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FDI ATTRACTION

Final Report

March 6, 2010

This publication was produced for review by the United States Agency for International Development. It was prepared by Joshua G. Timberlake and Raj Vohra / Deloitte Consulting LLP.

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FDI ATTRACTION

FINAL REPORT

USAID JORDAN ECONOMIC DEVELOPMENT PROGRAM

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DELOITTE CONSULTING LLP

USAID/JORDAN

USAID/ OFFICE OF ECONOMIC GROWTH (EG)

DATE: MARCH 6, 2010

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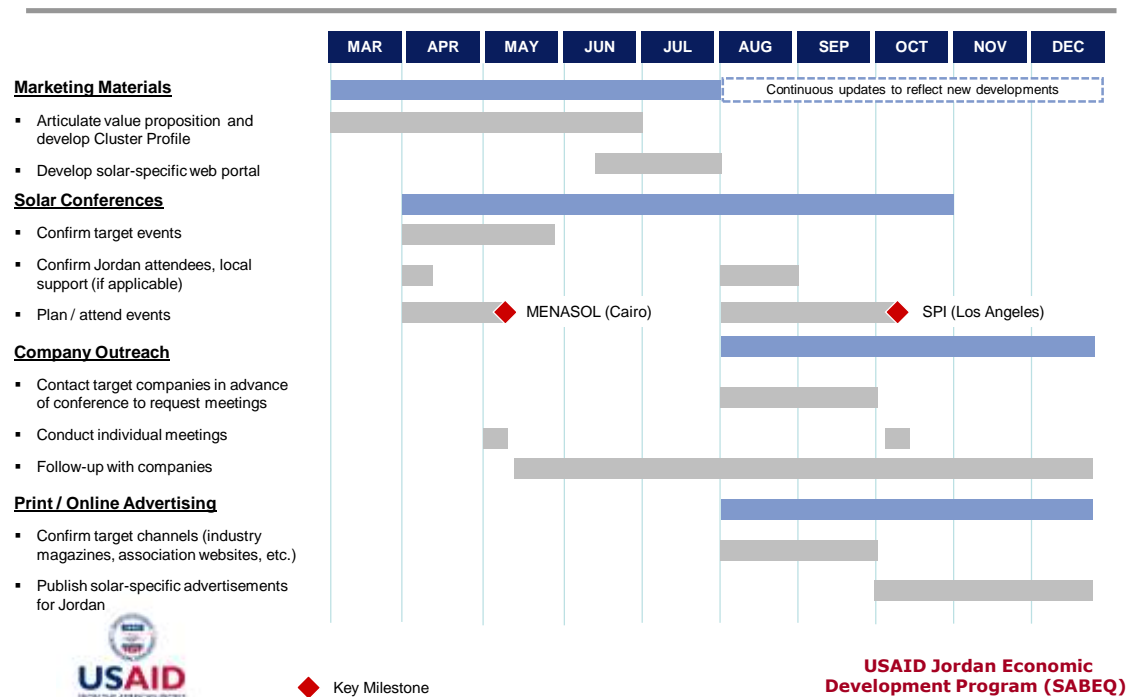
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EXECUTIVE SUMMARY

- To promote energy independence and economic growth, Jordan aims to attract more foreign direct investment (FDI) in the clean tech / EWE sector
- Initial analysis conducted in December 2009 suggests Jordan is more likely to compete for investment in **solar** than in other “clean” technologies (wind, biofuels, etc.)
- Key stakeholders such as the Ministry of Energy and Development Zones Commission agree that solar is a viable target for FDI attraction
- The focus of this analysis is to:
 - Benchmark Jordan against regional and global competitors for attracting solar FDI
 - Identify Jordan’s competitive strengths, challenges, and value proposition to global solar companies
 - Recommend actions to increase competitiveness
 - Outline an outreach strategy
- Based on Jordan’s competitive strengths and challenges identified in the benchmark comparison, specific recommendations and next steps to enhance Jordan’s competitiveness include:
 - Conduct detailed study of generation policy alternatives
 - Utilize proposed MEMR policy and economic advisors to evaluate economics of Feed-in Tariff and other alternatives
 - Begin outreach campaign to put Jordan “on the map” for solar
 - Gather relevant stakeholders (MEMR, DZC, EDAMA, others) to identify each entity’s role in outreach activities
 - Identify solar-suitable real estate alternatives in greater Amman
 - Continue to investigate opportunities to bring additional zones under the DZC umbrella
 - Identify candidates for a solar or “clean-tech” specific industrial park
 - Establish a fund to extend credit to solar companies
 - Investigate possible financing sources for small or large-scale loans
 - Develop a solar-specific suite of incentives and policies
 - Evaluate “long list” of potential incentives for high-level fit with Jordan’s economic and regulatory climate, and identify “short list” candidates for further analysis
 - Utilize proposed economic advisor to evaluate financial feasibility of top candidate programs
- Recommended activities and sequencing for the Outreach Strategy are summarized below:

PROPOSED OUTREACH STRATEGY OVERVIEW - 2010



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The principal deliverable from this assessment was a presentation to the Minister of Energy, USAID, and other key economic development stakeholders in Jordan, on March 2, 2010. The full presentation has been amended to this executive summary.



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FDI Attraction Strategy for Solar Industry

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Background / Scope of Work

- To promote energy independence and economic growth, Jordan aims to attract more foreign direct investment (FDI) in the clean tech / EWE sector
- Initial analysis conducted in December 2009 suggests Jordan is more likely to compete for investment in **solar** than in other “clean” technologies (wind, biofuels, etc.)
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 - Benchmark Jordan against regional and global competitors for attracting solar FDI
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Benchmark Location Comparison

Benchmark Location Comparison – Overview

- Goal is to evaluate Jordan through the lens of a solar company (or consultant) conducting a global location analysis for a new manufacturing facility
- Benchmark locations were selected from among three categories:
 - Established global destinations
 - Emerging global competitors
 - Regional competitors
- The decision framework, criteria, and weightings are based on actual project experiences working with solar manufacturers
- Data sources mirror those used for Deloitte Consulting's corporate location strategy projects¹



¹ This analysis draws on Deloitte Consulting's prior experience conducting field investigations in many of the benchmark locations. However, no additional countries were visited as part of this analysis.

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Benchmark Locations

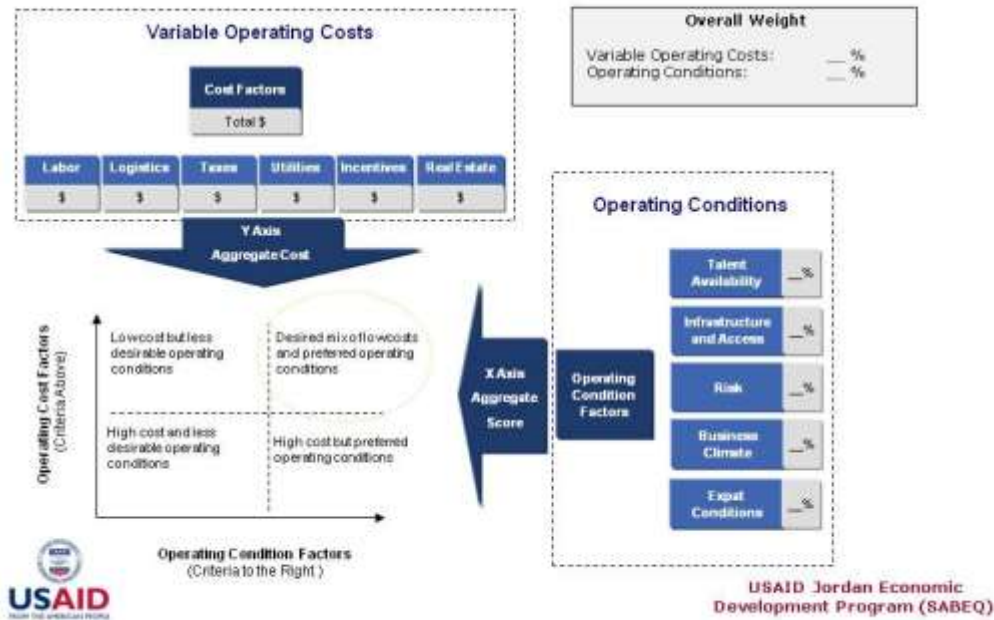
	Country	Comments
Established Global	China	Key origin country of, and increasingly destination for, solar FDI
	Germany	Primary origin country for solar investments
	Malaysia	Has leveraged semiconductor platform to challenge Singapore
	Singapore	Established as a top-tier global destination for solar investment
	USA	Attracting substantial manufacturing investment to serve domestic market
Emerging Global	Mexico	Certain regions (e.g. Mexico) shifting focus toward solar
	Philippines	Low-cost destination with successful history of FDI attraction in other sectors
	Poland	Emerging, lower-cost alternative to Germany
	South Africa	Successful history of FDI attraction, turning attention toward solar
	Thailand	Large electronics industry
Regional	Egypt	Considerable momentum in wind, nascent solar sector
	Israel	Established as a "clean-tech" hub within the region
	Oman	Minimal momentum to date – potential regional competitor
	Qatar	Minimal momentum to date – potential regional competitor
	Turkey	Key regional competitor for FDI attraction – targeting wind and solar
	UAE (Abu Dhabi)	MASDAR City has become a recognized global brand



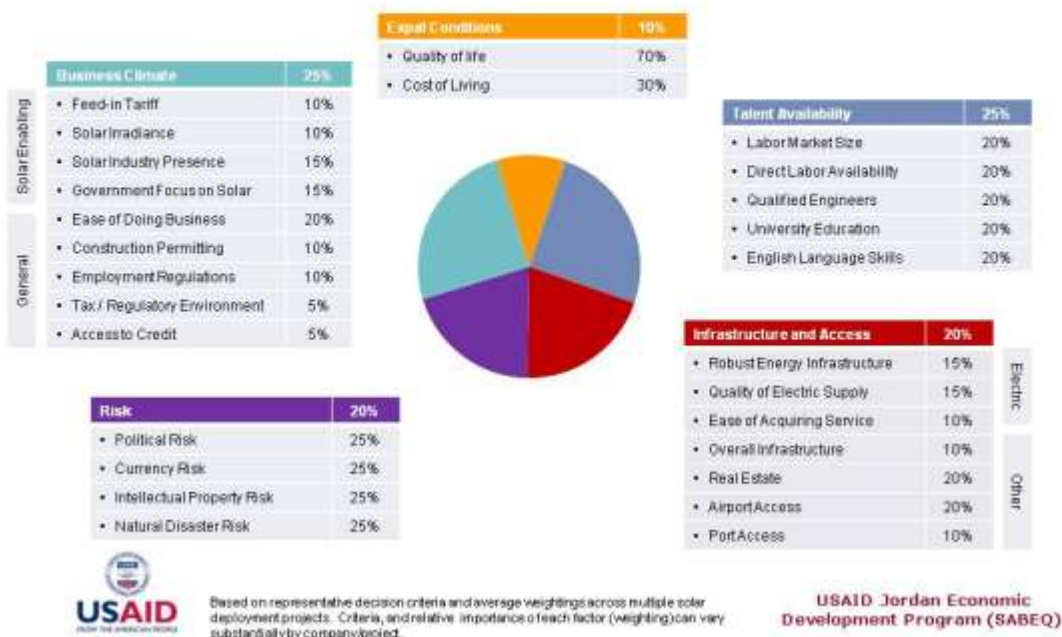
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Representative Location Decision Framework



