

PROPOSED CHANGES TO

THE 2018-12-14 DRAFT OF INTEGRATED NATIONAL ENERGY AND CLIMATE
PLAN OF THE REPUBLIC OF LITHUANIA

DRAFT PLAN ENGLISH VERSION, PAGE 2

Abbreviations

AROPE	At Risk of Poverty or Social Exclusion
BEMIP	Baltic Energy Market Interconnection Plan
BENTE	Baltic Energy Technology Scenario study
Biomass CHP	Biomass Combined Heat and Power
BJVK	Bio generation development cluster
CCS	Carbon Capture and Storage
CCUS	Carbon Capture, Utilisation and Storage
CEF	Connecting Europe Facility
CO ₂	Carbon Dioxide
DHS	District Heat Supply
DSO	Distribution System Operator
EE	Energy Efficiency
EIS	European Innovation Scoreboard
EOR	Enhanced Oil Recovery
ENTSO-E	European Network of Transmission System Operators (electricity)
ETS	Emissions Trading System
EU	European Union
EV	Electric Vehicle
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIPL	Gas Interconnection Poland–Lithuania
Ignalina NPP	Ignalina Nuclear Power Plant
Incukalns UGS	Incukalns Underground Gas Storage
IT	Information Technology
JESSICA	Joint European Support for Sustainable Investment in City Areas
ktoe	Kilo Tons of Oil Equivalent
LitPol Link	Lithuania–Poland Electricity Interconnection
LNG	Liquefied Natural Gas
LRAs	Local and Regional Authorities
LULUFC	Land Use, Land-use Change, and Forestry
mFRR	Manual Frequency Restoration Reserve
Mtoe	Million Tons of Oil Equivalent
MWh	Megawatt hour
NECP	Integrated National Energy and Climate Plan
NEIS	National Energy Independence Strategy
NETP	Nordic Energy Technology Perspectives
NordBalt	Submarine Power Cable between Lithuania and Sweden
NZEB	Nearly Zero-energy Buildings
PaMs	Policies and Measures
PCI	Project of Common Interest
POTP	Post-taxes Total Price
RDI	Research, Development and Innovations
RES	Renewable Energy Sources
RES-district H&C	RES-district Heating and Cooling
RES-households H&C	RES-households Heating and Cooling
RES-E	RES-Electricity
RES-T	RES Transport
RGMCG	Regional Gas Market Coordination Group
SPM	Single-point Mooring
TSO	Transmission System operator

support eco-friendly, energy saving green R&D and innovation activities producing and realizing high added-value products. Moreover, energy and sustainable environment related area is also supported through pre-commercial procurement aiming at creating innovative products in this field.

The potential of Lithuanian science and study institutions and businesses in the solar energy field is relatively high. The institutions carry out fundamental and contract-based research in collaboration with Lithuanian and foreign companies and research institutions; highly qualified specialists are being trained. Research related to solar energy, optimisation of combustion processes, energy efficient materials, efficient lighting, industrial biotechnologies, biofuel production, hydrogen technologies and other relevant studies are carried out in Lithuania.

Digitalisation is seen as one of the most important factors for Lithuania's competitiveness improvement worldwide. To ensure Lithuania's timely participation in the processes of the Fourth Industry Revolution the Ministry of Economy has taken active steps to implement the industry digitisation initiative in Lithuania. The establishment of the national industry digitisation platform "Pramonė 4.0" is to be considered among the major industry digitisation initiative implementation objectives.

To increase the value added generated by the industry sector, to accelerate the introduction of digitalisation of industry, to ensure the competitiveness of the Lithuanian industry at international level and to add to more rapid growth of the Lithuanian economy the creation of favourable conditions for close cooperation of industry, business, the academic community and public authorities is to be firstly considered the objectives of the "Pramonė 4.0" platform, which is formed in mid-2017. Secondly, it is necessary to ensure that every company in Lithuania could make full use of the benefits offered by digital innovation in the field of product improvement, process optimisation and adapting the existing business models to the needs of the digital era.

The introduction of digital processes in companies will lead to the efficient use of resources, reduced quantities of waste and reduced air pollution.

