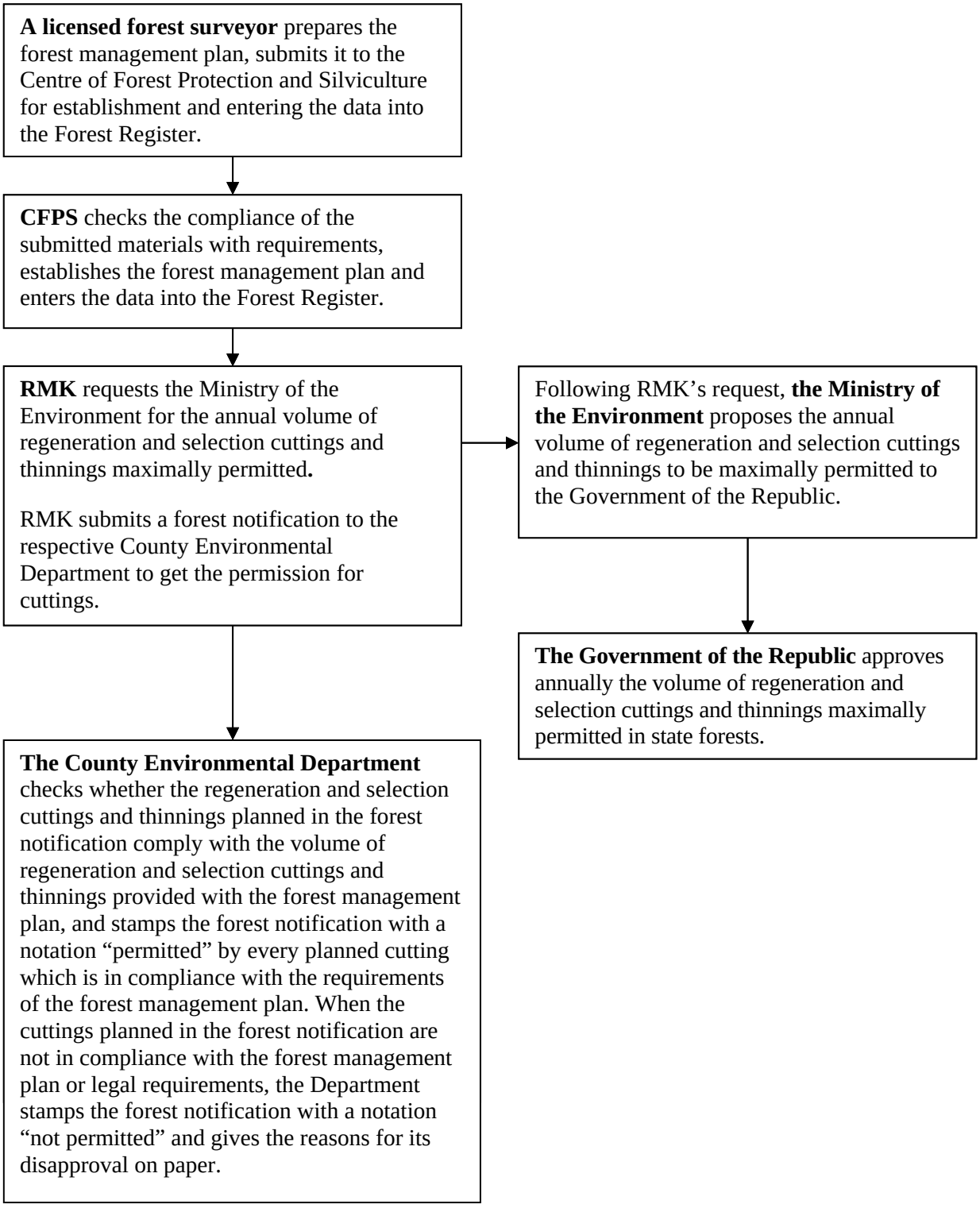
[1] The Forest Act, Art. 7; Art. 30 paragraph 3; Art. 23 paragraph 6; Art. 42 paragraph 1.
[2] The regulation of the Ministry of the Environment from 27 April 2004 on "The establisher of the forest management plan and the procedures of establishing forest management plans".

maximally permitted in protected and commercial forests and provide the lists of forest parts eligible for harvesting. Following the forest management plans, the Government of the Republic determines annually the maximum volumes permitted to cut from state forest by the managers of the forest.[3] The functions of different institutions, which are essential in planning the logging as provided with the Forest Act are schematically given in figure 2.

The international Forest Stewardship Council (FSC) has prepared a standard consisting of ten principles and 56 criteria,[4] which if followed, define that forests are managed sustainably, i.e. in an ecologically balanced, socially equitable and economically viable way. RMK was issued with the certificate of complying with the FSC standard on 1 February 2002 and it was renewed on 1 February 2007. The FSC standard provides among other principles and criteria that the holder of the certificate must observe all relevant national and local legal acts and administrative requirements, and ensure that forest products are not harvested in a larger scale than they can be regenerated, that management is based on a relevant and accurate forest management plan and that correct and reliable information can be immediately provided about the activities going on in the forest.

[3] The Forest Act, Art. 42, paragraph 1.
[4] See http://www.fsc.org/en/about/policy_standards/princ_criteria

Figure 2. Scheme of permitting cuttings in state forests managed by RMK as provided with the Forest Act.



A constitutive part of the forest management is forest planning, which is carried out with the purpose to collect data on forest's condition and the volume of its growing stock, and based on the information collected, to prepare a forest management plan and to give a judgment on the previous management of the forest. State forests have been planned (including the total area forest inventory and preparation of forest management plans) for decades, whereas until 2004 the forest planning was carried out independently from forest management (forest was planned by the state-owned Estonian Forest Survey Centre and its predecessors, and in 2003, by the Centre of Forest Protection and Silviculture).

In the last three years, after the state-owned Estonian Forest Survey Centre was shut down, the RMK has carried out forest planning on its own, making use of its Forest Survey Management Department established for this purpose in 2004.

Since 1999, the forests in Estonia have been statistically surveyed in every year in order to gain an overview of the forest.

According to its publications, the RMK has used a forest management information system (hereinafter MIS) from 2001, which has been developed following the needs of the organization and combines different databases from forest information to accounting. In the beginning of 2004, the terms of reference for developing an MIS 3.0 were began to be specified and an improved forestry software was developed within a year. Following this, a renewed version 3.0 of MIS was launched in 2005. In 2003, RMK completed the geographic information system (GIS) as a result of work over many years.

Description of the audit

Following questions were aimed to be answered in the course of the audit:

- Does the internal control system of RMK ensure that the data on state forest and effected cuttings is reliable and correct?
- Is the state forest management planned efficiently and in compliance with current requirements?
- Has the RMK has complied with the law in its forest management activities and adhered to its plans?

The National Audit Office did not audit the procedures of internal control system. Likewise, the NAO did not audit the info-technological solution of RMK databases. Instead, the NAO formed its opinion on the basis of the data provided by RMK and Statistics Estonia.

Sample for analyzing cuttings

For analyzing the cuttings planned and actually effected a sample was drawn, which included 7 RMK forest districts out of 64: Aakre, Laiksaare, Märjamaa, Putkaste, Sonda, Surju and Vahastu. Only such forest districts were selected, where the areas of planned regeneration cuttings and the area of effected regeneration cuttings as provided by RMK headquarters differed significantly. It was also considered that the sample must represent all RMK forest management regions. Based on this sample, the NAO assessed the reliability of the data describing RMK’s cuttings planned and those of actually carried out.

Sample for involving Experts and analyzing the growing stock

In order to assess the cubic measure of stems planned to cut in state forest (i.e. the growing stock of a forest subcompartment) and to compare this with RMK’s data on the timber volumes obtained from clear cuttings, control measurements were ordered from Experts. For these control measurements, a method of test sites was used to estimate the volume of growing stock, which is similar to the method used for the National Forest Inventory. Only conifer forests were selected for control measurements,

because the differences between the NFI and RMK's data were the greatest in these cases. In order to assess the growing stock of mature conifer forests, control measurements were carried out in randomly picked subcompartments, which were selected from the lists of forest parts planned for regeneration cuttings as approved in December 2005. The sample for control measurements was designed by taking into account that the random error should remain within ±10% with 95% probability. The sample used for analysing the cuttings (see above) was not used for the sample of control measurements. The involved Experts were Veiko Adermann, Tarmo Kask and Tarmo Tolm, who have led NFI's field measurement groups and processed its data since the NFI was implemented in Estonia.

1. Accounting of effected cuttings

In planning the cuttings, it is important to know the area, age and growing stock of the forest. For decades, the planning of logging both in state and private forests has been based on the data of total area forest inventory. Total area forest inventories are carried out in every ten years, when all forested sites are measured and volumes of wood are assessed. For planning the cuttings in state forest, the RMK uses its own database, which includes data of forest inventories and which in recent years has been updated according to the cuttings carried out (see chapter 2.1). Hence, it is essential that the cutting data is accurate, as the accuracy of cutting data impacts substantially RMK's data on all forest. If all cuttings are not registered correctly, then this gives an impression as if there are more forests eligible for harvesting than in reality.

The revenue of state forest[5] management is mostly earned from logging. Thereby, it is important that RMK's internal control systems would ensure accurate and reliable accounting of cuttings by both the total area cut and timber harvested, as this conditions the correct reporting of revenues.

1.1. Data on the area of regeneration cuttings carried out in state forest is not reliable

To obtain an overview of RMK cuttings, the National Audit Office requested RMK for the lists of forest subcompartments cut during 2003–2005. As NAO referred to inconsistencies in RMK's initial data, the RMK sent lists of cut forest areas for several times. The NAO finds that the data is nevertheless inconsistent (see table 2).

