

Analysis of energy networks belonging to public undertakings

Final report summary

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REPUBLIC OF ESTONIA
GOVERNMENT OFFICE



REPUBLIC OF ESTONIA
MINISTRY OF ECONOMIC AFFAIRS
AND COMMUNICATIONS



REPUBLIC OF ESTONIA
MINISTRY OF FINANCE

Objective and implementation of the assignment

The energy networks belonging to public undertakings were analysed at the request of the Strategy Unit of the Government Office of Estonia and it was funded from measure no. 12.2 “Development of quality of policy-making” of priority axis no. 12 “Administrative Capacity” of the Cohesion Fund’s operational programme 2014-2020. The initiator and partner of the project is the Ministry of Economic Affairs and Communications.

The objective of the analysis is to identify possible solutions in the management of the energy networks belonging to Estonian public undertakings, which would be beneficial for the society (lower price, better security of supply or better service quality).

The following areas were analysed:



Ownership structure of the transmission and distribution network.



Management of the assets of the transmission and distribution network.



Economic sustainability of the provision of network services and profitability of the company.



Cooperation of transmission and distribution network companies.



Regulative environment, owner's expectations, obligations arising from articles of association and legislation.

Possible development versions were highlighted on the basis of the performed analyses and the practices of reference countries (Ireland, Denmark, South Australia, United Kingdom, Lithuania, Luxembourg) and their impact and potential risks were assessed. An in-depth analysis of the selected significant development versions was carried out to specify the possible impact and risks of their implementation.

The assignment was completed by Grant Thornton Baltic OÜ from 7 August to 18 December 2018.

Structure of analysis

The structure of the analysis was divided in six main parts

Regulations and their possible developments:

- the framework of regulations and further development trends in the European Union were assessed on a broader scale;
- the parties to Estonian regulative environment and the legislation that regulates the area were assessed;
- the sources of restrictions that must be taken into account or changed upon the selection of various development versions were specified.

The present situation and development view of Estonian electricity networks:

- the parties and the historical development of the operational model were specified;
- estimates were prepared by analysing the present operations. Suggestions about the following were analysed and highlighted:
 - a) merging the distribution networks belonging to Estonian public undertakings;
 - b) reliability and customer satisfaction;
 - c) division of assets and related inefficiency;
 - d) owner's expectations and analysis of cooperation;
 - e) asset management and analysis of investments;
 - f) equal treatment of market participants.

The present situation and development view of Estonian gas transmission network

Comparison of operations in Estonia with the operational models of reference countries:

- the operational models of reference countries were assessed to find the best practices;
- the present operations in Estonia were assessed against the background of reference countries;
- the factors that would help support the provision of a service with suitable quality and guarantee the preservation of a reasonable price level were specified.

Selection of development versions:

- the assessment criteria to which the suggested development version should correspond were specified;
- the development versions were specified and assessed;
- the most important versions the influence of which should be assessed in greater detail were highlighted.

Analysis of the development versions:

- the impact of the implementation of the highlighted versions was assessed from the financial side and in light of risks.

A need for change

The development of energy networks is more topical throughout Europe than ever before. One of the main trends in the development of networks is the undistorted functioning of the European Union energy market. A shared electricity network and market create the foundation for energy efficiency, reducing energy dependency and faster integration of renewable sources of energy.

The second important factor here is decreasing the dependence of energy source materials (gas, oil, uranium and electricity) supply from third countries to European Union Member States.

The keys to the security of electricity supply to Estonian consumers are the close integration of Estonia in the European electricity network and market on the one hand and a strong and cost-effective national electricity network on the other hand. Upon the development of the electricity network, this means considering future trends, investing in external connections and making serious contributions to the development of a transmission and distribution network that considers the comprehensive needs of the state.

The analysis was carried out for the assessment of the main challenges and possible solutions, which would highlight the main challenges in the management of the electricity networks belonging to Estonian public undertakings and possible solutions.

