Project Sheet

Estonia-Latvia 3rd IC

Project type	transmission
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Key Information

Cross Border Project
AC transmission line
New

PCI number 4.2 (4th list, 31 Oct. 2019)
Under Construction

Description

Project nr 62 is a planned third 330 kV interconnection between Estonia and Latvia. The project consists of 3 investments of which nr 386 is the main inter-area investment, AC 330 kV OHL between Kilingi-Nõmme substation in Estonia and Riga CHP2 substations.

Project promoters

AST
ELERING

Countries

Estonia
Latvia

National development plan(s)

It is included in the Latvian National Power Transmission System Development Plan 2020-2029 which has been approved by resolution of the Public Utility Commission Council No.149 of September 2019, Project Nr. 1, Appendix 3.

Additional information on the project

Project website:

http://elering.ee/general-information/

http://www.ast.lv/eng/transmission_network/latvian_estonian_3rd_interconnection/

PCI link:

https://ec.europa.eu/energy/sites/ener/files/documents/pci_4_2_1_en.pdf

https://ec.europa.eu/energy/sites/ener/files/documents/pci_4_2_2_en.pdf

National development plans:

http://elering.ee/varustuskindluse-aruanded/

http://www.ast.lv/eng/par_ast/public_reports/development_plan_of_transmission_power_system/?

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Project sheet backlog

6 Nov. 2020 - Publication as part of the draft TYNDP 2020 package for consultation

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Project Description & Context

Project Investments

Main investment(s): "330 kV AC OHL between Kilingi-Nomme substation in Estonia and Riga CHP2 substation in Latvia. New 330 kV power transmission line is planned to take route along already existing 110 kV power transmission lines, by constructing both 110 kV and 330 kV lines on the same towers. Under the framework of the project it is planned to reconstruct the open-air switchyard of the 330/110 kV substation Riga CHP2 by constructing new open-air connection point for the 330 kV line Kilingi Nomme - Riga CHP2. """

Type of element	Total route length (km)	From substation 1	To substation 2	Present status	Commissioning year	Progress of the investment	Explanation in case of delay or reclustering
AC transmission line	205	Kilingi-Nomme (EE)	Riga CHP2 (LV)	Under Construction	2020	Investment on time	

Other investments

Description	Type of element	Total route length (km)	From substation 1	To substation 2	Present status	Commissioning year	Progress of the investment	Explanation in case of delay or reclustering
New double circuit OHL with 2 different voltages 330 kV and 110 kV and with capacity 1143 MVA/240 MVA and a length 175 km. Major part of new internal connection will be established on existing right	AC transmission line	175	Harku (EE)	Sindi (EE)	Under Construction	2021	Investment on time	

Description	Type of element	Total route length (km)	From substation 1	To substation 2	Present status	Commissioning year	Progress of the investment	Explanation in case of delay or reclustering
of way on the western part of Estonian mainland.The investment helps together with 3rd EE-LV interconnector to increase interarea capacity up to 600 MW.								
The internal reinforcement for 3rd EE-LV interconnector and significant investment for Baltic Synchronization project	AC transmission line	15	Riga CHP2 (LV)	Riga HPP (LV)	Under Construction	2020	Investment on time	

Is the project in the reference grid?

Yes

System Needs addressed by the project

Project promoter(s) selected up to 4 system needs that are addressed by their project in a predefined list. Available needs ranged from reduction of price differentials between countries, improvement of system flexibility and stability, enabling cost-efficient connection of high volumes of RES, improvement of voltage stability...
As part of the TYNDP 2020, ENTSO-E released a study investigating cross-border system needs in the 2030 and 2040 horizons.

The project promoter did not select any need.

Interconnection targets

In 2017, the Interconnection Target Expert Group proposed alternative indicators to the 15% interconnection criteria for every country and electrified island with a new methodology developed collaboratively between the European Commission, ENTSO-E, ENTSOG, industry, universities and other experts. The methodology is based on three indicators:

1. Price differential between EU countries, with an objective to reduce it below 2 EUR/MWh
2. Ratio between nominal transmission capacity and installed RES capacity, with a target of past 30%
3. Ratio between nominal transmission capacity and peak load, with a target of past 30%

The following maps show the ITEG methodology applied to the TYNDP 2030 scenarios, with the 2020 grid.

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Project Assessment

Transfer capacity increase (National Trends 2025)

	Border	A B	B A
Transfer capacity increase (in MW)	Estonia - Latvia	600	600

CBA results

ENTSO-E has assessed the benefits delivered by each project in 2025 (scenario National Trends 2025) and in 2030 (three scenarios: National Trends, Distributed Energy and Global Ambition). Indicators B1 to B6 were computed by ENTSO-E, while promoters had the possibility to compute and submit so-called project-level benefits (B7 to B10). The benefits must be understood as benefits for Europe as a whole, not for the promoters of the project.
Results are presented per scenario.

Central scenario: National Trends

National Trends is the central policy scenario of the TYNDP2020, designed to reflect EU member state's National Energy and Climate Plans (NECP), in line with the requirement to meet current European 2030 energy strategy targets.

