



Cooperation on Energy Security: China–EU Government and Business Perspectives

中欧能源安全合作—政府与企业视角



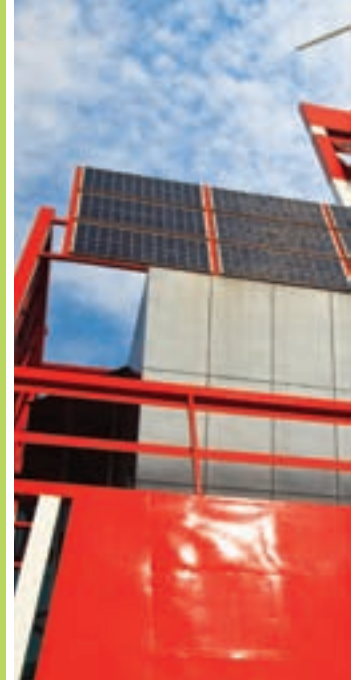
Conclusions from the High-Level
Conference, Beijing, December 13, 2012

2012年12月13日北京高层会议总结

The EU and China together account for one-third of world energy use, and energy consumption in the EU and China is foreseen to continue growing in the coming years. With increasing consumption and the rising price of fossil fuels, the sustainability of energy security systems is an issue of mutual concern.

During the May 2012 EU–China High-Level Meeting on Energy, the European Commission and China signed the Joint Declaration on Energy Security, each side agreeing to strengthen coordination and cooperation in order to ensure global energy security, and to use the Europe–China Clean Energy Centre (EC2) as one of the implementation platforms for this cooperation.

In the spirit of the joint declaration, EC2 and its partners, the Energy Research Institute of the National Development and Reform Commission (China) and the Regional Environmental Center for Central and Eastern Europe organised the High-level Conference “China–EU Cooperation on Energy Security” on December 13, 2012. This one-day conference, comprising high-level presentations and roundtable discussions, was an opportunity to brainstorm on possible areas of cooperation and to formulate recommendations for initiatives to be included in the roadmap being developed by China’s National Energy Administration (NEA) and the EC Directorate General for Energy under their joint Energy Security Working Group.





欧盟和中国能源消费量合计占世界能源消费量的三分之一，欧盟和中国的能源消费预计在未来几年内将继续增长。随着消费和化石燃料价格的上涨，能源安全系统的可持续发展是一个共同关心的问题。

在2012年5月举办的中欧能源高层会议中，欧盟委员会和中国国家能源局签署了能源安全联合声明，双方一致同意加强协调与合作，以确保全球能源安全，并把中欧清洁能源中心（EC2）作为此合作的实施平台之一。

在联合声明的指导下，EC2与其合作伙伴国家发展和改革委员会能源研究所和中东欧区域环境中心于2012年12月13日共同举办了中欧能源安全合作高层会议。为期一天的会议（高层演讲和圆桌讨论会）为探讨未来可能的能源合作领域、制定在中国国家能源局和欧盟能源总局能源安全工作组下的合作路线图提供了机遇。

Participants

The event drew almost 200 delegates from the NEA, the Chinese Ministry of Commerce, the Chinese Ministry of Environmental Protection, Shanghai Development and Reform Commission, Tianjin Development and Reform Commission, the International Energy Agency (IEA), the EU Delegation to China, embassies of EU member states, and representatives of Chinese and European oil and gas, coal and power companies, industrial associations, universities and research institutes.

Opening remarks and presentations

Opening remarks were delivered by:

Gu Jun, Deputy Director General, Department of International Cooperation, NEA

Ambassador Vladimir Rakhmanin, Deputy Secretary General of the Energy Charter Secretariat

Luo Yu, First Secretary, Department of International Trade and Economic Affairs, Chinese Ministry of Commerce

Jean-Jacques Soulacroup, Resident Representative of the European Investment Bank in China



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参会人员

来自国家能源局、商务部、环保部、上海市发改委和天津市发改委等单位的领导，国际能源署（IEA）、欧盟驻华使团、欧盟成员国驻华大使馆代表，以及国内外知名的石油天然气公司、煤炭公司、电力企业、行业协会、大学和科研院所等有关专家200多人参加了研讨会。

欢迎致辞及大会演讲

欢迎致辞：

顾骏，国家能源局合作司副司长

Vladimir Rakhmanin大使，能源宪章秘书处副秘书长

罗煜，中华人民共和国商务部，国际经贸司商务一秘

Jean-Jacques Soulacroup，欧洲投资银行驻华代表

High-level speakers shared their knowledge and experience in relation to three key areas:

The energy roadmap and energy security

An Fengquan (NEA)

Jorgen Sjoberg (Chalmers University)

Energy transformation and energy security

Zhang Xiliang (Tsinghua University)

Stefano Casertano (Potsdam University)

Energy governance

Yang Yuanhua (Xinhua Center for World Affairs Studies)

Martin Young (IEA)

All the presentations can be found on the EC2 website (www.ec2.org.cn/en/training-series/).



