



APEC Sustainable Energy Center



Report on APEC Sustainable Energy Center (APSEC)

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President



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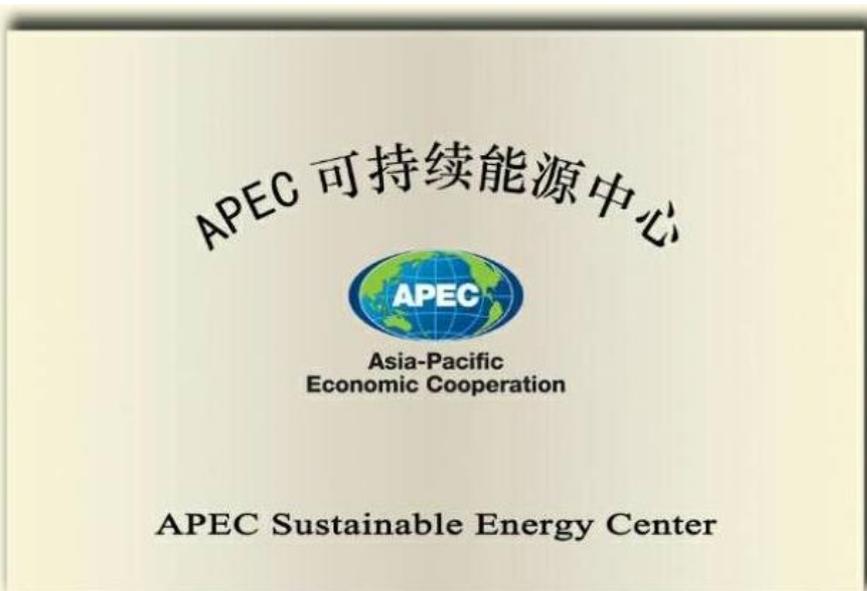
Part 1. Introduction of APSEC

Part 2. Main Progress in Year 2015

Part 3. Work together with EGNRET (proposed)

1. Background & Significance

Establishment: at the 11th Energy Ministerial Meeting (**11th EMM**) on **2 Sep 2014** during **APEC China 2014**



2. Nature

Under APEC mechanism, APSEC is **directly** guided by APEC **Energy Working Group (EWG)**.

In Chinese context, APSEC accepts the guidance of its Steering Committee comprising leaders from **National Energy Administration, Ministry of Foreign Affairs** and **Tianjin University** respectively.

APSEC **is affiliated to NEA**, and TU is responsible for its O&M.

3. Mission & Objectives

M: To promote **pragmatic cooperation** on sustainable energy development among APEC economies;

O.s:

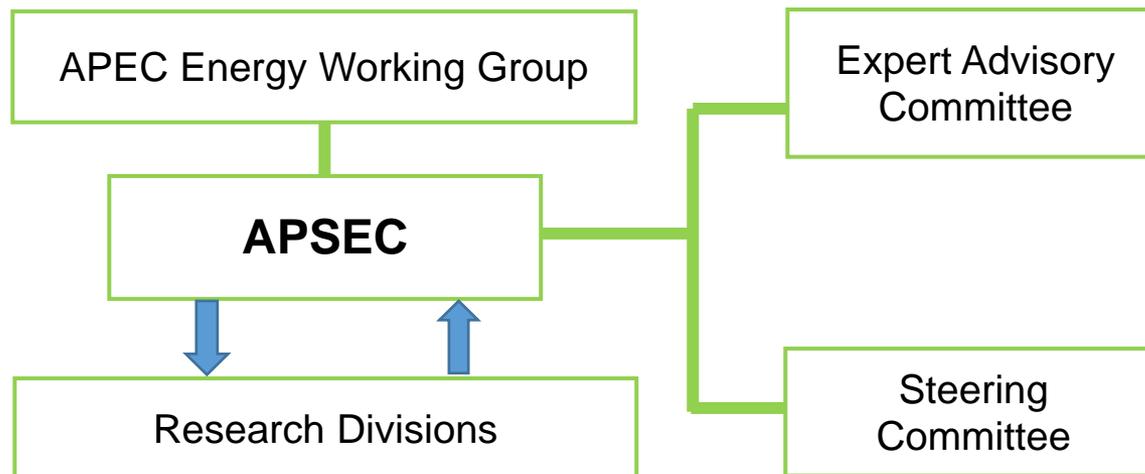
- **promote advanced ideas and models** of sustainable energy development across the APEC region;
- **facilitate cooperation** among member economies in information exchange, policy dialogue, technology R&D, demonstration and dissemination;
- **capacity building** in the field of sustainable energy.

