

“Enabling PV Iran” Solar Business in Iran

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SOLAR SKY

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Electricity Mix and Share of Renewable Energy

Solar Market Today

Solar PV systems in Iran

Iran Manufacturing Capacity in PV

Market Potential of Solar PV (until 2020)

Technical

Government Target

According to the issued permits



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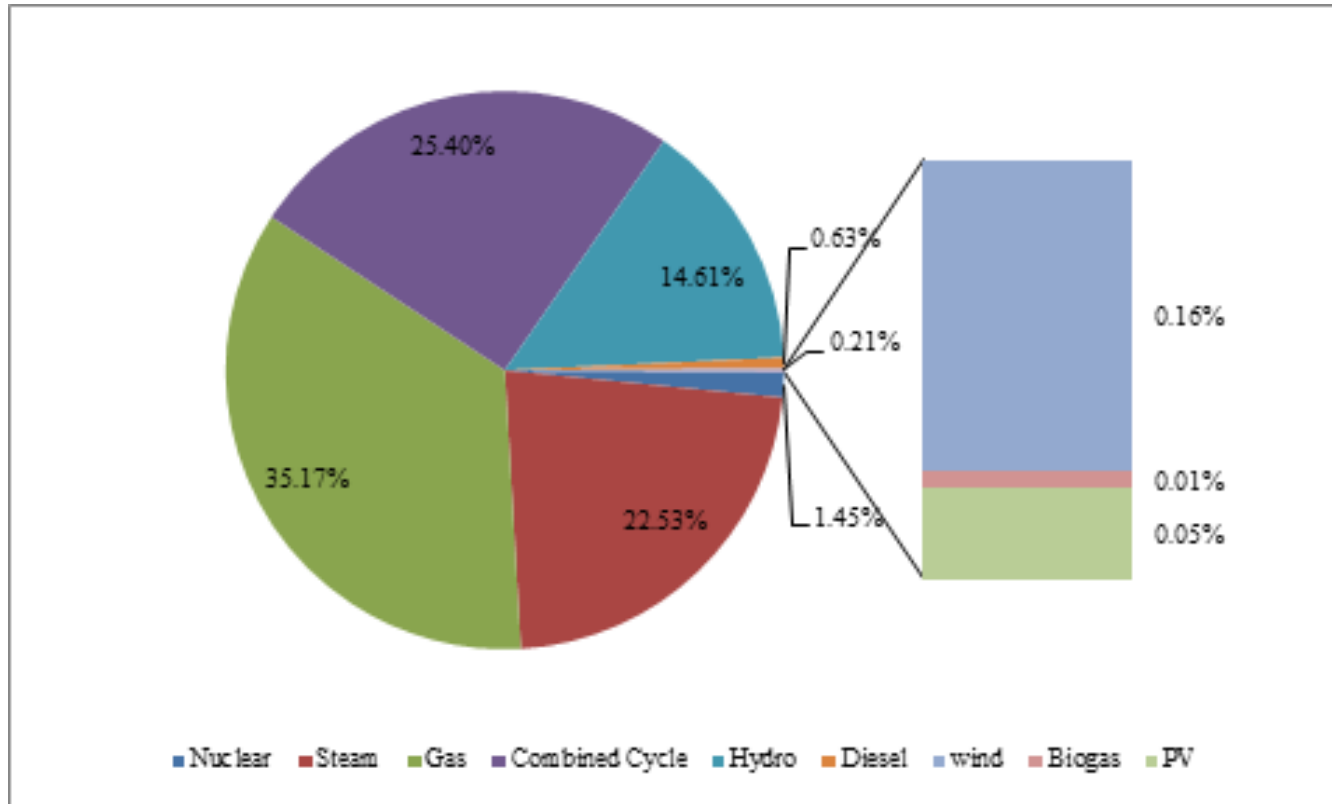


Nominal installed capacity and electricity generation (2005 and 2013)

