Summary Report of Information Exchange of APEC Environmental Services

APEC Committee on Trade and Investment

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Prepared by
Policy Research Center for Environment and Economy, Ministry of Environmental Protection, China
Address: No. 1 Yuhuinanlu, Chaoyang District, Beijing, 100029, China
Tel: (86) 10 84665308 Fax: (86) 10 84665308
Email: li.liping@prcee.org
http://www.prcee.org

Produced for
Asia-Pacific Economic Cooperation Secretariat
Address: 35 Heng Mui Keng Terrace, Singapore 119616
Tel: (65) 6891 9600 Fax: (65) 6891 9690
Email: info@apec.org; Website: www.apec.org

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Summary Report of the project on Information Exchange of APEC Environmental Services

The project on Information Exchange of APEC Environmental Services (CTI /25/2010T) proposed by China, was approved in September 2010. This project was designed to take concrete actions to implement APEC Environmental Goods and Services (EGS) Work Programme by exchanging the information on both liberalization and technology aspects on environmental services (ES) within APEC economies. One of the important project activities was to hold a symposium of APEC ES during 29-30 November 2010 in Beijing, China.

The symposium was organized by Policy Research Center for Environment and Economy, Ministry of Environmental Protection of China. About 50 participants, including the representatives from APEC economies[1], international experts, local experts and governmental officials, as well as NGO representatives, attended the symposium.

At the symposium, the participants mainly discussed on: 1) the classification, negotiation and market status and trends of ES; 2) transfer or diffusion of ES and ES-related technology.

For the details of the symposium including the information on the programme of the symposium is as attached.

The following points were made in the presentations and discussions in the symposium.

1) APEC has been playing an important role in negotiations on trade liberalization in ES and environmental cooperation.

2) Trade in ES, which have deep impact on sustainable development, have rapidly developed and had huge potential. As estimated, the ES market in the world has been increasing at a rate of 8% per annum. And the value of environmental market in 2010 grew to over 640 billion dollars. Therein, the services segment accounted for a little over half. This would place the environmental industry at roughly the same size as the pharmaceuticals or information technologies industries. Besides the rapid increase of outdoor ES market, it cannot be ignored that both global ES market and indoor ES market are of much importance and have huge potential for development. According

[1] Active participants from 11 APEC economies, Canada; Chile; China; Hong Kong, China; Korea; Japan; Mexico; Papua New Guinea; Peru; Chinese Taipei; Viet Nam, participated the symposium.

to the market survey, it is estimated that the value of APEC member economies in indoor air quality consultation and improvement will be up to 26.4 billion dollars in 2010 and 87.8 billion dollars in 2020.

3) Up to now, 59 APEC members have already made commitments on ES. Compared with other service sectors, the restriction for the sector of ES is less. Furthermore, the clearer definition and more detailed classification of ES might be discussed in the future negotiations, which will help to improve the development of ES and the level of commitments.

4) Transfer and dissemination of ES-related technologies are very important for the achievement of sustainable development for APEC economies, which have been reiterated by APEC leaders in Yokohama and are important components of EGS Work Program as well. However, due to the barriers of intellectual property and transfer fee, it is very difficult for developing economies to get access to advanced ES-related technologies. To facilitate and promote technology transfer and dissemination in APEC, as well as to help fight against the climate change and achieve sustainable growth in APEC region, it is urgent and necessary for APEC to take concrete actions individually and collectively.

In order to take concrete actions to promote APEC ES cooperation, the participants made suggestions and recommendations from two aspects:

1) Classification of ES

i) The ES could be redefined based on the demands of the environment: indoor ES which is for improving the indoor environment; the outdoor ES which is for improving the outdoor and regional environment; and the global ES which is for improving the global environment. This classification will be important complements for W/120 and CPC classification.

ii) An APEC list of ES could be developed. In order to develop the list, APEC should a) made the information exchange on ES regularly; b) develop new survey and research projects on classification of ES, including research on the environmental classification systems in EU, comparison of EU classification and CPC classification, research on indoor ES and etc.; c) enhance the capacities of ES in developing economies, such as organizing training courses on APEC ES.

2) Technology Transfer or diffusion of ES

i) APEC should specify the clear goal of APEC ES-related technology cooperation.

ii) APEC should learn the current status and trends of ES-related technology market within APEC economies, including indoor ES-related technology market, outdoor ES-related technology market, and global ES-related technology market.

iii) APEC should develop survey and analysis projects on ES-related technology, and identify the key fields of ES-related technology cooperation.

iv) It is suggested that the ES-related technology should be classified into global

ES-related technology, outdoor ES-related technology and indoor ES-related technology. As for the technology transfer for the global ES, it is recommended to transfer it to developing economies freely, which is the experience of the distribution of the anti-ADIS drugs to Africa. Regarding the outdoor and indoor ES-related technology, it is recommended to operate according to the market model. Specifically, as to the outdoor ES-related, joint development should be considered.

v) APEC should enhance the capacities of developing ES-related technology by strengthening the capacities of the universities or institutions in green technology, strengthening the capacities on the regulations, standards in developing economies, developing APEC guideline and good practice of ES-related technology.

vi) APEC should facilitate the ES-related technology trade and reduce or eliminate the non-tariff barriers by establishing Special Fund for the ES-related technology transfer, developing joint study on ES-related technology, and setting up a transfer center of APEC ES-related technology.

vii) APEC should further promote the information exchanges of APEC ES-related technology, for example, to set a database of APEC ES-related technology, to hold workshops on ES-related technology, and to organize ES-related exhibition, exposition, etc.

viii) APEC should develop cooperative demonstration projects of APEC ES-related technology, and to distribute the good practice.

AGENDA

Information Exchange of APEC Environmental Services

Jintai Hotel, Beijing, China

November 29 – 30, 2010

Language: English

Day 1: 29 November 2010		
TIME	CONTENTS	CHAIRPERSONS/SPEAKERS
8.30 – 9.15	Registration	
9.15 – 9.45	Opening Ceremony	Chairperson: Prof. Xia Guang, Director General, Policy Research Center for Environment and Economy(PRCEE), Ministry of Environmental Protection(MEP) ● Speech by representative of Department of International Cooperation, MEP ● Speech by Mr. Chen Chao, Deputy Division Director, Department of International Trade and Economic Affairs, Ministry of Commerce(MofCOM) ● Speech by Mr. Tang Dingding, Director General, Center for Environment and Development, MEP / China – ASEAN Environmental Cooperation Center
9.45-10.00	Coffee break	
10.00 – 17.00	**Session I: The classification, negotiation and market status and trends of environmental services(ES)**	Chairperson: MofCOM/MEP
10.00 – 10.30	*Policy of Green Economy in China*	Prof. Xia Guang, Director General, PRCEE, MEP
10.30 – 11.00	*The negotiation status and trends of ES*	Mr. Xie Cheng, Mission of China to the WTO
11.00 – 11.30	*APEC EGS cooperation*	Mr. Chen Chao, Deputy Division Director, Department of International Trade and Economic Affairs, MofCOM
11.30 – 12.00	*ES in developing countries*	Dr. Joachim Monkelbaan, ICTSD
12.00 – 13.30	Lunch break	
13.30 – 16.30		Chairperson: Prof. Hu Tao, PRCEE

13.30 – 14.00	Japan's perspectives on the discussions of ES Service Liberalization	Mr. Furuya, director, Japan-China Eonomic Affairs Division Asia and Oceanian Affairs Bureau, Minitstry of Foreign Affairs
14.00-14.20	*Environmental Technology Cooperation Mechanism toward China-ASEAN's Green Development*	Prof. Zhou Guomei, Deputy Director General, China-ASEAN Environmental Cooperation Center
14.20 – 14.40	Coffee Break	
14.40–15.30	*Redefining ES from demand of the environment*	Prof. Hu Tao, PRCEE
15.30 – 16.00	*Indoor air environment service: Demand, supply and potential market in HK and APEC region*	Prof. Lee Shuncheng, Research Center for Environmental Technology & Management, Department of Civil and Structural Engineering, The Hong Kong Polytechnic University
16.00 – 16.30	*Global ES: Demand, supply and potential market in China and APEC region*	Prof. Mao Xianqiang, Beijing Normal University
16.30 – 16.50	*Comments or questions*	
End of Day 1		
Day 2: 30 November		
9.00- 12.00	**Session II: Transfer or diffusion of ES and ES-related technology**	Chairperson: Prof. Zou Ji, Renmin University of China
9.00 – 9.40	*Technology transfer in climate change*	Prof. Zou Ji, Renmin University of China
9.40 – 10.20	*Technology transfer issues in environmental services*	Dr. Joachim Monkelbaan, International Center for Trade and Sustainable Development (ICTSD)
10.20 – 10.40	Coffee Break	
10.40 – 11.10	*Technology transfer and diffusion in CDM projects in China*	Prof. Tian Chunxiu, Division Director, PRCEE
11.10 – 11.40	*JICA's technical cooperation in the field of environmental management*	Mr.Taniguchi, Japan International Cooperation Agency
11.40-12.00	Comments and discussions	
14.00 – 16.00	**Session III: How to further APEC's work on ES**	
14.00 – 15.00	*Discussions on how to further APEC's work on ES*	

15.00 – 15.20	Coffee break	
15.20 – 16.00	*Presentation of outcomes by discussion*	
16.00	Closing remarks	
End of the Event		

Proceedings of Symposium on APEC Environment Services

Beijing, China

Nov. 29-30, 2010

CONTENTS

绿色经济发展的政策导向
Policy Orientation for Promoting Green Economy

环境保护部政策研究中心　夏 光

Dr. Xia Guang
Policy Research Center of Ministry of Environmental Protection, China

- 把发展绿色经济作为应对金融风暴、经济衰退、环境恶化和气候变化等多重危机的重要对策，这一点已经获得了世界各国的认同。
- It has gained recognition around the world that the **green economy** as an important countermeasure to the multi-crisis (financial crisis, economic recession, environmental degradation and climate change)
- 我国政府也提出要大力发展绿色经济，并提出了培育以低碳排放为特征的新的经济增长点，加快建设以低碳排放为特征的工业、建筑、交通体系等具体部署。
- The Chinese government also proposed to develop the green economy, and put forward the new economic growth which is characterized as the low-carbon emissions in related industries such as construction and transportation.

- 目前，人们对于发展绿色经济已经发表了大量的论述，这对于我们建立对绿色经济的认识起到了很好的“启蒙”作用。
- It has published a great deal of discussion on the green economy, which played "enlightenment" role for us to establish a green economy .
- 为了推动绿色经济的发展，下一步需要做更加深入的工作，主要是两个方面：
- In order to promote the green economy, the next step needs to do more in-depth work, mainly two aspects:

- 一是对“绿色经济”概念进行梳理和辨析，建立一个比较清晰的绿色经济概念体系；
- First, to illustrate the concept “green economy” , and to establish a clear system on it
- 二是从主要阐述发展绿色经济的重要意义，转换到提出促进绿色经济发展的政策安排。
- Second, to set policy arrangement for promoting green economy

Contents

一、关于“绿色经济”
Rethinking “green economy”

1、“绿色经济”的两种含义

Two indications of the green economy

现在，人们在大量使用“绿色经济”这个概念，并把它看作是一种新的经济形态。

Today, people in the extensive use of "green economy" concept and put it as a new economic form.

如果绿色经济是一种新的经济形态，那么原来“老”的经济形态是指什么？绿色经济究竟是指在原来“老”经济形态之外新出现的经济活动，还是指原来“老”经济形态换成了一种“新”的面貌？或者是二者兼而有之？

If the green economy is a new economic form, then the original "old" economic patterns mean? What is the green economy in the original "old" economies outside the emerging pattern of economic activity, but refers to the original "old" economic structure changed to a "new" look? Or a bit of both?

实际上，人们在使用“绿色经济”时，都是在按各自的理解去使用的，也就是说人们虽然都在使用同一个词，内心里却在指向不同的内容。如果这些问题不澄清，就无法把握绿色经济的外延，也就无法制定针对性的政策。

In fact, people use the "green economy" in accordance with policies. their own understanding.

If these problems are not clarified, neither grasp the extension of the concept , nor to develop targeted

- 对此我们应采取这样一种态度：在某种概念刚兴起的时候，我们可以比较宽泛或笼统地使用它，不必苛求，以便使它的所承载的思想或主张得到传播，而当它得到广泛接受和使用的时候，我们应反过来进行认真的琢磨，使之精细化，以便人们准确地实践之。
- We should adopt such an attitude: the concept of just the rise, we can compare the broad or general to use it, so that it's hosted by a thought or idea to be spreading. When it is widely acceptance, we should turn to engage in serious polish and refinement to make it practice.

- 对绿色经济也是这样，在刚开始阐述绿色经济的时候，主要目的在于说明它对于经济发展模式变革的重要性，此时不必对绿色经济的内涵外延过于追究。
- The same is true of the green economy.

  In the beginning, it is important to describe the importance to the new economic model, but not to find out the extentsion of the concept.

- 而当我们把发展绿色经济付诸实践的时候，就需要细致地理解绿色经济究竟指什么，这样才能有针对性地制定政策。
- And when we put the green economy into practice, we need detailed understanding of exactly what is meant by the green economy, so as to have targeted policy formulation.

直截了当地看，“绿色”是“环保”的代名词，“经济”是指人类进行的盈利活动，那么“绿色经济”就是与环保有关的人类盈利活动。

- “green” means “environmental protection”, “economy” means human activity to pursue profile, therefore green economy means human activity related to environmental protection and profile as well.

- 从这个性质上引申，我们可以看到绿色经济具有两种含义:
- From this extent , we can see that the green economy has two meanings:

- **第一种含义，是指“经济要环保”，要求经济活动不损害环境或有利于保护环境。**
- **The first meaning refers to the "economy is to green“. It requests that environment or economic activities benefit to protecting the environment .**

在这里，“绿色”是对经济活动的外在限定，它要求经济活动不以牺牲环境为代价或不付出过大的环境代价。

Here, the "green" is the external limit on economic activity. It requires economic activities are not at the expense of the environment.

- 在这个意义上，绿色经济并非单指某些产业活动，而是对整个经济体系的要求，它实际上是指要把原有经济体系的面貌由“非环保型”转到“环保型”，
- In this sense, the green economy is not just referring to certain industrial activities, but the whole economic system . It actually refers to the existing economic system should look by the "non-green-type" to "environmental protection“.

- 因此，此时绿色经济又可称为“环保型经济”或“环境友好型经济”。
- Therefore, at this time the green economy can also mean "green economy" or "environment-friendly economy."

- 举例说，钢铁、化工、建材、造纸等这些产业，在粗放型发展方式下是高排放的因而是非绿色经济的，而在清洁技术、循环利用和节能减排的生产方式下，就是环保型的，就属于绿色经济。
- For example, iron and steel, chemicals, building materials, paper-making, etc. These industries, in the extensive mode of development under the high emissions. While in clean technologies, recycling and energy savings mode of production that is environmentally friendly , and belongs to the green economy.

- 应该注意，这时候“绿色经济”强调的重点是“环保”，即为了环保的目的，哪怕放弃一部分经济效益也是必要的，以保证经济是“绿色”的。
- It should be noted that the "green economy" emphasis was placed on "green", that is, for the purpose of environmental protection. Even it is necessary to give up part of the cost-effectiveness to ensure that the economy is "green".

- **第二种含义，是指“从环保要经济”，即从环境保护活动中获取经济效益。**
- **The second meaning refers to "from the environmental to the economy", that is, to obtain economic benefits from environmental protection activities.**

美国耶鲁大学丹尼尔·埃斯蒂教授和安德鲁·温斯顿教授在《从绿到金——聪明企业如何利用环保战略构建竞争优势》一书中指出：“为什么通用电气、索尼、丰田、沃尔玛这些世界最大、最强硬、最追逐利润的企业现在都在谈环境保护？（因为）聪明的企业会通过对环保挑战的战略管理取得竞争优势”。

Yale University Professor Daniel and Professor Andrew Winston, in the book **“From Green to Gold** - How to use eco-smart business strategy to build competitive advantage”, pointed out: **“Why General Electric, Sony, Toyota, Walmart, these world's largest ,toughest, the most profit-driven businesses are now talking about environmental protection?** Because they gain the competitive advantage from the strategic management on environmental protection.”

- 他们认为“以全新视角观察事物，会带来实际收益。过去四十年间，越来越多的企业发现了灵活管理绿色浪潮带来的压力所能获得的潜在效益。未来的企业将既创造业务利润，又创造一个健康和可持续发展的世界”。
- They maintained that "a whole new perspective on things, will bring real benefits. **Over the past four decades, more and more companies find the flexibility on managing the pressure from green wave making potential benefits.** In the future companies not only create a business profits, but also to create a healthy and sustainable world. "

- 我们可以把这个意义上的绿色经济称为“从绿掘金”，也就是说，环境保护可以成为经济利润的一个来源，成为一个经济增长点。举例说，环境污染治理、环境基础设施建设、新能源开发、绿色食品研发等，都可以带来新的利润，使这一部分活动改变了“环保只赔钱不赚钱”的形象。
- We can in this sense call green economy as "Green Nuggets", that is, environmental protection can become a source of economic profit as well as economic growth. **For example, pollution control, environmental infrastructure, new energy development, green food R&D, can bring new profits.** It changed the image that “environmental protection can just lose,not make money".

