

## WACC

Item	Unit	Equity	Debt
<b>Asset shares</b>	%	<b>20</b>	<b>80</b>
Risk-free return, interest rate	% /a	5.0%	5.0%
Venture risk premium	% /a	5.0%	0.0%
Technology risk premium	% /a	0.0%	0.0%
Country risk	% /a	0.0%	0.0%
<b>Subtotal after tax</b>	<b>% /a</b>	<b>10.0%</b>	<b>5.0%</b>
Corporate tax	25%	3.3%	0.0%
<b>WACC before tax</b>	% /a	<b>13.3%</b>	<b>5.0%</b>
<b>Weighted Average Cost of Capital WACCn</b>	% /a	<b>6.67%</b>	
./. Inflation	% /a	2.00%	
<b>WACCr in real terms before tax</b>	% /a	<b>4.58%</b>	

TE-Ch5.4\_REN-PV-Ex-5-7-to-5-9.xls

Example 5-7 PV P kW vs. t°C

Item	Unit	Values		
Cell temperature	°C	25	60	80
Crystalline cells				
Temperature Coefficient	%/K	-0.4		
Power output	kW	100	86	78
Thin film cells				
Temperature Coefficient	%/K	-0.25		
Power output	kW	100	91	86

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Example 5-8\_PV\_yield

Item	Unit	Germany Munich	Greece Athens	Malaysia Kuala Lumpur	Australia Sydney	S. Africa Johannes burg
<b>Technical parameters</b>						
Module area (mono-crystalline)	m <sup>2</sup>	489,476				
PV Module efficiency $\eta_M$	-	20.43%				
Annual performance ratio $PR$	-	81.50%				
Azimuth *)	degrees	0				
Tracking	-	vertical axis tracking, optimal tilt				
Site latitude	degrees N	48.5	38.5	3.5	-33.5	-26.5
Longitude	degrees E	11.5	23.5	101.5	151.5	28.5
Optimal tilt angle, annual average ***)	-	37.9°	32.3°	14.6°	30.2°	25.9°
<b>Electricity Production</b>						
Nominal capacity STC **)	MW <sub>p</sub>	100				
Horizontal global irradiation ***)	kWh /m <sup>2</sup> a	1,149	1,565	1,788	1,620	2,018
Global irradiation, optimal tilted panel ***)	kWh /m <sup>2</sup> a	1,321	1,748	1,821	1,862	2,306
Annual yield	MWh / a	107,661	142,462	148,411	151,753	187,939
Specific yield (1000 W/m <sup>2</sup> , 25°C, AM=1.5)	kWh /kW <sub>p</sub>	1,077	1,425	1,484	1,518	1,879

\*) Northern hemisphere against due south, Southern hemisphere against due north

\*\*) Irradiation 1000 W/m<sup>2</sup>; 25°C; AM=1.5)

\*\*\*) NASA satellite derived meteorological and solar energy parameters

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 Example 5-9\_PV\_LEC

Item	Unit	Germany Munich	Greece Athens	Malaysia Kuala Lumpur	Australia Sydney	S. Africa Johannes burg
		100 MWe				
<b>Energy production</b>						
Nominal capacity STC	MWp	100				
Specific yield	kWh / kWp	1,077	1,425	1,484	1,518	1,879
Horizontal global irradiation	kWh /m <sup>2</sup> a	1,149	1,565	1,788	1,620	2,018
on optimal titled panel	kWh /m <sup>2</sup> a	1,321	1,748	1,821	1,862	2,306
Annual yield	MWh / a	107,661	142,462	148,411	151,753	187,939
<b>Financial constraints</b>						
Life time	a	25				
Equity share	%	20.0%				
Inflation	% / a	2.0%				
Discount rate, nominal	% / a	6.7%				
Discount rate, real terms	% / a	4.58%				
O&M Cost	% / a	0.50%				
Site lease	ct / kWh	0.20	0.20	0.20	0.20	0.20
Insurance	% / a	0.75%	0.75%	0.75%	0.75%	0.75%
<b>CAPEX, US\$ 2014, ±20%</b>	<b>Mio. US\$</b>	<b>215.0</b>	<b>215.0</b>	<b>215.0</b>	<b>215.0</b>	<b>215.0</b>
Specific CAPEX	USD / KWp	2,150	2,150	2,150	2,150	2,150
<b>Annual levelized costs, in real terms</b>						
Annualized CAPEX	1000 US\$ / a	14,612	14,612	14,612	14,612	14,612
O&M Costs	1000 US\$ / a	1,075	1,075	1,075	1,075	1,075
Lease	1000 US\$ / a	215	285	297	304	376
Insurance	1000 US\$ / a	1,612	1,612	1,612	1,612	1,612
<b>Total</b>	<b>1000 US\$ / a</b>	<b>17,515</b>	<b>17,584</b>	<b>17,596</b>	<b>17,603</b>	<b>17,675</b>
<b>LEC on real terms</b>	<b>ct / kWh</b>	<b>16.27</b>	<b>12.34</b>	<b>11.86</b>	<b>11.60</b>	<b>9.40</b>