演讲嘉宾在以下三个主要领域与与会者一起分享相关经验:

能源发展战略与能源安全

安丰全 (中国国家能源局)

Jorgen Sjoberg (瑞典查尔姆斯理工大学)

能源转型与能源安全

张希良 (清华大学)

Stefano Casertano (德国波茨坦大学)

全球能源治理与能源安全

杨元华 (新华社世界问题研究中心)

Martin Young (国际能源署)

全部演讲资料均可在EC2网站下载:

www.ec2.org.cn/zh/training-series/

Roundtables

The following outcomes emerged from the roundtable discussions facilitated by European and Chinese co-chairs.

COOPERATION ON RENEWABLES

The market for renewable energy is growing in both China and Europe, and this has lowered the cost of technology and boosted profitability (in the case of photovoltaics and wind specifically). Considerable efforts have already been made, and parties are looking for win-win business solutions to address common objectives.

Biomass, wind power and solar power have been earmarked for further cooperation.

In relation to biomass:

- pilot projects are needed in China;
- the cost issue should be monitored;
- policy should be more practical and implementable; and
- the focus for cooperation should be on advanced technology and design rather than on products; and
- greater cooperation is needed between businesses and governments.

In relation to wind power:

- there remain some unresolved issues in the development of wind energy (e.g. transmission infrastructure and interconnection lines); and
- a cooperation strategy should be developed based on innovative design and the analysis of regional and local characteristics.

In relation to solar power:

- win-win solutions need to be identified in regions with high potential for PV market development.

COOPERATION ON OIL, GAS AND CLEAN COAL

Since Europe and China face the same energy challenges, besides government-level cooperation there is a need for practical cooperation at the level of projects on the ground.

Europe and China have similar interests as they both are facing a continuous increase of dependency on external supplies of oil and gas.

圆桌讨论会

由中欧双方联合主持人主持的圆桌讨论会成果如下：

可再生能源领域合作

中欧双方的可再生能源市场均持续增长，使得技术成本降低，盈利能力提高（特别是光伏发电和风力发电领域）。双方对此均做出了巨大努力，目前正在为实现共同目标，寻求双赢方案。

生物质能、风力发电和太阳能光伏发电仍有进一步合作空间。

生物质能领域：

- 中国需要试点项目；
- 成本监测；
- 政策应更为实际，并具有更可实施性；
- 合作的重点应从产品转向先进技术与设计；企业与政府之间需要更多合作。

风力发电领域：

- 风能领域仍然存在一些尚未解决的问题（如输电基础设施和互联线路）；
- 以创新设计与分析区域和地方特点为基础，制定合作战略。

太阳能发电领域：

- 在光伏资源和市场潜力大的区域需要探讨双赢的解决方案

石油、天然气和清洁煤领域合作

由于中欧面临同样的能源挑战，除了政府层面的合作之外，也需要进行务实的项目合作。

由于进口油气资源的不断增加，因此中欧双方有类似利益。



China–EU cooperation on global oil market governance is needed in order to:

- revise national standards for oil product specification, with Europe sharing its experience;
- maintain stability in oil-producing regions; and
- improve energy market transparency.

Overseas energy cooperation is needed in order to:

- increase/facilitate business-to-business cooperation (e.g. Shell/PetroChina in Australia and BP/Sinopec in Angola);
- facilitate energy swaps (where practical);
- enhance the security of energy supply from the region between Europe and China by the development of a pan-Europe–Asia oil and gas pipeline network;
- explore non-conventional and deep-water oil and gas supply; and
- increase EU and Chinese dialogue on Russia to achieve better understanding of the common supplier.

In relation to clean coal, based on existing cooperation between Europe and China, demo projects can be

undertaken, but there is a need for policy and advanced technologies. China faces the problem of water and local pollution, while Europe’s challenge is related to Carbon Capture Sequestration (CCS) technology and CO₂ emissions. Europe and China thus need to work together to solve local pollution problems.

In relation to natural gas there is a need for:

- a pilot pricing scheme in China based on EU practices;
- greater exchange on dealing with seasonal fluctuations in gas supply/demand; pipeline interconnections (China could learn from the EU’s good track record);
- decentralised energy service providers (e.g. renewables); third-party access; and interchangeability/standard issues;
- large-scale European investments in China to meet the rapidly growing demand for natural gas; and
- cooperation on the exploitation of shale gas (especially with EU countries that are based on gas energy systems, such as Poland).



