



Global Market Outlook

For Solar Power / 2017 - 2021

inter
solar
connecting solar business | EUROPE



FAKTE AKTUALE PER ENERGJINE SOLARE NE BOTE,

1



**FRAUNHOFER INSTITUT PER SISTEMET E
ENERGJISE SOLARE ISE**

Te dhenat jane te nxjerra nga :

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Prodhimi Botëror **306.5 GW** gjate 2016
Sasite ne GW sipas kontinenteve

4.7 LINDJA MESEME AFRIKA

45.9

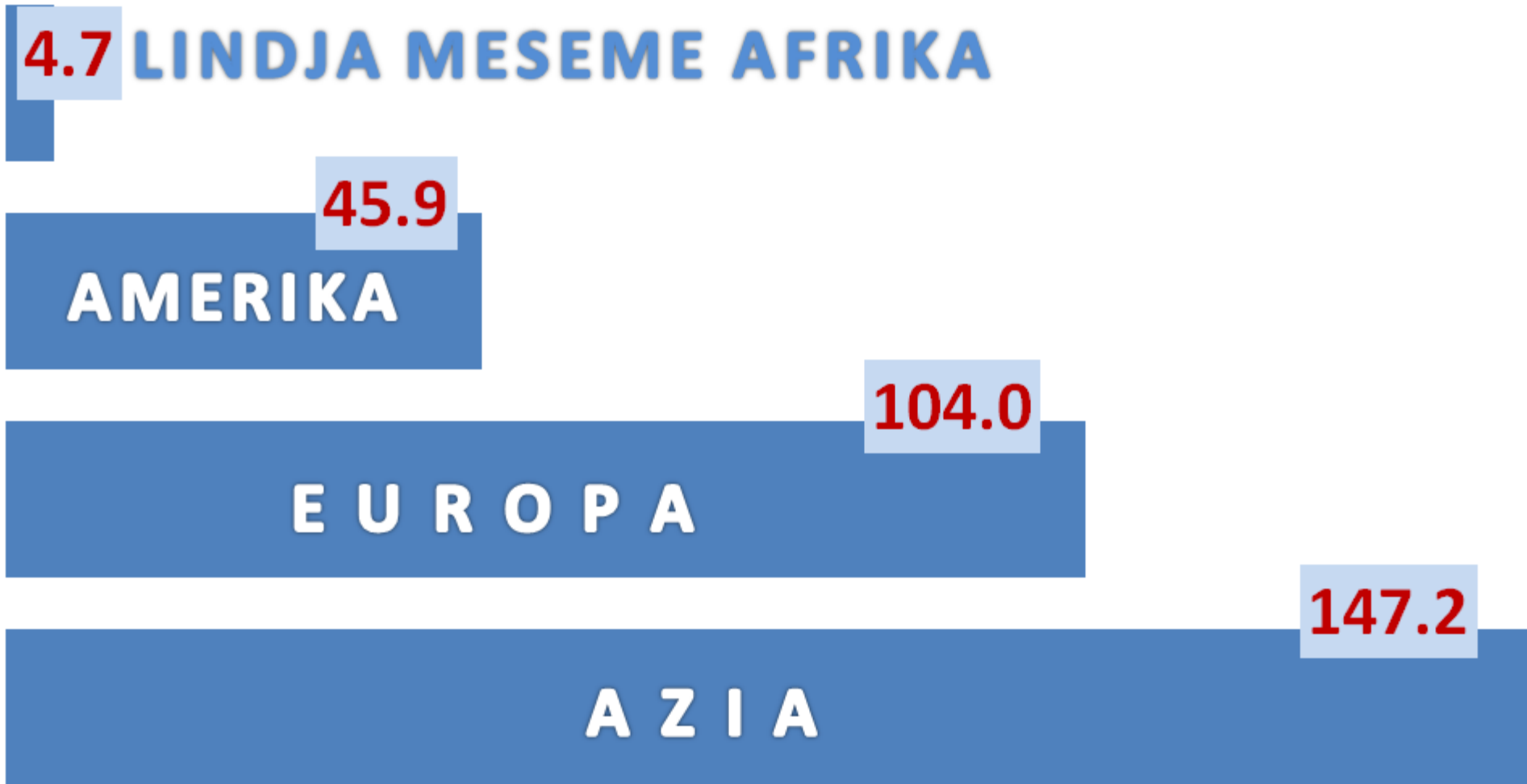
AMERIKA

104.0

EUROPA

147.2

AZIA



14.4%

Te tjere, 43.9

1.8% Spanje, 5.5

1.9% Australi, 5.8

2.3% France, 7.1

3.1% Indi, 9.5

3.8% Angli, 11.5

