



LIETUVOS MOKSLŲ AKADEMIJA

BALTIJOS VALSTYBIŲ ENERGETIKOS STRATEGIJOS PROJEKTAS

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Baltijos valstybių energetikos strategijos projektą rengė:

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BALTIJOS ENERGETIKOS STRATEGIJA

I. ĮVADAS

2004 m. gegužės 1 d. Estija, Latvija ir Lietuva tapo pilnateisėmis Europos Sąjungos narėmis. Narystė atveria Baltijos šalims ES rinkas, sudarydama dideles galimybes ekonomikos plėtrai ir kultūros raidai. Bendra istorija, ilgalaikis bendradarbiavimas ir nacionalinės politikos harmonizavimas su ES politika, teisės normomis ir standartais sukuria palankias sąlygas glaudesniai Baltijos šalių bendradarbiavimui, ypač plėtojant energetikos sektorių.

Perinamuoju iš centralizuoto ūkio planavimo į laisvos rinkos ekonomiką laikotarpiu Baltijos šalyse įvyko esminiai pasikeitimai: pokyčiai šalių ūkio struktūrose, permainos energetikos politikoje ir laipsniškas rinkos santykių sukūrimas. Per pastaruosius keletą metų Baltijos šalių bendradarbiavimas buvo orientuotas bendros energetikos politikos formavimui, ypač kuriant bendrą energijos rinką, pagrįstą darnios plėtos, konkurencingumo ir energetinio saugumo principais.

Šiuo metu stiprioji Baltijos šalių pusė – gera pirminės energijos balanso struktūra, kurią sudaro Estijos skalūnai, Latvijos hidroenergija, Lietuvos atominė energija, gamtinės dujos, naftos produktai ir didėjantis vietinių bei atsinaujinančių energijos išteklių indėlis. Be to, Baltijos šalių energetinį saugumą reikšmingai stiprina požeminė dujų saugykla Latvijoje ir Mažeikių naftos perdirbimo gamykla.

Tačiau spartus Baltijos šalių ekonomikos augimas, ženklus naftos ir gamtinių dujų kainų augimas, numatomas Ignalinos atominės elektrinės uždarymas, būtinybė pagerinti Narvos elektrinių gamtosaugines charakteristikas, priklausomybė nuo vienintelio gamtinių dujų tiekėjo, reikalauja atnaujinti bendrą energetikos politiką ir bendrus sprendimus dėl energetikos sektorių tolesnės plėtos.

Baltijos šalyse palyginti gerai išplėtos elektros energetikos, gamtinių dujų ir centralizuoto šilumos tiekimo sistemos. Elektros energetikos ir gamtinių dujų tiekimo sistemos turi stiprius tarpusavio ryšius. Tačiau regiono išoriniai ryšiai yra riboti ir orientuoti tik į Rusiją ir Baltarusiją. Iki šiol Baltijos šalys neturi tiesioginių jungčių su Centrinės Europos elektros energetikos sistemomis. Svarbiausia Baltijos šalių problema yra priklausomybė nuo monopolinio gamtinių dujų tiekėjo „Gazprom“, turint omenyje pastarųjų metų energijos tiekimo sutrikimus Rusijoje.

Baltijos energetikos strategijoje ((toliau – Strategijoje)) apibrėžtos pagrindinės nuostatos dėl energetikos sektoriaus ilgalaikės plėtos, atsižvelgiant į energijos vartojimo efektyvumo, energetinio saugumo, darnios plėtos ir valdymo gerinimo aspektus. Strategijoje akcentuojama energijos tiekimo silpnųjų ir stipriųjų pusių analizė, išryškintos energetikos sektoriaus plėtrai kylančios grėsmės bei pasiūlyti bendri veiksmai, nukreipti

šioms galimoms grėsmėms išvengti ir padidinti Baltijos šalių energetinį saugumą Strategijoje nustatytos svarbiausios priemonės energetiniam saugumui užtikrinti, kartu sumažinant neigiamą įtaką dėl priklausomybės nuo dominuojančio energijos importo iš vieno šaltinio ir padidinant energijos tiekimo darnumą.

II. ESAMA BŪKLĖ

Baltijos šalių energetikos sektorius turi savo stipriasias ir silpnasias puses. Jis susiduria su konkrečiomis grėsmėmis, tačiau turi geras galimybes dirbti veiksmingai ir patikimai. Veiksmingiau išnaudodama esamas galimybes ir turimą potencialą, Baltijos šalių energetika gali prisidėti prie regiono ekonomikos augimo, jos konkurencingumo stiprinimo, sumažinti galimas grėsmes ir išvengti nenumatytų energijos tiekimo sutrikimų.

Stiprioji pusė

Bendrosios stiprybės

- 1) Gera pirminės energijos balanso struktūra;
- 2) Esamų energetinių pajėgumų pakanka regiono poreikiams tenkinti;
- 3) Palyginti aukštas energetikos sektoriaus specialistų kvalifikacijos lygis.

Elektros energetikos sektorius

- 1) Stiprūs ryšiai tarp Baltijos šalių ir su Rusija bei Baltarusija;
- 2) Gera elektros energijos gamybos struktūra pagal technologijas ir naudojamo kuro rūšis;
- 3) Efektyvus bendradarbiavimas tarp Baltijos šalių perdavimo sistemos operatorių;
- 4) Esamų generuojančių galių pakanka regiono poreikiams tenkinti.

Gamtinių dujų sektorius

- 1) Racionaliai išvystyta infrastruktūra;
- 2) Dauguma stambiausių vartotojų gali naudoti įvairias kuro rūšis;
- 3) Galimybė pasinaudoti gamtinių dujų saugykla.

Skysto kuro sektorius

- 1) Gera veikianti rinka;
- 2) Patrauklūs tranzito maršrutai;
- 3) Veikianti naftos perdirbimo gamykla;
- 4) Galimybė naudoti netradicines skysto kuro rūšis.

Silpnoji pusė

Bendrosios silpnybės

- 1) Žemas energijos vartojimo efektyvumas pastatuose, transporto sektoriuje ir centralizuoto šilumos tiekimo sistemose;

- 2) Skirtingi Baltijos šalių energetikos politikos tikslai;
- 3) Maža energijos rinkos apimtis;
- 4) Nepakankamas mokymo ir mokslinių tyrimų finansavimas.

Elektros energetikos sektorius

- 1) Ribota rinka ir mažas elektros tiekėjų skaičius;
- 2) Baltijos šalių politikos tikslų ir teisės aktų skirtumai;
- 3) Nepakankami ryšių su ES elektros rinkomis pajėgumai;
- 4) Nepakankami Rusijos perdavimo sistemos pajėgumai gali turėti neigiamos įtakos elektros rinkos funkcionavimui ir elektros energetikos sistemų eksploatavimui;
- 5) Nepakankama paskirstymo ir perdavimo sistemų techninė kokybė;
- 6) Silpni ir neskaidrūs kainų signalai investicijoms į naujus generuojančius pajėgumus;
- 7) Maža Baltijos šalių elektros rinkos apimtis kelia papildomas problemas, susijusias su didelės galios atominių elektrinių eksploatavimu.

Gamtinių dujų sektorius

- 1) Dabartiniu metu Baltijos valstybės gali pirkti gamtines dujas tik iš Rusijos;
- 2) Infrastruktūros įmonėse nėra valstybinės nuosavybės dalies;
- 3) Silpni ir neskaidrūs gamtinių dujų tiekimo kontraktai;
- 4) Netinkamas gamtinių dujų rinkos reguliavimas;
- 5) Ribotas infrastruktūros pralaidumas.

Skysto kuro sektorius

- 1) Mažas biodegalų panaudojimo lygis;
- 2) Tebesitęsianti rezervinių skysto kuro atsargų plėtra sukuria tiekimo pažeidžiamumą esant tiekimo sutrikimams;
- 3) Politinių motyvų įtaka tranzitui/tiekimui.

Galimybės

Bendrosios galimybės

- 1) Aiškesni energetikos politikos signalai, nustatantys prioritetus ir tikslus, gali sukurti skaidrią reguliavimo aplinką efektyviam ilgalaikiam energijos tiekimui;
- 2) Galimo energijos taupymo potencialo panaudojimas sumažins energijos poreikių ir generuojančių galių augimo tempus;
- 3) Ekonomiškai pateisinamas didesnis galimų vietinių ir atsinaujinančių energijos išteklių indėlis sumažins priklausomybę nuo kuro importo;
- 4) Esama infrastruktūra ir sukaupta patirtis yra palankūs veiksniai naujai atominiai elektrinei statyti;
- 5) Baltijos valstybių universitetai ir mokslo įstaigos yra pajėgūs parengti kvalifikuotus specialistus;
- 6) Esamų centralizuoto šilumos tiekimo sistemų modernizavimas išplėsti skatins bendros šilumos ir elektros gamybos plėtrą;
- 7) Savalaikis naujų energijos šaltinių ir technologijų panaudojimas.

Elektros energetikos sektorius

- 1) Potencialus rinkos dalyvių interesas plėsti investicijas į elektros rinką ;
- 2) Jungčių su Suomijos, Lenkijos ir Švedijos elektros energetikos sistemomis įrengimas padidins elektros energijos tiekimo patikimumą;
- 3) Pozityvus Baltijos šalių visuomenės požiūris į branduolinę energetiką sudarys palankią aplinką naujai atominei elektrinei Lietuvoje statyti;
- 4) Esantis potencialas modernizuoti elektros energetikos sistemą per palyginti trumpą laiką;
- 5) Potencialas racionaliai padidinti atsinaujinančių energijos išteklių panaudojimą ;
- 6) UCTE reikalavimų taikymas padidins elektros energijos tiekimo patikimumą.

Gamtinių dujų sektorius

- 1) Esamų ir naujų gamtinių dujų saugyklų plėtra;
- 2) Tranzito maršrutų plėtra;
- 3) Potencialus suskystintų dujų importo/eksporto terminalo įrengimas;
- 4) Netradicinių dujų tyrimai ir plėtra;
- 5) Dujų naudojimo plėtra.

Skysto kuro sektorius

- 1) Potenciali vietinės naftos gavyba ;
- 2) Tolesnė netradicinių kuro rūšių naudojimo plėtra;
- 3) Efektyvesnis uostų panaudojimas;
- 4) Efektyvesnis saugyklų panaudojimas.

Grėsmės

Bendrosios grėsmės

- 1) Energijos teikimo saugumo būklės blogėjimas;
- 2) Netinkami signalai, kuriuos kelia nacionaliniai teisės aktai;
- 3) Bendros energetikos politikos nebuvimas;
- 4) Vietinės visuomenės ir vietinės valdžios priešinimasis;
- 5) ES energijos rinkų fragmentiškumas;
- 6) Pažeidžiamumas, kurį kelia globalinės tendencijos;
- 7) Lėtas centralizuoto šilumos tiekimo sistemų modernizavimas;
- 8) Kvalifikuotų specialistų stoka.

Elektros energetikos sektorius

- 1) Potencialus generuojančių pajėgumų stygius;
- 2) Potencialus Rusijos elektros energijos tiekėjų dominavimas su dempingo elementais;
- 3) Potencialus staigus elektros kainų padidėjimas;
- 4) Nepageidaujami energijos struktūros pasikeitimai;
- 5) Stambių avarijų tinkluose ir/arba sisteminių avarijų tikimybė;
- 6) Neapibrėžtumas dėl ilgalaikio kuro tiekimo elektrinėms.

Gamtinių dujų sektorius

- 1) Nenuspėjama tiekėjų elgsena;
- 2) Priklausomybės nuo gamtinių dujų tiekimo padidėjimas uždarius Ignalinos atominę elektrinę.

Skysto kuro sektorius

- 1) Potenciali rinkos koncentracija;
- 2) Potencialūs naftos ir jos produktų tiekimo sutrikimai ;
- 3) Potencialus tranzito poveikis aplinkai.

III. BALTIJOS VALSTYBIŲ ENERGETIKOS SEKTORIAUS TIKSLAI

Energetikos sektoriaus plėtros aplinkai būdingi globaliniai procesai ir reiškiniai, kurie sukelia naujus iššūkius energijos tiekimui ir Baltijos šalių nacionaliniam saugumui:

- 1) Sparčiai didėjantys naftos ir gamtinių dujų poreikiai pasaulyje, aplenkiantys naujų telkinių žvalgybos, gavybos ir vystymo tempus;
- 2) Didelė dalis naftos ir dujų telkinių yra sukoncentruota šalyse, kurios yra politiškai nestabilios ir kuriose vykdoma politinė energijos eksporto kontrolė;
- 3) Komplikuoti politiniai Vakarų demokratijų santykiai su gausių energijos išteklių turinčiomis šalimis;
- 4) Didėjanti kai kurių energijos išteklių eksportuojančių valstybių geopolitinė įtaka ir svertai diktuoti sąlygas energiją importuojančioms šalims ;
- 5) Stiprėjantis pagrindinių ekonomikų – Jungtinių Amerikos Valstijų, ES, Kinijos ir Indijos – vaidmuo energijos rinkose ir jų dvišalė partnerystė su Rusija;
- 6) Naftos ir gamtinių dujų kainų nepastovumas ir jų priklausomybė nuo politinių veiksnių;
- 7) Didėjanti įtampa šalių vyriausybėms dėl šiltnamio efektą sukeliančių dujų išmetimo mažinimo.

Atsižvelgiant į stojimo į ES sutartyje, Energetikos chartijos sutartyje, ES teisės aktuose ir Žaliojoje knygoje suformuluotus reikalavimus ir nuostatas, Strategija remiasi ant trijų atramų:

- 1) Energetinis saugumas;
- 2) Darni energetikos sektoriaus plėtra;
- 3) Konkurencingumas.

Remiantis šiomis atramomis, nustatomi šie energetikos strateginiai tikslai:

- 1) Integruoti elektros energetikos ir gamtinių dujų tiekimo sistemas į ES energetikos sistemas ir energijos rinkas;
- 2) Diversifikuoti pirminės energijos šaltinius ir tiekėjus, padidinti atsinaujinančių ir vietinių energijos išteklių indėlį;
- 3) Padidinti energijos vartojimo efektyvumą ūkio šakose ir energijos transformavimo sektoriuje;
- 4) Plėsti energijos išteklių, įskaitant elektros energiją, tranzito maršrutus;

- 5) Stiprinti energetikos sektoriui specialistus rengiančius universitetus ir mokslinius tyrimus vykdančias institucijas;
- 6) Parengti ir įgyvendinti bendrą politiką dėl energijos importo iš šalių, nepriklausančių ES.

IV. ELEKTROS ENERGETIKOS SEKTORIAUS UŽDAVINIAI

Elektros energijai gaminti Baltijos šalyse naudojami įvairūs pirminės energijos ištekliai: hidroenergija, skalūnai, atominė energija, gamtinės dujos, mazutas, orimulsija, vėjo energija, biodujos, biomasė ir kt.

2009 m. uždarius Ignalinos AE ir pagrindinę dalį elektros energijos gaminant esamose elektrinėse (modernizavus Lietuvos elektrinę ir atnaujinus Estijos elektrines) Baltijos elektros energetikos sistemoje turimų generuojančių galių, įskaitant šiuo metu planuojamas pastatyti modernias termofikacines elektrines ir elektrines centralizuoto šilumos tiekimo sistemose bei pramonės įmonėse, regiono poreikiams tenkinti pakaks iki 2015 metų. Tačiau naujų elektrinių statybos klausimai turi būti nagrinėjami.

Siekiant sumažinti priklausomybę nuo brangaus organinio kuro ir neigiamą teršalų įtaką bei padidinti bendrą Baltijos šalių energetinį saugumą, reikia išnagrinėti naujos atominės elektrinės statybos Lietuvoje tikslingumą. Dėl palyginti nedidelės bendros Baltijos valstybių elektros energetikos sistemos apkrovos (apie 6000 MW 2015 metais) kyla papildomos problemos, susijusios su didelės galios atomine elektrine, pvz., dėl rezervinių galių.

