

Climate change aspects within SEA proceedings

Estonia: SEA of the National Energy Sector
Development Plan

Case Study

Justice and Environment 2012

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Case study

SEA of the National Energy Sector Development Plan

ESTONIA

SEA procedures are closely linked to new investments, projects, strategic planning, extension or adaptation of existing plants, roads etc. At strategic level, SEA influences the fundamental nature of the development. Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programs on the environment (SEA Directive) contains some reference to climate change, however, this is far from being proportionate to the gravity of the problem. On the other hand, arguments referring to the problem of climate change often are used to justify environmental destruction, e.g. in planning and building water or wind power plants in special protection areas or having critical water impacts.

1. Short summary of the plan and/or program

1.1. Title

The following case study examines Strategic Environmental Assessment of the “National Energy Sector Development Plan until 2020” (*Energiamajanduse riiklik arengukava aastani 2020 – NESDP*).

1.2. Location

NESDP covers the whole territory of Estonia.

1.3. Area for that the plan/program has been prepared

NESDP was prepared to cover the whole of energy sector – mainly including production and consumption of electricity, heat and transport fuels.

1.4. Developer

NESDP process was initiated by the Government of the Republic of Estonia, which assigned the Ministry of Economic Affairs and Communications as the authority responsible for the preparation of the NESDP. Ministry of Environment, Ministry of Foreign Affairs, Ministry of Finance, Ministry of Social Affairs, Ministry of Education and Research, and Ministry of Agriculture were designated as parties to the process.

2. Relevant national regulation

2.1. Which are the main provisions transposing the SEA Directive?

Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (SEA Directive) is mainly transposed to the Estonian legal order by the Environmental Impact Assessment and Environmental Management System Act. The regulation on SEA is concentrated in the Chapter 2, Division 2 of the Act (Sections 31 to 46).

2.2. Which domestic legislative, regulatory or administrative provision required the preparation of the plan/program?

The preparation of the NESDP was required by the [Regulation No 302 of the Government of the Republic of 13 December 2005 “Types of Strategic Development Plans and the Procedure for their Preparation, Supplementation, Realization, Evaluation and Reporting”](#). This Regulation is issued based on the Section 10(2) of the [State Budget Act](#).

2.3. Does the national regulation on SEA demand taking climate change aspects into consideration in environmental assessments?

According to the Section 40(4)6) of the Environmental Impact Assessment and Environmental Management System Act, the SEA statement must include an assessment of the impacts of a plan or a programme to the climate change.

Official translation of the provision:

(4) A strategic environmental assessment report shall set out the following:

*6) an assessment of the potential significant direct, indirect, cumulative, synergistic, short and long-term, positive and negative environmental impacts, **including impacts on human health and social needs and property, biological diversity, populations, flora, fauna, soil, water and air quality, **climate changes**, cultural heritage and the landscape, an assessment of the possibilities of waste generation and a description of the methods for impact prognosis;***

3. The plan/program

3.1. Do the main objectives of the plan/program concern climate change? If yes, in which context is climate change referred?

NESDP has three main objectives, one of which is titled “Estonian energy supply and consumption are more economic”. Under this objective, a set of measures is provided, that should aim at making energy supply and consumption less wasteful and also have a positive effect regarding climate change. One of the indicators related to this objective is that by 2020 CO₂ emissions produced by the energy sector are two times lower than in 2007 (7,85 M tons compared to 15,7 M tons). The objectives or measures themselves, however, do not specifically mention climate change or mitigation of energy sector’s impact to it.

3.2. Does the plan/program have likely harmful impacts on the environment, especially on climate?

Energy sector in Estonia is by far the main source of harmful impacts on the climate change. This is mainly caused by large-scale use of oil shale (local solid fossil fuel) for production of electricity (in 2008, 94% of electricity produced in Estonia was produced from oil shale). Impacts on climate are only one of numerous negative impacts associated with use of oil shale; others include high emissions of SO₂ and NO_x, water pollution caused by mining etc.

In addition to it, use of fossil fuels in road transport creates significant amounts of greenhouse gases, therefore contributing to the climate change.

NESDP envisages continuing use of oil shale, which as a fossil fuel has a negative effect on climate, as brought out earlier. On the other hand it foresees both significant reduction of its use as well as using technologies that diminish negative impacts on climate and ambient air associated with burning oil shale. Therefore, NESDP and its measures have a likely positive effect on the climate change compared to the continuation of the existing situation.

