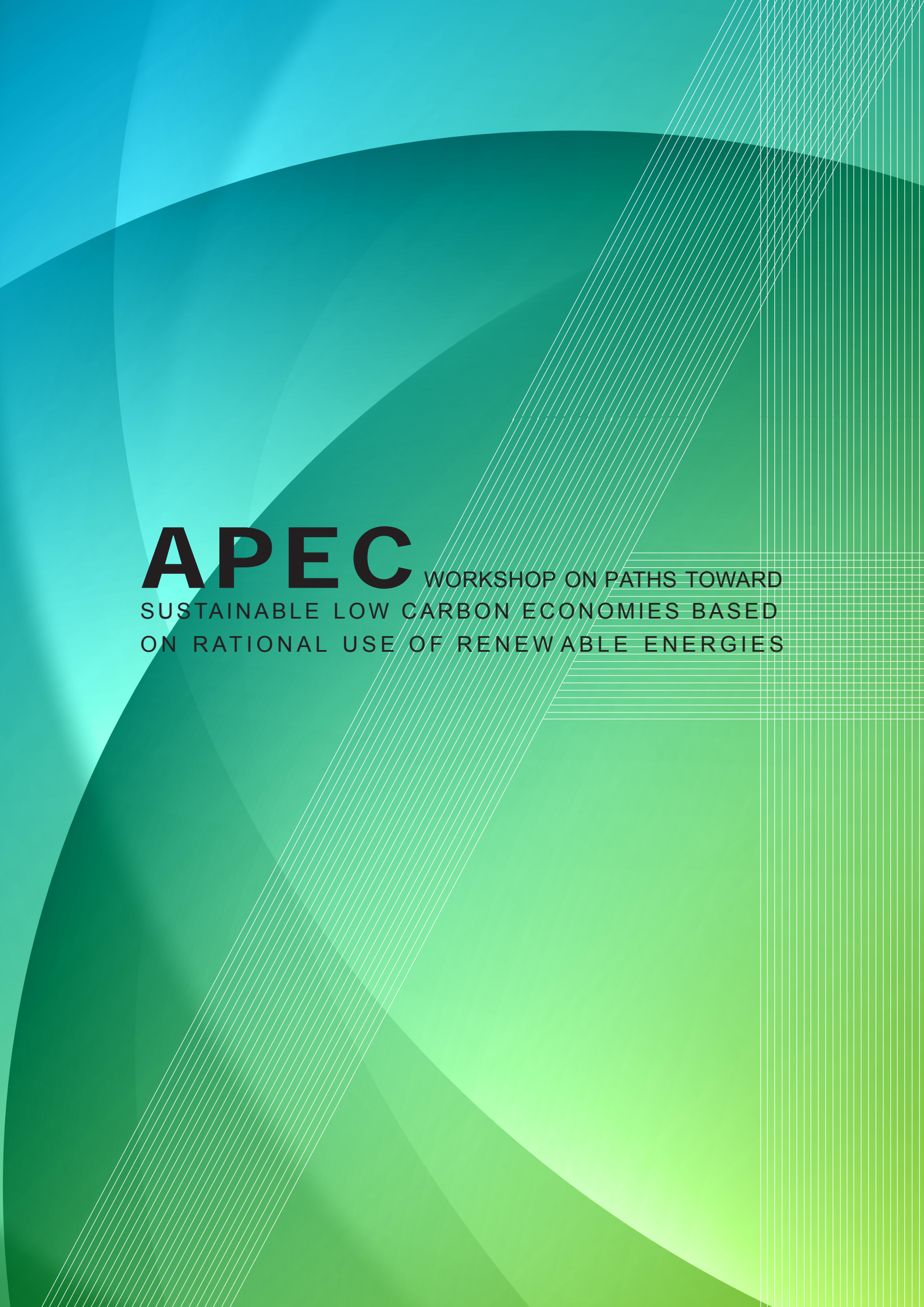




**Asia-Pacific
Economic Cooperation**

APEC Workshop on Paths toward Sustainable Low Carbon Economies Based on Rational Use of Renewable Energies

**APEC Energy Working
28 November 2012**

The background features a gradient from light blue at the top to light green at the bottom. A large, dark green, semi-circular shape is positioned on the left side. On the right side, there are several sets of parallel white lines: a set of vertical lines, a set of horizontal lines, and a set of diagonal lines running from the top-right towards the bottom-left. The text is centered horizontally and partially overlaid by these lines.

APEC

WORKSHOP ON PATHS TOWARD
SUSTAINABLE LOW CARBON ECONOMIES BASED
ON RATIONAL USE OF RENEWABLE ENERGIES

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1. Project Profile

1.1 Background

Asia-Pacific Economic Cooperation (APEC) is a significant platform for multilateral cooperation among economies. In order to strengthen regional economic integration, expand trade and promote regulatory cooperation, member economies launched APEC projects. APEC members pay much attention to the projects and participate in the project application to promote external economic cooperation by using the APEC platform and resources.

APEC leaders declared that the theme in 2010 is "Low Carbon Paths to Energy Security: Cooperative Energy Solutions for a Sustainable APEC", following the 2007 Sydney APEC Leaders' Declaration on Climate Change, Energy Security and Clean Development. The use of renewable energies will contribute to the reduction in energy intensity of at least 25% by 2030. In fact, based partly on pledges member economies made to support renewable energy and improved efficiency during the UN Climate Change Conference in Cancún in November 2010, APEC is already set to surpass its 25 percent reduction goal. The Asia-Pacific Energy Research Center expects a 38 percent decline by 2030 under a business as usual scenario.

In order to alleviate effects of global climate change, create low-carbon society, promote low-carbon policies and develop low-carbon industries and to strengthen exchanges and cooperation among APEC member countries in the field of low carbon, Asia-Pacific Economic Cooperation and China's National Energy Administration organized project application through Energy Working Group. With the support of Tianjin Development and Reform Commission of China, Tianjin University in China successfully applied for this project.

