



# *Strategic Environmental Assessment for the National Development Programme of the Energy Sector of Estonia*

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# What is SEA?

The goal of strategic environmental assessment is to take account of environmental considerations in the development and approval of strategic planning documents (SPD).

Strategic environmental assessment facilitates securing high-level environmental protection and promoting sustainable development.

In the SEA context, the environment is understood in a wider sense than solely a natural environment, i.e. effects are assessed from the viewpoint of natural, social, economic and cultural aspects.

The strategic environmental assessment report is part of a strategic planning document.

# The legal basis for the process of strategic environmental assessment in Estonia

- The Law on the Environmental Impact Assessment and Environmental Management System
- The Law on Administrative Proceedings (which in particular regulates open proceedings that establish a framework for public discussion and the presentation of documents for familiarization)
- The Law on Planning
- The Law on the Organization of Local Self-Governance
- Resolution of the Government of Estonia “Types of Strategic Development Programmes as well as the Order of their Development, Amendments, Implementation, Evaluation and Reporting on Them”

# The SEA Law

## Tasks of SEA participants and stakeholders - 1

The organizer of development of a strategic planning document shall:

- ❖ make a decision on initiating/refusing to initiate SEA;
- ❖ be responsible for carrying out SEA;
- ❖ cover the SEA-related costs;

The developer of a strategic planning document shall:

- ❖ organize public presentation of the SEA programme for familiarization and arrange its discussion;
- ❖ submit the SEA programme to the supervisory authority for approval;
- ❖ organize public presentation of the SEA Report for familiarization and arrange its discussion;
- ❖ submit the SEA Report to a supervisory body for approval.

# The SEA Law

## Tasks of SEA participants and stakeholders - 2

### The expert shall:

prepare, in cooperation with the SPD developer, the SEA programme and the SEA Report.

Qualification requirements to the expert:

- having state-recognized higher education or an equivalent qualification acquired in a foreign state in the field where he/she wants to assess environmental effects;
- having at least two years of working experience in the field where he/she wants to assess environmental effects;
- having been trained in strategic planning in the amount of at least 40 hours and having positively passed a corresponding examination;
- knowing SEA principles and procedures as well as legal acts related to carrying out the assessment.

# The SEA Law

## Tasks of SEA participants and stakeholders - 3

### SEA supervisory authority shall:

- ❖ verify the SEA Programme for compliance with the legal requirements and make a decision on approval of the Programme;
- ❖ exercise control of the SEA procedure's compliance with the legal requirements;
- ❖ exercise control of the SEA Report's compliance with the programme and legal requirements;
- ❖ endorse the SEA Report and approve environmental monitoring measures;
- ❖ verify the expert's compliance with the qualification requirements set forth in the SEA Law.

If probable environmental effects from SPD implementation can be transboundary, supervision of the SEA is exercised by the Ministry of the Environment (ME); in all other cases, the Department of the Environment (DE) is responsible for the supervision.

# The SEA Law

## Tasks of SEA participants and stakeholders - 4

### Concerned public authorities:

- Prior to making a decision concerning the need to initiate strategic assessment of environmental effects accompanying the SPD implementation, the opinions of the DE and all other institutions possibly affected by the probable environmental effects related to the SPD implementation should be requested.

Depending on the SPD character, such institutions include:

- Ministry of Defence
- Ministry of the Environment
- Ministry of Culture
- Ministry of Economy and Communications
- Ministry of Agriculture
- Ministry of Internal Affairs
- Ministry of Social Affairs

# The SEA Law

## Tasks of SEA participants and stakeholders - 5

### Concerned public authorities:

- governmental institutions operating within the management scope of these ministries;
- district administration;
- local governments;
- other institutions concerned.

### The public:

The public has the possibility of participating in the SEA process, provide suggestions and comments to the SEA programme and the SEA Report, and receive answers to its questions.

## General information

We will consider the process of SEA for two development programmes of Estonia's energy sector:

- the National Development Programme of the Energy Sector up to 2020 (NDPES 20) – *ENMAK 2020*, approved in 2009;
- the Development Programme of the Energy Sector of Estonia up to 2030 (DPES 2030+) – *ENMAK 2030+*, under approval.