4. Work Scope

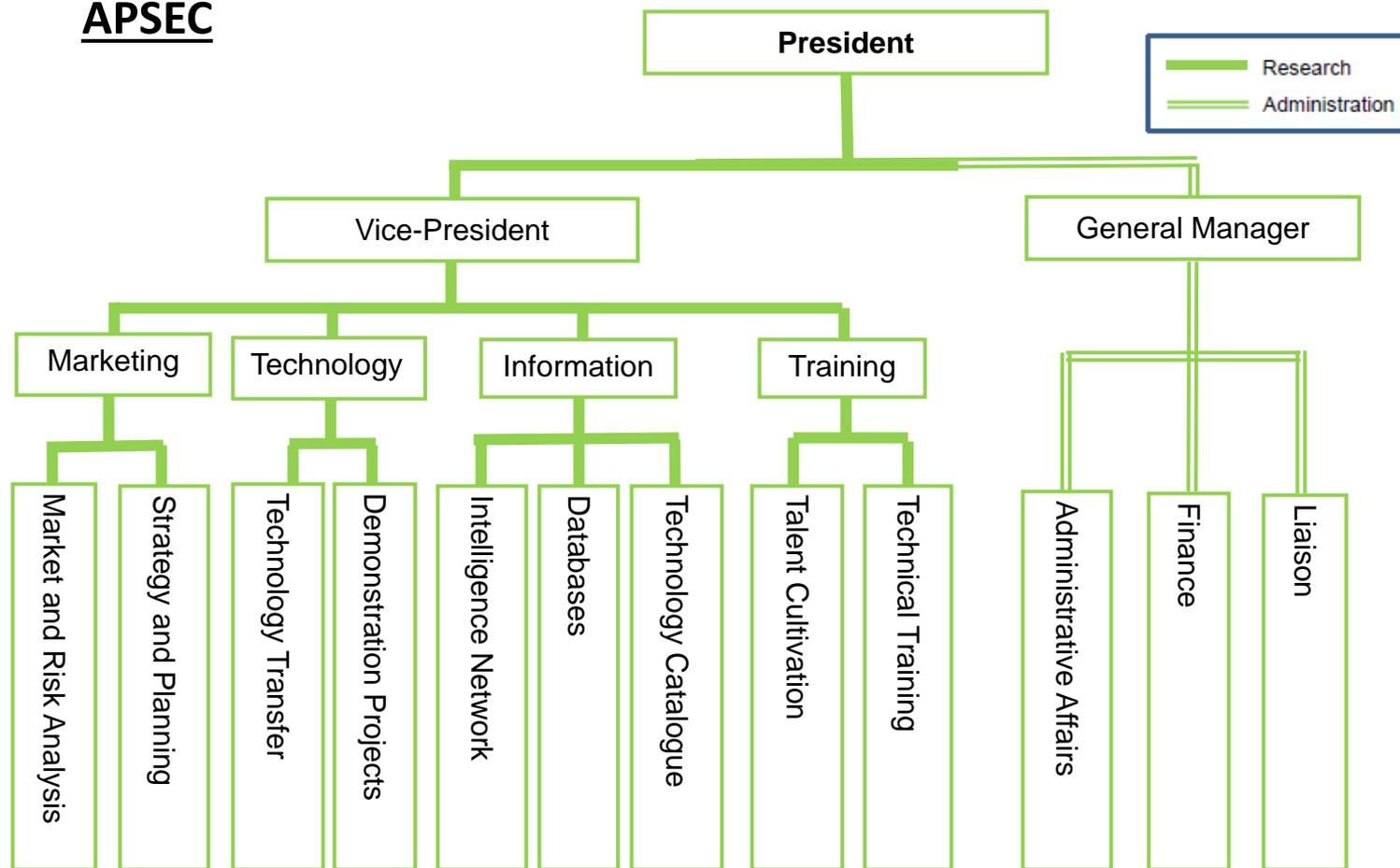
Facilitate **technology** transfer and dissemination through **practical projects**:

- To provide an **information platform** and regularly release publications on sustainable energy development among APEC economies;
- To build an Asia Pacific **knowledge network** and establish an APEC expert pool on sustainable energy;
- To conduct **technical exchange**, dissemination and application on sustainable energy in the APEC region;
- To facilitate the participation of APEC economies in APEC-funded **research projects**, as well as joint industry projects such as Low Carbon Model Town project in China;
- To organize **training courses** to representatives from APEC economies.

5. Organizational Structure



APSEC



6. Access ways

6.1 Logo



6.2 Microblog



6.3 WeChat



6.4 Website

- EN version <http://www.apsec.org.cn/apsecen/>
- CN version <http://www.apsec.org.cn>

7. Programs and Activities

Two Pillar Programs:

- *Clean Coal Technology Transfer*
- ***Sustainable City Development***

Two Platforms:

- *APEC Sustainable Energy Knowledge Network*
- *APSEC Strategic Partnerships*

Associated Activities:

- *Tours;*
- *Meeting events, like workshops, conferences & exhibit*
- *Training courses.*



APEC Sustainable Energy Center



Main Progress in the 1st Year

1st Anniversary Celebration of APSEC Asia Pacific Sustainable Energy Development Forum



1st APSEC Steering Committee Meeting

Sept.11 2015, Tianjin China



CEBU DECLARATION
2015 APEC Energy Ministerial Meeting
Cebu, Philippines

14. We reaffirm our commitment towards sustainable energy development in Asia Pacific region through knowledge-sharing and facilitating technology cooperation, demonstration and dissemination. **We recognize the progress made by the newly-established APEC Sustainable Energy Center (APSEC) in completing its institution building. We encourage APSEC to continue its work in expanding sustainable city development across the region, cutting-edge clean energy technologies and other programs on energy resiliency. We encourage APEC economies to support the work of this new institution.**

INSTRUCTIONS FROM APEC ENERGY MINISTERS

2015 APEC Energy Ministerial Meeting

Cebu, Philippines

We instruct the Energy Working Group (EWG), together with the Asia Pacific Energy Research Centre (APEREC), the APEC Sustainable Energy Center (APSEC), the Experts' Group on Clean Fossil Energy (EGCFE), the Experts' Group on Energy Data and

Promoting Community-based Clean Energy Use in Energy Poverty Stricken Areas

- We instruct EWG to work with APSEC with the assistance of the LCMT-TF to undertake APEC Cooperation Initiative for Jointly Establishing an Asia-Pacific Urbanization Partnership endorsed by APEC Leaders in 2014.** Construction of new buildings is an integral component for sustainable cities, and serves as an effective platform to demonstrate and apply cutting-edge technology. In line with this, we encourage Member Economies to explore strategies to drive the shift towards green buildings including zero energy buildings. This will ensure that new construction designs are incorporated in residential, commercial and even industrial structures including concepts and principles embracing energy efficiency particularly in emerging economic growth areas or second-tiered cities.



