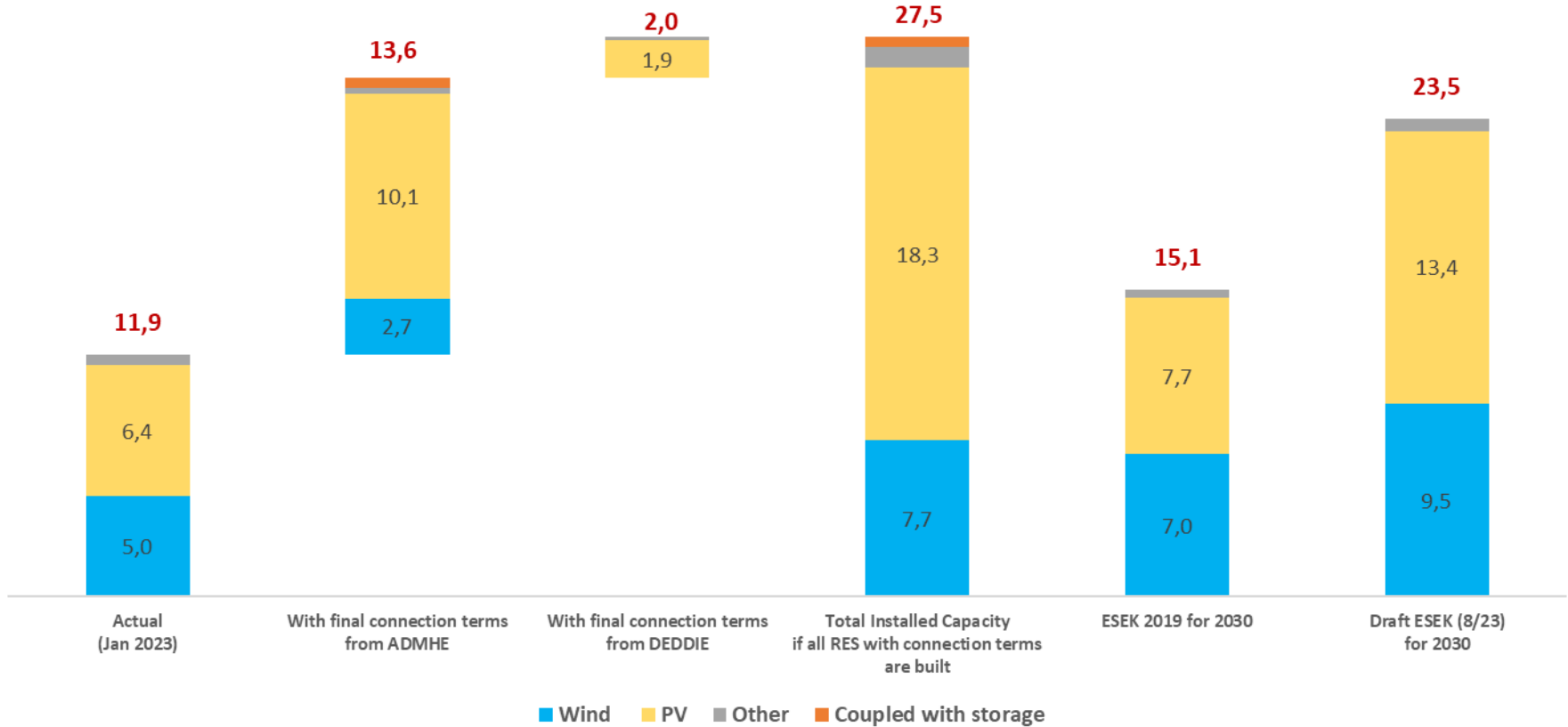

**ΗΜΕΡΙΔΑ ΙΕΝΕ:
Ευκαιρία ή Τροχοπέδη οι Στόχοι της
Ενεργειακής Μετάβασης για ΑΠΕ και
Ενεργειακή Αποδοτικότητα;**



18 April 2024

Has an analysis been conducted on the factors to consider, when licensing installations for additional MWs of RES?

