GROUP
SINCE 2002

BESS Moldova

Profit from Energy, Non-Stop Access systems that generate up to €200/hour in passive income

BALANCING and BESS

1. **The main role of BESS – balancing unstable generation from renewable sources**
   Solar and wind power plants produce energy unevenly (solar only during the day, and wind depending on weather conditions).

This results in overproduction during certain hours and a deficit during others. **BESS smooths out these fluctuations** by storing energy during surplus periods and delivering it to the grid during deficit periods.

WHY IS IT IMPORTANT:

SITUATION	CONSEQUENCE
Renewable sources produce too much during the night	Prices drop, even become negativ
Renewable sources suddenly stop generating in the evening	Prices rise abruptly (demand > supply)
There is no BESS	The system buys balancing energy at the maximum price

As shown in the definitions above, balancing is directly dependent on renewable energy sources (negative dependency) and on BESS (positive dependency)

The connection between electrical energy balancing and price fluctuations over time is a fundamental element of the functioning of the modern energy market, especially in countries with a high share of renewable energy sources (VRE). When a deficit or surplus of energy occurs in real-time, the system is forced to quickly activate expensive reserves or reduce production. This is reflected in the prices on the balancing market.

SCENARIO	IMPACT ON PRICE
Power deficit	Prices increase sharply
Generation surplus	Prices can become negative
Fluctuations from VRE	Increased price volatility
Presence of BESS	Mitigation of price spikes

WHAT IS HAPPENING IN MOLDOVA?

Moldova, compared to other countries, has a unique situation – it lacks permanent energy sources! In addition, considering the difficult energy situation, the Government of the Republic of Moldova has adopted measures to stimulate production from renewable energy sources. Based on the National Energy and Climate Plan (NECP) of the Republic of Moldova for the period 2025–2030, developed by the Ministry of Energy in collaboration with European partners, there is already a plan to increase the share of renewable energy to 30% of total consumption!

SWOT

STRENGTHS

- Opportunity to earn from arbitrage due to high price volatility (cheap solar energy during the day → expensive imported energy in the evening).
- Increased efficiency of renewable energy (PV) investments through adding BESS and creating a hybrid model.
- Reduced reliance on expensive emergency imports during evening peak hours.
- Buffering solar generation for evening peak demand.
- Improved grid resilience and prevention of price spikes due to shortages.
- Supporting the growth of renewable energy without risking grid stability.
- Potential participation in future system services and balancing markets.

WEAKNESSES

- High capital costs for BESS installation.
- High cost of capital in Moldova compared to more developed markets.
- Need for precise price forecasting and charge/discharge scheduling to profit from volatility.
- Risk of underutilization of BESS if price windows are misjudged by the operator.
- Absence of a mature system services market and proper price signals.
- Risk of rapid battery degradation when operating under peak loads.

