



# National Survey Report of PV Power Applications in ITALY 2016



PVPS

PHOTOVOLTAIC  
POWER SYSTEMS  
PROGRAMME

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**IEA PVPS TASK 1**

**National Survey Report of PV Power Applications in ITALY  
2016**

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## Foreword

The International Energy Agency (IEA), founded in November 1974, is an autonomous body within the framework of the Organisation for Economic Co-operation and Development (OECD) which carries out a comprehensive programme of energy co-operation among its member countries.

The IEA Photovoltaic Power Systems Technology Collaboration Programme (IEA-PVPS) is one of the collaborative R & D agreements established within the IEA and, since 1993, its participants have been conducting a variety of joint projects in the applications of photovoltaic conversion of solar energy into electricity.

The participating countries and organisations can be found on the [www.iea-pvps.org](http://www.iea-pvps.org) website.

The overall programme is headed by an Executive Committee composed of one representative from each participating country or organization, while the management of individual Tasks (research projects / activity areas) is the responsibility of Operating Agents. Information about the active and completed tasks can be found on the IEA-PVPS website [www.iea-pvps.org](http://www.iea-pvps.org)

## Introduction

The objective of Task 1 of the IEA Photovoltaic Power Systems Programme is to promote and facilitate the exchange and dissemination of information on the technical, economic, environmental and social aspects of PV power systems. Task 1 activities support the broader PVPS objectives: to contribute to cost reduction of PV power applications, to increase awareness of the potential and value of PV power systems, to foster the removal of both technical and non-technical barriers and to enhance technology co-operation. An important deliverable of Task 1 is the annual *“Trends in photovoltaic applications”* report. In parallel, National Survey Reports are produced annually by each Task 1 participant. This document is the country National Survey Report for the year 2015. Information from this document will be used as input to the annual Trends in photovoltaic applications report.

The PVPS website [www.iea-pvps.org](http://www.iea-pvps.org) also plays an important role in disseminating information arising from the programme, including national information.

## 1 INSTALLATION DATA

The PV power system market is defined as the market of all nationally installed (terrestrial) PV applications with a PV capacity of 40 W or more. A PV system consists of modules, inverters, batteries and all installation and control components for modules, inverters and batteries. Other applications such as small mobile devices are not considered in this report.

For the purposes of this report, **PV installations are included in the 2016 statistics if the PV modules were installed and connected to the grid between 1 January and 31 December 2016, although commissioning may have taken place at a later date.**

### 1.1 Applications for Photovoltaics

Italy in 2016 installed 382 MW compared to a lower 300 MW data of 2015; out of 382 MW installed in 2016, almost all plants are under a net-billing scheme. On-grid installed capacity reached 19.283 MW for more than 730.000 PV plants installed.

In the past 3 years more than 300 MW per year were installed without incentives; most plants have small size (below 20 kW, with average capacity of around 6 kW), and benefit from a net billing scheme (Scambio Sul Posto, SSP, see paragraph 3.1) and tax credit. Utility scale market is on a slightly recovering trend, thanks also to the sharp drop of the PV module costs, despite the low wholesale electricity prices.

After the end of the FiT law in 2013, tax credit (available only for small size plants up to 20 kW), together with a net-billing scheme (SSP), are the remaining measures to support PV market. Self-consumption is allowed for all PV system sizes.

Tax credit measures are foreseen also for storage systems, but so far storage has been installed in few residential PV plants, integrated with the inverter in order to achieve a better performance of the installed system, including also self-consumption. By the end of 2016, 503 communications of installation of storage systems were received by GSE (of which 391 in 2016), most of them related to plants under 20 kW.

