



EU4Energy Governance: Workshop on Assessment of Energy Infrastructure Projects for Eastern Partnership Countries

Venue: Radisson Blue Hotel, Yaroslaviv Val, Kiev, Ukraine,

10 April 2019

Summary and Conclusions

Mr. Janez Kopac – Director of EnCS, Ms. Estelle Payan – Project Manager, DG NEAR and Ms. Ruta Baltause – Support Group for Ukraine, the European Commission, opened the workshop with welcoming remarks, information about EU4Energy Governance Programme and discussion on current situation on energy markets and existing constraints.

In the first part of the workshop, Mr. András Mezősi from REKK presented Cost Benefit Analysis of planned electricity cross-border infrastructure projects in the Eastern Partner countries. He described the methodology and mentioned that such benefits as socio-economic welfare, carbon-cost estimation, grid losses and adequacy were assessed, as well as CAPEX and OPEX on the cost side.

In total 3 electricity infrastructure projects were submitted: EL_01 Black Sea I, EL_02 Black Sea II in two versions (*a* and *b*) and EL_04 Belarusian-Ukrainian line (back to back station) in two stages (*a* and *b*). Black Sea II and Belarusian-Ukrainian projects were divided into 2 sub-projects because the EL_02 has two alternative destinations (Romania and Bulgaria), while the second one has two stages. During the modelling, 9 infrastructure scenarios have been modelled, by combining the Black Sea project versions and Ukraine-Belarus project stages respectively.

Conclusions revealed that as a standalone project Black Sea lines are competitors while projects on installing back-to-back station between Belarus and Ukraine are complementary projects (stage two further enhances the benefits).



Project code	Welfare change, m€				Invcost m€	OM cost m€	EENS and Transm. loss change m€	NPV, m€	PI*
	Consumer	Prod.	Rent	Subtotal					
EI_01 (GE-RO)	12732	-11092	832	2472	-937	-76	- 195	1264	2.35
EI_02a (GE-RO)	19736	-17547	1859	4048	-2488	-323	- 397	839	1.34
EI_02b (GE-BG)	20325	-17150	853	4028	-2745	-356	- 393	535	1.19
EL_04_a (BY-UA_E)	2483	-2219	319	583	-137	-19	- 34	394	3.88
EL_04b (BY-UA_E)	2470	-2177	290	582	-132	-25	- 11	415	4.15
EI_02a+EI_02b	23208	-18907	1132	5433	-5233	-679	- 815	-1295	0.75
EL_01+EL_02a	20526	-17883	2142	4785	-3463	-402	- 592	328	1.09
EL_01+EL_02b	21965	-18161	1277	5081	-3720	-435	- 587	339	1.09
EL_01+EI_02a+EL_02b	23306	-18794	1010	5523	-6208	-758	- 1 010	-2453	0.60

In addition, the sensitivity analysis showed that the stand-alone projects are beneficially in almost all sensitivity scenarios, but their combinations (except for carrying out both stages of the Belarus-Ukraine back to back station) are not.

Project code	Reference		Low_demand		High_demand		Gas_release		Isolated_GE		ETS_ENC		ETS_2025	
	NPV	PI	NPV	PI	NPV	PI	NPV	PI	NPV	PI	NPV	PI	NPV	PI
EI_01 (GE-RO)	1264	2.35	1586	2.69	568	1.61	918	1.98	1005	2.07	1358	2.45	205	1.22
EI_02a (GE-RO)	839	1.34	1047	1.42	-215	0.91	388	1.16	-609	0.76	958	1.38	-1068	0.57
EI_02b (GE-BG)	535	1.19	441	1.16	-505	0.82	121	1.04	-796	0.71	553	1.20	-1321	0.52
EL_04_a (BY-UA_E)	394	3.88	455	4.33	18	1.13	807	6.89	394	3.88	653	5.77	130	1.95
EL_04b (BY-UA_E)	415	4.15	496	4.77	44	1.33	755	6.74	415	4.15	714	6.42	157	2.19
EI_02a+EI_02b	-1295	0.75	-1370	0.74	-2790	0.47	-1785	0.66	-3612	0.31	-1253	0.76	-3811	0.27
EL_01+EL_02a	328	1.09	444	1.13	-935	0.73	-149	0.96	-1739	0.50	423	1.12	-1983	0.43
EL_01+EL_02b	339	1.09	239	1.06	-1014	0.73	-156	0.96	-1715	0.54	382	1.10	-2027	0.46
EL_01+EI_02a+EL_02b	-2453	0.60	-2478	0.60	-3978	0.36	-2933	0.53	-4842	0.22	-2429	0.61	-5014	0.19