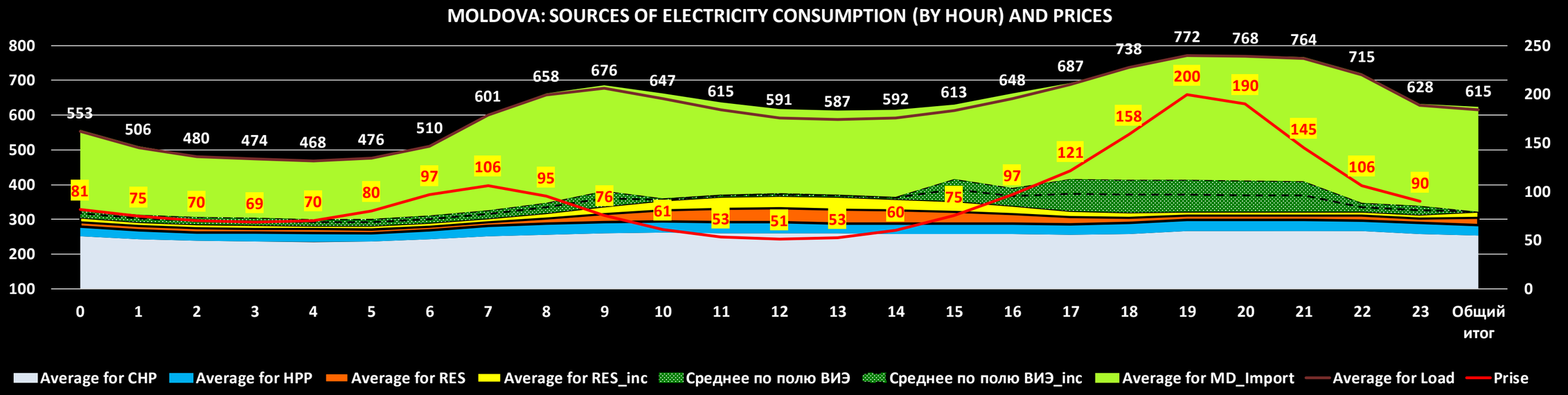
OPPORTUNITIES

- Increasing the share of renewables to 40–50% will require BESS in growing volumes for grid integration.
- High daily price volatility in Moldova: during the day, surplus solar generation leads to very low prices; in the evening, shortages and imports drive prices up 2–3 times.
- Ability to profit from price differences (arbitrage) using BESS.
- Opportunity to access grants and low-cost financing for BESS pilot projects.
- Growing solar generation provides cheap energy for BESS charging.
- Use of BESS to reduce emergency purchases at the highest prices.
- Integration with solar parks to create VPPs (virtual power plants).
- Potential for international balancing with Romania and Ukraine.

THREATS

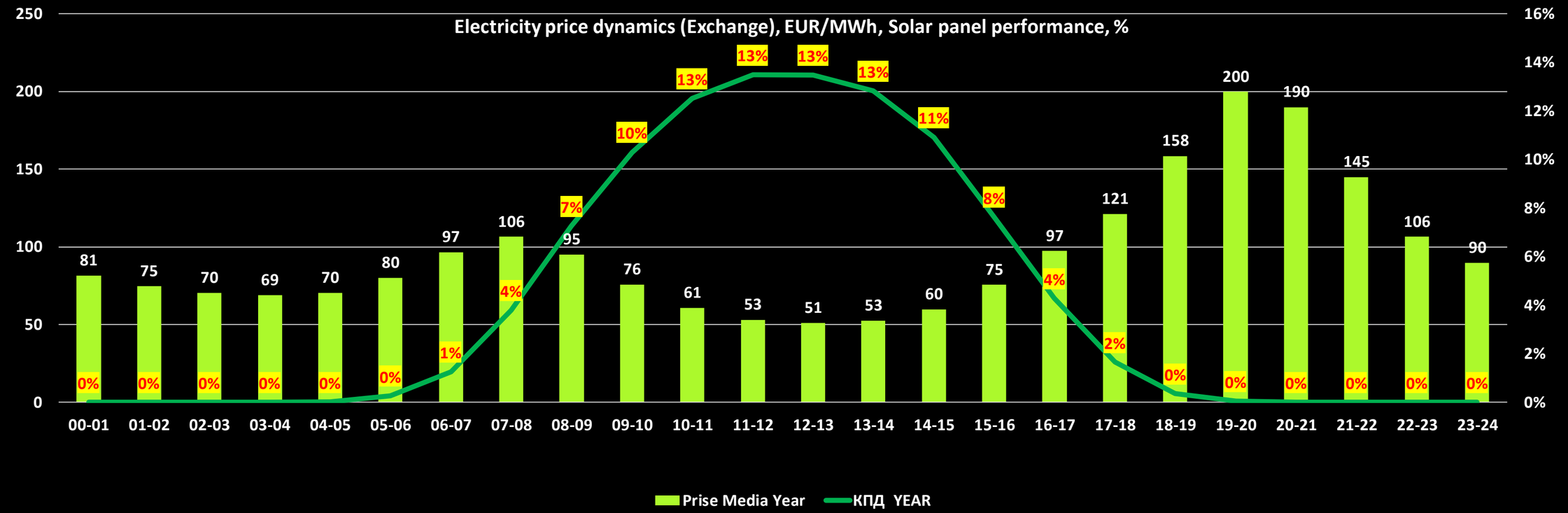
- Lack of a balancing market and proper price formation may reduce BESS profitability.
- Profitability depends on sustained price volatility (if margins narrow, BESS payback period increases).
- Rising battery prices could extend the payback period.
- Delays in synchronization with ENTSO-E could limit external trading opportunities.

