Introduction to the EU Project on CDM and Sustainable Energy Technology transfer and implementation

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ovember 12, 2007，Kunming Hotel, Kunming, CHINA

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欧盟 CDM及有关可持续能源技术转让与实施国际合作研究课题介绍

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  Report of stakeholder assessment in China:
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- **CDM优先技术领域对可持续发展的贡献**
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- **2007年案例分析国家研讨会 中国昆明会议概况**
  Information of 2007 case study country workshop:
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1. 项目概况（General information of the project）

- 项目名称:通过京都协议的清洁发展机制
  进行有关可持续能源技术的转让与实施的潜力
  Project name: The potential of transferring and implementing sustainable energy technologies through the Clean Development Mechanism of the Kyoto Protocol (ENTTRANS)

- 项目来源:欧盟第六框架能源技术研究项目
  Project source: EU project under FP6 on energy technology

- 项目类别:面向政策的国际合作研究
  Project type: Policy oriented

1.项目概况(续)（General information of the project）(cont.)

- 项目主要目的:

  通过在5个案例分析国（中国、泰国、智利、肯尼亚、以色列）分别进行的案例研究，对有可能通过CDM实现在发展中国家技术转让与实施的有关可持续能源技术领域进行调研分析，以期对有关技术进行总结并得出有关优先领域、主要障碍、需要解决的主要问题和相应解决方案等，并对技术转让市场链情况、CDM的优势、劣势以及需要的改进方面进行研究。

  Main objectives of the project:

  Study the sustainable energy technologies that can be transferred and implemented in developing countries through CDM, by means of the case study in 5 selected case study countries (China, Kenya, Thailand, Chile, and Israel), thus to identify the priority areas, technologies, barriers, as well as means of addressing the barrier issues, studies are also planned on investigating the market chain for the relevant technology transfer, and the possible improvement on CDM itself.

1.项目概况(续)（General information of the project）(cont.)

- 项目组成员机构:来自8个国家的10个机构:
  International partners of the project: 10 institutions from 8 countries:

1. Joint Implementation Network, NL
2. University of Edinburgh, UK
3. Asian Institute of Technology, Thailand
4. Public Power Corporation, Greece
5. ICTAF Tel Aviv University, Israel
6. National Technical University of Athens, Greece
7. Practical Action - East Africa, Kenya
8. Cambio Climático y Desarollo Consultores, Chile
9. Energy Delta Institute, NL
10. Kunming University of Science and Technology, China

- 项目时间:2006年2月-2008年1月(2年)
  Project term: 2 years (Feb 2006-Jan 2008)

- 项目经费:69.5万欧元
  Amount of project fund: 695,000 euros

2.中国利益相关方问卷调查评估报告
Report of stakeholder assessment in China

Stakeholder selection (General concerns)
利益相关者的选择 （总体条件）

The purpose for the stakeholder selection in China is to have a representative cross section and cross region covering while at the same time keep the interview workload manageable over such a large and diverse country.

跨行业，跨地区，代表性强，可操作。

Considering the regional and sectoral varieties of China and the stakeholder criteria of UNDP, the Chinese research team deliberately planned the selection of the stakeholders as the interviewees for the project. The following considerations were followed for the stakeholder selection.

Stakeholder selection (Regional concerns)
利益悠关者的选择 （地区条件）

- Since Chinese regional variety is very large, typical provinces must be cautiously selected for the ideal results of technical priority.

  As Yunnan and Shangdong represent different levels of economic level, different types of two regions (south and north), and different energy source usage, they are carefully selected for the interviewing area.

Province	Economic situation	Heating in winter	AC in summer	Coastal area	Hydroelectric abundance	Main energy source
Yunnan	Relatively less advanced	No	No	No	Yes	Hydropower, coal
Shandong	Advanced	Yes	Yes	Yes	No	Coal, oil, combustion power

Stakeholder selection (Category) 利益悠关者的选择 （分类）

The concern of the categories of the stakeholders followed the criteria of UNDP and suggested by JIN, with the consideration of the regional need kept in mind. The following categories of the stakeholders in China were planned and selected:

- International organizations
- NGOs
- Central governmental officials
- Provincial and lower level governmental officials (for each representative province)
- Industrial sectors (national level and for each representative province)
- Industrial associations (national level and/or for each representative province)
- Banking (International, national, and /or for each representative province)
- Academic institutions (Capital city Beijing, and for each representative province)
- Communities (for each representative province)

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Stakeholder selection 利益悠关者的选择

NATIONAL/INTERNATIONAL
- Central government
  - 01 Climate Change and the CDM
  - 01 Energy policy
  - 01 Technology transfer
  - 01 Environment
  - 01 Development
  - 01 Finance
  - 01 Trade and Industry
- 1 National Industry associations
- 2 International Organisations such as UNDP, UN Habitat and donors such as UKDFID , GTZ etc and NGOS such as WWF

YUNNAN
- 7 provincial government departments
- 5 Industries
- 2 Industrial associations
- 2 NGOs
- 2 local government at the community level
- 2 community representatives
- 2 Banks

SHANDONG
- 7 provincial government departments
- 5 Industries
- 2 Industrial associations
- 2 NGOs
- 2 local government at the community level
- 2 community representatives
- 2 Banks

Questionnaire analysis methodology 问卷分析方法

- **Based on the questionnaires done by the selected stakeholders, we use the Fuzzy Comprehensive Evaluation approach as below:**

(1) Count the frequency of every ranking scale (0-5 or -1-5) for each item

(2) Figure out the value of evaluation by the following equation:

$$v = \sum_{i=l}^{5} \frac{f_i}{\text{tot}} * i \qquad (1.1)$$

(3) For question 1 and 2 in the questionnaire, the order of *v* from equation above is the order of Energy Technology Needs and Priorities, and Technology Appropriateness and Suitability, respectively.

Questionnaire analysis methodology (cont.) 问卷分析方法（续）

(4) From the technologies which have been ranked as 4 and 5 in Question 2, we selected 15 technologies in the order based on the number of stakeholders who selected the related item to make the benefit (question 3) and implementation barriers (question 4) analysis.

(5) For each technology, the benefit or barriers value is firstly obtained by:

$$vI_j = \frac{\sum_{(i=1)\in j}^{n} v_i}{n} \qquad (1.2)$$

where, vI_j means the integrated value of the benefit or barriers, where benefits include Economic Benefits (j=1), Environmental Benefits (j=2), Social Benefits (j=3), and barriers (j=4) include Limited present affordability, Existing domestic legal/institutional frameworks, and so on; v_i is the value of assessment of each item calculated according to eq. (1.1); n is the number of the items of a benefit or barriers, for instance, in Economic Benefits, n equals to 8, while in barriers, n equals to 10.

