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Final Report

on the Organization of the Shenzhen International Workshop on Renewable Energy Technology and Investment and Global Top Investment Scenarios to Apply New Technologies for Renewable Energy Utilization BlueSky Award Evaluation Activities

October 2006

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PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

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Shenzhen International Technology Promotion Center for Sustainable Development

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深圳国际能源与环境技术促进中心 Shenzhen International Technology Promotion Center for Sustainable Development

Preamble

About ITPC

Shenzhen International Technology Promotion Centre for Sustainable Development (Hereafter ITPC) is an international project cosponsored by United Nations Industrial Development Organization, Shenzhen Municipal Government, Boao Asia Forum, CICETE and Shenzhen Energy Group, established in 2001 with the support of former Ministry of Foreign Trade and Economic Cooperation, Ministry of Science and Technology and State Environmental Protection Administration of China.

Being the only member with focus in energy and environment technology promotion in the International Technology Centres of UNIDO, ITPC is dedicated to sustainable development in energy area. The centre promotes technology transfer and cooperation partnerships, policy dialogue, exchange of experiences, information network and business linkages between South-South and North-North countries, so as to provide to less developed economies environment friendly energy solutions, investment stimulation, manpower training and information dissemination.

As an international platform to promote renewable energy, Shenzhen International Workshop on Renewable Energy Technology and Investment, together with the annual selection for UNIDO based BlueSky Award Global Top Ten Investment Scenarios to Apply New Technologies for Renewable Energy Utilization each year are organized by ITPC, offering an occasion when experts from the industry exchange their ideas and seek cooperation for the industrialization of submitted technologies.

Energy and environment related technologies under the promotion of ITPC covers the facet of city waste incineration to power/landfill gas recovery, bio-fuel as a replacement to fossil fuel, solar power comprehensive utilization, wind power, small hydro power and international greenhouse gas reduction projects within CDM regime.

Members of ITPC Steering Committee

Chairman:

Mr. Zongheng Xu, Mayor of Shenzhen Municipal Government (SMG)

Members:

Mr. Yongtu Long, Secretary-General of Boao Asia Forum

Madam Dan Liang, Director of UNIDO Investment and Technology Promotion Branch

Mr. Yue Wang, Director of CICETE

Mr. Zimin Gao, Board Chairman of SEC

Structure of ITPC

Director: Mr. Zimin Gao

Deputy Director: Dr. Yuanqi Yu

Technology Promotion Specialist: Mrs. Xiaokui Wang Workshop and Training Specialist: Ms. Angie Lee

Background Information

Shenzhen International Technology Promotion Center for Sustainable Development



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The International Technology Promotion Centre for Sustainable Development launched an annual event, Shenzhen International Workshop on Renewable Energy Technology and Investment (RETI), in 2004. In addition, the project has developed and promoted the concept of a "BlueSky Award" (BA) with the main aim to stimulate investment flow into the transfer and commercialization of new technologies and innovations in the area of renewable energy.

Background of RETI Workshop

Facing the growing energy crisis, resource shortage and environment pollution resulting from the over-consumption of conventional fossil fuel, promotion and utilization of renewable clean energy, particularly the combination of its research and industrialization for cost-effective ways, has become an urgent issue for countries all over the world, especially the developing ones, and this has become a major feature of circular economy.

RETI is a prestigious international event which crowded by multinational RE technology and investment specialists. Representatives from government administrations, universities, research institutes, public and private sectors and media will be gathered in Shenzhen to exchange the latest research outcome and experience from practice, which leads to the diffusion of renewable energy in China and other developing countries.

Background of BlueSky Award

Global Top Ten Investment Scenarios to Apply New Technologies for Renewable Energy Utilization BlueSky Award is sponsored by United Nations Industrial Development Organization (UNIDO), Shenzhen Municipal Government PRC, Boao Forum for Asia, China International Center for Economic and Technical Exchanges and Shenzhen Energy Group, with Shenzhen International Technology Promotion Center for Sustainable Development (ITPC) as the organizer.

The programme is based on the collection of leading technologies in renewable energy on global scale, the showcase of nominated technologies at China High-Tech Fair (CHTF) and the evaluation for Global Top Ten Investment Scenarios. The Award Presentation Ceremony is held each October in Shenzhen, China.

The aims of the award is to lead the industrialized utilization of renewable energy in China and other developing countries through the model effect of winning technologies so as to relax the stress on global economy and human life produced by conventional energy shortage and environmental deterioration.



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Summary of RETI&BA2006

Under the great support from United Nations Industry Development Organization (UNIDO), Shenzhen Municipal Government, Boao Forum for Asia, China International Centre for Economic and Technical Exchanges and Shenzhen Energy Group, ITPC organized this great event, RETI & BA 2006 with the main aim to encourage successful implementation of renewable energy projects and provide one international platform to exchange technologies and investment information.

The preparation of Bluesky Award 2006 underwent three phases: inviting global promising technologies to submit their application to run for the top ten, first round selection of candidate technologies among all submitted technologies and organization of their exhibition in the China High-tech Fair, final selection of the top ten technology through the integration of on-line vote, on-site vote at the fair and workshop, and the evaluation experts vote, all of which conducted based on the principal of transparency, justice and objectiveness. In the end, ten technologies respectively from China, India and Germany won the top ten awards.

As the twin event of Bluesky Award, RETI 2006 was successfully held from 13 to 16, October. The workshop fell into eight topic sessions, where experts from home and abroad, decision-makers from Chinese government, UNIDO Investment and Promotion Branch, REEEP Project office, CDM coordination office gathered to make around 50 presentations covering topics ranging from solar energy, biomass energy, to the project financing, Clean Development Mechanism etc. Besides this topic session, one summit forum and multinational dialogue on topics such as the solutions to the future energy crisis, CDM a new engine to push renewable energy development, were held in the morning of 16th, Oct 2006. Government officials and experts from UNIDO, REEEP gave their presentations and answered some interesting questions raised by the workshop audience.

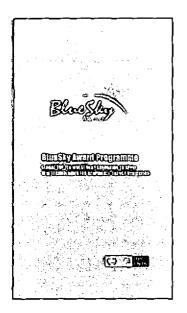
The whole series of event were concluded with the final ceremony of presenting Bluesky Award to the top ten technology holders. News covering 2006 Bluesky Award and RETI workshop immediately spread over the Internet and raised public awareness.

The event has been proved to be successful in realizing its target goal of stimulating renewable energy development, and as what Mayor of Shenzhen Municipal Government, Mr. Xu Zhongheng and Dr. Geroge Assaf from UNIDO called, "is successful to encourage the large scale utilization of renewable energy and will surely benefit to realize the concept of circular economy in Shenzhen, China."