- 可以看到，这个时候“绿色经济”强调的重点是“经济”，即通过政策调节和定向开发使环境保护也有利可图。
- The green economy emphasis "economic", that is, environmental protection is also profitable.

- 以上两种含义分别强调了“绿色”和“经济”两个方面，它们的共同要求是追求同时产生环境效益和经济效益，
- Respectively, emphasized the meaning of the above two aspects :"green" and "economic“. The common pursuit is to produce environmental benefits and economic benefits.

- 因此，二者合起来，可以形成一个绿色经济的定义：绿色经济是指那些同时产生环境效益和经济效益的人类活动。
- Therefore, the two together, can form a green economy definition: **the green economy refers to those human activities that generate environmental and economic welfares.**

2、“绿色经济”的两项外延

2.Two extensions of "Green economy"

- 按照绿色经济是能同时产生环境效益和经济效益的人类活动的定义，可以看到，绿色经济的外延由两部分组成:
- In accordance with definition of green economy , there are tow parts of the extension on it:

- **外延一：对原有经济系统进行“绿化”或生态化改造。**
- **Extension I:** Transforming the original economic system to "green" or “ecological”.

它包括开发新的生产工艺、降低或替代有毒有害物质的使用、高效和循环利用原材料、降低污染物的产生量、对污染物进行净化治理等，这些活动都能减轻对环境的压力，并通过节约资源而获得经济效益，对传统产业都是适用的。

It includes the development of new production processes, reduce or replace the use of toxic and hazardous substances, efficient and recycling of raw materials, reducing the amount of pollutants , purification treatment of the pollutants and so on.

These activities can reduce the pressures on the environment and obtain economic.

- 实际上，现代工业已经在很大程度上做到了低排放甚至零排放，所以尽管产业是传统产业，但属性上已属于绿色经济。
- In fact, modern industry has largely succeeded in low-emission or zero-emission. It can be seen as green economy.

- 我国政府所部署的“加快建设以低碳排放为特征的工业、建筑、交通体系等”就属于这个范围。

- The “ to accelerate the development of industrial, construction, transportation systems etc. with the characteristics of low-carbon emissions”, which are put forward by China’s Government developed, are within this scope.

外延二：发展对环境影响小或有利于改善环境的产业。

- **Extension 2:** Development of industry that created a small impact on the environment or even help to improve the environment.

它包括生态农业、生态旅游、有机食品、可再生能源、服务业、高新科技、植树造林等等，称为“绿色产业”，其特点就是天生对环境友好，不必投入过多资源进行污染防治和生态保护。

It includes **ecological agriculture, eco-tourism, organic food, renewable energy, services, high technology, forestation, etc.,** known as the "green industry" which is characterized by a natural environment-friendly.

- 这些产业并不都是新兴产业，有些是属于传统产业的，而且有些产业有着数千年的悠久历史，例如我国传统的农耕生产方式中有些做法充分运用了资源循环利用的原理，充满了生态文明的智慧。

- These industries are not all new industries. Some industries have a long history, over several thousand years. For example, China′s traditional farming practices in using the principle of recycling of resources, is full of ecological civilization wisdom.

- 目前联合国环境署倡导的“绿色投资”主要是要求各国把资金投入到这些既能增加就业、拉动消费又减少排放的经济活动中去，包括清洁技术、可再生能源、生态系统或环境基础设施、基于生物多样性的商业（如有机农业）、废物及化学品管理、绿色城市、绿色建筑和绿色交通等，可以看到与上述绿色产业也是基本一致的。

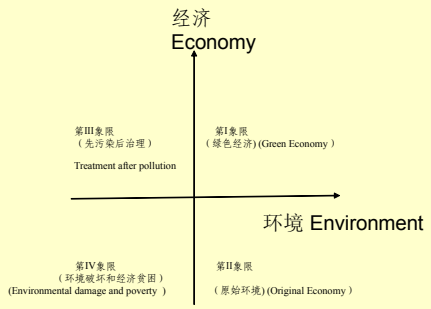
- “Green investment" advocated by UNEP is calling countries put money into economic activities which are good to stimulate employment and consumption as well as reduce emissions .**Including clean technology, renewable energy, ecological or environmental infrastructure, Biodiversity-based business (such as organic agriculture), waste and chemicals management, green cities, green buildings and green transportation and so on.**

- 明确了绿色经济的外延，就找到了政策的着力点，即为了推动绿色经济发展，

- We found the policy focus by clarified the extension of green economy. that is promoting green economic development,

- 我们需要在两个方向上制定政策：一是促进经济系统绿色化的政策；二是鼓励绿色产业发展的政策。
- We need to develop policies in both directions. One is the promotion of the economic system of green-oriented policies. The other is to encourage green industry development policies.

- **3. “绿色经济”的适用性**
- **3. The applicability of the “ green economy"**
- 根据绿色经济是指那些同时产生环境效益和经济效益的人类活动的定义，我们可以得到以下一个关于绿色经济的图示：
- According to the definition, we can get one of the following illustration on the green economy:



- 从中看到：
- 第I象限（绿色经济）是最值得追求的境界，但不等于说是唯一值得追求的境界。第I象限（先污染后治理）虽不如人意，但在付出一定环境代价的同时获得经济发展，也是一种不得已而为之的做法，人们往往要在经历了这个阶段后才能到达绿色经济的境界。
-
- In Quadrant I, (green economy), realm that is most worth pursuing, but not the only state. Quadrant II is not satisfactory, but is also a last resort approach. People often have to gone through this stage in order to reach the green economy realm.

- 第II象限是限制开发、保存原始环境的特殊情况。
- 第II象限（限制开发保存原始环境）对于特殊的生态系统是完全必要的（例如自然保护区），在这里环境是唯一的，并不必强调绿色经济的意义。
- In Quadrant II, the special ecological system is absolutely necessary (for example Nature Reserve), where the environment is unique, and no need to emphasize the significance of a green economy.
- In Quadrant II, the particular circumstances that restrictions on development and preserve the original environment .

- 第III象限是有经济无环保的状况，这是经济发展早期阶段容易出现的情况；
- In Quadrant III, no environmental protection with economic conditions, which is prone to the early stages of economic development situations;

- 第IV象限是既无发展也无环保的情况，反映了有些地方破坏了环境结果经济也无法发展的“双输”局面；
- In Quadrant IV, neither development nor environmental protection, reflecting the "lose-lose" situation;

- 所以发展绿色经济要放在特定的背景下去理解，发展绿色经济也是有前提的，有时候即使不是绿色经济也要去发展，而有时候即使是绿色经济也不能发展。
- Therefore, developing green economy is on the specific background . It has prerequisite .

- 不应不分条件地总是把绿色经济置于很高的位置，它毕竟是一种经济活动，为了人类的生存环境，有时候我们不得不放弃经济利益。
- It should not place the green economy at a very high position regardless of conditions. It is after all an economic activity. We had to give up economic interests in order to protect the living environment of mankind, .

4. 绿色经济与循环经济、低碳经济、生态经济等概念的关系

4. The relationship among Green economy , circular economy, low-carbon economy and ecological economy
-

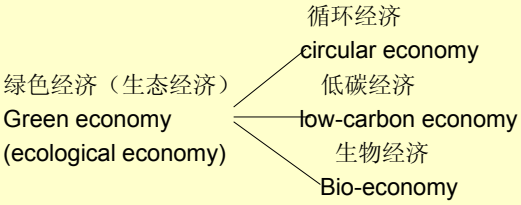
- 绿色经济、循环经济、低碳经济、生态经济等都是当前被广泛使用的概念，理清它们之间的关系也很有必要，这样可以使人们在不同的层面和语境下使用之，避免概念之间互相干扰而扰乱认识。
- Green economy, circular economy, low-carbon economy, ecology economy are currently being widely used concept. It is necessary to clarify them, so that to avoid interference.

- 这种划分有其合理性，大致上使每个概念各归其位，清晰有序。但其中对生态经济的理解可能偏窄。
- This division has its own rationality. Each concept is generally the property of their place, clearly and orderly.

- 生态经济中的“生态”并非生态系统中的那个“生态”，而是指“环境”或“绿色”，就像生态文明中的“生态”是泛指自然（环境）一样，所以生态经济应该等同于绿色经济，而不是从属于绿色经济。这样，绿色经济与生态经济是同一的，绿色经济就是生态经济，它包含了循环经济和低碳经济。
- Eco-economy refers to "environmental" or "green“. In this way, the green economy and ecological economy is the same.

归纳一下，上述几个概念就形成了以下关系：

- Summarize



通过这样的分析，我们分清了这些概念的层次，也可体现各个概念适合使用的特殊场合。

Through analysis, we distinguish these concepts and the suitable occasions.

发展绿色经济，就是发展循环经济等这些具体的经济运行方式，从而说明我国过去出台的推动循环经济发展等政策措施仍然是有用和有效的，并非因为现在提出了绿色经济的概念而不再适用。

Developing the green economy is to develop circular economy. It shows that our policies of promoting circular economy is still useful and effective.

- 循环经济的新发展

二、绿色经济发展的政策导向
Policy Orientation for Promoting Green Economy

由于绿色经济具有“绿色”和“经济”的双重特性，所以，积极促进绿色经济发展需要从环保和经济两个方面制定政策。

As the green economy has double feature as "green" and "economy“. It needs to formulate policies to promote green economy development by these both sides.

一般来说，环境政策的主要目的是使经济更绿化，经济政策的主要目的是使环保更赚钱，这两者相互配合，可相得益彰，获得共赢。

In general, the main purpose of environmental policy is to make the economy greener .The main purpose of economic policy is to make more money. It can obtain win-win situation.

- 从经济领域制定政策：**Developing relevant policies in economic field**

- 国家发改委《产业结构调整指导目录》(2005年12月2日): 该目录分为**鼓励、限制、淘汰**三类.
- **Catalogue for the Guidance of Adjustment of Industrial Structure released by NDRC** (December 2, 2005), which has the catalogue of encouraged industries, catalogue of limited industries and catalogue of phasing out industries

- **鼓励类**主要是对经济社会发展有重要促进作用，有利于节约资源, 保护环境、产业结构优化升级，需要采取政策措施予以鼓励和支持的关键技术、装备及产品。
  The catalogue of encouraged industries refer to the key technologies, equipment and products that greatly facilitate economic & social development; and are conducive to saving resources, protecting the environment, upgrading & optimizing industrial structure and in need of policy measures for encouragement and support.

- **国家发改委、财政部、国家税务总局《国家鼓励的资源综合利用认定管理办法》**（发改环资[2006]1864号）：通过对开展资源回收利用减免企业增值税、所得税、消费税来鼓励企业开展资源综合利用。

- **Regulations on Identification of Comprehensive Utilization of the Resources Encouraged by the State** (*Fagaihuanzi* No. [2006]1864) released by NDRC, Ministry of Finance and State Administration of Taxation: With reduction and exemption of value added tax, income tax and consumption tax of the enterprises that recycle and reuse waste, the State encourages enterprises to comprehensively utilize resources.

- **如果企业掺加不少于30%的煤矸石、石煤,粉煤灰,烧煤锅炉等其他废渣(不包括高炉水渣) 生产的建材产品、企业利用废液(渣)生产的黄金白银、废旧物资回收经营单位销售其收购的废旧物资，国家将给予免征增值税的优惠.**
- The State will exempt the value added tax of the enterprise if it manufactures building materials with addition of no less than 30% of gangue, or stone coal, fly ash or other ash from coal-fueled boilers (excluding blast furnace granulated slag); or manufactures gold or silver with waste liquid (residue) as raw material; or waste recycling operation unit sells the procured waste materials.

- 对于利用煤炭开采过程中伴生的舍弃物**再生沥青混凝土、利用城市垃圾生产的电力、在生产原料中掺有不少于30%的煤矸石, 石煤, 粉煤灰, 烧煤锅炉的炉底渣(不包括高炉水渣)及其他废渣生产的水泥，**国家在收取**增值税时本着即征即退**的原则.

- The State will follow the principle of immediately returning the value added tax at collection to the recycled asphalt concrete manufactured with the associated waste from coal mining, electricity manufactured by urban garbage and cement with at least 30% raw materials coming from gangue, stone coal, fly ash, ash of coal-fueled boilers (excluding blast granulated slag) or other slag.

- 而对于**利用煤矸石、煤泥、油母页岩和风力生产的电力、部分新型墙体材料产品，**国家将采取给予**增值税减半征收**的优惠政策。
- The State will exempt 50% value added tax of the power and some new wall material products manufactured from gangue, coal slime, or oil shale and wind.

- 在**所得税减免**方面，企业**利用废水、废气、废渣等废弃物为主要原料进行生产的，可在5年内减征或者免征所得税。**
- **In reduction and exemption of income tax: The income tax of an enterprise will be reduced or exempted within 5 years if it employs wastes such as waste water, gas or slag as main raw material for production.**

- **为处理利用其他企业废弃的，可减征或者免征所得税一年。**
- **The income tax of an enterprise will be reduced or exempted within one year if it treats or employs wastes of other enterprises**

- 2009年2月6日，**《国务院关于进一步加强淘汰落后产能工作的通知》**发布。**在电力、煤炭、钢铁、水泥、有色金属、焦炭、造纸、制革、印染等行业加快淘汰落后产能步伐。**
- **The Circular of the State Council on Further Strengthening Phasing out Outdated Productivity** was released on February 6, 2009. China will accelerate phasing out of outdated productivity in such industries as electricity, coal, iron & steel, cement, non-ferrous metals, coking, paper making, tanning, printing and dyeing.

- 国家发改委、科技部、工业和信息化部等6部委日前联合发布**《中国资源综合利用技术政策大纲》**，共提出257项具体技术。
- Six ministries and commissions including NDRC, Ministry of Science & Technology and Ministry of Industry and Information jointly released the Outline of Technical Policy on Comprehensive Utilization of Resources in China, which presents 257 specific technologies.

- 此外，现行税收优惠政策汇总还摘编了现行综合利用增值税、所得税优惠政策，**对掺兑废渣生产的特定建材产品免征增值税，对一些综合利用产品实行即征即退或先征后退等优惠政策。**
- In addition, the collection of existing favourable taxation policies extracts and compiles existing favourable policies on value added tax and income tax for comprehensive utilization of waste, which specify the exemption of value added tax of special building material products with slag as raw material and immediately returning the tax at collection or after collection for the products that comprehensively utilize wastes.

- 《大纲》所列的技术中：**Technologies listed in the Outlines:**
- **矿产资源综合利用**方面，包括能源矿产、金属矿产、非金属矿产等领域的51项综合利用技术；
  Comprehensive utilization of mineral resources: including 51 comprehensive utilization technologies in such fields as energy, minerals, metal minerals and non-metal minerals;
- **工业"三废"综合利用**技术方面，包括煤炭、电力、石油天然气、钢铁、有色、化工、建材、食品、纺织、造纸10个领域废弃物的156项综合利用技术；
  Comprehensive utilization of the "three wastes": including 156 comprehensive waste utilization technologies in 10 fields such as coal, electricity, petroleum & gas, iron & steel, non-ferrous metals, chemicals, building materials, food, textile and paper making;

- **再生资源回收利用**技术方面，汇总了废旧金属、废旧家电、废旧橡胶轮胎、废纸、废塑料、废玻璃、建筑废弃物等27项综合利用技术；
- **Recycling & reuse of wastes:** Summarizing 27 comprehensive waste utilization technologies for waste metals, waste household appliance, waste tyres, waste paper, plastics, glasses and building waste；

- **其他废弃物资源综合利用**包括农林废弃物、生活废弃物、养殖废弃物等23项综合利用技术。
- **Comprehensive utilization of other wastes:** Including 23 comprehensive waste utilization technologies for agricultural & forest waste, domestic waste and breeding waste and so on.

- 《大纲》的发布将对资源综合利用等循环经济领域发挥积极的引导作用。The release of the Outline will play an active role in guiding comprehensive utilization of resources and development of circular economy.
- **一是引导关键、共性重点综合利用技术的研发**，如鼓励研发农作物秸秆的生物酶转化技术，提升农作物秸秆利用水平；
- **1) Guide research & development of key and common technologies for comprehensive utilization**, for example: encouraging R&D of biological enzyme conversion technology for crop straw and raise utilization rate of crop straw;
- **二是引导推进高新技术产业化，**如稀土冶炼分离清洁生产工艺技术的产业化；
- 2) **Guide and facilitate commercialization of new technology**: e.g. Commercialization of clean production process of smelting of rare earth elements

- **三是引导成熟、先进的综合利用技术与工艺的推广应用**，如利用脱硫石膏生产建材等；
- 3) **Guide the extension & application of well-established and advanced technology and process:** e.g. Employing sulfur-free gypsum to manufacture building materials;

- **四是引导推动淘汰落后的生产技术、工艺和装备**；
- 4) **Guide the promotion of phasing out of outdated production technology, process and equipment;**

- **五是为各地区、各行业编制资源综合利用规划提供技术支撑。**
  5) Provide technical support to the development of the plan for comprehensive utilization of resources of each region and industry.

