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ENERGY COMMUNITIES IN GREECE AND ITS LIGNITE AREAS #4

REVIEW OF DEVELOPMENTS

The Green Tank
Policy solutions for a sustainable future

Energy Communities in Greece and its lignite areas #4

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Summary

This analysis was based on data by the General Commercial Registry (GEMI) until October 2023, the Hellenic Electricity Distribution Network Operator (HEDNO) until August 2023 and the Independent Electricity Transmission Operator (IPTO) until April 2023 and follows-up on the three previous Green Tank reports[1]. The main findings of the analysis can be summarized as follows:

1. In October 2023, **1,677 active energy communities** are recorded in Greece. Of these, 1,668 are active Energy Communities under Law no. 4513/2018**, increased by 18.6%** compared to November 2022 (1,406). Moreover, 8 Renewable Energy Communities (REC) and 1 Citizens' Energy Community (CEC) were established via Law No. 5037/2023 (March 2023), which have not submitted any project connection requests.

2. Up to August 2023, energy communities had filed a total of 6,304 commercial and self-production project requests for connection at low-medium voltage, with an overall capacity of 4,895.4 MW, which corresponds to a 4.7% increase compared to November 2022 (4,677.5 MW). Of these, **1,487 projects have been electrified nationwide, with a capacity of 1,071.7 MW**, which corresponds to a 34.3% increase in capacity compared to November 2022 (+360 electrified projects, +273.6MW).

3. **Requests for self-production projects by energy communities have soared from 147 in number in November 2022 to 577 in August 2023** (+ 292.5%), while the corresponding capacity requested also increased from 87 MW to 350 MW. **Over the past ten months, significant growth has been observed in self-production overall**, namely, cumulatively in net-metering by individual households and businesses and in virtual net-metering by energy communities and other entities (+157.5% in the number of requests and +96% in capacity). The electrified capacity of self-production projects amounts to 337.7 MW; this is almost double (+94.5%) that recorded in November 2022. However, it remains much lower than the increased interest of citizens that was already registered since the beginning of the energy crisis, as the electric power is only 17.3% of the requested capacity. **The pending 1,349 MW of self-production projects by energy communities and other entities can be electrified** using the 2 GW electricity space provided by the new legislation (Law no. 5037/2023).

4. **The electrified capacity of self-production projects by energy communities was just 7.5 MW** in August 2023. Despite tripling from November 2022, the electrified capacity of commercial projects is 142 times higher (1,064.2 MW). Moreover, the pending capacity of self-production projects (302.2MW) is 40 times higher than the electrified (7.5MW), while the corresponding ratio of pending to electrified capacity for commercial projects is only 1.5 (1674.6 MW vs. 1064.2 MW), highlighting the need to give immediate priority to the electrification of self-production projects.

[1] The Green Tank, November 2021, Review of Developments: Energy communities in the lignite regions of Greece, https://bit.ly/45NPGjv
The Green Tank, May 2022, Energy communities in Greece and its lignite areas, Review #2, https://bit.ly/45MIx2R
The Green Tank, January 2023, Energy communities in Greece and its lignite areas, Review #3, https://bit.ly/471hzFU

5. **The issue of grid space scarcity persists**, as the HEDNO has notified 66.6% of pending requests by energy community projects (commercial and self-production) of its inability to connect them to the grid (1,650 requests).

6. There are 293 energy communities recorded in the lignite region of Western Macedonia keeping the region in second place nationwide. However, the 12.3% growth rate compared to November 2022 was down from the 48.3% recorded in the previous year. Western Macedonia is, also, the first Region in number and capacity of pending applications (377.5 MW, 465 projects) and the first in number of projects that have received a notification of connection inability due to lack of grid (334.3 MW, 406 projects), while since November 2022 only 4 new requests for commercial projects and 3 for self-production, with a total capacity of 2.7MW, were submitted. These data highlight **the possible discouragement of citizens of Western Macedonia to participate in energy communities** possibly due to the lack of grid availability or delays in mobilizing available resources.

7. **The institution of energy communities in Arcadia appears to be gaining momentum**. This Regional Unit now hosts 44 active energy communities (+110% increase compared to November 2022). However, the new energy communities are not established in the lignite area of Megalopolis but in Tripoli, while the same applies for the requested projects too. In August 2023, records show 93 requests by energy communities for both commercial and self-production projects, with a capacity of 57.1 MW from which 23 requests of 15.1MW were electrified. Compared to November 2022, there are 24 additional requests (+6.8 MW), all of which concern virtual net-metering projects, a trend which highlights **citizens' recent shift towards self-production**.

8. In March 2023**, the institutional framework regarding energy communities was amended (Law no. 5037/2023)** to incorporate the European directives on renewable energy sources and the internal electricity market. Two new types of energy communities were introduced, Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs), while the possibility to establish new energy communities under the founding Law no. 4513/2018 was abolished. Furthermore, in an effort to limit the abuse of the institution of energy communities for profit, the possibility of distributing REC and CEC surpluses among members was drastically reduced to 20%. The new legislation also provided for the allocation of 2 GW of electricity space for self-production projects, as well as for public funds to support the latter. With regard to the implementation of these new provisions, it is crucial to ensure that both grid space and resources will be evenly distributed among the different categories of self-consumers; priority should be given to energy communities established by households/citizens, as the latter have well-documented difficulties in accessing bank loans or other financial resources.

9. September 2023 saw **the activation of the first program to support energy community self-production projects by the Just Development Transition Program 2021 – 2027**, totaling €41.795 million, of which €26.845 million are reserved for energy communities in

lignite areas. Even though this is a step in the right direction, this program is intended for energy communities established by local authorities and related entities, excluding citizens' and small and medium-sized enterprises' energy communities. The activation of programs supporting energy communities through the Regional Operational Programs 2021 - 2027 in Western Greece (€17 million) and the Ionian Islands (€850,000) is expected in the near future.

Introduction

Energy communities remain the most important tool available for citizens to engage in the energy transition and cope with the energy crisis. Through this institution, citizens may act collectively and become producers of renewable energy themselves, either to meet their own energy needs through virtual net-metering projects or to participate in the RES market by developing commercial projects. Energy communities may also be established by local authorities aiming at public benefit through the development of RES projects. On the other hand, the economic benefits of commercial projects - deriving from the sale of the electricity produced- are rendered to energy community members through surplus distribution.

In March 2023, the legislation on energy communities was amended to incorporate European Directives 2018/2001[2] (Renewable Energy Directive (REDII) and 2019/944[3] (Internal Electricity Market Directive (IEMD)), marking a new era in the course of the institution. According to the new Law no. 5037/2023[4], two new types of energy communities are introduced: Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs). Existing Energy Communities under founding Law no. 4513/2018[5] are maintained, but, as of 01/04/2023, new ones may no longer be established. The primary purpose of all three types of energy communities is to provide environmental, economic, and social benefits at community level for their members or their local areas of activity.

This review aims to present the evolution of the institution of energy communities by analyzing the aggregated data published by the General Commercial Registry (GEMI)[6] until October 2023, the Hellenic Electricity Distribution Network Operator (HEDNO)[7] until August 2023 and the Independent Power Transmission Operator (IPTO)[8] until April 2023.

In addition, the main changes of the institutional framework on energy communities and self-production, as well as recent developments regarding energy community funding sources are recorded. Furthermore, the relevant questions submitted in the Greek parliament are summarized, along with their corresponding answers. Finally, the report outlines recommendations aimed at strengthening the institution of energy communities in the context of the Just Transition.

[2] Directive (EU) 2018 / 2001 on the promotion of the use of energy from renewable sources, https://bit.ly/40dWJ3Z
[3] Directive (EU) 2019 / 944 on common rules for the internal market for electricity and amending Directive 2012/27/EU https://bit.ly/3FEgXdu
[4] Law 5037/2023, GG A' / 78/ 28.03.2023
[5] Law 4513/2018, GG A' / 9 / 23.01.2018
[6] GEMI, 2023, https://bit.ly/3FdiqHK
[7] HEDNO, File of Requests for the connection of RES and CHP plants under the competence of HEDNO (August 2023) https://bit.ly/303PJMj, File of Requests for the connection of virtual net-metering projects (August 2023) https://bit.ly/3Lyv2MW
[8] IPTO, Statistical data on RES projects connection (April 2023) https://bit.ly/3RvIxkf