Representative Operating Conditions Assessment



Risk

	Country	Currency Risk ¹	Political Risk ¹	IP Protection ²	Natural Disaster Risk ³
Established Global	China	BBB	B	4.4	Moderate
	Germany	A	AA	8.7	Low
	Malaysia	BBB	BBB	5.9	Moderate
	Singapore	A	AA	7.8	Moderate
	USA	A	AA	8.6	Moderate
Emerging Global	Mexico	BBB	BB	4.9	Moderate
	Philippines	BB	CCC	4.8	High
	Poland	BBB	A	5.8	Low
	South Africa	BBB	BBB	7.4	Low
	Thailand	BB	CCC	4.6	Moderate
Regional	Jordan	B	CCC	5.5	Low
	Egypt	BB	B	4.3	Low
	Israel	BBB	BBB	7.0	Low
	Oman	BBB	BBB	-	Low
	Qatar	BBB	BBB	5.6	Low
	Turkey	BB	BB	4.9	Moderate
	UAE	BBB	BBB	6.4	Low



¹ Economist Intelligence Unit – January, 2010. "AAA" is most favorable, followed by "AA", etc.
² 2009 International Property Rights Index (IPRI). 10 is most favorable.
³ New York Times Global Disaster Risk (adopted from United Nations study). Natural disaster risk can vary substantially by geography within larger countries.

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Expat Conditions

	Country	Cost of Living		Quality of Life Index ²
		Index ¹	Proxy City	
Established Global	China	86.6	Shenzhen	56
	Germany	93.1	Munich	81
	Malaysia	75.0	Kuala Lumpur	58
	Singapore	109.1	Singapore	81
	USA	100.0	New York	78
Emerging Global	Mexico	73.6	Mexico City	68
	Philippines	73.4	Manila	55
	Poland	95.0	Warsaw	71
	South Africa	60.4	Johannesburg	66
	Thailand	75.1	Bangkok	54
Regional	Jordan	79.6	Amman	55
	Egypt	75.9	Cairo	51
	Israel	105.0	Tel Aviv	67
	Oman	-	-	45
	Qatar	-	-	52
	Turkey	99.4	Istanbul	61
	UAE	95.7	Abu Dhabi	50



¹ Mercer Global Cost of Living Survey (2008). Index based on New York City = 100.
² International Living - 2010 Quality of Life Index; highest possible score = 100.

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Business Climate – Solar Enabling Environment

	Country	National Feed-in Tariff (Solar) ¹	Solar Irradiance ²	Solar Industry Presence/ Concentration ³	Government Focus on Solar ³
Established Global	China	No	Low - Moderate	High	Moderate
	Germany	Yes	Low	High	High
	Malaysia	Pending (2010-11)	Moderate	High	High
	Singapore	No	Moderate	High	High
	USA	No	Low - High	High	Moderate
Emerging Global	Mexico	No	Moderate	Moderate	Moderate
	Philippines	Pending (2010)	Moderate	Moderate	Moderate
	Poland	No	Low	Moderate	Moderate
	South Africa	Yes	Moderate - High	Low	Moderate
	Thailand	No	Moderate	Low	Moderate
Regional	Jordan	No	High	Low	Low
	Egypt	No	High	Low	Low (wind-focused)
	Israel	Yes	High	Moderate	Low - Moderate
	Oman	No	High	Low	Low
	Qatar	No	High	Low	Low
	Turkey	Yes	High	Low	Low (wind-focused)
	UAE	No	High	Moderate	High



¹ FIT data based on: Advancing a Sustainable Solar Future - 2009 study by the PV Group. Some countries including the U.S. and China offer FITs in specific states, cities or provinces.
² Advanced Energy Group: www.solarpower.com/solar-power-global-maps.html, based on average peak sun hours.
³ Deloitte experience from past global location analysis, and review of individual countries' investment promotion materials.

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Business Climate – General Indicators

	Country	Overall Ease of Doing Business ¹	Construction Permits ¹	Employing Workers ²	Paying Taxes ²	Access to Credit ²
Established Global	China	89	180	140	125	81
	Germany	25	18	158	71	15
	Malaysia	23	109	61	24	1
	Singapore	1	2	1 (tie)	5	4
	USA	4	25	1 (tie)	61	4
Emerging Global	Mexico	51	37	136	106	81
	Philippines	144	111	115	135	127
	Poland	72	164	76	151	15
	South Africa	35	52	102	23	2
	Thailand	12	13	52	88	71
Regional	Jordan	100	92	51	26	127
	Egypt	106	156	120	140	71
	Israel	29	120	90	83	4
	Oman	85	130	21	8	127
	Qatar	39	28	88	2	135
	Turkey	73	133	145	75	71
	UAE	33	27	50	4	71



¹ World Bank 2010 Doing Business Report. Countries ranked from 1 (most favorable) to 183.
² World Bank 2010 Doing Business Report. Construction Permitting, Employing Workers, Paying Taxes and Access to Credit represent select components of the overall Ease of Doing Business Index.

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Infrastructure (Electric)

	Country	Energy Infrastructure ¹	Quality of Electric Supply ²	Ease of Acquiring Electric Service ³		
				Procedures (number)	Time (days)	Cost (% of income per capita)
Established Global	China	5.18	61	4	118	835.7
	Germany	8.18	6	3	17	5.1
	Malaysia	7.61	39	6	51	42.6
	Singapore	8.89	12	5	76	34.2
	USA	5.72	17	5	48	16.8
Emerging Global	Mexico	3.95	88	7	169	577.1
	Philippines	3.64	87	5	63	466.5
	Poland	4.34	40	4	143	233.2
	South Africa	2.56	100	5	171	443.2
	Thailand	6.99	41	-	-	-
Regional	Jordan	6.42	35	5	43	525.2
	Egypt	-	51	7	50	453.5
	Israel	5.53	30	6	113	12.7
	Oman	-	29	5	66	70.8
	Qatar	7.43	25	3	90	3.8
	Turkey	4.71	84	4	62	812.6
	UAE	-	16	4	55	15.9



¹ 2009 IMD Global Competitiveness Report, countries scored from 0 (low) to 10 (high)
² 2009-10 WEF Global Competitiveness Report, countries ranked from 1 (best) to 133
³ World Bank 2010 Doing Business Report, Pilot Indicators on Getting Electricity. Based on representative case study for small to mid-sized manufacturer to acquire electric service.

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Infrastructure (Other)

	Country	Overall Infrastructure Quality ¹	Real Estate Abundance / Quality ²	Airport (Global Connectivity) ³	Port Access (# of Top 125 Ports) ⁴	Water Resources (m ³ / Capita) ⁵
Established Global	China	66	Strong	Strong	16	2,117
	Germany	6	Strong	Strong	2	1,294
	Malaysia	27	Strong	Moderate	4	22,210
	Singapore	2	Strong	Strong	1	136
	USA	14	Strong	Strong	14	9,245
Emerging Global	Mexico	71	Moderate	Strong	2	3,882
	Philippines	98	Moderate	Moderate	1	5,552
	Poland	121	Moderate	Moderate	0	1,405
	South Africa	43	Moderate	Moderate	2	928
	Thailand	41	Moderate	Strong	2	3,310
Regional	Jordan	29	Weak	Moderate	0	119
	Egypt	56	Moderate	Moderate	3	-
	Israel	50	Moderate	Moderate	2	110
	Oman	22	Weak	Weak	1	-
	Qatar	47	Weak	Weak	0	68
	Turkey	62	Moderate	Moderate	3	3,070
	UAE	11	Strong	Strong	2	-



¹ 2009-10 WEF Global Competitiveness Report, countries ranked from 1 (best) to 133
² Deloitte assessment based on past experience / interactions
³ Deloitte assessment based on access to major global business destinations
⁴ World Port Rankings (based on container traffic in twenty-foot equivalent units); 2007 statistics
⁵ 2009 IMD Global Competitiveness Report, renewable water resources in cubic meter per capita

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Talent Availability

	Country	Labor Market Size (Pop.) ¹	Unemployment Rate ¹	Qualified Engineers ²	University Education ²	English Language Capabilities ³
Established Global	China	1,338.6	4.3%	4.29	3.84	Moderate
	Germany	82.3	8.2%	6.16	6.76	Moderate
	Malaysia	25.7	3.7%	6.64	6.03	Moderate
	Singapore	4.7	3.4%	7.58	7.85	Strong
	USA	307.2	9.4%	6.37	7.06	Strong
Emerging Global	Mexico	111.2	6.2%	5.04	4.35	Moderate
	Philippines	97.7	8.0%	6.67	4.94	Strong
	Poland	38.5	11.0%	4.97	4.64	Moderate
	South Africa	49.1	24.0%	3.18	4.63	Strong
	Thailand	66.0	2.7%	6.27	5.12	Moderate
Regional	Jordan	6.3	13.5%	6.95	4.84	Strong
	Egypt	78.9	9.7%	-	-	Moderate
	Israel	7.2	8.0%	7.81	6.10	Moderate
	Oman	3.4	15.0%	-	-	Moderate
	Qatar	8	0.5%	5.74	7.17	Moderate
	Turkey	76.8	10.6%	7.20	6.67	Moderate
	UAE	4.8	2.4%	-	-	Strong



¹ CIA World Fact Book (July 2009 estimates for population; latest available for UE rates). Used as a proxy for direct labor availability, which is typically best assessed in detailed field investigations.

