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First Solar

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Agenda

- Three Topics**
 - Overview
 - Global Warming and Greenhouse Effect
 - Government Policy
 - Advanced in Technology
- Strategic Recommendations**
 - Basic Criteria
 - Target Markets
 - Market Entry
 - Implementation and Timeline
- Overall Impactful Conclusion**
 - Expected Outcome
 - Impact on Company

Company Analysis

- Issue 1: Industry Forces
- Issue 2: Priority Countries
- Implementation
- Conclusion

Company Overview: Past

Recent Events:

- High stock price volatility - Wide swings in stock price reduce investor confidence
- High awareness of off-homework - CEO has called for working with other top management
- Sluggish stock price growth - Trouble regarding global performance
- Company gross margin down - 2nd half equity to demand imbalance
- Increased industry competition - National government subsidies and low prices

Company Overview: Future

Forward Outlook:

- Historically cash rich position - Balance sheet strong when in comparison to competitors
- Production of 600 - need to open business in competitive markets to compete with fossil fuels
- Target Markets - develop relationships with policymakers, regulators, and end customers
- Strategic Partnerships - strengthen to enter underrepresented geographic markets

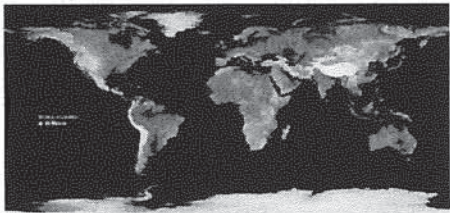
- 2007 - Turner Renewable Energy
- 2009 - Onuma
- 2010 - NextLight
- 2011 - JTEC to create profitability in automotive market
- 2012 - Compete with fossil fuel pricing
- 2013 - TetraSource Technologies
- 2014 - Proforma Solar (E.A.F.A technology)
- 2014 - Electricite
- 2014 - Coning and companies that are part of federation of electric power
- 2014 - Expand current ventures

Company Name	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Net Cash Position	1.00	0.75	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Net Debt Position	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00


Company Analysis

- Issue 1: Industry Forces
- Issue 2: Priority Countries
- Implementation
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Three Forces: Global Warming



Three Forces: Global Warming



- These Changes are IRREVERSABLE!
- Governments understand the urgency

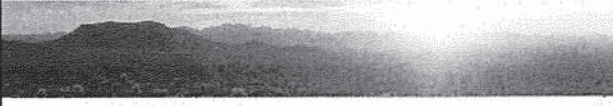
Three Forces: Government Policy/Social Expectation

Historical Subsidies

- Necessary for initial adoption in Europe
- Made for a Volatile Solar Energy Industry
- Too high risk for company

Solar Energy Incentives

- Continued support of PV energy production
- Remains a likeline to penetrating new markets
- Government plans to invest in clean energy industry



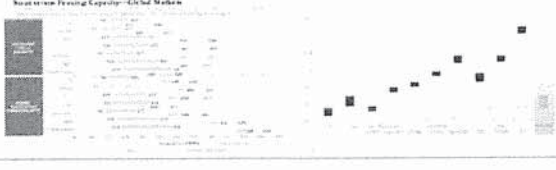
Three Forces: Solar Prices Compete with Fossil Fuels

Technology continues to improve

Reduction in Cost of Solar Power

Solar Energy becomes cost effective in comparison to fossil fuels

- CdTe (cadmium telluride) films on a commodity glass substrate
- Mounting technology to maximize energy returns
- Renewable Source vs. Fossil Fuels