6.2% Itali, 18.9

13.4% Gjermani, 41.1

13.8% USA, 42.4

14% Japoni, 42.9

25.3%

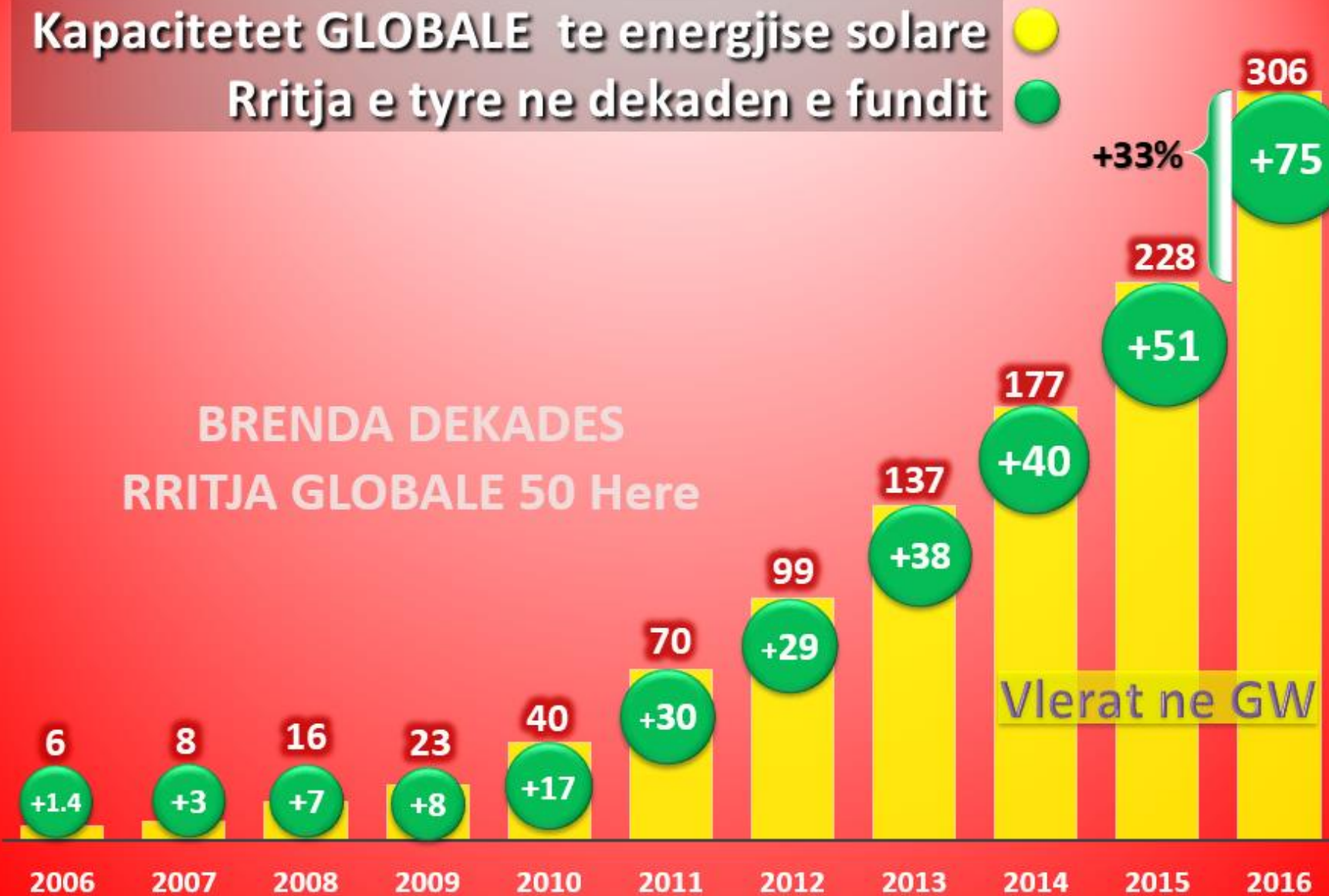
Kina, 77.9

Prodhimi Botëror
306.5 GW gjate 2016
Energji vetëm me
Panele Fotovoltaike

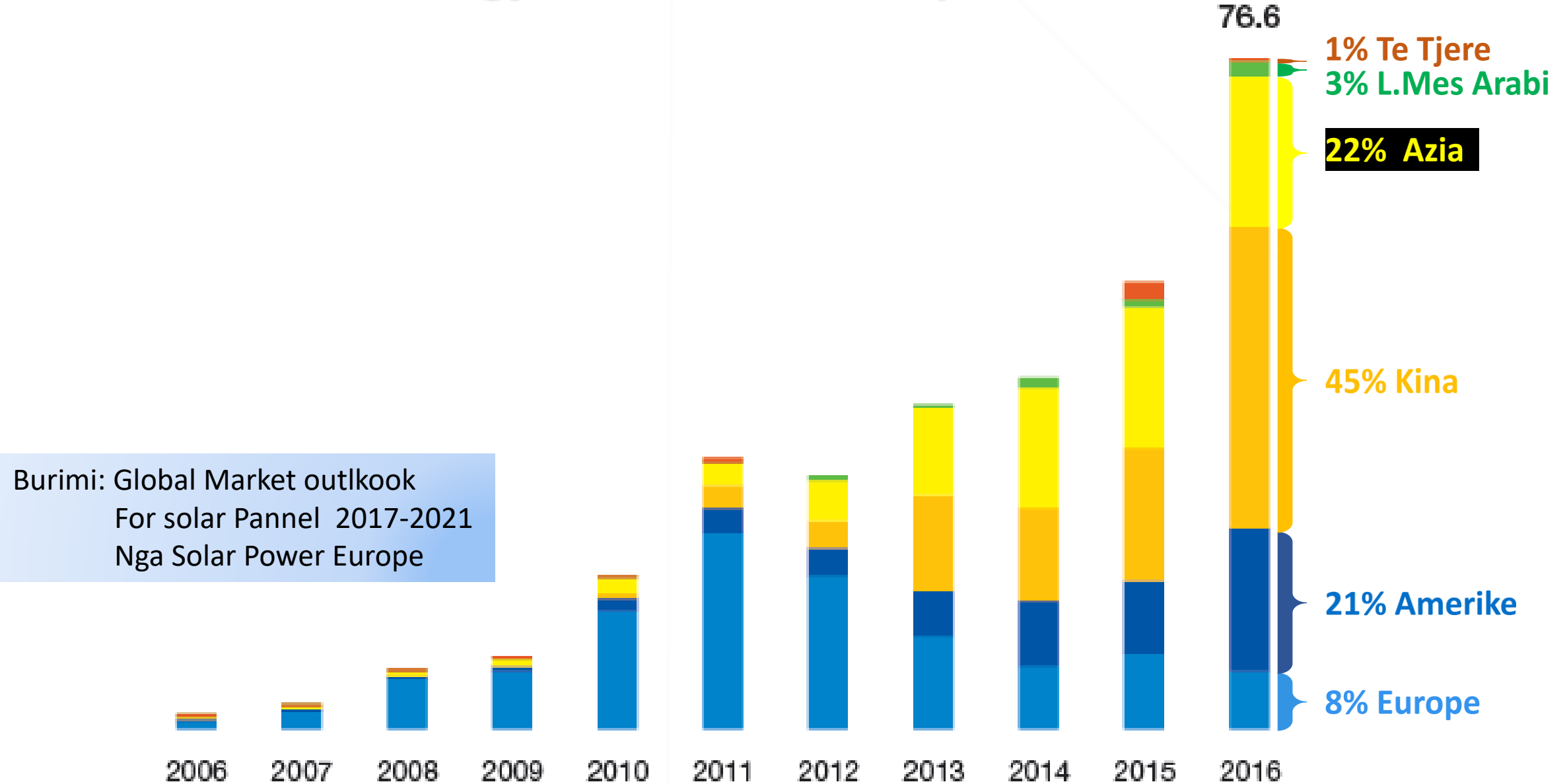
Kapacitetet GLOBALE te energjise solare

Rritja e tyre ne dekadën e fundit

BRENDA DEKADES
RRITJA GLOBALE 50 Here



Aktoret kryesor ne rritjen e kapaciteteve te prodhimit Te energjise me ane te panelve diellore



Cmimi i energjise se prodhuar nga parqet me Panele-fotovoltaike. Keto ju perkasin kontratave te realizuara ne vitin 2016.