Baltijos elektros energetikos sistemų integracija į Centrinės Europos ir Šiaurės šalių energetikos sistemas ir glaudesnis bendradarbiavimas su šiomis šalimis, taip pat prognozuojamas poreikių ir generuojančių galių išsidėstymas sąlygoja būtinybę parengti elektros perdavimo tinklo plėtros strategiją, jos įgyvendinimo priemonių planą bei numatyti ir atitinkamus finansavimo šaltinius. Elektros skirstomieji tinklai ir transformatorių pastotės taip pat turi būti atnaujinami taip, kad tenkintų augančius patikimo ir stabilaus elektros energijos tiekimo reikalavimus.

Siekiant užtikrinti elektros energijos tiekimo strateginį patikimumą ir integraciją į ES vidaus rinką būtina įgyvendinti tokias priemones:

- 1) Plėsti Baltijos šalių bendradarbiavimą ir kooperaciją – sukurti racionalią konkurencinę aplinką, stiprinti tranzitą, skatinti bendrą elektros energijos rinką, sukurti struktūrą prekybai CO₂ emisijomis;
- 2) Parengti Baltijos šalių elektros energetikos sistemų integracijos į Centrinės Europos ir Šiaurės šalių rinkas veiksmų planą;
- 3) Atnaujinti ir plėsti perdavimo ir skirstomuosius tinklus;
- 4) Atnaujinti dideles elektrines;
- 5) Išnaudoti paskirstytosios elektros energijos gamybos plėtros galimybes ir privalumus;
- 6) Padidinti elektros energijos gamybos struktūroje atsinaujinančių išteklių indėlį.

V. GAMTINIŲ DUJŲ SEKTORIAUS UŽDAVINIAI

Baltijos valstybės turi palyginti gerai išplėtotas technines gamtinių dujų tiekimo sistemas. Gamtinių dujų tinklų pralaidumas yra pakankamas vartotojų poreikiams tenkinti. Esama Inčukalns dujų saugykla, kurios tūrio pakanka Baltijos valstybėms ir Šiaurės Vakarų Rusijai, užtikrina racionalų gamtinių dujų tiekimo saugumą regione.

Tačiau ribotas jungties tarp Lietuvos ir Latvijos pajėgumas, ribotas saugyklos pajėgumas tiekiant dujas maksimalių apkrovų laikotarpiais ir ribotas jungties iš Rusijos į saugyklą Latvijoje pajėgumas yra silpnosios vietos Baltijos šalių gamtinių dujų tinkluose. Didesnės elektrinės ir katilinės turi galimybę gamtinių dujų tiekimo sutrikimų atveju naudoti krosnių kurą, mazutą arba skalūnus, taip sumažinant energetikos sistemų pažeidžiamumą sutrikus dujų tiekimui.

Dabartiniu metu gamtines dujas tiekia natūrali dujų monopolija „Gazprom“ ir jos dukterinės kompanijos. Vieno gamtinių dujų tiekėjo dominavimas stabdo rinkos liberalizavimą, o priklausomybė nuo tiekimo iš vieno šaltinio yra didžiausia problema. Dar daugiau – Baltijos Valstybių vyriausybės neturi nuosavybės jų teritorijose esančių dujų kompanijų perdavimo tinkluose ir saugykloje. Tai kelia sunkumų siekiant įtraukti politinę reikšmę turinčius projektus į dujų kompanijų investicines strategijas.

Atsižvelgiant į Rusijos verslovių dydį ir apimtį, esamas technines tiekimo priemones ir griežtėjančius aplinkosaugos reikalavimus, gamtinės dujos Baltijos šalyse yra viena iš patraukliausių organinio kuro rūšių. Siekiant padidinti gamtinių dujų tiekimo patikimumą būtina:

- 1) Parengti regioninio suskystintų gamtinių dujų importo/eksporto terminalo įrengimo ir reikiamos infrastruktūros plėtros galimybių studiją;
- 2) Parengti Lenkijos ir Lietuvos gamtinių dujų tiekimo sistemų sujungimo galimybių studiją;
- 3) Siekti paramos iš ES struktūrinių fondų strateginių dujotiekių, sujungsiančių Lietuvos ir Estijos gamtinių dujų sistemas su Lenkijos ir Suomijos dujų tinklais, statybai.

VI. SKYSTO KURO SEKTORIAUS UŽDAVINIAI

Dabartiniu metu naftos produktų dalis Baltijos šalių pirminės energijos balanse sudaro apie 26%. 2005 m. regione visoms reikmėms suvartota beveik 5 milijonai naftos produktų. Suformuota gera mažmeninė prekybos struktūra (keletas stiprių prekybininkų ir tiekėjų) ir tinkamai veikia su ja susijusios struktūros. Gera geografinė Baltijos šalių uostai padėtis yra palanki dideliame skysto kuro tranzitui iš Rusijos į Europą ir kitas šalis, taip pat jo importui iš įvairių šalių. Uostai vis dar turi galimybių geresniam jų kaip skysto kuro tranzito mazgų panaudojimui. Mažeikiuose yra vienintelė regione naftos perdirbimo gamykla, kurios pajėgumų (galima perdirbti 10–11 mln. t naftos per metus) pakanka Baltijos šalių poreikiams ir keletas kitų naftos perdirbimo įmonių kaimyninėse šalyse.

Siekiant užtikrinti patikimą naftos produktų tiekimą šalies ūkiams palaipsniui kaupiamos privalomos 90 dienų naftos produktų ir naftos valstybės atsargos. Visos Baltijos valstybės skysto kuro atsargoms sukaupti turi pereinamąjį laikotarpį. Dabartiniu metu sukauta tik maždaug pusė šių atsargų, todėl Baltijos valstybės, įvykus potencialiems sutrikimams, būtų šiek tiek labiau pažeidžiamos.

Vietiniai naftos ištekliai yra riboti, tačiau vietinės naftos gavyba galėtų išlikti konkuruojančiu šaltiniu naftos importui dar kelis dešimtmečius, išlaikant apie 0,2-0,4 mln. t metinį gavybos lygį ir sumažinant priklausomybę nuo naftos importo.

Naftos produktų, naudojamų elektros energijos ir šilumos gamybai, dalis mažės, tačiau mazutas išliks rezervinis kuras šiluminėse elektrinėse ir stambiose centralizuoto šilumos tiekimo sistemose. Lengvųjų naftos produktų vartojimas didžiaja dalimi didės transporto sektoriuje dėl augančio tarptautinis krovinių vežimo ir didėjančio gyventojų mobilumo.

Viena iš galimybių ateičiai galėtų būti motorinio kuro gamyba iš skalūnų. Technologiją, skirtą gaminti mazutą iš skalūnų, Estijoje jau galima naudoti, o tolesnis jos vystymas numato iš skalūnų gaminti dyzeliną ir automobilių benziną. Didėjantis globalinis interesas gaminti netradicinį skystąjį kurą parems jo gamybos plėtojimą iš skalūnų, o tai būtų papildomas būdas padidinti nepriklausomybę nuo energijos išteklių importo..

Baltijos šalyse yra keletas įmonių, gaminančių biodegalus ir skalūnų alyvą. Jau sukaupia biodegalų gamybos patirtis, esami ir plečiami jų gamybos pajėgumai ir laukiamos tarptautinės tendencijos padės įgyvendinti ES tikslus. Biodegalų vartojimo plėtra padidins Baltijos valstybių energetinį saugumą, taip pat padės sumažinti neigiamą transporto sektoriaus poveikį aplinkai.

Siekiant padidinti skystojo kuro tiekimo strateginį patikimumą, būtina:

- 1) Palaikyti skystojo kuro struktūros įvairovę Baltijos valstybių rinkoje;
- 2) Plėtoti biodegalų gamybą iš netradicinių energijos šaltinių;
- 3) Efektyviai sukaupti privalomas skystojo kuro atsargas.

VII. IŠVADOS

BALTIC ENERGY STRATEGY

I. INTRODUCTION

On 1st May 2004, Estonia, Latvia and Lithuania became full members of the European Union (EU). Membership opens the entire EU market for the Baltic economies with considerable opportunities for economic and cultural development. Common history, long-term cooperation and national policies harmonised with the EU policies, norms and standards create favourable conditions in the Baltic States for closer cooperation, and in particular in the energy sector.

Transition from a centrally planned to a free market economy in the Baltic States was accompanied by fundamental transformations: structural changes of the national economies, alteration of energy policies and gradual creation of market conditions. Over the last few years cooperation between the Baltic States has been directed towards preparation of common policy in the energy field, especially on creation of the sustainable, competitive and secure common energy market.

Currently the Baltic States altogether have a diverse energy mix, which is mainly based on contribution from oil shale in Estonia, hydro resources in Latvia and nuclear energy in Lithuania complemented with imported natural gas and oil products, and increasing share of local and renewable energy resources. Besides that, existence of the underground gas storage in Latvia and oil refinery in Mažeikiai is important facilities which contribute to energy security of the Baltic States.

However, the factors such as rapid economic growth in the Baltic States, significant increase of oil and natural gas prices, future decommissioning of Ignalina Nuclear Power Plant, the need for environmental upgrade of Narva Power Plants, dependency on gas supply from one supplier require an update of the common energy policy and common decisions on future development of their energy sectors.

The Baltic States have comparatively well developed power, natural gas supply and district heating systems. The power and natural gas systems are well interconnected. However, interconnections outside the region are limited and oriented only towards Russia and Belarus. Up to now the Baltic States have no direct connection to the power systems of Central Europe. The dependence on gas supply from natural gas monopoly Gazprom is the major concern for the Baltic States, particularly taking into consideration the recent energy supply disruptions in Russia.

The Baltic Energy Strategy (hereinafter: Strategy) outlines a framework for the energy sector development in long-term perspective taking into consideration aspects of energy efficiency, energy security, sustainability and improved management. The Strategy focuses on strategic analysis of strengths and weaknesses in energy supply, threats for development of the energy sector and common activities directed to avoid feasible threats and to increase energy security in the Baltic States. The Strategy describes the most

important measures which should be implemented seeking to ensure security of energy supply, to reduce negative impact from dominant dependency on energy import from one source and to improve the sustainability of the energy supply.

II. CURRENT SITUATION

The energy sector of the Baltic States has its strengths and weaknesses. It faces specific threats, however, has good opportunities for efficient and reliable operation. With more efficient use of the available opportunities and existing capacities, the energy sector of the Baltic States can enhance a more rapid economic development in the region, strengthening its competitiveness, reducing the possible threats and avoiding different unforeseen interruptions of energy supply.

Strengths

General

- 4) Diverse energy mix at primary energy supply;
- 5) Energy capacities are currently satisfactory to meet regional demands;
- 6) Relatively high level of qualified specialists in the energy sector.

Electricity

- 5) Strong interconnections between the Baltic States and with Russia and Belarus;
- 6) Diverse energy mix in electricity generation by technology and fuel;
- 7) Efficient co-operation between Baltic transmission system operators;
- 8) Current self-sufficiency in generation capacity.

Natural gas

- 4) Reasonably developed infrastructure;
- 5) Possibility to use alternative fuels by majority of largest customers;
- 6) Availability of gas storage facility.

Liquid fuels

- 5) Well-functioning markets;
- 6) Attractive transit route;
- 7) Availability of crude oil refinery;
- 8) Possibility to use non-conventional liquid fuels.

Weaknesses

General

- 5) Low energy efficiency in buildings, transport sector and district heating systems;
- 6) Different policy objectives among the Baltic States;
- 7) Small size of the energy markets;
- 8) Inadequate funding of education, research and development.

Electricity

- 8) Limited marketplace with small number of players on supply side;
- 9) Different policy objectives and legislation in the Baltic States;
- 10) Insufficient interconnection capacities with EU electricity markets;
- 11) Congestions in Russian transmission system may affect the electricity market functioning and operation of the power systems;
- 12) Insufficient technical quality of transmission and distribution systems;
- 13) Weak and non-transparent price signals for investments into new generation capacities;
- 14) Small size of the Baltic electricity market creates additional issues with large-scale nuclear power plants.

Natural gas

- 6) The Baltic States can currently buy natural gas only from Russia;
- 7) No state ownership in infrastructure companies;
- 8) Weak and non transparent natural gas supply contracts;
- 9) Inadequate regulation of the natural gas market;
- 10) Limited throughput of infrastructure.

Liquid fuels

- 1) Low current level of biofuels usage;
- 2) Still continued development of security stocks of liquid fuel creates vulnerability in cases of supply disruptions;
- 3) Influence of politics on transit/supply.

Opportunities

General

- 8) Clearer political signals about the priorities and objectives can create transparent regulatory framework for efficient long-term energy supply;
- 9) Utilization of available energy saving potential will reduce the growth rate of energy demand and generating capacities;
- 10) Economically justified larger contribution of available indigenous and renewable energy resources will reduce dependence on imported fuel;
- 11) Existing infrastructure and experience are supportive for construction of new nuclear power plant;
- 12) Universities and scientific institutions in the Baltic States are capable to prepare qualified specialists;
- 13) Modernization of the existing district heating systems will promote the development of combined heat and electricity production;
- 14) Timely introduction of new energy sources and technologies.

Electricity

- 7) Potential interest of market participants to develop and invest in the electricity market;

- 8) Construction of interconnections with power systems of Finland, Poland and Sweden would increase reliability of electricity supply;
- 9) Positive attitude of societies in the Baltic States towards the use of nuclear energy will support the construction of new nuclear power plant in Lithuania;
- 10) Existing potential to have modern power systems in relatively short period;
- 11) Potential for reasonable increase in the usage of renewable energy sources;
- 12) Application of UCTE conditions on security of electricity supply.

Natural gas

- 6) Development of existing and new natural gas storages;
- 7) Development of transit routes;
- 8) Potential construction of the liquefied gas import/export terminal;
- 9) Research and development of non-conventional gas;
- 10) Enlargement of gas usage.

Liquid fuels

- 5) Potential exploration of local crude oil;
- 6) Further development of the use of non-conventional fuels;
- 7) More efficient use of port facilities;
- 8) More efficient use of storage facilities.

Threats

General

- 9) Worsening of security of energy supply situation;
- 10) Creation of inadequate incentives by national legislations;
- 11) Absence of common energy policy;
- 12) Opposition from local public and local authorities (NIMBY effect);
- 13) Fragmentation of the EU energy markets;
- 14) Vulnerability from global trends;
- 15) Slow modernization of district heating systems;
- 16) Deficiency of qualified specialists.

Electricity

- 7) Potential lack of production capacities;
- 8) Potential dominance of power supplies with dumping elements from Russia;
- 9) Potential sharp increase of electricity prices;
- 10) Unwanted developments of energy-mix;
- 11) Possibility of major network outages and/or blackouts;
- 12) Uncertainty regarding long-term supply of fuel for power plants.

Natural gas

- 3) Unpredictability of supplies;
- 4) Higher dependence on natural gas supply after the closure of Ignalina NP.

Liquid fuels

- 4) Potential concentration of the market;
- 5) Potential crude oil and its products' supply interruptions;
- 6) Potential environmental impact of transit.

III. GOALS FOR THE ENERGY SECTOR IN THE BALTIC STATES

Global environment for the energy sector development could be characterized by processes and events, which cause new challenges for the energy supply and national security of the Baltic States:

- 8) Rapid increase of hydrocarbons consumption in the world, which is growing faster than exploration and development of new deposits;
- 9) Large share of oil and gas deposits are concentrated in countries with unstable political regimes and centralised political control over energy export;
- 10) Complicated political relationships among Western countries and countries which have large share of energy resources;
- 11) Increasing geopolitical influence of certain energy exporting states over energy importing countries, including mechanisms to dictate conditions for this import;
- 12) Strengthening of the role of the main economics – USA, EU, China and India – in energy markets and their bilateral partnership with Russia;
- 13) Volatility of oil and gas prices and their dependence on political factors;
- 14) Increasing tensions regarding reduction of GHG emissions for national governments.