According to data from the state-owned enterprise Î.S. Moldelectrica, which plays a key role in the electricity system of the Republic of Moldova as the transmission system operator (TSO), the electricity consumption throughout a day is as follows



Two distinct cycles of decrease and increase in electricity consumption are clearly observed. At the same time, production from renewable sources (VRE) occurs during periods of low consumption.
The blue area represents the CHP plants (CETs), which have a seasonal character and include the Moldovan CHP, located outside the territory of the Republic of Moldova, essentially being an import from Transnistria (Russian Federation).
This cannot be considered a stable generation source and, therefore, cannot perform the balancing function.
The yellow area represents imports from Romania and Ukraine. Very expensive electricity.
The balancing of the electricity market is only possible due to the import from Romania.
The main task is to shift the orange area (current production from VRE) into the green area (the high-price zone)!

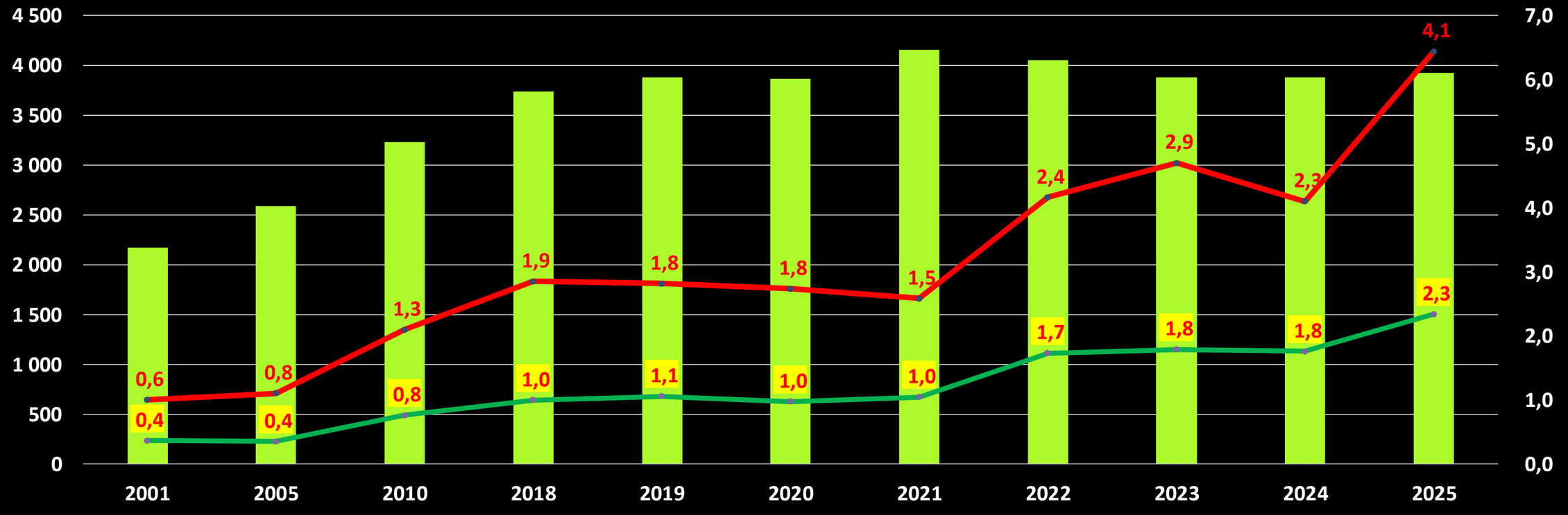
In order to estimate the losses caused by the lack of an electricity balancing mechanism – and, implicitly, to assess the profitability of having a balancing market – it is necessary to correlate the seasonality of production from renewable sources (VRE) with the price dynamics throughout the day.



Thus, it can be observed that renewable energy production (VRE) in Moldova, in the absence of a balancing mechanism, operates extremely inefficiently – the value of electricity at the time of generation is minimal.

The import of expensive electricity and the generation of domestic energy during peak periods with minimal prices lead to a constant increase in electricity tariffs in the Republic of Moldova.

DYNAMICS OF ELECTRICITY SALES VOLUMES AND PRICES IN MOLDOVA



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BESS is a multifunctional asset that can simultaneously participate in:

- Energy trading (Energy arbitrage),
- Providing grid services (balancing and services for the system operator),
- Integration of renewable energy sources (VRE),
- Increasing the reliability of energy supply.

Below is the calculation of profitability solely from energy trading through energy arbitrage (Arbitrage)!