## General information

- The National Development Programme of the Energy Sector up to 2020 was focused on:
  - electricity generation
  - production of heat energy
  - usage of biofuel by transport

# Chronology of the development of NDPES 20 and SEA (1)

- **18 January 2008** - the Government of Estonia initiated development of the NDPES 20.
- **4 March 2008** – the draft SEA programme for the NDPES 20 was ready and forwarded for publication
- **5 March 2008** – the Ministry of Economic Affairs and Communications (MEAC) initiated the SEA process for the NDPES 20
- **12 March 2008** – the Energy Forum “What Energy System Do We Want?” initiated by the MEAC was conducted in Tallinn. The Forum discussed issues associated with the development of the NDPES 20.
- **11 April 2008** – the draft SEA programme, amended after public discussion, was ready and presented to the Ministry of the Environment (ME) for approval.
- **7 May 2008** - the SEA programme approved by the ME was ready.
- **September 2008** – the 7th working draft of the NDPES 20 was ready.

## Chronology of the development of NDPES 20 and SEA (2)

- **7 October 2008** - the MEAC published the draft SEA Report on its home page.
- **31 October 2008** - public discussion of the SEA Report was held
- **21 November 2008** – the draft SEA Report, amended after publication and public discussion, was ready.
- **10 December 2008** – the draft NDPES 20 was ready.
- **9 February 2009** – the amended draft SEA Report was ready and forwarded to the ME for approval.
- **26 February 2009** – the ME approved the SEA Report for the NDPES 20.
- **March 2009** - the draft NDPES 20 was presented to the Government and Parliament of the Republic.
- **15 June 2009** – the Parliament adopted the NDPES 20.

# Key milestones of the strategic environmental assessment for NDPES

## 20

- The Expert Group on SEA made a qualitative assessment of the effect of nine scenarios of the energy sector development according to 27 impact criteria:
  - 6 scenarios were included into the NDPES by the developer and 3 scenarios were added by the Expert Group on SEA;
  - 27 impact criteria included 9 criteria assessing environmental effects, 6 criteria assessing social effects, and 12 criteria assessing economic effects of the scenarios in question.
- A long-term forecast of the effects of the 9 scenarios up to 2030 was made including the dynamics of production, consumption and environmental impact.
- A quantitative (monetary) assessment of the environmental impacts of electricity production was made based on ExternE methodology using EcoSenceWeb V 1.3. software.

Qualitative criteria used to assess the effects of the energy sector development scenarios (an explanation of the criterion and a possible estimate of its change are provided in brackets) (1)

- **I – Uninterrupted power supply:**

- 1 – provision with raw energy carrier materials under a normal situation (raw energy carrier materials: oil shale, natural gas, nuclear fuel, wind, biogas, shale gas, peat);
- 2 – provision with raw energy carrier materials under an emergency;
- 3 – the balancing/compensation of peak energy loads.

- **II – More sustainable supply and production of energy:**

- 4 – level of CO<sub>2</sub> emissions (increasing or decreasing);
- 5 – level of emissions of SO<sub>2</sub> and other atmospheric pollutants (increasing or decreasing);
- 6 – damage to land resources (need for space, change of intended land use);
- 7 – need for water resources (water consumption, volume);

Qualitative criteria used to assess the effects of the energy sector development scenarios (an explanation of the criterion and a possible estimate of its change are provided in brackets) (2)

- **II – More sustainable supply and production of energy:**
  - 8 – damage to water quality (change of the environmental and chemical state);
  - 9 – waste disposal including recycling and storage (volume and type of waste - ordinary waste, hazardous waste; need for a landfill and its capacity; need for a landfill to store hazardous waste);
  - 10 – life quality of the local population (need to relocate; change of agricultural land fertility; change of social infrastructure - school, kindergarten, etc.);
  - 11 – risks for public health and the environment (upper airway disease incidence over time; radiation-related disease incidence in time; change of the air equality, water schedule, and light conditions);
  - 12 – relationship with the territories being part of Natura 2000 (change of the physical state and functioning of territories; change of the favourable state of habitats);

Qualitative criteria used to assess the effects of the energy sector development scenarios (an explanation of the criterion and a possible estimate of its change are provided in brackets) (3)

