



OSSERVATORIO Sistemi di Accumulo :

ELABORAZIONE ANIE RINNOVABILI

Settembre 2025



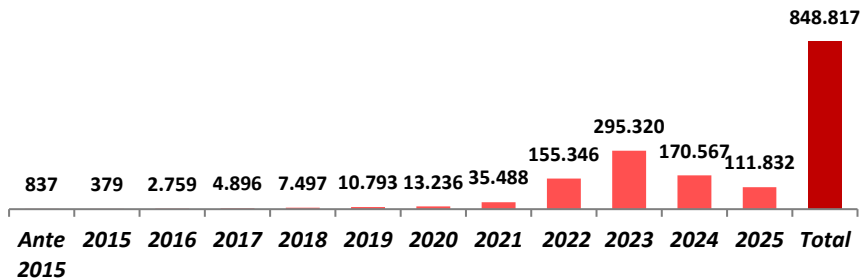
ANIE
Rinnovabili

OSSERVATORIO Sistemi di Accumulo :

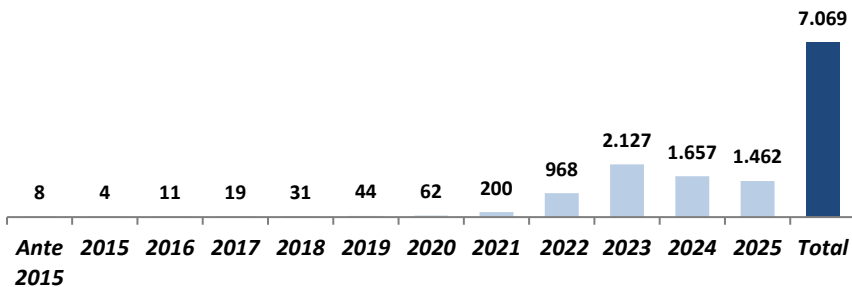
Totale Installato

SISTEMI DI ACCUMULO (SdA) IN ITALIA

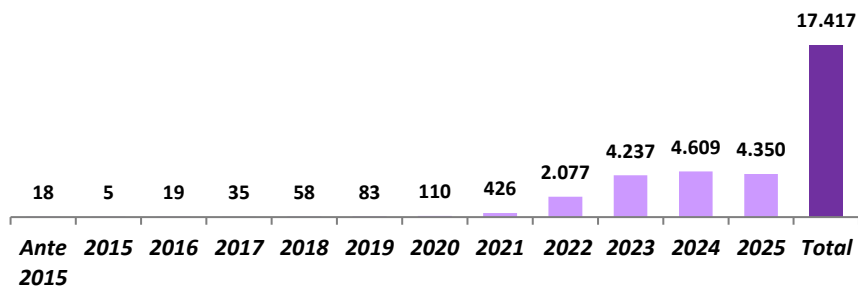
N. SdA connessi al Q3 2025



Potenza SdA connessi al Q3 2025 [MW]

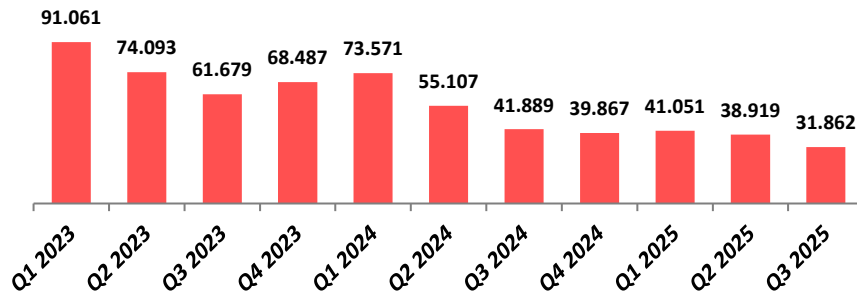


Capacità SdA connessi al Q3 2025 [MWh]

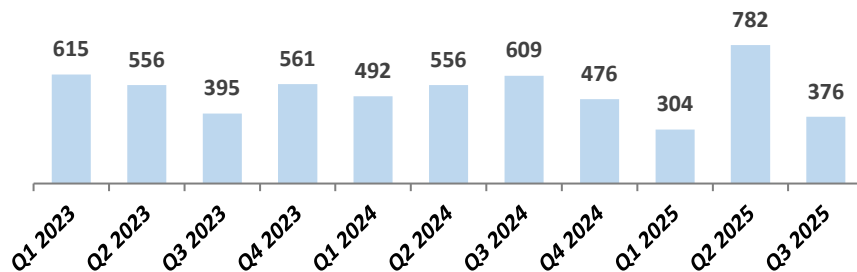


VARIAZIONI CONGIUNTURALI (2023-2025*)

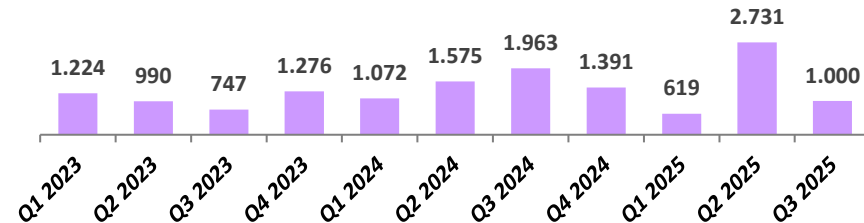
N. SdA connessi per trimestre



Potenza SdA connessi per trimestre [MW]



Capacità SdA connessi per trimestre [MWh]



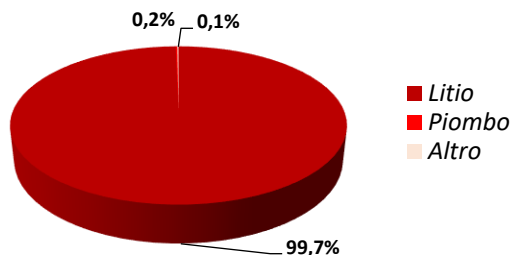
Periodo di riferimento	Variazioni congiunturali [%]		
	N. SdA	Potenza SdA	Capacità SdA
Q1 2023/Q4 2022	34%	42%	35%
Q2 2023/Q1 2023	-19%	-10%	-19%
Q3 2023/Q2 2023	-17%	-29%	-25%
Q4 2023/Q3 2023	11%	42%	71%
Q1 2024/Q4 2023	7%	-12%	-16%
Q2 2024/Q1 2024	-25%	13%	47%
Q3 2024/Q2 2024	-24%	9%	25%
Q4 2024/ Q3 2024	-5%	-22%	-29%
Q1 2025/ Q4 2024	3%	-36%	-55%
Q2 2025/Q1 2025	-5%	157%	341%
Q3 2025/ Q2 2025	-18%	-52%	-63%

Tecnologia	N. SdA	Potenza SdA [MW]	Capacità SdA [MWh]
Litio	846.185	7.031	17.202
Piombo	1.511	6	14
Altro	1.121	32	201
Totale	848.817	7.069	17.417

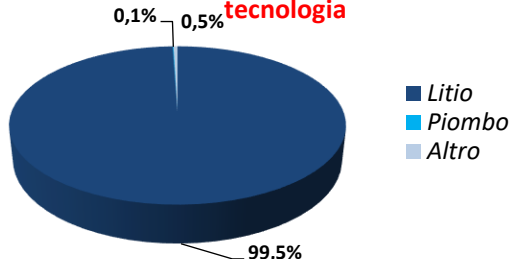


Altre tecnologie	N. SdA	Potenza SdA [MW]	Capacità SdA [MWh]
Aria compressa	22	23,61	187,17
Batteria a flusso Poli-Solfuro-Bromuro	3	0,00	0,01
Batteria a flusso Vanadio Redox	1	0,00	0,01
Batteria a volano	325	2,27	3,33
Batteria al Nichel-Cadmio	135	1,00	1,74
Batteria Nichel-idruri	34	0,34	0,79
Batteria Nichel-Zinco	15	0,08	0,16
Batteria Z.E.B.R.A.	71	1,01	1,72
Batteria Zolfo-Sodio	27	0,29	0,39
Idrogeno	53	0,30	0,60
Supercondensatori	433	3,42	5,13
Metallo-Aria	2	0	0

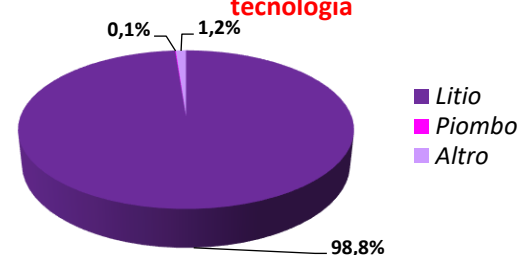
Distribuzione % N. SdA per tecnologia



Distribuzione % Potenza SdA per tecnologia

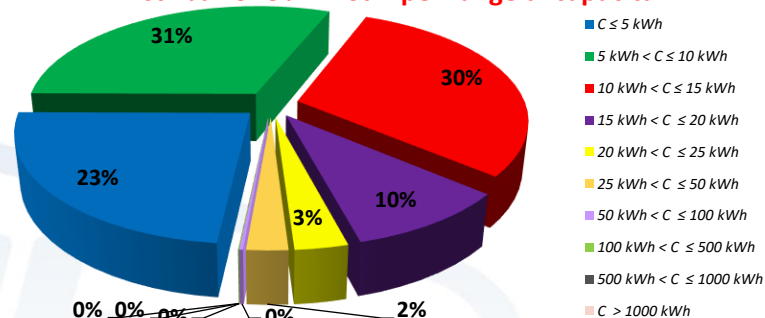


Distribuzione % Capacità SdA per tecnologia

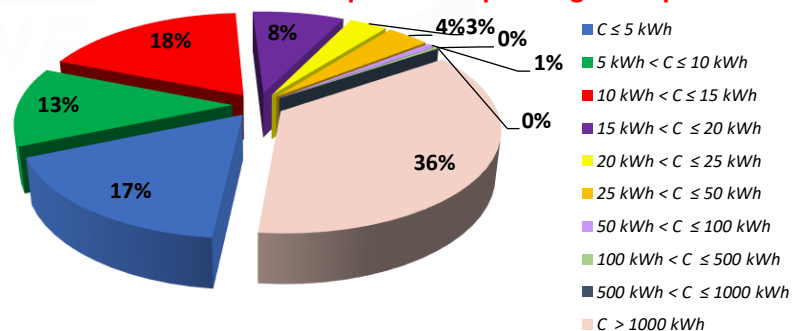


Range di Capacità SdA [kWh]	N.SdA	Potenza SdA [MW]	Capacità SdA [MWh]
$C \leq 5 \text{ kWh}$	198.904	1.317	2.949
$5 \text{ kWh} < C \leq 10 \text{ kWh}$	262.268	1.226	2.178
$10 \text{ kWh} < C \leq 15 \text{ kWh}$	255.618	1.547	3.138
$15 \text{ kWh} < C \leq 20 \text{ kWh}$	82.676	646	1.419
$20 \text{ kWh} < C \leq 25 \text{ kWh}$	26.503	273	585
$25 \text{ kWh} < C \leq 50 \text{ kWh}$	20.553	289	667
$50 \text{ kWh} < C \leq 100 \text{ kWh}$	1.869	65	129
$100 \text{ kWh} < C \leq 500 \text{ kWh}$	368	30	57
$500 \text{ kWh} < C \leq 1000 \text{ kWh}$	7	2	5
$C > 1000 \text{ kWh}$	51	1.673	6.290
Totale	848.817	7.069	17.417