Electricity Prices on OPCOM: EUR

Data/Hours		00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24
Jan	31	66,60	**62,74**	**60,56**	**59,17**	**62,37**	76,99	93,46	102,02	98,93	85,01	76,21	67,95	64,11	65,51	74,15	92,84	107,33	123,51	131,27	126,17	122,97	99,32	80,08	73,19
Feb	28	53,90	**52,15**	**50,62**	**50,37**	**54,04**	65,94	81,64	91,16	85,04	69,83	55,01	51,16	51,16	52,81	62,62	73,99	87,73	106,27	123,54	129,43	122,86	89,10	76,13	69,55
Mar	31	64,85	**60,76**	**59,03**	**58,94**	**59,87**	66,58	75,57	81,42	72,76	56,26	42,74	36,67	36,11	40,08	45,53	60,80	80,29	**104,26**	**131,13**	**134,60**	**126,44**	96,77	79,49	71,11
Apr	30	73,67	66,49	63,06	60,99	63,40	71,92	87,07	105,51	89,14	72,03	56,63	48,83	**43,50**	**43,25**	**45,59**	**59,49**	77,72	94,61	**120,28**	**148,66**	**137,20**	**106,29**	86,34	78,59
May	31	86,23	80,64	76,43	74,97	76,92	85,90	101,49	110,36	96,68	79,30	67,76	**61,09**	**57,38**	**55,28**	**61,23**	70,54	85,96	99,41	117,13	**160,19**	**166,67**	**137,77**	**103,88**	92,47
Jun	30	96,30	88,28	81,47	80,56	78,95	84,76	96,53	98,99	87,35	68,57	56,71	**52,53**	**52,26**	**52,28**	**54,65**	68,90	88,16	106,39	134,89	**194,43**	**208,21**	**172,60**	**121,67**	100,00
Jul	31	112,28	99,77	90,60	87,07	86,19	91,39	106,45	113,52	99,40	79,49	68,26	**61,98**	**61,71**	**64,61**	**72,59**	93,15	123,77	150,76	**245,75**	**364,18**	**414,15**	**331,51**	180,34	124,32
Aug	31	105,48	96,18	89,58	86,69	88,81	96,83	114,18	119,10	106,51	87,41	70,03	**62,99**	**65,42**	**65,68**	**73,11**	92,59	122,36	154,04	**234,34**	**308,69**	**301,04**	**175,72**	132,71	110,44
Sep	30	72,94	67,55	64,41	63,47	67,78	80,72	106,12	114,90	95,15	72,78	52,52	**40,61**	**33,13**	**36,16**	**44,11**	59,84	86,68	123,22	**152,34**	**197,60**	**150,78**	**110,77**	88,53	75,87
Oct	31	76,14	**65,96**	**61,88**	**61,17**	**62,51**	77,40	101,71	127,69	118,92	86,31	64,20	53,33	50,85	52,19	62,16	80,02	113,05	**152,46**	**182,43**	**190,73**	**155,24**	123,28	99,58	87,43
Nov	30	82,56	**76,17**	**73,03**	**70,41**	**70,81**	76,79	94,93	102,75	96,26	78,39	63,51	54,06	51,01	51,61	56,82	71,69	**85,39**	**117,00**	**153,87**	**204,50**	172,24	145,16	115,19	102,90
Dec	31	85,85	**77,70**	**71,68**	**71,78**	**73,24**	83,20	99,61	109,31	94,87	73,14	55,81	45,63	47,32	51,27	65,28	80,96	**107,77**	**122,35**	**174,62**	**236,82**	199,91	151,04	112,79	90,80

Price formation in Moldova is directly dependent on prices in Romania. Romania serves as a **benchmark** for Moldova in many areas – the laws are drafted based on the Romanian model, and the technical integration of the market and energy exchange takes place in this direction.It is even based on the energy exchange in Romania that the electricity exchange in Moldova will be organized

THE OPERATIONAL MODEL OF BESS: 2 CYCLES PER DAY

Battery Capacity	
Max Charging Power	100%
Full Charging Time	3 h
Charging Rate per Hour (%)	32%
Discharging Parameters	
Minimum State of Charge Limit	5%
Full Discharge Time	3 h
Discharge Rate per Hour (%)	32%

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Max Charging Power	100%
Full Charging Time	3 h
Charging Rate per Hour	32%
Discharging Parameters	
Minimum State of Char	5%
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Discharge Rate per Hou	32%