- 近几年，在国家一系列鼓励政策的引导下，我国资源综合利用取得了显著成效。
- Guided by a series of national incentive policies, comprehensive use of resources has obtained significant achievements in China over the past few years.

- 据初步统计，2008年，我国工业固体废物综合利用量为12.3亿吨，综合利用率达64.3%，比2000年提高了12.5个百分点，其中粉煤灰、煤矸石、冶炼废渣综合利用率分别达67%、55%、85%，基本实现了由“以储为主”向“以用为主”的转变。
- According to statistics, 1.23 billion t industrial solid waste were under comprehensive use in China in 2008 with comprehensive utilization rate at 64.3%, up by 12.5 percentage points compared with that of 2002. Among them, the comprehensive utilization rate was 67% for fly ash, 55% for gangue and 85% for smelting slag, basically achieving the shift from “stockpile in dominance” to “utilization in dominance”.

- 矿产资源综合利用水平有所提高，目前矿产资源总回收率已近35%, 共伴生矿产综合利用率已近40%.
- The comprehensive utilization rate of mineral resources has enjoyed some increase with overall recovery rate of mineral resources at about 35% and comprehensive utilization rate of associated minerals approaching 40%.
- .

- 社会生产和消费过程中产生的各种废弃物的回收和再生利用规模也不断扩大，环境效益和经济效益显著.
- The scale of recycling and reusing various kinds of wastes generated during production and consumption is under continuous expansion with remarkable environmental and economic benefits

- **从环保领域制定政策：**
- **Developing relevant policies in environmental field:**
- 促进绿色经济发展的环境政策，也是针对上述绿色经济的两项外延，从促进传统经济绿化和鼓励绿色产业成长这两个方面来考虑的。
- The promotion environmental policies on green economy development focus on two extensions of the green economy.

- 这些政策并非完全是新生的，而是在环境保护工作中已经使用的一些手段，例如规划、环评、监管、减排、考核等。
- These policies are not entirely new, but has been used in environmental protection work, such as planning, environmental assessment, monitoring, mitigation, assessment and so on.

- 第一，提高环境准入门槛，促进产业结构优化。要根据环境容量、资源禀赋和发展潜力，把国土空间划分为优化开发、重点开发、限制开发、禁止开发等主体功能区，制定不同的区域发展政策。根据环境容量和资源承载力确定污染物排放总量控制计划，并以此为基础制定经济发展总体规划和专项规划。在一些特殊的地区，要实行环境优先。
- First, improve the threshold of access and optimize the industrial structure. According to the environmental capacity and resources to determine the carrying capacity of total pollutant discharge control plan and as a basis for the formulation of economic development plan and special plans.

- 严格按照法律法规和环境标准的要求，对经济社会发展规划、经济政策、建设项目等进行严格的环境影响评价，对环境容量不足和污染物排放超过总量控制计划的地区，严格限制有污染物排放的建设项目的新建和扩建。
- In strict accordance with laws and regulations and environmental standards, on the economic and social development planning, economic policy, construction projects, a rigorous environmental impact assessment, environmental capacity shortages and pollutants emission control plan more than the total area, strict limits for contaminants emissions from new construction projects and expansion.

- 第二，加强环境保护管理和执法。依法关闭高耗能、高污染的企业，对排放污染造成重大损失的企业和个人依法追究责任。围绕水污染防治、大气污染防治、城市环境保护、农村环境保护、生态保护、核与辐射环境安全和推动解决当前突出的环境问题等重点任务，严格执法。
- Secondly, to strengthen environmental protection management and enforcement. To close down the high energy consumption and high pollution enterprises, causing significant loss of emission pollution enterprises and individuals held responsible according to law.

- 第三，强化环境与经济综合决策机制，实行环境保护问责制。把环境保护前置于经济社会发展的决策阶段，在经济决策过程中强化环境保护的把关和引导作用。从环境保护方面提出对国家和地区经济发展战略的重要建议。对环境有重大影响的决策，应当进行环境影响论证，必要时实行环保一票否决。
- Thirdly, to strengthen environmental and economic integrated decision-making mechanism, and the implementation of environmental responsibility. Have a significant impact on the environment of decision-making, should carry out environmental impact argument, if necessary, to implement the green one-vote veto.

- 把环境保护作为国家宏观经济调控政策的主要标准和重要手段。改革干部考核和任用制度，使那些在落实科学发展观和开展环境保护方面成绩突出的干部得到重用。
- Environmental protection as a national macro-economic control policies and important means of the main criteria. Reform of the cadre assessment and appointment system.

- 第四，把环保要求纳入生产、流通、分配、消费全过程。广泛推行清洁生产，鼓励节能降耗，防范和应对污染事故，构建低消耗、少污染的现代生产体系。实行有利于环境保护的流通方式，积极治理铁路、水运等运输污染，保障危险化学品运输和储存安全，限制高污染产品贸易，完善资源再生回收利用，建立清洁、安全的现代物流体系。
- Fourth, the integration of environmental requirements into the production, circulation, distribution, consumption, the whole process. The implementation of the circulation pattern that is conducive to environmental protection.

- 大力倡导环境友好的消费方式，实行环境标识、环境认证、绿色采购和生产者责任延伸等制度，推行垃圾分类和消费品回收，建立绿色、节约的消费体系。

- Advocate environment-friendly consumption patterns
- The implementation of environmental labels, environmental certification, green procurement and systems.

- 第五，制定和实施环境经济政策，创设有利于环境保护的激励机制。出台绿色信贷、污染责任保险、绿色投资等环境经济政策，把产品消费后的处置责任前移到生产者，从而激励生产者按照环境友好的理念进行产品设计，优化生产过程。通过制定引导性的财政和价格政策，引导企业走清洁生产和循环经济之路。

- Fifth, the formulation and implementation of environmental economic policies and the creation of incentives in favor of environmental protection.
- Introduction of green credits, pollution liability insurance, green investment environment, economic policy, post-consumer disposal of the product.
- Through the development of leading financial and pricing policies, guiding enterprises to take the clean production and recycling economy road.

- 通过调整水、电、煤等资源价格促进企业采取资源节约型的生产工艺。
- By adjusting the water, electricity, coal and other resource prices for enterprises to adopt resource-saving production processes.

- 完善环境保护模范城市、生态省（市）、生态示范区、环境友好型企业、绿色学校、绿色社区等创建活动，使那些在推进经济发展与环境保护相互融合方面取得重要进展的地区获得荣誉和实惠。
- Improving environmental protection model cities, eco-provinces (municipalities), ecological demonstration zone, environment-friendly enterprises, green schools, green communities to create activities to those who promote economic development and environmental protection made important progress in terms of integrating the areas of access to honor and benefits

- 从总体上说，绿色经济属于经济范畴，所以促进绿色经济发展的政策应主要从经济领域来制定，其中产业政策和财政政策最为重要。

- Generally speaking, the green economy is one of the economic areas. Therefore, the promotion of green economic development policies should be formulated mainly from the economic field, especially the industrial policy and fiscal policy.

谢 谢！ Thanks

The Negotiation Status and Trends of Trade Liberalization on Environmental Services

XIE Cheng,
Permanent Mission of China to the WTO
29-30 November,2010

Outline of the Presentation

- Negotiations on trade in services in the WTO
- Current commitments on environmental services
- Negotiations on environmental services in the new round negotiations

Negotiations on trade in services in the WTO

- The framework of the GATS
  - -Objective
  - -Structure
  - -Scope, coverage, and definition of four modes of services supply
- Doha Ministerial Declaration

What are the Environmental Services?

- Classification in the W/120
  - -A. Sewage service
  - -B. Refuse disposal services
  - -C. Sanitation services
  - -D. Other

What are the Environmental Services?

- Classification in the CPC prov.
  - - Sewage services (CPC 9401)
  - - Refuse disposal services (CPC 9402)
  - - Sanitation and similar services (CPC 9403)
  - - Cleaning services of exhaust gases (CPC 9404)

Current Commitments on Environmental Services

- General
  - -Environmental services: one of the least-committed sectors under the GATS
  - -59 Members have undertaken specific commitments in at least one of the seven CPC sub-sectors of environmental services
  - -In total, 318 sub-sectors have been scheduled
  - -Recently acceded Members have undertaken a proportionally higher level of commitments

Current Commitments on Environmental Services

- Sectoral scope of commitments

  -Most Members have listed their commitments according to W/120 structure and headings, with reference to corresponding CPC definitions

  -In more than 20 schedules, commitments on environmental services

Current commitments on environmental services

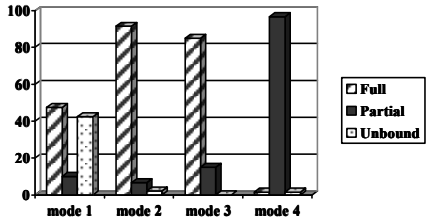
- Commitments by mode

  -Mode 1: 47% of the commitments are fully bound and 42% are unbound

  -Mode 2: 91% of the commitments are full commitments

  -Mode 3: 85% of the commitments are

Commitments on Environmental Services by Mode



China's Commitments on Environmental Services

Commitments cover all the seven sub-sectors

  -excluding environmental quality monitoring and pollution source inspection

- Market access commitments

  -Mode 1: Unbound except for environmental consultation services

  -Mode 2: None

  -Mode 3: Foreign services suppliers are

Negotiations on environmental services in the new round negotiations

- Request on environmental servces

  -Bilateral requests of other WTO Member to China

  -Plurilateral request

- Offers on environmental services

- Signaling conference in July 2008

Plurilateral Requests on Environmental Services

- Overview of plurilateral requests in services negotiations
- Requesting Members and recipients of the plurilateral request on environmental services
- Sector coverage

Offers on Environmental Services

- Some developed Members

  -the U.S.A: made modification on the classification of this sector

  -the E.U: partial improvement in Mode 1 and Mode 4 (Contractual service suppliers)

  -Japan: made modification on the

Offers on Environmental Services

- Some developing Members

  -India: offers in two sub-sectors

  -Brazil: No offers in environmental services

  -Thailand: Substantial improvements on market access in Mode 4 (Contractual

Possible Offers on Environmental Services in the Signaling Conference

- Backgrounds of the signaling conference in July, 2008
- All the signaling of offers are conditional
- China's signaling of offers on environmental services
  -Improved offer in the following sub-sectors where wholly foreign-owned enterprises are to be permitted:

Trends of Liberalization on Environmental Services

- The trends of DDA services negotiations
- The clustering approach on negotiations of environmental services and energy services
- Possible outcomes in negotiations on environmental services
  -Clarification of the definition and

Trends of Liberalization on Environmental Services

- Some concerns of developing countries on liberalization of environmental services

  -Cautious to making commitments on Mode 1

  -Lack of substantial commitments on Mode 4

GLOBAL PLATFORM
ON CLIMATE CHANGE, TRADE
& SUSTAINABLE ENERGY

Joachim Monkelbaan, ICTSD

in Developing Countries

ICTSD www.ictsd.org

GLOBAL PLATFORM
ON CLIMATE CHANGE, TRADE
& SUSTAINABLE ENERGY

Overview

- Definition
- Challenges
- Benefits of liberalization
- Development criteria
- Negotiating strategy
- What is needed?
- Exciting new initiatives

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ICTSD - 国际贸易和可持续发展中心

ICTSD
INTERNATIONAL CENTRE FOR TRADE AND SUSTAINABLE DEVELOPMENT

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GLOBAL PLATFORM
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& SUSTAINABLE ENERGY

Definition

"environmental services consist of those activities, which measure, prevent, limit, and correct environmental damage to air, water, soil, and problems relating to waste, noise, and ecosystems"

OECD/Eurostat

www.ictsd.org

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Challenges

- Investment in ES
- Technological capacity
- Access for the poorest
- Sustainability of projects
- Development vs. liberalization?

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Benefits of liberalization

- Increased efficiency
- Availability of environmental infrastructure
- Employment
- Spillover effects export-oriented sectors
- Export capacity of developing countries

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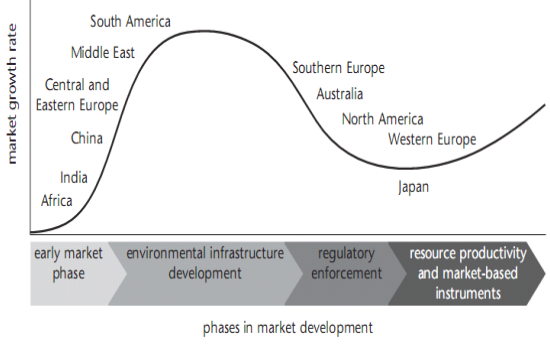
The Environmental Market Development Model



GLOBAL PLATFORM
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& SUSTAINABLE ENERGY

Development criteria in environmental services regulations

1. Fair and equitable access by vulnerable groups
2. Pro-poor strategy into environmental service provision
3. Fiscal performance
4. Environmental efficiency of performance

GLOBAL PLATFORM
ON CLIMATE CHANGE, TRADE
& SUSTAINABLE ENERGY

Development criteria in environmental services regulations – cont'd

5. Economic efficiency or performance
6. Technical sustainability and enhance host's capacity
7. Technology transfer

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& SUSTAINABLE ENERGY

Negotiating win-win options for developing countries

- Framework agreement for Asia
- Conditions in mode 3 horizontal commitments
- Priority human development goals

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& SUSTAINABLE ENERGY

What is needed in developing countries?

1. Definition
2. Assessment of environmental services
3. Data and information systems
4. Expert group
5. National overall strategy

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& SUSTAINABLE ENERGY

What is needed? Cont'd

6. Regional approach
7. Domestic institutional capacity and regulatory regimes
8. Enhance the role of the private sector
9. Investment policies
10. Capacity building

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SE FTA

= Sustainable Energy Free Trade Agreement

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So.. it's time to ACT!

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ACT = Alliance for Clean Technology

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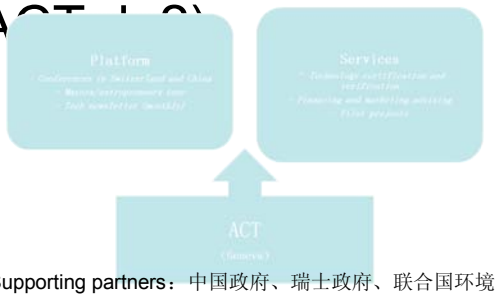
Context

Alliance for Clean Technology (ACT)

1

Services(what does ACT do?)



Supporting partners：中国政府、瑞士政府、联合国环境署、联合国气候变化公约、世界贸易组织、瑞中经济协会、上海和北京环境能源交易所、欧洲技术之旅、欧洲清洁能源协会等

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1

GLOBAL PLATFORM
ON CLIMATE CHANGE, TRADE

Environmental Service in Developing Countries

Organized by APEC

29 November | 11:30- 12:00

Jintai Hotel, Beijing, China

ICTSD GLOBAL PLATFORM ON CLIMATE CHANGE, TRADE & SUSTAINABLE ENERGY www.ictsd.org

Japan's perspectives on the discussions of Environmental Services Liberalization

Tokuro FURUYA
Director, Japan-China Economic Affairs Division,
Ministry of Foreign Affairs, Japan

Introduction
Japan puts great emphasis on environmental issues

Environmental Services in APEC
Eco-tourism, EGS

Environmental Services in WTO
Plurilateral request on environmental services

Environmental Services in bilateral or other contexts

Environmental Technology Cooperation toward China-ASEAN's Green Development

China-ASEAN Environmental Protection Cooperation Center (CAEC)

Contents

- Background
  - ASEAN Profile
  - China-ASEAN Cooperation
  - Global green development trend
- China-ASEAN Environmental Cooperation Strategy
  - Background
  - Cooperation Strategy 2009-2015
- Environmental Technology Cooperation

ASEAN: Profile(1)

- ASEAN established on 8 August 1967 in Bangkok by 5 original members (ASEAN-5): Indonesia, Malaysia, Philippines, Singapore and Thailand.
- Brunei Darussalam (8 January 1984); Vietnam (28 July 1995); Lao PDR and Myanmar (23 July 1997); and Cambodia (30 April 1999).
- Total population is about 567 million, spanning land area of 4.5 million sqkm. In 2006, combined GDP almost US$1.1 trillion and total trade of US$1.4 trillion.

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ASEAN: Profile(2)

- ASEAN lies in a region that is extremely diverse in terms of ethnicity, culture, religion and political systems.
- Considered one of the world's most successful regional organizations – a model for the developing world.