1.2 Objective

There are three main objectives of this project:

- ◆ To share and assemble information and experiences on available and affordable renewable technologies, covering the aspects of technical, standards and regulations, economic and social topics; To enhance the understanding of the rational use of renewable energies through analysis and evaluation of real demonstration cases from single solar buildings to eco-cities in the meeting place;
- ◆ To develop rational use methodology systems of various local renewable energies aiming at typical communities of residential and industry zones for sustainable low carbon economies, establish rational use methodologies systems for the development of renewable energies serving low carbon APEC economy growth modes;
- ◆ To enhance understanding of the significance of international collaboration through ECOTECH and capacity building activities on available and affordable renewable energy technologies towards green and sustainable APEC economy; To develop recommendations on promoting technology transfer, free trade and investment of renewable energies in APEC economies for a balanced, secure mode community.

1.3 Importance

This project will provide the opportunity for Chinese researchers and entrepreneurs learning advanced renewable technologies and new concepts of developing RE technologies from participating developed economies. The group work involved in the project on developing methodology and evaluation systems for the rational use of renewable energies will bring great benefits for the more and more application of RE in China.

The renewable technology with better economic and social performance will have a good market. This will accelerate the development of renewable energy technology and industry in China. The renewable energy systems serving sustainable low carbon communities designed and used in a rational way will easily be accepted by the stakeholders and thus have the potential of large scale application.

It will also address the issue of environmental quality and contributing to the reduction of greenhouse gas emissions in China. This project will also promote private investment in green industries and production processes, as well as promote green jobs education and training in China.

1.4 Participants

China is the proposing APEC economy of this project. And there are other five co-sponsoring economies including Australia; Hong Kong, China; Republic of Korea; Chinese Taipei; and the United States. In addition, there are other APEC and Non-APEC economies are actively involved in the project.

The project contains five types participants:

- ◆ Policy Makers and Government Officials involved in decision-making on renewable energy exploration and production; renewable energy generation strategies; greenhouse gas mitigation; relevant environmental and regulatory issues; and sustainable low carbon economy establishment.
- ◆ Research Organizations in the field of renewable energy.
- ◆ Industrial enterprises associated with the development of a stable and commercially viable renewable energy industry.

2. Project Implementation

According to the project objectives, four periods are arranged to finish the project:

2.1 1 January 2012-30 October 2012

(1) Action

- ◆ Conduct information collection on technologies, strategies, standards and policies on the development of renewable energies;
- ◆ Communicate and discuss the researched advanced renewable technologies and new concepts of developing high performance renewable technologies from among participating organizations;
- ◆ Classify and select the typical low carbon communities on the basis of local renewable energy resources and energy demand modes;
- ◆ Set the rules of the rational use of renewable energies for achieving sustainable low carbon communities by considering and balancing the economic and social factors;
- ◆ Develop the methodologies and strategies of the rational use of renewable energies serving low carbon communities; establish evaluation and assessment systems for the rational use of renewable energies.
- ◆ Approaches of information collection may include visiting websites, consulting literatures (e.g. books, publications, reports, etc.), conducting expert meetings and group discussion by email, telephone, or visiting sites to conduct case studies and so on.

(2) Output

Survey reports, website files, pictures and videos on technologies, strategies, standards and policies on the development of renewable energies and the rational use methodologies, guidance and practices in APEC economies and selected economies in other regions

2.2 1 November 2012-13 November 2012

(1) Action

Prepare for the Forum, including draft, program, agenda, and participation list (experts/designers/policy-makers/entrepreneurs, temporary employees, other stakeholders in APEC economies), invite speakers and delegates from government and private sector agencies currently progressing renewable energy development, knowing how to use them well and how to evaluate their performance from the aspects of technical, social and economical, prepare and collect of papers, rent the workshop place, etc. Approaches of workshop preparation include emails, phone calls or in person, etc.

(2) Output

Brochures, posters, media releases will be developed to brief the general about the key components of the workshop

2.3 14 November 2012-15 November 2012

(1) Action

Conduct a comprehensive Forum on Low-Carbon Town Development and Start Ceremony of Low-Carbon Town Tour in China to present the information collection and to assemble worldwide technology, experience on rational use of renewable energies through keynote speeches, oral presentations, exhibitions or face-to-face discussions. The target audience will include representatives of APEC economies and other selected economies, as well as the public within APEC economies, etc.

(2) Output

Workshop proceedings/Reports/Newspaper&TV/Websites.

2.4 16 November 2012-31 December 2012

(1) Action

The project team, in consultation with the relevant experts, designers, policy makers and entrepreneurs, will finalize a report on the workshop and its outcomes.

(2) Output 4

Final full project report

3. Representative Achievement

3.1 APEC Forum— Low-Carbon Town Development

The forum “New Energy, New City” - Low-Carbon Town Development and Ceremony of Low-Carbon Town Tour in China is a main part of this APEC project’s application and a representative achievement.

3.1.1 Organization of the Forum

◆ Organizers

Asia-Pacific Economic Cooperation
National Energy Administration of China
Tianjin Development and Reform Commission

◆ Undertaker

Tianjin University

◆ Joint Organizer

Chinese Renewable Energy Society
China Architectural Society
China Association of City Planning
Tianjin Foreign Affairs Office
Tianjin Science and Technology Committee
Tianjin Urban and Rural Construction and Management committee
Tianjin Renewable Energy Society

◆ Execution Units

International Research Center of Low-Carbon building of Tianjin University
Magazine of Urban Environment Design of School of Architecture, Tianjin University



◆ **Supporting Media**

News Channel of CCTV, Science and Education Channel of CCTV, Central Network Television of CCTV, Satellite Channel of TJTV, Science and Education Channel of TJTV, Tianjin National Radio;
China Daily, China Energy News, China Economic Herald, 21st Century Business Herald, ,Economic Observer, Economic Daily, Financial Times, Tianjin Daily, Xinmin Evening News, Tianjin Now Evening News, Tianjin Evening News, Northern Economic Times, Tianjin Education Daily;
Sina.com, Sohu.com, NetEase.com, Tianjin Channel of Xinhua Network, Tianjin Windows of People's Daily Online, China Renewable Energy Network, China Economic Information Network;
Journals of Renewable Energy, Energy and Environment, Energy Science, China Construction News , World Architecture, Architects, Green Science and Technology

3.12 Time and Venue

- ◆ **Time:** November 14th and 15th, 2012
- ◆ **Location:** Renaissance Tianjin Lakeview Hotel (Wanli Tianjin Hotel), China