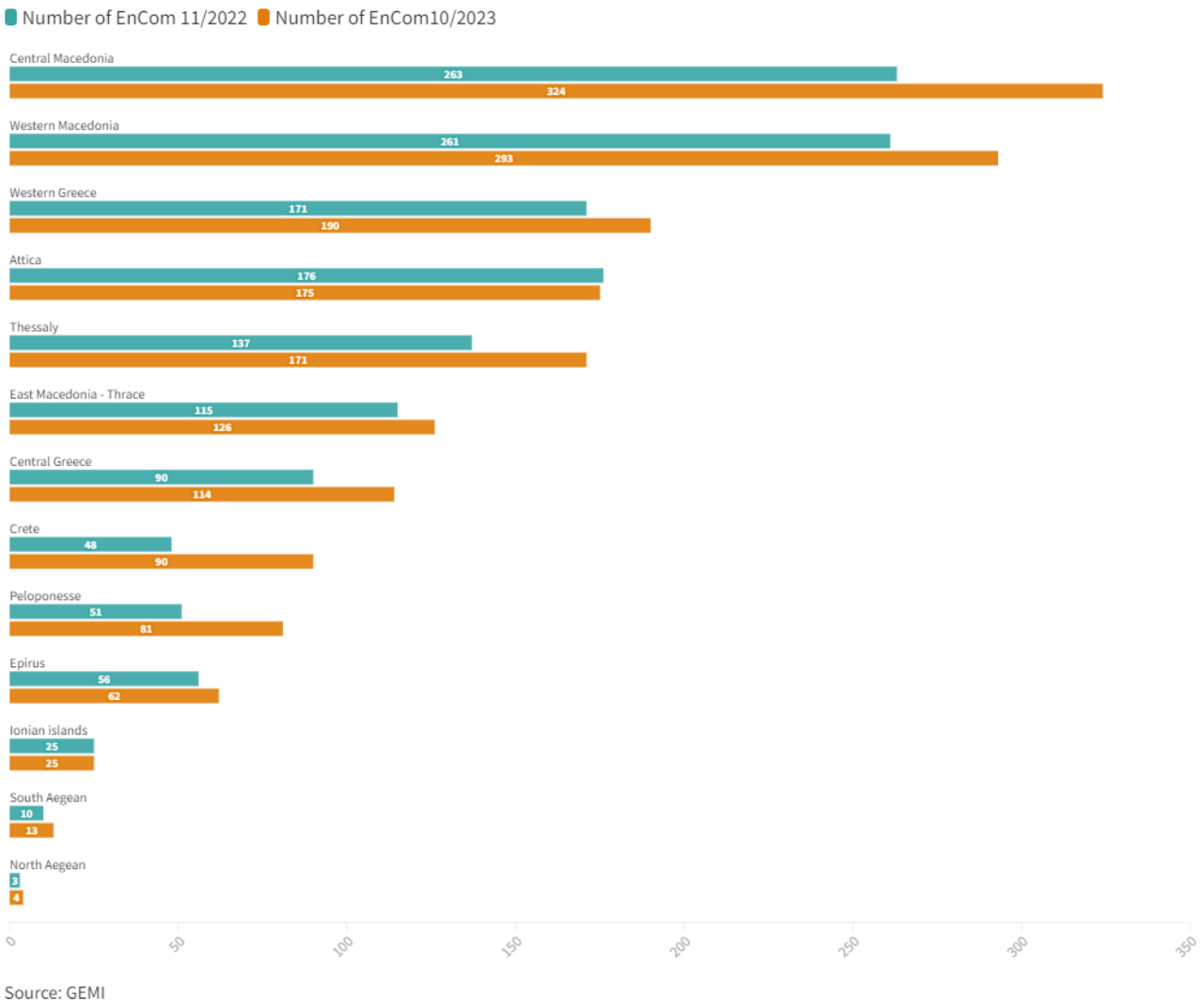
Energy Communities in Numbers

This section initially presents the number of energy communities and their projects nationwide, as well as data on commercial and self-production (virtual net-metering) projects separately. Then the analysis focuses on lignite regions, as well as on the evolution of self-production overall, namely, including net-metering and virtual net-metering projects by energy communities, individual households, enterprises and other entities.

Nationwide

According to the data of the General Commercial Registry, from 2018 to date, there are 1,677 active energy communities of all types (Energy Communities under Law no. 4513/2018; Renewable Energy Communities (RECs); and Citizen Energy Community (CECs)). Of these, 1,668 are active Energy Communities under Law No. 4513/2018; as of May 2023, when the new legislation came into force, eight (8) RECs and (one) 1 CEC have been established.

The number of Energy Communities under Law no. 4513/2018 has increased by 18.6% (262) compared to November 2022, while 154 Energy Communities have been dissolved and unlisted by October 2023. The evolution of the number of active energy communities over the past 11 months (November 2022 - October 2023) and their distribution across Greece's 13 Regions is presented in Figure 1. In the last ten months and in view of the expected legislative changes and the ceasing of the establishment of new energy communities under their founding law, there has been an increase in the number of energy communities nationwide.



Source: GEMI

Figure 1: Distribution of active energy communities by Region (November 2022, October 2023)

The ranking of Greece's Regions in terms of the number of energy communities established within their boundaries is the same as in November 2022. In particular, as of October 2023, the majority of active energy communities are located in Central Macedonia (324). In a very close second place is Western Macedonia (293), followed by Western Greece (190), Attica (175) and Thessaly (171). Despite the overall increase noted, the Ionian and Aegean islands are still making very little use of this institution. The highest growth is observed in Central Macedonia, where 61 new energy communities were established between November 2022 and October 2023, followed by Crete (42), Thessaly (34) and the Peloponnese (30).

With regard to the 8 new RECs, these were established in the regions of Western Greece (2), Peloponnese (1), Attica (1), Crete (1), Central Macedonia (1) and Central Greece (2). One (1) new CEC was established in the Peloponnese.

Overview of Energy Community Projects

In terms of requests submitted up to August 2023 by energy communities for both categories of energy community projects (commercial and self-production), records show a total of 6,304 requests for connection at low-medium voltage, with a capacity of 4,895.4 MW; this corresponds to a 4.7% increase in requested capacity compared to November 2022 (4,677.5 MW).

Of the total requested capacity until August 2023, 1,071.7 MW (21.9% of requested capacity) have been electrified, corresponding to 1,487 projects (23.6% of requests). The respective electrified capacity up to November 2022 was 798.1 MW[9]; therefore, projects' electrified capacity has increased by 34.3% over the past 10 months (+360 projects electrified, +273.6MW). What is more, in comparison to November 2021, when the electrified capacity was 467.6 MW from 681 projects, we observe an impressive leap forward (+129.2%). Thus, while until now non-electrified capacity followed a steady upward course, for the first time in August 2023, we detect a small decline (-1.3% compared to November 2022).

With regard to the evolution of the distribution of installed capacity across Greece, the largest increase in electrified capacity over the last 10 months was observed in Crete (+300.6%). Nonetheless, in absolute terms, Crete's installed capacity is low (4.1 MW) compared to the other regions and corresponds to just 6 electrified projects. The Ionian Islands rank second with a 142.9% increase in installed capacity; total installed capacity, however, remains low (16.6 MW) and corresponds to just 24 projects. The Peloponnese ranks third with a 102.9% increase in electrified capacity (47 MW; 78 projects in 2023), followed by the region of Attica (+59.9%; 13.8 MW; 18 projects), Eastern Macedonia & Thrace (+49%; 152.1 MW; 220 projects) and Epirus (+47.9%; 54.3 MW; 82 projects).

Since 2020, in addition to low-medium voltage, there are energy community projects also connected at high-voltage [10], under IPTO. These are either wind farms (W) or photovoltaic stations (PV) and their capacity ranges from 200 kW to over 18 MW (20-45 MW). Requests to connect energy community projects at high-voltage soared in October 2022, attaining a 374% increase compared to October 2021 (+1248 requests); correspondingly, the requested capacity increased by 1,607 MW. Between October 2022 and April 2023, the changes observed were minimal: 65 additional requests were submitted to the IPTO, while the total capacity decreased by 42.8 MW, probably due to both the cancellation of certain high-capacity projects and the submission of requests with a lower capacity. It should be noted that, to date, none of these projects have been electrified. Both the number of requests and the requested capacity of energy community projects at high voltage are lower than those at low-medium voltage. Nonetheless, and despite this 'tendency', energy community projects at high voltage account for 30% of energy community projects' requested capacity at low-medium and high voltage cumulatively.

[9] The capacity here appears reduced compared to Green Tank's previous analysis (January 2023, Energy Communities in Greece and Lignite Regions #3), as we have subtracted all projects transferred to private companies.

[10] These projects are mainly commercial, while the possibility of connecting self-production projects at high voltage is introduced as of March 2023 via Law No. 5037/2023. IPTO's data do not specify the nature of the projects.

	PROJECTS	CAPACITY (MW)	TECHNOLOGY
October 2020	34	168.00	W
October 2021	334	462.30	W, PV
October 2022	1582	2,069.30	W, PV
October 2023	1647	2,027.9	W, PV

Table 1: Energy Community projects under IPTO 2020 - 2023

With regard to renewable energy technologies, the majority of energy community projects concern photovoltaic installations. Among requests for commercial projects at low-medium voltage (HEDNO), a small number (23) concern wind farms, biogas, biomass and CHP plants, with a total requested capacity of 43.5 MW (1% of total capacity requested by commercial projects). Ten (10) of these requests are for wind farms with a capacity of 31.6 MW, which have not been electrified, while only one (1) 500 kW biogas project has been electrified in Epirus. Virtual net-metering projects include only photovoltaics systems.

On the other hand, there is a greater number of project requests for wind farms at high voltage (IPTO), compared to low-medium voltage. Until April 2023, 41 such requests had been submitted (2.5% of total requests), with a total requested capacity of 182 MW (9.1% of total requested capacity). All other requests relate to PV projects.

Cancellations

Requests for connection at low-medium voltage (commercial projects and self-production) may be cancelled either by the HEDNO, due to inability to connect or other unspecified reasons, or by the producer due to omission of documents, deadline expiration or automatic termination of the agreement.

Until August 2023, 2,341 requests with a corresponding capacity of 1,846.8 MW had been cancelled (37.1% of total requests; 37.7% of total requested capacity). This represents a 78% increase in both the number and capacity of cancelled projects, as compared to November 2022 (1,318 cancelled projects with a capacity of 1,035.5 MW). Of the total capacity cancelled up to August 2023, the HEDNO is accountable for 375.7 MW (20.3%), while the remaining 1,471.1 MW (79.7%) were cancelled by producers (Figure 2). Similarly, 20% of project requests were cancelled by the HEDNO, while the remaining 80% were cancelled by the producers.

We note that request cancellation is following an upward trend. Until November 2022, cancellations on the part of the HEDNO recorded a larger increase than those on the part of producers. In 2023, however, this trend is reversed and cancellations coming from producers show a higher rise compared to those by the HEDNO. This development may be attributed to the delays in the licensing and assessment procedures and/or to producer discouragement regarding project prospects following HEDNO's notification of its inability to connect due to insufficient grid space.

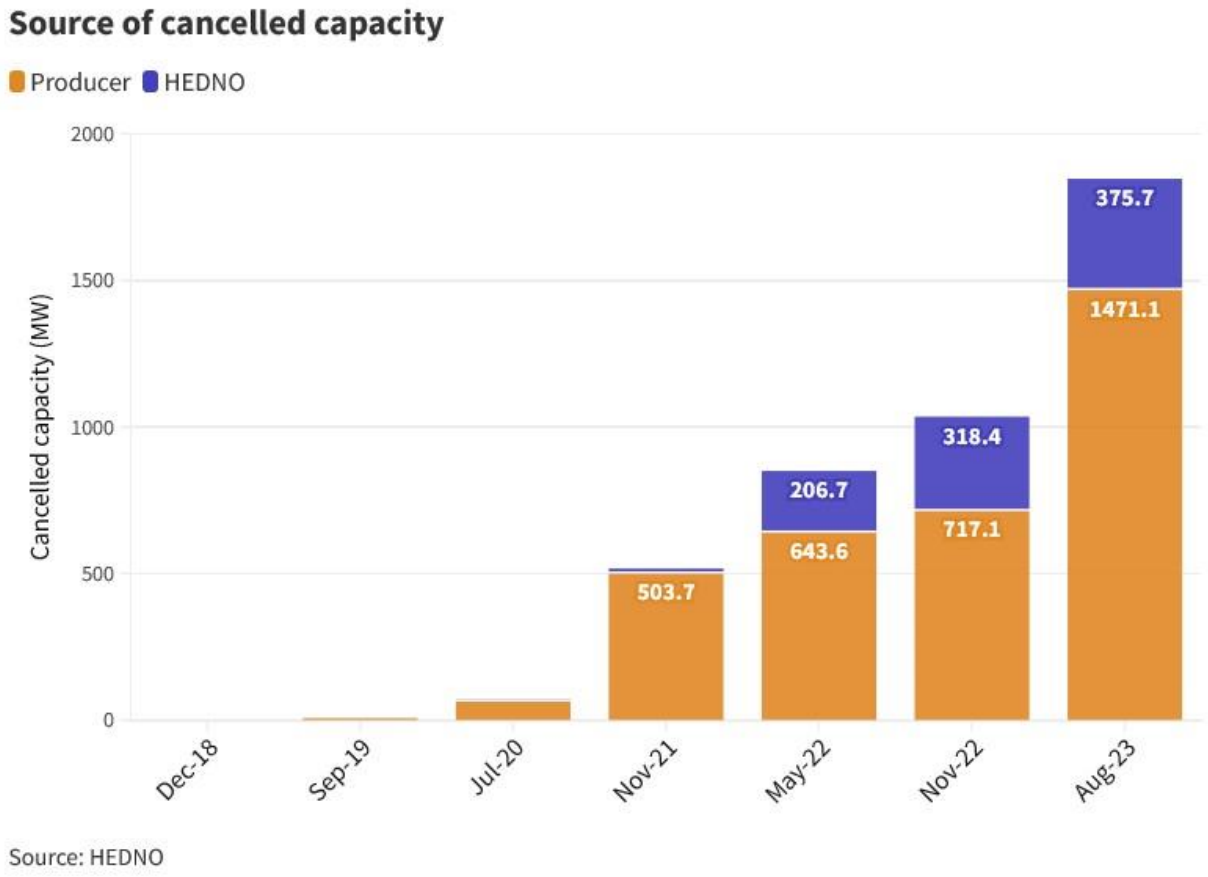


Figure 2: Evolution of the capacity corresponding to requests cancelled by the HEDNO or the producer

