Policy Review in Yujiapu CBD, China

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Policy Review in Yujiapu CBD, China

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Review Team Members

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- Dr. Samai Jai-In RTN, Technical Officer, Dhonburi Naval Dockyard, Thailand.
- Dr. Patric Sherry, Associate Professor & Executive Director, National Centre for Intermodal Transportation, University of Denver, United States.
- Mr. Pham Sinh Thanh, Head of Department of Environmental Impact Assessment and Appraisal, Industrial Safety Techniques and Environment Agency MOIT, Vietnam.
- Dr. Bing-Chwen Yang, Team Leader, Asia Pacific Energy Research Centre (APERC).
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- Mr. Lei CHEN, Researcher, Asia Pacific Energy Research Centre (APERC).
- Miss. Gayathiri Bragatheswaran, Researcher, Asia Pacific Energy Research Centre (APERC).

Review Activities in Tianjin China

Tuesday 30 August

- Site visit
  - Field observation of the Yujiapu CBD and constructor’s home
- Policy
  - Policy/strategy of central government and Tianjin city
- Low Carbon Index system
  - Index and target for the development of Yujiapu CBD
- Transportation system
  - Design concept and arrangement of the transportation system
Review Activities in Tianjin China

**Tuesday 30 August (cnt.)**

- **Plan for underground space**
  - Integration design and arrangement of underground space taking into account the living environment
- **Region cool and heat supply system**
  - Explanation of the system design and economic benefit analysis
- **Energy conservation building**
  - The implementation of the green building concept
- **Application of heat island analysis**
  - Micro climate concept and its application for the urban design to cooperate with the transient arrangement of the urban design

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Review Activities in Tianjin China

**Tuesday 30 August (cnt.)**

- **Energy management system**
  - The initial result for the employment of EMS in the sample building and the plan for the expansion of its application in this area
- **Low carbon construction**
  - Explanation of the overall construction concept, “constructor’s home” and low-carbon construction guideline
- **Region water system**
  - Arrangement of the different levels of the water system in Yujiapu CBD
# Review Activities in Tianjin China

**Wednesday 31 August**
- Discussion with Tianjin development and reform committee on the initial findings and preliminary recommendations
- Presentation and discussion of the draft recommendations to officers from the National Energy Agency

**Thursday 1 September**
- China low carbon town development
  - Detailed report on the strategy and status of the low carbon town development in China
  - Exchange of the concept on the low carbon town development

# Development in Tianjin China

**Major findings**

**Institutional Context and Goal**
- Strong commitment extends from the highest level of government (the Central Government) to the Tianjin Local Government for low carbon technology and its application in Yujiapu CBD, Tianjin, China.
- Strong communication between the China Central Government and Local Tianjin Government is evident in the setting of coordinated long term carbon emission reduction goals.

**Transportation & Underground Space**
- The transportation system management plan is comprehensive and impressive.
- Development of underground space to include pedestrian walk, utility tunnel and pass way for underground vehicle carriageway for loading/unloading, parking, etc. is indicative of a well thought out design.
Major findings

Urban Design

- Eight district heating and cooling systems (DHC) with ice storage system have been designed for this area and will cover about 72.9% of the floor area.
- Overall urban design in this development plan is a transit oriented development, with the employment of the micro-climate concept to plan the building and transportation arrangement.

Building and Energy Management

- At least twelve buildings in Phase I of the Yujiapu CBD area are planned to get the certification of green building, a highly commendable feat.
- The use of motion sensors and other advanced technology for controlling electricity demand in commercial buildings is an interesting and cutting edge concept.

Low Carbon Construction

- The basic concept employed by the Yujiapu CBD is to build a semi-permanent ‘builders’ home’ for the entire construction workforce and “manager home” for the management team members during their involvement in this project.
- It is not only to provide a comfortable living environment but also to reduce the construction of temporary housing.