Questionnaire analysis Methodology (cont.) 问卷分析方法（续）

(6) The benefit value of a technology is then gotten by:

$$vE = \frac{\sum_{j=1}^{m} vI_j \cdot \alpha_j}{m}$$

where, vE means the benefit value of a technology; vI_j means the integrated value of the each benefit, which has been known from eq. (1.2); j is the index of benefit, and since there are three benefits(Economic Benefits, Environmental Benefits, Social Benefits), j ranges from 1 to 3; a_j is the coefficient of a benefit or barriers, meaning its positive or negative contribution, and here a_j =1.

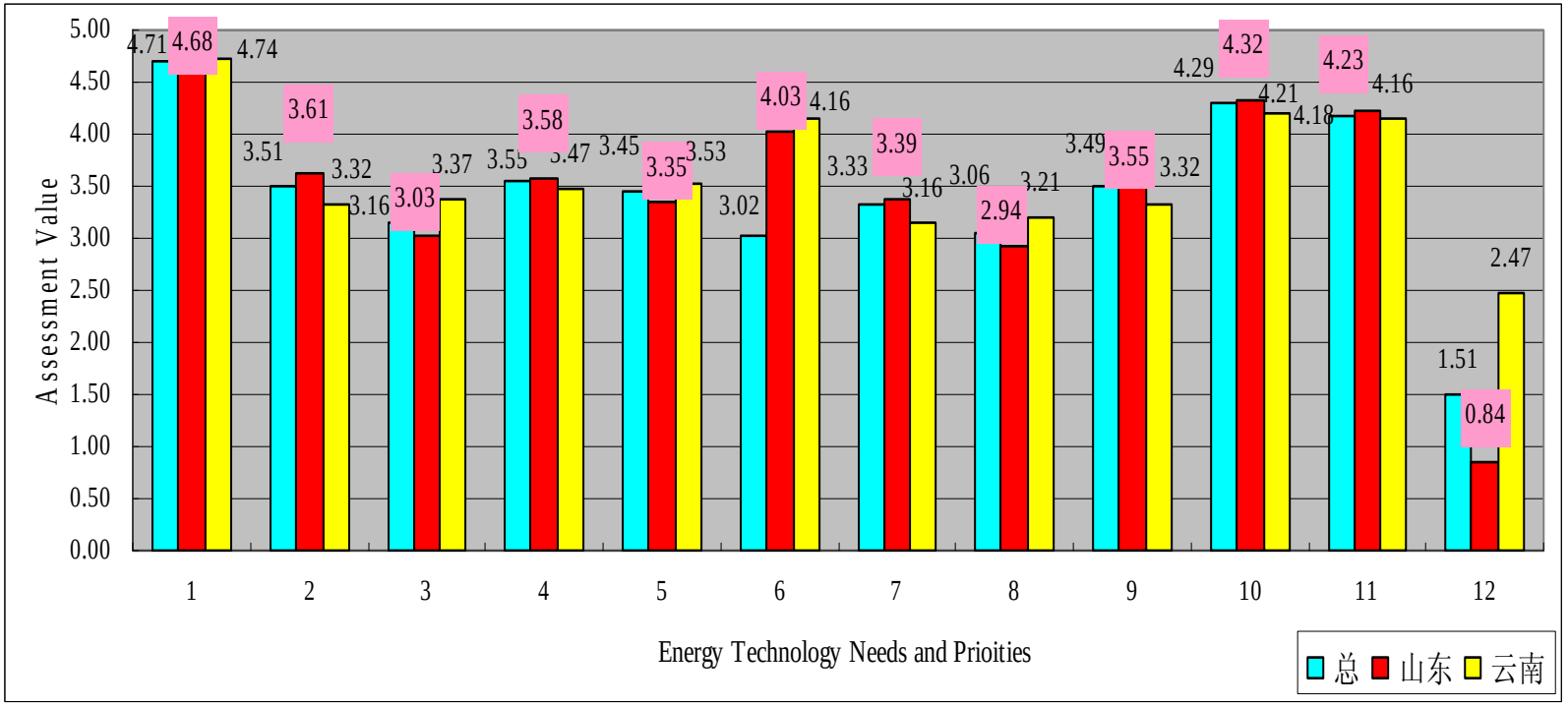
Questionnaire analysis methodology (cont.) 问卷分析方法（续）

(7) The evaluation of barriers is indicated by “Feasibility degree”, which is defined as:

$$FD = \frac{FO}{BI}$$

Where, FD refers to “Feasibility degree”, BI refers to “Barrier Importance”, FO refers to “Feasibility of Overcome”. BI and FO have been gotten by eq. (1.2).

Energy technology needs and priorities (Chart)
能源需求与优先领域



This figure shows the Assessment value for each energy technology needs and priorities in Yunnan, Shandong, and two provinces together respectively

Energy technology needs and priorities (Order)
能源技术需求与优先领域排序

Yunnan 云南

1, Electricity for industry工业用电领域

10, Energy efficiency in industry工业能效

11, Municipal solid waste management城市固体垃圾处理

6, Heat for industry工业供热

5, Electricity for service sectors服务性行业用电

4, Electricity for households -Urban communities城市家庭用电

3, Electricity for households- Rural communities农村家庭用电

2, Electricity for agriculture农业用电领域

9, Energy for cooling purposes (e.g. medicines)制冷耗能（如医药及食品业冷藏）

8, Heat for service sectors服务性行业供热

7, Heat for households家庭供热

*12, Other needs and priorities*其他领域

Energy technology needs and priorities (Order)
能源技术需求与优先领域排序

Shandong 山东

1, Electricity for industry工业用电领域

10, Energy efficiency in industry工业能效

11, Municipal solid waste management城市固体垃圾处理

6, Heat for industry工业供热

2, Electricity for agriculture农业用电领域

4, Electricity for households -Urban communities城市家庭用电

9, Energy for cooling purposes (e.g. medicines)制冷耗能（如医药及食品业冷藏）

7, Heat for households家庭供热

5, Electricity for service sectors服务性行业用电

3, Electricity for households- Rural communities农村家庭用电

8, Heat for service sectors服务性行业供热

*12, Other needs and priorities*其他领域

Energy technology needs and priorities (Order)
能源技术需求与优先领域排序

Yunnan and and Shandong (云南省与山东省)