Pending Requests

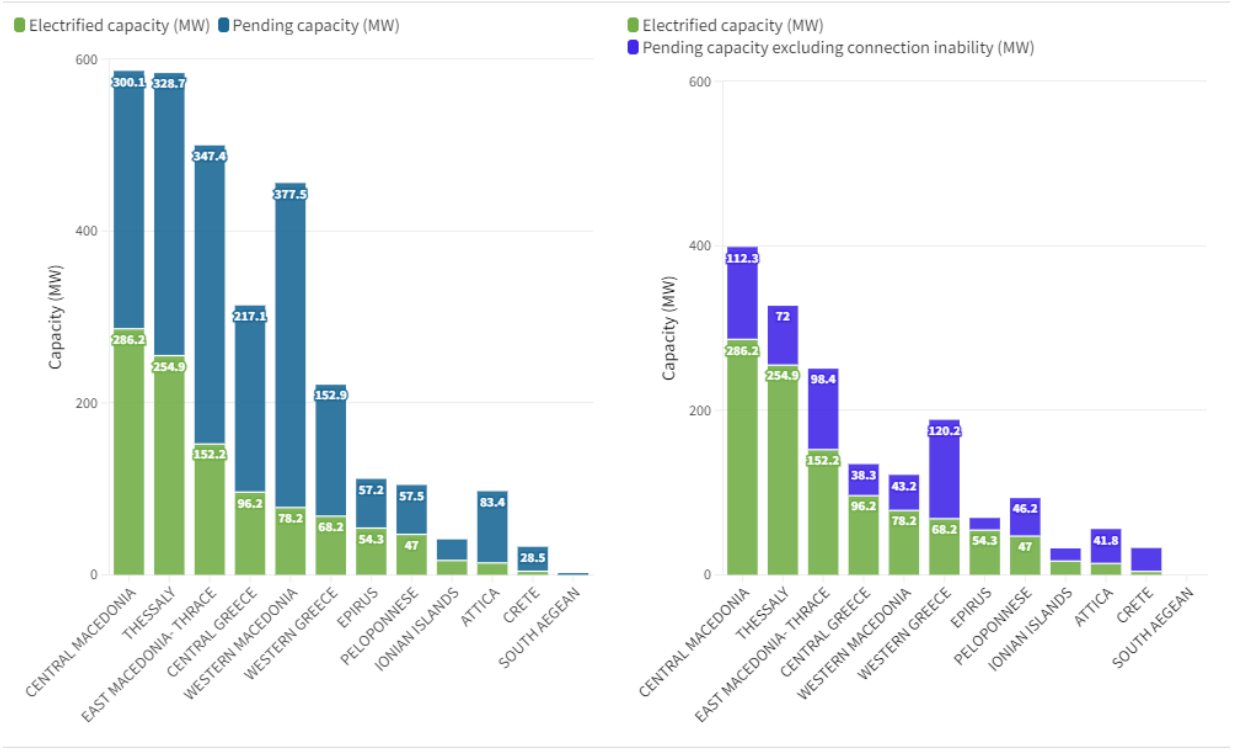
The course of pending requests at low-medium voltage (commercial and self-production projects) is thought-provoking. Pending requests are those that have been neither electrified nor cancelled. Non-electrified requests include those for which a notification of connection inability may have been issued[11]. In August 2023, there were 2,476 pending requests (39.3% of the total requests) with a capacity of 1,976.8 MW, down 28.7% compared to November 2022. The largest share of pending requests corresponds to projects that could not be connected to the grid (66.6%, 1,650 requests). Excluding these projects, namely, those that have received a notification regarding connection inability (1,650 requests, 1,346 MW), the pending capacity drops to 631 MW, corresponding to 826 projects. These are requests for projects that are in progress and therefore have the best chance of being connected, especially if their assessment and licensing is accelerated. The corresponding capacity in November 2022 was 885.4 MW (1,089 projects). Therefore, over the past 10 months, the net decrease in the number of requests in this category was 263, while the net increase in the capacity was 254.4 MW.

[11] In case of notification of inability to connect, it is possible for the applicant/producer to maintain the request pending for 5 years.

Figure 3 compares each region's electrified capacity with that of regional pending requests, including (on the left) or not including (on the right) requests having received a notification of connection inability. First off, as illustrated by the figure, Central Macedonia boasts the highest installed capacity (286.2 MW; 377 projects) among regions, followed by Thessaly (254.9 MW; 313 projects), and Eastern Macedonia and Thrace (152.2 MW; 220 projects). When considering all pending requests (Figure 3, left), this ranking changes; the region with the highest pending capacity is Western Macedonia (377.5 MW; 465 projects), followed by Eastern Macedonia and Thrace (347.4 MW; 435 projects) and Thessaly (328.7 MW; 388 projects). Focusing next on pending requests, having excluded those that have received a notification regarding connection inability (Graph 3, right), we find that the highest pending capacity is observed in Western Greece (120.2 MW; 153 projects) and amounts to almost twice that region's installed capacity. Western Greece is followed by Central Macedonia (112.3 MW; 125 projects) and Eastern Macedonia and Thrace (98.4 MW; 127 projects).

Furthermore, the analysis of the data shows that most requests that received a notification of connection inability are found in the region of Western Macedonia (334.3 MW, 406 projects). The case of Crete is distinct, as it is the only region where all pending requests concern inability to connect to the grid. It is worth noting that, in the lignite region of Western Macedonia, connection inability accounts for a whopping 87.3% of pending requests. In most regions, pending applications and the ones from which the inability to connect is excluded by HEDNO, show a decrease compared to the previous period of November 2022, as a consequence of the increase in the number of projects electrified or cancelled.

The pending capacity observed in all regions clearly highlights the broader need to develop and improve the country's network infrastructure. At the same time, improving licensing processes is of paramount importance, as for a significant part of pending requests nationwide (826 requests or 33.3% of pending requests), the HEDNO has not issued a notification regarding connection inability nor has the assessment and licensing process been completed. Therefore, the relevant processes should be expedited in order to proceed and be finalized without further delay. In this subset of pending requests, the capacity by region is shown in purple in Figure 3 (right).



Source HEDNO

Figure 3: Comparison of electrified vs. pending capacity by August 2023 for each region (left). Comparison of electrified vs. pending capacity excluding requests notified with connection inability by August 2023 for each region (right).

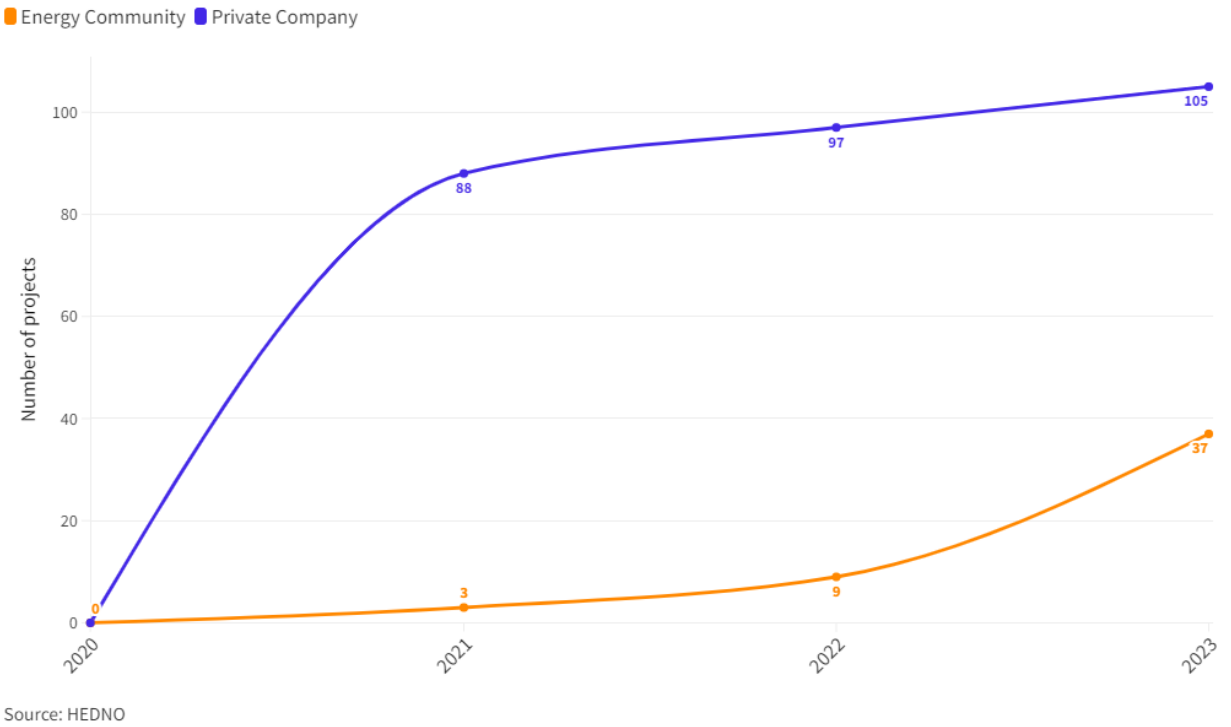
Project Transfers

The transfer of energy community RES projects adheres to the relevant legal provisions regarding the transfer of RES projects overall and concerns energy community commercial projects. However, we dedicate a section of this report to project transfer, as this possibility is -to a certain extent- related to the abuse of the energy community institution. In particular, ever since Law no. 4513/2018 established energy communities, the latter have enjoyed privileges such as priority connection to the grid, licensing process accommodations and high feed-in-tariffs; these favorable conditions have been exploited by RES companies using the framework of energy communities so as to circumvent competitors. Regarding the manner in which energy communities participate in the electricity market, continuous extensions have been granted regarding feed-in tariffs for energy community commercial projects; the most recent one was included in the new legislation on energy communities, albeit in articles unrelated to RECs and CECs (art. 111 of Law no. 5037/2023, amendment of article 7 of Law no. 4414/2016). In particular, feed-in tariffs for energy community commercial projects were once again extended until 30.09.2024.