China-ASEAN Cooperation(1)

- Official Dialogue between China and ASEAN,1991
- Jiang Zemin participated the China-ASEAN Summit, signed Joint Declaration,1997
- Joint Declaration of the Heads of State/government of ASEAN and China on Strategic Partnership for Peace and Prosperity,2003

China-ASEAN Cooperation(2)

- 01/01/2010, China-ASEAN Free Trade Area fully established.
- Duty free for 7251 product,91.5% of import from ASEAN
- Duty free for 90% Chinese products export to Indonesia, Malaysia, Philippines, Singapore, Thailand and Brunei Darussalam

Investment in ASEAN countries

Table 2003-2007 share of Chinese investment of FDI in ASEAN countries (2003-2007 %)

	2003	2004	2005	2006	2007
Brunei	---	---	0.52	---	0.64
Cambodia	26.13	22.55	1.35	2.03	7.43
Indonesia	-4.49	3.27	0.14	1.16	1.43
Laos	4.21	20.94	73.5	25.69	47.64
Malaysia	0.08	0.18	1.43	0.12	-0.39
Myanmar	---	1.63	4.89	8.84	21.57
Philippines	0.19	0.01	0.24	0.32	0.15
Singapore	-0.03	0.32	0.15	0.53	1.65
Thailand	2.94	1.66	0.06	0.18	0.80
Vietnam	0.88	1.05	1.03	1.84	1.65

Table Sectoral distribution of investment on ASEAN countries (1999-2006, million USD)

	1999	2000	2001	2002	2003	1999-2003	1999-2006
Agricultural	0.80	3.47	4.47	4.03	1.17	13.94	26.44
mining	0.03	-0.06	0.00	4.88	1.37	6.22	807.03
Manufacture	-10.96	14.69	46.94	47.72	13.40	111.79	258.64
Construction	11.03	10.78	-7.48	-3.17	-1.58	9.58	7.63
Trade/commercial	16.87	4.26	-21.74	-4.94	-0.79	-6.34	419.34
Financing service	82.56	-44.08	-10.06	-227.43	-41.38	-240.39	-47.56
Real estate	20.54	32.50	22.65	36.65	26.87	139.21	419.20
Other services	4.42	9.14	2.45	0.50	8.41	24.92	122.24
other	-66.97	3.46	6.71	-27.02	3.63	-80.19	-4.91
Total	58.32	34.16	43.94	-168.77	11.10	-21.65	2008.05

China-ASEAN Environmental Cooperation Strategy(1)

- Background

  Premier Wen Jiabao stated at the 11th China-ASEAN Summit that "we are ready to discuss with ASEAN the formulation of a China-ASEAN strategy on environmental protection cooperation"

China-ASEAN Environmental Cooperation Strategy(2)

- Environmental protection has been made the 11th priority area of cooperation of China-ASEAN cooperation mechanism on the 11th China-ASEAN Summit.

China-ASEAN Environmental Cooperation Strategy(3)

- Six Priority Cooperation Field
  - public awareness and environmental education
  - environmentally sound technology, environmental labeling and cleaner production
  - biodiversity conversation,
  - environmental management capacity building, global environmental issues,
  - environmental goods and services industry

Global Green Development Trend

- Green development is the future of national and regional development
- The great challenges and opportunities faced by economic development in future: green and low carbon
- The development of economy:
  - Acceleration of new industrialization system, which is characterized by green and low carbon
  - **Sustainable development**

Green investment in the Green new deal

国家	刺激方案	资金总量	绿色投资比例	主要绿色投资领域
德国	双刺激方案（2008年11月河2009年2月）	810亿欧元	13.2%	绿色建筑、可持续交通、公共交通
法国	经济复兴计划（2008年12月）	260亿欧元	21.2%	绿色建筑、可持续交通、新能源汽车、可再生能源、电网改造
意大利	紧急方案（08年11月）和汽车刺激方案（2009年2月）	820亿欧元	2.8%	铁路、汽车、高能效机动车
英国	恢复计划（08年11月）和汽车工业支持计划（2009年2月）	221亿英镑	6.9%	绿色建筑、可持续交通、新能源汽车、水网、可再生能源、防洪
西班牙	刺激方案（2008年11月）	110亿欧元	5.8%	水和废物设施
美国	经济稳定法案（08年10月）和美国恢复与再投资法（2009年2月）	9720亿美元（不包括救济银行的7000亿美元）	11.5%	清洁和可再生能源、碳捕获、绿色建筑、铁路、新能源汽车
韩国	绿色新工作创造计划（2009年2月）	381亿美元	80.5%	新能源汽车、绿色建筑、河流和森林恢复、大坝、可再生能源
日本	经济刺激计划（2009年4月）	1500亿美元（15万亿日元）	尚不明确	尚不明确
中国	刺激方案（2008年11月）	5861亿美元（4万亿人民币）	37.8%	环保、基础设施和经济结构调整

Green development in China（2005-2007）

领域与部门	单位	2005年	2006年	2007年
1. 环保污染治理投资[1]	亿元	2388.0	2566.0	3384.6
建设项目"三同时"	亿元	640.1	767.2	1367.4
城市环境基础设施	亿元	1289.7	1314.9	1467.8
工业污染源治理	亿元	458.2	483.9	549.1
2. 生态基础设施建设和生物多样性[2]				
珍稀、濒危动物繁殖场	个	313	164	164
珍稀植物引种栽培场	个	127	77	77
自然保护区个数	个	2194	2349	2395
保护区面积	公顷	148225823	149949031	151535040
保护区占国土面积	%	14.8	15.0	15.8
生态示范区建设试点地区和单位	个	528	528	528
国家级自然保护区个数	个	38	39	69
国家级自然保护区投资	亿元	23.5	27.1	58.8
当年全国造林面积	公顷	4802850	3109106	1790698
林业基本建设投资	亿元	404.0	446.8	470.8

Green Development in China（2005-2007）

3. 清洁技术[3]	亿元	3966.1	4561.0	5245.2
4. 可再生能源[4]	亿元	5927.6	6114.4	6736.3
农村非商品能源生活消费情况	万吨标煤	27022.3	26761.8	27984.9
沼气	万吨标煤	398.9	492.7	508.5
秸秆	万吨标煤	14579.9	15959.6	17790.8
薪柴	万吨标煤	12043.5	10309.5	9685.6
水力发电量	亿千瓦时	3535	3970	4358
风电	万吨标煤			2.81
太阳能总利用量	万吨标煤			1454
地热总利用量	万吨标煤			218
核电发电量	亿千瓦时	505	531	548
5. 废物管理投资[1]	亿元	458.2	483.9	549.1

Green development in China（2005-2007）

6. 绿色建筑[5]				
采暖区供热计量及节能改造	亿平方米			1.05
高效照明产品	万支			5000
绿色建筑节能折算成价值量	亿元	38.7	38.7	38.7
7. 可持续交通[6]	亿元	2187.8	2870.0	3365.9
轿车年总产量	辆	2779425	3869689	4797706
排量≤1.0L机动车数	辆	426348	410817	246825
1.0L＜排量≤1.6L机动车数	辆	1277728	1993208	2586449
排量≤1.6L机动车数占比	%	61.31	62.12	59.05
公共交通				
公共交通车辆总数	辆	313296	307869	344489
公共交通客运总量	万人次	4836930	4659247	5325857
8. 环保产业[3]	亿元	4572.1	5257.9	6046.6
中国GDP	亿元	183867.9	210871.0	246619.0
绿色经济（1-7之和）Green Economy by UNEP	亿元	15370.4	17080.8	19790.6
1-7之和占GDP比重 As of GDP	%	8.4	8.1	8.0
绿色经济（1-8之和）Green Economy Excluded Environmental Industry	亿元	19942.5	22338.7	25837.2
1-8之和占GDP比重 As of GDP	%	10.8	10.6	10.5

Green investment (estimated) in 11th five-year plan

	Areas	Investment amounts (billion RMB)
1	Pollution abatement and treatment	1530
2	Ecological conservation and biodiversity conservation	1200
3	Renewable energy	1500
4	Energy saving	500
5	Sustainable transportation	1400
6	Green building	400
	total	6080

中国环境产业发展（2004年）
Environmental Industry in China in 2004

	Total	Products	recycling	environmental services	cleaning products
firms (number)	11623*	1867	6105	3387	947
employment (10^4 persons)	159.5*	16.8	95.9	17.0	23.3
revenues (10^6RMB)	4572.1	341.9	2787.4	264.1	1178.7
profits (10^6 RMB)	393.9	37.0	223.4	26.2	107.3
export (10^6 USD)	61.9	1.9	11.3	0.7	48.0
Relevant industrial output (10^6 RMB)	4437.9	358.0	2866.2	—	1213.7

Environmental Technology Cooperation(1)

- To promote dialogue and cooperation in environmental protection industry.
  - Annual Summit-mechanism
  - Joint study on environmental sound technology: exploring demand and mechanisms
- To strengthen the cooperation on mutual recognition of environmental products and low carbon products

Environmental Technology Cooperation(2)

- Environmental technology demonstration
  - Small-sized waste water treatment project
  - Solid-waste treatment project
  - Rural environmental protection
- To enhance environmental communication between government, enterprise and social organization through “China-ASEAN Green Envoy Program”.

Looking forward: achieving green prosperity

- Energy crisis, food shortage and climate change brings more challenges.
- Balancing the Environment and Development.
- Mainstreaming the Green Development for Economic Transformation.
- Green industry will be core in green development.
- Good Chances: Regional Environmental Cooperation between ASEAN and China .

THANKS!

CAEC: a platform and think tank for global and regional environmental cooperation

Contacting:
zhou.guomei@chinaaseanenv.org

Redefining Environmental Services (ES) from the Side of Demand for Environment

HU Tao, LI Liping
WU Yuping, GUO Hongyan

MEP Expert Team of T&E

November, 2010, Jintai Hotel, Beijing

Outline

- **Background**
- **Environmental problems**
- **Redefine EGS from side of demand for environment**

Background

- APEC
  - How to promote APEC ES related to climate change issue?
  - APEC survey report in 3 countries
- WTO
  - How to promote CTE-EGS negotiation?
  - How does ES response to global environmental challenges related to MEAs?

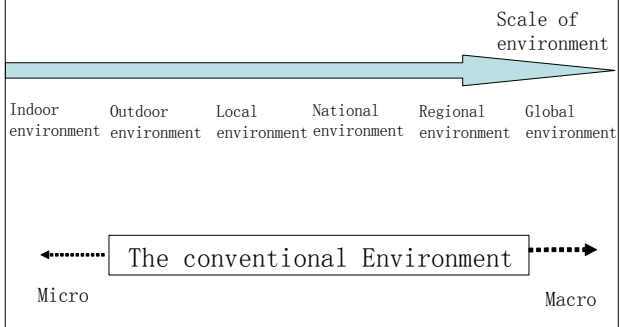
Environmental problems

- Clarifying the meaning of the environment
- Problems of the environment
- Demand of EGS
- Environmental priorities

Environmental problems

- What does the environment mean?
- This is a fundamental question that should be answered before talking environmental problems, priorities and EGS
- Deepen our thinking and expand from the common environment towards
  - Micro level to indoor environment
  - Macro level to global environment

Spectrum of the environment



Meanings of the Environment

- Spectrum of the environment from micro to macro level
  - Indoor environment
  - Outdoor environment
  - Local environment
  - National environment
  - Regional environment
  - Global environment

Environmental problems

- Indoor environmental problems
  - 70% of people's lifetime are averagely spent indoor where is the direct touch factor of human being
  - WHO reports most of health problems are related to indoor environmental quality
  - Indoor environmental goods and services can reduce, remove, recover and resolve the indoor environmental problems

Environmental problems

- Indoor environmental problems
  - Air pollution from fossil energy sources for cooking and heating
    - SOx, NOx
    - Particulates could reach 500mg/m3 in living room and1000mg/m3 in kitchen
  - Building materials for house building and decoration
  - Furniture and decoration parts with VOC pollutants
  - Smoking indoor
  - Indoor water drinking and sewage
  - Indoor trash
  - Noise
  - Radiation
  - And others

Environmental problems

- Demand of EGS for indoor environment
  - The booming housing is bringing more opportunities
    - Each year there are about 1.6-2 billion square meter new houses
    - To ensure energy saving buildings, it is creating a lot of demand of goods and services
    - Landscape and horticulture design services
    - Indoor pollution cleanup and prevention also create a lot of demand for indoor goods and services, such as
      - VOC free furniture
      - Eco-labeled building materials

Environmental problems

- Outdoor, local and national environmental problems
  - Air pollution
  - Water pollution
  - Solid wastes
  - Biodiversity loss and ecosystem degradation
  - Noise
  - Radiation

Environmental problems

- Demand of EGS for outdoor
  - **Taking China as an example, the environmental targets of 11th five year plan (2006-2010) provides trmendous opportiunties**
    - **Energy intensity 20% reduction**
    - **SO2 emissions 10% reduction**
    - **COD emission 10% reduction**
    - **Water consumption of value added indistry 30% reduction**
    - **Seweage treament rate reaching 70%**
    - **Industrial solid wastes treatment rate higher than 60%**
    - **The demand of environment is huge, especially**
      - **energy and GHGs reduction**
      - **SO2 reduction**

Environmental problems

- Global environmental problems
  - Climate change
  - Ozone depletion
  - Biodiversity loss
  - POPs
  - Hazardous wastes Trans-boundary transfer regulated by Basal convention
  - And other MEAs regulated global environmental problems

Environmental problems

- Demand of EGS for global environment
  - Signed and new MEA treaty implementation brings opportunities
    - Both importing and exporting opportunities of energy saving and other GHGs control measures EGS for Post KY negotiation treaty and implementation, as described in IPCC AR4
    - CFC free EGS for ODS reduction
    - EGS for POPs convention implementation for both importing and exporting

Environmental problems

- Environmental Priorities
  - Key factors of environmental priority setting
    - Health impacts > other impacts
    - Direct impacts > indirect impacts
    - Authorized responsibilities at different level organizations / governments taking their own responsibilities

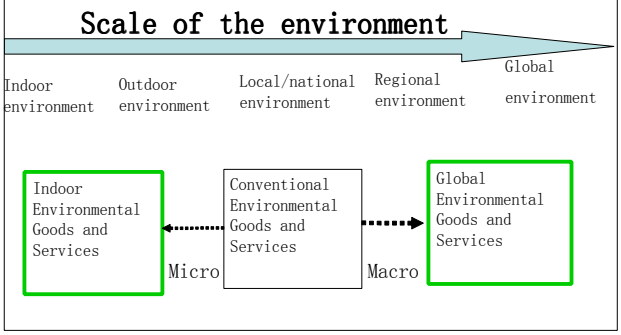
Environmental problems

- Environmental Priorities of China
  - From past China's narrow national interests, the rank should be:
    - Indoor > outdoor/local/national > global
  - From the current new strategy of China, the rank could be:
    - Indoor + outdoor/local/national + global
    - Strategy of Co-control of all pollutants
- For international community, like UN, WTO, WHO, they should focus on
  - First on global issues of MEAs and MDGs, and then indoor health issue to accomplish their responsibilities
  - outdoor/local/national is not a necessity because its mainly the national government responsibilities

Redefining EGS from side of demand for the environment

- Considerations from trade aspect and supply side of EGS
  - UN CPC service classification
  - W/120 classification
  - APEC environmental goods list
  - For WTO environmental goods

Redefining environmental industry and EGS



Redefining EGS from side of demand for the environment

- Defining environmental industries for producing EGS based on the demand of environmental challenges at the whole spectrum
  - The EGS for improving indoor environment
  - The EGS for improving outdoor, local and regional environment (conventional ones)
  - The EGS for improving global environment

Redefining EGS from side of demand for the environment

- Coherent with existing CPC system
  - Water service
    - 9401 I means indoor water service
    - 9401 c means conventional water service
    - 9401 g means global water service
  - Solid waste service
    - 9402 I means indoor solid waste service
    - 9402 c means conventional waste service
    - 9402 g means global waste service
  - Air service
    - 9403 I means indoor air service
    - 9403 c means conventional air service
    - 9403 g means global air service

Redefining EGS from side of demand for the environment

- **EGS in WTO Negotiations and APEC**
  - **Trade interest driven but environmental demand driven**
    - **Environment is used by trade officials as an excuse to promote exporting**
  - **National interest driven but global interest driven**
    - **It's very necessary to have global environmental goods to improve global environment**
  - **Lack of coherence with MEAs**
    - **Not mutual supportive**
    - **Even conflicts**
      - **US section 301 probe**
      - **Non-tariff measures Vs barriers**

Thank You!