3.13 Main Participants

- ◆ Leaders from National and Tianjin relative government departments
- ◆ Experts and scholars in the field of Energy, Architecture, Technology and Industry at home and abroad
- ◆ Well-know entrepreneurs in the field of Energy, Architecture, Technology and Industry at home and abroad
- ◆ Media of Television, Radio Stations, Print Media, Internet Media



3.2 SCHEDULE

TOPICS

- Topic 1: Low-Carbon Town Planning and Energy Strategies
- Topic 2: Low-Carbon Town Practices - Part 1
- Topic 3: New Energy and Low-Carbon Town Construction
- Topic 4: Low-Carbon Town and Ecological Environment
- Topic 5: Low-Carbon Town Construction and Energy-saving Technology
- Topic 6: New Energy Technologies in Low-Carbon Town
- Topic 7: Low-Carbon Town Practices - Part 2

November 13th(Tuesday)

09:00—22:00 Register at the Lobby of Renaissance Tianjin Lakeview Hotel

Address: Renaissance Tianjin Lakeview Hotel, No.16 Bin Shui Road, He Xi District, Tianjin, China

19:00—20:30 Welcome Banquet

Place: Renaissance Tianjin Lakeview Hotel

Morning, November 14th(Wednesday)

Time: 09:00—12:10

Place: Renaissance Tianjin Lakeview Hotel Opening Ceremony

Chairperson: Shu Gequn, Vice-president of Tianjin University

09:00—09:10 Opening Ceremony Speech by Shu Gequn, Vice-president of Tianjin University

09:10—09:20 Speeches by Leaders of National Energy Administration Speech by Zhang Dan,
Counselor of Department of International Economy, Ministry of Foreign Affairs of China

09:20—09:30 Speeches by Leaders of Tianjin Municipality or Tianjin Development and Reform Commission

09:30—09:40 Low-Carbon Town Signing Ceremony of Strategic Cooperation

09:40—10:00 Start Ceremony of Low-Carbon Town Tour in China

10:00—10:10 Take a Group Photo

10:10—10:20 Coffee Break

Topic 1: Low Carbon Town Planning and Energy Strategies

Chairperson: Zhang Qi, Dean of School of Architecture, Tianjin University. Professor & Ph.D Advisor

10:20—10:40 Yu Yixin Academician of the Chinese Academy of Engineering, Class-A Principal in the
Discipline of Electrical Engineering, Tianjin University

Lecture theme: Smart Grid Technology of Town

10:40—11:00 Li Bo Board Chairman of Tianjin New Financial Investment Co. Ltd.

Lecture theme: The First APEC Low-Carbon Model Town— Practices and Innovation
of Yujiapu Financial District

11:00—11:20 Wen Hongyu Director of Dalian Science & Technology Town Development Co. Ltd.

Lecture theme: Dalian Eco-Science & Technology Town—Practices and Exploration
of Yida Group in Low-Carbon Eco-town Construction

11:20—11:40 Satoshi Nakanishi Former General Manager of Asia Pacific Energy Research Center,
Energy Source Consultant Japan

Lecture theme: Efforts Toward Low-Carbon Town Development in the APEC

11:40—12:00 Steve Blume President of Australian Solar Council (Australian Solar Energy Society)

Lecture theme: The Importance of Quality Standards in Solar Renewable Deployment

12:00—12:10 Q&A 12:10—13:20 Lunch

Afternoon, November 14th(Wednesday)

Time:13:20—18:00 Place: Renaissance Tianjin Lakeview Hotel

Topic 2: Low-Carbon Town Practices - Part 1

Chairperson: Xue Kongkuan

13:20—13:40 Ye Qing President of Shenzhen Institute of Building Research, Secretary General of
Ecologic Urban Research Professional Board

Lecture theme: From Green Building to Eco-city



- 13:40—14:00 Xue Kongkuan President of Beijing Modern Building Institute, CNBM; Director of Ecologic Habitation Committee, Architectural Society of China
Lecture theme: Low-Carbon Ideas and Implementation Strategies in Ecologic Habitation Construction
- 14:00—14:20 Li Dexiang Principal of Ecological Design Studio, School of Architecture, Tsinghua University; Ph.D Advisor
Lecture theme: Equip Oneself with Others' Wisdom—Exploration of Low-Carbon Town Development Pattern
- 14:20—14:40 Yang Tianju President of Pan-China Group
Lecture theme: Theoretical Research and Practices of Innovative Models of Chinese Town Development
- 14:40—15:00 Zhang Baogui Beijing Baogui Stone Crafts Technology Co., Ltd.; Well-known Sculpture Artist
Lecture theme: Discussion of Urban Sculpture and Architectural Design Through Recycle of Waste Material
- 15:00—15:20 Zhu Neng Professor & Ph.D Advisor in School of Architecture at Tianjin University
Lecture theme: Comparison on Energy Efficiency of Energy Efficient Buildings in China and America
- 15:20—15:30 Q&A
- 15:30—15:50 Coffee Break

Topic 3: New Energy and Low-Carbon Town Construction

Chairperson: Robert Boehm

- 15:50—16:10 Robert Boehm Distinguished Professor of Mechanical Engineering and Director of the Center for Energy Research, University of Nevada Las Vegas
Lecture theme: Two Energy Conserving House Projects in the Mojave Desert
- 16:10—16:30 Wongee Chun Professor of Jeju National University, South Korea
Lecture theme: Energy and Environmental Policy for Low-Carbon Green Growth Society
- 16:30—16:50 Marialena Nikolopoulou Professor and Director of Centre for Architecture and Sustainable Environment, Kent School of Architecture, University of Kent, UK
Lecture theme: From Comfort Models to Comfortable People: How Big is the Gap? Implications for Low-Carbon Cities
- 16:50—17:10 Zhu li Associate Professor & Ph.D Advisor in School of Architecture at Tianjin University
Lecture theme: Multi-function Solar Technologies and Their Applications in Low-Carbon Buildings
- 17:10—17:30 Tzu-Chen Hung Professor, Department of Mechanical Engineering, National Taipei University of Technology, Chinese Taipei; Vice Chief Executive Officer, Committee of Recruitment for Technological Colleges and Universities, Ministry of Education, Chinese Taipei
Lecture theme: The Integration of a Low-cost ORC Design with a Passive Solar Energy Collection in Power Generation for Developing and Undeveloped Territories
- 17:30—17:50 David del Rio Vilas Adjunct Full Professor, Department of Economic Analysis and Business Administration, University of A Coruna, Spain; Head of the R&D Area, ROYFE S.L. and CYE S.L.
Lecture theme: A Case Study of a Spanish Engineering Firm: the Effective Integration of Renewable Energy Solutions in Architectural and Building Projects
- 17:50—18:00 Q&A