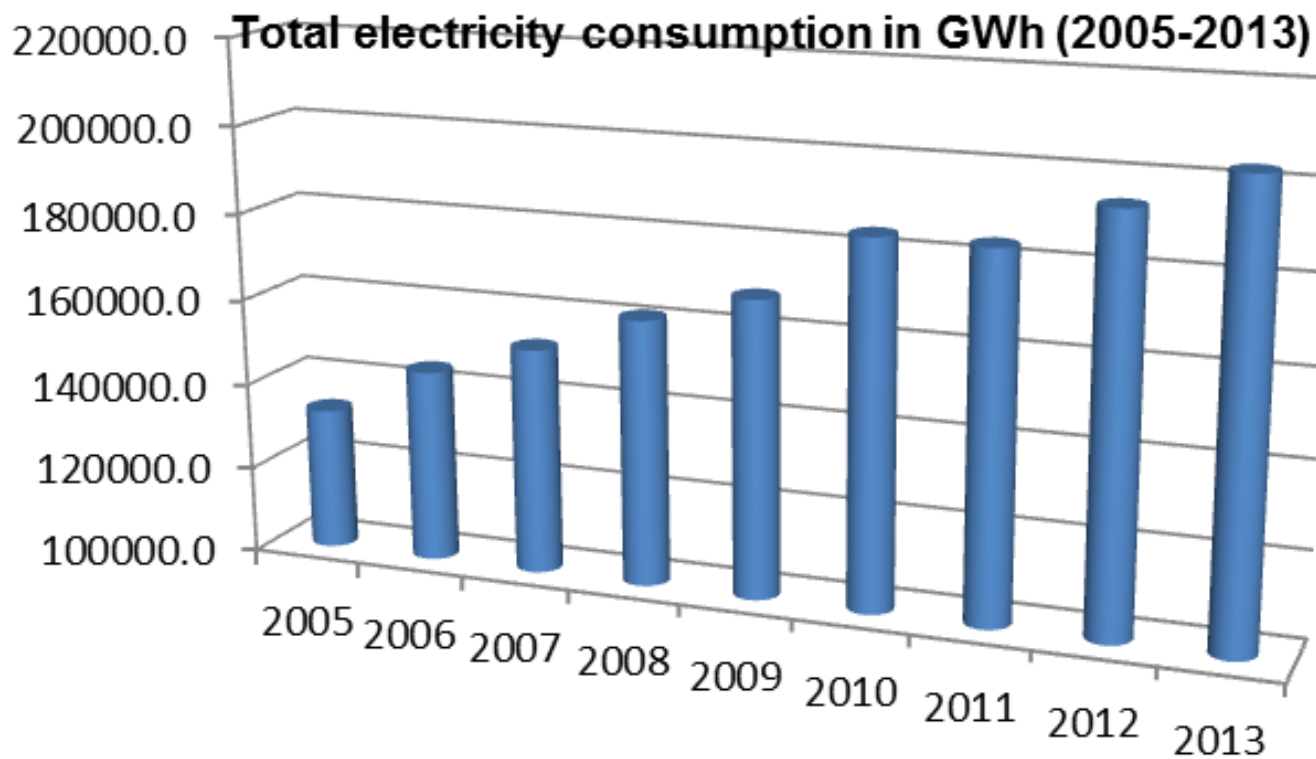
Power plant type	2005		2013	
	Capacity (MW)	Generation (GWh)	Capacity (MW)	Generation (GWh)
Steam	15578.0	93382.8	15829.2	89664.0
Gas	12049.3	32128.9	24714.7	66038.8
Combined cycle	6831.7	36194.0	17849.1	87135.1
Diesel	493.1	212.0	439.4	71.1
Hydro	6043.9	16100.2	10266.0	14582.0
Wind	47.6	71.0	110.1	375.6
PV	0.144	0.000	0.069	0.068
Nuclear	0.0	0.0	1020.0	4545.8
Biogas	0.0	0.0	6.9	20.8
Total	41043.7	178088.8	70235.5	262433.3

Electricity Mix and Share of Renewable Energy

Electricity generation capacity mix (2013)

