



Investment Opportunity in Ukraine:

**3.85 MW Solar PV Plant with
3.88 MW Extension Option**

08 July 2013

Solar PV Power Plant - Summary

- We present **an opportunity to invest in the Ukrainian solar power plant (SPP) by acquiring 100% in the Ukrainian project company** operating the SPP consisting of 3 stages:
 - *1st stage of **1.375 MW** is under commercial operation from February 2013*
 - *2nd stage of **2.475 MW** is completed and will be commissioned in September 2013*
 - *3rd stage of **3.88 MW** is fully permitted and can be commissioned by the end of December 2013*
- EPC Contractor for the 1st and 2nd stages has been **Martifer Solar** that will be also responsible for operation and maintenance of the SPP
- **“Green” tariff for the electricity generated by the solar power plant is fixed till January 1, 2030. Mandatory electricity off-take is also granted till January 1, 2030**
- The project company received generation license, became member of the Wholesale Electricity Market, received “green” tariff for the 1st stage and signed respective PPA with the Wholesale Electricity Market Operator. “Green” tariff for the 2nd stage will be secured in August 2013
- All permits, land, grid and design documentation was secured for the 3rd stage. Grid connection works were performed as well when constructing the 2nd stage
- **Investor’s contribution in the Project is estimated at EUR 18.55 mln**, in particular:
 - EUR 10.8 mln - payment for 100% in the project company (e.g. purchase price for the 1st and 2nd stages)
 - EUR 7.754 mln – total CAPEX for the 3rd stage.

Contact info:



2nd entrance, 4th floor, BC Olimpiyskiy
Chervonoarmiyska Str., 72
Kyiv, 03680, Ukraine
Phone: +38 044 287 49 20 / +38 044 287 49 22
Fax: +38 044 287 64 99
<http://imepower.wordpress.com>

Yuri Kubrushko, Partner

Mob. +38 050 630 82 19
Skype: yuri.kubrushko
E-mail: yuri.kubrushko@imepower.com

Olga Gruzinskaya, Director

Mob. +38 050 334 65 07
E-mail: olga.gruzinskaya@imepower.com

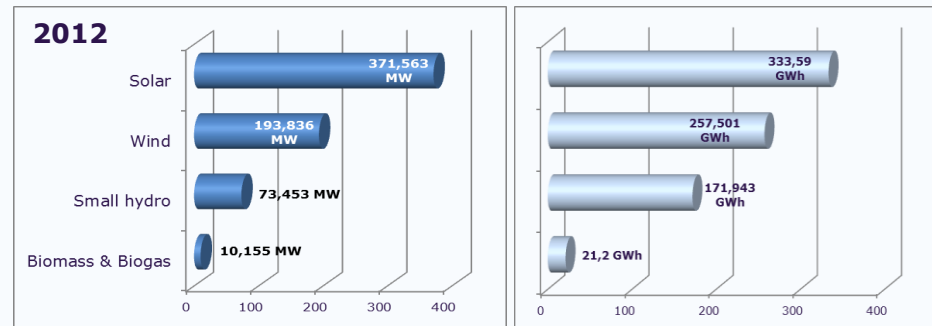
Solar PV Power Plants in Ukraine's Energy Balance

- Since 2009 favorable environment for RES power plants' development has been created in Ukraine
- Currently there are 26 commissioned solar PV power plants in Ukraine with a total installed capacity of 376.5 MW. This is slightly more than 50% of the total installed capacity of all Ukrainian RES power plants providing about 1% of the total national electricity output
- The leading solar PV developer in Ukraine is Active Solar operating solar PV power plants with installed capacity of 348.6 MW, while smaller developers are working on many new projects that can provide another 100-150 MW of solar capacity in the nearest years
- Draft Revised Energy Strategy of Ukraine until 2030 prepared by the Ministry of Energy and Coal defines a 10% target for RES power plants in 2030 (6 GW of installed capacity). **Target contribution of solar power plants is estimated at 1.5-2.5 GW of installed capacity and 2-3.3 TWh of electricity generation in 2030**
- In 2012, from 833 mln kWh supplied by RES power plants (excluding large HPPs), **solar PV power plants supplied approx. 333 mln kWh or nearly 40% of electricity supplied by all RES power plants**
- According to the Ukrainian National Energy Efficiency Agency, **commissioning of approx. 300 MW of additional PV solar power plants is expected in 2013**, but this figure in reality will be lower due to introduction of new local content requirement rules from 1 July 2013 that will delay implementation of many projects due to the need of adjusting to new rules