APEC Sustainable Energy Center



Work with EGNRET

1. Define the terminology of Sustainable Energy

- New and Renewable Energy
- Clean Energy including clean fossil fuel?
- Nonconventional fossil fuel?

2. To cooperate on the APEC Cooperative Network for Sustainable Cities (CNSC Pillar Program)

We instruct EWG to work with APSEC with the assistance of the LCMT-TF to undertake APEC Cooperation Initiative for Jointly Establishing an Asia-Pacific Urbanization Partnership endorsed by APEC Leaders in 2014.

In 2014, APEC Leaders recognized that the Asia-Pacific is currently experiencing booming urbanization and realized that sustained and healthy development of urbanization is conducive to promoting innovative growth and realizing robust, inclusive and sustainable development in the Asia-Pacific. **In this light, APEC Leaders endorsed the APEC Cooperation initiative for Jointly Establishing an Asia-Pacific Urbanization Partnership.**

Urbanization

26. Under the pillar of Urbanization, we seek to identify new drivers of economic growth by pursuing urbanization and sustainable city development. We support APEC partnership initiatives on urbanization and undertake to **establish a cooperative network** of sustainable cities in APEC economies. We will organize forums, hold policy dialogues, and utilize international sister-cities programs to **promote cooperation and share experiences** on urbanization and sustainable city development.

27. We will **facilitate the use of existing resources for research and capacity building on urbanization**. We encourage member economies to **support urbanization cooperation and urbanization-related projects**, including by making voluntary contributions to establish a sub-fund within the APEC framework.

28. We applaud progress made in the APEC Low Carbon Model Town Project and the promotion activities under it. We underscore the importance of eco-city and smart city cooperation programs, and **undertake to explore pathways to green urbanization and sustainable city development**.

New Sub-fund to support the implementation of the Initiative

2. Eligibility Criteria for the IERG Sub-Fund

The funding of a single project applying for the IERG Sub-Fund is subject to a cap of USD150, 000. All projects funded through the APEC Support Fund and its Sub-funds must primarily benefit developing economies.

Drawing on the direction set in *the APEC Accord on Innovative Development, Economic Reform and Growth* endorsed at the AELM in 2014 (Annex C of the 2014 Leaders' Declaration), the proposed criteria are intended to be in line with the priority areas specified in the aforementioned document.

Therefore, to be considered as eligible for the IERG Sub-Fund, the project must contribute to at least one of the following priorities:

- Overcoming the Middle-Income Trap;
- Implementing the APEC Initiative of Cooperation to Promote Internet Economy;
- Implementing the APEC Cooperation Initiative for Jointly Establishing an Asia-Pacific Urbanization Partnership, including establishing a cooperative network of sustainable cities in APEC economies, organizing sustainable urban development forums and policy dialogues, and carrying forward relevant projects that advance sustainable urbanization goals;

APPENDIX B

APEC Concept Note

Please submit through APEC Secretariat Program Director. Concept Notes of more than 3 pages (including title page) or incomplete submissions will not be considered.

Project Title:	Strategic Plan to Implement APEC Cooperation Initiative for Jointly Establishing the Asia-Pacific Urbanization Partnership
Fund Source (<i>Select one</i>):	<input type="checkbox"/> General Project Account (formerly Operational Account) <input type="checkbox"/> TILF Special Account <input checked="" type="checkbox"/> APEC Support Fund For ASF: As per Guidebook Ch. 3, list ASF Sub-fund if appropriate for this project:
APEC forum:	Energy Working Group (EWG)
Proposing APEC economy:	People's Republic of China
Co-sponsoring APEC economies:	Australia, Chinese Taipei, Hong Kong China, United States, Japan, Malaysia, Thailand, Vietnam
Expected start date:	July, 2016
Expected completion date:	June, 2017

2. **Objectives:** Describe the 2-3 key objectives of the project. (e.g. ensure workshop participants will be able to...; to create a framework...; to develop recommendations...; to build support...; to revise strategies...; to create an action plan;...to increase knowledge in; to build capacity in... etc.)
- To create an action plan of establishing the Cooperative Network for City Executives and to form the trend of sustainable development in APEC Cities by proposing initiatives on urban planning, green buildings, transportation, industries, economies and human lives within cities;
 - To build capacity in cities sustainable development by providing series and systematic training courses to relevant stakeholders to improve the professional knowledge, decision-making, marketing, finance essay and technical quality;
 - To increase knowledge in the technology, knowledge and products by setting up a technology, knowledge and products sharing platform for future widely popularizing and transferring this database among APEC economies through various ways;

Explanations on our FOCUS of CNSC

M: To promote pragmatic cooperation on **sustainable energy development** among APEC economies;

O.s:

- promote advanced ideas and models of **sustainable energy development** across the APEC region;
- facilitate cooperation among member economies in information exchange, policy dialogue, technology R&D, demonstration and dissemination;
- capacity building **in the field of sustainable energy.**

WS:

- **Facilitate technology transfer and dissemination through practical projects:**
 - information platform, knowledge network, technical exchange, research projects & training courses.