The transfer of energy community projects was first observed in 2021. In fact, in addition to transfers from energy communities to private companies, the reverse trend was also observed, namely, project transfers from private companies to energy communities. Comparing these two transfer categories (Figure 4), it is evident that many more projects of energy communities were transferred to private companies than the other way around. However, in the past year, the increase in projects transferred

to energy communities was much higher (+300%) than the increase in projects transferred to private companies (+8%).

In particular, with regard to Energy Communities under Law No. 4513/2018 -namely, excluding RECs and CECs- up to August 2023, 105 projects with a capacity of 84.4 MW had been transferred from former energy communities to private companies. These projects were all commercial, of which 5 were electrified, 31 are pending and 69 have been cancelled. Similarly, up to August 2023, 37 project transfers from private companies to energy communities were recorded with a total requested capacity of 30.1 MW. Of these, 12 projects were electrified (8.9 MW), 1 was cancelled by the HEDNO, and 24 are pending, 13 of which have been notified of connection inability.



Source: HEDNO

Figure 4: Change in the number of commercial projects transferred to energy communities or private companies between 2021 and 2023

Energy Community Commercial Projects

From 2018 to August 2023, 5,727 requests have been submitted by energy communities for commercial RES projects with a requested capacity of 4,545.5 MW. Of these projects, 25.5% have been electrified (1,462 projects), recording a 30.7% increase compared to November 2022 (1,119 projects) and a noticeable improvement compared to 2021 (+116%). Correspondingly, the electrified capacity amounts to 1,064.2 MW (24.3% of the requested capacity), up 33.9% and 128.1% compared to 2022 and 2021, respectively (Figure 5).

Focusing on cancellations, we observe that up to August 2023, 39.4% of requests, amounting to 1,806.6 MW, have been cancelled (2,258 requests). Specifically, from November 2022 to August 2023, a total of 958 requests corresponding to 780.1 MW were cancelled. Of these requests, 7.5% (72) were

cancelled by the HEDNO due to inability to connect or other unspecified reasons, while the remaining 92.5% (886) were cancelled by producers due to omission of documents, deadline expiration or automatic termination of the agreement.

On the other hand, numerous requests for commercial projects are pending (2007 projects, 1,674.6 MW). Of these, 73.3% have received a notification regarding connection inability (1,471 projects with a capacity of 1,228.2 MW), while 26.7% (536 requests with a capacity of 446.45 MW) have neither been notified by the HEDNO regarding connection inability, nor completed the assessment and licensing process. Therefore, over the past 10 months, as far as commercial projects are concerned, several requests were resolved through cancellations or activations; nevertheless, a significant number of commercial project requests (35%) remain pending.

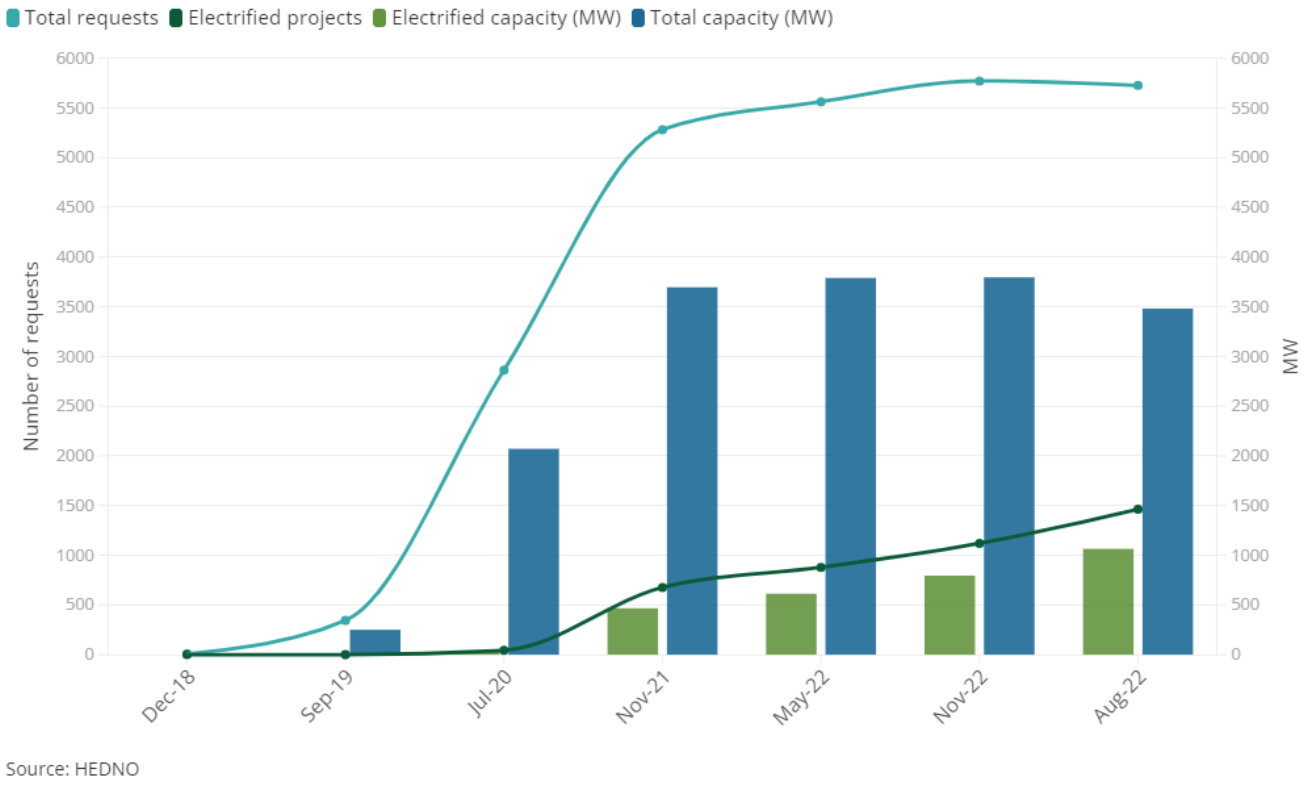


Figure 5: Number and capacity of electrified and non-electrified commercial projects up to August 2023

The distribution of requests for commercial RES projects among Regions resembles that of the previous year with the highest number of requests recorded in Central Macedonia (1,455) and Thessaly (988). However, it is worth noting the growing number of electrified projects in the Ionian Islands, which saw a threefold increase compared to November 2022 (24 electrified projects, 16.6 MW of electrified capacity); similarly, over the same period, electrified projects doubled in the Peloponnese (68 electrified projects, 45.9 MW of electrified capacity). In absolute terms, the largest increase in electrified projects was noted in Thessaly (+65 projects, +57.1 MW). With regard to pending requests, the trend has changed compared to the previous period. In November 2022, Central Macedonia ranked first in terms of pending requests with 844 projects; nonetheless, by

August 2023, this number had dropped significantly, as 48 projects had been electrified and 423 had been cancelled. Furthermore, in November 2022, Western Macedonia ranked fourth, with 558 pending requests (453.8 MW). Currently, however, Western Macedonia is the region with the most pending requests (434 projects; total capacity of 357.7 MW), followed by Eastern Macedonia & Thrace (384 projects; 316.7 MW) and Thessaly (360 projects; 311.6 MW).

Energy Community Self-Production Projects

Requests for virtual net-metering projects by energy communities surged in August 2023 (577), increasing by 292.5% compared to November 2022 (147); a corresponding growth (302.2%) was noted in requested capacity (from 87 MW to 350 MW), as illustrated in Figure 6. This substantial increase demonstrates citizens' ever-growing need to meet their own needs through clean energy. Over the past 10 months, the number of electrified projects tripled (from 8 to 25) and the electrified capacity rose by 137% (from 3.2 MW to 7.5 MW).

At the same time, however, request cancellations increased almost fivefold (from 18 in November 2022 to 83 in August 2023), mostly on the part of the HEDNO, which accounted for 79.5% (66 requests of 29.7MW). In addition, the number of pending requests remained high (469 projects or 81.2% of requests), as did pending capacity (302.2 MW or 86.3% of requested capacity). By August 2023, the projects that had been notified regarding connection inability amounted to 224, with a capacity of 146.8 MW (42% of requested capacity). Excluding the latter leaves 290 projects (184.5 MW) pending, for which the assessment and licensing process should be expedited, so as to proceed with their electrification without further delay.