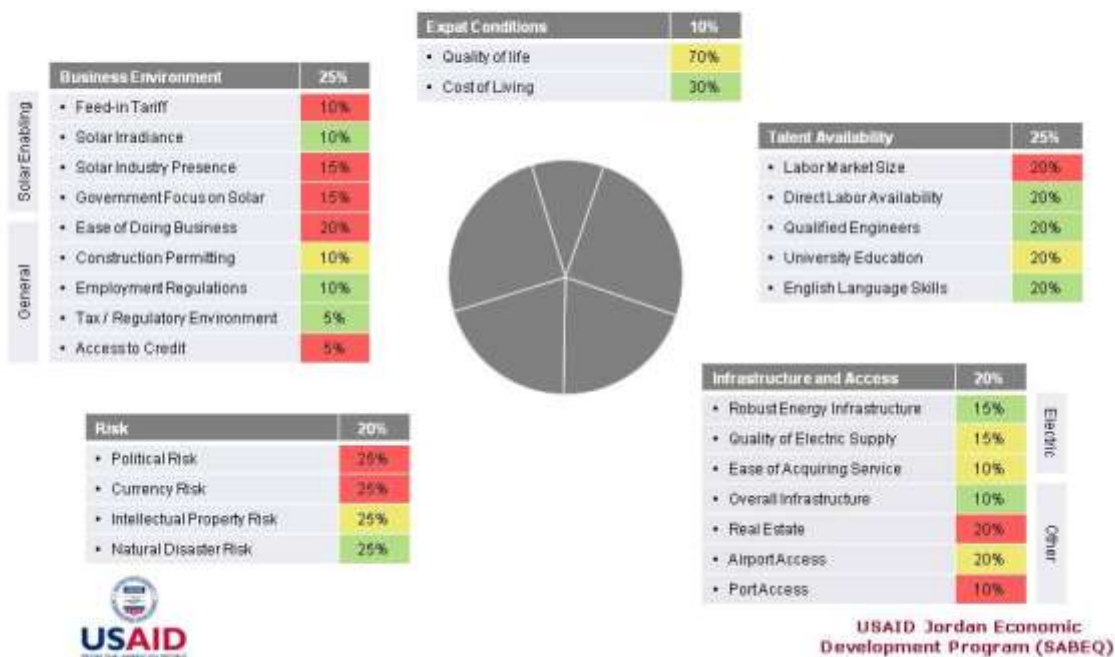
² 2008 IMD Global Competitiveness Report; countries scored from 0 (lowest) to 10 (highest)

³ Deloitte assessment

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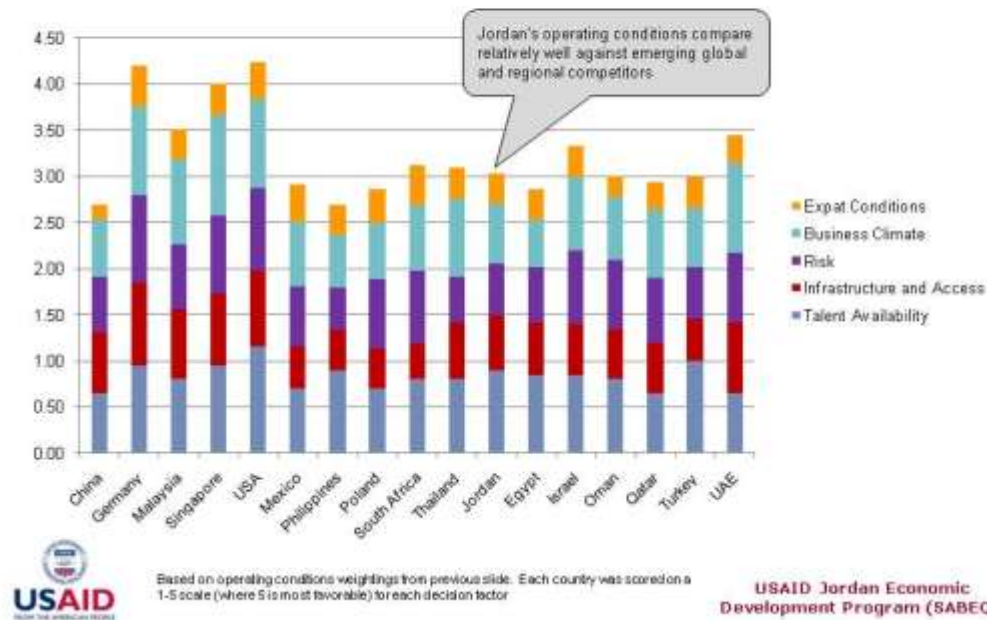
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Snapshot of Jordan's Comparative Operating Conditions



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Comparative Operating Conditions Ranking



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Summary Operating Costs – Utilities, Labor, Taxes

	Country	Average Industrial Electricity Cost (\$US per kWh) ¹	Direct Manufacturing Labor (\$US / hr) ¹	Engineering / Management Salary (\$US / year) ¹	Federal Corporate Income Tax Rate ²
Established Global	China	\$0.10*	\$1.38	\$46,975	25%
	Germany	\$0.11	\$37.59	\$164,555	30-33%
	Malaysia	\$0.06	\$3.54	\$40,202	25%
	Singapore	\$0.14	\$8.35	\$91,920	19%
	USA	\$0.07	\$24.59	\$109,152	34%
Emerging Global	Mexico	\$0.09*	\$2.92	\$73,507	28%
	Philippines	\$0.14	\$1.12	\$44,879	35%
	Poland	\$0.12	\$6.25	\$77,921	19%
	South Africa	\$0.04*	\$7.39	\$65,000	28%
	Thailand	\$0.07	\$2.29	\$44,677	25%
Regional	Jordan	\$0.08*	\$3.24	\$40,000*	15%
	Egypt	\$0.06	\$1.70*	\$45,000*	20%
	Israel	\$0.08	\$13.99	\$89,951	25%
	Oman	\$0.04*	\$7.50*	-	12%
	Qatar	\$0.07*	\$6.32	-	10%
	Turkey	\$0.14	\$2.50	\$90,069	20%
	UAE	\$0.04*	\$7.50*	\$96,000*	0%

¹ From IMD Global Competitiveness Report unless otherwise noted. Rates specified with an asterisk (*) were obtained from Deloitte in-country experience or data from investment promotion agencies (IPAs), or other 3rd party sources such as Mercer Global Salary Survey.

² Tax rates from 2010 World Bank Doing Business Report and individual country IPAs.

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Investment Incentives – Established Global Locations

Country	General	Solar-Specific
China	<ul style="list-style-type: none"> • Perennial VAT refund on utilities • Refund of local portion of corporate income tax (~4%) 	<ul style="list-style-type: none"> • Encouraged industry status (not limited to, but inclusive of solar) • High/New Technology Enterprise Status (not limited to, but inclusive of solar)
Germany	<ul style="list-style-type: none"> • Subject to European Union restrictions on maximum allowable incentives (can be offered in many formats including grants, tax abatements, labor cost reimbursements, etc.) 	<ul style="list-style-type: none"> • Feed-in Tariff • Few industry-specific incentives to support manufacturers
Malaysia	<ul style="list-style-type: none"> • Pioneer Status (5-year corporate income tax holiday) 	<ul style="list-style-type: none"> • Increased likelihood of achieving Pioneer Status, and extended timeframe (potentially 10+ years) • Additional incentives for training, R&D, infrastructure
Singapore	<ul style="list-style-type: none"> • Corporate Income Tax Holiday (up to 10 years) 	<ul style="list-style-type: none"> • Labor/wage subsidy (IDS) • Training Subsidy (INTECH)
USA	<ul style="list-style-type: none"> • No federal income tax holiday • Most incentives offered at State or local level (state corporate income tax credits, property tax abatements, workforce training programs, grants, infrastructure improvements, etc.) 	<ul style="list-style-type: none"> • Federal loan guarantee program (Department of Energy) • Investment Tax Credit (30% income tax credit on capital expenditures) • Several US states have passed solar-specific incentive (Arizona, New Mexico, Oregon, etc.)



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Investment Incentives – Emerging Global Locations

Country	General	Solar-Specific
Mexico	<ul style="list-style-type: none"> • Few statutory incentives • Discretionary benefits commonly offered at the State or local level include land cost write downs, infrastructure assistance, job training support, wage subsidies 	<ul style="list-style-type: none"> • None identified
Philippines	<ul style="list-style-type: none"> • Income tax holiday (up to 8 years) • 5% gross income tax following expiration of ITH • M&E tax exemption for 3 years 	<ul style="list-style-type: none"> • Pending Feed-in Tariff legislation • Real estate tax cap (1.5%) on cost of equipment and facilities used to produce renewable energy • Reduced income tax rates
Poland	<ul style="list-style-type: none"> • Subject to European Union restrictions on maximum allowable incentives (can be offered in many formats including grants, tax abatements, labor cost reimbursements, etc.) 	<ul style="list-style-type: none"> • None identified
South Africa	<ul style="list-style-type: none"> • Grant of up to 30% for qualifying investment in plant, M&E for manufacturing • Tax allowance of up to 100% of capital investment costs 	<ul style="list-style-type: none"> • Feed-in Tariff
Thailand	<ul style="list-style-type: none"> • Income tax holiday (varies by location – typically ~7 years) 	<ul style="list-style-type: none"> • None identified



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Investment Incentives – Regional Competitors

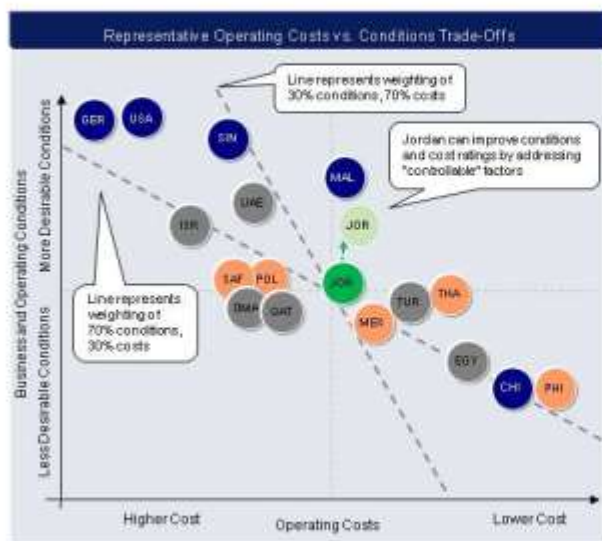
Country	General	Solar-Specific
Egypt	<ul style="list-style-type: none"> Income tax exemptions ranging from 5 years to indefinite term (in select zones) Income tax exemptions for short-term expats 	<ul style="list-style-type: none"> None identified
Israel	<ul style="list-style-type: none"> Investment grants up to 24% of eligible capital expenditures Reduced income tax rate for up to 10 years 	<ul style="list-style-type: none"> Feed-in Tariff (relatively low program cap of 50MW in process of being extended)
Oman	<ul style="list-style-type: none"> Reduced land costs Reduced utility rates Reduced corporate income tax rates 	<ul style="list-style-type: none"> None identified
Qatar	<ul style="list-style-type: none"> Corporate income tax exemption up to 10 years Income tax exemption on salaries of expats 	<ul style="list-style-type: none"> None identified
Turkey	<ul style="list-style-type: none"> 100% Corporate Tax Exemption (in Free Trade Zone) 	<ul style="list-style-type: none"> Feed-in Tariff
UAE	<ul style="list-style-type: none"> No statutory incentives (however UAE does not levy corporate income tax) 	<ul style="list-style-type: none"> 100 % foreign ownership Zero import tariffs No restrictions on capital movement Increased intellectual property protection
Jordan	<ul style="list-style-type: none"> 5% corporate income tax (Development Zones) 0% sales tax, custom duties, social services tax, and dividends tax (most activities) 	<ul style="list-style-type: none"> No significant solar-specific incentives



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Summary of Jordan's Overall Competitive Position



Placement of each country on the 2x2 is representative only, and not to scale. Costs are based on direct manufacturing wages rates, versus a full, comprehensive cost model.