A good discussion emerged regarding the most advantageous projects and further explanation was provided to interpret the results, such as:

- The 1000 MW version of the Black Sea cable is more beneficiary than the 2000 MW version. The 2000 MW is too large capacity under the current circumstances
- Connecting Georgia to the neighboring countries enhances the benefit of the Black Sea cable, but it is beneficiary without these enhanced connections as well.

During the second part of the workshop, presentation of the methodology to assess gas infrastructure candidate projects and preliminary results was made by Mr. Péter Kotek from REKK.

He described the methodology and mentioned that benefits such as socio-economic welfare, carbon-cost saving, and Security of Supply benefits were assessed, where the benefits of Consumers, Producers, TSOs, Storage and LNG operators are also calculated. On the cost side, CAPEX is taken into consideration to calculate the socio-economic Net Present Value of the projects.

During the presentation, it was explained that methodology included eligibility check (cross-border effect crossing two countries), investment cost verification and missing data imputation, case-by-case market modelling, and sensitivity analysis. The research showed that both submitted projects: Gas_01 Ukraine-Belarus Reverse Flow and Gas_02 White Stream proved to be beneficial.



Gas_01 is evaluated to have large Security of Supply benefits for Belarus, although the project, under the current import price assumption from Russia is not showing market benefits, as the price formed in Ukraine is higher.

Gas_02 needs further upstream connections to be able to generate the modelled benefits. These connections are the further expansion of the South Caucasus pipeline (or an alternative project with the same impact) with adequate capacities for White Stream (a project that currently is not confirmed) and the Trans-Caspian pipeline, to provide gas source.

	Total modelled	Normal Welfare (m€)	SOS Welfare (m€)	Total Welfare (m€)	CO2 benefit (m€)	Total investment costs (m€)	NPV (m€)	PI*
GAS_01	Reference	0	111182	5559	23	4	5578	1431
GAS_02	Reference	24636	91861	27994	94	3900	24187	7

The White Stream benefits, as modelled, would be enough to accommodate this additional CAPEX need.

The conclusion is that Gas_01 is a “no regret” project due to its low estimated cost and large SoS benefits, whereas White Stream is only a section of an *as-a-whole* beneficial corridor, including the Trans-Caspian pipeline and additional capacities in the Caucasus region, and should be treated as such and not as a stand-alone project.

Both projects remain beneficial in the sensitivity scenarios.

GAS_01	Demand +10%	Demand -10%	LNG high	LNG low	Belarus elasticity
NPV	5578	7142	4030	5493	5493
PI*	1431	1832	1034	1409	1409

GAS_02	Demand +10%	Demand -10%	LNG high	LNG low	high cost TM, AZ gas	RO offshore	Transbalcan reverse flow
NPV	28770	19364	17348	28532	13046	22751	24164
PI*	8.38	5.97	5.45	8.32	4.35	6.83	7.20

Conclusions:

Participants to the Workshop welcomed the result of the modelling and general implementation of EU4Energy Governance regional dimension.

As a result of the Workshop it was agreed that the partner countries could continue with submission of the suggestions on the projects to be assessed under methodology. The European Commission will have an internal discussion on this workshop and possible follow-ups.