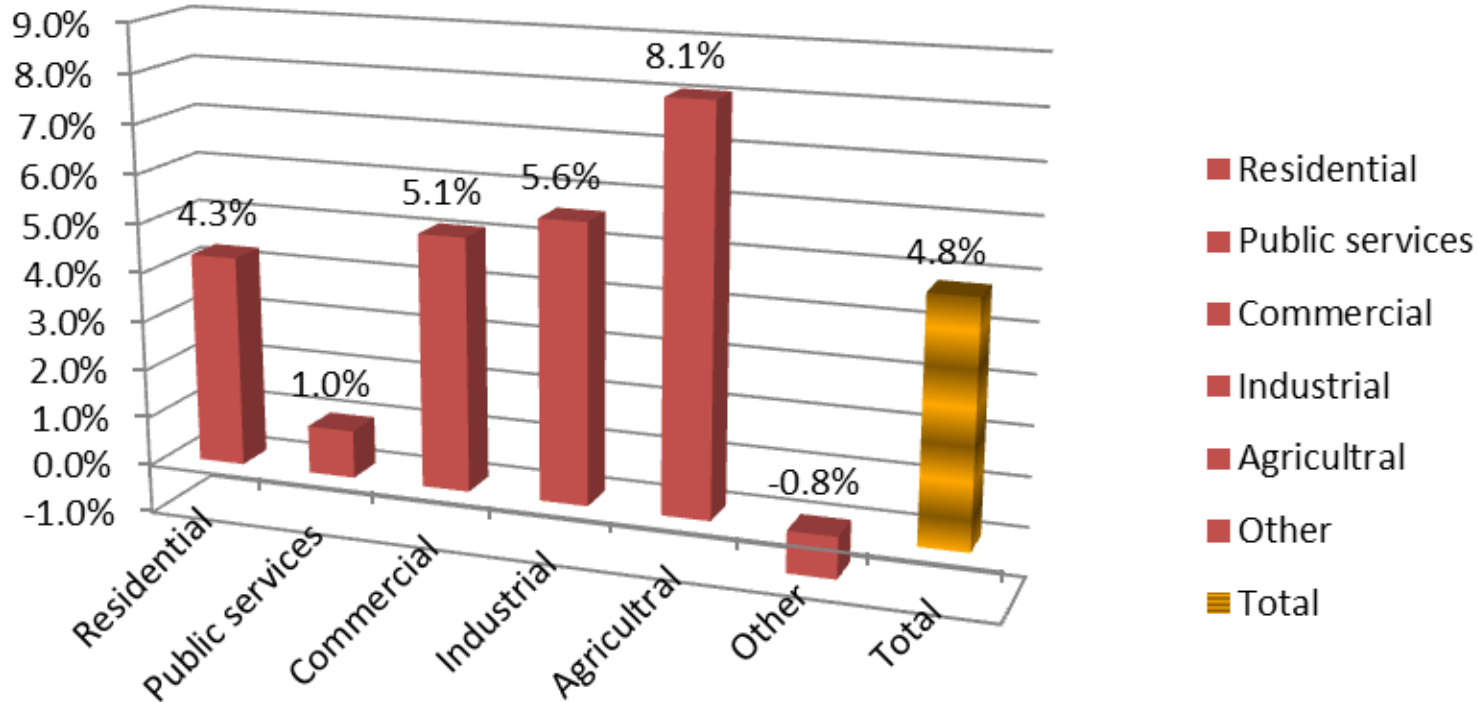


Electricity Consumption Growth in Iran



	2005	2006	2007	2008	2009	2010	2011	2012	2013
Series1	132897.1	144581.1	152329.1	161445.1	168438.1	184181.1	183905.1	194148.1	203088.1

Average Growth Rate



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Solar Market Today: PV Systems in Iran

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Item	Installed capacity (KW)	Description
1	32.105	Universities, Distribution and Regional Electricity companies, SUNA, Telecommunication systems, Rural Electrification and other state offices by the end of the year 1392(20.03.2014)
2	7.158	Installed capacity of photovoltaic systems from the electricity levies from March 21st 2013 to 21.06.2015
3	514	Feed in Tariff: Capacity installed by private sector company, Atrin Parsian
39777		Total installed capacity (KW)

Solar Market Today: PV Systems in Iran

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32 MW Breakdown (2013)

Description	Capacity (KW)
Street lights and parks energy supply	23500
Traffic lights and bus stations electrification	2240
Universities, regional power companies and other governmental organizations	1562
Telecommunication systems	3800
Electrification of rural areas (967 households)	979
Total	32081

Capacity Installed & Under Development by the Private Sector



Project Status		Size (MW)
Installed plants		0.514
Projects submitted (PPA)	Under Art. 133 mechanism	10.3
	Under Art. 19 mechanism	5
Under development with establishment license		2,756
Total		2,771.814