- **II – More sustainable supply and production of energy:**
  - 13 – restrictions on regional development (drinking water quality; air quality, risks for health, availability of labour and other aspects that affect spatial development);
  - 14 – energy intensity of goods and services (increasing or decreasing);
  - 15 – transboundary environmental effects;
  - 16 – risks associated with transportation (environmental impacts related to transportation of raw materials (dust, noise, radiation) and health risks).
- **III – Provision of power to consumers at reasonable prices:**
  - 17 – prime cost compared to 2007 (increasing or decreasing);
  - 18 – external costs (increasing or decreasing);
  - 19 – energy prices for consumers (increasing or decreasing);

Qualitative criteria used to assess the effects of the energy sector development scenarios (an explanation of the criterion and a possible estimate of its change are provided in brackets) (4)

- **III – Provision of power to consumers at reasonable prices:**
  - 20 – food prices (increasing or decreasing);
  - 21 – dependency on imported energy price (increasing or decreasing);
  - 22 – predictability of energy prices (demonstrates how Estonia/EU can impact the price level using regulatory measures (political decisions); increasing or decreasing);
  - 23 – price stability (increasing or decreasing);
  - 24 – competitiveness of the national economy (increasing or decreasing).
- **IV – Energy efficiency and energy saving:**
  - 25 – process energy efficiency (increasing or decreasing);
  - 26 – energy efficiency in construction (increasing or decreasing);
  - 27 – energy consumption (increasing or decreasing).

## Evaluation of change in each criterion

The following scale was used in the evaluation:

- +3 – significant positive effect;
- +2 – moderate positive effect;
- +1 – insignificant positive effect;
- 0 – no effect;
- -1 – insignificant negative effect;
- -2 – moderate negative effect;
- -3 – significant negative effect;
- ? – effect not clear.

## Link between NDPES 20 and other strategic development documents

The NDPES 20 provided a basis for the following development and target programmes:

- The Development Programme for Energy Production and Distribution Sector up to 2018
- The State Programme for the Use of Shale Oil for 2008-2015
- The Programme Stimulating the Usage of Biomass and Bioenergy for 2007-2013
- Target Programme on Energy Saving.

# The Development Programme of the Energy Sector of Estonia up to 2030: the need for development

- Energy sector development programmes in Estonia are drafted and revised once every 5-6 years (previously in 1991, 1998, 2004, and 2009).
- Development by the EU of more detailed goals and measures on the climate and energy policy up to 2030.
- Growing links between the region's energy resource supply networks and other EU regions.
- A vision of future contributions of various energy sources has changed globally.
- Growing impact of resource and energy efficiency upon competitiveness.

## The Development Programme of the Energy Sector of Estonia up to 2030: the goal of development

Choose an optimal energy supply scenario that will guarantee availability of resources for consumers at a reasonable price, with low environmental impacts, according to the long-term goals of the EU's energy and climate policy, and that will be the most competitive in a long-term outlook.

# The Development Programme of the Energy Sector of Estonia up to 2030: strategic objectives

1. Guarantee energy provision to the electricity generation sector, the heat production sector, the transport sector, the housing and utilities sector, and the local fuel production sector.
2. Reduce energy intensity of the economy and increase energy saving.
3. Increase energy security by means of developing a business environment necessary for energy production, an energy infrastructure, and establishing connections with other networks (diversification of energy resource supplies).

# The Development Programme of the Energy Sector of Estonia up to 2030: difference from previous programmes

- This Programme deals not with the energy sector development options per se but considers the impact of these options on the environment, human health, and competitiveness of economy as a whole.
- Scope: DPES 2030+ combines into a single whole the options related to heat production, residential energy consumption, electricity generation and distribution, transport energy consumption, and production of local biofuels.
- More attention was paid to quantitative analysis: both direct and indirect costs and benefits of possible actions as well as wider economic consequences were evaluated.
- Development format: [www.energiatalgud.ee](http://www.energiatalgud.ee) web environment was chosen as a platform for compilation of the DPES 2030+, which allowed as many stakeholders as possible to get an idea of the current situation and participate in the development of the document in one place and in a coordinated way.

