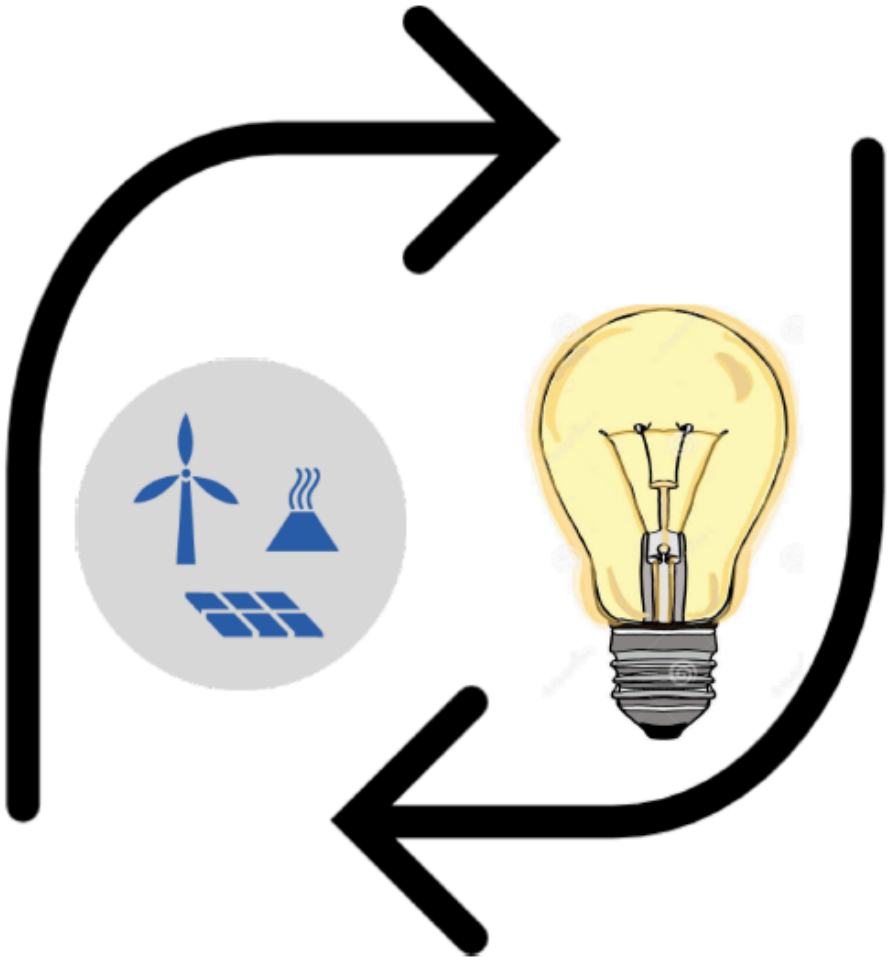
The Energy Professionals Group

PARLIAMENTARY RESOLUTION ON ELECTRICITY SELF CONSUMPTION

ITALIAN PARLIAMENT POSITIONING ON ELECTRICITY SELF-CONSUMPTION AND ENERGY COMMUNITIES



Short paper
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Gruppo Professione Energia - The Energy Professionals (GPE) is the integrated consulting firm founded and managed by Marco Pezzaglia, a graduate in electrical engineering from the Polytechnic of Milan in 1993, began his career in the field of modeling and studies of electrical systems in a liberalized environment at the Italian Experimental Electrotechnical Centre (CESI www.cesi.it). In 2001 he joined the Authority for Electricity and Gas (now Regulatory Authority for Energy, Networks and the Environment – ARERA www.arera.it) where, in 2003, he was appointed Head of the Electricity Networks unit, dealing in particular with the terms and conditions for accessing to the electricity networks of production and consumption plants (connection and rules for dispatching) and the use of the interconnection network with foreign countries. On 1st January 2007, he took up the position of Head of the Renewable Sources, Energy Production and Environmental Impact Unit within the Markets Department, where he was actively involved in issues relating to assessments of the development of renewable sources, production and consumption systems and access to the system and the electricity market for electricity production and self-production/self-consumption systems. Since the beginning of 2010, he has been providing strategic consultancy and services in the energy sector both to private customers and to numerous sector associations, with particular reference to technical-regulatory and market issues. Expert in Energy Management certified EN 11339.