## 1.2 Total photovoltaic power installed

**Table 1: PV power installed during calendar year 2016**

			MW installed in 2016	MW installed in 2016	AC or DC
<b>Grid-connected</b>	BAPV <sup>(2)</sup>	Residential	362	155	DC
		Commercial		136	DC
		Industrial		71	DC
	BIPV <sup>(3)</sup> (if a specific legislation exists)	Residential			
		Commercial			
		Industrial			
	Ground-mounted	cSi and TF	20		DC
		CPV			
	<b>Off-grid</b>	Residential			
		Other			
Hybrid systems					
<b>Total</b>			<b>382</b>		<b>DC</b>

<sup>1</sup> Blank box stands for not available data

<sup>2</sup> Building Applied PhotoVoltaic

<sup>3</sup> Building Integrated PhotoVoltaic

**Table 2: Data collection process**

If data are reported in AC, please mention a conversion coefficient to estimate DC installations.	Data refer to the sum of PV nominal power
Is the collection process done by an official body or a private company/Association?	Public bodies: GSE, RSE and ENEA
Link to official statistics (if this exists)	<a href="http://www.gse.it">www.gse.it</a> <a href="http://www.terna.it">www.terna.it</a> <a href="https://www.autorita.energia.it/">https://www.autorita.energia.it/</a>

**Table 3: PV power and the broader national energy market**

<i>MW-GW for capacities and GWh-TWh for energy</i>	<b>2016 numbers</b>	<b>2015 numbers<sup>(1)</sup></b>
Total power generation capacities (all technologies)	117.080,8 MW	120.040,6 MW
Total power generation capacities (renewables including hydropower)	52.272,8 MW	51.483,5 MW
Total electricity demand (= consumption)	295.508,3 GWh	297.179,9 GWh
New power generation capacities installed during the year (all technologies) <sup>(2)</sup>	-2.959,8 MW	-5.477,9 MW
New power generation capacities installed during the year (renewables including hydropower)	789,3 MW	903.9 MW
Total PV electricity production	22.104,3 GWh	22.942,2 GWh
Total PV electricity production as a % of total electricity consumption	7,5%	7,7%

<sup>1</sup> Data updated according to TERNA annual report 2016

<sup>2</sup> Net change in generation capacities

**Table 4: Other information<sup>(1)</sup>**

	<b>2016 Numbers</b>
Number of PV systems in operation in your country (a split per market segment is interesting)	732.053
Capacity of decommissioned PV systems during the year in MW	0
Total capacity connected to the low voltage distribution grid in MW	6.884
Total capacity connected to the medium voltage distribution grid in MW	11.203
Total capacity connected to the high voltage transmission grid in MW	1.196

<sup>1</sup> Grid connected



**Table 5: The cumulative installed PV power in 4 sub-markets (MW)**

<b>Sub-market</b>	<b>Stand-alone domestic</b>	<b>Stand-alone non-domestic</b>	<b>Grid-connected distributed</b>	<b>Grid-connected centralized</b>	<b>TOTAL</b>
1992	4,0	3,8	0,1	0,7	8,6
1993	4,4	4,2	0,1	3,5	12,2
1994	4,7	4,7	0,2	4,6	14,2
1995	4,8	4,8	0,3	5,9	15,8
1996	5,0	4,8	0,4	5,9	16,1
1997	5,1	4,8	0,7	6,2	16,8
1998	5,2	5,1	0,8	6,6	17,7
1999	5,2	5,6	0,9	6,7	18,4
2000	5,2	5,9	1,2	6,7	19,0
2001	5,3	6,4	1,6	6,7	20,0
2002	5,3	6,4	3,6	6,7	22,0
2003	5,3	6,4	7,6	6,7	26,0
2004	5,3	6,7	12,0	6,7	30,7
2005	5,3	7,0	18,5	6,7	37,5
2006	5,3	7,5	30,5	6,7	50,0
2007	5,4	7,7	68,7	18,3	100,1
2008 <sup>(1)</sup>	5,4	7,9	309,1	173,9	496,3
2009 <sup>(1)</sup>	5,0	8,0	682,6	581,4	1277,0
2010 <sup>(1)</sup>	4,0	9,0	1.544,6	2.047,5	3.605,1
2011 <sup>(1)</sup>	0,0	10,0	4.333,3	8.797,7	13.141,0
2012 <sup>(1)</sup>	0,0	11,0	6.042,6	10.742,4	16.796,0
2013	0,0	12,0	7.010,0	11.175,5	18.197,5
2014	0,0	12,0	7.236,4	11.358,0	18.606,4
2015 <sup>(1)</sup>	0,0	14,0	7.493,5	11.407,2	18.914,7
2016	0,0	14,0	7.809,9	11.473,2	19.297,1