The **800 MW** Sheikh Maktoum Solar Park Phase 3 in the United Arab Emirates tender of the Dubai Electricity and Water Authority (DEWA), which was awarded in mid-2016, resulted in a winning bid of around **2.95 US cents per kWh**. There were many experts discussing the sustainability of such a low price, even though the plant is scheduled to be operational only in 2020.

The price spiral quickly continued its way downwards. In August 2016, a power supply contract over 280 GWh per year was awarded for **29.1 USD/MWh** in Chile, which is scheduled to be generated from a new **120 MW PV plant** as of 2019. The latest record holder is again the UAE, where the Abu Dhabi Water and Electricity Authority (ADEWA) tendered the Sweihan project. Originally planned to have **350 MW**, the awarded capacity that is scheduled to be online in 2019 is 1.18 GW – with a new world-record low 25-year power supply contract for **24.2 USD/MWh**. As these record solar projects were awarded under nearly “ideal” circumstances (stable political framework, very high irradiation, very good finan

2016 DUBAI UAE

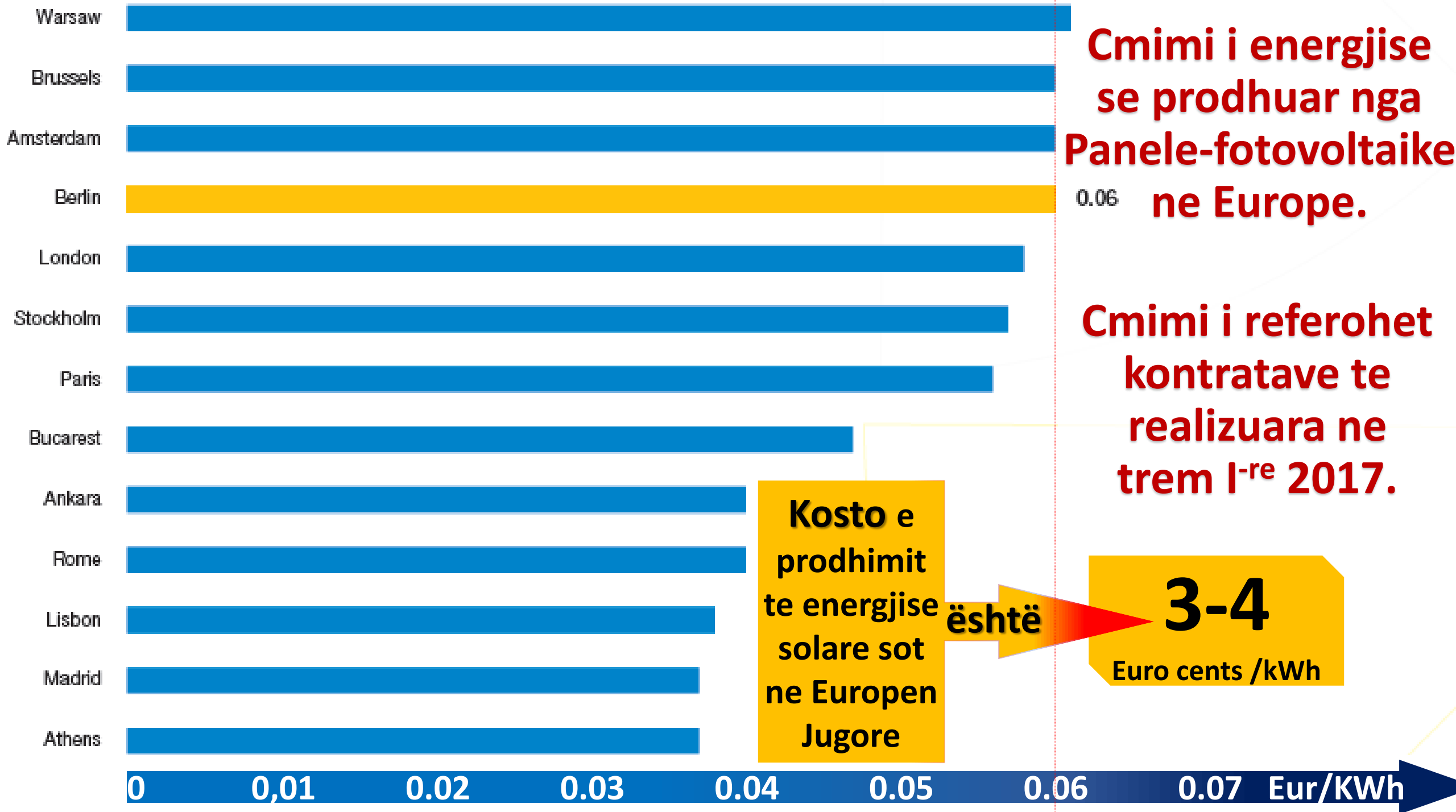
2.95 Cent(\$)/Kwh

2016 Gusht Kili

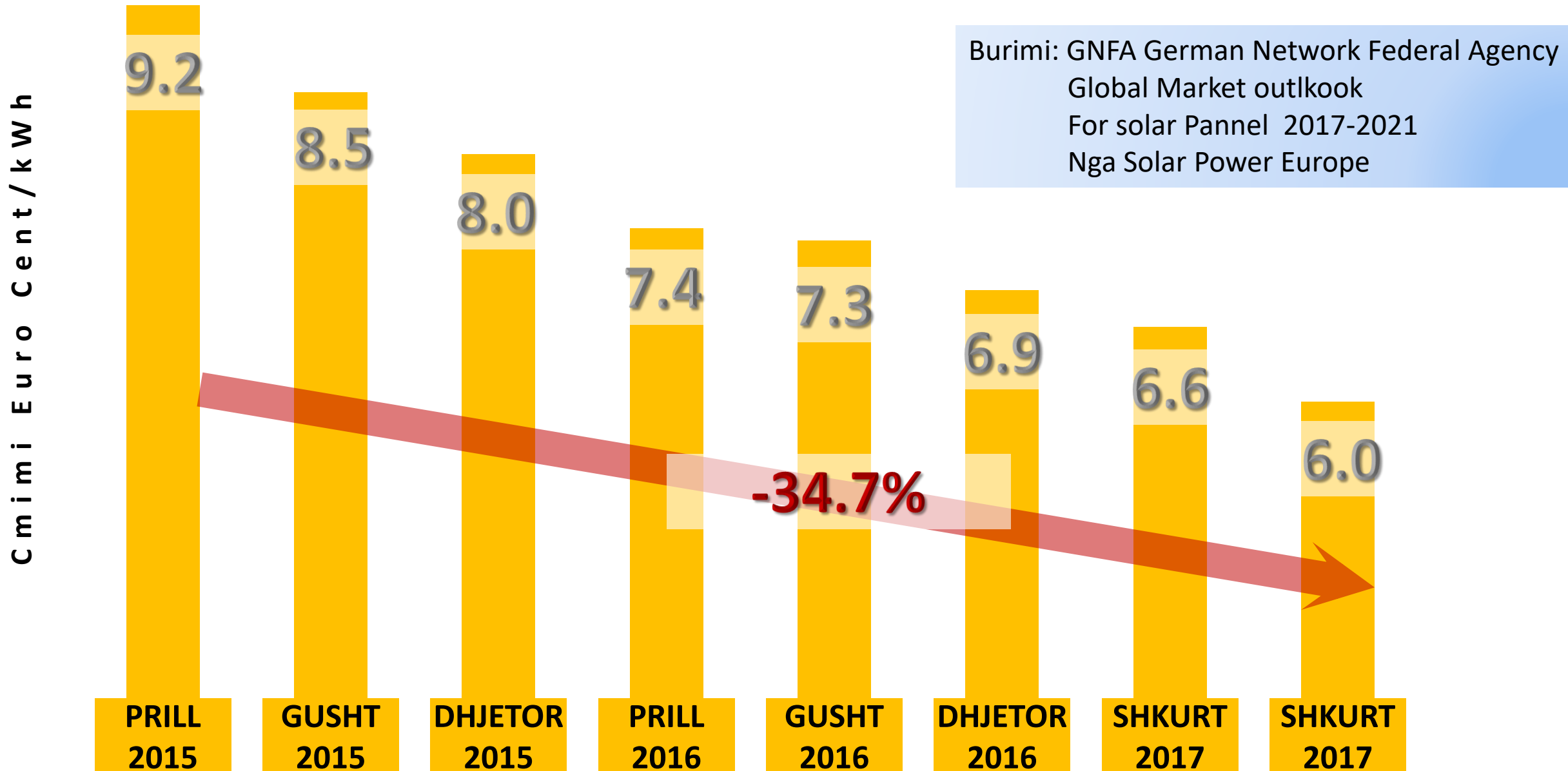
29.1 USD /Mwh

2016 Abu DHABI UAE

24.2 USD/Mwh



Cmimet me te ulta gjate 2016 te kontraktuara ne Gjermani





FAKTE AKTUALE, ENERGJIA SOLARE NE SHQIPERI

2



1100m²,

156,8 Kwh fuqi e instaluar,

1.3 vite

1250 Kw per cdo kilovat te instaluar

Paneli me 16.5% Rikuperim

Nese rikuperimi do ishte 18.5% d kishim 1401Kw

Fuqia peak e sistemit: 330 panele * 260Wp/panel = 85.8 kWp
Fuqia e inverterave: 3 invertera * 27kW = 81kW
Siperfaqe e 1 paneli: 1.637m * 0.992m = 1.624m²
Siperfaqe e sistemit: 1.624m² * 330panele = 536m²
Cmimi per kW 14 lek(pa tvsh)

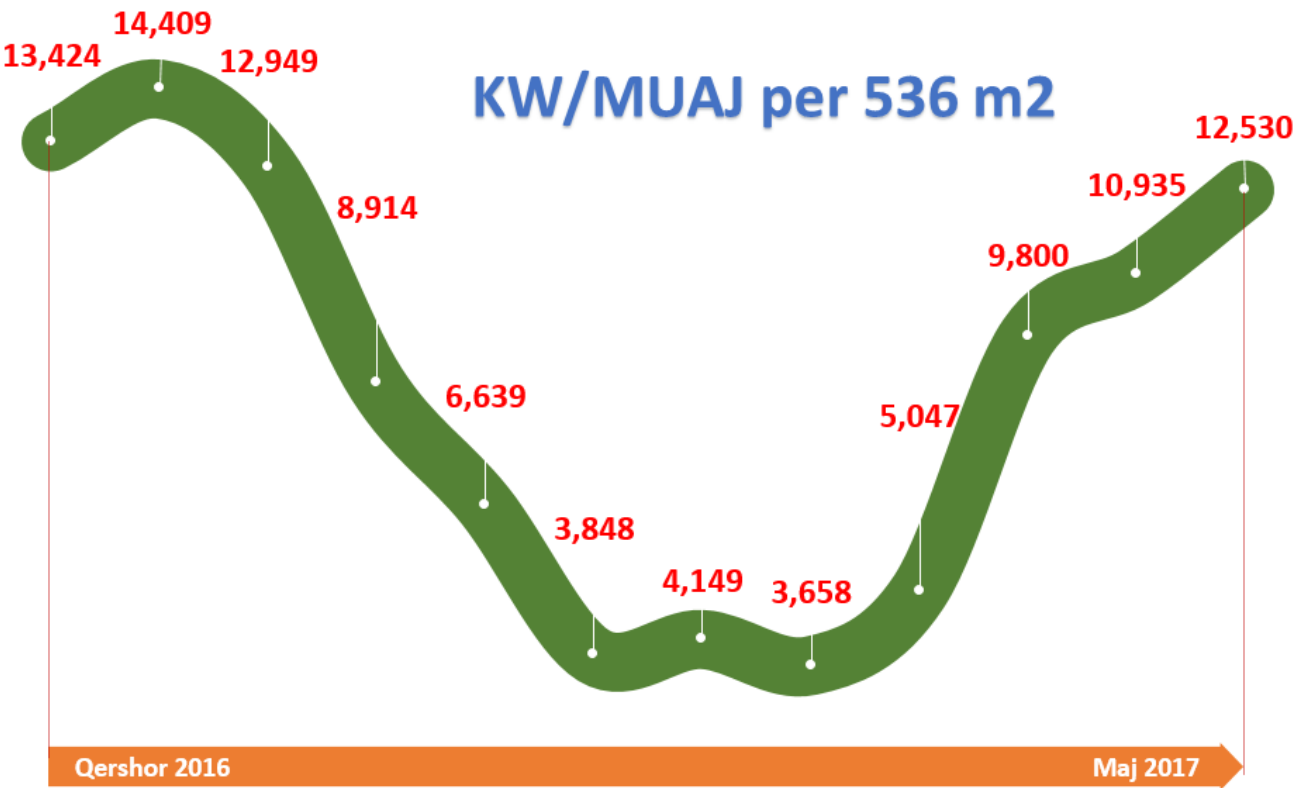
1239kWh/kWp

Muaji

Energy [kWh]