1, Electricity for industry工业用电领域

10, Energy efficiency in industry工业能效

11, Municipal solid waste management城市固体垃圾处理

4, Electricity for households -Urban communities城市家庭用电

2, Electricity for agriculture农业用电领域

9, Energy for cooling purposes (e.g. medicines)制冷耗能（如医药及食品业冷藏）

5, Electricity for service sectors服务性行业用电

7, Heat for households家庭供热

3, Electricity for households- Rural communities农村家庭用电

8, Heat for service sectors服务性行业供热

6, Heat for industry工业供热

*12, Other needs and priorities*其他领域

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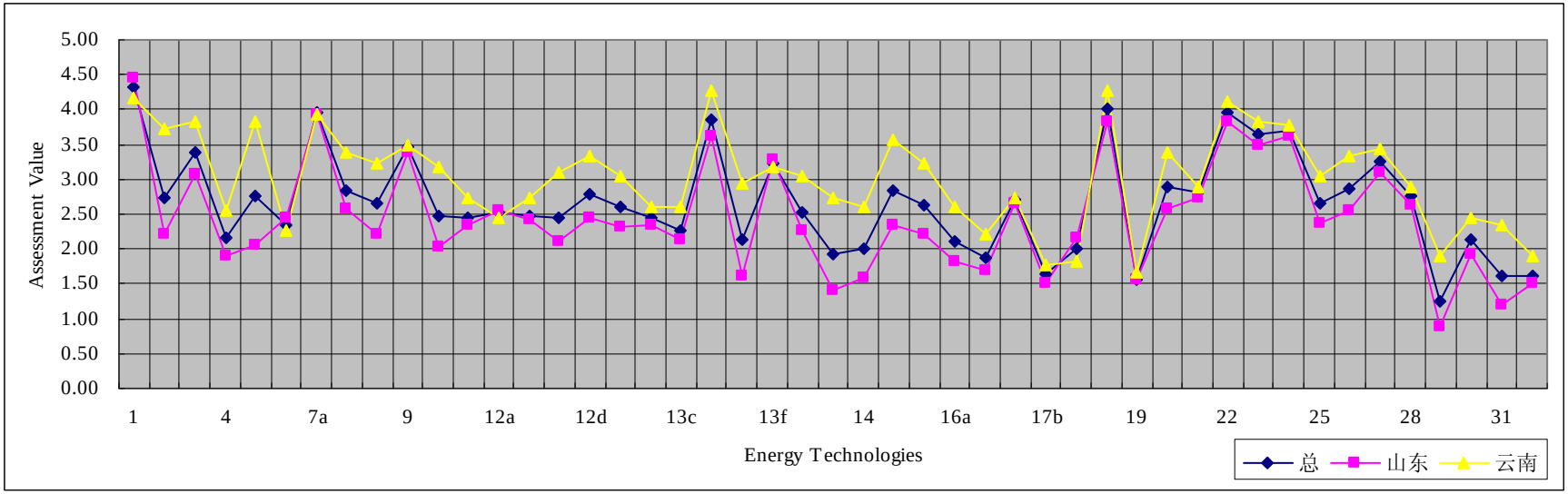
Technology appropriateness and suitability (Chart)
技术适应性



The chart shows the appropriateness and suitability Assessment value for each energy technology aforementioned in Yunnan, Shandong, and two provinces together respectively

Technology appropriateness and suitability (Order)
技术适应性排序

Yunnan (云南省）

18, energy saving lamps (lighting end use in building)节能灯（建筑物照明）

13.d, Solar coolers (cooling at institution/households level)供电或供热用的太阳能荚板（pod）

1, clean coal for large scale electricity大型供电中的清洁煤技术

22, cement industry energy水泥厂的能效及节能措施

7.a, hydro (dams) for large scale electricity supply大型供电中的水力发电（坝式电站）

5, coal steam improvement for large scale electricity supply大型供电中的燃煤汽轮机改进技术

23, iron & steel industry energy efficiency/saving measures钢铁厂的能效及节能措施

3, coal-to-gas for large scale electricity supply大型供电中的煤-燃气转换技术

24, chemical industry energy efficiency/saving measures化工厂的能效及节能措施

2, steam boiler upgrading for large scale electricity supply大型供电中的蒸汽轮机改进技术

15.a, sustainable design buildings可持续建筑物设计（如通过方位、设计、绝缘等获得供供热及照明）

19, efficient charcoal production (for households/commercial cooking)用于家庭/商业烹饪中的高效木炭生产技术

27, combustion of Municipal Solid Waste(MSW) for district heat or electricity用于区域供热或供电的城市固体垃圾燃烧技术

7.b Run of River hydro for large scale electricity supply大型供电中的径流式水力发电

20, improved cook stoves (for households/commercial cooking)用于家庭/商业烹饪中的灶具改进技术

Technology appropriateness and suitability (Order)
技术适应性排序

Shandong (山东省）

1, clean coal for large scale electricity大型供电中的清洁煤技术

7.a, hydro (dams) for large scale electricity supply大型供电中的水力发电（坝式电站）

18, energy saving lamps (lighting end use in building)节能灯（建筑物照明）

22, cement industry energy水泥厂的能效及节能措施

24, chemical industry energy efficiency/saving measures化工厂的能效及节能措施

13.d, Solar coolers (cooling at institution/households level)供电或供热用的太阳能荚板（pod）

23, iron & steel industry energy efficiency/saving measures钢铁厂的能效及节能措施

9, wind for large scale electricity supply and for community or small scale electricity supply大型、小型供电及社区供电中的风力发电

13.f, Solar cookers (cooking for households)太阳能灯具（用于家庭照明）

27, combustion of Municipal Solid Waste(MSW) for district heat or electricity用于区域供热或供电的城市固体垃圾燃烧技术

3, coal-to-gas for large scale electricity supply大型供电中的煤-燃气转换技术

21, LPG and LNG (for households /commercial cooking)用于家庭/商业烹饪中的液化石油气及液化天然气

17.a, CHP coal/gas-based large-scale electricity and heat supply大型供电、供热中基于煤/燃气的组合式热电生产技术（大型）

28, Gasification of Municipal solid Waste for large scale electricity or heat or both用于大型供电、供热或两者兼具的城市固体垃圾汽化技术

20, improved cook stoves (for households/commercial cooking)用于家庭/商业烹饪中的灶具改进技术

Technology appropriateness and suitability (Order)
技术适应性排序

Yunnan and Shandong (云南省与山东省）

1, clean coal for large scale electricity大型供电中的清洁煤技术

18, energy saving lamps (lighting end use in building)节能灯（建筑物照明）

22, cement industry energy水泥厂的能效及节能措施

7.a, hydro (dams) for large scale electricity supply大型供电中的水力发电（坝式电站）

24, chemical industry energy efficiency/saving measures化工厂的能效及节能措施

13.d, Solar coolers (cooling at institution/households level)供电或供热用的太阳能荚板（pod）

23, iron & steel industry energy efficiency/saving measures钢铁厂的能效及节能措施

9, wind for large scale electricity supply and for community or small scale electricity supply大型、小型供电及社区供电中的风力发电

13.f, Solar cookers (cooking for households)太阳能灯具（用于家庭照明）

27, combustion of Municipal Solid Waste(MSW) for district heat or electricity用于区域供热或供电的城市固体垃圾燃烧技术