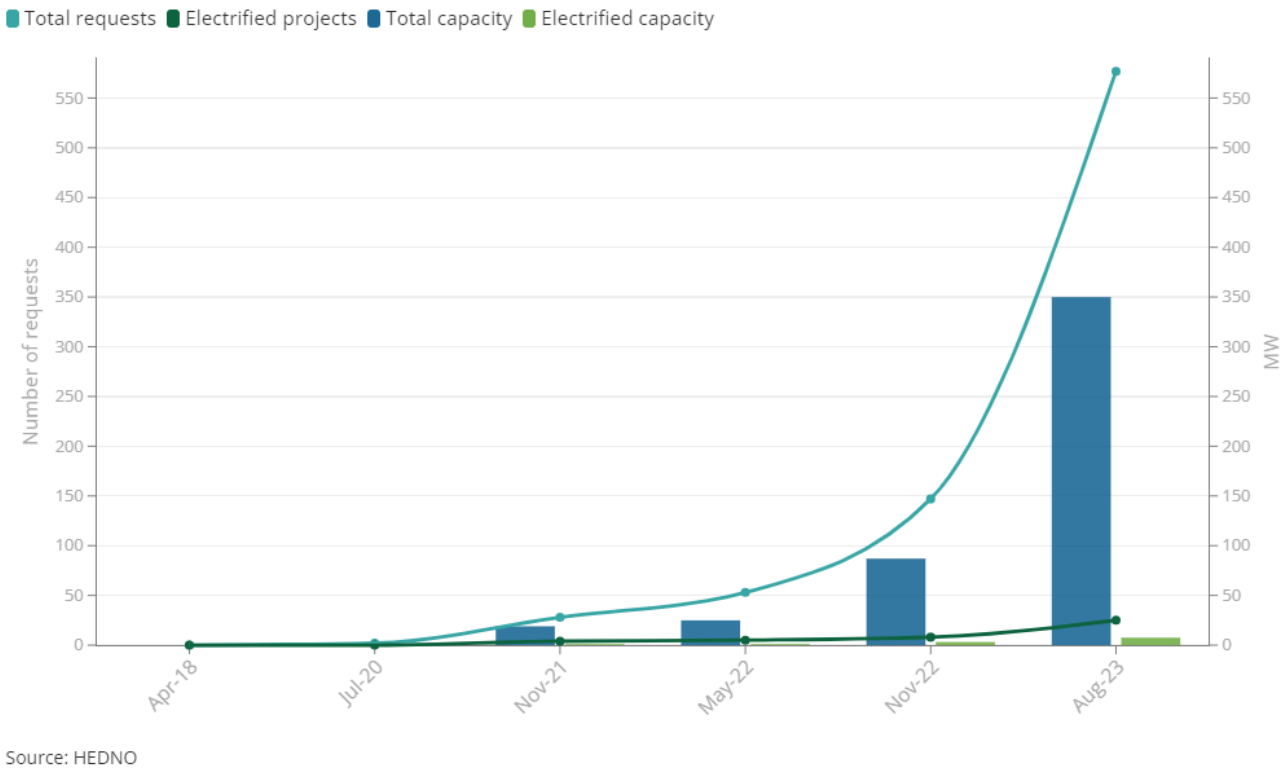


Figure 6: Number and capacity of electrified and non-electrified virtual net-metering projects up to August 2023

Looking at the geographical distribution of requests for self-production projects, a remarkably large increase is noted in two particular regions. The number of requests in the Peloponnese in August 2023 (104) was 8.5 times higher than that recorded in November 2022 (11), while, over the same period, it more than quadrupled in Central Macedonia (from 20 to 105). Next in rank is Central Greece, followed by Eastern Macedonia and Thrace, with 78 and 51 additional project requests, respectively. With regard to electrification, the Peloponnese has the higher number of electrified projects (10), increased by 7 compared to November 2022; in parallel, the electrified capacity increased by 1 MW, leading to a total electrified capacity of 1.1 MW in August 2023. The highest electrified capacity is recorded in Crete (4.1 MW); even though the electrified projects are fewer in number (6), their capacity ranges between 400 and 1,000 kW.

The case of Central Greece is of particular interest: even though this region ranked third in terms of the increase observed in the number of requests, it also recorded the highest number of projects that received a connection inability notification by the HEDNO (59 projects with a capacity of 39.7 MW). This highlights the important issue of electrical space shortage for connecting virtual net-metering projects, in a region where no project has been electrified to date. With regard to the number of projects that were unable to be connected, behind Central Greece follows the region of Western Greece (45 projects, 35 MW) and Eastern Macedonia & Thrace (24 projects, 14.4 MW).

Looking specifically at pending projects which, up to August 2023, had not received a notification of inability to connect, we find the Peloponnese in the worst position with 77 pending projects (45.2 MW), followed by Central Macedonia (55 projects; 53.8 MW) and Central Greece (32 projects; 16 MW).

In summary, as illustrated in Figure 7, the electrified capacity of virtual net-metering projects (7.5 MW) is 142 times lower than that of commercial projects (1,064.2 MW). The same trend, albeit less pronounced, can be observed in the capacity corresponding to pending requests (302.2 MW for virtual net-metering projects and 1,674.6 MW for commercial projects). A striking difference between the two project categories lies in the ratio between electrified and pending capacity; in the case of virtual net-metering, pending capacity (capacity to be electrified) is almost 40 times the amount of electrified capacity, whereas in commercial projects it is merely 1.5 times greater.

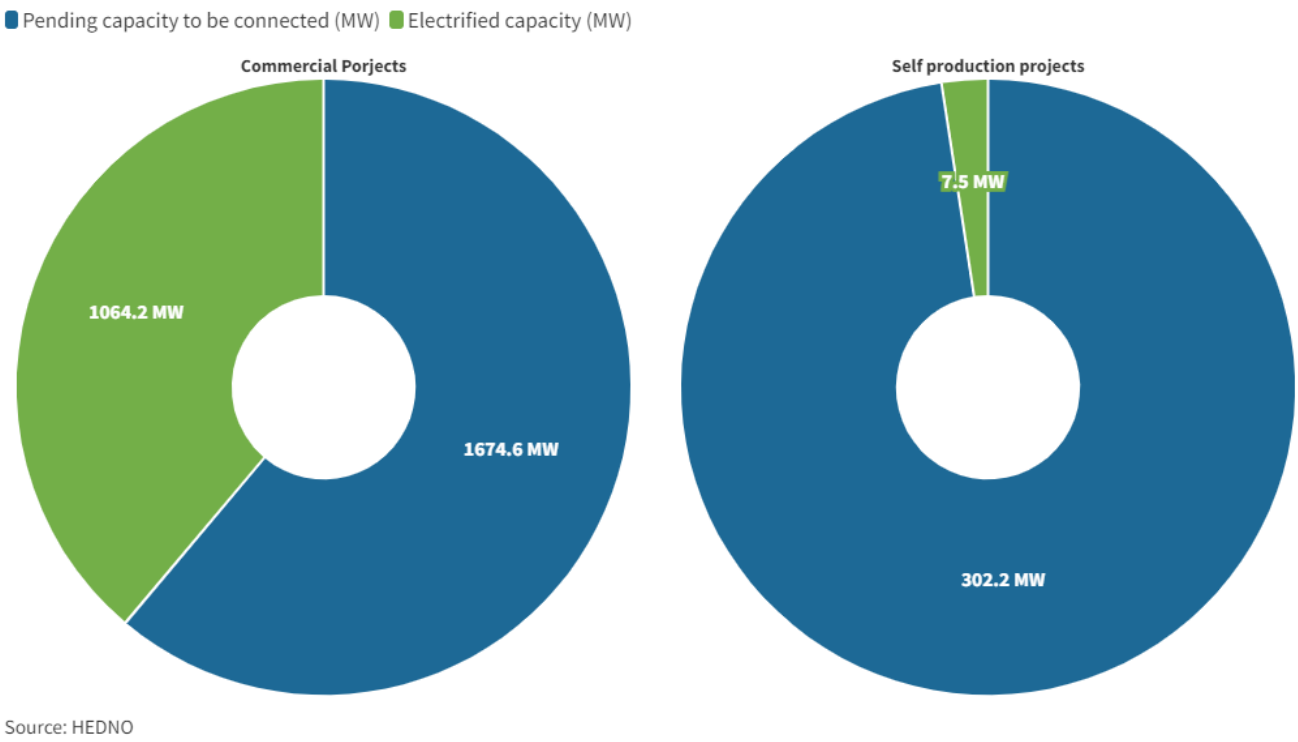


Figure 7: Electrified and pending capacity of commercial and virtual net-metering projects until August 2023

Self-production of Electricity by Citizens, Energy Communities and Other Entities

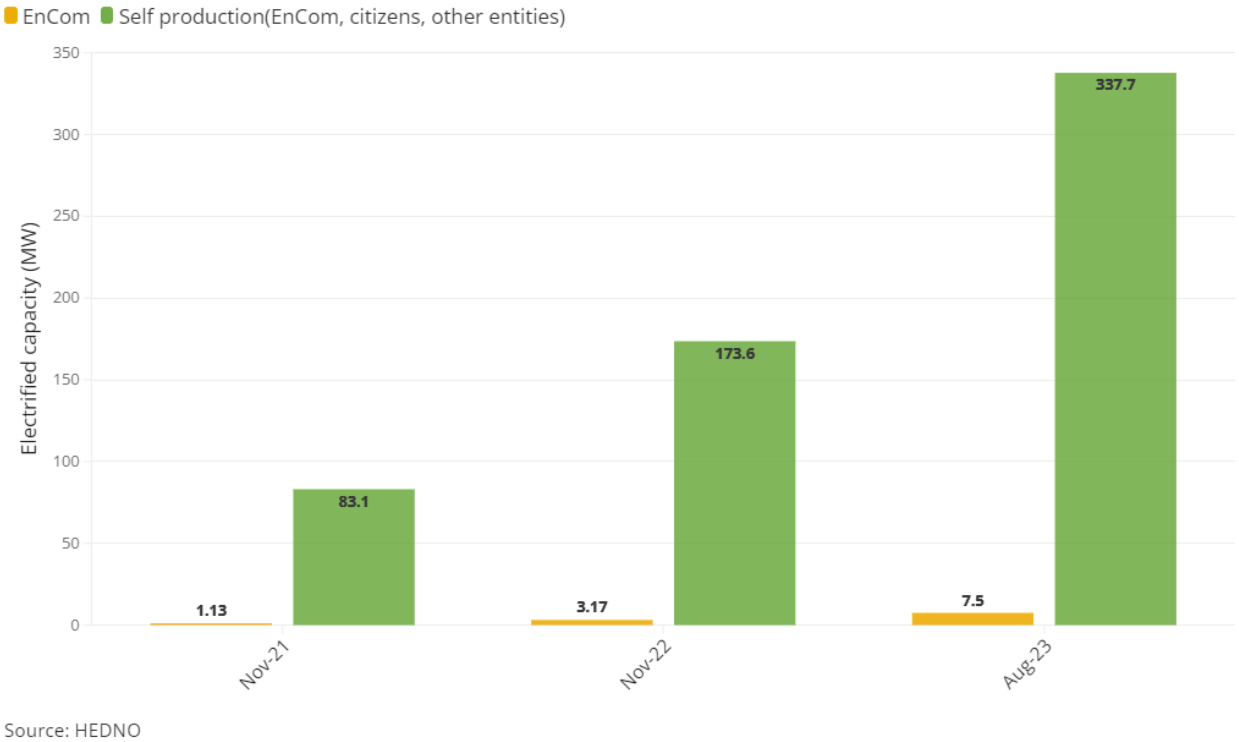
In addition to energy communities, it seems that other entities are increasingly using the tool of virtual net-metering[12] , especially following the energy crisis. Indeed, we observe that the number of virtual net-metering requests by energy communities and other entities in August 2023 (1,554) increased by 91.6% compared to November 2022 (811) and tripled compared to November 2021 (499). Even greater was the 159.3% increase in requested capacity recorded in August 2023 (565.8 MW) compared to November 2022 (218.2 MW). There are 230 electrified projects in August 2023 (+20 compared to November 2022) with a total capacity of 22.2 MW, improved by 62% since November 2022 (13.7 MW). Pending requests, namely, projects that have been neither electrified nor cancelled, amount to 866 with a capacity of 454.5 MW, which corresponds to 80.3% of virtual net-metering projects' requested capacity. Excluding projects that have received a notification regarding connection inability leaves 559 requests pending with a total capacity of 281.8 MW.