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The Short paper product is part of a series of specific studies on particular topics of interest to the energy sector and regulation. The articles are made available by the author on request, either from www.enusyst.eu (Energy User Systems) or on his own Linkedin page. For further requests or further information, please contact GPE.

The information contained in this document is purely reconnaissance: to this end, some technical details for the benefit of the narrative have been omitted. The author does not assume responsibility for any choices and actions that market operators may make on the basis of the information contained in the document. It should be noted that the application of the regulations on user systems must be duly analysed in relation to each specific case.

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1. Introduction

This document deals with the recent resolution adopted in the Italian Parliament on the self-consumption of electricity, collective self-sufficiency and the energy communities. Beyond the various considerations and provisions, the most salient feature of the resolution is the desire to proceed to "*political choices, consistent with the international commitments made under the Paris Agreement on Climate Change, create the historic and unmissable opportunity for the country to develop incisive and forward-looking actions aimed at effectively combining the development of technological innovation with energy, environmental and social sustainability*".
The text of the resolution is reproduced in full in order to verify the current feeling and orientation on the subject of the present Italian political level. The resolution will certainly not fail to be discussed, but it represents a very important guideline for the Italian energy transition in line with the path currently established in Europe.

In order to fully understand this document, it is assumed that the reader is already aware of the basic notions of energy systems of users. For further information, please consult the downloadable text at the following link www.enusyst.eu or contact Gruppo Professione Energia. The same applies to any in-depth analysis of the precise meaning of the individual passages and to any assessment of the consistency of the various declarations here reported.

2. The Resolution[1]

The 10th Standing Committee (Senate Industry Commission),
as a result of the investigation conducted on the deal assigned no. 59 on the support to production activities through the use of systems of generation, storage and self-consumption of electricity, including through a structured cycle of hearings of the most significant stakeholders and the public consultation conducted in October 2018,

Given that:

- *energy issues are now inseparably linked with those of combating climate change and, in particular, rising global temperatures. Sustainable development and the circular economy have become the central themes in the world debate and the full achievement of the 17 objectives of Agenda 2030, representing the path for action of the main countries, including Italy;*
- *the average rise in temperature of over 1.5 degrees represents a serious threat to the future of mankind, given that this rise is able to cause negative effects that affect the entire world population; solutions to the climate crisis are widely available through innovations and technologies starting with renewable energy, sustainable transport options, zero-carbon buildings, the transition to a circular economy;*
- *international agreements, not least the Paris agreement of 2015, are beginning to produce their first results, albeit well below what is necessary and decisive to reverse the current trend. Renewable energy currently accounts for more than 70% of net additions to electricity generation capacity. Many states, regions and local authorities have committed themselves*

[1] Unofficial translation elaborated by GPE.

to reducing their greenhouse gas emissions by at least 80% by 2050 compared to 1990. More than 700 companies, with a total market capitalization of over $16 trillion, have made far-reaching climate commitments, while numerous investors, with a portfolio of nearly $30 trillion, have signed up to the "Climate 100+", a five-year initiative to involve the world's largest greenhouse gas emitters, to improve climate change governance, reduce emissions and strengthen climate finance;