		I Cycle								II Cycle													
Max_rang	Discharging	7		Min_rang	Charging	3		Average_rang	Incarcare_over	3	Max_rang	Discharging	13		Min_rang	Charging	3		Average_rang	Incarcare_over	3		
		0																					
Data/Hours		**00-01**	**01-02**	**02-03**	**03-04**	**04-05**	**05-06**	**06-07**	**07-08**	**08-09**	**09-10**	**10-11**	**11-12**	**12-13**	**13-14**	**14-15**	**15-16**	**16-17**	**17-18**	**18-19**	**19-20**	**20-21**	**21-22**	**22-23**	**23-24**
Jan	31	0	0	Charging	Charging	Charging	0	Discharging	Discharging	Discharging	0	0	Charging	Charging	Charging	0	0	0	Discharging	Discharging	Discharging	0	0	0	
Feb	28	0	Charging	Charging	Charging	0	0	Discharging	Discharging	Discharging	0	0	Charging	Charging	Charging	0	0	0	0	Discharging	Discharging	Discharging	0	0	0
Mar	31	0	0	Charging	Charging	Charging	0	Discharging	Discharging	Discharging	0	0	Charging	Charging	Charging	0	0	0	0	Discharging	Discharging	Discharging	0	0	0
Apr	30	0	0	Charging	Charging	Charging	0	Discharging	Discharging	Discharging	0	0	0	Charging	Charging	Charging	0	0	0	Discharging	Discharging	Discharging	0	0	0
May	31	0	0	Charging	Charging	Charging	0	Discharging	Discharging	Discharging	0	0	Charging	Charging	Charging	0	0	0	0	0	Discharging	Discharging	Discharging	0	0
Jun	30	Discharging	0	Charging	Charging	Charging	0	Discharging	Discharging	0	0	0	Charging	Charging	Charging	0	0	0	0	0	Discharging	Discharging	Discharging	0	0
Jul	31		0	Charging	Charging	Charging	0	Discharging	Discharging	Discharging	0	0	Charging	Charging	Charging	0	0	0	0	0	Discharging	Discharging	Discharging	0	0
Aug	31	0	0	Charging	Charging	Charging	0	Discharging	Discharging	Discharging	0	0	Charging	Charging	Charging	0	0	0	0	Discharging	Discharging	Discharging	0	0	0
Sep	30	0	Charging	Charging	Charging	0	0	Discharging	Discharging	Discharging	0	0	Charging	Charging	Charging	0	0	0	0	Discharging	Discharging	Discharging	0	0	0
Oct	31	0	0	Charging	Charging	Charging	0	Discharging	Discharging	Discharging	0	0	Charging	Charging	Charging	0	0	0	0	Discharging	Discharging	Discharging	0	0	0
Nov	30	0	0	Charging	Charging	Charging	0	Discharging	Discharging	Discharging	0	0	Charging	Charging	Charging	0	0	0	0	Discharging	Discharging	Discharging	0	0	0
Dec	31	0	0	Charging	Charging	Charging	0	Discharging	Discharging	Discharging	0	0	Charging	Charging	Charging	0	0	0	0	Discharging	Discharging	Discharging	0	0	0

