

APPROVED

By Order No xxx of xxx August 2020 of the
Minister of Energy of the Republic of Lithuania

ACTION PLAN FOR STRENGTHENING THE LITHUANIAN ENERGY INNOVATION ECOSYSTEM

1. Introduction

In order to implement a task of the implementing measure plan for the National Energy Independence Strategy (hereinafter – the NEIS) – strengthening the Lithuanian energy research and innovation ecosystem – the Ministry of Energy of the Republic of Lithuania executed the “Development of the Lithuanian Energy Innovation Ecosystem” project (hereinafter – the Project) in 2019-2020.¹ One of the outcomes of the Project was the Action Plan for Strengthening the Lithuanian Energy Innovation Ecosystem (hereinafter – the Action Plan). This document sets out specific tasks and deadlines for their implementation in the areas of funding, human resources, infrastructure, products and services, science and technology, the regulatory environment, consumers and communication for the 2020-2030 period.

Within the scope of the Project, the Lithuanian energy innovation ecosystem model and its parts were evaluated, analysis was performed of the strengths, weaknesses and threats, and opportunities of the critical parts of the Lithuanian energy innovation ecosystem, and measures were proposed which would help strengthen Lithuania’s energy innovation ecosystem.

The priority axis “Energy and Sustainable Environment” of Smart Specialisation – the state strategy for supporting research and innovation – was also taken into account in preparing the Action Plan. Topics for its implementation:

- 1) Enhancing the interoperability of the distributed and centralised generation, network and energy efficiency system;
- 2) Meeting the needs of existing and new end users, and enhancing energy efficiency and smartness;
- 3) Development of the use of renewable biomass and solar energy sources and the recycling of waste for energy.

¹ The documents for the “Development of the Lithuanian Energy Innovation Ecosystem” project are available on the Ministry of Energy website: <http://enmin.lrv.lt/lt/veiklos-sritys-3/moksliniai-tyrimai-ir-inovacijos-energetikoje/veiksmu-planas-del-lietuvos-energetikos-srities-inovaciju-ekosistemos-sustiprinimo>

2. Definition of the innovation ecosystem

Entrepreneurship and innovation thrive under favourable conditions, when different parts of the country's innovation ecosystem – companies, research institutes, investors, public institutions – interact harmoniously. When we talk about entrepreneurship and innovation, the application of this term means a dynamic community led by a common goal with strong interrelationships based on cooperation, trust and the desire to create added value by sharing technologies and competencies.² In other words, looking at energy innovation as if it were an ecosystem helps to avoid fragmentation, and makes it possible to look for synergy between different actors and areas and strengthen the entire system evenly, without bypassing its individual units.

In the context of the Action Plan, energy innovations are understood as defined in the Republic of Lithuania Law on Energy:³ new or substantially improved products, technologies, business solutions, services, ways of providing such products and services, and business models which, due to new or newly adapted technologies or other reasons, may have a positive effect on energy activities and benefit society.

3. Preconditions for strengthening the Lithuanian energy innovation ecosystem

When the NEIS was approved in 2018, business participation was established as one of the strategic directions for energy progress. The NEIS also established the objective of Lithuania going from being a country that imports energy technology to a country that develops and exports energy technology. Promoting the use of renewable energy sources and improving energy efficiency by implementing building renovation programme and increasing the efficiency of manufacturing industries creates a large market for these services and the opportunity to create jobs and develop human resource capacity and innovative technologies for low greenhouse gas emissions and ambient air pollutants.⁴ This market will open up huge investment potential over the next few years. In the context of the National Energy and Climate Action Plan (hereinafter – the NECP), approximately EUR 14.1 billion in public and private funds are expected to be pulled in by 2030.⁵ The funding is planned to be allocated for infrastructure, human resources, and expanding the research and development (R&D) base. In response to the negative consequences of Covid-19, the

² InnoEnergy “Positioning Lithuanian Energy Agency Within the National & International Innovation Ecosystem”, p. 1

³ Article 2(6¹).

⁴ NEIS, p. 7, item 1.4.

⁵ Assessment of the Impact of the Planned Policies and Measures Presented in the Lithuanian Integrated National Energy and Climate Action Plan on the Macro-economy, Skills and Social Aspects, p. 41.

