# **CSP vs PV Developing** From a Developers Perspective

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RENEWABLE & SUSTAINABLE ENERGY STUDIES

# **CSP vs PV Developing** From a Developers Perspective

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- Land requirements
- Solar Resource
- Site Access
- Other





# The lay of the land....(shape)

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Wanjiashan Photovoltaic Power Station on Wanjiashan Mountain in Yanbian County,
southwest China's Sichuan Province



# The lay of the land.....(shape)



Bokpoort 50 MW trough

Kaxu 100 MW trough ¥ ¥ > 4

Xina 100 MW trough





## The lay of the land.....(slope)



0+00	0.000		PLATFORM 1	0+	319.72	0 0+32	21.720				PLATFOR	M 2		0+95	59.160	0+961.16	50 BLATEOR	M 2	1+	280.900	PONDS	1+48	1.400
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			319,720 n	n							637.4	40 m							0,000%	6	30		
	948																		520,240	, m			
0+0	00	0+100	0+2	00	0+30	)0	0+400	(	+500	0+6	00	0+700	0+800	0+90	00	1+000	1+100	1+2	00	1+300	1+400	-	-





### **Solar Resource**

#### DNI

















2012 - European Commanities, 2011-2008 NoClim-1 - Eccle des Mines de Parts-Mittel/IES, 2011-2005



Solar data - SolarGIS v1.8/0/2012 GeoModel Solar s.r.o.

#### GHI

## **Solar Resource**



**PV Yield Map** 

**Tracker Yield Map** 



Credit: Maps supplied by SolarGIS



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#### Global Horizontal Irradiance (GHI) for PV

#### Direct Normal Irradiance (DNI) for CSP

AFRIC.



### **Solar Resource - Reducing uncertainty**





Running ground-monitoring campaign and combining measurements with satellite data is the way to maintain low uncertainty of solar resource in a longterm

Source: SolarGIS





### **Solar Resource – Ground Measurements**

- All CSP developers deploy on-site solar (and meteorological) measurements
- Mandated by RE-IPPPP (CSP) and required by banks
- Due to higher uncertainties of satellite derived data
- In established markets PV plants can rely on satellite derived data only (no ground measurements). In new markets (mainly developing countries) ground measurements are required.



## **Solar Resource: Inter-annual variability**





GHI215820823.5 %DNI266324747.1 %
DNI 2663 2474 7.1 %

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### Site access



# Other CSP factors.....

You need water!

Limited technology suppliers

You need more people on site

Local manufacturing opportunities







# Thank you for your attention

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