The present situation calls for broader agreements in the future

At first glance, the present situation can be characterised as prudential and company-centred:

- all assessments of the functioning of companies indicate that they contribute to efficiency. The guidelines of the state as the owner, which have been prepared so far, are being followed and investments are treated prudently proceeding from the needs of the companies;
- there are deficiencies in the cooperation between the transmission network and the state-owned main distribution network company and the achievement of goals set in the joint development plan has not been successful;
- the security of electricity supply and the satisfaction of end-consumers have improved constantly in the transmission network as well as in the state-owned distribution network Elektrilevi with the help of long-term contributions;
- the model for management of gas networks works well and the present system is optimal according to all estimates obtained.

The need for change arises from the fact that little importance has been attributed to the comprehensive view of the development of electricity networks and cooperation is lacking:

- **the owner's expectations of the area have not been properly described.** There is no comprehensive view or references to the implementation of the Estonian Electricity Network Development Plan and the need for cooperation is not emphasised. Presenting the owner's expectations to the biggest distribution network Elektrilevi has not been considered important (expectations are only presented via the owner's expectations of Eesti Energia).
- **There are deficiencies in the network development cooperation** and the achievement of the goals set in the jointly created development plan is not successful.
- **There is a lack of logic in the division of the network's assets that reduces efficiency.** Attention has been given to the problem for a long time, but no solution has been found due to the problems in cooperation.
- **The costs of management/development of the electricity networks belonging to public undertakings** (incl. Port of Tallinn, Tallinn Airport and Estonian Railway) **are partly duplicated.**
- **The importance of transparency in the functioning of the market is not emphasised.** Market participants have repeatedly drawn attention to the problems in the functioning of a transparent market, emphasising the connection of the biggest distribution network to the generation and sale of energy as the main problem.

The analysis focused on finding a solution that would work in the long term

The purpose of the analysis was to find answers to the main questions related to energy networks:

- How can the quality and price of the service be positively influenced in the long term?
- How can bigger synergy in planning developments be found?
- How can the ability to cooperate be improved in the area?
- How can a market that functions well and is attractive to market participants in the long term be established?
- How can the most cost-effective network management solution be found in the management of the networks belonging to public undertakings?

Quantitative methods were used in the analysis as the first priority. Other methods were used in the situation where quantitative methods could not be used or there were no reliable source data. Assessments were given on the basis of the principle of constructivism and conclusion supported by several inputs or studies were used to make suggestions.

General connections and trends

Important connections were distinguished as a result of the analysis, which were used as the basis for making conclusions and suggesting the development versions.

Quality depends mainly on investments and tends to be higher in the case of managing networks jointly. It is possible to conclude on the basis of an analysis of the reference countries that state ownership does not guarantee better quality indicators and the quality indicators tend to be better in countries where the transmission and distribution networks are managed jointly. Quality mainly depends on the investments made in the improvement of quality (incl. maintenance costs).

Optimisation of investments has the biggest impact on the price paid by the end consumer. Regulated pricing creates the situation where every investment gets a return that has been determined, but restricted by the regulator. A network company is not really motivated to optimise its investments in this situation, although it could be done in cooperation between network companies.

The main task in the development of the long-term end-consumer price and quality is optimised investment, which is shaped by factors created via ownership structure, management principles and regulation.

The possibility to offer free market services reduces the motivation to invest in regulated services. Network companies of which the operation on the free market is not restricted, may take interest in investing in the development of free market services with a higher margin in the periphery of the monopoly, taking advantage of the access to clients related to the monopoly.

The ratio of quality indicators and investments is usually better when the focus is on the development of regulated market services. Allowing a monopoly to develop free market services makes it possible to achieve better financial results, but in the long term the quality of services may suffer related to the decrease in investments made in the regulated area.

Important trends to consider

Considering the important trends that affect the industry is important when the following developments are planned.

