Background



Background * Three solar energy * Solar electric (åκºe´³ς" μèf½): convert the sun's energy into electricity * Solar thermal (åxºe^3cfèf½): used the sun for heating or cooling * Concentrating solar: mixed both above as it used small optical mirrors to collect solar energy and convert the sunlight to heat. The heat was then applied to a liquid and gas to turn a turbine, thereby creating electricity * Grid-tied * Solar electric system that were connected to an electricity utility grid(electricity utility grid were heavily regulated by government bodies and were often separate from electricity providers * Either "ground mount" or "rooftop": in a field or desert area * Range from 1kW to 10 kW on residential home or 10 kW to 5 mW on commercial buildings * Off- grid * Independent of the main electricity grid * A solution to providing power in isolated rural areas * Silicon is the main semiconductor material for PV * Low grade silicon such as 5N (UMG-si) silicon is cheaper than 6N silicon * Canadian Solar has commercialized products with the lower grades for silicon * UMG-si is a bi product of the aluminum smelting business * Monocrystalline is efficiency that polycrystalline , but with higher cost of productions * Thin-film have no crystalline silicon , but rather a painted or printed semi-conductor; however, three of six materials had not been commercial viable * Life cycle c>@��èf½ä»‹äºŽä ¤ä ºé~¶æ®µä¹‹ä -,�ç"±è‡ªå·±å†³å®šä¸Žå^¤æ-,言之有ç�†å°±è¡Œ Growth ï¼^high growth, low rivalry and low barrier) Shake-out (increasing rivalry, slower growth) External Environmental Appraisal (PV industry) * Macro environmental appraisal: * PESTEL analysis for PV industry 1. Political: Opportunity 1): an increasing number of government incentive programs for renewable energy 2) Feed-in tariff, offering subsidies Threat: 1) Largely hinged on government initiatives and renewable support schemes. E. g.

Spanish place a cap on annual installations, the demand dropped substantially 2) Heavily installation cause public backlash against government due to the high costs 2. Economic Opportunity 1) The cost of solar will be competitive with non- renewable sources within 3-5 years 2) Encouraging on the small-scale project for residential homes e. g. Ontario's FIT 3) Encouraging on domestic contents threat 1) the credit crunch, global economic downturn 2) fluctuating price of raw-material silicon 3) fluctuating solar demand 3. Social Opportunity 1) a growing awareness of the malaise of non renewable energy 4. Technological opportunity 1) relatively nascent and rapidly growing solar PV industry 2) technological breakthroughs of solar PV * Industry and competitive environmental appraisal: * Five forces analysis 1) The bargaining power of Suppliers:(high) PV manufacturers have two main suppliers, there are raw material suppliers and specialized equipment manufactures. As it mentioned in the case, the price of silicon is fluctuates. The cost of raw material increased because of the temporary silicon shortage around mid-2008, as a result, it would lead PV manufacturers to decrease the cost for crystalline PV modules. However, by mid-2009, that price had fallen. And some silicon maker will adapt their business models to start producing modules. For specialized equipment manufactures, such as furnaces, sawing machines, printing machines and laminators. 2) The bargaining power of Buyers: (high) several potential customers, For the consumer electronics, automotive and industrial product companies, they integrated solar cells into their products for resale. For example, the solar charger for use in automobiles. For grid-tied applications, they are either " ground mount" or "rooftop"--- ground mount applications were typically in a field or desert area and were either solar PV or concentrating solar power,

the typical customers were project developers, utility companies, solar installation companies, distributors, government, etc. Gried-tied rooftop projects ranged from residential area to commercial building. For the Canadian Solar, most of the sales profit are coming from Germany, Spain, Japan and US hinged on government initiatives and renewable support schemes, such as Feed-in tariff (FIT). In addition, developers of utility-scale PV projects also had to mindful of real estate cost and electricity transmission costs, which means PV manufacturers need to pay attention on that the price of their PV would be competitive with other competitors. 3) Threat of Potential entrants(medium) PV industries have low barriers due to the low capital requirements and medium-low technologies. The main barrier is product warranties. In addition, the warranties may not only used in production, but also can be used in the whole vertical integration (silicon producers, suppliers of PV cells and consumers). 4) Threat of Substitutes (medium) 1. thin-film modules held more promise given their competitive price compared to poly and mono crystalline silicon modules. However, poly and mono crystalline silicon enjoyed higher efficiencies, required less space, fewer mounting systems and less cabling same power output. Other rawmaterial. Cadmium Telluride to be the semi-conductor, delivering a lower price. 5) Competitive rivals: (very high) 1. competition in the industry was fierce with diverse players ranging from Japanese electronic giants to lowcost Chinese producers. These competitors can be divided into two groups (details were written in the case study. p. 6~7).(çœ⟨ä¸⟨é�⟩ ¢çš" å^†æž�å�Šä¸¾ä¾<) Start-ups 1. Cost —leadership: Vertically integrated to low cost labor for a cost advantage Suntech, Yingli Green, Trina Solar and Canadian Solar: 2. Specialized Complete PV module: compete on