Table 2. The area of regeneration cuttings in state forest (ha)

	Origin of data	2003	2004	2005	Total
Total area of regeneration cuttings	Statistics Estonia (RMK data mediated by CFPS)	7 216	6 842	5 495	19 553
Total area of regeneration cuttings	Submitted to NAO by RMK on 28 March and 13 April 2006	7 201	5 821	5 495	18 517
Total area of regeneration cuttings calculated on the basis of a list of subcompartments cut.	Sent to NAO by RMK on 17 May 2006	6 421.3	7 931.6	2 817.1	17 170.0
Total area of regeneration cuttings calculated on the basis of a list of subcompartments cut.	Sent to NAO by RMK on 25 May 2006 (cuttings in 2005 and 2006) and 29 May 2006 (cuttings from 2003 to 2005)	6 361.0	9 395.9	6 068.9	21 825.8

Source: RMK, CFPS, Statistics Estonia, calculations of NAO.

The analysis of RMK's data revealed that the total areas resulting from adding up the subcompartments are consistent neither with the aggregated data that RMK has submitted to Statistics Estonia nor with the data it sent to NAO. Differences occurred by individual years, as well as for the entire period audited. This refers to a significant problem, as this data provides an overview of the state forest management, and the data must coincide because of the common methodology used for collecting data on cuttings.

In the opinion of RMK, these differences result from the fact that RMK did not submit to Statistics Estonia the data of its information system but gathered the data directly from its Forest Districts. Likewise, not all cuttings from previous years were reflected in the information system, and in the course of entering the data the database was also complemented.

[5] Hereinafter, state forest refers to the forest administered by RMK

To explain the reasons of the differences in total regeneration cutting, the NAO analyzed the cutting lists of seven forest districts in the audit sample, assuming that the organizers of logging possess the primary data. For that, the NAO employed the data provided by the Forest Districts and RMK headquarters, as well as the Internet-based forest database, which RMK had established for the use of County Environmental Departments.

The analysis of cutting lists revealed that while according to the data of RMK headquarters, 2516 ha of regeneration cuttings[6] was carried out in the selected forest districts during 2003–2005, the Forest Districts claim to have logged an area, which is smaller by a quarter, i.e. 1867 ha in total. The audit identified the following causes for these differences:

- **In the cutting data of RMK headquarters and Forest Districts, different years were noted to be the time of cutting.** In the lists of Forest Districts, the cutting years differed from the data of RMK headquarters in case of 588 subcompartments (45% of all cases given the number of subcompartments in the lists of Forest Districts) with a total area of 643.3 ha (34% of all cases given the total area of subcompartments in the lists of Forest Districts). Such cases, where same cuttings were marked with different years, were identified in the regeneration cutting lists of all seven Forest Districts in the audit sample, whereas the number of subcompartments with different cutting years ranged from 43 to 163 by forest districts.

  The RMK explains that the differences in the cutting years in databases relate to the entering of cuttings from earlier years into the database.

- **Double entries occur in the lists of RMK headquarters.** Altogether, cuttings on 65 subcompartments with a total area of 97.4 ha are entered twice. Double entries occurred in six forest districts out of seven in the audit sample. In the lists of two Forest Districts, there were more than 20 double entries, whereas the rest of the Districts provided lists with 1 to 6 double entries.

- **Areas of same subcompartments logged are different according to the data sent from RMK headquarters and Forest Districts, and the Internet-based database.** Apparently, inconsistencies occur at least in 56 cases of the areas of clear cut subcompartments.

  - In case of 11 subcompartments, the areas provided in the lists of the headquarters and Forest Districts were the same (19.7 ha in total), but differed from the areas cut according to the RMK database (23.6 ha in total).

  - In case of 23 subcompartments, the clear cut area was larger according to the Forest Districts (53.8 ha in total) than provided in the lists of the headquarters (30.8 ha in total). According to the RMK Internet database, the total clear cut area was 38.7 ha.

  - In case of 22 subcompartments, the clear cut area was smaller according to the Forest Districts (39.7 ha in total) than provided in the lists of the headquarters (68.6 ha in total). According to the RMK Internet database, same subcompartments accounted for 57.8 ha in total.

  Inconsistencies in the areas of cut subcompartments occurred in all seven forest districts, whereas in two of them, the differences accounted for more than 10% of the average prescribed yield of the audited period.

  RMK explains that these differences result from the fact that the areas planned for logging as marked on forest notifications have been later adjusted in the course of forest planning.

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[6] Here, 228.4 ha regeneration cuttings are not included, which were in the lists sent on 29 May 2006, because according to RMK's explanations, the lists were overlapping in respect of this area.

- **The logged subcompartment was missing in the list submitted by RMK headquarters.** According to the Forest Districts, clear cuttings have been carried out in 39 subcompartments (46.0 ha in total), which are not reported in the lists of RMK headquarters.

  Such an inconsistency in the data of cut areas occurred in six forest districts out of seven. In the case of one forest district, the total area of missing subcompartments was 25%, and in case of four forest districts, 5–10% of the average prescribed yield. Regarding the sixth forest district, the difference was smaller than 5% of the prescribed yield.

- **The subcompartment logged according to RMK's list was missing in Forest District's list.** Such regeneration cuttings, which according to the data of the headquarters had been carried out in 2003–2005, but were not reported in the lists of Forest Districts, accounted for 332.6 ha in total in 196 subcompartments. Annually, the cuttings can be divided as follows:

  In 2003, 138 subcompartments (225.2 ha in total)
  In 2004, 50 subcompartments (99.4 ha in total)
  In 2005, 8 subcompartments (8.0 ha in total)

  In order to provide more evidence for the finding that Forest Districts may not report all cuttings in their lists, the NAO analyzed the forest notifications and timber sales data from 2004 and 2005 (in the case of cuttings in 2003, the forest notifications may have been submitted in 2002, which made it unreasonably costly to find out in the course of the audit, in which year the cutting was actually effected). NAO identified 17 subcompartments (28.7 ha in total), which had been logged during the audited period according to the timber sales data and forest notifications, but were missing in the lists of Forest Districts.

  The above-described inconsistency in the subcompartments' data from 2004 and 2005 occurred in two forest districts out of seven. In one forest district, the area of missing subcompartments accounted for 38% of the average prescribed yield, and in another district for 5%.

- **The logged subcompartment was missing in the list of RMK headquarters, as well as in the list of Forest District.** On the basis of RMK's Internet database, the audit identified one such clear cutting from 2005 (1.4 ha)**,** which was reported neither in Forest District's list nor in headquarters' list.

  RMK explained that this happened due to a mistake of a district ranger, who has been fired by now.

For all seven forest districts in the audit sample, the RMK submitted data, which described the forests in these districts in 2005 and 2006. In case of three of these districts (Aakre, Laiksaare and Vahastu), a comparison of this data revealed that the area of old pine forests decreased by 2–50 times more than the area of regeneration cuttings planned for the same year. The Forest Districts claimed that no such works were carried out in these forest districts and no other changes occurred either, which could explain the decrease of pine forests on such a scale. According to the explanations of RMK headquarters, the area of forests was not reduced, but the number of respective entries in RMK's database was increased, because the inventory data from 2005 was entered and incorrect entries were fixed. In addition, the RMK explained that in Vahastu forest district, a cadastral unit with a total area of 450 ha was added to Käru forest district, whereas this change was registered on 10 January 2006. However, this does not explain the inconsistencies in RMK's data, as the comparison of Vahastu and Käru forest districts' data from 2005 and 2006 demonstrates that the area of middle-aged and premature pine forests in Käru forest district has not increased to such extent as the area of similar pine forests has decreased in Vahastu forest district.

In 2005, a large amount of subcompartments cut in earlier years were tagged as cut in the course of fixing the incorrect entries. In the explanations provided in the course of the audit, the Ministry of the Environment, as well as RMK argued that the differences in cutting and forest stand data result from the low quality of the existing data, which follows largely from the fact that not all information was

entered into the database. RMK explained that the data was began to be organized in 2004. According to RMK, the agency was aware that the database includes many incorrect entries, but for the last couple of years, the data regarding RMK's economic activities should be considerably more reliable due to improvements in its geographical information systems. Nevertheless, the NAO found inconsistencies also in the cutting data from 2005. Additionally, the audit identified numerous such cases even for the year 2006, when the forest that had been clear cut in earlier years was still described as growing in the database.

In the opinion of the NAO, RMK's explanations prove that until 2006, RMK's database included flawed data on the forests of the audited forest districts. Deficient accounting of cuttings has entailed a situation, where the planning of logging has relied on a database, which showed larger area of standing crop than was available in reality. As the planning of regeneration cuttings is based on the area of standing crop, which is overestimated in the database, the regeneration cuttings are planned on a larger area, as well as carried out on a larger scale than allowed by sustainable forest management (see also chapter 2.1).

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The outcomes of the audit enable to state neither how large was the total clear cut area in the forest districts in the audit sample, nor to what extent was the area of subcompartments mistaken, as the audit did not conduct any control measurements for clear cut areas. As no generalizable pattern occurred, it is methodologically not possible to find out the actually logged area or the proportion of correct data in all forest districts with a sample of seven forest districts only.

In NAO's opinion, the occurrence of various mistakes in the data of forest districts in the audit sample demonstrates that RMK's internal control system has not been able to prevent and discover errors in the accounting of cuttings and that the data on regeneration cuttings can not be regarded as reliable. As the headquarters and Forest Districts provide different information about the subcompartments, where regeneration cuttings have been carried out, the previous data published in RMK's annual accounts as well as its forest database, where survey data has been adjusted according to the data of economic activities, is not credible. If RMK's data on the area of clear cut sites cannot be credited, then this results in an error of indeterminate magnitude in the data of timber harvested from state forest.