Company Analysis

Issue 1: Industry Forces

Issue 2: Priority Countries


Implementation

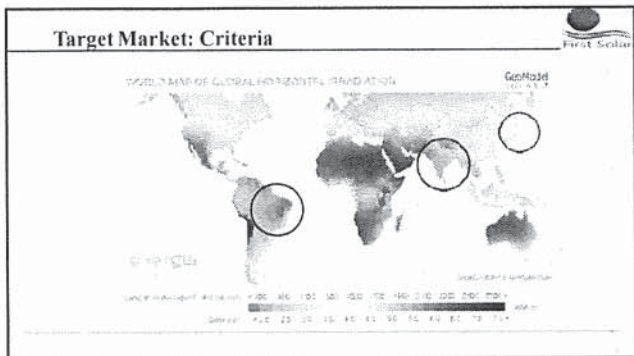
Conclusion



Target Market: Criteria

- Sunshine
- Gross Population
- Energy Consumption
- Industrial Growth
- Government Regulation
 - Available Funding
- Energy Prices





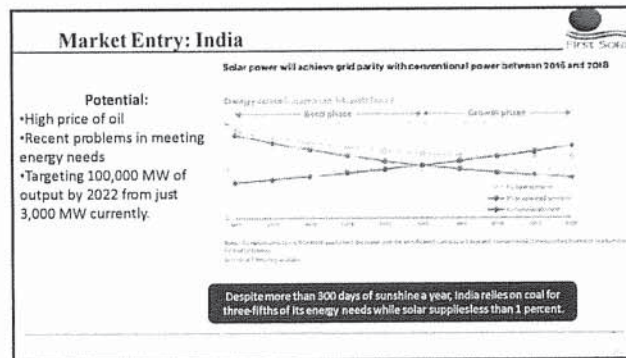
India

Year	2015	2016	2017	2018	2019
Population	1,236,544,631	1,251,798,939	1,267,446,426	1,283,289,506	1,299,330,625
Energy Consumption	757,900,000	804,131,900	852,379,814	901,817,843	954,123,278
Industrial Growth	3.9	6.1	6.0	5.8	5.8

- Government Incentives
 - JNNSM pushing "Solar Cities"
 - Offering Renewable Purchase Obligations and Renewable Energy Certificates when producers meet their target

Market Entry: India

- Current Ventures
 - Offices in New Delhi
 - Building 2.45 MW in 2 sites in Telangana
 - Committed to 3 additional sites
- Risks
 - Ability to pursue an expansion strategy can be affected by other public policies
 - Potential dependence on subsidies



Market Entry: India

- Current Ventures
 - Offices in New Delhi
 - Building 2.45 MW in 2 sites in Telangana
 - Committed to 3 additional sites
- Where to expand?
 - Continuing south
 - Potential new system in heart of designated Solar Cities

Market Entry: India

- Potential Site : Tamil Nadu

Location	Area (km ²)	Annual GHI (kWh/m ²)	Annual Energy Potential (MWh)
Chennai	1,000	1,800	1,800,000
Coimbatore	1,000	1,800	1,800,000
Madurai	1,000	1,800	1,800,000
Trichy	1,000	1,800	1,800,000
Vellore	1,000	1,800	1,800,000
Other locations

Japan

Year	2015	2016	2017	2018	2019
Population	126,999,808	126,860,108	126,720,562	126,581,169	126,441,390
Energy Consumption	859,700,00	884,631,300	895,246,876	908,675,579	923,214,388
Industrial Growth	2.1	2.9	1.2	1.5	1.6

- Government Regulation
 - KYOTO Protocol : Required reduction of greenhouse gas emission
 - Incentives for solar power installations
 - Long term goal of dramatically increasing solar power energy
- Risks
 - Government subsidies have been overused
 - Price of fossil fuels drop

Japan

- Fukushima Dalichi Nuclear Disaster
 - 30% of power was from nuclear
 - Import 80% of resources
 - 16% self sufficient
 - Trade deficit for the first time in 30 years
- Federation of Electric Power Companies of Japan
 - 10 privately owned electric power companies
 - Responsible for supplying electrical to their region
- Current Government reform
 - Ability to choose electricity company by 2020
 - De-monopolize
 - Lower energy prices for consumers