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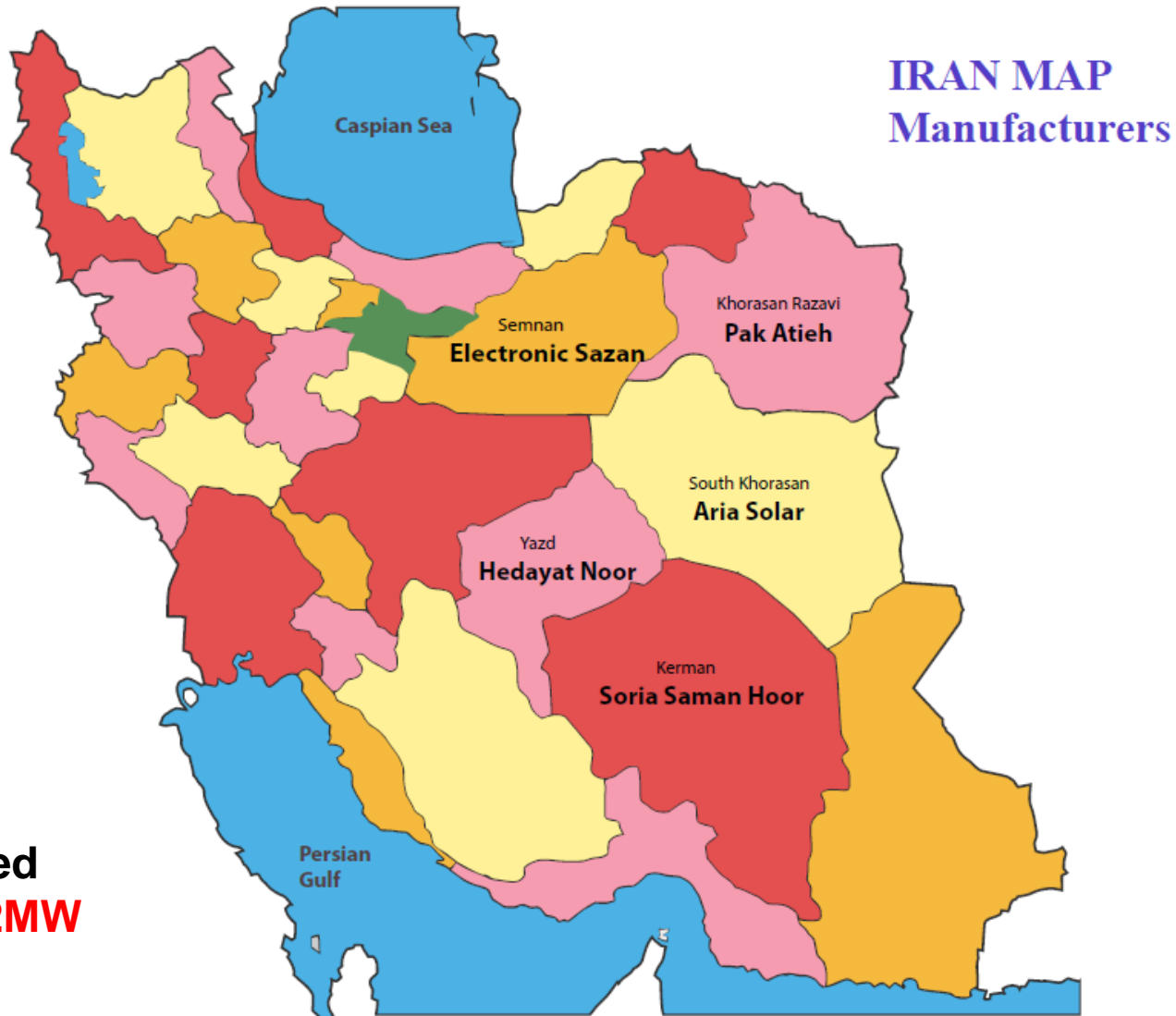
PV Production Capacity and Type of Technology

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Company	Production Capacity	Annual production 2014	Technology	Anticipation of Next Year	About 15%Extra Bonus
Electronic Sazan	10 MW panel	400 kW	mono	1.5~2 MW	<ul style="list-style-type: none"> - The dividing is not relevant to the value of components - The Bonus is not enough to encourage local manufacturing. - It is better to be 25-30% at least
	4 MW cell				
Soria Saman Hoor	25 MW panel		poly		
Pak Atieh	20 MW panel(2 lines)	3 MW	mono	6-10 MW	
Aria Solar	10 MW panel	450 kW			
Hedayat Noor Yazd	10 MW panel		poly & mono		
	3 MW cell & panel				

Iranian Manufacturers (Panels/ Inverters) (Nominal Capacity/ Annual production)