VOLUM, MW/h	**I Cycle / TRADING**									**II Cycle / PRODACTION**													
January	0,0	0,0	-883,5	-883,5	-883,5	0,0	883,5	883,5	883,5	0,0	0,0	-883,5	-883,5	-883,5	0,0	0,0	0,0	883,5	883,5	883,5	0,0	0,0	0,0	0,0
February	0,0	-798,0	-798,0	-798,0	0,0	0,0	798,0	798,0	798,0	0,0	0,0	-798,0	-798,0	-798,0	0,0	0,0	0,0	0,0	798,0	798,0	798,0	0,0	0,0	0,0
March	0,0	0,0	-883,5	-883,5	-883,5	0,0	883,5	883,5	883,5	0,0	0,0	-883,5	-883,5	-883,5	0,0	0,0	0,0	0,0	883,5	883,5	883,5	0,0	0,0	0,0
April	0,0	0,0	-855,0	-855,0	-855,0	0,0	855,0	855,0	855,0	0,0	0,0	0,0	-855,0	-855,0	-855,0	0,0	0,0	0,0	855,0	855,0	855,0	0,0	0,0	0,0
May	0,0	0,0	-883,5	-883,5	-883,5	0,0	883,5	883,5	883,5	0,0	0,0	-883,5	-883,5	-883,5	0,0	0,0	0,0	0,0	0,0	883,5	883,5	883,5	0,0	0,0
June	855,0	0,0	-855,0	-855,0	-855,0	0,0	855,0	855,0	0,0	0,0	0,0	-855,0	-855,0	-855,0	0,0	0,0	0,0	0,0	0,0	855,0	855,0	855,0	0,0	0,0
July	0,0	0,0	-883,5	-883,5	-883,5	0,0	883,5	883,5	883,5	0,0	0,0	-883,5	-883,5	-883,5	0,0	0,0	0,0	0,0	0,0	883,5	883,5	883,5	0,0	0,0
August	0,0	0,0	-883,5	-883,5	-883,5	0,0	883,5	883,5	883,5	0,0	0,0	-883,5	-883,5	-883,5	0,0	0,0	0,0	0,0	883,5	883,5	883,5	0,0	0,0	0,0
September	0,0	-855,0	-855,0	-855,0	0,0	0,0	855,0	855,0	855,0	0,0	0,0	-855,0	-855,0	-855,0	0,0	0,0	0,0	0,0	855,0	855,0	855,0	0,0	0,0	0,0
October	0,0	0,0	-883,5	-883,5	-883,5	0,0	883,5	883,5	883,5	0,0	0,0	-883,5	-883,5	-883,5	0,0	0,0	0,0	0,0	883,5	883,5	883,5	0,0	0,0	0,0
November	0,0	0,0	-855,0	-855,0	-855,0	0,0	855,0	855,0	855,0	0,0	0,0	-855,0	-855,0	-855,0	0,0	0,0	0,0	0,0	855,0	855,0	855,0	0,0	0,0	0,0
December	0,0	0,0	-883,5	-883,5	-883,5	0,0	883,5	883,5	883,5	0,0	0,0	-883,5	-883,5	-883,5	0,0	0,0	0,0	0,0	883,5	883,5	883,5	0,0	0,0	0,0
Total	**855**	**-1 653**	**-10 403**	**-10 403**	**-8 750**	**0**	**10 403**	**10 403**	**9 548**	**0**	**0**	**-9 548**	**-10 403**	**-10 403**	**-855**	**0**	**0**	**884**	**7 781**	**10 403**	**9 519**	**2 622**	**0**	**0**

Based on the charging and discharging cycles of BESS – that is, the purchase and sale of electricity – the financial flows and daily profit are calculated, depending on seasonality. All commissions and other relevant parameters are taken into account.
Based on the Cash Flow and the initial investment value, the payback period (ROI) is determined.

Charging Parameters	**90 mw/h**
CAPEX per 1 MW/h	**150 000** EUR
CAPEX	**13 500 000** EUR
Selling Price on the Free Market	**70** EUR per MW
Discount Compared to OPCOM	**15%**

CASH FLOW, EUR	I Cycle / TRADING									II Cycle / PRODACTION													
January	0	0	-61 845	-61 845	-61 845	0	70 182	76 612	74 290	0	0	-61 845	-61 845	-61 845	0	0	0	92 750	98 578	94 752	0	0	0	0
February	0	-55 860	-55 860	-55 860	0	0	55 377	61 832	57 679	0	0	-55 860	-55 860	-55 860	0	0	0	0	83 795	87 792	83 339	0	0	0
March										0	0	-61 845	-61 845	-61 845	0	0	0	0	98 477	101 083	94 952	0	0	0
April	0	0	-59 850	-59 850	-59 850	0	63 279	76 681	64 781	0	0	0	-59 850	-59 850	-59 850	0	0	0	87 412	108 036	99 713	0	0	0
May										0	0	-61 845	-61 845	-61 845	0	0	0	0	0	120 297	125 163	103 459	0	0
June										0	0	-59 850	-59 850	-59 850	0	0	0	0	0	141 302	151 316	125 434	0	0
July										0	0	-61 845	-61 845	-61 845	0	0	0	0	0	273 486	311 013	248 957	0	0
August										0	0	-61 845	-61 845	-61 845	0	0	0	0	175 980	231 817	226 070	0	0	0
September	0	-59 850	-59 850	-59 850	0	0	77 119	83 504	69 154	0	0	-59 850	-59 850	-59 850	0	0	0	0	110 713	143 608	109 583	0	0	0
October	0	0	-61 845	-61 845	-61 845	0	76 384	95 895	89 303	0	0	-61 845	-61 845	-61 845	0	0	0	0	136 997	143 234	116 579	0	0	0
November										0	0	-59 850	-59 850	-59 850	0	0	0	0	111 828	148 620	125 173	0	0	0
December	0	0	-61 845	-61 845	-61 845	0	74 806	82 089	71 242	0	0	-61 845	-61 845	-61 845	0	0	0	0	131 134	177 846	150 125	0	0	0
Total	0	-115 710	-361 095	-361 095	-245 385	0	417 148	476 613	426 449	0	0	-668 325	-728 175	-728 175	-59 850	0	0	92 750	1 034 914	1 771 874	1 593 025	477 850	0	0