- *with the agreement reached in June 2018 between the Council and the European Parliament on Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources, which will guide the legislation of member countries from 2020 to 2030, the target on renewable energy will be raised to 32 % in 2030 and is recognized the right to self-production, self-consumption, storage and sale of surplus electricity;*
- *among the objectives of the Italian proposal for a National Integrated Programme for Energy and Climate (PNIEC), already sent to the European Commission as required by the Regulation of the European Parliament and of the Council 2016/0375 on the governance of the Energy Union, include the citizen and businesses - especially small and medium - protagonists and beneficiaries of energy transformation and not only financiers of active policies, this means promoting self-consumption and renewable energy communities, but also maximum regulation and maximum transparency of the segment of the sale, so that the consumer can benefit from a competitive market;*
- *these political choices, consistent with the international commitments made under the Paris Agreement on Climate Change, create the historic and unmissable opportunity for the country to develop incisive and forward-looking actions aimed at effectively combining the development of technological innovation with energy, environmental and social sustainability;*
- *in the short term, this combination fuels benefits in support of the production activities of the green economy with direct repercussions, because it allows the purchase of electricity at the cost of producing renewable energy, which is currently lower than that of energy from fossil fuels, and because it fuels research and development at the national level in the field of digitization and control of energy flows, and indirect, through the revival of the entire supply chain involved and the improvement of energy security with the reduction of energy dependence;*
- *currently, the renewable energy production sector includes the entire supply chain of the electrical, electrotechnical, electronic and automation industries, in which about 1,300 companies with 468,000 employees and more than 70 billion euros in total turnover are estimated to be involved. In order to achieve the ambitious and possible European objectives of producing electricity from renewable sources by 2030, with adequate legislation, the self-generation of electricity from renewable sources for own consumption on site can also play a role of growing importance;*
- *the on-site self-consumption is not currently metered, It can only be estimated because the official measures available concern electricity injected into and taken from electricity grids and only in some cases (e.g. for incentivised installations) do they also concern the electricity produced. In ARERA's[2] memorandum of 12 March 2019 94/2019/I/COM, submitted at the hearing of the 10th Commission, the total amount of electricity currently consumed by the company is therefore estimated at around 28 TWh. The non-application of the tariff components to cover the general system costs represents a real implicit incentive that can be*

[2] Italian Regulation Authoruty for energy, grids, water and environment

estimated at about 1.4 billion euros per year, of which more than one billion euros for the self-consumption of fossil fuel energy;

- *under the new Community targets for 2030, this amount of net annual production of energy produced by distributed generation (DG) plants, which is renewable and consumed on site, will have to be increased significantly, in such a way as to take advantage of the lowest cost of producing energy from renewable sources, and therefore without resorting to instruments that constitute an unjustified burden on bills for citizens and businesses.*

Whereas:

- *in 2017, own consumption from RES was 5.5 TWh, of which 4.1 from photovoltaics, 0.9 from bioenergy and 0.5 from hydroelectric power. From the above data, it can be seen that almost all of our own consumption from renewable energy sources (RES) is from photovoltaics. According to the first estimates developed by GSE[3] and RSE[4], the generation of own RES consumption could increase from about 6 TWh at present to about 20 TWh in 2030;*
- *during 2019 the estimates will be refined in view of the final drafting of the PNIEC. There is currently no evidence to suggest that own consumption from nonphotovoltaic RES should increase significantly in the coming years; if it remained in the same proportion as today, own consumption from non photovoltaic RES by 2030 would be just over 1 TWh. What will increase instead will be the own consumption from photovoltaics. If the current proportion were to remain, by 2030, own photovoltaic consumption would be about 12.7 TWh;*
- *GSE and RSE believe that self-consumption will develop for several reasons: the spread of storage systems, the use of favorable policies and conditions for demand management and the adjustment of user behavior that could be induced to maximize self-consumption, even in the absence of batteries. An enabling factor for this should be the new technological, consumption management and energy price growth tools;*
- *an important role for the growth of own consumption is also attributed to storage systems: according to some of the scenarios developed by GSE and RSE, of the 30 GW of additional photovoltaic capacity to 2030 envisaged by the PNIEC proposal, more than 12 GW can be equipped with storage systems. Specifically, no less than 12 GWh of storage capacity, coupled to small domestic systems, and 3 GWh coupled to large centralized systems, are assumed. This diffusion of storage, which could also be favoured by an evolution of the current "exchange on site" to explicitly or implicitly reward self-consumption, will determine an increase in the share of self-consumed energy that, in small domestic systems, could be increased from the current 30 % to values well over 50 %;*
- *therefore, self-consumption, together with other interventions on the electrical system, could contribute to managing the potential impacts of the massive spread of photovoltaics: the large number of photovoltaic systems will probably lead to overgeneration in the middle hours of the day, when the peak of solar generation may not correspond to a sufficient demand for energy especially in some areas, and on the other hand in the evening there may be a rather rapid increase in the demand for energy on the grid. For example, according to some initial estimates developed by RSE, the spread of batteries coupled to photovoltaic systems could result in a reduction in overgeneration of about 0.5 TWh per year;*
- *to the development potential of self-consumption from photovoltaics it is possible to associate also a series of economic and environmental benefits, among which the saving of about 1 TWh of electricity per year due to the lack of grid losses in the transport of energy*