<sup>1</sup> Grid connected data updated with GSE statistics 2016

## 2 COMPETITIVENESS OF PV ELECTRICITY

### 2.1 Module prices

**Table 6: Typical module prices for a number of years – local currency per W<sup>(1)</sup>**

Year	2009 <sup>(2)</sup>	2010 <sup>(2)</sup>	2011 <sup>(2)</sup>	2012 <sup>(2)</sup>	2013 <sup>(2)</sup>	2014	2015	2016
Standard module crystalline silicon price(s): Typical	2,50	1,70	1,50	0,80	0,60	0,55 <sup>(3)</sup>	0,55 <sup>(3)</sup>	0,48 <sup>(3)</sup>
Lowest prices	2,30	1,50	1,20	0,70	0,50	0,50 <sup>(4)</sup>	0,50 <sup>(4)</sup>	0,40 <sup>(4)</sup>
Highest prices						0,80	0,75	0,65

<sup>1</sup> Blank box stands for not available data

<sup>2</sup> Statistics updated according to GSE analysis data related to database of plants accessing incentive scheme

<sup>3</sup> Crystalline silicon modules

<sup>4</sup> Imported crystalline silicon modules

### 2.2 System prices

**Table 7: Turnkey Prices of Typical Applications – local currency<sup>(1)</sup>**

Category/Size	Typical applications and brief details	Current prices per W
OFF-GRID Up to 1 kW		
OFF-GRID >1 kW		
Grid-connected Rooftop up to 10 kW (residential)		1,34-1,73
Grid-connected Rooftop from 10 to 250 kW (commercial)		1,20-1,48
Grid-connected Rooftop above 250kW (industrial)		1,08-1,26
Grid-connected Ground-mounted above 1 MW		0,76-0,98
Other category (hybrid diesel-PV, hybrid with battery...)		

<sup>1</sup> Blank box stands for not available data

**Table 8: National trends in system prices (current) for different applications – local currency per W**

Price/Wp	2011 <sup>(1)</sup>	2012 <sup>(1)</sup>	2013 <sup>(1)</sup>	2014	2015	2016
Residential PV systems < 10 kW	3,60	2,60	2,20	1,67	1,60	1,55
Commercial and industrial	2,70	1,80	1,40	1,40	1,32	1,22
Ground-mounted	2,80	1,70	1,20	1,03	0,96	0,88

<sup>1</sup> Statistics updated according to GSE analysis data related to database of plants accessing incentive scheme

## 2.3 Cost breakdown of PV installations

### 2.3.1 Residential PV System < 10 kW

**Table 9: Cost breakdown for a residential PV system – local currency<sup>(1)</sup>**

Cost category	Average (local currency/W)	Low (local currency/W)	High (local currency/W)
<b>Hardware</b>			
Module	0,60	0,55	0,65
Inverter	0,15	0,14	0,16
Other (racking, wiring...)	0,27	0,22	0,32
<b>Soft costs</b>			
Installation	0,09	0,07	0,10
Customer Acquisition	0,03	0,02	0,03
Profit	0,30	0,25	0,35
Other (permitting, contracting, financing...)	0,11	0,09	0,12
<b>Subtotal Hardware</b>	<b>1,02</b>	<b>0,91</b>	<b>1,13</b>
<b>Subtotal Soft costs</b>	<b>0,53</b>	<b>0,43</b>	<b>1,60</b>
<b>Total Installed Cost</b>	<b>1,55</b>	<b>1,34</b>	<b>1,73</b>