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1.00 BlueSky Award 2006



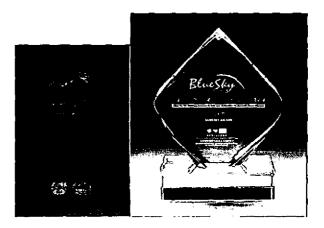


Figure 1. BlueSky Award Programme Brochure and the Award Trophy



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1.01 Call for 2006 BlueSky Award Application

The global call for BlueSky Award 2006 candidate technologies started from May, 2006, Before that, the application forms went through months of amendment and complementing based on the experience of the first session of Bluesky Award 2005 and a whole pack of BlueSky Award Application Specifications with detailed instruction and templates forms, which helps improve the standardization of submitted files, reduce need of enquiries and facilitate prospective applicants.

Together with BlueSky Award Programme digital brochure, the information was first published on ITPC website, then through the website of co-organizers and other supporters to the event. The corresponding newsletters were edited and delivered regularly to the professional database of ITPC, and advertisement released on professional journals, newspaper and web media

Collection of possible candidate technologies comes from four channels: volunteer submissions in response to the call, recommendations from organizations and experts in partnership, and invited applicants known for their achievement within the range.

This process was planned to be closed in two months and then an extension was made after discussion to allow the translation work of application files to be finished. New applications kept arriving and until the virtual date of deadline, 30 August 96 applications from diverse countries were received, mainly from the hosting country, China, and about one-third from USA, UK, Germany, Belgium, Japan, India and other regions oversea.

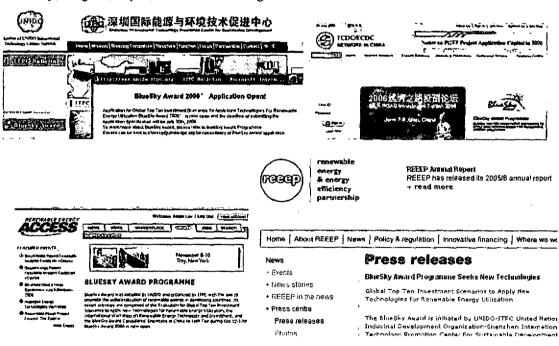


Figure 2. Online Promotion of BlueSky Award 2006 Call for Applications



1.02 Candidates Selection

Preliminary evaluation for the selection of applicants for award were conducted based on the technology review and, if possible, site visits by the experts from ITPC and the event co-organizer, Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences.

After first candidate selection in the first round, 26 participants from China, India, UK, USA Germany, Japan, Belarus and China Taiwan are entitled as candidates to run for the final top ten awards before they are to get prepared for further evaluation and verification; public vote from internet, visitors on-site vote at the candidates' showcase in China Hi-tech Fair (CHTF), and the evaluation by BlueSky Award Evaluation Experts Committee (BA-EEC), with a ratio of 20%:20%:60% respectively.



1.03 On-line vote

Since 15 September when the 26 candidate technologies were listed on ITPC website (www.unido-itpc.org) for public enquiry and vote, their description pages have been frequently clicked.

To encourage exchanges and make the vote more sourceable, visitors were allowed to ask questions on these technologies in linked discussion zone, where applicants will be asked to give their feedbacks. Then before a visitor could make an effective vote, registration of appropriate personal information was required and exact ten tickles out of the list restricted. Result of online vote can be retained on a real time basis, and 172,306 ballots were received until 15 October to make a 20% proportion of the result.



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Figure 3. ITPC Website BlueSky Award 2006 Online Vote Webpage



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1.04 Candidates' Showcase and On-site vote

BlueSky Award Candidates Showcase has been an internal part and highlight of CHTF since 2005, where the candidates display their submitted technologies in forms of modules, illustrative posters, and full size equipments when adaptable.

CHTF, a co-organizer of the event, boasts a particular asset of visitors, from all around the world, on behalf of various organizations, of special interest in high technology handle. This occasion provides valuable source for inventors and researchers to meet delegates in energy related industry or investment background, where they can introduce their innovations, build up partnerships and make it to the market. For this year, one of its nine main halls specialized in Circular Economy, where BlueSky Award Candidates' Showcase took place.

The showcase opened at 12 Oct. Of the twenty-six candidates, twenty took part in the showcase and others fail to make the travel. Twenty participants set up standard booth in the integrated area of BlueSky Award Candidates Showcase, and two built separated display to contain modules and prototypes. All of them were invited to make technological report in corresponding interest groups of RETI Topic Seminar sited in the neighboring seminar area.

1,059 valid paper ballots were counted until 5 pm 15 Oct, fourth day of the display, to contribute 10% to the final result. The next afternoon, another 10% of on-site vote came from the audience at the Final Voting Ceremony at Wuzhou Guest House on 16th, Oct, 2006.

















Figure 4. Candidates' Showcase, Topic Seminar and On-site vote



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1.05 Evaluation by BA-EEC

The nine members of 2006 BlueSky Award Evaluation Experts Committee (BA-EEC), whose name list is given in Annex B, were nominated and invited by correspondents at UNIDO and ITPC. After their accepting of the appointment, application files were sent either via email or delivered discs for reference, and printed version submitted at their arrival to Shenzhen.

The committee interviewed candidates' showcase on the afternoon of 15 October, where candidates briefed and demonstrated their technologies, and questions and answers made.

Based on previous reading and exchanging, the experts discussed about the candidates' performance in the Evaluation Work Meeting in the same evening.



2006 BA-EEC members and BlueSky Award candidates



Ms. Rohani Hashim candidate from India



Prof. Edgar Schicker interviewing the candidate from Yunnan, China



Mr. Binu Parthan, Prof Shicker and candidates from National Academy of Sciences of Belarus



Mr. Fengqi ZHOU listening to the brief by candidate from China Taiwan

Figure 5. BA-EEC's interview at candidates' showcase



1.06 Final Evaluation of BlueSky Award

Final Evaluation of BlueSky Award took place at Huaxia Hall in the afternoon of 16 October. Before making their decisions, the committee listened to the five-minute Technology Summary Statement by each candidate, made final discussion and return to the stage to make their vote. Each choice was displayed on the screen for public observation and the Poll Result for each Voting Channel calculated by designed software.



Mr. Chen Yong giving his vote on the stage



BA-EEC members presenting BlueSky Nominee Award 2006

The most exiting moment came when the final result figured out by the computer and demonstrated in the broad screen. The BA-EEC members presented the ten Nominee Awards. Then Mr. Zongheng XU and Dr. George Assaf, Mr. Yongli ZHAO, Section Dean of CICETE, Mr. Zimin GAO and Mr. Lugaung YAN gave the BlueSky Award crystal trophy and certificates to the top ten.

