Topic 5: Green Energy Industry

Discussion 1: The Twin-pillar Industries

Ministry of Economic Affairs

November 4,2009

MOEA

Outline

I. Taiwan's Green Energy Industry Assessment & Promotion Plan

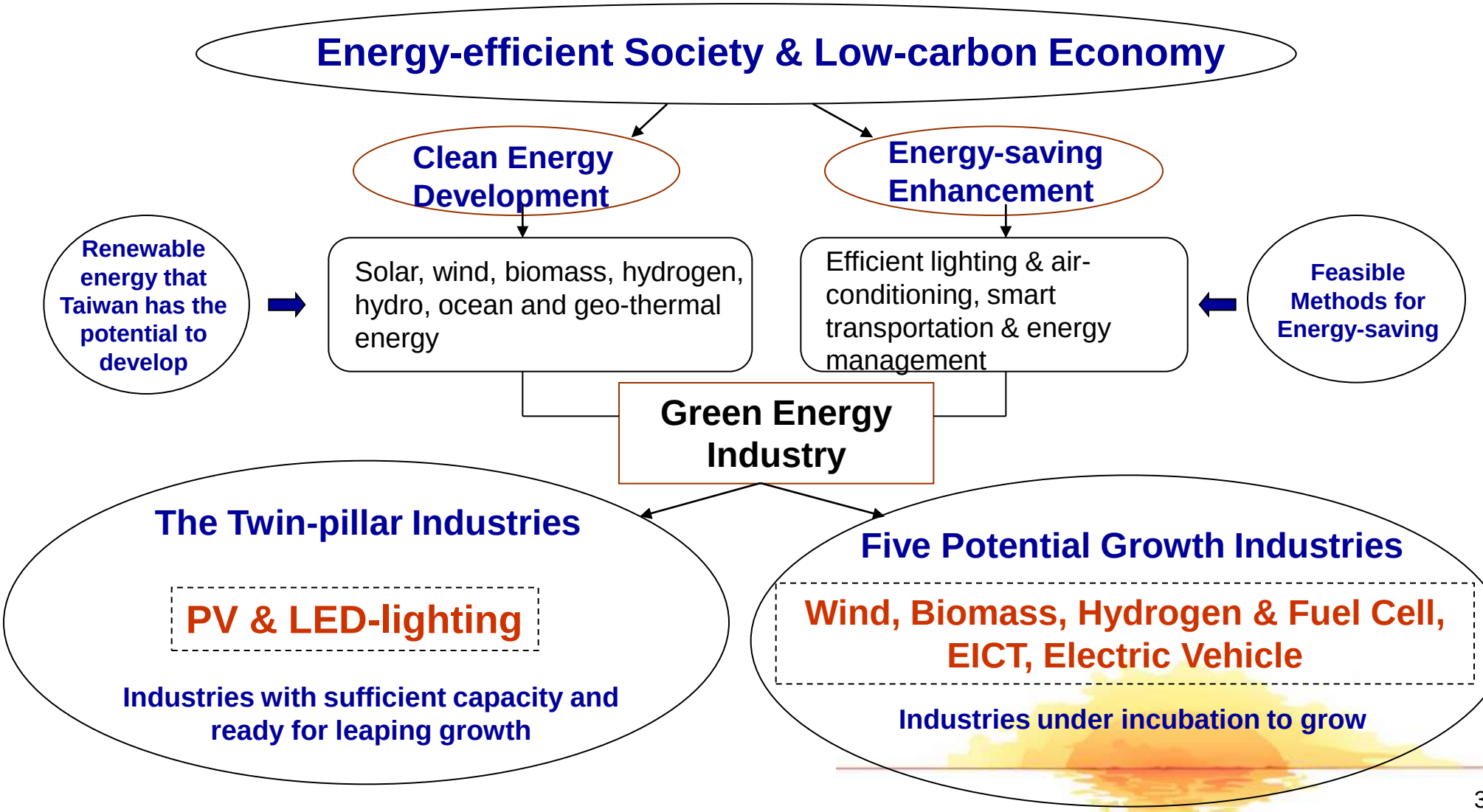
II. Strategy for The Twin-pillar Industries Development