Market Entry: Japan

- Acquire Distribution Company
 - Government mandate forcing companies to divest
 - Use existing sales channel
- Enter Japanese utility market
 - Finance with cash and additional debt in bond market
- Expand
 - Expand into Japanese PV systems power plants
 - Leverage our newly acquired distribution companies sales

Brazil

Year	2015	2016	2017	2018	2019
Population	202,038,670	203,851,973	205,686,641	207,537,821	209,405,661
Energy Consumption	478,800,000	497,952,000	517,870,080	538,584,883	560,128,279
Industrial Growth	3.1	(0.5)	2	2.8	2.5

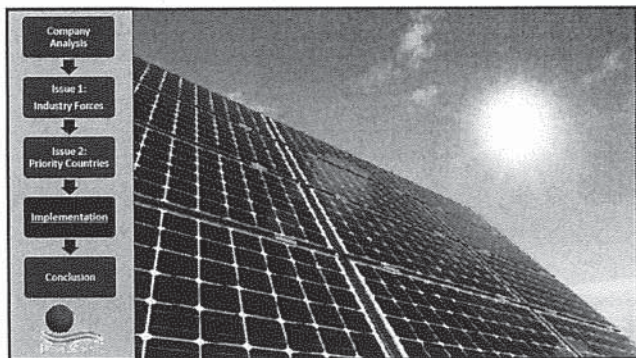
- Government Influence
 - Want to be a world leader and fight against climate change
 - Exponential Growth expected
- Risks
 - High local taxes - 25% Royalty Tax
 - Complex local content rules
 - 60% of components domestically produced
 - Lowest development prices in the world

Brazil

- Drought pushing hydroelectric grid to breaking point
- Need new energy fast
- PV plants install in less than a year
- No module or cell makers in the country
- Potential for long term commitment
- Rising living standards making sustainable energy and priority

Market Entry: Brazil

- Purchase State on Decision
 - Enter into Brazil and avoid high import taxes
 - Comply with rules about domestic production
 - Finance state with free cash flow
- Analyze impact of renewable energy
 - Drought causing gridlines to come to breaking point
 - In need of energy solar energy will allow them to keep production a renewable energy source
- Increase market share in Brazil
 - Increase sales through expansion to Brazilian market



Relation of Forces

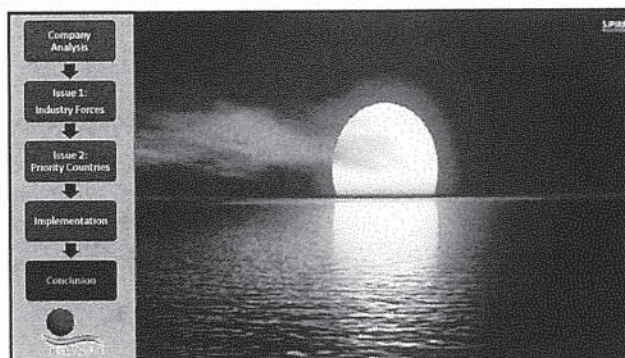
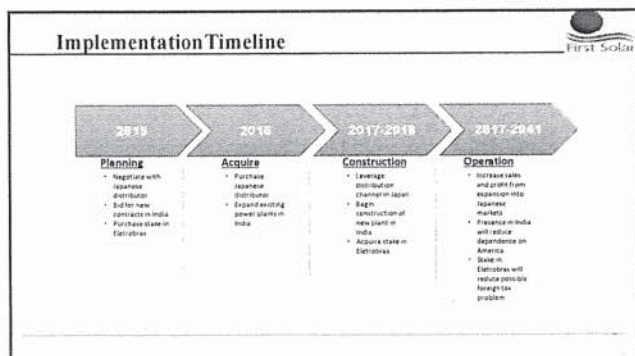
- Global Warming**
 - Priority to decrease CO2 emissions and lessen carbon footprint
- Government Policy**
 - Each Country has policies in place incenting renewable energy
- Market Forces**
 - Competing with current energy prices in industries