3. Buildings as platform for innovative technologies

We instruct EWG to work with APSEC with the assistance of the LCMT-TF to undertake APEC Cooperation Initiative for Jointly Establishing an Asia-Pacific Urbanization Partnership endorsed by APEC Leaders in 2014. ***Construction of new buildings is an integral component for sustainable cities, and serves as an effective platform to demonstrate and apply cutting-edge technology. In line with this, we encourage Member Economies to explore strategies to drive the shift towards green buildings including zero energy buildings.***

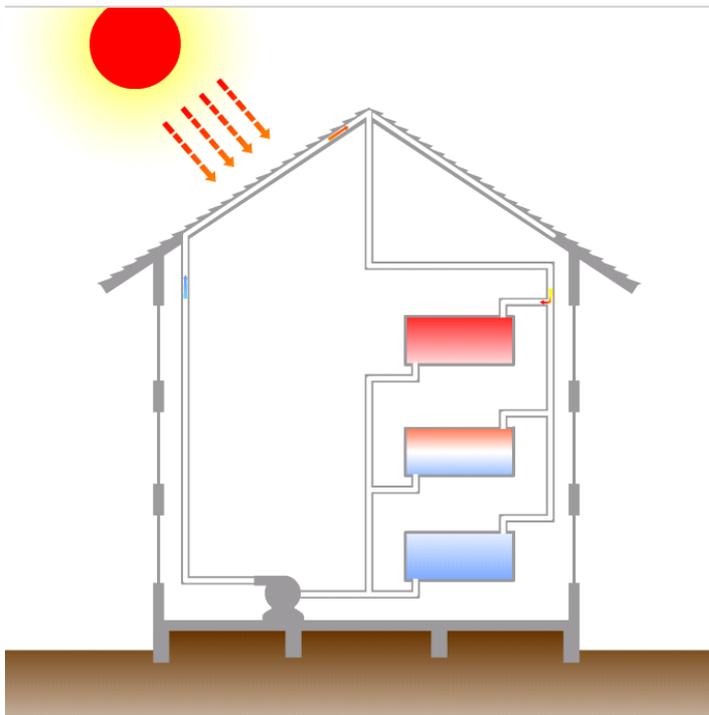
Newly proposed

APEC Concept Note

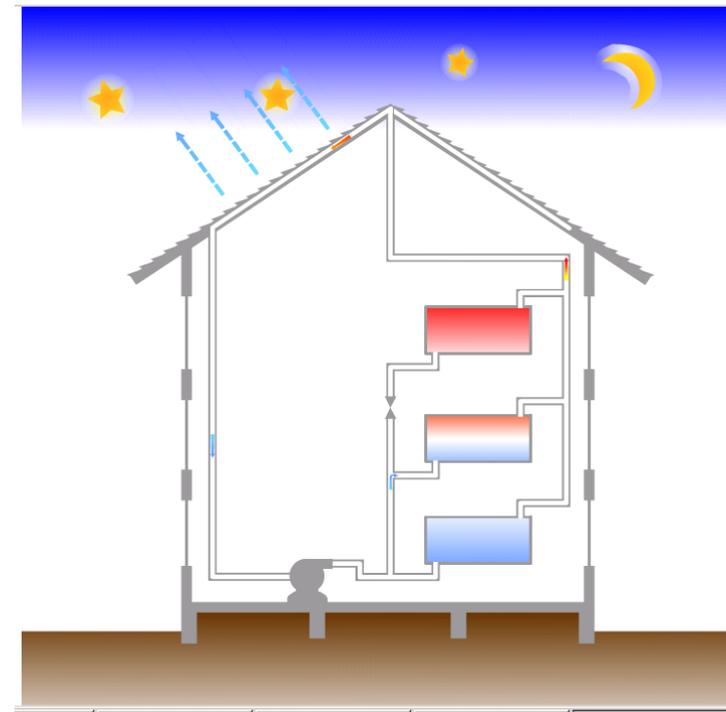
Project Title:	Study on the cost-effective renewable energy-supply solutions based on innovative solar technologies to promote green buildings in APEC region
Fund Source (<i>Select one</i>):	
<input type="checkbox"/> General Project Account (formerly Operational Account)	
<input type="checkbox"/> TILF Special Account	
<input checked="" type="checkbox"/> APEC Support Fund	
For ASF: As per Guidebook Ch. 3, list ASF Sub-fund if appropriate for this project: Energy Efficiency	
APEC forum:	Energy Working Group
Proposing APEC economy:	P.R China
Co-sponsoring APEC economies:	Australia, Hongkong China, United States
Expected start date:	July 2016
Expected completion date:	June 2017