3, coal-to-gas for large scale electricity supply大型供电中的煤-燃气转换技术

21, LPG and LNG (for households /commercial cooking)

17.a, CHP coal/gas-based large-scale electricity and heat supply大型供电、供热中基于煤/燃气的组合式热电生产技术

28, Gasification of Municipal solid Waste for large scale electricity or heat or both

20, improved cook stoves (for households/commercial cooking)用于家庭/商业烹饪中的灶具改进技术

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Sustainability benefits 有利可持续性的技术

Yunnan 云南省

1, clean coal for large scale electricity supply 大型供电中的清洁煤技术

2, steam boiler upgrading for large scale electricity supply大型供电中的蒸汽轮机改进技术

5, coal steam improvement for large scale electricity supply大型供电中的燃煤汽轮机改进技术

7.a, hydro (dams) for large scale electricity supply大型供电中的水力发电（坝式电站）

13.d, Solar coolers (cooling at institution/ households level)用于各类机构、家庭的水加热及室内取暖的太阳能供热技术

14, CMM for generator (for large scale electricity supply) 大型供电中的瓦斯发电技术

18, energy saving lamps (lighting end use in buildings) 节能灯（建筑物照明的终端）

22, cement industry energy efficiency/saving measures 水泥厂的能效及节能措施

23, iron & steel industry energy efficiency /saving measures 钢铁厂的能效及节能措施

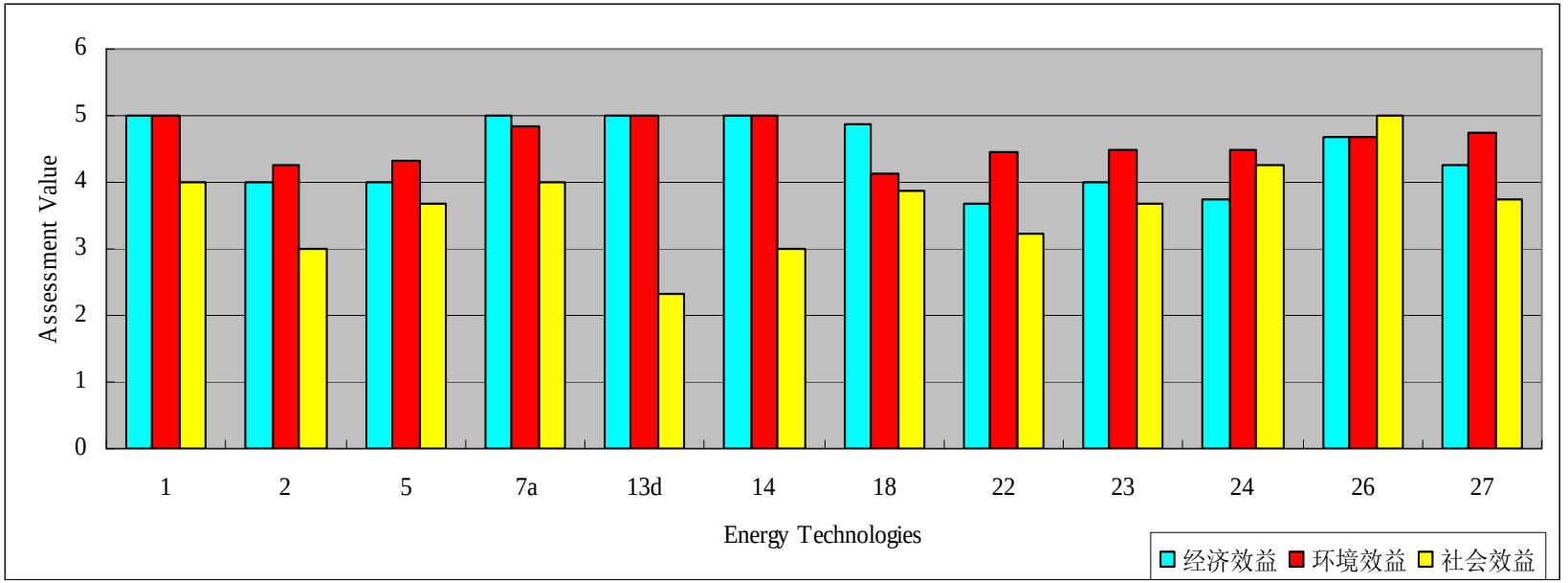
24, chemical industry energy efficiency /saving measures 化工厂的能效及节能措施

26, methane capture in landfills (MSW) for large scale electricity or local heat or both 用于大型供电、区域供热或两者兼具的垃圾填埋场甲烷捕集技术

27 Combustion of Municipal Solid Waste (MSW) for district heat or electricity 用于区域供热或供电的城市固体垃圾燃烧技术

Sustainability benefits (Economic, Environmental, Social)
有利经济、环境、社会的可持续性

Yunnan（云南省）



The chart shows the Economic, Environmental, Social Assessment value for each energy technology in Yunnan provinces .

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Sustainability benefits 有利可持续性的技术

Shandong 山东省

1, clean coal for large scale electricity supply大型供电中的清洁煤技术

3, coal-to-gas for large scale electricity supply大型供电中的煤-燃气转换技术

4, oil steam improvement for large scale electricity supply大型供电中的燃油汽轮机改进技术

7.a, hydro (dams) for large scale electricity supply大型供电中的水力发电（坝式电站）

9, wind for large scale electricity supply and for community or small scale electricity supply大型、小型供电及社区供电中的风力发电

11, biomass (forest/agriculture) boiler (for large scale electricity supply)大型供电中的生物质能发电（森林、农业等）

12.a, Biogas for generator (for large scale electricity supply)大型供电中的沼气发电技术

13.a, solar towers (for large scale electricity supply)大型供电中的太阳能风力塔

13.b, Solar (pv) (for large and small scale electricity supply)大型、小型供电中的太阳能光伏技术

13.d, Solar coolers (cooling at institution/ households level) 用于各类机构、家庭的水加热及室内取暖的太阳能供热技术