	Total system	Totali LEK me tvsh	ECO 27/1	ECO 27/2	ECO 27/3
	85800 Wp		27000 Wp	27000 Wp	27000 Wp
	kWh		kWh	kWh	kWh
Qershor 2016*	13,424	225,519	4,509	4,473	4,442
Korrik 2016	14,409	242,072	4,806	4,789	4,814
Gusht 2016	12,949	217,543	4,328	4,303	4,318
Shtator 2016	8,914	149,749	2,985	2,971	2,957
Tetor 2016	6,639	111,541	2,227	2,214	2,199
Nentor 2016	3,848	64,641	1,294	1,272	1,282
Dhjetor 2016	4,149	69,696	1,406	1,359	1,384
Janar 2017	3,658	61,460	1,242	1,201	1,216
Shkurt 2017	5,047	84,787	1,652	1,701	1,693
Mars 2017	9,800	164,645	3,280	3,272	3,249
Prill 2017	10,935	183,715	3,667	3,636	3,633
Maj 2017	12,530	210,505	4,186	4,155	4,190
TOTALI per 1 vit	106,302	1,785,874	35,581	35,347	35,375
Qershor 2017	14,301	240,252	4,814	4,754	4,734
Korrik 2017	13,976	234,804	4,720	4,627	4,629
Gusht 2017	12,642	212,394	4,242	4,193	4,208

* kur jane vene ne pune /kane ca dite kolaudimi mangesi



Vete shlyerja => Investitori pretendon 5.5-6Vjet

Vete shlyerja => Llogaritjet* dalin 8.2-9 Vjet

Rikuperimi	16.5%	18.5%
1100E/KWh		
Vite	9.06	8.09
1000E/KWh		
Vite	8.24	7.35

Shenim

Cmimet jane marre te perferta nuk jane te Investitorit
Orientimi I paneleve me diellin effiecnce minimal

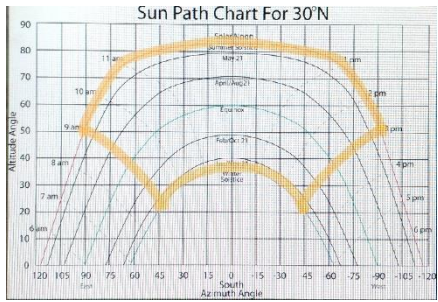
156,8 KWh, 1250 KW-vit/KWh instaluar, Paneli me 16.5% Rikuperim

Investimi 1100 (1000)Euro Kwh, kredia 4%, 10 vite Investim plus kosto kredie 209,553 Euro

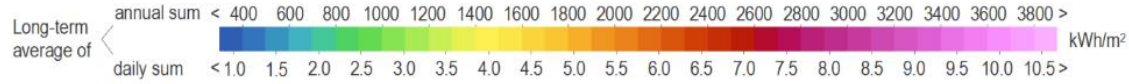
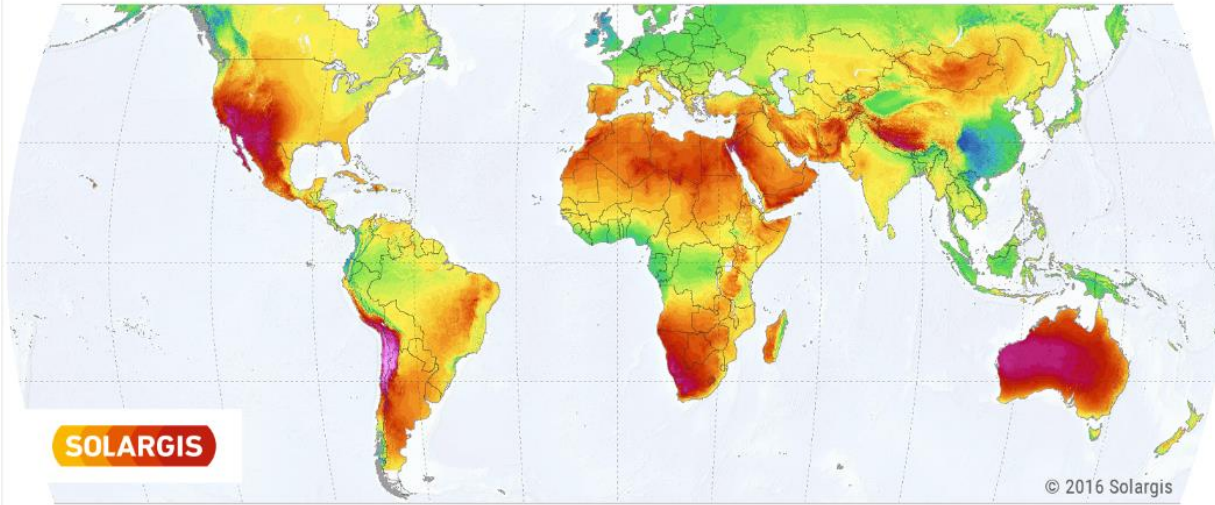
Mes.vjetore 185767Kwh duke konsideruar renien e rendimentit 0.7% ne vit te panelit