4. Description of the SEA

4.1. Procedure

4.1.1. Preparer of the assessment

SEA was prepared by the Stockholm Environment Institute Tallinn (SEIT - <http://www.sei-international.org/tallinn>).

4.1.2. Authorities involved

Public authorities actively involved in the SEA procedure were: Ministry of Economic Affairs and Communications, Ministry of Environment, National Audit Office of Estonia, Government Office and Ministry of Social Affairs, Ministry of Finance.

4.1.3. Short description of procedure of public consultation

Public consultation of the SEA of the NESDP was carried out in two phases; in the first the program of SEA was introduced. The program was made publicly available on the home page of the Ministry of Economic Affairs and Communications) for 22 days (5 March – 26 March 2008) and an oral hearing was held on 27 March. Second phase of public consultation was held after the draft SEA report was prepared. The report was made publicly available for 25 days (7 October – 31 October 2008) and an oral hearing was held on 31 October 2008.

4.1.4. Short description of transboundary consultation

No transboundary consultation was held. According to the SEA report, potential transboundary effect may take place with regard to some measures, but as all of these require additional environmental impact assessment (either in the form of EIA or SEA), transboundary consultation should take place within these procedures.

4.2. Content

4.2.1. Does the assessment of the current state of the environment concern climatic factors?

The SEA does not contain a general description of the state on environment; instead it focuses on the current environmental impacts of Estonian energy sector. This part of the assessment focuses almost exclusively on the environmental impacts of power generation from oil shale. The latter is undoubtedly the cause for most of environmental impacts related to energy sector (including impact on the climate change) but on the other hand not the only one.

The assessment brings out that stationary pollution sources in Eastern Virumaa (the county where large thermal power plants using oil shale are located) produces 82,4% of the whole of CO₂ emissions of Estonia. However, this data is not further elaborated and no more information related to climatic factors, climate change or its causes is presented. Therefore the assessment of the current state of affairs does not include a wide range of data or substantive analysis regarding climatic factors.

4.2.2. Does the assessment evaluate the likely impacts of the plan/program on climate?

The assessment does evaluate the likely impacts of the program to the climate. The environmental impacts (including impact on climate) of NESDP's objectives and measures were assessed using **qualitative analysis** (3 expert opinions). Experts evaluated the objectives and measures using 27 criteria; one of these was the level of CO2 emissions.

In addition to evaluating the objectives and measures of NESDP, different possible future scenarios in three main areas – power production, central heating and transportation were compared. The aim of the comparison of alternative scenarios was to give adequate background information for preparation of NESDP and National (Electric) Power Sector Development Plan (NPSDP). The latter was prepared parallel to the NESDP (SEA of that program was, however, prepared by another consultancy). Different methods for comparing the scenarios were used for different areas of the energy sector.

Power production

Different future scenarios of (electric) power production were compared using three methods:

- quantitative analysis of full costs (including both production and external costs);
- modeling of emissions; and
- qualitative analysis.

Quantitative analysis of full costs was carried out using EcoSenseWeb (ESW) software, which among other externalities also takes climate change considerations into account when calculating full costs of power production by certain means. The external costs related to a ton of CO2 equivalent of greenhouse gases were considered to be at 19 €. At the same time, the SEA report itself acknowledges that according to many SCC (social cost of carbon) experts, this should be significantly higher in the future, up to 85 €/ton. In total, 6 different scenarios were compared using the described methodology (4 scenarios being considered in the NPSDP at the time of preparation of SEA and additional 2 proposed by the SEA preparer).

Next, long-term emissions trends of future scenarios of power production were modeled and compared. Modeling system "Long Range Energy Alternatives Planning System" (LEAP) was used for this purpose. Emissions of CO2 and SO2 produced in the power sector in the period of 2000-2030 were projected for different alternative scenarios. In total, 9 scenarios were analyzed using this method. These were the 6 scenarios analyzed by means of ESW, and three of their modifications. Modifications were needed to take into account that oil shale may be used for either power generation by burning the solid fuel in power stations or processed to make liquid fuels. As emissions related to using oil shale as a solid fuel or as a material for liquid fuels differ significantly, 3 additional scenarios were evaluated.

Finally, the qualitative analysis of future scenarios of power production was carried out. Three experts evaluated the scenarios based on the same 27 criteria used for the evaluation of the measures and objectives of the NESDP. One of the criteria used was the emissions of CO₂. 9 scenarios were evaluated (same scenarios analyzed by the LEAP-method).