Final results of BlueSky Award 2006 winners and nominees can be found in ANNEX C.



Mr. Zongheng Xu presenting the Award on Dr. Rainer Koerber from Karlsruhe



Dr. George Assaf presenting BlueSky Award 2006 on Mr. Yinghui MA from China



Zimin GAO presenting BlueSky Award 2006 on Mr. Deepak GADHIA from India



2006 BlueSky Award Winners



2006 BlueSky Award Nominees Figure 6. Awarding Ceremony



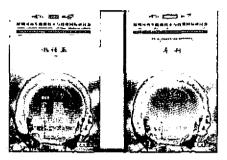
2.00 RETI 2006

2.01 Preparation

Preparation for 2006 Shenzhen International Workshop on Renewable Energy Technology and Investment consist of the agenda design, participant invitation, site and facility arrangement, guidebook publication and other issues.



Entry ticket of RETI&BA 2006



Invitation and Guidebook of RETI&BA 2006

Figure 7. Publications

2.02 Scheme of the workshop

RETI 2006 is composed with two parts: Topic Seminar from 12 to 16th October in the workshop area of Candidates Showcase, divided into specialized group and presented mainly by candidates running for the award; and Summit Forum on 16 October in Wuzhou Guest House with special contributions from leading experts in the RE industry.

2.03 Topics discussed

Main topic of RETI 2006 is Clean Development Mechanism (CDM), a theme of emerging significance in inducing investment into green house emission reduction, of which the comparatively complex elements and procedure need to be further deliberated to improve industrial involvement.

Integrated with this topic, the contributions are distributed into several teams of interest enumerated as following:

Topics for Topic Seminar

Clean Development Mechanism (CDM)-An opportunity for RE Industry Solar Energy Heat Recycling& Green Power Generation Power Generation from Biomass

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41/F, Huaneng Building, No.2068 Shennan Rd., Futian District, Shenzhen 518031, Guangdong, China Tel: (+86-755)-8368-4225 Fax: (+86-755)-8368-4221 bluesky@unido-itpc.org www.unido-itpc.org



Biofuel

Investment in Renewable Energy Successful Energy Saving Cases Study Energy Saving Standard on Buildings

Topics for Summit Forum

Topic on CDM-A New Engine for Renewable Energy Development Multilateral Dialogue: The Future Solution of Energy Crisis

2.04 Participants

Participants to the event come from three main sources: BlueSky Award Candidates, noted experts in the industry, and representative from related government administrations. For detailed name list of this part please refer to Annex A: Final list of participants and speakers.

3.00 Satellite Events

3.01 Meeting with Shenzhen Major

On the afternoon of 16 October, Mr. Zonghen XU, Major of Shenzhen Municipal Government, Chair at ITPC Steering Committee, met Dr. George Assaf and BA-EEC members in VIP Room, Wuzhou Guest House where he listened to the evaluation for the award receiptors and exchanged ideas on the prospect of circular economy in Shenzhen.



Figure 8. Mayor Zongheng Xu and Dr. George Assaf shaking hands

3.02 Meeting with the project donor-Shenzhen Energy Group

On the afternoon of 15 October, Mr. Zimin GAO and the Management Board of Shenzhen Energy Group, the project donor of ITPC, met BA-EEC members and invited speakers in Henshan Hall, Wuzhou Guest House, where deliberation on *Investment in Renewable Energy Industry: Trend and Opportunities*.



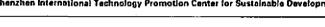




Figure 9. Experts Meeting with the Management Bureau of SEC

3.03 Launching of Energy China Video Series

In the Opening Ceremony of 2006 BlueSky Award Candidates' Showcase taken place at two pm. 12 October, a highlight goes to the Launching of *Energy China Video Series*, composed by *New Energy* reflecting the application of previous BlueSky Award Winners, *Industrial Enterprise Energy Conservation* and *Green Building*.

Dr. George B. Assaf, Head of UNIDO's Technology Promotion Group; Mr. Li Lianhe, Vice Chairman to CPPCC Shenzhen Committee; Mr. Bin LI, General Manager, Shenzhen Energy Group Co., Ltd and Mr. Changhu Zhou, Government Counselor of Guangdong Province unveiling the show. And Mr. Siping Chen, Vice Dean of Shenzhen University presented the series to Dr. Assaf.

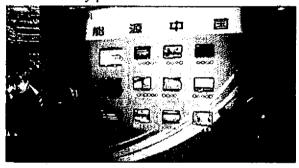


Figure 10. Unveiling the Energy China TV Wall

4.00 Partnership Extension and Propaganda

4.01 Partnership extension and outcome

This year, owing to the recommendation and introduction by correspondents from UNIDO and cooperators, a number of influential international organizations join Bluesky Award event and RETI forum for the first time. These organizations include Renewable Energy & Energy Efficiency Partnership (REEEP); World Association of Industrial and Technological Research Organizations (WAITRO); Deutsch-Chinese Economic and Trade Cooperation Center; California Energy Commission (CEC) Sacramento, CA, USA and Research Centre Karlsruhe etc. Apart from the organizations such as Guangzhou Branch, Chinese Academy of Sciences; Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences and Member Consultation Base of Chinese Academy of Sciences at Shenzhen remain as supportive as ever. We also receive great assistance

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from China Renewable Energy Society and Shenzhen Tsinghua International Technology Transfer Center for the first time.

For a completed list of partners of RETI&BA 2006, please refer to ANNEX I: Partnership

4.02 Propaganda, social Influence & public awareness

To multiply its social influence and enhance public awareness in utilizing green energy, more contribution has been put into the promotional work of the event this year.

This involves the production of Energy China Video Series, a collaborated work by local academy, the award winners and ITPC, and the real time video record work for the current event implemented by the same team.

Whereas China New Energy, a well recognized professional website and journal in China, and Shenzhen Energy, a specialized journal issued by Shenzhen Energy Group, were designated as the authorized media based on their merit and contribution to the RETI&BA event.

Last but not least, following organizations in partnership with the centre released the BlueSky Award call for candidates and invitation of the workshop:

China New Energy China Hi-Tech Fair China Green Energy Renewable Energy and Energy Efficiency Partnership Chinese Energy Strategy Plan Research Board Technical Co-operation among Developing Countries/ECDC Network in China Harbin Institute of Engineering Guangzhou Energy Conversion Institute, Chinese Academy of Sciences World Economist China-EU Cooperation

Other authorized media show equal attention to the event including *Phenix TV*, *Nanfang Daily*, Shenzhen TV, Shenzhen Economic Daily, Shenzhen Special Zone Daily, Shenzhen Circular Economy Journal, part of the reports by which employed in ANNEX J: News Report 1- Paper publications.