Welcome your comments and suggestions

hu.tao@prcee.org

Indoor air environment service: Demand, supply and potential market in HK and APEC region

Prof Frank S. C LEE

HKPU

Nov 29-30, 2010

Beijing

Objectives

- **To introduce the regulations on indoor air quality control and practices in HK, China, etc**
- **To Explain the significances of these regulations for citizen's health protection**
- **Indoor air environment service, including the demand for such services, supply capabilities and potential markets in HK and APEC region.**

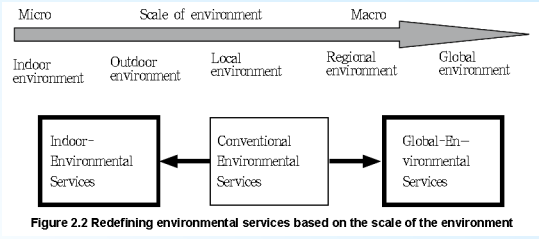
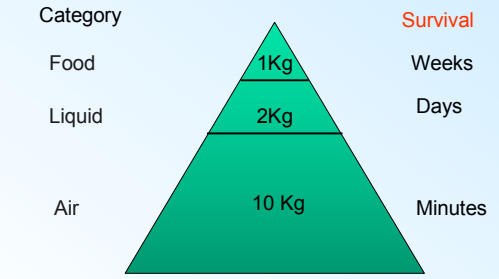
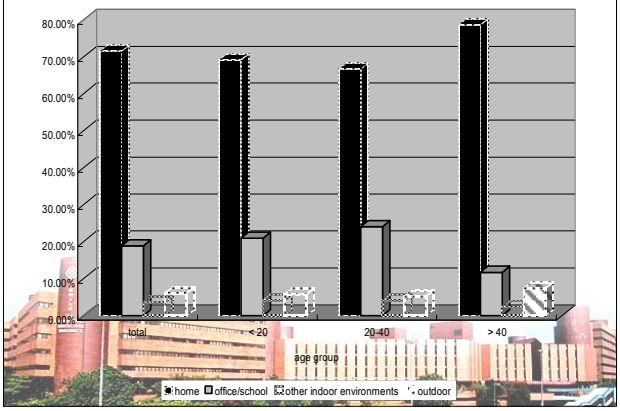


Figure 2.2 Redefining environmental services based on the scale of the environment

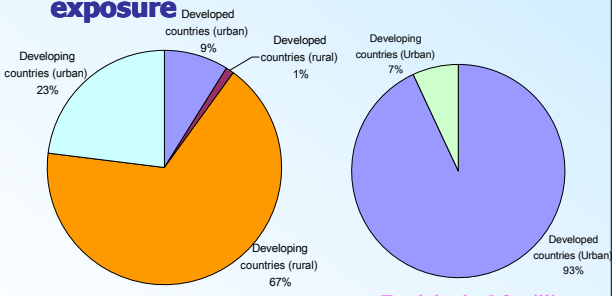
Why is the air quality we breathe important?



People spend most of their time indoors (>90%)



Estimated annual deaths due to indoor and outdoor pollution exposure



Total deaths 2.8 million (indoor exposure)

Total deaths 0.2 million (outdoor exposure)

[WHO, 2000]

Indoor Air Quality (IAQ)

- Impurities in the air
  - environmental tobacco smoke (ETS)
  - carbon dioxide (CO_2)
  - carbon monoxide (CO)
  - nitrogen oxide (NO)
  - organic gas and vapors
  - formaldehyde
  - ozone (O_3)
  - particulate
  - fibers
  - radon
  - microorganisms
  - allergens

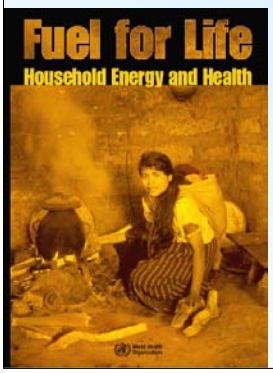
The evidences of indoor air and

Health Outcome	Evidence
ALRI(children<5yr) COPD(adults) Lung cancer (coal)	Between 10-20 studies (but few measured exposure or dealt with confounding factors
Tuberculosis Cataract Upper airway cancer Asthma	Several consistent studies (more convicting for asthma)
Low birth weight Prenatal mortality Otitis media	Very few studies, support from environmental tobacco smoke and or ambient air pollution studies
Cardiovascular disease	No studies, but suggestive

ALRI: acute lower respiratory infections
COPD: chronic obstructive pulmonary disease

[World Health Report 2002]

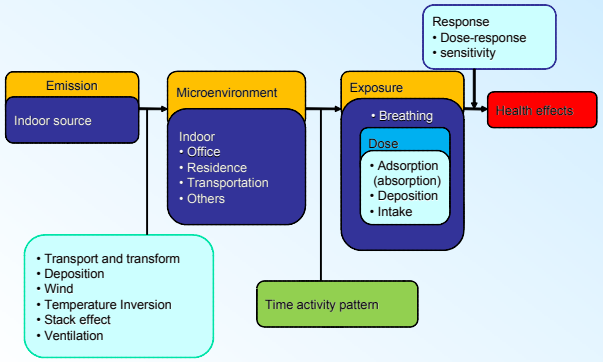
Indoor smoke contains a variety of health-damaging pollutants



- particles (complex mixtures of chemicals in solid form and droplets)
- carbon monoxide
- nitrous oxides
- sulphur oxides (mainly from coal)
- formaldehyde
- carcinogens (chemical substances known to increase the risk of cancer) such as benzo[a]pyrene and benzene.

Different housing characteristics and behaviors with vary

Health effect assessment of indoor air pollutants



China IAQ Standard

No.	Parameter	Pollutants	Unit	Level	Remarks
1	Physical	Temp	℃	22~28	Summer
				16~24	Winter
2		RH	%	40~80	Summer
				30~60	Winter
3		Air Velocity	m/s	0.3	Summer
				0.2	Winter
4		Fresh Air	$m^3/h \cdot 人$	30*	
5	Chemical	二氧化硫 SO_2	mg/m^3	0.50	1 h Ave
6		二氧化氮 NO_2	mg/m^3	0.24	1 h Ave
7		一氧化碳 CO	mg/m^3	10	1 h Ave
8		二氧化碳 CO_2	%	0.10	Daily Ave
9		氨 NH_3	mg/m^3	0.20	1 h Ave
10		臭氧 O_3	mg/m^3	0.16	1 h Ave
11		甲醛 HCHO	mg/m^3	0.10	1 h Ave
12		苯 C_6H_6	mg/m^3	0.11	1 h Ave
13		甲苯 C_7H_8	mg/m^3	0.20	1 h Ave
14		二甲苯 C_8H_{10}	mg/m^3	0.20	1 h Ave
15		苯并[a]芘 B(a)P	ng/m^3	1.0	Daily Ave
16		可吸入颗粒 PM10	mg/m^3	0.15	Daily Ave
17		总挥发性有机物 TVOC	mg/m^3	0.60	8 h Ave
18	Biological	Total Bacteria Count	cfu/m^3	2 500	依据仪器定[b]
19	radioactive	氡[222]Rn	Bq/m^3	400	年平均值（行动水平[c]）

* 新风量要求不小于标准值，除温度、相对湿度外的其它参数要求不大于标准值。
[b] 见附录 D。
[c] 行动水平即达到此水平建议采取干预行动以降低室内氡浓度。

IAQ Objectives for Offices and Public Places in Hong Kong

Parameter	Unit	8-hour average	
		Excellent Class	Good Class
Room Tamperature	℃	20 to < 25.5	< 25.5
Relative Humidity	%	40 to < 70	< 70
Air Movement	m/s	< 0.2	< 0.3
Carbon Dioxide (CO_2)	ppmv	< 800	< 1000
Carbon Monoxide (CO)	$\mu g/m^3$	< 2,000	< 10,000
Respirable Suspended Particulate (PM_{10})	$\mu g/m^3$	< 20	< 180
Nitrogen Dioxide (NO_2)	$\mu g/m^3$	< 40	< 150
Ozone (O_3)	$\mu g/m^3$	< 50	< 120
Formaldehyde (HCHO)	$\mu g/m^3$	< 30	< 100
Total Volatile Organic Compounds (TVOC)	$\mu g/m^3$	< 200	< 600
Radon (Rn)	Bq/m^3	< 150	< 200
Airborne Bacteria	cfu/m^3	< 500	< 1,000

Indoor Air Quality Certification Scheme

- The aims of the Scheme is to
  - Recognize good IAQ management practices and;
  - Provide incentives for owners of premises or property management companies to pursue the best level of IAQ
- 2 levels of IAQ objectives (Excellent Class and Good Class)
- Voluntary and self-regulatory approach
- Certified premises in HK:

IAQ Class	No. of premise
Excellent	105
Good	369

Information Provided by Government

- Background information
  - IAQ objectives
  - IAQ standard
- Certification information
  - List of certified premises
  - IAQ certification steps
  - IAQ service providers
    - IAQ consultants
    - IAQ contractors
    - IAQ laboratories
    - IAQ control facility suppliers
    - IAQ certificate issuing bodies and HOKLAS laboratories
- References
  - Guidance notes for the IAQ management
  - IAQ booklets and leaflets
  - IAQ centre and other useful contacts

Indoor Air Quality Certification Steps

- Owner of premises to engage a "IAQ Certificate Issuing Body" (CIB)
- CIB carry out a walk-through inspection
- Rectify the IAQ problems with the assistance of the CIB
- Conduct IAQ measurement
- CIB to certify the premises in compliance with IAQ objectives and issue a certificate
- Owner of the premises send to the Indoor Air Quality Information Centre (IAQIC) the certificate for registration and a copy of the certification report for record
- IAQIC to return the certificate to owner of the premises with a registration number for display in a prominent location for the public information
- Owner of the premises to initiate annual re-certification

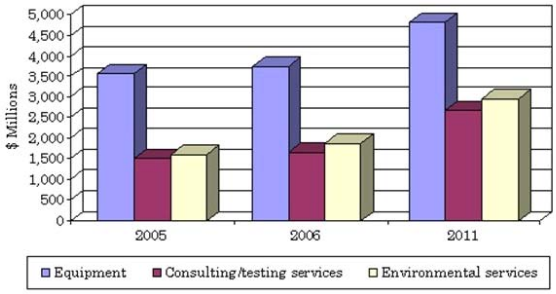
Examples of IAQ Certification Scheme

- Name of Building
- Address
- Certified Location

- Issuing Body

◆ Issuing body should fulfill the requirement of "HK Inspection Body Accreditation scheme" HKIAS

US Indoor Air Quality Market and Trends

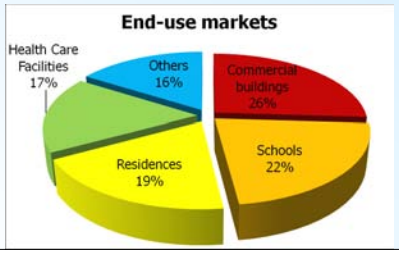


REPORT HIGHLIGHTS - US

- IAQ equipment market → $3.6 billion in 2005
  - Reach $10.4 billion by 2011, a 5.2% average annual growth rate (AAGR) over next 5 years.
- Consulting and testing services → $1.5 billion in 2005
  - Reach $2.7 billion by 2011 based on a 10% AAGR over the next 5 years.
- Environmental services, inclu. mold remediation, asbestos abatement, and radon mitigation → $1.6 billion in 2005
  - Reach $2.9 billion by 2011 , at AAGR of 9.5%.

REPORT HIGHLIGHTS - US

- The end-use markets with the biggest potential for applications of IAQ equipment and services include
  - residential dwellings,
  - commercial buildings,
  - schools, and
  - health care facilities.

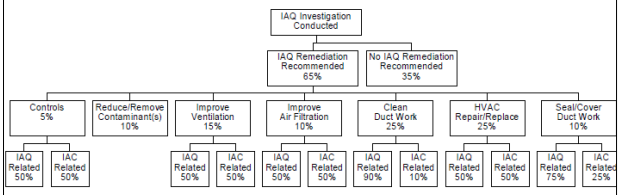


Major Capital Equipment Required for IAQ US

Equipment	% of total[a]	Cost
Air sampling equipment	29%	$50-$300
Duct cleaning equipment	25%	$2,500-$10,000
Moisture meter	24%	$200-$500
Thermometer	19%	$10-$100
CO2 meter	15%	$300-$500
Microbial lab	14%	$100,000-$1,000,000
RH meter	14%	$200-$400
Carbon-monoxide meter	12%	$50-$500
Others	2%-8%	N/A

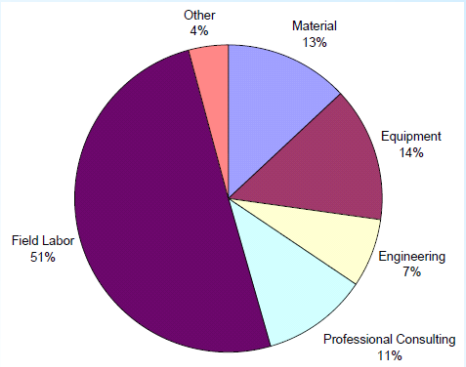
a. Total is greater than 100% due to multiple responses from single respondents

Flowchart from IAQ Investigation to Potential Remediation[b]

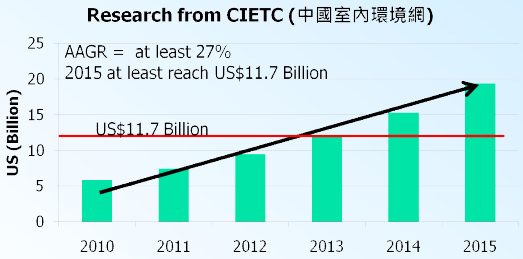


b. Figures represent percent of value of investigations and remediations

IAQ Remediation Direct Costs – US



IAQ Remediation Direct Costs – China



China 12th 5-year Development Plan (Three Indoor Environmental Core Developments)

- Ensure air quality in both construction and renovation could be monitored, inspected and assessed
- Improve the quality of the air cleaning products, cleaning technologies and cleaning services
- Promote the use of indoor air cleaning products, cleaning technologies and cleaning services

China 12th 5-year Development Plan (Indoor environmental products/technologies examples)

- Indoor air purification equipment
  - Formaldehyde purifier, particle removal equipment
- Indoor air cleaning agent
  - De-odour spray, formaldehyde elimination spray
- Centralized ventilation system
  - Advance duct cleaning, indoor air monitoring
- Household air conditioner with air purification system
- Thermal exchange device (to household scale)
  - To keep indoor air temperature unchanged (enhance energy saving and reduce carbon emission)

China 12th 5-year Development Plan (Indoor environmental products/technologies examples)

- Large scale public air purification system enhancement
- De-odouring equipment
  - TiO_2 de-odouring system
- Household indoor air monitoring, alerting system development
- Industrial air pollution control
- Other energy saving technology

Indoor Air Environment Services

Ventilation Hygiene

- **Methods, products and services for inspecting and cleaning the HVAC ducts**
- **Superior energy efficient filtration solutions to remove airborne particulate and gaseous impurities**

Inspection of ventilation ducts

Inspection Robot facilitates inspection of the need for duct cleaning.

Various accessories can be used to obtain video and still digital pictures of the ducts which can then be saved on diskette.

The saved video or still pictures can be used for planning maintenance measures, engineering work or quality assurance.

Air Duct Inspection

Before Cleaning.

After Cleaning.

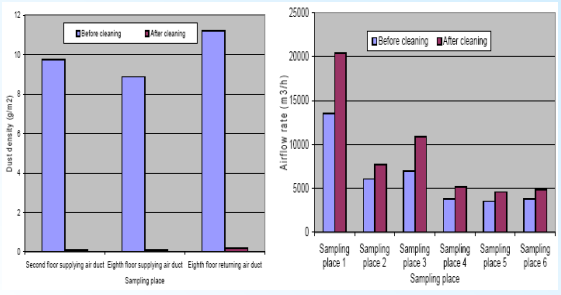
Air Duct Inspection

Before Cleaning.

After Cleaning.

EVHA

Effect of duct cleaning on the **dust** on duct surfaces and **air flows** in an office building in Beijing
(Li, Jun et al. 2006)

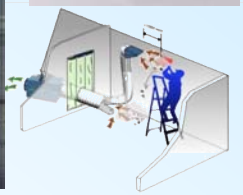


Indoor Air Environment Services

Renovation Hygiene

- **Methods, products and services for removal of dust during the renovation works.**





Demand for indoor air environment services, supply capabilities and potential markets in APEC region.

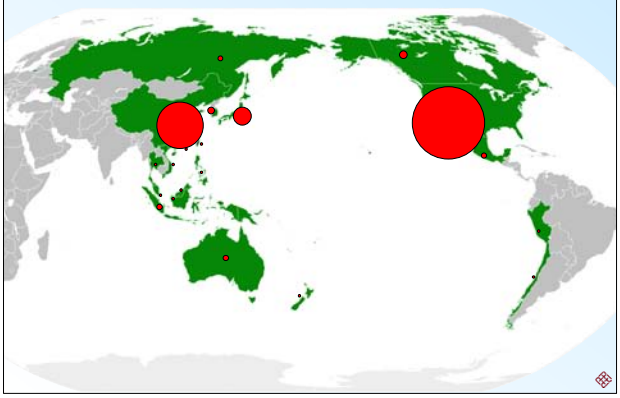
The coming slides are based on [NEMI Indoor Air Quality Market Research, June 2002] with 5% annual increase rate. USA has been used as IAQ baseline for comparison.