RES Installed & Projected Capacity (GW)



Latest Energy Surplus	
Year	Latest ISP
2024	
Apr	
01/04/2024	-9,633.16
02/04/2024	-14,506.75
03/04/2024	-683.95
04/04/2024	-146.97
05/04/2024	-2,042.98
06/04/2024	-5,879.21
07/04/2024	-23,190.51
08/04/2024	-9,746.48
09/04/2024	-9,451.98
10/04/2024	-2,018.82
11/04/2024	-15,850.93
12/04/2024	-19,677.53
13/04/2024	-26,135.52
14/04/2024	-19,112.61
15/04/2024	-1,416.36

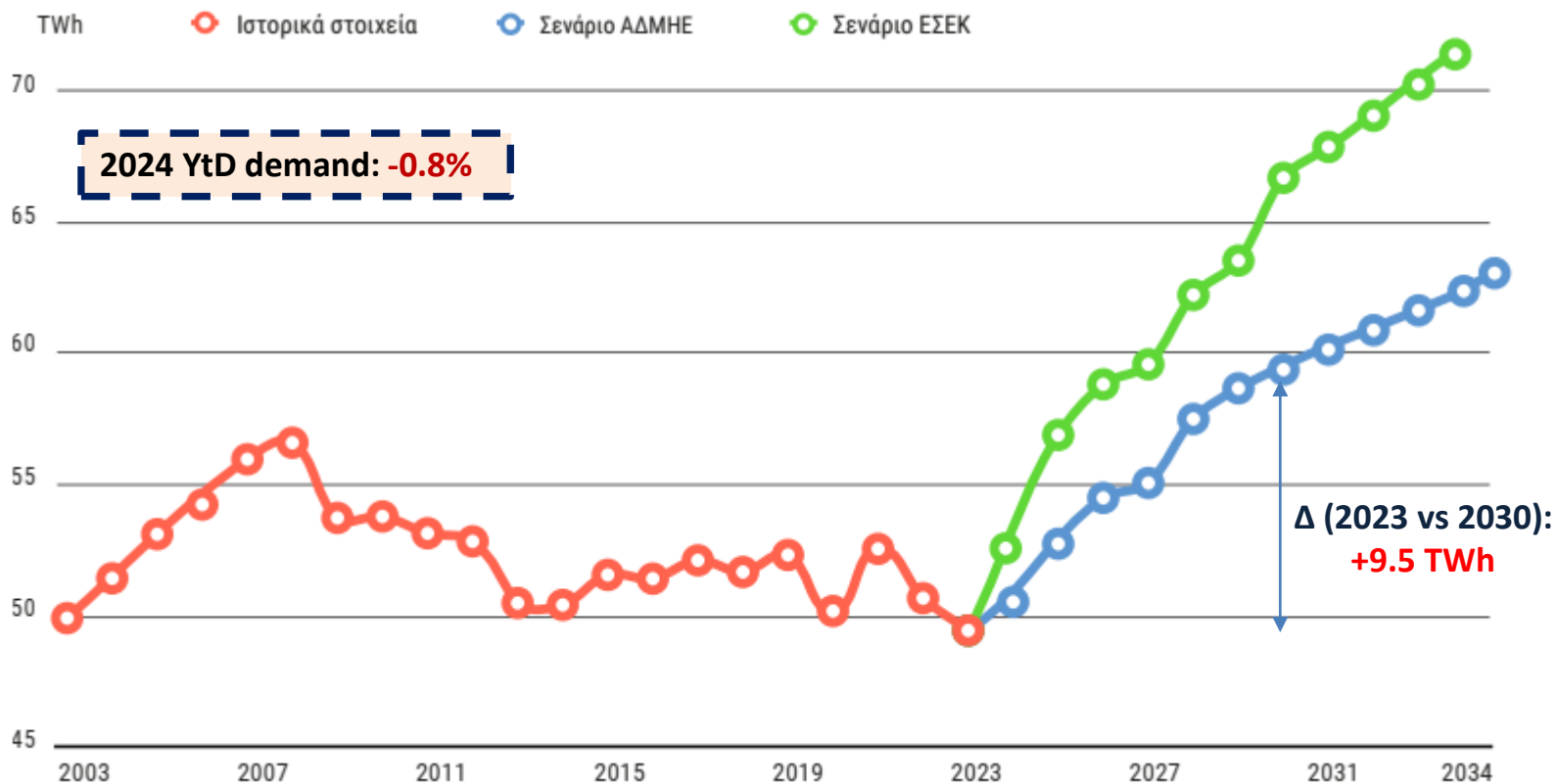
-159.494 MWh



**Total Surplus
1-15 of April**

Latest ISP	
2024	
Apr	
13/04/2024	
1	0.00
2	-268.13
3	-620.50
4	-651.36
5	-623.50
6	-593.08