[3] Gestore dei servizi energetici Spa – www.gse.it

[4] Ricerca sul sistema energetico Spa - http://www2.rse-web.it/

and a saving of greenhouse gases equal to 400,000 tons of CO2 associated with the surplus of electricity production necessary to cover the grid losses mentioned.

Noted that:

- *currently about 13,000 storage systems are installed (mainly with lithium-ion technology and installed by private individuals) on as many photovoltaic systems, the vast majority of which entered into operation in the last 3 years. In the first three quarters of 2018, the figure for 2017 has already been exceeded (almost 5,000 installations). The measures available on the incentivised plants show that the average percentages of self-consumption for private individuals and businesses without accumulation are as follows: 30 % private individuals and 50 % businesses. This difference is mainly due to the different load profiles of the users. The use of accumulations leads to an increase in the average consumption of private households of 25% and companies of 15% respectively;*
- *decentralised and widespread production brings generation and consumption closer together and is therefore the ideal model for inducing people to consume energy during the hours of production from renewable sources, and to equip themselves with tools that make their own consumption flexible, such as storage facilities, or tools that allow users to plan so that they can consume energy during the hours of production of renewables, such as electric vehicles and heat pumps. In order to achieve the objectives of penetration of renewables, it is not enough to increase the capacity of renewable production, it is necessary to orient consumption to ensure that the new renewable production is consumed instantly.*

Also in view of the fact that:

- *in this broad framework that outlines the challenges for the near future, the production activities involved in the green energy supply chain are called to play a strategic role of fundamental importance, as catalysts and drivers of change, creating a model of energy transition that combines technological innovation and respect for the environment, with the resulting employment, economic, health and environmental benefits;*
- *it seems necessary that the Government and Parliament contribute to decisively support this process, analysing the critical legislative, regulatory and regulatory aspects still present in the current regulatory framework that governs the self-production and self-consumption of energy in both the manufacturing and tertiary sectors, and in the residential sector, in order to overcome these problems and support their real growth and orderly development;*

In order for Italy to be a leading industrial player, a profound transformation of the national electricity system must be initiated without delay, based on a now obsolete assumption of centralised energy generation. In the new configuration, the participation of energy consumers in the electricity markets through demand response mechanisms and modern software for managing electricity flows in aggregate forms is required and indispensable. It is therefore necessary to create the conditions so that energy consumers, even collectively, can generate and store energy for their consumption, in a context in which consumers and producers of energy from renewable sources contribute to the stability and security of the national electricity grid.