Distribuzione % N. SdA per range di capacità



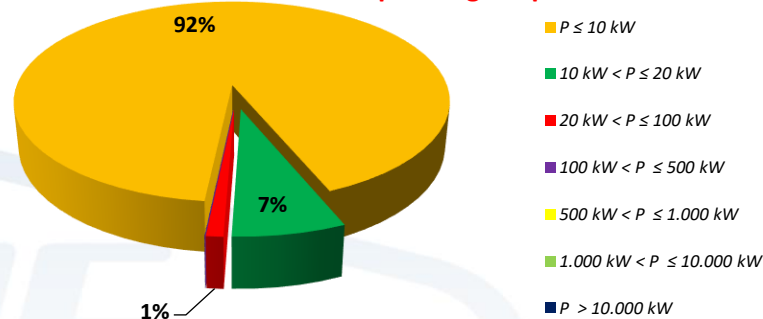
Distribuzione % Capacità SdA per range di capacità



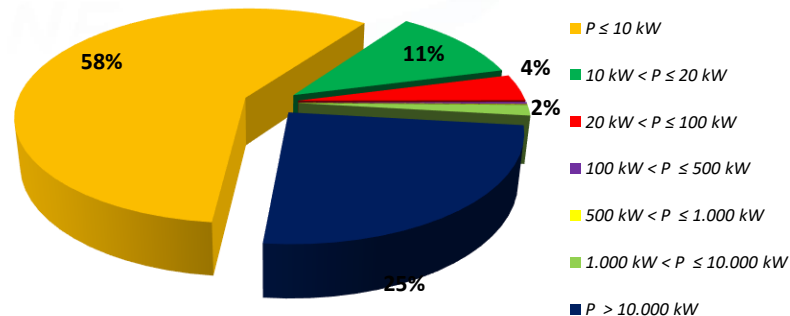
RANGE DI POTENZA SdA

Range di Potenza SdA [kW]	N.SdA	Potenza SdA [MW]	Capacità SdA [MWh]
$P \leq 10 \text{ kW}$	780.933	4.115	8.888
$10 \text{ kW} < P \leq 20 \text{ kW}$	58.838	785	1.174
$20 \text{ kW} < P \leq 100 \text{ kW}$	8.881	280	360
$100 \text{ kW} < P \leq 500 \text{ kW}$	109	21	34
$500 \text{ kW} < P \leq 1.000 \text{ kW}$	4	3	4
$1.000 \text{ kW} < P \leq 10.000 \text{ kW}$	20	111	136
$P > 10.000 \text{ kW}$	32	1.755	6.822
Totale	848.817	7.069	17.417

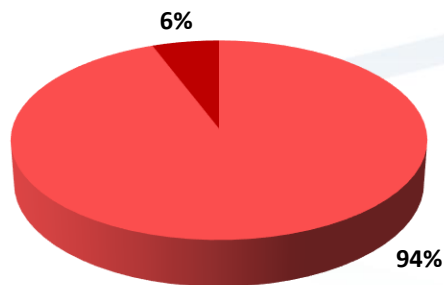
Distribuzione % N. SdA per range di potenza



Distribuzione % Potenza SdA per range di potenza

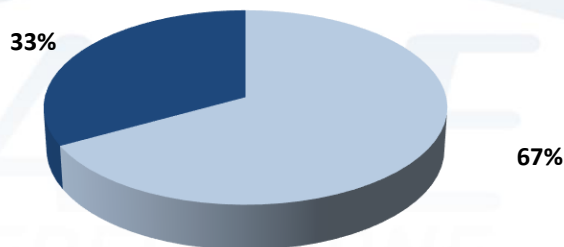


Distribuzione % N. SdA per taglia



■ N. SdA con C < 20 kWh ■ N. SdA con C ≥ 20 kWh

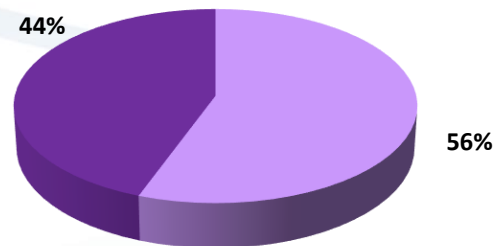
Distribuzione % Potenza SdA per taglia



■ Potenza SdA con C < 20 kWh

■ Potenza SdA con C ≥ 20 kWh

Distribuzione % Capacità SdA per taglia

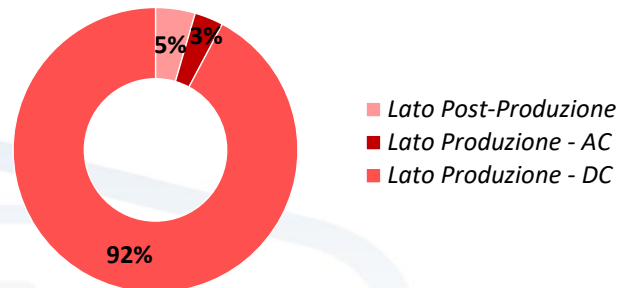


■ Capacità max SdA con C < 20 kWh

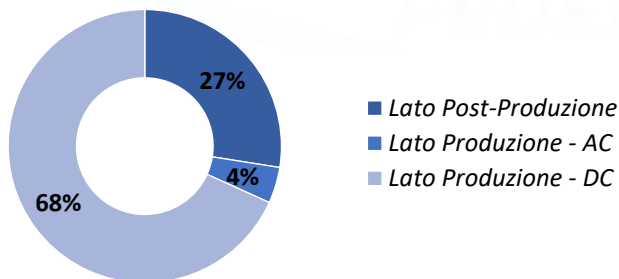
■ Capacità max SdA con C ≥ 20 kWh

Tipo configurazione	N. SdA	Potenza SdA [MW]	Capacità SdA [MWh]
Lato post Produzione - AC	38.207	1.944	6.968
Lato Produzione - AC	27.773	302	877
Lato Produzione - DC	782.837	4.823	9.572
Totale	848.817	7.069	17.417

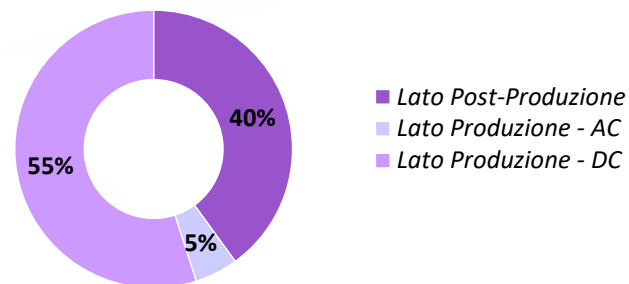
Distribuzione % n. SdA per configurazione



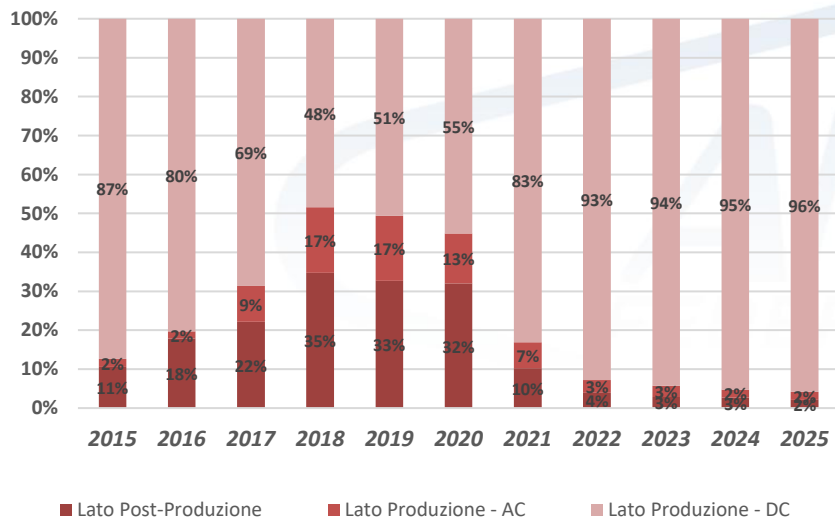
Distribuzione potenza SdA per configurazione



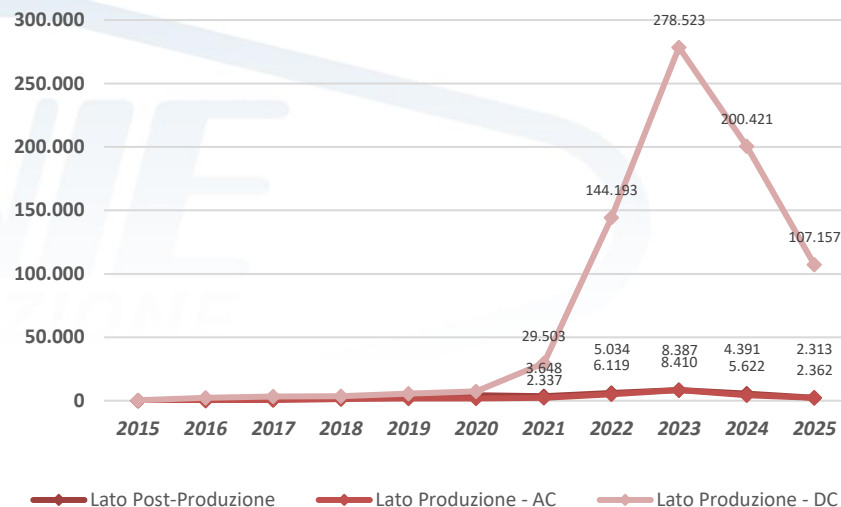
Distribuzione % capacità SdA per configurazione