			Comparison of the COP21 scenarios with NT2030 average result		
	NT2025	**NT2030**	**DE2030 is < or > than NT2030**	**GA2030 is < or > than NT2030**	

Increase in socio-economic welfare

B1 Annual Socio-Economic Welfare (SEW) increase (M € / year)	max average min	8 6 4	27 23 20	>	<	ENTSO-E assessment
B1_CO2 Annual Socio-Economic Welfare increase resulting from CO2 emissions reduction	max average min	2 1 0	9 7 6	<	<	ENTSO-E assessment
B1_RES Annual Socio-Economic	max average	1 1	3 2	>	<	ENTSO-E assessment

Welfare increase resulting from RES integration	min	0	1			

Reduction of CO2 and GHG emissions

B4 Non-CO2 emissions (kg/year)

B4a Nitrogen oxides	average	-426	-606	n/a	n/a	ENTSO-E assessment
B4b Ammonia	average	-2	19	n/a	n/a	ENTSO-E assessment
B4c Sulfur dioxide	average	-351	-452	n/a	n/a	ENTSO-E assessment
B4d Particular matter 5	average	259	7649	n/a	n/a	ENTSO-E assessment
B4e Particulate matter 10	average	35	-3	n/a	n/a	ENTSO-E assessment
B4f Non-methane volatile organic compounds	average	269	7717	n/a	n/a	ENTSO-E assessment

B2a Annual CO2 variation from market simulation (ktonnes / year)	max average min	-13 -38 -87	-220 -259 -328	>	>	ENTSO-E assessment
B2a_€ Annual Societal cost variation resulting from CO2 variation from market simulation monetised (M € / year)	CO2 price 60€/ ton 100€/ ton 189€/ ton	1 3 6	8 19 42	< < <	< < <	ENTSO-E assessment
B2b Annual CO2 variation due to network losses (ktonnes / year)	average	8	29	n/a	n/a	ENTSO-E assessment
B2b_€ Annual Societal cost variation resulting from	CO2 price 60€/ ton 100€/	-1 0 -1	-1 -2 -5	n/a	n/a	ENTSO-E assessment

CO2 variation from network simulation monetised (M € / year)	ton 189€/ ton					

Integration of renewable energy sources

B3 Annual avoided curtailment (RES integration) (GWh / year)	max average min	25 12 0	73 53 27	>	<	ENTSO-E assessment
B3a Connected RES (MW)	-			n/a	n/a	ENTSO-E assessment

Impact on grid losses

B5 Variation of network losses (GWh / year)	average	19	114	n/a	n/a	ENTSO-E assessment
B5_€ Variation of network losses monetised (M€ / year)	average	1	4	n/a	n/a	ENTSO-E assessment

Security of supply

B6 Annual reduction in Energy Not Served (MWh / year)	max average min		1457	n/a	n/a	ENTSO-E assessment
B6_€ Annual Socio-Economic Welfare increase resulting from reduction in Energy Not Served monetised (M€ / year)	average	n/a	14.57	>	n/a	ENTSO-E assessment

Scenarios: Distributed Energy & Global Ambition

DE and GA are two scenarios created in line with the COP21 targets to understand the impact on infrastructure needs agains different pathways reducing EU-28 emissions to net-zero by 2050. For these two scenarios, projects were assessed with a subset of CBA parameters.

		DE2030	GA2030	
Increase in socio-economic welfare				
B1 Annual Socio-Economic Welfare (SEW) increase (M€ / year)	average	27	17	ENTSO-E assessment
B1_CO2 Annual Socio-Economic Welfare increase resulting from CO2 emissions reduction	average	-13	1	ENTSO-E assessment
B1_RES Annual Socio-Economic Welfare increase resulting from RES integration	average	6	2	ENTSO-E assessment
Reduction of CO2 and GHG emissions				
B2a Annual CO2 variation from market simulation (ktonnes / year)	average	239	-42	ENTSO-E assessment
B2a_€ Annual Societal cost variation resulting from CO2 variation from market simulation monetised (M€ / year)	CO2 price 60€/ ton 100€/ ton 189€/ ton	-2 -11 -33	1 3 7	ENTSO-E assessment
Integration of renewable energy sources				
B3 Annual avoided curtailment (RES integration) (GWh / year)	average	123	46	ENTSO-E assessment
B3a Connected RES (MW)	-			ENTSO-E assessment

Sensitivity Study: Current Trends

'Current Trends' describes a future where the energy transition is slower than planned.

	CT2030	

Increase in socio-economic welfare

B1 Annual Socio-Economic Welfare (SEW) increase (M€ / year)	average	6	ENTSO-E assessment
B1_CO2 Annual Socio-Economic Welfare increase resulting from CO2 emissions reduction	average	3	ENTSO-E assessment
B1_RES Annual Socio-Economic Welfare increase resulting from RES integration	average	0	ENTSO-E assessment

Reduction of CO2 and GHG emissions

B2a Annual CO2 variation from market simulation (ktonnes / year)	average	-97	ENTSO-E assessment
B2a_€ Annual Societal cost variation resulting from CO2 variation from market simulation monetised (M€ / year)	CO2 price 60€/ ton 100€/ ton 189€/ ton	3 7 16	ENTSO-E assessment

Integration of renewable energy sources

B3 Annual avoided curtailment (RES integration) (GWh / year)	average	1	ENTSO-E assessment
B3a Connected RES (MW)	-		ENTSO-E assessment

Residual impact

Information on the residual impact of the project was provided by the project promoter(s).

Project Costs

The project costs were provided by the project promoter(s).

	CAPEX (Meuro)	Uncertainty range (%)	OPEX
386. 3rd EE-LV interconnection	120	10	0.6
735. Harku-Sindi 330kV OHL	60		0.1145
1062. Riga CHP2 - Riga HPP	20	10	0.1
Total	200		0.8145

Explanation provided by the project promoter on the CAPEX uncertainty range:

386

735

1062