The government regards CCS as an unavoidable transition technology that can be used to reduce carbon emissions in sectors where no cost-effective alternatives will be available in the near future. In addition to the use of CCS for emissions reductions in industry, CCS may, in the future, play an important role in the realisation of negative emissions and may pave the way for the development of green hydrogen and CCUS.

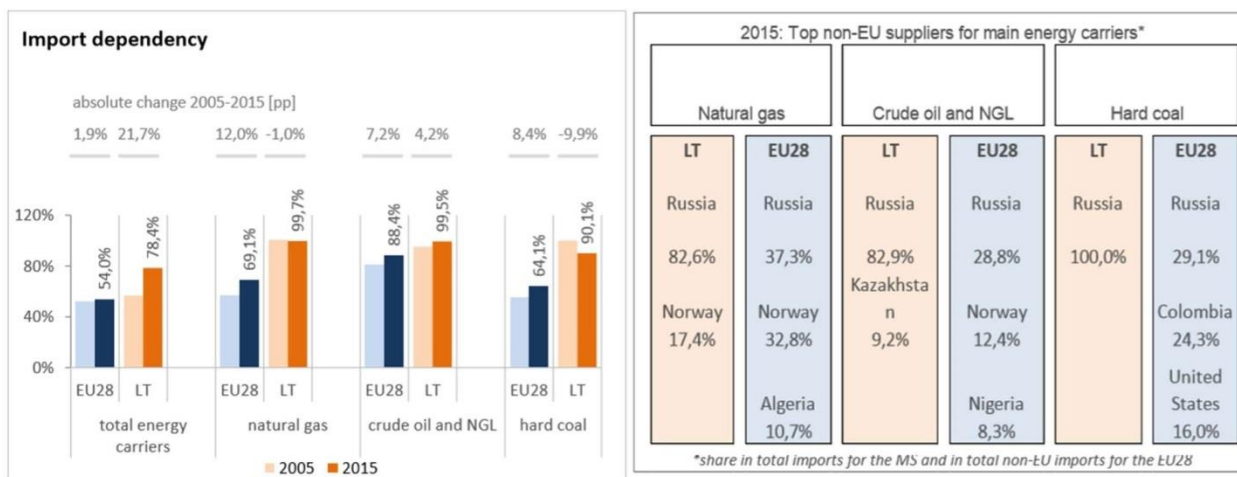
In the absence of nuclear generation and with very limited hydro-powered generation, CCS seems to be the most promising technology available to decarbonise major industrial GHG contributors including electricity generation, cement manufacture, oil refining, and fertilizer production. Subject to economically viable and secure development, the Government recognises CCS as a potential bridging technology that could support the transition to a low carbon energy future.

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Table 3.1.3.1. The summary table of adaptation policies and measures in different sectors in 2021 – 2030.

Measures	Objectives	Entities responsible for implementing the policy	Planned budget ^{1,2,3} , MEUR
Cross-cutting measures			
1. Ensure continuous improvement of the meteorological and hydrological monitoring network	Regular update of the meteorological and hydrological observation system	Ministry of Environment (Lithuanian Hydrometeorological Service)	15.81 ¹
2. Improvement of the geological monitoring network	Regular update of the surface and underground water monitoring system – to supplement it with indicators from studies on climate change effects	Ministry of Environment (Lithuanian Geological Service)	X ¹
3. Modernize the weather forecast and warning system to Multi-hazard Impact-based Services	In 2022, modernize the weather forecast and warning system to Multi-hazard Impact-based Services	Ministry of Environment (Lithuanian Hydrometeorological Service)	0.15 ^{1,2}
4. Improvement of the Climate scenarios and adaptation options	Regular update the climate scenarios and climate adaptation measures.	Vilnius university, Geoscience institute	X ³
5. Improvement of risk management plans	By 2030, prepare national and local plans for the recognition of climate risks and adaptation	Ministry of Interior Ministry of Environment, Municipalities	0.1 ³
6. Participation in international cooperation	Constantly Participate in the international cooperation for climate adaptation and in the development of an international climate adaptation policy	Ministry of Environment	0.1 ²
7. Improvement of the warning system	Regular update and strengthen capability to respond to the consequences of extreme natural phenomena caused by climate change	Ministry of Interior	X ¹
8. Improvement of national building standards	By 2030, national building standards should be developed keeping in mind that infrastructure projects need to withstand the current and future impacts of climate change.	Ministry of Environment	0.1 ¹
9. Counselling of the business sector on adaption to climate change	By 2023, develop an information and consultation infrastructure for business.	Ministry of Economy	X ¹
10. Improvement and upgrading ICT infrastructure	Improvement and upgrade ICT (the telecommunication network and its elements such as terrestrial cables, submarine cables, wireless antennas, satellite networks, towers, telecom offices, data centres and customer premises equipment) infrastructure to adapt to the effects of climate change	Communications Regulatory Authority of the Republic of Lithuania	X ¹
11. Improvement of power generation infrastructure, energy distribution networks and energy storage	Improvement and upgrade of power generation infrastructure, energy distribution networks and energy storage to adapt to the effects of climate change	Ministry of Energy	X1
12. Improvement of waste infrastructure	Improvement of waste infrastructure to adapt to the effects of climate change	Ministry of Environment	X1