III. Major Promotion Plans & Status

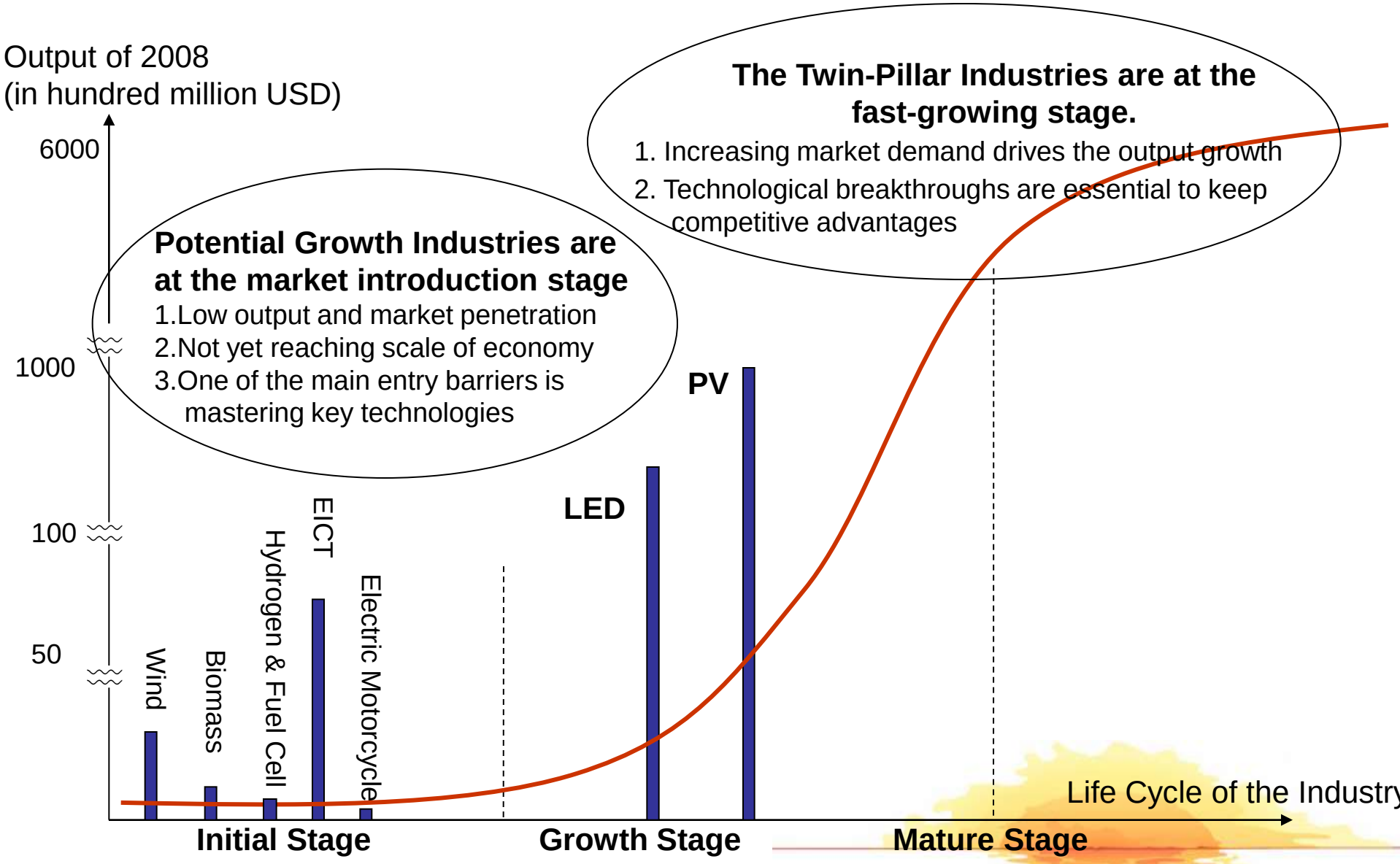
IV. Discussion Outline

I. Taiwan's Green Energy Industry Assessment & Promotion Plan

(I) Key Industries for Development



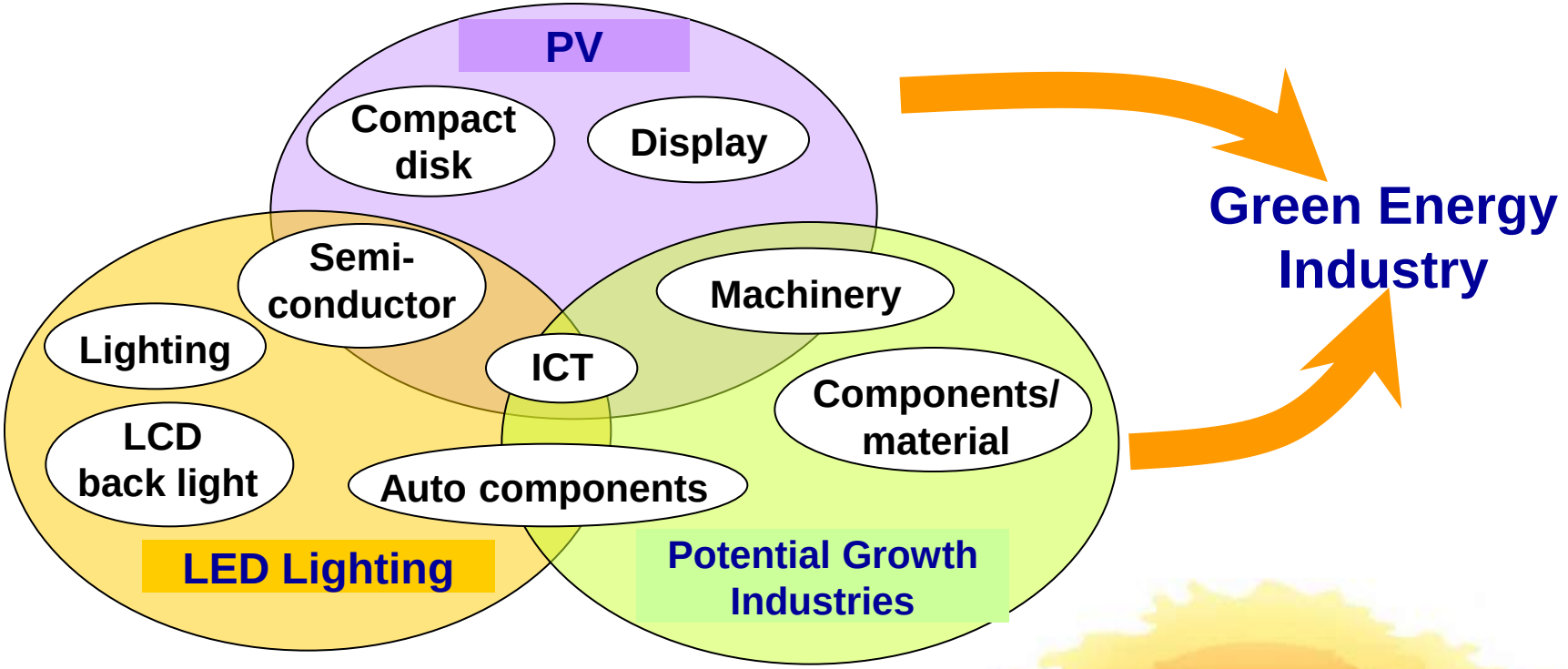
(II) Current Statuses of the Key Industries



(III) Taiwan's Competitive Advantages in Developing Green Energy Industry

Taiwan's major advantages:

1. Strong & competitive IT industry base and skilled manufacturing process management
2. Well-developed manufacturing capacity and human resources in conventional industries, such as electro-mechanical, metal products, composite material, and electronic control
3. Excellent talent pool in semiconductor and TFT-LCD industries easily transferable to green energy industry



Leveraging the strengths of existing competitive industries to make Taiwan a leader in the global green energy Industry