Year 2010 (Demand)	Population	Population	IAQ service equal to USA	IAQ weighted population	Value of IAQ Consultancy	Value of IAQ Remediations
Country	Millions	% from APEC			Million USD	Million USD
Australia	23	1%	1	23	138	633
Brunei	0	0%	0.2	0.08	0	2
Canada	32	1%	1	32	192	881
Indonesia	242	9%	0.1	24.2	145	666
Japan	127	5%	0.6	76.2	457	2,097
Republic of Korea	49	2%	0.6	29.4	176	809
Malaysia	28	1%	0.1	2.8	17	77
New Zealand	4	0%	1	4	24	110
Philippines	92	3%	0.1	9.2	55	253
Singapore	5	0%	1	5	30	138
Thailand	66	2%	0.1	6.6	40	182
USA	310	11%	1	310	1861	8,532
Chinese Taipei	23	1%	0.15	3.45	21	95
Hong Kong, China	7	0%	0.6	4.2	25	116
People's Republic of China	1,330	49%	0.15	199.5	1198	5,491
Mexico	111	4%	0.2	22.2	133	611
Papua New Guinea	7	0%	0.1	0.7	4	19
Chile	17	1%	0.15	2.55	15	70
Peru	30	1%	0.1	3	18	83
Russia	140	5%	0.15	21	126	578
Vietnam	86	3%	0.1	8.6	52	237
Totally	2,729	100%		787.68	4729	21,679

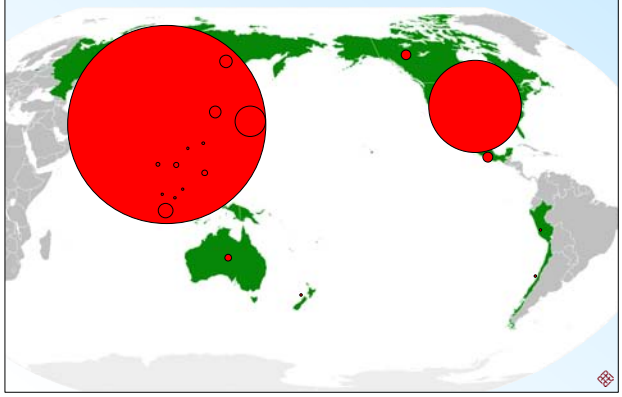
Year 2015 (expected)	Population	Population	IAQ service equal to USA	IAQ Weighted population	Value of IAQ Consultancy	Value of IAQ Remediations
Country	Millions	% from APEC			Million USD	Million USD
Australia	23	1%	1	23	176	808
Brunei	0	0%	0.5	0.2	2	7
Canada	32	1%	1	32	245	1,124
Indonesia	242	9%	0.2	48.4	371	1,700
Japan	127	5%	0.8	101.6	779	3,569
Republic of Korea	49	2%	0.8	39.2	300	1,377
Malaysia	28	1%	0.2	5.6	43	197
New Zealand	4	0%	1	4	31	141
Philippines	92	3%	0.2	18.4	141	646
Singapore	5	0%	1	5	38	176
Thailand	66	2%	0.2	13.2	101	464
USA	310	11%	1	310	2,376	10,890
Chinese Taipei	23	1%	0.4	9.2	71	323
Hong Kong, China	7	0%	0.8	5.6	43	197
People's Republic of China	1,330	49%	0.5	665	5,097	23,361
Mexico	111	4%	0.3	33.3	255	1,170
Papua New Guinea	7	0%	0.2	1.4	11	49
Chile	17	1%	0.4	6.8	52	239
Peru	30	1%	0.2	6	46	211
Russia	140	5%	0.3	42	322	1,475
Vietnam	86	3%	0.2	17.2	132	604
Totally	2,729	100%		1387.1	10,631	48,727

Year 2020 (expected)	Population	Population	IAQ service equal to USA	IAQ weighted population	Value of IAQ Consultancy	Value of IAQ Remediations
Country	Millions	% from APEC			Million USD	Million USD
Australia	23	1%	1	23	225	1,031
Brunei	0	0%	0.7	0.28	3	13
Canada	32	1%	1	32	313	1,435
Indonesia	242	9%	0.2	48.4	473	2,170
Japan	127	5%	1	127	1,242	5,694
Republic of Korea	49	2%	1	49	479	2,197
Malaysia	28	1%	0.3	8.4	82	377
New Zealand	4	0%	1	4	39	179
Philippines	92	3%	0.2	18.4	180	825
Singapore	5	0%	1	5	49	224
Thailand	66	2%	0.2	13.2	129	592
USA	310	11%	1	310	3,032	13,898
Chinese Taipei	23	1%	0.6	13.8	135	619
Hong Kong, China	7	0%	1	7	68	314
People's Republic of China	1,330	49%	0.6	798	7,805	35,776
Mexico	111	4%	0.5	55.5	543	2,488
Papua New Guinea	7	0%	0.25	1.75	17	78
Chile	17	1%	0.5	8.5	83	381
Peru	30	1%	0.25	7.5	73	336
Russia	140	5%	0.4	56	548	2,511
Vietnam	86	3%	0.25	21.5	210	964
Totally	2,729	100%		1608.23	15,730	72,101

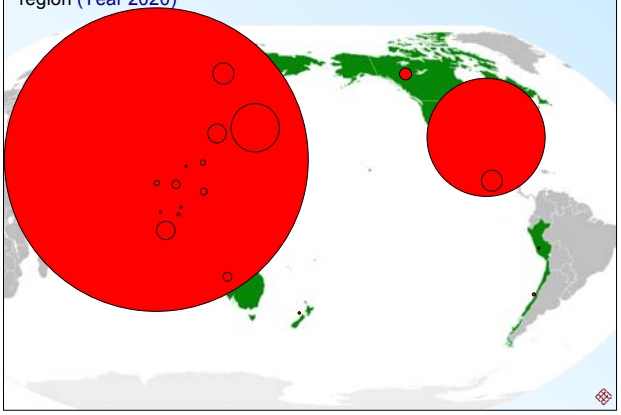
Indoor air quality consultancy and remediation market value in APEC region (Year 2010)



Indoor air quality consultancy and remediation market value in APEC region (Year 2015)



Indoor air quality consultancy and remediation market value in APEC region (Year 2020)



Market size for IAQ Consultation and Remediations		APEC	USA	China
Year 2010	Million USD	26,408	10,393	6,688
Year 2015	Million USD	59,359	13,266	28,458
Year 2020	Million USD	87,830	16,930	43,581

Market size for IAQ Consultation		APEC	USA	China
Year 2010	Million USD	4,729	1,861	1,198
Year 2015	Million USD	10,631	2,376	5,097
Year 2020	Million USD	15,730	3,032	7,805

Market size for IAQ Remediations		APEC	USA	China
Year 2010	Million USD	21,679	8,532	5,491
Year 2015	Million USD	48,727	10,890	23,361
Year 2020	Million USD	72,101	13,898	35,776

Year 2010

IAQ Remediations Market	APEC	USA	China
Controls	1,084	427	275
Reduce/remove contaminant	2,168	853	549
Improve ventilation	3,252	1,280	824
Improve air filtration	2,168	853	549
Air duct cleaning	5,420	2,133	1,373
HVAC repair/replace	5,420	2,133	1,373
Seal or cover duct work	2,168	853	549

Year 2015

IAQ Remediations Market	APEC	USA	China
Controls	2,436	545	1,168
Reduce/remove contaminant	4,873	1,089	2,336
Improve ventilation	7,309	1,634	3,504
Improve air filtration	4,873	1,089	2,336
Air duct cleaning	12,182	2,723	5,840
HVAC repair/replace	12,182	2,723	5,840
Seal or cover duct work	4,873	1,089	2,336

Year 2015

IAQ Remediations Market	APEC	USA	China
Controls	2,436	545	1,168
Reduce/remove contaminant	4,873	1,089	2,336
Improve ventilation	7,309	1,634	3,504
Improve air filtration	4,873	1,089	2,336
Air duct cleaning	12,182	2,723	5,840
HVAC repair/replace	12,182	2,723	5,840
Seal or cover duct work	4,873	1,089	2,336

Year 2020

IAQ Remediations Market	APEC	USA	China
Controls	3,605	695	1,789
Reduce/remove contaminant	7,210	1,390	3,578
Improve ventilation	10,815	2,085	5,366
Improve air filtration	7,210	1,390	3,578
Air duct cleaning	18,025	3,475	8,944
HVAC repair/replace	18,025	3,475	8,944
Seal or cover duct work	7,210	1,390	3,578

Indoor Environmental Service Market

Market potential

- **Buildings, people, pollution and needs to save energy**

Factors affecting demand

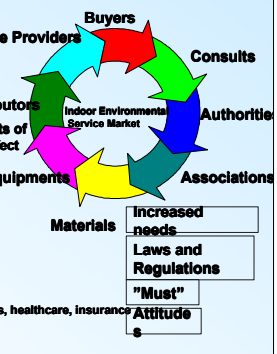
- **Stronger when pollution increase and acts of energy savings materialize – treshold effect**

Service market

- **Based on existing factors – Demand factors are critical**

Market for Equipments and Materials

- **Linked with the need of Service market**
  - **Interest parties; Research Institutes, healthcare, insurance companies etc.**



Demand factors for Indoor Environmental Services

- Laws, Reculations and Guidelines
- Changes of attitudes
- Increased knowledge
- Higher profit expectation (Saving of energy, better rents with Green Leed ratings etc)

Saving of energy by clean and balanced HVAC-system

- HVAC-Systems (air ducts) should be cleaned before taking new building in use and then peridiocally in every 6 months - 5 years .
- **Dirty HVAC-system will cause a pressure drop that reduces air volume. This will be compensated with the fan which consumes more energy when pressure increase.**
- Well balanced and clean HVAC-System can reduce energy consumption 30-40 %.

Thank you

"Information Exchange of APEC Environmental Services"
29 – 30 November 2010, Beijing, China

Global-Environmental Service:

Demand, supply and potential market in China

Mao Xianqiang

School of Environment, Beijing Normal University

Contents

1. International Regulations on Global Environment

- **MEAs dealing with global environment issues**
  - **United Nations Framework Convention on Climate Change (UNFCCC)**
  - **Convention on Biological Diversity (CBD)**
  - **The Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol)**
  - **Stockholm Convention on Persistent Organic Pollutions (POPs Convention)**
  - **Basal Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal (Basal Convention)**
  - **Et al.**

UNFCCC regulations

- change in the Earth's climate and its adverse effects are a common concern of humankind
- control of CO_2 and other GHGs to combat global warming
- calls for the widest possible cooperation by all countries
- common but differentiated responsibilities

223

Other MEAs regulations

- **CBD regulations**
  - dedicated to the conservation and sustainable use of biodiversity.
  - The CBD work programs — ranging from agricultural biodiversity to forests, climate change to island issues, and plant conservation to ecotourism — set the agenda for key conservation and sustainable use activities around the world.
- **Montreal Protocol regulations**
  -eliminating Substances that Deplete the Ozone Layer
- **Stockholm Convention**
  - eliminating POPs
- **Basal Convention**
  - dealing with Hazardous Wastes

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2. Defining Global Environment Services

- Extended environment spectrum
- Redefining environmental services based on the extended environment spectrum

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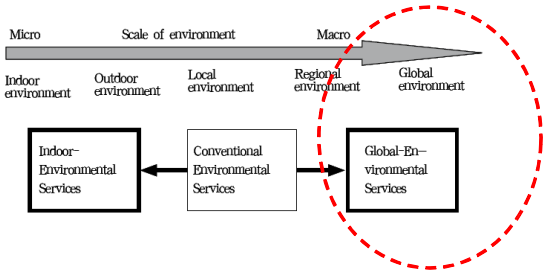
Extended environment spectrum and redefining environmental services



Definition

- **Global-environmental services**: **environmental services for improving global-environment.**
- Global-environmental services is expected to deal with the problems such as climate change, ozone depletion, biodiversity loss, Persistent Organic Pollutants (POPs) emission, and hazardous waste transboundary, et al..

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Classification

- According to global-environmental problems and the requirements from MEAs, we could draw the categories of GES as follows:

  UNFCCC-related GES

  CBD-related GES

  POPs-related GES

  Montreal Protocol-related GES

  Basal convention-related GES

  Others
- The above classification not only focus on how to deal with various global-environmental problems, but also how to conform to the international regulations smoothly. The classification will be in line with international responsibility and public concern.

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UNFCCC-related GES

- Climate-friendly GES
- mitigation and adaptation technologies and services
- such as, Clean/renewable energy technologies and services; energy efficiency technologies and services; CCS; carbon sinks services; sectoral adaptation; Risk evaluation; flexibility / adaptive management

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CBD-related GES

- Biodiversity-friendly GES
- biodiversity conservation and its sustainable use
- Such as, agricultural biodiversity, forestry, wild plant conservation, ecotourism, Traditional Knowledge protection and utilization, et al.

Montreal Protocol-related GES

- Ozone-friendly GES
- Control substances that Deplete the Ozone Layer
- e.g., CFC-free refrigerator technologies

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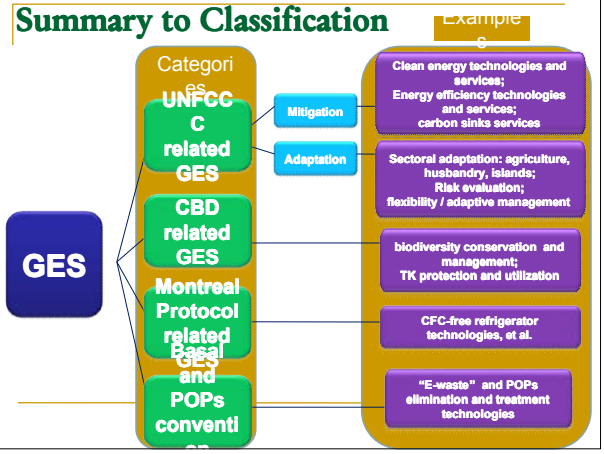
Summary to Classification



3. GES Market in China

- **GES demand**
- **GES supply**
- **Expected GES potential market**

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The overall situation

- China's environmental services showing rapid development in the areas of:
  - Environmental protection consultancy
  - Operating of environmental pollution treatment facilities
- From 1993 to 2004, the annual growth rate of environmental services was up to approximately 25%, nearly 2 times of the growth rate of environmental protection product market.

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Drivers for China's demand for GES

- Resource-saving and Environmental Friendly Society
- Industrial structure adjustment
- the Eleventh Five-Year Plan of Environmental Protection target
  - 20% energy intensity reduction during 2006-2010
  - 50 million ton of carbon sequestration increasing during 2005-2010
  - Et al.

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GES demands of China

- Some Specific demands
  - Eco-label certification service
  - Carbon financing services
    - Carbon CERs exchange service, such as Beijing, Tianjin and Shanghai exchange offices
    - Climate insurance
  - Nuclear safety service
  - Technology cooperation and technology transfer service
  - Capacity building service
  - Global-Environmental accounting service
  - Global-environmental education service
  - Low carbon transportation service

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Global environmental goods supply and their services (installation & maintenance)

Such as:

· solar water heaters (China holds 75% of world market)

· photovoltaic equipment (China ranks No.2)

· wind power generation equipment (China ranks No.3)

· LED、ESL (China ranks No.1)

· small hydropower equipment (China ranks No.1)

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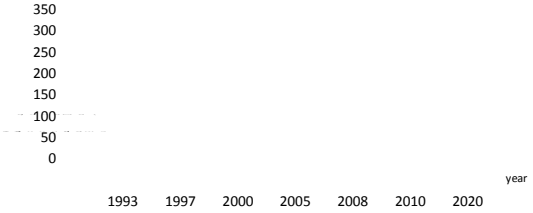
Rapid growth Environment Service market in China

- According to investigations on environmental industry, the market growth rate of internationally comparable environmental services (excluding waste reuse products) is 54.2% during1993-1997, and 27.3% during 1997-2000.
- And according to the *Report of China Environmental Services Development*, from 1993 to 2004, the average annual growth rate of environmental services market was 25%.

Rapid growth Environment Service market in China

- From 1993 to 2004, the average annual growth rate of environmental services market was 25%,



Source: form① Development Report of China Environmental Services and ②' 2010-2015 China Environmental Services Investment Analysis and Forecast Report'
The value in 2010 and 2020 are predictive value

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Potential market for GES

- **(1) National targets—The target and requirements of the 12th five-year plan**
- **(2) International obligation commitment**
  - — By 2020, the emission of CO2 per unit of GDP will be reduced by 40%-45%
- **(3) Energy-saving environmental protection industry planning**
  - priorities : energy efficient technologies and equipment, high efficiency and energy saving products, advanced technology , environmental protection service, etc.
  - to establish the environmental service system (financing and investment, engineering design and construction, facilities operation and maintenance, technical advice and training, et al.)