Taking into consideration requirements and provisions in the Treaty of Accession to the EU, Energy Charter Treaty, EU legislation and the Green Paper, the Strategy has three main pillars:

- 4) Security of supply;
- 5) Sustainability;
- 6) Competitiveness.

Under these pillars, the following strategic objectives have been set:

- 7) To integrate power and gas supply systems into the energy systems and energy markets of the EU;
- 8) To diversify primary energy sources and supplies, and increase the contribution of renewable and local energy resources;
- 9) To increase the energy efficiency at the demand side and in the energy transformation sector;
- 10) To develop the transit routes for energy products, including electricity;
- 11) To strengthen education, research and development in the energy sector;
- 12) To elaborate and implement a common policy on energy imports from non-EU countries.

IV. TASKS FOR THE POWER SECTOR

There are a number of different primary energy sources in use in electricity generation in the Baltic States: hydro, oil-shale, nuclear, natural gas, orimulsion, wind, landfill gas, biomass, fuel oil, etc.

In the case of Ignalina NPP decommissioning in 2009 the major part of electricity will be generated by existing power plants (modernisation of Lithuanian Thermal Power Plant, renovation of units at Balti and Eesti power plants, construction of modern combined power and heat generation power plants and power plants at district heating utilities and industrial enterprises) the existing available capacities in the Baltic power system will be sufficient to meet the regional demand until 2015. However, the construction of new power plants should be considered.

To reduce the dependence on expensive fossil fuels and harmful impact of emissions, and to increase overall energy security in the Baltic States, the construction of a new nuclear power plant should be studied in Lithuania. The small size of the Baltic power market (in 2015, expected maximum load is about 6000 MW) creates additional issues with large-scale nuclear power plants e.g., concerning reserve capacities.

Integration of the Baltic power systems into Central European and Nordic energy systems and closer collaboration with these countries, as well as expected distribution of load and generating capacities, stipulates a necessity to prepare strategy for the development of transmission system, action plan for its implementation and appropriate financial sources. Electricity distribution grid and transformer substations also should be renovated with a view to complying with increasing requirements for the reliability and stability of electricity supply.

In order to ensure the strategic reliability of electricity supply and integration into the EU internal market, the following measures must be taken:

- 7) To develop cooperation and collaboration of the Baltic States - to facilitate a competitive environment, to enhance transit and to promote common electricity market; to create a framework for CO₂ allocations;
- 8) To prepare an action plan regarding further integration of the Baltic power systems into markets of Central Europe and Nordic countries;
- 9) To renew and build transmission and distribution facilities;
- 10) To renew the large power production capacities;
- 11) To use possibilities and benefits from development of distributed electricity generation;
- 12) To increase the share of renewables in the electricity mix.

V. TASKS FOR THE NATURAL GAS SECTOR

The Baltic States have comparatively well developed technical systems of natural gas supply. Natural gas networks within the Baltic States are currently sufficient to cover the

needs of the customers. The existence of gas storage in Incukalns with sufficient volume for the Baltic States and for North-West Russia provides reasonable security of gas supply in the region.

However, limited interconnection capacity between Latvia and Lithuania, limited output capacity of the storage in peak periods and limited interconnection capacity from Russia to the storage facility in Latvia are bottlenecks in the current natural gas networks in the Baltic States. Larger power stations and boiler houses have ability to use in the case of gas supply interruptions also light or heavy fuel oil or shale oil, decreasing so the vulnerability of the energy system from gas supplies.

Currently natural gas imports are handled by natural gas monopoly Gazprom and its subsidiaries. Domination of one natural gas supplier does not support liberalization of this market and dependence on supply from one source is the major concern. Furthermore, the governments of the Baltic States have no ownership in the transmission and storage of the gas companies in their territory. This fact makes it difficult to involve the projects of political interest in the investments strategies of the gas companies.

Taking into consideration the size and volumes of the Russian gas fields, the existing technical supply facilities and the more stringent environmental requirements, natural gas is one of the most attractive forms of fossil fuel in the Baltic States. In order to enhance reliability of the natural gas supply it is necessary:

- 4) To prepare feasibility study for construction of the regional liquefied gas import/export terminal and development of necessary infrastructure;
- 5) To prepare feasibility study for interconnection of Lithuanian and Polish natural gas systems;
- 6) To strive for financial support from the EU Structural Funds for construction of strategic pipelines connecting the Lithuanian and Estonian natural gas systems with gas networks in Poland and Finland.

VI. TASKS FOR THE LIQUID FUELS SECTOR

The share of petroleum products in the primary energy balance of the Baltic States currently constitutes about 26%. In 2005, total consumption of oil products amounted to almost 5 million tons. The retail market is well structured (several strong traders and suppliers) and the associated structures are operating properly. The ports of the Baltic States are well positioned for the large-scale liquid fuels transit from Russia to Europe and other countries as well as for their import from various countries. They have still a potential to be better exploited as liquid fuels transit hubs. There is one refinery with sufficient production volume (annual crude oil refining capacity is 10-11 million tons) within the Baltic States (in Mažeikiai) and several other refineries in reasonable range in the neighbouring countries.

In order to ensure reliable supply of the national economies with petroleum products, mandatory 90-day stocks will be accumulated gradually. All the Baltic States have a

transition period for the creation of liquid fuels stocks. Currently only about half of these stocks are secured, which makes the Baltic States slightly more vulnerable to the potential risks of supply disruptions.

Indigenous oil resources are limited; however, extraction of local crude oil could be a competing source to imports of crude oil for several decades, maintaining the annual extraction level of about 0.2-0.4 million tons and reducing dependency on oil imports.

The share of petroleum products used for production of electricity and heat will decrease but fuel oil will remain a reserve fuel for thermal power plants and large district heating systems. The most noticeable increase in the consumption of light petroleum products is expected in the transport sector due to increasing international freight transportation and mobility of population.

An option for the future would be to produce transport fuels from oil-shale. The technologies for heavy fuel oil from oil-shale are today available in Estonia, and further development of oil-shale based diesel and gasoline is foreseen. The growing global interests for non-conventional liquid fuels will support the development of shale-oil production and would provide additional option for the increase the independence from imported energy resources.

There are several facilities in the Baltic States for production of biofuels and shale oil. Accumulated experience of biofuel production, existing and developing capacities of their production and expected international trends would support the implementation the EU objectives. Increasing consumption of biofuels will increase energy security of the Baltic States, and has also a potential to reduce harmful impact from transport on environment.

In order to enhance strategic reliability of the supply of the liquid fuels it is necessary:

- 4) To maintain the diverse structure of the liquid fuels market in the Baltic States;
- 5) To develop biofuels and non-conventional energy sources;
- 6) To build up efficiently the mandatory stocks of liquid fuels.

VII. CONCLUSIONS

PRIEDAI

Draft 2006-12-05

BALTIC ENERGY STRATEGY

I. INTRODUCTION

On 1st May 2004, Estonia, Latvia and Lithuania were inducted as full members into European Union (EU). Membership opens the entire EU market for the Baltic economies with considerable opportunities for economic and cultural development. Common history, long-term cooperation and national policies harmonised with the EU policies, norms and standards create favourable conditions in the Baltic States for closer cooperation, and in particular in the energy sector.

Transition from a centrally planned to a free market economy in the Baltic States was accompanied by fundamental transformations: structural changes of the national economies, alteration of energy policies and gradual creation of market conditions. Over the last few years cooperation between the Baltic States has been directed towards preparation of common policy in the energy field, especially on creation of the sustainable, competitive and secure common energy market.

Currently the Baltic States altogether have a diverse energy mix, which is mainly based on contribution from oil shale in Estonia, hydro resources in Latvia and nuclear energy in Lithuania complemented with imported natural gas and oil products, and increasing share of local and renewable energy resources. Besides that, existence of the underground gas storage in Latvia and oil refinery in Mažeikiai is important facilities which contribute to energy security of the Baltic States.

However, the factors such as rapid economic growth in the Baltic States, significant increase of oil and natural gas prices, future decommissioning of Ignalina Nuclear Power Plant, the need for environmental upgrade of Narva Power Plants, dependency on gas supply from one supplier require an update of the common energy policy and common decisions on future development of their energy sectors.

The Baltic States have comparatively well developed power, natural gas supply and district heating systems. The power and natural gas systems are well interconnected. However, interconnections outside the region are limited and oriented only towards Russia and Belarus. Up to now the Baltic States have no direct connection to the power systems of Central Europe. The dependence on gas supply from natural gas monopoly Gazprom is the major concern for the Baltic States, particularly taking into consideration the recent energy supply disruptions in Russia.

The Baltic Energy Strategy (hereinafter: Strategy) outlines a framework for the energy sector development in long-term perspective taking into consideration aspects of energy efficiency, energy security, sustainability and improved management. The Strategy

focuses on strategic analysis of strengths and weaknesses in energy supply, threats for development of the energy sector and common activities directed to avoid feasible threats and to increase energy security in the Baltic States. The Strategy describes the specific actions and most important measures which should be implemented seeking to ensure security of energy supply, to reduce negative impact from dominant dependency on energy import from one source and to improve the sustainability of the energy supply.

II. CURRENT SITUATION

The energy sector of the Baltic States has its strengths and weaknesses. It faces specific threats, however, has good opportunities for efficient and reliable operation. With more efficient use of the available opportunities and existing capacities, the energy sector of the Baltic States can make significant contribution to more rapid economic development in the region, strengthening its competitiveness, reducing the possible threats and avoiding different unforeseen interruptions of energy supply.

Strengths

General

- 7) Diverse energy mix at primary energy supply;
- 8) Energy capacities are currently satisfactory to meet regional demands;
- 9) Relatively high level of qualified specialists in the energy sector.

Electricity

- 9) Strong interconnections between the Baltic States and with Russia and Belarus;
- 10) Diverse energy mix in electricity generation by technology and fuel;
- 11) Efficient co-operation between Baltic transmission system operators;
- 12) Current self-sufficiency in generation capacity.

Natural gas

- 7) Reasonably developed infrastructure;
- 8) Possibility to use alternative fuels by majority of largest customers;
- 9) Availability of gas storage facility.

Liquid fuels

- 9) Well-functioning markets;
- 10) Attractive transit route;
- 11) Availability of crude oil refinery;
- 12) Possibility to use non-conventional liquid fuels.

Weaknesses

General

- 9) Low energy efficiency in buildings, transport sector and district heating systems;

- 10) Different policy objectives among the Baltic States;
- 11) Small size of the energy markets;
- 12) Inadequate funding of education, research and development.

Electricity

- 15) Limited marketplace with small number of players on supply side;
- 16) Different policy objectives and legislation in the Baltic States;
- 17) Isolation from the EU electricity markets;
- 18) Congestions in Russian transmission system may affect the electricity market functioning and operation of the power systems;
- 19) Insufficient technical quality of transmission and distribution systems;
- 20) Weak and non-transparent price signals for investments into new generation capacities;
- 21) Small size of the Baltic electricity market creates additional issues with large-scale nuclear power plants.

Natural gas

- 11) The Baltic States can currently buy natural gas only from Russia;
- 12) No state ownership in infrastructure companies;
- 13) Weak and non transparent natural gas supply contracts;
- 14) Inadequate regulation of the natural gas market;
- 15) Limited throughput of infrastructure.

Liquid fuels

- 1) Low current level of biofuels usage;
- 2) Still continued development of security stocks of liquid fuel creates vulnerability in cases of supply disruptions;
- 3) Influence of politics on transit/supply.

Opportunities

General

- 15) More clear political signals about the priorities and objectives can create transparent regulatory framework for efficient long-term energy supply;
- 16) Utilization of available energy saving potential will reduce the growth rate of energy demand and generating capacities;
- 17) Economically justified larger contribution of available indigenous and renewable energy resources will reduce dependence on imported fuel;
- 18) Existing infrastructure and experience are supportive for construction of new nuclear power plant;
- 19) Universities and scientific institutions in the Baltic States are capable to prepare qualified specialists;
- 20) Modernization of the existing district heating systems will promote the development of combined heat and electricity production;
- 21) Timely introduction of new energy sources and technologies.

Electricity

- 13) Potential interest of market participants to develop and invest in the electricity market;
- 14) Construction of interconnections with power systems of Finland, Poland and Sweden would increase reliability of electricity supply;
- 15) Positive attitude of societies in the Baltic States towards the use of nuclear energy will support the construction of new nuclear power plant in Lithuania;
- 16) Existing potential to have modern power systems in relatively short period;
- 17) Potential for reasonable increase in the usage of renewable energy sources;
- 18) Application of UCTE conditions on security of electricity supply.

Natural gas

- 11) Development of existing and new natural gas storages;
- 12) Development of transit routes;
- 13) Potential construction of the liquefied gas import/export terminal;
- 14) Research and development of non-conventional gas;
- 15) Enlargement of gas usage.

Liquid fuels

- 9) Potential exploration of local crude oil;
- 10) Further development of the use of non-conventional fuels;
- 11) More efficient use of port facilities;
- 12) More efficient use of storage facilities.

Threats

General

- 17) Worsening of security of energy supply situation;
- 18) Creation of inadequate incentives by national legislations;
- 19) Absence of common energy policy;
- 20) Opposition from local public and local authorities (NIMBY effect);
- 21) Fragmentation of the EU energy markets;
- 22) Vulnerability from global trends;
- 23) Slow modernization of district heating systems;
- 24) Deficiency of qualified specialists.

Electricity

- 13) Potential lack of production capacities;
- 14) Potential dominance of power supplies with dumping elements from Russia;
- 15) Potential sharp increase of electricity prices;
- 16) Unwanted developments of energy-mix;
- 17) Possibility of major network outages and/or blackouts;
- 18) Uncertainty regarding long-term supply of fuel for power plants.

Natural gas

- 5) Unpredictability of supplies;

- 6) Higher dependence on natural gas supply after the closure of Ignalina NP.

Liquid fuels

- 7) Potential concentration of the market;
- 8) Potential crude oil and its products' supply interruptions;
- 9) Potential environmental impact of transit.

III. GOALS FOR THE ENERGY SECTOR IN THE BALTIC STATES

Global environment for the energy sector development could be characterized by processes and events, which cause new challenges for the energy supply and national security of the Baltic States:

- 15) Rapid increase of hydrocarbons consumption in the world, which is growing faster than exploration and development of new deposits;
- 16) Large share of oil and gas deposits are concentrated in countries with unstable political regimes and centralised political control over energy export;
- 17) Complicated political relationships among Western countries and countries which have large share of energy resources;
- 18) Increasing geopolitical influence of certain energy exporting states over energy importing countries, including mechanisms to dictate conditions for this import;
- 19) Strengthening of the role of the main economics – USA, EU, China (partly India) – in energy markets and their bilateral partnership with Russia;
- 20) Volatility of oil and gas prices and their dependence on political factors.

For the Baltic States in addition to challenges stated above and discussed in the Green Paper “A European Strategy for Sustainable, Competitive and Secure Energy”, absence of the EU external energy policy, lack of viable alternatives for energy imports, absence of interconnections with energy systems of Central Europe pose problems for development of energy sector.

Taking into consideration requirements and provisions presented in the Treaty of Accession to the EU, Energy Charter Treaty, EU legislation and the abovementioned Green Paper, Strategy has three main pillars:

- 7) Security of supply;
- 8) Sustainability;
- 9) Competitiveness.