tailored propositions, customer relationships and service, technological difference First Solar, Sun Power Cell: compete on technology, relationships with module producers and price Q-Cell, Solar World, Motech, Gintech and JA solar Incumbents 1. Compete on brand recognition, research and development, strong distribution: Sharp, Kyocera and Sanyo * Industry chain PV cell manufacturer Silicon Potential: automotive and industrial product companies integrated solar cell into products Grid-tied: project developer, utility companies, solar installation company, government PV Module manufacturer PV cell manufacturer Silicon Potential: automotive and industrial product companies integrated solar cell into products Grid-tied: project developer, utility companies, solar installation company, government PV Module manufacturer Canadian solar company will be affected by two important factors: 1) The price of silicon and PV manufacturing efficiencies largely determine the price of PV cells. Once the price fluctuated, the cost of PV manufacturing will be influenced 2) Largely hinged on the government incentive programs, As a result, the company is very passive, the gross profit is not very high. Internal appraisal: assessing strategic capability * Analysing strategic capability: (一一对åº", 红色为competitive advantage) | Resources | Competences(competitive advantage) | * physical | * Have a lot of sales offices worldwide * Established in Canada, which was regarded as the environmental friendly country * Take part in several international trade shows * Established manufacturing plants in China * In US, move the office near to the heart of U. S solar movement * Flexible Vertical integration * One of the first companies to initiate a recycling process for reclaimable silicon from discarded, broken or unused * The company used both its branding and manufactured white label products for other OEMs * Form strategic alliance

with China-based Guodian Power Development | * Value network control (international) * Emphasis" Canadian" root, further differentiate from other Chinese manufacturers, get rid of the country of origin. Combined elements of western management and engineering with a low-cost chinese production base * Build its brand and have the initial communication with its consumers * Low labour cost, decrease the cost of company * Take advantage of the favourable policy incentives * Higher capacity, superior production yield, better inventory control and efficient cash management * Had a strong competitive advantage in recycling silicon, which can decrease the cost of the company and establish good brand image * Good quality for the product and strong capability of manufacturing. * Becoming more active instead of heavily depending on government incentives | * financial | * Receive the venture capital investment * Nasdaq | * Relieve the capital constraint * More proceeds to have efficient cash management | * human | * 2742 employees in manufacturing * Management team * International development office * The founder has a lot of experience in solar development * Have the good relationship with Chinese governmental organizations and Canadian International Development Agency | * Strong manufacturing ability * / * Focus on developing Latin America and Middle East * Grasp the opportunity to develop the areas that were not addressing * B-G (business to government), enter into the market more easily | Summary: 通过å¤éf¨å'Œå†...éf¨çš" 评 ä¼°å�Šå^†æž�,请自行ç"¨swotè¿>行å^†æž� Strategy analysis 1. market segmentation (case, P4) ä ‰ä¸ªæœ€å¤§çš"æ¶^è′¹å¸,场为欧æ′²ï¼Œæ—¥æœ¬å�Šç¾Žå>½, Analysis: 1) Spain is the strongest market due to the aggressive renewable energy feed-in tariff program. Although its uncontrollable growth lead to the

drop in 2009, it was still seen as a key market in the long term due to its government's high renewable target 2) Germany was the second largest market because it was one of the first countries in the world to introduce a FIT program. The government continue to carry out the Renewable Energy law. Furthermore, PV solar was expected to remain strong as a result of high public awareness and support of renewables, the skilled PV industry and accessible financing opportunities. 3) The requirement of residential application is large, and the government implemented national and regional support mechanisms 4) For the US market, President Obama's support of renewable energy and several state programs enacted incentives and stimulus programs Besides, Canadian Solar had decided to focus on 10 major markets in the next two to three years where strong renewable policies existed (case p15) 2 Competitive strategy 1) flexible Vertical integration (�ç,¹) Case p6 (prediction)/p9 (inverted flexible vertical integration business model) + textbook p141(backward integration) 2) Cost-leadership strategy (textbook P 112 $\frac{1}{4}$ Case p6/p7/ p10) ($\pm \frac{1}{4}$ c, $\pm \frac{1}{4}$ $\pm \frac{1}{4}$ use cost-leadership strategy * Price competition is vigorous * Product is standardized or readily available from many suppliers — commodity status * There are few ways to achieve differentiation that have value to buyers, 产å"�éf½å·®ä¸�多 * Most buyers use product in same ways * Buyers incur low switching costs * Buyers are large and have significant bargaining power Their strategy implementation * Low labour costs * factory located close to raw material sources * seven facilities dedicated to the manufacture of different solar PV components * combined elements of western management and engineering with a low-cost chinese production base Case p9 CANADIAN SOLAR'S MODEL- it would lead to lower manufacturing cost