Morning, November 15 (Thursday)

Time: 09:00—12:20 Place: Renaissance Tianjin Lakeview Hotel

Topic 4: Low-Carbon Town and Ecological Environment

Chairperson: Jerry Yan

- 09:00—09:20 Jerry Yan Chair Professor of Royal Institute of Technology (KTH) and Malardalen University (MDU), Sweden
Lecture theme: Transition of Future Energy Systems: Decoupling Between Development and Emissions
- 09:20—09:40 Sorawit Nunt - Jaruwong Planning and Policy Analyst, Department of Alternative Energy Development and Efficiency, Ministry of energy, Thailand
Lecture theme: Low -Carbon Policy and Status in Thailand
- 09:40—10:00 Igor Skryabin Business Development Manager, ANU Energy Change Institute
Lecture theme: Energy Change: Demand for New Education and Research Programs
- 10:00—10:20 Naren Tuya Supervisors of Galaxy Hahua Low-Carbon Industrial (Tianjin) Fund Management Co., Ltd
Lecture theme: Low-Carbon Development is an Important Investment Field for Industrial Fund
- 10:20—10:30 Q&A
- 10:30—10:50 Coffee Break



Topic 5: Low-Carbon Town Construction and Energy-saving Technology

Chairperson: Long Weiding

- 10:50—11:10 Long Weiding Standing Deputy Director of Building Energy Saving and New Energy Research Center, Tongji University; Professor & Ph.D Advisor of Sino-German College Applied Sciences of Tongji University.
Lecture theme: Urban Energy Saving
- 11:10—11:30 Yan Wei Associate Professor, Department of Architecture of Texas A&M University, U.S.A.
Lecture theme: Computer Modeling for Sustainable Building Design, Simulation, and Estimation
- 11:30—11:50 Fu Xiangzhao Director & Professor & Ph.D Advisor of Environmental Quality Assurance and Ecologic Reconstruction Research Center, Chongqing University
Lecture theme: Urban Fresh Air
- 11:50—12:10 Cao Yiyong General Designer, Beijing Buildinglife Architectural Planning & Design Co., Ltd.
Lecture theme: Application of Exergy Analysis in Low-Carbon Energy Planning and Architectural Design
- 12:10—12:20 Q&A
- 12:20—13:20 Lunch

Afternoon, November 15 (Thursday)

Time: 13:20—18:00

Place: Renaissance Tianjin Lakeview Hotel



Topic 6: New Energy Technologies in Low-Carbon Town

Chairperson: Li Yuguo

- 13:20—13:40 Christopher Chao Professor of Mechanical Engineering and Associate Dean of Engineering, the Hong Kong University of Science and Technology
Lecture theme: Some New Initiatives in Energy Efficient and Smart Green Building Research
- 13:40—14:00 Francis W.H.Yik Professor of Hong Kong Polytechnic University
Lecture theme: Green and Energy Efficient Building and Air-conditioning System Design by Simulation
- 14:00—14:20 Li Yuguo Head of Department of Mechanical Engineering, the University of Hong Kong
Lecture theme: High-rise Compact Cities: Urban Warming, City Ventilation and Energy Efficiency
- 14:20—14:40 Yi-Tung Chen Professor of Department of Mechanical Engineering, University of Nevada Las Vegas
Lecture theme: The Perspective of Hydrogen Energy in 21st Century
- 14:40—15:00 Zhao Jun Professor & Ph.D Advisor of Tianjin University
Lecture theme: the Future Energy facing Rapid Development of Chinese Low-carbon Town
- 15:00—15:20 Yin Bo Associate Dean of Tianjin Branch of Chinese Academy of Sciences
Lecture theme: Concepts and Development Orientations for the multi-energy coupled system
- 15:20—15:30 Q&A
- 15:30—15:50 Coffee Break



Topic 7: Low-Carbon Town Practices - Part 2

Chairperson: Phillip Jones

- 15:50—16:10 Phillip Jones Head of Welsh School of Architecture, Cardiff University; Chair of Wales Low Carbon Research Institute (LCRI)
Lecture theme: Evaluation Frameworks for Low-Carbon Urban Planning
- 16:10—16:30 Zou Honglu President and Executive Manager of MCC Hi-Tech Engineering Co., Ltd.
Lecture theme: Sustainable Low-Carbon Town
- 16:30—16:50 Zhang Bolun Director of Green Building Consulting, Research and Development Center of East China Architectural Design & Research Institute Co., Ltd.
Lecture theme: Sustainable Low-Carbon Town
- 16:50—17:10 Ren Jun Core Expert of Tianjin Innovative Finance Low-Carbon City Design & Research Institute
Lecture theme: Tianyou Green Design Centre—Renovation Technology Integration on Low Energy Consumption Green Office Building
- 17:10—17:30 Rick Hurt Senior Researcher of University of Nevada at Las Vegas
Lecture theme: Energy Efficient Home Projects for Utility Peak Grid Reduction
- 17:30—17:50 Pablo Diaz de la Cuesta Head of the Industrial Department in PROYFE S.L., Spain
Lecture theme: Three Cases of Successful Low-Carbon Architectural and Building Projects
- 17:50—18:00 Q&A
- 18:00 Closing Ceremony

November 16(Friday)

Morning: Low-Carbon Town Tour—Yujiabao Financial District

Afternoon: Haihe Tour



List of experts or consultants

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新能源·新城市
—APEC低碳城镇发展项目
NEW ENERGY·NEW CITY
—APEC LOW-CARBON TOWN DEVELOPMENT PROJECT

首页 APEC项目 组织机构 新闻动态 APEC会议 政策标准 行业专家 成果展示 联系方式

新闻动态 新闻 12345678

最新通知
APEC项目动态
行业动态
APEC会议专题
赞助合作

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—APEC Low-Carbon Town Development Project
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Sponsorship