7	-714.90
8	-785.91
9	-856.73
10	-1,109.61
11	-2,722.10
12	-3,425.50
13	-3,487.70
14	-3,374.30
15	-3,064.70
16	-2,322.05
17	-1,279.00
18	-237.05
19	0.00
20	0.00
21	0.00
22	0.00
23	0.00

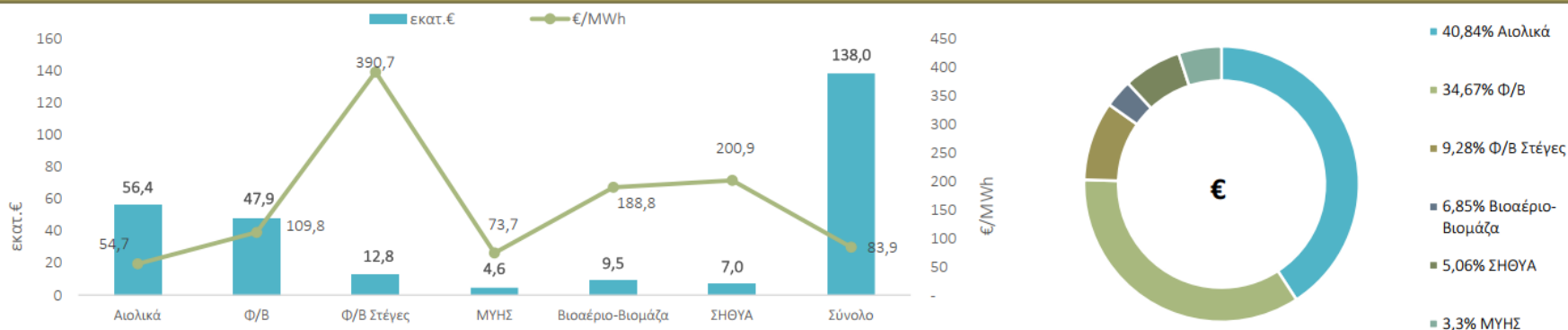
High levels of PV deployment are said to meet energy demand, but are we confident in our understanding of the projected demand?



Δ (2023 vs 2030) PV production: +17.7 TWh
Δ (2023 vs 2030) Wind Production: + 6 TWh
}
Total Δ (2023 vs 2030): +23.7 TWh

Source:
 - Demand forecast 2025-2034/ΑΔΜΗΕ
 - RES forecast production based on the final connection terms of ADMIE/DEDDIE