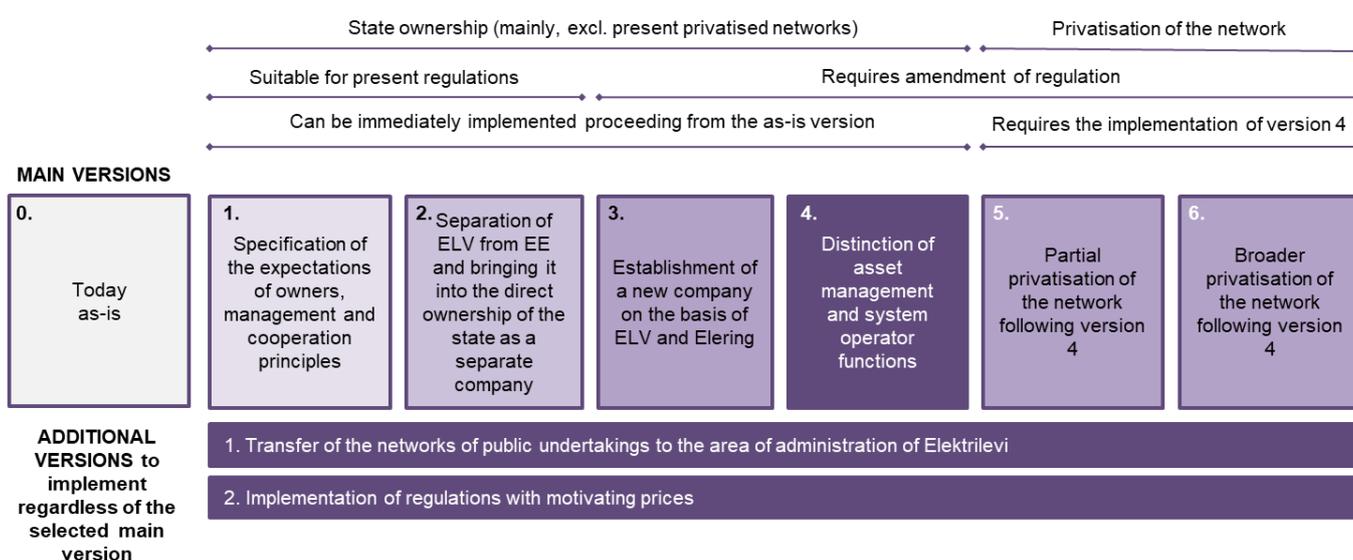
The provision of new network-related services will increase. The rapid increase in micro and medium generation will create challenges for the development of networks. The present network connections and system management must be able to cope with the addition of new and dispersed generation capacities, and the need to use new service solutions and technologies will also increase.

- The above **brings along an increased need for cooperation between the transmission and distribution networks** in the management of networks and the energy system in Estonia.
- Free market participants need the support of network companies increasingly more in offering their solutions, which increases **the pressure on the operation of a transparent market.**

The development of regulations is aimed to a clear distinction of regulated services. The main direction of the European Union regulation supports the above logic of connections. The aim is to restrict the investments of monopolies in the development of free market services and to steer them towards focusing only on the development of regulated services and guaranteeing their quality.

Possible development directions

The different possibilities of combining ownership, management and other components that can be influenced were described proceeding from the above assessments. The inputs were used to highlight possible development versions that comprised six main and two additional versions.



Main versions

Version 1 - Specifications of the management system and operation whilst preserving the current ownership structure

We will specify the differentiated operation of the distribution network whilst preserving the present ownership structure:

- Specification of the owner's expectations in terms of management principles and cooperation;
- Ensuring the impartiality of management, including the formation of a neutral supervisory board of Elektrilevi;
- Separation of the functions of Elektrilevi from the joint functions of Eesti Energia Group;
- Specification of the service strategy of Elektrilevi in terms of free market services.

Version 2 - Taking Elektrilevi OÜ out of Eesti Energia Group and to the direct ownership of the state

Separation of the distribution network from Eesti Energia Group to guarantee transparent and impartial operation, which in addition to version 1 calls for:

- Making changes in the ownership structure;
- Refinancing the debt obligations of Eesti Energia and ensuring future separation;
- Full separation of joint functions from Eesti Energia Group.

Version 3 - Merger of regulated distribution and transmission network/ Establishment of a new joint network operator

Merger of the distribution network and distribution network with the preservation of their present functions, which in addition to the aspects highlighted in version 2 calls for:

- The establishment of a merged network operator (transmission and distribution networks together);
- Modifying of the regulation;
- Merger of organisations and cultures.