Heat production

Possible future scenarios in heat production (for central heating of buildings) were compared using the emissions projection system LEAP (see above) and qualitative analysis (evaluation by experts using 27 criteria). In the field of heat production, only three alternative scenarios were compared (continuation of current situation where use of natural gas is dominant, increased use of liquid fuels derived from oil shale and scenario with increased use of biomass).

Transport

In the field of transport, both the NESDP and its impact assessment concentrated on the use of bio-fuels for road transport only. Four hypothetical future scenarios for the use of bio-diesel were evaluated (qualitatively) in three categories (environmental, social, economic impacts) by experts. Description of whether and how climate change considerations played a role in the final assessment to the environmental impacts is not found in the SEA report. The scenarios only differed in the ratio of origin of base material (foreign/domestic) and ratio of fuel produced in different location (produced in Estonia/produced abroad).

4.2.3. Had the Preparer received opinions - from authorities, from the public or neighboring countries - adverting priority of climate change?

- During the public consultation phase, the issue of climate change was taken up by a representative of the Ministry of Environment (at the public hearing). Attention was drawn to the fact that modeling of future emissions using the LEAP-system demonstrated an increase or a very slight decrease in CO₂ emissions for scenarios of power production – this would not be compatible with Estonia’s obligations under EU legislation (especially the Energy and Climate Package which had reached the phase of final debates at that time).
- National Audit Office also brought out in its comments sent to the SEA expert group after the public consultation that the SEA does not consider the impacts of the EU Energy and Climate Package to the NESDP.
- In its written comments, Ministry of Environment as the supervisor of the SEA report, also pointed out that the SEA does not include a scenario whereby a nuclear power plant would be built in Estonia, which could significantly help reduce the emissions of CO₂.

4.2.4. Were these comments or recommendations meaningfully taken into account?

None of the above comments gave rise to significant amendments to the SEA report. To the first (oral) question, experts replied by referring to future technologies that might help further curb the emissions compared to the results of the modeling based on current technologies (including carbon capture and storage). As regards the EU Energy and Climate Package and its possible impacts, experts pointed out that its final contents became known only after the assessment was prepared and the Ministry of Environment was making a separate assessment of the potential impacts of the Package on its own.

To the question concerning domestic production of nuclear energy, the preparers of the SEA replied that for building a nuclear power station in Estonia firstly a separate strategic plan would have to be prepared and its impacts assessed. Secondly, this cannot reasonably happen within the period of the given NESDP (i.e. before 2020). Therefore, the current solution, whereby only imported nuclear energy was included in different scenarios, was justified.

5. Current status

5.1. of the plan/program

NESDP was adopted by the Parliament on 15 June 2009.

5.2. of the SEA procedure

SEA report was approved by the competent supervisory authority – Ministry of Environment – after additional consultation on 26 February 2009.

6. Conclusions

Impact of the NESDP on the climate was taken into account in the SEA procedure to a certain extent. Firstly, emission of CO₂ as the main greenhouse gas was taken into account in the qualitative analysis of the objectives and measures proposed in the NESDP.

As the main contributor to the climate change in Estonia is oil shale and its use for power production, this rightfully was subject to additional attention. Altogether, three methods (2 quantitative and 1 qualitative) were used to evaluate impacts of alternative future scenarios in this area, all of which took emissions of CO₂ into account. At the same time, impact on climate change was not a predominant factor in the final assessment and ranking of the scenarios. This can be attributed to a number of factors, including the financial cost attributed to CO₂ emissions in the assessment of full costs of different scenarios (see above) and the fact that investments in the energy sector are high enough to make it a rather conservative sector (as brought out in the SEA report).

As regards two other main areas within energy sector – central heating and transportation, the analysis was less thorough, especially in the area of transport. Potential impacts in the latter area and ways of their mitigation was only viewed from the perspective of the use of bio-fuels. Although impact of transport on climate should be more specifically assessed in the framework of the National Transportation Development Plan, NESDP and its SEA could have at least assessed and determined general trends, e.g. assess whether more investments to the public transport or electric road vehicles would be more reasonable than investments in bio-fuels or vice versa.

Consultations with the public and authorities concentrated mostly on matters other than climate change (e.g. energy security, direct impact on human health etc.). Climate change considerations were almost exclusively brought out in the context of legal obligations towards EU. Therefore, high emissions of greenhouse gases were treated as a legal, rather than a truly environmental problem in the consultation phase.

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