<sup>1</sup> GSE specific survey

### 2.3.2 Utility-scale PV systems > 5 MW

**Table 10: Cost breakdown for an utility-scale PV system – local currency<sup>(1)</sup>**

Cost Category	Average (local currency/W)	Low (local currency/W)	High (local currency/W)
<b>Hardware</b>			
Module	0,45	0,40	0,50
Inverter	0,06	0,05	0,07
Other (racking, wiring.. )	0,12	0,11	0,13
<b>Soft cost</b>			
Installation	0,04	0,03	0,05
Customer acquisition	0,02	0,01	0,02
Profit	0,16	0,14	0,17
Other (contracting, permitting, financing etc.)	0,03	0,02	0,04
<b>Subtotal Hardware</b>	0,63	0,56	0,70
<b>Subtotal - Soft cost</b>	0,25	0,20	0,28
<b>Total Installed Cost</b>	0,88	0,76	0,98

<sup>1</sup> GSE specific survey

## 2.4 Financial Parameters and specific financing programs

**Table 11: PV financing scheme**

Average rate of loans – residential installations	3,8%
Average rate of loans – commercial installations	3,3%
Average cost of capital – industrial and ground-mounted installations	2,8%

## 2.5 Specific investments programs

Not available.

## 2.6 Additional Country information

**Table 12: Country information 2016**

Retail Electricity Prices for an household (range)	21,95-23,77 €cent/kWh <sup>(1)</sup>			
Retail Electricity Prices for a commercial company (range)	20-28,5 €cent/kWh <sup>(2)</sup>			
Retail Electricity Prices for an industrial company (range)	10-17,89 €cent/kWh			
Population at the end of 2016 (or latest known)	60.695.740			
Country size (km <sup>2</sup> )	301.336			
Average PV yield (according to the current PV development in the country) in kWh/kWp	1.158 kWh/kWp			
Name and market share of major electric utilities <sup>(3)</sup>	<b>Year 2016</b>		<b>Year 2015</b>	
	Electric utilities	Share %	Electric utilities	Share %
	Enel	22,1	Enel	25,6
	Eni	9,1	Eni	8,5
	Edison	7,7	Edison	6,4
	A2A	5,1	A2A	3,1
	Engie	3,5	Engie	3,2
	Czech Gas Holding	3,5	Czech Gas Holding	3,6
	Iren	3,1	Iren	2,9
	Tirreno Power	2	Tirreno Power	1,1
	ERG	2	ERG	2,1
	Axpo Group	1,8	Axpo Group	2,4
	Saras	1,8	Saras	1,8
	Sorgenia	1,5	Sorgenia	1,4
Edipower (in 2016 in A2A)		Edipower	2,4	
Others	37	Others	35,5	

<sup>1</sup> Consumption up to 5.000 kWh/y

<sup>2</sup> Nomisma Energia estimate

<sup>3</sup> Generation share

### **3 POLICY FRAMEWORK**

#### **3.1 Direct support policies for PV installations**

##### ***3.1.1 New, existing or phased out measures in 2016***

###### *3.1.1.1 Description of support measures excluding BIPV, and rural electrification*

In 2016 there have been no changes in the general framework. After the end of the FiT law in 2013, tax credit (available only for small size plants up to 20 kW), together with a net-billing scheme (Scambio Sul Posto, SSP), are the remaining measures to support PV market. Self-consumption is allowed for all PV system sizes. In addition, in the frame of a specific law related to urban planning, the opportunity to increase the volume of existing buildings in case of RES plants is confirmed.

Italy, during the years, developed different incentive mechanisms, from the “10.000 PV roofs” one, implemented in the early 2000, to the so-called “Conto Energia”, a Feed-in Tariff (Feed-in Premium until 2012) system (2005-2013).