中欧在全球石油市场治理的合作是必要的:

- 修订石油产品国家标准，与欧洲国家分享经验;
- 维护石油生产地区的稳定;
- 提高能源市场透明度。

海外能源合作是必要的:

- 增加或促进企业间的合作（如壳牌与中石油在澳大利亚的合作，英国石油公司与中石化在安哥拉的合作）;
- 促进能源互换（在切实可行的情况下）;
- 通过建设泛欧亚油气管道网络，提高中欧能源供应的安全性;
- 开发非常规油气和深水石油资源;
- 加强中欧双方在俄罗斯问题上的对话，以便更好的了解共同的油气供应商。

就清洁煤而言，虽然需要政策指导和先进技术，但是中欧现有示范项目合作仍然可以实施。中国面临的问题是水污染和当地污染，而欧洲面临的则是碳捕获、存储技术（CCS）和二氧化碳排放问题。因此，中欧双方需要合作以解决当地污染问题。

天然气领域:

- 借鉴欧盟经验，在中国开展定价改革试点项目;
- 为了应对天然气供应或需求的季节性波动而进行更广泛的交流; 管道互联（中国可以借鉴欧洲的良好经验）; 多元化能源服务供应商（如可再生能源）; 管道第三方准入; 互换性/标准问题;
- 欧洲在中国进行大规模投资，以满足快速增长的天然气市场需求;
- 合作开采页岩气（尤其是与欧洲天然气资源国进行合作，如波兰）

COOPERATION ON NUCLEAR

The need to improve safety is an ongoing concern and cooperation in this regard is very important. New requirements from regulatory bodies will lead to greater safety but will also imply more funding and more time to develop new technologies. A global energy standard is needed in order to facilitate EU-China cooperation on technology.

Many nuclear power plants in France are built inland, which are subject to the same requirements as coastal plants. In China, most nuclear power plants are built on the coast. All inland projects were stopped after the Fukushima disaster due to the risk of water pollution. Requirements for coastal and inland plants differ in China, and there are public acceptance issues to deal with. An EU-China seminar on inland nuclear power plants is recommended in order to compare approaches in safety technologies and social acceptance.

In the event of a crisis, reactions are needed at site, operator and national levels. In order to improve operator-level responses, exchanges on crisis

management and lessons learned must be increased, and cooperation on the development of post-accident tools must be improved.

In order to improve safety, cooperation is recommended in the field of research and development:

- changes need to be applied to plants currently being constructed, in addition to planned and existing plants;
- new research and development is needed on post-accident tools to ensure better reactions; and
- research is needed to develop the next generation of reactors with better use of fuel.

COOPERATION ON CROSS-CUTTING ISSUES:

The following cross-cutting recommendations also emerged:

- the drafting of joint studies on environmentally friendly energy production and consumption;
- education and training for the transfer of lessons learned from Europe; and
- more effective promotion of university-to-university and business-to-business cooperation by EC2.

核能安全领域

提高安全性是一个需要在合作中长期关注的问题。监管机构的新要求将导致对安全性更高的要求，但是也意味着需要更多的资金和时间来开发新技术。为了促进中欧科技合作，制定全球性的标准是必须的。

在法国，有很多建在内陆的核电厂，建在沿海地区的核电厂与内陆核电厂的要求是一致的。在中国，大多数核电厂是建沿海地区。福岛灾难后，由于存在水体污染的风险，目前所有的内陆项目均已停止。在中国，内陆核电厂与沿海核电厂的要求是不同的。目前存在公众接受度的问题，因此，建议举行中欧内陆核电厂建设的研讨会，探讨技术安全性与社会接受度问题。

在发生危机时，需要现场处理、运营商和国家层

面的迅速反应。为了提高运营商的反应，必须加强危机管理，吸取经验教训，开展改善事故处理的合作。

为了提高安全性，建议在以下领域进行合作：

- 目前在建的工场、将要建造的工场以及已经建成的工场的改造项目；
- 为了确保更好的反应效果，需要研究新的事故后处理方法；
- 为了开发新一代更好的利用燃料的反应堆，应进行必要的研究。

跨领域合作：

- 联合研究有利于环境的能源生产和消费；
- 汲取欧洲经验教训，开展教育和培训活动；
- 更有效的通过EC2进行促进大学对大学和企业对企业的合作。

Based on the contributions of speakers and participants at the high-level conference, conclusions were formulated in relation to future EU–China cooperation and dialogue on energy strategy, energy structure transformation, global energy governance, and energy security in relation to renewables; oil, gas and clean coal; and nuclear safety issues.