DNA Plan for the Economy of the Future provides for EUR 324.4 million in new and additional investments in the field of Climate Change and Energy.⁶

A well-functioning energy innovation ecosystem would contribute to improving the conditions for local producers and researchers to further develop and strengthen the innovative products created in the country. It would also create conditions and incentives for new products and services to emerge. In this case, part of the investments necessary to achieve the goals set in the NEIS and the NECP could remain in Lithuania and contribute to the economic growth of the entire country. In light of this, and in order to make the most of the country's potential in the development of innovative products and services and the objective of Lithuania going from being a country that imports energy technology to a country that develops and exports energy technology, it is expedient to define the parts of the Lithuanian energy innovation ecosystem and look for measures to strengthen these parts and their interaction.

4. Expected outcome

Implementation of the measures provided for in the Action Plan will help accomplish the goal set out in the NEIS for the research and development being carried out and the products being created in Lithuania to be put into industrial production and to become part of Lithuanian exports, thus contributing to the country's economic growth.⁷ In addition, as envisaged in the NECP, the measures of the Action Plan will contribute to the growth of exports and the development of new types of business in the country, including the use of hydrogen in energy, industry and transport, and analysis of further carbon capture, use and storage technologies and their application possibilities in Lithuania.⁸

The Action Plan also provides for the measure "8.4. Develop a system of indicators to measure the progress of energy innovation". This system is planned to be used to conduct annual assessments of the condition of the Lithuanian energy innovation ecosystem and to enable its continuous progress.

⁶ Ateities ekonomikos DNR, p. 10 <http://lr.v.lt/uploads/main/documents/files/2010519%20AED%20planas.pdf>

⁷ NEIS, p. 51.

⁸ NECP, p. 51.

Task	Measure	Implementation period	Indicator	Responsible for execution
FUNDING				
1. Creating a favourable “Funding” part of the energy innovation ecosystem	1.1. Under the right conditions, invest in the Innovation Promotion Fund in order to promote research, development and innovation (RD&I) related to the energy sector, and support pilot projects in the field of energy, giving priority to projects that are in line with the objectives established in the NEIS and the NECP	Q4 2021	Ex ante assessment performed	ENMIN, EIMIN, FINMIN
	1.2. Create an energy sector start-up acceleration programme in order to ensure the business development of micro and small enterprises related to the energy sector	Q4 2022	Programme created	ENMIN, energy undertakings
	1.3. Create a funding programme designed to promote the development and commercialisation of innovative products, services and technologies in the field of renewable energy sources	Q2 2021	Funding programme created	ENMIN, EIMIN, MITA
	1.4. Encourage state-controlled energy undertakings to conduct pre-commercial procurement and public procurement of innovation	Ongoing	Steady growth in the number of pre-commercial procurement and public procurement of innovation each year	ENMIN, EIMIN, FINMIN, state-controlled energy undertakings
	1.5. Establish a support scheme for pre-commercial procurement and public procurement of innovation, by ensuring funding	Q1 2021	Support scheme for the 2021-2027 funding period	EIMIN, ENMIN, MITA
	1.6. Provide the European Commission and	Q3 2020	Experts able to	ENMIN,

	the Innovation and Networks Executive Agency (hereinafter – the INEA), which manages Innovation Fund projects, with consultations on projects funded by the Innovation Fund		provide consultations identified	ME
	1.7. Actively participate in events for projects financed by the European Commission and the INEA Innovation Fund, carry out activities that ensure dissemination of the fund’s opportunities among Lithuanian energy undertakings, and ensure that Lithuania submits at least one energy project/application to the planned 2020 call for proposals	Q2 2021	At least one project/application submitted	ENMIN, LEA, energy undertakings
	1.8. Participate in the development of the planned sectoral innovation funding system in order to ensure that the energy sector is one of the areas financed	Q4 2020	A funding model as favourable as possible for the energy sector	ENMIN, MITA
	1.9. Actively participate in identifying and selecting projects for the “Clean Energy Transition” sub-programme within LIFE 2021-2027	2021-2027	At least two projects/applications submitted	ENMIN, LEA, ME, APVA, energy undertakings
	1.10. Examine opportunities for attracting foreign direct investment (hereinafter — FDI) to the energy sector and develop a scheme for long-term attraction of investment	Q4 2021	Feasibility study carried out on attracting FDI to the energy sector; if necessary, a scheme for FDI attraction developed and adapted to the energy sector	ENMIN, EIMIN, Invest Lithuania, Enterprise Lithuania