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5.00 Outcome

5.01 Conclusions of separate topics

As outlined above, RETI 2006 workshop is held with two parts, one is the topic session from 12th to 16th in the showcase area, respectively focusing on CDM, solar energy, biomass, renewable energy investment, energy efficiency in building etc. On 16th, Oct, the summit forum was held in Wuzhou guest hotel, where the solutions to the future energy crises have been discussed. To conclude the workshop result, here we would give the brief description of what has been discussed and what results have been achieved for the separate topics as follows:



Figure 11. Audience in Topic Seminar

Session 1: Topics on Clean Development Mechanism (CDM)-An opportunity for RE Industry

It is generally believed that CDM, as an effective way to combat the global climate change using the least cost, will surely provide the engine to develop renewable energy development especially in developing countries. Therefore the first topic session is about CDM and around 50 participants joined the seminar. Mr. Wang Zhen, first secretary of UNIDO chaired this session and five presentations have been made in the seminar. Experts from home and abroad discussed many issues like CDM concept, how CDM provide an effective tool to financing renewable energy projects, how CDM project undergo the certification process and what will the CDM trend go in the future. Project developers and CER buyers, DOE and some project service company gave their wonderful presentations illustrating their strategy to develop renewable energy, their procurement strategy to buy CER, their authorized service to provide certification and verification service as well as the skills to write one good project development documents. In the end, Dr. Yu Yuanqi, vice director of ITPC concluded this session by adding remarks that we should make full, timely use of the good opportunity to promote the renewable energy development by developing CDM projects, which is win-win mechanism both to developing countries and developed ones.



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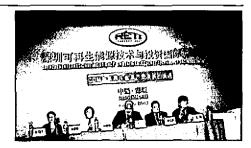


Figure 12, Topics on CDM-An opportunity for RE Industry

Session 2: Topic on Solar Energy

The solar energy topic session was opened in the afternoon 13th Oct. 6 presentations were made with topics on the innovative solar energy utilization technologies. Lanying ZHANG, Senior Engineer/Director Assistant, UNIDO International Center for Promotion and Transfer of Solar Energy Technology; Vice Director, Gansu Natural Energy Research Institute gave her detailed introduction to the high Efficiency Solar Energy Heater/Boiler, which will run for the final Bluesky Award. Peishi ZHU, General Manager, Kunming Xinyuan Sunshine Technology Co., Ltd also presented his core technology to combine the solar energy with active solar energy building. He said that the largest potential energy conservation lies in the effective combination of solar energy with building and more emphasis should be put on this field. In addition, Dr. Ximeng JIANG, an Chinese expert returned from Japan also stated his technology of Innovative Solar Water Heating System with High Efficiency Solar Collectors using Transparent Insulator Aerogel and TiOxNy Selective Surface Coating.



Figure 13. Topics on Solar Energy

Session 3: Topic on Heat Recycling & Green Power Generation

In a broader sense, waste heat can also be regarded as renewable energy, according to Prof. Edgar Schicker, Professor for Process Plant Design at the University for Applied Sciences of Nuremberg, Germany Head of Supervisory Board at BEST Berlin, Society for Plant Safety and Environmental Protection Ltd. He chaired this session and opened it saying that in addition to renewable energy, we should also give R& D efforts to waste heat recovery and power generation field, since there is



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now indeed many waste heat or gases being emitted without any recycling measures undertaken. In fact, there is a large potential to recycle it and even use it for large power generation, say, 200 MW station in some iron & steel plant. The successful CDM project case study in Jinan Iron & Steel Plant illustrates the good point. Three contributors gave their presentations respectively on Helical Screw Expanding Power Generator, A Novel Variable Speed Constant Frequency Doubly Fed Salient Pole Synchronous Machine, Smart Energy bonder of Getters: Nano-science Used in Energy Efficiency Improvement. All of the experts provided different technology options to recycle waste heat by giving audience the case study.



Figure 14. Topics on Heat Recycling & Green Power Generation

Session 4: Topic on Power Generation from Biomass

Biomass is one of the richest energy resources in the world, especially in China. Due to its carbon neutral, biomass power generation is regarded as the most promising technology to solve the environmental pollution. Mr. Bin LI, General Manager, Shenzhen Energy Group Co., Ltd chaired this session and also he expressed his interests to more commitments to utilize the Shenzhen municipal waste. Four experts from China, USA, Belarus gave their presentations, introducing their technology options such as utilizing animal waste residue for power generation in a large diary programme, municipal waste-to-energy technology, Technology and Equipment for Processing Organic Waste to Energy and pilot demonstration of Straw to Coal, Gas and Electricity Energy Station. Experts came to conclusions that China has potential to implement the above technologies and should conduct more technology transfer from developed economy.



Figure 15. Topic on Power Generation from Biomass



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Session 5: Topic on Biofuel

Prof. Chuangzhi WU, Senior Researcher/Director, Guangzhou Institute of Energy Conversion, Chinese Academy of Science chaired this session. Prof. Wu has, for many years, been devoted to R & D of biomass gasification power generation and has successfully established one 5 MW biomass gasification power generation plant in Xinhua, Jiangsu Province. He made remarks that in addition to the biomass power generation, biofuel should be also regarded one of the alternative fuels to meet the future energy supply. Dr. Koerber Rainer from Chemistry Department, Research Center Karlsruhe told us about their Bioliq Projects, which in the final campaign for Bluesky Award, ranked the first. Representatives from Guangdong Zhongke Tianyuan Co., Ltd shared us his experience to exploit Fuel Ethanol Production from Cassava. Mr. Shuqi CHEN, Board Director/Researcher, Changsha TianDi Green Energy Resources Technology Institute, in his presentation, gave detailed introduction to his energy crops concept of Using Oil of Daphniphyllum Calycinum as Raw Material to Make Biodiesel and Compound Technique. Also expert from Japan, Prof. Yoshikawa, Technology Director/Researcher, 3R Technology Co., Ltd stated his total Technologies for Producing Fuels, Hydrogen and Electricity from Solid Wastes and Biomass Resources. He hoped to promote the promising technologies in large communities in China.