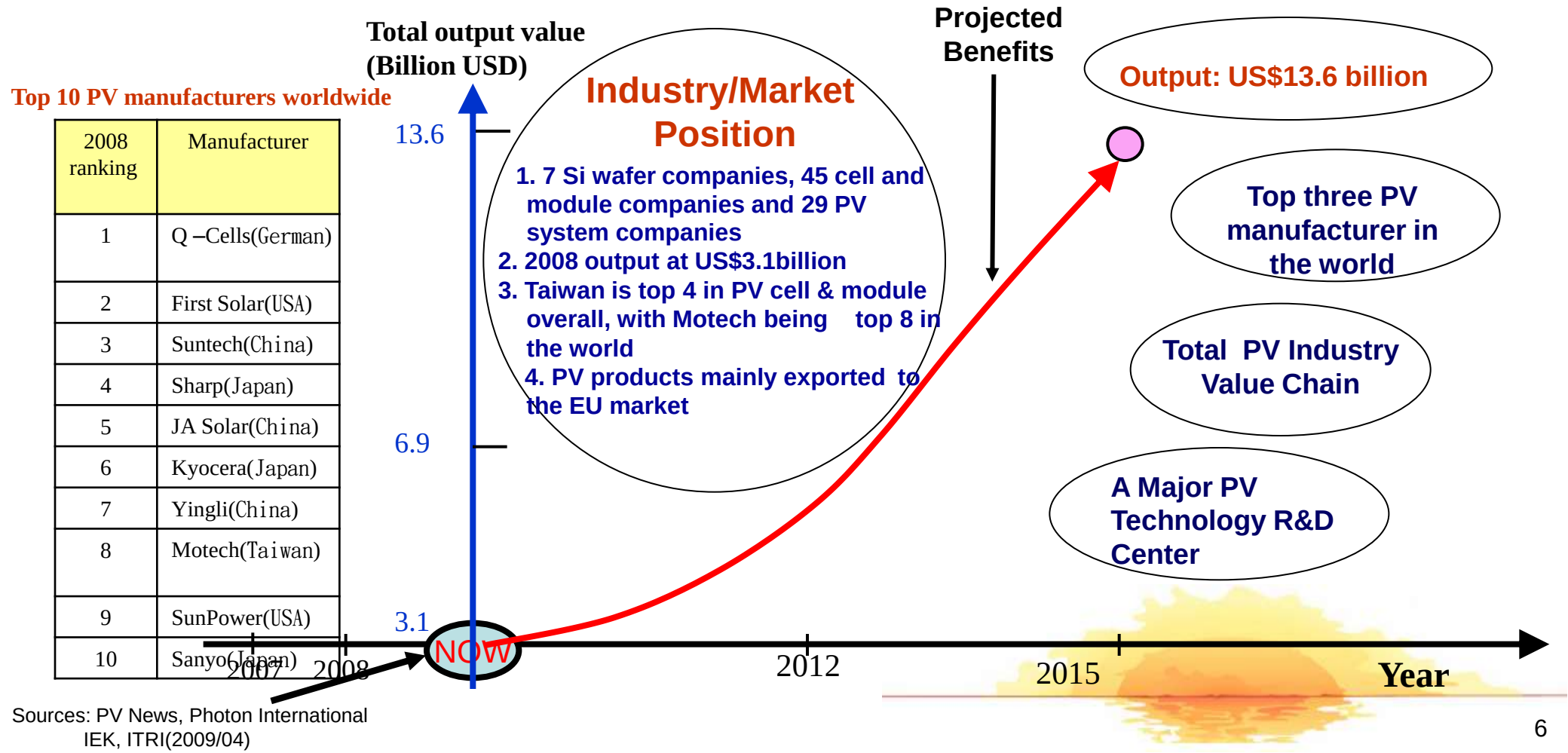
II. Strategy for The Twin-pillar Industries Development