Αξία και Μεσοσταθμική Τιμή Ενέργειας Μονάδων ΑΠΕ ΔΣ

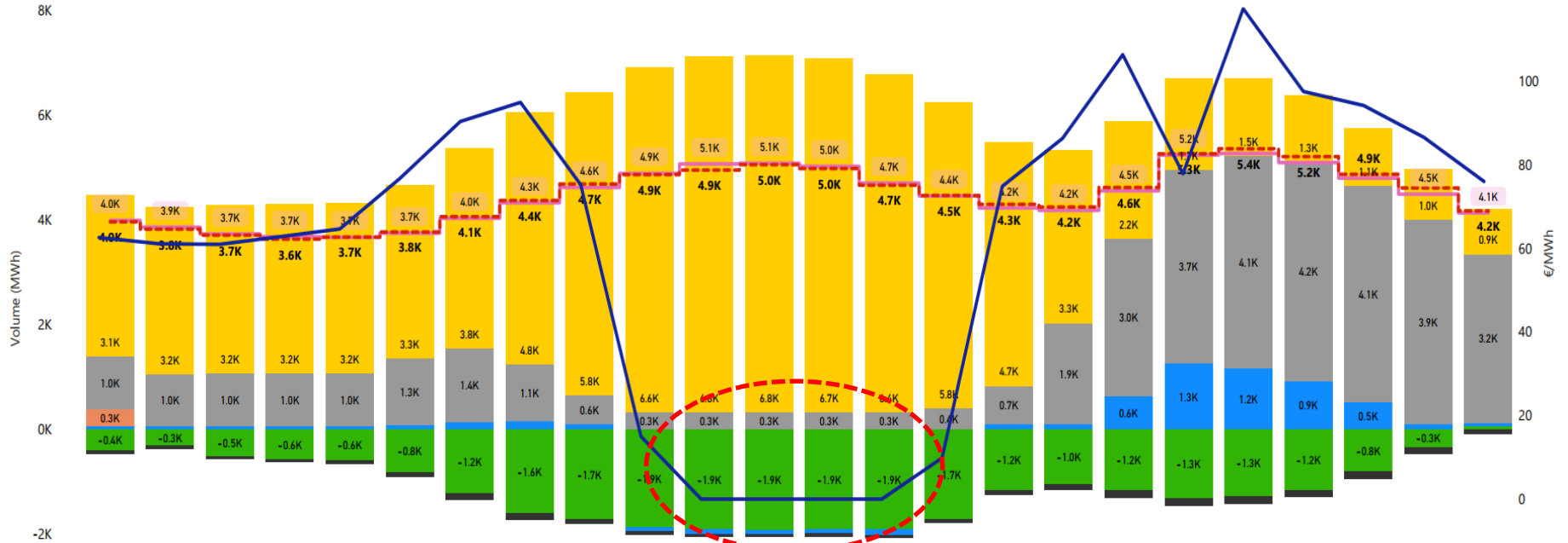


Μήνας	Αιολικά		Φ/Β		Φ/Β Στέγες **		ΜΥΗΣ		Βιοαέριο-Βιομάζα		ΣΗΘΥΑ (1) & Κατανεμόμενες ΣΗΘΥΑ (2)		Σύνολο		
	εκατ.€	€/MWh	εκατ.€	€/MWh	εκατ.€	€/MWh	εκατ.€	€/MWh	εκατ.€	€/MWh	εκατ.€	€/MWh (1)	€/MWh (2)	εκατ.€	€/MWh
Ιαν	56,6	60,9	49,3	128,7	11,6	394,0	5,3	75,1	6,8	145,5	9,2	321,0	-	138,9	93,3
Φεβ *	54,4	56,7	62,2	119,8	8,7	391,5	4,2	69,3	6,1	141,2	6,0	222,1	-	141,6	86,8
Μαρ	58,6	59,6	80,3	125,5	9,5	389,5	5,8	71,4	6,7	142,3	5,6	201,7	-	166,6	92,3
Απρ	41,2	57,5	85,3	122,7	10,6	391,3	5,0	70,0	8,8	183,4	4,7	184,3	-	155,7	98,2
Μάι	51,4	60,5	80,7	124,8	16,0	391,6	5,8	71,7	9,1	184,1	4,3	179,7	-	167,3	98,9
Ιουν *	30,6	59,1	99,1	121,1	15,0	391,5	5,3	74,1	8,7	186,2	3,7	160,3	-	162,4	107,1
Ιουλ	39,3	56,8	106,9	109,9	15,4	391,2	3,4	72,6	8,5	185,1	3,2	168,7	-	176,8	97,3
Αυγ	63,8	57,8	102,0	111,7	20,8	390,2	2,5	72,3	8,5	189,8	4,8	184,9	-	202,5	93,1
Σεπ	62,6	58,2	77,9	113,8	21,4	391,6	2,2	73,2	7,9	186,0	4,7	188,8	-	176,7	92,4
Οκτ *	43,8	56,3	75,7	113,0	17,8	390,6	2,3	73,9	9,4	185,9	5,6	193,9	-	154,7	96,4
Νοε	67,1	58,1	51,8	110,2	16,9	390,6	3,6	75,0	9,5	190,3	6,5	206,4	-	155,4	86,4
Δεκ	56,4	54,7	47,9	109,8	12,8	390,7	4,6	73,7	9,5	188,8	7,0	200,9	-	138,0	83,9
Σύνολο Έτους	625,8	58,0	919,1	117,1	176,5	391,2	50,0	72,5	99,5	176,1	65,4	203,5	-	1.936,4	93,7