Figure 16. Topic on Biofuel

Session 6: Topic on Investment in Renewable Energy

In addition to CDM, the workshop also organized this session to discuss other investment possibilities, invited government officer from China and other country like Thailand to introduce their national strategy to encourage renewable energy. Mr. Shanxin SHI, Consultant at China Development Bank, Vice President at Chinese Society for Urban Studies (CSUS) made his presentation telling about the active role of China Development Bank to promote renewable energy development. Mr. Thamrong Mahajchariyawong, Deputy Secretary General, Thailand Board of Investment also made presentation introducing their national strategy to develop renewable energy and the policy to attract foreign capital to invest in his country. He expressed his warm welcome to all of the investors, who would like to develop renewable energy in Thailand. Mr. Jiyang WANG, member of Chinese Academy of Sciences, famous scientist in geothermal energy, chaired this session and he said that geothermal energy, Pumped-storage Power Generation and other renewable



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energy can not be neglected in diversification of energy supply.



Figure 17. Topic on Investment in Renewable Energy

Session 7 & 8: Topic on Successful Energy Saving Cases Study and Energy Saving Standard on Buildings

As these two sessions were held on 16, Oct, 2006 when ITPC organized the summit forum and Bluesky Award Ceremony in Wuzhou Guest House, the organizing committee decided to invite two partners to chair these parallel sessions. Shenzhen Expertise Federation of Energy Conservation co-organized the session with topic on Successful Energy Saving Cases Study and Shenzhen Municipal Key Lab on Building Energy Saving co-organized the afternoon session focusing on topic of Energy Saving Standard on Buildings. Nine local experts gathered to discuss the successful case study of energy conservations in buildings, other possible technologies were also discussed to meet the aim of energy conservation. However, experts argued that due to the lack of effective energy saving standard on building, it is very difficult to assess whether one energy conservation programme or effort is effective. Hence developing one pilot comprehensive energy efficiency evaluation system is imperative. And we should try to combine some international efforts to conduct research on this field, for instance experiences from EU, USA should be learned.

Summit Forum: Topic on CDM-A New Engine for Renewable Energy Development and the **Future Solution of Energy Crisis**



Dr. George Assaf hosting the Opening Ceremony of Summit Forum



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The summit forum, which took place on 16th, Oct, in Wuzhou Guest House, marked the peak for these series great events, RETI 2006. Head of UNIDO's Technology Promotion Group, Dr. George B. Assaf, Mayor of Shenzhen Municipal Government, Mr.Zongheng XU, Counselor of the State Council, Former Secretary-General of Ministry of Science & Technology, PRC, President of China Society for Renewable Energy, Mr.Shi Dinghuan, CDM project administration office of National Development & Reform Commission, Ms. Li Liyan, and also some experts and officials from international programme, renowned university, institute gathered to make presentations and discussed the hot topics.











Mr. Zimin Gao hosting the forum

Mr. Dinghuan SHI

Prof. Edgar Schicker

Mrs. Liyan Li

Mrs. Binu Parthan

Figure 18. Participants of the Summit Forum

From nine to eleven in the morning, four experts made presentations in the Topic session on CDM-A New Engine for Renewable Energy Development. Mr. Dinghuan SHI, as the former Secretary-General of Ministry of Science & Technology made it clear that Chinese government has been giving much attention to development of renewable energy and great efforts have been made to encourage it. Actually it can be anticipated that in the decades to come, there will be booming development as long as we continue to hold efforts to this field. Professor Edgar Schicker at the University for Applied Sciences of Nuremberg, Germany, after listening to Mr.Shi's presentation, gave good remarks on Chinese government's position to encourage development of renewable energy as well as the large investment flow from market actors. However, he argued that for China, there is still a long way to go before realizing its ambitious goal in his presentation titled Renewable Energy Progress and Prospect in Germany. Lack of effective incentive mechanisms and low public awareness will constitute the main barriers to development of renewable energy, he remarked. Experience from EU and Germany can be shared not only in technology transfer, but also the capacity building in making effective policy. He also pointed out that the current CDM mechanism is just one effective tool to boost the growth of renewable energy development, the problem is: are you ready to grasp the opportunity when CDM is here with you? Following his presentation, Ms. Li Liyan, vice director of CDM Coordination Office under NDRC, began to introduce the CDM mechanism and its impact on renewable energy industry in China telling about CDM policy, CDM requirements, CDM international rules. In the end, Mr. Binu Parthan, Deputy Director - Programme Coordination, REEEP International Secretariat presented the audience of REEEP's Plan for Global Renewable Energy Development. He welcomed active participation from Chinese side.



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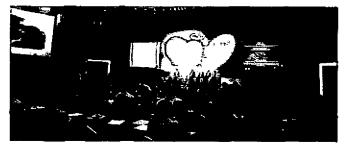
After closing of this summit forum, from 11 to 12, six experts joined Multilateral Dialogue with its topic on The Future Solution of Energy Crisis. Mr.Zhou fengqi, Senior Research Fellow, Senior Advisor of Energy Research Institute of National Development and Reform Commission, and National Chief Technical Advisor of GOC/WB/GEF China Renewable Scale-up Program Management Office, chaired this dialogue. He asked six experts to give their own opinion on how to face the future solution of energy crisis. Member of China Engineering Academy, noted physical scientist, Mr. Zuoxiu HE, who once made great contributions in nuclear development in China, began this dialogue, saying that human kind can not rely on the power from nuclear due to the limited raw material for this purpose, and the age to utilize solar energy is here with us. He stressed that after detailed comparisons between nuclear and solar energy in terms of investment cost, security etc, solar energy seems to be the best option. After Mr. He's remark, Prof. Jiyang WANG, a famous expert in geothermal, seemed not to agree with him, adding remarks that in terms of energy security, diversity of energy supply, it is unwise to confine the solar energy as the only best solution resources, otherwise it would discourage the development of renewable energy, say, geothermal energy, which can also be utilized on large scale. Prof. Shi Dinghuan agreed with Prof. Wang, adding further remarks that China has witnessed great change in developing renewable energy in solar energy, biomass energy, or other forms of energy resources. The future energy strategy has shown that Chinese should stick to the principle of "raking energy conservation first, development of renewable energy as the alternative options to meet the future energy supply crisis". Edgar Shicker and Binu Parthan also concluded that Chinese government is now on the right way in the pursuit of its great campaign to develop renewable energy, however international cooperation in technology transfer or in capacity building of policy making and experience sharing, are called for.