In order to unlock the possibility of producing, storing and self-consuming energy for consumers, the instruments already identified by European legislation cannot be ignored. A first aspect concerns the implementation of the so-called Closed Distribution Systems (CDCs), as provided for in the Electricity Markets Directive (No 2009/72/EC of 13 July 2009). TSOs are private electricity grids that distribute electricity within an industrial, commercial or geographically limited shared services site, where

there are technical or security reasons justifying the partial integration of the production process of the site users. Within those systems, energy may be produced for distribution to the users on the site without transiting through the distribution or transmission system, provided that the distribution or transmission system does not supply household customers, excluding accidental use by a limited number of households employed by the owner of the distribution system. European legislation leaves it to the Member States to decide whether or not to implement this provision. With the adoption of Legislative Decree no. 93 of 1 June 2011, Italy decided not to make use of this option. The prohibition to build such systems, however, blocks the possibility of making investments for self-consumption and the coordinated management of consumption within industrial consortia and large areas for commercial and tertiary use.

In order to make the transition to renewable sources sustainable, all the tools aimed at coordinating energy supply and demand must be developed. In this context, closed distribution systems are an opportunity that should be seized, appropriately balanced with the need to contain energy costs for the generality of citizens and businesses and therefore differentiating the rules on the payment of charges between closed distribution systems and efficient systems of users for both new and historical CDSs.

With reference to the sector of production, accumulation and self-consumption of energy from renewable sources in condominiums and other buildings, it is necessary to overcome the critical issues generated with reference to production. Legislative Decree no. 28 of 3 March 2011 imposes the obligation to produce electricity from renewable sources, for a percentage that varies according to the surface area of the building. The critical point of this rule is that the electricity produced under the provisions of Legislative Decree no. 28 of 2011 can be consumed directly by the general users condominium and not by the housing units of the condominium. Much of the energy is therefore not self-consumed, but is fed into the electricity grid, and then be purchased again by the owners who have fed it.

Article 21 of Directive (EU) 2018/2001 provides that tenants and tenants inside a building can collectively produce, store and consume electricity. In Italy, this is currently prohibited to individual condominium users and is not convenient for the condominium that can only supply general services. This right must therefore be recognised as soon as possible. The current restrictions constitute an unjustified restriction on the freedom of citizens and represent an obstacle to the necessary spread of self-consumption, also in view of the current favourable technological conditions, for example with regard to the important evolution of storage systems (battery, thermal or even more futuristic such as the exploitation of batteries of electric vehicles, including the Vehicle to Grid).

It is necessary to allow, also on an experimental basis, the early launch of renewable energy communities (CERs or Local Energy Communities - LECs), i.e. aggregations of users (citizens, local authorities and small and medium-sized enterprises) that come together for the production, storage and consumption of energy in aggregate form. The energy produced by the CERs can be shared among the members and consumed directly by the members who have participated with their share to the investment for the production of the plants. The Energy Community allows citizens and local authorities to secure the supply of self-produced electricity at the cost of producing renewable energy, which is currently lower than that of fossil energy. Because of their roots in the territory, CERs can support solidarity mechanisms for the supply of energy to the poorest citizens. In addition, energy produced by the Community can be transferred to entities with different consumption

characteristics, thus overcoming one of the major current obstacles to the spread of self-consumption.

To allow CERs to perform their function, it is essential to accelerate the installation of second generation "intelligent" meters (Smart Meters2G), which currently cover about 20 percent of Italian users, especially where the citizens themselves request the installation to be able to create communities of renewable energy.

Also the "consumption of proximity", or the self-consumption of energy produced in geographically delimited communities, is a virtuous tool and to be encouraged if implemented in such a way as to encourage the simultaneity between production from renewable sources and consumption and therefore the optimization of renewable production and the reduction of energy flows on transmission networks.

In addition, local consumption reduces the need to upgrade the network, if implemented in such a way as to stimulate maximum simultaneity between production and consumption. Compared to CERs, it is also important to regulate the desired participation of these players in the Market for Dispatching Service (MSD), which has recently benefited from an initial regulatory opening, especially in the case of the use of photovoltaic systems with suitable storage systems.
Considering that in the Italian proposal of PNIEC there is an explicit paragraph in which are indicated the policies and measures to achieve the national contribution to the achievement of the binding target at EU level for 2030 on renewable energy,

commits the Government to:

1) implement Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, with immediately operational provisions on the implementation of the parts relating to own consumption and CERs;
2) establish, as indicated in Directive (EU) 2018/2001, a favourable framework for promoting and facilitating the development of the self-consumption of renewable energy, taking into account the unjustified barriers that exist for the self-consumption of renewable energy and, at the same time, the potential of the same, in the territories and energy networks;
3) ensure that final customers, in particular household customers, have the right to participate in renewable energy communities, while maintaining their rights and obligations as final customers and without being subject to unjustified or discriminatory conditions or procedures;
4) ensure that renewable energy communities are granted the right to produce, consume, store and sell renewable energy, including through renewable electricity trading agreements, and to share, within the same community, the renewable energy produced by the production units held by that renewable energy producer/consumer community. This must be done by ensuring that the members of the community maintain their rights and obligations as final customers and that, on the one hand, sharing is not considered for tax purposes as an energy sale and, on the other hand, the fees for the distribution of energy are paid, but not those for transport and at least partly dispatching if the energy is simultaneously produced and consumed within the members of the community, without being conveyed on the national transmission grid. All this according to criteria of

sustainability of costs for the generality of citizens and businesses, which should not see their costs increased in the bill;

5) guarantee the right to self-consumption of energy from renewable sources by allowing direct lines between production and consumption not contiguous and allowing self-consumption distributed with more consumers in the condominiums, with closed distribution systems (SDC), with local energy communities and peer to peer;
6) take the necessary actions to ensure that individual or collective self-consumption is efficient, convenient and sustainable by opening up markets to renewable generation, particularly that of grid services;
7) take the necessary steps to ensure a gradual transition to a non-centralised system for dispatching energy flows, reforming the structure of the new bill for domestic users and eliminating fixed distribution tariffs;
8) stabilising and strengthening measures providing for super-amortisation and tax deductions for energy requalification measures and for the purchase of plants producing energy from renewable sources;
9) provide for a rewarding mechanism for own consumption, also as an alternative to "on-site exchange", which stimulates the use of storage systems to maximise own consumption;
10) encouraging economic sustainability criteria to keep costs down for consumers, given that many fossil-fuelled plants - with the exception of high-efficiency cogeneration plants - are at an advanced stage of depreciation and could be subject to a reduced exemption mechanism, in order to free up resources for reducing bills and stimulating new self-consumption;
11) consider tax relief measures or capital grants for CERs and new RES installations operating in local consumption using the distribution network, also taking into account the environmental benefits resulting from the use of these instruments;
12) initiate the implementation of the National Strategy for Sustainable Development, in line with the objectives of the United Nations Agenda 2030, by stepping up action to reduce greenhouse gas emissions, with particular reference to the promotion of energy efficiency and renewable energy;
13) implement the National Energy Strategy (SEN), where it provides for the gradual replacement of coal-fired power generation, primarily, with that from renewable sources, in order to give certainty and implementation to an advanced, courageous and able to support the modernization of our economic system;
14) proceed rapidly with the reform of the system of incentives for renewables, to be implemented in parallel with the progressive reduction of environmentally harmful incentives, in view of the substantial achievement of grid parity, i.e. the point at which electricity produced by plants powered by renewable energy sources has the same price of energy produced from conventional energy sources, and primarily from fossil fuels;
15) provide, as part of the reform of energy incentives a sustainable management aimed at reducing general system costs through their full management by the Single Buyer[5], also monitoring, through the Integrated Information System[6], the flows of general costs actually paid by consumers and paid by sellers, ensuring adequate transparency of processes and appropriate forms of protection for operators and consumers;
16) lastly, as part of the measures aimed at recovering energy efficiency, hopes to extend to households the incentive mechanisms for the compensation of reactive energy, similarly

[5] Acquirente Unico Spa - http://www.acquirenteunico.it/
[6] Information system management for settlement purpose managed by Acquirente Unico Spa

to what is already provided for industrial users, also in the light of the new technological possibilities allowed by second-generation meters.