Unreliable accounting of cut forest sites produces errors in accounting the area of standing crop, which has been updated following the cuttings, as well as distorts the growing stock of state forest and disenables to gain correct overview of the resources owned by the state. Through planning, these errors are devolved upon the periods to come.

1.2. RMK has provided the official statistics with smaller volumes of cuttings than actually effected

When comparing RMK's data on harvested and stored timber volumes as they have been registered in the book-keeping with the volumes of wood sold as a standing crop and the cutting data submitted to the Statistics Estonia, it appears that according to the official statistics, in 2001–2006, less state forest has been cut than it has been sold. The differences in the cutting and sales data range from 0.8 to 9.4% in different years compared to the cutting data submitted by RMK. The RMK has not analyzed the reasons of these differences.

According to RMK's explanations, the official statistics of cuttings is prepared on the basis of data provided by Forest Districts, which in calculating the timber volumes, have relied on the information from the enterprises working in or buying timber from state forest.

RMK's sales and cutting data cannot be analyzed on the basis of one year data only, as in the case of state forest management it is possible that the wood sold as standing crop was cut in the next year. As the timber harvested in one year can be stored and sold in the following year, the cutting, storing and

sales data should compared as an aggregate of several years. Comparing the cutting statistics with storing and sales data shows that the differences from different years do not offset each-other but only amplify. Given the aggregate of 2001–2006, according to the officially presented data, RMK has cut 526 000 solid cubic meters (3.5%) less state forest than provided with RMK's data of timber stored and the data of the standing crop sold. Hereby, NAO assumes that RMK's sales data is equally reported in its book-keeping and that external auditors have verified its annual accounts to be correct to a relevant extent.

In all seven forest districts in the audit sample, significant differences occurred in the data of RMK headquarters and Forest Districts on the timber volumes obtained from regeneration cuttings. For randomly selected subcompartments, sold timber volumes differed in several occasions and, in the case of some cutting areas, for more than ten times. In addition, multiple differences occurred between the survey data of forests and the sold timber volumes. RMK explained these differences with adjustments in its database and with the fact that the headquarters and Forest Districts used different sources when sending data to NAO. According to RMK's explanations, no common system was implemented in RMK until 2005, on the basis of which the Forest Districts could have collected and presented official cutting statistics. Likewise, the RMK has informed that contrary to earlier years, in 2005, the timber from the areas that were still being logged in the end of this year, was not included in the cutting data.

As the audit identified inconsistencies in cutting volumes, the NAO examined more thoroughly, how RMK has reported the timber volumes produced from and transported out of a particular forest compartment. It appeared, that the data of the electronic register of conveyance documents, which has been used as a basis for the timber sales data, is not always consistent with the data of the primary documents underlying the same register. Cases occurred, where the register showed smaller amount of timber marked on the respective conveyance document or different sale assortments compared to the amount received by the purchaser of the timber. The incomplete overview of timber transportations reveals that it is possible to take timber out of state forest and deliver it to the purchaser without reporting it in the conveyance and sales data. In the course of the audit, RMK carried out additional measurements in three subcompartments and discovered that the growing stocks of these sites were significantly larger than the volumes of wood planned for logging according to RMK's initial data, and noted that the growing stock found out with the latter, more accurate method of measuring (total area tally), is more valid. Additionally explained RMK that, in average, the amount of standing crop in its databases is 15% smaller than in reality. This methodological particularity is entailed by the average time passed from the inventory. In NAO's opinion, the problem is that RMK does not compare the volumes cut and sold with the growing stock of the forest stands set under cutting. Hence, it cannot be verified whether all of the wood cut is reported in cutting statistics and sales data.

According to RMK's explanations, the data of the cutting rights of standing crops and timber sales do not have to coincide with the data of cuttings statistics, as they represent data from different time periods calculated with different methodologies. RMK has also presented the issue of lacking methods to measure the logging waste as a possible cause for differences in cutting and sales data.

In NAO's viewpoint, RMK's cutting and sales data should not present substantial differences with unknown reasons, as given RMK's work procedures, the sales and cutting data is received from the same source. The RMK counts the wood volumes that have been sold as standing crop only on the basis of the measurement data of standing crop, and the timber volumes sold only on the basis of the measurement data of logs or stacks measured, on account of which the RMK cannot provide different data for official cutting statistics. The RMK has not compared the volumes of harvested timber with the earlier data of growing stocks of the forest stands cut, in order to assess whether the logging produced as much timber as should have been obtained according to the growing stock data. In most cases, RMK has not assessed the actual growing stock imminently prior to the cutting of such forest stands, where the trees were planned to be sold as timber. The NAO finds that the methodology of calculating the logging waste is hereby not relevant, as the waste is neither separately measured nor included in the accounting. If the cutting data from 2005 does not reflect the wood in areas currently

being logged, then this provides one of the reasons as to why the officially presented cutting data is smaller than in reality, but it does not explain the differences in data from previous years.

The control measurements provided that, in the case of 30 random subcompartments dominated by conifers, their average growing stock was between 247–354 solid cubic metres per hectare (in average, 301±54 solid cubic metres per hectare) with 95% probability, while the initial average growing stock of these subcompartments remains within the limits of the random error found during the control measurements. The outcomes of control measurements revealed that the random error in measuring the average growing stock per hectare was ±18%. As the random error of control measurements was bigger than the ±10% criteria set during the audit preparations, the NAO does not use the results of these measurements in this audit report.

Likewise, RMK's external auditors[7] have brought attention to the inconsistencies in cutting and sales data and observed that RMK's information system does not guarantee correct reporting of the timber volumes transported out of forest. The auditors have noted that the accountancy of harvested timber volumes must be improved. In RMK's opinion, the auditors' recommendations have been fulfilled.

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The data provided by RMK reveals that, in 2001–2006, more than 500 000 solid cubic meters of timber (for about 246 million EEK in total) has been sold without reporting it in the cutting data (in average, for about 49 million EEK in year). As no more timber can be stored and sold than has been harvested, the cutting data publicly presented by RMK is not accurate, and the timber volumes actually harvested from state forest should be larger. Thus, the accountancy of state forest cuttings does not provide a true overview of actual cutting volumes and the statistics provided by RMK does not present RMK's logging activities reliably. An essential shortcoming is that RMK has currently no well-functioning system to re-examine the timber volumes planned for cutting as well as already harvested.

As the data published by RMK about the subcompartments logged and timber volumes harvested and sold is not reliable, RMK's forest management cannot be considered to correspond to the regeneration of forests and the increase in wood to comparable extent.

Recommendations to the Minister of the Environment

- To organize the management of RMK in a way in which its internal control system would ensure reliable and correct accounting of the areas and volumes of cuttings. For this purpose, the RMK must
  - prior to cuttings, carry out a sufficiently thorough assessment of all areas subject to cutting;
  - after cuttings, check the timber volumes sold against the inventory data of the cutting area and descriptions of forest surveys. If differences occur, then RMK must find out the causes for such inconsistencies;
  - ensure accurate accounting of the timber volumes produced from state forest;
  - ensure full compliance with the requirements of forestry law;
  - improve the information system in a way that would enable to compare effectively and quickly the timber volumes cut and sold with the assessment data of cutting areas and descriptions of forest surveys.

[7] Report to RMK managers about the observations made in the course of the final audit in 2005.

If necessary, pursue an additional independent audit to assess the performance of RMK’s internal control system and its accounting of cuttings in order to identify and address the shortcomings in the internal control system and to ensure that the activities in state forest are correctly reported.

2. Planning of logging

Sustainable forest management means that forest is cut only in volumes which do not jeopardize forest regeneration, future logging prospects and living conditions for plant and animal species. Forest management is planned on the basis of forest inventory data in the course of forest planning, which results in preparing the forest management plan. The latter includes both inventory data and the activities planned for the next ten years. County Environmental Departments must compare the cuttings planned in forest notifications with the forest management plan.

Pursuant to the Forest Act, the Government of the Republic approves the annual cutting volume maximally permitted in state forest, relying on forest management plans.[8]

2.1. The forest management plans prepared by RMK in 2002–2006 do not meet the requirements

Pursuant to the Forest Act currently in force (passed in 2006), as well as to the previous Forest Act valid during the audited period (passed in 1998), forest management plans are prepared at least once in every ten years for state forest management. In addition, the Forest Act in force during the audited period provided that the inventory data used for drawing up the plan was not supposed to date from more than ten years ago.

The forest planning guidelines in force during the audited period provided that the forest management plan indicates the maximally permitted cutting volumes over the next ten years by subcompartments. According to the guidelines, the forest management plan must also include the volumes of regeneration cuttings and thinnings in protected and commercial forests, as well as the lists of forest parts eligible for harvesting.

From 1 January 2005, the RMK must submit forest management plans to the Centre of Forest Protection and Silviculture for establishment.[9]

RMK does not always rely on inventory data in planning the logging

Calculations for finding the prescribed yield in forest districts must be based on independent total area forest inventory. This helps to prevent the risk accompanied with the use of unreliable data in forest planning, that regeneration cuttings are planned on an area, which is too large. As RMK receives its main revenue from state forest cuttings, the planning of cutting volumes by RMK itself holds a remarkable conflict of interests. An organization, which receives its major income from logging, prioritizes retaining the cutting volumes over sustainable management.

The audit uncovered that instead of comprehensive forest management plans, the RMK submits only cutting lists to CFPS for establishment and enables the CFPS to access its information system for checking the accuracy of the data. The NAO finds that such a state of affairs is not in compliance with the Forest Act, as it does not provide the establisher with a complete picture of the activities planned in the forest district. Likewise, it is not possible to assess the management of the last period and to identify potential mistakes in the accounting of cuttings, as the data in RMK's information system is continuously adjusted and the system does not enable to compare all data with the respective data from previous periods.