	1.11. Initiate an EnergyTech project designed to promote the development of EnergyTech start-ups in Lithuania and increasing their visibility	Q3 2021	Approved project	ENMIN, EIMIN, MITA
	1.12. Make proposals which would allow energy innovation companies to gain better access to bank financing (a measure to reduce bank risk and encourage investment in energy innovation)	Q4 2021	Increased energy innovation sector loan portfolio at banks	ENMIN, EIMIN, FINMIN
	1.13. Compile a list of experts in the energy sector that funding providers could use as a basis when using energy experts for evaluating energy R&D investment projects that have been submitted (or add to the existing lists of MITA, LMT experts)	Q4 2022	Compilation of a list of energy experts	ENMIN, MITA, LMT
	1.14. Conduct a survey of companies in the energy sector to clarify the situation regarding their use of the corporate tax relief for companies developing new products or improving them. After the survey, make suggestions to the responsible authorities for improving the measure	Q3 2020	Proposals submitted for improvement of the relief	ENMIN
	1.15. Ensure adequate funding for the Clean Energy Transition European Partnership	2021-2027	At least as much money as was invested taken back through the participation of Lithuanian science	ENMIN MESS FINMIN
	1.16. Actively participate in the Baltic-Nordic Energy Research programme	Q4 2021	At least as much money as was invested taken back through the participation of	ENMIN, science institutions

			Lithuanian science	
HUMAN RESOURCES				
1. Creating a favourable “Human Resources” part of the energy innovation ecosystem	<p>2.1. Ensure demand that meets the needs of specialists in the energy sector (heat, electricity, RES and others) and popularisation of the energy profession in Lithuania:</p> <p>2.1.1. Identify the need for traditional energy professionals in the long-term perspective</p> <p>2.1.2. Prepare lists of new energy specialities and communicate them</p> <p>2.1.3. Create a continuous programme for the popularisation of energy studies, involving energy sector companies and associated structures and other industrial companies (energy undertaking scholarships, paid internships at local companies, participation in studies/career fairs, communication)</p> <p>2.1.4. Increase the attractiveness and modernity of study programmes in the field of energy (rename and update study programmes)</p> <p>2.1.5. Create a communication plan for energy popularisation (development of an energy ambassador programme for students/schoolchildren, visits to schools, school field trips to energy undertakings before choosing a profile in the last grades of school)</p> <p>2.1.6. Establishment of funded doctoral places at universities</p>	Ongoing	Stabilisation of enrolment in energy specialities in 2021 and steady growth from 2022 onwards	ENMIN, LEA, NERC, energy sector companies and associations, MESS, LMT, institutions of science and studies
	2.2. Encourage students to analyse urgent	Ongoing	Among technology	ENMIN, energy

	issues raised by the state and energy undertakings in their master's and doctoral theses		university students, at least five research papers per year analysing the problems of the energy sector from 2022 onwards	undertakings and associations, MESS, LEA
	2.3. Expand LEA's competence in the field of energy innovation by entrusting them with additional human and financial resource functions: collecting and systematising data and information on innovative projects, products and solutions in the energy sector, collecting and processing statistics, advising entities on matters related to pre-commercial procurement and innovation public procurement and funding rules for Horizon Europe and other European Union funds, counselling and mentoring energy start-ups	Q4 2021	Expanded LEA functions and administrative capacity	ENMIN, LEA
	2.4. Encourage the establishment and strengthening of innovation units at state- and municipality-controlled energy undertakings in order to increase the innovation dimension of energy undertakings	Q4 2023	Units established at state-controlled energy undertakings or their parent management companies or other selected alternatives implemented by 2023	Energy undertakings, ENMIN
INFRASTRUCTURE				