The cost of the incentive is covered by a component of the electricity tariff structure paid by all final consumers (the financial cap set by FiT law was 6,7 BEUR in terms of yearly payments). In addition to FiT, Italy in 2009 switched from the net-metering mechanism to the so-called “Scambio Sul Posto” (SSP) for systems below 500 kW. The SSP is a net-billing scheme, in which electricity fed into the grid is remunerated through an “energy quota” based on electricity market prices and a “service quota” depending on grid services costs (transport, distribution, metering and other extra charges). In case the producer does not want to apply for the SSP, electricity market prices are applied for the electricity injected into the grid.

###### *3.1.1.2 BIPV development measures*

None.

###### *3.1.1.3 Rural electrification measures*

None.

###### *3.1.1.4 Support for electricity storage and demand response measures*

Regarding storage, tax credit measures are foreseen.

**Table 13: PV support measures (summary table)<sup>(1)</sup>**

	On-going measures residential	Measures that commenced during 2016 - residential	On-going measures Commercial + industrial	Measures that commenced during 2016 – commercial + industrial	On-going measures Ground-mounted	Measures that commenced during 2016 – ground mounted
Feed-in tariffs	No					
Feed-in premium (above market price)	No					
Capital subsidies	Yes, at a regional level				No	
Green certificates	No					
Renewable portfolio standards (RPS) with/without PV requirements	No obligations for utilities to obtain a minimum percentage of their power from renewable energy sources					
Income tax credits	Yes	No				
Self-consumption	Yes	No	Yes	No	Yes	No
Net-metering	No					
Net-billing <sup>(2)</sup>	Yes	No	Yes	No	Yes	No
Collective self-consumption and virtual net-metering	Yes, under some conditions (paragraph 3.3)	No	Yes, under some conditions (paragraph 3.3)	No		
Commercial bank activities e.g. green mortgages promoting PV	Yes	No	Yes			
Activities of electricity utility businesses	Yes	No	Yes	No	Yes	No
Sustainable building requirements	Yes	No	Yes	No		
BIPV incentives	No					

<sup>1</sup> Blank box stands for not available data

<sup>2</sup> Up to 500 kW

### 3.2 Self-consumption measures

PV self-consumption	1	Right to self-consume	Yes
	2	Revenues from self-consumed PV	Savings on the electricity bill
	3	Charges to finance Transmission & Distribution grids	No
Excess PV electricity	4	Revenues from excess PV electricity injected into the grid	SSP, net-billing based on energy and services; market price for selling
	5	Maximum timeframe for compensation of fluxes	Self-consumption, real time; SSP, advance payment twice per year
	6	Geographical compensation	On site (meter aggregation is allowed for some specific SSP cases)
Other characteristics	7	Regulatory scheme duration	Unlimited
	8	Third party ownership accepted	Yes, with condition for SSP
	9	Grid codes and/or additional taxes/fees impacting the revenues of the prosumer	On self-consumed electricity, a 5% of system tariffs applied to electricity withdrawn from the grid is charged above 20 kW
	10	Regulations on enablers of self-consumption (storage, DSM...)	Yes (tax credit for storage)
	11	PV system size limitations	Self-consumption, none; SSP, up to 500 kW
	12	Electricity system limitations	None
	13	Additional features	None



### **3.3 Collective self-consumption, community solar and similar measures**

Meter aggregation and virtual net-billing are allowed for some specific cases, i.e., Municipalities of up to 20.000 inhabitants and the Ministry of Defence.

### **3.4 Tenders, auctions & similar schemes**

None.

### **3.5 Financing and cost of support measures**

In 2016 GSE spent 15,9 BEUR for supporting RES, mainly for power production and purchasing RES electricity, of which 6,7 for PV plants (6,0 for incentives granted for PV plants built between 2005-2014 when FiT was in force and the rest for net-billing and simplified purchase).