Global Established

- CHN China
- GER Germany
- MAL Malaysia
- SIN Singapore
- USA United States

Global Emerging

- MEX Mexico
- PHI Philippines
- POL Poland
- SAR S. Africa
- THA Thailand

Regional

- EGY Egypt
- ISR Israel
- OMA Oman
- QAT Qatar
- TUR Turkey
- UAE United Arab Emirates
- JOR Jordan (current)
- JOR Jordan (potential)

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Jordan's Competitive Challenges Fall Into Two Primary Categories

Non-Controllable Factors:

- Political risk
- Currency risk
- Labor market size
- Port access
- Ease of doing business
- Solar industry presence

Controllable Factors:

- Feed-in Tariff (or other solar-enabling legislation)
- Government focus on solar
- Real estate
- Access to credit
- Industry-specific incentives and policies (beyond those which stimulate generation)



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Recommendations and Next Steps

Controllable Factors: Solar Enabling Legislation

- A Feed-in-Tariff, or comparable policy, is **critical** to spurring widespread solar **generation** in Jordan
- While not critical to attracting foreign direct investment in manufacturing, effective generation policy remains **important** to help:
 - Create local market demand in Jordan
 - Demonstrate government commitment to renewables
 - Get Jordan “on the radar” of solar companies
- SABEQ, USAID, and the Ministry of Energy are currently working on a program to study methods for Jordan to encourage large-scale renewable energy generation

Recommended next step: conduct detailed analysis (including economic impact) of policy alternatives to stimulate widespread renewable energy generation in Jordan



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Controllable Factors: Government Focus on Solar (“Outreach Strategy”)

- Articulate Jordan's value proposition to solar companies, based on the competitive strengths identified herein*
- Develop “cluster profile” materials targeted toward solar investors
- Devote space on Jordan's primary business attraction website(s) to solar
- Begin to attend solar industry group conferences and trade fairs*
- Contact executives at resident Jordanian solar companies to discuss what initiatives would help them thrive/expand in the region
- Contact executives at global solar companies to introduce Jordan as a potential location option*
- Utilize solar trade organizations, publications, websites, etc. as sources of information and possible advertising vehicles*

Recommended next step: gather key stakeholders (MEMR, DZC, EDAMA, other) to determine each entity's role in outreach activities



*Detailed recommendations on value proposition, conferences/trade fairs, publications/trade organizations, and potential target companies are included in Outreach Strategy section

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Controllable Factors: Real Estate

- The existing Development Areas which best cater to solar investment are:
 - Ma'an Development Area
 - King Hussein Bil Talal Development Area (Mafrq)
- Both appear to be well-planned master developments, but are relatively nascent
- In addition, both (but particularly Ma'an) are challenged by their distance from Amman which may compromise the "sense of arrival" felt by foreign executives
 - Remoteness is **not** likely to inhibit investments in generation (PV solar farm, or CSP facility) but will influence manufacturing or R&D-related location decisions

Recommended next step: identify methods (by incorporating existing industrial zones into the DZC scheme, or considering a new zone) to offer solar companies a real estate solution *in greater Amman* with DZC benefits



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Controllable Factors: Access to Credit

- Jordan ranks 26th in the world in availability of scientists and engineers, yet 108th in company spending on R&D and 90th in number of utility patents¹
- Limited access to funding in support of research / innovation is likely restricting Jordan's scientists/engineers from reaching their "innovation potential"
- Enhancing access to credit can help spur growth and development of a local solar cluster, which will then attract interest from international companies
- On a larger scale, many recent solar projects in established markets, such as the U.S., have been heavily financed through federal loan guarantee programs

Recommended next step: establish a dedicated fund to extend credit to small and/or large scale solar companies to help nurture domestic growth



¹ 2009-10 WEF Global Competitiveness Report; countries ranked from 1 (best) to 133. Utility patents protect the way an article is used and works, versus a design patent which only protects the ornamental appearance of an invention

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Controllable Factors: Solar-Specific Incentives

- Establishing industry-specific incentives will help put Jordan on the “solar radar” and distinguish Jordan from competing countries
- Solar incentives can be categorized as either:
 - “Demand side” policies which help stimulate consumption of solar energy and associated technologies
 - “Supply side” incentives offered directly to solar companies help reduce production (or other operating) costs
- Samples of potential demand and supply side incentives are included on the following slides

Recommended next step: review the long list of potential “supply side” and “demand side” incentives to determine which could be implemented in Jordan. Conduct detailed financial / regulatory analysis of the candidate programs. Implement a suite of solar-specific incentives.



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Potential Demand Side Incentives

- “Demand side” policies help stimulate consumption of solar energy and associated technologies

Potential “Demand Side” Incentives	Description
Feed-in Tariff (or comparable legislation)	Country-level policy to stimulate renewable energy generation (alternatives to be studied in detail during future analysis)
Renewable Portfolio Standards (Utilities)	Require utilities to purchase a certain percentage of their energy from renewable sources by a specified timeframe
Renewable Energy Standards (Public-Sector)	Mandate government agencies (e.g. Development Zones) to purchase a certain percentage of their energy from renewable sources by a specified timeframe
Commercial Collaboration	Work with specific investor companies to guarantee Jordanian government entities will purchase a specified amount of product (e.g. solar panels); occurs on a case-by-case basis, but can be a significant, mutually-beneficial incentive



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Potential Supply Side Incentives (Higher Impact)

- The "supply side" incentives which are most likely to influence location decisions are also the most expensive programs to implement

Potential "Supply Side" Incentives	Description
Corporate Tax Incentives	Additional inducements (beyond the current DZC scheme) to lower corporate income tax, property tax, or other business tax liabilities
Land Cost Reduction	Provide subsidized real estate (land purchase, or building lease rate)
"Green" Energy Subsidies	Solar companies are increasingly sensitive to the sources of energy used in their own production process; utilizing "green" energy can assist with public relations
Low-Interest Loans	Particularly important given the current credit crisis, and nascent state of many solar companies. Can help nurture growth of small-scale solar companies; and also make or break large-scale, globally competitive projects
Cash Grants	Often directly tied to job creation or capital investment
Infrastructure Improvements	Offset "hard costs" associated with road, electric, water, or other infrastructure improvements which would otherwise be the responsibility of the company
Wage Subsidies	Subsidize wages (typically for production employees) for a specified period of time at the start-up phase of the project



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Potential Supply Side Incentives (Lower Impact)

- Many creative "supply side" incentive programs are less expensive to implement, but can also help attract investment from solar companies

Potential "Supply Side" Incentives	Description
Fee Waivers	Offset application and permit fees for site/building permits, utility connections, inspections, or other required processes
Expansion Options	Reserve adjacent land for specified period of time to accommodate potential expansion plans
Recruiting / Training Support	Development of customized recruiting and training programs which are specific to the needs of solar companies
Expat Relocation Assistance	Development of customized expat relocation packages, including travel subsidies; housing assistance; personal income tax exemptions; guaranteed placement for children in international schools; spousal employment assistance, or other inducements
Industry / Trade Show Sponsorship Commitments	Sponsor company attendance at leading global solar industry shows (which can also serve as a powerful platform for companies to describe why they chose Jordan)
Expedited Permitting	Assign a representative from applicable agency (e.g. DZC) to shepherd foreign companies through permitting; commit to complete the process in a substantially reduced timeframe
University Linkages	Provide introductions / access to leading solar technology researchers in Jordanian universities to foster collaborative research opportunities



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Summary Recommendations and Next Steps

- Conduct detailed study of generation policy alternatives
 - Utilize proposed MEMR policy and economic advisors to evaluate economics of Feed-in Tariff and other alternatives
- Begin outreach campaign to put Jordan “on the map” for solar
 - Gather relevant stakeholders (MEMR, DZC, EDAMA, others) to identify each entity’s role in outreach activities
- Identify solar-suitable real estate alternatives in greater Amman
 - Continue to investigate opportunities to bring additional zones under the DZC umbrella
 - Identify candidates for a solar or “clean-tech” specific industrial park
- Establish a fund to extend credit to solar companies
 - Investigate possible financing sources for small or large-scale loans
- Develop a solar-specific suite of incentives and policies
 - Evaluate “longlist” of potential incentives for high-level fit with Jordan’s economic and regulatory climate, and identify “short list” candidates for further analysis
 - Utilize proposed economic advisor to evaluate financial feasibility of top candidate programs



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Outreach Strategy Details

Outreach Strategy Overview

- Initial outreach efforts should focus on (in recommended priority order):
 - Articulating Jordan's value proposition for solar companies
 - Developing "cluster profile" materials which include:
 - Value proposition for solar companies
 - Contact information
 - Taxes and incentives
 - Real estate opportunities
 - Costs and conditions information
 - Devoting space on Jordan's primary business attraction website(s) to solar
 - Attending solar industry group conferences and trade fairs to:
 - Keep apprised of latest industry trends and technologies
 - Understand how competing locations are marketing themselves
 - Help put Jordan "on the map" for solar investment
 - Develop relationships with executives at global solar companies
 - Contacting executives at resident Jordanian solar companies to discuss what initiatives would help them thrive/expand in the region
 - Contacting executives at global solar companies to discuss Jordan as a potential location option (results of company targeting analysis included in appendix)
 - Marketing in targeted solar industry trade publications



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Jordan's Value Proposition for Solar

- Jordan's value proposition for solar manufacturers can highlight many strengths identified herein...
 - Relatively low operating cost environment (corporate income tax rate, labor rates, etc.)
 - Well-rated electric (and overall) infrastructure
 - Good irradiance (lots of sun!)
 - Abundant engineering talent
 - Attractive expat environment (Amman)
 - Favorable business climate (for certain measures, such as employment regulations, tax environment, etc.)
 - Strong English language capabilities (particularly among MENA countries)
 - Relatively low natural disaster risk
 - Higher unemployment rates (suggesting availability of direct labor)
- Plus additional attributes...
 - 100% foreign ownership (advantage compared with certain regional competitors)
 - Central location within MENA region



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Key Solar Conferences for Consideration

Conference Name	Comments / Link	Location of Next Event	Date of Next Event
Solar Power International	Largest solar expo in the US, with over ~23,000 attendees and 750 exhibitors in 2009. Exhibit sales for 2010 event will open in March. 2009 attendee list (by company) available on expo website. http://www.solarpowerinternational.com/	Los Angeles, USA	October 12-14, 2010
European Photovoltaic Solar Energy Conference and Exhibition	4,300 conference registrants and 44,000 total attendees at 2009 event. Focuses on scientific, industry, and policy issues related to PV http://www.europhotovoltaic-conference.com/	Valencia, Spain	September 6-9, 2010
Intersolar	Hosts events in Europe, Asia, and N. America. European event in 2009 included over 1,500 exhibitors and 60,000 attendees http://www.intersolar.de/index.php?id=1&L=1	Munich, Germany San Francisco, USA Shanghai, China	June 9-11, 2010 July 13-15, 2010 March 16-18, 2010
MENASOL 2010	2 nd year for MENASOL conference. Appears more focused on generation/policy than on new technologies and specific company exhibitions http://www.solarpanels.com/event/menasol-2010-2nd-north-africa-and-middle-east-en	Cairo, Egypt	May 4-5, 2010