The forest management plans prepared prior to 2004 planned the logging on the basis of the real situation in forests, while the independent forest survey ensured that the mistakes in earlier

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8 The Forest Act, Article 42, paragraph 1

9 The regulation of the Minister of the Environment from 27 April 2004 on "The establisher of the forest management plan and the procedures of establishing forest management plans".

accountancy of cuttings would not give the impression that there are more forests eligible for cutting than in reality. Although the Forest Districts were aware that the independent total area forest inventory is periodically carried out in all forests in these districts, cases occurred, when the outcomes of the inventory still identified mistakes in the accountancy of cuttings. If these mistakes were discovered, then they were not passed to the forest management planning. For example,

- The total area forest inventory conducted in the course of the 1995 forest planning in Sonda forest district revealed that, in the previous period, 106.1 ha of clear cuttings had been carried out in pine forests, although according to the Forest District, there had been only 98.0 ha of such cuttings.

- According to the total area forest inventory conducted in the course of the 1997 forest planning in Halinga forest district, 50.6 ha of clear cuttings had been carried out in pine forests in the previous period, but according to the data of the Forest District, there had been only 39.0 ha of such cuttings.

During 2002–2004, the prescribed yield was newly calculated in every year for planning the cuttings in RMK forest districts. For calculating the prescribed yield, RMK's survey databases were updated following the cuttings. As a result of this work, lists of mature commercial forests were prepared, which were forwarded to County Environmental Departments instead of forest management plans and which provided the basis for carrying out the cuttings. In 2004, the newly launched RMK Forest Survey Management Department began to assemble and organize the inventory data and the information on performed forestry activities present in RMK databases and, based on this, made new calculations of prescribed yields. Following the new cutting areas estimated, the RMK prepared lists of forest sites, which were planned to be logged.

In 2004, the RMK Forest Survey Management Department started to survey also the state forest, which was previously done by the Estonian Forest Survey Centre and the institutions preceding it, and in 2003, by the Centre of Forest Protection and Silviculture. In 2004–2006, the RMK carried out state forest inventories only to the extent of about two thirds of what was necessary to survey (see chapter 2.6). Hence, in planning the forest state management, the RMK employed data, which dated from more than ten years ago, and which were not permitted to be used as a basis of management pursuant to the Forest Act.

Following the time passed from surveys, the forests in RMK database become older and the amount of forests eligible for harvesting that bases the prescribed yield increases accordingly, while at the same time, the data of cut forest stands is not reduced because of the inadequate accountancy of cuttings. Thus, as a result of shortcomings in RMK's information system, the cuttings are planned on the basis of the area of forests eligible for harvesting which is larger than in reality. This proves that, during the audited period, RMK has planned cuttings on the basis of a database, which provides larger area of forests that are mature for harvesting than actually available. Re-calculating the prescribed yields on the basis of such database implies a methodological error, due to which the planned cutting volumes are bigger than optimal, thus jeopardizing sustainable management.

Cuttings are planned on a short-term basis

Although the forest planning guidelines for the audited period provided that the forest management plan must indicate by subcompartments the volumes maximally permitted to cut over the next ten years starting from the forest survey present, the RMK planned cuttings for remarkably shorter periods.

In the beginning of 2005, the RMK provided the CFPS with information on cuttings planned only for the year 2005, not for the next ten years. In November 2005, the RMK submitted new data on planned cuttings for all forest districts, whereas for different periods by different forest districts (see table 3). In the fall of 2006, the RMK presented CFPS with new lists of planned cuttings per 38 forest districts, majority of them for one year only (see table 3). An examination of the data of these 38 forest districts reveals that, in the case of seven forest districts, the RMK had planned cuttings in 2006 for a shorter period than in 2005.

Table 3. The number of forest districts according to the period, for how long the RMK planned the cuttings in 2005 and 2006

Period of cuttings planned according to lists submitted for establishment	Number of forest districts, for which the lists of planned cuttings were submitted in the end of 2005.	Number of forest districts, for which the lists of planned cuttings were submitted in the end of 2006.
1 year	17	29
2 years	13	6
3 years	4	0
4 years	7	1
5 years	8	2
6 and more years	16	0

Source: CFPS

Planning of cuttings for a period of couple of years only does not take the natural conditions into account to a sufficient extent. In warm winters, the cutting of paludifying forests and peatland forests is aggravated, whereas in cold winters, it is reasonable to cut such forests in as large amounts as possible, but by considering that the cuttings must be carried out to an equally smaller extent over the next years. Previous forest management practice has demonstrated that natural conditions can be best considered if cuttings are planned for periods of at least ten years long. RMK's re-planning of cuttings in every year has resulted in a situation, where it is no more possible to assess whether the cuttings conform to the planned, because the annual plans cannot be punctually followed in most cases due to the natural circumstances and there is not coherent information available on plans in longer perspective. RMK's practice to submit every year new cutting lists for establishment entails a risk of over-logging. Exceeding the annual limit of the area of regeneration cuttings may not become apparent when cuttings are carried out according to the list established in the first year for a longer period of time, as the lists of subcompartments planned for cutting are newly established every next year without taking into account whether the cuttings in previous year were carried out on the scale of one or several years. For example, in Sonda forest district, the regeneration cutting was exercised on a larger scale than planned because the cutting lists were established for a shorter period of time and altered annually.

An example. RMK staff explained concerning the cutting lists submitted for establishment in fall 2005, that about 5.6 ha of regeneration cuttings were planned for the years 2006–2010 into Sonda forest district's protected forests. The audit revealed that, in September 2006, already 8.4 ha of clear cuttings were carried out in protected forests and additional 16.9 ha of cuttings were planned to be effected in the same year, which altogether equals with the area planned to be cut over five years. The materials submitted for establishment in fall 2006 indicate that about 15.2 ha of clear cuttings were planned to be effected in Sonda forest district's protected forests in the year 2007, i.e. an area, which is about three times larger than the average cutting area previously planned per annum. Thus, the cutting volumes were planned to be increased for 2007 in a situation, where already in 2006, they were performed on the scale of several years.

The Minister of the Environment approved on 27 December 2006 the regulation on managing the forests, which was enforced on 12 January 2007 and lowered the felling ages for forest stands. The RMK explained that while the theoretically prescribed yield for the protected forests in Sonda forest district was 22.5 ha in the end of 2005, then by being calculated according the changed felling ages, it increased up to 34.5 in 2007. The NAO finds that the increase in cutting volumes, which results from lowered felling ages, leads necessarily to a decrease in future cutting volumes.

According to the statement of RMK, the agency has not been able to perform long-term forest management over the last four years, because in this period, several reforms were launched and several legal acts were enforced, which changed substantially the forest planning and management. In addition, RMK had to train its employees to conduct forest surveys, while previously they were carried out by CFPS. In the end of 2007, it is the first time after a long while, when forest management

can be again subjected to long-term planning. The RMK finds likewise, that planning of logging in the perspective of 1 or 2 years only is not reasonable and intends to prepare and submit for establishment new plans with a perspective of at least 3–5 years to come.

In the standpoint of the NAO, the annual re-calculation of the prescribed yield is not in compliance with the Forest Act, as it is not based on inventory data but on older data, which is modified following the cuttings. In NAO's opinion, it was not necessary to abolish the long-term forest management plans in forest management and to re-calculate the prescribed yields in every year, as the amendments that have been made into legislation since the Forest Act was passed in 1993 have mostly mitigated the conditions of carrying out cuttings. Likewise, placing the forests under protection does not imply the need to re-plan logging annually, as it suffices to give up the previously planned activities, which are not permitted pursuant to the new conservation regime, in such parts of forest.

Given the situation, where RMK submits annually new lists of planned cuttings, it is even more complicated to achieve the long-term objectives of state forest management, because in addition to the lack of forest management plans for ten years period there is also no reliable information available about the regeneration cuttings planned per every year (see chapter 2.3).

The NAO finds that RMK does not follow the rationale of the Forest Act to plan forest management on the basis of long-term objectives. In addition to the risk that over-logging is not discovered, the planning of regeneration cuttings on a short-term basis only results in another risk that cutting sites are wrongly located (regarding, e.g. their distance from each other). In this situation, the cutting of timber volumes necessary to fill the budget may contradict with the requirements in effect regarding the placement of cutting areas. The audit revealed that in five forest districts out of seven in the audit sample, the requirements of locating the cutting areas were violated (see chapter 3.2).

The state forest management activities planned in protected areas have not been coordinated with the administrators of these areas

The Forest Act provides that if the forest is located at a protected area, then the forest planner must obtain an approval for the forest management plan from the administrator of this protected area. Pursuant to the Nature Conservation Act, Article 14, paragraph 1, the forest management plan shall not be issued within a protected area, special conservation area, species protection site or the protective zone of an individual protected natural object without being given an express consent by the administrator of the respective protected natural object.

Part of RMK’s forest is located within protected areas, but until the fall of 2006, the CFPS as an establisher of RMK’s forest management plans did not request the RMK to confirm that the Forest Districts situated within protected areas had obtained an approval for the forest management plan from the administrators of these areas. RMK explained that, since 2006, all management plans, which plan logging at protected areas, special conservation areas or species protection sites have been submitted to County Environmental Departments for their approval. In NAO's opinion, however, the lists submitted to CFPS in 2006 were not forest management plans but basically forest notifications as they contained cuttings for only one year to come. Six forest districts out of seven in the audit sample were partially located within the territory of some protected area. With regard to Aakre, Laiksaare, Surju, Putkaste, Sonda and Vahastu forest districts, the NAO was informed by the County Environmental Departments, which are the administrators of all protected areas in their territory from the beginning of 2006, that as RMK has not submitted any forest management plans for their approval, the plans have not been approved.