Total Installed
Capacity= **82MW**

Additional 15% FiT for the use of domestic products

Item	Component Description		Share of each component in the total Technology	Bonus percentage in Year 2015 (1394)
1	PV Panel	Frame	6,67%	1,00%
2		Glass	8,00%	1,20%
3		EVA sheet	7,33%	1,10%
4		Back sheet	7,33%	1,10%
5		Junction Box	5,33%	0,80%
6		Cell	13,33%	2,00%
7		Ribone tape	3,33%	0,50%
8		PV paste	3,33%	0,50%
9	Cable	DC cables	5,00%	0,75%
10	Invertor	Electronic part	18,67%	2,80%
11		Box and other metal parts	6,67%	1,00%
12	Other Components	Instructure	10,00%	1.50%
13		Solar Tracker	5,00%	0.75%
Total Sum			100,00%	15,00%



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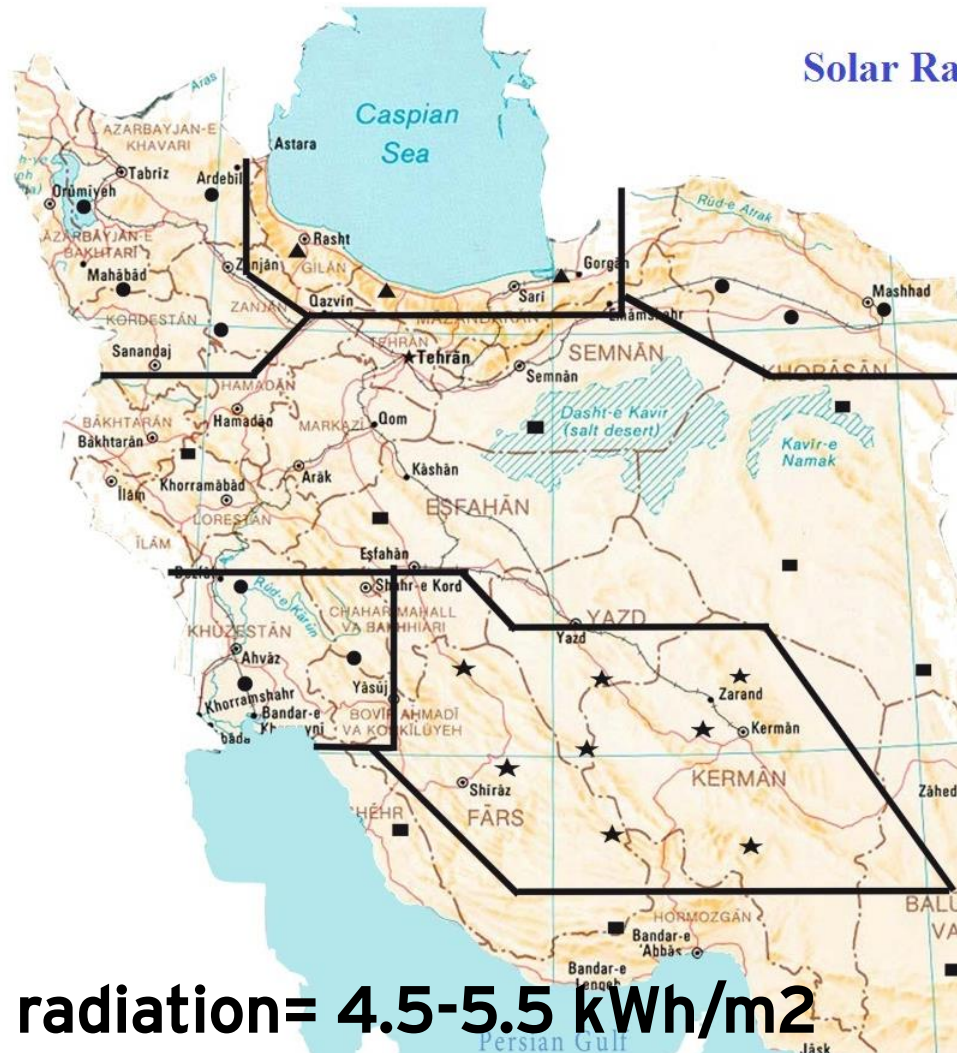
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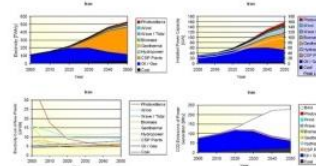
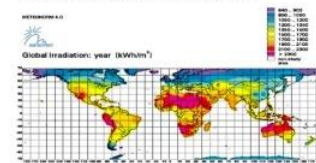
According to the issued permits

Market Potential of Solar PV (until 2020)