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Potential market for GES

- Growth rate of environmental services market is expected to be 5-20% during the 12th Five-Year Plan period,
- and if the proportion of GES in the environmental services market is expected to be 10-15%, then,

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GES potential market

Category	In 2010 (billion RMB)	Predicted Growth Rate During the 12th Five-Year Plan (%)	In 2015 (billion RMB)
UNFCCC-related GES	8.57~12.85	15~25	9.85~16.07
CBD-related GES	1.07~1.61	10~20	1.18~1.93
Other MEAs –related GES	2.26~3.39	10~20	2.49~4.07
Total	11.9~17.85	15~20	13.69~21.42

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- Thank you very much for your attention!

Innovative Mechanism for Development and Transfer of ESTs: China's Perspectives

Information Exchange of APEC Environmental Services
Jintai hotel, Beijing, China
November 29-30, 2010

ZOU Ji, FU Sha, and WANG Ke
Programme of Energy and Climate Economics
School of Environment and Natural Resources
中国人民大學 RENMIN UNIVERSITY OF CHINA

Outlines

- Concepts on ESTs and analytical framework
- Perspectives on International Mechanism for D&D&T of ESTs
  - Institutional Arrangement
  - Performance Assessment and Monitoring
  - Innovative Financial Mechanism: MTAF
  - Policy Instruments
  - IPR issues
- Opportunities from financial mechanism
- Conclusions

Concept: ESTs may only be effective when they work as a whole package

- Hardware: devices, equipment, process, and complementary technological system, etc.;
- Software: awareness, knowledge, information, know-how, IPRs, designs, etc;
- Human resources: well trained and qualified;
- Financial resources to make D&T&T happen, and
- Enabling environment: regulating framework by both developed and developing countries, appropriate institutional arrangement; and infrastructure
- Transfer of ESTs should be assessed on a basis of effectiveness in terms of speed, range, and size.

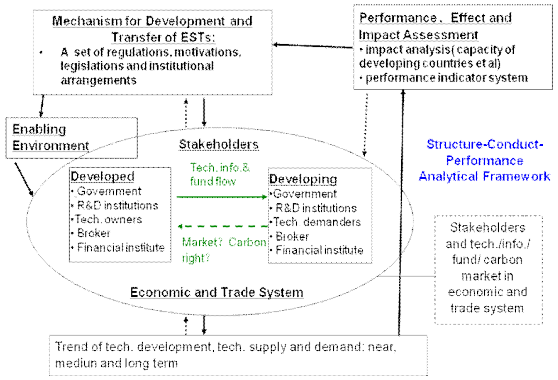
Concept: purpose

- The central purposes of EST R&D are for both protection of climate as global public goods and sustainable development;
- Developed countries should take major responsibilities to take leadership in D&D&T of EST, assisting developing countries to enhance their endogenous innovation capacity.

Concept: Governments play important and different roles in the whole cycle of ESTs

Stage of tech / dimensions	Invention R&D	Innovation R&D (demo)	Diffusion and Deployment
Stakeholder	Research institutes, Universities, Government	Large company, Research institute, Universities, joint venture, gov't	Companies, Brokers, government
Financial resources	Public finance for R&D	Public finance, Company invest. Venture capital	company investment, Bank, stock, bonds, public finance
Policy instruments	Subsidies, Planning, awareness	Subsidies, planning, norms, permit, standard, directorate,	Taxation, subsidies, pricing, promoting competition, permit, norms, compulsory licensing, patent pool…

Analytical Framework: Structure-Conduct-Performance



Why we need innovative mechanism?

- Request by Article 4.5 and Bali Action Plan to address global externality
- Crucial roles of ESTs
- Urgent needs for D&D&T of ESTs (lock-in)
- Little progresses made since 1994
- barriers of TT to be overcome

We need to speed up D&D&T of ESTs to meet climate challenge

Figure 1 Estimation of CO_2 Emission reduction in Coal-fired power generation sector

		small scale sets	Normal	Sub-critical	Sub-critical	SC	USC	IGCC(Multi-Nozzle Gasifier)	IGCC (dry pulverized coal gasifier)
Unit capacity,MW		<100MW	100 ~ 300MW	300 ~ 600MW	600MW	600MW	≥600MW	≥200MW	≥200MW
Unit coal use, gce/kwh		394	346	322	306	298	267	304	299
Capacity volume in 2005, MW		102	99	120	33	14	0	0	0
Installed Capactiy under BAU Scenario (GW)	2010	70	110	140	277	64	20	4	2
	2020	35	95	130	500	134	100	10	6
	2030	0	70	120	652	164	230	30	25
Installed Capactiy under Technology progress Scenario (GW)	2010	55	100	140	128	74	180	6	4
	2020	20	70	100	109	94	581	26	10
	2030	0	35	60	85	114	897	60	40
Accumulative CO2 reduction (Mt-CO2)	2006—2020	2313							
	2006—2030	5813							

Source: working paper of Renmin University —Harvard University Joint Project "Economics of Win-Win energy policy", 2008.

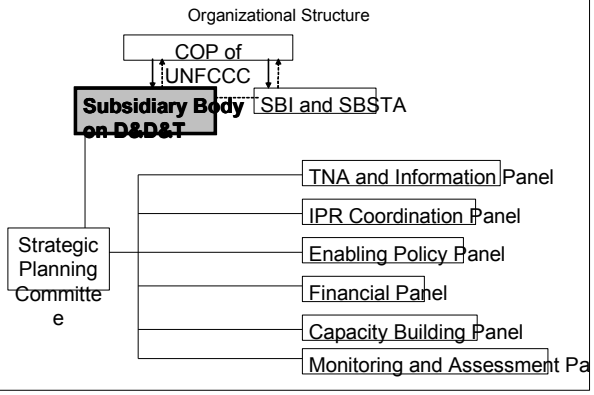
Major Components of the Innovative Mechanism for Development and Transfer of ESTs

- Institutional Arrangement: Intergovernmental Body under UNFCCC
- Performance Assessment and Monitoring
- Financial Mechanism for D&D&T of ESTs
- Policy Instruments, and
- Intellectual Property Issues

Institutional Arrangement 1

- Enhanced mechanism under UNFCCC: need a more effective and implementation-oriented/operational body to:
  - Provide advice, guidance, and recommendations;
  - Coordinate actions by different international stakeholders and governments' policies;
  - Guide and supervise utilization of special TT fund based on public finance;
  - Promote communication and info/knowledge sharing; and
  - Monitor and assess the performance and progresses.
- Panels under the UNFCCC body

Institutional Arrangement 2



Institutional Arrangement 3

With priorities on:

- Policy dialogues and coordination for better incentives to private sectors and markets;
- Financing basic research and R&D; and
- Direct transfer and diffusion of publicly owned technologies.

Institutional Arrangement 4

Policy coordination to provide incentives for private sector

- Tax exemption for ESTs exports of companies in developed countries;
- Subsidies to encourage R&D and transfer of ESTs;
- Favorable conditions for EST-related export credits: guarantee for technology export credits, subsidies, etc.;
- Removal of technology export bans; and
- Other regulations, policies and measures.

Back to Major Components of the Mech

Performance Assessment & Monitoring

- Speed of technology flow
  - Considering to avoid lock-in effects in developing countries
  - Needed time for innovation (R&D) and diffusion
- Range of technology flow
  - Covering most of the meaningful sectors
  - Larger market share and penetration
- Effectiveness
  - Emission reduction
  - Affordable and least cost and expected benefits

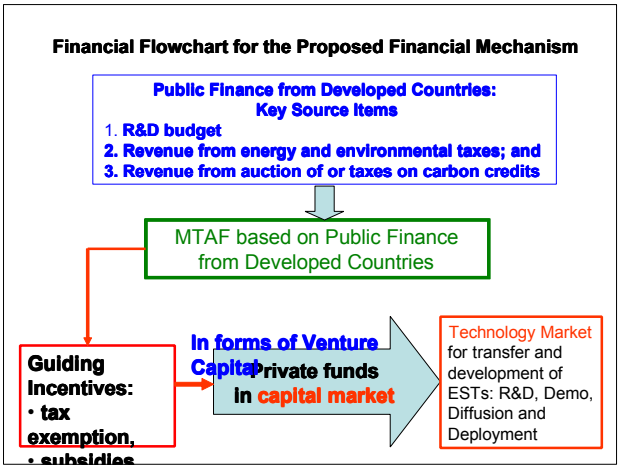
Back to Major Components of the Mech

Innovative Financial Mechanism serving for D&T&D of ESTs

- Public private partnership based
- Public finance should take lead and be precondition of effectiveness of the financial mechanism
- Leverage private finance in market by providing incentives
- Channel and guide three markets: carbon, capital, and technology

Multilateral Technology Acquisition Fund (MTAF)

- A PPP framework for financing D&D&T of ESTs may be feasible by linking public and private finance;
- Significant amount of public finance from developed countries should play a leading role in guiding and attracting private financial resources into D&D&T of ESTs
- A special fund based on public finance from developed countries need to be established and used to create incentives to private sectors through various policy instruments with impacts on capital market
- A range of financial instruments may be applied for financing D&D&T of ESTs.
- Venture capital might be a typical form for private investment in ESTs



Policy Instruments (1)

- Subsidies in R&D for invention and demonstration of identified ESTs in prioritized areas;
- Insurance to curb risks of investment in D&T&D of new ESTs;
- loan guarantee or subsidies for exporting and diffuse ESTs;
- Direct investment in D&T&D of ESTs as share holder in normal forms or via venture capital investment;
- Investment in financial products related to D&T&D of ESTs by holding stocks, bonds and other potential financial products.

Policy Instruments (2)

- Investment in such infrastructure as information, transaction platform, monitoring and enforcement system;
- Expenses in capacity building in developing countries with development of human resources as a priority;
- Government purchases of ESTs;
- permits, compulsory licensing for patented ESTs, etc; and
- Others.

Back to Major Components of the Mech

Intellectual Property Issue

- The IPR practices in the history have seen that the existing IP system does not match the increasing needs for speeding up D&T&D of ESTs to meet challenges of climate change.
- Different types of technologies in different sectors may be of different implication of IP policies (e.g. power *vs* automobile manufacture). Studies are needed case by case.
- Compulsory licensing related to patented ESTs and specific legal and regulatory arrangement should be in place as part of the efforts to implement UNFCCC.
- Price discrimination of ESTs may be arranged for different regions to support developing countries, and
- An innovative IP sharing arrangement should be developed for joint R&D of future ESTs.

Opportunities from financial crisis

- Context: China's plan on (2008-10) USD 586 bln of stimulus investments in ten focal areas (e.g., grid, transport and buildings); US's bailout plan for automobile industry and other stimulus plans all over in the world;
- Opportunities to employ (import or export) low carbon technologies coupling these stimulus plans with views of restructuring economies toward low-carbon economy ;
- From a technology roadmap to technology needs and supply assessment: what sectors, areas, key low carbon technologies
- What favored conditions for low carbon economy may be offered?
- Mechanism for affordable price and broader range of penetration?

Conclusions

- ESTs and transfer of ESTS should be understood as a package;
- An innovative int'l mechanism should be created to scale up and speed up the technological and financial flows between developed and developing countries, covering mainly institutional innovation, MTAF, and IP protection & sharing system;
- Financial crisis provide both challenges and opportunities for restructuring the world economy toward low-carbon economy.

Thank you for your attention!

Contact:
Prof. ZOU Ji
zouji@ruc.edu.cn

中国人民大學
RENMIN UNIVERSITY OF CHINA

GLOBAL PLATFORM
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& SUSTAINABLE ENERGY

Technology Transfer Issues in Environmental Services

Joachim Monkelbaan, ICTSD

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Overview

- Trade in services as a vehicle for transfer of technology
- Barriers to TT
- IP
- Flexibilities for successful ToT
- Key points
- Channels for ToT in the GATS
- Practical strategy and new initiatives

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ICTSD - 国际贸易和可持续发展中心

ICTSD
INTERNATIONAL CENTRE FOR TRADE AND SUSTAINABLE DEVELOPMENT

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& SUSTAINABLE ENERGY

Definition ES

"environmental services consist of those activities, which measure, prevent, limit, and correct environmental damage to air, water, soil, and problems relating to waste, noise, and ecosystems"

OECD/Eurostat

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Definition TT

"The broad set of processes covering the flows of knowledge, experience and equipment amongst different stakeholders such as governments, private sector entities, financial institutions, NGOs and research/educational institutions"
IPCC

OECD/Eurostat

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Trade in services as vehicle for transfer of technology

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Barriers to Technology Transfer

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IP

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Flexibilities in GATS Article IV

A. Attract a greater supply of foreign technology

B. Encourage interactions between domestic and foreign firms

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Elements for successful transfer of technology

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Key points

- Tacit knowledge
- The concept of TT in WTO negotiations
- Needs of developing countries
- Role of the WTO

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Channels of technology transfers per mode of supply

Mode of supply	Channels of technology transfer	Spillover
Cross-border (mode 1)	Using technology-intensive services	Passive
Commercial presence (mode 3)	Person-to-person communication or learning by doing: • Formal training • Informal knowledge sharing • Backward/forward interactions with domestic firms	Active

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Climate Change:

- *Article 4.5 of the UNFCCC*

- *Copenhagen Accord*

- *Cancun: the TM?*

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A Knowledge Fund

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A practical strategy

1. CCTIS
2. Mutually beneficial TT contracts

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Example 1

A licensing agreement whereby a scientific team at a university owns a patent, which it licenses to a business that will pay royalties to the university upon sale of products using the claims of the patent.

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Example 2

A joint venture whereby both parties invest human capital, funds or use of facilities, and other items of value, in order to develop a wind turbine design for high rainfall climates, and the parties agree to joint ownership of IP with distribution rights in different geographic territories.

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Example 3

A developing country puts out a bid for a magnetic, high-efficiency public transport system and accepts an offer from a developed country company that offers an IP license to patents and documentation relating to the transport system, plus engagement with engineers from the local university.

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"the reason it is difficult for the people to live in peace.. Is because of too much knowledge."

道

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So.. it's time to ACT!

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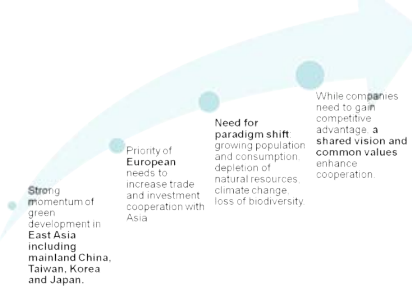
ACT = Alliance for Clean Technology

By ICTSD EGS programme and

Context



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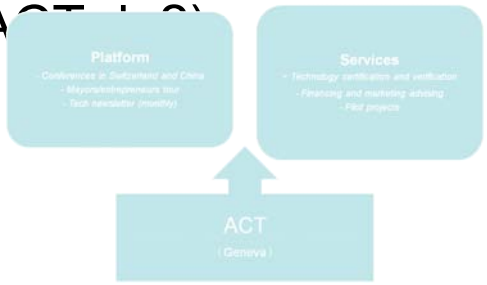

Supporting partners：中国政府、瑞士政府、联合国环境署、联合国气候变化公约、世界贸易组织、瑞中经济协会、上海和北京环境能源交易所、欧洲技术之旅、欧洲清洁能

服务(what does ACT d

支持单位：中国政府、瑞士政府、联合国环境署、联合国气候变化公约、世界贸易组织、瑞中经济协会、上海和北京环境能源交易所、欧洲技术之旅、欧洲清洁能源协会等

Examples of issues

- Sectoral approach to emissions trading (lessons learned from the EU ETS), low-carbon city pilots in China
- Voluntary standards for emission reductions, how to integrate different carbon markets
- Aviation industry: from 2012 in EU ETS

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Technology Transfer Issues in Environmental Services

Organized by APEC

30 November | 09:40 - 10:20

Jintai Hotel, Beijing, China

ICTSD GLOBAL PLATFORM ON CLIMATE CHANGE, TRADE & SUSTAINABLE ENERGY www.ictsd.org

Technology Transfer and Diffusion in CDM Projects in China

Tian Chunxiu
PRCEE

Nov.30, 2010

Prepared for the Symposium:
Information Exchange of APEC Environmental Services

Outline

- **Brief Introduction of CDM**
- **Development of CDM Projects in China**
- **Evaluation of Technology Transfer in the CDM Projects in China**
- **Analysis of Barriers to Technology Transfer in the CDM Projects in China**
- **Suggested Approaches to Strengthening Technology Transfer**

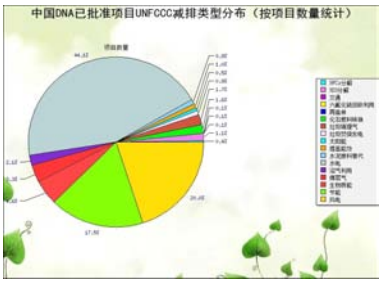
Brief Introduction of CDM

- One of three flexible mechanisms of Kyoto Protocol under the UNFCCC. A project-based mechanism to allow GHG emission reduction cooperation between developed countries and developing countries
- Two purposes: to help developing countries to achieve SD and reach the final targets listed under the Convention; to help developed countries to meet their quantified emission reduction commitments.
- Three aditionalities:
  - environmental aditionality
  - **technological aditionality**
  - fund aditionality

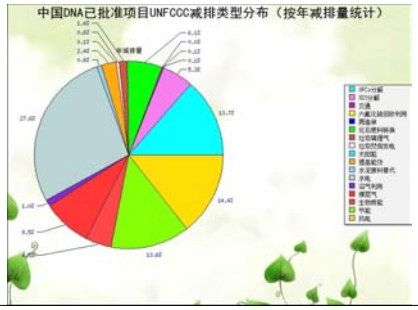
Development of CDM Projects in China (1)

- Up to Nov.25,2010, the DNA of China has approved 2787 CDM projects, the annual emission reduction is estimated to be 500 million tCO_2e ; 1046 projects have been registered in CDM EB, the generated annual emission reduction is predicted to be 240 million tons of CO_2e.