Version 4 - Establishment of a separate owner of the merged network (transmission and distribution network) and an Independent System Operator (ISO)

The goal is to establish two separate companies: The company that owns the assets of the transmission and distribution network and the Independent System Operator (ISO). In addition to ensuring the principles of version 2, it calls for:

- The establishment of a merged network operator (transmission and distribution networks together);
- The separation of the function of the Independent System Operator (ISO) with the specification of the owner's expectations, management and functions;
- Modifying of the regulation;
- Merger of organisations and cultures;
- Free market services will not be pursued any more.

Version 5 - Sale of the minority shareholding in the joint network operator

Upon the implementation of version 4, we will assess the possibilities for the privatisation of the minority shareholding of the network operator. In addition to ensuring the principles of version 4, it calls for the preparations necessary for the privatisation and carrying out the privatisation. The Independent System Operator will be 100% state owned. The state has the majority shareholding of the company that owns the assets and the minority shareholding will be privatised. Free market services will not be pursued any more.

Version 6 - Broader privatisation of distribution networks

Upon the implementation of version 4, we will assess the possibilities for the separation and broader privatisation of distribution networks. In addition to ensuring the principles of version 4, it calls for the distribution of network assets and preparation of the privatisation.

- Separation of regional distribution networks and privatisation up to the extent of 100%, similar to the present networks operating in private ownership;
- Privatisation of the minority shareholding in the transmission network can also be considered as an additional option;
- The Independent System Operator will be 100% state owned. The distribution networks suitable for 100% privatisation will be separated from the company that owns assets and privatised. Privatisation of the minority shareholding in the transmission network can also be considered as an option. Free market services will not be pursued any more.

Additional versions

The following alternatives were highlighted as additional versions, the use of which we recommend to implement with the selected main version.

1. **In terms of electricity networks belonging to public undertakings, it would be practical to consider the option to transfer the assets and activities related to energy networks to the largest state owned network operator** according to the proposal made above. The approach is supported by the analysis as a result of which the costs related to the network to be transferred would decrease by 10% upon concentration.
2. **Development of performance based pricing regulation by adding pricing components that motivate behaviour (service quality, customer satisfaction etc.),** i.e. pricing regulation that steers towards efficiency is an option of motivating network operators to increase the operator's profit in addition to increasing benefits to the end-consumer. This approach is supported by the principles of the regulations of most of the reference countries and as a result of the analysis, we also recommend using this practice in Estonia, provided that the selected solution will not make the work of the regulator too complicated.

Results of the analysis

The areas that need to be improved as a priority and as the basis for the selection of the next steps were identified as a result of the analysis.

1. The target-orientation and broader cooperation in the area can be significantly improved

Specification of the division of assets and joint planning, development and maintenance activities are essential for the achievement of synergy at the level of state. The process of specification of the division of assets and joint investment management makes it possible to guarantee the achievement of the same outcomes with investments that are up to 20% lower.

The parties have acknowledged the problems since the baseline study of 1998, but the owner's expectations do not emphasise cooperation in making investments, which creates the situation where the investments of companies are currently only assessed on company-basis without considering broader comprehensive needs.

As the problem has still not been solved, the efforts made by the owner or the parties cannot be considered adequate for finding a solution – cooperation in the area can be improved considerably.

The need for changes in the area is also supported by the study of reference countries, which indicates that in comparison with the reference countries, the quality indicators of Estonia are basically among the worst, whilst Ireland and Finland, which guarantee better quality, spend less per network kilometre for managing their distribution networks.

The present cooperation and the necessary comprehensive changes in the system can be steered by specifying the owner's expectations and/or changing the ownership structure.

Proposal

Specify broader goals and the owner's expectations:

- In a situation where the owner's expectations are phrased by different ministries, it is necessary for these ministries to achieve an agreement on common network-related goals.
- The owner's expectations must be specified in specific development plans that the parties are expected to comply with (the present versions do not specify these).
- Phrasing the owner's expectations must make it possible to managements to make assessments about cooperation. The expectations phrased today do not specify the aspects related to cooperation.
- Separate owner's expectations must be prepared by the state to Elektrilevi, the largest state owned company that owns a distribution network.

Proposal

Select a network development version and initiate the changes necessary moving towards its implementation:

The lack of cooperation in the area may be explained with the aspects concerning the ownership structure. As cooperation must be considered an important base component of further development, then changing the ownership structure may also be justified in the situation where it has a negative impact on performance indicators (e.g. price for the end-consumer) in the short term. The selection of development versions and recommendations are separately highlighted in the summary.