Solar Radiation in Iran

Solar Radiation Resource – Global Distribution



راهنمای نماد

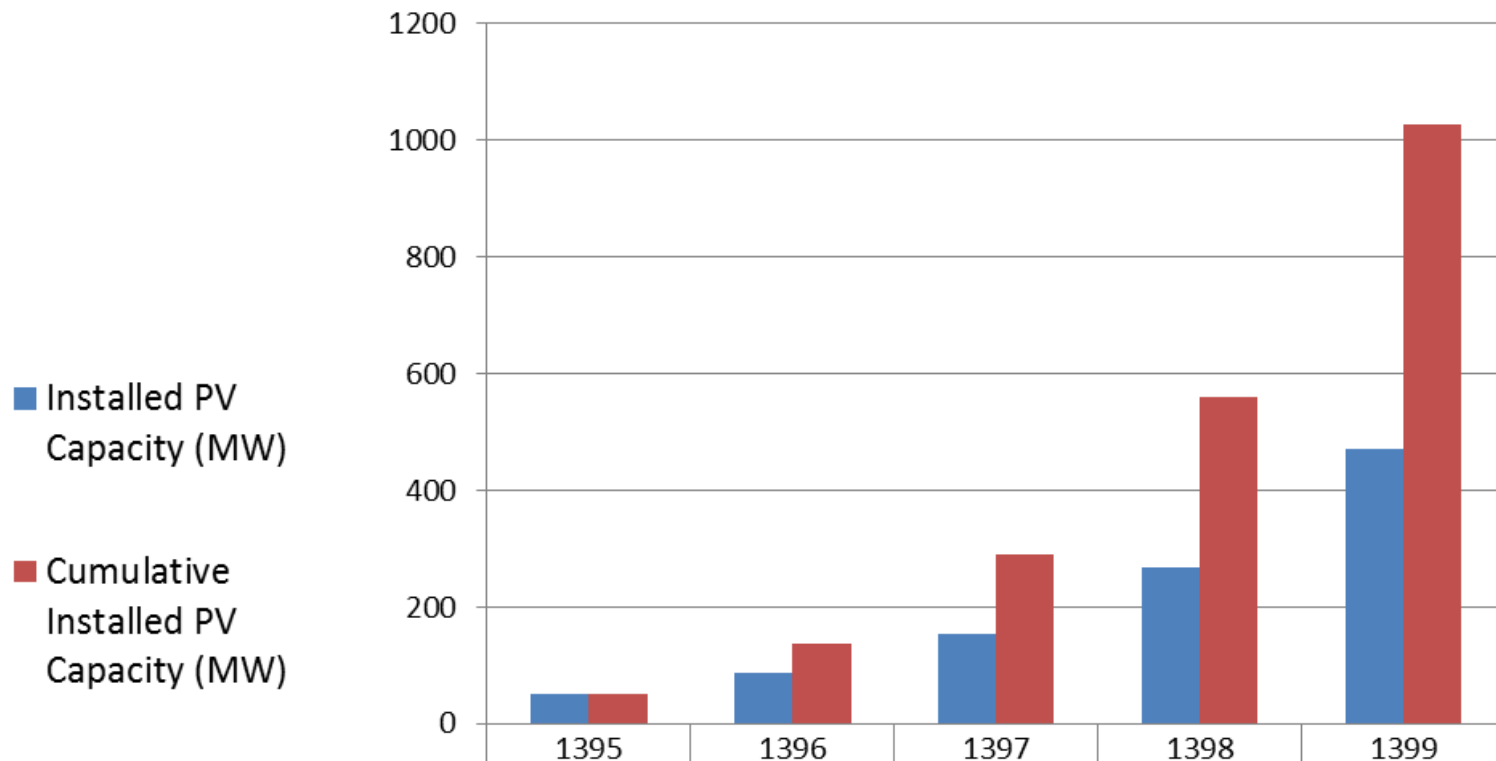
Solar Irradiation	Kwh/m/day
▲	2.8-3.8
●	3.8-4.5
■	4.5-5.2
★	5.2-5.4