Innovative Solar Energy Technologies

- Heating-Cooling Solar Panel



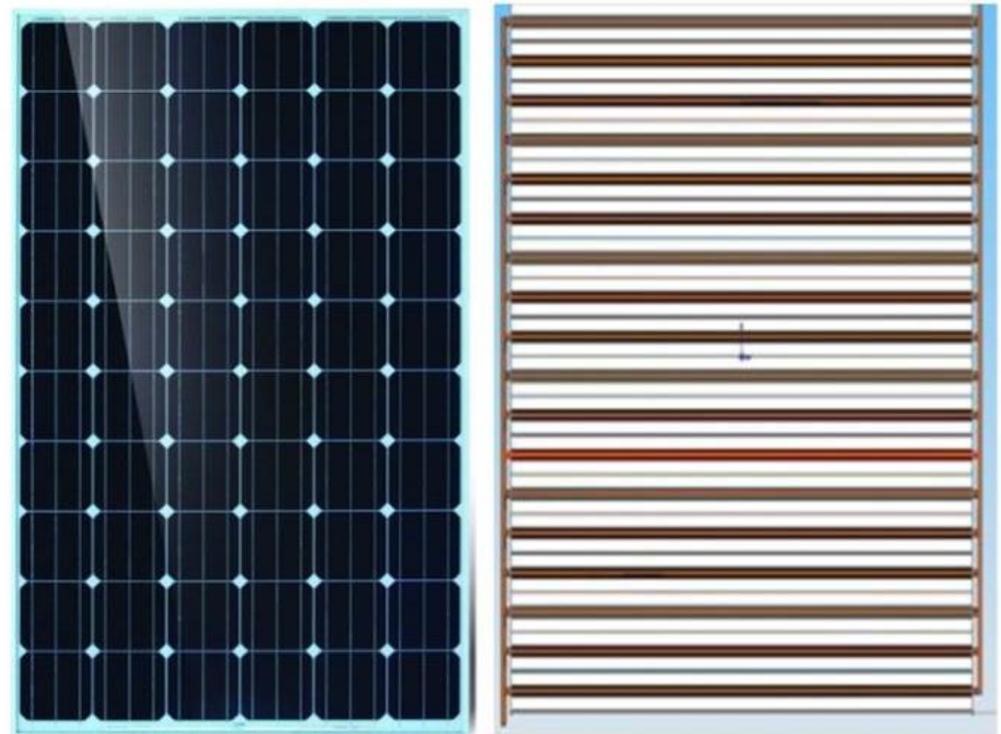
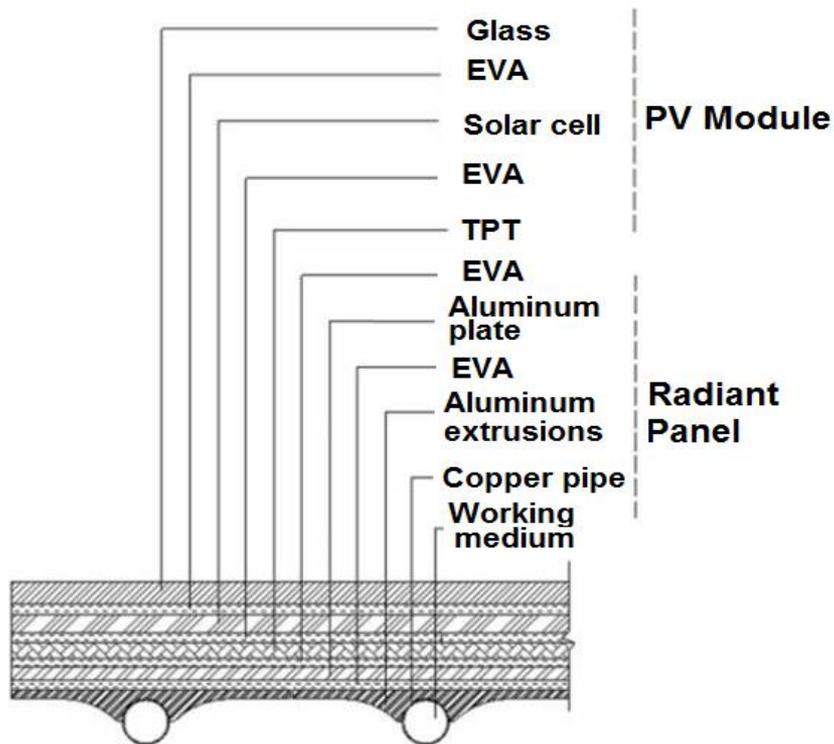
Heat collecting



Coolth collecting

Innovative Solar Energy Technologies

- Heating-Cooling Solar PV Panel



Innovative Solar Energy Technologies

- Heating-Cooling Solar PV Panel



Aluminum plate coupling



First lamination



Copper pipe coupling



Pipe welding



Frame installaion



Second lamination



Building Integration Forms

● Solar Radiant Panel

- Roof
- Wall
- Sunshade
- Railing
- etc.