2. It would be practical to merge the electricity distribution networks owned by public undertakings

The electricity network belonging to different public undertakings partly duplicates the costs related to management and development. The estimated savings on the costs related to the electricity networks belonging to other public undertakings is 10% per year in the coming years.

Proposal

To concentrate distribution networks of all other public undertakings into the ownership of Elektrilevi OÜ using the present network takeover practice of Elektrilevi and considering the specific features and special requirements of the networks to be taken over.

3. A transparent competition environment and equal treatment of market participants are essential

The owner's representatives do not emphasise the problems related to the competition environment on a broader scale and the common approach is that everything is fine when the activity complies with Estonian laws. However, the circle of parties and arguments about the bottlenecks in the present system are convincing enough to see the improvement of the competition environment as a priority. Pursuant to its functions, Elering must ensure the efficient and transparent operation of the market and promote competition when operating the electricity market. The performance of this role has caused disagreements, which hinder cooperation with Eesti Energia. The above is one of the many reasons why cooperation is not working in the best possible manner in the specified critical areas.

The strategy of Eesti Energia, which has aimed the focus of Elektrilevi to free market services and emphasised the importance of developing the joint services of the group, can amplify the dissatisfaction of the companies providing services on the free market. It's clear that this makes it possible to create a larger income base and cut costs in the group, which also creates the opportunity to reduce the prices for end-consumers.

The approach may prove to be problematic in the longer term, because:

- the complexity of the regulator's job will increase, e.g. in the assessment of the division of costs of the merged services;
- the provision of free market services and services concentrated into a group give market participants the reason to suspect Eesti Energia of violation of the principle of differentiated operation of the distribution network.

Proposal

Consider the principle of equal treatment of market participants as an important assessment basis in the selection of development versions.

4. Side effects need to be taken into account in developing the free market strategy and intragroup synergy of Eesti Energia

The strategy of Eesti Energia for the development of intragroup synergy and steering Elektrilevi towards the development of free market services may have a negative impact on the full operation of the electricity network:

- merging the services means that making the changes, which require the separation of areas and the joint services related to them, will be difficult (e.g. upon privatisation);
- the development of free market services spreads the focus of Elektrilevi and may reduce the concentration on the optimisation of the investments related to regulated services.

Proposal

Specify the principles of service development and, in particular, free market services in the strategy of Elektrilevi, considering their long-term impact and the principle of an unbiased treatment of market participants.

Proposal for selection of the development version

Development versions were selected on the basis of assessment methodology, which highlighted the following about all versions:

- Assessment of suitability with the present operating model (as-is);
- Examples of the implementation of similar practices in other countries;
- Suitability with trends in the area;
- Suitability analysis with the assessment criteria selected by the steering group: Future security; End-customer satisfaction; Efficient operation; Open and impartial system.

The analysis steering group selected versions 1, 3, 4 and 5 on the basis of the assessment for an in-depth analysis.

The possible financial impact, suitability with regulations and the need to change them, and the risks related to implementation were analysed in depth about the selected versions.

Two of the best versions (version 1 and version 4) were highlighted as a result of the in-depth analysis:

Reasoning for the selection of version 1

The goal is to change the management of Elektrilevi OÜ, which belongs to Eesti Energia Group and owns the biggest distribution network, in a manner that results in a more transparent and separate operation without changing the ownership structure.

The joint functions implemented in the group today, such as IT, development, etc., will be separated into company-based functions. Changes in governance and management must lead to more effective cooperation between network operators also in the area of investments. Separation is also necessary to ensure that another development version could be implemented in the future (the increasing integration in Eesti Energia Group is making it more difficult and expensive).

The implementation of the version calls for the following:

- The state as the owner must specify the owner's expectations, emphasising the principles of separate management and cooperation between network operators. A precondition to this is that the Ministry of Economic Affairs and Communications and the Ministry of Finance will agree on common goals and common owner's expectations;
- The principles of separation of management will be the bases for the election of the members of the supervisory board of Elektrilevi, which will be appointed by the management board of the parent company (the current situation, where the supervisory board of Elektrilevi consists of the members of the management board of Eesti Energia, does not comply with the principle of separation);
- The services strategy of Elektrilevi OÜ must also be specified in respect of free market services by creating a clear view of the development of the provided free market services.