Industry Experts
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 John H. Dethlefsen: TU Berlin
 Robert K. Wood: University of Waterloo
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3.3 websites or online material

URL: <http://www.uedmagazine.net/APEC/Project.aspx?one=323>
 Some pictures of the website are as follows:

Picture 1. Homepage



Picture 2. APEC Project

新能源·新城市
—APEC低碳城镇发展项目
NEW ENERGY·NEW CITY
—APEC LOW-CARBON TOWN DEVELOPMENT PROJECT

最新通知
最新项目动态
行业动态
APEC论坛专题
赞助合作

APEC低碳城镇发展项目整体实施计划

亚太经济合作组织（APEC）、中国领导人和政府代表团，以及世界范围内关注清洁能源发展的APEC领导人圆桌会议主要成员为“实施路线图”，为清洁能源进一步通过清洁能源合作为发展中国家提供发展的APEC“中国倡议”的组成部分。2007年APEC第十五届领导人非正式会议上提出，“在清洁能源和“绿色经济”、创新和增长、基础设施、能力建设、人才发展、技术转让”五个领域开展合作。2011年APEC第十九届领导人非正式会议上，胡锦涛主席强调：“清洁能源和绿色经济是未来发展的方向，清洁能源和可再生能源、节能减排、循环经济、绿色建筑等领域合作。”

为了积极应对全球气候变化，促进绿色经济、绿色金融发展和绿色产业，同时为了落实APEC领导人和中国领导人的倡议，加强国际上对绿色经济在清洁能源领域的交流与合作，亚太经济合作组织（APEC）国家能源发展项目（以下简称“项目”）在天津滨海新区启动。项目旨在通过清洁能源合作，为发展中国家提供清洁能源技术、人才、资金、政策和能力建设支持。项目旨在通过清洁能源合作，为发展中国家提供清洁能源技术、人才、资金、政策和能力建设支持。项目旨在通过清洁能源合作，为发展中国家提供清洁能源技术、人才、资金、政策和能力建设支持。

项目分为五个阶段进行，具体实施计划如下：

第一部分 启动与基础建设（2012年9月-12月）

- 一、项目启动与基础建设
- 二、专家咨询组的启动与基础建设
- 三、项目启动、在天津、设计、建设、运营、维护
- 四、项目启动、在天津、设计、建设、运营、维护

第二部分 “清洁能源中国行”系列活动（2012年11月-12月）

第三部分 清洁能源“领跑者”——天津滨海新区清洁能源示范项目（2012年11月-12月）

第四部分 APEC项目启动实施成果汇报（2012年12月-12月）

第五部分 APEC项目启动实施计划（2012年12月-12月）

支持媒体
合作伙伴

新能源·新城市
—APEC低碳城镇发展项目
NEW ENERGY·NEW CITY
—APEC LOW-CARBON TOWN DEVELOPMENT PROJECT

最新通知
最新项目动态
行业动态
APEC论坛专题
赞助合作

APEC项目动态

2012年7月11日，新能源·新城市——APEC低碳城镇发展项目启动会在天津滨海新区启动。项目旨在通过清洁能源合作，为发展中国家提供清洁能源技术、人才、资金、政策和能力建设支持。项目旨在通过清洁能源合作，为发展中国家提供清洁能源技术、人才、资金、政策和能力建设支持。项目旨在通过清洁能源合作，为发展中国家提供清洁能源技术、人才、资金、政策和能力建设支持。

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支持媒体
合作伙伴

3.4 Standard and Methodologies

Some Policies and Measures of China's Low-carbon Town Development.

The State Council and NDRC

2010.07: NDRC issued the Notice of the Development of Low-carbon Provinces and Low-carbon Cities Pilot Projects and officially put forward the work of Low-carbon provinces and cities in 5 pilot provinces and 8 pilot cities. 2010.12: In the Notice of National Plan for Development of Priority Zones, the State Council declared to build Low carbon cities and reduce greenhouse gas emissions. 2011.03: The State Council put forward the idea to promote Low-carbon pilot cities in the Opinions of the State Council on Implementing the Arrangement of Major Departments in Accordance with the Report on the Work of the Government.

Other Ministries: MOHURD (former MOC), MOST, MOEP

2005.09: Guidelines of Giving Priority to the Development of Urban Public Transport by MOHURD, NDRC, MOST, MOPS, MOF, MLR. 2006.12: Opinion on the Economic Policy of Giving Priority to the Development of Urban Public Transport by Ministry of Construction, NDRC, MOF and MOHRSS.

2011.01: Notice on Forming MOHURD Low-carbon Eco-city Construction Leading Group. 2011.07: Temporary Measures on Declaration and Management of MOHURD Low-carbon Ecological Pilot City (Town) by MOHURD.

Local Government

2009.12: Decision on Building Low-carbon City by Hangzhou, Zhejiang Province. 2010.01: Work Plan on Building Low-carbon City by Chengdu, Sichuan Province. 2010.05: Construction Plan on Low-carbon City by Xiamen, Fujian Province. 2010.10: Opinions on Building Low-carbon City by Baoding, Hebei Province. Low-carbon town development has become an important concept and feature of the new round of China's town development. Through town practices and theoretical exploration in recent years, China has formed its own understanding of the concept and has formulated a way of realizing low-carbon town development with Chinese characteristics.

The main characteristics of China's low-carbon town development can be concluded in the following three points. First, we take sustainable development as the basic concept and emphasize reducing carbon emissions in development, such as reducing the carbon emissions per unit of GDP. Second, we emphasize industrial sustainable development, infrastructure layout and reduction of energy consumption in construction in order to establish a final low-carbon economic structure and a low-carbon life style. Third, we emphasize minimizing accumulative carbon emissions in the life cycle of primary urban infrastructure construction, operation and retirement.

According to the practices of China's cities and towns, the main approaches of China's low-carbon town development can be summarized in these six areas: low-carbon industry, low-carbon layout, low-carbon energy, low carbon building, low-carbon transportation and resource recycling.