**Distribuzione % configurazione SdA connessi
annualmente**



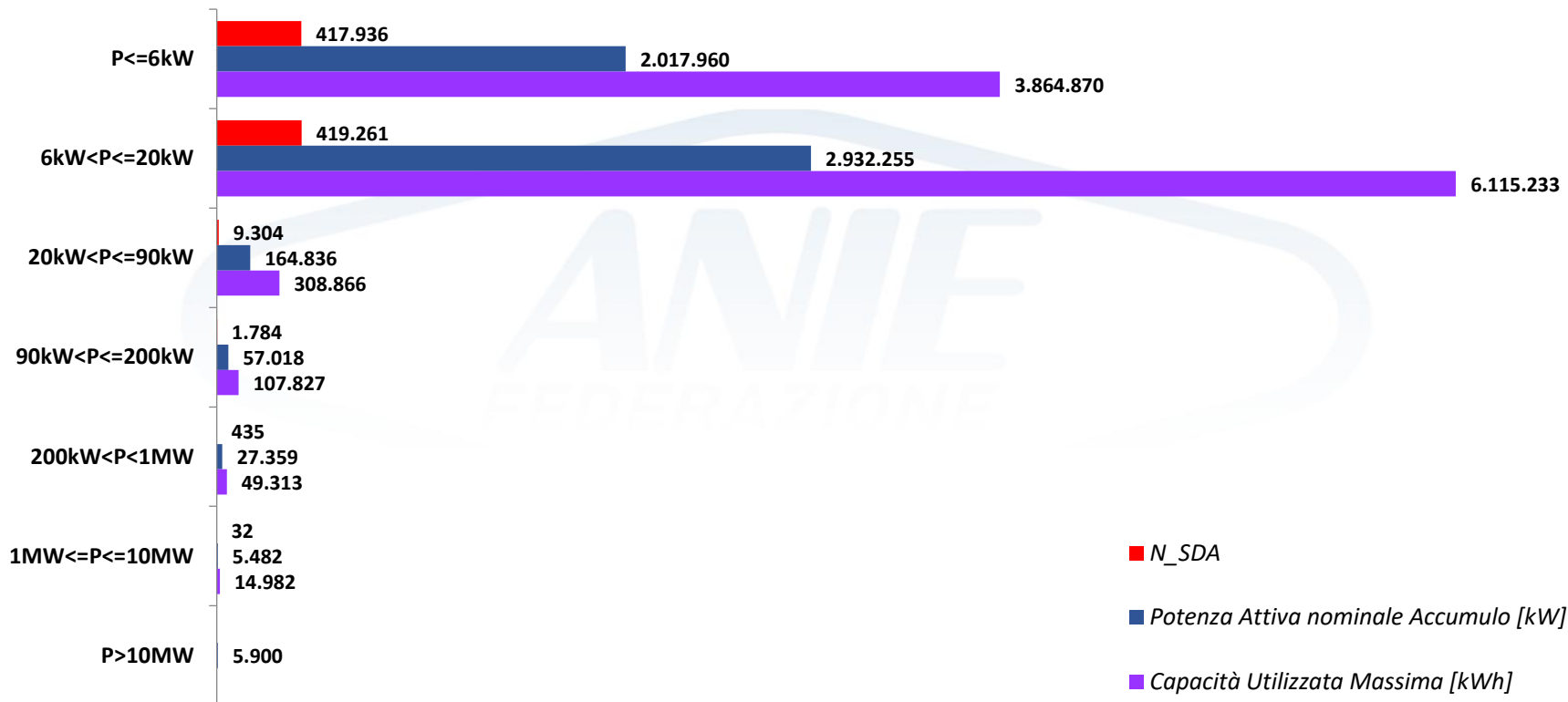
N. SdA connessi per configurazione



CLASSE DI POTENZA SdA ABBINATO A FV

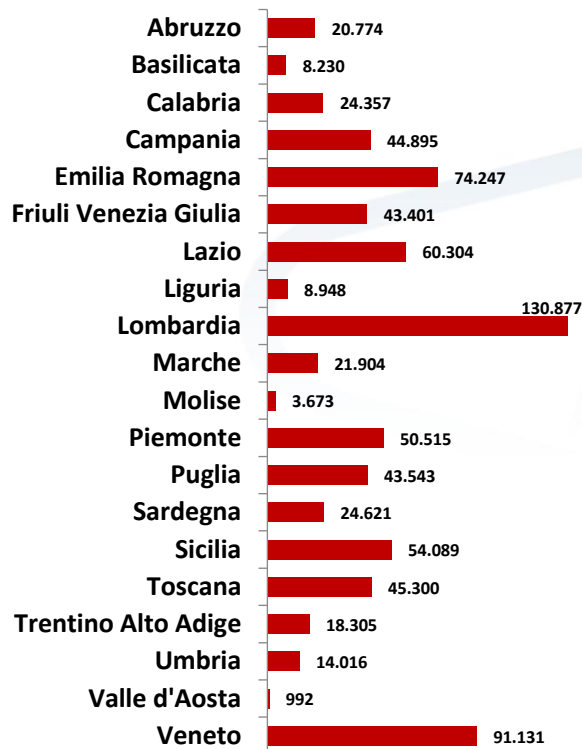
N. SdA, potenza SdA [kW] e capacità SdA [kWh] per taglia impianto FV abbinato (cumulato Q3 2025)

Classe di potenza impianto FV abbinato [kW]

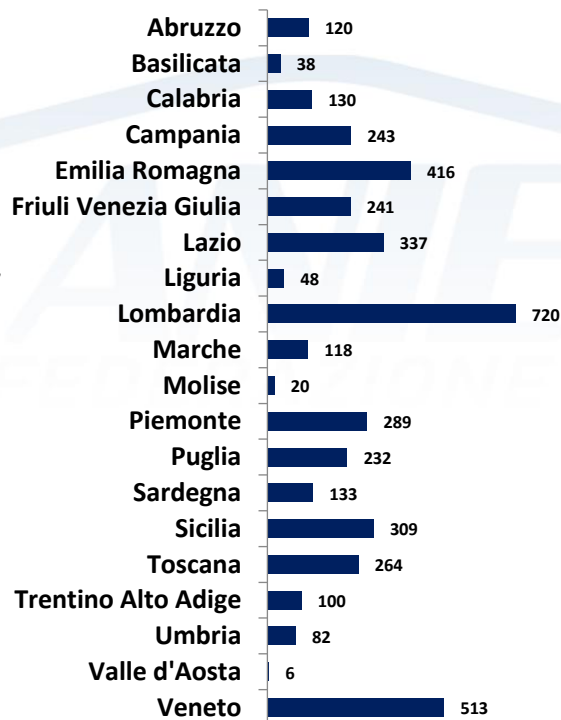


Dati Regionali SdA – Residential (≤ 20 kWh)

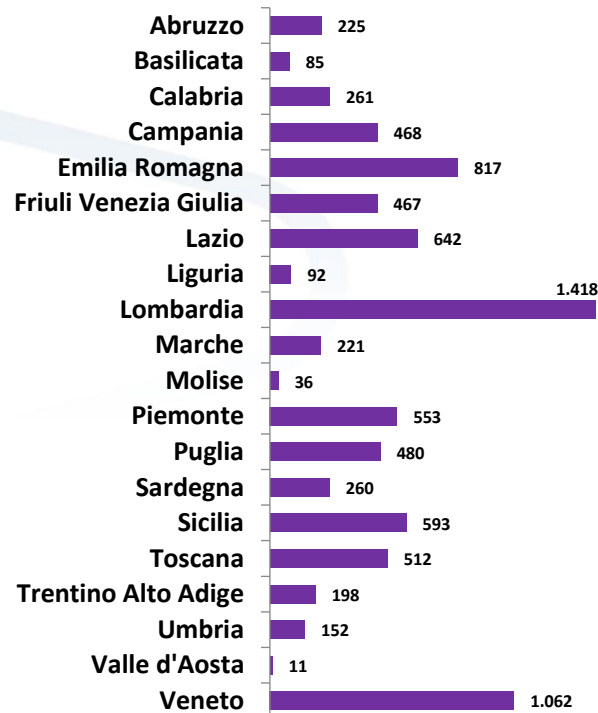
N. totale SdA installati per regione



Potenza totale SdA per regione [MW]

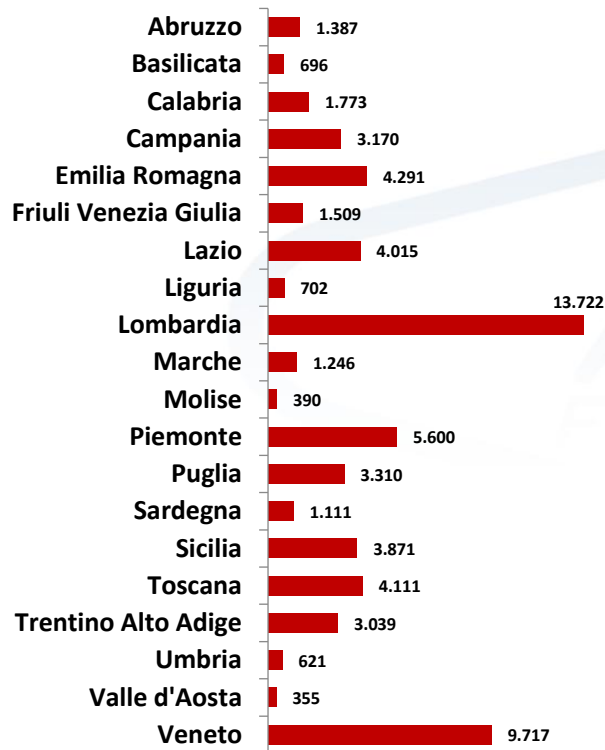


Capacità SdA utilizzata max totale per regione [MWh]

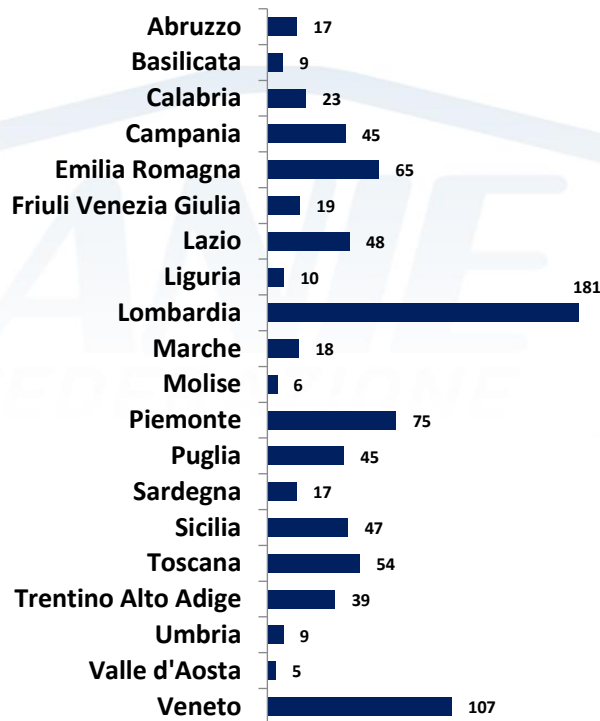


Dati Regionali SdA – C&I (20 kWh<x≤1 MWh)

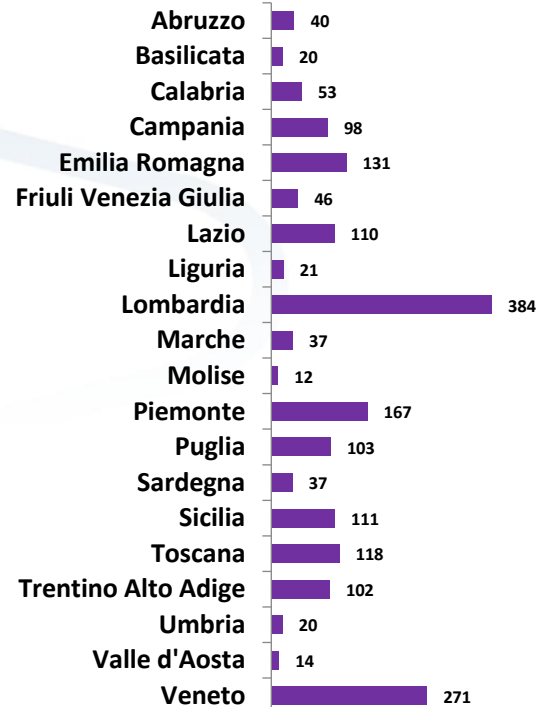
N. totale SdA installati per regione



Potenza totale SdA per regione [MW]