(I) Photovoltaic Industry

A. Current Status and Vision

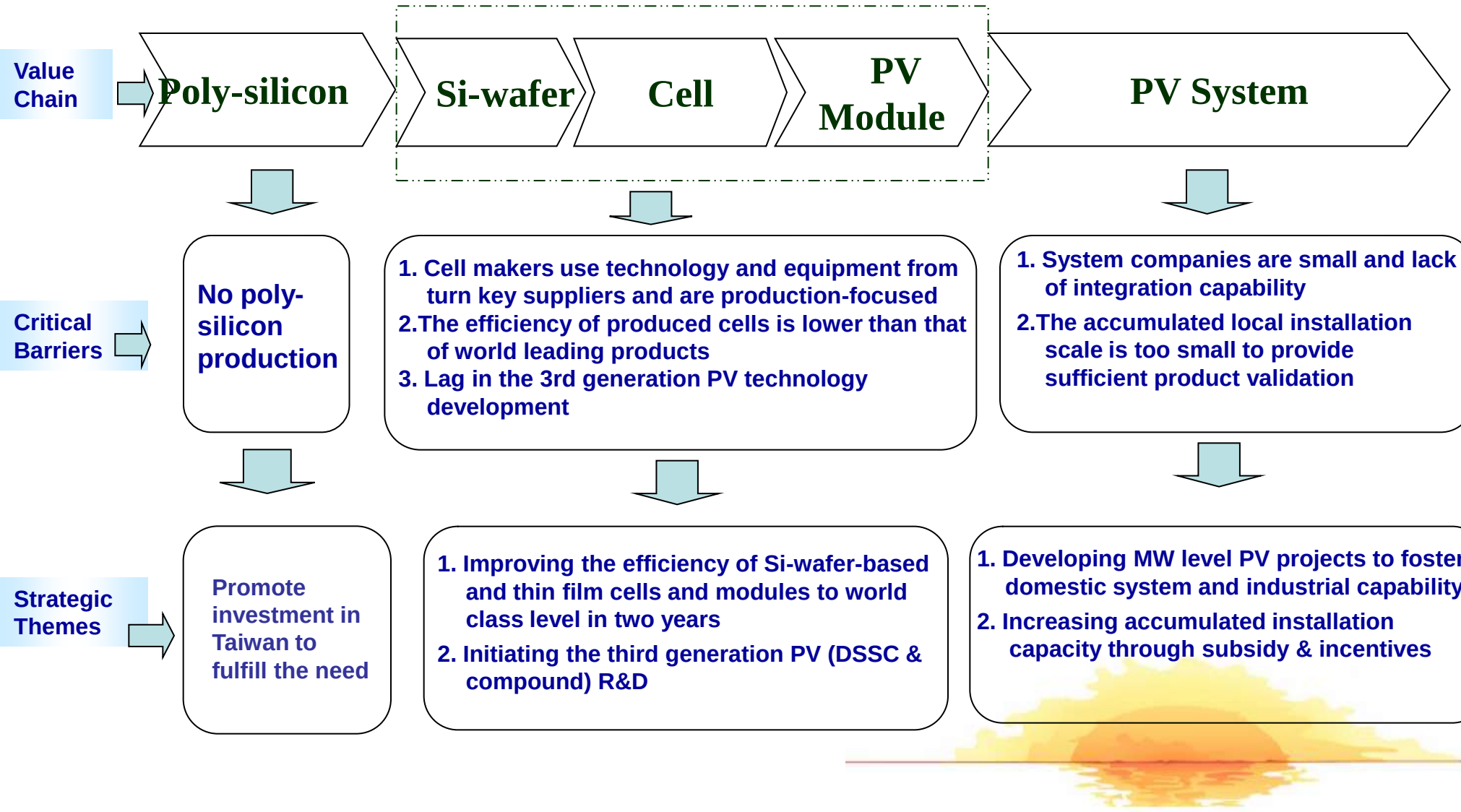
Top 10 PV manufacturers worldwide

2008 ranking	Manufacturer
1	Q –Cells(German)
2	First Solar(USA)
3	Suntech(China)
4	Sharp(Japan)
5	JA Solar(China)
6	Kyocera(Japan)
7	Yingli(China)
8	Motech(Taiwan)
9	SunPower(USA)
10	Sanyo(Japan)



Sources: PV News, Photon International
IEK, ITRI(2009/04)

(B) Issues and Development Strategy



C. Strategies and specific measures

Strategy	Measure
Technology breakthrough	
Upgrading technical capacity to world-class level	Enhance the efficiency of polycrystalline silicon solar cells to 17% or above in 2 years
	Improve the efficiency of silicon thin film solar cells to 9% or above in 2 years
	Increase the efficiency of silicon solar cell modules to 15% or above in 2 years
Aggressive positioning of the 3rd generation solar cell technology	Actively pursue third generation PV technology, with the efficiency target of laboratory-scale, advanced silicon solar cells at 22% or above in 4 years
	Enhance the efficiency of laboratory-scale dye-sensitized solar cell sub-module to 9% or above in 4 years
	Improve the efficiency of CIGS solar modules to 12% or above in 4 years
Key material and equipment development	Silicon technologies other than the Siemens'
	Develop key material and equipment for silicon, thin films, dye-sensitized solar cells and modules