منبع: سازمان انرژی‌های نو ایران، سالانه ۱۳۸۱

Solar radiation= 4.5-5.5 kWh/m²
300 sunny days per year on 2/3 of the land

سازمان انرژی‌های نو ایران
 معاونت فنی و اجرایی
 دفتر انرژی خورشیدی

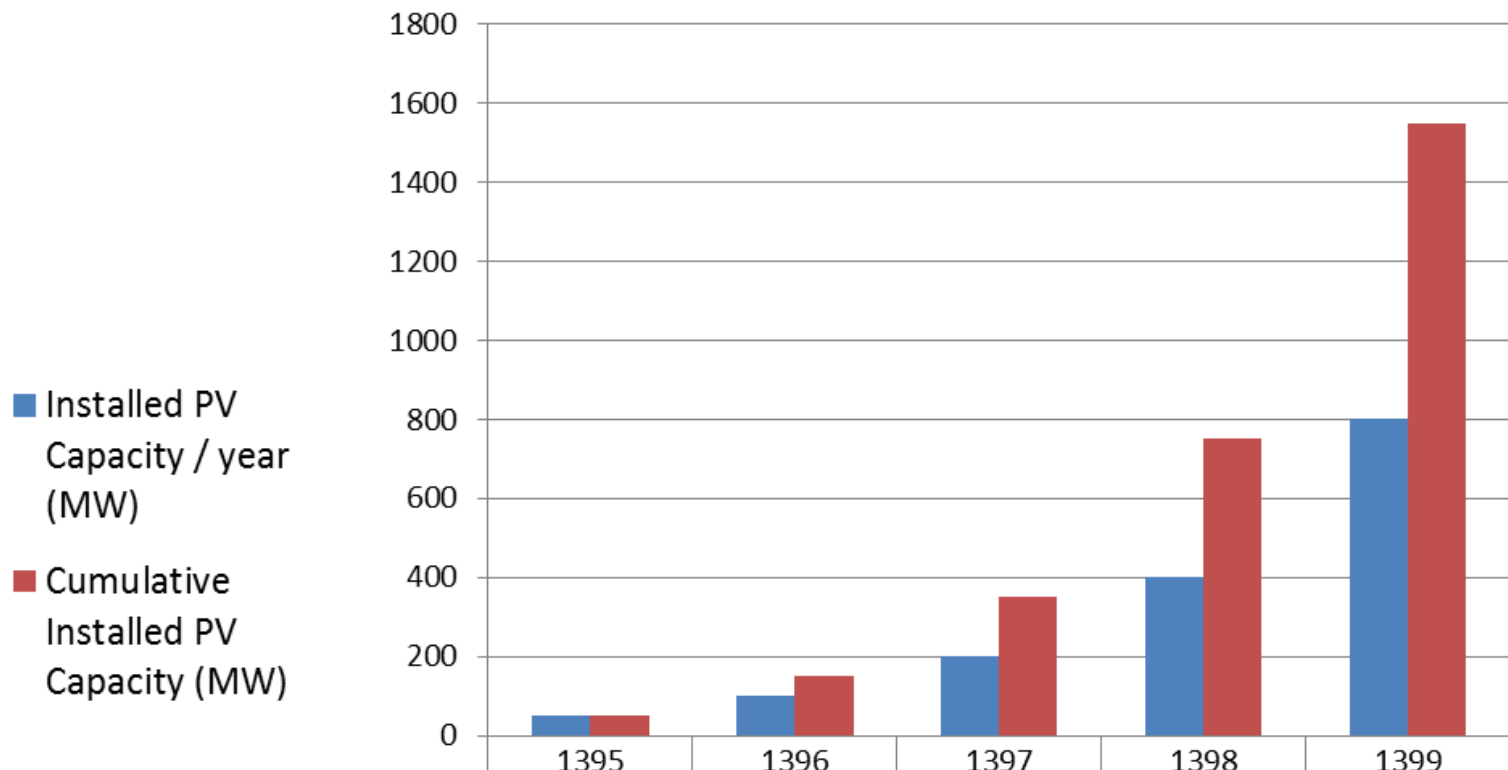
Government Target: 1000 MW Scenario in 2020



Installed PV Capacity (MW)	50	88	153	268	469
Cumulative Installed PV Capacity (MW)	50	138	291	559	1028