Under these pillars, the following strategic objectives have been set:

- 13) To integrate power and gas supply systems into the energy systems and energy markets of the EU;
- 14) To diversify primary energy supply by sources and suppliers, to increase the contribution of renewable and local energy resources;

- 15) To increase the energy efficiency at the demand side and in the energy transformation sector;
- 16) To develop the transit routes for energy products, including electricity;
- 17) To strengthen education, research and development in the energy sector;
- 18) To elaborate and implement a common policy on energy imports from non-EU countries for the internal consumption of the Baltic States.

IV. TASKS FOR THE POWER SECTOR

There are number of different primary energy sources in use in the electricity generation of Baltic States: hydro (traditional and pumped storage), oil-shale (different technologies), nuclear, natural gas, orimulsion, wind, landfill gas, biomass, fuel oil, etc. The total installed electricity generating capacity is equal actually to about 9200 MW and exceeds significantly maximum load of about 5000 MW in the Baltic States.

Experience accumulated from safe and reliable operation of Ignalina NPP is a strong argument for continued operation of the Unit 2 until commissioning of new nuclear power plant in Lithuania. Continued nuclear operation would give significant benefit for the energy sectors and economies of the Baltic States but it requires positive acceptance of this opportunity by the EU member states. In the case of Ignalina NPP decommissioning in 2009 the major part of electricity will be generated by existing thermal power plants. In the case of moderate development of thermal power plants (modernisation of Lithuanian Thermal Power Plant by 2010, renovation of units at Balti and Eesti power plants, construction of modern combined power and heat generation power plants and new power plants at district heating utilities and industrial enterprises) the existing available capacities in the Baltic power system will be sufficient to meet the regional demand for a period by the years 2010-2015. However, due to uncertainty of orimulsion import from Venezuela, construction of new combined cycle gas turbine unit with a capacity of 400 MW on the site of Lithuanian TPP is required by 2010. At the same time feasibility for construction of power plant fired by coal with a capacity of about 400 MW in the Baltic region should be thoroughly analysed.

After closure of Ignalina NPP dependency on primary energy import will increase significantly. To reduce dependence on expensive fossil fuels, to reduce harmful impact of emissions and to increase overall energy security in the Baltic States, new nuclear power plant should be commissioned in Lithuania. Small size of Baltic power market (in 2015, expected maximum load is about 6000 MW) creates additional issues with large-scale nuclear power plants e.g., concerning reserve capacities.

Integration of the Baltic power systems into Central European and Nordic energy systems and closer collaboration with these countries, as well as expected distribution of load and generating capacities, stipulates a necessity to prepare strategy for the development of transmission system, action plan for its implementation and appropriate financial sources. Electricity distribution grid and transformer substations also should be renovated with a view to complying with increasing requirements for the reliability and stability of electricity supply.

In order to ensure the strategic reliability of electricity supply and integration into the EU internal market, the following tasks are necessary:

- 13) To develop cooperation and collaboration of the Baltic States - to facilitate a competitive environment, to enhance transit and to promote common electricity market;
- 14) To prepare an action plan regarding further integration of the Baltic power systems by 2012 into markets of Central Europe and Nordic countries;
- 15) To construct new and restore physically and morally worn electricity transmission and distribution facilities;
- 16) By 2015 to renew the large power production capacities, including new nuclear power plant in Lithuania and Narva Power Plants;
- 17) To use efficiently possibilities and benefits from development of distributed electricity generation;
- 18) To increase year by year the share of renewables in the electricity mix (taking into account the yearly variation of hydro resources).

V. TASKS FOR THE NATURAL GAS SECTOR

The Baltic States have comparatively well developed technical systems of natural gas supply. Natural gas networks within the Baltic States are currently sufficient to cover the needs of the customers. The existence of gas storage in Incukalns with sufficient volume for the Baltic States and for North-West Russia provides reasonable security of gas supply in the region.

However, limited interconnection capacity between Latvia and Lithuania, limited output capacity of the storage in peak periods and limited interconnection capacity from Russia to the storage facility in Latvia are bottlenecks in the current natural gas networks in the Baltic States. Larger power stations and boiler houses have ability to use in the case of gas supply interruptions also light or heavy fuel oil or shale oil, decreasing so the vulnerability of the energy system from gas supplies.

Currently natural gas imports are handled by natural gas monopoly Gazprom and its subsidiaries. Domination of one natural gas supplier does not support liberalization of this market and dependence on supply from one source is the major concern. Furthermore, the governments of the Baltic States have no ownership in the transmission and storage of the gas companies in their territory. This fact makes it difficult to involve the projects of political interest in the investments strategies of the gas companies.

Taking into consideration the size and volumes of the Russian gas fields, the existing technical supply facilities and the more stringent environmental requirements, natural gas is one of the most attractive forms of fossil fuel in the Baltic States. In order to enhance reliability of the natural gas supply it is necessary:

- 7) To create legal and economical preconditions for long-term agreement with owners of Incukalna gas storage for usage of existing storage capacities with a view to meet demand of consumers in the Baltic States over winter peak load and in the case of accidents;
- 8) To prepare feasibility study for construction of the regional liquefied gas import/export terminal and development of necessary infrastructure;
- 9) To prepare feasibility study for interconnection of Lithuanian and Polish natural gas systems;
- 10) To strive for financial support from the EU Structural Funds for construction of strategic pipelines connecting the Lithuanian and Estonian natural gas systems with gas networks in Poland and Finland.

VI. TASKS FOR THE LIQUID FUELS SECTOR

The share of petroleum products in the primary energy balance of the Baltic States currently constitutes to about 26%. In 2005, total consumption of oil products amounted to almost 5 million tons. The retail market is well structured (several strong traders and suppliers) and the associated structures are operating properly. The ports of the Baltic States are well positioned for the large-scale liquid fuels transit from Russia to Europe and other countries as well as for their import from various countries. They have still a potential to be better exploited as liquid fuels transit hubs. There is one refinery with sufficient production volume (annual crude oil refining capacity is 10-11 million tons) within the Baltic States (in Mažeikiai) and several other refineries in reasonable range in the neighbouring countries.

In order to ensure reliable supply of the national economies with petroleum products, mandatory 90-day stocks will be accumulated gradually. All the Baltic States got a transition period for the creation of liquid fuels stocks. Currently only about half of these stocks are built up, which makes the Baltic States slightly more vulnerable to the potential risks of supply disruptions.

Indigenous oil resources are limited; however, extraction of local crude oil could be a competing source to imports of crude oil for several decades, maintaining the annual extraction level of about 0.2-0.4 million tons and reducing the dependence on oil import.

The share of petroleum products used for production of electricity and heat will shrink but fuel oil will remain a reserve fuel for thermal power plants and large district heating systems. Upon installation of flue gas cleaning equipment, petroleum products could be competitive for natural gas. The most noticeable increase in the consumption of light petroleum products is expected in the transport sector due to increasing international freight transportation and mobility of population.

An interesting option for the future would be to produce transport fuels from oil-shale. The technologies for heavy fuel oil from oil-shale are today available in Estonia, and further development of oil-shale based diesel and gasoline is foreseen. The growing global interests for non-conventional liquid fuels will support the development of shale-

oil production and would provide additional option for the increase the independence from imported energy resources.

Despite the car manufacturers so far have not been supportive towards wider usage of the biofuels, their contribution in the motor fuel balance after implementation of modern technologies may become significant. There are several facilities in the Baltic States for production of biofuels and shale oil. Accumulated experience of biofuel production, existing and developing capacities of their production and expected international trends would support the implementation the EU objectives. Increasing consumption of biofuels will increase energy security of the Baltic States, and has also a potential to reduce harmful impact from transport on environment.

In order to enhance strategic reliability of the natural gas supply it is necessary:

- 7) To maintain the diverse structure of the liquid fuels market in the Baltic States;
- 8) To develop biofuels and non-conventional energy sources;
- 9) To build up efficiently the mandatory stocks of liquid fuels.

VII. MEASURES OF STRATEGIC RELIABILITY IN ENERGY SUPPLY FOR THE BALTIC STATES

Potential interruptions of crude oil and/or natural gas supply or transit as well as political pressures to the ownership of the infrastructures have high impact on the economies of the Baltic States. Thus, appropriate measures directed to increase energy security in the Baltic States should be implemented. These measures should reduce or compensate threats stipulated by high dependence on primary energy import from Russia risk factors mentioned above. In order to increase energy security in the Baltic States it is necessary:

- 1) By 2012 to construct interconnections with Poland and Sweden for integration into the power systems of Central Europe and Nordic countries;
- 2) By 2015 to commission a new nuclear power plant and to implement technical measures necessary to comply with UCTE requirements;
- 3) Build up gas reserves at existing storage facilities and constructed new storages and to ensure adequate reliability of gas supply;
- 4) To prepare feasibility study for construction of the regional liquefied gas import/export terminal and development of necessary infrastructure;
- 5) To continue exploration of crude oil and to define new onshore deposits and in the Baltic Sea shelf;
- 6) To prepare and implement a programme directed to faster utilization of local and renewable energy sources;
- 7) To develop efficiently distributed power generation;
- 8) To stimulate the implementation of the efficient modern technologies.

BALTIC ENERGY STRATEGY

I. INTRODUCTION

On 1st May 2004, Estonia, Latvia and Lithuania were inducted as full members into European Union (EU). This historic date marked the end of accession process. Membership has its privilege and opens the entire EU market for the Baltic economies with considerable opportunities for economic and cultural development. Common history, long-term cooperation and national policies harmonised with the EU policies, norms and standards create favourable conditions in the Baltic States for closer cooperation, and in particular in the energy sector.

Transition from a centrally planned to a free market economy in Lithuania, Latvia and Estonia was followed by fundamental transformations – dramatic structural changes of the national economies, alteration of energy policies and gradual creation of market conditions. Over the last few years cooperation among energy authorities, policy makers and researchers was directed to preparation of common policy in the energy field, especially on creation of the sustainable, competitive and secure common energy market.

Currently primary energy represents diverse energy mix in the region which is based on contribution from oil shale in Estonia, hydro resources in Latvia and nuclear energy in Lithuania complemented with imported natural gas and oil products, increasing share of local and renewable energy resources. Existence of the underground gas storage in Latvia is significant for all three countries. Role of oil refinery in Mažeikiai is also important seeking to meet regional needs for petroleum products in the Baltic countries. Both options contribute to energy security. However, the rapid economic growth in the Baltic States, significant increase of oil and natural gas prices, future decommissioning of Ignalina Nuclear Power Plant, dependency on gas supply from one country and other factors requires common policy and common decisions on future development of their energy sectors.

The Baltic States have comparatively well developed power, natural gas supply and district heating systems. The power and natural gas systems are well interconnected. However, interconnections outside the region are limited and oriented only towards Russia and Belarus. Up to now the Baltic States have no direct connection to the power systems of Central and Western Europe. The dependence on gas supply from the Russian natural gas monopoly Gazprom is the major concern for the Baltic States, particularly taking into consideration the recent events in Russia when energy supply is more and more used for political goals.

The Baltic Energy Strategy outlines a framework for the energy sector development in long-term perspective taking into consideration aspects of energy efficiency, energy security, sustainability and improved management. The Strategy focuses on strategic analysis of strengths and weaknesses in energy supply, threats for development of the energy sector and common activities directed to avoid feasible threats and to increase energy security in the Baltic States. The Strategy describes the specific actions and most

important measures which should be implemented seeking to ensure security of energy supply and to reduce negative impact from dominant dependency on energy import from one source.

II. CHARACTERISTICS OF GLOBAL ENVIRONMENT AND CHALLENGES FOR ENERGY SECURITY IN THE BALTIC STATES

Global environment for the energy sector development could be characterized by processes and events which causes new challenges for the energy supply and national security of the Baltic States:

- 21) Depletion of oil and natural gas resources and rapid increase of hydrocarbons consumption in the world, which is growing faster than exploration and development of new deposits;
- 22) Large share of oil and gas deposits is concentrated in countries with unstable and non-democratic political regimes and centralised political control on energy export;
- 23) Complicated political relationships among Western countries and countries which have large share of energy resources;
- 24) Increasing geopolitical influence of certain energy exporting states over energy importing countries, including mechanisms to dictate conditions for this import;
- 25) Increased political influence and role of governments and political factors in energy markets; which limit freedom for market forces
- 26) Increased influence of energy issues on development of foreign policy and national security;
- 27) Strengthening of the role of the main economics – USA, EU, China (partly India) – in energy markets and their bilateral partnership with Russia;
- 28) Volatility of oil and gas prices and their dependence on political factors.

For the Baltic States in addition to challenges stated above and discussed in the Green Paper “A European Strategy for Sustainable, Competitive and Secure Energy” (COM (2006) 105 final), absence of the common EU energy policy, lack of viable alternatives for energy supply, absence of necessary interconnections with Western energy systems are causing serious problems for development of their energy sector.

III. FACTORS INFLUENCING STABILITY OF THE BALTIC ENERGY SECTOR

Major factors influencing stability and causing risk for the energy systems in the Baltic States are the following:

- 1) Dependence on dominating energy import from Russia;
- 2) Dependence of reliability, safety and stability of the power systems in the Baltic States and of the possibilities of electricity export-import on the Russian Unified Power System;
- 3) Absence of interconnections with Western European and Nordic countries and very limited electricity exchange with the European electricity markets;

- 4) Absence of alternative supply of natural gas;
- 5) Growing volatility of natural gas prices, their dependence on a monopolistic supplier and on the political situation in the world;
- 6) Decommissioning of Ignalina NPP in 2009 having a major impact on the structure of electricity generation sources, primary energy balance and electricity prices;
- 7) Postponed specific decisions regarding the construction of new nuclear power plant and overdue of plant construction;
- 8) Uncertainty regarding reliability of long-term supply of oil for Lithuanian TPP from Venezuela;
- 9) Construction of new natural gas pipeline from Russia into Europe under the Baltic Sea bypassing the territories of the Baltic States;
- 10) Fast implementation of the strict EU environmental requirements;
- 11) Possible interruptions of oil and gas supply;
- 12) High dependence of the Latvian power system on hydro energy, which is influenced by unpredictable weather conditions;
- 13) Necessity to reconstruct oil shale power plants in Estonia due to more strict environmental requirements.

IV. SWOT ANALYSIS

The energy sector of the Baltic States has its strengths and weaknesses. It faces specific threats, however, has good opportunities for efficient and reliable operation. With more efficient use of the available opportunities and existing capacities, the energy sector of the Baltic States can make significant contribution to more rapid economic development in the region, strengthening its competitiveness, reducing the possible threats and avoiding different unforeseen interruptions of energy supply.

Strengths

General

- 10) Diverse energy mix at primary energy supply;
- 11) Energy capacities are currently satisfactory to meet regional demands;
- 12) Relatively high level of qualified specialists in the energy sector.

Electricity

- 13) Strong interconnections between the Baltic States and with Russia and Belarus;
- 14) Diverse energy mix in electricity generation by technology and fuel;
- 15) Efficient co-operation between Baltic transmission system operators;
- 16) Current self-sufficiency in generation capacity.

Natural gas

- 10) Reasonably developed infrastructure;
- 11) Possibility to use alternative fuels by majority of largest customers;
- 12) Availability of gas storage facility.

Liquid fuels

- 13) Well-functioning markets;
- 14) Attractive transit route;

- 15) Availability of crude oil refinery;
- 16) Possibility to use non-conventional liquid fuels.

Weaknesses

General

- 13) Low energy efficiency in buildings, transport sector and district heating systems;
- 14) Different policy objectives among the Baltic States;
- 15) Small size of the energy markets;
- 16) Inadequate funding of education, research and development;

Electricity

2. Limited marketplace with small number of players on supply side;
3. Different policy objectives and legislation in the Baltic States;
4. Isolation from the EU electricity markets;
5. Congestions in Russian transmission system may affect the electricity market functioning and operation of the power systems;
6. Insufficient technical quality of transmission and distribution systems;
7. Weak and non-transparent price signals for investments into new generation capacities;
8. Small size of the Baltic electricity market creates additional issues with large-scale nuclear power plants.