A similar boom is also observed in individual requests by households and businesses for self-production through net-metering. Between November 2022 and August 2023, the number of requests rose by 162% (from 11,503 to 30,150), while the requested capacity increased by 78.3%,

[12] Under current legislation, virtual net-metering may only be employed by certain categories of citizens and legal entities, such as farmers, public/private legal entities pursuing general or local public benefit or other public interest objectives (school complexes, educational institutions, etc.) and energy communities. All others, such as individual citizens and businesses, may employ net-metering.

reaching 1,389.8 MW (779.4 MW in November 2022). In August 2023, 31% of net-metering requests concern electrified projects (9,345) with a capacity of 315.5 MW, up 97.3% compared to November 2022 (159.9 MW). On the other hand, HEDNO has been unable to connect 13.9% of requests; moreover, 17,772 requests, totaling 894.5 MW in capacity (namely, 64.4% of the requested capacity), are pending. Excluding all projects that the HEDNO was unable to connect to the grid leaves 16,939 requests with a capacity of 541.7 MW, which have the best chance of being connected if their assessment and licensing is fast-tracked.

The increase in requests for self-production projects indicates that -as a result of the energy crisis- citizens, businesses and local communities have resorted to the use of RES in order to meet their energy needs, either individually (net-metering and virtual net-metering) or collectively (energy communities implementing virtual net-metering). The above analysis shows that, cumulatively, net-metering and virtual net-metering requests in August 2023 amounted to 31,704, up 157.5% compared to November 2022, while the requested capacity increased by 96%, reaching 2 GW (1,955.6 MW). Only a small fraction of these projects has been electrified, namely 9,575 projects with a capacity of 337.7 MW, which represents 17.3% of the requested capacity (+89.6% in number and +94.5% in capacity compared to November 2022, when the electrified capacity was 173.6 MW. The evolution of the capacity of self-production projects from energy communities and other entities (such as individual citizens, businesses, farmers, municipalities) compared to the capacity of self-production projects of energy communities in the period November 2021 to August 2023 is presented in Figure 8.



Source: HEDNO

Figure 8: Evolution of electrified capacity in self-production of energy community projects and energy community projects and other actors, such as individual citizens, businesses, farmers, municipalities

In addition, 17,498 requests of self-production projects remain pending, with a total requested capacity of 823.6 MW; no inability to connect has been issued regarding these projects. Therefore, it is feasible for many citizens and entities to become self-sufficient in meeting their electricity needs if the assessment and licensing processes are expedited. Furthermore, taking into account requests for which a connection failure has been issued, the total number of pending requests rises to 18,638 with a total capacity of 1,349 MW. Given that the new institutional framework reserves 2 GW of electricity space for self-production projects, the 1,349 MW that are currently pending can be electrified, provided that self-production projects by citizens and their energy communities are given priority in the allocation of grid space.

Lignite Areas

Focusing on the lignite regional units of Western Macedonia and Arcadia, the data provided by the GEMI indicate that, in October 2023, active Energy Communities under Law no. 4513/2018 amount to 293 in Western Macedonia; of these, 179 are located in Kozani, 91 in Florina, 15 in Grevena and 8 in Kastoria. In Arcadia on the other hand, 44 energy communities are recorded, 38 of which are located in Tripoli, while Megalopolis is home to just one. To date no REC or CEC has been established in the lignite areas of Western Macedonia and Arcadia.

Western Macedonia

Between November 2022 and October 2023, 32 new energy communities were established, corresponding to a 12.3%, increase, which is significantly lower than the 48.3% increase recorded in the previous year (November 2021 - November 2022). It is worth noting that the new energy communities were established in the purely lignite regions of Kozani (+28) and Florina (+4). Therefore, the majority of energy communities in Western Macedonia remain in the purely lignite areas, a fact which can be attributed to the long-standing energy tradition of these two regional units.

In the lignite areas of Western Macedonia, energy community projects (commercial and self-production) could be described as stagnant, as, out of a total of 820 requests with a capacity of 615.8 MW in August 2023, only 7 were new.

Requests for commercial projects in August 2023 amounted to 786, up by just 4 compared to November 2022, while the requested capacity (613.7 MW) increased by 1.5 MW. Electrified capacity increased from 63 MW in November 2022 to 78.2 MW (+24.1%) and electrified projects from 101 to 124 (+22.8%); these 23 additional projects are all located in the area of Kozani. It is worth noting that the increase in electrified capacity is significantly lower than that recorded in the previous year (+156.2% between November 2021 and November 2022).

Virtual net-metering projects account for the remaining 34 requests, corresponding to a capacity of 20 MW. Only 3 additional requests were submitted compared to November 2022 (+1.2 MW), while no additional projects were electrified; thus, electrified projects remain stationary (1 project of 0.03MW).

With regard to project cancellations (commercial and self-production), as of August 2023, 229 commercial and 2 virtual net-metering projects have been cancelled; these 231 projects had a total capacity of 196 MW. Compared to November 2022, cancelled projects increased by 50% (77 projects), leading to a corresponding increase (48.3%) in cancelled capacity. One third (33.8%) of these requests were cancelled by the HEDNO, while the remaining 66.2% were terminated by producers.

There are 93 fewer pending requests (commercial and self-production projects) in August 2023 (465 requests; 377.5 MW in capacity) compared to 10 months ago. Excluding the requests that the HEDNO was unable to connect, 59 projects (43.2 MW) remain pending; their assessment and licensing should be accelerated, so as to proceed with their electrification without further delay.

Examining the course of requests for energy community self-production projects, we observe that, in November 2022, Western Macedonia ranked second among regions with 31 projects and 18.7 MW of requested capacity. However, in August 2023 it fell to 6th place with 34 projects totaling 20 MW; only 3 of these projects are new, accounting for 1.2 MW. This finding reflects citizens' discouragement in participating in energy communities; citizens may be dissuaded having witnessed the delay in the completion of their projects or the inability to connect them due to insufficient grid space, as well as the idleness of funds reserved for energy communities in lignite regions.

Arcadia

In the Regional Unit of Arcadia, the number of energy communities more than doubled between November 2022 (21) and October 2023 (44). However, this increase was recorded in Tripoli (22) and other areas of Arcadia (2), rather than in the lignite area of Megalopolis. In fact, the latter saw the number of its active energy communities decrease, as one was dissolved; thus, there is now just one (1) active energy community in the area.

In August 2023, there are 93 requests for energy community projects (commercial and self-production) in Arcadia, corresponding to a total requested capacity of 57.1 MW. Compared to November 2022, there are 24 additional requests (+6.8 MW), all of which concern virtual net-metering projects; this is an encouraging development, as it highlights citizens' shift towards self-production, a trend which had not been recorded in November 2022 despite the energy crisis.

The number of electrified projects is now 23 (9 more than in November 2022), bringing the total electrified capacity to 15.1 MW. Of the 14 additional projects electrified in the past 10 months, 12 are commercial (15 MW) and only 2 are virtual net-metering projects (0.1 MW). Remarkably, none of the electrified projects are located in Megalopolis, nor has any new request been submitted in that lignite area since November 2022. Even the 8 requests for commercial projects -totaling 6 MW in capacity- that had been submitted previously, had already been cancelled by the HEDNO 10 months ago. Therefore, electrified projects are mainly concentrated in Tripoli, which currently hosts 22 (21 commercial and 1 virtual net-metering, totaling 15 MW). The other electrified virtual net-metering project is located in Gortynia.

The number of cancelled projects has remained almost the same (43 projects, all commercial), while the total cancelled capacity amounts to 33.9 MW. It should be noted that the HEDNO is responsible for the largest share of cancellations (86%), while only 6 requests were terminated by producers. In total, 27 requests with a capacity of 8.1 MW are pending. Excluding from all pending requests the 3 projects for which the HEDNO has issued an inability to connect leaves 24 requests with a total capacity of 6.4 MW; their assessment and licensing should be fast-tracked in order to proceed with their electrification without further delay.

Recent Institutional Changes

The "Fit for 55" package of measures and initiatives prompted the revision of the Renewable Energy Directive (RED II)[13], which also constitutes the main legislation introducing energy communities into the European institutional framework. The revised Directive reaffirms the role of citizens in the energy transition, as well as their contribution to achieving European climate targets.

In particular, as an all-encompassing principle, this Directive upholds that Member States should ensure the development of decentralized electricity production and storage systems and their participation in the energy market; moreover, it recommends that Member States encourage self-producers and energy communities to actively participate in the energy market, by providing flexibility services through demand-response and storage systems. Furthermore, RED II recognizes that self-production -including energy communities- contributes to reducing fossil gas demand and increases system resilience, thus bolstering the European renewable energy targets. Finally, it stipulates that energy communities have the potential to participate in offshore wind farms and decarbonize the building sector, as well as contribute to the promotion of renewable-based district heating (and cooling) systems.

The most important institutional development for energy communities in Greece is the incorporation of Directives 2018/2001 (Renewable Energy Directive (REDII) and 2019/944 (Internal Electricity Market Directive (IEMD)) into Law no. 5037/2023, which was passed in March 2023. The new law significantly altered the institutional framework for energy communities through the introduction of two new types of energy communities, Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs); in addition, as of 01/04/2023, the possibility of establishing new energy communities under the founding law no. 4513/2018 was abolished. Furthermore, the new legislation introduced two very important changes, namely, a drastic restriction (down to 20%) in the distribution of surpluses among REC and CEC members, and the allocation of 2 GW of electricity space for self-production projects, along with public funds for their support. Other provisions regarding self-production were also re-examined. The main changes are reflected below.

[13] European Parliament legislative resolution of 12 September 2023 on the proposal for a directive of the European Parliament and of the Council amending Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the European Parliament and of the Council as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652 (COM(2021)0557 – C9-0329/2021 – 2021/0218(COD)), https://bit.ly/474En7F

Definition of RECs and CECs

Two new definitions for energy communities have been added, namely, for Renewable Energy Communities (RECs) and Citizen Energy Communities (CECs). In addition, these definitions elicit new provisions on the composition and minimum number of members of an energy community, its activities and its area of operation. However, the legal form of Energy Communities, as we have known it to date, remains unchanged. The two new Energy Community types being introduced are urban cooperatives, based on open and voluntary participation and managed by their members; their primary purpose is to deliver environmental, economic and social benefits, at community level, to their members or to the areas where the community operates, rather than financial gain. A summary of the provisions regarding RECs and CECs is presented below (Table 2).