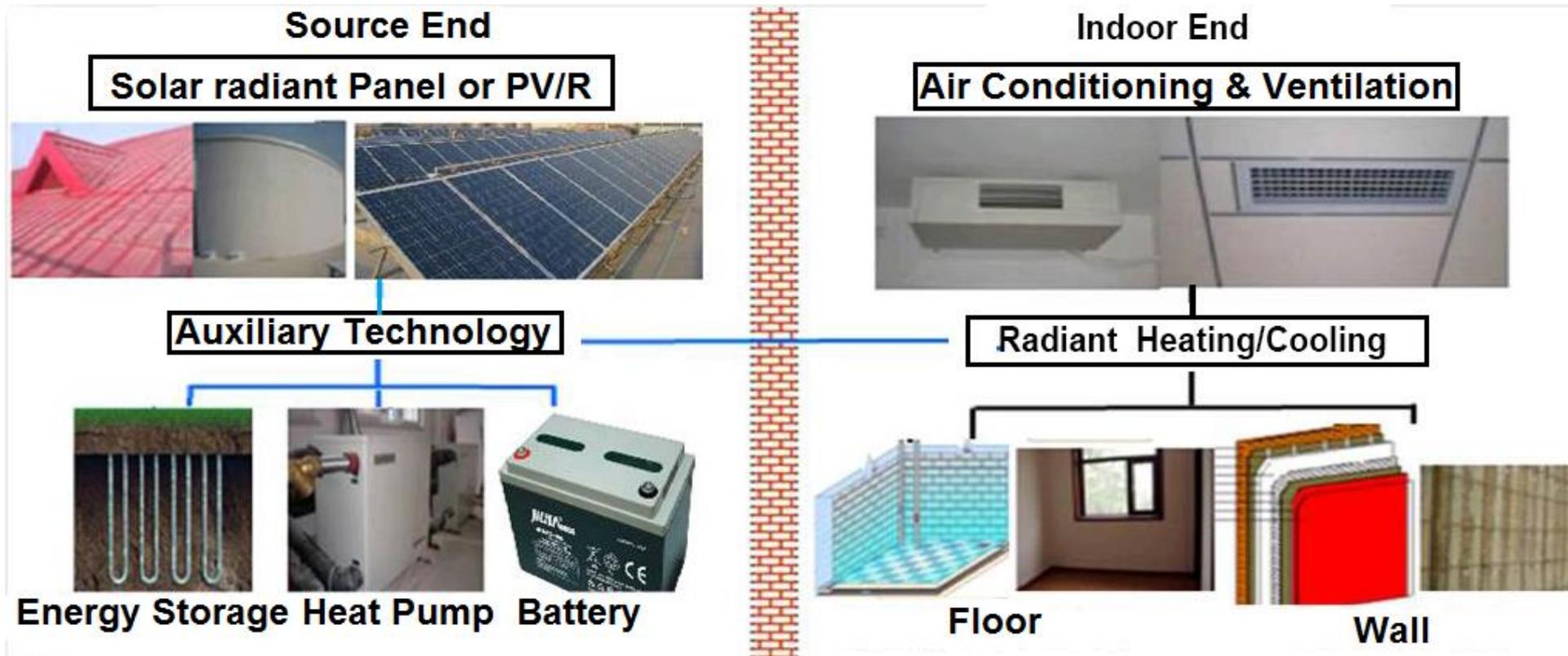


● PV/R

- Roof
- Wall
- Sunshade
- etc.

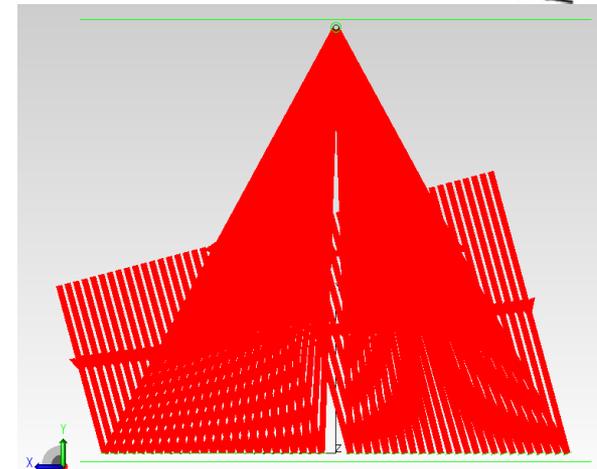
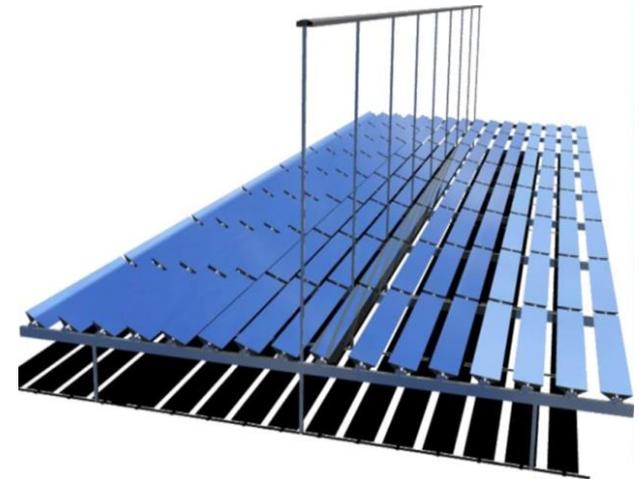
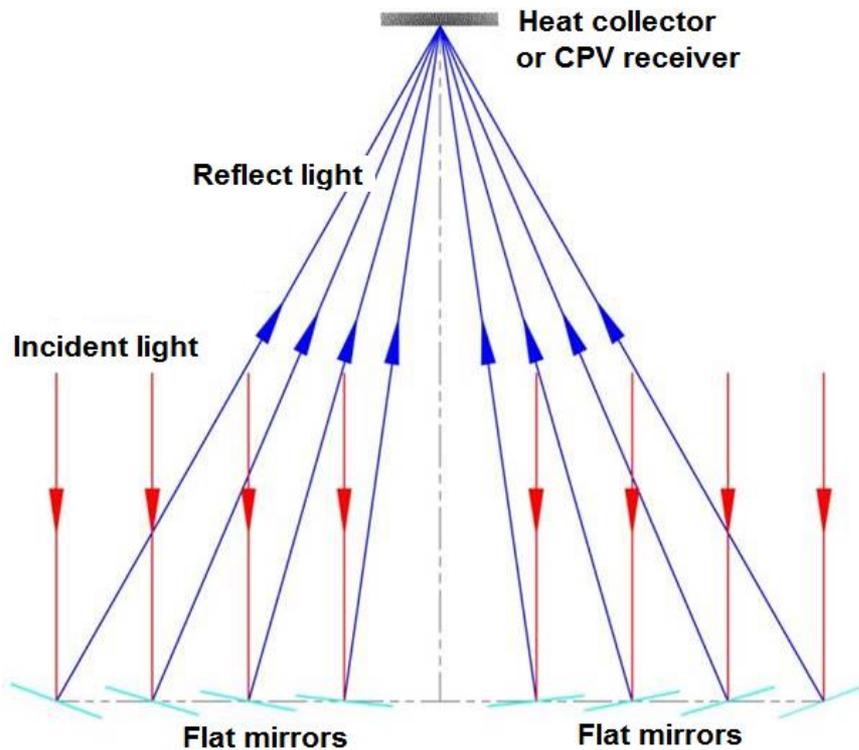