Natural gas

- 1) The Baltic States can currently buy natural gas only from Russia;
- 2) No state ownership in infrastructure companies;
- 3) Weak and non transparent natural gas supply contracts;
- 4) Inadequate regulation of the natural gas market;
- 5) Limited throughput of infrastructure.

Liquid fuels

- 1) Low current level of biofuels usage;
- 2) Still continued development of security stocks of liquid fuel creates vulnerability in cases of supply disruptions;
- 3) Influence of politics on transit/supply.

Opportunities

General

- 22) More clear political signals about the priorities and objectives can create transparent regulatory framework for efficient long-term energy supply;
- 23) Utilization of available energy saving potential will reduce the growth rate of energy demand and generating capacities;
- 24) Economically justified larger contribution of available indigenous and renewable energy resources will reduce dependence on imported fuel;
- 25) Existing infrastructure and experience are supportive for construction of new nuclear power plant;

- 26) Universities and scientific institutions in the Baltic States are capable to prepare qualified specialists;
- 27) Modernization of the existing district heating systems will promote the development of combined heat and electricity production;
- 28) Timely introduction of new energy sources and technologies.

Electricity

- 19) Potential interest of market participants to develop and invest in the electricity market;
- 20) Construction of interconnections with power systems of Finland, Poland and Sweden would increase reliability of electricity supply;
- 21) Positive attitude of societies in the Baltic States towards the use of nuclear energy will support the construction of new nuclear power plant in Lithuania;
- 22) Existing potential to have modern power systems in relatively short period;
- 23) Potential for reasonable increase in the usage of renewable energy sources;
- 24) Application of UCTE conditions on security of electricity supply.

Natural gas

- 16) Development of existing and new natural gas storages;
- 17) Development of transit routes;
- 18) Potential construction of the liquefied gas import/export terminal;
- 19) Research and development of non-conventional gas;
- 20) Enlargement of gas usage.

Liquid fuels

- 13) Potential exploration of local crude oil;
- 14) Further development of the use of non-conventional fuels;
- 15) More efficient use of port facilities;
- 16) More efficient use of storage facilities.

Threats

General

- 25) Worsening of security of energy supply situation;
- 26) Creation of inadequate incentives by national legislations;
- 27) Absence of common energy policy;
- 28) Opposition from local public and local authorities (NIMBY effect);
- 29) Fragmentation of the EU energy markets;
- 30) Vulnerability from global trends;
- 31) Slow modernization of district heating systems;
- 32) Deficiency of qualified specialists.

Electricity

- 19) Potential lack of production capacities;
- 20) Potential dominance of power supplies with dumping elements from Russia;
- 21) Potential sharp increase of electricity prices;
- 22) Unwanted developments of energy-mix;
- 23) Possibility of major network outages and/or blackouts;

24) Uncertainty regarding long-term supply of fuel for power plants;

Natural gas

7) Unpredictability of supplies;

8) Higher dependence on natural gas supply after the closure of Ignalina NP.

Liquid fuels

10) Potential concentration of the market;

11) Potential crude oil and its products' supply interruptions;

12) Potential environmental impact of transit.

V. VISION OF THE ENERGY SECTOR IN THE BALTIC STATES

In 15-20 years energy sector in the Baltic States will constitute an integral part of their economies, will ensure secure, environment-friendly and affordable (with prices not higher than average in the EU) energy supply to all consumers. Generating capacities of power systems will guarantee self sufficiency and uninterrupted supply as well as possibility to export energy into markets of neighbouring countries at competitive prices. It will create favourable conditions for further progress of the national economies, will be integrated into Western, Scandinavian and Eastern energy systems, competitive in an open international energy market and will ensure energy security similar as in other EU countries. It will consist of well balanced energy systems, which will be based on modern technologies and will create relevant preconditions for further development of societies in the Baltic States and rapid economic growth, and supply by primary energy sources will be as diverse as possible (renewable sources, nuclear energy, fossil fuels, etc.). Energy performance in new buildings and transport systems will comply with best possible achievements in the world practice. Rational and efficient energy use will be stable part of life's philosophy.

VI. THE MAIN STRATEGIC OBJECTIVES

Taking into consideration essential requirements and provisions presented in the Treaties of Accession to the EU, Energy Charter Treaty, legal acts of the EU and Green Paper, energy policy in the Baltic States is based on implementation of three main strategic objectives:

10) Security of supply;

11) Sustainability;

12) Competitiveness.

Seeking to implement these strategic objectives and to increase energy security in the Baltic States, the following goals have been set:

19) To integrate power and gas supply systems into the energy systems and energy markets of the EU;

20) To diversify primary energy supply by sources and suppliers, to increase essentially contribution of renewable and local energy resources;

21) To increase the energy efficiency at the demand side and in the energy transformation sector.

Seeking to implement these strategic objectives and goals, the following tasks in the energy sector of the Baltic States have been set:

- 1) To finish the implementation of the requirements set forth in the EU directives for liberalization of electricity and gas sectors, to ensure that all customers will be entitled to freely choose their electricity and gas suppliers;
- 2) To ensure the continuity in utilization of nuclear energy and by 2015 to commission in Lithuania a new nuclear power plant that will meet electricity demand of the Baltic States;
- 3) To implement environmental directives of the EU in the energy sector and to mitigate energy impact on environment and climate change;
- 4) By 2010 to ensure that 90-day stocks of crude oil and petroleum products are built up and maintained, and by 2013 to develop new capacities of natural gas storage;
- 5) To modernize existing ageing power plants, electricity and natural gas transmission and distribution networks and district heating systems, to increase their efficiency and reliability;
- 6) For establishment of the integrated Nordic-Baltic electricity market and integration into power systems of Western Europe not later than by 2012 to build up interconnections connecting high voltage networks of the Baltic States with power systems of Scandinavian countries and Poland;
- 7) To use efficiently regional underground storage for commercial use of natural gas and to build up a common liquefied gas import/export terminal which could be justified by few criteria (energy security, diversification of energy supply, economic, etc.);
- 8) To increase economically justified utilization of available local and renewable energy resources;
- 9) To utilize the benefits of combined heat and power generation according to the needs and possibilities of each country and in accordance with the directives of the EU;
- 10) To increase the energy efficiency so that in 2025 the relative energy consumption in buildings, various facilities and equipment, technological processes and transport systems would be close to the indices in the developed EU member states;
- 11) To improve energy sector management: to develop the energy sector taking into consideration its integrity, to use efficiently strengths of the energy potential and favorable opportunities, to harmonize regulation principles applied for separate energy sectors, to strive continuously for simplification and reduction of regulation in the energy sector, to improve the skills and knowledge of the specialists employed in the institutions involved in the energy sector management;
- 12) To maintain and strengthen universities and scientific research institutions by ensuring their proper funding so that required number of qualified young specialists for the energy sector would be educated and trained for management of the energy systems, their development and implementation of modern technologies;
- 13) To elaborate and implement a common policy on energy imports from non-EU countries;
- 14) To increase the participation of private capital in the energy sector.

VII. COMMON INTERESTS OF THE BALTIC STATES

Strategic interests of Estonia, Latvia and Lithuania are based on development of close cooperation and collaboration as well as on consolidation of common activities in the region directed to preparation of the sound energy policy of the Baltic States and appropriate instruments supporting creation of the common Baltic electricity market:

- 1) Not later than by 2012 to construct interconnections with Poland and Scandinavian countries for integration into the power systems of Western Europe, thereby increasing reliability of electricity supply and efficiency of usage of generating capacities;
- 2) To focus on compliance with UCTE requirements for separate control areas and a control block without losing opportunities to purchase services from and to maintain electricity exchange with Russia. This would increase security of electricity supply to end users, ability to be operated independently in cases of emergency, performance for primary and secondary frequency control, fast recovery in cases of major network outages or black-outs, etc;
- 3) To harmonize the electricity market principles and to eliminate differences in the market legislations of the Baltic States, which hinder the development of the common Baltic electricity market. To prepare the common approach to the electricity imports from Russia;
- 4) By 2015 to commission in Lithuania a new nuclear power plant that will meet electricity demand of the Baltic States;
- 5) To prepare common policy and action plan for mutual support in emergency cases in the energy sector;
- 6) To support the development of the European External Energy Policy as an integral part of the Common Foreign and Security Policy;
- 7) To strive for preparation and implementation of the common energy security policy in the context of the EU with responsibility of Commission of the European Communities regarding coordination of energy related projects;
- 8) To request from the European Commission to include interconnections, necessary to eliminate isolation of the Baltic energy systems, into the list of priority projects, to define mechanism of their implementation and appropriate financial support.

VIII. PROVISIONS FOR THE POWER SECTOR DEVELOPMENT IN THE BALTIC STATES

There are number of different primary energy sources in use in the electricity generation of Baltic States: hydro (traditional and pumped storage), oil-shale (different technologies), nuclear, natural gas, orimulsion, wind, landfill gas, biomass, fuel oil, etc. The total installed electricity generating capacity is equal actually to about 9200 MW and exceeds significantly maximum load of about 5000 MW in the Baltic States. Experience accumulated from safe and reliable operation of Ignalina NPP is a strong argument for continued operation of the Unit 2 until 2015-2017. Positive acceptance of this opportunity by the EU member states would give significant benefit for the energy sectors and economies of the Baltic States. In a case of Ignalina NPP decommissioning in 2009 the major part of electricity will be generated by existing thermal power plants fired

by natural gas, orimulsion and oil shale. In a case of moderate development of thermal power plants (renovation of units at Balti and Eesti power plants, construction of modern combined power and heat generation power plant in Latvia and new power plants at district heating utilities and industrial enterprises) the existing available capacities in the Baltic power system will be sufficient to meet the regional demand for a period by the years 2013-2015.

Since 2010 the modernised Lithuanian Thermal Power Plant will become one of the most important generation sources in the Baltic region. Reliable its performance with a capacity of 1500 MW requires finishing process of plant modernisation by this time. Supply of cheaper fuel (orimulsion or heavy fuel oil) should be guaranteed because Lithuanian TPP using expensive natural gas cannot generate electricity competitive in the market. Due to uncertainty of orimulsion import from Venezuela, increase of its efficiency is urgent and construction of new combined cycle gas turbine unit with a capacity of 400 MW on the existing site is required by 2010. At the same time feasibility for construction of power plant fired by coal with a capacity of about 400 MW in the Baltic region should be thoroughly analysed.

Modernisation of existing combined heat and power plants and construction of the new ones, including power plants utilizing available local and renewable energy resources, will facilitate the solution of the problem related to growing electricity demand and will increase energy security.

After closure of Ignalina NPP dependency on primary energy import will increase significantly. To reduce dependence on expensive fossil fuels, to reduce harmful impact of emissions and to increase overall energy security in the Baltic States, new nuclear power plant should be commissioned in Lithuania. Small size of Baltic power market (in 2015, expected maximum load is about 6000 MW) creates additional issues with large-scale nuclear power plants. There is a need to keep large reserve capacities available in the area in order to secure the power supply for the cases of outages in such power plant, especially if capacity of one unit is bigger than 800 MW. Therefore construction of interconnections with power systems of Western Europe and Scandinavia is required before commissioning of new nuclear power plant. Otherwise issue of reserve capacities should be based on agreement with Russian IPS.

Integration of the Baltic power systems into energy systems of Western Europe and Scandinavia and closer collaboration with these countries as well as expected distribution of load and generating capacities stipulates a necessity to prepare strategy for the development of transmission system, action plan for its implementation and appropriate financial sources. Electricity distribution grid and transformer substations also should be renovated with a view to complying with increasing requirements for the reliability and stability of electricity supply.

In order to ensure the strategic reliability of electricity supply and integration into the EU internal market, the following measures are necessary:

- 19) To develop cooperation and collaboration of the Baltic States - to establish a competitive environment and common electricity market;
- 20) To prepare action plan regarding integration of the Baltic power systems by 2012 into markets of Western Europe and Scandinavia and more efficient use of

- existing capacities in these markets as well as to increase reliability of electricity supply;
- 21) By 2015 to implement technical measures necessary to comply with UCTE requirements for synchronous operation of power systems in the Baltic States and Western Europe;
 - 22) To reconstruct and restore physically and morally worn electricity transmission and distribution networks in order to meet growing loads and ensure the reliability of electricity supply and meet quality requirements;
 - 23) By 2015 to commission a new nuclear power plant;
 - 24) To use efficiently possibilities and benefits from development of distributed electricity generation.

IX. PROVISIONS FOR THE NATURAL GAS SECTOR DEVELOPMENT IN THE BALTIC STATES

The Baltic States have comparatively well developed systems of natural gas supply, which are connected with the “Northern Lights” pipeline transporting natural gas from the Siberian gas fields to Western Europe. Natural gas imports come from a single source and are handled by the Russian natural gas monopoly Gazprom and its subsidiaries. Domination of one natural gas supplier does not support liberalization of this market and dependence on supply from one source is the major concern. Natural gas networks within the Baltic States are currently sufficient to cover the needs of the customers. Larger power stations and boiler houses have ability to use in the case of gas supply interruptions also light or heavy fuel oil or shale oil, decreasing so the vulnerability of the energy system from gas supplies. The existence of gas storage in Incukalns with sufficient volume for the Baltic States and for North-West Russia provides reasonable security of gas supply in the region. However, limited interconnection capacity between Latvia and Lithuania, limited output capacity of the storage in peak periods and limited interconnection capacity from Russia to the storage facility in Latvia are bottlenecks in the current natural gas networks in the Baltic States.

Taking into consideration the size and volumes of the Russian gas fields, the existing technical supply facilities and the more stringent environmental requirements, natural gas is one of the most attractive forms of fossil fuel in the Baltic States. It is very likely that these resources will dominate for many years. The main goals for development of natural gas sector are: to guarantee safe, efficient and reliable gas supply, distribution and storage; to promote development of internal gas market; to integrate natural gas system into the EU gas systems. In order to enhance strategic reliability of the natural gas supply it is necessary:

- 11) To expand and upgrade the gas transmission networks and to ensure that gas transit via the Baltic States is increasing and conditions applied for this transit are in line with the European Energy Charter and legal acts of the EU. Connection of the transit routes via the Baltic States would support the integration of the gas systems into the EU natural gas networks;
- 12) To create legal and economical preconditions for long-term agreement with owners of Incukalns gas storage for usage of existing storage capacities with a view to meet demand of consumers in Lithuania and Estonia over winter peak

- load and a case of accidents as well as for common efforts of the Baltic States related to development of Latvian gas storages;
- 13) To prepare feasibility study for construction of the regional liquefied gas import/export terminal in Latvia and development of necessary infrastructure, providing major technical and economical data: capacity, the most appropriate site, construction time, conditions for attracting private investors, etc. Its construction will provide a possibility to reduce dependence on a single supplier of natural gas and will increase energy security in the Baltic States;
 - 14) To prepare feasibility study for interconnection of Lithuanian and Polish natural gas systems which would allow to diversify gas supply taking into consideration the Nabucco pipeline supplying gas from the Caspian region and the Middle East and other options;
 - 15) To strive for financial support from the EU Structural Funds for construction of strategic pipelines connecting the Lithuanian and Estonian natural gas systems with gas networks in Poland and Finland. This would guarantee alternative gas supply and integration into the EU gas market.