Vlera vjetore 185,767 x 16.8ALL/Kwh (14+Tvsh) Ose 23,120Euro/vit

Periudha e vete shlyerjes 209553/23120 =9.06(8.24)vite

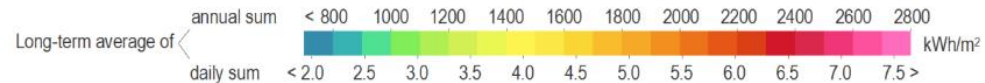
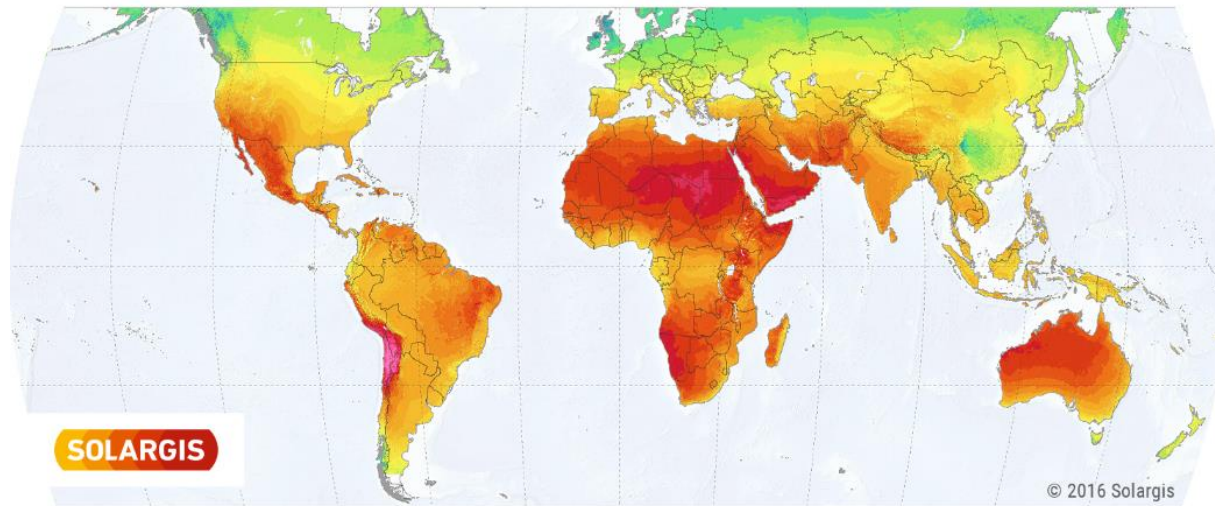


DIRECT NORMAL IRRADIATION

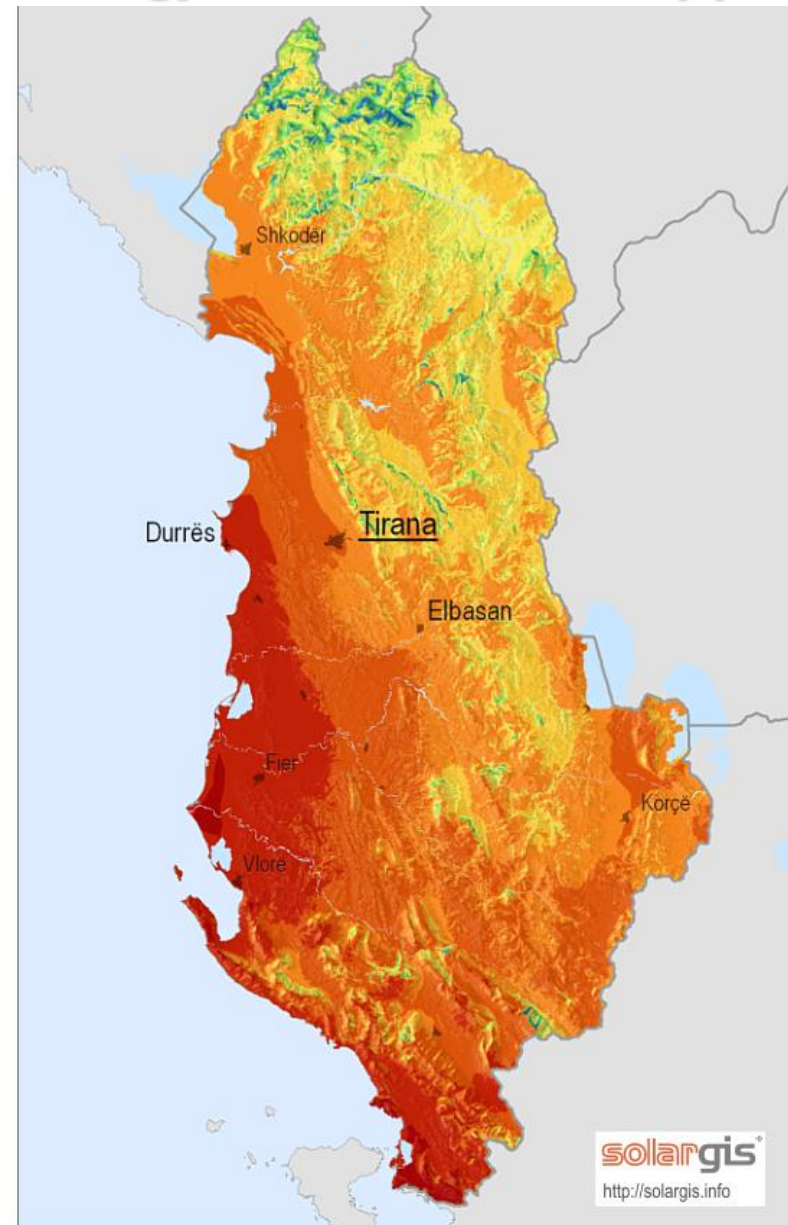


RADIACIONI SOLAR

GLOBAL HORIZONTAL IRRADIATION



Energjia Solare ne Shqiperi



Average annual sum (4/2004 - 3/2010) 0 10 20 km
< 1200 1300 1400 1500 1600 1700 kWh/m²