Mr. Fengqi ZHOU

Mr. Zuoxiu HE

Question from audience



Overview of the conference site

Figure 19. Participants of the Summit Dialogue



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5.02 Potential technology cooperation and project matching

RETI & BA 2006 provides an international platform for market actors, research experts, decision-makers to exchange the latest technology advance, the investment prospects as well as the national development strategy. The potential technology cooperation and project matching can be described as follows:

- The showcase of these candidate technologies presented in the fourth hall of China Hi-tech Fair provided one opportunity to gather all of the market actors, research experts and investors to identify project cooperation. This showcase of BA 2006 highlights the concept of circular economy, which is represented by the exhibitions in the fourth hall. Technology holders from USA, India, Germany, Belarus, Japan, China presented their mature technologies respectively on biomass utilization, solar energy, PV building etc. while thousands of visitors visited their displays and some representatives from industry park showed their intention to conduct cooperation with those proven technologies. For instance, technology holder of CSP from India signed intention letter of cooperation.
- In terms of project financing, the project investors find some suitable technology holders, for example, the representatives from Thailand invest board presented their policy to attract foreign investment whilst Guangzhou Institute of Energy Conversion, Chinese Academy of Science expressed their interest to conduct some biomass gasification demonstration project in Thailand, where biomass resource is also very rich.
- The CDM session provides one platform for project developers, CER Buyers, DOEs to conduct one potential CDM projects. Some energy contracting service companies asked experts whether an energy contract management project can be developed as one CDM project and invited some potential companies to join the partnership during the discussion session of the seminar.

5.03 Support from local administration

Owing to the great support from Shenzhen Municipal Government and Shenzhen Energy Group, this event proved to be very successful. The director of ITPC steering committee, Mayor of Shenzhen Municipal Government, Mr.Zongheng XU attended the Awarding Ceremony and also held direct dialogue with all of the experts and BlueSky Award Evaluation Committee expert members, saying that the great campaign to realize circular economy is in compliance with the national campaign of "realizing the concept of scientific development using the less energy to power more economic growth". The event, held in Shenzhen will surely provide one platform and act as think tanker to put forward good suggestions on how Shenzhen could meet its green development using renewable energy. In the end, Mayor Xu encouraged all of these experts to



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contribute more efforts in this area. He also promised to give more supports to the annual event.

5.04 Public awareness enhancement

Raising public awareness to utilize renewable energy is the main goal of this RETI & BA event. Organizing candidate technologies to present their technologies in the showcase exhibition in the fourth hall during high-tech fair and inviting citizens from all around the country and region to join the BlueSky Award Ceremony make the concept to use renewable energy widely accepted and public awareness raised. Besides these activities, ITPC also published many brochures and issued newsletters to the public. More importantly, in close cooperation with Shenzhen Media Centre, ITPC also made one series of TV media titled Energy China, which give the general introductions to each top ten technologies including technology process, market situation and case study etc. 300 copies of TV series were distributed to the parties of interest as the first step.

5.05 Follow up activities

Propaganda of the event

Recent focus of work goes to the promotion of the event since a good number of enquiries have been received on covering the whole event and its outcome in detail and for some press in series or special report. Taking account of other elements a completed review of the event is imperative and beneficial.

Promotion of Winning Technologies

Since the award has been give to a few outstanding technologies or projects, it will take continuous work to follow up the intents established in the showcase between technology holders and potential partners, whilst from the many interested organizations consulting about future cooperation with the top ten, selection will be made and sometimes face-to-face meeting will be held to facilitate the further application of those achievements in renewable energy.

Past experience tells us this will be a long but meaningful process and necessary intelligence will be recruited to this aim.

Extension in Partnership Network

As mentioned previously, broadened partnership will be of ultra importance in raising the international influence of the whole event, which will hence help a great deal the dissemination of green energy and a renewed mind on how to use energy meaningfully. We shall continue to call for new partners joining us in this campaign for the common vision shared by every organization, or individual, committed in to this area: to achieve sustainable development and a better standard of life for all people.



5.06 Recommendations and suggestions

The RETI & BA 2006 proved to be a successful international event, which gathered market actors, research experts and government officials from all over the world to discuss the latest technology progress, exchange the potential technology cooperation and identify the project investment opportunities. There is no doubt that this annual event will play more and more active role to promote renewable energy development.

However, to help this event to be more soundly based, ITPC, as the organizing committee would like to draw some recommendations and suggestions to UNIDO as follows:

- It is recommended that more cooperation between UNIDO and Chinese government in the field of renewable energy be stressed. Now the RETI & BA, although supported by UNIDO and Chinese government, only serve as one international platform to provide one initial intention of cooperation. But when it comes to the project cooperation between different countries, more barriers still exist despite of mutual strong will to further cooperation. So keeping constant track of how the cooperation proceeds and helping them overcome these barriers should be one major post-service tasks for ITPC. For example, we can help both sides to find another project financing tool or utilize the other function of UNIDO, say, some local departments of investment and technology promotion. In a word, ITPC should not only mainly act as a bridge, but also should be more functional to facilitate project cooperation.
- Global participation in the great event is also called for. This year's event invites many experts from about seven countries to join the event. However it is pity that we did not have presence of experts from Africa, Latin American. Since the BlueSky Award is one global event, global participation of experts is of course very important. So we recommend that we should try to broaden our partnership globally and invite more experts and technology holders from more countries to join the event with the support from UNIDO.
- More financial contribution from UNIDO is recommended to be given to support the event. During our preparation of this event, when we invite some promising technologies to join our BlueSky Award, they often asked ITPC to cover their travel expense saying that they can not afford the flight fees despite of their strong will to participate and promote their technologies through the platform. Whereas due to the limited budget for the event, we had to fail to invite their presentations, which is just worth promoting and is in compliance with the standards of top ten investment scenarios to utilize renewable energy.

We are confident that the RETI & BA will prove to be more successful both in technology transfer and facilitation of project cooperation, if the recommendations are adopted by UNIDO and more supports from market actors, research experts, governmental authority are received.



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Annex A: Final list of participants and speakers

*Since the event lasted for 5 days and was open to public and professional audience in a big amount, which is over one thousand, the list of public and professional audience is omitted here and only information of VIP guests and presentation makers can be found in this Annex.

George B. Assaf, [UK]Head of UNIDO's Technology Promotion Group

Zhen WANG, First Secretary, Chinese Commission to UNIDO

Yongli ZHAO Section Dean of CICETE

Zonghen XU,

Major of Shenzhen Municipal Government, Chair at ITPC Steering Committee

Mr. Guoqiang HUANG, Vice Secretary General, CPC Shenzhen Committee

Mr. Li Lianhe,

Vice Chairman to CPPCC Shenzhen Committee

Changhu Zhou,

Government Counselor of Guangdong Province

Zimin GAO

Board Chairman, Shenzhen Energy Group, Director of UNIDO-ITPC

Bin LI.