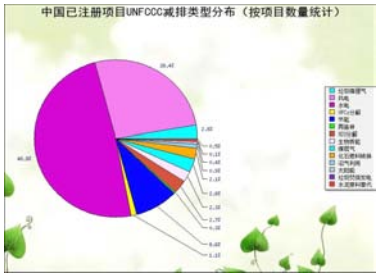
Development of CDM Projects in China (2)



Development of CDM Projects in China (3)



Development of CDM Projects in China (4)



Development of CDM Projects in China (5)

Evaluation of Technology Transfer in the CDM Projects in China (1)

The evaluation and analysis results are based on the part outcomes of the EU-China CDM Facilitation Project.

[The EU-China CDM Facilitation Project is the largest project on CDM capacity building funded by EU in China. The total fund is more than 2.3 million Euros, with a three-year project period starting from February 2007 to March 2010. The objective of this project is to provide direct help to the healthy development of CDM in China through a series of research, capacity building, technical exchange and training, etc. The project is guided and organized by EU, MEP and NDRC of China, with PRCEE as the Chinese technical leading organization and IVL as the foreign technical leading organization; and other 4 organizations as the participating organizations.]

Evaluation of Technology Transfer in the CDM Projects in China (2)

- 14 operating CDM projects were selected and field survey was conducted, which covered all the types of CDM projects and regions
- the PDDs of more than 200 Chinese CDM projects were reviewed
- 18 EU enterprises that had participated in Chinese CDM projects were interviewed
- the CDM agencies in 10 provinces of China were interviewed

Evaluation of Technology Transfer in the CDM Projects in China (3)

Type	Industrial Nature	Case Name
Energy Conservation and Energy Efficiency Improvement	Cement Heat Utilisation	Anhui Conch Ningguo Cement Factory 9100 kW surplus heat generation project
	Steel Heat Utilisation	Hebei Handan Steel Group CCPP Power Generation Project waste heat CCPP project
		Complementary coke dry quenching power generation for No.9 & No.10 coke oven in Wuhan Iron and Steel Corporation
	Ultra-supercritical Power Generation	Jiangsu Guodian Taizhou USC Power Generation
Renewable energy	Hydro power	Yunnan Heiye 25MW hydropower project
		Hunan Xiaoxi 135MW hydropower project
	Wind power	Dongshan 49.3MW wind power project in Chifeng, Inner Mongolia
		Jiangsu Rudong Dongfang 100.5MW Wind Power Project
	Biomass power	Hebei Jinzhou 24MW Straw Power Generation Project
Fuel Substitute	Natural Gas	Beijing No.3 Thermal Power Plant NGCC project
Methane Recycle and Use	Coal Bed gas Recovery	Shanxi Yangquan Coal Group coal-bed gas power generation project
	Landfill gas power	Nanjing Tianjingwa Landfill gas power Project
Non-CO_2	HFC-23 Destruction	Jiangsu Changshu Sanlaifu Group HFC-23 destruction project
	N_2O Destruction	Shanxi Tianji Chemical Group N_2O destruction project

Evaluation of Technology Transfer in the CDM Projects in China (4)

The definition of technology transfer in this project mainly includes the following three contents and standards:

- **"abroad":** installations and designs are from other countries;
- **"novelty":** the technology is advanced and new compared with that in China;
- **"capacity":** capacity, skills and knowledge are acquired to operate and maintain the equipments.

Evaluation of Technology Transfer in the CDM Projects in China (5)

Key findings:

- CDM projects have created favorable conditions and provided support to the development and diffusion of new technologies in China, therefore it is of some positive effects. For example, CDM projects have provided a broad market for large-scale application of wind power technology; through CDM projects, the coke dry quenching (CDQ) technologies were diffused tremendously in China.
- There are relatively big obstacles to transferring technology through CDM, especially key technology to developing countries. Our study shows the following:
  - *Strictly speaking, the CDM projects registered at EB have not achieved real technology transfer. The so called "technology*

Evaluation of Technology Transfer in the CDM Projects in China (6)

transfer" is merely a transfer of the technology carrier-the transfer of installations. It is far from achieving the predicted targets of "developing countries can get advanced technologies through CDM projects".

-- from PDDs' review, less than 40% of the projects have mentioned technology transfer;

-- even for these 40% projects field survey showed: :

- 2/3 of the projects only had installations transfer, and the purchase of installations have no favourable price compared with that of the ordinary commercial trade;
- the rest 1/3 projects have mentioned knowledge and capacity training, it is simply installations operation and maintenance training.

- *Based on CDM project types, those projects with so called "technology transfer" are mainly focused on non-CO_2 CDM projects, such as fuel switching, N_2O, HFC-23, CBM etc.*

Evaluation of Technology Transfer in the CDM Projects in China (7)

-- there are great demands in energy-efficiency and renewable energy CDM projects technology transfer, yet the transfer level is very low, mainly some installations transfer.

- *Besides CDM projects type, the "technology transfer" level is also related to company scale, company nature, information availability, and local regulations.*

-- the areas with high economic development level, high information availability, and sufficient regulation system have relatively high levels of "technology transfer" in CDM projects.

--large state-owned companies paid more attention to technology transfer in negotiation compared with small and medium sized companies.

Evaluation of Technology Transfer in the CDM Projects in China (8)

- *The technology transfer suppliers are mainly from EU and Japan. Among which, EU is mainly active in the field of renewable energy, in particular wind power and biomass CDM projects. Renewable energy installations exported from EU to China through CDM takes up 80% of the total export EU delivered to China. EU has made little contribution to the technology transfer of energy efficiency CDM projects, the export in such field through CDM is much lower than that of Japan.*

- *Comparing internationally, the ratio of CDM project "technology transfer" in China is approximately the same as other developing countries, which is 30-40%.*

Analysis of barriers to technology transfer in the CDM projects in China (1)

- The technology supply side has serious barriers
  - the lack of relevant policies from the government of technology supply side;
  - IPR overprotection of technology supply side
  - the technology market monopoly

Example: N_2O CDM project: the project contract requires the return of the catalyst used for treating N_2O back to the foreign technology owner.

Analysis of barriers to technology transfer in the CDM projects in China (2)

- There were barriers to technology transfer on the technology demand side
  - there is no clear technology demand list;
  - there are weak driving forces for project owners to pursue technology transfer;
  - the lack of capacity: human capital, qualified management, access to information;
  - inadequate regulation system for technology-demand

Analysis of barriers to technology transfer in the CDM projects in China (3)

- The problems existed in CDM itself hindered technology transfer
  - methodology bottlenecks
  - the development and technology transfer of CDM project is restricted by the additionality rules

Suggested Approaches to Strengthening Technology Transfer (1)

- ***Policy proposal to the decision makers in China***

- *CDM project management and monitoring:*
  -- to introduce a clearer and more operational definition of technology transfer in the project approval process, at least at the DNA level;
  --to prioritise technologies to reflect China 's interest in promoting more SD and be aligned with China 's other initiatives for tackling climate change. For example, encouragement should be given to the projects that have a rather large co-benefits, such as the waste heat utilization project etc. ;
- *to promote the capacity building of enterprises and ensure a good information access*
- *to formulate related economic incentive policies*

Suggested Approaches to Strengthening Technology Transfer (2)

- *Policy proposal to the government of developed countries and UNFCCC COP/CMP/EB*

- the governments of developed countries can fund CDM technology transfer i.e. the governments can raise funds and establish a CDM technology transfer fund to subsidize technology transfer.
- the governments of developed countries can formulate policies that provide economic incentives and encourage enterprises to transfer technology via CDM, e.g. to provide credit guarantees for technology export, to facilitate the examination and approval procedure for technology export etc.

Suggested Approaches to Strengthening Technology Transfer (3)

- establish rational international mechanisms to facilitate technology transfer in CDM projects

  --set up compensation mechanisms. The related fund could be used to support the development of new methodologies or support collaborative research and development efforts.
- Host countries should be encouraged to set up "technology additionality" standards, and the DNA of all the countries should use these standards as the criteria for the approval of CDM project.
- …

Thank you!

JICA's Technical Cooperation in the field of Environmental Management

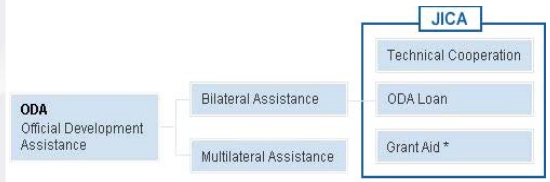
November, 2010

Yoshikazu TANIGUCHI
Global Environment Department,
Japan International Cooperation Agency (JICA)

Topics

1. About JICA
2. JICA' Efforts for the Environmental Management
3. Case Study

1. About JICA: Japan's ODA and JICA



*This excludes Grant Aid which the Ministry of Foreign Affairs will continue to directly implement for the necessity of diplomatic policy.

Total budget : More than ¥1 trillion (about US$11 billion by DAC Rate in 2009 : US$1=\93.5)

2. JICA' Efforts for the Environmental Management

JICA's Approach in the field of Environmental Management

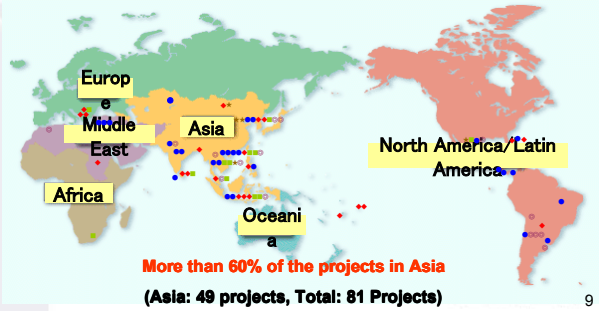
Support for formulating adequate environmental policy and environmental planning

Support for strengthening systems responding to environmental issues

Support for the improvement of technology for adequate environmental management

JICA's Project Map in the Environmental Management Field (Technical Cooperation, 2010)

★ Air Pollution (5) ● Water Pollution (27) ◆ Waste Management (22)
■ Climate Change (12) ◎ Complex, Others (15) ( ):Number of projects



More than 60% of the projects in Asia

(Asia: 49 projects, Total: 81 Projects)

3. Case Study

1. Waste Management
- Promotion of Circular Economy Project in China -

2. Water Environment Management
- Program on Vietnam Urban Water Environment Management -

3. Climate Change
- The Study for Promotion of CDM Projects in Dominican Republic -

Case Study 1 : Waste Management
Promotion of Circular Economy Project in China
<Technical Cooperation Project> 2008.10-2013.10

Background
- China has initiated its11th 5-year plan since 2006.
- They have adopted a Recycle Promotion Policy.

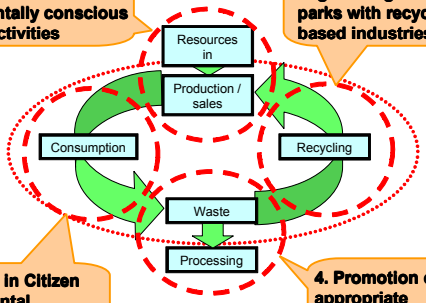
Project Purpose
- Strengthening the execution of environmental protection measures for the materials cycle.
- Following the recycle processes.

Partner country organization
Sino-Japan Friendship Centre for Environmental Protection

Promotion of Circular Economy Project in China

1. Promotion of environmentally conscious business activities

3. Promotion of eco-engineering industrial parks with recycling based industries



2. Increase in Citizen Environmental Awareness

4. Promotion of appropriate management of waste

Case Study 2 : Water Environment Management
Program on Vietnam Urban Water Environment Management

Program Goal

To reduce pollution load to public water bodies in Vietnam, thereby improving water quality and satisfying various water needs

	Component 1: Capacity Development of	Component 2: Capacity Development of Administrative Institutions	Component 3: Development of Drainage and Wastewater Infrastructure and
Main Target	Research Institutions	MONRE and DONREs	MOC and provincial development of public
Input	T/C (VAST)	Expert, T/C (MONRE), T/C (Ho Chi Minh, Hanoi)	Loan (Hanoi, Ho Chi Minh, Hai Phong, etc…), T/C

Program on Vietnam Urban Water Environment Management
Component 1: Enhancing Capacity of Vietnamese Academy of Science and Technology in Water Environment Protection
2008.1-2012.1

●Project purpose :
Scientific and technological basis of VAST(IET) for the improvement of the water environment will be further strengthened
●Outputs :
1.Improvement of water quality monitoring and development of analysis methods
2.Suitable technologies on domestic and industrial wastewater treatment
3.Improvement of training courses on water quality monitoring and wastewater treatment
4.Encouragement of activities on water environment protection
● Partner country organization : Vietnamese Academy of Science and Technology, Institute of Environmental Technology


State of urban drainage


State of the laboratory VAST/ IET

Program on Vietnam Urban Water Environment Management
Component 2: Capacity Development of Administrative Institutions Charged with Overall Water Environment Management
<Technical Cooperation Project> 2010.6-2012.5

Project Purpose:
Capacity of MONRE (Central Gov.) and target DONREs (Local Gov.) on water environmental management is strengthened.

(2) Target sites: Hanoi, HaiPhong, Hue, Ba Ria-Vung Tau and HCM

(3) Output:
- Improvement of policy & systems (M)
- Strengthening enforcement capacity of water pollution control (D)
- Making effective water pollution control measures (D)

Program on Vietnam Urban Water Environment Management
Component 3 : Development of Drainage and Wastewater Infrastructure and Management Capacity

M/P, F/S
Hanoi city environmental management plan (2000)
Hai Phong city environmental management plan (2001)

Technical Cooperation
Capacity development on sewerage management in Ho Chi Minh City (2009.5-2010.11)

ODA loans
Total amount: approximately US$150 millions
Urban water environmental management projects in Hanoi, HoChiMinh, Hai Phong, Hue, and Binh Duong Provinces.

Ho Chi Minh City Water Environment Improvement Project (1)
2001.3 L/A

←Ho Chi Minh City Sewage Treatment Plant

Case Study 3 : Climate Change
The Study for Promotion of CDM Projects in Dominican Republic
<Development Study> 2008.8-2010.12

Background

・Dominican Republic relies on fossil fuel but has difficulty to secure its stable import.
・Dominican Republic wants to promote CDM projects related to biogas or methane gas.

Project Purpose


CDM seminar

Case Study 3 : Climate Change
The Study for Promotion of CDM Projects in Dominican Republic
<Development Study> 2008.8-2010.12

Potential survey for each sector
(ex. wind farm, waste water, solid waste
Drafting PIN (Project Idea Note) and
model PDD (Project Design Document)

↓

Developing Recommendation Paper and
Action Plan
Workshop and Seminar for private
companies
which have interest in CDM project

↓

Develop CDM projects in Dominican Republic

Japan International Cooperation Agency

Conclusion

- Assistance for basic infrastructure of trade liberalization
- Arising issue – PPP or PFI, etc.

Japan International Cooperation Agency 21

Thank you for your attention

http://www.jica.go.jp/english/index.html

Japan International Cooperation Agency 22

END

Report prepared by

Policy Research Center for Environment and Economy, Ministry of Environmental Protection, China
Address: No. 1 Yuhuinanlu, Chaoyang District, Beijing, 100029, China
Tel: (86) 10-84665308 Fax: (86) 10-84665308
Email: li.liping@prcee.org
Website: www.prcee.org

Produced for

Asia-Pacific Economic Cooperation Secretariat
Adress: 35 Heng Mui Keng Terrace, Singapore 119616
Tel: (65) 68919600 Fax: (65) 68919690
Email: info@apec.org
Website: www.apec.org