The RMK explained that it has not sought the approval for its plans because of inconsistencies in the legislation. Regardless of the fact that the duty to coordinate forest management plan with the protected area's administrator was provided by both the Forest Act and the Nature Conservation Act, the RMK did not submit the plans prepared during the audited period to the respective administrator for its approval because the regulation on establishing the forest management plans did not require that the presence of such an approval should be checked. These circumstances have been improved in the

course of the audit and, from fall 2006, the RMK started to send the lists of planned cuttings to protected area's administrators for their approval.

In NAO's opinion, the state of affairs in which the RMK submits for approval only the forest notifications of one or two years is not in compliance with the Forest Act and the Nature Conservation Act. The forest management that complies with the conservation objectives requires strategic planning, which involves an overview of the given situation, as well as the activities planned in longer perspective. The administrator of a protected area must have the opportunity to assess the complete impact of the planned activity on protected area's conservation objectives, whereas this is not enabled by assessing only the localised impact of every single cutting. As in 2006, the RMK submitted for establishment lists of only 38 forest districts, in 29 of which the cuttings were planned just for one year, the NAO finds that this is not sufficient to meet nature conservation objectives.

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The audit uncovered that, in planning the cuttings in state forest in recent years, the RMK has not observed the requirement to plan forest management on a long-term basis. RMK's forest districts lack formal forest management plans. In NAO's opinion, sustainable forest management is currently not ensured, as RMK plans logging only in shorter perspective and does nor rely on forest inventory data in planning the cuttings, but on database, which contains flawed data because of the unreliable cutting data.

The NAO finds that planning of cuttings in state forest presents an acute conflict of interests, as RMK's income and profit are dependent on the scale of logging.

2.2. The Centre of Forest Protection and Silviculture has not fulfilled its purposes as provided by legal acts in establishing forest management plans

According to the regulation on establishing the forest management plan[10], the forest management plan must be submitted to the Centre of Forest Protection and Silviculture for establishment. Along with the plan, the inventory data used for its preparation must also be submitted. Pursuant to the Forest Act, the CFPS must check whether the submitted materials are in compliance with the requirements of the above-mentioned regulation and other legal acts. CPFS' statues provide among other duties that it is CFPS's task to observe also the quality of forest planning work.

The resolution to establish the forest management plan indicates by subcompartments and modes of cuttings the maximally permitted volumes of regeneration and selection cuttings and thinnings in hectares for the next ten years. The inventory data used for preparing the forest management plan along with planned forest management activities are entered into the Forest Register. If the submitted forest management plans meet the requirements, then the Forest Register[11] includes same data as the resolutions establishing the plans.

The RMK has submitted to CFPS several times a year its forestry database, which RMK has used as a basis for preparing the forest management plans, although the database does not provide data of total area forest inventory but only such survey data, which has been modified according to the incoherent data collected by RMK about its previous management activities. The outcomes of the audit reveal that CFPS has accepted as a basis for preparing the forest management plans such survey data, which dates from more than ten years ago (see chapter 2.5) and data, which cannot be regarded as inventory

[10] The regulation of the Ministry of the Environment from 27 April 2004 on "The establisher of the forest management plan and the procedures of establishing forest management plans".

[11] The national register for forest resource accounting was established and its statues approved by the resolution no. 294 of the Government of the Republic from 7 October 1999.

data (see chapter 2.1) and which were not permitted to be used for preparing forest management plans during the audited period. In some cases, the area shown in the lists of subcompartments planned for regeneration cuttings and thinnings differs from what RMK submitted for entering in the Forest Register. As RMK's database on the previous management of state forests is not reliable (see chapter 1.1), the use of this database has passed the errors in cutting data into planning.

The CFPS has not observed whether RMK has obtained approvals for its forest management plans from protected area administrators (see chapter 2.1). Since NAO brought this to notice, the CFPS has begun to monitor that the activities planned in a state forest would be coordinated with the administrator of the respective protected area. Although the forest planning guidelines in force during the audited period provided that a forest management plan foresees cuttings for ten years, the CFPS has disregarded this requirement as well, and validated materials submitted by RMK, which plan cuttings for shorter periods of time (see chapter 2.1).

The regulation on establishing forest management plans provides that also the plans, which have been prepared before this requirement of establishment was enforced, have to be submitted for establishment in the case a total area forest inventory will not be carried out and a new formal forest management plan will not be prepared. In this case, the application for establishment had to include lists of forest management activities carried out after the forest management plan was prepared. Every performed activity in this list had to indicate its designation, the area involved, the number of forest compartment and subcompartment, and the year, when the activity was completed. The CFPS did not require RMK to submit the forest management plans prepared prior to 2004 together with the lists of forest management activities. In NAO's opinion, if the forest management plans that were prepared in prior to 2004 had been established along with the lists of activities carried out in the meantime, then this had prevented many problems, which this audit uncovered.

The CFPS explained to the NAO that it did not require RMK to submit materials, which would have been in compliance with legal provisions, because it considered the efforts to check and establish such materials to be too labour-consuming. In assessing the potential work needed, the CFPS relied on the size of an average private forest immovable.

The RMK explained that the regulation on establishing forest management plans was not followed and the plans prepared prior to 2004 and the lists of interim forest management activities were not submitted because the regulation imposed this duty on the owner of the private forest or the person, who prepared the plan.

The NAO finds that CFPS's explanations are not well grounded, as considering RMK's info-technological means and the level of organization in the management it is not appropriate to equate the amount of procedures needed in the case of state forests with the work needed for assessing and establishing the forest management plans of very different and small immovables of private forest. In addition, the audit did not reveal as if CFPS had proposed to the Ministry of the Environment in 2004 to change the institution's structure and to increase its budget in order to cover the needs to proceed documents, which were necessary to manage the state forest in compliance with the requirements.

The RMK explained that the Forest Act passed in 1999 does not provide any reference, which would bind the management of state forests with forest management plans. In case the logging corresponded to the cuttings' eligibility criteria pursuant to the Forest Act, the RMK is of the opinion that the cutting was permitted to be carried out without forest management plan. According to CFPS's explanations, the CFPS does not find it to be a violation of law that, in 1999–2004, the RMK managed forests differently than it was described in forest management plans. At the same time, the CFPS questioned if the management that differs from what is provided by the forest management plan is always rational and sustainable.

Although the Forest Act in force during the audited period provided that, along with the forest inventory and preparation of the management plan, the procedures of forest planning also include the assessment of forest management, the RMK did not assess the previous management in the course of

the state forest planning. At the same time, also the CFPS could neither assess nor analyze RMK's previous management, because RMK did not submit the lists of activities performed during the years, which had passed from the preparation of the forest management plan.

In NAO's opinion, it is important that forest management would be based on long-term forest management plans, and that in preparing or, at the latest, in establishing such a plan, the previous management of forests would be analyzed as well. Analyzing the state forest management is essential as both RMK and CFPS informed that, in managing the state forest, cuttings may have been carried out without being described in the forest management plan. As the audit revealed that Forest Districts relied on contradictory data in managing the state forest (see chapter 2.3), it proves to be important to analyze the forest management.

Concerning the observations made above, it is crucial that RMK would submit to CFPS the forest management plans prepared during 1996–2003 on the basis of total area forest inventory, as well as formal lists of the activities carried out in previous years. In this way, it would be possible to analyze to what extent the state forest management observed the forest management plans, to what extent the management was affected by the amendments in protected categories during this period, and thereafter, to assess RMK's performance in managing the state forests in the previous period.

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Thus, the Centre of Forest Protection and Silviculture has not fulfilled its purpose incurred by the Forest Act and consequent legislation to ensure that forest management would be based on formal forest management plans.

2.3. Data on the area of regeneration cuttings planned in state forest is not reliable

The RMK plans regeneration cuttings on the basis of areas. At first, prescribed yields are determined, and based on this, the lists of subcompartments allocated for logging are prepared. The NAO examined, whether the data on planning the regeneration cuttings available in Forest Districts and RMK headquarters is accurate and reliable.

RMK headquarters' data on the cutting volumes planned for 2004 and 2005 differs from the data of its Forest Districts.

The audit compared RMK headquarters' data on the areas of regeneration cuttings planned for 2004 and 2005 with an alternative data, which Forest Districts have used for managing the state forests. In comparing the data obtained from RMK headquarters and Forest Districts, it appeared that, in the case of some forest districts, the areas of planned regeneration cuttings differed up to 40%.

Such contradictory data on the area of planned regeneration cuttings complicates the observance of the planned. Cases occurred, when the Forest District made regeneration cuttings on an area, which was larger than initially planned, explaining this with data received from the headquarters.

An example. In the case of Märjamaa forest district, the RMK headquarters presented the NAO with materials, which provided that forest district's prescribed yield was 77.1 ha altogether and the total area of regeneration cuttings planned in the course of budgeting was 74.1 ha. The area of forest parts planned for regeneration cutting in 2004, which the Forest District sent to NAO, was 74.1 ha in total. This list had been signed by the Forest Manager in January 2004. According to Forest District's information, there were 90.9 ha of regeneration cuttings carried in this district in 2004. However, the Forest District explained that cuttings were actually carried out on an area smaller than the planned, as the District regarded the prescribed yield to be 98.4 ha, which was sent from RMK headquarters.

RMK explained that the headquarters provided the NAO only with initial areas of regeneration cuttings, which were sent to the Forest Districts in spring of the current year. On the basis of such initial areas, the Forest Districts select the forest parts allocated for cutting in the coming year, and as a result of that, the total area of planned regeneration cuttings (so-called budgeted list) is finalized and signed by the Forest Manager, and RMK's budget for the next year is prepared accordingly. RMK headquarters argued that headquarters' and Forest Districts' data is not consistent because the headquarters sent only the initial list to NAO, whereas the Forest Districts sent the final area of subcompartments allocated for regeneration cuttings, which is implemented as a basis for budgeting and used for the annual management of forests.