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Key Solar Conferences for Consideration

Conference Name	Comments / Link	Location of Next Event	Date of Next Event
World Renewable Energy Congress XI and Exhibition 2010	2010 conference is focused on Green Buildings and Renewable Energy Options. Conference is not exclusively focused on solar, though solar will play a prominent role http://www.wereweb.co.uk/werecxi.html	Abu Dhabi, UAE	September 25-30, 2010
Photon Expo – Photovoltaic Technology Show 2010	6 th year for the conference. Includes specific sub-agendas for inverters, PV production, utilities, investors, and other interests http://www.photon-expo.com/en/pts_2010_europe/pts_2010_showinfo.htm	Stuttgart, GER	April 27-29, 2010
POWER-GEN Asia	Co-located with Renewable Energy World 2010 conference; 2 nd year of conference; projected attendance of ~7,000 http://www.powergenasia.com/index.html	Singapore	November 2-4, 2010

A link to additional global solar exhibitions and conferences can be found at: <http://www.enf.cn/expo/>



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Key Solar Industry Publications

- Several leading solar publications offer the opportunity to stay current on industry trends and technologies – and are potential outlets to advertise Jordan as a destination for solar investment

Publication	Comments / Link
PHOTON International	Free newsletter available online. Annual magazine subscription price of €214 per year for 12 issues http://www.photon-magazine.com/
Solar Industry Magazine	Only available in print (subscription is free) http://www.solarindustrymag.com/page.php?2
PhotovoltaicsWorld	Part of Renewable EnergyWorld family of magazines. Free subscription (electronic copies only outside of United States). http://www.renewableenergyworld.com/realmagazine
Solar Today	Publication of the American Solar Energy Society (ASES). Geared towards U.S. readers, but contains information on latest technologies, policies, etc. which apply globally. http://www.ases.org/index.php?option=com_content&view=article&id=14&Itemid=22



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Trade Associations and Other Information Sources

Publication	Comments / Link
Solarbuzz	Online repository for research reports, industry news, trends, and specific company listings. Offers free subscription to weekly newsletter, as well as paid access to several reports. http://www.solarbuzz.com/
European Photovoltaic Industry Association (EPIA)	Membership appears restricted to PV companies (over 200 industry leaders) however access to industry news, reports, and other information is available on the EPIA website. http://www.epia.org/
Solar Energy Industries Association (SEIA)	Primarily focused on U.S. issues, but contains information on policy, technology, and specific companies of interest. http://www.seia.org/
European Solar Thermal Electricity Association (ESTELA)	Website offers free industry reports, information on member companies, and listing of upcoming events. http://www.estelasolar.eu/



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Company Targeting Objectives

The company targeting process is:

- A method to prioritize companies for focused outreach efforts
- A common tactic among investment promotion organizations worldwide
- Designed to identify companies more likely to be "location active" in deploying new facilities
- Based on research, trends, analysis, and industry experience
- A logical starting point for Jordan's efforts to attract solar-related FDI

The process is not:

- Resulting in a list of companies that have been contacted / pre-qualified for interest in Jordan
- A guarantee that the identified companies will be receptive to Jordan's outreach efforts

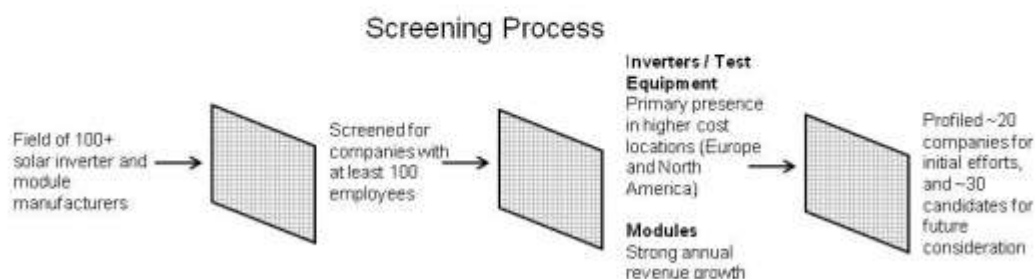


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Company Targeting Process

- From the hundreds of global companies in the solar industry, we selected approximately 50 companies which could be potential targets for Jordan. Factors considered when identifying the representative targets include:
 - Current facility footprint
 - Financials (revenue and profit growth)
 - Recent company activities / initiatives (consolidation, cost reduction, etc.)



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Advanced Energy Industries, Inc.

Solar Inverters

Factor	Key Considerations
Company Background	Advanced Energy Industries, Inc. designs, manufactures, sells and supports industrial power conversion products that transform power into various usable forms. The Company's products enable manufacturing processes that use thin-film deposition for various products, such as semiconductor devices, flat panel displays, solar panels and architectural glass, as well as grid-tie power conversion in the solar market.
Current Growth and Profitability	Advanced Energy Industries, Inc.'s revenues decreased 1.5% to \$66M. Losses were primarily attributed to decreased sales in semiconductor division, with significant sales growth in solar division.
Current Suppliers	Primary components include coils, housings, printed circuit boards, wiring.
Current Customers	AE creates solutions aimed at maximizing process impact, improving productivity, and lowering cost of ownership for its customers, including original equipment manufacturers (OEMs) and end users around the world.
Current Global Footprint	<ul style="list-style-type: none"> ■ Sales offices throughout North America, Europe, and Asia ■ Manufacturing operations in Shenzhen, China and USA
Current Presence in MENA Region	<ul style="list-style-type: none"> ■ Limited, regional sales in Turkey and Europe
Recent Location Activity	<ul style="list-style-type: none"> ■ December 2008, opened new 45,000 facility dedicated to solar inverter production, Colorado, USA
Important Company Contacts	<ul style="list-style-type: none"> ■ Hans Betz, CEO - hans.betz@aeti.com ■ Yurval Wasserman, President and COO - yurval.wasserman@aeti.com ■ Lawrence D. Firestone, CFO - lawrence.firestone@aeti.com ■ www.advanced-energy.com
Jordan's Potential Messaging and Value Proposition	If considering a new manufacturing or service center in the Middle East, Jordan offers a more abundant, educated, and captive labor force compared with most locations (including UAE).
Potential Obstacles for Jordan to Overcome	<ul style="list-style-type: none"> ■ China is currently viewed as low cost manufacturing location for company, Jordan would need to demonstrate ability to provide low cost technically skilled opportunity ■ Middle East sales volumes may not justify new operations in the near future



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Ballard

Solar Inverters

Factor	Key Considerations
Company Background	Ballard has traditionally focused on battery technologies for the auto industry but has recently introduced its 30kW EcoStar(TM) power converter specifically designed for photovoltaic markets.
Current Growth and Profitability	2008 revenue of \$60M down from \$65M in 2007.
Current Suppliers	Primary components include coils, housings, printed circuit boards, wiring.
Current Customers	Photovoltaic manufacturers, distributors, and installer.
Current Global Footprint	<ul style="list-style-type: none"> ■ Burnaby, BC, Canada- Headquarters and manufacturing ■ Lowell, MA, USA- Manufacturing and R&D
Current Presence in MENA Region	<ul style="list-style-type: none"> ■ None
Recent Location Activity	<ul style="list-style-type: none"> ■ Primary growth has been through acquisitions in Europe.
Important Company Contacts	<ul style="list-style-type: none"> ■ John Shendan, CEO - john.shendan@ballard.com ■ Paul Cass, VP Operations - paul.cass@ballard.com ■ Bruce Cousins, CFO - bruce.cousins@ballard.com ■ http://www.ballard.com
Jordan's Potential Messaging and Value Proposition	<ul style="list-style-type: none"> ■ Ballard manufacturing operations are currently located in high cost locations. ■ As Ballard grows its solar business, it should consider lower cost manufacturing options for higher volume production.
Potential Obstacles for Jordan to Overcome	<ul style="list-style-type: none"> ■ Jordan is not currently recognized as a destination for technology manufacturing ■ Middle East sales volumes may not justify new operations in the near future



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Fronius Solar

Solar Inverters

Factor	Key Considerations
Company Background	Fronius has been engaged in solar electronics since 1992, in particular in the development and production of grid-connected photovoltaic inverters and components for professional system monitoring.
Current Growth and Profitability	Limited financial data publicly available, though Fronius has shown significant growth in its Solar business
Current Suppliers	Primary components include coils, housings, printed circuit boards, wiring
Current Customers	Photovoltaic manufacturers, distributors, and installer
Current Global Footprint	Production Sites <ul style="list-style-type: none"> ■ Austria: Sattledt, Pettenbach, Weis ■ Czech Republic: Krumlov ■ Ukraine: Kiev
Current Presence in MENA Region	■ None
Recent Location Activity	<ul style="list-style-type: none"> ■ Currently ongoing expansions at Weis distribution center and Thalheim, Germany R&D center ■ Production facility opened in Sattledt, Austria
Important Company Contacts	<ul style="list-style-type: none"> ■ Elisabeth Engelbrecht-Müller-Straub, VP Finance - straub.elisabeth@fronius.com ■ Klaus Fronius, VP Manufacturing - fronius.klaus@fronius.com ■ http://www.fronius.com
Jordan's Potential Messaging and Value Proposition	As a European based company with a strong history in the market, Jordan offer an opportunity to enter the growing Mid East Solar market
Potential Obstacles for Jordan to Overcome	<ul style="list-style-type: none"> ■ Jordan is not currently recognized as a destination for technology manufacturing ■ Middle East sales volumes may not justify new operations in the near future