## Chronology of the development of DPES 2030+ and SEA (1)

- **8 August 2013** - the Government of Estonia initiated development of the DPES 2030+.
- **18 September 2013** – the MEAC initiated the SEA process for the DPES 2030+.
- **17 February 2014** – a draft SEA programme was made publicly available.
- **21 and 23 March 2014** – public discussion of the SEA programme took place.
- **28 April 2014** – the draft SEA programme, amended after public discussion, was presented to the DE for approval.
- **21 May 2014** – the DE made a decision to extend the SEA programme consideration procedure.
- **4 June 2014** – the DE made a decision to eliminate shortcomings in the SEA programme.
- **20 June 2014** – an amended version of the SEA programme was prepared and submitted to the DE for approval.
- **3 July 2014** - the SEA programme was approved by the DE.

## Chronology of the development of DPES 2030+ and SEA (2)

- **27 October 2014** - the MEAC published the draft DPES 2030+ and the draft SEA Report on its home page.
- **21 November 2014** - public discussion of the SEA Report was held
- **19 December 2014** – the draft SEA Report, amended after publication and public discussion, was ready and forwarded to the DE for approval.
- **14 January 2015** – the DE approved the SEA Report for the DPES 2030+.
- **19 February 2015** - the draft DPES 2030+ was presented to the Government of the Republic.

## Effect assessment indicators for the energy sector development scenarios (1)

The SEA for DPES 2030+ used 23 indicators in the following fields for comparison and ranking of alternatives:

- public sector revenue and expenditure
- ensuring energy security, including guaranteeing energy provision
- reduction of impact on health
- improvement of competitiveness of the economy
- reduction of environmental impact

## Effect assessment indicators for the energy sector development scenarios (2)

*Public sector revenue and expenditure:*

- cost of actions taken by the State (m €/year) (↓)
- receipt of tax revenues (m €/year) (↑)

## Effect assessment indicators for the energy sector development scenarios (3)

*Ensuring energy security, including guaranteeing energy provision:*

- end energy consumption (TWh) (↓)
- domestic primary energy consumption (TWh) (↓)
- fuel import share (%) (↓)
- electricity import share (%) (↓)
- share of renewable energy sources in domestic primary energy consumption (%) (↑)
- share of renewable energy sources in end energy consumption (%)  
(↑)
- share of non-fuel energy sources in end energy consumption (%)  
(↑)

## Effect assessment indicators for the energy sector development scenarios (4)

*Reduction of impact on health:*

- loss of health or DALY burden of disease (DALY) ( $\downarrow$ )
- number of premature deaths caused by PM 2.5 (cases per annum) ( $\downarrow$ )

## Effect assessment indicators for the energy sector development scenarios (5)

*Improvement of competitiveness of the economy :*

- GDP change (%) (↑)
- foreign trade balance change (%) (↑)
- labour productivity change (%) (↑)
- employment change (%) (↑)
- change in energy intensity of economy (%) (↓)

## Effect assessment indicators for the energy sector development scenarios (6)

### *Reduction of environmental impact*

- greenhouse gas emissions (m t/year) (↓)
- biodiversity change (↓)
- NOx emissions (t/year) (↓)
- SO2 emissions (t/year) (↓)
- PAH emissions (t/year) (↓)
- HFC emissions (t/year) (↓)
- VOC emissions (t/year) (↓)

## What will Estonia's energy sector be like in 2030? (1)

If the measures described in the draft Development Programme of the Energy Sector up to 2030 have been implemented, the following results can be achieved:

- state budget revenue growth rate will increase by **2%/year** compared to the baseline scenario;
- energy intensity of economy will decrease by 2030 by **66%** compared to 2012 (5.6 -> 2 MWh/1000 € GDP);
- imported fuel share in domestic primary energy consumption will be **25%** in 2030;
- imported electricity share will be **0%** in 2030;
- end energy consumption in 2020 and 2030 will remain on the 2010 level (~32 TWh);
- renewable energy share in end energy consumption will be **45%** in 2030;
- renewable energy share in domestic primary energy consumption will be **28%** in 2030.

## What will Estonia's energy sector be like in 2030? (2)

- Achievement of long-term goals of the EU's energy and climate policy secured.
- Number of premature deaths caused by PM<sub>2.5</sub> will go down by about **50%** compared to 2012.
- **The burden of diseases** emerging due to the energy sector's environmental impact will decrease by **40%** compared to 2012.
- The energy sector's adverse impacts on biodiversity will be mitigated by the measures envisaged in the SEA Report.



Thank you for attention!