根据演讲人与参会者的建议，加强欧盟与中国在能源战略、能源结构转型、全球能源管理、可再生能源、石油、天然气、清洁煤和核安全方面的合作与对话。



Conclusions

RENEWABLES

An expanded market for renewables is both lowering technology costs and boosting sector profitability, leading parties in China and Europe to seek mutually beneficial agreements that meet common needs. Renewables not only play a role in the supply side, they also contribute to rational energy use on the demand side: the lower the demand to satisfy with high efficiency, the greater the coherence for renewables. Biomass and wind development in China requires collaboration on cost issues, legislation, pilots for advanced technologies and design, rather than products, grid connection and transmission infrastructure in the case of wind energy. Meanwhile, the PV industry is encouraged to seek win-win business solutions worldwide, for example in Africa and other regions with high PV potential market development. End-use energy efficiency combined with renewables offers still another unique opportunity for EU-China partnership.



总结

可再生能源

可再生能源市场的发展需要降低技术成本和培育行业盈利能力，中欧双方主要部门可寻求双赢的合作方式来满足共同的需求。可再生能源不仅对能源供应方有重要作用，也有助于需求方进行合理的能源使用。提高能效降低能源需求，为可再生能源的利用提高了机遇。在中国生物质和风能领域，可以开展降低成本、立法、示范项目中引进先进技术和设计理念方面的合作，对风能而言，主要是电网接纳和输电基础设施建设问题。对光伏发电行业而言，建议寻求双方共赢的商业解决方案，例如非洲和其他地区具有较大的光伏市场发展潜力。终端能源使用效率与可再生能源相结合，将是一个战略性的合作领域。

OIL

The EU relies mainly on external supplies of oil while China dependence on external supplies is growing continuously. Practical cooperation is needed in the form of joint projects on the ground. An important area of concrete cooperation is global oil market governance in order to maintain stable global prices by improving standards for oil product specification; increasing transparency; ensuring stability in the main supplier region; fostering cooperation at company level; and producing an international oil price benchmark. Overseas energy cooperation is needed in order to facilitate business-to-business cooperation; build a Pan Asia–Europe oil and gas pipeline network; and foster dialogue with Russia in order to maintain the stability of supply.

CLEAN COAL

The main challenges in China centre on water and local pollution, while European priorities focus on CCS technology and CO₂ emissions. Cooperation is needed on

finding technical solutions for local pollution mitigation; standardisation/policy to reduce coal use in urban areas; and carbon sequestration mechanisms.

NATURAL GAS

Demand is growing rapidly in China and the necessary large-scale investments will be a good opportunity for Europe. Cooperation is needed in the form of pilots in China based on EU practices. Exchanges of ideas are also needed on how to deal with seasonal fluctuations in supply/demand; pipeline interconnections; decentralised energy service providers (e.g. renewables); third-party access; interchangeability/standardisation issues; and shale gas (especially with the EU).

NUCLEAR

A global energy standard would facilitate cooperation in promoting safety technologies and social acceptance; crisis management and the development of post-accident tools; research and development on next-generation reactors; and improvements in existing and future power plants.



石油

欧盟的石油需求主要依赖于外部供应商，中国石油对外依存度不断提高。双方需要务实的合作。具体合作的一个重要领域是全球石油市场治理，以便通过提高石油产品的规格标准维护全球石油价格的稳定、增加市场透明度、确保主要供应地区的稳定、促进公司层面的合作、以及建立国际油价标杆。海外能源合作是必要的，加强企业间的合作、建立一个泛欧亚石油和天然气管道网络、促进与俄罗斯的对话以确保石油供应的稳定性。

清洁煤

中国主要面临的挑战是水污染和当地污染，欧洲则是CCS技术与二氧化碳排放。为了减少当地污染，在寻求技术解决方案中进行合作是必要的；为降低煤炭在城市中的使用，需要制定标准或政策及固碳机制。

天然气

中国对天然气的需求急剧增长，对欧洲国家来说，正是一个在中国进行大规模投资的好机会。根据欧盟经验，在中国进行试点项目的合作是必要的；就如何应对供应或需求的季节性波动开展交流、管道连接、多元化能源服务供应商（如可再生能源）；第三方介入；互换性或标准化问题；页岩气开发（特别是欧盟）。

核能

制定全球性的能源标准将有利于促进安全技术的合作，并为社会所接受；危机管理和事故后工具开发；新一代反应堆的研究和开发；改善现有和未来的发电厂。

EC2 is a hub of excellence, providing support to the Chinese Government and key players in the energy sector, both Chinese and European. By supporting technological cooperation, providing policy advisory services, building capacity and raising awareness, the ultimate goal of the prestigious partners in the EC2 consortium is to promote the increased use of clean energy in China, thus contributing to global sustainable development.

中欧清洁能源中心是为中国政府及中欧能源企事业单位提供支持的卓越中心。中欧清洁能源中心的合作伙伴联盟旨在通过协助技术合作、提供政策咨询和能力建设服务、以及提升认知来推广清洁能源的使用，实现全球可持续发展。

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