We should promote and provide guidance for the establishment of low-carbon production. This mainly guides and realizes the reduction of total transportation demand, particularly that of automobile transportation, and the increase of public transportation through the optimal use of space and related city functions. We should develop and use new low-carbon energy technology to improve primary energy structure, increase energy supply efficiency, and reduce fossil energy consumption and carbon emissions. Appropriate materials, design and technology deployed in newly constructed buildings with good management and operation can reduce the energy consumption of the building, the energy facilities and systems within it. Advanced technology and management techniques, promotion of low-carbon travel, development of public transportation, improvement of fuel efficiency and development of new energy vehicles can reduce the energy consumption and carbon emission involved in transportation. After the retirement of primary civil, municipal and industrial facilities, the recycling of facilities and resources shall be enhanced. We could also enhance waste recycling and the development of the resources recycling industry.

With sustainable development as a core concept, China's low-carbon town development is pursuing coordination between the sustainable development of urbanization and carbon emission reduction through integrated use of six main pathways: low-carbon industry, low carbon layout, low-carbon energy, low-carbon building, low-carbon transportation and resources recycling. At present, China has plenty of best practices and experiences on low-carbon towns that could serve as model learning material.

3.5 Research papers



他山之石可以攻玉——低碳城市发展路径探索

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Explore the Path to Low-carbon Cities by Learning from Experiences of Others

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他山之石可以攻玉——低碳城市发展路径探索
Explore the Path to Low-carbon Cities by Learning from Experiences of Others
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摘要: 在协同理论、中医理论和生态位理论的指导下, 探讨低碳城市发展的实践路径, 并以海南万宁为例, 探讨与关键要素、生态城市协同的低碳发展。

Abstract: Under the guidance of synergistics, traditional Chinese medicine and ecological niche theories, the paper discusses the path to low-carbon city development in China. It conducts application study based on the eco-planning for Wanning Lucheng "Sun and Water" demonstration area of Hainan Province.

Key words: Eco-city, Synergistics, Low-carbon Development

为应对全球气候变化、资源短缺、生态环境恶化的挑战, 人类正在积极探索低碳发展, 以应对气候变化、资源短缺、生态环境恶化、建设生态城市, 推广低碳城市, 我们将从理论和实践两个方面, 探索低碳城市的发展路径。

1 协同理论: 中医理论和生态位理论的启示

1.1 理论背景

1.1.1 协同理论要点

协同理论的主要内容包括三个方面: 1. 自组织原理, 是系统在没有任何指令的条件下, 其内部子系统或要素之间通过非线性相互作用形成一定的结构或功能, 具有内在的自组织性, 且在一定的外部环境或边界条件下, 系统会自动形成一定的协同效应; 2. 协同作用, 是指系统内各子系统或要素之间通过非线性相互作用而产生的协同效应, 这种协同作用能使系统在低熵状态下发生突变, 有序变为无序, 从而产生新的协同效应; 3. 协同作用, 是指系统内各子系统或要素之间通过非线性相互作用而产生的协同效应, 这种协同作用能使系统在低熵状态下发生突变, 有序变为无序, 从而产生新的协同效应。

1.1.2 中医理论要点

中医理论: 整体观念和辨证论治。整体观念: 强调人与自然、人与社会的统一, 强调人与自然、人与社会的统一, 强调人与自然、人与社会的统一。

1.1.3 生态位理论要点

生态位理论: 生态位是指一个物种在群落中的地位或作用, 包括物种在群落中的空间位置、时间位置、资源利用、以及与其他物种的关系等。

1.2 对协同理论发展的启示
启示: 从协同理论的发展来看, 城市的发展, 是一个在环境、产业、建筑、交通、水、能源、景观、社会等多个子系统协同作用下的开放系统, 它在外部输入与内部反馈的相互作用下, 通过子系统之间的非线性相互作用, 形成协同效应, 从而实现城市系统的整体优化。从协同理论的发展来看, 城市的发展, 是一个在环境、产业、建筑、交通、水、能源、景观、社会等多个子系统协同作用下的开放系统, 它在外部输入与内部反馈的相互作用下, 通过子系统之间的非线性相互作用, 形成协同效应, 从而实现城市系统的整体优化。从协同理论的发展来看, 城市的发展, 是一个在环境、产业、建筑、交通、水、能源、景观、社会等多个子系统协同作用下的开放系统, 它在外部输入与内部反馈的相互作用下, 通过子系统之间的非线性相互作用, 形成协同效应, 从而实现城市系统的整体优化。

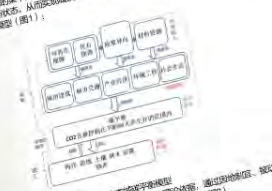


图1 生态位理论与协同理论的关系
启示: 生态位理论与协同理论的关系, 以生态位理论和协同理论为基础, 通过生态位理论、协同理论的指导, 实现生态位理论与协同理论的有机结合, 实现生态位理论与协同理论的有机结合, 实现生态位理论与协同理论的有机结合。



4. Project Benefits

The beneficiaries in the project include five parts:

◆ Policy Makers and Government Officials

They will benefit by referring to project reports and studying the systematic information about rational use of renewable energy that could be applied to the unique conditions of each economy. Energy, renewable energy, and power generation policymakers will benefit from systematic information and recommendations of rational use of renewable energy technologies. Governments and the power generation sector in developing APEC economies will benefit from capacity-building through improved knowledge and access to this information. Governments will be better equipped to make informed judgments on policymaking regarding renewable energies. They also will obtain support in developing, implementing and promoting renewable energy technology transfer and trade programs through the outputs of this project.

◆ Research Organizations

They will receive more systematic information on the rational use of renewable energy through sharing project outputs and apply them in relevant studies.

◆ Industrial enterprises

They will achieve guidance or practices from this project outputs in using renewable energy rationally, which will eventually improve their renewable energy efficiency, enhance their competitiveness, and ensure their sustainable development.

◆ APEC Citizens receiving the benefits of diminished fuel costs and improved air quality

They stand to benefit through reduced emissions of environmental pollutants due to substitution of more plentiful renewable energy for other fossil fuels.

◆ Non-APEC stakeholders including government and private sector.

Since the APEC area is now the leading region of the world energy demand and supply and its technologies, strategies, standards and policies on the development of renewable energies and the rational use methodologies, guidance and practices to low carbon APEC economy growth modes is crucially important for them for planning and implementing their renewable energy policies and business strategies.