base in the long term Case p10 PRODUCTION FACILITIES- the company produced all of its products in its seven plants in China $1\ddot{1}\%$ at the begining, the competitors are using cost-

leadership strategy in order to make profits in terms of decreasing cost, which can be seen in the cast p.

- 9 (CS changing the raw material and adapting the vertical integration to eas e the strong power of suppliers).
- 2) when the market become more mature as well as the competion getting more intensive, CS need to change its strategy to differentiation strategy. -> marketing devlopment and product development (can be seen in case p.
 10 Products,

they offer specialty products which can arise its profits by adding values to di fferent production. is the potential strategy they may use,

as the life cycle changes may influence the marco environment. Textbook from P. 122 to p. 125 If everyone using cost leadership strategy to make profits, it's time for managers to change their strategy into differentiation strategy which can interact with competitors. 3 The ansoff product/market-growth matrix (textbook P135). Choose the market development strategy directions- offering existing products to new markets Reasons: new users and new geographies, $\text{æ}<\text{"} \text{ å}\pm\text{-}\text{i}_{\text{3}}\text{$\check{s}}\text{$\check{s}}^{\circ}\text{$\mathring{a}}^{\circ}\text{\otimes}<\text{$\%$}\text{$\check{s}}^{3/4}\text{$\check{Z}}\text{\otimes}^{-2}\text{\otimes}^{-2}\text{\otimes}\text{-\otimes}\text{...}\text{\otimes}^{-7}\text{$\check{a}}^{-7}\text{$\otimes$}\text{$\otimes$}^{-7}\text{$\otimes$

av ej½a¾sævvçs" questions: 1 ç, ºa»€eº⅓a¸aœ‹ç, ºa»€eº⅓æœjæœ ‰solar energyçš" 群é>†? 2 Canadian solarç, ºä»€éº¼æœf挑 在ä¸-國è¨å» ? 3 ä¸åœ‹è¨å» å°�canadian solar帶來什麼好è™ • China:

Factor conditions: low labor cost -> cost advantage Demand conditions: subsidies for solar programs -> boost local demand -> b2g one of the markets with great potential (exhibit. 3) Film strategy, industry structure and rivalry: 4 out of top 10 module producers are from China. (HQ is in China) firm strategy -> " invert flexible vertical integration business model" -> all big player in china use vertically integration Chinese government provide incentive program Related and supporting industries: 3 out of 10 top 10 cell producer are from China. -> Competitive advantage cooperate with government-owned suppliers 6 INTERNATIONAL STRATEGY: i1/4 Textbook p. 170ï\\\/4\\\mathref{m}\) There are 2 possible alternatives due to lack of information. global: Coordination high: they coordinate all the activities, and have sales offices in many countries, configuration dispersed; manufacture in China, and R&D in Canada complex export: coordination high: they coordinate all the activities, and have sales offices in many countries, configuration concentrated; all the activities are in China 7. Market selection and entry case p. 8+ textbook p171 Future prediction Analysis: (Mckinsey 7 Ss, textbook 243) a. Internal: Organic growth: CS can add values and gain profits through vertical integration (from producing ingots, wafer, cells to modules) Because CS has enough technology to produce those things from downstream by themselves. Cost advantages: access to low-cost labour. b. Joint Venture or alliance(textbook p210, case p12) c. In future, manager should attempt to develop a "balanced" portfolio, the following factors should be taken into consideration: 1 Existing and future growth potentials 2 Existing and future profit potentials 3 Existing and future cash flows 4 Existing and future investment (financial and people) 5 Inherent risks associated with each business area d. Blue ocean thinking case p6 + Textbook p40 (figure 2. 7

strategy canvas) * the five pv cell companies competed on technology, relationships with module producers and price * the company can concentrate on where a large gap can be created between competitors