X. PROVISIONS FOR THE CRUDE OIL, PETROLEUM PRODUCTS AND BIOFUELS DEVELOPMENT IN THE BALTIC STATES

The share of petroleum products in the primary energy balance of the Baltic States currently constitutes to about 26%. In 2005, total consumption of oil products amounted to almost 5 million tons. The retail market is well structured (several strong traders and suppliers) and the associated structures are operating properly. The ports of the Baltic States are well positioned for the large-scale liquid fuels transit from Russia to Europe and other countries as well as for their import from various countries. They have still a potential to be better exploited as liquid fuels transit hubs. There is one refinery with sufficient production volume (annual crude oil refining capacity is 10-11 million tons) within the Baltic States (in Mažeikiai) and several other refineries in reasonable range in the neighbouring countries.

In order to ensure reliable supply of the national economies with petroleum products, mandatory 90-day stocks will be accumulated gradually. All the Baltic States got a transition period for the creation of liquid fuels stocks. Currently only about half of these stocks are built up, which makes the Baltic States slightly more vulnerable to the potential risks of supply disruptions.

Indigenous oil resources are limited; however, extraction of local crude oil could be a competing source to imports of crude oil for several decades, maintaining the annual extraction level of about 0.2-0.4 million tons and reducing the dependence on oil import.

The share of petroleum products used for production of electricity and heat will shrink but fuel oil will remain a reserve fuel for thermal power plants and large district heating systems. Upon installation of flue gas cleaning equipment, petroleum products could be competitive for natural gas. The most noticeable increase in the consumption of light petroleum products is expected in the transport sector due to increasing international freight transportation and mobility of population.

Despite the car manufacturers so far were not supportive towards wider usage of the biofuels, their contribution in the motor fuel balance after implementation of modern technologies can become significant. There are several facilities in the Baltic States for production of biofuels and shale oil. Accumulated experience of biofuel production, existing and developing capacities of their production and expected international trends would support the implementation the EU objectives. In addition, shale oil has also a potential to become an alternative fuel in the transport sector. The growing global interests for non-conventional liquid fuels will support the development of biofuels production. Increasing consumption of biofuels will increase energy security of the Baltic States, will reduce harmful impact from transport on environment and create new working places.

XI. MEASURES OF STRATEGIC RELIABILITY IN ENERGY SUPPLY FOR THE BALTIC STATES

Potential interruptions of crude oil and/or natural gas supply or transit as well as political pressures to the ownership of the infrastructures have high impact on the economies of the Baltic States. Thus, appropriate measures directed to increase energy security in the Baltic States should be implemented. These measures should reduce or compensate threats stipulated by high dependence on primary energy import from Russia risk factors mentioned above. In order to increase energy security in the Baltic States it is necessary:

- 9) By 2012 to construct interconnections with Poland and Scandinavian countries for integration into the power systems of Western Europe;
- 10) By 2015 to commission a new nuclear power plant and to implement technical measures necessary to comply with UCTE requirements;
- 11) Build up gas reserves at existing storage facilities and constructed new storages and to ensure adequate reliability of gas supply;
- 12) To prepare feasibility study for construction of the regional liquefied gas import/export terminal and development of necessary infrastructure;
- 13) To develop exploration of crude oil and to define new onshore deposits and in the Baltic Sea shelf;
- 14) To prepare and implement a programme directed to faster utilization of local and renewable energy sources;
- 15) To develop distributed power generation;
- 16) To stimulate the implementation of the efficient modern technologies.

STRENGTHS

General

1. Diverse energy mix at primary energy supply

Good structure of primary energy balance, which is comprised from oil shale in Estonia, hydro resources in Latvia and nuclear energy in Lithuania, complemented with natural gas, oil products, increasing contribution of local and renewable energy resources and a possibility to use different fuels in the major energy enterprises.

2. Reasonable preconditions for energy supply

Energy capacities are currently satisfactory to meet regional demands: power stations, oil refinery, import and export terminals of oil and its products, supply routes, logistics, integrated system of natural gas supply with large underground gas storage, district heating systems, CHP etc. There have been historically no major technical supply disruptions.

3. Highly qualified personnel

The level of qualified specialists is relatively high in the energy sector. The quality of energy education and science is relatively high inter alia due to intense co-operation with other countries universities.

Electricity

1. Strong interconnections between the Baltic States and with Russia and Byelorussia

There are currently no congestions in the interconnections between the Baltic States and with Russia and Byelorussia. The networks of the Baltic States are also widely used for power transit for Kaliningrad region. Interconnection to Finland will create the first interconnection to the Nordic power market.

2. Diverse energy mix in electricity generation by technology and fuel

There are number of different energy sources in use in the power generation of Baltic States: hydro (traditional and pumped storage), oil-shale (different technologies), nuclear, natural gas, orimulsion, wind, landfill gas, biomass, light and heavy fuel oil, etc.

3. Tradition of co-operation between Baltic transmission system operators

The co-operation among the Baltic transmission system operators is very efficient; the official co-operation is now organized via special co-ordination unit BALTSO.

4. Current self-sufficiency in generation capacity

Currently the generation capacities within the Baltic States are able to cover the electricity needs of the Baltic States.

Natural Gas

1. Reasonably developed infrastructure

Natural gas networks within the Baltic States are currently sufficient to cover the needs of the customers.

2. Possibility to use alternative fuels by majority of largest customers

Larger power stations and boiler houses have ability to use in the case of gas supply interruptions also light or heavy fuel oil or shale oil, decreasing so the vulnerability of the energy system from gas supplies.

3. Availability of storage facility

The existence of gas storage in Incukalns with sufficient volume for the Baltic States and for North-West Russia provides reasonable security of gas supply in the region.

Liquid Fuels

1. Well-functioning markets

The retail market is well structured (several strong players) and the associated structures are operating properly.

2. Attractive transit route

The ports of the Baltic States are well positioned for the large-scale liquid fuels transit from Russia to Europe and other countries.

3. Availability of crude oil refineries

There is one refinery with sufficient production volume within the Baltic States (in Mažeikiai) and several other refineries in reasonable range in the neighbouring countries.

4. Possibility to use non-conventional liquid fuels

There are several facilities in the Baltic States for production and consumption of biofuels and shale oil. The growing global interests for non-conventional liquid fuels support the development of these facilities.

WEAKNESSES

General

17) Low energy efficiency in buildings, transport sector and district heating systems

Energy efficiency in the public sector (schools, universities, hospitals, etc.) and in the old living houses is improved only slightly. Relative energy consumption for heating of buildings is greater than in the Western European countries. Many district heating systems are not used efficiently, renovations are sometimes going too slowly, their reliability in many places is low, and a probability of serious accidents is relatively high. District heating systems in residential and public buildings constructed before 1990 are obsolete and are not designed for rational use of energy.

18) Different policy objectives among the Baltic States

One could find several differences (often contradictory) in the policies on energy, environment, transport and social affairs among the Baltic States. Such contradictions and conflicting interests create additional barriers for development of a common energy market.

19) Small size of the energy markets

Limited size of the energy markets of the Baltic States limit also the number of market participants. Economically reasonably sized power plant in larger countries (1000-2000 MW) would be very dominating player in the Baltic States.

20) Inadequate funding of research and development.

Low level of energy research and development funding has produced no significant progress in the development of the energy science in the Baltic States.

Electricity

1. Limited marketplace with small number of players in supply side

Companies of a reasonable size in other power markets would be very dominating in the Baltic States power markets. This would create very high risk of the abuse of a market position.

2. Different policy objectives and legislation in the Baltic States

One can find significant, even contradictory differences in the electricity market legislations of the Baltic States, which hinder the development of the common Baltic electricity market. There have been long discussions about harmonization of the market principles, but without any significant progress. Special attention should be given to the common approach to the power imports from Russia.

3. Isolation from the EU power markets

Electricity networks in the Baltic States have no direct interconnections to the power systems of Western Europe; thus, it is not possible to participate in the common EU electricity markets.

4. Congestions in Russian transmission system may affect power market functioning

There are some points of congestion in the power transmission system of Russia, which may have also direct impact to the operations of the Baltic power market. However, there are no technical problems, but rather issues related to balancing in the power market.

5. Insufficient technical quality of distribution systems

A large part of electricity distribution network, substations and pipelines are physically and morally obsolete. The power systems of the Baltic States do not comply with UCTE requirements for separate control areas

6. Weak and non-transparent price signals for investments into new generation capacities.

Current regulation and pricing principles are not providing clear signals for the investments into new traditional production capacities. This is not only a problem for the Baltic States, but is a general problem of the liberalised power markets.

7. The size of nuclear facilities

Small size of Baltic power market creates additional issues with large-scale nuclear power plants. There is a need to keep large reserve capacities available in the area in order to secure the power supply for the cases of outages in nuclear power plant.

Natural Gas

1. 100% dependence on one supplier

The Baltic States can currently buy natural gas only from Russia. Domination of one natural gas supplier does not support liberalization of this market.

2. No state ownership in infrastructure companies

The Baltic States do not have currently any say in the development of natural gas infrastructure. The investment decisions to infrastructure are only made by the dominant supplier, which takes in its investments into account its competitive interests, but not the potential interests of a state (for example to increase competitive pressures).

3. Weak and non transparent natural gas supply contracts

Gas supply contracts are generally non transparent and does not provide sufficient security of supply in peak periods. Also often changing pricing principles are creating additional risks to the customers.

4. Inadequate regulation

The regulation of the natural gas market seems not to be sufficient, taking into account non-transparency and non-predictability of gas prices and regional interests in infrastructure.

5. Limited throughput of infrastructure

Limited interconnection capacity between the Latvia and Lithuania, limited output capacity of the storage in peak periods, limited interconnection capacity from Russia to the storage facility in Latvia are bottlenecks in the current natural gas networks in the Baltic States.

Liquid Fuels

1. Low level of biofuels usage

The general problem of the EU in the development of biofuels is observed also in the Baltic States. The car manufacturers seem not to be very supportive towards wider usage of the biofuels.

2. Development of security stocks of liquid fuel

All the Baltic States got a transition period for the creation of the stocks of liquid fuels. Currently about half of these stocks are built up, which makes the Baltic States slightly more vulnerable to the potential risks of supply disruptions.

3. Influence of politics on transit/supply

Political pressures to the ownership of the infrastructures (for example in cases of Port of Ventspils, Mazeikiai Nafta etc.) are creating political tensions to the energy market and are increasing interdependence of these areas.

OPPORTUNITIES

General

1. To create clear and transparent regulatory framework for efficient long-term energy supply.

Currently the regulations in the Baltic States in the energy field are reasonably developed. By adding more clearly political signals about the priorities and objectives of the energy market development, the Baltic energy market could within next 10 years become very attractive market place.

2. High energy efficiency potential.

Utilization of available energy saving potential will reduce the growth rate of energy demand and generating capacities, as well as the amount of imported fuel and will facilitate the solution of environmental issues.

3. Wider utilization of renewables and peat

Economically justified larger contribution of available indigenous and renewable energy resources (wood, straw, peat, biogas, renewable municipal flammable waste, wind, hydro energy and raw materials for biofuel etc.) into the primary energy balance of the Baltic States will reduce dependence on imported fuel and would mitigate the negative consequences of the increase of fossil fuel prices. Larger contribution of local industries into modern technologies may create favourable preconditions for more efficient use of renewable energy sources in the Baltic States.

4. Existing infrastructure and experience are supportive for construction of new nuclear power plant.

Experience accumulated from the safe and reliable operation of Ignalina NPP, a generally positive attitude of political parties and society towards the use of nuclear energy, the trends of the EU emission trading and market developments would support the development new nuclear power plant.

5. Universities and scientific institutions in the Baltic States are capable to prepare qualified specialists.

The Baltic States scientific base on energy, if properly funded, is sufficient to prepare enough qualified specialists for the Baltic States.

6. Utilization of heat load potential with CHP.

Modernization of the existing district heating systems will promote the development of combined heat and electricity production, increasing at the same time the efficiency of the primary energy consumption and energy security of the Baltic States.

7. Timely introduction of new energy sources and technologies

Development of hydrogen economy and other developments in the scientific scene on energy should be carefully followed. The Baltic States should be flexible to adjust their energy policies timely, if technological development would provide new clear alternatives for energy supply.

Electricity

1. Potential interest of market participants to develop and invest in the market.

There are necessary legal preconditions to establish a competitive environment and common electricity market in the Baltic States, and to join the markets of Western and Northern Europe. The market participants have prepared themselves to be competitive in the liberalised power market.

2. Interconnections.

Construction of interconnections with power systems of Finland, Poland and Sweden would increase reliability of energy supply and will create preconditions for integration into electricity market of Western Europe, for more efficient use of existing power plants and will assist the Baltic States to become energy transit hub.

3. Potential to have modern power system in relatively short period

The Baltic States have a unique opportunity to modernize their power system in coming 10 years. In parallel with liberalization of power market it is possible to create efficient, environmentally sound and reliable power supply to the Baltic States.

4. Potential for reasonable increase in the usage of renewable energy sources.

Increased use of renewable energy sources would be supported by the necessity to comply the EU Directive on the promotion of electricity produced from renewable energy sources in the internal electricity market. Appropriate support mechanisms with stable power production from renewable sources with reasonable returns to the investors would have limited impact also to the power prices.

5. Application of UCTE conditions on security of power supply.

Focus on compliance with UCTE requirements for separate control areas and a control block would increase security and quality of electricity supply to end users, ability to be operated independently in cases of emergency, performance for primary and secondary frequency control, fast recovery in cases of major network outages or black-outs, etc.

Natural Gas

1. Development of new and existing storages.

Building up gas reserves at existing storage facilities and constructed new storages should insure more adequate reliability of gas supply. Geological possibilities support the development of the Baltic States as a gas storage area for the Western Europe.

2. Development of transit routes.

There is a potential to develop new natural gas pipelines via the Baltic States. Conditions applied for transit of energy resources in the Baltic States are in line with the European Energy Charter and legal acts of the EU. Connection of the transit routes via the Baltic States would support the integration of the gas networks to the EU natural gas networks.

3. Development of LNG.

Potential construction of the liquefied gas import/export terminal and development of necessary infrastructure would provide a possibility to reduce dependence on a single supplier of natural gas and will increase energy security in the Baltic States.

4. Research and development of non-conventional gas.

There is a potential to develop the usage of non-conventional gases (landfill gas, oil-shale gas) more widely. Technology development is the key for larger penetration of these sources.

5. Enlargement of gas usage.

Existing system of gas pipelines within the Baltic States allows further increase of the natural gas supply with minor investments, provided, that substantial investments into networks are made in Russia and more stable political and legal framework would emerge in the Russian gas market.

Liquid Fuels

1. Potential exploration of local crude oil.

Despite very limited oil reserves, extraction of local crude oil could be a competing source to imports of crude oil for several decades, thus, reducing the dependence on oil import.

2. Further development of the use of non-conventional fuels.

Accumulated experience of biofuel production, existing and developing capacities of their production and expected international trends would support the implementation the EU objectives. In addition, shale oil has a potential to become an alternative fuel in the transport sector.

3. More efficient use of port facilities.

The ports of the Baltic States have still a potential to be better exploited as liquid fuels transit hubs.

4. More efficient use of storage facilities.

The synergies of keeping the stocks of liquid fuels within the neighbouring Baltic States are currently not exploited, as far as there are not bilateral agreements between the countries.

THREATS

General

1. Worsening of security of energy supply situation.

Currently the Baltic States are self-sufficient as a region. The closure of Ignalina NPP and old units of Narva PP may cause a situation, whereby the Baltic States power market may not be self-sufficient and the energy supplies might not be available in some cases from neighbouring countries.

2. Creation of inadequate incentives by national legislations

Inappropriate regulation reduces possibilities of the energy sector to react into changes in the market. Artificially reduced energy prices based on regulation and/or political pressure would result underinvestment into reliability of supply. Delayed construction of necessary new capacities may cause serious accidents and shortages of energy supply.