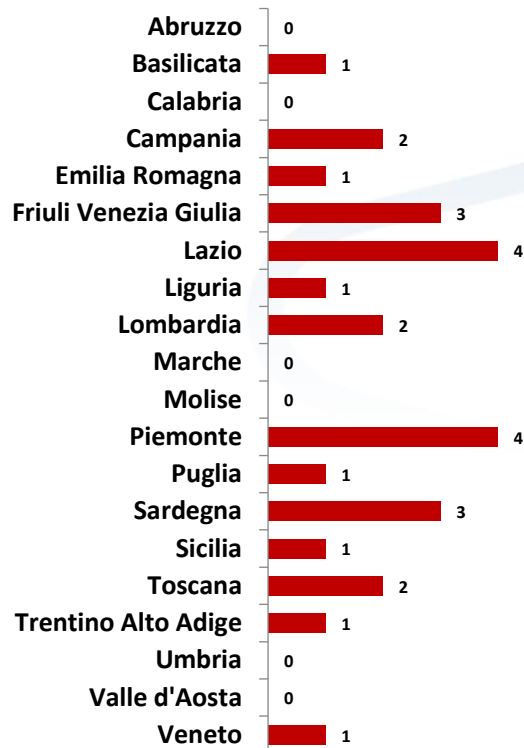


Capacità SdA utilizzata max totale per regione [MWh]

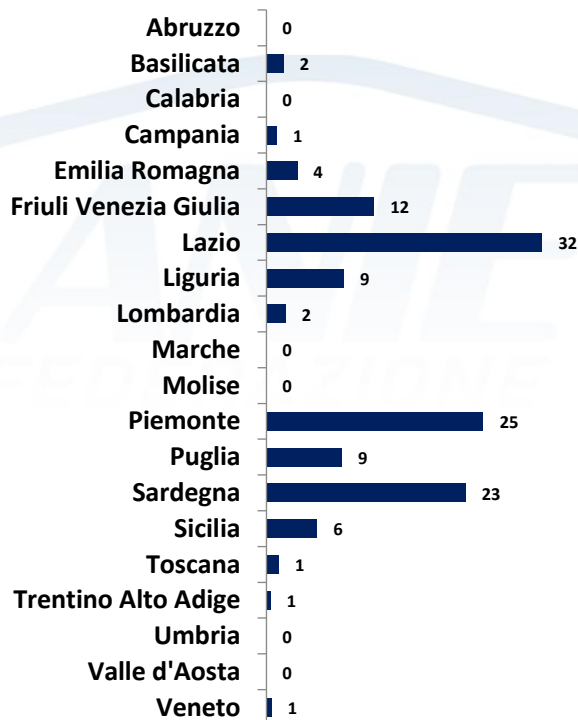


Dati Regionali SdA – Utility Scale (1 MWh<x≤10 MWh)

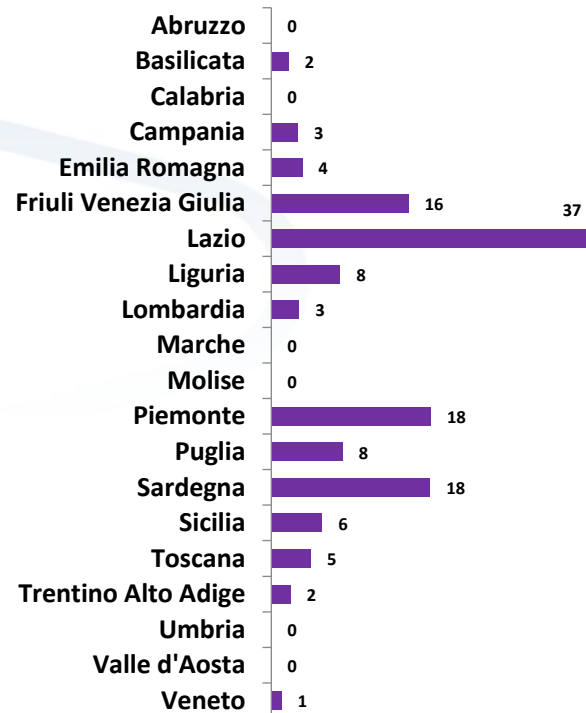
N. totale SdA installati per regione



Potenza totale SdA per regione [MW]

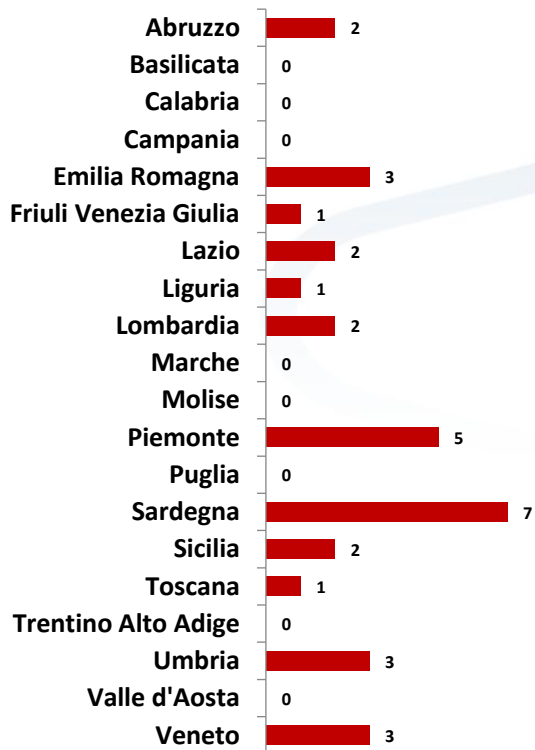


Capacità SdA utilizzata max totale per regione [MWh]

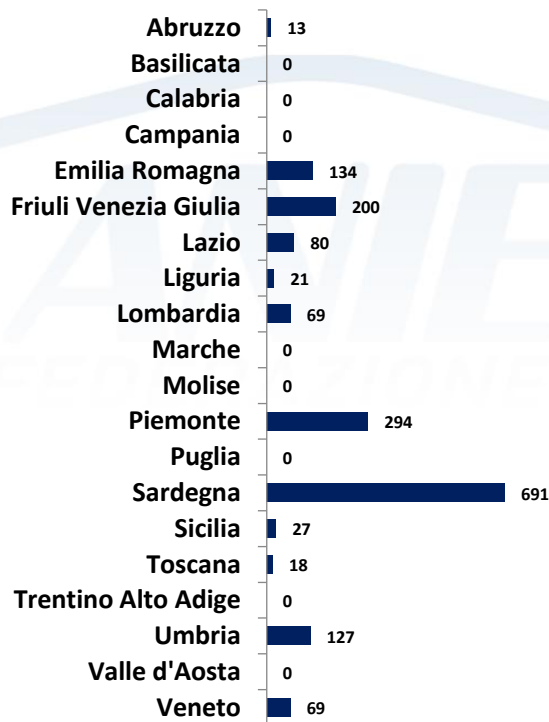


Dati Regionali SdA – Large Utility Scale (>10 MWh)

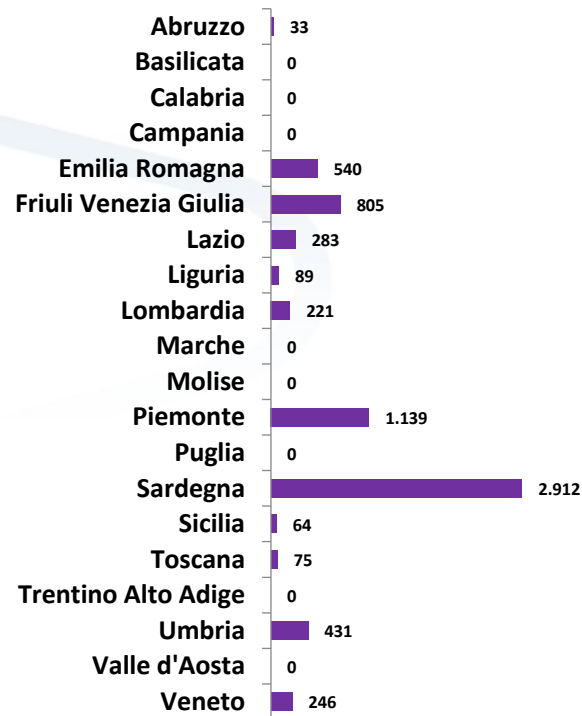
N. totale SdA installati per regione



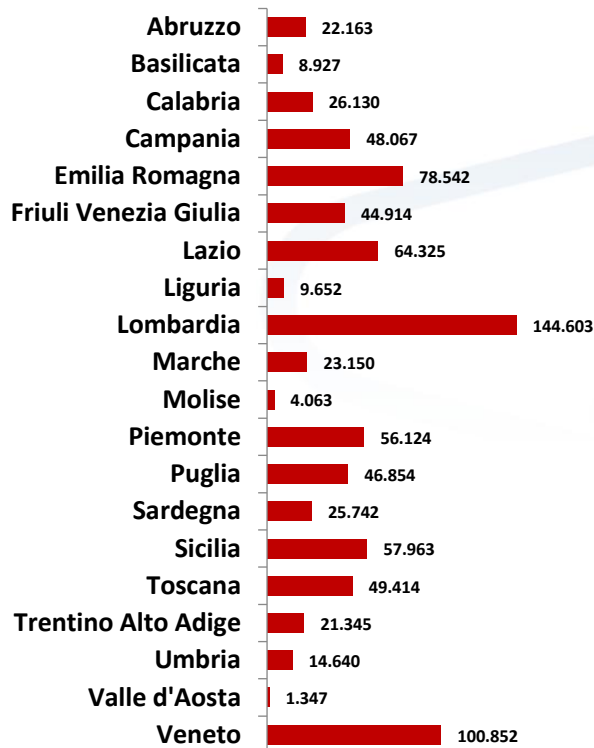
Potenza totale SdA per regione [MW]