The NAO examined all data submitted, and found out that RMK's explanations do not give reasons for such inconsistencies. It appeared, that in most cases, the total area in the lists of subcompartments signed by Forest Managers conform to neither the budgeted area of regeneration cuttings sent from the RMK headquarters nor the data provided by the Forest Districts, which they had used as an input for management.

In three forest districts out of five, the RMK had planned to carry out regeneration cuttings on a larger area than the prescribed yield for 2003–2005.

The RMK presented the NAO with data on the prescribed yields decided for the years 2003–2005. After repeated enquiries, the RMK provided the data on the area of regeneration cuttings planned for 2006 only in September 2006. As the data was contradictory, the RMK sent to NAO once again the data for 2006, as well as the data for 2003–2005 (except for the forest districts in Loode region, in the case of which the RMK provided only data for the year 2005) in November 2006. In the case of five forest districts, the Forest Districts sent to NAO also the original documents providing the area of regeneration cuttings fixed in the budget for 2003–2006.

The data sent from RMK reveals that the prescribed yield for 2006 was over 20% larger than the yield prescribed for 2005 and over 10% larger than the area of regeneration cuttings planned for 2003 and 2004. According to RMK's explanations, the significant difference in calculating the areas of regeneration cuttings for 2006 results from the fact that the data provided for 2003–2005 represented the total area of forest stands allocated for cutting, whereas the data for 2006 referred to theoretically prescribed yield. Actual area of regeneration cuttings planned for 2006 is provided in the budget of the same year. Hence, the areas of prescribed yields presented per 2003–2005 are not directly comparable to the yield prescribed for 2006.

Comparing the annual cutting lists in 2003–2005 with the yields prescribed for these years, it appears that in three forest districts out of the examined five, the Forest Managers have planned regeneration cuttings on a larger area than it is provided with the prescribed yield for the same period (see table 4). Likewise, the data for 2006 reveals that in some forest districts, the area planned for regeneration cuttings is larger than the theoretically prescribed yield.

Table 4. The total area of regeneration cuttings planned for 2003–2005 compared to the total area of budgeted regeneration cuttings according to the original documents, which are provided with the lists signed by the Forest Managers for the same period (ha).

	The yield prescribed for 2003–2005	The total area of forest sites planned to be cut in 2003–2005 according to the lists of regeneration cuttings
Laiksaare	191.9	219.5
Märjamaa	259.9	246.2
Putkaste	171.6	199.5
Surju	291.0	369.2
Vahastu	185.3	136.6

Source: RMK

In some forest districts, cases occurred during the audited period, where the Forest Districts had carried out regeneration cuttings on a larger area than initially planned, explaining that they followed the lists signed by the Forest Managers.

Examples

1. In Laiksaare forest district, the prescribed yield for 2003 was 53.9 ha in total and, according to the data sent from RKM headquarters, the area of regeneration cuttings used for budgeting in 2003 was the same. According to Forest Districts' own data, regeneration cuttings were carried out on 69.5 ha in total. The Forest District claimed that the cuttings were actually carried out on a smaller area than planned, because it followed the list established by the Forest Manager in fall 2002. The list sent from the Forest District provides that 76.4 ha of regeneration cuttings were planned to be carried out altogether in the Laiksaare district in 2003.

2. In Surju forest district, the Forest District's prescribed yield for 2004 was 94.0 ha in total and, according to the data sent from RMK headquarters, the area of regeneration cuttings used for budgeting was 92.7 ha, i.e. slightly smaller than the prescribed yield. According to Forest District's own data, regeneration cuttings were carried out on 102.1 ha in total. The Forest District claimed that cuttings were carried out on a smaller area than planned, because it followed the list established by the Forest Manager in January 2004. The list sent from the Forest District provides that 137.4 ha of regeneration cuttings were planned to be carried out altogether in this forest district in 2004.

In the course of the audit, the RMK explained that prescribed yields are calculated theoretically and they cannot be punctually followed in every single year because of weather conditions. Guided by the prescribed yield and taking into account natural and other circumstances, every Forest District prepares a list of forest parts allocated for cutting. The Forest Manager signs this list after the annual budget proposals of Forest Districts have been discussed and RMK's budget for the next year has been prepared accordingly. RMK explained the contradictory data presented to NAO on planned regeneration cuttings with the fact that in Forest Districts and regions the data on different stages of budgeting cannot coincide indeed. In addition, the RMK claimed that in 2007, it will launch a new IT-application – a budget module, which becomes the common tool for all levels of management.

In NAO's opinion, RMK's explanations are not relevant, because the audit did not assess the various stages of budgeting in RMK and did not ask the data corresponding to this. Following the objectives of the audit, NAO requested RMK for the areas of planned regeneration cuttings, upon which the annual management of state forests is based in Forest Districts, but RMK provided different data in this regard.

Also the RMK Internal Audit Department has called RMK directing bodies' attention to the fact[12] that although Forest Managers must approve the list of cuttings for the next year according to the regulations of procedures approved by the RMK Forest Management Director, problems have occurred in meeting this requirement in reality.

The outcomes of the audit uncovered that there is no reliable information available regarding the size of the area of the regeneration cuttings that were annually planned to be carried out in RMK forest districts. It is not possible to obtain information from the RMK Forest Survey Management Department about the regeneration cutting areas planned by forest districts for particular years, because the department does not plan the cuttings for every individual year.

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The audit revealed that the information exchange between the RMK headquarters and its Forest Districts is problematic. Apparently, the annual areas of regeneration cuttings planned by the Forest

[12] The RMK Internal Audit Department's report "Assessment of Forest" from 2004.

Districts during the audited period differed from RMK headquarters' data on the planned cutting areas and prescribed yields, which based the budgeting. Likewise, in the second half of 2006, RMK encountered problems in providing accurate data on the area of regeneration cuttings planned by forest districts for the same year. The headquarters' data reveals that in some forest districts, the RMK had intended to carry out regeneration cuttings in 2006 on an area, which was larger than planned for the same year. As RMK improves its database and develops an info-technological budget module, which is aimed to be implemented in 2007, the information exchange will probably improve as well.

Unclear and inconsistent data on the area of planned regeneration cuttings disorient Forest Districts in observing the plans and hinder the monitoring, thus jeopardizing the sustainable management of state forests. Preparing cutting lists for a larger area than determined by prescribed yields results in a risk, that the volumes of regeneration cuttings planned annually in Forest Districts' budgets are larger compared to sustainable cutting volumes. As there is no reliable data available on standing crop and planned regeneration cuttings, the outcomes of the audit do not enable to evaluate, whether the planned cutting volumes guarantee sustainable management of state forest and whether the value of the state forest is to be retained.

2.4. The Ministry of the Environment's role in administering the state forest has been modest

Pursuant to the Forest Act, the Government of the Republic approves annually the timber volumes maximally permitted to cut from state forest, relying on forest management plans.[13] The Ministry of the Environment requests the Government of the Republic every year for the approval of the timber volumes permitted to cut from state forest and must ensure that the requested volumes are based on forest management plans and in compliance with the Forest Act.

According to the explanations of the Ministry of the Environment, prior to submitting the documents to the Government, the annual cutting volumes requested by RMK are compared with the cutting volumes, which are given in RMK's development plan approved by the RMK Supervisory Board, as the Ministry's staff claims that RMK's development plan reflects the total sum of cutting volumes provided in forest districts' management plans. The Ministry explains that it supervises the preparation and establishment of RMK's development plan, thereby ensuring the observance of the principles of sustainable forest management in administering the state forest.

The RMK explained to NAO, that RMK's development plan does not represent the sum of forest districts' forest management plans. In compiling the development plan, data was collected from the survey descriptions of forest management plans without modifying them, but also without including data on planned forest management activities. Hence, the cutting volumes provided in RMK's development plan do not represent the activities planned in forest management plans. The cutting volumes shown in the development plan are foreseen specifically for the use of the development plan, based on RMK's database. The RMK claims that it has not based its application for cutting volumes on forest management plans, but estimated the prescribed yields newly every year and relied on these yields (see chapter 2.1).

After planning the logging it is also important to pay attention to the observance of the planned. If more cuttings are carried out than planned, then this damages ecological systems and decreases the profit to be earned from forest in the future.

If cuttings are effected on a larger area than planned (see chapter 2.3), then this results in a shortage of forest parts eligible for regeneration cutting. The problems accompanying the cuttings that are carried out on a larger area than planned become more explicit in these forest districts, where the area of commercial forests decreases due to the need to place forests under protection. Possible signs that

[13] The Forest Act, Article 42, paragraph 1

RMK's previous management has resulted in a shortage of forest stands eligible for logging in commercial forests are given, for example, by the fact that the regeneration cuttings are planned on an increasingly larger area in the protected forests of Sonda forest district (see chapter 2.1). The scarcity of forests stands eligible for logging is also indicated by RMK's intention to increase the area of commercial forests at the expense of the protected forests.

An example. The RMK requested the Ministry of the Environment[14] to exclude 41 sites from the list of capercaillie's protection sites in the Nature Conservation Register and turn them into commercial forests, because to the understanding of RMK staff, the capercaillies neither nested nor performed mating displays at these sites. The capercaillie is a specie that belongs to the protected category II. By the time the request was made, the inventories of species specialists had not given any results, which had enabled to come to such conclusions. New inventories carried out on this request in spring 2006 produced contrary information: at most sites, the capercaillie nested or mated, and only in the case of two areas, the species specialists did not consider it to be reasonable to continue with the protection regime. For example, in Märjamaa forest district, the RMK had applied for turning 5 capercaillie's protection sites into commercial forests, but according to the assessment of species specialists, the request was not grounded in the case of four species protection sites, whereas one area overlapped with black storks' (in the protected category I) protection site, and only in one case the protection regime was considered to be no more necessary.