Ukraine Electricity Capacity and Generation Mix

Technology	Installed Capacity		Electricity Generation	
	as of 01.01.2010	as of 01.01.2013	2009	2012
Thermal, CHP	63.5%	63.0%	45.3%	48.6%
Nuclear	26.1%	25.7%	47.9%	45.5%
Hydro	10.2%	10.1%	6.7%	5.5%
Incl. small hydro	0.1%	0.1%	0.1%	0.1%
Wind	0.2%	0.5%	0%	0.1%
Solar	0%	0.6%	0%	0.2%
Biomass	0%	0.01%	0%	0.01%
Biogas	0%	0%	0%	0%
Total	52.96 GW	53.8 GW	173 TWh	198 TWh

Share of Ukraine's Solar PV Power Plants



RES Technology	2015	2020	2025	2030
Wind	0.6	1.9	3.8	7.4
Solar	0.3	0.8	1.4	2.6
% of total	~21%	22%	21%	21%
Small HPPs	0.4	0.7	1.3	2.1
Biomass and Biogas	<0.1	0.2	0.2	0.3
Others	<0.1	<0.1	0.1	0.2
Total	<1.4	3.6	6.8	12.6

Draft Revised Energy Strategy of Ukraine until 2030

Incentives for Solar Project Development in Ukraine

AT THE CONSTRUCTION PHASE:

- Granted connection to electricity networks
- Tax benefits on export duty*, VAT* and land tax

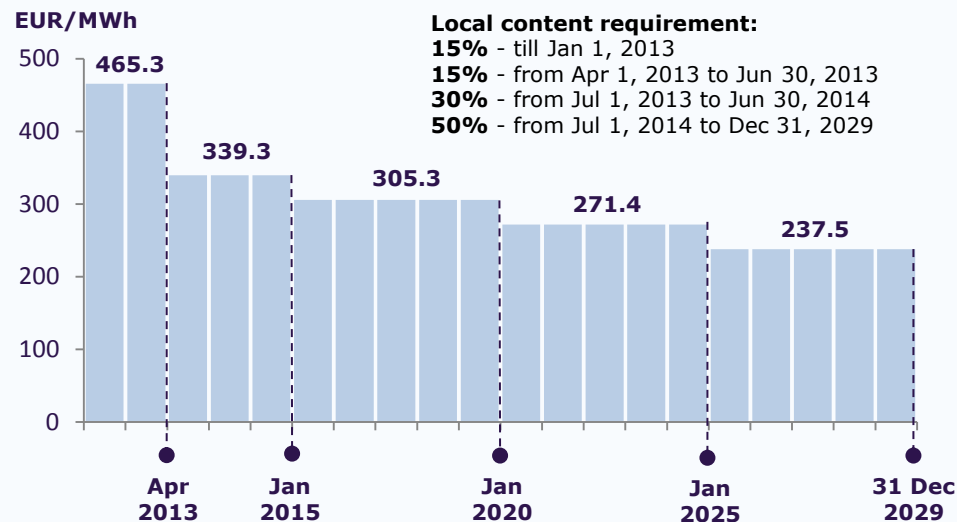
AT THE OPERATION PHASE:

- Feed-in ("green") tariff fixed in EUR till 2030. The amount of the "green" tariff depends on the commissioning date of RES power plant
- Priority dispatching
- Mandatory off-take by the Wholesale Electricity Market of the electricity produced by RES power plant. For the perspective (liberalized) electricity market model – mandatory off-take by the operator of a day-ahead market**
- Full payments in cash for the electricity supplied by RES power plants to the Wholesale Electricity Market
- Tax benefits on corporate income tax (till 2021) and land tax.