13.f, Solar cookers (cooking for households)太阳能灯具（用于家庭照明）

18, energy saving lamps (lighting end use in buildings)节能灯（建筑物照明的终端）

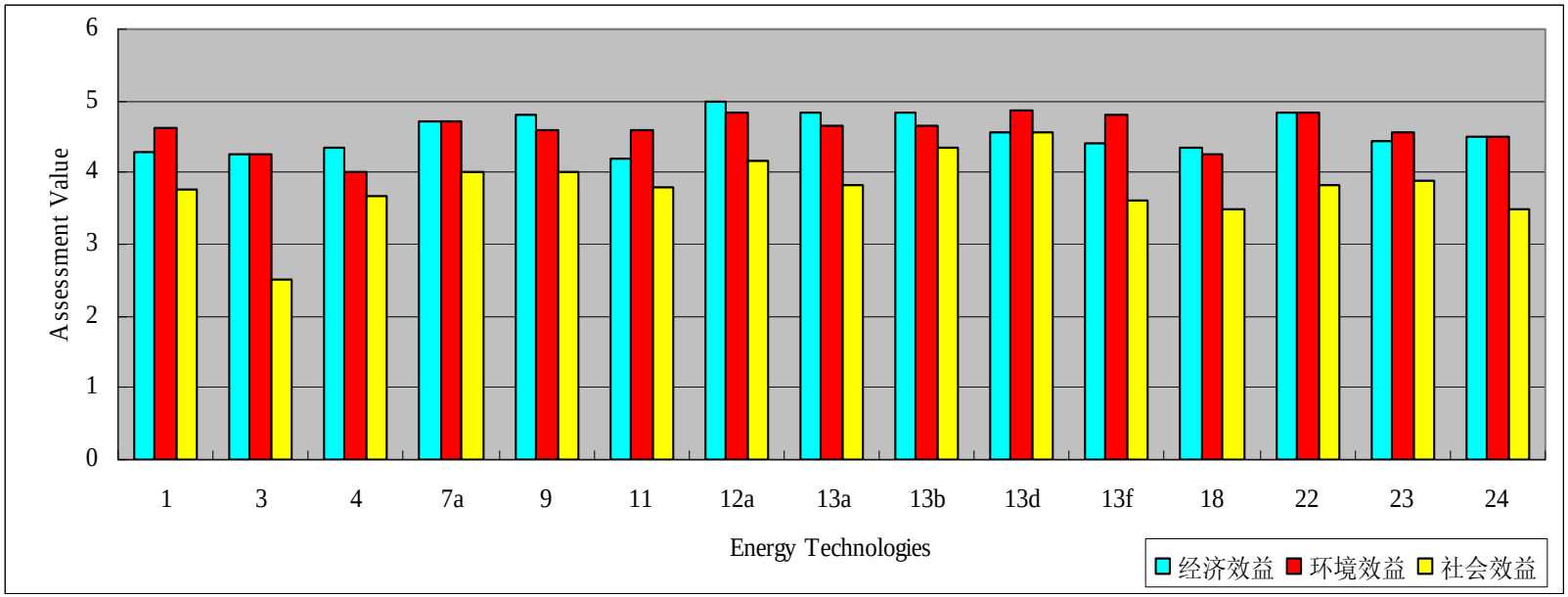
22, cement industry energy efficiency/saving measures 水泥厂的能效及节能措施

23, iron & steel industry energy efficiency /saving measures 钢铁厂的能效及节能措施

24, chemical industry energy efficiency /saving measures化工厂的能效及节能措施

Sustainability benefits (Economic, Environmental, Social)
有利经济、环境、社会的可持续性

Shandong（山东省）



The chart shows the Economic, Environmental, Social Assessment value for each energy technology in Shandong provinces .

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Sustainability benefits 有利可持续性的技术

Yunnan and Shandong (云南省与山东省）

1, clean coal for large scale electricity supply大型供电中的清洁煤技术

2, steam boiler upgrading for large scale electricity supply 大型供电中的蒸汽轮机改进技术

3, coal-to-gas for large scale electricity supply大型供电中的煤-燃气转换技术

7.a, hydro (dams) for large scale electricity supply大型供电中的水力发电（坝式电站）

9, wind for large scale electricity supply and for community or small scale electricity supply大型、小型供电及社区供电中的风力发电

11, biomass (forest/agriculture) boiler (for large scale electricity supply)大型供电中的生物质能发电（森林、农业等）

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13.b, Solar (pv) (for large and small scale electricity supply)大型、小型供电中的太阳能光伏技术

13.d, Solar coolers (cooling at institution/ households level)用于各类机构、家庭的水加热及室内取暖的太阳能供热技术

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22, cement industry energy efficiency/saving measures水泥厂的能效及节能措施

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24, chemical industry energy efficiency /saving measures化工厂的能效及节能措施

27, Combustion of Municipal Solid Waste (MSW) for district heat or electricity用于区域供热或供电的城市固体垃圾燃烧技术

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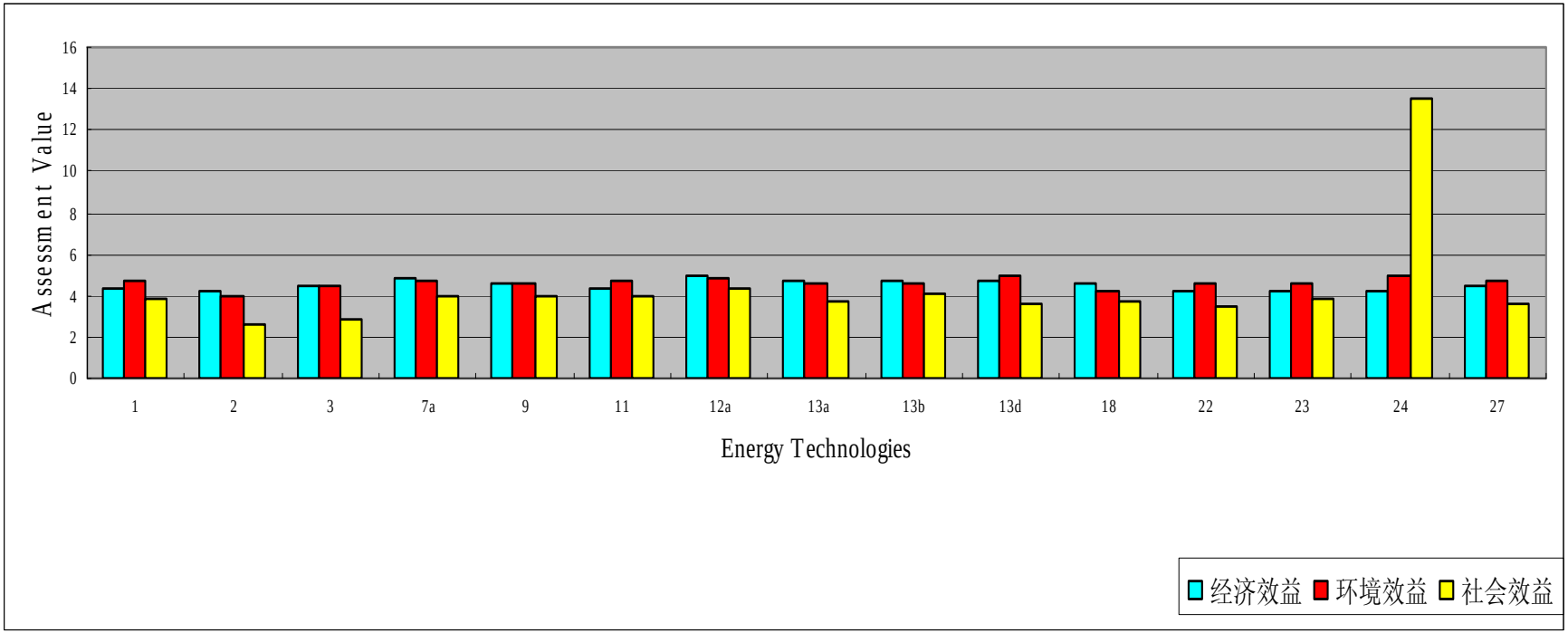
Sustainability benefits (Economic, Environmental, Social)
有利经济、环境、社会的可持续性

Yunnan（云南省与山东省）



The chart shows the Economic, Environmental, Social Assessment value for each energy technology in Yunnan and Shandong provinces together.