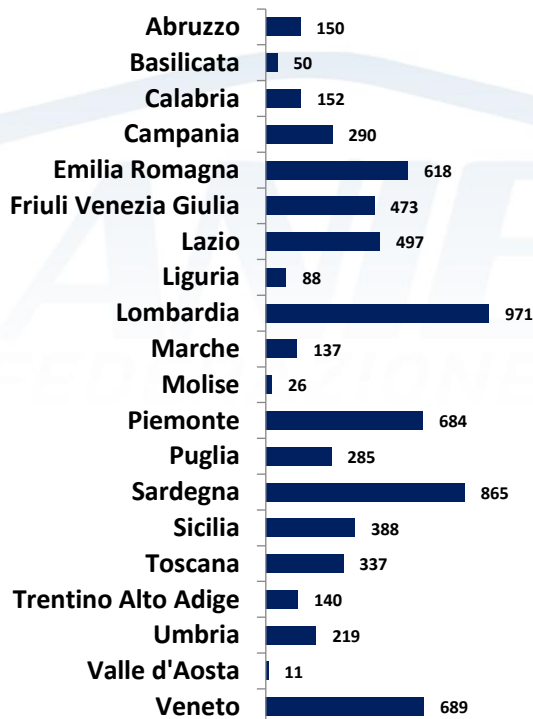
Capacità SdA utilizzata max totale per regione [MWh]



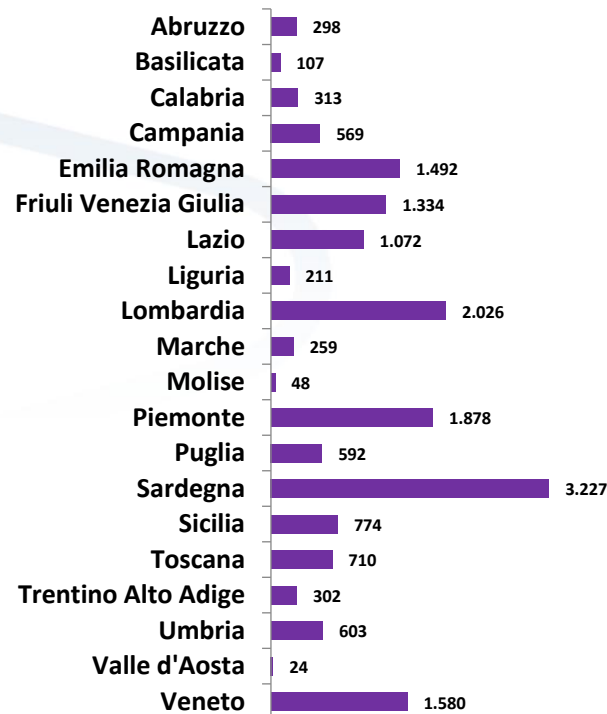
N. totale SdA installati per regione



Potenza totale SdA per regione [MW]

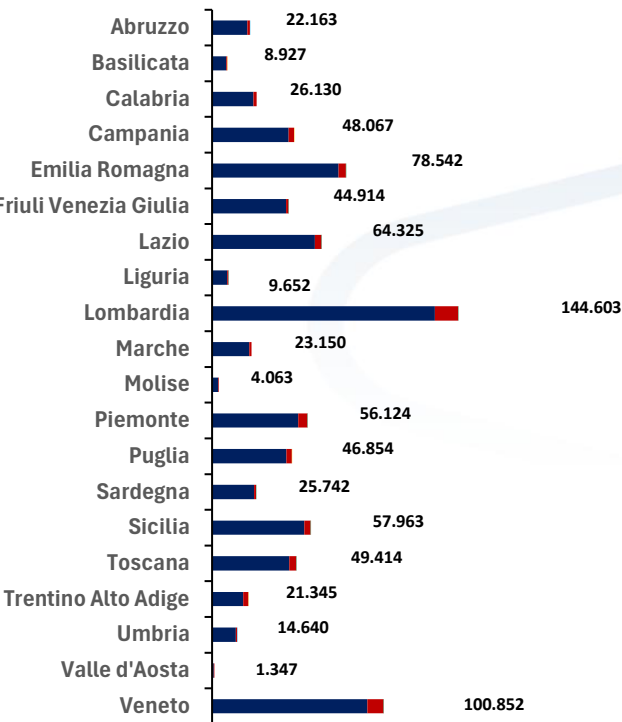


Capacità SdA utilizzata max totale per regione [MWh]

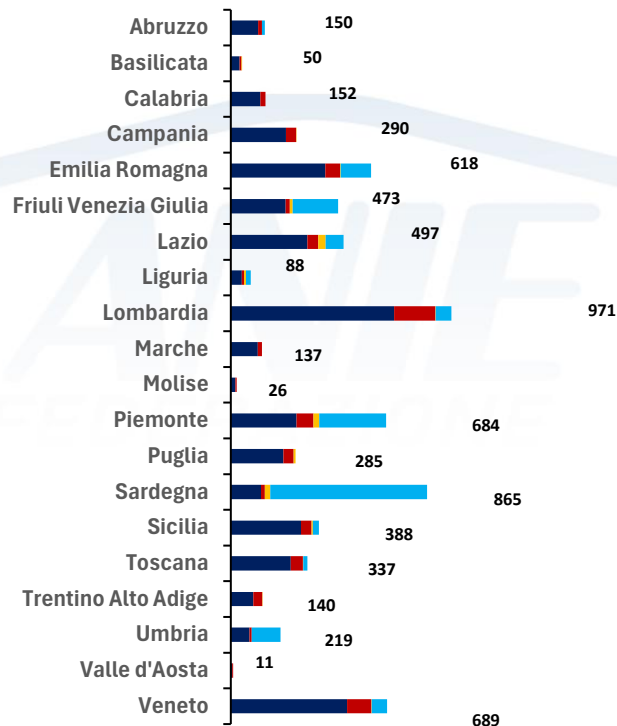


Dati Regionali SdA per Segmento di Mercato

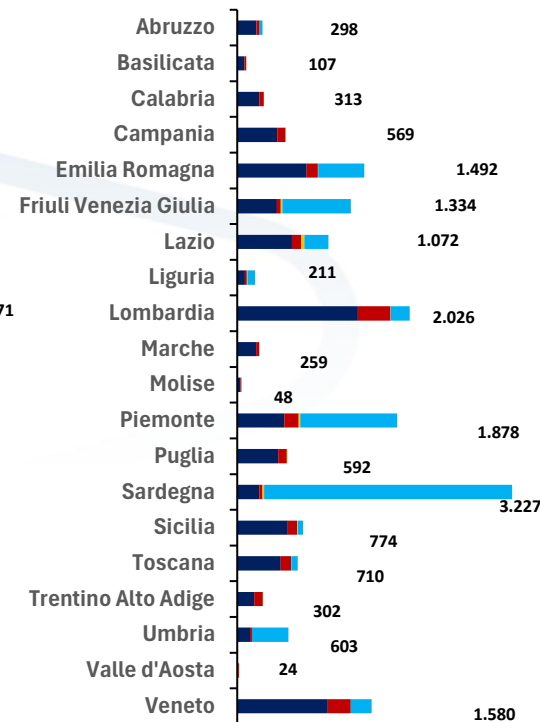
N. totale SdA installati per regione



Potenza totale SdA per regione [MW]

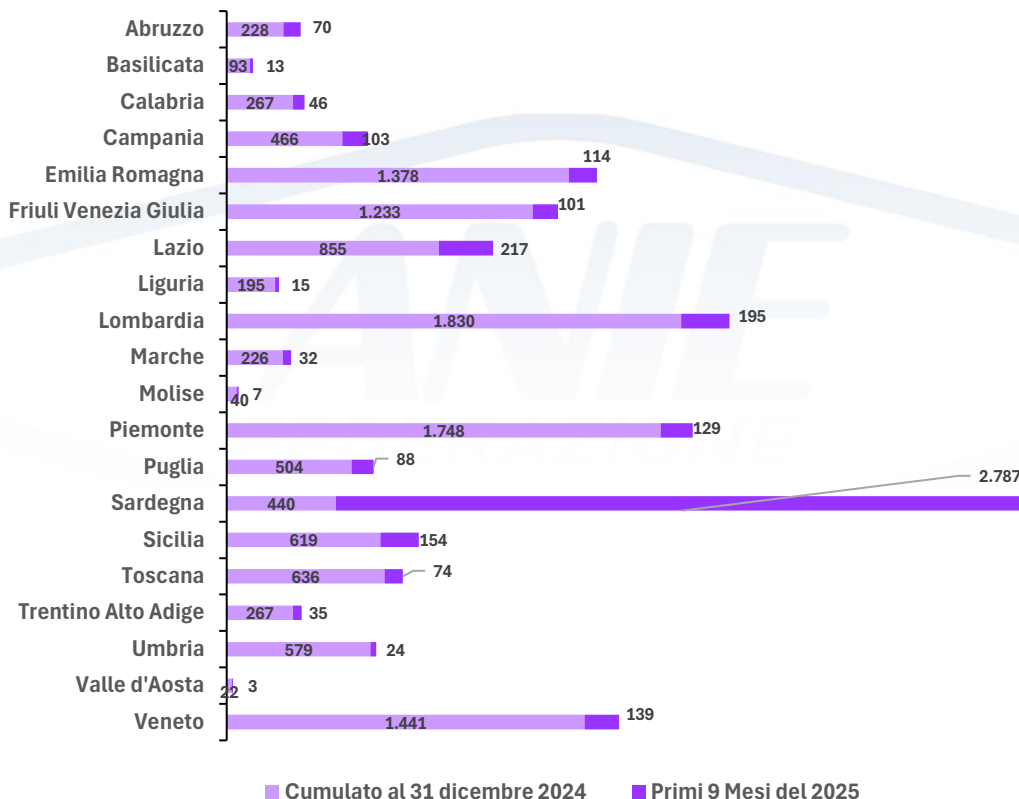


Capacità SdA totale per regione [MWh]



Dati Regionali SdA Cumulato 2024 + Installazioni primi 9 mesi 2025

Capacità SdA totale per regione [MWh]



Cumulato al 31 dicembre 2024

Primi 9 Mesi del 2025

INSTALLAZIONI PER SEGMENTI DI MERCATO

N. SdA

Segmento di Mercato	Q3 2025	2025	CUMULATO
<i>Residential $C \leq 20$ kWh</i>	29.526	104.800	784.122
<i>C&I 20 kWh $< C \leq 1000$ kWh</i>	2.331	7.015	64.636
<i>Utility Scale 1000 kWh $< C \leq 10000$ kWh</i>	2	6	27
<i>Large Utility Scale $C > 10000$ kWh</i>	3	11	32
Totale	31.862	111.832	848.817

Potenza [MW]

Segmento di Mercato	Q3 2025	2025	CUMULATO
<i>Residential $C \leq 20$ kWh</i>	171	597	4.360
<i>C&I 20 kWh $< C \leq 1000$ kWh</i>	47	130	839
<i>Utility Scale 1000 kWh $< C \leq 10000$ kWh</i>	1	4	128
<i>Large Utility Scale $C > 10000$ kWh</i>	157	731	1.741
Totale	376	1.462	7.069

Capacità [MWh]

Segmento di Mercato	Q3 2025	2025	CUMULATO
<i>Residential $C \leq 20$ kWh</i>	311	1.097	8.552
<i>C&I 20 kWh $< C \leq 1000$ kWh</i>	92	264	1.894
<i>Utility Scale 1000 kWh $< C \leq 10000$ kWh</i>	2	11	132
<i>Large Utility Scale $C > 10000$ kWh</i>	594	2.978	6.839
Totale	1.000	4.350	17.417