3. Absence of common energy policy

Inadequate political decisions within Baltic States, in the EU or in Russia may cause serious results in the operations of the energy market. Therefore common energy policy of the Baltic States and strong EU energy strategy is supported by the Baltic States.

4. NIMBY (Not In My BackYard) effect

One can observe the same kind of trend as in other countries around the world, whereby new facilities in the energy sector have serious problems of local public acceptance.

5. Fragmentation of the EU energy markets

Energy markets of the EU are not well interconnected, which increases the risk of having different market areas with different policy objectives. This would hamper the further integration of the EU energy markets.

6. Vulnerability from global trends

Without investments into diverse new power capacities and enlarged usage of local fuels, the economies of the Baltic States are increasingly vulnerable and dependent on the situation in the world energy markets, especially in cases of dramatic increase of oil and natural gas prices and interruptions of fuel and electricity supply

7. Slow modernization of district heating systems

Due to the slow modernization of smaller district heating systems the probability of severe accidents remains comparatively high. This may cause negative economical and social consequences, which would lead to increased use of local heating instead of more efficient and environmentally reasonable district heating.

8. Deficiency of qualified specialists

The existing public attitude and under-financing in the Baltic countries of energy engineering and technical professions cause threat, that in the future the energy sector and technical support organizations, scientific research and consulting institutions will not be supplied with necessary number of qualified specialists. Emigration or re-qualification of qualified specialist may complicate the development and implementation of modern technologies even further.

Electricity

1. Potential lack of production capacities

After closure of Ignalina NPP in 2009 and Narva PP environmentally obsolete units in 2016, the Baltic States might not be able to meet their electricity demand. Investments into construction of new or modernization of existing electricity generation facilities have to be made within next 10 years.

2. Potential dominance of power supplies with dumping elements from Russia

Russian power producers have several competitive advantages: they don't have to fulfil the same level of environmental and nuclear safety requirements as the producers in the Baltic States, internal fuel prices in Russia are lower than export prices etc. Therefore Russian producers are able to out-compete existing and potential new power producers in the Baltic States if any restrictions are not set towards electricity imports from Russia. Due to the potential lack of power in Russia in the coming decade, electricity prices could increase rapidly, having a negative impact to the economies of the Baltic States and to the security of power supply.

3. Potential sharp increase of electricity prices

Electricity prices in the Baltic States will increase sharply due to the closure of Ignalina NPP, re-building of Narva PP, the increase in the share of renewable electricity production and investments into construction of new generating capacities. Also potential abuse of the market power might bring along unreasonable prices of electricity.

4. Unwanted developments of energy-mix

Each Member State of the EU can define for itself the energy mix. However, as a result of inter alia wrong incentives in liberalized energy markets and/or in the emission trading, the energy mix can turn out to be completely different compared to the desired one. Special attention should be given to the potential dominance of natural gas in the electricity markets due to wrong incentives from the EU and national regulations.

5. Threat of major network outages and/or blackouts.

Inadequate investments needed for the modernization and development of electricity transmission networks or its development at the existing network renovation may cause the risk of severe system accidents. Existence of large generation units jeopardize aspirations of the Baltic States to comply with the UCTE requirements as for separate control areas in each country as well as for separate control block of the Baltic integrated power system.

6. Uncertainty regarding long-term supply of fuel for Lithuanian power plants

There are no long-term fuel supply contracts, which may also have negative impact to the neighbouring energy markets after closure of Ignalina NPP.

Natural Gas

1. Unpredictability of supplies

Due to weak supply contracts the gas supply to the Baltic States is exposed to disruptions and potential sharp increases of gas prices.

2. Natural gas supplies after the closure of Ignalina NPP

After the closure of Ignalina NPP electricity supply in Lithuania will be more dependent on natural gas. This raises gas availability issues in the whole region, leads to dominance of one supplier and reduces significantly security of supplies.

Liquid Fuels

1. Potential concentration of the market

Mergers, acquisitions and exit from the market can easily create dominant players in the liquid fuel retail market.

2. Potential crude oil and its products' supply interruptions

Potential interruptions of crude oil and/or its products supply or transit have high impact on the economies of the Baltic States. Also the systems of the use of emergency stocks of liquid fuels are not tested yet in the Baltic States.

3. Potential environmental impact of transit

Large volumes of transit of liquid fuels are exposed to the risk of leakages and accidents, which might have devastating impact to the surrounding nature and wildlife.

Baltijos valstybių energetikos sektoriaus veiksmų planas

Strateginis tikslas	Uždaviniai	Esama būklė	Rodiklis	Vyriausybės veiksmai
1. Padidinti energijos tiekimo saugumą			<i>Sumažėjusi rizika dėl nesėkmių energetikos sistemose</i>	
1.1	Padidinti pirminės energijos šaltinių įvairovę	<i>2005 m. Baltijos valstybėse energija buvo pagaminta naudojant 15 skirtingų pirminės energijos šaltinių</i>	<ol style="list-style-type: none"> 1. Iki 2016 m. pirminės energijos šaltinių, naudojamų energijai gaminti, turi padidėti 2. Energijos, pagamintos iš alternatyvių energijos šaltinių (t.y. nenaudojant atominės energijos, gamtinių dujų, hidroenergijos, naftos produktų ir skalūnų) dalis kasmet didėja 	<i>Iki 2008 m. pabaigos pasiūlyti harmonizuotus teisės aktus, skatinančius tolesnį energijos išteklių diversifikavimą</i>
1.2	<i>Sumažinti priklausomybę nuo elektros energijos importo iš trečiųjų šalių</i>	<i>2005 m. iš Baltijos valstybių į trečiąsias šalis eksportuota 7.9 % pagamintos elektros energijos</i>	<i>1. Pradedant 2016 m. Baltijos valstybės turi patenkinti savo poreikius vietinėse elektrinėse pagaminta elektros energija bet kuriuo laiko momentu</i>	<i>Iki 2007 m. pabaigos reguliuoti elektros energijos importą iš trečiųjų šalių</i>
1.3	Efektyviai (ekonomiškai pagrįstais būdais) sukaupti racionalias skystojo kuro atsargas	<ol style="list-style-type: none"> 1. 2006 m. EE buvo įsipareigojusi sukaupti 35 dienų atsargas (sukaupta 44 dienų atsargos); LV buvo įsipareigojusi sukaupti ... dienų atsargas (sukaupta ... dienų atsargos); LT buvo įsipareigojusi sukaupti 90 dienų 	<ol style="list-style-type: none"> 1. Skystojo kuro atsargos turi būti sukauptos iki 2010 m. 2. Dvišaliai susitarimai dėl saugojimo tarp Baltijos valstybių turi būti pasirašyti iki 2008 m. 	<ol style="list-style-type: none"> 1. Vykdyti skystojo kuro atsargų kaupimo iki 2010 m. nustatytą tempą 2. Parengti ir pasirašyti dvišalius susitarimus tarp Baltijos valstybių dėl skystojo kuro atsargų

Strateginis tikslas	Uždaviniai	Esama būklė	Rodiklis	Vyriausybės veiksmai
		<p><i>atsargas (sukaupta 60 dienų atsargos)</i></p> <p>2. <i>Nėra dvišalių susitarimų dėl skystojo kuro atsargų tarp Baltijos valstybių</i></p>		<i>saugojimo iki 2008 m. pabaigos</i>
1.4	Integruoti elektros energetikos ir dujų tiekimo sistemas į ES energetikos sistemas	<i>Estlink (350 MW) jau veikia, LIT-POL, LIT-SWE nagrinėjamos, Estlink 2 tik kaip variantas</i>	<p>1. <i>Iki 2012 m. elektros jungčių su kitomis ES šalimis pajėgumas bus ne mažiau kaip 1500 MW</i></p> <p>2. <i>Iki 2015 m. bus pradėta eksploatuoti nauja dujų jungtis su kitomis ES šalimis</i></p>	<p>1. <i>Patobulinti teisinę bazę siekiant motyvuoti naujų jungčių statybą</i></p> <p>2. <i>Paremti kompanijų bendradarbiavimą naujų jungčių parengimui</i></p>
1.5	<i>Pagerinti energetikos infrastruktūros patikimumą ir kokybę</i>		<p>1. <i>Infrastruktūros gedimų skaičius kasmet mažės</i></p> <p>2. <i>Vartotojų, kurie bus atjungti dėl infrastruktūros gedimų, kasmet mažės</i></p> <p>3. <i>Vartotojų nusiskundimų dėl kokybės skaičius kasmet mažės</i></p>	<p>1. <i>Energetikos infrastruktūros modernizavimo ir atnaujinimo motyvavimas</i></p> <p>2. <i>Parengti tinklų paslaugų standartus ir juos racionaliai tobulinti</i></p> <p>3. <i>Sukurti reikalingų investicijų programą ir grąžą energetikos kompanijoms</i></p>
1.6	Intensyvinti vietinių energetikos kompanijų bendradarbiavimą projektuose,		<i>Padidinti projektų įgyvendintų bendradarbiaujant Baltijos energetikos kompanijoms, skaičių</i>	1. <i>Skatinti vietinių energetikos kompanijų bendradarbiavimą projektuose, turinčiuose reikšmę regionui (nauja atominė elektrinė, naujos</i>

Strateginis tikslas	Uždaviniai	Esama būklė	Rodiklis	Vyriausybės veiksmai
	turinčiuose reikšmę regionui			<i>jungtys, nauja požeminė dujų saugykla, suskystintų dujų terminalas ir kt.)</i>
1.7	Mažinti energetikos sistemų pažeidžiamumą		<ol style="list-style-type: none"> 1. <i>Baltijos elektros energetikos sistemos rezervinė galia turi būti ne mažesnė kaip ...%,</i> 2. <i>Didžiausio Baltijos elektros energetikos sistemos bloko galia turi ne viršyti 20% nuo maksimalios apkrovos</i> 3. <i>Trečiosios šalies veiksmų, paveikiančių daugiau kaip 100 000 energijos vartotojų, skaičius turi būti 0,</i> 4. <i>Maksimali dalis vartotojų, kuriems energija ekstremalių situacijų (Force Majeure) atveju, Baltijos šalyse turi neviršyti 3% 2010 m., 2% 2015 m.</i> 	<ol style="list-style-type: none"> 1. <i>Parengti motyvus investicijoms, skirtoms sumažinti elektros energetikos sistemos pažeidžiamumą ekstremaliais atvejais (Force Majeure),</i> 2. <i>Pagerinti svarbiausios (kritinės) infrastruktūros apsaugą</i> 3. <i>Skatinti naujas paskirstytosios energijos gamybos įmones</i>
1.8	Sumažinti priklausomybę nuo energijos importo	<i>2005 m. importuojamos energijos dalis Baltijos valstybėse buvo ...% (EE 31%, LV ..%, LT 56%)</i>	<i>Importuojamos energijos dalis Baltijos valstybėse iki 2015 m. bus sumažinta iki ... (alternatyva: kasmet iki 2015 m. sumažinti ...%)</i>	<ol style="list-style-type: none"> 1. <i>Skatinti investicijas į pateisinamus atsinaujinančių energijos išteklių projektus</i> 2. <i>Skatinti pateisinamų atsinaujinančių energijos išteklių vartojimą</i> 3. <i>Nustatyti priimtina šalies priklausomybės nuo</i>

Strateginis tikslas	Uždaviniai	Esama būklė	Rodiklis	Vyriausybės veiksmai
				<i>importuojamos energijos lygį</i>
1.9	Padidinti tiekėjų įvairovę	<i>Baltijos valstybėse yra 3 pagrindiniai tiekėjai elektros rinkoje ir 5 pagrindiniai tiekėjai dujų rinkoje</i>	<i>Tiekėjų skaičius Baltijos energijos rinkoje iki 2010 m. padidės</i>	<i>Iki 2007 m. pabaigos pašalinti kliūtis ES kompanijoms patekti į nacionalines energijos rinkas</i>
2. Padidinti energetikos sektoriaus darnumą			Iki 2015 m. pagrindiniai energetikos rodikliai bus artimi ES vidurkiui. Pirminės energijos intensyvumas (BVP vertinant perkamosios galios pariteto rodikliais) Baltijos valstybėse 2015 m. bus artimas ES vidurkiui	
2.1	Padidinti galutinės energijos vartojimo efektyvumą		<i>Metinis galutinės energijos sąnaudų prieaugis turi ne viršyti 30% nuo BVP padidėjimo</i>	<ol style="list-style-type: none"> 1. Skatinti inovacijų ir modernių technologijų diegimą 2. Skatinti racionalų vietinių energetikos sistemų vystymą 3. Įdiegti ir propaguoti efektyvesnius prietaisus 4. Skatinti investicijas, skirtas energijos vartojimo efektyvumui didinti 5. Skatinti vartotojus protingiau naudoti energiją (know-how, namų sertifikatai prietaisams, energijos auditai ir pan.)

Strateginis tikslas	Uždaviniai	Esama būklė	Rodiklis	Vyriausybės veiksmai
				6. Plėsti visuomeninį transportą 7. Didinti reikalavimus automobilių efektyvumui
2.2	Didinti energijos gamybos efektyvumą	<i>Elektros gamybos efektyvumas Baltijos valstybėse yra ...% (EE...%, LV ...%, LT 39%). TE gamybos dalis Baltijos valstybėse yra ...% (EE...%, LV ...%, LT 17.7%)</i>	TE dalis Baltijos valstybių elektros gamybos balanse 2025 m. turi būti ne mažesnė kaip 30%	1. Skatinti investicijas į efektyvesnes technologijas, jei jos pateisinamos ekonomiškai ir aplinkosaugos rodikliais 2. Skatinti optimalų TE indėlį
2.3	Didinti energijos perdavimo ir paskirstymo efektyvumą	<i>2005 m. EE elektros perdavimo nuostoliai 2,7%, paskirstymo nuostoliai 11%, šilumos paskirstymo nuostoliai 22%, LV elektros perdavimo nuostoliai ...%, paskirstymo nuostoliai ...%, šilumos paskirstymo nuostoliai ...%, LT elektros perdavimo nuostoliai 2.8%, paskirstymo nuostoliai 7.5%, šilumos paskirstymo nuostoliai 14.9%</i>	<i>2010 m. perdavimo nuostoliai 2,5%, paskirstymo nuostoliai 7%, šilumos paskirstymo nuostoliai 12%</i>	1. Skatinti investicijas tinklams atnaujinti 2. Skatinti geresnius matavimo ir valdymo svertus, išvengti komercinių nuostolių
2.4	Plačiau naudoti atsinaujinančius, atliekinius ir kitus vietinius energijos išteklius	<i>2005m. EE atsinaujinančių energijos išteklių dalis sudarė 10%, LV ...% (be didelių HE ...%), LV 8.7%, (didelių HE ir HAE 8.3%)</i>	<i>Stabilus atsinaujinančių energijos išteklių dalies energijos struktūroje didėjimas (eliminavus kintančių didelių HE įtaką)</i>	1. Parengti teisinę bazę, skatinančią pateisinamus naujus įrenginius (įmones), naudojant atsinaujinančius ir atliekinius energijos išteklius 2. Skatinti biodegalų gamybą ir naudojimą