During last year commissioning of new solar PV projects by independent developers has accelerated:

- Developers/sponsors and other market participants (EPC contractors/suppliers) accumulated adequate experience in the project development and implementation
- Debt financing is available for small and medium size projects via EBRD's USELF program and from local commercial banks

Green Tariff and Local Content Share Applied to Solar Power Plants***



*** depending on commissioning date

Local Content Requirement Applied from July 1, 2013

Elements of local content	Operations that shall be performed on the territory of Ukraine	Fixed share, %
Microcrystalline silicon	manufacturing	32
Mono-crystal rods, multi-crystal rods or pseudo-mono-crystal rods	manufacturing	13
Mono-crystal or multi-crystal wafers	manufacturing	7
Photoelectric elements	manufacturing	20
Photoelectric modules	assembly	23
Construction works	accomplishment	5
Total		100

* exemption for imported equipment if no similar equipment is manufactured in Ukraine (approved on a case-by-case basis by the Government)

** according to the draft law on perspective electricity market functioning

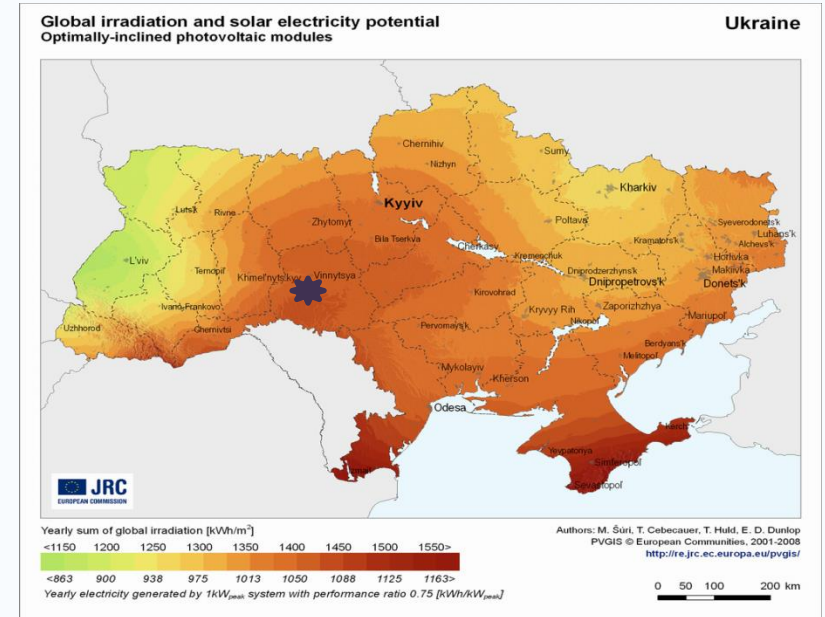
Solar PV Power Plant - General Information

The solar PV power plant's site is located in Vinnitsa region and comprises two land plots with total area of 15.5 hectares with a 380 m distance from each other and connected by the access road in between.

Land plots are leased for 25 years by the project company for location, construction, operation and maintenance of a solar power plant.

OTL 10 kV and communication cable run through one of the land plots. Distance to existing substation 10/110 kV is 72 m from the land plot. OTL 35 kV runs through another land plot.

- The **1st stage** of the solar power plant with nominal capacity of **1.375 MW** was commissioned in December 2012 and **is under commercial operation from February 2013**
- Construction of the **2nd stage (2.475 MW)** has been **completed in June 2013**. Commercial operation will start in September 2013
- Construction of the **3rd stage (3.88 MW)** is envisaged by the Declaration on commencement of civil engineering and construction registered in December 2012 and can be completed by the end of 2013. Planned capacity of the 3rd stage can be adjusted after technology is confirmed