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SMA Solar Technology AG

Solar Inverters

Factor	Key Considerations
Company Background	World's largest producer of solar inverters and monitoring systems for photovoltaic applications. Products range from utility-scale inverters (> 1MW) to small residential and commercial-scale applications of < 2kW. SMA employs approximately 4,000 people worldwide. The company became public in 2008 and is traded on the German stock exchange.
Current Growth and Profitability	2009 revenues were ~€ 680 million, a jump of over 100% from 2007
Current Suppliers	Primary components include coils, housings, printed circuit boards, wiring
Current Customers	Primary customers are small to mid-size residential and commercial installers of PV solar systems. SMA also sells to utilities who are installing large-scale solar farms
Current Global Footprint	<ul style="list-style-type: none"> ■ Niestetal, Germany (Headquarters, manufacturing, R&D) ■ Denver, USA (manufacturing) ■ 13 global service operations
Current Presence in MENA Region	<ul style="list-style-type: none"> ■ MENA service center located in United Arab Emirates
Recent Location Activity	<ul style="list-style-type: none"> ■ Opened new production facility in Niestetal, Germany, 2009 ■ Announced deployment of largest U.S. inverter production facility in Denver, CO, 2009 ■ Acquired Dutch-based OKE-Services to enhance position in the micro-inverter market, 2009 ■ Announced partnership with Pure Energies to distribute inverters to the growing market of Ontario, CA
Important Company Contacts	<ul style="list-style-type: none"> ■ Günther Cramer, CEO - guenther.cramer@sma.de ■ Pierre-Pascal Urban, CFO - pierre.urban@sma.de ■ Peter Drews, Chief Operating Officer - peter.drews@sma.de ■ Marko Werner, Chief Sales Officer - marko.werner@sma.de ■ www.sma.de/en.html
Jordan's Potential Messaging and Value Proposition	If considering a new manufacturing or service center in the Middle East, Jordan offers a more abundant, educated, and captive labor force compared with most locations (including UAE)
Potential Obstacles for Jordan to Overcome	<ul style="list-style-type: none"> ■ United Arab Emirates is home to SMA's sole facility in the MENA region ■ Middle East sales volumes may not justify new operations in the near future



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Centrosolar AG

Solar Inverters

Factor	Key Considerations
Company Background	CENTROSOLAR Group AG, Munich, is a listed photovoltaics business focusing on roof-mounted systems. Its core business is plug-and-play integrated systems for private houses. Centrosolar manufactures inverters under brand name Solarstoc.
Current Growth and Profitability	\$460 M in annual sales represents a 50% annual growth along with 700% employee growth to 800
Current Suppliers	Primary components include coils, housings, printed circuit boards, wiring
Current Customers	Focused on turnkey solutions for residences
Current Global Footprint	■ Manufacturing operations are primarily in Germany with subsidiary locations in Greece, France, The Netherlands, Spain, Switzerland, and USA
Current Presence in MENA Region	■ None
Recent Location Activity	■ October 2009, Germany Glass operations reach full capacity ■ December 2008, Solar module facility announced in Weis, Germany
Important Company Contacts	■ Dr. Alexander Kirsch, CEO and CFO - alexander.kirsch@centrosolar.com ■ Dr. Axel Müller-Groeling, Director of strategy and Operations - axel.groeling@centrosolar.com ■ www.centrosolar.com
Jordan's Potential Messaging and Value Proposition	If considering a new manufacturing or service center in the Middle East, Jordan offers a more abundant, educated, and captive labor force compared with most locations (including UAE)
Potential Obstacles for Jordan to Overcome	■ Jordan is not currently recognized as a destination for technology manufacturing ■ Middle East sales volumes may not justify new operations in the near future



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Solar Inverters

Other Potential Locationally-Active Companies

Company	HQ Address	Sales/ 1 Year Growth %	Number of Employees	Contact
Go Power! Electric Inc.	PO Box 6033, Victoria BC V8P 5L4, Canada	\$50M / (17%)	150	CFO: Roland Sartorius
Ingeteam, S.A.	Pintor Maeztu, 2 E-31008 Pamplona, Spain	\$569 M	125	Marketing Director: Eduardo Urturi
Magnetek, Inc.	N49 W13650 Campbell Drive, Menomonee Falls, WI, USA	\$98 M	191	CFO: Marty J. Schwenner
Mastervolt Solar BV	Snijdersbergweg 93, Amsterdam, The Netherlands 1105 AN	\$63 M	115	Finance Manager: J. Hof
Omnion (part of S&C Electric Co)	2010 Energy Drive, PO Box 879, East Troy, Wisconsin, 53120, USA	\$540 M S&C	2,400 S&C	CFO S&C: Stan Slabas
Phoenixtec Power Co Ltd (sub of Eaton Corp)	Eaton Ctr. 1111 Superior Ave. Cleveland, OH 44114 USA	\$11.5 B / (20%) Eaton	75,000 Eaton	CFO/ Chief Planning Officer: Richard H. Fearon
PV Powered	20720 Brinson Blvd, Bend, OR 97701, USA	NA/ 500% growth over 3 years	100	CFO: Roger C. Laubscher
Outback Power Systems	6115 192nd St NE, Arlington, WA	\$19 M	105	CEO: Stephen Humphreys
Power-One, Inc.	740 Calle Plano, Camarillo, California, USA	\$537 M/ 5%	4,500	SVP Finance: Linda C. Heller



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Other Potential Locationally-Active Companies

Company	HQ Address	Sales/ 1 Year Growth %	Number of Employees	Contact
SatCon Technology Corporation	27 Drydock Avenue, Drydock, Massachusetts, USA	\$62 M / 49%	210	GM EMEA: Peter Deege
Sharp Corporation (Photovoltaics Division)	282-1 Hajikami, Shinjo-cho, Kita-Katsuragi-gun, Nara Prefecture 638-2196, Japan	\$29 B/ (15%) Sharp Corp	55,000 Sharp Corp	Group General Manager Solar Systems Group Tetsuroh Muramatsu
Siemens AG	Wittelsbacherplatz 2D-80333 Munich, Germany	\$111 B/ (0.1%)	400,000	CEO, Renewable Energy Division: René Umlauf
Steca GmbH	Mammstrasse 1, D 87700 Memmingen, Germany	\$62 M	600	N/A
Sunways AG	Macairestrasse 3-5, Konstanz, Germany	\$385 M/ 22%	330	COO: Joerg Von Strom
Xantrex Technology Inc.	8999 Nelson Way, Burnaby, Canada	\$230 M	250	VP Wind and Solar: Bernd Kohlstruck



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3S Industries AG

Factor	Key Considerations
Company Background	The solar concern 3S with its holding company 3S Industries AG and its subsidiaries Somont, 3S Swiss Solar Systems and Pasion, is the world's market leader for production equipment for the manufacture of solar modules. The Group covers the entire value-creation chain of solar module production and combines the key competences in the fields of soldering, laminating and testing under a single roof.
Current Growth and Profitability	2008 sales of \$300 M representing 300% growth. Total revenue reflects an increase in demand for the Company's products and services.
Current Suppliers	Glass, solar cell, encapsulate, frame (generally aluminum). Additional components may include batteries, inverters, and circuit breakers.
Current Customers	Solar module manufacturers, solar array installers for home and commercial use.
Current Global Footprint	<ul style="list-style-type: none"> ■ HQ and manufacturing: Lyss, Switzerland; ■ Manufacturing: Umkirch, Germany ■ Sales: USA, Singapore, Hong Kong, and China
Current Presence in MENA Region	■ None
Recent Location Activity	■ Sales offices recently opened in USA, Singapore, Hong Kong, and China.
Important Company Contacts	<ul style="list-style-type: none"> ■ Dr. Patrick Hofer-Noser, CEO - patrick.noser@3-s.com ■ Philipp Flückiger, CFO - philipp.flueckiger@3-s.com ■ Sylvère Leu, COO - sylv@leu@3-s.com ■ www.3-s.com
Jordan's Potential Messaging and Value Proposition	With significant recent growth 3S Industries should seek to expand and diversify their manufacturing base. Jordan offers access to the growing Middle East solar industry at a lower cost base than neighboring countries.
Potential Obstacles for Jordan to Overcome	■ Middle East sales volumes may not justify MENA operations in the near future.



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First Solar

Solar Modules

Factor	Key Considerations
Company Background	First Solar, Inc. designs and manufactures solar modules using a thin film semiconductor technology. First Solar claims to maintain the lowest manufacturing cost in the industry and was the first company to break the \$1/watt price barrier.
Current Growth and Profitability	For the nine months ended 26 September 2009, First Solar, Inc. revenues increased 75% to \$1.42B. Net income totaled \$498.5M, up from \$215.6M. Revenues reflect a rise in income due to MW volume of solar modules sold.
Current Suppliers	Glass, solar cell, encapsulate, frame (generally aluminum). Additional components may include batteries, inverters, and circuit breakers.
Current Customers	First Solar focuses sales on large scale energy producers and Independent Power Producers (IPPs).
Current Global Footprint	<ul style="list-style-type: none"> ■ HQ: Tempe, AZ, USA ■ Manufacturing: Perrysburg, OH, USA; Kulim, Malaysia
Current Presence in MENA Region	<ul style="list-style-type: none"> ■ None
Recent Location Activity	<ul style="list-style-type: none"> ■ Addition of 8 production lines in Malaysia, December 2009 ■ JV with EDF Energies Nouvelles and French government for solar manufacturing plant in France, July 2009
Important Company Contacts	<ul style="list-style-type: none"> ■ Bruce Sohn, President - bsohn@firstsolar.com ■ Jens Meyerhoff, CFO - jmeyerhoff@firstsolar.com ■ www.firstsolar.com
Jordan's Potential Messaging and Value Proposition	First Solar has enjoyed tremendous growth as a premier thin film module manufacturer. Jordan offers a Mid East deployment opportunity to capitalize on the growing regional market.
Potential Obstacles for Jordan to Overcome	<ul style="list-style-type: none"> ■ Middle East sales volumes may not justify MENA operations in the near future



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Solar-Fabrik AG

Solar Modules

Factor	Key Considerations
Company Background	Solar-Fabrik AG is a Germany-based company engaged in the photovoltaics industry. It is structured into four business fields: wafers, wafer preparation, solar cell production and solar power systems. The Company develops, manufactures, markets and sells solar modules and system, as well as various technical products and components used to exploit and convert solar energy.
Current Growth and Profitability	For 2008 Solar Fabrik reported over \$300 M in revenues representing 60% annual growth.
Current Suppliers	Glass, solar cell, encapsulate, frame (generally aluminum). Additional components may include batteries, inverters, and circuit breakers.
Current Customers	Wide range of clients including: Independent Power Producers, large scale energy producers, and resident based applications.
Current Global Footprint	<ul style="list-style-type: none"> ■ Headquarters and three manufacturing facilities in Breisgau, Germany ■ Subsidiary solar cell manufacturer, Solar Energy Power Pte. Ltd. (SEPP), Singapore
Current Presence in MENA Region	<ul style="list-style-type: none"> ■ None
Recent Location Activity	<ul style="list-style-type: none"> ■ Opened 3rd manufacturing facility in Germany, Early 2009
Important Company Contacts	<ul style="list-style-type: none"> ■ G�nter Weinberger, CEO - g.weinberger@solar-fabrik.de ■ Martin Friedrich, CFO - m.friedrich@solar-fabrik.de ■ Martin Schlenk, COO - m.schlenk@solar-fabrik.de ■ www.solar-fabrik.de
Jordan's Potential Messaging and Value Proposition	Solar Fabrik is one of the largest solar module manufacturers and should consider the Mid East as a potential market growth region. Jordan offers a Mid East deployment opportunity to capitalize on the potential growth of the regional market.
Potential Obstacles for Jordan to Overcome	<ul style="list-style-type: none"> ■ Middle East sales volumes may not justify MENA operations in the near future



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Evergreen Solar Inc.