VARIAZIONI TENDENZIALI PER SEGMENTO DI MERCATO

N. SdA

Segmento di Mercato	YY 25/24	Q3 2025/ Q3 2024	Q2 2025/ Q2 2024	Q1 2025/ Q1 2024	yy 24/23
Residential C ≤ 20 kWh	-33%	-24%	-28%	-42%	-29%
C&I 20 kWh < C ≤ 1000 kWh	-48%	-17%	-43%	-65%	-28%
Utility Scale 1000 kWh < C ≤ 10000 kWh	-14%	NS	200%	-83%	150%
Large Utility Scale C> 10000 kWh	38%	-40%	150%	200%	150%
Totale	-34%	-24%	-29%	-44%	-29%

Potenza

Segmento di Mercato	YY 25/24	Q3 2025/ Q3 2024	Q2 2025/ Q2 2024	Q1 2025/ Q1 2024	yy 24/23
Residential C ≤ 20 kWh	-31%	-21%	-25%	-41%	-34%
C&I 20 kWh < C ≤ 1000 kWh	-15%	25%	-12%	-41%	-35%
Utility Scale 1000 kWh < C ≤ 10000 kWh	-87%	NS	-50%	-97%	-2%
Large Utility Scale C> 10000 kWh	21%	-56%	138%	61%	363%
Totale	-12%	-38%	40%	-38%	0%

Capacità

Segmento di Mercato	YY 25/24	Q3 2025/ Q3 2024	Q2 2025/ Q2 2024	Q1 2025/ Q1 2024	yy 24/23
Residential C ≤ 20 kWh	-36%	-25%	-30%	-47%	-33%
C&I 20 kWh < C ≤ 1000 kWh	-31%	3%	-26%	-54%	-23%
Utility Scale 1000 kWh < C ≤ 10000 kWh	-74%	NS	-33%	-94%	64%
Large Utility Scale C> 10000 kWh	20%	-59%	151%	15%	611%
Totale	-6%	-49%	73%	-42%	42%



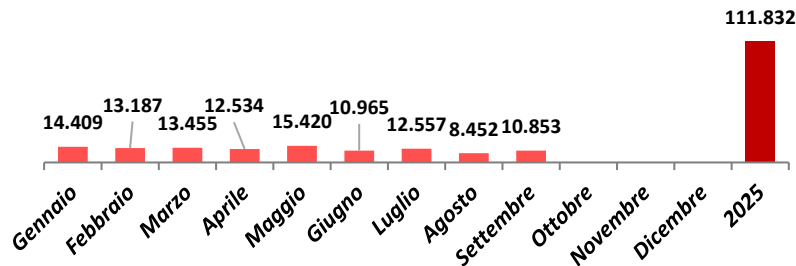
ANIE
Rinnovabili

OSSERVATORIO Sistemi di Accumulo :

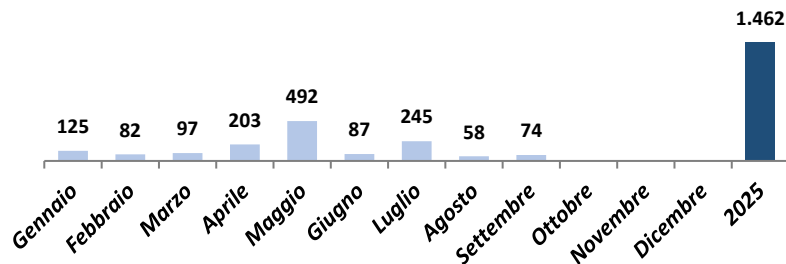
Installato nel Q3 2025

Sistemi di Accumulo - 2025

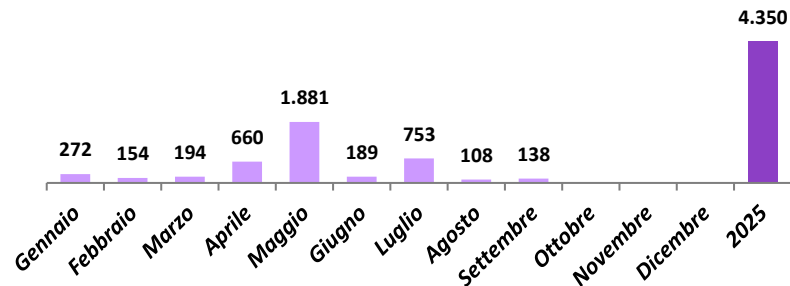
N. SdA connessi



Potenza SdA connessi [MW]

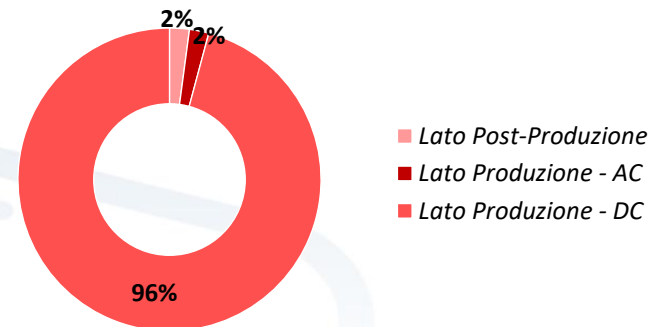


Capacità SdA connessi [MWh]

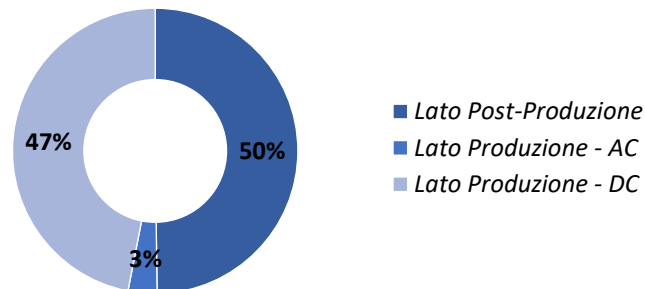


Tipo configurazione	N. SdA	Potenza SdA [MW]	Capacità SdA [MWh]
Lato post Produzione - AC	2.362	728	2.834
Lato Produzione - AC	2.313	48	242
Lato Produzione - DC	107.157	686	1.273
Totale 2025	111.832	1.462	4.350

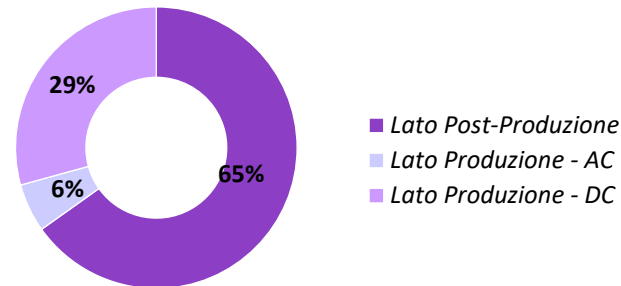
Distribuzione % n. SdA per configurazione (installazioni 2025)



Distribuzione potenza SdA per configurazione (installazioni 2025)

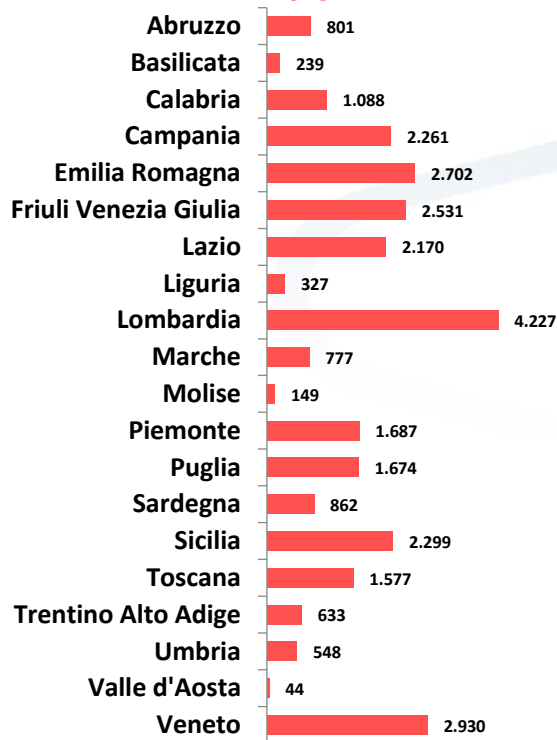


Distribuzione % capacità SdA per configurazione (installazioni 2025)

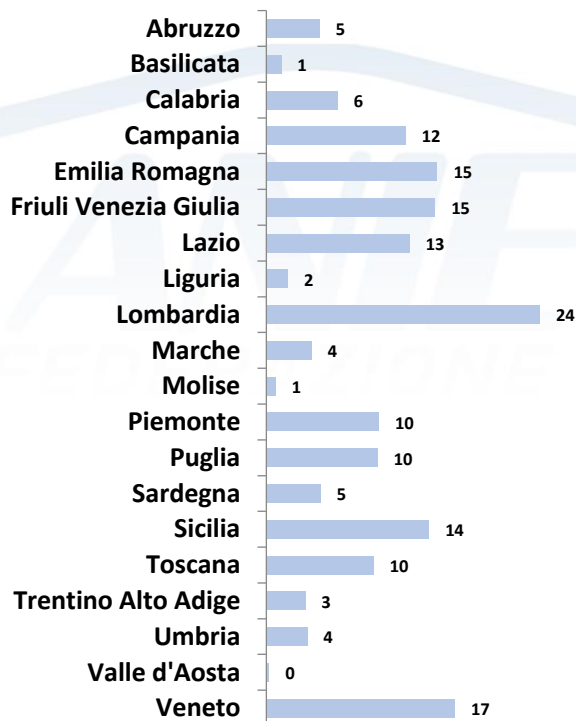


Dati Regionali SdA Q3 – Residential (≤ 20 kWh)

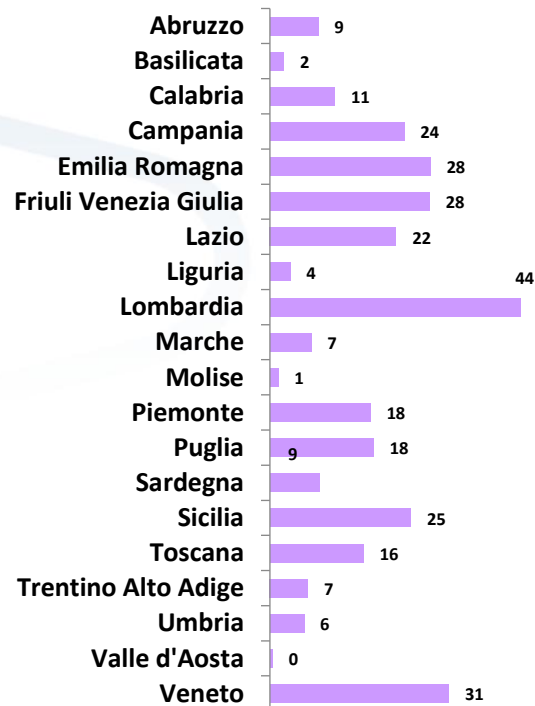
N. SdA installati per regione nel Q3 2025