Payback Period: Fix Price MOLDOVA **4.5 YEAR**

Profitability calculation considering the loan – broken down by years:

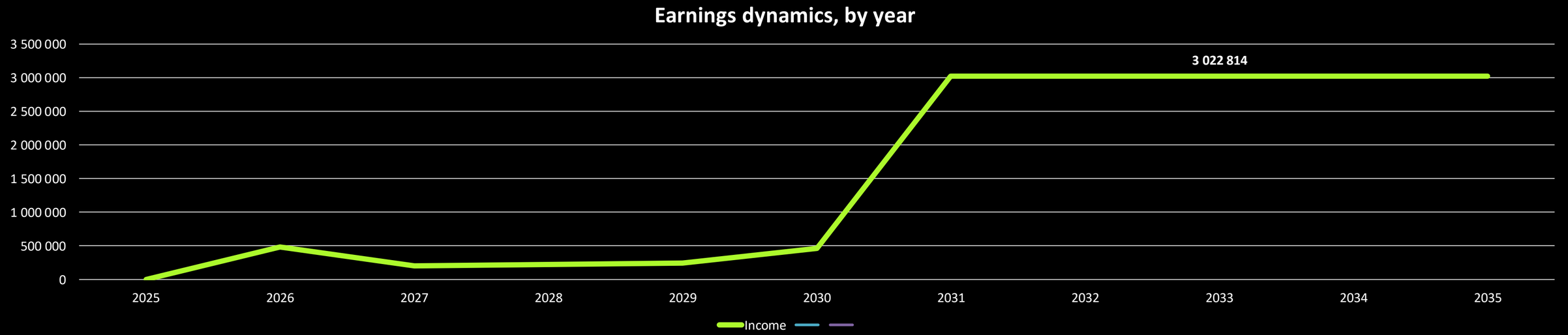
	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	TOTAL:
Aport Proprie	2 700 000											
Venituri din productia de energie electrică		3 022 814	3 022 814	3 022 814	3 022 814	3 022 814	3 022 814	3 022 814	3 022 814	3 022 814	3 022 814	**30 228 141**
Deducerea TVA	0											
TVA plătit		0	0	0	0	0	0	0	0	0	0	0
Rambursarea creditului		2 539 286	2 820 176	2 799 912	2 777 621	2 560 365	0	0	0	0	0	13 497 359
inclusiv												
Corpul creditului, contractul	0	1 542 857	1 542 857	1 542 857	1 542 857	1 395 545	0	0	0	0	0	7 566 973
Corpul creditului, suplimentar		0	483 528	686 167	909 069	1 154 262	0	0	0	0	0	3 233 027
Dobânda la credit	1 080 000	996 429	793 790	570 888	325 695	10 558	0	0	0	0	0	3 777 359
		483 528	686 167	909 069	1 154 262	1 616 711	3 022 814	3 022 814	3 022 814	3 022 814	3 022 814	
FLUXUL NET DE NUMERAR	-2 700 000	483 528	202 639	222 902	245 193	462 449	3 022 814	3 022 814	3 022 814	3 022 814	3 022 814	**14 030 782**
ACUMULATIV: FLUXUL NET DE NUMERAR		-2 216 472	-2 013 833	-1 790 931	-1 545 738	-1 083 289	1 939 525	4 962 340	7 985 154	11 007 968	14 030 782	

INVESTMENT RECOVERY PERIOD

5 years 4 months

MONTHLY EARNINGS AFTER RECOVERING THE INVESTMENT

251,901 €



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