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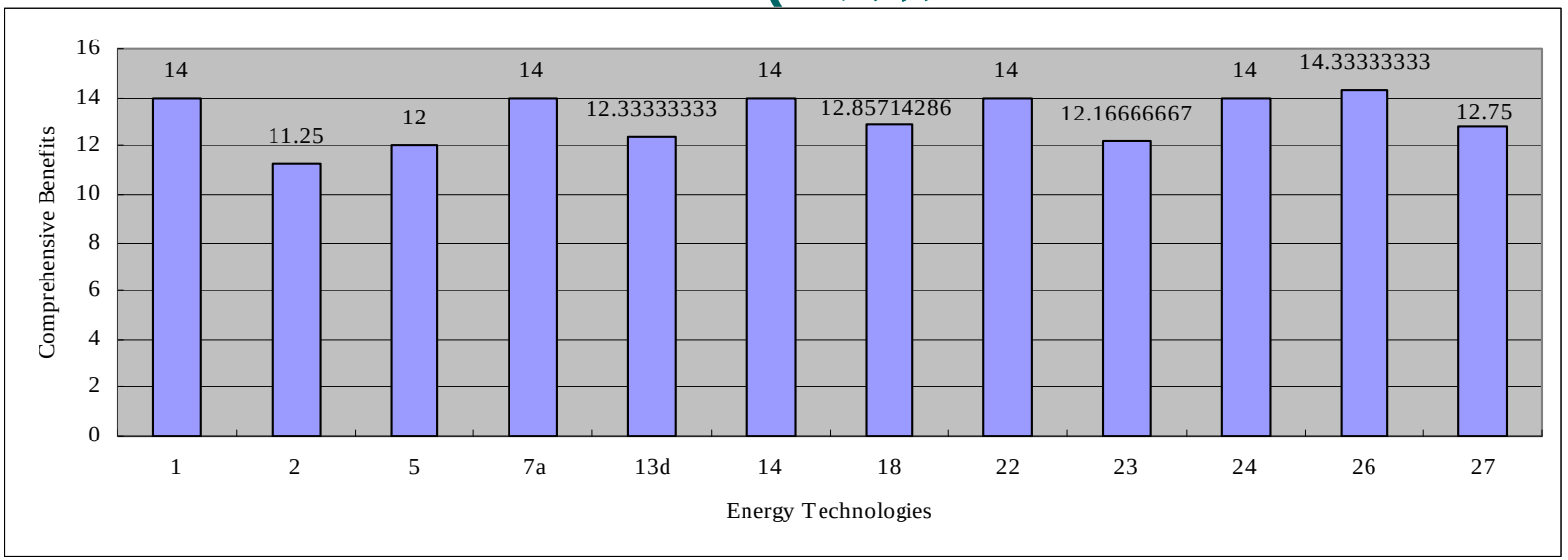
Sustainability benefits （comprehensive)
有利可持续性(综合）

Yunnan (云南省）

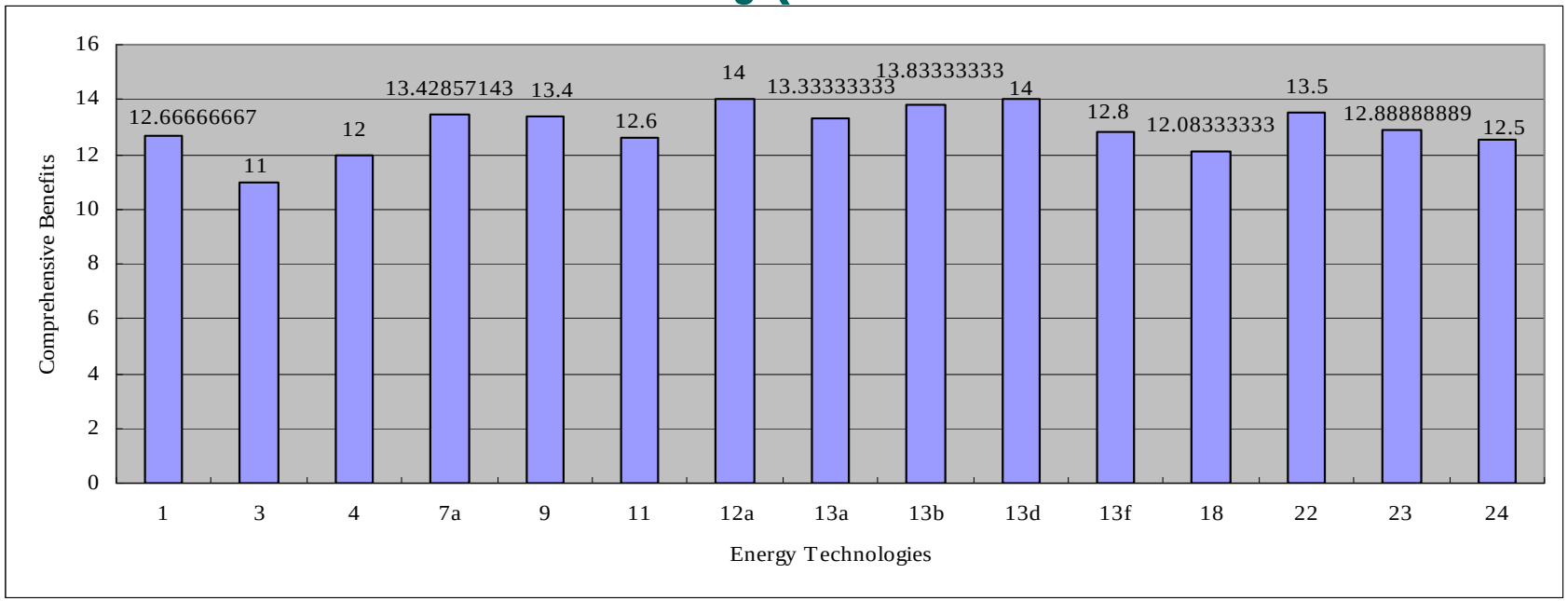


Comprehensive benefits of selected technologies

(1) 大型供电中的清洁煤技术, (2) 大型供电中的蒸汽轮机改进技术, (5)大型供电中的燃煤汽轮机改进技术, (**7 . a)**大型供电中的水力发电（坝式电站）, (13. d)用于各类机构、家庭的水加热及室内取暖的太阳能供热技术, (14)大型供电中的瓦斯发电技术, (18)节能灯（建筑物照明的终端）, (22)用于家庭/商业烹饪中的高效木炭生产技术, (23)钢铁厂的能效及节能措施, (24)化工厂的能效及节能措施, (26)用于大型供电、区域供热或两者兼具的垃圾填埋场甲烷捕集技术, (27)用于区域供热或供电的城市固体垃圾燃烧技术