C. Strategies and specific measures (cont'd)

Strategy	Measure
Critical Investment	
Establishment of a complete industry value chain	**Facilitate the construction & operation of feedstock poly-silicon plant**
Conducive environment	
International certification labs establishment	Establish photovoltaics modules certification lab conforming with international standards & quality
	Establish a standardized verification platform for solar photovoltaic modules and systems
Establishment of national PV standards	**Establish national measurement standards for photovoltaics and traceable system**
New energy technologies and new products validation	**Establish assessment techniques for the performance and reliability of new products/systems to accelerate products development**
Provide tax incentives to reduce entry cost	**Imported components and raw material exempt from commodity taxes and customs duties**

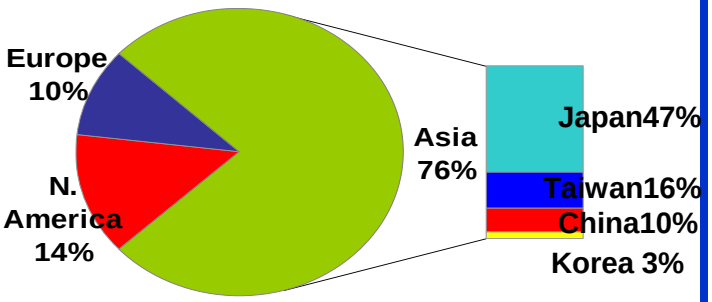
C. Strategies and specific measures (cont'd)

Strategy	Measure
Export markets expansion	
International market entries assistance	1. Organize overseas exhibitions and sales missions for local manufacturers to be a part of major global supply chains 2. Use the New Zheng He project to expand into emerging overseas markets
	Utilize complimentary cross-strait strengths to improve the industry value chain and global market development.
Domestic market growth	
Encourage & foster MW-class system integrators	Taiwan Power Co. to accelerate installation of 10 MW large-scale PV power generation plants
	Promote and accelerate the installation of private sector PV systems
	Assist the industry in the deployment of large-scale solar power plants
Provide subsidies to expand domestic market	PV systems in major public construction investment projects of the economy revival plan
	PV product/system donations tax deductible or tax-free

(II) LED Lighting Industry

A. Current Status and Vision

Distribution of world high-brightness LED lighting industry



Source：IEK, ITRI(2007)

Total output value (Billion USD)

16

4.9

1.4

2007

2008

NOW

2012

2015

Year

Industry/Market Position

1. 50+ manufacturers of light source, 40+ in lighting module, and 100+ in LED applications
2. No. 1 in world LED light source production and Top 2 in output (16%). Epistar Corp. No. 1 of the HB light source manufacturers in the world
3. World No.1 production output in back light module
4. 72% of the LED lighting products are for export, mainly to China