As the forest managed by RMK is a state asset administered by the Ministry of the Environment, the Ministry must be informed of how it is ensured that the logging in state forest would conform to the plans. The Ministry of the Environment told NAO that the observance of cutting volumes is controlled by the RMK Internal Audit Department and the Environmental Inspectorate.

The Environmental Inspectorate claimed that it does not inspect the observance of the planned cutting volumes. Likewise, the RMK Internal Audit Department's work plans from recent years do not contain any audits planned on examining the cutting volumes. Thus, the Ministry of the Environment does not have any other overview of RMK activities than what is provided by the RMK itself. The audit findings prove that the Ministry of the Environment is poorly informed of the use of the state asset it administers.

The audit results indicate that the Ministry of the Environment lacks efficient control system over RMK activities to monitor the observance of the planned. Also, RMK's organization of work cannot ensure that plans are observed and that the state asset is thereby sustained and prudently used.

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According to the assessment of the NAO, the RMK forest districts lack formal forest management plans (see chapter 2.1 and 2.2). The audit results uncovered that RMK has implemented a system, according to which the cuttings area is annually re-planned on the basis of a database of insufficient quality, without considering the legal requirements. The maximal cutting volumes approved every year by the Government of the Republic are not based on forest management plans, and the government has confronted with a situation, where it has no opportunity to compare the cutting volumes RMK applies for with the forest management plans. It appeared that the Ministry of the Environment also does not compare the cutting volumes requested by RMK with the forest management plans, but with RMK's development plan, where the planned cutting volumes are derived from a database, which contains flawed information (see chapter 1.1 and 2.1). Hence, in recent years, the Government of the Republic has not been able to fulfill its duty as provided with the Forest Act to administer the state forest management within a framework determined on the basis of the results of strategic planning.

[14] RMK's letter no 3-1-1/96 to the Ministry of the Environment from 16 January 2006

2.5. RMK’s forest planning is not efficient

Planning of forests by the forest manager leads to a conflict of interests

The forest is planned with a purpose to collect data on forest’s condition and the volume of its growing stock, as well as to prepare the forest management plan. In the course of forest planning, survey data is analyzed and a decision is taken as to how much and which forest should be cut over the next ten years. In addition, the management of the previous period is assessed (whether the planned was observed, whether the forest management has given expected results etc). Thus, the forest planning functions to some extent also as a supervision.

Since 2004, the RMK Forest Survey Management Department carries out forest planning in state forest. While the forest surveyor is mostly engaged in inventory works and preparing forest management plans with a main purpose to describe the forest as precisely as possible, then in the case of RMK, the need to earn income should be taken into account as well. As RMK is financially dependent on the revenue received from forest, it is primarily interested in the income from logging. In the NAO's opinion, in the case of a state-owned strategic resource it is not reasonable that one and the same agency assesses the size of the resource, prepares the plan for its exploitation and uses the revenue later mainly for its own management activities. Namely, RMK uses 74% of the income from regeneration cuttings for its management activities.

In 2004–2006, the state forests managed by RMK have been not surveyed to necessary extent

In order to keep RMK's forest inventory data updated within every 10 years, surveys should have been carried out on at least ca 80 000 ha every year in 2004, 2005, as well as in 2006.

Whereas up to 2004 the state forest was surveyed by forest districts (total area forest inventory), then in 2004, the RMK implemented an approach, according to which not the whole forest district was surveyed anymore but only these subcompartments or compartments, which RMK regarded as necessary to be surveyed. This immediately brought along an increase in transport costs and a decrease in inventory volumes. In 2004 and 2005, RMK surveyed the forest state only to half of the extent of what was necessary. In 2006, the RMK carried out total area forest inventories on approximately 86 000 ha. This provides that about 153 000 ha out of the necessary 240 000 ha have been surveyed within the last three years. In spite of not surveying the state forest to necessary extent, in 2006, the RMK surveyed 5900 ha of forests that did not belong to the state.

RMK explained that state forest inventories were carried out in smaller amount because its Forest Survey Management Department began work in spring 2004, and it takes at least a year for the forest surveyors to grow into their job.

The NAO finds that the RMK did not assess before implementing new methodology for surveying and planning the management of state forests all the involved effects and risks. In a situation, where state forests have not been surveyed to necessary extent, RMK's inventories of forests not belonging to the state are not justified, as these can be well carried out by licensed forest survey enterprises.

RMK's forest planning has rapidly become more expensive than the private forests' planning

In previous years, planning of state forests has always been about twice cheaper than the planning of private forests. This is conditioned by the fact that state forests are mostly situated as larger blocks, which means that they can be surveyed and the data on them collected more quickly and with significantly smaller transportation costs. According to the Centre of Forest Protection and Silviculture, the expenses for planning private forests were up to 110 EEK/ha in 2003, 130 EEK/ha in 2005, and 140 EEK/ha in 2006. Thus, the expenses for carrying out private forests' planning have annually increased around 10%, while the forest planning costs in 2006 were 27% higher than in 2003.

In 2003, the RMK ordered forest planning from CFPS and the average price of forest planning was 53 EEK per one hectare of forest land to be surveyed. In addition to forest surveyor's work, the expenses of forest planning also included the entering of data, compiling and manipulating of maps, as well as administration costs. RMK could not indicate the cost of forest planning for 2004 because the Forest Survey Management Department was just established and the works were financed from different budget lines. According to the budget of RMK Forest Survey Management Department, the average price for forest planning in 2005 was 165 EEK/ha, and in 2006, 99 EEK/ha. Therefore, in 2006, the state forest planning costs were 87% higher than in 2003. Concerning the 10% annual increase in the average cost of private forests' planning, the average cost of state forests' planning should have been 70 EEK/ha in 2006.

According to RMK's explanations, the forest planning costs from previous years are not comparable to the current work of RMK forest surveyors, because they have been given additional tasks. Likewise, the RMK claims that whereas until 2003 the forest surveyor surveyed about 6000–8000 ha of state forests per year, in RMK, the standard is 3500–3600 ha per year. The reduction of work is explained with the fact, that more time is spent per forest subcompartment and more measurements are carried out. In addition, the RMK has explained that RMK's forest planner is the surveyor of her region, the administrator of the database and GIS specialist at the same time, thanks to whom new restrictions resulting from nature conservation and other legislation are quickly reflected in the data.

Since 2005, 31 forest surveyors are employed by the RMK Forest Survey Management Department, i.e. twice as much as there were surveyors of state forests up to 2003. In 2005, approximately 55 000 ha was surveyed (includes in addition to total area forest survey also the surveys of cutting areas carried out before and after the logging), and in 2006, 100 000 ha (among these 6000 ha of forests in Matsalu National Park, which according to RMK staff did not include forests administered by RMK). Thus, RMK's forest surveyors surveyed about 1800 ha per person (50% of the standard), and in 2006, about 3200 ha per person. Also in 2006, the average work load of an RMK forest surveyor was smaller than the established standard, and twice smaller than the work load of these state forests' surveyors, who worked in previous years and independently from RMK.

The NAO is of the opinion, that as forests are surveyed to half of the extent of what is necessary, it is not justified that RMK forest surveyors carry out additional tasks and more surveys than required. With less amount of surveys it is also possible to obtain data of sufficient accuracy. The entering of nature conservation and other restrictions affecting forest management into national databases and their subsequent use is arranged via the Environmental Register and the Forest Register. RMK's such duplicating activity and spending of state money for this are not justified.

The RMK explained that state forests' inventory is currently remarkably more expensive because aerial photographing and drawing of necessary maps are also included in the costs. The outcomes of the audit revealed that the expenditure for purchasing aerial photographing services accounted for 5.2% in RMK Forest Survey Management Department's budget in 2005, and for 1.8% in 2006, therefore being marginal costs.

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Thus, RMK has surveyed approximately one third less state forests than necessary. The annual work load required from RMK forest surveyors is unjustifiably small and the expenditure per surveyed forest land is unreasonably large. Hence, RMK's forest management is not sustainable and incurs additional costs to the state.

Planning of logging in state forest by RMK involves an essential conflict of interests, as RMK is financially dependent on effecting the cuttings. The audit's findings that RMK is planning cuttings on the basis of a flawed database, and according to procedures, which do not comply with the legislation, that RMK is planning cuttings on a short-term basis and re-planning them in every year, and that there is no reliable information available on the size of the area, where regeneration cuttings are planned to be carried out annually in different forest districts, indicate a risk of overlogging in state forest.

Recommendations to the Minister of the Environment

- To analyze and, if necessary, to rearrange the organization of forest inventory, preparation of forest management plans and forest management in a way in which the possible conflict of interests would be eliminated. For example, in order to separate different functions from each other, to purchase forest surveys and the preparation of management plans from private sector or assign the task to conduct forest surveys and management planning to some existing state agency.

- To recommence forest management planning in the state forest managed by RMK, thereby effecting the preparation of formal long-term forest management plans on the basis of a total area forest inventory as follows from the Forest Act. To require that RMK will submit formal forest management plans to CFPS for establishment. For the time being when the required new forest management plans are being prepared, to request, pursuant to the Forest Act, the RMK to submit lists of activities carried out in forests (cuttings, reforestation, etc.) along with the management plans compiled before the year 2004.

  This guarantees that the management is based on and the Forest Register is supplied with the most recent and accurate data, that cuttings are planned pursuant to long-term objectives and that the management activities during the period preceding the plans are assessed as well.

- To ensure that CFPS fulfills the duties assigned to it and requests RMK for formal forest management plans. This includes

  - permitting to regard only the cuttings planned in the course of total area forest inventories and described in forest management plans as regeneration cuttings;

  - observing that additional formal lists indicating the cuttings which Forest Districts have carried out after the respective forest management plan was originally prepared are submitted together with the draft management plans proposed to CFPS for establishment;

  - analyzing the lists of performed activities and forest management plans submitted by RMK with a purpose to assess whether RMK has followed these plans when managing state forests.