General Manager, Shenzhen Energy Group Co., Ltd

Yuanqi YU

PhD/Deputy Project Director, International Coordinator, UNIDO-ITPC

Dinghuan SHI Professor,

Counselor of the State Council,

Former Secretary-General of Ministry of Science & Technology, PRC,

President of China Society for Renewable Energy

Siping Chen,

Vice Dean of Shenzhen University

Edgar Schicker

[DE]Professor at the University for Applied Sciences of Nuremberg, Germany

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41/F, Huaneng Building, No.2068 Shennan Rd., Futian District, Shenzhen 518031, Guangdong, China Tel: (+86-755)-8368-4225 Fax: (+86-755)-8368-4221 bluesky@unido-itpc.org www.unido-itpc.org



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Binu Parthan

[AUST] Deputy Director - Programme Coordination, REEEP International Secretariat Chairperson: Senior Research Fellow,

Senior Advisor of Energy Research Institute of National Development and Reform Commission, and National Chief Technical Advisor of GOC/WB/GEF China Renewable Scale-up Program Management Office

Zuoxiu HE

Member of China Engineering Academy, noted physical scientist

Ms. Li Liyan,

Vice director of CDM Coordination Office under NDRC

Jiyang WANG

Member of Chinese Academy of Sciences

Guangyuan TAO

Vice Director, Deutsch-Chinese Economic and Trade Cooperation Center

Shanxin SHI

Consultant at China Development Bank, Vice President at Chinese Society for Urban Studies

Thamrong Mahajchariyawong [TH]Deputy Secretary General, Thailand Board of Investment

Deepak GADHIA [India] Managing Director, Gadhia Solar Energy Systems Pvt., Ltd.

Xiaoyan LIU CDM auditor of TÜV SÜD Gruppe

Haoxiang JIANG Chief Representative in China, EEA Fund Management Ltd

Hoi Yin So

[US] RNK Security (TBC) Chairperson: Wenhua XI

Director, UNIDO International Center for Promotion and Transfer of Solar Energy Technology; Director, Gansu Natural Energy Research Institute

Lanying ZHANG

Senior Engineer/Director Assistant, UNIDO International Center for Promotion and Transfer of Solar Energy Technology;

Vice Director, Gansu Natural Energy Research Institute

Weiming KONG

Chief Inventor, Creatvow Invention Organization

Shenzhen International Technology Promotion Center for Sustainable Development

41/F, Huaneng Building, No.2068 Shennan Rd., Futian District, Shenzhen 518031, Guangdong, China Tel: (+86-755)-8368-4225 Fax: (+86-755)-8368-4221 bluesky@unido-itpc.org www.unido-itpc.org



Peishi ZHU

General Manager, Kunming Xinyuan Sunshine Technology Co., Ltd

Board Chairperson, Shenzhen Topray Solar Co., Ltd

Hongshen XU

Board Chairperson, Shenzhen Green Power Solar Technology Co., Ltd

Ximeng JIANG

Project Director, DYNAX Corporation

Da HU

Board Chairperson/General Manager, Shenzhen Huihe New Energy Technology Co., Ltd Yuquan NING

Professor, HuaZhong University of Science and Technology

Meiying LEE

Researcher,

Taiwan Courtesy Plastics Co., Ltd

Chairperson: Bin LI

General Manager, Shenzhen Energy Group Co., Ltd

Dr. Bryan Jenkins

[US] Professor and Executive Director.

California Biomass Collaborative/

University of California, Davis

Yinghui MA

PhD./General Manager, Shenzhen Energy Environmental Engineering Co., Ltd

Henadz

ZHURAUSKI

A. V. Luikov Heat and Mass Transfer Institute, the National Academy of Sciences of Belarus

Shaoliang XU

Senior Engineer

Chairperson: Chuangzhi WU

Senior Researcher/Director, Guangzhou Institute of Energy Conversion, China Academy of Science

Dr.Koerber Rainer

[DE] Chemistry Department,

Research Center Karlsruhe

Zhaoxing Tang

General Manager, Guangdong Zhongke Tianyuan Co., Ltd

Shuqi CHEN

Board Director/Researcher, Changsha TianDi Green Energy Resources Technology Institute

Kunio Yoshikawa

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30



[JP] Technology Director/Researcher, 3R Technology Co., Ltd Jianan WANG General Manager, Shenzhen Puxin Science& Technology Co., Ltd

Songyuan DAI

Institute of Plasma Physics, Chinese Academy of Sciences

Ping FANG

Vice Director, Shenzhen Energy Group Pumped-storage Power Generation Station Chairperson: Changfu SUN

Deputy Secretariat, Shenzhen Expertise Federation of Energy Conservation

Junmin HU

Dean of Shenzhen Packaging Industry Association, Shenzhen Huajing Glass Bottle Co., Ltd.

Jiangyue XIONG

General Manager, Shenzhen Pengrui Energy Technology Co., Ltd

Zhigang HUANG

Member, Shenzhen Expertise Federation of Energy Conservation

Yuanbo JIANG

Director, Shenzhen PowerU Technology Co., Ltd

Guoxiang ZHANG

Shenzhen Huajing Glass Bottle Co., Ltd

Dean, Shenzhen Institute of Building Research

Director, Shenzhen Municipal Key Lab on Building Energy Saving

Erjian GAO

Section Director, Science & Education Department, Shenzhen Municipal Construction Bureau

Bing QIANG

China Merchants Real Estate (Shenzhen) Co., Ltd

Xuezhen LIU

General Manager, Shenzhen Commonpraise Solar Co., Ltd.



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Annex B: BlueSky Award Evaluation Experts Committee Members

Name	Nation	Title
		Member of China Academy of Science, Honorary Director-General of China Solar Energy
Luguang YAN	China	Academy, Director of Science Committee, Institute of
1	ļ	Electrical Engineering, Chinese Academy of Sciences (IEECAS)
		Professor,
]		Counselor of the State Council,
Dinghuan SHI	China	Former Secretary-General of Ministry of Science &
		Technology, PRC,
		President of China Society for Renewable Energy
		Senior Advisor of Energy Research Institute of
		National Development and Reform Commission, and
Fengqi ZHOU	China	National Chief Technical Advisor of GOC/WB/GEF
		China Renewable Scale-up Program Management
		Office
	China	Member of China Academy of Engineering,
		Professor of Huazhong University of Science &
Yuan PAN		Technology,
		Member of Chinese Expert Committee of ITER Fusion Project
		Ph.D, President of Guangzhou Branch, Chinese
Yong CHEN	China	Academy of Sciences; President of Guangdong
		Academy of Sciences
Shanxin SHI	China	Consultant at China Development Bank, Vice President
Shanxin Shi	Cilina	at Chinese Society for Urban Studies (CSUS)
Binu Parthan	India	Deputy Director - Programme Coordination, REEEP
Billu rarman		International Secretariat
Edgar SCHICKER	Germany	Professor for Process Plant Design at the University for
Eugai SCHICKER	Gennany	Applied Sciences of Nuremberg, Germany
Mrs. Rohani	Malaysia	Secretary General, World Association of Industrial and
Hashim	141alay 51a	Technological Research Organization (WAITRO)