Building Energy Supply Systems



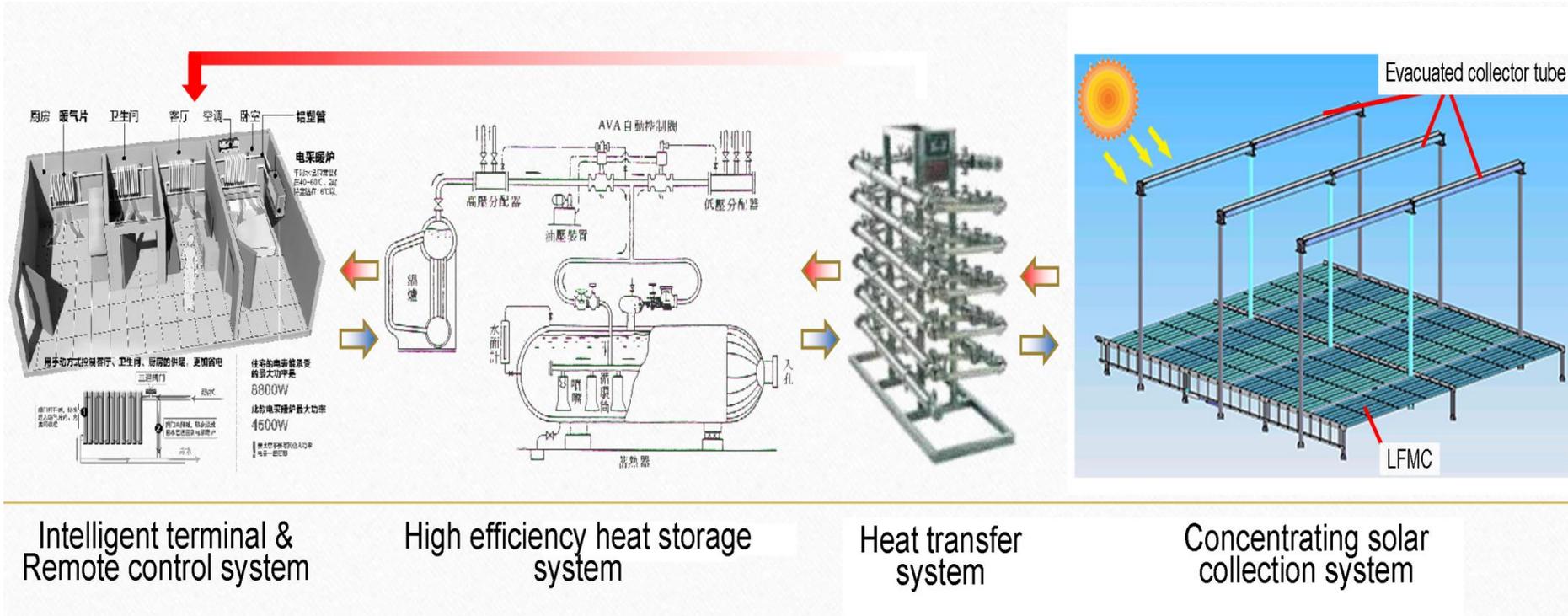
Innovative Solar Energy Technologies

- Linear Flat Mirror Concentrator (LFMR)