Region Water System

- Setting the clear target for different water resource recycle.
- Common ditch and separate system was employed for water supply and drainage system.
- It was good to see that the Yujiapu CBD plan took the water environment into complete consideration.
The Review Team made 31 recommendations in this final report

GOALS TO REDUCE CO₂ EMISSIONS AND LOW CARBON INDEX SYSTEM

1. Further the coordination between Local Community-Level Goals and Sector-Level Goals.
2. Further the clarification of Sector-Level Goals by examining the applicability of various advanced low-carbon technologies and unique local conditions.
3. Assign a local agency in Tianjin / Yujiapu (counterpart organization) as the monitoring/reviewing agency for the co-ordination.
4. Display both CO₂ targets and actual emissions prominently at the exhibition centre or at other landmarks of Yujiapu for helping create common understanding for stakeholders.
5. Develop a Virtual Exhibition and material which displays not only the LCT goals but, progress and achievements and can also be distributed to other economies.
Recommendations

TRANSPORTATION SYSTEM

7. Clarify a road pricing plan and the parameters and key indicators of the model that would be used to support the plan.
8. Deal with connectivity in a rigorous scientific fashion by making correct estimation of the substantial traffic flow from surrounding areas into the Yujiapu CBD area.
9. Conduct a detailed plan to deal with the role of freight and its impact on the overall traffic flow and carbon usage.
10. Plan some accommodation (parking spaces) for irregular electric vehicles not just automobiles.
11. Enrich the overall transportation plan with evacuation and emergency routes.

UNDERGROUND SPACE

12. Consideration and arrangement of the ventilation and smoke exhaust for the underground space with reference from the heat island analysis.
13. Arrange more close cooperation between the underground space development and the heat island analysis and DHC system.
Recommendations

REGIONAL COOL AND HEAT SUPPLY ENERGY SYSTEM

14. Provide regulation (such as M&V guidelines, underground trench, etc.) or incentives (government subsidies) for the employment of a DHC system.

15. Identify the interface or responsibility/risk for all involved parties, this needs to be more clearly identified.

16. Monitor and calibrate the sensing & metering infrastructure/devices so that accurate and sufficient data can be provided.

17. Consider high temperature difference in DHC system to reduce the energy requirement.

Recommendations

ENERGY SAVING BUILDING

18. Consider the certification of green building as a necessary condition in the contract, to constrain the behaviour of the developer.

19. Consider some measures as an incentive to the owner of the building so higher standards of green buildings can be met.

20. Conduct the regulation/guideline for carrying out the testing and verification of a new building.

21. Set up and improve a mechanism for the review of the electricity and heat consumption information.
HEAT ISLAND ANALYSIS APPLICATION

22. Identify incentives offered for the development of the building with consideration/employment of the micro-climate concept or other high-efficient system/facilities.

23. Propose the guidelines or criteria for solving the conflict between the results from the micro-climate concept and the real distribution of building arrangements.

ENERGY EFFICIENCY MANAGEMENT SYSTEM

24. Develop a well thought out plan with regards to the supply and demand balance of electricity across the board and the type of technology that can be introduced there (i.e. smart grids).

25. Implementation of education campaigns and policies on the benefits of energy efficiency to alter human behaviour on energy conservation and the employment of new technology.

26. Expand close cooperation between the energy service company (ESCO) and the Energy Management System (EMS) or DHC to raise energy efficiency and create a beneficial situation.

27. Expand the existing EMS to the Area Energy Management System (AEMS) and combine with security systems or other smart management concepts to form the basis of a smart home or community.
Recommendations

LOW CARBON CONSTRUCTION

28. Consider shipping the material due to the close location of the Yujiapu area to the delivery port.

29. Evaluation of low carbon construction for the underground space construction work.

Recommendations

REGIONAL WATER SYSTEM

30. Consider collecting Rain water by sunken plaza.

31. Set up a centre to monitor the quality and flow of drinking water, rainwater system, and even river water information etc.
Summary

- China has a strong commitment to low carbon technology and its application in Yujiapu CBD, Tianjin, China.
- China has set up very clear long term carbon emission reduction goals, set up by the Central Government and Tianjin City.
- A broad and intense development action plan was developed and is being executed in Yujiapu CBD.
- The monitoring and tracing mechanism was also set up to supervise/manage the low carbon construction in this development project.
Thank you for your kind attention

We Extend Our Appreciation to Our Chinese Friends for Their Support and Cooperation for Carrying Out This Policy Review

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