Sustainability benefits (comprehensive)
有利可持续性（综合）

Shandong (山东省)

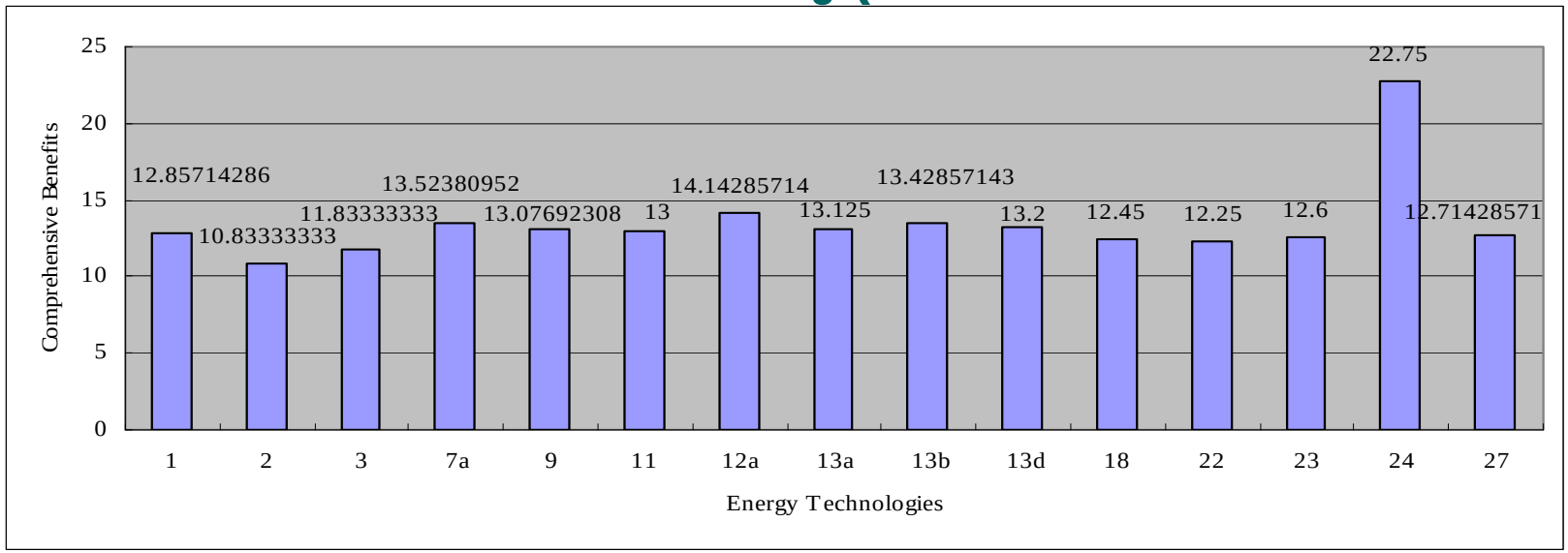


Comprehensive benefits of selected technologies

(1) 大型供电中的清洁煤技术, (3) 大型供电中的煤-燃气转换技术, (4) 大型供电中的燃油汽轮机改进技术, (7. a) 大型供电中的水力发电（坝式电站）, (9) 大型、小型供电及社区供电中的风力发电, (11) 大型供电中的生物质能发电（森林、农业等）, (12. a) 大型供电中的沼气发电技术, (13. a) 大型供电中的太阳能风力塔, (13. d) 用于各类机构、家庭的水加热及室内取暖的太阳能供热技术, (13. f) 太阳能灯具（用于家庭照明）, (18) 节能灯（建筑物照明的终端）, (22) 用于家庭/商业烹饪中的高效木炭生产技术, (23) 钢铁厂的能效及节能措施, (24) 化工厂的能效及节能措施

Sustainability benefits (comprehensive)
有利可持续性（综合）

Yunnan and Shandong (云南省与山东省）



Comprehensive benefits of selected technologies

(1) 大型供电中的清洁煤技术, (2) 大型供电中的蒸汽轮机改进技术, (3)大型供电中的煤-燃气转换技术, (7. a)大型供电中的水力发电（坝式电站）, (7. a)大型供电中的水力发电（坝式电站）(9)大型、小型供电及社区供电中的风力发电, (11)大型供电中的生物质能发电（森林、农业等）, (12. a)大型供电中的沼气发电技术, (13. a)大型供电中的太阳能风力塔, (13. b)大型、小型供电中的太阳能光伏技术, (13. d)用于各类机构、家庭的水加热及室内取暖的太阳能供热技术, (18)节能灯（建筑物照明的终端）, (22)用于家庭/商业烹饪中的高效木炭生产技术, (23)钢铁厂的能效及节能措施, (24)化工厂的能效及节能措施

Sustainability benefits (comprehensive order)
有利可持续性（综合排序）

Yunnan (云南省）

26, methane capture in landfills (MSW) for large scale electricity or local heat or both用于大型供电、区域供热或两者兼具的垃圾填埋场甲烷捕集技术

24, chemical industry energy efficiency /saving measures化工厂的能效及节能措施

22, cement industry energy efficiency/saving measures水泥厂能效提升以及节能技术

14, CMM for generator (for large scale electricity supply)大型供电中的瓦斯发电技术

7.a, hydro (dams) for large scale electricity supply大型供电中的水力发电（坝式电站）

1, clean coal for large scale electricity supply 大型供电中的清洁煤技术

18, energy saving lamps (lighting end use in buildings)节能灯（建筑物照明的终端

27, Combustion of Municipal Solid Waste (MSW) for district heat or electricity用于区域供热或供电的城市固体垃圾燃烧技术

13.d, Solar coolers (cooling at institution/ households level)用于各类机构、家庭的水加热及室内取暖的太阳能供热技术

23, iron & steel industry energy efficiency /saving measures钢铁厂的能效及节能措施

5, coal steam improvement for large scale electricity supply大型供电中的燃煤汽轮机改进技术

2, steam boiler upgrading for large scale electricity supply大型供电中的蒸汽轮机改进技术

Sustainability benefits (comprehensive order)
有利可持续性（综合排序）

Shandong (山东）

12.a, Biogas for generator (for large scale electricity supply)大型供电中的沼气发电技术

13.d, Solar coolers (cooling at institution/ households level)用于各类机构、家庭的水加热及室内取暖的太阳能供热技术