*Μήνες Εκκαθάρισης για τα Φ/Β Χαμηλής Τάσης
Σημειώσεις: Συμπεριλαμβάνονται και τα στοιχεία των Φ/Β Στεγών στα ΜΔΝ

DAM 25/03/2024

● Net Cross Border ● Net Hydro (Hydro -Pumping) ● Lignite ● Natural Gas ● RES ● Interconnected Crete ● Interconnected Mainland --- ISP1 Requirements — DAM Price



DAM (€/MWh)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
62,5	61,0	60,9	62,7	64,6	76,7	90,2	94,8	75,1	15,0	0,0	0,0	0,0	0,0	9,9	74,7	86,2	106,2	77,8	117,2	97,4	94,0	86,4	75,9	

Financial impact analysis of Exporting PV production during the hours 11-14:

- Exports (MWh): **7.700**
- Revenue from Exports (€): **0**
- Cost of PVs payment: $7.700\text{MWh} \times 117 \text{ €/MWh} =$ **900.900 €**
- Net Financial Impact for Consumers: **-900.900 €**

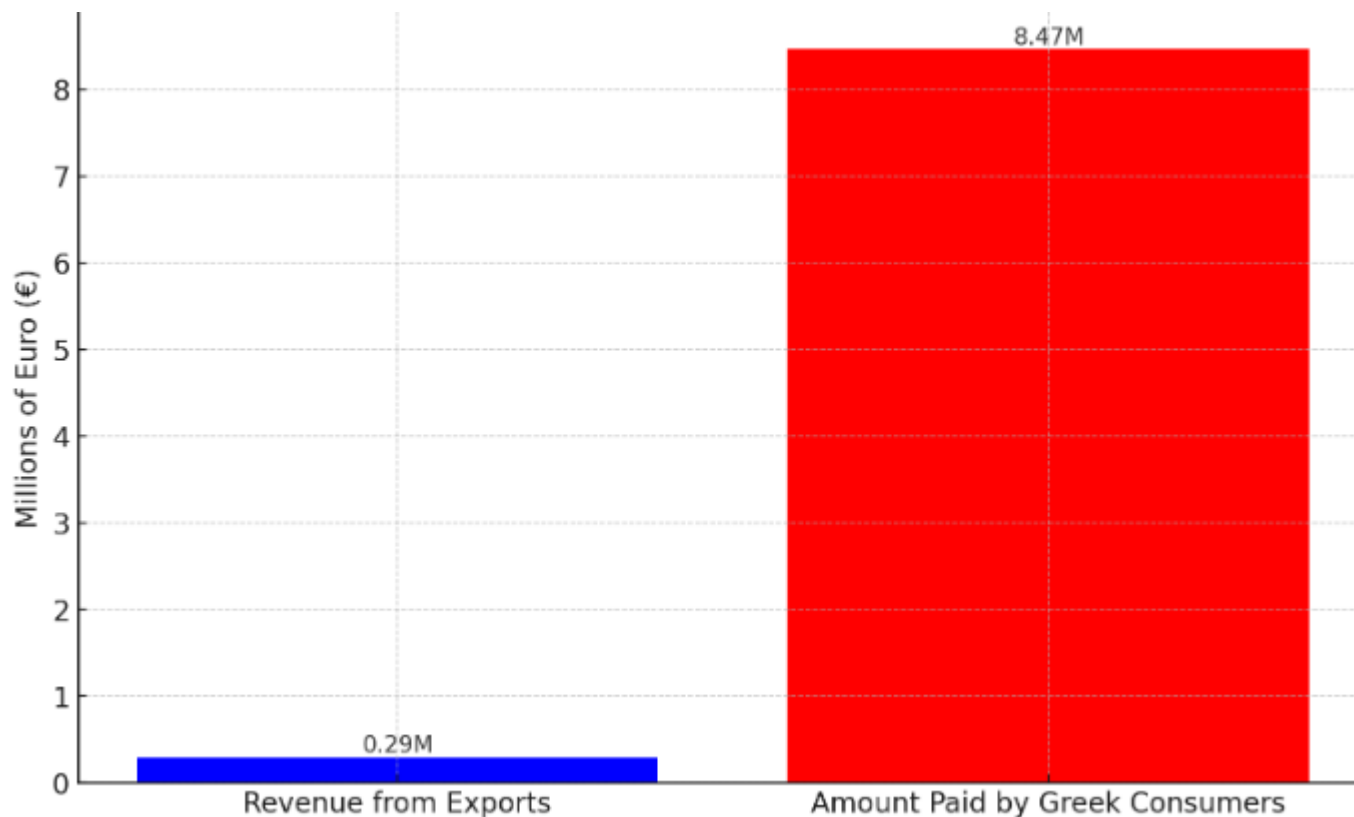
Period Analyzed: 1st of March to 15th of April 2024