1. Creating a favourable “Infrastructure” part of the energy innovation ecosystem	3.1. Implement a demonstration project for the production and storage of energy from renewable sources using hydrogen and other innovative technologies	Q3 2022	Implemented demonstration project	LEI, ENMIN, EPSO-G
	3.2. Installation of electricity storage facilities (200 MW) for balancing the electricity system in accordance with the provisions of Regulation 2019/943 and Directive 2019/944	Q4 2021	Implemented project	ENMIN FINMIN EPSO-G
	3.3. Carry out an assessment of the availability of energy sector data for the development of new innovative products and make suggestions for improving accessibility	Q3 2020	Prepared proposals	ENMIN, LEA, NERC
	3.4. Analyse the attractiveness and accessibility of existing open access resources and services for energy technology developers and researchers; make proposals for improving the infrastructure or its attractiveness/accessibility	Q4 2020	Prepared proposals	ENMIN, MITA, energy undertakings, institutions of science and studies
	3.5. Evaluate the possibility of using innovative technologies for the production and supply of heat and cooling. Prepare proposals for long-term solutions for infrastructure development	Q4 2021	Prepared proposals	ENMIN, LEI, energy undertakings
	3.6. Implement the project for electricity generation using LNG vaporisation at the Klaipėda LNG terminal (FSRU PowerGen)	Q4 2021	Implemented project	ENMIN, Klaipėdos Nafta, IGNITIS, EPSO-G
PRODUCTS AND SERVICES				

4. Creating a favourable “Products and Services” part of the energy innovation ecosystem	4.1. Organise regular energy sector hackathons ⁹ and innovation workshops according to the defined energy sector innovation needs/formulated problems (national and international dimension) in order to initiate the development of innovative products, services and solutions, and ways to integrate the circular economy into the energy system, as well to make the most efficient use of natural resources, end-use energy and excess and by-pass energy	Ongoing	At least one hackathon per year	ENMIN, ME, energy undertakings, NERC
	4.2. Develop and announce a programme to select and support (with financial and non-financial instruments) innovative pilot projects in the energy sector	Q1 2023	Programme created	ENMIN, LEA, MITA
	4.3. Create a catalogue accessible by electronic means that presents the innovative products/technologies and services of the Lithuanian energy sector and publishes Lithuania’s latest technological achievements, and provide for measures and activities to actively present (publicise) this catalogue	Q2 2021	Number of catalogue users	ENMIN, energy undertakings, institutions of science and studies
	4.4. Create a hydrogen technology development and promotion programme in Lithuania (creation of a Lithuanian hydrogen cluster or working group, evaluation studies, assessment of Lithuania’s integration in the European Union’s hydrogen value-added chain,	Q1 2022	Programme created	ENMIN, AB Amber Grid, LEI, LEA, science institutions, energy undertakings, DH companies

⁹ Hackathon – a software developer “marathon” (multi-day event), during which creative and educational goals are pursued (specific programming products are developed) together with graphic designers.

	possible pilot project)			
	4.5. Analyse opportunities for using smart sector (heat, electricity, etc.) integration technologies (Power-to-Gas, Power-to-X) in the Lithuanian energy sector	Q4 2021	Proposals submitted	ENMIN, EPSO-G, DH companies
	4.6. Promote the development of digital energy innovations in Lithuania	Q4 2020	Completed study or analysis on the need for possible promotion measures in Lithuania	ENMIN
	4.7. Analyse the possibility of centralised deployment of innovative cyber security measures at energy undertakings	Q1 2021	Conclusion and submitted proposals	ENMIN, NERC, National Cyber Security Centre
SCIENCE AND TECHNOLOGY				
4. Creating a favourable “Science and Technology” part of the energy innovation ecosystem	5.1. Identify priority promising energy technologies, clarify the amount of funding for their research and innovation, formulate funding goals and a communication plan for announcing them and presenting them to the public (if necessary, conduct research, the “Lithuanian Energy Technologies Scenarios to 2050” study)	Q4 2020	Prepared proposals	ENMIN, MESS, EIMIN, Statistics Lithuania, LEA, energy undertakings and associations, institutions of science and studies
	5.2. Organise targeted research that would enable the sustainable integration of the energy innovation ecosystem into the development of the country and facilitate the deployment of energy innovations in society	Ongoing	Compilation of a list of targeted research	ENMIN
	5.3. Establish a measure of progress in energy innovation in the strategic documents of the Ministry of Energy	Q2 2021	Established in strategic documents	ENMIN