Part of the cost is recovered by revenues arising from electricity sale (1,5 € BEUR) on the power exchange, thus determining a RES burden on electricity bills of 14,4 BEUR. This resulted at the end of 2016 in 3,95 EURcts/kWh paid by the electricity consumers in the residential sector (of which 1,67 EURcts/kWh for PV). The amount paid by the other consumers is slightly lower.

### **3.6 Indirect policy issues**

None.

## **4 HIGHLIGHTS OF R&D**

### **4.1 Highlights of R&D**

The Italian R&D activities on photovoltaic are mainly conducted by ENEA (the Italian Agency for New Technology, Energy and the Environment), RSE (a research company owned by GSE, the Italian publicly-owned company managing the renewable energy source incentives), CNR (the National Council for Scientific Research) and EURAC (a research company). Additional activities are conducted by several Universities and other research institutes, including those of private companies.

ENEA is the most important, with activities focused on innovative materials, solar cell design and PV systems. Its research on innovative materials concerns crystalline and microcrystalline silicon cells, amorphous-crystalline silicon heterojunction cells, CZTS single junction and CZTS/silicon tandem cells, Perovskite single junction and Perovskite-silicon tandem cells and micromorph tandem cells. Concerning PV systems aspects, ENEA is developing systems and strategies to better integrate PV plant in the power grid, providing services for users and distributors and taking into account the emerging technologies of energy storage. Moreover, it is working with an innovative approach on architectural integration of PV elements in buildings.

RSE is the main organization involved in several European projects as coordinator and partner. Research activities is centred on high efficient solar cells, development of multi-junction solar cells based on III-V-IV elements and nanostructured coating for high concentration application. It is involved in the development of new SiGeSn ternary material for four junction solar cells, in the design of new optics, in outdoor and indoor concentrating module characterization, and in the development of new quaternary chalcogenides for thin film PV application. RSE conducts also performance evaluations of PV systems by dedicated monitoring system and is involved in the development of advanced tools for PV production forecast. RSE is heavily involved in the smart grid topic, addressing strategies to better integrate PV plants and storage system into the national grid as well as develop new ancillary services for the electric system. RSE has been involved in research and demonstration activities for electrification of remote communities, such as small islands not connected to the national electric grid.

EURAC is a research company, focused on quality and reliability of PV modules and systems. The core activities concern failure collection in the field, methodology for the calculation of degradation of performance of PV systems, uncertainty related to initial yield assessment, integration of PV in buildings, forecasting of PV generation and the calculation of PV hosting capacity, solar economics of PV systems with storage.

#### **4.2 Public budgets for market stimulation, demonstration / field test programmes and R&D**

Not available.

#### **Table 14: Public budgets for R&D, demonstration/field test programmes and market incentives.**

Not available.

## **5 INDUSTRY**

### **5.1 Production of feedstocks, ingots and wafers (crystalline silicon industry)**

Not available.

#### **Table 15: Production information for the year for silicon feedstock, ingot and wafer producers**

Not available.

## 5.2 Production of photovoltaic cells and modules (including TF and CPV)

Table 16: Production and production capacity information for 2016

Cell/Module manufacturer (or total national production)	Technology (sc-Si, mc-Si, a-Si, CdTe)	Total Production (MW)		Maximum production capacity (MW/yr)	
		Cell	Module	Cell	Module
<i>Wafer-based PV manufactures</i>					
3D Division Energy			(*)		(*)
Abba Srl			(*)		(*)
AV Project	sc-Si, mc-Si				(*)
Azimut Srl	sc-Si, mc-Si				(*)
Cappello Group SpA	sc-Si, mc-Si		0,5		40,0
DG Energy	mc-Si				9,0
Enecom s.r.l	sc-Si, mc-Si				(*)
Enipower	sc-Si, mc-Si				(*)
Ferrania Solis	sc-Si, mc-Si		17,0		110,0
GALA Tech S.r.l.					140,0
Meridionale Impianti	mc-Si				20,0
Peimar	sc-Si, mc-Si				(*)
Shunda Italia srl	sc-Si, mc-Si				(*)
SPSistem	mc-Si				60,0
Sunerg solar srl	sc-Si				(*)
Torri Solare srl	mc-Si		3,5		18,0
Trienergia S.r.l.					(*)
Union glass srl.	mc-Si				(*)
V-energy Green Solutions	sc-Si, mc-Si		6,1		23,0
Waris S.r.l.	sc-Si, mc-Si		(*)		50,0
Total			27,01		470,0
<i>Thin film manufacturers</i>					
Shunda Italia srl	a-Si		(*)		(*)
3Sun	a-Si		(*)		190,0
<i>Cells for concentration</i>					
-					
<b>TOTAL</b>			<b>27,1</b>		<b>660,0</b>