5. Overall Impact

APEC and Non-APEC economies participated in this project. They exchanged experience, valuable information and discuss the rational ways to improve the energy structure, enhance energy research and development as well as promote clean and renewable energy in the construction of low-carbon towns in order to develop low-carbon economy and build low-carbon society.

All the efforts in the project are to provide the rational use strategies of renewable energies serving sustainable APEC economies. In addition, the project results are to develop recommendations on promoting technology transfer, free trade and investment of renewable energies in APEC economies for a balanced, secure mode community, which could be adopted by the future APEC projects.

The results will provide guidance to stakeholders and beneficiaries that are involved in related activities in their own economies or organizations. Furthermore, the private sectors participating in this project will gain more knowledge, recommendations from experts on the design and implementation of the rational use of renewable energies, and they will be encouraged to improve their renewable energy efficiency, enhance their competitiveness, and ensure their sustainable development.



“APEC低碳城镇中国行”启动仪式在天津举行

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天津北方网讯：11月14日，“新能源·新城市—APEC低碳城镇发展论坛暨低碳城镇中国行启动仪式”在天津举行。来自APEC各经济体的知名专家学者、科研人员与相关领域的专家学者、企业家等60多位嘉宾共聚一堂，共同探讨低碳城镇建设与发展。中国外交部国际经济合作司司长、国家能源国际中心理事长张升，天津市发展和改革委员会副主任高伟亮，天津市科学技术委员会国际合作处处长魏国所出席。开幕式由天津大学副校长彭俊毅主持。



张升代表外交部国际经济合作司对本次论坛的举行表示祝贺。他在致辞中说，APEC低碳城镇示范项目是2010年第九届APEC能源部长会议的重要成果。本次论坛是台全球和亚太地区绿色增长和可持续发展的最好契机，是在低碳产业合作领域的又一次有益尝试。对进一步落实绿色增长的重要倡议和APEC能源部长会议的成果都有重要意义。作为APEC各成员国在低碳城镇发展领域加强交流、经验分享、政策对话、能力建设提供重要平台。张升表示，中国将始终积极参与APEC能源领域的合作。深入探索APEC低碳城镇的本地化应用，推动各成员国在推进节能减排和提高能效、发展绿色低碳能源、推动能源科技创新、解决全球能源治理等领域加强合作，努力推动经济平衡、包容、可持续、创新、安全增长。

张升对论坛的发展提出四点建议。一是树立理念，突出重点，进一步推动APEC各成员国绿色低碳发展、绿色增长的理念，更加重视能源发展和新城市建设，更加积极转变经济发展方式。他建议论坛进一步向清洁能源领域、加大清洁能源技术研究和推广、发展清洁能源和可再生能源等。二是加强协调、信息共享。在充分考虑各成员国经济差异性和多样性的基础上，加强信息交流和能力建设，增强各成员国特别是发展中成员国绿色增长的能力。总结并推广低碳城镇发展经验，并在此基础上探讨APEC低碳城镇最佳范例。

APEC低碳城镇中国行启动仪式上，天津大学建筑学院院长张钧与亿达集团大连科技发展有限公司总经理刘志宇签署了《低碳城镇建设产学研战略合作协议》。天津新金融投资有限公司总经理贾勇与天津市金融生态设计研究院院长王童签署了《千亿美元金融生态设计示范城市综合研究合作协议》，实现战略合作、合作共赢。

14日两天的论坛共设立七个专题的演讲，涵盖了低碳城镇建设中从城市规划到城市政策、绿色建筑到材料应用等领域。中国工程院院士、天津大学电气工程一级学科负责人余贻鑫，亚太能源研究中心APEC首席经理、能源顾问Satoshi Nakamura，澳大利亚太阳能学会主席Steve Blum等来自中国、美国、英国、日本、澳大利亚、瑞典等国家和地区的嘉宾就低碳城镇建设、低碳能源、建筑设计、节能环保、低碳产业等主题展开演讲。

为了积极应对全球气候变化，创建低碳社会，推动低碳政策和低碳产业发展，落实APEC领导人和中国国际领导人的会议精神，加强国际APEC各经济体在低碳发展领域的交流与合作，亚太经济合作组织(APEC)和中国国家能源局组织了能源工作部项目申报。天津大学在天津市发展和改革委员会的牵头下，成功申报了APEC项目“2012 11A - APEC Workshop on Path towards Sustainable Low Carbon Economies Based on Rational Use of Renewable Energy”。这是2011年第三期获批的7个项目中唯一的一个由龙头企业申报的APEC项目。本项目还有其它6个APEC经济伙伴为项目的共同成员，包括美国、澳大利亚、韩国、中国香港和中国台湾等。

本次项目的整个实施周期为一年。从2012年1月至2013年12月。共分“调研—分析—实践—报告”四个阶段进行。本次APEC项目的调研与实践方式之一是“APEC低碳城镇中国行”。该活动将把低碳城镇的理念、政策、经验、技术等运用于实践。国家能源局将聘请来自美国一些重点低碳示范城镇的建设进展成果。专家团队将基于“方法论”的思路，为一些重要领域的建设“把脉诊断、分析瓶颈、开方解决”。

“APEC低碳城镇中国行”将为我国低碳城镇建设的参与者搭建一个融合“方针政策研究、城市规划指导、产学研成果转化、投融资洽谈、科技成果展示推广”的多元化沟通平台。将从保护生态环境、推动文化传统、结合国家方针政策、运用市场经济手段、加强城镇体系、落实低碳技术应用、提高公共参与度等方面以平衡、协调与规划、实施，大力推进我国低碳城镇的实际建设与全面推广。

15日，论坛嘉宾赴北APEC首座低碳示范镇——天津滨海新区于家堡金融区实地考察。这是低碳城镇中国行的第一步。此外，“APEC低碳城镇中国行”还将组织赴大连生态科技新城、松花江农桥、北京地区、枣庄地区进行实地考察考察学术研讨交流。