Total MWh Exported: 72.375 MWh at or Below 15 €/MWh Day-Ahead prices

Export Revenue: 290.827 €

Price Paid by Greek Consumers: 117 €/MWh (ΔΑΠΕΕΠ December 2023 data)

Total Paid by Greek Consumers: 8.467.875 €



		Capture price/DAM price (%)	
		Wind	PV
March	2021	96%	95%
	2022	96%	89%
	2023	94%	81%
	2024	99%	68%

DAM vs Wind & PV Capture Price (€/MWh) (March 2024)			
DAM	Wind	PV	
67,54	67,09	45,91	(€/MWh)

$\Delta(\text{€/MWh}): -21,63$

DAM vs Wind & PV Capture Price (€/MWh) (1-14 April 2024)			
DAM	Wind	PV	
50,85	53,63	21,45	(€/MWh)

$\Delta(\text{€/MWh}): -29,4$

Cannibalization Effect and Its Serious Impacts:

Prices Drop Sharply: Excessive PV production simultaneously can cause electricity prices to plummet, sometimes even turning negative.

Losses for PV Producers: When prices drop dramatically, PV producers may see their profits vanish, putting the viability of their projects at risk.

PPAs Become a Heavy Load: For individuals holding agreements to purchase PV production at fixed prices, a market downturn can transform these contracts into significant financial burdens, compelling them to pay substantially more than the market.

Huge Challenge in Keeping the Lights On: With so much PVs coming in, keeping the electricity grid stable and efficient becomes a big challenge.

Fixed Prices vs. Market Fluctuations: Committing to a PPA means locking in electricity prices, which can become a liability if market prices decrease, potentially leading to paying more for energy than current rates.