<sup>1</sup> Blank box stands for not available data

(\*) The company is active in the production but data is not available

Source: RSE specific survey

### 5.3 Manufacturers and suppliers of other components

After the end of FiT scheme, important inverter companies started to reach new markets, according to a new business path. The main activities in 2016 are focused on operation and maintenance of existing plants, revamping and a secondary market related to large size plants acquisition.

## 6 PV IN THE ECONOMY

### 6.1 Labour places

**Table 17: Estimated PV-related labour places in 2016** <sup>(1)</sup>

Research and development (not including companies)	
Manufacturing of products throughout the PV value chain from feedstock to systems, including company R&D	
Distributors of PV products	
System and installation companies	
Electricity utility businesses and government	
Other	
<b>Total</b>	<b>11.807</b> <sup>(2)</sup>

<sup>1</sup> Blank box stands for not available data

<sup>2</sup> 2016 GSE data, concerning permanent jobs, in terms of FTE (Full Time Equivalent), directly and indirectly related to O&M activities on existing PV facilities.

### 6.2 Business value

**Table 18: Value of PV business**

Not available.

## 7 INTEREST FROM ELECTRICITY STAKEHOLDERS

### 7.1 Structure of the electricity system 2016

<p>Short description of the electricity industry landscape</p>	<p>Italian electricity sector went through a deep reform over the last 20 years that changed it from a monopolistic structure to a liberalised market. The process started in 1999 but the full liberalisation was decided only in August 2017 and will start in mid 2019 when the tariff system will end also in the domestic sector. The former monopolist ENEL still holds relevant market shares in all segments, especially in the domestic sector.</p> <p>Structure: generation, transmission and distribution are separated. Generation is a free activity where ENEL has a 22% market share while the rest is scattered among several players. Transmission is a regulated activity held by the transmission system operator (TSO) Terna; distribution is a regulated activity where ENEL still holds a 89% market share. Retail activity is free, but with tariffs until mid 2019, where ENEL holds 70% of the market with a formal separation from the other activities. Enel is a stock company where the state holds a 26% stake. Terna is a stock company with the state holding a 30% stake. Some companies with activities in production, distribution and retail are former municipalities hold by local authorities. A2A and Iren are the larger producers.</p> <p>Energy authority was created in 1995 and is regulating the electricity sector following directives from the Italian Government and Parliament.</p>
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### 7.2 Interest from electricity utility businesses

Not available.

### 7.3 Interest from municipalities and local governments

Not available.

## **8 HIGHLIGHTS AND PROSPECTS**

After incentive era, market evolved from large ground plant investments to small residential systems based on self-consumption and net-billing scheme.

In 2016 a kind of market adjustment can be observed, with new large projects close to grid parity and an increasing number of PV installations (chiefly due to modules cost reduction).

2016 PV market shows again two main segment, first one that of self-consumption residential small plants, the other that of large systems (secondary market of managing and acquisition).

Italy is defining 2030 renewable energy targets in the National Energy Strategy (NES); the current NES document defines an increase of RES share up to 48%-50% in electricity sector consumption, thus determining an expected PV tripled capacity.