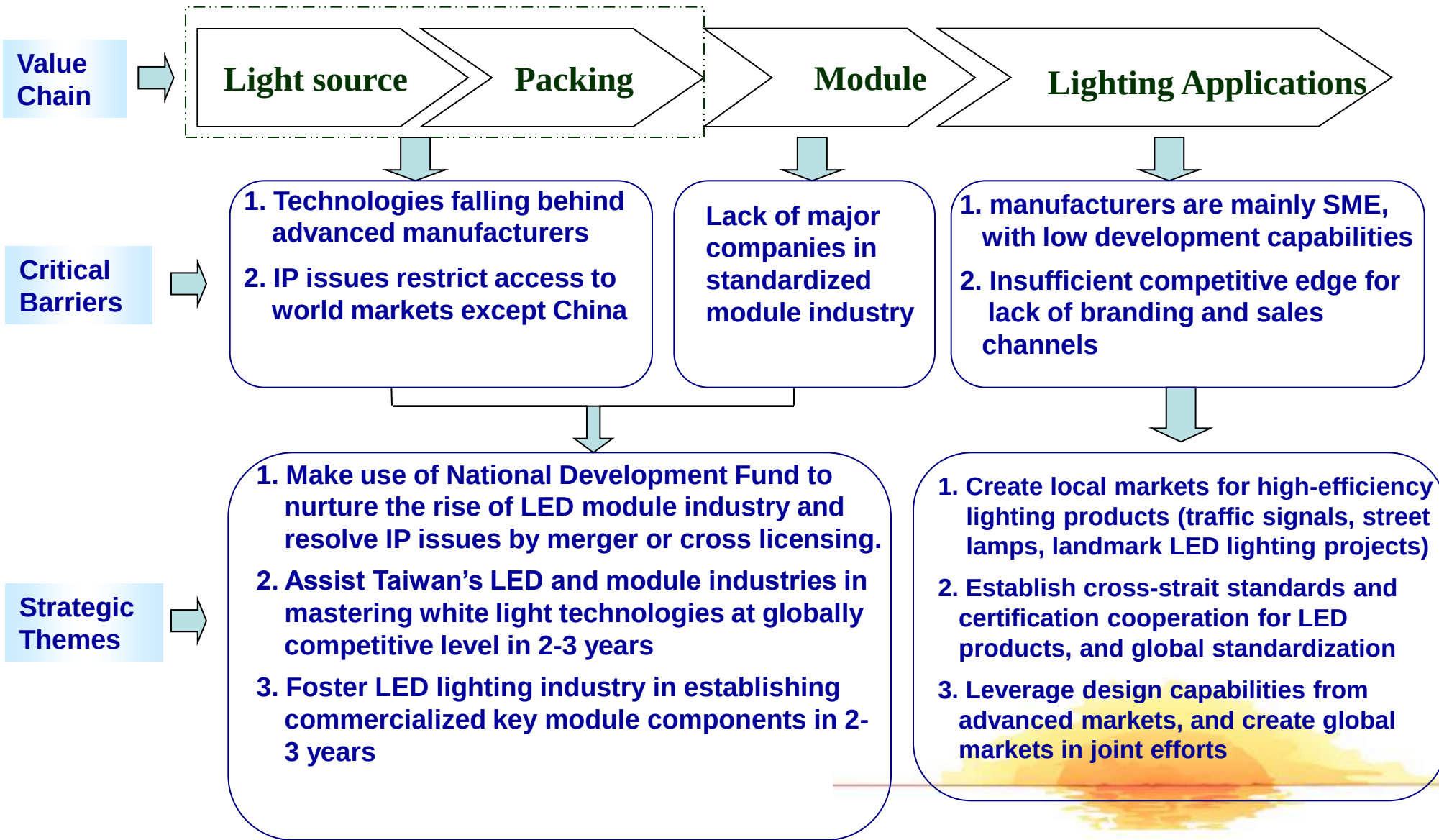
Output: US$ 16.4 billion

Projected Benefits

Production base of high value-added LED lighting products

No.1 LED light source and module supplier in the world

B. Issues and Development Strategy



C. Strategies and specific measures

Strategy	Measure
Technology breakthrough	
Establish domestic technology capacity	Establish indigenous white LED technology, with light-emitting efficiency comparable to general lighting, in order to establish a high-value white LED production base; LED light source among top three in the world
Set up IP think tank and capitals to resolve IP issues	Close monitoring of the latest patent status and provide capital assistance for manufacturing investments
Promote standardized modules and innovative applications	Develop standardized LED modules and key component technologies
	Develop innovative, intelligent and ergonomic lighting applications
Critical investment	
Develop module technologies with market scale & plants	Create cross-strait common lighting module specifications to accelerate market expansion, at least 5 new LED lighting module manufacturing plants
Foster lighting enterprises with global scale and competitiveness	Assist and facilitate the investments of major global LED manufacturers in Taiwan
	Facilitate cross-strait cooperation in the establishment of world-class LED enterprises