Potenza SdA per regione [MW] nel Q3 2025

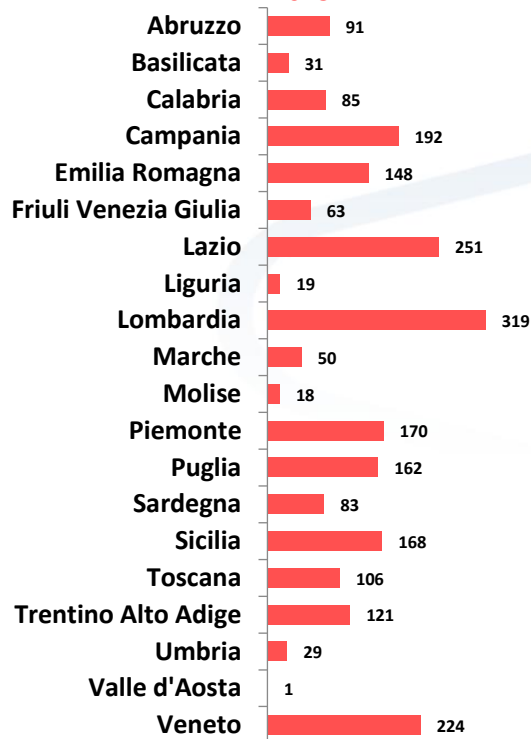


Capacità SdA utilizzata max per regione [MWh] nel Q3 2025

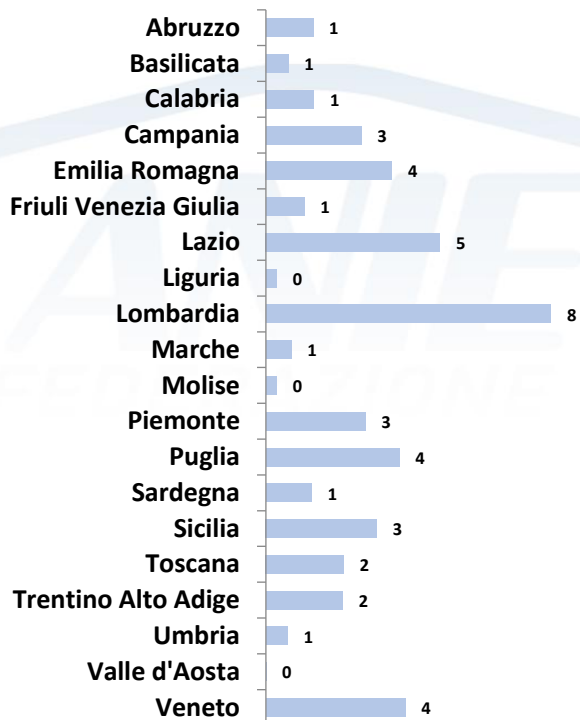


Dati Regionali SdA Q3 – C&I (20 kWh<x≤1 MWh)

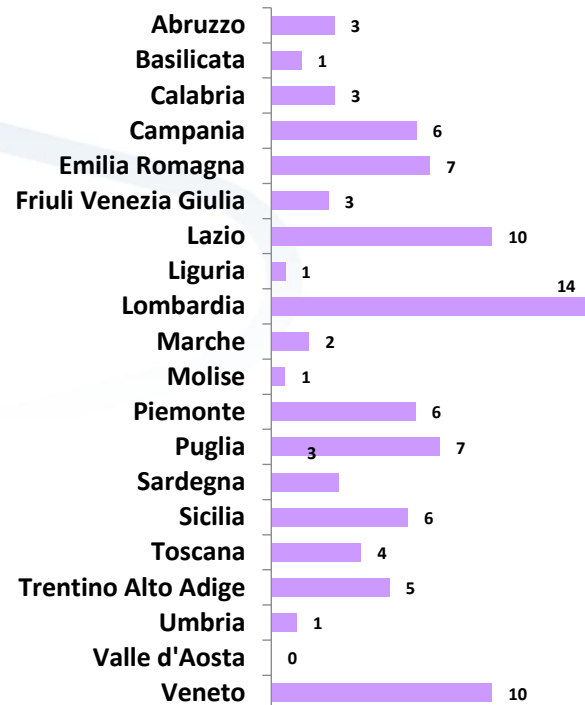
N. SdA installati per regione nel Q3 2025



Potenza SdA per regione [MW] nel Q3 2025

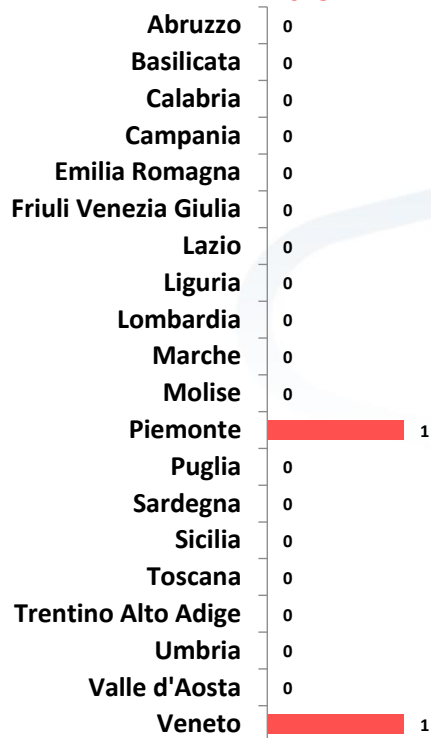


Capacità SdA utilizzata max per regione [MWh] nel Q3 2025

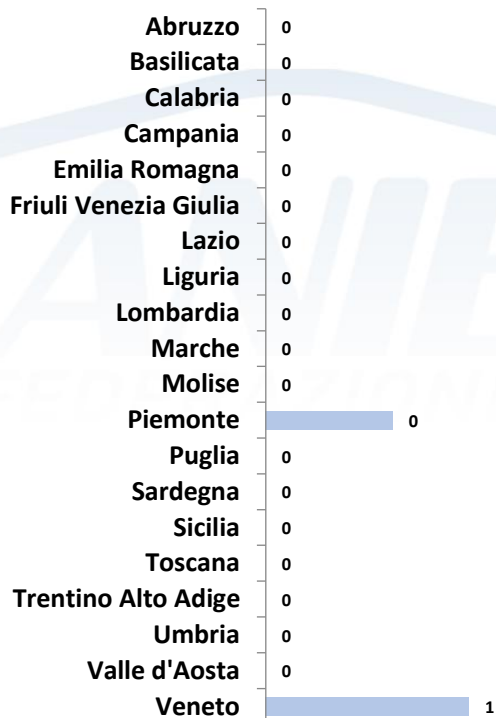


Dati Regionali SdA Q3 – Utility Scale (1 MWh$x\leq 10\text{ MWh}$)

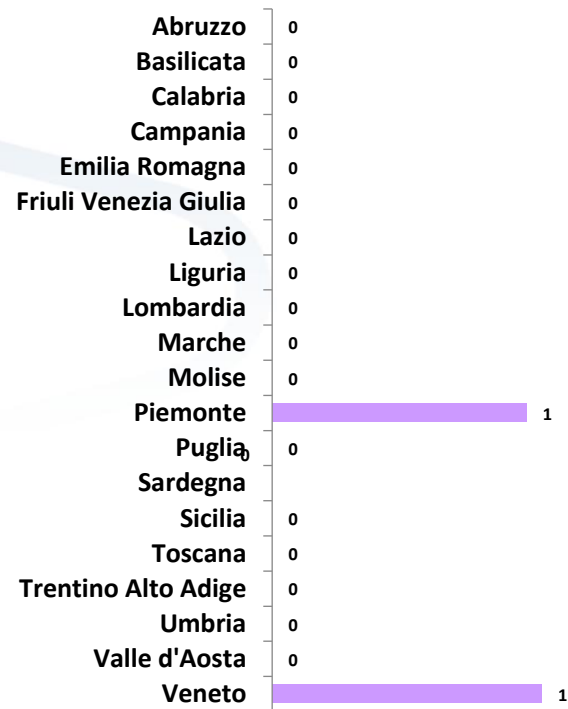
N. SdA installati per regione nel Q3 2025



Potenza SdA per regione [MW] nel Q3 2025



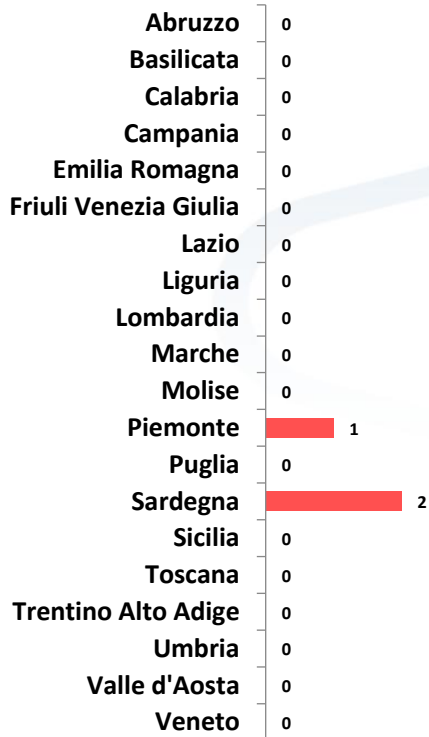
Capacità SdA utilizzata max per regione [MWh] nel Q3 2025



Dati Regionali SdA Q3 – Large Utility Scale (>10 MWh)