Year

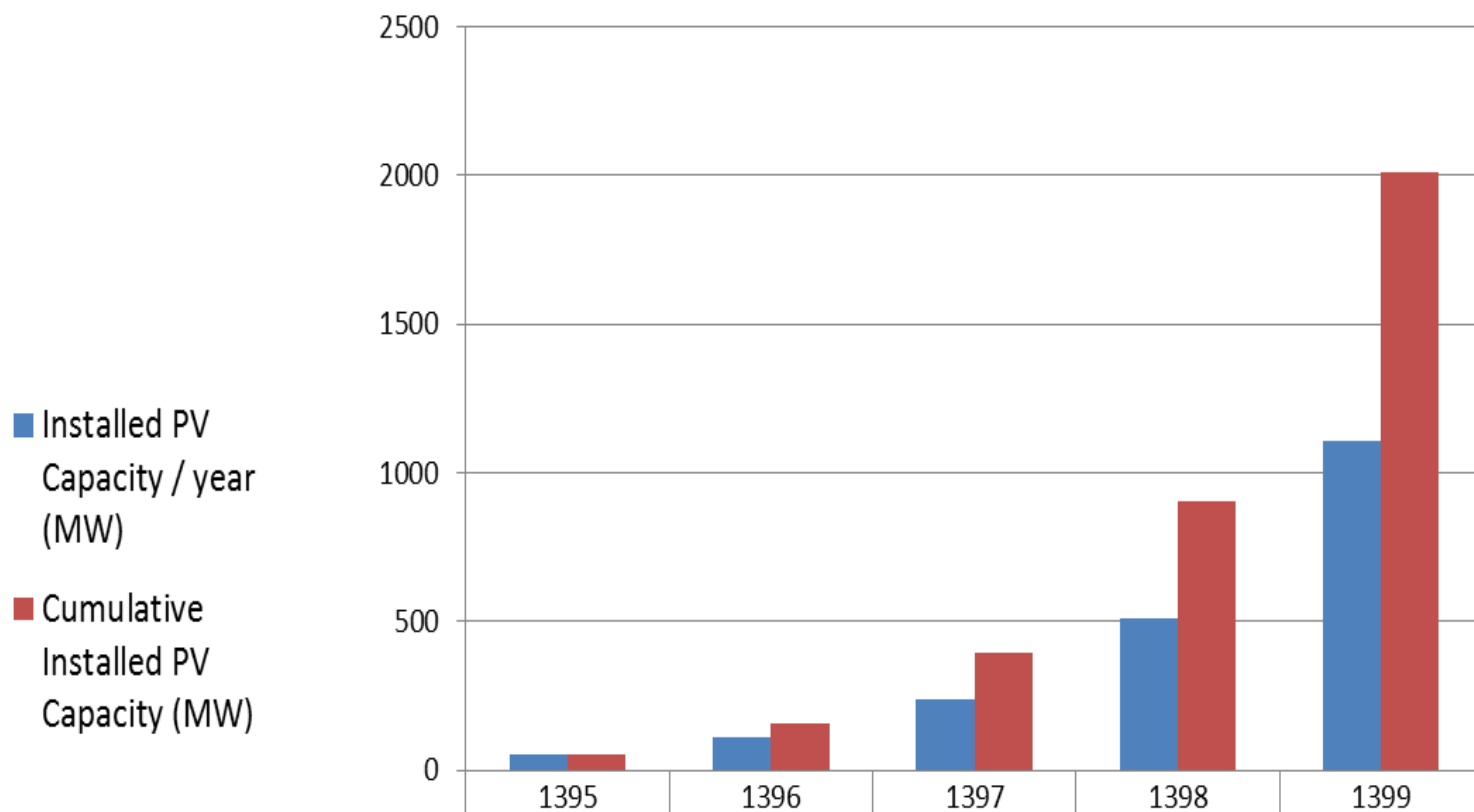
Government Target: 1500 MW Scenario in 2020



Installed PV Capacity / year (MW)	50	100	200	400	800
Cumulative Installed PV Capacity (MW)	50	150	350	750	1550

Year

Government Target: 2000 MW Scenario in 2020



Installed PV Capacity / year (MW)	50	109	235	511	1109
Cumulative Installed PV Capacity (MW)	50	159	394	905	2014

Year

Forecast

Renewable energy resources	Wind	Photovoltaic	Biomass	Small Hydro	Sea wave power	Total
Under development** (MW)	5662.96	<u>1615 .03</u>	194.29	23.5	0.15	7495.93
Share in total planned investment	75.5%	21.5%	2.6%	0.3%	0.0%	100.0%
Estimated demand for renewable systems (MW in 2020)	3777.4	1077.3	129.6	15.7	0.1	5000.0

Table 19: Under developed renewable projects and potential market in the 6th FYDP (2016-2020)

*with at least construction permit, primary agreement or prepared feasibility studies

Source: <http://www.sun.org.ir/> (last visited in 12/12/2015)



Thank you for your attention!