Solar Modules

Factor	Key Considerations
Company Background	Evergreen Solar, Inc. develops, manufactures and markets solar power products enabled by its String Ribbon technology. The Company manufactures and markets solar power products, including solar cells, panels and systems. It markets and sells all solar panels manufactured by Sovello under the Evergreen Solar brand, as well as manages customer relationships and contracts.
Current Growth and Profitability	For the nine months ended 3 October 2009, Evergreen Solar, Inc.'s revenues totaled \$197.3M, up from \$67.9M. Net loss totaled \$167.1M, up from \$33.6M. Revenues reflect a significant increase in Product income.
Current Suppliers	Glass, solar cell, encapsulate, frame (generally aluminum). Additional components may include batteries, inverters, and circuit breakers.
Current Customers	Commercial scale customers including large scale energy producers and Independent Power Producers (IPPs)
Current Global Footprint	<ul style="list-style-type: none"> ■ HQ: Marlboro, MA, USA ■ Manufacturing: Devens, MA, USA; Midland, MI, USA; Bitterfeld-Wolfen, Germany
Current Presence in MENA Region	■ None
Recent Location Activity	<ul style="list-style-type: none"> ■ The Company ceased its manufacturing operations in Marlboro, Massachusetts, on December 31, 2008 citing high operating costs
Important Company Contacts	<ul style="list-style-type: none"> ■ Richard M. Feldt, CEO - rfeldt@evergreensolar.com ■ Richard G. Chlebowski, VP of Strategy and Business Development - rchlebowski@evergreensolar.com ■ Carl Stegerwald, VP - Construction Management and Facilities Engineering - cstegerwald@evergreensolar.com ■ www.evergreensolar.com
Jordan's Potential Messaging and Value Proposition	Jordan offers a Mid East deployment opportunity to capitalize on the growing regional market.
Potential Obstacles for Jordan to Overcome	■ Middle East sales volumes may not justify MENA operations in the near future



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Q-Cells SE

Solar Modules

Factor	Key Considerations
Company Background	Q-Cells' core business is the development, production and sale of mono- and polycrystalline, silicon-based solar cells. Its core business segment Solar Cell Production includes monocrystalline cells, comprising Q6M and Q6LM; and polycrystalline cells such as Q5, Q6, Q6LTT, Q6LTT3 and Q6LEP3, among others. The Company also offers a range of thin film modules and is engaged in Project Business. It is also engaged in the research and development activities.
Current Growth and Profitability	For the nine months ended 30 September 2009, Q-Cells SE's total revenue decreased 35% to EUR623.6M. Net loss from continuing operations totaled EUR344.2M, vs. a profit of EUR122.7M. Total revenue reflects a decrease in demand for the Company's products and services in all geographic segments with exception of Germany. Net loss from continuing operations reflects increased personnel expenses and depreciation charges.
Current Suppliers	Glass, solar cell, encapsulate, frame (generally aluminum). Additional components may include batteries, inverters, and circuit breakers.
Current Customers	Wide range of clients including: commercial applications, Independent Power Producers, and large scale energy producers.
Current Global Footprint	<ul style="list-style-type: none"> ■ HQ and manufacturing: Germany ■ Cell and module manufacturing: Malaysia
Current Presence in MENA Region	■ None
Recent Location Activity	<ul style="list-style-type: none"> ■ Malaysia facility opened, 2009 ■ Announcement of Mexico module manufacturing facility investment, 2008 ■ Additional line added in Germany, 2008
Important Company Contacts	<ul style="list-style-type: none"> ■ Anton Milner, CEO - a.milner@q-cells.com ■ Dr. Nedim Can, CFO - n.can@q-cells.com ■ www.q-cells.de
Jordan's Potential Messaging and Value Proposition	Jordan offers a Mid East deployment opportunity to capitalize on the growing regional market.
Potential Obstacles for Jordan to Overcome	■ Middle East sales volumes may not justify MENA operations in the near future



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Canadian Solar Inc.

Solar Modules

Factor	Key Considerations
Company Background	Canadian Solar Inc. (CSI) designs, develops, manufactures and sells solar cell and module products that convert sunlight into electricity for a variety of uses. Its products include a range of standard and specialty solar modules built for use in a range of residential, commercial and industrial solar power generation systems. It sells its products under its Canadian Solar brand name and to original equipment manufacturing customers under their brand names.
Current Growth and Profitability	For the nine months ended 30 September 2009, Canadian Solar Inc.'s revenues decreased 41% to \$376.8M. Net income decreased 8% to \$38.2M. Revenues reflect decreased sales from Europe segment and lower income from Asia segment. Net income also reflects a decrease in gross profit margin, an increase in research & development expenses, a rise in selling expenses and the absence of gain on debt extinguishments.
Current Suppliers	Glass, solar cell, encapsulate, frame (generally aluminum). Additional components may include batteries, inverters, and circuit breakers.
Current Customers	Solar project developers, solar power system integrators and installers, commercial property owners, independent power producers and utility leaders across 24 countries including Canada, China, Germany, Japan, Spain, and the US.
Current Global Footprint	<ul style="list-style-type: none"> ■ HQ: Ontario, Canada ■ Manufacturing: 7 facilities in Suzhou and throughout China ■ Other facilities: Germany, Italy, Japan, Korea and USA
Current Presence in MENA Region	■ None
Recent Location Activity	<ul style="list-style-type: none"> ■ Announced joint venture with Japan-based West Holding, to distribute residential solar systems ■ Announced intent to build a solar panel manufacturing facility in Ontario, Canada, 2009 ■ CSI Cells Co., Ltd., a cell manufacturing subsidiary, opened in Suzhou, China, 2007
Important Company Contacts	<ul style="list-style-type: none"> ■ Shawn Gu, CEO ■ Bencheng Li, VP Business Development, China - bencheng.li@canadian-solar.com ■ Xiaohu Wang, VP Ingot and Wafer Operations - xiaohu.wang@canadian-solar.com ■ www.canadian-solar.com
Jordan's Potential Messaging and Value Proposition	
Potential Obstacles for Jordan to Overcome	



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Shenzhen Topraysolar

Solar Modules

Factor	Key Considerations
Company Background	Shenzhen Topraysolar Co., Ltd. is a China-based company engaged in manufacture and sale of solar cells and accessories of solar products. The Company's major products include non-crystalline silicon solar cell chips and modules, mono-crystalline silicon solar cell chips and modules, multi-crystalline silicon solar cell chips and modules, as well as solar cell application products, among others.
Current Growth and Profitability	For the nine months ended 30 September 2009, Shenzhen Topraysolar Co., Ltd.'s revenues decreased 18% to \$23.1M. The Company's net income decreased 53% to \$3.76M. Revenues reflect a decrease in the sales volume due to unfavorable market demand. Net income also suffered from lower gross profit margin, higher general & administrative expense, as well as decreased non-operating income.
Current Suppliers	Glass, solar cell, encapsulate, frame (generally aluminum). Additional components may include batteries, inverters, and circuit breakers.
Current Customers	Solar power generation systems manufacturing companies in China and overseas markets, such as Europe, the Americas, Australia and other Asian countries.
Current Global Footprint	■ HQ and manufacturing: Shenzhen, China
Current Presence in MENA Region	■ None
Recent Location Activity	■ None
Important Company Contacts	<ul style="list-style-type: none"> ■ Wukui Chen, Chairman of the Board - wukui.chen@topraysolar.com ■ Hao Chen, Deputy General - haochen@topraysolar.com ■ Ying Ren, Director - yingren@topraysolar.com ■ Marketing Director - Franklin@topraysolar.com General Manager - Lisali@topraysolar.com ■ www.topraysolar.com Tel: +86-755-29680281
Jordan's Potential Messaging and Value Proposition	
Potential Obstacles for Jordan to Overcome	



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Solarfun Power Holdings

Solar Modules

Factor	Key Considerations
Company Background	Solarfun Power Holdings Co., Ltd. is a manufacturer of silicon ingots, photovoltaic (PV) cells and PV modules in China. The Company manufactures a variety of silicon ingots, PV cells and PV modules. The Company also provides PV cell processing services and PV module processing services. The Company conducts its business in China through its operating subsidiary, Linwang China.
Current Growth and Profitability	For the nine months ended 30 September 2009, Solarfun Power Holdings Co. Ltd.'s revenues decreased 34% to \$364M. Net loss totaled \$22.4M, vs. an income of \$19.9M. Revenues reflect a decrease in photovoltaic modules revenue and lower photovoltaic cells revenue. Net loss reflect increased general & administrative expenses, higher interest expenses, lower interest income and decreased other income.
Current Suppliers	Glass, solar cell, encapsulate, frame (generally aluminum). Additional components may include batteries, inverters, and circuit breakers.
Current Customers	Over 40 systems integrators, third party distributors, and other customers in Germany, Spain and Italy, as well as several other European countries.
Current Global Footprint	<ul style="list-style-type: none"> ■ HQ and manufacturing: Qidong, China ■ Sales and support offices: Shanghai, China; Torrance, CA, USA; Seoul, Korea; Barcelona, Spain; Ismaning, Germany; Sydney, Australia
Current Presence in MENA Region	■ None
Recent Location Activity	<ul style="list-style-type: none"> ■ Established Solarfun Power Deutschland GmbH, 2008
Important Company Contacts	<ul style="list-style-type: none"> ■ Yonghua Lu, Chairman - yonghua.lu@solarfun-power.com ■ Ping (Peter) Xie, President - ping.xie@solarfun-power.com ■ Andreas Liebheit, Managing Director EMEA - andreas.liebheit@solarfun-power.com ■ www.solarfun.cn
Jordan's Potential Messaging and Value Proposition	
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Trina Solar Limited

Solar Modules

Factor	Key Considerations
Company Background	Trina Solar Limited is an integrated solar-power products manufacturer based in China. The Company produce monocrystalline photovoltaic (PV) modules ranging from 165 watts to 230 watts in power output and multicrystalline PV modules ranging from 210 watts to 230 watts in power output. The PV modules are built to general specifications, as well as to the customers' and end-users' specifications.
Current Growth and Profitability	For the twelve months ended 31 December 2009, Trina Solar's revenues increased 175.6% to \$631.9M. Net income increased 179.8% to \$100.0M.
Current Suppliers	Glass, solar cell, encapsulate, frame (generally aluminum), polysilicon. Additional components may include batteries, inverters, and circuit breakers.
Current Customers	Products are sold to distributors, wholesalers and PV system integrators globally, including in a number of European countries, such as Germany, Spain and Italy.
Current Global Footprint	<ul style="list-style-type: none"> ■ HQ and manufacturing: Jiangsu, China
Current Presence in MENA Region	■ None
Recent Location Activity	<ul style="list-style-type: none"> ■ Announced the planned establishment of a warehouse operation in CA, USA, 2009 ■ Completed solar cell plant, 2007
Important Company Contacts	<ul style="list-style-type: none"> ■ Jifan Gao, CEO - jifan.gao@trinasolar.com ■ Yu Zhu, VP Procurement & Business Development - yu.zhu@trinasolar.com ■ Chen Chung Yu, VP of Manufacturing - chen.cyu@trinasolar.com ■ www.trinasolar.com
Jordan's Potential Messaging and Value Proposition	
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Other Potential Locationally-Active Solar Module Companies