If necessary, to change the structure of the Centre of Forest Protection and Silviculture and to ensure that necessary funds are available for performing these tasks.

- To assess consistently the effect of state forest management on the value of state forest as state's biological assets. Depending on the results of this analysis, to adjust the organisation of state forest management if necessary.

3. Legitimate use of forests

Pursuant to the State Assets Act, the administrators of state assets and accredited institutions are obliged to manage the state asset prudently and stand in every respect for its retention and potential growth. Pursuant to the Forest Act, the manager of state forest is responsible for preserving the value and ensuring the legitimate use of state forest, the timber produced from state forest and other assets assigned to its disposal.

In managing the forest, the requirements of the Forest Act and consequent forest protection guidelines have to be followed. In the meaning of the Forest Act, damage is caused to the forest, if the forestry legislation is violated, i.e. the forest is cut thinner than allowed by the minimal rates of basal area or crop density, the permitted felling age, locating of cutting areas, or way or time of cutting are not observed, or the forest is cut on a site, where logging is prohibited.

For observing the forestry law, a procedure has been established by legal acts, according to which the County Environmental Departments must, in case the forest notification foresees cuttings which would violate the forestry law, prohibit the person submitting the forest notification to carry out such cuttings and notify her of this prohibition on paper, when proceeding the forest notification. Pursuant to the Forest Act, the Environmental Inspectorate performs state supervision in respect of the legitimacy of reforestation, forest tending and use.

3.1. In all seven forest districts in the audit sample, cases were identified, where cuttings violated the forestry law

It appeared in the course of the audit that in all RMK forest districts in the audit sample, cuttings were carried out, which were not permitted pursuant to forestry law.

Clear cut areas were wider or larger than permitted by the Forest Act

The Forest Act, Article 30, paragraph 5, clause 1 in force during the audited period provided that in managing the commercial forest, the width of clear cut site must not exceed 100 m and the area 5 ha in all conifer or valuable broadleaved[15] forest stands regardless of the way they are later regenerated, as well as in other broadleaved forest stands, which are later regenerated by planting conifer or valuable broadleaved trees on the clear cut area.

In the course of the audit, in five forest districts out of the examined seven, 17 cases were identified, where clear cut areas were wider or larger than permitted by the Forest Act.

In 13 cases, RMK disagreed with the conclusions of the audit and explained that at the instant of cutting, the logging did not violate the Forest Act, as the cutting was carried out in broadleaved forest stands, which were however not valuable. The conflict with the Forest Act emerged when the clear cut areas were regenerated with conifer plants. In addition, the RMK informs that this inconsistent requirement has been excluded in the currently valid Forest Act.

The Environmental Inspectorate has notified the NAO that the cases RMK disputes represented violations of forestry law. Pursuant to the rationale of the law, regeneration cutting is carried out for regenerating the forest and the way of reforestation must be decided in prior to logging. Concerning the provisions of the Article 30, it must be known prior to cutting how the clear cut area is planned to be regenerated: if it is planned to be regenerated with conifer trees, then the width of the cutting area must not exceed 100 m, if it is planned to be regenerated with non-valuable broadleaved trees, then the cutting area can be up to 150 m wide. As in these cases, conifer trees were used for reforestation, the

[15] In Estonia, oak, ash elm, soft-leaved elm and maple are regarded as valuable broadleaved trees.

cutting areas must be regarded as too wide. In such cases, the Article 56^{10} of the Forest Act in force during the audited period on "Forest regeneration, tending, use and violations of forest protection requirements" must be followed, whereas they do not represent cases of cutting at prohibited site (see the Forest Act, Article 56, paragraph 3, clause 1), hence, no damage has caused to the environment by such a violation of the forestry law in the sense of the Forest Act.

The Forest Act that entered into force on 1 January 2007 mitigated the requirements concerning the width of cutting areas, on account to which part of the identified violations cannot be further proceeded according to the valid Forest Act. This does not cancel out the fait accompli that also in these cases, during the audited period, the RMK did not respect the forestry law while managing the state forest. The Forest Act currently in force does not set any limits to the width of the cutting area, if the area is not larger than 3 ha, and otherwise, in case of larger cutting areas, the area must not be wider than 100 m also in non-valuable broadleaved forest stands.

In carrying out regeneration cuttings, the requirements of closing time are not taken into consideration

The Forest Act, Article 13, paragraph 2 in force during the audited period provided that new clear cuttings cannot be carried out next to existing clear cut area before the previous area has been regenerated and the minimum closing time has elapsed. The clause 2 of the forest protection guidelines provides that new clear cutting can be commenced next to a clear cut area, which has not been regenerated and which closing time has not elapsed, at a minimum distance of 100 m from this area. Pursuant to the Article 10, paragraph 3 of the same act, the clear cut area was regarded as regenerated, when more than 1200 plants from main tree species with heights of at least 0.8 m were growing there per hectare, being evenly spread over the whole area.

In the course of the audit, in five forest districts out of the seven examined, 12 cases were identified, where the Forest Districts had not met the requirements of closing time when carrying out clear cuttings.

In regard to 9 of these cases, the RMK disagrees with the audit's conclusions. According to RMK's explanations, in two cases, the clear cut areas were reforested pursuant of the requirements of the Forest Act, and in one case, the distance between clear cut areas was 100 m according to the measurements of the Environmental Inspectorate. Regarding 5 cases, the areas were cut within the same year and RMK claims that the Article 13, paragraph 2 of the Forest Act enabled different interpretations, which is why RMK does not regard the commencement of new clear cutting closer than 100 m to non-regenerated clear cut area as a violation. In addition, the RMK has explained that these five cases do not represent violations pursuant to the Forest Act currently in force.

The Environmental Inspectorate has notified the NAO that in the cases RMK disputed, the forestry law has not been observed. In the two cases mentioned above, the Inspectorate does not accept the explanations of the Forest District as if the clear cut areas had been properly regenerated. Whereas RMK counts all wooden plants on the test plots of a given forest subcompartment, including sapling-generated shrubberies, and extrapolates the results to the whole area, the Environmental Inspectorate considers the treeless area to be part of a clear cut area, which is larger than 0.1 ha and presents insufficient number of proper wooden plants. Regarding the case, where according to RMK explanations the measurements of the Environmental Inspectorate provided the distance between clear cut areas to be 100 m, the Inspectorate confirmed that the distance was smaller than 100 m. Regarding the clear cuttings carried out within the same year, the Environmental Inspectorate argued that the logging violated the requirements of the Forest Act, as the distances between two non-regenerated clear cut areas were smaller than 100 m.

The Forest Act that entered into force on 1 January 2007 mitigated the requirements established with respect to locating of cutting areas, on account to which some of these identified violations cannot be further proceeded on the basis of the current legislation. This, once again, does not cancel out the fait

accompli that also in these cases, the RMK did not respect the forestry law while managing the state forest during the audited period.

Thinnings have been carried out in prohibited ways

The Forest Act, Article 17, paragraph 1 in force during the audited period provided that thinnings can be carried out in order to increase the value of the forest by regulating the forest density and composition, and to enable the use of the timber of trees that will fall out in the immediate future.

In the course of the audit, a case was identified in two forest districts, where in managing the state forest, the thinning was carried out in a prohibited way.

Regarding one case, the RMK disagreed with the conclusion of the audit and explained that the NAO had mistakenly regarded a sanitary cutting as a thinning. The RMK claimed that the sanitary cutting was carried out following a forest protection expertise and its forest notification also applied for a sanitary cutting.

The Environmental Inspectorate informed regarding the said cutting that the forest notification was at first submitted for effecting a thinning. The Inspectorate also brought to notice that this thinning was planned to be carried out in a forest site surrounded by clear cut areas, which had been logged by violating closing time requirements. After measuring the basal area and stumps of trees, which had survived storm damage, it came out that as a result of an earlier thinning, the forest was cut thinner than permitted. In addition, the Environmental Inspectorate explained that as the RMK violated the requirements of closing time and carried out the thinning in a prohibited way, it itself created the preconditions for storm damage.

Cuttings have been carried out without submitting forest notifications

The Forest Act, Article 23, paragraph 3 in force during the audited period provided that in order to get the permission for logging, the owner of the forest or her representative must submit a forest notification to the respective County Environmental Department of the location of the immovable.

In the course of the audit, five cases were identified in three forest districts, where in managing the state forest, cuttings were carried out without submitting the forest notification.

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Thus, in all seven forest districts in the audit sample, cases were identified, where the activities of RMK Forest Districts in managing the state forest had contradicted the forestry law. In addition to ignoring particular requirements of cuttings, the RMK has also violated the provisions of the Forest Act, which are concerned with forest owner's duty to manage the forest in accordance with the principles of sustainable use. The NAO notified the Environmental Inspectorate of these findings and proceedings were launched in regard to the violations that were not outdated. In the case of these violations, where the Forest Act that entered into force in 2007 provided more advantageous requirements than before, the proceeding was closed. In some cases, the violations were already outdated and the prosecution of responsible persons was no more possible. Regardless that the violations went out of date or the requirements were mitigated, these cases represented violations of legal requirements at the time of the management. With regard to most violations identified in the course of the audit, the Forest Districts informed County Environmental Departments with forest notifications that they are planning logging in places and ways, which do not comply with the legislation, but the County Environmental Departments did not establish these incompliances and did not prohibit the Forest Districts from carrying out these activities. Hence, knowingly or unknowingly, the Forest Districts have planned cuttings, which conflict with the legislation, but neither RMK's nor the Ministry of the Environment's control systems have been able to identify or prevent such violations.

Recommendation to the Minister of the Environment

- To improve the performance of County Environmental Departments and the Environmental Inspectorate in the field of state forest in order to prevent violations of the Forest Act.

/signed digitally/

Tarmo Olgo
Director of Audit of the IV Audit Department