



## Improving Power System Resilience for European Power Grid Integration (P176114)

EUROPE AND CENTRAL ASIA | Ukraine | Energy & Extractives Global Practice |  
IBRD/IDA | Investment Project Financing | FY 2021 | Seq No: 5 | ARCHIVED on 09-Nov-2023 | ISR58696 |

Implementing Agencies: Ministry of Finance of Ukraine, PJSC "Ukrhydroenergo", PJSC "Ukrhydroenergo"

**Key Dates****Key Project Dates**

Bank Approval Date: 30-Jun-2021

Effectiveness Date: 10-Jun-2022

Planned Mid Term Review Date: --

Actual Mid-Term Review Date:

Original Closing Date: 31-Dec-2026

Revised Closing Date: 31-Dec-2026

**Project Development Objectives**

Project Development Objective (from Project Appraisal Document)

To enhance the flexibility of the Ukrainian power grid through storage investments and market expansion to support synchronization with the European electricity grid and decarbonization of power sector.

Has the Project Development Objective been changed since Board Approval of the Project Objective?

No

**Components Table**

Name
Installation of Battery Energy Storage System (BESS) with solar Photovoltaic (PV) plants, establishment of an Energy Management System (EMS), and Supervision Consultancy:(Cost \$249.00 M) Technical Assistance for UHE:(Cost \$1.00 M) Contingent Emergency Response Component (CERC)

**Overall Ratings**

Name	Previous Rating	Current Rating
Progress towards achievement of PDO	<span style="color: orange;">■</span> Moderately Satisfactory	<span style="color: orange;">■</span> Moderately Satisfactory
Overall Implementation Progress (IP)	<span style="color: orange;">■</span> Moderately Satisfactory	<span style="color: orange;">■</span> Moderately Satisfactory
Overall Risk Rating	<span style="color: red;">■</span> High	<span style="color: red;">■</span> High

**Implementation Status and Key Decisions**

The project was approved by the Board of Directors on June 30, 2021, and its legal agreements were signed on September 13, 2021. The project became effective on June 10, 2022. The Project's Contingency Emergency Response Component (CERC) has been supporting UHE's urgent needs to restore damaged hydro power facilities. The procurement of block transformers will be concluded shortly. In the meantime, the original scope, which is aimed at installing ancillary services battery storage, remains highly relevant and serves the Government's strategic development priorities.



**Risks**

**Systematic Operations Risk-rating Tool**

Risk Category	Rating at Approval	Previous Rating	Current Rating
Political and Governance	Substantial	High	High
Macroeconomic	Moderate	High	High
Sector Strategies and Policies	Substantial	High	High
Technical Design of Project or Program	Moderate	High	High
Institutional Capacity for Implementation and Sustainability	Substantial	High	High
Fiduciary	Substantial	Substantial	Substantial
Environment and Social	Substantial	Substantial	Substantial
Stakeholders	Substantial	Substantial	Substantial
Other	Moderate	Substantial	Substantial
Overall	Substantial	High	High

**Results**

**PDO Indicators by Objectives / Outcomes**

Newly installed capacity of battery storage				
▶ Newly installed capacity of battery storage (Megawatt, Custom)				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	0.00	200.00
Date	19-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	Installed capacity of energy storage			

Available Frequency Containment Reserve (FCR) amount				
▶ Available Frequency Containment Reserve (FCR) amount (Megawatt, Custom)				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	177.00	177.00	177.00	300.00



Date	19-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	Available FCR amount (MW) in Ancillary Services Market			

Reduced variable renewable energy curtailment				
▶ Reduced renewable energy curtailment (Gigawatt-hour (GWh), Custom)				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	0.00	12.70
Date	19-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	Avoided solar and wind energy curtailment			

Ancillary services market improved				
▶ Number of units (power plants/storage units) certified for trading in Ancillary services market (Number, Custom)				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	32.00	32.00	32.00	40.00
Date	21-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	This indicator tracks the progress towards improved legal and regulatory framework on ancillary services market.			

Reduced GHG emissions				
▶ Reduced GHG emissions (Metric tons/year, Custom)				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	0.00	124,721.00
Date	07-Apr-2021	24-Sep-2021	09-Nov-2023	31-May-2027
Comments:	This indicator tracks the GHG emissions reduction enabled by the proposed project			

**Intermediate Results Indicators by Components**

Installation of BESS with solar PV plants, establishment of an EMS and Supervision Consultancy				
▶ Ancillary services battery storage procured and installed (Yes/No, Custom)				



	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	No	No	No	Yes
Date	21-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	This indicator tracks the progress of installation of ancillary services battery storage			
<b>► Long-duration battery procured and installed (Yes/No, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	No	No	No	Yes
Date	21-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	This indicator tracks the progress of installation of long-duration battery storage			
<b>► PV solar procured and installed (Yes/No, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	No	No	No	Yes
Date	21-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	This indicator tracks the progress of installation of PV solar plants			
<b>► Supervision consultant mobilized (Yes/No, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	No	No	No	Yes
Date	21-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	This indicator tracks the progress of mobilization of the supervision consultant			
<b>► ASM rules updated to increase market competitiveness and enable storage participation (Yes/No, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	No	No	No	Yes
Date	24-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	This indicator tracks the progress of improvements in ancillary services market rules			
<b>► Grid code updated to include connections and operation rules for storage (Yes/No, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target