	Renewable Energy Community (REC)	**Citizen Energy Community (CEC)**
Participation	Natural persons Local and regional authorities **Small- and medium-sized enterprises (SMEs)** Agricultural and civil cooperatives **Non-profit legal entities under public or private law**	Natural persons Local and regional authorities **Legal entities under public or private law** Agricultural and civil cooperatives
Locality	At least **50% plus 1** of the members must have **proximity** to the area where the REC operates and the project is being developed	**Not applicable**
Minimum number of members	**30 members**, with exceptions for the islands (20), enterprises (15) and local and regional authorities (3)	**30 members**, with exceptions for the islands (20), enterprises (15) and local and regional authorities (3)
Area of operation	Within **one** region	Within **one or across multiple** regions
Activities	Production, consumption, storage or sale of electricity from RES; sharing electricity; actions to address energy poverty	**REC activities and, in addition,** production, self-consumption or sale of electricity from RES; storage, distribution and supply of electricity; cumulative representation; provision of flexibility and balancing; provision of energy efficiency; electric vehicle charging; and other services to its members
Financial Surplus	Distribution of financial surpluses following a 10% share allocated to the regular reserve, and at least a 70% retention as extraordinary or special reserves (namely, **distribution of up to 20%** of profits to members).	Distribution of financial surpluses following a 10% share allocated to the regular reserve, and at least a 70% retention as extraordinary or special reserves (namely, **distribution of up to 20%** of profits to members).

Table 2: Legislation provisions regarding RECs and CECs; Edited by: The Green Tank

Self-production

The new law modifies the provisions on both individual and collective self-production, thus, affecting energy communities as well. The most important changes concern the following:

- New capacity limits are set for net-metering. The limit of 3MW is abolished and replaced by a limit of 10.8KW per consumption supply for households and 100KW per consumption supply for legal entities under public and private law, water service providers and farmers.
- The bill introduces virtual net-billing, namely, real-time self-production along with the possibility to sell surplus electricity, without setting any capacity limits. This is a new form of net-metering, whereby only the electricity produced and consumed in real time is offset. The remainder of the electricity is sold to the grid and compensated in one of the ways provided for by the legislation (usually at a wholesale price, provisions are pending). The possibility to sell surplus electricity, so far, had not been foreseen by the relevant framework. Until now,

the electricity that was not self-consumed was "stored" in the grid for three years; beyond that period of time, surplus electricity was not compensated. Virtual net billing is foreseen for all self-production projects, with a particular focus on company projects (either individually or through energy communities) in lieu of virtual net metering. We should underline that this new regulation on virtual net billing enables -for the first time- individual citizens to implement self-production projects without any capacity limitation and irrespective of the location of consumption installations. Until recently, individual households or enterprises could only self-produce using net-metering, under the condition that the production and consumption of electricity be based at the same or adjacent location.

- Joint self-consumption is established; the legislation, so far, had not enabled self-producers located in the same building to share electricity. Thus, the installation of photovoltaic systems in apartment buildings is facilitated, as apartments and common areas of the same building can now share the same photovoltaic system without having to form an energy community. In this case, the net-metering limits set for households and businesses (10KW and 100KW, respectively) apply.

From 01.11.2023 onward, Energy Communities under Law No. 4513/2018 are not allowed to submit new requests to the competent Operator for self-consumption stations implementing virtual net-metering. Moreover, as of 01.07.2023, all net-metering (whether virtual or not) project requests submitted to the competent Operator shall be regulated by the new provisions.

In order to implement virtual net-metering:

- production plants may be connected to the grid either at High, Medium or Low Voltage. Until recently, energy community net-metering projects were only connected to the low-medium voltage network, parts of which are now in a state of saturation. This provision, allowing connection at high-voltage, may offer a way forward to citizen and energy community net-metering projects.
- regarding RECs, CECs, as well as Energy Communities under Law No. 4513/2018, the electricity supply of production plants and any corresponding consumption supply to be offset may be connected to different power suppliers. Until now, the legislation did not provide this possibility, thus obliging energy community members to have the same supplier in order to proceed with the net-metering process. This regulation offers them flexibility; however, further specifications on the manner of its implementation are pending.

The provisions per net-metering type and producer category are presented below (Table 3).

		Households (domestic consumption)	Enterprises (legal entities under public or private law)	Energy Communities*
Net metering	**applicable to:**	applicable	applicable	non-applicable
	capacity limit	up to 10 KWp per supply	up to 100 KWp per supply	non-applicable
	area of project installation	same as that of consumption supply	same as that of consumption supply	non-applicable
Virtual net-metering	**applicable to:**	non-applicable, except through Energy Communities	non-applicable	only domestic consumers, farmers, local or regional authorities, citizens living below the poverty line and households affected by energy poverty
	capacity limit	non-applicable, except through Energy Communities	non-applicable	no maximum capacity limit, but the latter is determined by the cumulative (100%) requested capacity
	area of project installation	non-applicable, except through Energy Communities	non-applicable	in any Region, regardless of where the consumption installation or the seat of the Energy Community is located. The only prerequisite is that 50% +1 of the members must have proximity to the area of operation and project development.
Virtual net-billing	**applicable to:**	applicable	Applicable, individually or through Energy Communities	applicable
	capacity limit	non-applicable	non-applicable	non-applicable
	area of installation	in any Region, regardless of where the consumption installations are located.	in any Region, regardless of where the consumption installations are located.	in any Region, regardless of where the consumption installations are located. The only prerequisite is that 50% +1 of the members must have proximity to the area of operation and project development.

*Energy Communities herein refer to Energy Communities under Law 4513/2018, RECs and CECs,

Table 3: Provisions per metering type and self-producer category; Edited by: The Green Tank

Apart from the new definitions for RECs and CECs and the new provisions on self-production, the new institutional framework for energy communities diverges from the founding law on several interesting points. In particular:

Locality and Proximity

The concept of proximity to the RES project or area of operation of an Energy Community has been introduced in the institutional framework, in order to define locality. This criterion differentiates community types in terms of activity location. RECs are more local in nature and typically focus on citizen projects aimed at meeting their own needs and addressing energy poverty, whereas CEC projects can be developed throughout the territory without restrictions (except with regard to member composition) and involve larger-scale projects and different types of activities, such as electricity supply, cumulative representation, provision of flexibility and balancing, as well as projects boosting energy efficiency.

Financial Surplus

The new bill abolishes the for-profit or non-profit nature of energy communities, as provided for by Law 4513/2018, and introduces the possibility of distributing surpluses only after withholding 10% for ordinary reserves and at least 70% for extraordinary or special reserves. This regulation reinforces the main objective of the institution of energy communities, namely, to provide their members or the areas where they operate with environmental, economic and social benefits, rather than making a profit. Moreover, it limits the abuse of this institution by entrepreneurs who try to circumvent competition and benefit from the advantages offered to energy communities with regard to both licensing and electricity trading. Given that the extraordinary and special reserves (amounting to at least 70% of the surplus) can be used to cover the duties of an energy community, as well as contribute to its further development and promote the expansion of its activities, this regulation is a step in the right direction.

Extension of feed-in tariffs for energy community projects

Via Article 111 of Law no. 5037/2023, a further extension of feed-in tariffs for energy community projects was granted until 30.09.2023; this extension contradicts numerous provisions in the legislation, which were adopted to limit the abuse of the institution of energy communities and combat profiteering. Both photovoltaic and wind systems are very mature technologies for the production of electricity from renewable energy sources and do not need feed-in tariffs to boost their further development. The provision of feed-in tariffs leads to an unnecessary increase in the cost of electricity for all other citizens, which is particularly unfair, especially in the wake of the energy crisis. Instead of relying on a feed-in tariff scheme to facilitate the participation of energy communities in the electricity market, a special competitive procedure could be provided exclusively for RES projects by energy communities, thus, ensuring a level playing field.

Grid Availability

Importantly, the new legislation provides that 2 GW of grid space will be reserved for the implementation of net-metering and virtual net-metering projects. This provision is in line with a

recommendation included in the Hellenic Electricity Distribution Network Operator's (HEDNO) Development Plan 2021 – 2026, which is currently under public consultation. Recognizing that one of the most important obstacles for the development of Energy Community projects is grid availability, this reserved space will encourage a significant growth of local community projects that aim at meeting their own energy needs rather than making profits. As cited above, up until August 2023, 337.7MW of net-metering and virtual net-metering projects had been installed, while another 1,349 MW were pending. In addition, the 2 GW of self-production projects correspond to approximately 15% of the PV project capacity foreseen in the draft of the revised National Energy and Climate Plan (13.4 GW). Therefore, 2 GW of reserved grid space can accommodate both current and a large part of future needs. Nonetheless, the new bill also introduces the possibility for enterprises to set up energy communities for self-production and their energy needs could potentially far exceed the 2GW margin. Therefore, when examining connection requests, as well as in the preparation of ministerial decisions determining the beneficiaries of programs allocating the available funds**, it is vital to ensure that this valuable grid space -and any future extension of it- be distributed equally among the different categories of self-consumers (citizens and households; small and medium-sized enterprises; local authorities; farmers; legal entities under public and private law), giving priority to households and citizens.**

Available Resources

A positive development with regard to the financial incentives and support measures available to Renewable Energy Communities (RECs) is the provision of calls -to be issued through joint Ministerial Decisions (JMDs)- for programs involving the installation of photovoltaics and storage systems for the implementation of virtual net-metering; these projects shall be financed by EU funds, including the Recovery and Resilience Program and the National Development Program. This provision also applies to Citizen Energy Communities (CECs), which have a different scope of activities and a broader member composition. **This measure has the potential to be highly beneficial, provided that it prioritizes citizens, small-medium enterprises, farmers, local authorities and, overall, beneficiaries that have proven difficulties in obtaining bank loans or accessing other financial resources.**

Connection of virtual net-metering projects to the High Voltage Grid

The provision included in the new bill regarding the possibility of connecting virtual net-metering projects to the High Voltage Grid is on the right track, as it increases the opportunities to connect projects and make good use of the existing infrastructure. This provision could find direct application in the lignite region of Western Macedonia, where connection requests by several energy community virtual net-metering projects are currently being rejected by the HEDNO due to the saturation of the low and medium voltage grid. Taking advantage of the available High Voltage grid space in Western Macedonia will also contribute to the immediate activation and absorption of the Just Development Transition Program 2021 - 2027 resources dedicated to energy communities. **Therefore, the possibility to connect virtual net-metering projects at high voltage should not be confined to large companies, especially in Western Macedonia, where there is an increased demand for this project category.**

Energy communities and businesses

The participation of enterprises in energy communities, which was foreseen by the founding law, is now further specified in Law no. 5037/2023. In particular, it is provided that a REC or a CEC can be established with the participation of at least 15 small and medium-sized enterprises (SMEs) or legal entities under private law. In addition, like all other self-producers, enterprises shall also be able to connect projects to the high-voltage grid and benefit from privileges provided by the legislation, namely, access to the grid and funding opportunities.