Revenue Sources



	2015	2017	2018	2019	2020
Global Revenues	\$437,441,408	\$448,493,066	\$502,154,293	\$601,658,158	\$68,489,592
Japan Revenues	\$477,407,961	\$171,366,785	\$181,670,769	\$662,782,475	\$1,129,480
India Revenues	\$19,412,443	\$63,526,714	\$194,030,588	\$36,439,331	\$19,028,900
International Revenues	\$2,951,943,014	\$2,128,077,515	\$4,190,450,704	\$4,178,443,459	\$1,408,878,779
Financial Interest Expense (Net)	\$1,051,000,000	\$1,200,000,000	\$1,000,000,000	\$1,000,000,000	\$1,000,000,000

Expected Outcomes

- India**
 - Already secured contracts
 - Fast expansion in market
- Japan**
 - Replace Nuclear energy with Solar
 - Dramatically decrease the amount of imported fuel
- Brazil**
 - Gain stake in company to avoid high import tax
 - Expect high growth potential in Brazil



Conclusion

Three forces

Expand in new market

Target Countries

Appendix

- Company Overview
- 3 Trends
- Country Profiles
- Implementation
- Additional
- Past
- Global Warming
- Selection Criteria
- Relation of Forces
- Warning Facts
- Future
- Government Policy
- Solar Map
- Revenue Sources
- Market Strength
- Technology and Prices
- India
- Expected Outcomes
- RPO's
- Japan
- Timeline
- Assumptions Finance
- Assumptions Projects
- Development
- Conclusion
- Assumptions Projects
- Development

Three Forces: Global Warming

- 280 parts per million to 379 parts per million in the last 150 years.
- 90% probability that human-produced greenhouse gases have caused much of the observed increase in Earth's temperatures over the past 50 years.
- Coastal regions can see serious effects of global warming in the long run

Strength in Current Markets


Country	Year	Production (MW)	Capacity (MW)	Cost (\$/kW)	Notes
China	2014	10,000	10,000	1.5	World leader in production
USA	2014	1,000	1,000	2.5	Significant growth
India	2014	500	500	3.0	Emerging market
Japan	2014	100	100	4.0	High cost, low capacity
Germany	2014	300	300	3.5	High capacity, high cost

RPOs

Year	Energy Demand (MWh)	Peak Demand (MW)	Solar Energy Requirement (MWh)	Solar Capacity Requirement (MW)
2014	10,000	1,000	1,000	1,000
2015	11,000	1,100	1,100	1,100
2016	12,000	1,200	1,200	1,200
2017	13,000	1,300	1,300	1,300
2018	14,000	1,400	1,400	1,400
2019	15,000	1,500	1,500	1,500
2020	16,000	1,600	1,600	1,600
2021	17,000	1,700	1,700	1,700
2022	18,000	1,800	1,800	1,800

Assumptions

Country	Capacity (MW)	Revenue (\$/MWh)
India	10,000	0.15
Japan	1,000	0.20
Brazil	500	0.25
Total Solar Potential	11,500	0.20



Assumptions: Previous Projects

RECENT PROJECT FINANCING OVERVIEW

	Phase 1	Phase 2	Phase 3	Total
BLM APPROVAL	100%	100%	100%	100%
CONTRACT	100%	100%	100%	100%
PERMITS	100%	100%	100%	100%
CONSTRUCTION	100%	100%	100%	100%
OPERATIONS	100%	100%	100%	100%
DECOMMISSIONING	100%	100%	100%	100%
REVENUE	100%	100%	100%	100%
OPERATING COSTS	100%	100%	100%	100%
DECOMMISSIONING COSTS	100%	100%	100%	100%
NET PRESENT VALUE	100%	100%	100%	100%

- Pricing of recently completed projects

Development

Projects typically take 5 years