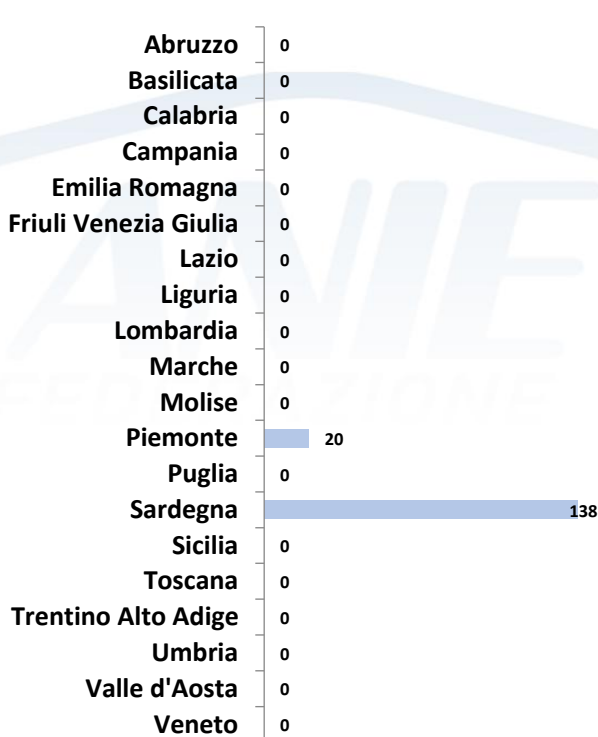
N. SdA installati per regione nel Q3

2025

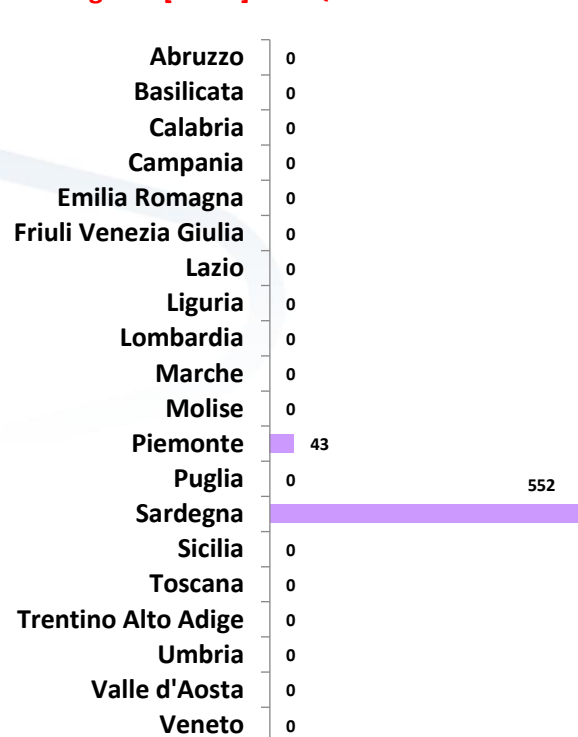


Potenza SdA per regione [MW] nel Q3

2025

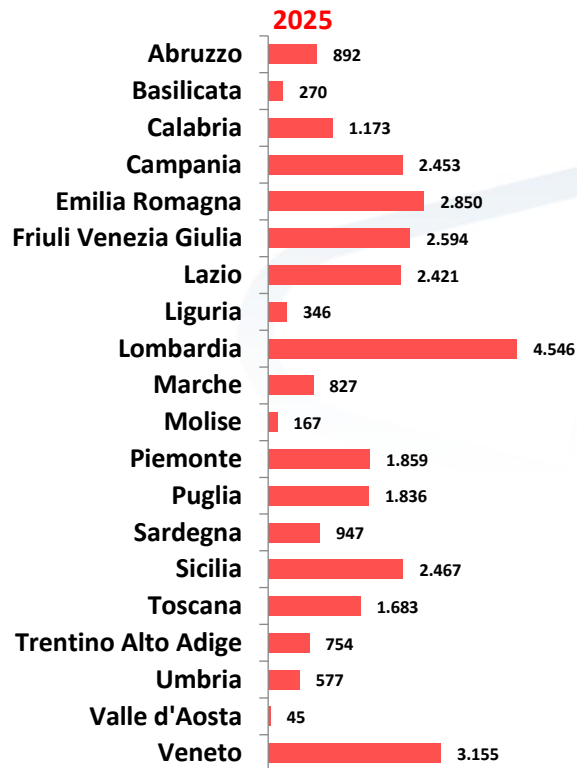


Capacità SdA utilizzata max per regione [MWh] nel Q3 2025

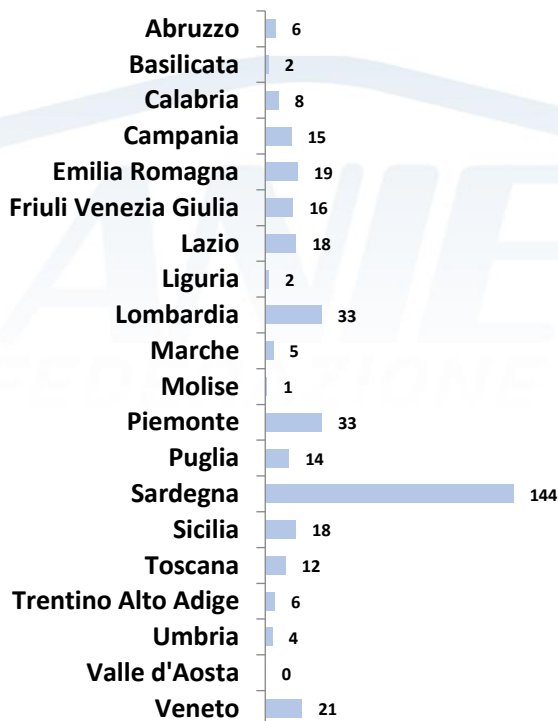


DATI REGIONALI SdA – Q3 2025

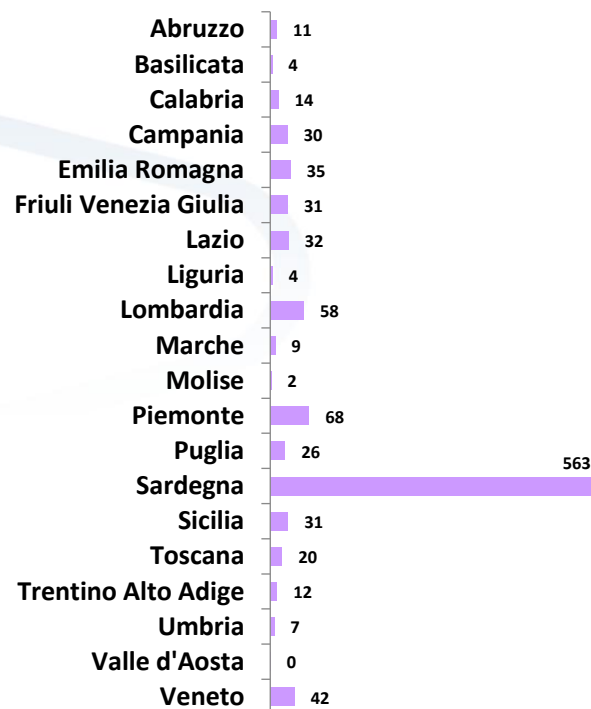
N. SdA installati per regione nel Q3 2025



Potenza SdA per regione [MW] nel Q3 2025



Capacità SdA utilizzata max per regione [MWh] nel Q3 2025



VARIAZIONI TENDENZIALI PER REGIONE – Q3 2025 vs 2024

Regioni	N. SdA	Potenza SdA [MW]	Capacità SdA [MWh]	N. SdA	Potenza SdA [MW]	Capacità SdA [MWh]	Var. N. SdA	Var. Potenza SdA	Var. Capacità SdA
	2025			2024			2025 vs 2024		
Abruzzo	892	6	11	1.419	9	17	-37%	-28%	-33%
Basilicata	270	2	4	514	3	6	-47%	-27%	-34%
Calabria	1.173	8	14	1.565	9	18	-25%	-12%	-23%
Campania	2.453	15	30	3.278	19	38	-25%	-20%	-22%
Emilia Romagna	2.850	19	35	3.307	84	293	-14%	-77%	-88%
Friuli	2.594	16	31	3.165	19	36	-18%	-14%	-16%
Lazio	2.421	18	32	3.553	22	39	-32%	-18%	-18%
Liguria	346	2	4	502	3	5	-31%	-19%	-23%
Lombardia	4.546	33	58	5.875	88	279	-23%	-63%	-79%
Marche	827	5	9	1.061	6	12	-22%	-19%	-23%
Molise	167	1	2	349	2	4	-52%	-48%	-52%
Piemonte	1.859	33	68	2.249	214	862	-17%	-85%	-92%
Puglia	1.836	14	26	2.536	15	31	-28%	-6%	-18%
Sardegna	947	144	563	1.369	48	180	-31%	202%	213%
Sicilia	2.467	18	31	3.396	21	40	-27%	-16%	-24%
Toscana	1.683	12	20	2.010	12	24	-16%	-5%	-14%
Trentino	754	6	12	793	6	13	-5%	-3%	-10%
Umbria	577	4	7	817	5	10	-29%	-18%	-29%
Valle d'Aosta	45	0	0	52	0	1	-13%	-30%	-57%
Veneto	3.155	21	42	4.079	25	53	-23%	-13%	-20%
Totale	31.862	376	1.000	41.889	609	1.963	-24%	-38%	-49%



ANIE
Rinnovabili

OSSERVATORIO Sistemi di Accumulo

Trend

ABBINAMENTO DEGLI ACCUMULI

Abbinamento SdA	N.SdA	Potenza nominale SdA [MW]	Capacità massima utilizzata [MWh]
<i>ACCUMULO</i>	47	1.787	6.891
<i>CELLE A COMBUSTIBILE</i>	1	0	0
<i>EOLICO</i>	3	2	2
<i>MARINO</i>	1	0	0
<i>IDROELETTRICO</i>	1	1	1
<i>SOLARE</i>	848.753	5.211	10.467
<i>TERMOELETTRICO</i>	11	68	57
Totale	848.817	7.069	17.417

Trend Potenza [MW]

Storage	2018	2019	2020	2021	2022	2023	2024	2025
<i>Elettrochimico Distribuito FERNP</i>	71	120	185	393	1.493	3.171	4.466	5.214
<i>Elettrochimico Distribuito TERMOELETTRICO</i>	0	0	7	13	33	68	68	68
<i>Elettrochimico Distribuito Totale</i>	71	120	192	406	1.526	3.239	4.534	5.282
<i>Elettrochimico Centralizzato Totale</i>	0	0	2	2	4	128	1.031	1.787
<i>Elettrochimico Terna</i>	60	60	60	60	60	60	60	60
<i>Pompaggio Puro Centralizzato</i>	7.394	7.322	7.329	7.294	7.288	7.288	7.288	7.288
Totale storage	7.596	7.622	7.775	8.168	10.404	13.954	17.447	19.699

Trend Capacità [MWh]

Storage	2018	2019	2020	2021	2022	2023	2024	2025
<i>Elettrochimico Distribuito FERNP</i>	115	194	295	707	2.712	6.378	9.050	10.470
<i>Elettrochimico Distribuito TERMOELETTRICO</i>	0	0	5	10	30	56	56	57
<i>Elettrochimico Distribuito Totale</i>	115	194	300	717	2.742	6.435	9.106	10.526
<i>Elettrochimico Centralizzato Totale</i>	0	0	3	3	10	210	3.836	6.891
<i>Elettrochimico Terna</i>	250	250	250	250	250	250	250	250
<i>Pompaggio Puro Centralizzato</i>	3.413	3.369	3.369	3.369	3.452	3.458	3.458	3.458
Totale storage	3.893	4.007	4.22	5.056	9.196	16.787	25.756	31.652

Tipologia	2030 [GWh]		2035 [GWh]			2040 [GWh]		
	PNIEC Policy	PNIEC Slow	DE-IT	GA-IT	PNIEC Slow	DE-IT	GA-IT	PNIEC Slow
Small Scale	14,0	13,3	16,2	15,6	15,1	19,1	18,2	17,5
Utility Scale	50,0	24,0	100,0	64,0	56,0	140,0	108,0	92,0
Capacity Market	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5
Totale	71,5	44,7	123,7	87,0	78,6	166,5	133,6	117,0