Indicators	1 st stage	2 nd stage	3 rd stage
Irradiation, kWh/m ²	1,404	1,404	1,404
Number of panels	5,610	10,100	15,825
Total area of solar panels, m ²	9,582	43,830	68,674
Specific energy yield, kWh/kWp	1.204	1.204	1.204
Nominal capacity, MW	1.375	2.475	3.88
Electricity generation, mln kWh/a	1.655	2.979	4.668
Solar modules degradation rate, % per year	0.7%	0.7%	0.7%
CAPEX, mln EUR (incl. VAT)	3.053	4.814	7.754
Specific CAPEX, ths EUR/MW	2,221	1,945	2,000
Complexity category	III	III	III

Starting September 2013 the stages 1 and 2 will be fully operational with a total capacity of 3.85 MW, while another 3.88 MW that can be added by the end of 2013

Solar PV Power Plant – Main Design Decisions

DESIGN PHASE

- III class of complexity has been adopted for all PV solar plant stages, thus, **no obligatory state expertise of design documentation is required**
- Designed solar PV plant is not included in the list of activities and facilities that are of high environmental risk approved by the Government. **No environmental permit for construction and operation is required**
- **Technical conditions** for grid connection **were issued** for all stages
- **Grid connection contract** was concluded with PJSC “Vinnitsaoblenergo”, local network operator, and **is valid till February 2014**
- **Design documentation for the 3rd stage is ready**



CONSTRUCTION PHASE

	1 st stage	2 nd stage
Solar modules producer	Hanwha SolarOne	Yingli Solar
Type of modules	SF 220-30-P245	YL245P-29b
Inverter producer	AEG Power Solution	
Type of inverter	PV 625	PV 630
EPC Contractor	Martifer Solar	

- Product warranty (20 years) and capacity guarantee for solar modules are provided by solar modules producer
- Security and monitoring systems are provided
- “Local content” for the 1st stage is 43.8% (no less than 15% was required by law) as approved by licensed expert organization
- Similar level of the “local content” is expected for the 2nd stage (no less than 15% was required by law for solar PV power plants commissioned in Q2 2013).

OPERATION & MAINTENANCE PHASE

O&M Contractor is Martifer Solar providing operation and technical maintenance of the 1st and 2nd stages within 5 years:

- remote monitoring and plant operational management 24 (twenty four) hours per day, including manual or automatic interventions in the command elements and control of the PV solar plant for purposes of entry into or exit from service, periodical reporting;
- preventive maintenance, including personnel and consumables, grass and vegetation cutting, dust cleaning, management of the stock of spare parts, reporting;
- all technical maintenance services.

It is expected that Martifer Solar will be O&M Contractor for the 3rd stage as well

Brief Information on the Project Company

The sole **owner and operator of the SPP is the Ukrainian project company** established in 2011 and registered in Vinnitsa region. Representative office of the company is located in Kyiv

The Company's statutory capital amounts to UAH 301 ths.

Owners of the Project company are:

- Company A (Cyprus) – 50%
- Company B (Cyprus) – 50%
- The Project company holds the **NERC's license for electricity generation (license is valid till December 2032)** and is the Member of the WEM.
- In December 2012 the NERC approved the **"green" tariff of 5,050.9 UAH/MWh or 465.3 EUR/MWh**, excluding VAT, for the 1st stage of 1.375 MW
- **"Green" tariff for the 1st stage is fixed till January 1, 2030**
- The Project company supplies electricity generated by the SPP to the WEM based on **long-term PPA signed with SE Energorynok (wholesale electricity supplier) in December 2012. PPA is agreed with the South-West Energy System of the TSO as well as with the NERC and is valid till Dec 31, 2029.**
- It is expected that the project company will get the "green" tariff for the 2nd stage (339.3 EUR/MWh, excluding VAT) by September 2013 and respective amendment to the PPA will be made. **The "Green" tariff for the 2nd and the 3rd stages will be also fixed till January 1, 2030.**

The Project Company is responsible for:

- Ensuring timely completion of construction and commissioning of the 2nd and the 3rd stages
- Submitting documents to the NERC for the "green" tariff approval as well as regular reporting
- Submitting documents to state enterprise Energorynok (WEM Operator) for PPA amendments
- Commercial operation of the power plant