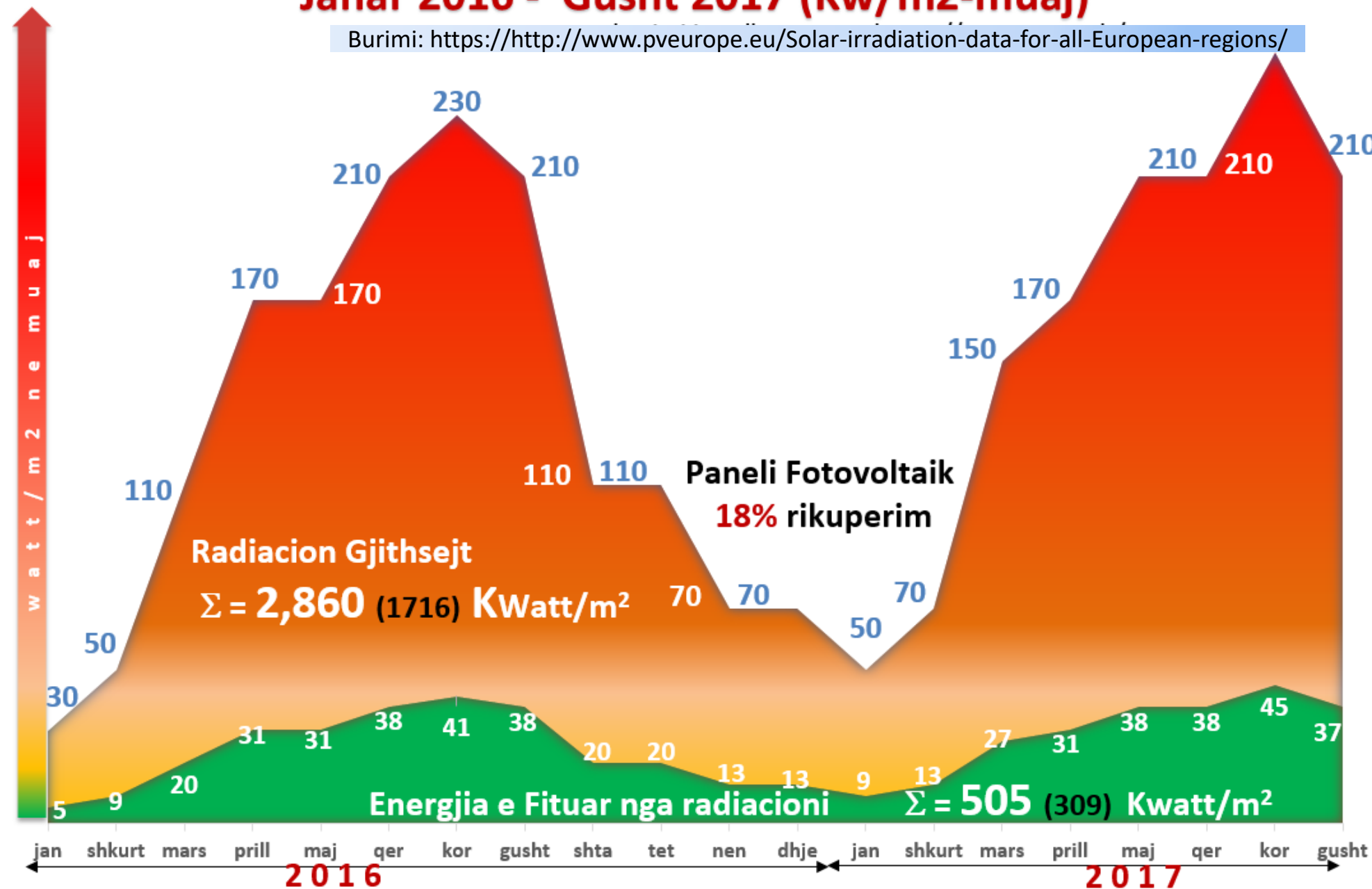
Mesatarja e 6 viteve 4/2004 - 3/2010



Zona Tirane Durrës ka radiacion 1600Kwh/m²

Energjia nga radiacioni diellor ne zonen Tirane Durrës - Shqiperi Janar 2016 - Gusht 2017 (Kw/m²-muaj)

Burimi: <https://http://www.pveurope.eu/Solar-irradiation-data-for-all-European-regions/>



**Nese paneli me
18% mer 309Kw
ne vit.**

**Mundesite per
1kw afersisht 6m
jane deri me
1850Kw ne vit.**

KOHA E SHFRYTEZIMIT

5.²⁰ AM

7.⁵⁰ PM

NE VERE - 14.30 ORE



NE DIMER 8.3 ORE

7.³⁰ AM

4.⁰ PM

Sasia e Kw qe perfitohet ne nje vit per cdo Kwh te instaluar

Ne vere		
Ore ne dite	Efficienca	Kw ne dite
2	100%	2.0
3	70%	2.1
6	50%	3.0
3.3	25%	0.8
14.3		7.9

Ne dimer		
Ore ne dite	Efficienca	Kw ne dite
1	90%	0.9
2	60%	1.2
3	30%	0.9
2.3	15%	0.3
8.3		3.3