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Annex C: BlueSky Award 2006 Winners

Rank	Technology Title	Applicant	From
1	bioliq - synthetic fuels from biomass via bioslurry gasification	Forschungszentrum Karlsruhe GmbH	Germany
2	Fuel Ethanol Production from Cassava	Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences	China
3	The Integrated Amorphous Silicon Solar Energy Wall	Shenzhen Topray Solar Co. Ltd	China
4	Municipal Waste-to-Energy Technology	Shenzhen Energy Environmental Engineering Co., Ltd	China
5	Cohesive-light all-glass Evacuated collector tubes	Hongsheng XUShenzhen Green Power Solar Technology Co., Ltd	China
6	Solar Concentrators for Thermal Applications like domestic, community and institutional cooking (steam) and other Industrial Processes	Mr. Deepak Gadhia, Managing Director, Gadhia Solar Energy Systems Pvt. Ltd.	India
7	A Novel Variable Speed Constant Frequency Doubly Fed Salient Pole Synchronous Machine	HuaZhong University of Science and Technology	China
8	Puxin Hydraulic Pressure Biogas Plant with Detachable Gas holders (Puxin Biogas Plant)	Shenzhen Puxin Science& Technology Co. Ltd	China
9	Using Oil of Daphniphyllum Calycinum as Raw Material to Make Biodiesel and Compound Technique	Shuqi CHENG, Chuanzhi CHENG, Changsha TianDi Green Energy Resources Technology Institute	China
10	Rooftop-panel construction component type solar energy collecting device /warm water system	Peishi ZHUKunming Xinyuan Sunshine Technology Co., Ltd	China



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Annex D: BlueSky Award 2006 Nominees

Rank	Technology Title	Applicant	From
1	Helical Screw Expanding Power Generator	Shenzhen Huihe New Energy Technology Co., Ltd	China
2	Total Technologies for Producing Fuels, Hydrogen and Electricity from Solid Wastes and Biomass Resources	3R Technology Co., Ltd.	Japan
3	Technology and Equipment for Processing Organic Waste to Energy	A. V. Luikov Heat and Mass Transfer Institute, the National Academy of Sciences of Belarus	Belarus
4	Dye-sensitized Solar Cell Module and application	Kongjia WANGSongyuan DAIInstitute of Plasma Physics, Chinese Academy of Sciences	China
5	Innovative Solar Water Heating System with High Efficiency Solar Collectors using Transparent Insulator Aerogel and TiOxNy Selective Surface Coating	Ximeng JIANGDynax Corporation	Japan
6	Dairy Power Production Program	California Energy Commission, Western United Resource Development, Inc.	USA
7	PES- Energy efficiency & Environment friendly Auto-cleaning System for Central Air-conditioning	Shenzhen Pengrui Energy Technology Co.,Ltd	China
8	Flexible Wing Solar Energy Car	Weimin KONG, Creatvow Invention Organization	China
9	Smart Energy bonder of Getters – Nano-science Used in Energy Efficiency Improvement	Mei-Ying LEETaiwan Courtesy Plastics Co., Ltd	China
10	Electrical Controlled Fuel Gas (biogas/methane) Mixture Technology	Yiliang CHEN, Zhichun WANG,HaibingYU,Peng ZHANG,Shengli Oilfield Shengli Power Machinery Co., Ltd	China



Annex E: Volunteers in service

Name

Organization & Project Function

Luis Luo, Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences

Call for BlueSky Award Candidates Supervision of translation work and facility Online evaluation of BlueSky Award by public

Steven Chai, Graduate School of Sociology, Beijing University

Preparation and organization for candidate's showcase Domestic Coordination

Xiao Shu, Environmental Management Dept. at Imperial College London

Call for BlueSky Award application Reception of oversea experts

Yaqin Gao, Chongqing University

Call for BlueSky Award application

Tianshu Qu, Transportation Company, Shenzhen Energy Group

Preparation for Application Documentations Coordination for candidates' showcase

Minghong Ding, Legal Consultancy, Shenzhen Energy Group

Management of Candidates' Showcase

Lucky Huang, Shenzhen University

Reception of invited guests

Ming Shi, Shenzhen Heifeng Advertisement Co., Ltd

Statistics of BlueSky Award ballots

Xinxin Wang, Shenzhen University,

Newsletter edition Service at candidates showcase

Fang Hu, Shenzhen University,

Junior translation

Ziqin Xin, Durham University,

Service at candidates showcase

Wa Chen, Shenzhen University,

Service at candidates showcase



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Annex F: Partnership

Co-organizers

UNIDO Investment and Technology Promotion Branch
China Hi-Tech Fair Organizing Committee Office
China Renewable Energy Society
Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences
Member Consultation Base of Chinese Academy of Sciences at Shenzhen
Shenzhen University Communication Research Centre
Shenzhen Institute of Building Research

Supporters

International Energy Agency
Renewable Energy & Energy Efficiency Partnership
World Association of Industrial and Technological Research Organizations (WAITRO)
University for Applied Sciences of Nuremberg, Germany
California Energy Commission (CEC), Sacramento, CA, USA
State Research and Development Programme of Energy Efficiency, Belarus
China Renewable Energy Development Project Office
Guangzhou Branch, Chinese Academy of Sciences
Technical Co-operation among Developing Countries/ECDC Network in China
Shenzhen Government Trade and Industry Bureau
Huazhong University of Science and Technology
Deutsch-Chinese Economic and Trade Cooperation Center
Shenzhen Expertise Federation of Energy Conservation
Shenzhen Tsinghua International Technology Transfer Center

Authorized Web Media

China New Energy Journal and Website (www.newenergy.org.cn)

Media Support

Shenzhen Energy Journal



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Annex G: Guidebook of RETI&BA 2006(Final Programme of the event)

Annex H: Workshop Presentation (1 CD)

Annex I: Energy China Video Series (8 DVDs)

Annex J: News Report 1- Paper publications

News Report 2- TV Interview with Shenzhen TV (1 DVD)

*Please refer to the corresponding post delivery.