13. Development sites for CCS in Lithuanian territory	CCS will allow the decarbonisation of major Lithuanian industries (including but not limited to cement production, oil refining, fertilizer manufacture), so that these major employers and major contributors to the national economy can continue operation in a low carbon environment	Ministry of Energy	X²
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(source: Eurostat)

Figure 1.1.3. Energy import dependency

Natural gas. Lithuania is highly dependent on energy imports, the vast majority of which are coming from Russia. In 2015, 78% of Lithuania's energy consumption came from imports, of which about 83% came from Russia. However, for natural gas, the Liquefied Natural Gas (LNG) terminal in Klaipėda that started operating in December 2014 is already helping greatly to diversify gas imports.

On the upstream gas market, the Klaipėda LNG terminal is sufficient to cover around 90% of all current demand of the three Baltic States. The gas pipeline Klaipėda-Kuršėnai is also fully functional, but the work on the gas interconnector pipeline with Poland (known as GIPL) is behind schedule. This pipeline will connect the Baltic countries with the continental European gas network for the first time and is essential for the development of the regional market for natural gas. Analysis indicates that oneregional LNG terminal, together with the pipeline projects that are being built in the region (with substantial EU financial support), including the GIPL (Poland-Lithuania) and the Baltic connector (Estonia-Finland), are sufficient to cover future supply needs of the region.

Electricity. Lithuania is part of the Nordic and Baltic wholesale electricity market. The interconnection capacity for electricity in the Baltic States increased to 23.7% in 2017, exceeding the 10% target. This was possible thanks to the commissioning of electricity interconnections with Finland via the Estlink2, with Poland via LitPol Link and with Sweden via NordBalt.

Electricity interconnections and gas imports diversification had a positive impact on energy prices, despite the very high concentration on the wholesale gas market. Better interconnections and the diversification of gas imports via the LNG terminal have increased competition and benefitted Lithuanian electricity and gas consumers (as well as Latvian and Estonian consumers). In 2016, households' electricity and gas prices in Lithuania were already below the EU average.

The next main objective for Lithuania is to synchronise its electricity systems with the European network. For historical reasons, the Baltic States are today operated in a synchronous mode forming the so-called BRELL ring (Belarus-Russia-Estonia-Latvia-Lithuania). The three Baltic States aim to synchronise their grids with the European network by 2025. The core of the work is being carried out within the Baltic Energy Market Interconnection Plan (BEMIP). A dedicated BEMIP working Group was set up supported by the Commission to work on the identification of the most cost-efficient synchronisation scenario that ensures system stability. The infrastructure element of the synchronisation of the Baltic States' electricity system with the European network has been included in the third list of projects of common interest.

ii. Projections of development with existing policies and measures at least until 2040 (including for the year 2030)

This part to be defined in the final version of the Plan

Hydrocarbon Production. Lithuania needs to maximize its production of hydrocarbons in accordance with goal No 5 in the European Energy Security Strategy in which it is explicitly stated that *the exploitation of conventional oil and gas resources in Europe <...> should be developed in full compliance with energy and environmental legislation.* This should include full exploitation of conventional sources of hydrocarbons both onshore and offshore, evaluation of the potential for production from unconventional sources, and use of Enhanced Oil Recovery Techniques (EOR) in conjunction with CCS to increase production.