Gjithesejt dite 365

Nga te cilat me diell 288 dite

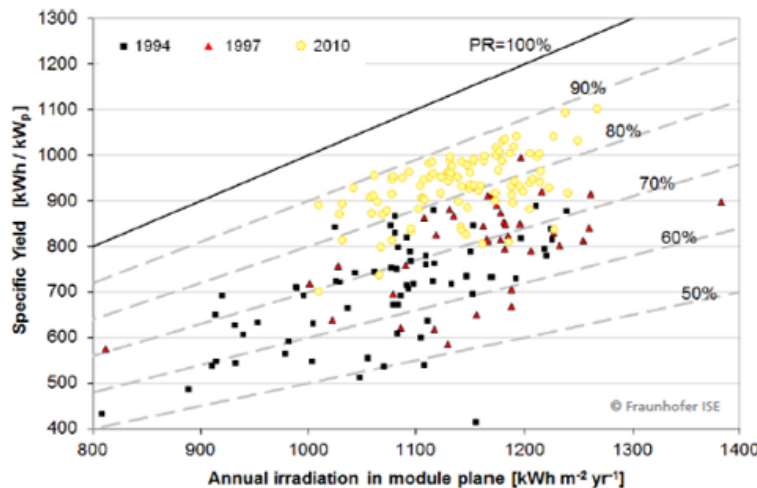
$$183 \times 7.9 = 1450.3$$

183 vere 182 dimer

183 vere 105 dimer

$$105 \times 3.3 = 351.225$$

Shuma Kw/vit eshte **1450 + 351 = 1,802**



Duke konsideruar qe eficienca eshte 75-85% e cdo paneli sasia reale eshte

1351 deri 1531

SASIA KW

QE PRODHOHET

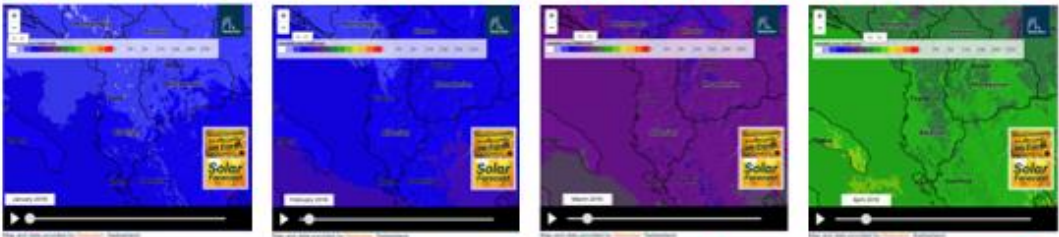
NE NJE VIT

PER CDO KWH

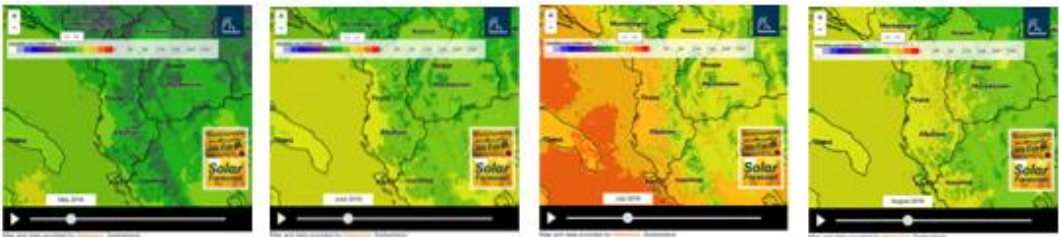
TE INSTALUAR

1351 - 1531

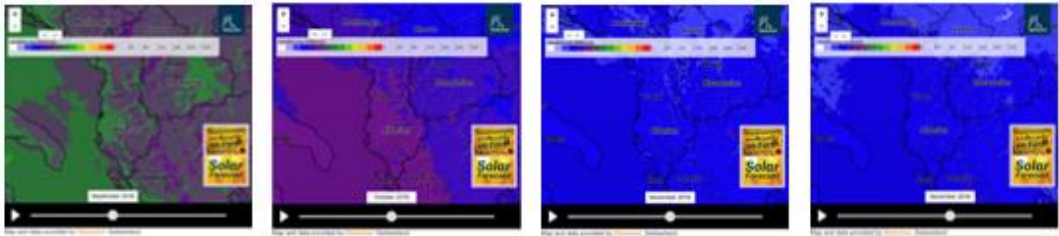
JANAR PRILL 2016 360(65)kwatt/m²katermujor



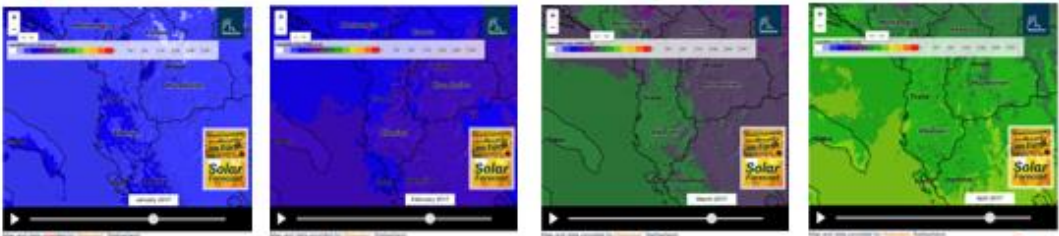
MAJ GUSHT 2016 820(148)kwatt



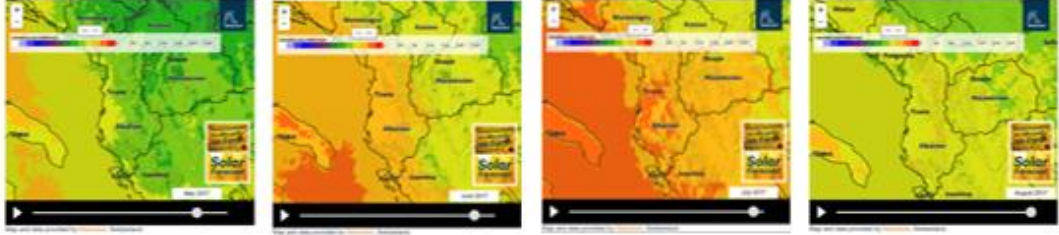
SHTATOR DHJETOR 2016 360(65)kwatt



JANAR PRILL 2017 440(79)kwatt



MAJ GUSHT 2017 880(158)kwatt



Rezatimi
diellor ne
vendin tone
janar 2016
deri me gusht
2017

LLOGARITJE PER 200kwh INSTALIM

4

1. Cmimi per Kwh instaluar **1000 Euro**
2. Fuqia e Instaluar **200KWh**
3. Investimi Kosto Kredise me 4% per 10 vite **242,988 Euro** (100,000vet+100,000Kredi =221,500Euro)
4. Paneli 18.5% Rikuperim, 305Wat, 2m²
5. Perfitueshmeria **1,400 Kw/vit**, per cdo kwh te instaluar
6. Cmimi ne 400 volt 16.8ALL (14Lek+tvsh) ¹¹ 16.8/135=**0.1244Euro/Kw**
7. Mesatarja e perfitimit te kw/vit per 10 vite **265,384 Kw**
8. Te ardhura vjetore **33,026Euro/vit**
9. Veteshlyerja ^{9.3} 242,988/33,026=7.36 Vite.

10 FAKTORE ME KRYESORE QE NDIKOJNE NE EFICIENCE

1. Projekti
2. Cmimi 900-1200 Euro/m² **1000 Euro/m²**
3. Rikuperimi - 16.5 – 21.4% **18.5%**
4. Amortizimi fundit 25 viteve **85%**
5. Paneli Monokristalin apo Polikristalin **Monokristalin**
6. Sasia e wateve per panel 240-340watt **305wat**
7. Vendosja mbi cati apo tarace **Cati**
8. Orientimi Drejtimi Jug-Lindje Jug Perendim **Jugun**
9. Certifikimi pannelit mundesisht 10 vite hardware, 25vite pune effective **TUV**
10. Sistemi I inverterave me te miret e **2017**
 - Fronius - Primo & Galvo range
 - SMA - New Sunny boy range
 - Solaredge - SE range & HD wave
 - ABB - New UNO range
 - SolaX Power - New X1 range

Kompani qe mundet te realizojne ne Shqiperi

1. Solaron
2. Elteknik
3. Unicom
4. Fastech
5. Yaha Solar



5-6

MUNDESI INSTALIMI

Coaching

1. NetRDA
2. Starnet



Financues Potencial

1. Burimet e veta
2. Union Bank
3. Landes lease
4. EBRD
5. Fondi Amerikan
6. EU Projects (Co-financing)