13.b, Solar (pv) (for large and small scale electricity supply)

22, cement industry energy efficiency/saving measures水泥厂能效提升以及节能技术

7.a, hydro (dams) for large scale electricity supply大型供电中的水力发电（坝式电站）

9, wind for large scale electricity supply and for community or small scale electricity supply大型、小型供电及社区供电中的风力发电

13.a, solar towers (for large scale electricity supply)大型供电中的太阳能风力塔

23, iron & steel industry energy efficiency /saving measures钢铁厂的能效及节能措施

13.f, Solar cookers (cooking for households)太阳能灯具（用于家庭照明)

1, clean coal for large scale electricity supply大型供电中的清洁煤技术

11, biomass (forest/agriculture) boiler (for large scale electricity supply)大型供电中的生物质能发电（森林、农业等）

24, chemical industry energy efficiency /saving measures化工厂的能效及节能措施

18, energy saving lamps (lighting end use in buildings)节能灯（建筑物照明的终端）

4, oil steam improvement for large scale electricity supply大型供电中的燃油汽轮机改进技术

3, coal-to-gas for large scale electricity supply大型供电中的煤-燃气转换技术

Sustainability benefits (comprehensive order)
有利可持续发展（综合排序）

Shandong and Yunnan (山东省与云南省）

24, chemical industry energy efficiency /saving measures化工厂的能效及节能措施

12.a, Biogas for generator (for large scale electricity supply) 大型供电中的沼气发电技术

7.a, hydro (dams) for large scale electricity supply 大型供电中的水力发电（坝式电站）

13.b, Solar (pv) (for large and small scale electricity supply) 大型、小型供电中的太阳能光伏技术

13.d, Solar coolers (cooling at institution/ households level) 用于各类机构、家庭的水加热及室内取暖的太阳能供热技术

13.a, solar towers (for large scale electricity supply)大型供电中的太阳能风力塔

9, wind for large scale electricity supply and for community or small scale electricity supply 大型、小型供电及社区供电中的风力发电

11, biomass (forest/agriculture) boiler (for large scale electricity supply) 大型供电中的生物质能发电（森林、农业等

1, clean coal for large scale electricity supply 大型供电中的清洁煤技术

27, Combustion of Municipal Solid Waste (MSW) for district heat or electricity 用于区域供而或供电的城市固体废弃物内燃技术

23, iron & steel industry energy efficiency /saving measures钢铁厂的能效及节能措施

18, energy saving lamps (lighting end use in buildings) 节能灯（建筑物照明的终端

22, cement industry energy efficiency/saving measures用于家庭/商业烹饪中的高效木炭生产技术

3, coal-to-gas for large scale electricity supply大型供电中的煤-燃气转换技术

2, steam boiler upgrading for large scale electricity supply大型供电中的蒸汽轮机改进技术

Summary of the Analysis Result (1)

- Electricity for industry, Energy efficiency in industry, Municipal solid waste managemen twere ranked as the first three energy technology needs and priorities to be developed in China for CDM. 在中国应当通过**CDM**促进发展的能源技术需求领域，排前**3**位的是：工业用电、工业能效、城市固体垃圾处理。
- Most of the priority CDM technologies in the research are in line with the country energy strategies of China. This indicates that the CDM technologies have great potentials in China. 多数与**CDM**相关的优先技术领域与中国的能源发展战略相吻合。
- The view of Yunan and Shandong to the Technology appropriateness and suitability is similar, the results should be reliable for whole country. 山东与云南在不同技术的技术适应性方面调研结果相近，一定程度可代表中国情况
- The view of Yunnan and Shandong to the Sustainability benefits is also similar, the results should be reliable for whole country as well.山东与云南在不同技术可持续性效益方面调研结果也相近，一定程度可代表中国情况

Summary of the Analysis Result (2)

- The technologies which has both high appropriateness and suitability for the energy technology needs and priorities and sustainability benefits in China are as below:在中国宜通过**CDM**促进优先发展的技术主要有：

  1, clean coal for large scale electricity supply.大型供电中的清洁煤技术

  22, cement industry energy efficiency/saving measures.水泥厂的能效及节能措施

  24, chemical industry energy efficiency /saving measures.化工厂的能效及节能措施

  13.d, Solar coolers (cooling at institution/ households level.用于各类机构、家庭的水加热及室内取暖的太阳能供热技术

  23, iron & steel industry energy efficiency /saving measures.钢铁厂的能效及节能措施

  27, Combustion of Municipal Solid Waste (MSW) for district heat or electricity.用于区域供热或供电的城市固体垃圾燃烧技术

  3, coal-to-gas for large scale electricity supply.大型供电中的煤–燃气转换技术

Summary of the Result Analysis (3)

Technology priorities

建议优先发展的技术

15 technologies were selected as priorities, based on the technologies with both high appropriateness and suitability, and also sustainability benefits assessment value in Yunnan and Shandong together, among the total of 47 technologies.

通过在云南和山东针对国际联合课题组统一提供的**47**种技术进行调研后，总结排列出**15**项建议优先发展的技术。

3. 案例分析国研讨会 中国昆明会议概况
Workshop of China at Kunming as a case study country workshop

- 研讨会名称：中国可持续发展清洁发展机制相关能源技术国际研讨会 Name of the workshop: **Workshop on the CDM Energy Technologies for the Sustainable Development in China**
- 研讨会时间、地点、议程：

  Workshop date, venue, and agenda
- 研讨会参加人员：按计划来自不同渠道的45名人员，其中39名正式代表

  Participants of the workshop：45participants from different categories as planned, 39 formal participants.
- 研讨会主要结果

  1. 总结报告了中国作为案例分析国之一已经进行的有关技术总结、问卷调查、优先能源技术领域等情况；

  2 . 讨论绘制了中国有关能源技术转让的市场链关系图模式

  3 . 讨论并总结了为促进有关技术转让应当对CDM进行的改进意见

  Main outputs of the workshop：

  1. Report of the country context, questionnaire interviews, and tech priorities

  2. Focused on models of the TT market mapping

  3. Discussed and summarized on the interaction between TT and CDM, and possible improvements to CDM.

Reference 主要参考资料

- CDM Country Guide for China, Edited by Institute for Global Environmental Strategies, Chinese Renewable Energy Industries Association,2005
- CLEAN DEVELOPMENT MECHANISM IN CHINA, The World Bank, Ministry of Science and Technology, P.R.China, The Deutsche Gesellschaft fur Technische Zusammenarbeit, German Technical Cooperation (GTZ), Federal Ministry of Eonomic Cooperation and Development, Swiss State Secretariat for Economic Affairs, 2004

谢谢！

Thank you very much！