Value	No	No	No	Yes
Date	24-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	This indicator tracks the progress of updates on Grid Code to facilitate participation of battery storage in markets			
<b>► Monitoring methodology for ancillary services at unit level implemented (Yes/No, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	No	No	No	Yes
Date	24-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	This indicator tracks the progress of implementation of the monitoring methodology for ancillary services at unit level			
<b>► Number of staff trained on gender awareness (Number, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	0.00	500.00
Date	24-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	This indicator tracks the progress of gender trainings conducted under the Project			
<b>► Percentage increase of women employed by UHE (Percentage, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	0.00	10.00
Date	24-Mar-2021	24-Sep-2021	09-Nov-2023	30-Apr-2027
Comments:	The indicator tracks the progress in the percentage increase of women employed by UHE			
<b>► Number of roundtables on storage systems and electromobility where citizens receive answers to their concerns (Number, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	0.00	5.00
Date	09-Apr-2021	24-Sep-2021	09-Nov-2023	30-Sep-2026
Comments:	The indicator tracks the progress in the number of roundtables on storage systems and electromobility			
<b>► Number of participating companies in Ancillary Services Market (Number, Custom)</b>				
	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	4.00	4.00	4.00	6.00



Date	15-Apr-2021	24-Sep-2021	09-Nov-2023	30-Sep-2026
Comments:	The indicator tracks number of companies participating in Ancillary Services Market for various services. The indicator is aimed at tracking market concentration.			

**Performance-Based Conditions**

**Data on Financial Performance**

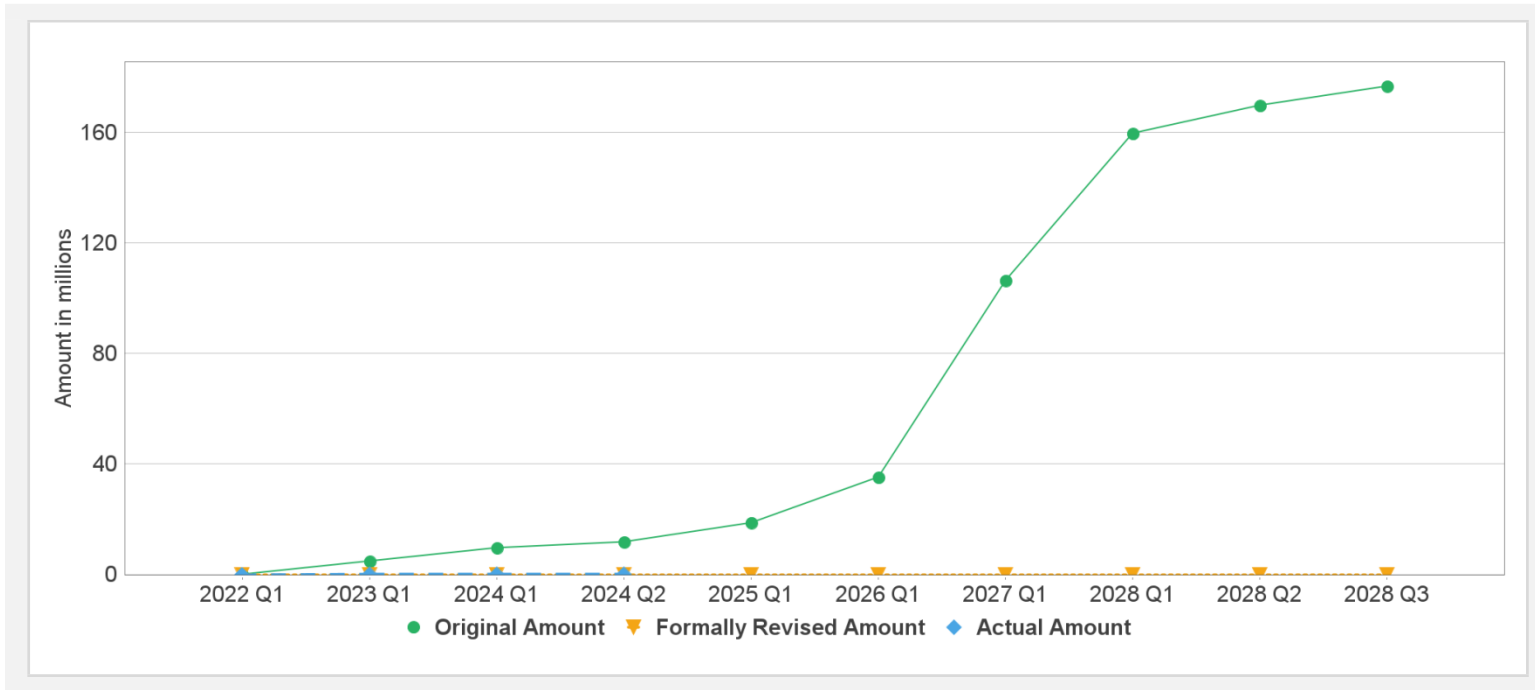
**Disbursements (by loan)**

Project	Loan/Credit/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P176114	IBRD-92840	Effective	USD	177.00	177.00	0.00	0.46	176.54	0.3%
P176114	TF-B5724	Effective	USD	1.00	1.00	0.00	0.00	1.00	0%
P176114	TF-B5994	Effective	USD	34.00	34.00	0.00	0.16	33.84	0.5%

**Key Dates (by loan)**

Project	Loan/Credit/TF	Status	Approval Date	Signing Date	Effectiveness Date	Orig. Closing Date	Rev. Closing Date
P176114	IBRD-92840	Effective	30-Jun-2021	13-Sep-2021	10-Jun-2022	31-Dec-2026	31-Dec-2026
P176114	TF-B5724	Effective	13-Sep-2021	13-Sep-2021	10-Jun-2022	31-Dec-2026	31-Dec-2026
P176114	TF-B5994	Effective	30-Jun-2021	13-Sep-2021	10-Jun-2022	31-Dec-2026	31-Dec-2026

**Cumulative Disbursements**



### Restructuring History

Level 2 Approved on 08-Nov-2022

### Related Project(s)

There are no related projects.