C. Strategies and specific measures (cont'd)

Strategy	Measure
Conducive environment	
International standards and certification	Establish national LED lighting test lab with international mutual recognition
	Establish cross-strait LED industry standards, and promote the standards globally
	Create cross-strait common testing platform and establish a mutual recognition mechanism
	Create business opportunities for LED lighting products through the cross-strait pilot scheme
	Outdoor LED lighting system standardized product testing and certification platform
Establish national LED standards	Establish national LED lighting measurement standards and traceable system
Domestic market growth	
Create domestic market of LED energy-saving lighting applications	Promote LED street lamps demonstration program
	Replace 250,000 traffic lights
	Public agencies to completely replace emergency exit signs (2.5 million), emergency lighting (1.50 million), and fire alarm lighting (300,000) with LEDs
	Institutionalize exit mechanism for low-efficiency/high-pollution products
Export markets expansion	
International market entries assistance	1. Organize overseas exhibitions and sales missions for local manufacturers to be a part of major global supply chains 2. Use the New Zheng He project to expand into emerging overseas markets

III. Major Promotion Plans & Status

(I) Photovoltaics

A. Technology Breakthrough: efficiency gains comparable to world-class level for poly-silicon solar cells, silicon thin-film solar cells and silicon solar cell modules have been achieved. Five companies have been invited to participate in technology development cooperation to further strengthen domestic technical capacity.

B. Critical Investment: 3 polycrystalline silicon material plants are scheduled to complete at the end of this year and early next year. In 2009, 11 photovoltaics companies announced investment plans with a total of approximately NT$34.2 billion. Nine of the investments plans totaling NT$27.631 billion have been officially submitted.

C. Conducive Environment: completion of Taiwan's first internationally certified laboratory for photovoltaics modules. This will provide domestic industry with the ability to certify their photovoltaics products and receive international quality certification in Taiwan (18 test items), saving of approximately 1/3 of the costs and time.

D. Export Markets Expansion

1. Overseas sales missions: As of Sept. 2009, the overseas sales amounted to US$130 million on-site orders, and US$410 million in total order in six missions.
2. Cross-strait Bridging: In March 2009, a "Cross-strait PV industry cooperation and exchange conference" was held, which represented the highest-level contact between energy officials of the two sides. An industrial cooperation memo was signed. Taiwan's manufacturers are ready to deploy, and in the future personnel exchanges and joint ventures and research will be the priorities for cooperation.

E. Domestic market growth

1. In “Economy Revitalization Plan to Expand Public Works and Investment Projects,” NT$484.4 million has been budgeted in 2009 for “Photovoltaic system demonstration projects in public buildings.” A total of 267 cases will be carried out and the installed capacity is approximately 1.9MW.
2. Implementation of the “Photovoltaic power generation demonstration system subsidy” will be carried out on project-basis to promote PV Roofs, solar city, landmark photovoltaics architectural demonstration, remote island emergency disaster prevention systems, solar campus, and solar communities. As of Sept. 2009, a total of 451 installations and a total capacity of approximately 5.2MW were completed.

(II) LED lighting

A. Technology Breakthrough: Production deployment of the innovative AC LED technologies by Epistar Corp. in Aug. 2009.

B. Critical Investment: In 2009, 11 LED lighting manufacturers announced investment plans of NT$45.8 billion. 26 investment proposals have been officially submitted totaling NT$16.86 billion.

C. Conducive Environment: Lighting test laboratory has been established and certified by TAF.

D. Export Markets Expansion: The “Cross-strait industrial cooperation and the exchange of LED lighting conference” was held in June 2009 as a first step in cross-strait cooperation. a memorandum of cooperation has been signed, and the consensus to jointly promote the product certification system and standards has been reached. A pilot project has been initiated and, by the end of this year (2009), laboratory round-robin tests for LED lights will be carried out.

E. Domestic Market Growth:

1. In 2009, NT$110 million has been invested for 38 LED street lamp demonstration projects in 25 cities and counties, saving of about 2 million kWh/year expected.
2. Traffic lights replacement plan: 54900 traffic lights are scheduled to be replaced by the end of 2009, a saving of about 20.79 million kWh/year.

IV. Discussion Outline

1. Strategies to accelerate the development of photovoltaics and LED technologies
2. Strategies and plans to establish domestic key technologies and frontier science base in photovoltaics and LEDs through international cooperation and technology transfer
3. Methodology to foster and develop worldwide marketing channels and brands for photovoltaics and LED products
4. Policy & measures for professional training in innovative business development as the foundation for accelerated industrial development

Thank you