Project Company Key Performance Indicators

	Q1 of 2013
Installed capacity, MW	1.375
Statutory capital, ths UAH	301.0
Fixed assets, ths UAH	21,808.5
incl. construction in progress	977.1
Current liabilities, ths UAH	21,196.5
Net sales, ths UAH	939.7
Profit after taxation, ths UAH	1,021.8
Number of personnel, people	5

Solar PV Power Plant – Financial Model

MAIN ASSUMPTIONS

Capacity and Electricity Output	1 st stage	2 nd stage	3 rd stage
Nominal capacity, MW	1.375	2.475	3.88
Commissioning date	Feb 1, 2013	Sep 1, 2013	Jan 1, 2014
Service life, years	20	20	20
Solar modules degradation rate, % per year	0.7%	0.7%	0.7%
Electricity generation, mln kWh/a	1.655	2.979	4.668
Electricity Tariff, EUR/MWh	465.3	339.3	339.3
Investor's contribution, mln EUR	10.800		7.754*

* could be reduced through debt financing (loan)

Expenditures	1 st stage	2 nd stage	3 rd stage
CAPEX, mln EUR	3.053	4.814	7.754
O&M (Martifer Solar), EUR/MWa.	18,000	18,000	18,000
Other OPEX, ths EUR/MWa.	46.8**	6.4	2.8
Insurance, %/a	0.3%	0.3%	0.3%
Loan Terms and Conditions			
Loan amount, mln EUR	3.812 (refinancing)		4.0
Loan tenor /Grace period, years	5 / 1		5/1
Interest rate, %	10%		10%

** incl. administrative expenses for all 3 stages

CASH FLOW STATEMENT FOR STAGES 1-3

	Total	2013	2014	2015	2016	2017	2018	2019	2020	2021	...	2025	2026	2027	2028	2029
Sales	51 548	1 032	3 334	3 310	3 287	3 263	3 240	3 216	3 193	3 169		3 075	3 051	3 028	3 004	2 981
O&M	2 262	37	139	139	139	139	139	139	139	139		139	139	139	139	139
OPEX	1 850	82	124	122	120	118	117	115	113	111		104	103	101	99	97
EBITDA	47 436	913	3 071	3 049	3 028	3 006	2 984	2 962	2 940	2 919		2 831	2 810	2 788	2 766	2 744
Depreciation	9 423	158	579	579	579	579	579	579	579	579		579	579	579	579	579
Interests	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-
EBT	38 014	755	2 492	2 470	2 449	2 427	2 405	2 383	2 361	2 340		2 252	2 230	2 209	2 187	2 165
Profit Tax	3 243	-	-	-	-	-	-	-	-	374		360	357	353	350	346
Net profit	34 770	755	2 492	2 470	2 449	2 427	2 405	2 383	2 361	1 965		1 892	1 874	1 855	1 837	1 819
Changes in VAT	0	(2 119)	539	535	462	406	177	-	-	-		-	-	-	-	-
Investment	(17 391)	(17 391)	-	-	-	-	-	-	-	-		-	-	-	-	-
Free Cash Flow	26 802	(18 597)	3 610	3 585	3 490	3 412	3 161	2 962	2 940	2 544		2 471	2 453	2 434	2 416	2 398
Loan proceeds **	7 812	7 812	-	-	-	-	-	-	-	-		-	-	-	-	-
Loan redemption	(7 812)	-	(726)	(1 953)	(1 953)	(1 953)	(1 226)	-	-	-		-	-	-	-	-
Interests	(2 269)	(249)	(763)	(603)	(407)	(212)	(35)	-	-	-		-	-	-	-	-
Free Cash Flow (incl. loan)	24 533	(11 034)	2 121	1 029	1 129	1 247	1 899	2 962	2 940	2 544		2 471	2 453	2 434	2 416	2 398
DCF (14%)	5 632	(6 948)	1 860	792	762	738	986	1 350	1 175	892		513	447	389	338	295

** refinancing of the 1st and 2nd stages and the 3rd stage partial financing

**Total investment of EUR 18.55 million,
incl. EUR 7.754 million for construction of the 3rd stage**

**Investor's Equity IRR for
the stages 1-3: 16.3%**