Version 1, benefits from the implementation:

In conclusion, the potential benefit for the society will come from the investments that are made somewhat more optimally as a result of the improved cooperation, which will give estimated savings of up to 2 million per year.

The one-off cost of the separation of functions is 10 million euros maximum and the annual additional cost will be 1 million euros.

Reasoning for the selection of version 4

The goal is to establish two separate companies: the owner of the merged network that owns the assets (transmission and distribution network), and an Independent System Operator (ISO) that is responsible for the operation of the system.

The separation of the system operator from the owner of the network makes it possible to create a better competition environment and improve the coordination of investments and innovation. In the long term, this will be beneficial to all market participants, including the consumers. It will also create the opportunity to privatise the assets of the network, as the system operator will maintain full control of the network (thereby supporting the state's comprehensive needs and energy security). This version is supported by the experience of Ireland and the changes taking place in the United Kingdom.

When planning the implementation of version 4, consideration must be given to the process of desynchronization of Russia and the process of joining the synchronous area of continental Europe, which is planned to be implemented by the end of 2025. Separation of the system operator and asset management activities could start from 2027.

The estimated impact of version 4 on financial indicators is as follows:

- one-off expenses 5-10 million euros upon the division in respect of IT systems;
- one-off expenses maximum 51 million euros upon the refinancing of debt. It is important to consider the fact that this is a time-varying amount, which depends on the level of interest rates and the approaching maturity. If the development version is implemented after the maturity dates of the loan commitments (2023 and 2026), then these expenses are minimal or non-existent;
- savings from the optimisation of investments are up to 8 million euros per year;
- and the expenses saved on the management and maintenance of the grid amount to 1-2 million euros per year.

Version 4 can be implemented directly from the as-is version. The realisation of the version requires merging the assets and functions of the transmission network and distribution network to the same company or group, after which the assets and functions of the system operator can be separated into a new company by way of a division.

The realisation of the version requires amendment of the Estonian Electricity Market Act in such a manner that it would allow one company to own the transmission network and the distribution network and the system operator to operate as a separate company.

Version 4, benefits from the implementation:

In conclusion, the potential benefit for the society will come from the investments that are made more optimally as a result of the improved cooperation and joint management of networks, which will give estimated savings of up to 8 million per year on investments and up to 2 million on expenses related to the maintenance and management of networks.

The one-off cost of the division of functions is maximum 10 million euros and the refinancing of debt obligations is maximum 51 million euros.

The proposal of the analysis team is to turn the system view from internal priorities to the full priorities of the electricity network and to change the cooperation and optimisation of investments in the system via the transformation of the ownership structure and areas of responsibility.

The different alternatives for the development and changes are represented as the main versions in the order of the applicability, starting from version 1 as the easiest to implement. The implementation of version 5 and 6 presume and require the initial implementation of version 4, which would provide the best preparation for the possible privatization.

Recommended main version

We find that version 4 is the most suitable considering the selected assessment criteria, which establishes two separate companies: the owner of the merged network that owns the assets (transmission and distribution network), and an Independent System Operator (ISO) that is responsible for the operation of the system.

We recommend to implement version 4 presuming that the implementation of the offered version requires more time and might create disagreements in opinions of the parties. If it's obvious that there is no desire to implement the version, then version 1 should be considered as the alternative.

The proposed minimum programme is the implementation of version 1, which in essence improves the key bottlenecks of today's functioning without changing the ownership structure.

We recommend implementing version 1 if it is decided not to use version 4 or the selection and implementation will take more than a year (in that case version 1 will fit as a preparation phase for the changes).

Recommended additional versions

The following alternatives were highlighted as additional versions, the use of which we recommend to implement regardless of the selected main version.

1. Concentrate the distribution networks of public undertakings regardless of the selected main version to the ownership of Elektrilevi OÜ.

2. Implement the principles of performance based price regulation for the improvement of the optimisation of investments regardless of the selected main version.



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