Company	HQ Address	Sales/ 1 Year Growth %	Number of Employees	Contact
Aleo Solar AG	Gewerbegebiet Nord, Prenzlau, Germany	\$530 M/ 48%	750	CEO: Jakobus Smit; CFO: Uwe Bögershausen
Conergy AG	Anckelmannsplatz 1, Hamburg, Germany	\$1.52 B/ 42%	1,642	CEO: Dieter Ammer COO: Andreas Von Zitzewitz
Dastek Co., Ltd.	204-4, Chugye-Ri, Yongin, Kyeonggi-Do, South Korea	\$17.4 M/ 91%	416	CEO: Hyeong Jae Hwang
Girasolar, Inc.	173 Parkland Plaza, Ann Arbor, Michigan, USA	\$56 M	+250 (including subsidiaries)	CEO: Peter Klamka
Johanna Solar Technology GmbH (sub of Robert Bosch)	Muenstersche Strasse 24, Brandenburg, Germany	NA	100	Managing Director: Gerhard Bookjans
Kyocera Corporation	6 Takeda Tobadono-cho, Fushimi Ku, Japan	\$11 B/ (12%)	54,000	Chief Director of Overseas Production Planning: Takashi Okuda
SolarEnerTech Corp.	1600 Adams Drive, Menlo Park, CA, USA	\$32 M/ 11%	320	CEO: Leo Shi Young
Solar Power Inc	4080 Cavitt Stallman Road, Granite Bay, CA	\$ 47 M/ 160%	230	President: Eric Hafler



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Other Potential Locationally-Active Solar Module Companies

Company	HQ Address	Sales/ 1 Year Growth %	Number of Employees	Contact
Solartron Public Company Limited	1000/65-67, P.B. Tower, Bangkok, Thailand	\$13.1 M/ 285%	147	Manager of Production: Natkanet Raminchatkhum
Solarwatt AG	Maria-Reiche-Str 2a 01109 Dresden, Sachsen Germany	\$297 M	450	CEO: Frank Schneider
SolarWorld AG	Martin-Luther-King-Str. 24, Bonn, Germany	\$1.3 B/ 24%	1,900	COO: Boris Klebensberger
SOLON Photovoltaik GmbH	Am Studio 160-12489 Berlin, Germany	\$1.1 B/ 55%	840	CFO: Simone Prüfer
Suntech Power Holdings Co., Ltd.	17-6 Changjiang South Road, Wuxi, China	\$1.92 B/ 43%	6,784	CEO: Zhengrong Shi CSO: Steven (Steve) Chan
Sunways AG	Macairestrasse 3-5, Konstanz, Germany	\$385 M/ 22%	330	COO: Joerg Von Strom
Voltavis AG	Sumpfstrasse 32, Zug, Switzerland	NA	NA	CEO: Dr. Holger Kufner
Webset Energy Systems Limited	Plot No. NI, Kolkata, India	\$32M/ 42%	300	Managing Director: S. Agrawal



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GT Solar

Solar Testing Equipment

Factor	Key Considerations
Company Background	GT Solar International, Inc. operates through two segments: photovoltaic and polysilicon. Through its subsidiaries, the company is a provider of specialized manufacturing equipment and services essential for the production of photovoltaic wafers, cells and modules and polysilicon. Its principal products are directional solidification systems (DSS) units, and chemical vapor deposition (CVD) reactors and related equipment.
Current Growth and Profitability	For the nine months ended 26 December 2009, GT Solar International, Inc.'s revenues decreased 13% to \$349.6M. Net income decreased 29% to \$54M. Revenues reflect a decrease in income from sales. Net income also reflects a decrease in the gross profit margins, higher amortization of intangibles, an increase in research & development expenses, higher interest expense, an increase in general & administrative expenses and a decrease in interest income.
Current Suppliers	Components may include electrical and electronics, optics, lamps, mechanical, and contacting parts.
Current Customers	Several of the world's largest solar companies, as well as companies in the chemical industry.
Current Global Footprint	<ul style="list-style-type: none"> HQ and manufacturing: Marmack, NH, USA Other locations: Missoula, MT, USA; Beijing & Shanghai, China; Taiwan
Current Presence in MENA Region	None
Recent Location Activity	<ul style="list-style-type: none"> Expanded photovoltaic equipment manufacturing facility and corporate headquarters, nearly doubling manufacturing capacity, 2008
Important Company Contacts	<ul style="list-style-type: none"> Thomas Gutierrez, President, CEO, Director - thomas.gutierrez@gtosolar.com Rick Tattersfield, VP - Global Operations- Manufacturing- Logistics- Supply Chain & Quality - rick.tattersfield@gtosolar.com David C. Gray, VP - Strategic Development- david.gray@gtosolar.com www.gtosolar.com Tel: 603-883-5200
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Chroma Ate Inc.

Solar Testing Equipment

Factor	Key Considerations
Company Background	Chroma Ate Inc. is principally engaged in the manufacture and sale of precision electronics testing instruments and automatic testing system (ATS) products. The Company mainly provides photovoltaic test solutions, semiconductor integrated circuit (IC) test solutions, light emitting diode (LED) test solutions, liquid crystal display (LCD) lighting control module (LCM) test solutions, video and color test solutions, automated optical inspection, power electronics test solutions, passive component test solutions, electrical safety test solutions, general purpose instruments and manufacturing execution systems (MES), among others.
Current Growth and Profitability	For the nine months ended 30 September 2009, Chroma Ate Inc.'s total revenues decreased 24% to NT\$7.72B. Net income dropped 52% to NT\$221.2M. Total revenues reflect a decline in sales due to weaker market demand and intensive market competition. Net income for the period also suffered from a lower gross profit margin, as well as significantly decreased gain on sale of investment.
Current Suppliers	Components may include electrical and electronics, optics, lamps, mechanical, and contacting parts.
Current Customers	Photovoltaic, semiconductor, IC, LED, LCD/LCM, and other precision electronics products manufactures
Current Global Footprint	<ul style="list-style-type: none"> HQ and manufacturing: Taiwan Other facilities: Beijing, Shanghai, Suzhou, Xiamen, Shenzhen and Dongguan, China; Japan; Netherlands; Finland; Irvine, CA, and Austin, TX, USA; Ontario, Canada; Tijuana, Mexico
Current Presence in MENA Region	None
Recent Location Activity	<ul style="list-style-type: none"> New subsidiary Testar Electronics Corp., 2007 Chroma Japan Corp. established, 2008
Important Company Contacts	<ul style="list-style-type: none"> Leo Qin-Min Huang, Chairman & CEO - lhua@chromaate.com Zheng Ying, Deputy General Manager-Administration Management - zying@chromaate.nl Zhou Lin, General Manager-Manufacture Information Management System Business - zlin@chromaate.nl www.chromaate.com
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Potential Obstacles for Jordan to Overcome	



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Spire Corporation

Solar Testing Equipment

Factor	Key Considerations
Company Background	Spire Corporation (Spire) develops, manufactures, and markets solutions for the solar industry, including individual pieces of manufacturing equipment and full turnkey lines for cell and module production and testing. In addition to its cell and module manufacturing solutions, its Spire Semiconductor subsidiary provides semiconductor foundry services and is developing triple-junction gallium arsenide (GaAs) concentrator solar cells. Spire also operates a small business line associated with advanced biomedical applications.
Current Growth and Profitability	For the nine months ended 30 September 2009, Spire Corporation's revenues increased 9% to \$50.1M. Net loss from continuing operation totaled \$8M, vs. an income of \$11K. Revenues reflects an increase in sale of goods. Higher loss reflects an increase in Cost of goods sold, a rise in selling, general & administrative expenses, higher internal research and development expenses and higher interest expenses net.
Current Suppliers	Solar Simulator, Light sources (e.g. arc lamp), sand, chemicals
Current Customers	Leading global solar manufacturing companies
Current Global Footprint	<ul style="list-style-type: none"> ■ HQ and manufacturing: Bedford, MA, USA ■ Additional facilities in South America, Northern Europe, Africa, Russia, and Australia to serve the respective regions
Current Presence in MENA Region	<ul style="list-style-type: none"> ■ Partnered with PV Middle East ■ Spire Solar facility in Africa
Recent Location Activity	<ul style="list-style-type: none"> ■ Established Spire Solar India, a wholly owned subsidiary, 2009 ■ Established Spire Taiwan LLC, a wholly owned subsidiary, 2009
Important Company Contacts	<ul style="list-style-type: none"> ■ Roger G. Little, President, CEO - rlittle@spirecorp.com ■ Rodger W. LaFavre, COO - rlafavre@spirecorp.com ■ Stephen J. Hogan, EVP, General Manager, Spire Solar - shogan@spirecorp.com ■ www.spirecorp.com
Jordan's Potential Messaging and Value Proposition	
Potential Obstacles for Jordan to Overcome	



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Dr. Schenk GMBH

Solar Testing Equipment

Factor	Key Considerations
Company Background	Dr. Schenk manufactures turnkey in-line and off-line vision systems for thin-film solar modules
Current Growth and Profitability	For the twelve months ended 31 December 2007, Dr. Schenk's net sales totaled \$38.2 million, an increase of 10.1% over FY05. Net income totaled \$6.7 million, which is an increase of 9.8% from FY05.
Current Suppliers	Components may include: electrical and electronics, optics, lamps, mechanical, and contacting parts
Current Customers	Thin film solar modules manufacturers
Current Global Footprint	<ul style="list-style-type: none"> ■ HQ: Planegg, Germany ■ Technical Centers: Beijing, China, Hong Kong, Taiwan ■ Other facilities: Woodbury, MN, USA; Seoul, South Korea; Tokyo, Japan ■ USA sales offices: Minnesota, Georgia, Connecticut
Current Presence in MENA Region	<ul style="list-style-type: none"> ■ None
Recent Location Activity	<ul style="list-style-type: none"> ■ US site relocated to Woodbury, MN and expanded to include manufacturing
Important Company Contacts	<ul style="list-style-type: none"> ■ Michael Dobler, Managing Director - michael.dobler@drschenk.com ■ Wilfried Finken, Managing Director - wilfried.finken@drschenk.com ■ Christoph Schenk, Managing Director - christoph.schenk@drschenk.com ■ www.drschenk.com
Jordan's Potential Messaging and Value Proposition	
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Notes on Company Targeting Data

- Direct e-mail addresses are estimated using Deloitte resources, and are not guaranteed to be 100% accurate
- Company information was sourced from subscription business intelligence databases, as well as publicly available sources, including:
 - Onesource
 - Hoovers
 - Industry websites, such as Solarbuzz.com
 - Individual company websites
 - Deloitte industry/client experience



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