Project transfers

The possibility to transfer RES projects that was provided for Energy Communities under Law no. 4513/2018 is prohibited in the new legislation on RECs and CECs (Law no. 5037/2023). In particular, the Law forbids the transfer of production permits, producer certificates or certificates of specific works and other administrative permits and approvals granted to power stations belonging to RECs and CECs. Furthermore, Law no. 5043/2023[14] (Article 121) provides for the possibility of converting energy community commercial projects (with a production license or producer certificate or exempted stations that have received or are receiving a final connection offer) into self-production projects (virtual net-metering projects) by the same or new energy communities.

Energy Community Funding

The resources provided for energy communities by the Just Development Transition Program 2021 - 2027[15] were activated on 27.09.2023 through the relevant call for proposals, *"Support provided to energy communities for the development of self-production actions"*, issued by the Special Coordination Service for Just Development Transition[16].

This is a call for proposals to strengthen energy communities in the implementation of net-metering and/or virtual net-metering projects and promote RES projects intended for self-production. A total of €41.795 million is available to energy communities in all regions under the Just Transition Fund[17]; of these resources, €26.845 million are earmarked for energy communities in the lignite areas (Kozani, Florina and Arcadia). The maximum subsidy rate is 80% of eligible costs and the minimum acceptable capacity of self-production RES installations has been set at 300 KW. Eligible costs relate to project dimensioning and equipment supply, as well as to the installation of RES plants, along with storage facilities to address the lack of grid space. Projects should serve the energy needs of public benefit enterprises, municipal water and sewage companies, schools at all levels, health centers and hospitals, municipal and public sports centers, local authority buildings, consumers living below the poverty line and households affected by energy poverty.

[14] Law 5043/ 2023, GG A' / 91/13-04-2023
[15] Just Development Transition Program 2021-2027, https://bit.ly/3PLQE8G
[16] Special Coordination Service for the Just Development Transition 27.9.2023, https://bit.ly/48IECHg
[17] Including the Region of Western Macedonia, the Regional Unity of Arcadia and Messinia, the Region of North and South Aegean and the Region of Crete.

Despite the delayed activation of the available resources, the above action constitutes a step in the right direction. Nonetheless, it is aimed exclusively at energy communities established by the entities mentioned above; thus, energy communities set up by citizens and/or local businesses are not included among its beneficiaries. This choice indicates that the characteristics of energy communities in Greece's lignite areas and citizens' motivation to meet their energy needs -as reflected in the preceding analysis- are both being overlooked. Therefore**, a second program should be launched immediately, using European Just Transition Fund resources to support energy community projects**; furthermore, eligible costs should include energy community electromobility projects, as well as heat pump installation projects, so as to offer a climate-friendly and economically sustainable alternative for meeting heating/cooling needs.

In the near future, the (Regional) Operational Programs for the period 2021 - 2027 are also expected to activate funds for energy communities. In particular, the Operational Program "Western Greece 2021 - 2027"[18] -under *Priority 2: Protection of the natural environment, climate change mitigation and adaptation, strengthening energy self-sufficiency and the circular economy in the Region of Western Greece*- includes an action of €17 million, entitled "Innovative forms of consumption", which shall support the installation and operation of RES projects by 7 energy communities to meet the energy needs of Local Organizations for Land Improvement (TOEB), local authorities, water supply companies and legal entities in Western Greece. In addition, the Operational Program "Ionian Islands 2021 - 2027"[19] -under *Priority 2: Environmental Protection, Sustainable Development and Climate Change Mitigation*- includes the pilot action "Energy Communities", which is budgeted at €850,000 and intended to support the establishment of energy communities in the Region of the Ionian Islands.

The Sectoral Program Environment and Climate Change 2021 - 2027[20] in the *Specific Objective 2. Promotion of renewable energy sources in accordance with the Renewable Energy Directive* refers to the support of actions for the development of renewable energy projects by energy communities, mainly in islands, mountainous and remote areas, but without any action being taken.

Energy Communities in the Hellenic Parliament

Between November 2022 and the publication of this report, important political developments took place in Greece, such as the national elections in May 2023 and the municipal/local government elections in October 2023. The institution of energy communities and its development constituted an issue of concern to political parties; the latter referred to this institution during election periods and highlighted its different aspects in Parliament, through questions and reports.

In particular, during this 10-month period, Greece's government (New Democracy) introduced institutional regulations on energy communities (Law no. 5037/2023), while the Coalition for the Radical Left (SYRIZA)[21], PASOK - Movement for Change (PASOK - KINAL)[22] and the European

[18] "Western Greece 2021 – 2027" Operational Program, https://bit.ly/3ZTpDpC
[19] "Ionian Islands 2021 – 2027" Operational Program https://bit.ly/3LYJBK1
[20] Sectoral Program Environment and Climate Change 2021 - 2027, https://bit.ly/3QB3Q3k
[21] SYRIZA, Governance Agenda 2023 – 2027, https://bit.ly/3LYJBK1
[22] PASOK-KINAL, 12 priorities for a socially just modern state, https://bit.ly/46mTvgE

Realistic Disobedience Front (MERA-25)[23] included energy communities in their agenda and public statements.

Energy communities were also discussed in parliament; SYRIZA tabled a question regarding the strengthening of energy communities in lignite areas and their role in the Just Transition[24] (delay in the activation of the Just Development Transition Program 2021-2027 funds; grid saturation and inability to connect projects). In response to this question, the competent Minister of Development and Investment cited the 'Just Development Transition Program 2021-2027' general guidelines on energy efficiency and clean and smart energy, as well as the provision for energy communities included in this program, without further details.

Moreover, SYRIZA submitted a question regarding local community opposition to the licensing of a large off-shore floating photovoltaic project by the Renewable Energy Community 'Energy Strategic Ltd' in Central Greece[25] , identifying issues in project licensing, while questioning the conditions of sustainable development in that specific area; this question remains unanswered.

Another question by SYRIZA related to the utilization and absorption of the National Just Transition Fund resources and the European funds available by the Just Development Transition Program 2021 - 2027 -specifically regarding energy communities[26]. In response, the competent Minister cited the progress in the utilization of funds dedicated to the Just Transition; special reference was made to the resources available to energy communities in transition areas. Moreover, it was clearly stated that additional national funds will be allocated to energy community projects, upon activation of the resources from emission trading revenues (years 2020 and 2021).

PASOK - KINAL submitted a question[27] on the burden and threats posed by the request by the Renewable Energy Community 'Energy Strategic of Ltd' to install a large off-shore floating photovoltaic project in the Gulf of Domvraina, with respect to the area's sustainable development; this question remains unanswered.

In April 2023, MERA - 25 submitted a report[28], which included letters by the Network of Non-Profit Energy Communities of Western Macedonia "OFeLOS" and the energy communities 'Klenia Cooperative Ltd' and 'Sunshine Ltd', highlighting their difficulty in connecting projects due to lack of electrical space, as well as the problems they face in the implementation of virtual net-metering; to date, no answer has been provided.

[23] MERA-25, Positions on green energy and circular economy, https://bit.ly/46qVCQz
[24] Hellenic Parliament (2023), Question by P. Perka, https://bit.ly/3LYhjzo
[25] Hellenic Parliament (2023), Question by Y. Poulou, https://bit.ly/46oBGhr
[26] Hellenic Parliament (2023), Question by P. Perka, https://bit.ly/46N3T0T
[27] Hellenic Parliament (2023), Question by. G. Moulkiotis, https://bit.ly/3Fea2aS
[28] Hellenic Parliament (2023), Report by K. Arsenis, https://bit.ly/3Fe9Mc4

Recommendations

The Green Tank continuously intervenes in the public debate on the development of the institution of energy communities and their contribution to the Just Transition of the lignite regions by submitting concrete recommendations. In particular, the following are recommended:

1. Funding
   - o A new program to support energy communities established by citizens and small and medium enterprises in the lignite areas, to be financed from the resources of the Just Development Transition Program 2021 – 2027, should be launched immediately to meet increased interest and needs. Emphasis should be placed on subsidizing hybrid photovoltaic & storage systems for self-production projects by energy communities set up by citizens[29], along the lines of the call already issued for municipalities and related entities.
   - o The national resources for the Just Transition (auctioning of CO_2 emission allowances) should be utilized to strengthen energy communities in lignite areas through the issuance of an immediate call for proposals.
   - o Entities that have proven difficulties in accessing bank loans or other financial resources (such as energy communities set up by citizens; small and medium-sized enterprises; farmers; and local authorities) should be given priority in obtaining funding through the financial incentives and support measures for energy communities stipulated in the new legislation (EU funds, Recovery and Resilience Program, National Development Program to meet the cost of installation of photovoltaic and storage systems for the implementation of virtual net-metering).
   - o A development fund (or an intermediary body) should be set up specifically for energy communities, so as to facilitate access to loans, provide guarantees, cover the costs of participating in competitive procedures, and subsidize the costs of projects' preliminary phases.

2. Grid
   - o The grid should be upgraded and expanded to allow the development of energy community projects; sufficient "electrical space", as well as a suitable -in terms of size- land area should be reserved for the installation of projects by energy communities -in particular those set up by citizens, local small businesses and local authorities- in the Lignite phase-out Zones.
   - o The 2 GW grid space provided by the new legislation for self-production projects -and any future extension of it- should be distributed equally among the different categories of self-producers (citizens and households; small and medium-sized enterprises; local authorities; farmers; legal entities under public and private law), with priority given to households and citizens aiming to meet their own needs either individually or collectively through energy communities.

[29] The Green Tank, September 2023, "Supporting Citizen Energy Communities in the Lignite Areas Via a Combination of Photovoltaics and Battery Energy Storage Systems", https://bit.ly/46LY98l

- The High Voltage Grid should not only accommodate large company projects; priority connection should be guaranteed for virtual net-metering projects by energy communities involving citizens.

3. Policies to support energy communities
   - The National Energy and Climate Plan (NECP) that is currently under review should set specific quantitative targets for Energy Communities.
   - Citizen participation in large-scale RES projects implemented in lignite areas by large companies such as the Greek Public Power Corporation (PPC) should be promoted; this could be achieved by instituting share ownership and reserving part of the shares to be purchased by Energy Communities.
   - A special framework for conducting competitive procedures for RES projects should be introduced, involving only energy communities and, thus, ensuring a level playing field.
   - An information hub for energy communities should be launched by the Ministry of Environment and Energy, aimed to strengthen the institution through the collection and publication of data on energy communities and the formulation of proposals (indicatively, regarding support schemes, business models, institutional changes, etc.), as well as to provide direct information on all relevant institutional developments and to address any issues that arise.