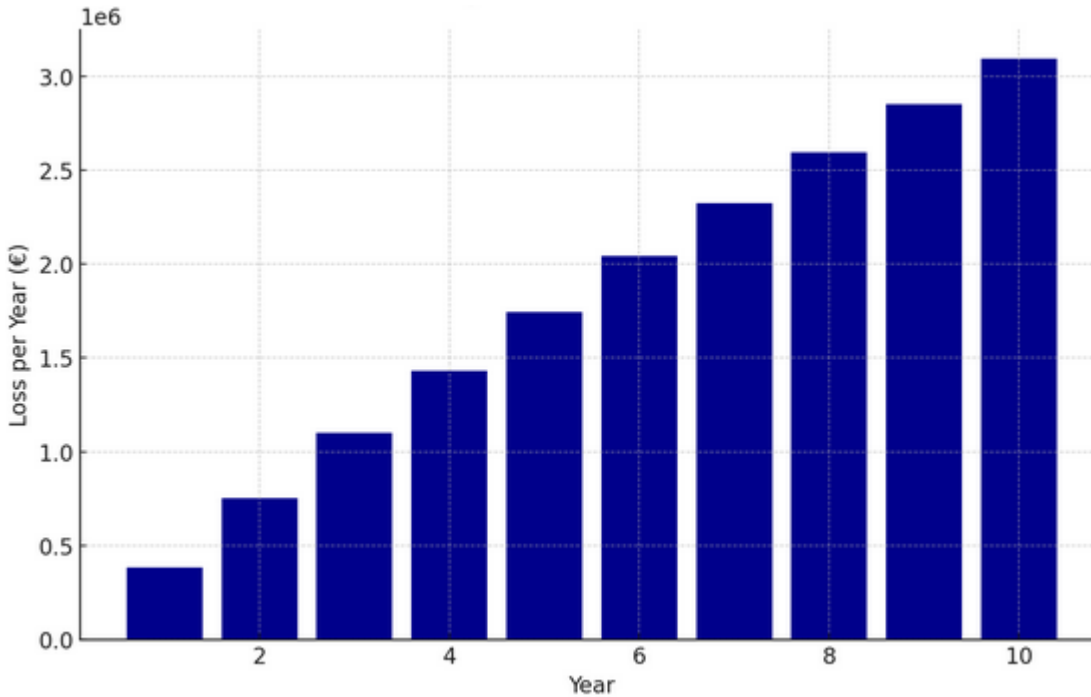
Lack of Flexibility for Changing Needs: PPAs set specific terms for energy volume and price, which might not align with future operational changes or reductions in energy consumption, limiting adaptability.

Unforeseen Regulatory Changes: The energy sector's regulatory landscape can evolve, impacting the anticipated benefits or obligations of a PPA and possibly introducing new costs.

Risk of Counterparty Failure: The bankruptcy or financial distress of either the energy buyer or seller poses a significant risk, potentially leading to legal disputes or the loss of investment and energy supply.

Overshadowed by Technological Advancements: Rapid advances in energy generation and storage technologies could make the terms of a PPA less attractive over time as more cost-effective or efficient options emerge.

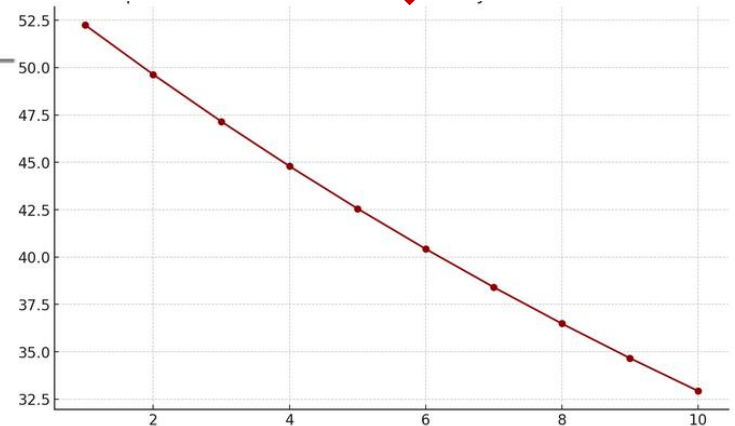
Annual Financial Losses



Total 10 years loss: 18.316.123 €

PPA (example)	
PV Capacity:	100 MW
Capacity Factor (CF):	16%
Volumes:	140.160 MWh
Contract Price:	55 €/MWh.

**Annual Decrease in PV Capture Price:
5% yearly decrease over 10 years**



**THANK YOU
FOR YOUR ATTENTION**

ANDREAS PETROPOULEAS