Strateginis tikslas	Uždaviniai	Esama būklė	Rodiklis	Vyriausybės veiksmai
				3. Skatinti kitų vietinių energijos išteklių (durpių, skalūnų alyvos produktų ir pan.) naudojimą
2.5	Sumažinti energijos gamybos neigiamą įtaką aplinkai ir žmonių sveikatai		Stabilus santykis visų rūšių teršalų dėl energijos gamybos kasmetinis mažėjimas	<ol style="list-style-type: none"> 1. Iki 2008 m. pabaigos parengti skaidrią programą, motyvuojančią naujų aplinkai palankių technologijų ir priemonių diegimą (tarp jų prognozuojamus prekybos išmetimais ilgalaikius principus) 2. Įgyvendinti ES aplinkosaugos direktyvas laikantis numatytų reikalavimų 3. Pagerinti erdvinio planavimo principus siekiant sumažinti emisijų tiesioginį poveikį visuomenei
2.6	Pagerinti dirbančių specialistų žinias ir gebėjimus		Naujų energetikos specialistų, baigusių mokymo institucijas ir aktyviai dirbančių energetikos sektoriuje, skaičius tenkina Baltijos valstybių poreikius ir užtikrina tolesnę energetikos sektoriaus plėtrą	<ol style="list-style-type: none"> 1. Nustatyti ilgalaikius energetikos sektoriaus įvairiuose lygiuose reikalingų specialistų poreikius 2. Pagerinti jaunų žmonių domėjimąsi energetikos

Strateginis tikslas	Uždaviniai	Esama būklė	Rodiklis	Vyriausybės veiksmai
				<i>sektoriumi</i> 3. <i>Sustiprinti specialistų rengimą įvairiuose lygiuose (universitetuose, koledžuose, vidurinėse mokyklose)</i> 4. <i>Padidinti energetikos sektoriui skiriamų mokslo tiriamųjų darbų %</i> 5. <i>Nuolat stiprinti specialistams skirtus informacijos tinklus</i>
3. Gerinti konkurenciją energijos rinkoje			<i>Konkurencijos būklė adekvačiai atspindi rinkos sąlygas</i>	
3.1	Didinti konkurenciją energijos gamyboje		1. <i>Iki 2007m. pabaigos šalys reguliuos importą iš trečiųjų šalių</i> 2. <i>Adekvatūs kainų signalai bus parengti iki 2008 m. pabaigos</i> 3. <i>Šalies nustatyta energijos struktūra bus pasiekta</i> 4. <i>Energijos kainų priimtimumo indeksas (pagrįstas vartotojams pateiktu klausimynu) turi pagerėti visose Baltijos Valstybėse</i>	1. <i>Reguliuoti tiekimą iš trečiųjų šalių iki 2007m. pabaigos</i> 2. <i>Nustatyti laukiamą šalies energijos balanso struktūrą iki 2008 m. pabaigos</i> 3. <i>Nustatyti konkurencines sąlygas gamintojams, kurios garantuotų laukiamą šalies energijos balanso struktūrą</i> 4. <i>Sukurti saugiklius, siekiant išvengti piktnaudžiavimo rinkoje iki 2007m. pabaigos</i>

Strateginis tikslas	Uždaviniai	Esama būklė	Rodiklis	Vyriausybės veiksmai
				5. Parengti adekvačius kainų signalus iki 2008m. pabaigos
3.2	Didinti konkurenciją energijos tiekime		<ol style="list-style-type: none"> 1. Dideli skirstomieji tinklai turi teisiškai liberalizuoti savo veiklą iki 2007 m. liepos mėn. 2. Dirbtiniai barjerai prekybai ES vidaus rinkoje turi būti panaikinti iki 2007 m. pabaigos 3. Energijos kainų priimtimumo indeksas (pagrįstas vartotojams pateiktu klausimynu) pagerintas visose Baltijos Valstybėse 	<ol style="list-style-type: none"> 1. Reguluoti tiekimą iš trečiųjų šalių iki 2007m. pabaigos 2. Atskirti dideliuose skirstomuosiuose tinkluose pardavimo veiklą iki 2007m. liepos mėn. 3. Panaikinti dirbtinius barjerus elektros ir dujų prekybai ES vidaus rinkoje iki 2007m. pabaigos 4. Liberalizuoti rinkas vartotojams kaip numatyta ES EU aktuose 5. Sukurti saugiklius siekiant išvengti piktnaudžiavimo dėl dominavimo rinkoje
3.3	Stiprinti reguliavimo institucijas		<ol style="list-style-type: none"> 1. Regulatoriaus pralaimėtų teismų skaičius kasmet mažėja 2. Regulatoriaus priimtimumo indeksas (remiantis vartotojams ir energetikos kompanijoms pateiktu klausimynu apie regulatoriaus veiklą) padidėjo visose Baltijos valstybėse 	<ol style="list-style-type: none"> 1. Parengti reguliavimo institucijų patirties apibendrinimą (know-how) 2. Užtikrinti reguliavimo institucijoms racionalų biudžetą

Baltic States energy sector Plan of Actions

Strategic Objective	Tasks	Current situation	Indicator	Actions to take by the Governments
1. Improve the Security of Energy Supply			<i>Reduced risk of failures of the energy system</i>	
1.1	Increase diversification of primary energy sources	<i>In 2005 energy was produced from 15 different primary energy sources in the Baltics</i>	3. The number of primary energy sources used for energy production has increased by 2016 4. The share of energy production from alternative energy sources (i.e. not nuclear, natural gas, hydro, crude oil products or oil-shale) is increasing year-by-year	<i>By the end of 2008 propose a harmonised legal framework to support further diversification of energy resources</i>
1.2	<i>Decrease the dependence from electricity imports from third countries</i>	<i>The share of electricity exports of the Baltic States to third countries was ...% in 2005</i>	2. <i>From 2016 onwards the Baltic States must be able to cover electricity needs by the local power plants in any moment of time</i>	<i>By the end of 2007 regulate the import of electricity from third countries</i>
1.3	Build up reasonable liquid fuel stocks in the economical way	3. <i>In 2006 EST has an obligation to keep 35 days stocks (has 44 days); LAT has an obligation to keep ... days stocks (has ... days); LIT has an obligation to</i>	3. <i>The liquid fuel stocks are built up by 2010,</i> 4. <i>Bilateral agreements on storage within the Baltic States are signed by 2008</i>	3. <i>Follow agreed pace for the creation of the liquid fuel stocks until 2010</i> 4. <i>Prepare and sign bilateral agreements for the storage of</i>

Strategic Objective	Tasks	Current situation	Indicator	Actions to take by the Governments
		<i>keep ... days stocks (has ... days).</i> 4. <i>There are no bilateral agreements on liquid fuel stocks between the Baltic States.</i>		<i>liquid fuel stocks between the Baltic States by the end of 2008</i>
1.4	Integrate electricity and gas supply systems into the EU energy systems	<i>Estlink (350 MW) is available, LIT-POL, LIT-SWE under consideration, Estlink 2 as an idea</i>	3. <i>By 2012 the capacity of power interconnectors towards other EU countries is at least 1500 MW</i> 4. <i>By 2015 new gas interconnection towards other EU countries is operational</i>	3. <i>Improve legislation to incentivise the building of new interconnectors</i> 4. <i>Support the cooperation of companies for preparation of new links</i>
1.5	<i>Improvement of reliability and quality of the energy infrastructure</i>		4. <i>The number of failures of infrastructures shall be decreasing year-by-year</i> 5. <i>The number of customers affected by the failures of infrastructure is decreasing year-by-year</i> 6. <i>The number of customers with quality problems is decreasing year-by year</i>	4. <i>Incentivise the modernisation and renovation the energy infrastructure</i> 5. <i>Set the network service standards, which will develop stepwise</i> 6. <i>Create a framework for the needed investment levels and returns for the energy companies</i>
1.6	Intensify co-operation of the local energy companies in projects with regional interest		<i>Increase in the number of implemented cooperation projects among the Baltic energy companies</i>	2. <i>Promote the cooperation of local energy companies on projects with regional interest (new nuclear power plant, new interconnections, new underground gas storage, liquefied gas</i>

Strategic Objective	Tasks	Current situation	Indicator	Actions to take by the Governments
				<i>terminal etc.)</i>
1.7	Decrease the vulnerability of energy system		5. Reserve level of the Baltic power system should be at least...%, 6. The load of largest unit in the Baltic power system should not exceed ...% of the load, 7. Number of acts of third parties affecting more than 100 000 energy users should stay at 0, 8. Max.share of affected customers by a Force Majeure case in the Baltics should be no more than 3% by 2010, 2% by 2015	4. Develop incentives to investments to decrease vulnerability of the energy system in cases of Force Majeure, 5. Improve the protection of critical infrastructure. 6. Promote disperse location of new energy production facilities.
1.8	Reduce the dependence on the imported energy	<i>In 2005 the share of imported energy to the Baltics was ...% (EST 31%, LAT ..%, LIT ...%)</i>	<i>The share of imported energy to the Baltics is reduced to the level of ... by 2015 (alternatively: yearly reduction until ...% until 2015)</i>	4. Promote the investments into justified renewables projects 5. Promote the use of justified indigenous energy resources. 6. Define in the national level the acceptable dependence level from the imported energy sources
1.9	Increase diversification of suppliers	<i>There are 3 main suppliers in the electricity market and 5 main suppliers in the gas market in the Baltics</i>	<i>Number of suppliers in the Baltic market has increased by 2010</i>	<i>By the end of 2007 remove obstacles for entering the national energy markets by the EU companies</i>
2. Increase the			By 2015 the main energy indices shall be in the EU average level.	

Strategic Objective	Tasks	Current situation	Indicator	Actions to take by the Governments
sustainability of the energy sector			<i>TPES/GDP (in Power of Purchasing Parities) of the Baltic States shall be in the EU average level by 2015</i>	
2.1	Increase the efficiency of final consumption		<i>Year-to-year increase in the final energy consumption should not exceed 30% of the increase of GDP</i>	<ul style="list-style-type: none"> 8. <i>Promote the introduction of innovations and modern technologies</i> 9. <i>Promote rational development of local energy systems.</i> 10. <i>Introduce and demonstrate more energy efficient appliances</i> 11. <i>Promote investments into energy efficiency.</i> 12. <i>Promote wiser use of energy by the customers (know-how, certificates for houses and appliances, energy audits etc.)</i> 13. <i>Increase the use of public transport</i> 14. <i>Increase the efficiency requirements for cars</i>
2.2	Increase the efficiency of energy generation	<i>In the Baltics the efficiency of power production is ...% (EST...%, LAT ...%, LIT...%). The share of CHP production in Baltics is ...% (EST...%, LAT ...%, LIT...%)</i>	The share of CHP in the Baltics should be at least 30% electricity production by 2025	<ul style="list-style-type: none"> 3. <i>Promote investments into more efficient technologies when they are economically and environmentally sound</i> 4. <i>Promote optimal use of</i>

Strategic Objective	Tasks	Current situation	Indicator	Actions to take by the Governments
				<i>CHP-s</i>
2.3	Increase the efficiency of energy, transmission and distribution	<i>2005: EST power transmission losses 2,7%, distribution losses 11%, heat distribution losses 22%.. LAT power transmission losses ...%, distribution losses ...%, heat distribution losses ...%. LIT power transmission losses ...%, distribution losses ...%, heat distribution losses ...%</i>	<i>By 2010 transmission losses 2,5%, distribution losses 7%, heat distribution losses 12%</i>	<ol style="list-style-type: none"> 3. <i>Promote investments into upgrades in networks</i> 4. <i>Promote better measurement and control mechanisms to avoid commercial losses</i>
2.4	Wider use of renewables, waste and other local sources for energy production	<i>In 2005 EST share of RES was 10%, LAT ...% (without large hydro ...%), LIT...%, (without large hydro and pumped storage ...%)</i>	<i>Stable increase of the share of renewables in the energy mix (eliminating the influence of varying resources in large hydro stations)</i>	<ol style="list-style-type: none"> 4. <i>Develop legislation to support feasible introduction of new RES and waste facilities</i> 5. <i>Promote the production and the use of biofuels</i> 6. <i>Promote the use of other local energy sources (peat, shale oil products etc.)</i>
2.5	Reduction of the negative impact of energy production on environment and public health		<i>Stable reduction of all main emissions from energy production year-by-year</i>	<ol style="list-style-type: none"> 4. <i>Create clear framework to incentivise the introduction of new environmentally sound technologies and measures (inter alia predictable emission trading principles for long term) by the end of 2008</i> 5. <i>Implement the EU environment directives in</i>

Strategic Objective	Tasks	Current situation	Indicator	Actions to take by the Governments
				<i>accordance with requirements</i> 6. <i>Improve the spatial planning principles to reduce direct contact of the public with emissions</i>
2.6	<i>Improve the knowledge and skills of the specialists employed</i>		<i>Number of new energy specialists from the educational institutions active in the energy sector covers the needs of the Baltic States and guarantees the further development of the sector.</i>	6. <i>Define the need for specialists in different levels of energy sector in the long run</i> 7. <i>Improve the interest of young people to the energy sector</i> 8. <i>Strengthen the preparation of specialists in the different levels (universities, technical schools, secondary schools)</i> 9. <i>Strengthen RDD%I of the energy sector</i> 10. <i>Continuously strengthen the information networks for specialists</i>
3. Improve the competition in the energy market			<i>Competition situation reflects adequately the market conditions</i>	
3.1	Improve		5. <i>Import of supplies from third</i>	6. <i>Regulate the supplies from</i>

Strategic Objective	Tasks	Current situation	Indicator	Actions to take by the Governments
	competition in the energy production		<p><i>countries is regulated nationally by the end of 2007</i></p> <p>6. <i>Adequate price signals developed by the end of 2008</i></p> <p>7. <i>Defined national energy mix is achieved</i></p> <p>8. <i>Energy price acceptability index (based on the questionnaire for the customers) has improved in all Baltic States</i></p>	<p><i>third countries by the end of 2007</i></p> <p>7. <i>Define expected national energy mix by the end of 2008</i></p> <p>8. <i>Establish competition conditions for generators to guarantee expected national energy mix</i></p> <p>9. <i>Create safeguards to avoid the abuse of market position by the end of 2007</i></p> <p>10. <i>Create adequate energy price signals by the end of 2008</i></p>
3.2	Improve competition in energy supply		<p>4. Large distribution networks have legally unbundled their activities by July 2007</p> <p>5. Artificial barriers to trade within the EU have been removed by the end of 2007</p> <p>6. Energy price acceptability index (based on the questionnaire for the customers) has improved in all Baltic States</p>	<p>6. <i>Regulate the supplies from third countries by the end of 2007</i></p> <p>7. <i>Unbundle large distribution networks from sale activities by July 2007</i></p> <p>8. <i>Remove the artificial barriers to electricity and gas trade within the EU by the end of 2007</i></p> <p>9. <i>Liberalise the markets for customers as foreseen by the EU regulations</i></p>

Strategic Objective	Tasks	Current situation	Indicator	Actions to take by the Governments
				<i>10. Create safeguards to avoid the abuse of market dominance</i>
3.3	Strengthen regulatory authorities		3. <i>Number of lost court cases by the Regulators has decreased year-by-year</i> 4. <i>Regulators acceptability index (based on the questionnaire for the customers and energy companies about the activities of the Regulator) has increased in all Baltic States</i>	3. <i>Develop know-how of the regulatory authorities</i> 4. <i>Guarantee reasonable budget for the regulatory authorities</i>

TURINYS

	Psl.
1. Baltijos energetikos strategija (<i>Projektas 2006-12-08</i>)	3
2. Baltic energy strategy (<i>Draft 2006-12-08</i>)	11
3. <i>PRIEDAI:</i>	
3.1. <i>Lietuvos ekspertų projektas, pasiūlytas Estijos ir Latvijos ekspertams, įvertinus Estijos ekspertų redakcines pastabas 2006-11-22 variantui „Baltic energy strategy“ (Draft 2006-12-05)</i>	20
3.2. <i>Lietuvos ekspertų parengtas Baltijos energetikos strategijos projekto variantas „Baltic energy strategy“ (Draft 2006-11-22)</i>	29
3.3. <i>Suderinta Baltijos energetikos sektoriaus strateginė analizė</i>	41
3.4. <i>Baltijos valstybių energetikos sektoriaus veiksmų planas</i>	53
3.5. <i>Baltic States energy sector Plan of Actions</i>	61