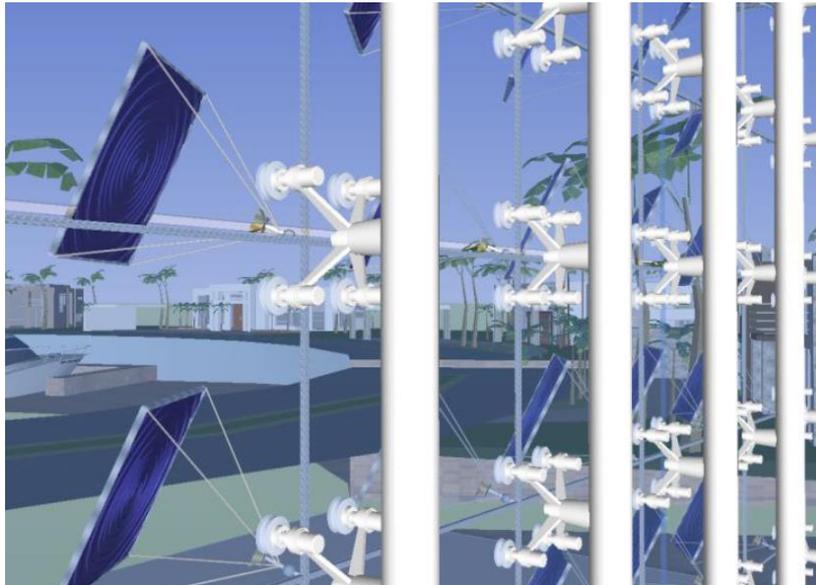
Innovative Solar Energy Technologies

- Linear Flat Mirror Concentrator (LFMR)**

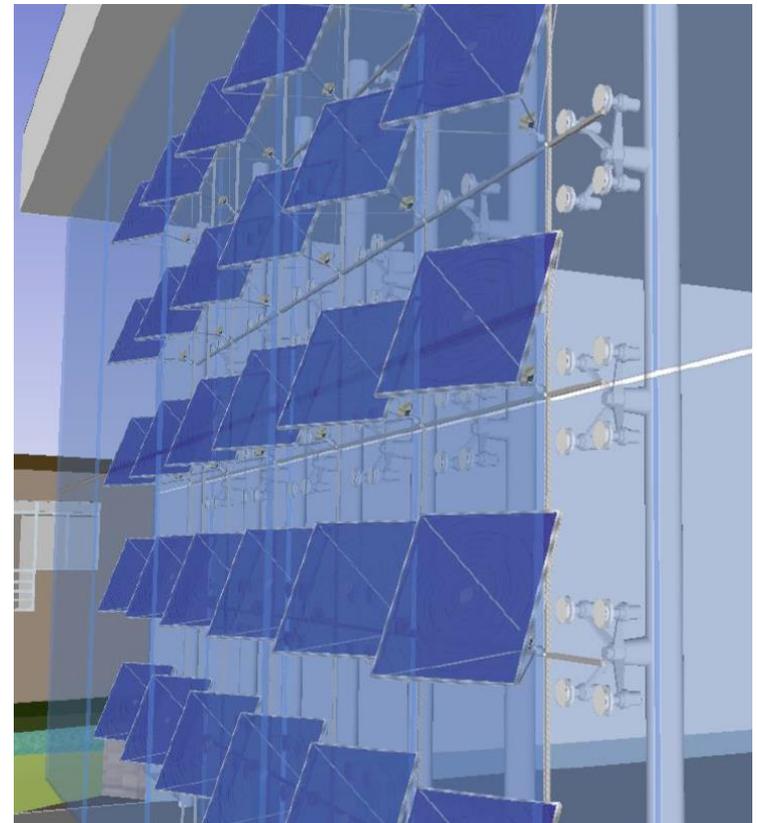


Innovative Solar Energy Technologies

- Dynamic Concentrating Solar Building Skin

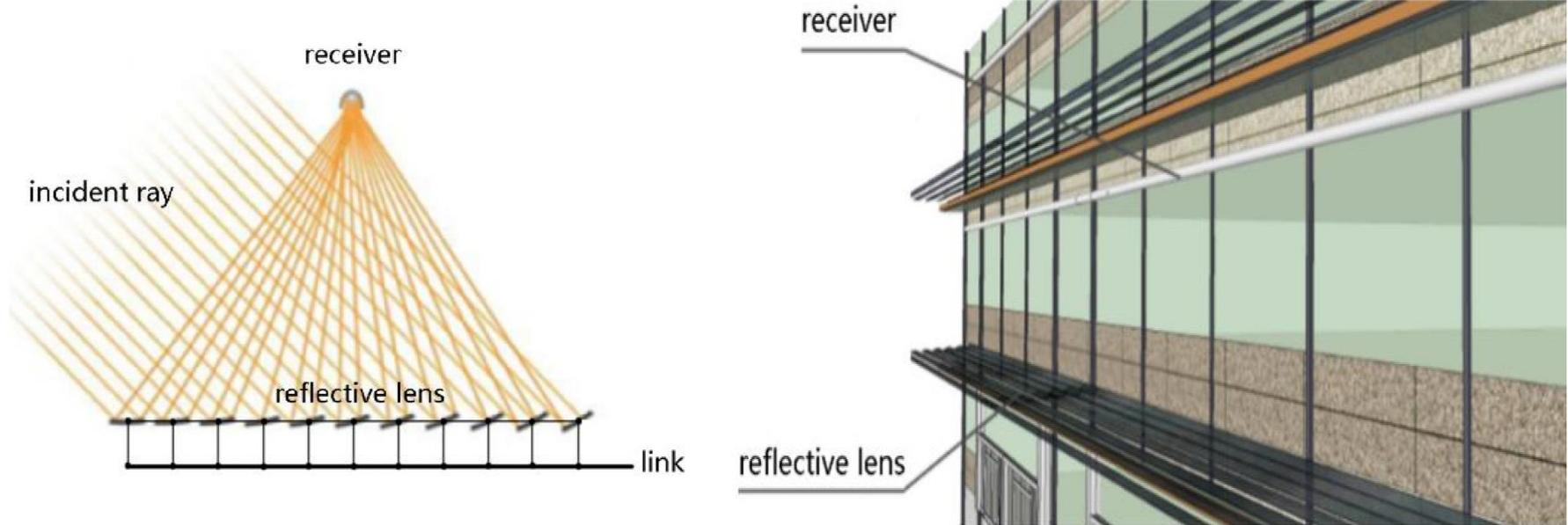


Fresnel point concentrating module
used between double-skin facades



Innovative Solar Energy Technologies

- Dynamic Concentrating Solar Building Skin



Reflective linear concentrating module used as shading components

Typical Demonstration Projects

- Building Integrated Solar Heating & Cooling System

Hotel
85000 m²



Apartment
70000 m²



School
4080 m²



Office Building
1300 m²



Typical Demonstration Projects

- Net Zero Energy Buildings



2010 Solar Decathlon of Europe —Sunflower House (72 m²)



Net Zero Energy Office, Shandong Province, China (2000 m²)

Typical Demonstration Projects

- Concentrating Solar Heating System in Inner Mongolia, China



4. Recommend APEC Visiting Researchers for APSEC through China's Overseas Talent Introduction Programs

- Chinese Government's "Recruitment Program of Global Experts" (1000 Talent Plan)
- Tianjin City Government's Global Brain-Gain Initiative
- Tianjin University Outstanding Talent Program



APSEC seeks researchers in the following areas:

- ***Low Carbon Buildings & Sustainable City Development***
- ***Clean Coal Technologies***
- ***Distributed Energy Systems & Smart Grid***

NB Other fields in Sustainable Energy are not excluded. You are more than welcome to propose other areas of interest to APEC economies.



**Thanks
for your attention!**

“Joining Hands Toward Sustainable Energy Development in the Asia-Pacific Region.”