	5.4. Get involved in European Union energy research and innovation initiatives, such as the SET-Plan Steering Group, Technology Implementation Plans and related formats, and the Horizon Europe research funding programme	Ongoing	Number of meetings attended by ENMIN or MESS representatives at least 100 per cent of all meetings held	ENMIN, MESS, institutions of science and studies
	5.5. Organise regular thematic cross-sectoral events for science and energy undertakings in order to promote cooperation and participation in joint projects	Ongoing	At least three events organised per year	ENMIN, energy undertakings, institutions of science and studies
REGULATORY ENVIRONMENT				
1. Creating a favourable “Regulatory Environment” part of the energy innovation ecosystem	6.1. Create a regulatory sandbox by establishing the model in energy sector legislation	Q3 2020	Legislation in force	ENMIN, NERC
	6.2. Through legislation, establish the option for companies engaged in regulated energy activities to direct part of the income from regulated activities to the promotion of innovation	Q3 2020	Legislation in force	NERC ENMIN
	6.3. Continuously analyse the Lithuanian legal framework and provide suggestions for its improvement	Ongoing	Contribute to improving Lithuania’s ranking in the Global Innovation Index	ENMIN, LEA
	6.4. Review the legal environment for the evaluation of science institutions and researchers and propose changes to it which would encourage science institutions and researchers to participate in the development of innovative products/technologies and solutions, joint	Q4 2020	Proposals submitted to MESS for improving the legal framework	ENMIN, LEA

	research, and partnerships with international research centres			
	6.5. Analyse the expediency of applying an Open Innovation Test Bed in the field of energy; as needed, initiate the establishment of an Open Innovation Test Bed adapted for the energy sector in Lithuania	Q4 2020	Proposals submitted	ENMIN LIC, institutions of science and studies
	6.6. Analyse the need to establish a Lithuanian energy system laboratory and possibilities to do so	Q3 2021	Conclusion and submitted proposals	ENMIN
CONSUMERS				
7. Creating a favourable “Consumers” part of the energy innovation ecosystem	7.1. Organise presentations of energy innovations to consumers (including business), raise consumer awareness and interest in energy innovations, and encourage them to participate more actively in energy	Ongoing	Consumer Awareness Index (survey)	ENMIN, LEA, energy undertakings, Consumer Rights Protection Authority
	7.2. Carry out public consultations with the public on a regular basis in order to better identify the consumer needs that could be addressed through innovation	Ongoing	Number of public consultations	ENMIN, LEA, STRATA, energy undertakings
	7.3. Carry out the necessary research to develop a system adapted to the case of Lithuania for assessing energy poverty and state intervention in the field of household energy	Q3 2021	Research carried out	LEI, ENMIN
COMMUNICATION AND INNOVATION CULTURE				
8. Creating a favourable “Communication and Innovation Culture” part of the energy	8.1. Take measures to strengthen innovation culture in the energy sector: 8.1.1. establish an annual energy innovation award to recognise innovative products, services or solutions related to the energy sector;	Ongoing	Energy Innovation Awareness Index	ENMIN, energy undertakings, institutions of science and studies

innovation ecosystem	8.1.2. organise Energy Week and Energy Days in order to communicate to the market the EU and national energy agenda, the challenges faced and the problems that arise, and to encourage the development of innovative solutions and their adaptation to address these issues; 8.1.3. become regular partners of the Energy Tech Summit event that is organised in Lithuania, increasing visibility and contributing to the formation of content			
	8.2. Promote the internationalisation of Lithuanian energy sector innovations by compiling a list of annual energy events taking place in the countries of the European Union, and working in closer cooperation with Lithuanian diplomatic missions operating in the EU	Ongoing	At least five events attended per year	ENMIN, Lithuanian representations to the EU
	8.3. Increase awareness of financial funds among Lithuanian companies in the energy-related sector which are developing innovative products/technologies, services and solutions and carrying out RD&I activities	Ongoing	Financial Funds Awareness Indicator	ENMIN, EIMIN, FINMIN, LEA
	8.4. Develop a system of indicators to measure the progress of energy innovation	Q4 2020	Created system	ENMIN, LEA, Statistics Lithuania
	8.5. Bring together a community of energy innovators, uniting key energy innovation ecosystem associations, clusters, businesses and innovators, in order to promote cooperation and form a common approach to energy innovation	Q3 2020	Creation of an energy innovation community	ENMIN, LEA