“新能源·新城市—APEC低碳城镇发展论坛暨低碳城镇中国行启动仪式”由亚太经济合作组织、国家能源局、天津市发展和改革委员会主办，天津大学、天津新金融投资有限公司承办。中国可再生能源学会、中国建筑学会、中国城市规划协会、天津市外事办公室、天津市科学技术委员会、天津市可再生能源学会协办，北京奥地姆建筑设计研究院有限公司，北京奥迪吉石科技有限公司支持。天津大学低碳城镇国际研究中心、天津大学建筑学院《城市·环境·设计》(EED)杂志总执行。(通讯员朱宝树)



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新能源 新城市——APEC低碳城镇发展论坛
天津新城市——APEC低碳城镇发展论坛开幕式暨APEC项目签约仪式在天津举行

土壤治理产业应尽快走出“换土”阶段
土壤治理产业应尽快走出“换土”阶段

新能源 新城市——APEC低碳城镇发展论坛
APEC项目签约仪式在天津举行

中国经济导报
APEC低碳城镇发展论坛于天津开幕
作者：王敏 陈阳 来源：中国经济导报 字数：719

6. Conclusion and Information on Next Steps

The next steps following completion of this project for keeping the continuity are provided by taking the different demand of the three participating groups into account. For the academic group people, the following work will focus on collaborations of international projects on renewable technologies, which may take the form of a further APEC-funded project or projects. New favorable renewable technologies will be developed, more prototypes of new RE products will be developed, and more demonstrations will be established through the team efforts in the APEC community. Knowledge will be further shared, more students and scholars will be exchanged, and more people will be educated and trained.

The project team will keep close contact and cooperation with APEC and other economies all the time to facilitate the promotion of potential renewable energy programs in APEC economies by the relevant private sectors. At an appropriate stage, EWG, EGNRET and APERC are expected to become involved in the work, developing scenarios for the sustainable low carbon economy based on developed recommendations on promoting technology transfer, free trade and investment of renewable energies in APEC economies. Progress can be assessed by quantifying the potential for renewable energy penetration and displacement of existing electricity supply derived from processes having a large carbon footprint and by assessing the needs for new investment and the resulting contribution to GDP in each APEC economy. Under the guidance of the EWG, the standards and regulations of the available and affordable renewable energies in the APEC member economies will be improved in a systematic way. By terms of the joint work of the three group people, APEC economies can work on the commercial application of these developed renewable energies and be devoted to a sustainable low carbon community.

In addition, we are going to plan an Low-Carbon Town Tour in China after the forum. Leaders of National Energy Administration will lead the groups to inspect the development proceeding and results of some key low-carbon demonstration cities in China. APEC Project Organizing Committee specially invites the world famous urban planning experts, architects, investment experts, real estate developers, low-carbon technology and material entrepreneurs and press reporters to participate in all the activities of “Low-Carbon Town Tour in China” Series of Activities. Based on “Methodology”, the expert group will diagnose and analyze the issues and put forward solutions for the development of some key cities and towns.

The target of “Low-Carbon Town Tour in China” Series of Activities is to establish a multiple communication platform integrating “Guiding of Guidelines and Policies, Design of Urbanization Planning, Integration of Expert Strength, Implementation of Investment and Financing Projects, Transformation of Production, Academic and Technical Results and Promotion of Technical Results” for all the participants. It is much more like an interactive platform aimed at “Common Development and Promotion”. Through the protection of ecological and environmental landscapes, inheritance of cultural traditions, combination with the national guidelines and policies and the execution of market-oriented economy, it will strengthen the planning of urbanization system, put the low-carbon technology into application and enhance public contributed degree so as to achieve balance, coordination, planning and successful implementation.

Low-Carbon Town Tour in China—Scheme				
Survey Item	Survey Time	Activity Form	Specific Item	Principals for Each Survey Point
Tianjin Yujiabao Financial District	November 14—16 (three days)	Opening of APEC Forum	The opening ceremony of APEC “New Energy • New City- Forum of Low-Carbon Urban Development in Economic Transformation”	Yang haisong, Minister
			The Launching Ceremony and Signing Ceremony of APEC Low-Carbon Cities China	
		Discussion and Exchange	The Keynote Report and Academic Discussion in APEC Forum of Low-Carbon Urban Development	
		Field Survey	Low-Carbon Layout and Construction—Tianjin Yujiabao Financial District (Field survey on construction of APEC low-carbon demonstration town in low-carbon Tianjin area)	
Dalian Biodiverse Emerging Science and Technology (BEST) City	In Early December (two days)	Field Visit and Survey	1) Original Ecological Protection in Dalian BEST City	Li Liang, Chief Engineer of Yida Group
			2) Energy Saving and Emission Reduction and Energy Management in Dalian BEST City	
			3) Utilization of Clean Energy in Dalian BEST City	
		Academic Exchanges	4) Academic Seminar of “Sustainable Development Planning for Dalian BEST City”	
Songhuajiang Farm	In Mid December (two days)	Field Survey		Li Yanqing, Director
		Academic Exchanges		
Beijing Area	In January 2013 (one day)	Field Visit and Survey	1) Low-Carbon Energy—The Project of Renewable Energy Utilization in Deqingyuan Eco-Friendly Park	Li Bin, Division Chief, Beijing Municipal Development and Reform Commission Yu Zhen, Doctor
			2) Low-Carbon Energy—The Project of Badaling Solar Power Tower and Heat Generation	
			3) Low-Carbon Energy—The Project of Reclaimed Water Source Heat Pump System in Olympic Village	
			4) Low-Carbon Energy—The 5KW Photovoltaic Roof Project in National Digital Television Industrial Park	
Zaozhuang Area	In March 2013 (three days)	Field Visit and Survey	1) The Project of Utilization of Waste Heat of Flue Gases and Sludge Recycling in Cogeneration Plant—Tengzhou New Energy Thermoelectricity	Zaozhuang Municipal Government Zhang Zhenglong, Director
			2) Mine Water Source Heat Pump Project—Binhu Coal Mine of Zaozhuang Mining Group	
			3) Low-Carbon Transportation—Zaozhuang Xuecheng Urban Bicycle Sharing System	
		Exchanges in Academic Seminar	4) Low-Carbon Transportation—Zaozhuang BRT Construction Project	
			5) Low-Carbon Industry— The Energy-Saving Construction in Taierzhuang Tourism Ancient City	
			6) Academic Seminar of “Zaozhuang Low-Carbon Urban Development”	

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